

2002 Tools and Shop Products Guide

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Caterpillar Inc. warrants **all products** sold, against defects in workmanship or materials under normal use, for **Six Months** after date of purchase, **unless otherwise stated.**

Hand Tools (Inch)

8T-0460 Serviceman's Tool Set, 117 Piece Set

Warranty: See individual part number

- Ideal for servicemen apprentices and shop mechanics
- Large assortment of 3/8 inch, 1/2 inch and 3/4 inch drive tools, 1/4 inch to 1 5/8 inch wrenches, pliers, punches, hammers and screwdrivers
- Designed for use on heavy equipment
- See 8T-0461 Serviceman's Tool Set, 95 Piece, for a similar but smaller set of tools; 8T-0461 contains complete groups of 1/4 inch, 3/8 inch and 1/2 inch drive tools.
- Individual hand tools within the group have a Lifetime Warranty
- Tool box must be ordered separately.



Consist of 8T-0460 Serviceman's Tool Set, 117 Piece Set

Part No.	Description	Size
3/8 inch Drive Tools		
8H-8567	Double Hex Socket	7/16 in
8H-8568	Double Hex Socket	1/2 in
8H-8569	Double Hex Socket	9/16 in
8H-8570	Double Hex Socket	5/8 in
8H-8571	Double Hex Socket	3/4 in
8H-8576	Adapter	3/8 in Female to 1/2 in Male
8H-8562	Universal Socket	7/16 in
8H-8563	Universal Socket	1/2 in
8H-8564	Universal Socket	9/16 in
8H-8565	Universal Socket	5/8 in
8H-8566	Universal Socket	3/4 in
9U-6637	Reversible Ratchet	
8H-8574	Socket Extension	76.2 mm (3.00 in) long
8H-8575	Socket Extension	152.4 mm (6.00 in) long
8H-8573	Speeder Handle	
8S-2274	Double Hex Socket	3/8 in
8S-2284	Universal Socket	3/8 in
1/2 inch Drive Tools		
1S-0259	Double Hex Socket	1/2 in
8H-8549	Double Hex Socket	9/16 in
8H-8550	Double Hex Socket	5/8 in
8H-8551	Double Hex Socket	11/16 in
8H-8552	Double Hex Socket	3/4 in
8H-8553	Double Hex Socket	13/16 in
8H-8554	Double Hex Socket	7/8 in
8H-8555	Double Hex Socket	15/16 in
8H-8556	Double Hex Socket	1 in
8H-8560	Universal Joint	1/2 in
8H-8561	Adapter	1/2 in Female to 3/4 in Male
9U-6639	Reversible Ratchet	1/2 in
8H-8559	Socket Extension	1/2 in, 279.0 mm (11.00 in) long
168-0383	Breaker Bar	1/2 in
3/4 inch Drive Tools		
8H-8529	Socket	3/4 in
8H-8530	Socket	7/8 in
8H-8531	Socket	15/16 in
8H-8532	Socket	1 in
8H-8533	Socket	1 1/16 in
8H-8534	Socket	1 1/8 in

Consist of 8T-0460 Serviceman's Tool Set, 117 Piece Set (cont'd)

Part No.	Description	Size
3/4 inch Drive Tools (cont'd)		
8H-8535	Socket	1 1/4 in
8H-8536	Socket	1 5/16 in
8H-8537	Socket	1 1/2 in
8H-8539	Socket	1 5/8 in
8H-8538	Socket	1 11/16 in
8H-8540	Socket	1 3/4 in
8H-8541	Socket	1 7/8 in
8H-8542	Socket	2 in
8H-8543	Socket	2 1/8 in
8H-8544	Socket	2 3/16 in
8H-8504	Socket	2 1/4 in
160-6389	Reversible Ratchet Head	
8H-8546	Breaker Bar	
162-8716	Ratchet Head Handle	
8H-8548	Socket Extension	203.2 mm (8.00 in) long
Combination Wrenches		
4C-9604	Combination Wrench	1/4 in
4C-9605	Combination Wrench	5/16 in
4C-9592	Combination Wrench	3/8 in
4C-9593	Combination Wrench	7/16 in
4C-9594	Combination Wrench	1/2 in
4C-9595	Combination Wrench	9/16 in
1S-0254	Combination Wrench	9/16 in (short)
4C-9596	Combination Wrench	5/8 in
4C-9597	Combination Wrench	11/16 in
4C-9598	Combination Wrench	3/4 in
1S-0253	Combination Wrench	3/4 in (short)
4C-9599	Combination Wrench	13/16 in
4C-9601	Combination Wrench	7/8 in
4C-9602	Combination Wrench (2)	15/16 in
4C-9603	Combination Wrench	1 in
8H-8516	Combination Wrench	1 1/6 in
8H-8517	Combination Wrench (2)	1 1/8 in
8H-8518	Combination Wrench	1 1/4 in
8H-8519	Combination Wrench	1 5/16 in
8H-8520	Combination Wrench	1 3/8 in (short)
8H-8424	Combination Wrench	1 1/2 in
8H-8423	Combination Wrench	1 5/8 in
8H-8501	Open End Tappet Wrench (2)	1/2 in x 9/16 in

Consist of 8T-0460 Serviceman's Tool Set, 117 Piece Set (cont'd)		
Part No.	Description	Size
Sockets Designed for Twelve Point Shoulder Bolts		
8S-1602	Tool Box	
8S-1588	Adapter	1/2 in Female to 3/8 in Male
8S-1589	Socket	1/4 in
8S-1590	Socket	5/16 in
8S-1591	Socket	3/8 in
8S-1592	Socket	7/16 in
8S-1593	Socket	1/2 in
8S-1594	Socket	9/16 in
8S-1595	Socket	5/8 in
8S-1596	Socket	11/16 in
8S-1597	Socket	3/4 in
8S-1598	Socket	13/16 in
8S-1599	Socket	7/8 in
8S-1600	Socket	15/16 in
8S-1601	Socket	1 in
Pliers, Punches, Screwdrivers and Hammers		
8H-8577	Ball Peen Hammer ¹	2 lb
1S-0257	Ball Peen Hammer ¹	12 oz
1S-0258	Soft Face Hammer ¹	32 oz
8H-8581	Feeler Gauge ¹	25 blade, .0015 in - .025 in
1F-1159	Center Punch ¹	3/16 in, 152.4 mm (6.00 in) long
8H-8579	Punch ¹	.38 in Point, 203.2 mm (8.00 in) long

Consist of 8T-0460 Serviceman's Tool Set, 117 Piece Set (cont'd)		
Part No.	Description	Size
Pliers, Punches, Screwdrivers and Hammers (cont'd)		
8H-8578	Punch ¹	.56 in Point, 241.3 mm (9.50 in) long
1F-1160	Chisel ¹	3/8 in Edge, 139.7 mm (5.50 in) long
1F-1161	Chisel ¹	3/4 in Edge, 177.8 mm (7.00 in) long
6V-6193	Heavy-Duty Diagonal Cutter	190.5 mm (7.50 in)
6V-6192	Slip Joint Pliers	190.5 mm (7.50 in) long
6V-6195	Interlocking Joint Pliers	234.7 mm (9.25 in)
6V-6194	Needle Nose Pliers	182.1 mm (7.19 in)
8H-8582	Vise Grip Wrench	254.0 mm (10.00 in)
8H-8580	Straight Blade Scraper ¹	38.1 mm (1.50 in) wide
6V-7937	Screwdriver Cabinet	152.4 mm (6.00 in) Blade
6V-7933	Plastic Handle Screwdriver	5/16 in tip, 277.1 mm (10.91 in) long
6V-7931	Plastic Handle Screwdriver	304.8 mm (12.00 in) Blade
6V-7934	Screwdriver	No. 2 Phillips tip, 213.6 mm (8.41 in) long
6V-7935	Screwdriver	1/4 in tip, 212.9 mm (8.38 in) long
6V-7936	Screwdriver	No. 1 Phillips tip, 169.2 mm (6.66 in) long
6V-7938	Screwdriver	1/4 in tip, 100.1 mm (3.94 in) long
6V-7932	Screwdriver	3/8 in tip, 342.1 mm (13.47 in) long
5F-4764	Crowfoot Bar ¹	406.4 mm (16.00 in) long

¹Warranty: Six Months

8T-0461 Serviceman's Tool Set, 95 Piece Set

Warranty: See individual part number

- Similar to 8T-0460 Serviceman's Tool Set, except in drive tools
- 8T-0461 set contains complete groups of 1/4 inch, 3/8 inch and 1/2 inch drive tools; whereas the 8T-0460 set contains 3/8 inch, 1/2 inch and 3/4 inch drive tools.
- Individual hand tools within the group have a Lifetime Warranty; hand tools within a group will be warranted when necessary.
- Tool box must be ordered separately.



Consist of 8T-0461 Serviceman's Tool Set, 95 Piece Set		
Part No.	Description	Size
1/4 inch Drive Tools		
9S-1711	Socket	3/16 in
9S-1712	Socket	7/32 in
9S-1713	Socket	1/4 in
9S-1714	Socket	9/32 in
9S-1715	Socket	5/16 in
9S-1716	Socket	11/32 in
9S-1717	Socket	3/8 in
9S-1718	Socket	7/16 in
9S-1719	Socket	1/2 in
9S-1720	Socket Extension	50.8 mm (2.00 in)
9S-1721	Socket Extension	101.6 mm (4.00 in)
9S-1722	Socket Driver	
9U-6635	Ratchet	
9S-1724	Universal Joint	
9S-1725	Socket Case	
9S-2573	Deep Well Socket	3/8 in

Consist of 8T-0461 Serviceman's Tool Set, 95 Piece Set (cont'd)		
Part No.	Description	Size
3/8 inch Drive Tools		
8S-2284	Universal Socket	3/8 in
8H-8562	Universal Socket	7/16 in
8H-8563	Universal Socket	1/2 in
8H-8564	Universal Socket	9/16 in
8H-8565	Universal Socket	5/8 in
9S-1727	Universal Socket	11/16 in
8H-8566	Universal Socket	3/4 in
8S-2274	Socket	3/8 in
8H-8567	Socket	7/16 in
8H-8568	Socket	1/2 in
8H-8569	Socket	9/16 in
8H-8570	Socket	5/8 in
9S-1728	Socket	11/16 in
8H-8571	Socket	3/4 in
9U-6637	Ratchet	
8H-8573	Speeder Handle	
8H-8574	Socket Extension	3 in
8H-8575	Socket Extension	6 in

Consist of 8T-0461 Serviceman's Tool Set, 95 Piece Set (cont'd)		
Part No.	Description	Size
3/8 inch Drive Tools (cont'd)		
8H-8576	Adapter	3/8 in Female to 1/2 in Male
8S-1588	Adapter	1/2 in Female to 3/8 in Male
8S-1589	Socket	1/4 in (12 Point)
8S-1590	Socket	5/16 in (12 Point)
1/2 inch Drive Tools		
1S-0259	Socket	1/2 in
8H-8549	Socket	9/16 in
8H-8550	Socket	5/8 in
8H-8551	Socket	11/16 in
8H-8552	Socket	3/4 in
8H-8553	Socket	13/16 in
8H-8554	Socket	7/8 in
8H-8555	Socket	15/16 in
8H-8556	Socket	1 in
9S-1729	Socket	1 1/16 in
9S-1730	Socket	1 1/8 in
9S-1731	Socket	1 1/4 in
9U-6639	Ratchet	
168-0383	Breaker Bar	
8H-8559	Socket Extension	279.0 mm (11.00 in)
9S-1732	Socket Extension	127.0 mm (5.00 in)
Combination Wrenches		
8H-8501	Open End Wrench (2)	1/2 in x 9/16 in
4C-9604	Combination Wrench	1/4 in
4C-9605	Combination Wrench	5/16 in
4C-9592	Combination Wrench	3/8 in
4C-9593	Combination Wrench	7/16 in
4C-9594	Combination Wrench	1/2 in
4C-9595	Combination Wrench	9/16 in
4C-9596	Combination Wrench	5/8 in
4C-9597	Combination Wrench	11/16 in
4C-9598	Combination Wrench	3/4 in
4C-9599	Combination Wrench	13/16 in
4C-9601	Combination Wrench	7/8 in
4C-9602	Combination Wrench	15/16 in
4C-9603	Combination Wrench	1 in
1S-0253	Combination Wrench	3/4 in (short)
1S-0254	Combination Wrench	9/16 in (short)

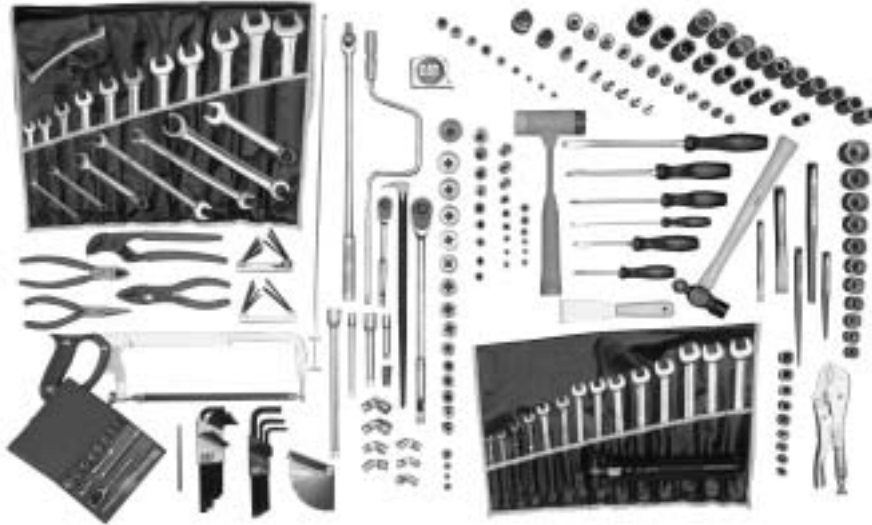
Consist of 8T-0461 Serviceman's Tool Set, 95 Piece Set (cont'd)		
Part No.	Description	Size
Pliers, Punches, Screwdrivers and Hammers		
1F-1159	Center Punch ¹	3/16 in, 152.4 mm (6.00 in) long
8H-8578	Punch ¹	3/8 in Point, 241.3 mm (9.50 in) long
8H-8579	Punch ¹	5/32 in Point, 203.2 mm (8.00 in) long
1F-1160	Chisel ¹	3/8 in Edge, 139.7 mm (5.50 in) long
1F-1161	Chisel ¹	3/4 in Edge, 177.8 mm (7.00 in) long
5F-4764	Crowfoot Bar ¹	406.4 mm (16.00 in) long
6V-7933	Screwdriver	5/16 in tip, 277.1 mm (10.91 in) long
6V-7937	Screwdriver	233.4 mm (9.19 in)
6V-7935	Screwdriver	1/4 in tip, 212.9 mm (8.38 in) long
6V-7932	Screwdriver	3/8 in tip, 342.1 mm (13.47 in) long
6V-7936	Screwdriver	No. 1 Phillips tip, 169.2 mm (6.66 in) long
6V-7934	Screwdriver	No. 2 Phillips tip, 213.6 mm (8.41 in) long
6V-6193	Diagonal Cutter	109.5 mm (7.50 in)
8H-8582	Vise Grip	254 mm (10.00 in)
6V-6194	Needle Nose Pliers	406.4 mm (16.00 in)
6V-6192	Slip Joint Pliers	191.8 mm (7.50 in)
6V-6195	Interlocking Joint Pliers	234.7 mm (9.25 in)
1S-0257	Ball Peen Hammer ¹	340.2 g (12 oz)
1S-0258	Soft Face Hammer ¹ (Serviceable parts of the hammer — 1 Medium Tip 3S-0460, 1 Hard Tip 3S-0459)	907.2 g (32 oz)
8H-8580	Scraper ¹	38.1 mm (1.50 in) wide
8H-8581	Feeler Gauge ¹	25 blade, .0015 in - .025 in
208-6183	Hacksaw	419.0 mm (16.50 in) long
9S-1743	Ferrule Nut Wrench	3/4 in-1 in
9S-1742	Hex Key Wrench Assembly	9 bits

¹ Warranty: Six Months

222-7876 Student Tool Set

Warranty: See individual part number

- A specially selected set of basic hand tools for students in the Caterpillar® Model Dealer Service Technician Program
- Premier quality tools for the work done in the classroom and on the job
- Over 200 tools



Part No.	Description
1U-5545	Metric Wrench Group
1U-7321	Standard Flashlight
2P-5490	Well Socket Group
5P-1720	Seal Pick
5P-3277	Measuring Tape
5P-3920	Steel Rule
8T-0461	Serviceman's Tool Group
139-2644	Safety Glasses
146-2728	Flex Pickup Tool
194-3574	Metric Socket Set
194-3576	Metric Socket Set
194-3578	Metric Socket Set
194-3584	Torx Socket Set
194-3585	Hex Bit Socket Set
199-6156	Metric Socket Set
199-9019	Metric Socket Set
200-1928	Metric Hex Key Set
200-1929	Metric Hex Key Set
200-1931	Metric Hex Key Set
200-8413	Metric Socket Set

213-4443 Socket Set, 17 Piece, 1/4 inch

Warranty: See individual part number

- 12 point
- 1/4 inch square drive
- Standard length sockets
- Chrome finish

Size	Part No.	Length
3/16 in	9S-1711	22.2 mm (.88 in)
7/32 in	9S-1712	22.2 mm (.88 in)
1/4 in	9S-1713	22.2 mm (.88 in)
9/32 in	9S-1714	22.2 mm (.88 in)
5/16 in	9S-1715	22.2 mm (.88 in)
11/32 in	9S-1716	22.2 mm (.88 in)
3/8 in	9S-1717	22.2 mm (.88 in)
7/16 in	9S-1718	22.2 mm (.88 in)
1/2 in	9S-1719	22.2 mm (.88 in)

Accessories included		
Part No.	Description	Size
9S-1720	Socket Extension	50.8 mm (2.00 in)
9S-1721	Socket Extension	101.6 mm (4.00 in)
9S-1722	Socket Driver	
9U-6635	Ratchet ²	
9S-1724	Universal Joint	
213-4437	Adapter (not shown)	1/4 in female to 3/8 in male
3P-2241	Adapter (not shown)	3/8 in female to 1/4 in male
9S-1725	Case ¹	

¹Warranty: Six Month

²9U-6636 Repair Kit



213-9965 Socket Set, 10 Piece, 1/4 inch Drive

Warranty: See individual part number

- 6 point
- 1/4 inch square drive
- Deep length sockets
- Chrome finish
- Includes socket bar and clips



Size	Part No.	Length
3/16 in	213-9967	50.8 mm (2.00 in)
7/32 in	213-9968	50.8 mm (2.00 in)
1/4 in	213-9969	50.8 mm (2.00 in)
9/32 in	213-9970	50.8 mm (2.00 in)
5/16 in	213-9971	50.8 mm (2.00 in)
11/32 in	213-9972	50.8 mm (2.00 in)
3/8 in	213-9974	50.8 mm (2.00 in)
7/16 in	213-9978	50.8 mm (2.00 in)
1/2 in	213-9980	50.8 mm (2.00 in)
9/16 in	213-9981	50.8 mm (2.00 in)

9S-1746 Socket Set, 11 Piece, 3/8 inch Drive

Warranty: See individual part number

- 12 point
- 3/8 inch square drive
- Chrome finish



Size	Part No.	Length
3/8 in	8S-2274	23.0 mm (.91 in)
7/16 in	8H-8567	23.0 mm (.91 in)
1/2 in	8H-8568	23.8 mm (.94 in)
9/16 in	8H-8569	24.6 mm (.97 in)
5/8 in	8H-8570	26.2 mm (1.03 in)
11/16 in	9S-1728	27.0 mm (1.06 in)
3/4 in	8H-8571	27.8 mm (1.09 in)

Accessories included		
Part No.	Description	Size
9U-6637	Reversible Ratchet ¹	
8H-8573	Speeder Handle	
8H-8574	Socket Extension	76.2 mm (3.00 in)
8H-8575	Socket Extension	152.4 mm (6.00 in)

¹9U-6638 Repair Kit (30 tooth) for 9U-6637 Ratchet. A 5P-7444 Repair Kit (20 tooth gear) or 5P-7445 Repair Kit (optional 30 tooth gear) is available for the former 5P-7443 Ratchet. The 4S-7325 Repair Kit is available for the former 8H-8572 Ratchet.)

214-1143 Socket Set, 7 Piece, 3/8 inch Drive

Warranty: See individual part number

- 6 point
- 3/8 inch square drive
- Standard length sockets
- Chrome finish
- Includes socket bar and clips



Size	Part No.	Length
3/8 in	214-1144	23.1 mm (0.91 in)
7/16 in	214-1145	23.1 mm (0.91 in)
1/2 in	214-1146	23.9 mm (0.94 in)
9/16 in	214-1147	26.2 mm (1.03 in)
5/8 in	214-1148	27.7 mm (1.09 in)
11/16 in	214-1149	28.7 mm (1.13 in)
3/4 in	214-1150	30.2 mm (1.19 in)

214-1151 Socket Set, 9 Piece, 3/8 inch Drive

Warranty: See individual part number

- 6 point
- 3/8 inch square drive
- Deep length sockets
- Polished chrome finish
- Includes socket bar and clips



Size	Part No.	Length
3/8 in	214-1152	54.0 mm (2.13 in)
7/16 in	214-1153	54.0 mm (2.13 in)
1/2 in	214-1154	60.3 mm (2.38 in)
9/16 in	214-1155	60.3 mm (2.38 in)
5/8 in	214-1156	60.3 mm (2.38 in)
11/16 in	214-1157	66.7 mm (2.63 in)
3/4 in	214-1158	66.7 mm (2.63 in)
13/16 in	214-1159	69.9 mm (2.75 in)
7/8 in	214-1160	69.9 mm (2.75 in)

9S-1747 Universal Drive Socket Set, 7 Piece, 3/8 inch Drive

Warranty: See individual part number

- 12 point
- 3/8 inch universal drive
- Polished chrome finish



Size	Part No.	Length
3/8 in	8S-2284	40.1 mm (1.58 in)
7/16 in	8H-8562	40.1 mm (1.58 in)
1/2 in	8H-8563	42.1 mm (1.66 in)
9/16 in	8H-8564	42.8 mm (1.69 in)
5/8 in	8H-8565	44.5 mm (1.75 in)
11/16 in	9S-1727	49.6 mm (1.95 in)
3/4 in	8H-8566	50.4 mm (1.98 in)

214-6490 Socket Set, 9 Piece, 3/8 inch Drive

Warranty: See individual part number

- 12 point
- 3/8 inch square drive
- Deep length sockets
- Chrome finish
- Includes socket bar and clips



Size	Part No.	Length
3/8 in	214-6491	54.1 mm (2.13 in)
7/16 in	214-6492	54.1 mm (2.13 in)
1/2 in	214-6493	60.5 mm (2.38 in)
9/16 in	8S-2357	60.5 mm (2.38 in)
5/8 in	9S-5031	60.5 mm (2.38 in)
11/16 in	214-6494	66.8 mm (2.63 in)
3/4 in	214-6495	66.8 mm (2.63 in)
13/16 in	214-6496	69.9 mm (2.75 in)
7/8 in	6V-0199	69.9 mm (2.75 in)

2P-5520 Open-End Crowfoot Wrench Group, 9 piece, 3/8 inch Drive

Warranty: See individual part number

- Can be used with 3/8 inch drive ratchet or torque wrenches

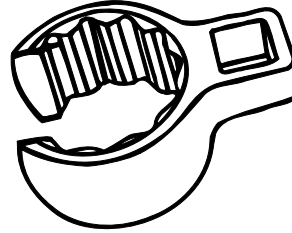
Size	Part No.	Drive
3/8 in	2P-5487	3/8 in
7/16 in	2P-5488	3/8 in
1/2 in	2P-5489	3/8 in
9/16 in	2P-5491	3/8 in
5/8 in	2P-5492	3/8 in
11/16 in	2P-5493	3/8 in
3/4 in	2P-5494	3/8 in
13/16 in	2P-5495	3/8 in
7/8 in	2P-5496	3/8 in
Optional Wrench (not included in 2P-5520)		
1 3/16 in	4C-9306	3/8 in



5P-0336 Crowfoot Wrench Group, 11 Piece

Warranty: See individual part number

- 12 point
- May be used with 3/8 inch or 1/2 inch drive ratchet or torque wrenches



Size	Part No.	Drive
5/8 in	5P-0324	3/8 in
11/16 in	5P-0325	3/8 in
3/4 in	5P-0326	3/8 in
13/16 in	5P-0327	3/8 in
7/8 in	5P-0328	3/8 in
15/16 in	5P-0329	3/8 in
1 in	5P-0331	3/8 in
1 1/16 in	5P-0332	3/8 in
1 1/8 in	5P-0333	1/2 in
1 1/4 in	5P-0334	1/2 in
1 3/8 in	5P-0335	1/2 in
Optional Wrenches (not included in 5P-0336)		
1 5/16 in	1U-5536	1/2 in
1 11/16 in	5P-0294	1/2 in

9S-1748 Socket Set, 16 Piece, 1/2 inch Drive

Warranty: See individual part number

- 12 point
- 1/2 inch square drive
- Chrome finish

Size	Part No.	Length
1/2 in	1S-0259	38.1 mm (1.50 in)
9/16 in	8H-8549	38.1 mm (1.50 in)
5/8 in	8H-8550	38.1 mm (1.50 in)
11/16 in	8H-8551	38.1 mm (1.50 in)
3/4 in	8H-8552	38.1 mm (1.50 in)
13/16 in	8H-8553	38.1 mm (1.50 in)
7/8 in	8H-8554	38.1 mm (1.50 in)
15/16 in	8H-8555	38.1 mm (1.50 in)
1 in	8H-8556	38.1 mm (1.50 in)
1 1/16 in	9S-1729	41.3 mm (1.63 in)
1 1/8 in	9S-1730	44.5 mm (1.75 in)
1 1/4 in	9S-1731	47.6 mm (1.88 in)



Accessories Included		
Part No.	Description	Size
9U-6639	Ratchet ¹	
168-0383	Breaker Bar	
8H-8559	Socket Extension	279.0 mm (11.00 in)
9S-1732	Socket Extension	127.0 mm (5.00 in)

¹9U-6640 Repair Kit (4S-7326 Repair Kit is available for former 8H-8557 Ratchet.)

214-6498 Socket Set, 12 Piece, 1/2 inch Drive

Warranty: See individual part number

- 6 point
- 1/2 inch square drive
- Standard length socketss
- Chrome finish
- Includes socket bar and clips



Size	Part No.	Length
7/16 in	214-6500	38.1 mm (1.50 in)
1/2 in	214-6501	38.1 mm (1.50 in)
9/16 in	214-6503	38.1 mm (1.50 in)
5/8 in	214-6504	38.1 mm (1.50 in)
11/16 in	214-6506	38.1 mm (1.50 in)
3/4 in	214-6507	38.1 mm (1.50 in)
13/16 in	214-6509	38.1 mm (1.50 in)
7/8 in	214-6510	38.1 mm (1.50 in)
15/16 in	214-6511	38.9 mm (1.53 in)
1 in	214-6512	39.7 mm (1.56 in)
1 1/16 in	214-6513	42.9 mm (1.69 in)
1 1/8 in	214-6514	44.5 mm (1.75 in)

2P-5490 Deep Well Socket Set, 9 Piece, 1/2 inch Drive

Warranty: See individual part number

- 6 point
- 1/2 inch square drive
- Chrome finish



Size	Part No.	Length
1/2 in	2P-5475	82.6 mm (3.25 in)
9/16 in	2P-5476	82.6 mm (3.25 in)
5/8 in	2P-5477	82.6 mm (3.25 in)
11/16 in	2P-5478	82.6 mm (3.25 in)
3/4 in	2P-5479	82.6 mm (3.25 in)
13/16 in	2P-5481	82.6 mm (3.25 in)
7/8 in	2P-5482	82.6 mm (3.25 in)
15/16 in	2P-5483	82.6 mm (3.25 in)
1 in	2P-5484	82.6 mm (3.25 in)

213-3086 Standard Impact Socket Set, 11 Piece

Warranty: See individual part number

- 6 point standard length sockets with black oxide finish, 1/2 inch square drive
- Includes socket bar and clips



Part No.	Description	Length
213-3087	Socket, 1/2 inch	38.1 mm (1.50 in)
213-3088	Socket, 9/16 inch	38.1 mm (1.50 in)
213-3089	Socket, 5/8 inch	38.1 mm (1.50 in)
213-3091	Socket, 11/16 inch	38.1 mm (1.50 in)
213-3094	Socket, 3/4 inch	38.1 mm (1.50 in)
213-3099	Socket, 13/16 inch	38.1 mm (1.50 in)
213-3102	Socket, 7/8 inch	38.1 mm (1.50 in)
213-3104	Socket, 15/16 inch	44.5 mm (1.75 in)
213-3107	Socket, 1 inch	44.5 mm (1.75 in)
213-3109	Socket, 1 1/16 inch	50.8 mm (2.00 in)
213-3110	Socket, 1 1/8 inch	50.8 mm (2.00 in)

213-3515 Impact Socket Set, 12 Piece

Warranty: See individual part number

- 6 point deep length sockets with black oxide finish, 1/2 inch square drive
- Includes socket bar and clips



Part No.	Description	Length
213-3516	Socket, 7/16 inch	82.6 mm (3.25 in)
213-3517	Socket, 1/2 inch	82.6 mm (3.25 in)
213-3518	Socket, 9/16 inch	82.6 mm (3.25 in)
213-3520	Socket, 5/8 inch	82.6 mm (3.25 in)
213-3521	Socket, 11/16 inch	82.6 mm (3.25 in)
213-3522	Socket, 3/4 inch	82.6 mm (3.25 in)
213-3523	Socket, 13/16 inch	82.6 mm (3.25 in)
213-3524	Socket, 7/8 inch	88.9 mm (3.50 in)
213-3525	Socket, 15/16 inch	88.9 mm (3.50 in)
213-3526	Socket, 1 inch	88.9 mm (3.50 in)
213-3528	Socket, 1 1/16 inch	88.9 mm (3.50 in)
213-3530	Socket, 1 1/8 inch	88.9 mm (3.50 in)

213-3086 Impact Socket Set, 11 Piece, 1/2 inch Drive

Warranty: See individual part number

- 6 point
- 1/2 inch square drive
- Standard length sockets
- Black oxide finish
- Includes socket bar and clips



Size	Part No.	Length
1/2 in	213-3087	38.1 mm (1.50 in)
9/16 in	213-3088	38.1 mm (1.50 in)
5/8 in	213-3089	38.1 mm (1.50 in)
11/16 in	213-3091	38.1 mm (1.50 in)
3/4 in	213-3094	38.1 mm (1.50 in)
13/16 in	213-3099	38.1 mm (1.50 in)
7/8 in	213-3102	38.1 mm (1.50 in)
15/16 in	213-3104	44.5 mm (1.75 in)
1 in	213-3107	44.5 mm (1.75 in)
1 1/16 in	213-3109	50.8 mm (2.00 in)
1 1/8 in	213-3110	50.8 mm (2.00 in)

213-3515 Impact Socket Set, 12 Piece, 1/2 inch Drive

Warranty: See individual part number

- 6 point
- 1/2 inch square drive
- Deep length sockets
- Black oxide finish
- Includes socket bar and clips



Size	Part No.	Length
7/16 in	213-3516	82.6 mm (3.25 in)
1/2 in	213-3517	82.6 mm (3.25 in)
9/16 in	213-3518	82.6 mm (3.25 in)
5/8 in	213-3520	82.6 mm (3.25 in)
11/16 in	213-3521	82.6 mm (3.25 in)
3/4 in	213-3522	82.6 mm (3.25 in)
13/16 in	213-3523	82.6 mm (3.25 in)
7/8 in	213-3524	88.9 mm (3.50 in)
15/16 in	213-3525	88.9 mm (3.50 in)
1 in	213-3526	88.9 mm (3.50 in)
1 1/16 in	213-3528	88.9 mm (3.50 in)
1 1/8 in	213-3530	88.9 mm (3.50 in)

214-1161 Socket Set, 11 Piece, 1/2 inch Drive

Warranty: See individual part number

- 12 point
- 1/2 inch square drive
- Deep length sockets
- Polished chrome finish
- Includes socket bar and clips



Size	Part No.	Length
1/2 in	214-1162	82.6 mm (3.25 in)
9/16 in	214-1163	82.6 mm (3.25 in)
5/8 in	214-1164	82.6 mm (3.25 in)
11/16 in	214-1165	82.6 mm (3.25 in)
3/4 in	214-1166	82.6 mm (3.25 in)
13/16 in	214-1167	82.6 mm (3.25 in)
7/8 in	214-1168	82.6 mm (3.25 in)
15/16 in	214-1169	82.6 mm (3.25 in)
1 in	214-1170	82.6 mm (3.25 in)
1 1/16 in	214-1171	82.6 mm (3.25 in)
1 1/8 in	214-1172	82.6 mm (3.25 in)

214-6518 Universal Impact Socket Set, 5 Piece, 1/2 inch Drive

- 6 point
- 1/2 inch square drive
- Black oxide finish
- Includes socket bar and clips



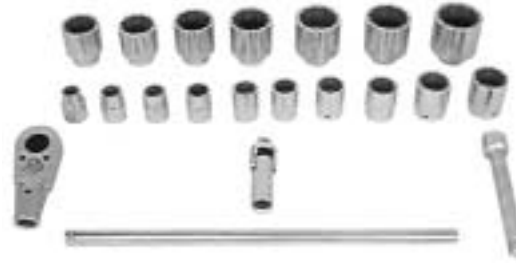
Size	Part No.	Length
1/2 in	214-6521	73.8 mm (2.91 in)
9/16 in	214-6522	73.8 mm (2.91 in)
5/8 in	214-6523	73.8 mm (2.91 in)
11/16 in	214-6524	77.8 mm (3.06 in)
3/4 in	214-6526	77.8 mm (3.06 in)

9S-1749 Socket Set, 21 Piece, 3/4 inch Drive

Warranty: See individual part number

- 12 point
- 3/4 inch drive
- Chrome finish

Size	Part No.	Length
3/4 in	8H-8529	50.8 mm (2.00 in)
7/8 in	8H-8530	50.8 mm (2.00 in)
15/16 in	8H-8531	50.8 mm (2.00 in)
1 in	8H-8532	52.4 mm (2.06 in)
1 1/16 in	8H-8533	54.0 mm (2.13 in)
1 1/8 in	8H-8534	55.5 mm (2.19 in)
1 1/4 in	8H-8535	57.2 mm (2.25 in)
1 5/16 in	8H-8536	58.7 mm (2.31 in)
1 1/2 in	8H-8537	63.5 mm (2.50 in)
1 5/8 in	8H-8539	66.7 mm (2.63 in)
1 11/16 in	8H-8538	69.9 mm (2.75 in)
1 3/4 in	8H-8540	69.9 mm (2.75 in)
1 7/8 in	8H-8541	79.4 mm (3.13 in)
2 in	8H-8542	79.4 mm (3.13 in)
2 1/8 in	8H-8543	82.6 mm (3.25 in)
2 3/16 in	8H-8544	82.6 mm (3.25 in)
2 1/4 in	8H-8504	82.6 mm (3.25 in)



Accessories Included		
Part No.	Description	Size
160-6389	Ratchet Head ¹	
8H-8546	Breaker Bar Head	
162-8716	Wrench Handle	
8H-8548	Socket Extension	203.2 mm (8.00 in)

¹ 160-6390 Repair Kit (4S-7327 Repair Kit is available for former 8H-8545 Ratchet Head.)

5S-6093 Heavy-Duty Socket Set, 17 Piece, 1 inch Drive

Warranty: See individual part number

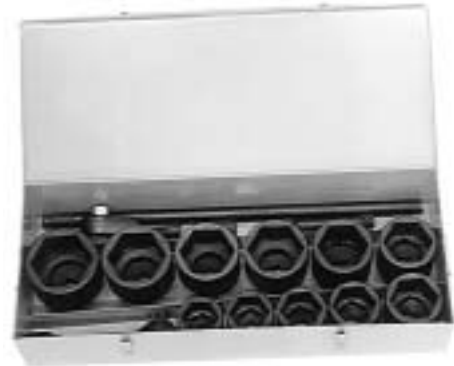
- 6 point
- 1 inch square drive
- Black oxide finish

Size	Part No.	Length
2 3/8 in	5S-6077	98.4 mm (3.88 in)
2 1/2 in	5S-6078	104.8 mm (4.13 in)
2 5/8 in	5S-6079	57.2 mm (2.25 in)
2 3/4 in	5S-6080	114.3 mm (4.50 in)
3 in	5S-6081	123.8 mm (4.88 in)
3 1/8 in	5S-6082	127.0 mm (5.00 in)
3 1/4 in	5S-6083	127.0 mm (5.00 in)
3 1/2 in	5S-6084	133.4 mm (5.25 in)
3 5/8 in	5S-6085	133.4 mm (5.25 in)
3 3/4 in	5S-6086	136.5 mm (5.38 in)
4 in	5S-6087	127.0 mm (5.00 in)

Accessories Included		
Part No.	Description	Size
5S-6092	Tool Box ²	
5S-6088	Sledge Socket Wrench ²	
161-3983	Ratchet Head ¹	
5S-6089	Wrench Handle	
5S-6076	Socket Extension	203.2 mm (8.00 in)
5S-6090	Sliding T Wrench Head	

¹ 161-3985 Repair Kit (5S-6094 Repair Kit is available for former 5S-6091 Ratchet Head.)

² Warranty: Six Months



8S-1603 Socket Set, 15 Piece, 12 Point Shoulder Bolt

Warranty: See individual part number



Size	Drive	Part No.	Length
1/4 in	3/8 in	8S-1589	31.8 mm (1.25 in)
5/16 in	3/8 in	8S-1590	31.8 mm (1.25 in)
3/8 in	3/8 in	8S-1591	38.1 mm (1.50 in)
7/16 in	3/8 in	8S-1592	38.1 mm (1.50 in)
1/2 in	1/2 in	8S-1593	44.5 mm (1.75 in)
9/16 in	1/2 in	8S-1594	44.5 mm (1.75 in)
5/8 in	1/2 in	8S-1595	44.5 mm (1.75 in)
11/16 in	1/2 in	8S-1596	44.5 mm (1.75 in)
3/4 in	3/4 in	8S-1597	82.6 mm (3.25 in)
13/16 in	3/4 in	8S-1598	82.6 mm (3.25 in)
7/8 in	3/4 in	8S-1599	82.6 mm (3.25 in)
15/16 in	3/4 in	8S-1600	82.6 mm (3.25 in)
1 in	3/4 in	8S-1601	57.2 mm (2.25 in)

Accessories Included	
Part No.	Description
8S-1602	Tool Box
8S-1588	Adapter, 1/2 in Female to 3/8 in Male

214-6142 Hex Driver Set, 10 Piece

Warranty: See individual part number

- Seven 3/8 inch drive hex sockets and three 1/2 inch drive hex sockets
- Includes socket bar and clips



Hex Size	Sq. Drive Size	Part No.	Overall Length
1/8 in	3/8 in	2P-8263	52.39 (2.06 in)
5/32 in	3/8 in	2P-8264	52.39 (2.06 in)
3/16 in	3/8 in	2P-8265	52.39 (2.06 in)
7/32 in	3/8 in	8T-3042	52.39 (2.06 in)
1/4 in	3/8 in	2P-8266	52.39 (2.06 in)
5/16 in	3/8 in	2P-8267	52.39 (2.06 in)
3/8 in	3/8 in	2P-8268	53.18 (2.09 in)
1/2 in	1/2 in	214-7320	53.18 (2.09 in)
9/16 in	1/2 in	214-7327	53.18 (2.09 in)
5/8 in	1/2 in	214-7328	53.18 (2.09 in)

Individual Hex Sockets and Replacement Hex Bits			
Socket Hex Size	Replacement Drive	Assembly	Hex Bit
1/8 in	3/8 in	2P-8263	2P-8269
5/32 in	3/8 in	2P-8264	2P-8271
3/16 in	3/8 in	2P-8265	2P-8272
7/32 in	3/8 in	8T-3042	8T-3043
1/4 in	3/8 in	2P-8266	2P-7274
5/16 in	3/8 in	2P-8267	2P-7274
3/8 in	3/8 in	2P-8268	2P-8275
9/16 in	3/8 in	5P-7253	5P-7252
1/2 in	1/2 in	214-7320	214-7321
9/16 in	1/2 in	214-7327	1P-3566
5/8 in	1/2 in	214-7328	214-7331

Drivers for TORX® Screws

Warranty: Lifetime

Part No.	Description	Size	Use
6V-2123	Socket Assembly	3/8 in square drive	Removal of TORX T-55 screws which retain brake cylinders to support plates on "V" Series Lift Trucks
5P-3038	Socket Assembly	3/8 in square drive	Removal of shaft seal and bearing retainer fasteners TORX T-30 on 16G Motor Grader circle drive motor
5P-8689	Socket Assembly	3/8 in square drive	Assembly and disassembly of TORX T-50 fasteners on cab door strikers

194-3584 TORX® Driver Set, 10 Piece

Warranty: See individual part number

- Ten pieces, 1/4 inch and 3/8 inch square drive
- TORXALIGN® design grips TORX® fasteners for easier fastener starting (TORX® and TORXALIGN® are registered trademarks of Camcar, Inc.)
- Includes socket bar and clips



TORXALIGN® Bits			
Torx Size	Sq. Drive Size	Part No.	Overall Length
T10	1/4 in	194-3531	39.6 mm (1.56 in)
T15	1/4 in	194-3532	39.6 mm (1.56 in)
T20	1/4 in	194-3533	39.6 mm (1.56 in)
T25	1/4 in	194-3534	39.6 mm (1.56 in)
T30	3/8 in	194-3535	44.5 mm (1.75 in)
T40	3/8 in	194-3536	44.5 mm (1.75 in)
T45	3/8 in	194-3537	52.3 mm (2.06 in)
T50	3/8 in	194-3538	52.3 mm (2.06 in)
T55	3/8 in	194-3539	51.6 mm (2.03 in)
One Piece, 1/4 inch Square Drive Torx® Socket included			
E8	1/4 in	194-3540	22.2 mm (.88 in)

Individual Sockets, 1/4 through 1 1/2 inch Drive

Warranty: Lifetime except impact sockets which are Six Months

- All sockets are chrome finish unless otherwise stated.

Individual Sockets, 1/4 inch Drive

1/4 inch Drive, Standard Length Sockets, 12 Point

Size	Part No.	Length
3/16 in	9S-1711	22.2 mm (.88 in)
7/32 in	9S-1712	22.2 mm (.88 in)
1/4 in	9S-1713	22.2 mm (.88 in)
9/32 in	9S-1714	22.2 mm (.88 in)
5/16 in	9S-1715	22.2 mm (.88 in)
5/16 in ²	5P-0127	31.8 mm (1.25 in)
11/32 in	9S-1716	22.2 mm (.88 in)
3/8 in	9S-1717	22.2 mm (.88 in)
7/16 in	9S-1718	22.2 mm (.88 in)
1/2 in	9S-1719	22.2 mm (.88 in)
3/8 in ¹	9S-2573	50.8 mm (2.00 in)

¹ Deep length socket

² Deep length socket, 6 point

1/4 inch Drive, Universal Sockets, 12 Point

Size	Part No.	Length
5/16 in	5P-4200	31.8 mm (1.25 in)

1/4 inch Drive, Deep Length Sockets, 6 Point, Chrome

Size	Part No.	Length
3/16 in	213-9967	50.8 mm (2.00 in)
7/32 in	213-9968	50.8 mm (2.00 in)
1/4 in	213-9969	50.8 mm (2.00 in)
9/32 in	213-9970	50.8 mm (2.00 in)
5/16 in	213-9971	50.8 mm (2.00 in)
11/32 in	213-9972	50.8 mm (2.00 in)
3/8 in	213-9974	50.8 mm (2.00 in)
7/16 in	213-9978	50.8 mm (2.00 in)
1/2 in	213-9980	50.8 mm (2.00 in)
9/16 in	213-9981	50.8 mm (2.00 in)



Typical Sockets

Individual Sockets, 3/8 inch Drive

3/8 inch Drive, Universal Sockets, 12 Point

Size	Part No.	Length
3/8 in	8S-2284	40.1 mm (1.58 in)
7/16 in	8H-8562	40.1 mm (1.58 in)
1/2 in	8H-8563	42.1 mm (1.66 in)
9/16 in	8H-8564	42.8 mm (1.69 in)
5/8 in	8H-8565	44.5 mm (1.75 in)
11/16 in	9S-1727	49.6 mm (1.95 in)
3/4 in	8H-8566	50.4 mm (1.98 in)

3/8 inch Drive, Standard Length Sockets, 12 Point

Size	Part No.	Length
3/8 in	8S-2274	23.0 mm (.91 in)
7/16 in	8H-8567	23.0 mm (.91 in)
1/2 in	8H-8568	23.8 mm (.94 in)
9/16 in	8H-8569	24.6 mm (.97 in)
5/8 in	8H-8570	26.2 mm (1.03 in)
11/16 in	9S-1728	27.0 mm (1.06 in)
3/4 in	8H-8571	27.8 mm (1.09 in)
1/4 in ¹	8S-1589	31.8 mm (1.25 in)
5/16 in ¹	8S-1590	31.8 mm (1.25 in)
3/8 in ¹	8S-1591	38.1 mm (1.50 in)
7/16 in ¹	8S-1592	38.1 mm (1.50 in)

¹ Shoulder bolt socket 12 point

3/8 inch Drive, Deep Length Sockets, 12 Point, Chrome

Size	Part No.	Length
3/8 in	214-6491	54.1 mm (2.13 in)
7/16 in	214-6492	54.1 mm (2.13 in)
1/2 in	214-6493	60.5 mm (2.38 in)
9/16 in	8S-2357	60.5 mm (2.38 in)
5/8 in	9S-5031 ¹	60.5 mm (2.38 in)
11/16 in	214-6494	66.8 mm (2.63 in)
3/4 in	214-6495	66.8 mm (2.63 in)
13/16 in	214-6496	69.9 mm (2.75 in)
7/8 in	6V-0199	69.9 mm (2.75 in)

¹ Comes with insert for removing spark plugs

3/8 inch Drive, Standard Length Sockets, 6 Point, Chrome

Size	Part No.	Length
3/8 in	214-1144	23.1 mm (0.91 in)
7/16 in	214-1145	23.1 mm (0.91 in)
1/2 in	214-1146	23.9 mm (0.94 in)
9/16 in	214-1147	26.2 mm (1.03 in)
5/8 in	214-1148	27.7 mm (1.09 in)
11/16 in	214-1149	28.7 mm (1.13 in)
3/4 in	214-1150	30.2 mm (1.19 in)

3/8 inch Drive, Deep Length Sockets, 6 Point, Chrome

Size	Part No.	Length
3/8 in	214-1152	54.0 mm (2.13 in)
7/16 in	214-1153	54.0 mm (2.13 in)
1/2 in	214-1154	60.3 mm (2.38 in)
9/16 in	214-1155	60.3 mm (2.38 in)
5/8 in	214-1156	60.3 mm (2.38 in)
11/16 in	214-1157	66.7 mm (2.63 in)
3/4 in	214-1158	66.7 mm (2.63 in)
13/16 in	214-1159	69.9 mm (2.75 in)
7/8 in	214-1160	69.9 mm (2.75 in)

Individual Sockets, 1/2 inch Drive

1/2 inch Drive, Standard Length Sockets, 12 Point		
Size	Part No.	Length
7/16 in	214-6497	38.1 mm (1.50 in)
1/2 in	1S-0259	38.1 mm (1.50 in)
9/16 in	8H-8549	38.1 mm (1.50 in)
5/8 in	8H-8550	38.1 mm (1.50 in)
11/16 in	8H-8551	38.1 mm (1.50 in)
3/4 in	8H-8552	38.1 mm (1.50 in)
13/16 in	8H-8553	38.1 mm (1.50 in)
7/8 in	8H-8554	38.1 mm (1.50 in)
15/16 in	8H-8555	38.1 mm (1.50 in)
1 in	8H-8556	38.1 mm (1.50 in)
1 1/16 in	9S-1729	41.3 mm (1.63 in)
1 1/8 in	9S-1730	44.5 mm (1.75 in)
1 1/4 in	9S-1731	47.6 mm (1.88 in)
1/2 in ¹	8S-1593	44.5 mm (1.75 in)
9/16 in ¹	8S-1594	44.5 mm (1.75 in)
5/8 in ¹	8S-1595	44.5 mm (1.75 in)
11/16 in ¹	8S-1596	44.5 mm (1.75 in)

¹ Shoulder bolt socket 12 point

1/2 inch Drive, Standard Length Sockets, 6 Point, Chrome		
Size	Part No.	Length
7/16 in	214-6500	38.1 mm (1.50 in)
1/2 in	214-6501	38.1 mm (1.50 in)
9/16 in	214-6503	38.1 mm (1.50 in)
5/8 in	214-6504	38.1 mm (1.50 in)
11/16 in	214-6506	38.1 mm (1.50 in)
3/4 in	214-6507	38.1 mm (1.50 in)
13/16 in	214-6509	38.1 mm (1.50 in)
7/8 in	214-6510	38.1 mm (1.50 in)
15/16 in	214-6511	38.9 mm (1.53 in)
1 in	214-6512	39.7 mm (1.56 in)
1 1/16 in	214-6513	42.9 mm (1.69 in)
1 1/8 in	214-6514	44.5 mm (1.75 in)

1/2 inch Drive, Deep Length Sockets, 12 Point		
Size	Part No.	Length
1/2 in	214-1162	82.6 mm (3.25 in)
9/16 in	214-1163	82.6 mm (3.25 in)
5/8 in	214-1164	82.6 mm (3.25 in)
11/16 in	214-1165	82.6 mm (3.25 in)
3/4 in	214-1166	82.6 mm (3.25 in)
13/16 in	214-1167	82.6 mm (3.25 in)
7/8 in	214-1168	82.6 mm (3.25 in)
15/16 in	214-1169	82.6 mm (3.25 in)
1 in	214-1170	82.6 mm (3.25 in)
1 11/16 in	214-1171	82.6 mm (3.25 in)
1 1/8 in	214-1172	82.6 mm (3.25 in)

1/2 inch Drive, Deep Length Sockets, 6 Point		
Size	Part No.	Length
1/2 in	2P-5475	82.6 mm (3.25 in)
9/16 in	2P-5476	82.6 mm (3.25 in)
5/8 in	2P-5477	82.6 mm (3.25 in)
11/16 in	2P-5478	82.6 mm (3.25 in)
3/4 in	2P-5479	82.6 mm (3.25 in)
13/16 in	2P-5481	82.6 mm (3.25 in)
7/8 in	2P-5482	82.6 mm (3.25 in)
15/16 in	2P-5483	82.6 mm (3.25 in)
1 in	2P-5484	82.6 mm (3.25 in)

1/2 inch Drive, Standard Length Impact Sockets, 6 Point, Black		
Size	Part No.	Length
1/2 in	213-3087	38.1 mm (1.50 in)
9/16 in	213-3088	38.1 mm (1.50 in)
5/8 in	213-3089	38.1 mm (1.50 in)
11/16 in	213-3091	38.1 mm (1.50 in)
3/4 in	213-3094	38.1 mm (1.50 in)
13/16 in	213-3099	38.1 mm (1.50 in)
7/8 in	213-3102	38.1 mm (1.50 in)
15/16 in	213-3104	44.5 mm (1.75 in)
1 in	213-3107	44.5 mm (1.75 in)
1 1/16 in	213-3109	50.8 mm (2.00 in)
1 1/8 in	213-3110	50.8 mm (2.00 in)

1/2 inch Drive, Universal Impact Sockets, 6 Point, Black		
Size	Part No.	Length
1/2 in	214-6521	73.8 mm (2.91 in)
9/16 in	214-6522	73.8 mm (2.91 in)
5/8 in	214-6523	73.8 mm (2.91 in)
11/16 in	214-6524	77.8 mm (3.06 in)
3/4 in	214-6526	77.8 mm (3.06 in)

1/2 inch Drive, Deep Length Impact Sockets, 6 Point, Black		
Size	Part No.	Length
7/16 in	213-3516	82.6 mm (3.25 in)
1/2 in	213-3517	82.6 mm (3.25 in)
9/16 in	213-3518	82.6 mm (3.25 in)
5/8 in	213-3520	82.6 mm (3.25 in)
11/16 in	213-3521	82.6 mm (3.25 in)
3/4 in	213-3522	82.6 mm (3.25 in)
13/16 in	213-3523	82.6 mm (3.25 in)
7/8 in	213-3524	88.9 mm (3.50 in)
15/16 in	213-3525	88.9 mm (3.50 in)
1 in	213-3526	88.9 mm (3.50 in)
1 1/16 in	213-3528	88.9 mm (3.50 in)
1 1/8 in	213-3530	88.9 mm (3.50 in)

Individual Sockets, 3/4 inch Drive

3/4 inch Drive, Standard Length Sockets, 12 Point		
Size	Part No.	Length
3/4 in	8H-8529	50.8 mm (2.00 in)
7/8 in	8H-8530	50.8 mm (2.00 in)
15/16 in	8H-8531	50.8 mm (2.00 in)
1 in	8H-8532	52.4 mm (2.06 in)
1 1/16 in	8H-8533	54.0 mm (2.13 in)
1 1/8 in	8H-8534	55.5 mm (2.19 in)
1 1/4 in	8H-8535	57.2 mm (2.25 in)
1 5/16 in	8H-8536	58.7 mm (2.31 in)
1 1/2 in	8H-8537	63.5 mm (2.50 in)
1 5/8 in	8H-8539	66.7 mm (2.63 in)
1 11/16 in	8H-8538	69.9 mm (2.75 in)
1 3/4 in	8H-8540	69.9 mm (2.75 in)
1 7/8 in	8H-8541	79.4 mm (3.13 in)
2 in	8H-8542	79.4 mm (3.13 in)
2 1/8 in	8H-8543	82.6 mm (3.25 in)
2 3/16 in	8H-8544	82.6 mm (3.25 in)
2 1/4 in	8H-8504	82.6 mm (3.25 in)
5/8 in ¹	2P-8276	82.6 mm (3.25 in)
3/4 in ¹	8S-1597	82.6 mm (3.25 in)
13/16 in ¹	8S-1598	82.6 mm (3.25 in)
7/8 in ¹	8S-1599	82.6 mm (3.25 in)
15/16 in ¹	8S-1600	82.6 mm (3.25 in)
1 in ¹	8S-1601	57.2 mm (2.25 in)
2 1/2 in ²	3P-2230	152.4 mm (6.00 in)

¹ Shoulder bolt socket 12 point

² Special socket for fast fill fuel adapter

3/4 inch Drive, Standard Length Impact Sockets, 6 Point, Black		
Size	Part No.	Length
3/4 in	214-6553	44.5 mm (1.75 in)
13/16 in	214-6554	47.8 mm (1.88 in)
7/8 in	214-6556	47.8 mm (1.88 in)
15/16 in	214-6557	47.8 mm (1.88 in)
1 in	214-6558	50.8 mm (2.00 in)
1 11/16 in	214-6559	50.8 mm (2.00 in)
1 1/8 in	214-6560	54.1 mm (2.13 in)
1 3/16 in	214-6561	54.1 mm (2.13 in)
1 1/4 in	214-6562	54.1 mm (2.13 in)
1 5/16 in	214-6564	57.2 mm (2.25 in)
1 3/8 in	214-6565	57.2 mm (2.25 in)
1 7/16 in	214-6566	57.2 mm (2.25 in)
1 1/2 in	8T-5182	57.2 mm (2.25 in)
1 9/16 in	214-6567	60.5 mm (2.38 in)
1 5/8 in	214-6568	60.5 mm (2.38 in)
1 11/16 in	214-6607	65.0 mm (2.56 in)
1 3/4 in	214-6569	65.0 mm (2.56 in)
1 13/16 in	214-6570	66.8 mm (2.63 in)
1 7/8 in	214-6571	69.9 mm (2.75 in)
2 in	214-6572	73.2 mm (2.88 in)

3/4 inch Drive, Deep Length Impact Sockets, 6 Point, Black		
Size	Part No.	Length
1 in	214-6599	76.2 mm (3.00 in)
1 1/16 in	214-6600	76.2 mm (3.00 in)
1 1/8 in	214-6601	76.2 mm (3.00 in)
1 3/16 in	214-6602	82.6 mm (3.25 in)
1 1/4 in	214-6603	82.6 mm (3.25 in)
1 5/16 in	214-6604	82.6 mm (3.25 in)
1 3/8 in	214-6605	82.6 mm (3.25 in)
1 7/16 in	214-6606	88.9 mm (3.50 in)
1 1/2 in	1U-5715	88.9 mm (3.50 in)
1 9/16 in	214-6608	88.9 mm (3.50 in)
1 5/8 in	214-6609	88.9 mm (3.50 in)
1 11/16 in	6V-7874	88.9 mm (3.50 in)
1 3/4 in	214-6611	88.9 mm (3.50 in)
1 13/16 in	214-6612	95.3 mm (3.75 in)
1 7/8 in	214-6613	95.3 mm (3.75 in)
2 in	214-6614	95.3 mm (3.75 in)

Individual Sockets, 1 inch Drive

1 inch Drive, Standard Length Sockets, 12 Point		
Size	Part No.	Length
1 1/2 in	6V-0024	69.9 mm (2.75 in)

1 inch Drive, Standard Length Sockets, 6 Point, Black		
Size	Part No.	Length
27/32 in	6V-4175	88.9 mm (3.50 in)
7/8 in ⁴	9S-6375	88.9 mm (3.50 in)
7/8 in ¹	5P-1745	88.9 mm (3.50 in)
29/32 in ³	6V-2002	57.2 mm (2.25 in)
15/16 in ⁴	9S-6374	63.5 mm (2.50 in)
15/16 in ³	9S-6370	76.2 mm (3.00 in)
1 3/32 in ³	5P-3579	57.2 mm (2.25 in)
1 1/8 in ³	9S-6373	57.2 mm (2.25 in)
1 1/8 in ⁴	9S-6369	66.8 mm (2.63 in)
1 9/32 in ³	5P-3580	63.5 mm (2.50 in)
1 5/16 in ³	9S-6372	63.5 mm (2.50 in)
1 15/32 in ³	5P-3581	63.5 mm (2.50 in)
1 1/2 in ³	9S-6371	63.5 mm (2.50 in)
1 11/16 in	2P-2334	76.2 mm (3.00 in)
1 3/4 in	2P-2335	76.2 mm (3.00 in)
1 7/8 in	2P-2336	82.6 mm (3.25 in)
2 3/16 in	2P-2338	91.9 mm (3.62 in)
2 1/4 in ²	5P-1748	87.1 mm (3.43 in)
2 3/8 in ¹	5S-6077	98.4 mm (3.88 in)

1 inch Drive, Standard Length Sockets, 6 Point, Black (cont'd)		
Size	Part No.	Length
2 1/2 in ¹	5S-6078	104.8 mm (4.13 in)
2 5/8 in ¹	5S-6079	57.2 mm (2.25 in)
2 3/4 in ¹	5S-6080	114.3 mm (4.50 in)
2 7/8 in	2P-8262	98.6 mm (3.88 in)
3 in ¹	5S-6081	123.8 mm (4.88 in)
3 1/8 in ¹	5S-6082	127.0 mm (5.00 in)
3 1/4 in ¹	5S-6083	127.0 mm (5.00 in)
3 1/2 in ¹	5S-6084	133.4 mm (5.25 in)
3 5/8 in ¹	5S-6085	133.4 mm (5.25 in)
3 3/4 in ¹	5S-6086	136.5 mm (5.38 in)
4 in ¹	5S-6087	127.0 mm (5.00 in)
4 1/4 in	5P-1662	90.4 mm (3.56 in)

¹ Chrome finish

² Impact socket, 6 point, Warranty: Six Months

³ Track bolt socket, 6 point, Warranty: Six Months

⁴ Thin wall track bolt socket, 6 point, Warranty: Six Months

1 inch Square Drive Standard Length Impact Sockets, 12 Point, Industrial Finish		
Size	Part No.	Length
1 1/2 in	168-7955	66.5 mm (2.62 in)

1 inch Square Drive Standard Length Impact Sockets, 12 Point, Black Finish		
Size	Part No.	Length
1 1/2 in	4C-6994	57.2 mm (2.25 in)

1 inch Square Drive Standard Length Impact Sockets, 6 Point, Industrial Finish		
Size	Part No.	Length
3/4 in	9U-6548	54.0 mm (2.13 in)
13/16 in	9U-6549	54.0 mm (2.13 in)
7/8 in	9U-6550	54.0 mm (2.13 in)
15/16 in	9U-6551	54.0 mm (2.13 in)
1 in	9U-6552	57.2 mm (2.25 in)
1 1/16 in	9U-6553	57.2 mm (2.25 in)
1 1/8 in	9U-6554	57.2 mm (2.25 in)
1 3/16 in	9U-6555	57.2 mm (2.25 in)
1 1/4 in	9U-6556	60.3 mm (2.38 in)
1 5/16 in	9U-6557	63.5 mm (2.50 in)
1 3/8 in	9U-6558	63.5 mm (2.50 in)
1 7/16 in	9U-6559	63.5 mm (2.50 in)
1 1/2 in	9U-6560	66.7 mm (2.63 in)
1 9/16 in	9U-6561	66.7 mm (2.63 in)
1 5/8 in	9U-6562	69.9 mm (2.75 in)
1 11/16 in	9U-6563	73.0 mm (2.88 in)
1 3/4 in	9U-6564	73.0 mm (2.88 in)
1 13/16 in	9U-6565	74.6 mm (2.94 in)
1 7/8 in	9U-6566	74.6 mm (2.94 in)

1 inch Square Drive Standard Length Impact Sockets, 6 Point, Industrial Finish (cont'd)		
Size	Part No.	Length
1 15/16 in	9U-6567	74.6 mm (2.94 in)
2 in	9U-6568	82.6 mm (3.25 in)
2 1/16 in	9U-6569	82.6 mm (3.25 in)
2 1/8 in	9U-6570	82.6 mm (3.25 in)
2 3/16 in	9U-6571	84.9 mm (3.34 in)
2 1/4 in	9U-6572	84.9 mm (3.34 in)
2 5/16 in	9U-6573	88.9 mm (3.50 in)
2 3/8 in	9U-6574	92.1 mm (3.63 in)
2 7/16 in	9U-6575	92.1 mm (3.63 in)
2 1/2 in	9U-6576	92.1 mm (3.63 in)
2 9/16 in	9U-6577	95.3 mm (3.75 in)
2 5/8 in	9U-6578	95.3 mm (3.75 in)
2 11/16 in	9U-6579	98.4 mm (3.88 in)
2 3/4 in	9U-6580	98.4 mm (3.88 in)
2 13/16 in	9U-6581	101.6 mm (4.00 in)
2 7/8 in	9U-6582	101.6 mm (4.00 in)
2 15/16 in	9U-6583	122.2 mm (4.81 in)
3 in	9U-6584	111.1 mm (4.38 in)

1 inch Square Drive Deep Length Impact Socket, 6 Point, Industrial Finish		
Size	Part No.	Length
2 3/16 in	4C-9748	111.1 mm (4.38 in)

Individual Sockets, 1 1/2 inch Drive

1 1/2 inch Drive, Track Sockets, Impact Sockets		
Size	Part No.	Length
1 1/2 in	9U-6734 ¹	78.0 mm (3.07 in)
1 5/8 in	1U-8798	114.3 mm (4.50 in)
1 11/16 in	1U-8586	114.3 mm (4.50 in)
2 in	8T-9175	114.3 mm (4.50 in)
2 1/16 in	8T-9174	114.3 mm (4.50 in)
2 9/16 in	132-8743	102.4 mm (4.03 in)
2 3/4 in	136-5190	107.1 mm (4.216 in)

¹ Special for 994 Lift Cylinder

Ratchets

Warranty: Lifetime



Size	Part No.	Length	Smallest Working Arc	Repair Kit
1/4 in	9U-6635	112.3 mm (4.42 in)	12°	9U-6636
3/8 in	9U-6637 ¹	187.0 mm (7.38 in)	12°	9U-6638
3/8 in	194-4944 ²	260.4 mm (10.25 in)	5°	—
1/2 in	214-7338	261.9 mm (10.31 in)	10°	214-7339
1/2 in	214-7340 ²	287.3 mm (11.31 in)	4.5°	214-7341
1/2 in	9U-6639 ³	381.0 mm (15.00 in)	10°	9U-6640
1/2 in	214-7333 ⁴	448.6 mm (17.66 in)	10°	—

¹ For the former 5P-7443, use a 5P-7444 Repair Kit (20 tooth gear) and 5P-7445 Repair Kit (30 tooth gear). A 4S-7325 Repair Kit is available for the former 8H-8572 Ratchet.

² Round head

³ For the former 8H-8557, a 4S-7326 Repair Kit is available.

⁴ Long flex handle

168-0383 Breaker Bar, 1/2 inch Drive

Warranty: Lifetime



Drive Size	Part No.	Length
3/8 in	214-7326	242.9 mm (9.56 in)
1/2 in	168-0383	457.2 mm (18.00 in)

Ratchet Heads

Warranty: Lifetime

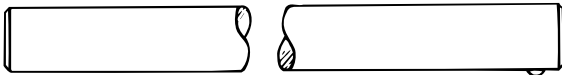


Size	Part No.	Head Width	Head Length	Head Depth	Smallest Working Arc	Repair Kit
3/4 in	160-6389	63.0 mm (2.48 in)	150.9 mm (5.94 in)	31.2 mm (1.23 in)	11.25°	160-6390
1 in	161-3983	79.4 mm (3.12 in)	200.0 mm (7.86 in)	38.1 mm (1.51 in)	12°	161-3985

NOTE: A 4S-7327 Ratchet Repair Kit is available for discontinued 8H-8545 Ratchet Head; a 5S-6094 Ratchet Repair Kit is available for discontinued 5S-6091 Ratchet Head.

Handles

Warranty: Lifetime



Drive Size	Part No.	Length
3/4 in	162-8716	489.0 mm (19.25 in)
1 in	5S-6089	736.6 mm (29.00 in)

8H-8546 Head Breaker Bar, 3/4 inch Drive

Warranty: Lifetime



Drive Size	Part No.	Length	Width
3/4 in	8H-8546	93.6 mm (3.67 in)	42.1 mm (1.66 in)

Socket Extensions

Warranty: Lifetime

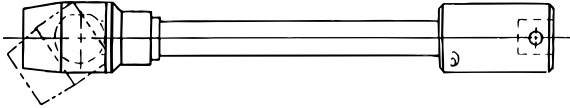


Drive Size	Part No.	Length
1/4 in	9S-1720	50.8 mm (2.00 in)
1/4 in	9S-1721	101.6 mm (4.00 in)
3/8 in	8H-8574	76.2 mm (3.00 in)
3/8 in	3P-2240	304.8 mm (12.00 in)
3/8 in	8H-8575	152.4 mm (6.00 in)
1/2 in	5P-8676	76.2 mm (3.00 in)
1/2 in	9S-1732	127.0 mm (5.00 in)
1/2 in	8H-8559	279.0 mm (11.00 in)
3/4 in	8H-8548	203.2 mm (8.00 in)
3/4 in	8T-9265 ¹	254.0 mm (10.00 in)
3/4 in	8T-5183 ¹	406.4 mm (16.00 in)
1 in	5S-6076	203.2 mm (8.00 in)

¹ Requires locking pin

Universal Joint Extension Socket

- 1/2 inch drive
- 12 point



Size	Part No.	Length
5/8 in	6V-4058	182.6 mm (7.19 in)

Sliding T-Handle

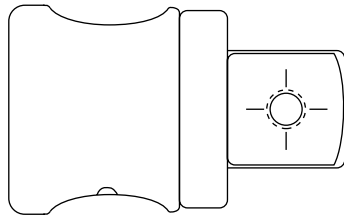
Warranty: Lifetime



Drive Size	Part No.	Length
1/4 in	214-7319	114.3 mm (4.50 in)
1/2 in	213-1985	304.8 mm (12.00 in)

Sliding "T" Wrench Head

Warranty: Lifetime



Drive Size	Part No.	Description	Use
1 in	5S-6090	Head	5S-6089 Handle

8H-8573 Speeder Handle, 3/8 inch Drive

Warranty: Lifetime



Drive Size	Part No.	Length
3/8 in	8H-8573	447.5 mm (17.62 in)

Socket Drive Adapters



Part No.	Description
213-4437	Adapter, 1/4 in Female to 3/8 in Male
3P-2241	Adapter, 3/8 in Female to 1/4 in Male
8H-8576	Adapter, 3/8 in Female to 1/2 in Male
8S-1588	Adapter, 1/2 in Female to 3/8 in Male
8H-8561	Adapter, 1/2 in Female to 3/4 in Male
9S-1744	Adapter, 3/4 in Female to 1/2 in Male
2P-8261	Adapter, 3/4 in Female to 1.0 in Male
5P-3588	Adapter, 1 in Female to 3/4 in Male

Impact Wrench Socket Adapters

- The heavy-duty adapter and extensions can be used with 1 1/2 inch drive impact wrenches.
- Allows the use of 1 inch drive sockets instead of the higher priced 1 1/2 inch drive sockets



Item	Part No.	Description
1	9S-4028	Extension, 1 in drive both ends, 133.4 mm (5.25 in) long
2	9S-4026	Adapter, 1 1/2 in to 1 in drive
3	9S-4027	Extension, 1 in drive both ends, 60.3 mm (2.38 in) long

Universal Joint

Warranty: Lifetime



Drive Size	Part No.
1/4 in	9S-1724
3/8 in	6V-0094
1/2 in	8H-8560

Universal Drives

Warranty: Lifetime

- Used with Caterpillar torque multipliers as well as other applications

5P-1749

- Use with the 5S-6076 Extension, 5P-1748 Socket, and a suitable torque multiplier to loosen and tighten the nuts which retain 8D and 9D Ripper mounting brackets.



5P-3534

- Use with a Torque Multiplier in applications such as tightening the nuts which secure the final drive housings to the rear frame and case of Caterpillar articulated Motor Graders.

Drive Size	Part No.	Torque Capacity	Angular Rotation
1 in	5P-1749	1,500 ft lb	30°
3/4 in	5P-3534	1,000 ft lb	30°

1P-0853 Ratchet Adapter

- 3/4 inch female to 3/4 inch male
- Used primarily with the 1P-0850 Torque Multiplier
- Convenient for other applications such as with the 3/4 inch drive 9S-7351 Torque Wrench



Capacity	450 lb
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4C-9818 Hex Shank

4C-9819 Universal Joint

Warranty: Manufacturer's



4C-9818



4C-9819

Part No.	Outside Diameter	O.A.L.	Size
4C-9818	—	2 3/4 in	7/16 in hex x 1 1/4 in on one end with 1/2 in square drive (male) with lock button on other end.
4C-9819	1 3/16 in	2 1/2 in	1/2 in square drive (female) with lock button hole.

4C-9600 Combination Wrench Set, Standard Length, 11 Piece

Warranty: See individual part number

- Polished chrome finish
- Includes vinyl bag



Size	Part No.	Length
3/8 in	4C-9592	165.1 mm (6.50 in)
7/16 in	4C-9593	184.15 mm (7.25 in)
1/2 in	4C-9594	204.0 mm (8.03 in)
9/16 in	4C-9595	222.3 mm (8.75 in)
5/8 in	4C-9596	241.3 mm (9.50 in)
11/16 in	4C-9597	260.4 mm (10.25 in)
3/4 in	4C-9598	280.2 mm (11.03 in)
13/16 in	4C-9599	299.2 mm (11.78 in)
7/8 in	4C-9601	318.3 mm (12.53 in)
15/16 in	4C-9602	338.1 mm (13.31 in)
1 in	4C-9603	357.1 mm (14.06 in)

4C-9610 Short Length Combination Wrench Set, 9 Piece

Warranty: See individual part number

- Polished chrome finish
- Includes vinyl bag

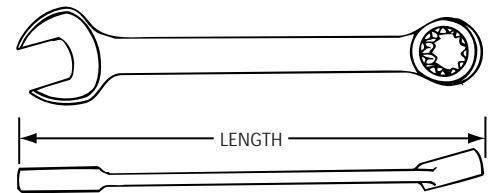


Size	Part No.	Length
1/4 in	4C-9604	114.3 mm (4.50 in)
5/16 in	4C-9605	124.0 mm (4.88 in)
3/8 in	4C-9606	132.6 mm (5.22 in)
7/16 in	4C-9607	138.2 mm (5.44 in)
1/2 in	4C-9608	146.1 mm (5.75 in)
9/16 in	1S-0254	165.1 mm (6.50 in)
5/8 in	4C-9609	157.2 mm (6.19 in)
11/16 in	4C-9611	167.4 mm (6.59 in)
3/4 in	1S-0253	174.8 mm (6.89 in)

Combination Wrenches

Warranty: Lifetime

- 15° angle on open end and 15° offset on box end
- Box end is 12 point except 8H-8502 which is 6 point.
- All are polished chrome finish except 9U-5130.



Size	Part No.	Length
1/4 in	4C-9604	114.3 mm (4.50 in)
1/4 in	8H-8502 ¹	78.7 mm (3.10 in)
5/16 in	4C-9605	124.0 mm (4.88 in)
3/8 in	4C-9606	132.6 mm (5.22 in)
3/8 in	4C-9592	165.1 mm (6.50 in)
7/16 in	4C-9607	138.2 mm (5.44 in)
7/16 in	4C-9593	184.2 mm (7.25 in)
1/2 in	4C-9608	146.1 mm (5.75 in)
1/2 in	4C-9594	204.0 mm (8.03 in)
9/16 in	1S-0254	165.1 mm (6.50 in)
9/16 in	4C-9595	222.3 mm (8.75 in)
5/8 in	4C-9609	157.2 mm (6.19 in)
5/8 in	4C-9596	241.3 mm (9.50 in)
11/16 in	4C-9611	167.4 mm (6.59 in)
11/16 in	4C-9597	260.4 mm (10.25 in)
3/4 in	1S-0253	174.8 mm (6.89 in)

Size	Part No.	Length
3/4 in	4C-9598	280.2 mm (11.03 in)
13/16 in	4C-9599	299.2 mm (11.78 in)
7/8 in	4C-9601	318.3 mm (12.53 in)
15/16 in	4C-9602	338.1 mm (13.31 in)
1 in	4C-9603	357.1 mm (14.06 in)
1 1/16 in	8H-8516	382.8 mm (15.25 in)
1 1/8 in	8H-8517	404.6 mm (15.94 in)
1 1/4 in	8H-8518	433.1 mm (17.06 in)
1 5/16 in	8H-8519	458.5 mm (18.06 in)
1 3/8 in	8H-8520	482.6 mm (19.00 in)
1 1/2 in	8H-8424	534.5 mm (21.04 in)
1 5/8 in	8H-8423	562.4 mm (22.14 in)
46 mm (1 13/16 in)	9U-5130 ²	596.1 mm (23.47 in)

¹ Box end is 6 point

² Black oxide finish

Open End Wrenches

Warranty: Lifetime

- Tappet wrench
- For low torque applications



Size	Part No.	Length
1/2 in x 9/16 in	8H-8501	9.50 in

1P-3515 Open End Wrench Set, 30° and 60° Offset, 14 Piece

Warranty: Lifetime



Optional Wrenches (not included in 1P-3515)		
1 3/8 in	127-2277	356.6 mm (14.04 in)
1 1/2 in	127-2278	385.8 mm (15.19 in)
1 5/8 in	127-2279	415.0 mm (16.34 in)
1 7/8 in	127-2280	473.2 mm (18.63 in)

Size	Part No.	Length
3/8 in	1P-3501	122.9 mm (4.84 in)
7/16 in	1P-3502	137.4 mm (5.41 in)
1/2 in	1P-3503	151.6 mm (5.97 in)
9/16 in	1P-3504	166.6 mm (6.56 in)
5/8 in	1P-3505	180.8 mm (7.12 in)
11/16 in	1P-3506	197.6 mm (7.78 in)
3/4 in	1P-3507	210.3 mm (8.28 in)
13/16 in	1P-3508	225.6 mm (8.88 in)
7/8 in	1P-3509	239.8 mm (9.44 in)
15/16 in	1P-3510	254.0 mm (10.00 in)
1 in	1P-3511	269.0 mm (10.59 in)
1 1/16 in	1P-3512	283.5 mm (11.16 in)
1 1/8 in	1P-3513	298.5 mm (11.75 in)
1 1/4 in	1P-3514	327.2 mm (12.88 in)
1P-3516 Tool Kit Bag (not serviced)		

Hand Tools (Metric)

200-8413 Socket Set, 13 Piece, 1/4 inch Drive

Warranty: See individual part number

- 6 point
- 1/4 inch drive
- Standard length sockets
- Polished chrome finish
- Includes socket bar and clips



Size	Part No.	Length
4.0 mm	200-8415	22.2 mm (0.87 in)
5.0 mm	200-8417	22.2 mm (0.87 in)
5.5 mm	200-8418	22.2 mm (0.87 in)
6.0 mm	200-8419	22.2 mm (0.87 in)
7.0 mm	200-8420	22.2 mm (0.87 in)
8.0 mm	200-8421	22.2 mm (0.87 in)
9.0 mm	200-8422	22.2 mm (0.87 in)
10.0 mm	200-8423	22.2 mm (0.87 in)
11.0 mm	200-8424	22.2 mm (0.87 in)
12.0 mm	200-8426	22.2 mm (0.87 in)
13.0 mm	200-8427	22.2 mm (0.87 in)
14.0 mm	200-8428	22.2 mm (0.87 in)
15.0 mm	200-8429	23.0 mm (0.91 in)

194-3578 Socket Set, 9 Piece, 1/4 inch Drive

Warranty: See individual part number

- 6 point
- 1/4 inch drive
- Deep length sockets
- Polished chrome finish
- Includes socket bar and clips



Size	Part No.	Length
6.0 mm	194-3518	50.8 mm (2.00 in)
7.0 mm	194-3519	50.8 mm (2.00 in)
8.0 mm	194-3521	50.8 mm (2.00 in)
9.0 mm	194-3522	50.8 mm (2.00 in)
10.0 mm	194-3523	50.8 mm (2.00 in)
11.0 mm	194-3527	50.8 mm (2.00 in)
12.0 mm	194-3528	50.8 mm (2.00 in)
13.0 mm	194-3529	50.8 mm (2.00 in)
14.0 mm	194-3530	50.8 mm (2.00 in)

194-3574 Socket Set, 12 Piece, 3/8 inch Drive

Warranty: See individual part number

- 12 point
- 3/8 inch drive
- Standard length sockets
- Polished chrome finish



Size	Part No.	Length
8.0 mm	194-3480	23.0 mm (0.91 in)
9.0 mm	194-3483	23.0 mm (0.91 in)
10.0 mm	194-3488	23.0 mm (0.91 in)
11.0 mm	194-3490	23.0 mm (0.91 in)
12.0 mm	194-3492	23.8 mm (0.94 in)
13.0 mm	194-3494	24.6 mm (0.97 in)
14.0 mm	194-3495	26.2 mm (1.03 in)
15.0 mm	194-3496	27.0 mm (1.06 in)
16.0 mm	194-3497	27.8 mm (1.09 in)
17.0 mm	194-3498	28.6 mm (1.13 in)
18.0 mm	194-3499	28.6 mm (1.13 in)
19.0 mm	194-3500	30.2 mm (1.19 in)

199-9019 Socket Set, 12 Piece, 3/8 inch Drive

Warranty: See individual part number

- 12 point
- 3/8 inch drive
- Deep length sockets
- Polished chrome finish
- Includes socket bar and clips



Size	Part No.	Length
8.0 mm	199-9023	54.0 mm (2.13 in)
9.0 mm	199-9025	54.0 mm (2.13 in)
10.0 mm	199-9026	54.0 mm (2.13 in)
11.0 mm	199-9027	54.0 mm (2.13 in)
12.0 mm	199-9028	54.0 mm (2.13 in)
13.0 mm	199-9029	54.0 mm (2.13 in)
14.0 mm	199-9030	60.3 mm (2.37 in)
15.0 mm	199-9031	60.3 mm (2.37 in)
16.0 mm	199-9032	60.3 mm (2.37 in)
17.0 mm	199-9033	66.7 mm (2.63 in)
18.0 mm	199-9034	66.7 mm (2.63 in)
19.0 mm	199-9035	66.7 mm (2.63 in)

214-6620 Socket Set, 12 Piece, 3/8 inch Drive

Warranty: See individual part number

- 6 point
- 3/8 inch drive
- Standard length sockets
- Chrome finish
- Includes socket bar and clips



Size	Part No.	Length
8.0 mm	214-6621	23.0 mm (0.91 in)
9.0 mm	214-6623	23.0 mm (0.91 in)
10.0 mm	214-6624	23.0 mm (0.91 in)
11.0 mm	214-6625	23.0 mm (0.91 in)
12.0 mm	214-6626	23.8 mm (0.94 in)
13.0 mm	214-6627	24.6 mm (0.97 in)
14.0 mm	214-6628	26.2 mm (1.03 in)
15.0 mm	214-6629	27.0 mm (1.06 in)
16.0 mm	214-6630	27.8 mm (1.09 in)
17.0 mm	214-6631	28.6 mm (1.13 in)
18.0 mm	214-6632	28.6 mm (1.13 in)
19.0 mm	214-6633	30.2 mm (1.19 in)

214-6634 Socket Set, 8 Piece, 3/8 inch Drive

Warranty: See individual part number

- 6 point
- 3/8 inch drive
- Deep length sockets
- Polished chrome finish
- Includes socket bar and clips



Size	Part No.	Length
10.0 mm	214-6635	54.0 mm (2.13 in)
11.0 mm	214-6636	54.0 mm (2.13 in)
12.0 mm	214-6637	54.0 mm (2.13 in)
13.0 mm	214-6638	54.0 mm (2.13 in)
14.0 mm	214-6639	60.3 mm (2.37 in)
15.0 mm	214-6640	60.3 mm (2.37 in)
17.0 mm	214-6641	66.7 mm (2.63 in)
19.0 mm	214-6642	66.7 mm (2.63 in)

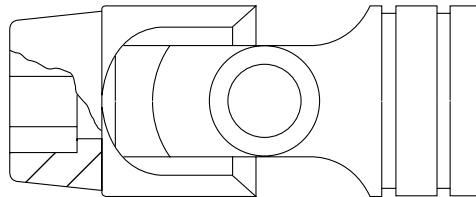
9U-6124 Universal Metric Socket Set, 9 Piece, 3/8 inch Drive

SMCS Code: 1251-010, 0601

Model: 3066 Engine

Warranty: Lifetime

- 9U-6128 used to remove and install fuel injection pump
- Standard length, 12 point universal socket set
- Specially forged and heat treated for toughness and long life—meets rigid industry standards
- Includes socket bar and clips



Size	Part No.	Length
10.0 mm	9U-6125	43.5 mm (1.71 in)
12.0 mm	9U-6126	45.5 mm (1.79 in)
13.0 mm	9U-6127	45.5 mm (1.79 in)
14.0 mm	9U-6128	47.9 mm (1.89 in)
15.0 mm	9U-6129	47.9 mm (1.89 in)
16.0 mm	9U-6130	47.9 mm (1.89 in)
17.0 mm	9U-6131	50.7 mm (2.00 in)
18.0 mm	9U-6132	50.7 mm (2.00 in)
19.0 mm	9U-6133	52.5 mm (2.07 in)

199-6156 Socket Set, 13 Piece, 1/2 inch Drive

Warranty: See individual part number

- 12 point
- 1/2 inch drive
- Standard length sockets
- Polished chrome finish
- Includes socket bar and clips



Size	Part No.	Length
12.0 mm	199-6149	38.1 mm (1.50 in)
13.0 mm	199-6150	38.1 mm (1.50 in)
14.0 mm	8T-3041	38.1 mm (1.50 in)
15.0 mm	6V-9110	38.1 mm (1.50 in)
16.0 mm	6V-9111	38.1 mm (1.50 in)
17.0 mm	6V-9112	38.1 mm (1.50 in)
18.0 mm	6V-9113	38.1 mm (1.50 in)
19.0 mm	6V-9114	38.1 mm (1.50 in)
20.0 mm	199-6152	38.1 mm (1.50 in)
21.0 mm	6V-9115	38.1 mm (1.50 in)
22.0 mm	6V-9116	38.1 mm (1.50 in)
23.0 mm	199-6153	38.1 mm (1.50 in)
24.0 mm	199-6154	38.8 mm (1.53 in)

194-3576 Socket Set, 10 Piece, 1/2 inch Drive

Warranty: See individual part number

- 12 point
- 1/2 inch drive
- Deep length sockets
- Polished chrome finish
- Includes socket bar and clips



Size	Part No.	Length
16.0 mm	194-3505	82.6 mm (3.25 in)
17.0 mm	194-3506	82.6 mm (3.25 in)
18.0 mm	194-3510	82.6 mm (3.25 in)
19.0 mm	194-3511	82.6 mm (3.25 in)
20.0 mm	194-3512	82.6 mm (3.25 in)
21.0 mm	194-3513	82.6 mm (3.25 in)
22.0 mm	194-3514	82.6 mm (3.25 in)
24.0 mm	194-3515	82.6 mm (3.25 in)
25.0 mm	194-3516	82.6 mm (3.25 in)
26.0 mm	194-3517	82.6 mm (3.25 in)

213-6923 Impact Socket Set, 12 Piece, 1/2 Inch Drive

Warranty: See individual part number

- 6 point
- 1/2 inch drive
- Black oxide finish
- Standard length impact sockets
- Includes socket bar and clips



Size	Part No.	Length
10.0 mm	213-6926	38.1 mm (1.50 in)
11.0 mm	213-6927	38.1 mm (1.50 in)
12.0 mm	213-6928	38.1 mm (1.50 in)
13.0 mm	213-6929	38.1 mm (1.50 in)
14.0 mm	213-6930	38.1 mm (1.50 in)
15.0 mm	213-6932	38.1 mm (1.50 in)
16.0 mm	213-6933	38.1 mm (1.50 in)
17.0 mm	213-6934	38.1 mm (1.50 in)
18.0 mm	213-6935	38.1 mm (1.50 in)
19.0 mm	213-6936	38.1 mm (1.50 in)
20.0 mm	213-6924	38.1 mm (1.50 in)
21.0 mm	213-6937	38.1 mm (1.50 in)

214-6643 Impact Socket Set, 11 Piece, 1/2 inch Drive

Warranty: See individual part number

- 6 point
- 1/2 inch drive
- Black oxide finish
- Deep length impact sockets
- Includes socket bar and clips



Size	Part No.	Length
10.0 mm	214-6644	82.6 mm (3.25 in)
11.0 mm	214-6645	82.6 mm (3.25 in)
12.0 mm	214-6646	82.6 mm (3.25 in)
13.0 mm	214-6647	82.6 mm (3.25 in)
14.0 mm	214-6648	82.6 mm (3.25 in)
15.0 mm	214-6649	82.6 mm (3.25 in)
16.0 mm	214-6650	82.6 mm (3.25 in)
17.0 mm	214-6651	82.6 mm (3.25 in)
18.0 mm	214-6652	82.6 mm (3.25 in)
19.0 mm	214-6653	82.6 mm (3.25 in)
20.0 mm	214-7346	82.6 mm (3.25 in)

9U-6547 Impact Socket Set, 24 Piece, 3/4 inch Drive

Warranty: See individual part number

- 6 point
- 3/4 inch drive
- Black oxide finish
- Standard length impact sockets



Size	Part No.	Length
17.0 mm	9U-6523	44.5 mm (1.75 in)
19.0 mm	9U-6524	44.5 mm (1.75 in)
20.0 mm	9U-6525	44.5 mm (1.75 in)
21.0 mm	9U-6526	47.8 mm (1.88 in)
22.0 mm	9U-6527	47.6 mm (1.87 in)
23.0 mm	9U-6528	47.8 mm (1.88 in)
24.0 mm	9U-6529	47.6 mm (1.87 in)
26.0 mm	9U-6530	50.8 mm (2.00 in)
27.0 mm	9U-6531	50.8 mm (2.00 in)
28.0 mm	9U-6532	53.8 mm (2.12 in)
30.0 mm	9U-6533	53.8 mm (2.12 in)
31.0 mm	9U-6534	54.0 mm (2.13 in)

Size	Part No.	Length
32.0 mm	9U-6535	53.8 mm (2.12 in)
33.0 mm	9U-6536	53.8 mm (2.12 in)
34.0 mm	9U-6537	54.0 mm (2.13 in)
35.0 mm	9U-6538	57.2 mm (2.25 in)
36.0 mm	9U-6539	57.2 mm (2.25 in)
38.0 mm	9U-6540	57.2 mm (2.25 in)
40.0 mm	9U-6541	66.7 mm (2.63 in)
41.0 mm	9U-6542	66.5 mm (2.62 in)
42.0 mm	9U-6543	66.5 mm (2.62 in)
43.0 mm	9U-6544	66.5 mm (2.62 in)
46.0 mm	9U-6545	66.7 mm (2.63 in)
50.0 mm	9U-6546	73.2 mm (2.88 in)

194-3585 Metric Hex Driver Set, 9 Piece

Warranty: See individual part number

- Includes socket bar and clips



Hex Size	Drive Size	Part No.	Bit Length	Overall Length
4.0 mm	3/8 in	194-3541	25.4 mm	52.3 mm (2.06 in)
5.0 mm	3/8 in	194-3542	25.7 mm	52.6 mm (2.07 in)
6.0 mm	3/8 in	194-3543	25.7 mm	52.6 mm (2.07 in)
7.0 mm	3/8 in	194-3544	25.7 mm	52.6 mm (2.07 in)
8.0 mm	3/8 in	194-3545	25.1 mm	52.1 mm (2.05 in)
10.0 mm	3/8 in	194-3546	25.5 mm	52.5 mm (2.07 in)
12.0 mm	1/2 in	194-3547	—	81.0 mm (3.19 in)
14.0 mm	1/2 in	194-3548	—	81.0 mm (3.19 in)
17.0 mm	1/2 in	194-3549	—	93.7 mm (3.69 in)

200-1931 Folding Hex Bit Set, 7 Piece

- 3 inch long bits
- Bit sizes: 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm, 4.0 mm, 5.0 mm, 6.0 mm
- Black oxide finish
- Chrome plated case



Individual Metric Hex Drivers

Warranty: Lifetime

Hex Size	Drive Size	Part No.	Bit Ext. Length	Overall Length
6.0 mm	3/8 in	8T-3040	25.4 mm	53.1 mm (2.09 in)
10.0 mm	1/2 in	6V-9085	23.9 mm	62.0 mm (2.44 in)
14.0 mm	1/2 in	6V-9086	35.0 mm	81.0 mm (3.19 in)
17.0 mm	3/4 in	1U-6151	47.0 mm	92.0 mm (3.62 in)
19.0 mm	3/4 in	9U-7418	47.7 mm	111.3 mm (4.39 in)
22.0 mm	1 in	1U-9474	32.0 mm	84.0 mm (3.31 in)
24.0 mm		140-8780 ¹	50.8 mm	50.8 mm (2.00 in)
27.0 mm	1 in	129-4552	72.0 mm	129.0 mm (5.08 in)

¹Hex bit only

Metric Hex Bit Repair Kit

Warranty: Lifetime

- Bit and retaining pin only

Driver Part No.	Repair Kit Part No.
194-3541	—
194-3542	—
194-3543	—
194-3544	—
194-3545	—
194-3546	—
194-3547	—
194-3548	—

Driver Part No.	Repair Kit Part No.
194-3549	—
8T-3040	6V-9087
6V-9085	6V-9088
6V-9086	6V-9089
9U-7418	9U-7419
1U-9474	1U-9476
129-4552	129-4553
1U-6151	1U-6152

Individual Sockets, 1/4 through 1 1/2 inch Drive

Warranty: Lifetime except impact sockets which are Six Months

- All sockets are polished chrome finish unless otherwise noted.

Individual Sockets, 1/4 inch Drive

1/4 inch Drive, Standard Length Sockets, 6 Point		
Size	Part No.	Length
4.0 mm	200-8415	22.2 mm (.87 in)
5.0 mm	200-8417	22.2 mm (.87 in)
5.5 mm	200-8418	22.2 mm (.87 in)
6.0 mm	200-8419	22.2 mm (.87 in)
7.0 mm	200-8420	22.2 mm (.87 in)
8.0 mm	200-8421	22.2 mm (.87 in)
9.0 mm	200-8422	22.2 mm (.87 in)
10.0 mm	200-8423	22.2 mm (.87 in)
11.0 mm	200-8424	22.2 mm (.87 in)
12.0 mm	200-8426	22.2 mm (.87 in)
13.0 mm	200-8427	22.2 mm (.87 in)
14.0 mm	200-8428	22.2 mm (.87 in)
15.0 mm	200-8429	23.0 mm (.91 in)

1/4 inch Drive, Deep Length Sockets, 6 Point		
Size	Part No.	Length
6.0 mm	194-3518	50.8 mm (2.0 in)
7.0 mm	194-3519	50.8 mm (2.0 in)
8.0 mm	194-3521	50.8 mm (2.0 in)
9.0 mm	194-3522	50.8 mm (2.0 in)
10.0 mm	194-3523	50.8 mm (2.0 in)
11.0 mm	194-3527	50.8 mm (2.0 in)
12.0 mm	194-3528	50.8 mm (2.0 in)
13.0 mm	194-3529	50.8 mm (2.0 in)
14.0 mm	194-3530	50.8 mm (2.0 in)

Individual Sockets, 3/8 inch Drive

3/8 inch Drive, Standard Length Sockets, 12 Point		
Size	Part No.	Length
8.0 mm	194-3480	23.0 mm (.91 in)
9.0 mm	194-3483	23.0 mm (.91 in)
10.0 mm	194-3488	23.0 mm (.91 in)
11.0 mm	194-3490	23.0 mm (.91 in)
12.0 mm	194-3492	23.8 mm (.94 in)
13.0 mm	194-3494	24.6 mm (.97 in)
14.0 mm	194-3495	26.2 mm (1.03 in)
15.0 mm	194-3496	27.0 mm (1.06 in)
16.0 mm	194-3497	27.8 mm (1.09 in)
17.0 mm	194-3498	28.6 mm (1.13 in)
18.0 mm	194-3499	28.6 mm (1.13 in)
19.0 mm	194-3500	30.2 mm (1.19 in)

3/8 inch Drive, Deep Length Sockets, 12 Point		
Size	Part No.	Length
8.0 mm	199-9023	54.0 mm (2.13 in)
9.0 mm	199-9025	54.0 mm (2.13 in)
10.0 mm	199-9026	54.0 mm (2.13 in)
11.0 mm	199-9027	54.0 mm (2.13 in)
12.0 mm	199-9028	54.0 mm (2.13 in)
13.0 mm	199-9029	54.0 mm (2.13 in)
14.0 mm	199-9030	60.3 mm (2.37 in)
15.0 mm	199-9031	60.3 mm (2.37 in)
16.0 mm	199-9032	60.3 mm (2.37 in)
17.0 mm	199-9033	66.7 mm (2.63 in)
18.0 mm	199-9034	66.7 mm (2.63 in)
19.0 mm	199-9035	66.7 mm (2.63 in)

3/8 inch Drive, Standard Length Sockets, 6 Point		
Size	Part No.	Length
8.0 mm	214-6621	23.0 mm (.91 in)
9.0 mm	214-6623	23.0 mm (.91 in)
10.0 mm	214-6624	23.0 mm (.91 in)
11.0 mm	214-6625	23.0 mm (.91 in)
12.0 mm	214-6626	23.8 mm (.94 in)
13.0 mm	214-6627	24.6 mm (.97 in)
14.0 mm	214-6628	26.2 mm (1.03 in)
15.0 mm	214-6629	27.0 mm (1.06 in)
16.0 mm	214-6630	27.8 mm (1.09 in)
17.0 mm	214-6631	28.6 mm (1.13 in)
18.0 mm	214-6632	28.6 mm (1.13 in)
19.0 mm	214-6633	30.2 mm (1.19 in)

3/8 inch Drive, Deep Length Sockets, 6 Point		
Size	Part No.	Length
10.0 mm	214-6635	54.0 mm (2.13 in)
11.0 mm	214-6636	54.0 mm (2.13 in)
12.0 mm	214-6637	54.0 mm (2.13 in)
13.0 mm	214-6638	54.0 mm (2.13 in)
14.0 mm	214-6639	60.3 mm (2.37 in)
15.0 mm	214-6640	60.3 mm (2.37 in)
17.0 mm	214-6641	66.7 mm (2.63 in)
19.0 mm	214-6642	66.7 mm (2.63 in)

9U-6124 Universal Metric Socket Set, 3/8 inch Square Drive, 12 Point,		
Size	Part No.	Length
10.0 mm	9U-6125	43.5 mm (1.71 in)
12.0 mm	9U-6126	45.5 mm (1.79 in)
13.0 mm	9U-6127	45.5 mm (1.79 in)
14.0 mm	9U-6128	47.9 mm (1.89 in)
15.0 mm	9U-6129	47.9 mm (1.89 in)
16.0 mm	9U-6130	47.9 mm (1.89 in)
17.0 mm	9U-6131	50.7 mm (2.00 in)
18.0 mm	9U-6132	50.7 mm (2.00 in)
19.0 mm	9U-6133	52.5 mm (2.07 in)



Item	Part No.	Description	Size
1	4C-8240	Excavator Track Socket	20.0 mm
2	4C-6723	Excavator Track Socket	35.5 mm
3	4C-6724	Excavator Track Socket	46.0 mm

Individual Sockets, 1/2 inch Drive

1/2 inch Drive, Standard Length Sockets, 12 Point		
Size	Part No.	Length
12.0 mm	199-6149	38.1 mm (1.50 in)
13.0 mm	199-6150	38.1 mm (1.50 in)
14.0 mm	8T-3041	38.1 mm (1.50 in)
15.0 mm	6V-9110	38.1 mm (1.50 in)
16.0 mm	6V-9111	38.1 mm (1.50 in)
17.0 mm	6V-9112	38.1 mm (1.50 in)
18.0 mm	6V-9113	38.1 mm (1.50 in)
19.0 mm	6V-9114	38.1 mm (1.50 in)
20.0 mm	199-6152	38.1 mm (1.50 in)
21.0 mm	6V-9115	38.1 mm (1.50 in)
22.0 mm	6V-9116	38.1 mm (1.50 in)
23.0 mm	199-6153	38.1 mm (1.50 in)
24.0 mm	199-6154	38.8 mm (1.53 in)
25.0 mm	194-3558	38.8 mm (1.53 in)
26.0 mm	194-3559	41.2 mm (1.62 in)

1/2 inch Drive, Standard Length Sockets, 12 Point (cont'd)		
Size	Part No.	Length
27.0 mm	194-3562	42.8 mm (1.69 in)
28.0 mm	194-3563	44.4 mm (1.75 in)
29.0 mm	194-3564	44.4 mm (1.75 in)
30.0 mm	194-3565	44.4 mm (1.75 in)
31.0 mm	194-3566	47.6 mm (1.87 in)
32.0 mm	194-3567	47.6 mm (1.87 in)

1/2 inch Drive, Deep Length Sockets, 12 Point		
Size	Part No.	Length
16.0 mm	194-3505	82.6 mm (3.25 in)
17.0 mm	194-3506	82.6 mm (3.25 in)
18.0 mm	194-3510	82.6 mm (3.25 in)
19.0 mm	194-3511	82.6 mm (3.25 in)
20.0 mm	194-3512	82.6 mm (3.25 in)
21.0 mm	194-3513	82.6 mm (3.25 in)
22.0 mm	194-3514	82.6 mm (3.25 in)
24.0 mm	194-3515	82.6 mm (3.25 in)
25.0 mm	194-3516	82.6 mm (3.25 in)
26.0 mm	194-3517	82.6 mm (3.25 in)

1/2 inch Drive, Standard Length Impact Sockets, 6 Point, Black		
Size	Part No.	Length
10.0 mm	213-6926	38.1 mm (1.50 in)
11.0 mm	213-6927	38.1 mm (1.50 in)
12.0 mm	213-6928	38.1 mm (1.50 in)
13.0 mm	213-6929	38.1 mm (1.50 in)
14.0 mm	213-6930	38.1 mm (1.50 in)
15.0 mm	213-6932	38.1 mm (1.50 in)
16.0 mm	213-6933	38.1 mm (1.50 in)
17.0 mm	213-6934	38.1 mm (1.50 in)
18.0 mm	213-6935	38.1 mm (1.50 in)
19.0 mm	213-6936	38.1 mm (1.50 in)
20.0 mm	213-6924	38.1 mm (1.50 in)
21.0 mm	213-6937	38.1 mm (1.50 in)

1/2 inch Drive, Deep Length Impact Sockets, 6 Point, Satin		
Size	Part No.	Length
10.0 mm	214-6644	82.6 mm (3.25 in)
11.0 mm	214-6645	82.6 mm (3.25 in)
12.0 mm	214-6646	82.6 mm (3.25 in)
13.0 mm	214-6647	82.6 mm (3.25 in)
14.0 mm	214-6648	82.6 mm (3.25 in)
15.0 mm	214-6649	82.6 mm (3.25 in)
16.0 mm	214-6650	82.6 mm (3.25 in)
17.0 mm	214-6651	82.6 mm (3.25 in)
18.0 mm	214-6652	82.6 mm (3.25 in)
19.0 mm	214-6653	82.6 mm (3.25 in)
20.0 mm	214-7346	82.6 mm (3.25 in)

1/2 inch Drive, Deep Length Impact Sockets, 6 Point, Satin		
Size	Part No.	Length
8.0 mm	1U-7936	82.5 mm (3.25 in)
9.0 mm	1U-7937	82.5 mm (3.25 in)
10.0 mm	1U-7938	82.5 mm (3.25 in)
11.0 mm	1U-7939	82.5 mm (3.25 in)
12.0 mm	1U-7941	82.5 mm (3.25 in)
13.0 mm	1U-7942	82.5 mm (3.25 in)
14.0 mm	1U-7943	82.5 mm (3.25 in)
15.0 mm	1U-7944	82.5 mm (3.25 in)
16.0 mm	1U-7945	82.5 mm (3.25 in)
17.0 mm	1U-7946	82.5 mm (3.25 in)
18.0 mm	1U-7947	82.5 mm (3.25 in)
19.0 mm	1U-7948	82.5 mm (3.25 in)

Individual Sockets, 3/4 inch Drive

3/4 inch Drive, Standard Length Sockets, 6Point		
Size	Part No.	Length
24.0 mm	6V-9117	50.8 mm (2.00 in)
30.0 mm	6V-9118	57.2 mm (2.25 in)
36.0 mm	6V-9119	58.7 mm (2.31 in)
46.0 mm	6V-9120	73.0 mm (2.87 in)

3/4 inch Drive, Standard Length, Impact Sockets, 12 Point		
Size	Part No.	Length
20.0 mm	152-1058	55.5 mm (2.19 in)

3/4 inch Drive, Deep Length, Impact Sockets, 6 Point		
Size	Part No.	Length
36.0 mm	175-6797	89.0 mm (3.50 in)
43.0 mm	6V-7874	88.9 mm (3.50 in)

3/4 inch Drive, Standard Length Impact Sockets, 6 Point, Black		
Size	Part No.	Length
17.0 mm	9U-6523	44.5 mm (1.75 in)
19.0 mm	9U-6524	44.5 mm (1.75 in)
20.0 mm	9U-6525	44.5 mm (1.75 in)
21.0 mm	9U-6526	47.8 mm (1.88 in)
22.0 mm	9U-6527	47.6 mm (1.87 in)
23.0 mm	9U-6528	47.8 mm (1.88 in)
24.0 mm	9U-6529	47.6 mm (1.87 in)
26.0 mm	9U-6530	50.8 mm (2.00 in)
27.0 mm	9U-6531	50.8 mm (2.00 in)
28.0 mm	9U-6532	53.8 mm (2.12 in)
30.0 mm	9U-6533	53.8 mm (2.12 in)
31.0 mm	9U-6534	54.0 mm (2.13 in)
32.0 mm	9U-6535	54.0 mm (2.13 in)

3/4 inch Drive, Standard Length Impact Sockets, 6 Point, Black (cont'd)		
Size	Part No.	Length
33.0 mm	9U-6536	53.8 mm (2.12 in)
34.0 mm	9U-6537	54.0 mm (2.13 in)
35.0 mm	9U-6538	57.2 mm (2.25 in)
36.0 mm	9U-6539	57.2 mm (2.25 in)
38.0 mm	9U-6540	57.2 mm (2.25 in)
40.0 mm	9U-6541	66.7 mm (2.63 in)
41.0 mm	9U-6542	66.5 mm (2.62 in)
42.0 mm	9U-6543	66.5 mm (2.62 in)
43.0 mm	9U-6544	66.5 mm (2.62 in)
46.0 mm	9U-6545	66.7 mm (2.63 in)
50.0 mm	9U-6546	73.2 mm (2.88 in)

Individual Sockets, 1 inch Drive

1 inch Drive, Standard Length, Impact Sockets, 6 Point		
Size	Part No.	Length
46.0 mm	4C-6724	73.5 mm (2.89 in)

1 inch Drive, Tapered ¹ , Impact Sockets, 6 Point		
Size	Part No.	Length
19.0 mm	1U-7626	89.0 mm (3.50 in)
22.0 mm	1U-7627	89.0 mm (3.50 in)
24.0 mm	1U-7628	89.0 mm (3.50 in)
27.0 mm	1U-7629	89.0 mm (3.50 in)
30.0 mm	1U-7630	89.0 mm (3.50 in)
32.0 mm	1U-7631	89.0 mm (3.50 in)

¹ Special design for excavator track bolts; not intended for general use

Individual Sockets, 1 1/2 inch Drive

1 1/2 inch Drive, Standard Length, Impact Sockets, 6 Point		
Size	Part No.	Length
55.0 mm	136-5189	90.4 mm (3.56 in)
65.0 mm	132-8743	102.4 mm (4.03 in)
70.0 mm	136-5190	107.1 mm (4.22 in)

1U-5545 Combination Wrench Set, 14 Piece

Warranty: Lifetime

- Metric, 6.0 mm through 19.0 mm
- Polished chrome finish
- Includes storage pouch



Size	Part No.	Length
6.0 mm	1U-5546	113.0 mm (4.45 in)
7.0 mm	1U-5547	118.0 mm (4.65 in)
8.0 mm	1U-5548	123.0 mm (4.84 in)
9.0 mm	1U-5549	159.0 mm (6.26 in)
10.0 mm	6V-9090	171.0 mm (6.73 in)
11.0 mm	6V-9091	184.0 mm (7.24 in)
12.0 mm	6V-9092	195.0 mm (7.68 in)
13.0 mm	6V-9093	207.0 mm (8.15 in)
14.0 mm	6V-9094	219.0 mm (8.62 in)
15.0 mm	6V-9095	233.0 mm (9.17 in)
16.0 mm	6V-9096	242.0 mm (9.53 in)
17.0 mm	6V-9097	256.0 mm (10.08 in)
18.0 mm	6V-9098	267.0 mm (10.51 in)
19.0 mm	6V-9099	280.0 mm (11.02 in)

4C-4064 Wrench, 41.0 mm

4C-4065 Wrench, 55.0 mm

SMCS Code: 4303-010

Model: See Below

- General purpose tools that, with the required FT drawings, can be changed to special application tools
- As special application tools, used to remove and install front steering cylinder linkage knuckle on Cat vehicles listed below
- Forged steel, straight-handled, open end, with black oxide finish



4C-4064 Wrench	FT2296	Telescoping Material Handlers RT50, RT60 and RTC60; 214B Hydraulic Excavator
4C-4065 Wrench	FT2297	Telescoping Material Handlers RT50, RT60 and RTC60

Individual Combination Wrenches

Warranty: Lifetime

- 15° angle on open end and 15° offset on box end

Size	Part No.	Length
6.0 mm	1U-5546	113.0 mm (4.45 in)
7.0 mm	1U-5547	118.0 mm (4.65 in)
8.0 mm	1U-5548	123.0 mm (4.84 in)
9.0 mm	1U-5549	159.0 mm (6.26 in)
10.0 mm	6V-9090	171.0 mm (6.73in)
11.0 mm	6V-9091	184.0 mm (7.24 in)
12.0 mm	6V-9092	195.0 mm (7.68 in)
13.0 mm	6V-9093	207.0 mm (8.15 in)
14.0 mm	6V-9094	219.0 mm (8.62 in)
15.0 mm	6V-9095	233.0 mm (9.17 in)
16.0 mm	6V-9096	242.0 mm (9.53 in)
17.0 mm	6V-9097	256.0 mm (10.08 in)
18.0 mm	6V-9098	267.0 mm (10.51 in)
19.0 mm	6V-9099	280.0 mm (11.02 in)

Size	Part No.	Length
20.0 mm	6V-9100	292.0 mm (11.50 in)
21.0 mm	6V-9101	304.0 mm (11.97 in)
22.0 mm	6V-9102	318.0 mm (12.52 in)
23.0 mm	214-7214	328.0 mm (12.91 in)
24.0 mm	6V-9103	338.0 mm (13.31 in)
25.0 mm	214-7215	356.0 mm (14.02 in)
26.0 mm	214-7217	364.0 mm (14.33 in)
27.0 mm	214-7218	376.0 mm (14.80 in)
29.0 mm	214-7220	395.0 mm (15.55 in)
30.0 mm	6V-9104	414.0 mm (16.30 in)
32.0 mm	214-7222	433.0 mm (17.00 in)
36.0 mm	214-7223	490.0 mm (19.29 in)
46.0 mm	9U-5130	596.0 mm (23.46 in)

Miscellaneous Hand Tools

211-0616 Hand Tool Set

Warranty: See individual part numbers

- For performing routine adjustment and maintenance of all Track-Type Tractors, Track-Type Loaders and Engines

Part No.	Description
1S-0259	Socket, 1/2 in, 1/2 in drive, 12 Pt.
4C-9592	Combination Wrench, 3/8 in
4C-9594	Combination Wrench, 1/2 in
4C-9595	Combination Wrench, 9/16 in
4C-9596	Combination Wrench, 5/8 in
4C-9598	Combination Wrench, 3/4 in
4C-9601	Combination Wrench, 7/8 in
4C-9603	Combination Wrench, 1 in
4C-9605	Combination Wrench, 5/16 in
5F-4764	Pry Bar, 406.4 mm (16.00 in) long
6V-7934	Screwdriver, PHILLIPS™ No. 2, 247.7 mm (9.75 in) long
6V-7935	Screwdriver, Standard 1/4 in tip, 196.0 mm (7.75 in) long
8F-9866	Grease Gun
8H-8549	Socket, 9/16 in, 1/2 in drive, 12 Pt.

Part No.	Description
8H-8554	Socket, 7/8 in, 1/2 in drive, 12 Pt.
8H-8555	Socket, 15/16 in, 1/2 in drive, 12 Pt.
8H-8556	Socket, 1 in, 1/2 in drive, 12 Pt.
8H-8559	Socket Extension, 1/2 in drive, 254.0 mm (10.00 in) long
8H-8581	Feeler Gauge, 25 blade, .0015 in to .025 in
9S-1730	Socket, 1 1/8 in, 1/2 in drive, 12 Pt.
9S-1732	Socket Extension, 1/2 in drive, 127.0 mm (5.00 in) long
9U-6639	Ratchet, 1/2 in drive
185-3630	Filter Strap Wrench
211-0136	Tool Bag
212-8144	Petcock Socket, 1/2 in drive
212-8145	Drain Plug Socket, 1/2 in Female, 3/4 in Male
213-1983	Combination Pliers, 167.0 mm (6.60 in) long



211-0617 Hand Tool Set

Warranty: See individual part numbers

- For routine maintenance and adjustment of all rubber-tired machines (Wheel Loaders, Motor Graders, Skidders, Solid Frame Off Highway Trucks, Wheel Tractors, Backhoe Loaders and Integrated Toolcarriers)

Part No.	Description
1P-0545	Tire Pressure Gauge
1S-0259	Socket, 1/2 in, 1/2 in drive, 12 Pt.
4C-9592	Combination Wrench, 3/8 in
4C-9594	Combination Wrench, 1/2 in
4C-9595	Combination Wrench, 9/16 in
4C-9596	Combination Wrench, 5/8 in
4C-9597	Combination Wrench, 11/16 in
4C-9598	Combination Wrench, 3/4 in
4C-9605	Combination Wrench, 5/16 in
5F-4764	Pry Bar, 406.4 mm (16.00 in) long
6V-7932	Screwdriver, Standard 3/8 in tip, 323.9 mm (12.75 in) long
6V-7934	Screwdriver, PHILLIPS™ No.2, 247.7 mm (9.75 in) long
8F-9866	Grease Gun
8H-8536	Socket, 1 5/16 in, 3/4 in drive, 12 Pt.
8H-8537	Socket, 1 1/2 in, 3/4 in drive, 12 Pt.
8H-8538	Socket, 1 11/16 in, 3/4 in drive, 12 Pt.

Part No.	Description
8H-8541	Socket, 1 7/8 in, 3/4 in drive, 12 Pt.
8H-8549	Socket, 9/16 in, 1/2 in drive, 12 Pt.
8H-8551	Socket, 1 1/16 in, 1/2 in drive, 12 Pt.
8H-8552	Socket, 3/4 in, 1/2 in drive, 12 Pt.
8H-8553	Socket, 13/16 in, 1/2 in drive, 12 Pt.
8H-8554	Socket, 7/8 in, 1/2 in drive, 12 Pt.
8H-8555	Socket, 15/16 in, 1/2 in drive, 12 Pt.
8H-8559	Socket Extension, 1/2 in drive, 254.0 mm (10.00 in) long
8H-8581	Feeler Gauge, 25 blade, .0015 in to .025 in
9S-1730	Socket, 1 1/8 in, 1/2 in drive, 12 Pt.
9S-1731	Socket, 1 1/4 in, 1/2 in drive, 12 Pt.
185-3630	Filter Strap Wrench
212-8144	Petcock Socket, 1/2 in drive
212-8145	Drain Plug Socket, 1/2 in Female, 3/4 in Male
213-1985	Sliding T-Handle, 1/2 in drive, 304.8 mm (12.00 in) long



214-6153 Hand Tool Group

Warranty: See individual part number

- Use for routine maintenance adjustments on rear engine Track-Type Loaders such as the 943, 953, 963 and 973

Part No.	Description
8H-8549	Socket, 9/16 in
8H-8552	Socket, 3/4 in
8H-8554	Socket, 7/8 in
8H-8556	Socket, 1 in
8H-8559	Socket Extension, 1/2 in, 254.0 mm (10.00 in) long
9U-6639	Ratchet
9U-7419	Hex Bit
6V-7935	Screwdriver, 1/4 in Tip
6V-0092	Plug Socket, 1/2 in Female, 3/8 in Male
4C-9594	Combination Wrench, 1/2 in

Part No.	Description
4C-9595	Combination Wrench, 9/16 in
4C-9598	Combination Wrench, 3/4 in
5F-4764	Pry Bar, 406.0 mm (16.00 in) long
8F-9866	Grease Gun
185-3630	Filter Strap Wrench
212-8144	Petcock Socket
213-1983	Pliers
211-0136	Tool Bag, 610.0 mm x 203.0 mm x 159.0 mm (24.00 in x 8.00 in x 6.25 in) (Not shown)



133-8877 Field Tool Group

Model: 416C, 426C, 436C, 428C, and 438C Backhoe Loaders

Warranty: See individual part numbers

- Used to perform routine maintenance and adjustment operations on C-series Backhoe Loaders
- Group includes 20 required hand tools
- Features both English and Metric wrenches and sockets
- Includes "T" handle wrench and extension for wheel lug removal and installation
- Canvas bag provides adequate storage even in limited space



Part No.	Description
	Wrench sizes (English), 7/16, 1/2, 13/16, 7/8 and 15/16
	Wrench sizes (Metric), 14 and 17
	Socket size (English and Metric, 1/2 in drive), 15/16 and 17.0 mm
	Socket size (Metric, 3/4 in drive), 28.0 mm
	"T" handles, 1/2 and 3/4 in drive
	Extension, 3/4 in drive
	Screwdrivers, #2 Phillips and 1/4 in flat
	Pliers, (1) slip joint and (1) retaining ring
8F-9866	Grease gun w/ Flex Hose
	Socket, 3/8 in drive, T30 Torx Bit
185-3630	Strap Wrench
	Tool Bag

209-9239 Hand Tool Set

Model: 910E Wheel Loader, 12B and 14B Integrated Tool Carriers
Warranty: See individual part number

- For routine maintenance and adjustments

Part No.	Description
1P-0545	Tire Pressure Gauge ¹
1S-0255	Combination Pliers, 163.5 mm (6.44 in) long
4C-9592	Combination Wrench, 3/8 in
4C-9595	Combination Wrench, 9/16 in
4C-9598	Combination Wrench, 3/4 in
5F-4764	Pry Bar, 406.4 mm (16.00 in) long ¹
6V-7932	Standard Screwdriver, 3/8 in tip, 323.9 mm (12.75 in) long
6V-7933	Standard Screwdriver, 5/16 in tip, 260.4 mm (10.25 in)
6V-9093	Combination Wrench, 13.0 mm
6V-9096	Combination Wrench, 16.0 mm
6V-9101	Combination Wrench, 21.0 mm
8F-9866	Grease Gun ¹
8H-8536	Socket, 1 5/16 in, 3/4 in drive, 12 Pt.
8H-8537	Socket, 1 1/2 in, 3/4 in drive, 12 Pt.
8H-8539	Socket, 1 5/8 in, 3/4 in drive, 12 Pt.
8H-8556	Socket, 1 in, 1/2 in drive, 12 Pt.
8H-8559	Socket Extension, 1/2 in drive, 254.0 mm (10.00 in) long
8H-8561	Socket Drive Adapter, 1/2 in Female, 3/4 in Male
8H-8581	Feeler Gauge, 25 blade, .0015 in to .025 in
9S-1730	Socket, 1 1/8 in, 1/2 in drive, 12 Pt.



Part No.	Description
9U-6639	Ratchet, 1/2 in drive
185-3630	Filter Strap Wrench ¹
211-0136	Tool Bag
212-8145	Drain Plug Socket, 1/2 in Female, 3/4 in Male
213-1985	Sliding T-Handle, 1/2 in drive, 304.8 mm (12.00 in) long
213-3088	Socket, 9/16 in, 1/2 in drive, 6 Pt.
213-6926	Impact Socket, 10.0 mm, 1/2 in drive, 6 Pt.
213-6929	Impact Socket, 13.0 mm, 1/2 in drive, 6 Pt.
213-6933	Impact Socket, 16.0 mm, 1/2 in drive, 6 Pt.
213-6935	Impact Socket, 18.0 mm, 1/2 in drive, 6 Pt.
213-6936	Impact Socket, 19.0 mm, 1/2 in drive, 6 Pt.

¹Warranty: Six Months

144-4674 Field Tool Group

Model: 914G, 924F and 928G Wheel Loaders
Warranty: See individual part numbers

- Used to perform routine maintenance and adjustment operations
- Group contains 25 individual hand tools
- Features both English and Metric wrenches and sockets
- Includes Cat grease gun, filter wrench and tire pressure gauge
- Canvas bag provides adequate storage even in limited space

Part No.	Description
	Hand wrench sizes SAE, 3/4, 13/16, 1-1/8, 1-3/8 and 1-5/8 in
	Hand wrench sizes, (Metric) 10.0, 13.0, 16.0, 18.0 and 19.0 mm
	Socket sizes, (Metric) 10.0, 13.0, 16.0 and 19.0 mm x 3/8 in drive
	Screwdrivers, #2 Phillips and 1/4 in flat
	Pliers, 1 slip joint
	Ratchet, 3/8 in drive
	Adapter, 3/8 in female to 1/2 in male
	Extension, 152.4 mm (6.00 in) x 3/8 in drive
	Torx Socket drivers, T30 and T50 x 3/8 in drive
8F-9866	Grease gun w/Flex Hose
1P-0545	Tire Pressure Gauge
185-3630	Strap wrench
	Tool Bag



214-7318 Hand Tool Group

Model: All 300 Series Excavators
Warranty: See individual part number

- Used for routine maintenance and adjustment
- Flat top tool box provides adequate storage for all tools in this group
- Using proper tools reduces downtime



Part No.	Description
9U-6639	Ratchet, 1/2 in drive
8S-1588	Socket Adapter 1/2 in Female to 3/8 in Male
9S-1732	Socket Extension, 1/2 in drive, 127.0 mm (5.00 in) long
194-3535	Socket, Assembly, T30
194-3538	Socket, Assembly, T50
194-3565	Socket, 30 mm, 1/2 in drive, 12 Pt.
199-6154	Socket, 24 mm, 1/2 in drive, 12 Pt.
213-6926	Impact Socket, 10.0 mm, 1/2 in drive, 6 Pt.
213-6927	Impact Socket, 11.0 mm, 1/2 in drive, 6 Pt.
213-6929	Impact Socket, 13.0 mm, 1/2 in drive, 6 Pt.
6V-9111	Socket, 16.0 mm, 1/2 in drive, 12 Pt.
6V-9112	Socket, 17.0 mm, 1/2 in drive, 12 Pt.
6V-9113	Socket, 18.0 mm, 1/2 in drive, 12 Pt.
6V-9116	Socket, 22.0 mm, 1/2 in drive, 12 Pt.
1U-7563	Hex Wrench, 4.0 mm
1U-7564	Hex Wrench, 5.0 mm
1U-7565	Hex Wrench, 6.0 mm
1U-7566	Hex Wrench, 8.0 mm
1U-7567	Hex Wrench, 10.0 mm
1U-7569	Hex Wrench, 14.0 mm
1U-7585	Hex Wrench, 5/8 in
6V-9096	Combination Wrench, 16.0 mm
6V-9098	Combination Wrench, 18.0 mm
6V-9099	Combination Wrench, 19.0 mm
6V-9101	Combination Wrench, 21.0 mm

Part No.	Description
6V-9102	Combination Wrench, 22.0 mm
6V-9103	Combination Wrench, 24.0 mm
6V-9104	Combination Wrench, 30.0 mm
214-7222	Combination Wrench, 32.0 mm
214-7223	Combination Wrench, 36.0 mm
8H-8424	Combination Wrench, 1 1/2 in
214-7330	Combination Wrench, 1 5/16 jaw range
4C-4064	Open End Wrench, 41.0 mm
185-3630	Filter Strap Wrench
8F-9866	Grease Gun
5F-4764	Pry Bar, 406.4 mm (16.00 in) long
9U-7968	Pry Bar
6V-7932	Standard Screwdriver, 3/8 in tip, 323.9 mm (12.75 in) long
1S-0255	Combination Pliers, 163.5 mm (6.44 in) long
8H-8577	Ball Peen Hammer, 2 lb
8H-8581	Feeler Gauge, 25 blade, .0015 in to .025 in
9U-6219	Tool Box

214-7219 Hand Tool Group

Warranty: See individual part number

- For routine maintenance and adjustments

Part No.	Description
8H-8549	Socket, 9/16 in
8H-8556	Socket, 1 in
8H-8559	Socket Extension, 1/2 in, 254.0 mm (10.00 in) long
8H-8581	Feeler Gauge
6V-7932	Standard Screwdriver, 3/8 in tip
4C-9592	Combination Wrench, 3/8 in
4C-9595	Combination Wrench, 9/16 in
4C-9598	Combination Wrench, 3/4 in
5F-4764	Pry Bar, 406.0 mm (16.00 in) long
8F-9866	Grease Gun
185-3630	Filter Strap Wrench
213-1985	Sliding T-Handle



152-4942 Field Tool Group

Model: 902, 906, and 908 Compact Wheel Loader
Warranty: See individual part number

- Used to perform routine maintenance and adjustments
- Includes 12 required hand tools
- Includes both English and metric wrenches and screwdrivers
- Roll-up tool pouch provides good storage in limited space

Open end wrenches	10.0, 11.0, 12.0, 13.0, 16.0, 17.0, 18.0, and 19.0 mm
Hex wrench	4.0 mm
Screwdrivers	#2 Phillips and 1/4 in flat tip
Ball peen hammer	16 oz.
Adjustable wrench	8.00 in
Filter band wrench	3 3/4 in diameter
T-bar and sliding head	12.00 in long x 1/2 in square drive
Deep socket	1 1/8 in, 6 point, 1/2 in square drive



157-0674 Hand Tool Group

Model: 972G Wheel Loader
Warranty: See individual part number

- Used to perform routine maintenance and adjustment
- Twenty six (26) individual hand tools
- Metric wrenches and sockets accommodate fasteners and fittings on wheel loader
- Reduce downtime by using proper tools

Part No.	Description
1P-0545	Tire Gauge Group
8H-8546	Breakover Bar Head
162-8716	Handle
8H-8548	Extension
8H-8559	Extension
213-1985	Sliding T-Handle
8H-8581	Feeler Gauge
6V-7932	Screwdriver
6V-7934	Screwdriver
5F-4764	Pry Bar
8F-9866	Grease Gun Assembly
1U-5548	Wrench, 8.0 mm
6V-9090	Wrench, 10.0 mm
6V-9093	Wrench, 13.0 mm
6V-9097	Wrench, 17.0 mm
6V-9099	Wrench, 19.0 mm



Part No.	Description
185-3630	Filter Strap Wrench
199-6150	Socket, 13.0 mm
6V-9112	Socket, 17.0 mm
6V-9114	Socket, 19.0 mm
6V-9116	Socket, 22.0 mm
199-6154	Socket, 24 mm
6V-9118	Socket, 30 mm
6V-9119	Socket, 36 mm
6V-9120	Socket, 46 mm
212-8145	Plug Socket
212-8144	Petcock Socket

197-5088 Service Group (Harvester Head)

197-1880 Service Group (Tree Harvester)

197-1877 Service Group (Forwarder)

Model: HH55 and HH65 Harvester Head (Skogsjan); 550, 560, 570, and 580 Tree Harvester (Skogsjan); 554 and 574 Forwarder (Skogsjan)

Essential Tool

Warranty: See individual part numbers

- Used to perform routine maintenance and adjustment operations
- 197-1880 Service Group contains hand tools needed in addition to 197-5088 Service Group for harvester
- All tools are serviced separately

197-5088 Service Group (Harvester Head)	
Part No.	Description
161-5346	Shackle, qty. 4
161-5347	Link, qty. 4
161-8953	Hex Wrench, 6.0 mm
161-8956	Cleaning Hook
164-3171	Spanner Wrench
164-5047	Chain Tool
224-0851	Chain
224-0853	Chain
197-3672	Saw Adjustment Wrench

197-1877 Service Group (Forwarder)	
Part No.	Description
1B-7810	Ball Peen Hammer
1P-0545	Tire Gauge Group
1U-5545	Metric Wrench Group
4C-5742	Pry Bar, 46.00 in long
4C-9600	Wrench Tool Group
5P-0946	Tool Box
6V-3989	Unvalved Nipple, qty. 3
6V-4143	Coupler Assembly, qty. 2
6V-7933	Screwdriver, 5/16 in tip
6V-7934	Screwdriver, No. 2 Phillips tip
6V-7935	Screwdriver, 1/4 in tip
6V-7936	Screwdriver, No. 1 Phillips tip
6V-7937	Screwdriver, 3/16 in tip
6V-9102	Wrench, 22.0 mm
6V-9104	Wrench, 30.0 mm
6V-9124	Screwdriver, 1/8 in tip
8F-9866	Grease Gun Assembly
8H-8516	Wrench, 1 1/16 in
8H-8520	Wrench, 1 3/8 in
8T-0856	Pressure Gauge
8T-0859	Pressure Gauge
8T-0861	Pressure Gauge
8T-5183	Drive Extension
9U-6533	Impact Socket, 30.0 mm
9U-6637	Ratchet, 3/8 in Drive
9U-6639	Ratchet, 1/2 in Drive
127-2279	Open End Wrench, 1 5/8 in
160-6389	Ratchet Head, 3/4 in Drive
161-8958	Pump Wrench Assembly
162-8716	Ratchet Handle, 3/4 in Drive
175-7546	Cutter Group
177-7860	Hose Assembly
185-3630	Wrench Assembly
194-3585	Hex Bit Socket Set
200-1929	Hex Key Set, Metric
214-7218	Wrench, 27 mm
214-7223	Wrench, 36 mm
214-7324	Torx® Bit Set
214-7330	Adjustable Wrench, 12.00 in
214-7332	Adjustable Wrench, 15.00 in
214-7342	Screwdriver, No. 3 Phillips tip

197-1880 Service Group (Tree Harvester)	
Part No.	Description
1B-7810	Ball Peen Hammer
1P-0545	Tire Gauge Group
1P-2853	Spanner Wrench
1U-5545	Metric Wrench Group
4C-5742	Pry Bar, 46.00 in long
4C-9600	Wrench Tool Group
5F-4764	Pry Bar, 16.00 in long
6V-3989	Unvalved Nipple, qty. 3
6V-6195	Pliers
6V-7933	Screwdriver, 5/16 in tip
6V-7934	Screwdriver, No. 2 Phillips tip
6V-7935	Screwdriver, 1/4 in tip
6V-7936	Screwdriver, No. 1 Phillips tip
6V-7937	Screwdriver, 3/16 in tip
6V-9102	Wrench, 22.00 mm
6V-9104	Wrench, 30.00 mm
6V-9124	Screwdriver, 1/8 in tip
8F-9866	Grease Gun Assembly
8H-8423	Wrench, 1 5/8 in
8H-8516	Wrench, 1 1/16 in
8H-8520	Wrench, 1 3/8 in
8H-8559	Socket Extension, 1/2 in Drive
8T-0855	Pressure Gauge
8T-0859	Pressure Gauge
8T-0861	Pressure Gauge
8T-5183	Drive Extension
9U-6219	Tool Box
9U-6533	Impact Socket, 30 mm
9U-6536	Impact Socket, 33 mm
9U-6637	Ratchet, 3/8 in Drive
160-6389	Ratchet Head, 3/4 in Drive
161-8953	Hex Wrench, 6.00 mm
161-8954	File
161-8955	File Handle
161-8958	Pump Wrench Assembly
162-8716	Ratchet Handle, 3/4 in Drive
163-4468	Hose Assembly, qty. 2
164-3171	Spanner Wrench
175-7546	Cutter Group
185-3630	Wrench Assembly
194-3574	Metric Socket Set
194-3585	Hex Bit Socket Set
200-1929	Hex Key Set, Metric
214-7218	Wrench, 27 mm
214-7223	Wrench, 36 mm
214-7324	Torx® Bit Set
214-7330	Adjustable Wrench, 12.0 in
214-7332	Adjustable Wrench, 15.0 in
214-7333	Flex Head Ratchet, 1/2 in Drive
214-7342	Screwdriver, No. 3 Phillips tip

207-1515 Hand Tool Set

SMCS Code: 0600
Model: All
Warranty: See below

- Basic maintenance tool group
- Contains 21 individual hand tools
- Includes canvas bag for storing or transporting tools
- Warranty—canvas bag, grease gun, and strap wrench assembly have a 6 month warranty. All other hand tools have a lifetime warranty.



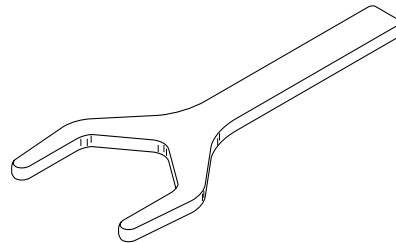
Part No.	Description
8F-9866	Grease Gun
8H-8581	Feeler Gauge, 25 Blade
6V-7933	Plastic Handle Screwdriver [152.0 mm (6.00 in) blade]
9U-6639	1/2 inch Square Drive Ratchet
9S-1732	Socket Extension [127.0 mm (5.00 in) long]
18S-3630	Spin-On Filter Strap Wrench Assembly
5F-4764	Rolling Head Pry Bar [406.0 mm (16.00 in) long]
6V-7934	Phillips Screwdriver No. 2
6V-9096	Combination Wrench, 16.0 mm
6V-9098	Combination Wrench, 18.0 mm
6V-9099	Combination Wrench, 19.0 mm
6V-9101	Combination Wrench, 21.0 mm

Part No.	Description
6V-9102	Combination Wrench, 22.0 mm
6V-9103	Combination Wrench, 24.0 mm
1U-7563	Hex Wrench, 4.0 mm
1U-7564	Hex Wrench, 5.0 mm
1U-7565	Hex Wrench, 6.0 mm
1U-7566	Hex Wrench, 8.0 mm
1U-7567	Hex Wrench, 10.0 mm
1U-7569	Hex Wrench, 14.0 mm
1U-7585	Hex Wrench, 5/8 inch

197-3672 Saw Adjustment Wrench

Model: Harvester Head

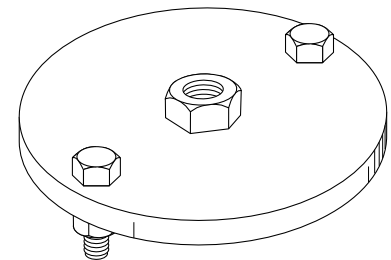
- Used to adjust saw tension on newer model saw heads
- Designed for easy access of adjustment nut
- Wrench opening: 3 3/4 inch



186-3646 Locknut Wrench Assembly

SMCS Code: 4264-025
Model: Feller Buncher
Essential Tool

- Used to adjust tension on cutting chain — this tool provides the only safe and efficient way of adjustment
- Used with 1 1/8 inch socket
- Distance between pins: 117.0 mm (4.60 in)
- Pin diameter: 19.1 mm (.75 in)



Ratchet Wrenches

Warranty: Lifetime

- Available in hex sizes from 3/8 inch to 2 1/4 inch
- Comes with either straight, integral handles or handles adapted for 1/2 inch or 3/4 inch square drive
- Wrenches equipped with 1/2 inch and 3/4 inch square drive handle. Can be used either with torque wrenches, combined with 1/2 inch and 3/4 inch drive extensions, or used with a breaker bar.
- Ratchets in 45° increments (1/8 of a turn)
- Forged steel jaws, heat treated high carbon steel handles, and stainless steel rivets with a black corrosion-resistant finish



Typical Ratchet Wrench Assembly with 1/2 inch Square Drive Handle



Typical Ratchet Wrench Assembly with Straight Handle

9U-6517 Ratchet Wrench

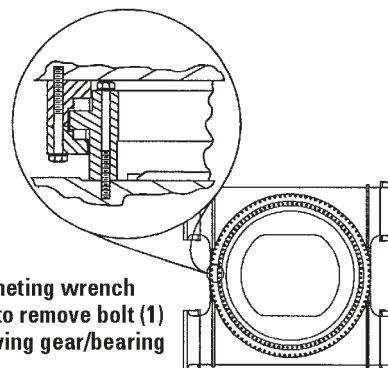
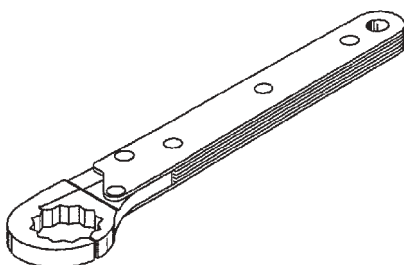
SMCS Code: 7063-010, 7063-017, 0602

Model: 5000 Series Mining Excavators

Warranty: Lifetime

- Used to quickly remove and install bolts (Use standard wrench for initial loosening; bolts cannot be tightened to final torque with ratchet wrench.)
- For 30 mm hex bolts
- Fits 46 mm (1 13/16 in) bolt heads
- Ratcheting style wrench greatly decreases time for removing or installing the many bolts required to attach swing bearing/gear (Starting and running bolts down until seated, or removing bolts, can take a large amount of time if done with conventional hand tools.)

Type of wrench	Ratcheting box end
Bolt head size	46.0 mm (1.81 in)
Torque specification	up to 490 N-m (366 lb ft)
Thickness	16.0 mm (.63 in)
Head diameter	80.8 mm (3.18 in)
Overall length	354.0 mm (14.00 in)



Ratcheting wrench is used to remove bolt (1) from swing gear/bearing

Reference

SEN6058, 5130 Service Manual Module, Disassembly and Assembly; SEN6108, 5230 Service Manual Module, Disassembly and Assembly; SEHS9721 Special Instruction, Assembly Procedure for Hydraulic Excavator (5130 only)

8T-3120 Straight Handle Wrench Set, 11 Piece

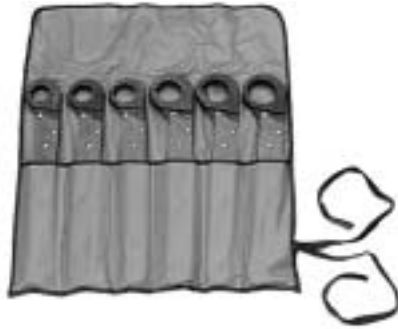
Warranty: Lifetime



Part No.	Hex Size	Torque Capacity
8T-3122	3/8 in	26 N-m (19 lb ft)
8T-3123	7/16 in	29 N-m (21 lb ft)
8T-3124	1/2 in	34 N-m (25 lb ft)
8T-3125	9/16 in	45 N-m (33 lb ft)
8T-3126	5/8 in	68 N-m (50 lb ft)
8T-3127	11/16 in	86 N-m (64 lb ft)
8T-3128	3/4 in	97 N-m (72 lb ft)
8T-3129	13/16 in	114 N-m (84 lb ft)
8T-3130	7/8 in	141 N-m (104 lb ft)
8T-3131	15/16 in	159 N-m (118 lb ft)
8T-3132	1 in	170 N-m (125 lb ft)

8T-3227 Straight Handle Wrench Set, 6 Piece

Warranty: Lifetime

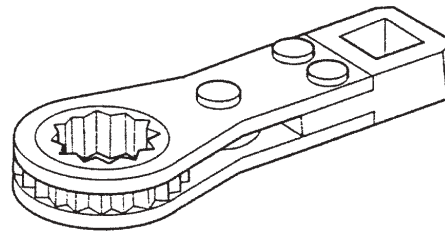


Part No.	Hex Size	Torque Capacity
8T-3133	1 1/16 in	190 N-m (140 lb ft)
8T-3134	1 1/8 in	200 N-m (150 lb ft)
8T-3135	1 1/4 in	270 N-m (200 lb ft)
8T-3136	1 3/8 in	340 N-m (250 lb ft)
8T-3137	1 1/2 in	410 N-m (300 lb ft)
8T-3138	1 5/8 in	475 N-m (350 lb ft)

157-3719 Ratcheting Box Wrench

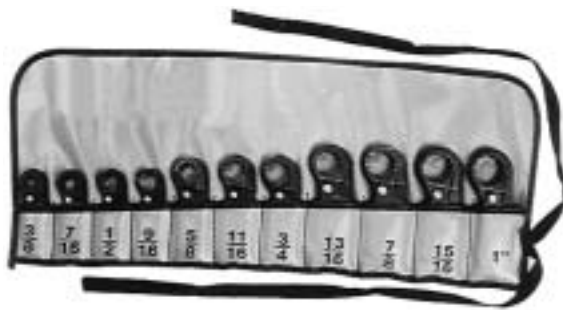
Warranty: Lifetime

- * Used to remove and install Bosch fuel injection pumps
- Built-in ratchet mechanism reduces removal/installation time
- Square drive: 3/8
- Socket size: 13.0 mm (12-point)



8T-3228 Wrench Set, 11 Piece, 3/8 inch Square Drive Handle

Warranty: Lifetime



Part No.	Hex Size	Torque Capacity
8T-3172	3/8 in	26 N-m (19 lb ft)
8T-3173	7/16 in	29 N-m (21 lb ft)
8T-3174	1/2 in	34 N-m (25 lb ft)
8T-3175	9/16 in	45 N-m (33 lb ft)
8T-3176	5/8 in	68 N-m (50 lb ft)
8T-3177	11/16 in	86 N-m (64 lb ft)
8T-3178	3/4 in	97 N-m (72 lb ft)
8T-3179	13/16 in	114 N-m (84 lb ft)
8T-3180	7/8 in	141 N-m (104 lb ft)
8T-3181	15/16 in	159 N-m (118 lb ft)
8T-3182	1 in	170 N-m (125 lb ft)

Individual Wrenches, 3/4 inch Square Drive

Warranty: Lifetime

- Not sold as part of any sets — must be ordered individually

Part No.	Description	Hex Size
1U-5732	Wrench Assembly	1 3/4 in
1U-5733	Wrench Assembly	1 7/8 in
1U-5734	Wrench Assembly	2 in
1U-5735	Wrench Assembly	2 1/8 in
1U-5736	Wrench Assembly	2 1/4 in

Heavy-Duty Adjustable End Wrenches

- Designed for heavy-duty work
- Accommodate many of the larger nuts on Caterpillar and other equipment
- Cadmium coated to prevent rusting
- Jaw adjusts in 1/8 inch increments

Part No.	Jaw Range	Jaw Thickness	Length	Weight
8F-2243	69.9-120.7 mm (2 3/4 in-4 3/4 in)	28.6 mm (1 1/8 in)	914.4 mm (36 in)	10 kg (22 lb)
8F-2239	34.9-73.0 mm (1 3/8 in-2 7/8 in)	22.2 mm (7/8 in)	609.6 mm (24 in)	5 kg (11 lb)



ServiceParts		
Component	8F-2243	8F-2239
Movable Jaw	8F-2245	8F-2241
Bolt	8F-2246	8F-2242
Nut	5B-3254	5B-3254
Handle		8F-2240

Heavy-Duty Box Wrenches

- Used to tighten large fasteners such as hitch pins

Item	Part No.	Description	Size
1	5P-7320	Box Wrench	38.1 mm (1.50 in)
2	9U-7376	Sledge Wrench	460.0 mm (1.81 in)
3	8T-3196	Wrench	47.6 mm (1.88 in)
4	5P-1661	Sledge Wrench	108.0 mm (4.25 in)



Adjustable Wrenches



Part No.	Jaw Range	Length	Finish
214-7322	24.0 mm (.94 in)	203.2 mm (8.00 in)	Black Oxide
214-7323	29.0 mm (1.13 in)	254.0 mm (10.00 in)	Black Oxide
214-7330	33.0 mm (1.31 in)	304.8 mm (12.00 in)	Black Oxide
214-7332	42.0 mm (1.66 in)	381.0 mm (15.00 in)	Black Oxide

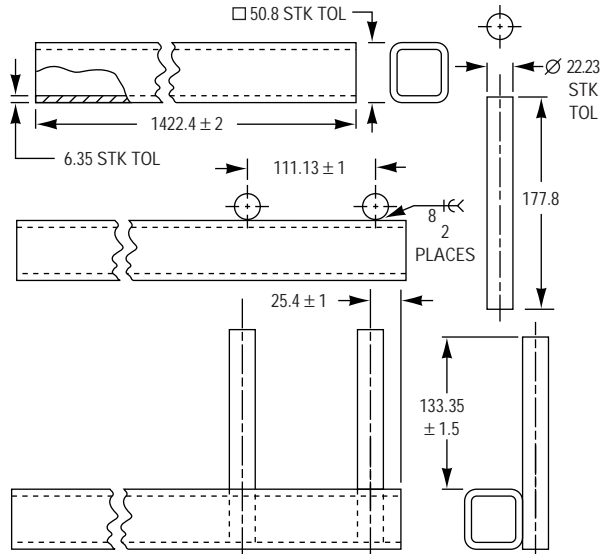
FT2798 Track Bar Assembly

SMCS Code: 4197-025
Model: 267 and 277 Skid Steer Loader with Rubber Track
Essential Tool
Warranty: None

- Used to rotate tensioning wheels to increase track tension
- Material (tubing): SAE1026 steel
- Material (rod): SAE4140 steel

Reference

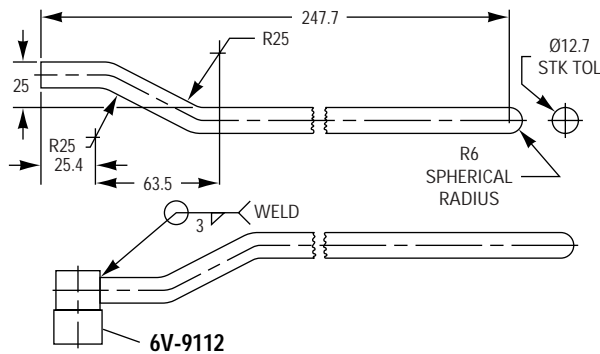
SEBU7494 Operation and Maintenance Manual



FT2778 Pump Wrench Assembly

SMCS Code: 3108-025
Model: All Skid Steer Loaders
Warranty: None

- Used to adjust neutral adjusting bolt on hystat piston pump
- Socket: 6V-9112
- Handle material: SAE4140 steel



1U-8760 Wrench for Special Applications

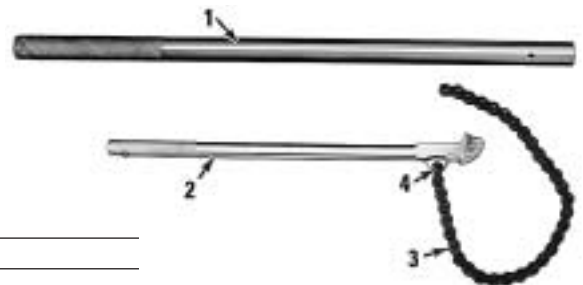
- Used for holding cylinders and other irregularly shaped objects—works for parts of most any size and shape
- Special head design for turning wrench in either direction
- Ratcheting action makes it possible to regrip without removal.
- Chain wrench capacity: 1/2 inch to 4 3/4 inch O.D.



3P-1535 Chain Wrench Group

SMCS Code: 4303-017, 5105-017, 5309-017, 5102-017
Model: 16G, 518, 613C, 615, 910

- Used to remove and install threaded crown, which is used to retain head on later hydraulic cylinders
- General purpose tool that can be used in many applications



Item	Part No.	Description
1	3P-1536	Handle
2	1U-8792	Chain Wrench Assembly, Handle Length 482.6 mm (19.00 in)
3	1U-8791	Chain — part of 1U-8792, 76.2 mm (3.00 in) O.D. Minimum and 171.5 mm (6.75 in) O.D. Maximum
4	3P-1537	Pin — part of 1U-8792

1U-7608 Chain Wrench

SMCS Code: 5102-017

Model: D6H, D7H and motor graders prior to April 1987 G-Series production

- Used to remove and install threaded crowns on hydraulic cylinders
- Can be used on threaded crowns up to 203.0 mm (8.00 in) in diameter
- Can be used with breaker bars, ratchets, and torque wrenches
- Grips cylindrical objects for assembly or disassembly
- Black oxide finish, high carbon steel
- 19.0 mm (.75 in) square drive
- Rated capacity of 1360 N·m (1000 ft·lb)



Head length	114.3 mm (4.50 in)
Head width	54.0 mm (2.13 in)
Head thickness	34.9 mm (1.38 in)
Chain length	711.2 mm (28.00 in)
Weight	.86 kg (1.90 lbs)

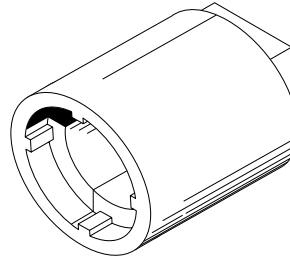
174-9536 Lock Nut Spanner Wrench

SMCS Code: 5050-010

Model: CV16 Vibratory Compactor for Skid Steer Loaders

Essential Tool

- Used to remove and install 2B-3457 Lock Nut on vibratory compactors
- Reduces service time by making lock nut removal and installation quick and easy
- Made of high quality, heat-treated steel



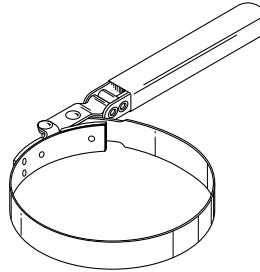
Square drive	1/2 in
Number of teeth	4
Tooth width	5.9 mm (.23 in)

187-2718 Filter Wrench

SMCS Code: 5050-011

Model: Various Models — including Skid Steer Loaders, Compact Wheel Loaders, and Mini-Hex Excavators

- Used to remove spin-on oil and fuel filters
- Makes filter removal quick and easy
- Fits filter diameters between 88.9 to 98.6 mm (3.50 to 3.88 in)



185-3630 Filter Strap Wrench

SMCS Code: 0602

Model: Caterpillar Engines

- Provides quick, efficient service when removing or installing all spin-on type fuel and oil filters
- Capable of applying higher torques required on larger filters without denting filter can

Item	Part No.	Description
1	6H-7378	Retaining Ring
2	1P-0551	Spring Pin
3	2P-8253	Strap



Tubular Spanner Wrench Dimension Chart



Tubular Spanner Wrench Dimension Chart					
Part No.	Type	No. Teeth	Tooth I.D.	Tooth O.D.	Tooth Width
5P-3518	Sq. Drive	4	.95 in	1.26 in	.11 in
5P-2190	Sq. Drive	4	1.25 in	1.62 in	.16 in
2P-2317	Sq. Drive	4	1.38 in	1.75 in	.16 in
1S-4208	Bar Drive	9	1.56 in	2.06 in	.14 in
1P-2381	Dbl. Ended	4	1.59 in	2.25 in	.16 in
7F-1929	Dbl. Ended	4	1.80 in	2.50 in	.22 in
6V-4071	Sq. Drive	4	1.89 in	2.63 in	.17 in
140-3073	Sq. Drive	4	1.93 in	2.50 in	.14 in
1S-0578	Bar Drive	4	2.00 in	2.25 in	.20 in
FT1641	Sq. Drive	4	2.07 in	2.75 in	.20 in
1U-8306	Sq. Drive	4	2.09 in	2.63 in	.19 in
FT1931	Hex	4	2.12 in	2.25 in	.22 in
1S-4207	Bar Drive	9	2.31 in	2.81 in	.14 in
152-7159	Sq. Drive	4	2.33 in	3.65 in	.24 in
5P-4756	Sq. Drive	4	2.37 in	3.00 in	.19 in
6F-3011	Bar Drive	4	2.39 in	2.75 in	.22 in
9U-6263	Sq. Drive	4	2.40 in	—	.25 in
6F-3013	Bar Drive	4	2.53 in	2.75 in	.22 in
FT0529	Hex Drive	4	2.53 in	2.75 in	.22 in
6V-4072	Sq. Drive	4	2.75 in	3.50 in	.24 in
FT1065	Bar Drive	4	2.75 in	3.00 in	.22 in
1S-4206	Bar Drive	9	2.88 in	3.38 in	.14 in
5P-0964	Sq. Drive	4	2.88 in	3.13 in	.35 in
FT1590	Sq. Drive	4	3.00 in	3.35 in	.20 in
6V-2065	Sq. Drive	4	3.14 in	4.00 in	.25 in
6V-4070	Sq. Drive	4	3.14 in	3.88 in	.24 in
6V-4041	Sq. Drive	4	3.14 in	3.38 in	.24 in
4C-6747	Sq. Drive	4	3.38 in	4.48 in	.16 in
4C-6931	Sq. Drive	4	3.40 in	3.88 in	.25 in
FT1196	Sq. Drive	4	3.45 in	4.25 in	.30 in
FT2338	Sq. Drive	4	3.50 in	4.00 in	.50 in
5P-4770	Sq. Drive	4	3.50 in	4.75 in	.26 in
6V-4074	Sq. Drive	4	3.66 in	4.38 in	.35 in
6V-3135	Sq. Drive	4	3.66 in	4.29 in	.35 in
4C-9831	Sq. Drive	4	3.61 in	4.00 in	.24 in
5P-6153	Sq. Drive	4	3.69 in	4.13 in	.34 in
1H-2367	Dbl. Ended	6	3.75 in	4.25 in	.81 in
		8	3.75 in	4.25 in	.34 in
5P-2684	Sq. Drive	4	3.78 in	4.25 in	.52 in
5P-4727	Chain Drive	4	3.93 in	4.38 in	.32 in
6V-3133	Sq. Drive	4	3.93 in	4.56 in	.34 in
FT2341	Hex	28	3.93 in	4.71 in	.23 in

Tubular Spanner Wrench Dimension Chart					
Part No.	Type	No. Teeth	Tooth I.D.	Tooth O.D.	Tooth Width
FT1532	Sq. Drive	4	3.94 in	4.25 in	.52 in
6V-4073	Sq. Drive	4	3.94 in	4.75 in	.35 in
5P-7323	Sq. Drive	4	3.94 in	4.69 in	.37 in
FT1846	Sq. Drive	4	3.20 in	3.50 in	.31 in
FT1847	Sq. Drive	4	4.00 in	4.50 in	.31 in
9U-6237	Sq. Drive	4	4.00 in	5.00 in	.36 in
4C-6369	Sq. Drive	4	4.06 in	5.00 in	.38 in
4C-8502	Sq. Drive	4	4.09 in	4.85 in	.38 in
8T-2838	Sq. Drive	4	4.13 in	5.03 in	.36 in
5P-4204	Sq. Drive	8	4.25 in	4.50 in	.28 in
9S-9099	Bar Drive	4	4.31 in	4.75 in	.20 in
FT0554	Hex Drive	4	4.34 in	4.98 in	.31 in
5P-0316	Center Hub	4	4.38 in	4.75 in	.35 in
8T-2839	Sq. Drive	4	4.38 in	5.25 in	.36 in
FT1983	Hex	4	4.60 in	5.60 in	.36 in
5P-4202	Sq. Drive	8	4.69 in	5.00 in	.24 in
2P-2345	Sq. Drive	3	4.75 in	5.75 in	.86 in
FT1848	Sq. Drive	4	4.80 in	5.26 in	.23 in
5P-2978	Sq. Drive	8	4.88 in	5.25 in	.35 in
6V-3132	Sq. Drive	4	4.91 in	5.54 in	.36 in
6V-3158	Sq. Drive	8	4.91 in	6.63 in	.38 in
FT0553	Hex Drive	4	5.13 in	5.76 in	.31 in
9S-7365	Center Hub	8	5.30 in	5.75 in	.44 in
5P-0295	Center Hub	8	5.30 in	5.75 in	.44 in
6V-0005	Sq. Drive	4	5.38 in	5.75 in	.39 in
6V-3134	Sq. Drive	4	5.38 in	6.010 in	.48 in
5P-4201	Sq. Drive	8	5.50 in	6.00 in	.24 in
FT1446	Sq. Drive	6	5.65 in	7.50 in	.75 in
5P-3042	Center Hub	8	5.67 in	6.10 in	.44 in
9S-9066	Center Hub	8	5.68 in	6.12 in	.44 in
FT825	Sq. Drive	4	5.78 in	6.16 in	.47 in
4C-8500	Sq. Drive	4	5.85 in	6.25 in	.43 in
FT1446	Sq. Drive	4	5.70 in	7.50 in	.75 in
FT1898	Hex	4	5.94 in	7.46 in	—
5P-3568	Sq. Drive	8	5.97 in	6.50 in	1.02 in
140-1770	Sq. Drive	6	6.12 in	7.00 in	.36 in
5P-3044	Sq. Drive	8	6.75 in	7.00 in	.39 in
1M-6760	Bar. Drive	8	7.13 in	7.75 in	1.37 in
6H-4137	Bar. Drive	8	7.72 in	8.63 in	.19 in
154-9320	Sq. Drive	4	7.95 in	9.50 in	1.10 in
156-5875	Sq. Drive	4	10.94 in	12.13 in	1.09 in
205-0633	Sq. Drive	4	5.70 in	5.95 in	.39 in

174-9696 Final Drive Spanner Wrench

SMCS Code: 4050-006, 0700-525
Model: 555, 570, 580 Tree Harvesters

- Used to remove double bearing nut on final drive

Drive	Square
Number of teeth	3
Tooth width	10.7 mm (.42 in)
Inside tooth diameter	87.0 mm (3.40 in)
Outside tooth diameter	96.3 mm (3.79 in)

Cylinder Spanner Wrenches

SMCS Code: 0700-006, 525
Model: 554, 574 Skogsjan Forwarders

- Used to remove nuts on boom and stick group

Part No.	Description	Used on	Drive	No. of Teeth	Tooth Width	Inside Tooth Diameter	Outside Tooth Diameter
174-9465	Cylinder Spanner Wrench	170-1384 Nut	square	3	6.5 mm (.25 in)	77.7 mm (3.057 in)	85.5 mm (3.37 in)
174-9467	Cylinder Spanner Wrench	170-0949 Nut	square	3	6.5 mm (.25 in)	67.8 mm (2.27 in)	76.4 mm (3.01 in)
174-9468	Cylinder Spanner Wrench	170-1385 Nut	square	3	7.3 mm (.29 in)	91.2 mm (3.59 in)	100.0 mm (3.90 in)

Nut Spanner Wrenches



Item	Part No.	Description	Diameter Range
1	1P-2856	Spanner Wrench	155.6-222.3 mm (6.13-8.75 in)
2	1P-2854	Spanner Wrench ¹	114.3-158.8 mm (4.50-6.25 in)
3	1P-2853	Spanner Wrench ¹	50.8-120.7 mm (2.00-4.75 in)
4	1P-2852	Spanner Wrench ¹	31.8-76.2 mm (1.25-3.00 in)
5	1P-2851	Spanner Wrench ¹	19.1-50.8 mm (.75-2.00 in)

¹ Part of 1P-2855 Spanner Wrench Group

5P-8675 Extension Handle for 5P-3520 Cylinder Spanner Wrench

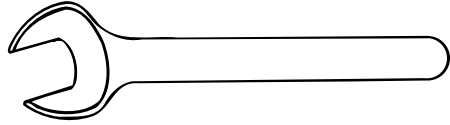
- Provides a 3/4 inch drive handle for the 5P-3520 Spanner Wrench
- Reading will be half the applied torque if 9S-7352 Torque Wrench is combined with the 5P-3520 Spanner Wrench and the 5P-8675 Extension Handle.

Item	Part No.	Description
1	5P-8675	Extension Handle
2	5P-3520	Cylinder Spanner Wrench
3	6H-3956	Spring Pin



Special Open End Wrenches

- Fit various nuts, bolt heads, etc. that are too large for ordinary hand tools



Size	Part No.
1 5/8 in	9B-1496
1 7/8 in	0V-0455
2 9/32 in	8F-2239
2 3/4 in	9F-3869
3 1/2 in	1B-7412

214-7335 Wrench Set, Double End Flare Nut, 3 Piece

Warranty: Lifetime



Size	Part No.	Length
3/8 in x 7/16 in	214-7314	147.6 mm (5.81 in)
1/2 in x 9/16 in	214-7315	173.0 mm (6.81 in)
5/8 in x 11/16 in	214-7317	200.8 mm (7.91 in)

Individual Offset Wrenches, Double End Flare Nut

Warranty: Lifetime



Size	Part No.	Length
13/32 in and 15/32 in	5P-7254	127.0 mm (5.00 in)
14/32 in and 19/32 in	5P-7255	165.1 mm (6.50 in)
25/32 in and 29/32 in	5P-7256	190.5 mm (7.50 in)
3/4 in and 1 in	9S-1743	203.2 mm (8.00 in)

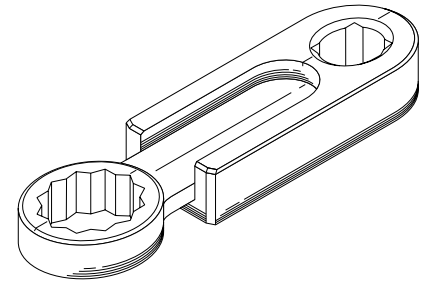
159-3327 Hex Wrench

SMCS Code: 3200-000, 0721, 3203

Model: 216, 226, 228, 236, 246, 248, 252, and 262 Skid Steer Loaders

Essential Tool

- Used to remove hydrostatic pump assembly mounting bolts
- 21.0 mm hex end
- 1/2 in square drive



200-1931 Hex Bit Set, 7 Piece

- Black oxide finish bits
- Chrome plated case
- 3.00 inch long bits
- Bit sizes: 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm, 4.0 mm, 5.0 mm, 6.0 mm



9S-1742 Hex Bit Set, 9 Piece

- Black oxide finish
- 3 inch bits
- 3 1/2 inch cadmium case
- Sizes: .05 inch, 1/16 inch, 5/64 inch, 3/32 inch, 7/64 inch, 1/8 inch, 9/64 inch, 5/32 inch, 3/16 inch



200-1928 "L" Shaped Hex Key Wrench Group, Inch, 13 Piece

- Sizes: .05 inch, 1/16 inch, 5/64 inch, 3/32 inch, 7/64 inch, 1/8 inch, 9/64 inch, 5/32 inch, 3/16 inch, 7/32 inch, 1/4 inch, 5/16 inch and 3/8 inch
- CAT® branded plastic holder included



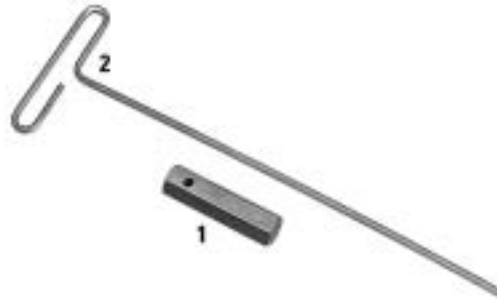
200-1929 "L" Shaped Hex Key Wrench Group, Metric, 9 Piece

- Sizes: 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm, 4.0 mm, 5.0 mm, 6.0 mm, 8.0 mm, and 10.0 mm
- CAT® branded plastic holder included



Hollow Head Screw Hex Wrenches

- Used to remove and install hollow head screws



Item	Part No.	Description	Size
1	1P-3566	Bit	9/16 in
	1P-3567	Bit	3/4 in
2	6V-0115	Wrench	1/8 in
	6V-2104	Wrench	3/32 in
	5P-4205	Wrench	5/32 in
	5P-4206	Wrench	9/64 in

Special Large Socket Wrenches



Part No.	Hex Size	Usable Depth
1/2 inch Drive		
4C-6172 ¹	1.13 in	3.00 in
3B-7012	2.00 in	4.50 in
3/4 inch Drive		
3B-6352	2.63 in	4.50 in
1B-4657	2.75 in	4.50 in
7M-7809	2.88 in	7.25 in
5P-0954	3.00 in	4.50 in
2B-1730	3.39 in	4.50 in
5P-3540	3.50 in	4.50 in
1U-6689	3.50 in	6.30 in

Part No.	Hex Size	Usable Depth
3/4 inch Drive		
2B-1731	3.63 in	4.50 in
1U-6690	4.00 in	6.30 in
5P-7367 ²	4.29 in	1.50 in
125-5723	4.50 in	5.75 in
1U-6691	5.50 in	7.90 in
1U-6692	5.75 in	7.90 in
Bar Turn		
9F-9963	1.459 in	8.38 in

¹ Special for removal of solenoid valves on countershaft transmissions

² Octagon

Lock Removal Socket

- 1/2 inch drive



Part No.	Size
5P-6587	1/2 in Hex
5P-6588	9/16 in Hex
5P-6589	3/4 in Hex

4C-4601 Spark Plug Socket

- 7/8 inch hex, 1/2 inch square drive, 6 point
- 103.1 mm (4.06 in) long
- Special thin wall for use on G3500 and G3600 Engines



9U-7290 Screwdriver Set

Warranty: Lifetime

- Exclusive high-tech handle design for a more comfortable grip and more powerful performance
- Includes a flat 1/4 inch tip and #1 Phillips



162-7804 Black Plastic Handle Screwdriver Set, 6 Piece

Warranty: Lifetime

- Black plastic handles
- 6-piece set
- Includes vinyl pouch



Tip Size	Part No.	Description
1/4	6V-7935	Standard
3/16	6V-7937	Standard
5/16	6V-7933	Standard
3/8	6V-7932	Standard
No. 1	6V-7936	Phillips
No. 2	6V-7934	Phillips

Black Plastic Handled Screwdrivers

Warranty: Lifetime

- Nickel/chrome-plated blades with vapor-blasted tips for best possible grip on screws
- Heavy duty, high impact handle
- Shape of black plastic handle provides the optimum fit to the human hand.



Standard Tip, Round Shank

Standard Tip, Round Shank Screwdrivers		
Tip Size	Part No.	Length
1/8 in	6V-9124	120.7 mm (4.75 in)
1/4 in	6V-7938	100.1 mm (3.94 in)
1/4 in	6V-7935	212.9 mm (8.38 in)
3/16 in	6V-7937	239.8 mm (9.44 in)
5/16 in	6V-7933	277.1 mm (10.91 in)
3/8 in	6V-7932	342.1 mm (13.5 in)
1/2 in	6V-7931	452.0 mm (17.79 in)



Phillips Tip, Round Shank

Phillips Tip, Round Shank Screwdrivers		
Tip Size	Part No.	Length
No. 1	6V-7936	169.2 mm (6.66 in)
No. 2	6V-7934	213.6 mm (8.41 in)
No. 3	214-7342	276.4 mm (10.88 in)

9U-7291 Ratcheting Screwdriver, 5 Bits

Warranty: Lifetime

- 8 3/4 inch long overall; 3 25/32 inch stainless steel shank length
- 3/16 inch and 9/32 inch flat tips, #1 and #2 Phillips, and #2 Pozidriv store in hollow handle.



9U-7328 Tool Bit Set, 6-piece

- Includes #1, #2, and #3 Phillips and 6.5 mm x 1.2 mm, 6.0 mm x 1.0 mm, and 5.5 mm x 0.8 mm flat tips
- High impact, pocket-sized ABS plastic case
- Convenient magnetic bit holder (to fit power drills or for use with the case as a hand-held screwdriver) is included.



Individual Extractors

- Useful in maintenance departments, machine shops, garages, workshops, etc., to remove broken screws, bolts or other threaded parts
- First, drill a hole into the broken part. Insert the extractor. By twisting to the left, the extractor will grip into the wall of the hole and the broken part can be backed out without damaging threads.



Extractor Size	Cat Part No.	Drill size to use	Used to remove Screws and Bolts	Used to remove Pipe
Left Hand Spiral Tapered Flutes				
1	4C-3364	5/64 in	2.5 mm - 6.0 mm (3/16 in - 1/4 in)	—
2	4C-3365	7/64 in	6.0 mm - 8.0 mm (1/4 in - 5/16 in)	—
3	4C-3366	5/32 in	8.0 mm - 12.0 mm (5/16 in - 7/16 in)	—
4	4C-3367	1/4 in	12.0 mm - 14.0 mm (7/16 in - 9/16 in)	—
5	4C-3368	17/64 in	14.0 mm - 20.0 mm (9/16 in - 3/4 in)	1/8 in
6	4C-3369	13/32 in	20.0 mm - 24.0 mm (3/4 in - 1 in)	—
7	4C-3370	17/32 in	24.0 mm - 35.0 mm (1 in - 1 3/8 in)	—
8	4C-3371	13/16 in	35.0 mm - 44.0 mm (1 3/8 in - 1 3/4 in)	3/4 in
9	4C-3372	1 1/16 in	44.0 mm - 54.0 mm (1 3/4 in - 2 1/8 in)	1 in
10	4C-3373	1 5/16 in	54.0 mm - 63.0 mm (2 1/8 in - 2 1/2 in)	1 1/4 in
Straight Tapered Flutes				
1	4C-3374	9/64 in	2.5 mm - 8.0 mm (1/4 in - 5/16 in)	—
2	4C-3375	3/16 in	9.0 mm - 10.0 mm (3/8 in)	—
3	4C-3376	15/64 in	12.0 mm (7/16 in)	1/8 in
4	4C-3377	5/16 in	13.0 mm - 14.0 mm (1/2 in - 9/16 in)	1/4 in
5	4C-3378	3/8 in	15.0 mm - 16 mm (5/8 in)	3/8 in
6	4C-3379	15/32 in	17.0 mm - 19.0 mm (3/4 in)	1/2 in
7	4C-3380	9/16 in	22.0 mm (7/8 in)	—

Extractor Sets

- For removing broken screws and bolts (eliminates re-drilling and retapping for a larger screw)

4C-3381 Extractor Set, Left Hand Spiral	
Part No.	To remove bolts, screws and pipes:
4C-3364	3/32 in to 5/32 in
4C-3365	5/32 in to 7/32 in
4C-3366	7/32 in to 9/32 in
4C-3367	9/32 in to 3/8 in and 1/8 in Pipe
4C-3368	3/8 in to 5/8 in and 1/4 in Pipe
4C-3369	5/8 in to 7/8 in and 3/8 in Pipe

4C-3383 Extractor Set, Straight Tapered	
Part No.	To remove bolts, screws and pipes:
4C-3374	3/16 in to 5/16 in
4C-3375	3/8 in
4C-3376	7/16 in and 1/8 in Pipe
4C-3377	1/2 in to 9/16 in and 1/4 in Pipe
4C-3378	5/8 in and 3/8 in Pipe
4C-3379	3/4 in and 1/2 in Pipe

4C-3382 Extractor Set, Left Hand Spiral	
Part No.	To remove bolts, screws and pipes:
4C-3364	3/32 in to 5/32 in
4C-3365	5/32 in to 7/32 in
4C-3366	7/32 in to 9/32 in
4C-3367	9/32 in to 3/8 in and 1/8 in Pipe
4C-3368	3/8 in to 5/8 in and 1/4 in Pipe
4C-3369	5/8 in to 7/8 in and 3/8 in Pipe
4C-3370	7/8 in to 1 1/8 in and 1/2 in Pipe
4C-3371	1 1/8 in to 1 3/8 in and 3/4 in Pipe
4C-3372	1 3/8 in to 2 in and 1 in Pipe



4C-3382

4C-5530 Extractor Set, Straight Tapered	
Part No.	To remove bolts, screws and pipes:
4C-3374	3/16 in to 5/16 in
4C-3375	3/8 in
4C-3376	7/16 in and 1/8 in Pipe
4C-3377	1/2 in to 9/16 in and 1/4 in Pipe
4C-3378	5/8 in and 3/8 in Pipe



4C-3384

4C-3384 Extractor Set, Left Hand Spiral, in vinyl pouch	
Part No.	To remove bolts, screws and pipes:
4C-3364	3/32 in to 5/32 in
4C-3365	5/32 in to 7/32 in
4C-3366	7/32 in to 9/32 in
4C-3367	9/32 in to 3/8 in and 1/8 in Pipe
4C-3368	3/8 in to 5/8 in and 1/4 in Pipe

1B-9925 Left Hand Spiral Screw Extractor

- Originally used for the removal of burner tubes in the D70, D65 Tractors and D9900 Power Units
- Used to remove broken screws and bolts
- Eliminates re-drilling and retapping for larger screw



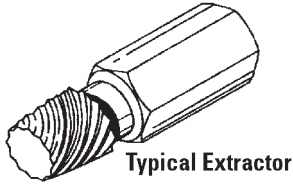
Turn	1/2 in
Spiral length	1 3/4 in
Taper per foot	1 3/8 in
Square drive	5/8 in
Overall length	10 1/2 in

134-5336 Extractor Set

SMCS Code: 0671
Model: All

- Used to remove broken studs, screws, pipes, bolts, and alemite fittings (eliminates re-drilling and retapping for larger bolt)
- Set comes with 25 most widely used sizes, 1/8 through 7/8 inch
- Used with socket or flat wrench
- Will also remove "Break Away Bolts" on some fuel systems built after January 1996

- New extractor grips a larger cross section than traditional extractors, because of finely knurled multi-spline
- Made from tough C4150 alloy steel for long life
- Pilot drill diameter is same as extractor size (for example 5/16 extractor uses a 5/16 diameter drill)
- Can also be ordered individually



Typical Extractor

Part No.	Size	Hex Dimension	Bolt Size
134-5337	1/8 in	1/2 in	#12
134-5338	5/32 in	1/2 in	1/4 in
134-5339	3/16 in	1/2 in	5/16 in
134-5340	7/32 in	1/2 in	3/8 in
134-5341	1/4 in	1/2 in	7/16 in
134-5342	9/32 in	1/2 in	1/2 in
134-5343	5/16 in	1/2 in	9/16 in
134-5344	11/32 in	1/2 in	5/8 in
134-5345	3/8 in	1/2 in	11/16 in
134-5346	13/32 in	1/2 in	3/4 in
134-5347	7/16 in	5/8 in	13/16 in
134-5348	15/32 in	5/8 in	7/8 in
134-5349	1/2 in	5/8 in	15/16 in

Part No.	Size	Hex Dimension	Bolt Size
134-5350	17/32 in	3/4 in	1 in
134-5351	9/16 in	3/4 in	1 1/16 in
134-5352	19/32 in	3/4 in	1 1/8 in
134-5353	5/8 in	3/4 in	1 3/16 in
134-5354	21/32 in	7/8 in	1 1/4 in
134-5355	11/16 in	7/8 in	1 5/16 in
134-5356	23/32 in	7/8 in	1 3/8 in
134-5357	3/4 in	7/8 in	1 7/16 in
134-5358	25/32 in	1 in	1 1/2 in
134-5359	13/16 in	1 in	1 9/16 in
134-5360	27/32 in	1 in	1 5/8 in
134-5361	7/8 in	1 in	1 11/16 in

Left Hand Drills

- Index set not available
- 135° split point
- Self-centering capability
- M-7 steel
- Excellent for removing broken studs and fasteners



Part No.	Size
4C-3335	1/16 in
4C-3336	5/64 in
4C-3337	3/32 in
4C-3338	7/64 in
4C-3339	1/8 in
4C-3340	9/64 in
4C-3341	5/32 in
4C-3342	11/64 in
4C-3343	3/16 in
4C-3344	13/64 in
4C-3345	7/32 in
4C-3346	13/64 in
4C-3347	1/4 in
4C-3348	17/64 in
4C-3349	9/32 in

Part No.	Size
4C-3350	19/64 in
4C-3351	5/16 in
4C-3352	21/64 in
4C-3353	11/32 in
4C-3354	23/64 in
4C-3355	3/8 in
4C-3356	25/64 in
4C-3357	13/32 in
4C-3358	27/64 in
4C-3359	7/16 in
4C-3360	28/64 in
4C-3361	15/32 in
4C-3362	31/64 in
4C-3363	1/2 in

2P-5535 Stud Remover Set

- Extractors are not threaded and thus will accommodate studs with either coarse or fine threads.
- Saves time when removing a number of studs and eliminates thread damage

Reference

GMG02078 Special Instruction

Item	Part No.	Description
1	2P-5527	Extractor, 3/4 in
2	2P-5528	Extractor, 7/8 in
3	2P-5529	Extractor, 1 in
4	2P-5497	Body
5	2P-5538	Bolt
6	2P-5537	Washer



Stud Removers

- Replaces 5P-0250 Group
- Handles larger studs



Typical Collet



Part No.	Description	Size
1U-8582	Main Housing	
1U-8583	Collet	1 1/2-6-2B
1U-8584	Collet	1 1/2-12-2B
1U-9994	Collet	1 3/8-6-2B
1U-9995	Collet	1 3/8-12-2B
1U-9996	Collet	1 1/4-7-2B
1U-9997	Collet	1 1/4-12-2B
1U-9998	Collet	1 1/8-7-2B
1U-9999	Collet	1 1/8-12-2B

8S-1378 Stud Remover and Resetter Tool Set, 1/4 through 5/8 in

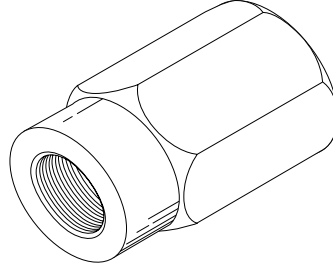


Part No.	Description	Size
8S-1365	Collet	1/4 in - 20
8S-1366	Collet	1/4 in - 28
8S-1367	Collet	5/16 in - 18
8S-1368	Collet	5/16 in - 24
8S-1369	Collet	3/8 in - 16
8S-1370	Collet	3/8 in - 24
8S-1371	Collet	7/16 in - 14
8S-1372	Collet	7/16 in - 20
8S-1373	Collet	1/2 in - 13
8S-1375	Collet	9/16 in - 12
8S-1376	Collet	9/16 in - 18
8S-1346	Collet	5/8 in - 11
8S-1377	Collet	5/8 in - 18
8S-1364	Box	
Not Shown		
8S-1374	Collet	1/2 in - 20
8S-1347	Housing	

Metric Stud Installers

Essential Tool

- Used to quickly and easily install metric studs (not for stud removal)
- Can be used with standard wrench or impact wrench
- Reduces possible damage to threads
- Designed to easily release from stud after installation
- Ensures reliable bolted joint (reduces chance of stud backout)



Part No.	Size
204-7932	M16 x 2.0
204-7933	M20 x 2.5
204-7934	M24 x 3.0
204-7935	M30 x 3.5
204-7936	M36 x 3.0

1U-9382 Hydraulic Nut Splitter

Warranty: Manufacturer's

- 25 ton capacity, 2 1/4 inch across flats
- Accommodates hex nuts from 1 1/8 inch to 2 1/4 inch
- Special heat-treated cutter blade is pushed into the nut by a hydraulic ram, cracking it in half. Once cracked, the blade returns to the starting position and the nut is removed.
- Service Part: 1U-9383 Replacement Cutter Blade



4C-4712 Hydraulic Nut Splitter

Warranty: Manufacturer's

- 15 ton capacity
- Accommodates hex nuts from 3/4 inch (bolt size 1/2 inch) to 1 1/2 inch (bolt size: 1 inch)
- Dial in the size of the nut you want to split — align the mark on the chisel with the scale on the frame of the nut splitter.
- Service Part: 4C-4713 Replacement Cutter Blade



Hacksaws



Part No.	Description	Length	Use
194-3552	Hacksaw	350.0 mm (13.78 in)	for use with 12 inch blade; blade tensioning device in handle
208-6183	Hacksaw	419.1 mm (16.50 in)	for use with 12 inch blade

Replacement Hacksaw Blade Sets

Part No.	Teeth	Material	Quantity
1U-9234	12 in-18	Bi-Metal	5
1U-9236	12 in-24	Bi-Metal	5
1U-9238	12 in-32	Bi-Metal	5
1U-9240	12 in-18	High Carbon Steel	5
1U-9242	12 in-24	High Carbon Steel	5
1U-9244	12 in-32	High Carbon Steel	5

Pry Bars

- Flat taper at one end and pointed taper on the other end



Part No.	Description	Size
1U-7587	Rolling Head Pry Bar	152.4 mm (6.00 in)
194-3553	Rolling Head Pry Bar	304.8 mm (12.00 in)
5F-4764	Rolling Head Pry Bar	406.4 mm (16.00 in)
194-3556	Rolling Head Pry Bar	533.4 mm (21.00 in)
1U-7591	Pry Bar	.625 mm x 457.2 mm (.63 in x 18.00 in)
1U-7592	Pry Bar	.75 mm x 609.6 mm (.75 in x 24.00 in)
1U-7593	Pry Bar	.875 mm x 762.0 mm (.88 in x 30.00 in)
4F-5166	Pry Bar	762.0 mm (30.00 in)
4C-5742	Long Pry Bar	1168.4 mm (46.00 in)
4C-5647	Long Pry Bar	1371.6 mm (54.00 in)

Hammers



Item	Part No.	Size	Height	Length	Weight
Ball Peen Hammers					
1	1S-0257	1 1/8 in		298.5 mm (11.75 in)	340.2 g (12 oz)
2	1B-7810	1 5/32 in	113.5 mm (4.47 in)	406.4 mm (16.00 in)	.68 kg (1 1/2 lb)
3	8H-8577	1 1/4 in	128.6 mm (5.06 in)	406.4 mm (16.00 in)	.9 kg (2 lb)
Soft Face Hammers					
4	1S-0258	1 11/16 in	117.5 mm (4.63 in)	330.2 mm (13.00 in)	.9 kg (2 lb)
5	Replacement Tips for 1S-0258: 3S-0460 Medium Tip 3S-0459 Hard Tip				

Multiple Use Hammers



Item	Part No.	Description	Face Diameter ¹	Overall Length ¹	Weight ¹
1	223-1697	Double Face Sledge	22.0 mm (1.00 in)	889.0 mm (35.00 in)	4. kg (10 lb)
2	223-1694	Dead Blow Sledge	70.0 mm (3.00 in)	508.0 mm (20.00 in)	2 kg (5 lb)
3	223-1693	Hand Drilling (Short Handle)	38.0 mm (2.00 in)	273.0 mm (11.00 in)	2 kg (4 lb)
Not shown	223-1698	Double Face Sledge	58.0 mm (2.00 in)	905.0 mm (36.00 in)	5 kg (11 lb)
Not shown	223-1695	Dead Blow Sledge	83.0 mm (3.00 in)	914.0 mm (36.00 in)	5 kg (11 lb)

¹ Dimensions and weights are estimates only

9U-7329 Universal Level

Warranty: Manufacturer's

- Made of high-impact ABS
- Has two easy-to-read Plexiglas vials, one a vertical angle dial adjustable from 0° to 180°
- Includes a clear plastic gift box



Automatic Power Tapes

- 2-color
- Handsome, chrome-finished case
- Removable belt clip



Part No.	Blade Width	Blade Length in Feet	Blade Length in Meters	Graduations in English	Graduations in Metric	Locking Feature
5P-3277	1/2 in	10	3	1 in, 1/10 in	1.0 cm, 1.0 mm	Yes
1U-9366	3/4 in	16	5	1 in, 1/16 in	1.0 cm, 1.0 mm	Yes
1U-9367	1 in	26	8	1 in, 1/16 in	1.0 cm, 1.0 mm	Yes
1U-9368	1 in	30	9	1 ft, 1 in, 1/16 in	—	Yes

Tape Measures

Warranty: Manufacturer's

9U-7327 Tape Measure, 1/2 inch x 10 ft

- Can read dimensions directly on the tape by looking in a see-through window
- Great for inside measurements such as window dimensions.
- Readings in mm and inches



9U-7326 Tape Measure, 1/4 inch x 6 ft

- Black ABS-encased steel tape
- Slim and contemporary—fits easily in your pocket
- Has auto stop and return
- Readings in mm and inches



Steel Tape

- Heavy-duty vinyl covered welded steel case
- Yellow coated 3/8 inch wide blade, 2-color markings, folded steel hook, folding handle
- Graduation — inches in black; feet and 16 inch centers in red, meters in black, centimeters and millimeters in red
- English on one side, metric on the other side



Part No.	Blade Width	Blade Length Feet	Blade Length Meters	Graduations English	Graduations Metric
1U-9369	3/8 in	50	15	1 ft 1 in, 1/16 in	1.0 m, 1.0 cm, 1.0 mm

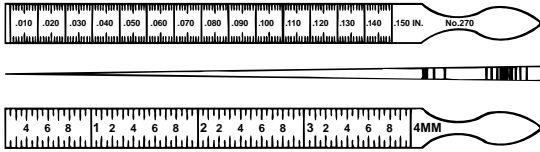
5P-3920 Steel Rule

- Length x width: 304.8 mm (12.00 in) x 25.4 mm (1.00 in)



4C-8733 Taper Gauge

- Used to quickly and conveniently measure openings for shim packs or spacers
- Used in place of thickness gauges
- Made of quality tool steel
- One side graduated in inches, other side in millimeters
- Size: 6.20 in x .40 in (160.0 mm x 11.0 mm)



9U-7289 Stainless Steel Pocket Scale

Warranty: Lifetime

- Shows millimeters and inches on one side
- Only 6 1/4 inch long and 1/2 inch wide
- Has a convenient pocket clip



4C-9798 Block Magnet

- Measures or checks for straight line dimensions on any large, steel structure using magnet restrained string lines
- Fast, economical means of simplifying inspection of large steel structures for alignment, position, parallelism, dimensional accuracy
- Strong enough to hold a tight string over a steel structure
- Magnets can be stacked to obtain string clearance with structure features.
- String not included
- Dimensions: 25.0 mm x 25.0 mm x 50.0 mm (1.00 in x 1.00 in x 2.00 in)
- Weight: 0.166 kg (0.366 lbs)



Combination and Multiple Position Pliers

Warranty: Lifetime



Type	Part No.	Description	Length	Finish	Vinyl Grip
A	6V-6192	Combination Pliers	190.5 mm (7.50 in)	Black Oxide	Yes
A	213-1983	Combination Pliers	159.3 mm (6.30 in)	Chrome	Yes
A	1S-0255	Combination Pliers	163.5 mm (6.4 0in)	Chrome	No
B	214-7347	Multiple Position Pliers	304.8 mm (12.00 in)	Chrome	Yes
B	6V-6195	Multiple Position Pliers	235.0 mm (9.3 0in)	Black Oxide	Yes
C	6V-6194	Needle Nose Pliers	181.0 mm (7.10 in)	Black Oxide	Yes
D	8H-8582	Vise Grip, Straight Jaw	250.0 mm (9.80 in)	Chrome	No
D	214-7348	Vise Grip, Curved Jaw	250.0 mm (9.80 in)	Chrome	No
E	6V-6193	Diagonal Cutter Pliers	185.7 mm (7.30 in)	Black Oxide	Yes
Not shown	212-3607	End Cutter Pliers	187.3 mm (7.40 in)	Black Oxide	Yes

Aluminum Pipe Wrenches

- 10 inch through 24 inch
- 35% lighter than cast iron wrenches
- Heat treated titanium — aluminum alloy handle
- Forged hook jaw
- Heat-treated alloy steel parts interchangeable with iron wrenches



Item	Part No.	Description	Pipe Capacity	Length
1	4C-6974	Aluminum Wrench	14.0 mm - 63.0 mm (.25 in - 2.00 in)	356.0 mm (14.00 in)
2	4C-6975	Aluminum Wrench	14.0 mm - 75.0 mm (.25 in - 2.50 in)	457.0 mm (18.00 in)
3	4C-6976	Aluminum Wrench	14.0 mm - 90.0 mm (1.25 in - 3.00 in)	610.0 mm (24.00 in)
Not shown	4C-6973	Aluminum Wrench	10.0 mm - 48.0 mm (.13 in - 1.50 in)	254.0 mm (10.00 in)

Heavy-Duty Pipe Wrenches

- High-tensile ductile iron handle and hardened tool-steel parts
- Designed to withstand heavy demands



Part No.	Pipe Capacity	Length	Weight
4C-6962	10.0 mm - 48.0 mm (.13 in - 1.50 in)	254.0 mm (10.00 in)	5.4 kg (12 lb)
4C-6963	10.0 mm - 60.0 mm (.13 in - 2.00 in)	305.0 mm (12.00 in)	8.1 kg (18 lb)
4C-6964	14.0 mm - 63.0 mm (.25 in - 2.00 in)	356.0 mm (14.00 in)	9.5 kg (21 lb)
4C-6965	14.0 mm - 75.0 mm (.25 in - 2.50 in)	457.0 mm (18.00 in)	15.0 kg (33 lb)
4C-6972	14.0 mm - 90.0 mm (.25 in - 3.00 in)	610.0 mm (24.00 in)	27.2 kg (60 lb)

Quick Release Tubing Cutters

- Offer the best tracking and easiest cutting available anywhere
- Cut copper, aluminum and steel tubing (not steel pipe)
- With a quick wheel change, they also cut a wide variety of plastic pipe and tubing.



Item	Part No.	O.D. Capacity	Length	Weight	Wheel for Copper, Aluminum, Brass, Steel	Wheel for Stainless Steel
1	4C-6977	3.0 mm - 33.0 mm (.13 in - 1.31 in)	152.0 mm (6.00 in)	0.2 kg (.5 lb)	4C-6980	4C-6981
2	4C-6978	6.0 mm - 60.0 mm (.25 in - 2.63 in)	203.0 mm (8.00 in)	0.5 kg (1.25 lb)	4C-6980	4C-6981
3	4C-6979	10.0 mm - 90.0 mm (.38 in - 3.50 in)	279.0 mm (11.00 in)	1.1 kg (2.5 lb)	4C-6982	—

Retaining Ring Pliers



Item	Part No.	Tip Size	Type
1	1P-1863 (No. 26)	.12 in	External
2	1P-1861 (No. 25)	.09 in	Internal
3	1P-1857 (No. 23)	.07 in	Internal
4	1P-1855 (No. 22)	.04 in	External
5	1P-1859 (No. 24)	.07 in	External
6	1P-1853 (No. 21)	.04 in	Internal



Item	Part No.	Tip Size	Type
1	1P-1864 (No. 26-90)	.12 in	External
2	1P-1862 (No. 25-90)	.09 in	Internal
3	1P-1858 (No. 23-90)	.07 in	Internal
4	1P-1856 (No. 22-90)	.04 in	External
5	1P-1860 (No. 24-90)	.07 in	External
6	1P-1854 (No. 21-90)	.04 in	Internal

5P-5197 External Pliers

- Use to compress or expand large retaining rings
- A double ratchet locks to hold the handles at any given point without hand pressure.
- Gap between the plier tips ranges from 12.7 mm (.50 in) fully closed to 76.0 mm (3.00 in) fully open.



Item	Part No.	Description
1	5P-5197	External Pliers
2	136-1452	Internal Pliers
3	1U-6728	Tip Set
4	1U-6728	Tip Set
Not shown	6V-2062	Tip Set, 90° (Used for 5P-5197)

1U-8758 Pliers

- Used to remove and install the large internal retaining rings in power shift transmissions
- Overall length: 29.00 in (737.0 mm)
- Double ratchet lock
- Pliers include 0.15 in (3.8 mm) diameter tips.
- Service Part: 1U-8759 Replacement Tips (2 per package)



2P-8312 External Retaining Ring Pliers

- Used to remove and install tempered steel retaining rings used in many applications
- Right angle tips to provide the necessary clearance where the lock ring is accessible only from a perpendicular position



1U-7250 Pin Punch Set, 7 Piece

- Hot-formed from fine alloy steel and heat treated for maximum hardness — they hold their edges and points
- Includes pouch

Part No.	Punch Size	Length
1U-7275	1/16 in	111.1 mm (4.38 in)
1U-7276	3/32 in	120.7 mm (4.75 in)
1U-7277	1/8 in	133.4 mm (5.25 in)
1U-7278	5/32 in	139.7 mm (5.50 in)
1U-7279	3/16 in	152.4 mm (6.00 in)
1U-7280	7/32 in	161.9 mm (6.38 in)
1U-7281	1/4 in	171.5 mm (6.75 in)



1U-7260 Drift Punch Set, 5 Piece

- Hot-formed from fine alloy steel and heat treated for maximum hardness — they hold their edges and points
- Includes pouch

Part No.	Punch Size	Length
1U-7282	1/8 in	254.0 mm (10.00 in)
1U-7283	3/16 in	254.0 mm (10.00 in)
1U-7284	7/32 in	254.0 mm (10.00 in)
1U-7285	1/4 in	254.0 mm (10.00 in)
1U-7286	5/16 in	254.0 mm (10.00 in)

1U-7301 Cold Chisel Set, 5 Piece

- Hot-formed from fine alloy steel and heat treated for maximum hardness — they hold their edges and points
- Includes pouch



Part No.	Punch Size	Length
1U-7287	5/16 in	130.2 mm (5.13 in)
1U-7288	3/8 in	136.5 mm (5.38 in)
1U-7289	7/16 in	141.3 mm (5.56 in)
1U-7290	1/2 in	152.4 mm (6.00 in)
1U-7291	5/8 in	171.5 mm (6.75 in)

Individual Chisels and Punch Pieces

- Hot-formed from fine alloy steel and heat treated for maximum hardness — they hold their edges and points



Item	Part No.	Punch Size	Length	Type
1	8H-8578	3/8 in	241.3 mm (9.50 in)	Punch
2	1F-1161	3/4 in	177.8 mm (7.00 in)	Cold Chisel
3	1F-1159	3/16 in	152.4 mm (6.00 in)	Center Punch
4	1U-7292	3/16 in	406.4 mm (16.00 in)	Aligning
Not shown				
	8H-8579	5/32 in	203.2 mm (8.00 in)	Punch
	1F-1160	13/32 in	139.7 mm (5.50 in)	Cold Chisel
	1U-7296	3/16 in	158.8 mm (6.25 in)	Center Punch
	8T-0832	1/4 in	142.7 mm (5.63 in)	Cape Chisel

Rivet Sets

- Available for either “Star” set rivets or “Roll” set rivets
- “Star” set rivets, identified by a star stamped in the head, should be used only where the clinching is done against a non-metallic surface. To form a good clinch, there should be approximately 3/16 inch of rivet extension before the rivet is set.
- “Roll” set rivets, marked with a circle on the head, should be used when clinching is done against metal. To form a good clinch, there should be approximately 1/8 inch of rivet extension before the rivet is set.

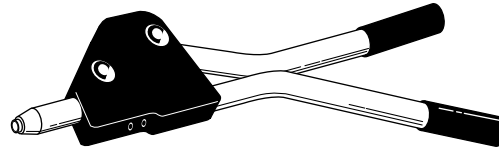


Item	Part No.	Description
1	1P-2874	Roll Set (for 1/4 in rivets)
2	6F-6947	Star Set
3	6F-6946	Roll Set (for 3/16 in rivets)
	6V-7013	Roll Set (for 5/32 in rivets)

129-1063 Riveter Kit

SMCS Code: 4054
Model: M312 Wheeled Excavators

- Used for miscellaneous repairs requiring rivets
- Comes with three different nose pieces
- Overall length: 53.0 cm (21.0 in)



Feeler Gauges



Item	Part No.	Description
1	1U-7234	Feeler Gauge, 25 Blade, .0015 in-.040 in
2	8H-8581	Feeler Gauge, 25 Blade, .0015 in-.025 in
Not shown	1B-9660	Valve Clearance Gauge, 6 Blade, .005 in-.010 in

Plastic Gauges for Checking Clearance

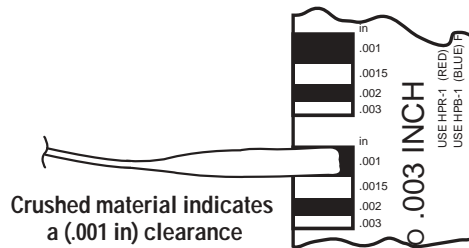
SMCS Code: 1000-082, 0700, 0701, 0714

Model: All Engines or Clearance Between Any Mating Parts

- Used to quickly and easily check clearance between mating parts (main rod and bearing clearance, component side clearance, oil pump cover to gear clearance, etc.)
- Plastigage clearance indicator is an extruded plastic thread that crushes when clamped between two mating parts.
- Available in four color-coded sizes for easy identification
- Clearance thickness is determined by holding crushed indicator material against paper packaging (refer to illustration).
- Any plastic residue on parts can be quickly removed with component cleaner.
- One indicator per package
- Overall length: 30.0 cm (12.00 in)

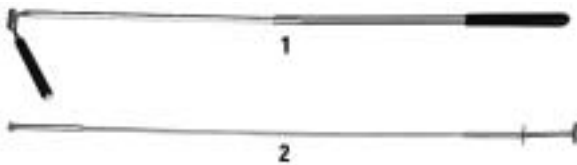


Typical Package with One Indicator



Part No.	Color	Clearance Range
198-9142	Green	0.025 to 0.076 mm (.001 to .003 in)
198-9143	Red	0.051 to 0.152 mm (.002 to .006 in)
198-9144	Blue	0.102 to 0.229 mm (.004 to .009 in)
198-9145	Yellow	0.230 to 0.510 mm (.009 to .020 in)

Magnets



Item	Part No.	Description
1	1U-7262	Telescoping Magnet
2	146-2728	Flexible Pickup Tool

Putty Knife/Scraper

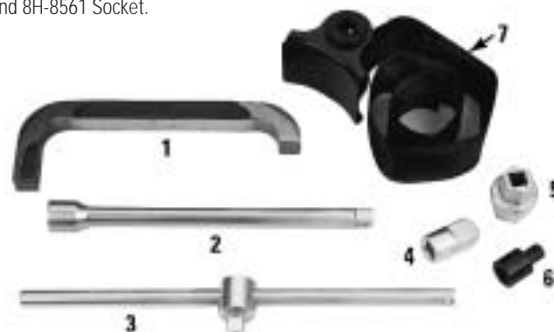


Part No.	Description	Size
8H-8580	Scraper (Not shown)	38.1 mm (1.50 in) wide

Filter and Plug Removal and Installation Tools

- Used to remove and install drain and fill plugs
- Most hexagonal plugs can also be removed and installed using the 213-1985 Sliding T-Handle and 8H-8561 Socket.

Item	Part No.	Description
1	1S-2475	Wrench, 3/4 in square
2	8H-8559	Extension, 1/2 in drive, 279.0 mm (11.00 in) long
3	213-1985	Sliding T-Handle, 1/2 in drive
4	212-8145	Plug Socket, 1/2 in Female, 3/4 in Male
5	212-8146	Drain Plug Socket, 1/2 in Female, 1 in and 1 1/2 in Hex
6	6V-0092	Plug Socket, 1/2 in Female, 3/8 in square. Male
7	185-3630	Strap Wrench Assembly



Cab Glass Installation Tools

- For installing the filler strips around the glass in cabs

Part No.	Description
4C-9946	Filler Strip Tool Assembly
5H-4845	Seal Installation Tool Assembly
5H-4846	Handle
5H-4847	End
5H-4848	Bit

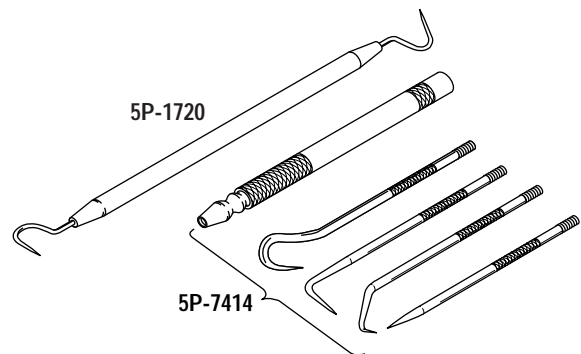


5P-1720 Seal Pick

5P-7414 Seal Pick Kit

5P-1720

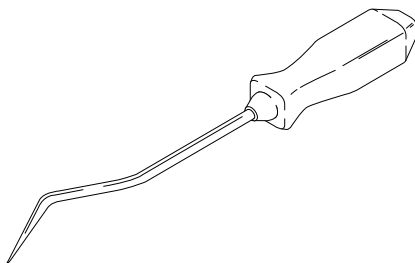
- Used to remove and install all types of oil seals
- One end of pick is pointed for prying out flexible seals.
- Blunt, hook end is used to align seals for installation and to eliminate the twist that occurs when installing O-ring or quad-ring seals.
- Both ends of the pick are hardened and provide much greater strength than would normally be expected from a tool this size.



195-4609 Seal Pick

Model: All Hydraulic Cylinders

- Used to remove cylinder rod seals
- Large size allows faster and easier removal of seals from large hydraulic cylinders
- Heavy-duty design
- Overall length: 248.0 mm (9.80 in)



4C-4870 Utility Knife

- A "slide lock" pushbutton knife
- 152 mm (6 in) long
- Includes 2 blades stored in the handle
- Service Part: 4C-4871 Replacement Blade Set, .635 mm (0.025 in), Qty: 100



Scratch Brushes

- Hand scratch brushes are excellent for removing rust, scale, old paint, chips and dirt, and for cleaning castings and metal parts.
- Provide long, effective service at extremely low cost



Part No.	Description	Size
1U-9915	Curved Handle Brush	.014 in (3 x 19 Row)
1U-9916	Curved Handle Brush	.012 in (4 x 19 Row)
1U-9917	Shoe Handle Brush	.014 in (4 x 16 Row)
1U-9918	Inspection Stainless Brush	.006 in (3 x 7 Row)

160-0774 Corner Cleaner Wire Brush

- Quickly removes flaking paint, rust, and scale
- Handy small size with pointed end works well in hard to reach areas
- Full size handle with finger grips and thumb rest provides added control and comfort
- Made of tough polypropylene
- Overall length: 254.0 mm (10.00 in)



160-0772 Longneck Wire Brush

- Excellent for removing rust, scale, old paint, chips, or dirt
- Unique wrap-around handle protects your fingers
- Full size handle and molded finger grips add control and reduce fatigue
- Over 80 yards of wire for maximum performance
- Made of tough polypropylene
- Heavy-duty steel scraper has a baked-on, rust resistant finish.
- Scraper is permanently secured to brush.
- Scraper width: 76.2 mm (3.00 in)
- Overall length: 330.2 mm (13.00 in)



160-0775 Industrial Wire Scrubber

- Quickly removes flaking paint, rust, and scale
- Dual grip design reduces fatigue — grasp either the handle or specially molded block
- Made of tough polypropylene
- Overall length: 177.8 mm (7.00 in)



1U-9921 Battery Post Brush

- Stiff wire bristles thoroughly clean posts



Acid Brushes

- Genuine horsehair bristles, crimped with flat tin handle.
- Chemical resistant handle

Part No.	Description	Size
1U-9977	Acid Brush	3/8 in
1U-9978	Acid Brush	1/2 in
1U-9979	Acid Brush	9/16 in



Parts Cleaning Brushes

Item	Part No.	Description	Wire Size	Wire Row
1	1U-9920	11 in O.A.L.	Size #10	Black Polypropylene
2	1U-9919	11 in O.A.L.	Size #10	Tampico
3	1U-9922	11 in O.A.L.	Size #10	Unitized
4	2B-4317	10 3/4 in O.A.L.	Paint Style 1 1/2 in	Black Nylon



Torque Wrenches

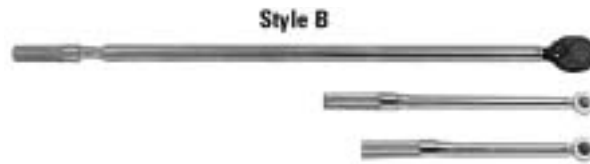
Click Type Torque Wrenches

Style A

- The 8T-9293, 162-8718 and 4C-5492 Torque Wrenches work only in the right-hand or clockwise direction, and are guaranteed to be accurate within 4% of setting of the top 80% of the scale.
- Easily adjusted by a small calibrated dial along the wrench arm
- Eliminates the need to reduce the torque setting to the low end of the scale for storage in order to retain accuracy
- The 162-8718 Torque Wrench can be disassembled into three components for storage in a tool box.

Style B

- The 9U-5019, 9U-5020, 9U-5018, 9U-5006 and 9U-5007 Torque Wrenches work in both right and left-hand (clockwise and counter-clockwise) directions.
- Micrometer handle style adjustment
- These wrenches are labeled in both ft-lbs and N-m.



Style	Torque Range		Drive Size	Part No.	Accuracy	Headstyle	Increments	Head Length	Head Width	Head Depth	Case	Service Kit
	Min.	Max.										
A	40 ft-lb	252 ft-lb	1/2 in	8T-9293	±4%	Flex-Ratchet	5 ft-lb	561.97 mm (22 1/8 in)	41.27 mm (1 5/8 in)	19.05 mm (3/4 in)	Yes	5P-7429
A	200 ft-lb	600 ft-lb	3/4 in	162-8718	±4%	Detach-Ratchet	10 ft-lb	1219.2 mm (48 in)	60.32 mm (2 3/8 in)	31.75 mm (1 1/4 in)	—	160-6390
A	20 ft-lb	100 ft-lb	3/8 in	4C-5492	±4%	Flex-Ratchet	2 ft-lb	447.67 mm (17 5/8 in)	28.57 mm (1 1/8 in)	14.28 mm (9/16 in)	Yes	4C-5819
B	15 ft-lb	75 ft-lb	3/8 in	9U-5019	±6%	Fixed Ratchet	0.5 ft-lb	363.22 mm (14.3 in)			Yes	
B	10 ft-lb	100 ft-lb	3/8 in	9U-5020	±6%	Fixed Ratchet	0.5 ft-lb	381 mm (15 in)			Yes	
B	20 ft-lb	150 ft-lb	1/2 in	214-7349	±6%	Fixed Ratchet	1 ft-lb	469.9 mm (18.5 in)			Yes	214-7350
B	30 ft-lb	150 ft-lb	1/2 in	9U-5018	±6%	Fixed Ratchet	1 ft-lb	457.2 mm (18 in)			Yes	
B	50 ft-lb	250 ft-lb	1/2 in	9U-5006	±6%	Fixed Ratchet	1 ft-lb	495.3 mm (19.5 in)			Yes	
B	100 ft-lb	600 ft-lb	3/4 in	9U-5007	±6%	Fixed Ratchet	5 ft-lb	1079.5 mm (42.5 in)			Yes	

Dial Type Torque Wrenches

- Accuracy within 2% of the reading within the upper 80% of the scale
- Wrenches with follow-up needle use two pointers on the dial which move as one as long as pressure is applied and one remains at the maximum torque reading until reset.
- Wrenches with light indicator features a light which comes on when the torque setting is reached.
- Work in both right and left-hand (clockwise and counter-clockwise) directions



Torque Range		Drive Size	Part No.	Accuracy	Increments		Length	Needle	Follow-Up Indicator	Light Case
Metric	U.S.				Metric	U.S.				
800 N-m	600 ft-lb	3/4 in	9U-5014	±4%	20 N-m	10 ft-lb	118.11 cm (46.5 in)	—	Yes	Yes
480 N-m	350 ft-lb	3/4 in	9U-5015	±4%	20 N-m	10 ft-lb	70.61 cm (27.8 in)	—	Yes	Yes
240 N-m	175 ft-lb	1/2 in	9U-5016	±4%	5 N-m	5 ft-lb	54.61 cm (21.5 in)	Yes	—	Yes
35 N-m	300 in-lb	3/8 in	9U-5017	±4%	1 N-m	5 in-lb	25.4 cm (10.0 in)	Yes	—	Yes
800 N-m	600 ft-lb	3/4 in	9S-7351	±2%	20 N-m	10 ft-lb	103.9 cm (40.9 in)	—	Yes	—
480 N-m	350 ft-lb	3/4 in	9S-7352	±2%	10 N-m	5 ft-lb	75.9 cm (29.9 in)	Yes	—	—
230 N-m	175 ft-lb	1/2 in	9S-7353	±2%	10 N-m	2.5 ft-lb	47.62 cm (18.75 in)	Yes	—	—
34 N-m	300 in-lb	3/8 in	9S-7354	±2%	1N-m	5 in-lb	25.2 cm (9.9 in)	Yes	—	—

Torque Wrench Extensions

- Used for fasteners in inaccessible places, such as track roller guard bolts, where a torque wrench and standard socket cannot be used
- Has an effective length of 610 mm (24 in) and a capacity up to 884 N-m (650 ft-lb)
- A slide rule type torque computer, Form SEHS7150, is available to determine the torque wrench dial reading for different extensions.

Part No.	Description	Hex Hex Size	Straight/ Config.	Offset	Torque
6V-3146	Tubular Extension				
6V-4170	Adapter, 3/4 inch, Sq. Drive				
Heavy-Duty Box Wrenches					
6V-4165		19 mm	12 pt	straight	650 ft/lbs
4C-6194		20 mm	12 pt	straight	650 ft/lbs
4C-9563		24 mm	12 pt	straight	650 ft/lbs
4C-9564		30 mm	12 pt	straight	650 ft/lbs
4C-9565		36 mm	12 pt	straight	650 ft/lbs
9U-7375		46 mm	12 pt	offset	1000 ft/lbs
9U-5612		55 mm	12 pt	offset	1000 ft/lbs
6V-4166		7/8 in	12 pt	straight	650 ft/lbs
6V-4167		15/16 in	12 pt	straight	650 ft/lbs
6V-4171		15/16 in	12 pt	15° offset	—
6V-4168		1-1/8 in	12 pt	straight	650 ft/lbs
6V-4169		1-5/16 in	12 pt	straight	650 ft/lbs
6V-4154		1-1/2 in	12 pt	straight	650 ft/lbs



Adapters and Extensions for Torque Wrenches

- The 8S-5131, 1P-2382, 5P-4773, and 9S-6330 Adapters are used with the 9S-7353 or 9U-5014 Torque Wrench.
- The 8F-4677 Extension and 8F-4678 Adapter are used with the 9S-7352 or 9U-5015 Wrench to increase the capacity of the wrench.



Part No.	Description	Use
9S-6330	Adapter (1/2 inch Drive, 9/16 inch 12 Point Box End)	for 9/16 inch head universal joint bolts in earlier 992 Wheel Loaders.
8S-5131	Adapter (1/2 inch Drive, 7/8 inch 12 Point Box End)	for front left main bearing cap bolt on 1100 and 3100 Series Engines.
1P-2382	Adapter (1/2 inch Drive, 3/4 inch 12 Point Box End)	for universal joint bolts on all tractor-scraper (except 613) and No. 16 Motor Graders.
5P-0166	Crowfoot Wrench (3/8 inch Drive, 3/4 inch Hex)	for torquing fuel line nuts on D3 Tractors, 910 Wheel Loaders and 931 Track Loaders.
8F-4678	Adapter Driver (3/4 inch Drive)	for use with 8F-4677 Extension.
8F-4677	Extension, 3/4 inch Drive, 26 7/8 inch center to center	use to double capacity of 8F-4675 and 9S-7352 Torque Wrenchs for torque applications up to 700 ft.lb.
5P-4773	Adapter (1/2 inch Drive, 5/8 inch 12 Point Box End)	for 5/8 inch head universal joint bolts in later 992
Not Shown		
9U-5932	Camshaft Torque Extension 3600 Engines	
8T-3196	Offset Box Wrench (3/4 inch Drive, 1 7/8 inch Hex, 12 pt)	
9U-6282	Crankshaft Main Bearing on 3054 and 3056 Engines. 1/2 inch Sq. Drive, 15/16 inch Hex, 12 pt	
156-2568	Adapter, 3/8 inch drive, 10 mm, 12 point box end	

Special Torque Wrench Extensions

- Extensions listed below are used with the 6V-9452 Adapter, 6V-9451 Tubular Arm, and the 9S-7352 Torque Wrench primarily for applications up to 1000 ft-lb (1360 N-m).
- The Torque Computer, Form SEHS7150, can be used to compute the correct torque wrench reading for proper torque application at the fastener.



Part No.	Description	Use
6V-9452	Adapter, 3/4 inch Drive	
6V-9451	Tubular Arm	
6V-9453	Wrench, 2 3/16 inch	Tighten retaining nut for lower vertical hitch pin on 613 Tractor-Scrapers.
6V-9454	Wrench, 1 7/8 inch	Tighten mounting stud nuts on 55, 56, 57, 58 and 59 Towing Winches.
6V-9456	Wrench, 1 11/16 inch	Tighten steering cylinder tie rod bolt nut on No. 16G Motor Graders.
6V-9455	Wrench, 1 7/8 inch	Tighten mounting stud nuts on 55 and 56 Towing Winches
9U-7375 (not shown)	Wrench 46 mm (1 13/16 in) Offset — 40 mm (1.56 in)	Remove and install rear axle housing, pivot joint cap bolts on 789 and 793

8T-3052 Degree Wheel

- Used for measuring torque turn angles
- The nut or bolt does not have to be marked in order to obtain the correct torque.
- 1/2 inch drive and can be used with any standard 1/2 inch drive socket.



1P-7460 Mechanical Torque Tester

- Torque wrenches can be checked quickly and easily.
- Has a range from 680 N-m (0-500 ft-lb)
- Furnished with 3/8 inch, 1/2 inch and 3/4 inch adapters to accommodate Caterpillar torque wrenches.
- Certified accuracy is ±1% or one scale division, whichever is greater



Electronic Torque Testers

- Accuracy better than 1% of the indicated value in ranges between 10% to 100% of maximum rating
- Maximum overtorque of 120% of full rating
- Reliable “first-peak” mode for tests of click type torque wrenches without the need for manual sensitivity adjustment—A red light and buzzer indicate capture of first torque peak. Other modes include “peak hold” which records the highest reading during a test and “track” which displays continuously during use.
- Equally accurate in clockwise and counter-clockwise directions

- Automatic or manual display reset
- Unique adjustable head moves for easy reading
- Rechargeable battery with 110 V AC adapter included (not available separately)
- CE compliant

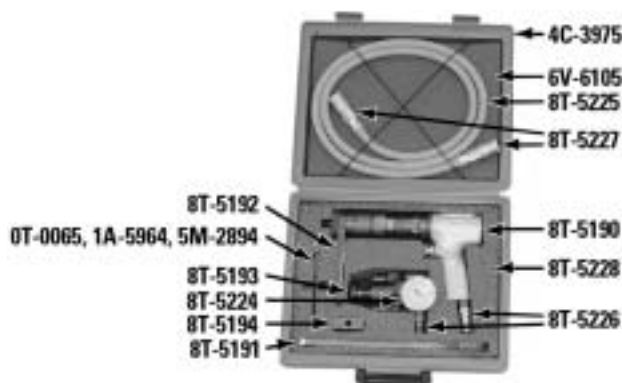
NOTE: Use 9U-5101 mounting bracket to mount the testers to a bench top. No bracket is required to mount testers to a vertical surfaces.



Part No.	Torque Range		Size
	Metric	Drive U.S.	
9U-5009	12 to 57 N-m	10 to 50 in-lb	1/4
9U-5010	57 to 282 N-m	50 to 250 in-lb	3/8
9U-5011	226 to 1130 N-m	200 to 1000 in-lb	3/8
9U-5012	68 to 339 N-m	50 to 250 ft-lb	1/2
9U-5013	163 to 813 N-m	120 to 600 ft-lb	3/4

8T-5230 Air Regulated Torque Wrench Set

- Allows controlled output torque in a range of 34 to 300 N-m (25 to 220 ft-lb)
- Readily adapts to 6V-7820 or 6V-6080 Torque Multipliers which provide controlled torque values between 300 to 4350 N-m (220 to 3200 ft-lb)
- Output torque of the wrench can be set by adjusting the air supply at the regulator.
- Regulator air gauge is calibrated in kPa and psi.
- Air pressure of 620 kPa (90 psi) is required for the maximum torque setting.
- 1/2 inch drive and rotation is reversible.
- Most effective where there are several hardware items that require the same torque; for example, when tightening the wheel nuts or front strut mounting bolts on off-highway trucks



Part No.	Description
8T-5190	Wrench Set ¹
8T-5191	Bar
8T-5192	Bar
8T-5193	Regulator
8T-5194	Block (Spacer)
8T-5224	Gauge
8T-5225	Hose
8T-5226	Nipple (two)
8T-5227	Coupler (two)
8T-5228	Block (base)
4C-3975	Case
6V-6105	Block (lid)
0T-0065	Bolt, 64 mm (2 1/2 in) long
1A-5964	Bolt, 89 mm (3 1/4 in) long
5M-2894	Washer (two)
Not Shown	
1U-5809	Grommet
1U-5748	Output spindle
8T-5321	Seal Kit

¹ When the 8T-5190 Wrench Set is ordered separately, the 8T-5192 Bar is assembled on the wrench. The 8T-5191 Bar is then supplied as a loose part.

Pneumatic Wrench Groups

- Allows controlled output torque from 286 N-m (200 ft lbs) to 4125 N-m (3000 ft lbs)
- Output torque is set by adjusting air pressure regulator (part of 194-7591 Regulator Group)



194-7585 Pneumatic Wrench Group (RAD 1000)	
Torque range	286 to 1429 N-m (200 to 1000 ft lbs)
Square drive	1 inch
Air pressure for maximum torque	689 kPa (100 psi)
Air consumption at 689 kPa (100 psi)	20 cfm
Minimum pressure	103 kPa (15 psi)

Service Parts	
Part No.	Description
194-7588	Pneumatic Wrench Group
194-7602	Reaction Arm
194-7607	Snap Ring Kit
195-3499	Wrench Assembly
194-7591	Regulator Group
194-7609	Hose Assembly
194-7610	Cage Assembly
194-7611	Filter Assembly
194-7612	Gauge Pressure

194-7582 Pneumatic Wrench Group (RAD 25)	
Torque range	1143 to 4285 N-m (800 to 3000 ft lbs)
Square drive	1 inch
Air pressure for maximum torque	689 kPa (100 psi)
Air consumption at 689 kPa (100 psi)	32 cfm
Minimum pressure	103 kPa (15 psi)

Service Parts	
Part No.	Description
194-7590	Pneumatic Wrench Group
194-7605	Reaction Arm
194-7608	Snap Ring Kit
195-3501	Wrench Assembly
194-7591	Regulator Group
194-7609	Hose Assembly
194-7610	Cage Assembly
194-7611	Filter Assembly
194-7612	Gauge Pressure

- All wrench groups have standard 1 inch square drive
- Requires 689 kPa (100 psi) air pressure to achieve maximum torque
- Wrench group works well in applications requiring different torque specifications (readjust torque setting by simply adjusting air pressure)
- Regulator group includes cage, hose, pressure gauge, and filter assembly — filter assembly is equipped with air filter, pressure regulator, and automatic oiling system
- Requires 4C-8856 Fitting and 8T-9568 Oil (not included)

194-7584 Pneumatic Wrench Group (RAD 600)	
Torque range	286 to 857 N-m (200 to 600 ft lbs)
Square drive	1 inch
Air pressure for maximum torque	689 kPa (100 psi)
Air consumption at 689 kPa (100 psi)	20 cfm
Minimum pressure	103 kPa (15 psi)

Service Parts	
Part No.	Description
194-7587	Pneumatic Wrench Group
194-7602	Reaction Arm
194-7607	Snap Ring Kit
195-3498	Wrench Assembly
194-7591	Regulator Group
194-7609	Hose Assembly
194-7610	Cage Assembly
194-7611	Filter Assembly
194-7612	Gauge Pressure

194-7586 Pneumatic Wrench Group (RAD 2000)	
Torque range	571 to 2857 N-m (400 to 2000 ft lbs)
Square drive	1 inch
Air pressure for maximum torque	689 kPa (100 psi)
Air consumption at 689 kPa (100 psi)	20 cfm
Minimum pressure	103 kPa (15 psi)

Service Parts	
Part No.	Description
194-7589	Pneumatic Wrench Group
195-7592	Reaction Arm
194-7607	Snap Ring Kit
195-3500	Wrench Assembly
194-7591	Regulator Group
194-7609	Hose Assembly
194-7610	Cage Assembly
194-7611	Filter Assembly
194-7612	Gauge Pressure

Repair Information

195-3498, 195-3499, 195-3500, and 195-3501 Wrench Assemblies must be sent to the address below for repair. The wrench must be accompanied with a Return Material Authorization Number before shipping to the OEM.

Global Bolting Technologies
827 Anchor Ave.
Billings, MT 59105-2519
Phone and fax: (406) 259-9111

Hydraulic Wrenches

Warranty: Manufacturer's

- Well suited for high torque and/or low clearance applications
- Easy and safe to use
- Can decrease bolting time by up to 75%
- Accurate torque to ± 3%
- The best torque-to-weight ratio available

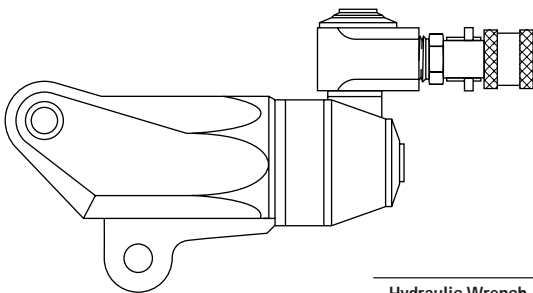


132-8112 HY-1MXT	3/4 in square drive (max. ft. lbs. 1,400)
132-8119 HY-3MXT	1 in square drive (max. ft. lbs. 3,200)
132-8126 HY-5MXT	1 1/2 in square drive (max. ft. lbs. 5,600)
132-8133 HY-10MXT	1 1/2 in square drive (max. ft. lbs. 11,500)
1U-6221 HY-2XLCT (Accessories below)	accepts 3/4 in to 2 3/8 in hex links and 3/4 in square drive
132-8143	36 mm Low Clearance Hex Link (max. ft. lbs. 1,670)
1U-6222	46 mm Low Clearance Hex Link (max. ft. lbs. 1,670)
132-8144	55 mm Low Clearance Hex Link (max. ft. lbs. 1,670)
132-8154	3/4 in Square Drive Link (max ft. lbs. 1,360)
132-8159 HY-4XLCT (Accessories below)	accepts 1 in to 2 9/16 in hex links and 1 in square drive
132-8176	36 mm Low Clearance Hex Link (max. ft. lbs. 3,750)
132-8177	46 mm Low Clearance Hex Link (max. ft. lbs. 3,750)
191-1816	46 mm Extra Low Clearance Hex Link (max. ft. lbs. 3,750)
132-8178	55 mm Low Clearance Hex Link (max. ft. lbs. 3,750)
132-8167	1 in Square Drive Link With Reaction Arm (max. ft. lbs. 3,050)

132-8183 HY-8XLCT (Accessories below)	accepts 1 7/8 in to 3 7/8 in hex links and 1/2 in square drive
132-8190	55 mm Low Clearance Hex Link (max. ft. lbs. 7,500)
132-8191	65 mm Low Clearance Hex Link (max. ft. lbs. 7,500)
132-8192	70 mm Low Clearance Hex Link (max. ft. lbs. 7,500)
132-8201	1 1/2 in Square Drive Link (max. ft. lbs. 6,250)
132-8206 HY-4ULC (Accessories below)	accepts 1 1/2 in to 2 3/8 in hex links and 1 in square drive max. ft. lbs 3,100
132-8212	36 mm Low Clearance Hex Link
132-8213	46 mm Low Clearance Hex Link
132-8214	55 mm Low Clearance Hex Link
132-8220	1 in Square Drive Link
132-8223	Power Pack, 115V, 50/60 Hz, Single Phase, Hose & Gauge Included
132-8231	Power Pack, 220V, 50/60 Hz, Single Phase, Hose & Gauge Included
132-8232	Air Power Pack, 60-120 Psi, Hose & Gauge Included

Hydraulic Wrenches and Power Pack

- Wrench has two times higher speed than conventional hydraulic wrenches and uses same links
- Power pack can also be used with conventional hydraulic wrenches



Service Parts	
Part No.	Description
7X-0486	Coupler Assembly
7X-0487	Nipple Assembly, Valved

196-6925 Power Pack	
Maximum oil flow	11800 cu liters (720 cu in)
Motor	115 VAC, single phase, 20 amp
Hose length	4.6 m (15 ft)
Remote control cable length	6.1 m (20 ft)

Hydraulic Wrench	Link Part No.	Link Description	Minimum Torque Range	Maximum Torque Range
194-7598 (2A)	132-8143	36 mm low clearance hex link	203 N-m (150 ft lbs)	2260 N-m (1670 ft lbs)
	1U-6222	46 mm low clearance hex link	203 N-m (150 ft lbs)	2260 N-m (1670 ft lbs)
	132-8144	55 mm low clearance hex link	203 N-m (150 ft lbs)	2260 N-m (1670 ft lbs)
	132-8154	3/4 in. square drive link	203 N-m (150 ft lbs)	1840 N-m (1360 ft lbs)
194-7599 (4A)	132-8176	36 mm low clearance hex link	473 N-m (350 ft lbs)	5075 N-m (3750 ft lbs)
	132-8177	46 mm low clearance hex link	473 N-m (350 ft lbs)	5075 N-m (3750 ft lbs)
	132-8178	55 mm low clearance hex link	473 N-m (350 ft lbs)	5075 N-m (3750 ft lbs)
	132-8167	1 in. square drive link	473 N-m (350 ft lbs)	4128 N-m (3050 ft lbs)
194-7600 (8A)	132-8190	36 mm low clearance hex link	878 N-m (650 ft lbs)	10150 N-m (7500 ft lbs)
	132-8191	46 mm low clearance hex link	878 N-m (650 ft lbs)	10150 N-m (7500 ft lbs)
	132-8192	55 mm low clearance hex link	878 N-m (650 ft lbs)	10150 N-m (7500 ft lbs)
	132-8201	1 1/2 in. square drive link	878 N-m (650 ft lbs)	8458 N-m (6250 ft lbs)

Hydraulic Wrenches and Pumps

Model: All
Warranty: One Year

- Used to safely and quickly remove and install various sizes of bolts and nuts
- Can be used to attach cutting edges to blades, buckets, or scrapers — tightens wheel nuts, final drive fasteners, nuts on large pumps and motors, etc.
- Eliminates use of torque multipliers and cheater bars
- Used with economical single acting 10,000 psi hydraulic pumps
- Requires only one hydraulic hose
- CE compliant (except 175-7944)

Hydraulic Wrenches

- Only use good-quality impact sockets
- Socket drive accuracy: ±3%
- Attached metal plate provides pressure to torque conversion chart
- Also includes plastic laminated sheet with pressure to torque conversion chart

Hydraulic Pumps

- Includes hydraulic gauge
- Includes high-quality hose, 68,950 kPa (10,000 psi)

WARNING

Only use hoses rated at 68,950 kPa (10,000 psi). Using hoses which have a rated capacity below the rated pressure of the hydraulic pump can result in serious injury or death.

Typical Electric Hydraulic Pump



175-7945 Manual Hydraulic Pumps (Single Acting)	
Pump operating pressure	68,950 kPa (10,000 psi)
Weight	2.3 kg (5 lbs)
Gauge size	64 mm (2.5 in)
Hose length	1.5 m (5 ft)



Typical Hydraulic Wrench

Hydraulic Wrenches		
Part No.	Torque Range	Square Drive Size
175-7938	230 to 1627 N-m (170 to 1200 lb ft)	3/4 inch
175-7939	586 to 4013 N-m (432 to 2960 lb ft)	1 inch
175-7940	1118 to 7591 N-m (825 to 5600 lb ft)	1 1/2 inch
175-7941	1640 to 11116 N-m (1210 to 8200 lb ft)	1 1/2 inch

Electric Hydraulic Pumps (Single Acting)	
175-7944	115 Volts
175-9412	230 Volts
Pump operating pressure	68,950 kPa (10,000 psi)
Maximum flow	6.6 cu liter (400 cu in) per minute
Weight	26 kg (57 lbs)
Gauge size	102 mm (4.0 in)
Hose length	4.6 m (15 ft)

Special Sockets and Extensions

- For use with the 8T-5230 Air Wrench Group to remove and install rear dual rims on 785 and 789 trucks, or other similarly sized rim

Model	Requirement	Tool Description	Tool Part No.
785 and 789	Remove and Install Rim Nuts	Socket (1.50 Hex)	8T-5182
785 and 789	Standard Rim	Extension (16 inch long)	8T-5183
785 and 789	Rim Pilot Stud Nuts	Deep Socket (1.50 Hex)	1U-5715
789	Large Optional Rims	Extension (10 inch long)	8T-9265

5P-2410 Hand Impact Wrench

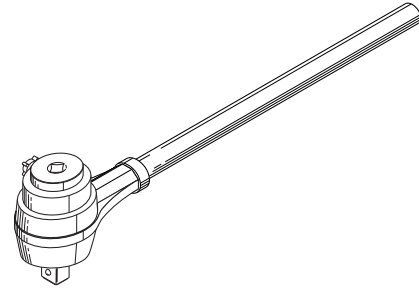
- Loosen nuts bound by corrosion and tighten nuts to an estimated torque value readily with this impact wrench.
- Particularly suited to field use because an air or electric power source is not required
- With a 1 inch square drive and capacity up to 2000 ft-lb torque, the wrench will handle 3/4 inch to 1 3/4 inch bolts.
- Wrench action provides impact torque in one direction and free ratcheting in the other.
- When turned about 30°, energy stored in a heavy spring in the handle is suddenly released, delivering a torsional impact to the square output drive through a link and rotary hammer arrangement. To reverse the direction of this action, the wrench is merely turned over. The amount of impact is adjustable.



206-8796 Torque Multiplier

Warranty: Manufacturer's

- Used to apply torque greater than capability of torque wrench with an accuracy of $\pm 5\%$
- Specifically used to install and remove counterweight bolts on 5230B Front Shovels or other similar applications
- Designed for use with 1 inch square drive torque wrench
- Provides 360° continuous rotation in both directions
- Built-in, angle-of-turn protractor measures angle of rotation in 5° increments for torque turn specifications
- Overload protection is provided by square output drive which shears at a torque slightly above maximum output rating
- Decals located on multiplier provide torque input and output values



Square drive (input)	1 inch
Square drive (output)	1 1/2 inch
Power ratio	4.33 to 1
Rated input capacity	1,470 N-m (1,081 ft-lb)
Maximum output capacity	5,440 N-m (4,000 ft-lb)
Overall length	76 mm (30.0 in)

References

REN3379 Service Manual, Disassembly and Assembly

Torque Multipliers

Warranty: Manufacturer's

- Used to apply torques above the capability of torque wrenches with an accuracy of $\pm 5\%$
- The 6V-6080 Multiplier has a maximum torque capacity of 4335 N-m (3200 ft-lb).
- The 6V-7820 Multiplier has a maximum capacity of 1620 N-m (1200 ft-lb).
- Both multipliers are designed for use with a 1/2 inch square drive torque wrench.
- The 6V-6080 Multiplier features a directional clutch which holds the windup and provides ratcheting action so that the multiplier is usable in close quarters where movement of the input wrench is limited.
- Both multipliers are designed to provide 360° continuous rotation in both directions.
- They also have an angle of turn protractor which measures the angle of rotation in 5° increments for torque turn specifications.
- Overload protection is provided by the square output drive which shears at a torque slightly above the maximum output rating.
- Decals providing torque input and output values are located on the multiplier.



Part No.	Square Input	Square Output	Power Ratio	Rated Input Capacity	Maximum Rated Output	Rated Weight
6V-7820	1/2 in	3/4 in	6 to 1	271 N-m (200 ft-lb)	1620 N-m (1200 ft-lb)	4 kg (9 lb)
6V-6080	1/2 in	1.0 in	18.5 to 1	240 N-m (177 ft-lb)	4335 N-m (3200 ft-lb)	8.2 kg (18 lb)

Pneumatic Tools

Impact Wrenches, 3/8 inch

Warranty: Manufacturer's

- Reverse bias air motor provides greater power in reverse for extra break away torque
- Molded ergonomic handle grip reduces vibration and operator fatigue
- Built in power regulator allows power output to be adjusted to operating conditions
- CE compliant

Part No.	222-3049	222-3048
Drive size	3/8 in	3/8 in
Recommended air pressure	620 kPa (90 PSIG)	620 kPa (90 PSIG)
Air consumption, free speed	12.3 SCFM (1.8 CFM) [50.97]	14 SCFM (1.9 CFM) [53.8 l/min.]
Air consumption, working	—	25 SCFM (3.5 CFM) [99.11 l/min.]
Free speed, forward	10,000 RPM	8000 RPM
Free speed, reverse	10,000 RPM	9000 RPM
Sound level, free speed	87 dBa	84.6 dBa
Sound level, working	—	95.6 dBa
Blows per minute	1200	1170
Torque range	40-122 N-m (30-90 ft-lb)	68-251 N-m (50-185 ft-lb)
Maximum torque	217 N-m (160 ft-lb)	251 N-m (185 ft-lb) Forward 285 N-m (210 ft-lb) Reverse
Air inlet thread size	1/4 in - 18 NPT	1/4 in - 18 NPT
Recommended hose size, ID min.	8 mm (5/16 in)	10 mm (3/8 in)
Overall length	121 mm (4.75 in)	159 mm (6.25 in)
Height	—	179 mm (7 in)
Width	—	57 mm (2.24 in)
Weight	1.2 kg (2.6 lbs)	1.70 kg (3.75 lbs)



Impact Wrenches, 1/2 and 3/4 inch

Warranty: Manufacturer's

- Aluminum housing reduces weight and provides durable long life
- Steel nose front for extra protection, easy service access
- Power speed regulator allows power output to be adjusted to operating conditions
- Variable speed trigger allows operator versatility over wide range of fasteners
- CE compliant

Part No.	222-3050	222-3051	222-3053
Drive size	1/2 in	1/2 in	3/4 in
Recommended air pressure	620 kPa (90 PSIG)	620 kPa (90 PSIG)	620 kPa (90 PSIG)
Air consumption, free speed	30 SCFM (4.2 CFM) [118.9 l/min.]	30 SCFM (4.2 CFM) [118.9 l/min.]	41 SCFM (5.8 CFM) [164.2 l/min.]
Free speed, forward	8000 RPM	8000 RPM	4500 RPM
Free speed, reverse	8000 RPM	8000 RPM	5000 RPM
Sound level, free speed	108 dBa	108 dBa	92 dBa
Torque range	35-408 N-m (25-300 ft-lb)	35-392 N-m (25-280 ft-lb)	407-1085 N-m (300-800 ft-lb)
Maximum torque	578 N-m (425 ft-lb) Forward 578 N-m (425 ft-lb) Reverse	549 N-m (404 ft-lb) Forward 549 N-m (404 ft-lb) Reverse	1626 N-m (1200 ft-lb)
Air inlet thread size	1/4 in - 18 NPT	1/4 in - 18 NPT	3/8 in - 18 NPT
Recommended hose size, ID min.	8 mm (5/16 in)	8 mm (5/16 in)	10 mm (3/8 in)
Overall length	185 mm (7.3 in)	236 mm (9.3 in)	259 mm (10.2 in)
Weight	2.63 kg (5.8 lbs)	2.95 kg (6.5 lbs)	6.59 kg (14.5 lbs)



Impact Wrenches, 1 inch

Warranty: Manufacturer's

- Aluminum housing reduces weight and provides durable long life
- Steel nose front for extra protection, easy service access
- Power speed regulator allows power output to be adjusted to operating conditions
- Variable speed trigger allows operator versatility over wide range of fasteners
- CE compliant



Part No.	222-3054	222-3055
Drive size	1 in	1 in
Recommended air pressure	620 kPa (90 PSIG)	620 kPa (90 PSIG)
Air consumption, free speed	26 SCFM (3.6 CFM)	41 SCFM (5.8 CFM) [164.2 l/min.]
Air consumption, working	38 SCFM (5.3 CFM) [150.1 l/min.]	38 SCFM (5.3 CFM) [150.1 l/min.]
Free speed, forward	4000 RPM	4000 RPM
Free speed, reverse	4000 RPM	4000 RPM
Sound level, free speed	92 dBa	92 dBa
Sound level, working	103 dBa	103 dBa
Blows per minute	500	505
Torque range	813-1898 N-m (600-1400 ft-lb)	813-1898 N-m (600-1400 ft-lb)
Maximum torque	3796 N-m (2800 ft-lb)	4067 N-m (3000 ft-lb)
Air inlet thread size	1/2 in - 14 NPT	1/2 in - 14 NPT
Recommended hose size, ID min.	13 mm (1/2 in)	13 mm (1/2 in)
Overall length	302 mm (11.8 in)	535 mm (21 in)
Height	270 mm (10.6 in)	172 mm (6.8 in)
Width	111 mm (4.37 in)	110 mm (4.33 in)
Weight	12.05 kg (26.5 lbs)	12.27 kg (27 lbs)

Sanders and Polishers

Warranty: Manufacturer's

- Aluminum housing reduces weight and provides durable long life
- Compact design for easy maneuvering in restricted areas
- Ball bearing mounted air motor reduces vibration and operator fatigue; prolongs motor life
- Full choice of RPM ranges
- 5 inch and 7 inch HD angle, 2-handed vertical and in-line sanders
- 7 inch polisher
- CE compliant



Part No.	222-3063	222-3064	222-3065	222-3067	222-3068	222-3084	222-3069
Description	Palm Sander, 6 in	7 in Angle Sander	7 in Vertical Sander	Heavy Duty Sander	6 in Sander	5 in Compact Sander	7 in Angle Polisher
Recommended air pressure	620kPa (90 PSIG)	620kPa (90 PSIG)	620kPa (90 PSIG)	620kPa (90 PSIG)	410kPa (60 PSIG)	620kPa (90 PSIG)	620kPa (90 PSIG)
Air consumption, free speed	36 SCFM (5 CFM) [141.6 l/min.]	34 SCFM (4.8 CFM) [135.9 l/min.]	31 SCFM (4.3 CFM) [121.8 l/min.]	16 SCFM (2.3 CFM) [65.13 l/min.]	11 SCFM (2.1 CFM) [59.47 l/min.]	32 SCFM (4.2 CFM) [118.9 l/min.]	34 SCFM (4.8 CFM) [135.9 l/min.]
Air consumption, working	—	—	—	—	—	—	31 SCFM (4.3 CFM) [121.8 l/min.]
Horsepower	—	1	—	—	0.25	0.3	1
Free speed	10000 RPM	5100 RPM	4500 RPM	1800 osc/min	10000 RPM	1400 RPM	2600 RPM
Sound level, free speed	83 dBa	84 dBa	83 dBa	87 dBa	93 dBa	88 dBa	84 dBa
Spindle thread	5/16 in - 18 UNC	5/16 in - 11 UNC	5/16 in - 11 UNC	—	5/16 in - 18 UNC	7/16 in - 20 UNC	5/8 in - 11 UNC
Pad/disc size, diameter	152 mm (6 in)	178 mm (7 in)	178 mm (7 in)	2-3/4 x 17-1/2	150 mm (6 in)	127 mm (5 in)	178 mm (7 in)
Air inlet thread size	1/4 in - 18 NPT	1/4 in - 18 NPT	1/4 in - 18 NPT	1/4 in - 18 NPT	1/4 in - 18 NPT	1/4 in - 18 NPT	1/4 in - 18 NPT
Recommended hose size, ID min.	8 mm (5/16 in)	8 mm (5/16 in)	10 mm (3/8 in)	8 mm (5/16 in)	8 mm (5/16 in)	8 mm (5/16 in)	8 mm (5/16 in)
Overall length	122 mm (4.8 in)	410 mm (15.75 in)	—	406 mm (16 in)	260 mm (10.2 in)	118 mm (4.6 in)	410 mm (15.75 in)
Height	—	102 mm (4 in)	190 mm (7.5 in)	121 mm (4.75 in)	—	121 mm (4.75 in)	—
Weight	1.36 kg (3 lbs)	3.09 kg (6.8 lbs)	2.72 kg (6 lbs)	—	2.2 kg (4.9 lbs)	—	—
Compounding/ buffing pad (included)	—	—	—	—	—	—	BFS80

Air Grinders

Warranty: Manufacturer's

- Aluminum housing reduces weight and provides durable long life
- Compact design for easy maneuvering in restricted areas
- Paddle-style, variable speed throttle safety trigger prevents accidental startup; easy to use, versatile
- Ball bearing mounted air motor reduces vibration and operator fatigue; prolongs motor life
- Powerful .2 horsepower motor
- Angle head zirk grease fitting (right angle only) allows lubrication of gear train, prolongs life of tool
- CE compliant



Part No.	222-3074	222-3076	222-3077	222-3070
Tool description	Medium Mini Die Grinder	Right Angle Die Grinder	Extended Die Grinder	4-1/2" Compact Grinder
Recommended air pressure	620 kPa (90 PSIG)	620 kPa (90 PSIG)	620 kPa (90 PSIG)	620 kPa (90 PSIG)
Air consumption, free speed	25 SCFM (3.5 CFM) [99.11 l/min]	15 SCFM (2.1 CFM) [59.47 l/min]	25 SCFM (3.5 CFM) [99.11 l/min]	23 SCFM (3.3 CFM) [93.45 l/min]
Air consumption, working	—	—	—	23 SCFM (3.2 CFM) [90.61 l/min]
Horsepower	0.2	0.2	0.2	—
Free speed	22000 RPM	20000 RPM	22000 RPM	12000 RPM
Sound level, free speed	91 dBa	93 dBa	91 dBa	87 dBa
Air inlet thread size	1/4 in - 18 NPT	1/4 in - 18 NPT	1/4 in - 18 NPT	1/4 in - 18 NPT
Recommended hose size, ID min.	8 mm (5/16 in)	8 mm (5/16 in)	8 mm (5/16 in)	8 mm (5/16 in)
Collet size	1/4 in	1/4 in	1/4 in	—
Overall length	165 mm (6.5 in)	140 mm (5.5 in)	293 mm (11.5 in)	254 mm (10 in)
Disc size, diameter	—	—	—	102 mm (4-1/2 in)
Grinding disc set (incl.)	—	—	—	AT415A51
Weight	1.09 kg (2.4 lbs)	.64 kg (1.4 lbs)	1.05 kg(2.5 lbs)	2.25 kg (5 lbs)

Part No.	222-3071	222-3072
Tool description	Die Grinder	Die Grinder
Free speed	6000 RPM	6000 RPM
Wheel capacity	175 mm (7 in)	175 mm (7 in)
Weight	2.7 kg (5.9 lbs)	4.1 kg (9.1 lbs)
Length	315 mm (12.4 in)	—
Height	—	180 mm (7.1 in)
Sound level	85 dBa	82 dBa
Air consumption under load	17 l/s (35 cfm)	28 l/s (60 cfm)
Air consumption free speed	8 l/s (18 cfm)	28 l/s (60 cfm)
Spindle thread	5/8 in - 11	5/8 in - 11

Air Drills

Warranty: Manufacturer's

- Aluminum housing reduces weight and provides durable long life
- Compact design for easy maneuvering in restricted areas
- Contoured button style variable speed trigger is easy to use; versatile
- Ball bearing mounted air motor reduces vibration and operator fatigue; prolongs motor life
- Powerful, reversible .3 horsepower motor
- CE compliant



Part No.	222-3061	222-3062
Description	3/8 in Reversible	1/2 in Reversible
Chuck range, diameter	1/16 in - 3/8 in	—
Air consumption, free speed	71 SCFM (10 CFM) [283.2 l/min.]	71 SCFM (10 CFM) [283.2 l/min.]
Air consumption, working	43 SCFM (6 CFM) [169.9 l/min.]	43 SCFM (6 CFM) [169.9 l/min.]
Horsepower	0.3	0.3
Free speed	2200 RPM	900 RPM
Sound level, free speed	92 dBa	97 dBa
Sound level, working	104 dBa	109 dBa
Spindle thread	3/8 in - 24 UNF	3/8 in - 24 UNF
Torque range	0-4 N-m (0-35 in-lb)	0-6.8 N-m (0-60 in-lb)
Air inlet thread size	1/4 in - 18 NPT	1/4 in - 18 NPT
Recommended hose size, ID min.	8 mm (5/16 in)	8 mm (5/16 in)
Recommended air pressure	620 kPa (90 PSIG)	620 kPa (90 PSIG)
Overall length	199 mm (7.85 in)	224.8 mm (8.85 in)
Weight	.45 kg (2.85 lbs)	1.61 kg (3.55 lbs)

Air Hammers

Warranty: Manufacturer's

- Aluminum housing reduces weight and provides durable long life
- Variable speed trigger is easy to use, versatile
- Air directed exhaust
- Air line filter
- Nylon friction plugs
- Long barrel for easier access to hard to reach areas
- QC chuck
- CE compliant



Part No.	222-3080	222-3081
Tool description	Long Air Hammer w/QC Chuck	Moderate Duty
Recommended air pressure	620 kPa (90 PSIG)	620 kPa (90 PSIG)
Air consumption	28.5 SCFM (4 CFM)	28 SCFM (4 CFM) [113.3 l/min.]
Sound level, free speed	100 dBa	100 dBa
Blows per minute	2200	3200
Air inlet thread size	1/4 in - 18 NPT	1/4 in - 18 NPT
Recommended hose size, ID min.	10 mm (3/8 in)	8 mm (5/16 in)
Overall length	318 mm (12.5 in)	222 mm (8.75 in)
Chuck bit size	—	10.2 mm (.401 in) shank diameter
Piston stroke	—	97 mm (3-3/4 in)
Chisel shank diameter	—	10 mm (0.401 in)
Bore diameter	—	19 mm (3/4 in)
Weight	2.50 kg (5.5 lbs)	2.95 kg (6.5 lbs)

Air Ratchet

Warranty: Manufacturer's

- Aluminum housing reduces weight and provides durable long life
- Versatile, easy-to-use paddle-style trigger; variable speed trigger
- Ball bearing mounted air motor reduces vibration and operator fatigue; prolongs motor life
- 200 RPM free speed, 250 in-lbs torque output — fast and powerful
- CE compliant

Part No.	222-3059
Drive size	3/8 in
Recommended air pressure	620 kPa (90 PSIG)
Free speed air consumption	22 SCFM (3.0 CFM)
Free speed	200 RPM
Sound level, free speed	95.1 dBA
Torque range	7-81 N-m (5-60 ft-lb)
Air inlet thread size	1/4 in - 18 NPT
Recommended hose size	10 mm (3/8 in)
Overall length	256 mm (10.43 in)
Weight	1.09 kg (2.4 lbs)



222-3082 Nibbler

Warranty: Manufacturer's

- CE compliant

Recommended air pressure	620 kPa (90 PSIG)
Free speed air consumption	26 SCFM (3.6 CFM) [101.9 l/min.]
Sound level, free speed	90 dBA
Free speed strokes	2000 per minute
Air inlet thread size	1/4 in - 18 NPT
Recommended hose size, ID min.	8 mm (5/16 in)
Overall length	178 mm (7 in)
Weight	1.18 kg (2.6 lbs)



222-3083 Shears

Warranty: Manufacturer's

- CE compliant

Recommended air pressure	620 kPa (90 PSIG)
Average air consumption	4 CFM [113.3 l/min.]
Horsepower	0.6
Sound level, free speed	88.1 dBA
Sound level, working	99.6 dBA
Cutting capacity	1.2 mm (3/64 in)
Width of cut	5.6 mm (7/32 in)
Cutting speed	4.572 m (15 ft) per minute
Strokes	2500 per minute
Air inlet thread size	1/4 in - 18 NPT
Recommended hose size, ID min.	8 mm (5/16 in)
Overall length	254 mm (10 in)
Weight	1.3 kg (2.8 lbs)



223-1154 Air Engraver

Warranty: Manufacturer's

- CE compliant

Recommended air pressure	620 kPa (90 PSIG)
Average air consumption	7 SCFM (1.0 CFM)
Free speed	14000 RPM
Sound level	90.0 dBA
Air inlet thread size	1/4 in - 18 NPT
Recommended hose size, ID min.	10 mm (3/8 in)
Hose length	1511 mm (59.5 in)
Overall length without hose	140 mm (5.5 in)
Weight	.22 kg (.48 lbs)

223-1155 Air Scaler

Warranty: Manufacturer's

- Steel housing
- Hardened steel barrel and piston
- CE compliant

Stroke length	51 mm (2 in)
Bore diameter	25 mm (1 in)
Blows per minute	4000
Weight	2.6 kg (5.7 lbs)
Length	409 mm (16.1 in)
Air inlet size	1/4 in
Recommended hose size, ID min.	10 mm (3/8 in)
Needles, 19 (included)	3mm (0.12 in) diameter x 180 mm (7 in) long

Air Hose Assemblies Coiled

Warranty: Manufacturer's

- Designed for air service only
- Ideal air hose for blow guns, nut setters, etc
- Constructed of lightweight fungus-resistant, oil and water impervious nylon
- Spring-wound hose extends over 20 times its stored length with permanent memory.
- 360° swivel couplings at both ends



Maximum burst pressure	4960.8 kPa (720 psi)
Maximum working pressure	1240.2 kPa (180 psi)
Operating temperature range	6.67 to 76.67°C (20° to 170°F)

Part No.	Length	Hose I.D.	Male NPT Each End
1U-7714	3.66 m (12 ft)	.375 in	3/8 in
1U-7715	7.62 m (25 ft)	.375 in	3/8 in
1U-7716	15.24 m (50 ft)	.375 in	3/8 in
4C-4508	3.66 m (12 ft)	.500 in	1/2 in
4C-4509	7.62 m (25 ft)	.500 in	1/2 in
4C-4510	15.24 m (50 ft)	.500 in	1/2 in
4C-4506	3.66 m (12 ft)	.250 in	1/4 in
4C-4507	7.62 m (25 ft)	.250 in	1/4 in

Extra Heavy-Duty Quick-Detach Air Couplers and Connectors

Warranty: Manufacturer's

Part No.	NPTF Size	Pressure Drop @ 100 psi	Air Volume
Standard Type			
1U-7717 Connector	1/4 in (f)	10 psi (68.9 kPa)	30 CFM
1U-7721 Coupler	1/4 in (m)	10 psi (68.9 kPa)	30 CFM
Volume Type			
1U-7718 Coupler	1/2 in (f)	20.67 kPa (3 psi)	80 CFM
1U-7719 Coupler	3/4 in (f)	20.67 kPa (3 psi)	80 CFM
1U-7720 Connector	1/2 in (m)	20.67 kPa (3 psi)	80 CFM
1U-7722 Connector	3/4 in (m)	20.67 kPa (3 psi)	80 CFM

4C-5746 Air Powered Siphon Cleaning Gun

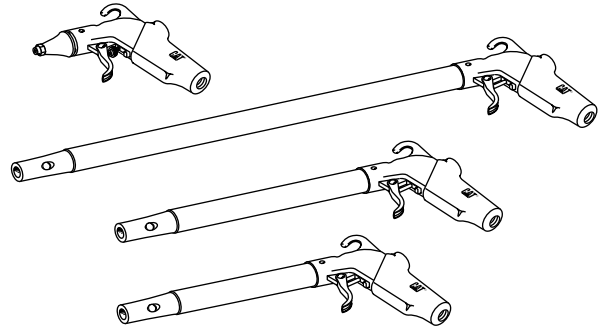
Warranty: Manufacturer's

- Ideal for cleaning parts, engines and equipment
- Light weight — easy to use
- 1.8 m (6 ft) long vinyl suction hose with metal weighted strainer included



Safety Air Guns

- Ideal for cleaning parts, engines and equipment
- Cast aluminum, pistol-style body
- Adjustable trigger control regulates air volume
- Protective air cone prevents debris from flying back at operator
- Diverts air through side slots if tip is blocked
- Tip pressure reduces to 207 kPa (30 psi) if tip is blocked (meets OSHA requirements)
- Four different lengths provides greater versatility when cleaning



Inlet	1/4 NPT (female)
Maximum operating pressure	827 kPa (120 psi)

Part No.	Description
156-0927	Jet Guard Safety Air Gun
156-0930	Long John Safety Air Gun, 61 cm (24.0 in)
156-0931	Long John Safety Air Gun, 91 cm (36.0 in)
156-0932	Long John Safety Air Gun, 122 cm (48.0 in)

4C-6774 Gun Vac Vacuum Unit

Warranty: Manufacturer's

- Small, air operated vacuum unit (includes 4C-6775 Reusable Bag and 4C-6776 Straight Extension, 18 inch)
- Handles like a blowgun — vacuums up chips instead of blowing them
- No electrical parts — complete kit contains vac-head, reusable chip collecting bag, wand and brush attachments
- 1/4 inch NPT thread



4C-6778 Spray Gun Canister

Warranty: Manufacturer's

- 1-quart canister attaches to spray gun eliminating feed tubes and buckets.
- Increased mobility reduces the risks of spills.



4C-6779 Pneumatic Oil Gun

Warranty: Manufacturer's

- Heavy-duty pneumatic oil gun with steel 1-quart reusable dispenser
- Cast aluminum pistol grip and 12 inch extension for reaching constricted locations
- Adjustable nozzle tip controls spray volume from a fine mist to a heavy application.
- Knurled nut under trigger controls air volume.



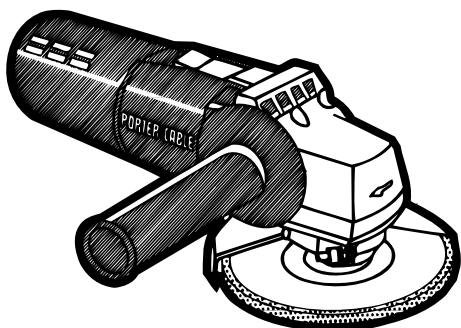
Electrical Tools

141-6993 Heavy-Duty Angle Grinder, 10,000 RPM, 5 inch

Warranty: Manufacturer's

- Turns at 10,000 RPM for maximum grinding performance and efficiency
- High output motor is designed and manufactured for long life and best performance
- AC/DC switch for versatility on the job
- High performance spiral bevel gears with removable pinion are machined and hardened to high tolerances; can be changed individually and need not be changed as a set as with some competitive units (parts available from manufacturer)
- Maintenance-free bearings are sealed and lubricated for life to minimize downtime
- Can be used as a sander
- Special cooling system keeps motor cool even under heavy overload for long trouble-free life
- Double insulated
- Standard equipment includes: auxiliary handle, wheelguard, 5 inch (127 mm) depressed center grinding wheel, flange and retaining nut, wrenches, and operating manual

Power	120 VAC, 25-60 Hz, single phase/120 VDC
Motor Amps	6.6
No load speed (RPM)	10,000
Spindle thread size	5/8 inch-11 RH
Wheel size	127 mm (5 in)
Length	305 mm (12 in)
Net weight	2.04 kg (4-1/2 lbs)
Shipping weight	2.84 kg (6-1/4 lbs)



Options for 141-6993

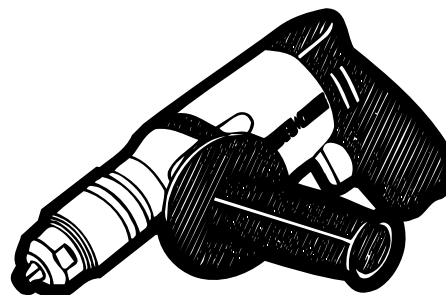
Part No.	Description	Size	Specs.
9U-6382	Grinding Disc	127 x 6.35 mm x 5/8 in-11 Type 27 (5 in x 1/4 in)	A24
9U-6383	Grinding Disc	127 x 6.35 mm x 5/8 in-11 Type 27 (5 in x 1/4 in)	Z/A24

4C-9927 Keyless Extra-Heavy-Duty Variable Speed Reversing Drill, 1/2 inch

Warranty: Manufacturer's

- New industrial-quality (keyless chuck) enables bit change in seconds; no more lost chuck keys or fumbling for the key during bit changes
- Thrust-line grip with electronic VSR Switch; includes lock-on button
- Full power in reverse for fast backout
- Variable speed motor provides high torque at low speeds
- Precision gearing with a helical pinion
- All ball and needle bearing construction
- Positive stop brushes stop motor when brushes need replacing (brushes available from manufacturer).
- Standard equipment includes: auxiliary side handle and operating manual (items not available separately).

Power	120 VAC, 25-60 Hz, single phase
Motor Amps	5.0
Speed (RPM)	0-750
Gear reduction	3-Stage
Chuck size	13 mm (1/2 in) Keyless Design
Drilling capacity:	
Wood	38 mm (1-1/2 in)
Steel	13 mm (1/2 in)
Length	292 mm (11-1/2 in)
Net weight	2.15 kg (4-3/4 lbs)
Shipping weight	2.60 kg (5-3/4 lbs)



151-0968 Cordless Heavy-Duty Variable Speed Drill, 3/8 inch, 12 Volt

SMCS Code: 0600
Model: All
Warranty: Manufacturer's

- Replaces discontinued 4C-9928 Heavy-Duty Variable Speed Drill

Drill

- Advanced Magnaquench™ Rare-Earth motor combines neodymium iron-boron high density magnets for high torque, high efficiency, and long run times
- Motor is fan cooled to withstand heavy use
- Uses long life brushes that never need replacing, for tough professional applications
- Two speed ranges of 0 to 400 rpm for high torque and 0 to 1200 rpm for high speed
- Twenty-position adjustable clutch offers complete control of torque from 15 to 330 in-lbs
- Electric brake stops tool instantly when variable speed trigger is released
- Keyless Jacobs™ chuck provides maximum gripping power
- Variable speed trigger and reversing button positioned for one-handed operation
- Warranted by manufacturer for 1 year from date of purchase

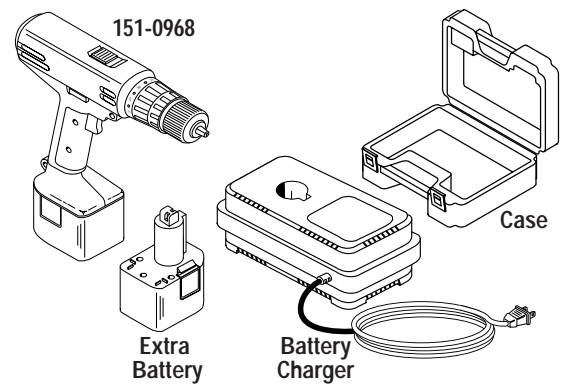
Power	120 VAC, 60 Hz, single phase
Battery voltage	12 VDC
Clutch	20 positions
Speed ranges	0 to 350 rpm and 0 to 1250 rpm
Weight with battery pack	1.9 kg (4.25 lbs)
Shipping weight	6.6 kg (14.5 lbs)

Batteries

- Group comes with two 12 Volt removable battery packs
- High Amp/hour batteries run 30% longer between recharge cycles than standard batteries
- Batteries do not develop memories (do not have to be run down completely before charging)

Battery Charger

- Charges battery using a soft-pulse method for long battery cycle life
- Maintains charge by trickle charging
- Will detect a weak or defective pack that needs to be replaced
- Built-in sensor waits for battery to cool or warm, before it begins to charge



9U-5590 Double Insulated Extra Heavy-Duty Angle Electric Drill, 3/8 inch

Warranty: Manufacturer's

- Lightweight — 1.36 kg (3 lbs)
- Genuine SIOUX-wound motor for long life
- Variable speed, reversible, double insulated

Part No.	Chuck Size	RPM No Load	Side To Center	Volts	Full Load Amps	Overall Length	Net Wt. Tool Only	Max. HP	Maximum Capacity	
									In Steel	In Hdwod.
9U-5590	3/8 in (9.52 mm)	0-1300	1 in (25.4 mm)	115	3.5	10 in (254 mm)	3.5 lb (1.6 kg)	.375 (.280 kW)	3/8 in (9.52 mm)	1 in (25.4 mm)



197-1438 Abrasive Cut Off Saw

Warranty: Manufacturer's

- Used to cut all metal shapes and reinforced hose products
- 100% ball and needle bearing motor construction
- Built-in carrying handle makes unit portable
- Quick release vise swivels 45 degrees
- Spindle lock makes cutting wheel removal fast and easy
- Includes wheel wrench for changing cutting wheels

Replacement blade	1U-6810 Abrasive Cutting Wheel
Cutting wheel diameter	35 cm (14 in)
Arbor size	25.4 mm (1.00 in)
Cutting capacity	133 mm (5.25 in) round, 70 mm (2.8 in) x 179 mm (7.0 in) rectangular, 108 mm (4.25 in) x 108 mm (4.25 in) square
Speed	3900 rpm
Voltage	120 Volt AC/DC, 25 to 60 Hz, 15 Amps
Overall size (H x W)	40 cm (15.8 in) x 27 cm (10.5 in)
Weight	20 kg (44 lbs)
Shipping weight	22 kg (49 lbs)



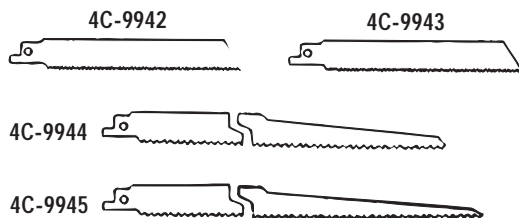
205-0594 Abrasive Cut Off Saw Guide Group

- Used to ensure hose end squareness when cutting hydraulic hoses to length (hose end squareness is vital to producing quality hose assembly)
- Used with 197-1438 Abrasive Cut Off Saw (only works on this model of saw)
- Works with all Caterpillar Hydraulic Hose except 1028 and 1543
- Rugged construction from 2 inch angle iron and steel plates
- Designed with handle and chain to pull hose down into cutting guide—ensures square cut
- Replaces current quick clamp on saw
- Adjustable (allows guide to be set square with blade)

Overall length	648 mm (25.5 in)
Weight	7 kg (15 lbs)
Construction	welded



Saw Blades — designed for use on most saws



BIM and HCS Saw Blades (not shown)

Part No.	Length	Teeth	Qty/pkg	Teeth Specs
1U-9234	305 mm (12 in)	457 mm (18 in)	5	Raker BIM ¹
1U-9236	305 mm (12 in)	610 mm (24 in)	5	Wavy BIM
1U-9238	305 mm (12 in)	813 mm (32 in)	5	Wavy BIM
1U-9240	305 mm (12 in)	457 mm (18 in)	5	Raker HCS ²
1U-9242	305 mm (12 in)	610 mm (24 in)	5	Wavy HCS
1U-9244	305 mm (12 in)	813 mm (32 in)	5	Wavy HCS

¹ BIM — All purpose blade, highly flexible, for the most difficult materials.

² HCS — High carbon steel blade, for non-hard materials.

Bi-Metal All-Purpose Tiger™ Saw Blades

Part No.	Length	Teeth/inch	Qty/pkg	Recommended Use
4C-9942	152 mm (6 in), flexible	18	5	Heavy gauge (non-ferrous metals) — bar and angle stock-stainless-galvanized pipe-tubing (over 18 ga.)
4C-9943	152 mm (6 in), flexible	14	5	Heavy gauge (non-ferrous metals) — bar and angle stock-cast aluminum-copper-brass-galvanized pipe-tubing (over 18 ga.)
4C-9944	229 mm (9 in)	5/7	5	General roughing-in wood
4C-9945	305 mm (12 in)	6	5	General roughing-in wood

1U-9187 Ground Fault Circuit Interrupter

Warranty: Manufacturer's

- Assures you of reliable ground fault protection in wet or damp areas
- Can be used with power tools, in marine and other wet locations
- High strength rain-tight nylon case molded for easy gripping when inserting or removing unit from a receptacle
- Slim design permits use in a standard duplex receptacle without blocking the other outlet.
- Neon lamp indicates if the Ground Fault Circuit Interrupter has tripped, giving a clear indication of the plug's status from a distance or in the dark.
- Unique design features an internal safety relay which prevents potentially faulty equipment from being energized when the supply circuit has an open or disconnected neutral.
- Protection assured even if the supply circuit polarity is unintentionally reversed
- Four grommets are included to provide a secure, raintight seal; they accommodate cord diameters from 9 mm (.35 in) to 16.5 mm (.65 in); screw-on relief cord grip will not damage or interfere with conductor terminators.
- Class A Portable — listed by Underwriters' Laboratories, Inc.

NOTE: Not to be used with double insulated equipment



Supply voltage	120 (+10, -15) VAC, 60 Hz, single phase
Ratings	15A., 125VAC
Configuration	NEMA 5-15P, 2-Pole, 3-Wiring Grndg.
Operating temperature	-35°C (-30°F) to 66°C (150°F)
Trip threshold	5 ± 1 mA.
Trip time	0.025 sec. nominal as per U.L. Standard
Case material	Gray nylon
Dimensions	Length — 140 mm (5.50 in) Height — 70 mm (2.75 in) Width — 44 mm (1.75 in)
Cord type	AWG 14/3 or 12/3, SJ, SJO, SJT, SJTO, S, SO, STO
Cord grip range	9.1 mm - 16.5 mm (.36 in - .65 in)

CSTG Electrical Cord Definitions

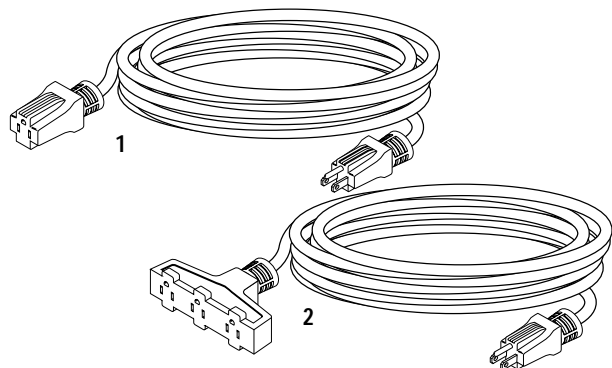
Abbreviations	
U.L.	Underwriters Laboratories
C.U.L.	Canadian Underwriters Laboratories
O.S.H.A.	Office of Safety and Health Administration
NEMA	National Electrical Manufacturers Association

Cord Designation by Letter	
S	Hard surface, flexible cord, general use
J	300 Volt cord or smaller
E	Elastic synthetic rubber, good low temp cord
W	Watertight cord
O	Oil resistant
A	Low-temperature rated
T	Thermo-grade plastic

Heavy-duty Contractor and Industrial Application Extension Cords

- Designed for heavy-duty use by contractors and industrial applications
- Outer jacket protects against rough handling and extreme weather conditions
- Provides superior resistance to sunlight, ozone, cracking, oils chemicals, and moisture
- All cords have CAT logo printed on cord

- All extension cords are UL (Underwriters Laboratory) listed and meet OSHA (Office of Safety and Health Administration) requirements
- All plugs and outlets are NEMA (National Electrical Manufacturers Association) designated — 5-15P plug and 5-15R outlet



Item	Part No.	Description
1	165-4947	Extension Cord, Outdoor Vinyl (25 ft)
	165-4948	Extension Cord, Outdoor Vinyl (50 ft)
	165-4949	Extension Cord, Outdoor Vinyl (100 ft)
2	165-4950	Extension Cord, All Weather Rubber (25 ft)
	165-4951	Extension Cord, All Weather Rubber (50 ft)
	165-4952	Extension Cord, All Weather Rubber (100 ft)
	165-4953	Extension Cord, All Weather Rubber (25 ft)
	165-4954	Extension Cord, All Weather Rubber (50 ft)
	165-4955	Extension Cord, All Weather Rubber (100 ft)

	165-4947, 165-4948, 165-4949	165-4950, 165-4951, 165-4952	165-4953, 165-4954, 165-4955
Usage	outdoor (vinyl material)	all-weather (TPE material)	all-weather (TPE material)
Outlet	single	triple	triple
Wire size	12 gauge, 3 conductor	12 gauge, 3 conductor	10 gauge, 3 conductor
Rating	SJTW-A ¹	SJEOW-A ¹	SJEOW-A ¹
Maximum voltage	300 Volts	—	—
Other listings	CUL (Canadian Underwriters Laboratory)	—	—
Voltage rating	—	300 Volts	300 Volts
Operating temperature	—	-50 to 107°C (-58 to 225°F)	-50 to 107°C (-58 to 225°F)
Weight	—	one-third lighter than ordinary cords	one-third lighter than ordinary cords

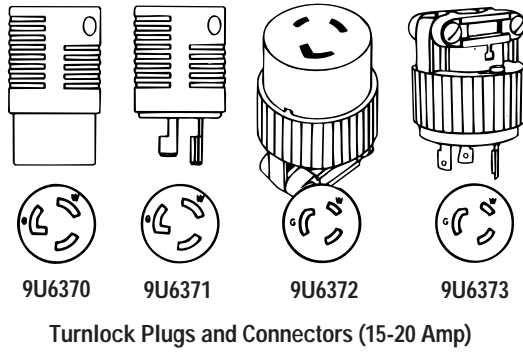
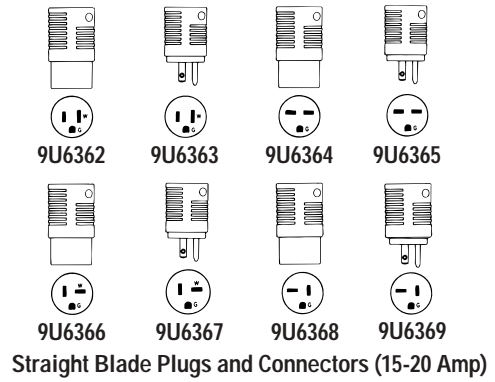
¹ (S) Hard Surface, Flexible Cord, General Use; (J) 300 Volt cord or smaller; (E) Elastic Synthetic Rubber, Good Low Temperature Cord; (W) Watertight Cord; (O) Oil Resistant; (A) Low Temperature Rated; (T) Thermo Grade Plastic

Plugs and Connectors

Warranty: Manufacturer's

- For use in construction sites, industrial, dusty and damp environments
- For use with tools, motors, grinding machines, high pressure washers, outdoor lighting
- UL and CSA listed

Straight Blade Plugs and Connectors (15-20 Amp)		
Part No.	Type	Description
9U-6362	15 Amp, 125V AC Connector	2 Pole, 3 Wire, NEMA 5-15P
9U-6363	15 Amp, 125V AC Plug	2 Pole, 3 Wire, NEMA 5-15P
9U-6364	15 Amp, 250V AC Connector	2 Pole, 3 Wire, NEMA 6-15P
9U-6365	15 Amp, 250V AC Plug	2 Pole, 3 Wire, NEMA 6-15P
9U-6366	20 Amp, 125V AC Connector	2 Pole, 3 Wire, NEMA 5-20P
9U-6367	20 Amp, 125V AC Plug	2 Pole, 3 Wire, NEMA 5-20P
9U-6368	20 Amp, 250V AC Connector	2 Pole, 3 Wire, NEMA 6-20P
9U-6369	20 Amp, 250V AC Plug	2 Pole, 3 Wire, NEMA 6-20P



Turnlock Plugs and Connectors (15-20 Amp)		
Part No.	Type	Description
9U-6370	15 Amp, 125V AC Heavy-Duty Connector	2 Pole, 3 Wire, Grounded NEMA L5-15
9U-6371	15 Amp, 125V AC Heavy-Duty Plug	2 Pole, 3 Wire, Grounded NEMA L5-15
9U-6372	20 Amp, 250V AC Heavy-Duty Connector	2 Pole, 3 Wire, Grounded NEMA L5-20
9U-6373	20 Amp, 250V AC Heavy-Duty Plug	2 Pole, 3 Wire, Grounded NEMA L5-20



Heavy-Duty Connectors and Plugs (20-30 Amps) with Insulating Cord Grip			
Part No.	Type	Description	Cord Diameter
9U-6374	20 Amp, 125/250V Connector	Yellow High Impact, with Insulating Cord Grip	14.27 - 26.97 mm (.562 in - 1.062 in)
9U-6375	20 Amp, 125/250V Plug	Yellow High Impact, with Insulating Cord Grip	14.27 - 26.97 mm (.562 in - 1.062 in)
9U-6376	20 Amp, 250V Connector	Yellow High Impact, with Insulating Cord Grip	14.27 - 26.97 mm (.562 in - 1.062 in)
9U-6377	20 Amp, 250V Plug	Yellow High Impact, with Insulating Cord Grip	14.27 - 26.97 mm (.562 in - 1.062 in)
9U-6378	30 Amp, 125V Connector	Yellow High Impact, with Insulating Cord Grip	15.875 - 28.575 mm (.625 in - 1.125 in)
9U-6379	30 Amp, 125V Plug	Yellow High Impact, with Insulating Cord Grip	15.875 - 28.575 mm (.625 in - 1.125 in)
9U-6380	30 Amp, 250V Connector	Yellow High Impact, with Insulating Cord Grip	15.875 - 28.575 mm (.625 in - 1.125 in)
9U-6381	30 Amp, 250V Plug	Yellow High Impact, with Insulating Cord Grip	15.875 - 28.575 mm (.625 in - 1.125 in)

Tool Boxes

Tool Storage Units

Warranty: One Year

- 40 inch and 30 inch top chests have a top compartment—gas spring in 40 inch top chest and slide lock on 30 inch top chest allow top compartment to open easily
- Double-wall steel construction provides strength and durability to support loaded drawers so they stay level
- Full length stiffener under the cover is welded to sides of the cover to provide the strongest top cover available and to minimize racking
- Extra deep drawer pulls give more finger room (almost 1 inch) to comfortably pull the drawer
- Rolled edges on drawers add strength, rigidity, and safety
- Ball-bearing slides provide extra weight support with smooth, one-hand operation
- Ergonomic handle design provides comfortable gripping and ease of maneuvering
- Gussets on corners improve cabinet strength so the cabinet stays square
- Drawer liners included
- Caster plates and weldnuts keep casters tight for smooth rolling—caster screws pass through double thick steel plates and pre-threaded weldnuts



Part No.	Description
214-6144	30 inch Roller Cabinet
214-6145	30 inch Top Chest
214-6146	30 inch Combo (Roller Cabinet and Top Chest) ¹
214-6147	40 inch Roller Cabinet
214-6148	40 inch Top Chest
214-6149	40 inch Combo (Roller Cabinet and Top Chest) ¹
214-6150	53 inch Roller Cabinet
214-6151	53 inch Top Chest
214-6152	53 inch Combo (Roller Cabinet and Top Chest) ¹
214-7344	Side Cabinet (bulk)
214-7345	Side Cabinet (6 drawer)

¹ Combo part numbers available for sale only in North and South America

Tool Box Accessories

Part No.	Description	Width	Depth	Height
Work Surfaces				
223-3835	Laminated Press Board Top for the 76.2 cm (30 in) roller cabinet	76.2 cm (30 in)	50.80 cm (20.00 in)	.97 cm (0.38 in)
223-3836	Laminated Press Board Top for the 101.6 cm (40 in) roller cabinet	101.6 cm (40 in)	50.80 cm (20.00 in)	.97 cm (0.38 in)
223-3837	Butcher Block Top for the 134.62 cm (53 in) roller cabinet	134.77 cm (53.06 in)	49.38 cm (19.44 in)	4.45 cm (1.75 in)
Covers - black with CAT logo printed in white on the front of the cover				
223-3832	Cover for the 76.2 cm (30 in) combo top chest and roller cabinet			
223-3833	Cover for the 101.6 cm (40 in) combo top chest and roller cabinet			
223-3834	Cover for the 134.62 cm (53 in) combo top chest and roller cabinet			

	Drawers	Width	Depth	Height	Cubic cm (in)	Weight	Load Capacity
214-6144 Roller Cabinet, 30 inch							
Overall	7	74.93 cm (29.5 in)	50.29 cm (19.8 in)	102.36 cm (40.3 in)	188911.6 cm (11519 in)	86.71 kg (191 lb)	508.48 kg (1120 lb)
Drawer, 5.08 cm (2 inch) full width	2	61.47 cm (24.2 in)	44.45 cm (17.5 in)	4.06 cm (1.6 in)	22222 cm (1355 in)		
Drawer, 10.16 cm (4 inch) full width	3	61.47 cm (24.2 in)	44.45 cm (17.5 in)	9.14 cm (3.6 in)	75013.6 cm (4574 in)		
Drawer, 15.24 cm (6 inch) full width	1	61.47 cm (24.2 in)	44.45 cm (17.5 in)	14.22 cm (5.6 in)	38900.8 cm (2372 in)		
Drawer, 20.32 cm (8 inch) full width	1	61.47 cm (24.2 in)	44.45 cm (17.5 in)	19.30 cm (7.6 in)	52719.6 cm (3219 in)		

	Drawers	Width	Depth	Height	Cubic cm (in)	Weight	Load Capacity
214-6145 Top Chest, 30 inch							
Overall	4	74.93 cm (29.5 in)	50.29 cm (19.8 in)	49.28 cm (19.4 in)	114603.2 cm (6988 in)	56.75 kg (125 lb)	—
Drawer, 5.08 cm (2 inch) full width	2	61.47 cm (24.2 in)	44.45 cm (17.5 in)	4.06 cm (1.6 in)	22222 cm (1355 in)		
Drawer, 10.16 cm (4 inch) full width	2	61.47 cm (24.2 in)	44.45 cm (17.5 in)	9.14 cm (3.6 in)	50003.6 cm (3049 in)		
Top Compartment		74.68 cm (29.4 in)	47.50 cm (18.7 in)	11.94 cm (4.7 in)	42377.6 cm (2584 in)		
214-6147 Roller Cabinet, 40 inch							
Overall	7	101.6 cm (40 in)	50.29 cm (19.8 in)	102.62 cm (40.4 in)	270878.8 cm (16517 in)	127.12 kg (280 lb)	508.48 kg (1120 lb)
Drawer, 5.08 cm (2 inch) full width	2	88.14 cm (34.7 in)	44.45 cm (17.5 in)	4.06 cm (1.6 in)	31865.2 cm (1943 in)		
Drawer, 10.16 cm (4 inch) full width	3	88.14 cm (34.7 in)	44.45 cm (17.5 in)	9.14 cm (3.6 in)	107551.2 cm (6558 in)		
Drawer, 15.24 cm (6 inch) full width	1	88.14 cm (34.7 in)	44.45 cm (17.5 in)	14.22 cm (5.6 in)	55776.4 cm (3401 in)		
Drawer, 20.32 cm (8 inch) full width	1	88.14 cm (34.7 in)	44.45 cm (17.5 in)	19.30 cm (7.6 in)	75686 cm (4615 in)		
214-6148 Top Chest, 40 inch							
Overall	4	101.6 cm (40 in)	50.29 cm (19.8 in)	49.28 cm (19.4 in)	161080.8 cm (9822 in)	83.54 kg (184 lb)	—
Drawer, 5.08 cm (2 inch) full width	2	88.14 cm (34.7 in)	44.45 cm (17.5 in)	4.06 cm (1.6 in)	31865.2 cm (1943 in)		
Drawer, 10.16 cm (4 inch) full width	2	88.14 cm (34.7 in)	44.45 cm (17.5 in)	9.14 cm (3.6 in)	71700.8 cm (4372 in)		
Top Compartment		101.35 cm (39.9 in)	47.50 cm (18.7 in)	11.94 cm (4.7 in)	57514.8 cm (3507 in)		
214-6150 Roller Cabinet, Double Bank, 53 inch							
Overall	13	135.64 cm (53.4 in)	50.29 cm (19.8 in)	98.55 cm (38.8 in)	333576 cm (20340 in)	188.86 kg (416 lb)	1271.20 kg (2800 lb)
Drawer, 5.08 cm (2 inch) narrow	2	28.45 cm (11.2 in)	44.45 cm (17.5 in)	4.06 cm (1.6 in)	10282.8 cm (627 in)		
Drawer, 10.16 cm (4 inch) narrow	3	28.45 cm (11.2 in)	44.45 cm (17.5 in)	9.14 cm (3.6 in)	34718.8 cm (2117 in)		
Drawer, 30.48 cm (12 inch) narrow	1	28.45 cm (11.2 in)	44.45 cm (17.5 in)	29.72 cm (11.7 in)	37605.2 cm (2293 in)		
Drawer, 5.08 cm (2 inch) wide	2	88.14 cm (34.7 in)	44.45 cm (17.5 in)	4.06 cm (1.6 in)	31865.2 cm (1943 in)		
Drawer, 10.16 cm (4 inch) wide	4	88.14 cm (34.7 in)	44.45 cm (17.5 in)	9.14 cm (3.6 in)	143401.6 cm (8744 in)		
Drawer, 20.32 cm (8 inch) wide	1	88.14 cm (34.7 in)	44.45 cm (17.5 in)	19.30 cm (7.6 in)	75686 cm (4615 in)		
214-6151 Top Chest, Double Bank, 53 inch							
Overall	10	135.64 cm (53.4 in)	50.29 cm (19.8 in)	50.8 cm (20 in)	130986.8 cm (7987 in)	122.13 kg (269 lb)	—
Drawer, 5.08 cm (2 inch) narrow	2	28.45 cm (11.2 in)	44.45 cm (17.5 in)	4.06 cm (1.6 in)	10282.8 cm (627 in)		
Drawer, 10.16 cm (4 inch) narrow	3	28.45 cm (11.2 in)	44.45 cm (17.5 in)	9.14 cm (3.6 in)	34718.8 cm (2117 in)		
Drawer, 5.08 cm (2 inch) wide	2	88.14 cm (21.4 in)	44.45 cm (17.5 in)	4.06 cm (1.6 in)	19647.2 cm (1198 in)		
Drawer, 10.16 cm (4 inch) wide	3	88.14 cm (21.4 in)	44.45 cm (17.5 in)	9.14 cm (3.6 in)	66338 cm (4065 in)		
214-7345 Six Drawer Side Cabinet							
Overall	6	41.91 cm (16.5 in)	50.04 cm (19.7 in)	86.36 cm (34 in)	87428.4 cm (5331 in)	51.76 kg (114 lb)	—
Drawer, 5.08 cm (2 inch)	1	28.45 cm (11.2 in)	44.45 cm (17.5 in)	3.81 cm (1.5 in)	4821.6 cm (294 in)		
Drawer, 10.16 cm (4 inch)	4	28.45 cm (11.2 in)	44.45 cm (17.5 in)	8.89 cm (3.5 in)	45001.6 cm (2744 in)		
Drawer, 30.48 cm (12 inch)	1	28.45 cm (11.2 in)	44.45 cm (17.5 in)	29.72 cm (11.7 in)	37605.2 cm (2293 in)		
214-7344 Bulk Side Cabinet							
2 shelves		41.91 cm (16.5)	50.04 cm (19.7 in)	86.36 cm (34 in)	181252.8 cm (11052 in)	34.05 kg (75 lb)	—

4C-5912 Storage Chest



Total capacity	4536 in ³
Shipping weight	37.2 kg (82 lbs)

	Drawers	Width	Depth	Height
Chest	10	66.35 cm (26 1/8 in)	33.02 cm (13 in)	51.43 cm (20 1/4 in)
Drawer	6	17.78 cm (7 in)	31.43 cm (12 3/8 in)	4.76 cm (1 7/8 in)
	1	17.78 cm (7 in)	31.43 cm (12 3/8 in)	15.55 cm (6 1/8 in)
	2	59.69 cm (23 1/2 in)	31.43 cm (12 3/8 in)	4.76 cm (1 7/8 in)
	1	59.69 cm (23 1/2 in)	31.43 cm (12 3/8 in)	9.84 cm (3 7/8 in)
Top Compartment		50.8 cm (25 1/2 in)	32.06 cm (12 5/8 in)	6.35 cm (2 1/2 in)

9U-6217 Tool Holder

- Holds up to 14 long screw drivers and pry bars with handles
- Dimensions: 23.5 cm W x 8 cm F to B x 28 cm H (9 1/4 in x 3 1/8 x 11 in)
- Shipping weight: 1.8 kg (4 lbs)



9S-1750 Chest

- 3 drawer, drop front tool chest
- Weight: 17.69 kg (39 lbs),
- Color: Red



	Drawers	Width	Depth	Height
Chest	3	60.96 cm (24 in)	26.67 cm (10 1/2 in)	29.84 cm (11 3/4 in)
Drawer	1	55.88 cm (22 in)	22.86 cm (9 in)	3.81 cm (1 1/2 in)
	1	55.88 cm (22 in)	22.86 cm (9 in)	5.08 cm (2 in)
	1	55.88 cm (22 in)	22.86 cm (9 in)	8.73 cm (3 7/16 in)
Top Compartment		60.80 cm (23 15/16 in)	24.92 cm (9 13/16 in)	8.25 cm ¹ (3 1/4 in) ¹

¹ Includes height of lid

174-9802 Six-Drawer Tool Chest, Black 188-2095 Six-Drawer Tool Chest, Orange

- Tough construction — rigid three-piece cap end, eight added stiffeners to ensure strength, gasketed cover and watershed hinge, internally riveted to protect rivets from rust, and a three point locking system
- Slides are 17% wider than average tool chests for added strength and durability.
- Slides are formed from one piece of steel to eliminate fasteners, and no special tool is needed to move slides.
- Superior black electrostatic finish on 174-9802; orange finish on 188-2095
- Drop-front cover lifts to 180 degrees (helps eliminate pinched fingers when closing)
- Top drawer size is more compatible with standard size hand tools and includes drawer liners and dividers.



Overall size	66.0 x 35.1 x 41.9 cm (26.0 x 13.8 x 16.5 in)
Compartment size	64.8 x 32.0 x 10.2 cm (25.5 x 12.6 x 4.0 in)
Three-drawer size	16.0 x 30.2 x 4.6 cm (6.3 x 11.9 x 1.8 in)
Two-drawer size	54.1 x 30.2 x 4.6 cm (21.3 x 11.9 x 1.8 in)
One-drawer size	54.1 x 30.2 x 7.1 cm (21.3 x 11.9 x 2.8 in)
Weight	36 kg (79 lbs)
Storage capacity	53,389 cubic centimeters (3,528 cubic inches)

174-9803 Lock

- Fits 174-9802 and 188-2095 Tool Chests
- Lock with two keys



9U-6219 Tool Box

- Black, steel construction
- Dimensions: 508 mm (20 in) long by 219.08 mm (8.63 in) wide by 219.08 mm (8.63 in) high
- Tote tray included



Drawer Liner Kits

- Protects drawers, tools, and deadens sound
- 1.6 mm (1/16 in) thick oil resistant black foam

Part No.	Description
4C-3015	7 sheets, 72.4 cm W x 45.7 cm D (27 1/2 in x 18 in)
4C-3016	8 sheets, 91.8 cm W x 58.4 cm D (36 1/8 in x 23 in)

5P-4724 Lock Kit

- Fits 9S-1750 Tool Chest and discontinued 5F-4763 Tool Chest



Metal Storage Boxes with Hinged Lids and Socket Trays

Name	Part No.	Length	Width	Height	Storage Capacity (in ³)	Color
Box	8S-1602	213.36 mm (8.4 in)	101.6 mm (4.0 in)	38.1 mm (1.5 in)	50.6	Orange
Box	2P-8306	381 mm (15.0 in)	287.02 mm (11.3 in)	76.2 mm (3.0 in)	506.3	Orange
Box	5P-0946	457.2 mm (18.0 in)	254 mm (10.0 in)	127 mm (5.0 in)	900.0	Orange
Box	9S-6332	508 mm (20.0 in)	381 mm (15.0 in)	101.6 mm (4.0 in)	1200.0	Orange
Box	9S-1725	159.5 mm (6.28 in)	103.12 mm (4.06 in)	25.4 mm (1.0 in)	N/A	Red
Box	5S-6092	788.67 mm (31.06 in)	317.5 mm (22.50 in)	146.05 mm (5.75 in)	N/A	Red

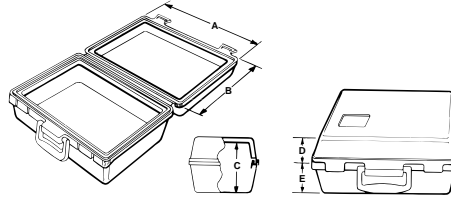
178-2212 Case 178-2213 Dividers

- Uses include organizing fastener groups and other small reusable items such as nuts, bolts, washers
- Convenient to transport to a field site due to compact size
- Overall case dimensions: 457 x 305 x 76 mm (18.0 x 12.0 x 3.0 in)
- Dividers can partition case to a maximum of 48 bins.
- Dividers in packages of 12 each



Plastic Storage Cases with Hinged Lids

- Impact-resistant
- Textured surface to prevent scratches



Part No.	Length A Exterior & Interior	Length B Exterior & Interior	Overall Length C Exterior & Interior	Lid Depth D Exterior & Interior	Base Depth E Exterior & Interior	Handle	No. Of Latches	Color
4C-4730	660mm (26.00 in), 622 mm (24.50 in)	421mm (16.56 in), 330 mm (13.00 in)	114 mm (4.50 in), 102 mm (4.00 in)	23 mm (0.90 in), 20 mm (0.78 in)	84 mm (3.31 in), 79 mm (3.12 in)	Yes	Two	Gray
6V-9449	470 mm (18.50 in), 432 mm (17.00 in)	395 mm (15.56 in), 330 mm (13.00 in)	203 mm (8.00 in), 187 mm (7.38 in)	102 mm (4.00 in), 89 mm (3.50 in)	101 mm (3.96 in), 82.5 mm (3.25 in)	Yes	Two	Black
6V-7145	470 mm (18.50 in), 432 mm (17.00 in)	395 mm (15.56 in), 330 mm (13.00 in)	127 mm (5.00 in), 114 mm (4.50 in)	43 mm (1.70 in), 35 mm (1.38 in)	84 mm (3.31 in), 79 mm (3.12 in)	Yes	Two	Black
8T-0841	394 mm (15.50 in), 356 mm (14.00 in)	311 mm (12.25 in), 273 mm (10.75 in)	191 mm (7.50 in), 175 mm (6.88 in)	95 mm (3.75 in), 83 mm (3.27 in)	95 mm (3.75 in), 92 mm (3.63 in)	Yes	Two	Black
4C-3975	394 mm (15.50 in), 356 mm (14.00 in)	311 mm (12.25 in), 273 mm (10.75 in)	140 mm (5.50 in), 127 mm (5.00 in)	44 mm (1.75 in), 35 mm (1.38 in)	95 mm (3.75 in), 92 mm (3.63 in)	Yes	Two	Black
6V-3072	394 mm (15.50 in), 356 mm (14.00 in)	311 mm (12.25 in), 273 mm (10.75 in)	102 mm (4.00 in), 89 mm (3.50 in)	25 mm (1.00 in), 16 mm (0.63 in)	76 mm (3.00 in), 73 mm (2.63 in)	Yes	Two	Black
6V-3073	311 mm (12.25 in), 289 mm (11.38 in)	224 mm (8.81 in), 178 mm (7.00 in)	99 mm (3.88 in), 90 mm (3.56 in)	30 mm (1.19 in), 24 mm (0.94 in)	68 mm (2.69 in), 65 mm (2.56 in)	Yes	Two	Black
148-5675	216 mm (8.50 in), 192 mm (7.56 in)	198 mm (7.81 in), 149 mm (5.88 in)	90 mm (3.56 in), 83 mm (3.25 in)	20 mm (0.78 in), 17 mm (0.67 in)	70 mm (2.75 in), 66 mm (2.60 in)	No	One	Black
6V-6045	191 mm (7.50 in), 173 mm (6.81 in)	102 mm (4.00 in), 81 mm (3.19 in)	41 mm (1.63 in), 33 mm (1.31 in)	10 mm (0.38 in), 3 mm (0.13 in)	31 mm (1.25 in), 30 mm (1.19 in)	No	One	Black
6V-3112	254 mm (10.00 in), 238 mm (9.38 in)	191 mm (7.50 in), 170 mm (6.69 in)	30mm (1.18 in), 24 mm (0.94 in)	—	—	No	None	Black

Foam Block for Plastic Storage Cases

Part No.	Length	Width	Thickness	Material	Color	Convuluted
6V-6105	350.52 mm (13.8 in)	254 mm (10.0 in)	12.7 mm (0.5 in)	Etherfoam ¹	Charcoal	No
8S-5128	520.7 mm (20.5 in)	223.52 mm (8.8 in)	50.8 mm (2.0 in)	Esterfoam ²	Charcoal	Yes
2P-8289	457.2 mm (18.0 in)	254 mm (10.0 in)	50.8 mm (2.0 in)	Esterfoam ²	Charcoal	Yes
6V-4094	279.4 mm (11.0 in)	170.18 mm (6.7 in)	38.1 mm (1.5 in)	Esterfoam ²	Charcoal	Yes
9S-8105	482.6 mm (19.0 in)	431.8 mm (14.0 in)	38.1 mm (1.5 in)	Ethafoam ³	Charcoal	Yes
3P-1549	386.08 mm (15.2 in)	279.4 mm (11.0 in)	12.7 mm (0.5 in)	Ethafoam ³	Black	No
6V-6126	365.76 mm (14.4 in)	276.86 mm (10.9 in)	73.66 mm (2.9 in)	Ethafoam ³	Black	No
6V-4873	360.68 mm (14.2 in)	279.4 mm (11.0 in)	12.7 mm (0.5 in)	Ethafoam ³	Black	No
6V-6044	353.06 mm (13.9 in)	264.16 mm (10.4 in)	25.4 mm (1.0 in)	Ethafoam ³	Black	No
8T-3153	322.58 mm (12.7 in)	238.76 mm (9.4 in)	10.16 mm (0.4 in)	Ethafoam ³	Black	No
6V-6107	190.5 mm (7.5 in)	149.86 mm (5.9 in)	27.94 mm (1.1 in)	Ethafoam ³	Black	No
6V-6096	190.5 mm (7.5 in)	149.86 mm (5.9 in)	12.7 mm (0.5 in)	Ethafoam ³	Black	No
6V-6057	175.26 mm (6.9 in)	83.82 mm (3.3 in)	22.86 mm (0.9 in)	Ethafoam ³	Black	No
148-5677	165 mm (6.5 in)	200 mm (7.9 in)	38 mm (1.5 in)	Etherfoam ¹	Charcoal	No

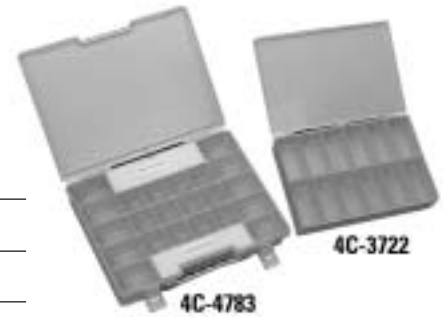
¹ Lightweight

² General purpose

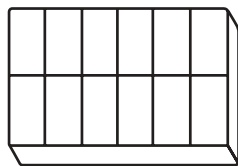
³ Dense

Plastic Divided Utility Boxes with Hinged Lids

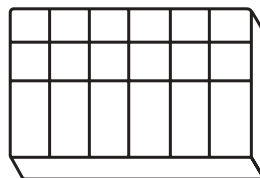
- Heavy-duty plastic boxes for organizing, storing, and protecting small parts
- Yellow polypropylene material—resistant to oils, solvents and common chemicals
- Rustproof, dentproof, spark proof, and non-conductive



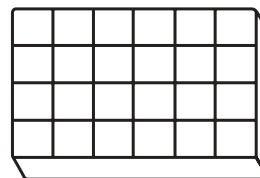
Part No.	Length	Width	Thickness	Color	Compartments Number	Size
4C-3722	332.74 mm (13.10 in)	(228.6 mm) 9.0 in	(58.42 mm) 2.30 in	Yellow	12	(50.8 x 104.14 mm) 2.00 in x 4.10 in
4C-3723	332.74 mm (13.10 in)	(228.6 mm) 9.0 in	(58.42 mm) 2.30 in	Yellow	6	(50.8 x 50.8 mm) 2.00 in x 4.10 in
					12	50.8 x 50.8 mm (2.00 in x 2.00 in)
4C-3724	332.74 mm (13.10 in)	(228.6 mm) 9.0 in	(58.42 mm) 2.30 in	Yellow	24	(50.8 x 50.8 mm) 2.00 in x 2.00 in
4C-3725	332.74 mm (13.10 in)	(228.6 mm) 9.0 in	(58.42 mm) 2.30 in	Yellow	3	(104.14 x 104.14 mm) 4.10 in x 4.10 in
					6	50.8 x 104.14 mm (2.00 in x 4.10 in)
4C-4463	332.74 mm (13.10 in)	(228.6 mm) 9.0 in	(58.42 mm) 2.30 in	Yellow	4	(50.8 x 104.14 mm) 2.00 in x 4.10 in
					1	104.14 x 104.14 mm (4.10 in x 4.10 in)
					1	104.14 x 317.5 mm (4.10 in x 12.50 in)
4C-4783	381 mm (15.00 in)	(228.6 mm) 11.8 in	(63.50 mm) 2.50 in	Gray/See-through Smoke Gray	9-24	(15 Removable Dividers)
4C-4787	177.8 mm (7.00 in)	(228.6 mm) 3.7 in	(31.75 mm) 1.25 in)	Opaque	8	35.05 x 41.15 mm (1.38 in x 1.62 in)
					1	28.45 x 82.55 mm (1.12 in x 3.25 in)
4C-4789	209.55 mm (8.25 in)	(228.6 mm) 4.5 in	(35.05 mm) 1.38 in)	Opaque	12	31.75 x 50.8 mm (1.25 in x 2.00 in)
6V-3007	332.74 mm (13.10 in)	(228.6 mm) 9.0 in	(58.42 mm) 2.30 in)	Opaque	13	50.8 x 50.8 mm (2.00 in x 2.00 in)
					1	50.8 x 158.75 mm (2.00 in x 6.25 in)
					1	50.8 x 212.85 mm (2.00 in x 8.38 in)
					1	104.65 x 104.65 mm (4.12 in x 4.12 in)



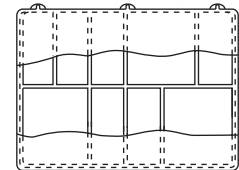
4C-3722



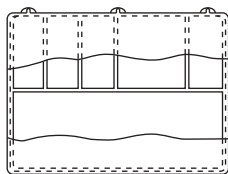
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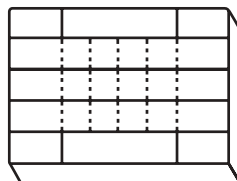
4C-3724



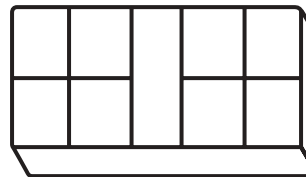
4C-3725



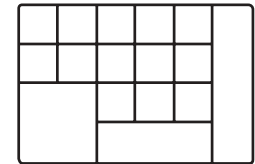
4C-4463



4C-4783



4C-4787



6V-3007

Sample Configurations

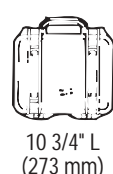
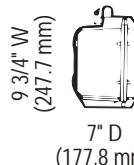
Protector Cases—Pelican Line

Warranty: Manufacturer's

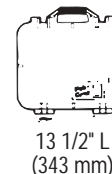
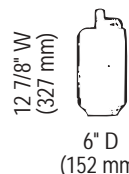
- Make an excellent lockable storage vault when equipment is not in use—just apply a lock
- Watertight, airtight, dustproof — Pelican cases feature an exclusive 6.5 mm (1/4 in) neoprene “O” ring, to guarantee a perfect seal. Neither dust nor water can penetrate this barrier to harm your equipment. These cases are so airtight and watertight they float even when loaded. The “O” ring is easily replaced if damaged.
- Purge valve — The exclusive built-in “O” ring purge valve is sealed for pressure allowing for quick equalization after changes in altitude or temperature.
- Dentproof — The tough, cushioned, protective shell eliminates damage from bumping, jarring, and even airline shipments.
- Protect contents inside — Multiple layers of industrial grade photographic foam secure and cushion equipment.
- Custom fit for tooling — The “Pick-N-Pluck” center foam section is prescored for quick and clean custom fitting. The case lid is lined with the same convoluted foam for maximum shock protection.
- Lightweight — easy to carry by using the comfortable, molded handle (4C-9650 and 4C-9658 have fold-down handles.)
- All cases are gray.



4C-9650



4C-9652



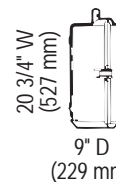
4C-9654



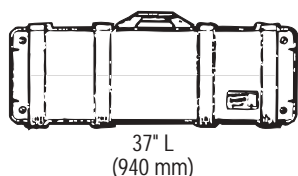
4C-9656



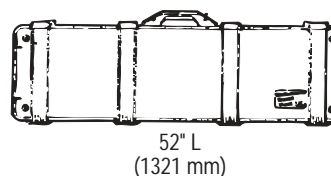
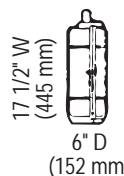
4C-9658



4C-9660



4C-9662



4C-9664

Part No.	Description	Outside Dimensions	Inside Dimension	Weight	Shipping Weight	Replacement Foam Set	Replacement O-Ring
4C-9650 ¹	Pelican Mini “S” Case™ (Fold-down handle)	273 mm L x 247.7 mm W x 127 mm D (10 3/4 in L x 9 3/4 in W x 5 in D)	241 mm L x 191 mm W x 114 mm D (9 1/2 in L x 7 1/2 in W x 4 1/2 in D)	.91 kg (2 lbs)	1.36 kg (3 lbs)	4C-9651, 3 Pc.	4C-9739
4C-9652	Pelican Mini “D” Case™	273 mm L x 247 mm W x 177.8 mm D (10 3/4 in L x 9 3/4 in W x 7 in D)	241 mm L x 191 mm W x 165 mm D (9 1/2 in L x 7 1/2 in W x 6 1/2 in D)	1.13 kg (2 1/2 lbs)	1.59 kg (3 1/2 lbs)	4C-9653, 3 Pc.	—
4C-9654	Pelican Case™	343 mm L x 327 mm W x 152 mm D (13 1/2 in L x 12 7/8 in W x 6 in D)	311 mm L x 235 mm W x 133 mm D (12 1/4 in L x 9 1/4 in W x 5 1/4 in D)	1.8 kg (4 lbs)	2.5 kg (5 1/2 lbs)	4C-9655, 3 Pc.	4C-9741
4C-9656	Pelican Case™	470 mm L x 387 mm W x 175 mm D (18 1/2 in L x 15 1/4 in W x 6 7/8 in D)	432 mm L x 299 mm W x 152 mm D (17 in L x 11 3/4 in W x 6 in D)	3.2 kg (7 lbs)	3.9 kg (8 1/2 lbs)	4C-9657, 3 Pc.	4C-9742
4C-9658 ¹	Pelican Pro Case™ (Fold-down handle)	521 mm L x 425 mm W x 216 mm D (20 1/2 in L x 16 3/4 in W x 8 1/2 in D)	483 mm L x 356 mm W x 197 mm D (19 in L x 14 in W x 7 3/4 in D)	4.5 kg (10 lbs)	6.2 kg (14 lbs)	4C-9659, 4 Pc.	4C-9743
4C-9660	King Pelican Case™	591 mm L x 527 mm W x 229 mm D (23 1/4 in L x 20 3/4 in W x 9 in D)	559 mm L x 432 mm W x 203 mm D (22 in L x 17 in W x 8 in D)	6 kg (13 lbs)	11.5 kg (25 lbs)	4C-9661 4 Pc.	4C-9744
4C-9662	Pelican Travel Vault II™	940 mm L x 445 mm W x 152 mm D (37 in L x 17 1/2 in W x 6 in D)	914 mm L x 343 mm W x 127 mm D (36 in L x 13 1/2 in W x 5 in D)	6.8 kg (15 lbs)	7.7 kg (17 lbs)	4C-9663, 3 Pc.	4C-9745
4C-9664 ²	Pelican Travel Vault™	1321 mm L x 445 mm W x 152 mm D (52 in L x 17 1/2 in W x 6 in D)	1289 mm L x 323 mm W x 127 mm D (50 3/4 in L x 13 1/2 in W x 5 in D)	11.8 kg (26 lbs)	13 kg (29 lbs)	4C-9665 3 Pc.	4C-9746

¹ New fold down handle.

² Supplied with regular foam; Pick-N-Pluck is not available.

Abrasive

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Brushes

Abrasives — Safety and Storage

Safety

To avoid injury always wear impact-resistant protective glasses, full face shield, safety shoes, arm guards, leather gloves and apron for all grinding operations.

For Abrasive Disc Grinding:

- Never grind without a proper backup pad.
- Never use another grinding disc as backup pad.
- Never use a larger diameter disc than specified by manufacturer.
- Check all backup pads for signs of irregularities. Check for concentricity. Do not exceed maximum RPM.
- Always use the grinder's safety pad. Check spindle for wobble.
- Check disc retainer nut for thread wear. Check for snug fit and full three-thread contact (except with quick change or non-wrench systems).

For Abrasive Belt Grinding and Polishing:

- Never run an abrasive belt on unfamiliar machinery.
- Inspect for safe operating conditions: the abrasive belt, idler assembly and contact wheel should be enclosed within sheet metal hood; adjustable deflector should be installed within 1/4 inch of abrasive belt working surface; use adequate exhaust system; employ special precautions with inflammable or other hazardous materials.

- Use workpiece fixture whenever possible.
- Always check: grinder spindle for run-out (wobble); contact wheel for balance, face trueness and run-out; idler pulley spindle for run-out and balance.

Proper Storage of Coated Abrasives

Follow these guidelines to prolong life and maintain the efficiency of coated abrasives.

- Keep stockroom at constant levels of humidity (35-50%) and temperature [12.8-21.1°C (55-70°F)].
- Keep cartons away from damp or cold walls and floor where they may absorb moisture.
- Store coated abrasives away from any heat source.
- Keep products in original packages for easy handling and stacking.
- Store bulk rolls flat on shelves or pallets — not on edge.
- Belts removed from packing case should be rolled up and stood on edge on a clean shelf. They may be draped over a large cylinder but NEVER hang a belt from a nail or peg (the backing will crease and the abrasive may crack).
- Precondition coated abrasive product in a chamber of controlled temperature and humidity before use for maximum efficiency.

Brushes — Safety Requirements

All operators must read this information thoroughly and completely before using the brush.

Operators and Work Area

Osborn Power Brushes are built to rigid manufacturing specifications that combine the finest in design, materials and workmanship. The product you receive will give you maximum work performance, and safe operation if used properly.

All power brushes, like other rotating cutting tools, demand that certain operating precautions be observed to assure operator and work area safety.

Inspection

Brushes should be carefully checked when removed from original carton. Do not use if rusted or damaged.

Storage and Handling

Store brushes in original boxes. Wire brushes should not be exposed to heat, high humidity, acids, fumes or liquids that can result in deterioration of wire filaments, and subsequently, premature failure of the wires. Also, check for distortion of brush fill that can cause imbalance and excessive vibration when brush is run. Do not allow foreign material to accumulate in brush face.

Machine Condition

Proper maintenance of machines is essential to keep them in safe operating condition. Special operating instructions furnished with a machine should be closely followed. Hoods and safety guards must be kept in place at all times. Use adequate spindle diameter for the brush — do not use brush larger than the machine was designed for. Brushing machines should have sufficient power to maintain rated spindle speeds.

Provide proper ventilation and/or exhaust systems on all brushing operations.

Mounting Brushes

Brushes should be inspected for rust, oxidation and other damage. Do not use the brush if it is not in good condition. Check spindle speed RPM. Do not mount and operate brush if spindle RPM exceeds MAXIMUM SAFE FREE SPEED (MSFS) for which brush is rated.

Brush arbor hole and spindle diameter should be the same for free fit. Spindle length should be sufficient to permit a full nut mounting. Direction of spindle nut thread should be in such relation to the direction of rotation that the nut will tend to tighten as spindle revolves. When flanges are used, they should be identical in size and radial bearing surface to avoid cross-bending pressure on the brush.

Work Rest

On single or double end pedestal machines, work rests of rigid and adjustable design should be used to support the work piece while brushing. Adjust the work rest for a maximum opening of 1/8 inch to the brush face. This will prevent the work from being forced between the brush and rest. The work rest should be adjusted only when the brush is not in motion.

Speed

MAXIMUM SAFE FREE SPEED (MSFS) is the maximum RPM at which the brush should be operated with no work applied (spinning free). It is not the recommended operating speed. The application determines the recommended operating speed, which should never exceed the MSFS brush ratings marked on the brush and/or shown in this catalog. Periodic speed checks of the spindle are the responsibility of the operator and user.

In all cases where MSFS is not indicated, and on special brushes, contact your CSTG HOTLINE for specific operating speed details.

Protective Equipment

The potential of serious injury exists for both the brush operator and others in the work area (possibly 50 or more feet from the brush). To protect against this hazard, before rotating the brush, during rotation, and until rotation stops operators and others in the area must wear SAFETY GOGGLES or FULL FACE SHIELDS WORN OVER SAFETY GLASSES WITH SIDE SHIELDS. Comply with the requirements of ANSI Z87.1-1979 "Occupational Eye and Face Protection."

Appropriate protective clothing and equipment (such as gloves, respirators, etc.) shall be used where there is probability of injury that can be prevented by such clothing or equipment.

Certain brushing operations, because of their nature and location, may require an enclosure to isolate the operation from other personnel.

Machine Guards

Rotating power brushes should be used only on machines that are equipped with safety guards, and these guards must be kept in place at all times.

Starting the Brush

Jog the machine before starting to determine if it is ready to use, and that the brush is fastened securely. Run the brush at operating speed with safety guards in place for at least one minute before applying work. Do not stand in front of or in line with the brush during this time.

Brush Pressure

Avoid excessive pressure against the work. This reduces the efficiency of the brush and could cause premature failure during operation.

Comply with the Safety Standards of the Industrial Division of the American Brush Manufacturers Association and the American National Standards Institute B 165.1-1985 "Safety Requirements for the Design, Care and Use of Power Driven Brushing Tools," and B 165.2-1982 "Safety Requirements for the Design, Care and Use of Power Driven Brushing Tools constructed with wood, plastic, or composition hubs and cores."

Brushes — Terminology

Outside Diameter

A larger brush diameter results in a more efficient finishing tool. Production economies are obtained through lower end-of-service costs. Wire brushes 304.8 mm (12 in) O.D. are a practical size whereas 304.8 to 406.4 mm (12 in to 16 in) O.D. is usually best for non-metallic types. Sizes for portable tools (6,000 RPM maximum) should not exceed 152.4 mm (6 in) O.D. in any material.

Inside Diameter

Diameter of brush back. Increasing the inside diameter of a brush while maintaining the outside diameter results in a stiffer, less flexible brush face.

Trim Length

Length of fill material extending beyond brush back or face plates. A short trim makes a stiff fast cutting brush, while a long trim gives a brush the flexibility to contact irregular surfaces.

Fill Density

Brushes with high density are used to produce finer surface finishes, and also where fast cutting action is required; for example, burr removing operations.

Brushes with low density offer greater brush flexibility. The relatively high degree of freedom of the brush wires makes for quick and efficient removal of rust, scale and other incrustations from surfaces by the impact resulting from the whip-like impingement of the wires on the surface.

Flexibility

That quality of a brush which determines resiliency and ability to reach into confined areas and conform to uneven or contoured surfaces.

Brushing Speed and Pressure

RPM speed specified for Osborn power brushes are Maximum Safe Free Speeds. In most operations, a lower speed than that specified will prove more efficient for you. Lower speeds and lighter pressures give longer brush life, generate less heat in the work, and require less power. It is important to remember that the TIPS of the wire filaments do the actual work. Where high brush pressures and speeds are required, it is recommended that a more aggressive brush be used. This may be done by increasing wire size, decreasing trim length or in some instances changing to another brush type.

Brush and Operating Adjustments to Obtain the Desired Results

Observed Result:

Brush works too slowly.

Corrections Suggested:

1. Increase surface speed by increasing O.D. or RPM.
2. Decrease trim length and increase fill density.
3. Increase filament diameter.

Observed Result:

Brush works too fast

Corrections Suggested:

1. Reduce surface speed by reducing RPM of O.D.
2. Reduce filament diameter.
3. Reduce fill density.
4. Increase trim length.

Observed Result:

Action of brush peens burr to adjacent surfaces

Corrections Suggested:

1. Decrease trim length and increase fill density.
2. If wire brush tests indicate metal too ductile (burr is peened rather than removed), change to non-metallic brush such as treated Tampico used with burring compound.

Observed Result:

Finer or smoother finish required

Corrections Suggested:

1. Decrease trim length and increase fill density.
2. Decrease wire diameter.
3. Try treated Tampico or cord brushes with suitable compounds recommended speeds.
4. Use auxiliary buffing compound with brush.

Observed Result:

Finish too smooth and lustrous

Corrections Suggested:

1. Increase trim length.
2. Reduce brush fill density.
3. Reduce surface speed.
4. Increase filament diameter.

Observed Result:

Brushing action not sufficiently uniform

Corrections Suggested:

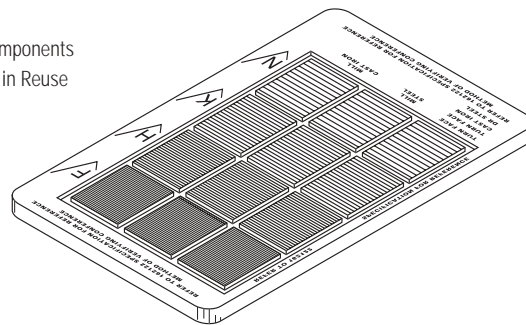
1. Increase trim length and decrease fill density.
2. Devise hand-held or mechanical fixture, or machine to avoid irregular offhand manipulation.

9A-1593 Surface Texture Replica (Comparison)

- Used as a reference tool for metal surface reconditioning during reuse and salvage of major components
- Provides user with a physical representation of surface finish specifications that are called out in Reuse and Salvage Guidelines
- Provides 12 examples of F, H, K, and N surface textures for cast iron and steel

References

SEBF8271, Guideline for Reusable Parts



Radial Knot Brushes — Stringer Bead-Type Wheels

- Designed for heavy duty cleaning, scale, spatter and rust removal
- High quality oil tempered wire gives long life on pipe and plate weld cleaning.

Part No.	Pkg. Qty.	Dia.	Arbor Hole (A.H) Threaded Size	Wire Size	Max Safe Free Speed RPM
1U-9957	1	76.2 mm (3 in)	9.5 mm (3/8 in) A.H.	.36 mm (.014 in)	25,000



Bench Grinder Wire Brushes

- General purpose wire brushes that provide fine to medium brushing action
- Excellent for brushing uneven surfaces or areas not easily reached by wider brushes
- Will remove light scale, dirt, rust, corrosion or light burrs

Part No.	Pkg. Qty.	Wheel Dia.	Arbor Hole	Wire Size	Face Width	Max. Safe Free Speed RPM
1U-9971	1	152.4 mm (6 in)	12.7-15.9 mm (1/2 in-5/8 in)	.36 mm (.014 in)	15.88 mm (5/8 in)	6,000
1U-9972	1	152.4 mm (6 in)	12.7-15.9 mm (1/2 in-5/8 in)	.36 mm (.014 in)	25.4 mm (1 in)	6,000
1U-9973	1	177.8 mm (7 in)	15.9 mm (5/8 in)	.36 mm (.014 in)	25.4 mm (1 in)	6,000
1U-9974	1	203.2 mm (8 in)	15.9 mm (5/8 in)	.36 mm (.014 in)	25.4 mm (1 in)	4,500



End Wire Brushes, 6.4 mm (1/4 in) Shank

- Suited for use on portable air and electric tools for jobs where space limitation is a factor
- For a majority of operations, higher speeds are required for effective brushing action.

NOTE: As a safety precaution, end brush shanks must be fully inserted into the chuck or collet, and tightened securely.

Part No.	Pkg. Qty.	Description	Wire Size	Dia.	Max. Safe Free Speed RPM
1U-9939	1	Knot Style	.51 mm (.020 in)	25.4 mm (1 in)	20,000
1U-9940	1	Crimped Wire	.51 mm (.020 in)	25.4 mm (1 in)	20,000
1U-9941	1	Crimped Wire	.51 mm (.020 in)	19 mm (3/4 in)	20,000
1U-9942	1	Circular End	.51 mm (.020 in)	38.1 mm (1 1/2 in)	15,000
1U-9943	1	Knot Style	.51 mm (.020 in)	19 mm (3/4 in)	20,000
1U-9945	1	Gal. Coated Crimped Wire	.36 mm (.014 in)	76.2 mm (3 in)	5,000
1U-9946	1	Galvanized	.36 mm (.014 in)	76.2 mm (3 in)	5,000
4C-6153	1	Crimped Wire	.15 mm (.006 in)	25.4 mm (1 in)	20,000
4C-6154	1	Crimped Wire	.264 mm (.0104 in)	25.4 mm (1 in)	20,000
4C-6157	1	Crimped Encapsulated Flair-Flex	.264 mm (.0104 in)	38.1 mm (1 1/2 in)	25,000
4C-6158	1	Knot Style	.36 mm (.014 in)	25.4 mm (1 in)	20,000



Cylinder Washing Brushes

- Brush Research Mfg. Co. Inc.

Part No.	Brush Diameter	Part No.	Brush Diameter
4C-6342	88.9 mm (3 1/2 in)	4C-6346	165.1 mm (6 1/2 in)
4C-6343	101.6 mm (4 in)	4C-6347	177.8 mm (7 in)
1U-7429	114.3 mm (4 1/2 in)	4C-6348	190.5 mm (7 1/2 in)
1U-9788	127 mm (5 in)	4C-6349	203.2 mm (8 in)
4C-6344	139.7 mm (5 1/2 in)	4C-6350	241.3 mm (9 1/2 in)
4C-6345	152.4 mm (6 in)		



Tube Brushes

Part No.	Pkg. Qty.	Description	O.D.	Wire
4C-6160	1	76.2 mm (3 in) Brush Face, 609.6 mm (24 in) O.A.L.	15.88 mm (5/8 in)	.15 mm (.006 in), Carbon Steel
4C-6161	1	76.2 mm (3 in) Brush Face, 609.6 mm (24 in) O.A.L.	9.53 mm (3/8 in)	.13 mm (.005 in), Carbon Steel

Spindle Mounted Flap Brush

- Used to clean curved and irregular shaped parts with hard to reach areas
- Use in place of wire wheels, hand scrapers, and wire brushes.
- Typical applications include cleaning up both hydraulic cylinders and engine lower bores.
- Can also be used to clean rust, carbon deposits, adhesives, and tough coatings.



Part No.	Pkg. Qty.	Description	Diameter	Maximum Operating Speed	Optimum Operating Speed	Use with:
4C-8630	1	CPFBS-A Medium	76.2 mm x 44.5 mm x 6.35 mm (3 in x 1 3/4 in x 1/4 in)	8,500	8,500	Grinder/Hand Drill

Discs

Surface Reconditioning Discs

Conditioning surfaces with conventional abrasive discs often results in dimensioning, gouging, or undercutting. Wire brushes don't thoroughly remove contaminants which can lead to rework. Their wires can become loose, fly off, and injure an operator.

Surface reconditioning discs can help reduce or eliminate these problems. They deliver superior, consistent finishes when you need to clean, deburr, blend or finish.

- Use disc coming off the edge — better finish results.
- Aluminum Oxide.
- Use for gasket removal.
- Use for deburring, cleaning and rust removal.
- Use instead of wire brushes or sand paper when you don't want to remove any stock.



Part No.	Pkg. Qty.	Description	Diameter	Maximum Operating Speed	Optimum Operating Speed	Use With:
5P-9709	25	Surface Conditioning Disc, A-Coarse	177.8 mm (7 in)	6,000	4,500	Grinder
6V-0185	40	Surface Conditioning Disc, A-Coarse	127.0 mm (5 in)	10,000	10,000	Grinder
1U-7622	25	Surface Conditioning Disc, A-Coarse	101.6 mm (4 in)	13,000/18,000 ¹	10,000	Grinder/Hand Drill
4C-4384	25	Surface Conditioning Disc, A-Coarse	76.2 mm (3 in)	13,000	15,000	Grinder/Hand Drill
4C-4383	25	Surface Conditioning Disc, A-Coarse	50.8 mm (2 in)	13,000	18,000	Grinder/Hand Drill

¹ Maximum speed is 13,000 if used with 4C-4763 Disc Pad Holder or 4C-4764 Disc Pad Holder and 155-3595 Adapter; maximum speed is 18,000 if used with 1U-7623.

Surface Reconditioning Discs — Superior Edge Wear

- Surface reconditioning disc used on right angle tools
- The edges of an abrasive on a right angle grinder tend to wear faster than the center and thus the disc is never fully used up. Superior edge wear discs have longer overall life than standard discs.
- Ideal for gasket removal, rust removal and general cleaning on steel parts
- Retained by hook and loop type fasteners or 7/8 inch bolt thru application
- Brown disc with gray backing



Part No.	Package Quantity	Description	Diameter	Maximum Operating Speed	Optimum Operating Speed	Use with:
9U-6921	10	SE Disc — A Coarse	177.8 mm (7 in)	6,000	4,500	Grinder
9U-6922	10	SE Disc — A Coarse	127.0 mm (5 in)	10,000	10,000	Grinder
9U-6923	10	SE Disc — A Coarse	127.0 mm x 22.23 mm center hole (5 in x 7/8 in)	10,000	10,000	Grinder
9U-6924	10	SE Disc — A Coarse	101.6 mm (4 in)	13,000/18,000 ¹	10,000/15,000	Grinder/ Hand Drill
9U-6925	10	SE Disc — A Coarse	101.6 mm x 22.23 mm center hole (4 in x 7/8 in)	13,000	10,000	Grinder/ Hand Drill
9U-6926	10	Roloc — A Coarse	76.2 mm (3 in)	18,000	15,000	Die Grinder/ Hand Drill
9U-6927	10	Roloc — A Coarse	50.8 mm (2 in)	25,000	21,000	Die Grinder/ Hand Drill

¹ Maximum speed is 13,000 if used with 4C-4763 Disc Pad Holder or 4C-4764 Disc Pad Holder and 155-3595 Adapter; maximum speed is 18,000 if used with 1U-7623.

Disc Pad Holders

Safety Tip

Place holder on table before turning tool on — prevents pad from flying off.



Part No.	Pkg. Qty.	Use With:	Description	Diameter	Hub/Shank	Maximum Operating Speed
5P-9718	1	5P-9709	Holder	177.8 mm (7 in)	5/8 in-11	6,000
6V-0186 ¹	1	6V-0185	Holder	127.0 mm (5 in)	5/8 in-11	10,000
4C-4763	1	1U-7622	Holder #914	101.6 mm (4 in)	M14 x 2	13,000
4C-4764	1	1U-7622	Holder #914	101.6 mm (4 in)	5/8 in-11	13,000
1U-7623	1	1U-7622	Holder #924	101.6 mm (4 in)	6.35 mm shaft (1/4 in)	18,000
4C-4382	1	4C-4384	Holder #923	76.2 mm (3 in)	6.35 mm shaft (1/4 in)	20,000
4C-4381	1	4C-4383	Holder #922	50.8 mm (2 in)	6.35 mm shaft (1/4 in)	20,000
1U-5520	1	9U-6926	Roloc Disc Holder	76.2 mm (3 in)		18,000
1U-5519	1	9U-6927	Roloc Disc Holder	50.8 mm (2 in)		25,000
1U-5518	1	1U-5519/1U-5520			Roloc Threaded Shaft	

¹ Female, 5/8 in-11; use 1U-9381 to adapt it.

Roloc Surface Conditioning Discs

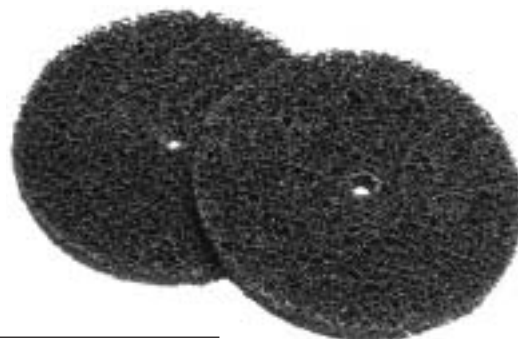
- Use a more positive retention method than the “hook and loop” fasteners system
- Roloc discs have a quarter turn male fastener embedded into the disc. The disc holder has the corresponding female fastener.
- Typically used at smaller sizes where the higher maximum operating speed requires a more positive retention system
- The disadvantage of this system is that the surface conditioning operation must always be conducted one direction only. Reversing the tool will “unspin” the Roloc disc from the Roloc holder.
- Aluminum oxide
- Use for gasket removal, deburring, cleaning, and rust removal.
- Use instead of wire brushes or sand paper when you don’t want to remove any stock.



Roloc Surface Conditioning Discs						
Part No.	Pkg. Qty.	Description	Diameter	Maximum Operating Speed	Optimum Operating Speed	Use With
1U-5516	25	Roloc Surface Conditioning Disc— use with 1U-5519 and 1U-5518	50.8 mm (2 in)	25,000	18,000	Die Grinder, Hand Drill
1U-5517	25	Roloc Surface Conditioning Disc— use with 1U-5520 and 1U-5518	76.2 mm (3 in)	15,000	15,000	Die Grinder, Hand Drill
Disc Holders						
Part No.	Pkg. Qty.	Description	Diameter	Maximum Operating Speed	Use With	
1U-5520	1	Roloc Disc Holder, use with 1U-5518	76.2 mm (3 in)	15,000	Die Grinder/Hand Drill	
1U-5519	1	Roloc Disc Holder, use with 1U-5518	50.8 mm (2 in)	25,000	Die Grinder/Hand Drill	
1U-5518	1	Roloc Threaded Shaft, use with 1U-5519 or 1U-5520	6.35 mm (1/4 in)	—	Die Grinder/Hand Drill	

Discs and Holders

- Flexible discs can be used to remove corrosion and surface deposits.
- Clean/strip designation indicates a coarse version of cutting/ polishing disc.
- Typical applications are clean up of hydraulic cylinders and engine lower bores.
- Can be used in stacks of two or three, for whatever width is required to clean the surface in the most efficient manner
- Aluminum oxide
- Use for gasket removal, deburring, cleaning, and rust removal.
- Use instead of wire brushes or sand paper when you don’t want to remove any stock.



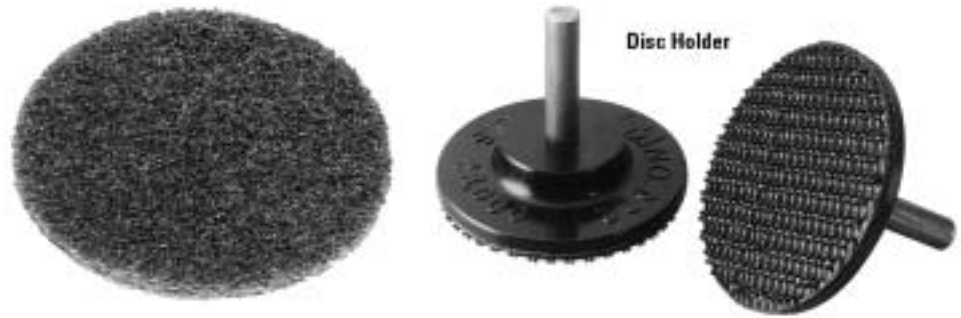
Part No.	Pkg. Qty.	Description	Diameter	Maximum Operating Speed	Optimum Operating Speed	Use With:
6V-4086	1	Cutting and Polishing Disc, A-Medium	152.4 mm x 6.35 mm (6 in x 1/4 in)	4,000	3,200	Straight Grinder and Hand Drill
8T-3054	1	Clean 'N Strip Disc, Extra Coarse	152.4 mm x 12.7 mm (6 in x 1/2 in)	4,000	3,200	Straight Grinder and Hand Drill
4C-3868	1	Clean 'N Strip Disc, Extra Coarse	101.6 mm x 6.35 mm (4 in x 1/4 in)	6,000	4,500	Straight Grinder and Hand Drill

Holders						
Part No.	Pkg. Qty.	Use With:	Description	Diameter	Hub/Shank	Maximum Operating Speed
8T-3055	1	8T-3054	Mandrel #934	127.0 mm (1/2 in)	6.35 mm x 70.5 mm Dia. (1/4 in x 2 1/2 in)	4,000
6V-4087	1	6V-4086/4C-3868	Mandrel #933	1 mm (1/4 in)	6.35 mm shank x 25.4 mm Dia. (1/4 in x 1 in)	6,000



Surface Reconditioning Discs for Aluminum Surfaces

- The ideal disc for aluminum
- Very fine grade minimizes the chance of changing the surface profile
- Uses the same holders and grinders as other surface reconditioning discs
- Identified by blue/green color both front and back of disc



Part No.	Package Quantity	Description	Diameter	Maximum Operating Speed	Optimum Operating Speed	Use with:
150-1197	10	Scuffing Disc — A Fine, N.H.	177.8 mm (7 in)	6,000	4,500	Grinder
150-1244	10	Scuffing Disc — A Fine, N.H.	127.0 mm (5 in)	10,000	10,000	Grinder
150-1243	10	Scuffing Disc — A Fine	127.0 mm x 22.23 mm center hole (5 in x 7/8 in)	10,000	10,000	Grinder
150-1246	10	Scuffing Disc — A Fine	101.6 mm (4 in)	13,000/18,000 ¹	10,000/15,000	Grinder/ Hand Drill
150-1245	10	Scuffing Disc — A Fine	101.6 mm x 22.23 mm centerhole (4 in x 7/8 in)	13,000	10,000	Grinder/ Hand Drill
150-1248	10	Roloc Scuffing Disc — A Fine	76.2 mm (3 in)	18,000	15,000	Die Grinder/ Hand Drill
150-1250	10	Roloc Scuffing Disc	50.8 mm (2 in)	25,000	21,000	Die Grinder/ Hand Drill

¹ Maximum speed is 13,000 if used with 4C-4763, (4C-4764, 155-3595); maximum speed is 18,000 if used with 1U-7623.

Holders

Part No.	Qty.	Use with:	Description	Diameter	Actual Diameter	Maximum Hub/Shank	Maximum Operating Speed	Optimum Operating Speed
5P-9718	1	150-1197	Holder	177.8 mm (7 in)	174.63 mm (6 7/8 in)	5/8 in-11	6,000	4,500
6V-0186	1	150-1244	Holder	127.0 mm (5 in)	120.65 mm (4 3/4 in)	5/8 in-11	10,000	10,000
4C-4763	1	150-1246	Holder 914	101.6 mm (4 in)	95.25 mm (3 3/4 in)	M14 x 2	13,000	10,000
4C-4764	1	150-1246	Holder 914	101.6 mm (4 in)	95.25 mm (3 3/4 in)	5/8 in-11	13,000	10,000
4C-4765	1	150-1246	Holder 925	101.6 mm (4 in)	95.25 mm (3 3/4 in)	3/8 in-24	13,000	10,000
1U-7623	1	150-1246	Holder 925	101.6 mm (4 in)	98.43 mm (3 7/8 in)	1/4 in Shaft	18,000	10,000
1U-5520	1	150-1248	Roloc Disc Holder	76.2 mm (3 in)	69.85 mm (2 3/4 in)		20,000	15,000
1U-5519	1	150-1250	Roloc Disc Holder	50.8 mm (2 in)	44.45 mm (1 3/4 in)		25,000	20,000
1U-5518	1	1U-5519/1U-5520	Roloc Threaded Shaft					
4C-4382	1	150-1252	Velcro Holder 923	76.2 mm (3 in)	78.03 mm (2 7/8 in)		20,000	15,000
4C-4381	1	150-1251	Velcro Holder 922	50.8 mm (2 in)	44.45 mm (1 3/4 in)		23,000	20,000

Surface Reconditioning Discs — Bolt-On Style

- Holders for these discs have a velcro type fastening system; not all the grinders in the shop will accept this kind of holder.
- For Blue Point AT425A Right Angle Grinder or similar model, a 7/8 inch center hole is needed.
- Brown discs with brown back

Part No.	Package Quantity	Description	Dia. x Center Hole	Maximum Operating Speed	Optimum Operating Speed	Use with:
9U-6928	10	Disc — A Coarse	127.0 mm x 22.23 mm (5 in x 7/8 in)	10,000	10,000	Grinder
9U-6929	10	Disc — A Coarse	101.6 mm x 22.23 mm (4 in x 7/8 in)	13,000	10,000	Grinder



Roloc Holders and Threaded Shaft Bristle Discs

- Bristle design and 3-dimensional abrasives enable Bristle Disc to remove carbon buildup, coatings, sealants, gaskets and weld discoloration quickly, leaving a clean surface ready for subsequent operations or inspection.
- Used with rotary tool such as drill or small angle grinder
- Designed to compete with crimped wire and bristle cup brushes
- Extends range of surface reconditioning operations where conformability and flexibility are most critical
- Provides exceptional finish, outstanding performance and a safer workplace by eliminating flying metal wires
- Come in 3 sizes and 3 grades
- All roloc holders use 1U-5518 Threaded Shaft.



Shaft size		6.4 mm (.25 in)		Roloc Bristle Discs						
Item	Part No	Description	Diameter	Size	Grit	Color	Maximum Operating Speed	Optimum Operating Speed		
Disc package quantity	10									
	50 grit discs	carbon removal, weld discoloration clean up or where coating removal discs are used								
		80 grit discs	corrosion removal, sealant removal and general maintenance repair operations							
			120 grit discs	aluminum parts						
	1	138-4523	Bristle Disc	25 mm (1.0 in)	1	50	Green	30,000	25,000	
	1	138-4524	Bristle Disc	25 mm (1.0 in)	1	80	Yellow	30,000	25,000	
	1	151-8101	Bristle Disc	25 mm (1.0 in)	1	120	White	30,000	25,000	
	1	138-4528	Bristle Disc	51 mm (2.0 in)	2	50	Green	25,000	18,000	
	1	138-4529	Bristle Disc	51 mm (2.0 in)	2	80	Yellow	25,000	18,000	
	1	138-4530	Bristle Disc	51 mm (2.0 in)	2	120	White	25,000	18,000	
1	138-4534	Bristle Disc	76 mm (3.0 in)	3	50	Green	20,000	15,000		
1	138-4535	Bristle Disc	76 mm (3.0 in)	3	80	Yellow	20,000	15,000		
1	138-4536	Bristle Disc	76 mm (3.0 in)	3	120	White	20,000	15,000		
2	151-8102	Holder for Bristle Discs	25 mm (1.0 in)							
2	1U-5519	Holder for Bristle Discs	51 mm (2.0 in)							
2	1U-5520	Holder for Bristle Discs	76 mm (3.0 in)							
3	1U-5518	Threaded Shaft								

Bristle Discs

- Bristle design and 3-dimensional abrasive filled fingers enable bristle disc to remove carbon buildup, coatings, sealants, gaskets, and weld discoloration quickly, leaving a clean surface ready for subsequent operations or inspection
- Used with rotary tool such as drill or right angle grinder — can be used with 141-6993 Heavy-Duty Angle Grinder
- Used for coating removal, weld preparation, and general cleaning
- Increased safety during use — bristles are mounted securely to backing, virtually eliminate flying wires common with wire brushes
- Flexible, abrasive-filled bristles conform to part's surface and clean without removing base material, helping reduce damage and rework
- Unique bristle shape resists excessive edge wear and loading with coatings, dirt, and debris to extend disc life and performance
- Resists heat build-up to reduce potential tempering or work surface damage
- Threaded 5/8-11 inch core quickly threads onto shaft of an electric or pneumatic right angle grinder
- Color coding makes abrasive grade selection quick and easy

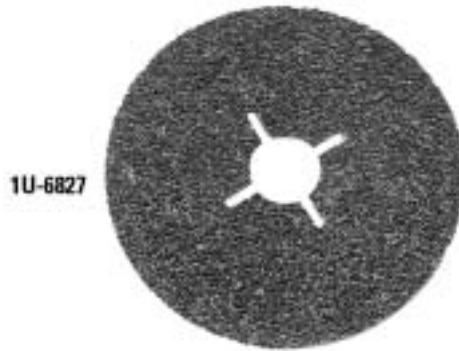


Maximum operating speed	12,000 rpm
Internal thread	5/8-11

Part No	Size	Grit	Color	Maximum Operating Speed	Optimum Operating Speed	Application
165-3945	4 1/2	50	Green	12,000	10,000	Carbon removal, weld discoloration cleaning, coating removal
165-3946	4 1/2	80	Yellow	12,000	10,000	Corrosion removal, sealant removal, general maintenance repair operations
165-3947	4 1/2	120	White	12,000	10,000	Aluminum parts

Fiber Discs

- Manufactured by Norton for Caterpillar
- Used for medium and heavy stock removal on right angle sanding equipment such as:
 - Cutting down and blending weld lines
 - Cutting down filler metal, rust and scale removal as well as deburring
- Used with air cooled rubber back up pads



Part No.	Grit	Size Dia x Hole	Pkg. Qty.
1U-6827	24	114.3 mm x 22.23 mm (4 1/2 in x 7/8 in)	25
1U-6828	36	114.3 mm x 22.23 mm (4 1/2 in x 7/8 in)	25
1U-6829	50	114.3 mm x 22.23 mm (4 1/2 in x 7/8 in)	25
1U-6830	60	114.3 mm x 22.23 mm (4 1/2 in x 7/8 in)	25
1U-6831	80	114.3 mm x 22.23 mm (4 1/2 in x 7/8 in)	25
1U-6832	100	114.3 mm x 22.23 mm (4 1/2 in x 7/8 in)	25
1U-6833	120	114.3 mm x 22.23 mm (4 1/2 in x 7/8 in)	25
1U-6834	24	127 mm x 22.23 mm (5 in x 7/8 in)	25
1U-6835	36	127 mm x 22.23 mm (5 in x 7/8 in)	25
1U-6836	50	127 mm x 22.23 mm (5 in x 7/8 in)	25
1U-6837	60	127 mm x 22.23 mm (5 in x 7/8 in)	25
1U-6838	80	127 mm x 22.23 mm (5 in x 7/8 in)	25
1U-6839	100	127 mm x 22.23 mm (5 in x 7/8 in)	25
1U-6840	120	127 mm x 22.23 mm (5 in x 7/8 in)	25
1U-6841	24	177.8 mm x 22.23 mm (7 in x 7/8 in)	25
1U-6842	36	177.8 mm x 22.23 mm (7 in x 7/8 in)	25
1U-6843	50	177.8 mm x 22.23 mm (7 in x 7/8 in)	25
1U-6844	60	177.8 mm x 22.23 mm (7 in x 7/8 in)	25
1U-6845	80	177.8 mm x 22.23 mm (7 in x 7/8 in)	25
1U-6846	100	177.8 mm x 22.23 mm (7 in x 7/8 in)	25
1U-6847	120	177.8 mm x 22.23 mm (7 in x 7/8 in)	25

Discs

- Excellent for cleaning welds, removing tough coatings, carbon deposits, adhesives and rust
- Conformable so there is less chance of under-cutting or gouging.
- Open web resists loading even from soft coatings and is non-metallic so it will not contaminate the surface with metallic residues.
- Will work at low RPM's, such as on a 6.35 mm (1/4 in) drill @ 1750 RPM
- Works well on other substrates such as wood, aluminum and even plastic



Part No.	Pkg. Qty.	Description	Diameter	Maximum Operating Speed	Optimum Operating Speed	Use with:
4C-8637	1	Clean 'N Strip 6.35 mm (1/4 in) Spindle Mounted Disc (CSD1-S)	101.6 mm x 12.7 mm x 6.35 mm (4 in x 1/2 in x 1/4 in)	8,000	8,000	Straight Grinder and Hand Drill
4C-8638	1	Clean 'N Strip 6.35 mm (1/4 in) Spindle Mounted Disc (CSD2-S)	101.6 mm x 25.4 mm x 6.35 mm (4 in x 1 in x 1/4 in)	8,000	8,000	Straight Grinder and Hand Drill

PSA Discs, Glue Backed, PSA/No Hole

- Manufactured by Norton for Caterpillar
- These discs have glue on the back and are used with backup pads to deburr, blend, etc.
- Pressure sensitive adhesive on disc back makes changes fast and easy.
- Efficient on flat and contoured metal surfaces and hard to reach areas



Part No.	Grit	Description	Size Dia x Hole	Pkg. Qty.
4C-3809	36	Cloth Backed Disc	50.8 mm (2 in)	50
4C-3810	50	Cloth Backed Disc	50.8 mm (2 in)	50
4C-3811	60	Cloth Backed Disc	50.8 mm (2 in)	50
4C-3813	100	Cloth Backed Disc	50.8 mm (2 in)	50
4C-3817	80	Cloth Backed Disc	76.2 mm (3 in)	50
4C-3819	60	Cloth Backed Disc	101.6 mm (4 in)	50
4C-3821	100	Cloth Backed Disc	101.6 mm (4 in)	50
4C-3822	120	Cloth Backed Disc	101.6 mm (4 in)	50
4C-3824	80	PSA — Paper Disc Rolls	127 mm (5 in)	50
4C-3834	80	Cloth Backed Disk	304.8 mm (12 in)	25

Backup Pads for PSA Discs

- Manufactured by Norton for Caterpillar
- Use stick and sand disc backup pads with all PSA discs.
- Made of flexible rubber that tapers at the edge.
- Come with 6.4 mm (1/4 in) steel shank for fast mounting into portable tool chunks



Part No.	Size Dia.	Shank	Pkg. Qty.
4C-3837	50.8 mm (2 in)	6.4 mm (1/4 in)	1
4C-3838	76.2 mm (3 in)	6.4 mm (1/4 in)	1
4C-3840	127 mm (5 in)	5/16 in-24 Thread Shank	1

Wheels

Wheel Shaping Kit

- Specially designed for shaping all "Scotch-Brite" Wheels
- Provides the necessary materials for an easy three-step shaping process
- Both abrasive materials are adhesive backed to adhere to the shape desired.



Part No.	Pkg. Qty.	Product	Contents
8T-7750	1	Wheel Shaping Kit #370	(1) roll 51 mm x 9 m (2 in x 30 ft) Three-M-ite Resin Bond PSA Abrasive Grade 40 (1) roll 51 mm x 9 m (2 in x 30 ft) Conformable Shaping Tape Grade 80

Clean 'N Strip Unitized Wheels

- Constructed of the most advanced material, Clean 'N Strip Unitized Wheels meet the demand for aggressive and durable cleaning products.
- Designed to compete with power tool wire brushing, this product provides a cleaner, burr-free surface quicker than any wire fiber product.
- Constructed of a non-woven nylon web, there is no opportunity for metal contamination or rusting in this product. It can be used on a variety of ferrous and non-ferrous metal surfaces.
- Used extensively in weld cleaning and conditioning applications to provide the proper surfaces for high integrity welding and cleaned polish surfaces for non-destructive testing
- Use this product for heavy-duty cleaning of rust, corrosion and coatings of all types.
- Aluminum oxide.
- Use for gasket removal, deburring, cleaning, and rust removal.
- Clean up to 4 times faster than wire brushes, runs smoothly and resists loading
- Use instead of wire brushes or sand paper when you don't want to remove any stock.

Density	7
Mineral type	S
Color	Black
Grade	XCS

Clean 'N Strip Unitized Wheels						
Part No.	Pkg. Qty.	Wheel Size	Hole Size	Maximum Operating Speed	Optimum Operating Speed	Use With:
8T-7770	2	203.2 x 25.4 mm (8 in x 1 in)	15.9 mm (5/8 in)	5,000	3,800	Straight Grinders, Bench Grinders
8T-7769	40	38.1 x 25.4 mm (1 1/2 in x 1 in)	4.8 mm (3/16 in)	18,000	16,000	Die Grinder with 8T-7768



8T-7768 Mandrell #936	
Maximum operating speed	18,000
Package quantity	5
Use with	8T-7769



Light Deburring Wheel

- Widely used for fine deburring and polishing applications
- Designed to allow for removal of burrs without changing the dimension of the workpiece
- An excellent blending and radiusing tool
- Used in a variety of hand and automatic deburring and finishing applications including centerless polishing

Density	6
Mineral type	S
Color	Gray
Grade	Fine

6V-2032 Adapter	
Maximum operating speed	4,000
Number required	2



Part No.	Pkg. Qty.	Description	Wheel Size	Hole Size	Maximum Operating Speed	Optimum Operating Speed	Use With:
8T-7748	3	Light Deburring Wheel	203.2 x 25.4 mm (8 in x 1 in)	76.2 mm (3 in)	4,500	4,500	Bench and Stand Grinder

SST Deburring Wheels

- Designed to be a clean, safe, economical tool.
- Advanced construction results in long unit life.
- Use for deburring, radiusing and polishing stainless steel and titanium as well as other ferrous and non-ferrous metals.

Density	8
Mineral type	S
Color	Gray
Grade	Fine

6V-2032 Adapter	
Maximum operating speed	4,000
Number required	2



Part No.	Pkg. Qty.	Wheel Size	Hole Size	Maximum Operating Speed	Optimum Operating Speed	Use With:
8T-7749	1	203.2 x 25.4 mm (8 in x 1 in)	76.2 mm (3 in)	4,500	4,500	Bench and Stand Grinder

187-3977 Spacer

187-3978 Adapter

SMCS Code: 0684-063

Spacer	
Material	steel
Weight	0.33 kg (.15 lb)



Spacer

- Used to adapt a deburring wheel to a 3/4 inch shaft bench grinder
- Used with 4C-8296 Bench Grinder and 8T-7749 Deburr Wheel
- Deburring wheel can be used in many applications including deburring permanent hose couplings
- Requires one spacer and two adapters

Adapter	
Material	aluminum
Weight	1.65 kg (.75 lb)
Maximum operating speed	4000 rpm
Hole diameter	3/4 inch



Adapter

Level Cut Unitized Wheel

- Made from an advanced material
- An excellent blending and polishing tool
- Used frequently in weld cleaning where high quality surface appearance is desirable

Density	5
Mineral type	A
Color	Tan
Letter color	Red
Grade	Fine



Part No.	Pkg. Qty.	Wheel Size	Hole Size	Maximum Operating Speed	Optimum Operating Speed	Use With:
8T-7767	50	25.4 x 25.4 mm (1 in x 1 in)	4.8 mm (3/16 in)	35,100	22,000	Die Grinder

8T-7768 Mandres #936	
Maximum operating speed	22,000
Package quantity	5



Finishing Flap Brush Wheel

- Fine grade flap brush replaces fine wire power brushes for removing carbon buildup, light rust and corrosion.

Density	5
Mineral type	A
Color	Maroon
Grade	Fine

6V-2032 Adapter	
Maximum operating speed	4,000
Number required	2



Part No.	Pkg. Qty.	Wheel Size	Hole Size	Maximum Operating Speed	Optimum Operating Speed	Typical Application
6V-2033	2	203.2 x 50.8 mm (8 in x 2 in)	76.2 mm (3 in)	3,200	3,200	Bench Grinder, Stand Grinders, Straight Grinders

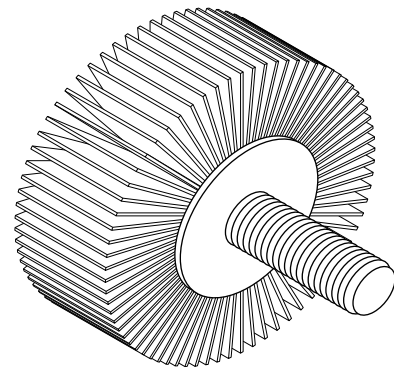
Flap Wheels

- Flap wheels consist of a series of coated abrasive pieces (forming the spokes of the wheel) which are mounted around a steel hub.
- Supplied with a 1/4 in-20 thread mandrel designed for fast mounting
- Can be used on higher speed machines popular in today's market
- Delivers smooth, chatter-free grinding
- Use with portable and benchstand grinders

Part No.	Pkg. Qty.	Size	Grit	Max. RPM
4C-8511	10	1 in x 1 in	60	25,000
4C-8512	10	1 in x 1 in	120	25,000
4C-8513	10	1 in x 1 in	180	25,000
4C-8514	10	2 in x 1 in	60	20,000
4C-8515	10	2 in x 1 in	120	20,000
4C-8516	10	2 in x 1 in	180	20,000
4C-8517	10	3 in x 1 in	60	20,000
4C-8518	10	3 in x 1 in	120	20,000
4C-8519	10	3 in x 1 in	180	20,000

Optimum Surface Feet per Minute Speed	Type Material
5,500	Aluminum
4,000	Hardwood
5,000	Non-ferrous metals
5,000	Steel (alloy)
5,000	Steel (mild)
6,500	Steel (stainless)

NOTE: Best speed ranges from 6,000 to 9,000 SFPM (Surface feet per minute). Wheels should be operated in direction of arrow. Never exceed maximum operating speed.



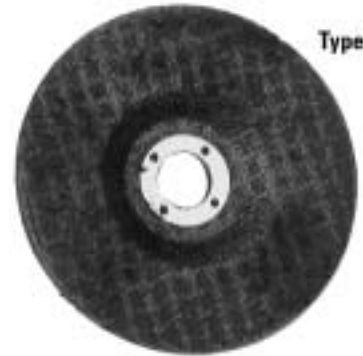
Adapters		
Part No.	Description	Size
4C-8520	Adapter	1/4 inch x 1 inch
4C-8521	Adapter	1/4 inch x 4 inch

Raised Hub Wheels

- Designed for use on electrical or air powered right angle or vertical shaft grinders
- Designed for rough grinding applications, including:
 - grinding/smoothing weld seams.
 - cleaning metal surfaces.
- Wheels fit 114.3 mm, 177.8 mm and 228.6 mm (4 1/2 in, 7 in and 9 in) grinders.
- Type 28 wheels have built-in 15° angle for out of position work.
- Wheels comply with ANSI safety code B-7.1



Type 28
(built-in 15° angle)



Type 27

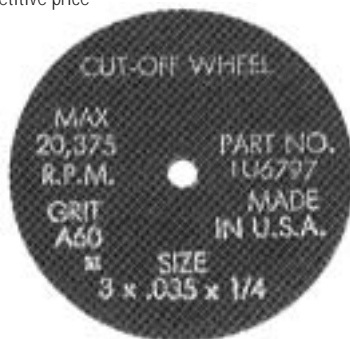
Type 27					
Part No.	Type	Grit Spec.	Max RPM	Wheel Size OD x Thick x ID/Thread	Pkg. Qty.
1U-6788	Std.	A24	15,300	101.6 mm x 3.18 mm x 15.88 mm (4 in x 1/8 in x 5/8 in)	10
1U-6789	Std.	A24	15,300	101.6 mm x 6.35 mm x 15.88 mm (4 in x 1/4 in x 5/8 in)	10
1U-6790	Std.	A24	13,300	114.3 mm x 3.18 mm x 22.23 mm (4 1/2 in x 1/8 in x 7/8 in)	10
1U-6791	Std.	A24	13,300	114.3 mm x 6.35 mm x 22.23 mm (4 1/2 in x 1/4 in x 7/8 in)	10
9U-6382	Std.	A24	12,220	127 mm x 6.35 mm x 5/8 in-11 (5 in x 1/4 in x 5/8 in-11)	1
1U-6792	Std.	A24	8,500	177.8 mm x 3.18 mm x 22.23 mm (7 in x 1/8 in x 7/8 in)	10
1U-6793	Std.	A24	8,500	177.8 mm x 6.35 mm x 22.23 mm (7 in x 1/4 in x 7/8 in)	10
1U-6794	Std.	A24	8,500	177.8 mm x 6.35 mm x 5/8 in-11 (7 in x 1/4 in x 5/8 in-11)	10
1U-6795	Std.	A24	6,600	228.6 mm x 6.35 mm x 22.23 mm (9 in x 1/4 in x 7/8 in)	10
1U-6796	Std.	A24	6,600	228.6 mm x 6.35 mm x 5/8 in-11 (9 in x 1/4 in x 5/8 in-11)	10
9U-6383	Hi Perf.	Z/A24 ¹	12,220	127 mm x 6.35 mm x 5/8 in-11 (5 in x 1/4 in x 5/8 in-11)	1
4C-3769	Hi Perf.	Z/A24 ¹	8,500	177.8 mm x 6.35 mm x 22.23 mm (7 in x 1/4 in x 7/8 in)	5
4C-3770	Hi Perf.	Z/A24 ¹	8,500	177.8 mm x 6.35 mm x 5/8 in-11 (7 in x 1/4 in x 5/8 in-11)	5
4C-3772	Hi Perf.	Z/A24 ¹	6,600	228.6 mm x 6.35 mm x 5/8 in-11 (9 in x 1/4 in x 5/8 in-11)	5

Type 28 (built-in 15° angle)					
Part No.	Type	Grit Spec.	Max RPM	Wheel Size OD x Thick x ID/Thread	Pkg. Qty.
4C-3863	Std.	A24	6,600	228.6 mm x 6.35 mm x 5/8 in-11 (9 in x 1/4 in x 5/8 in-11)	10
4C-3773	Hi Perf.	Z/A24 ¹	8,500	177.8 mm x 6.35 mm x 22.23 mm (7 in x 1/4 in x 7/8 in)	5
4C-3774	Hi Perf.	Z/A24 ¹	8,500	177.8 mm x 6.35 mm x 5/8 in-11 (7 in x 1/4 in x 5/8 in-11)	5
4C-3776	Hi Perf.	Z/A24 ¹	6,600	228.6 mm x 6.35 mm x 5/8 in-11 (9 in x 1/4 in x 5/8 in-11)	5

¹ Zirconia-Alumina

Cut-Off Wheels

- Fully reinforced cut-off wheels for heavy-duty cut off jobs on ferrous metals
- Wheels comply with ANSI Safety Code B-7.1
- Use A60 for burr-free, cool cutting of metal
- Use A36 for rough cutting applications
- Offer quality at a competitive price



Part No.	Grit Spec.	Max RPM	Wheel Size OD x Thick x ID	Pkg. Qty.
174-8900	A60	20,375	76.2 mm x .89 mm x 6.35 mm (3 in x .035 in x 1/4 in)	25
174-8901	A60	20,375	76.2 mm x .89 mm x 9.53 mm (3 in x .035 in x 3/8 in)	25
174-8902	A36	20,375	76.2 mm x 1.59 mm x 6.35 mm (3 in x 1/16 in x 1/4 in)	25
174-8903	A36	20,375	76.2 mm x 1.59 mm x 9.53 mm (3 in x 1/16 in x 3/8 in)	25
174-8904	A36	20,375	76.2 mm x 3.2 mm x 6.35 mm (3 in x 1/8 in x 1/4 in)	25
174-8905	A36	20,375	76.2 x 3.2 x 9.53 mm (3 in x 1/8 in x 3/8 in)	25
174-8906	A60	20,375	101.6 mm x .89 mm x 6.35 mm (4 in x .035 in x 1/4 in)	25
174-8907	A60	15,280	101.6 mm x .89 mm x 9.53 mm (4 in x .035 in x 3/8 in)	25
174-8908	A36	15,280	101.6 mm x 1.59 mm x 6.35 mm (4 in x 1/16 in x 1/4 in)	25
174-8909	A36	15,280	101.6 mm x 1.59 mm x 9.53 mm (4 in x 1/16 in x 3/8 in)	25
174-8910	A36	15,280	101.6 mm x 3.2 mm x 6.35 mm (4 in x 1/8 in x 1/4 in)	25
174-8911	A36	15,280	101.6 mm x 3.2 mm x 9.53 mm (4 in x 1/8 in x 3/8 in)	25
1U-6809	A36	5,095	304.8 mm x 2.8 mm x 25.4 mm (12 in x 7/64 in x 1 in)	25
1U-6810	A36	4,365	355.6 mm x 2.8 mm x 25.4 mm (14 in x 7/64 in x 1 in)	25
1U-6811	A24	3,820	406.4 mm x 3.97 mm x 25.4 mm (16 in x 5/32 in x 1 in)	10

Drill Sharpening Wheels (Type 1)

- Manufactured by Norton for Caterpillar
- Used on drill sharpening machines to form or resharpen drills
- Use aluminum oxide for all types of steel.
- Use silicone carbide for tungsten carbide, non-ferrous metals such as brass, bronze and aluminum.



Part No.	Grit Spec.	Wheel Size OD x Thick x ID	Pkg. Qty.
4C-3766	A100-H Aluminum Oxide	152.4 mm x 19 mm x 15.88 mm (6 in x 3/4 in x 5/8 in)	1
4C-3768 ¹	C80-I Silicon Carbide	152.4 mm x 19 mm x 15.88 mm (6 in x 3/4 in x 5/8 in)	1

¹ Used to sharpen cobalt or carbide drill bits and tools

Portable Wheels — Reinforced (Type 1)

- Manufactured by Norton for Caterpillar
- These reinforced wheels are to be used on grinders to clean up and blend.
- Straight wheels are to be used on portable horizontal shaft or straight shaft machines.

Part No.	Grit Spec.	Max RPM	Wheel Size OD x Thick x ID	Pkg. Qty.
4C-3777	A36	18,145	50.8 mm x 12.7 mm x 9.53 mm (2 in x 1/2 in x 3/8 in)	10
4C-3864	A24	18,145	50.8 mm x 12.7 mm x 9.53 mm (2 in x 1/2 in x 3/8 in)	10
4C-3865	A36	12,095	76.2 mm x 9.53 mm x 9.53 mm (3 in x 3/8 in x 3/8 in)	10



Bench and Pedestal Wheels (Type 1)

- Manufactured by Norton for Caterpillar
- Cover a broad range of general grinding jobs
- Offer custom quality
- Choose aluminum oxide wheels for all types of steel.
- 152.4 mm, 177.8 mm, 203.2 mm, and 254 mm (6 in, 7 in, 8 in and 10 in) wheels are supplied with additional arbor bushings so one specification can meet the needs of several machines with different arbor sizes.



Part No.	Grit Spec.	Max RPM	Wheel Size OD x Thick x ID	Pkg. Qty.
1U-6780	A36	4,140	152.4 mm x 12.7 mm x 25.4 mm (6 in x 1/2 in x 1 in)	1
1U-6781	A60	4,140	152.4 mm x 12.7 mm x 25.4 mm (6 in x 1/2 in x 1 in)	1
1U-6782	A36	4,140	152.4 mm x 25.4 mm x 25.4 mm (6 in x 1 in x 1 in)	1
1U-6783	A60	4,140	152.4 mm x 25.4 mm x 25.4 mm (6 in x 1 in x 1 in)	1
1U-6784	A36	3,600	177.8 mm x 25.4 mm x 25.4 mm (7 in x 1 in x 1 in)	1
1U-6786	A36	3,600	203.2 mm x 25.4 mm x 25.4 mm (8 in x 1 in x 1 in)	1
1U-6787	A60	3,600	203.2 mm x 25.4 mm x 25.4 mm (8 in x 1 in x 1 in)	1
1U-8285	A36	2,485	254 mm x 25.4 mm x 31.75 mm (10 in x 1 in x 1 1/4 in)	1
1U-8286	A60	2,485	254 mm x 25.4 mm x 31.75 mm (10 in x 1 in x 1 1/4 in)	1
1U-8289	A36	2,070	304.8 mm x 50.8 mm x 31.75 mm (12 in x 2 in x 1 1/4 in)	1
1U-8290	A60	2,070	304.8 mm x 50.8 mm x 31.75 mm (12 in x 2 in x 1 1/4 in)	1

Arbor Adapter Bushings included (Stock one size — use it on two different grinding machines.)						
Diameter	Center Hole	12.7 mm (1/2 in)	15.88 mm (5/8 in)	19 mm (3/4 in)	22.23 mm (7/8 in)	25.4 mm (1 in)
152.4 mm (6 in)	25.4 mm (1 in)	•	•	•		
177.8 mm (7 in)	25.4 mm (1 in)	•	•	•		
304.8 mm (8 in)	25.4 mm (1 in)		•	•	•	
254 mm (10 in)	31.75 mm (1 1/4 in)			•		•

Flaring Cup Snagging Wheels (Type 11)

- Manufactured by Norton for Caterpillar
- Use on right angle or vertical machines.
- Use for grinding welds, cleaning castings, or grinding fins and parting lines from rough castings.
- Use for smoothing of weld seams and metal preparations prior to plating/painting.

Part No.	Grit Spec.	Max RPM	Large OD/Small OD x Thick x ID	Pkg. Qty.
1U-6817	A16	9,075	101.6/76.2 mm x 50.8 mm x 5/8 in-11 (4/3 in x 2 in x 5/8 in-11)	10
1U-6818	A16	7,260	127/95.3 mm x 50.8 mm x 5/8 in-11 (5/3 3/4 in x 2 in x 5/8 in-11)	10
1U-6819	A16	6,000	152.4/120.7 mm x 50.8 mm x 5/8 in-11 (6/4 3/4 in x 2 in x 5/8 in-11)	5

1U-6817



Miscellaneous

Sanding Sheets

- Every workplace has uses for “Scotch Brite” Industrial Hand Pads. Whenever surfaces must be conditioned by hand — to make the surface look better or work better — “Scotch Brite” Hand Pads stand up to the call.
- “Scotch Brite” non-woven nylon abrasive webs are cut into 152.4 x 228.6 mm (6 in x 9 in) sheets to offer four grades of hand pads from Heavy Duty to Ultra Fine.
- Clean surfaces — remove rust, oxides, paint discoloration and other surface contaminants.
- Impart and blend cosmetic finishes on metal, or highlight wood finishes.
- Hand deburr metals and plastics quickly and economically with “Scotch Brite” Industrial Hand Pads.
- Shop rags, emery cloth, steel wool, and wire brushes can be replaced with “Scotch Brite” Industrial Hand Pads to save time, improve productivity, reduce costs and improve quality.
- Optional part: 4C-4175 Hand Pad Holder



Part No.	Pkg. Qty.	Description	Color	Grit	Use With
8T-7752	40	High Productivity Sheet	Black	80	Hand application, with or without 4C-4175. Hand Pad Holder.
8T-7753	10	Blending Hand Pad “Scotch Brite” 7446	Gray	100	Hand application, with or without 4C-4175. Hand Pad Holder.
8T-7751	10	Heavy Duty Hand Pad “Scotch Brite” 7440	Tan	120	Hand application, with or without 4C-4175. Hand Pad Holder.
8T-7765	60	General Purpose Hand Pad “Scotch Brite” 7447	Maroon	180	Hand application, with or without 4C-4175. Hand Pad Holder.

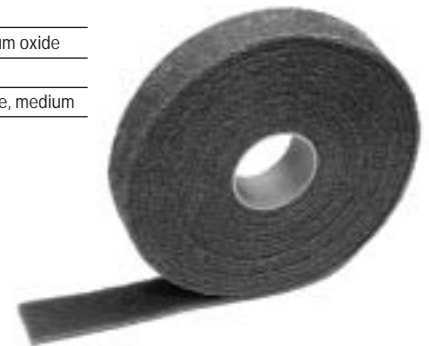


Cutting and Polishing Rolls

- A unique and aggressive material for cleaning, finishing deburring
- Ideal as a utility bench roll.
- Used in similar application as Emery Rolls, but does not load up with material.

Mineral type	Aluminum oxide
Color	Tan
Grade	Very fine, medium

Part No.	Pkg. Qty.	Size	Grade	Use With
1U-5514	1	51 mm x 9 m (2 in x 30 ft)	Very Fine	Hand application or hand drill with 8T-7766 mandrel
1U-5515	1	51 mm x 9 m (2 in x 30 ft)	Medium	Hand application or hand drill with 8T-7766 mandrel
1U-5512	1	25.4 mm x 9 m (1 in x 30 ft)	Very Fine	Hand application or hand drill with 8T-7766 mandrel
1U-5513	1	25.4 mm x 9 m (1 in x 30 ft)	Medium	Hand application or hand drill with 8T-7766 mandrel



Adapter — 8T-7766 Mandrel #935

- Tear off strip and insert in the mandrel to use in corners and other hard to reach areas.
- Use on air drills.

Maximum operating speed	6,000 RPM with 25.4 x 38.1 mm (1 in x 1 1/2 in) flat stock (roll or hand pad)
Package quantity	5



Emery Polishing Paper

- Manufactured by Norton for Caterpillar
- High quality, emery polishing paper which is required for salvage or cleaning of numerous Caterpillar parts
- Light duty/fine polishing



Part No.	Description	Dimension	Pkg. Qty.
6V-0083	4/0 grit	12.7 mm x 45.7 m (12 in x 50 yd)	1 roll
4C-3731	2/0 grit	12.7 mm x 45.7 m (12 in x 50 yd)	1 roll

6V-2010 Polishing Stone

- Manufactured by Norton for Caterpillar
- Use this fine grade polishing stone to remove the sharp, raised edges of nicks and burrs on machine components.
- More useful than the emery paper where a burr or raised edge is large.
- Should always be used with a lightweight oil



Dimensions	100 mm x 25 mm x 6 mm (4 in x 1 in x .25 in)
Package quantity	1

Cloth Shop Rolls

- Manufactured by Norton for Caterpillar
- These cloth shop rolls are cut in various widths and can be torn to the desired length for hand deburring.
- For contour sanding, stripping, deburring, rust removal, cutdown prior to polishing, and all general maintenance work

Part No.	Grit	Size Width x Length	Pkg. Qty.	Part No.	Grit	Size Width x Length	Pkg. Qty.
1U-6848	60J	38.1 mm x 45.7 m (1 1/2 in x 50 yd)	1	1U-6853	320J	38.1 mm x 45.7 m (1 1/2 in x 50 yd)	1
4C-8522	80J	38.1 mm x 22.7 m (1 1/2 in x 25 yd)	1	1U-8274	60J	50.8 mm x 45.7 m (2 in x 50 yd)	1
4C-8523	120J	38.1 mm x 22.7 m (1 1/2 in x 25 yd)	1	1U-8275	80J	50.8 mm x 45.7 m (2 in x 50 yd)	1
4C-8524	180J	38.1 mm x 22.7 m (1 1/2 in x 25 yd)	1	1U-8276	100J	50.8 mm x 45.7 m (2 in x 50 yd)	1
1U-6849	80J	38.1 mm x 45.7 m (1 1/2 in x 50 yd)	1	1U-8277	120J	50.8 mm x 45.7 m (2 in x 50 yd)	1
1U-6850	120J	38.1 mm x 45.7 m (1 1/2 in x 50 yd)	1	1U-8278	180J	50.8 mm x 45.7 m (2 in x 50 yd)	1
1U-6851	180J	38.1 mm x 45.7 m (1 1/2 in x 50 yd)	1	1U-8279	240J	50.8 mm x 45.7 m (2 in x 50 yd)	1
1U-6852	240J	38.1 mm x 45.7 m (1 1/2 in x 50 yd)	1	1U-8280	320J	50.8 mm x 45.7 m (2 in x 50 yd)	1



Sheets

- Manufactured by Norton for Caterpillar
- These sheets are used for sanding and metal surface preparation.
- Engineered for maximum economy, fast cutting and smoothing action
- Excellent for scouring, deburring, scale and rust removal



Part No.	Grit	Abrasive	Size	Pkg. Qty.
1U-6854	60J	Aluminum Oxide	228.6 x 279.4 mm (9 in x 11 in)	25
1U-6855	80J	Aluminum Oxide	228.6 x 279.4 mm (9 in x 11 in)	25
1U-6856	120J	Aluminum Oxide	228.6 x 279.4 mm (9 in x 11 in)	50
1U-6857	180J	Aluminum Oxide	228.6 x 279.4 mm (9 in x 11 in)	50
1U-6858	240J	Aluminum Oxide	228.6 x 279.4 mm (9 in x 11 in)	50
1U-6859	320J	Aluminum Oxide	228.6 x 279.4 mm (9 in x 11 in)	50
1U-8281	400A	Silicon Carbide	228.6 x 279.4 mm (9 in x 11 in)	50
1U-8282	500A	Silicon Carbide	228.6 x 279.4 mm (9 in x 11 in)	50
1U-8283	600A	Silicon Carbide	228.6 x 279.4 mm (9 in x 11 in)	50
4C-8510	Crocus	Ferrous Oxide	228.6 x 279.4 mm (9 in x 11 in)	50

Surface Conditioning Belts

- Excellent tool to polish crankshafts
- Ideal for high tension applications.
- Unique, reinforced “Scotch Brite” construction delivers a uniform, consistent finish that can be applied with abrasive belt machinery.
- “Scotch Brite” Surface Conditioning Belts are reinforced which allows the “Scotch Brite” material to be spliced into a continuous belt.
- Their open construction resists loading and heat buildup that normally affects belt life and performance.
- As it wears, the “Scotch Brite” belt exposes fresh abrasive mineral to the work surface, providing consistent results throughout the belt’s



Density	5					
Color	Tan					
Grade	Super fine					
Part No.	Pkg. Qty.	Wheel Size	Maximum Operating Speed	Optimum Operating Speed	Use With	
6V-3044	12	25.4 mm x 165.1 cm (1 in x 65 in)	6,500 SFPM	5,500 SFPM	Abrasive belt machinery	

Cleaning and Polishing Stars

- Perfect choice for cleaning and polishing the inside diameters of pipe, tubing, cylinders and other interior spaces
- Star shape allows the star tips to provide constant outward pressure on the walls to produce uniform and consistent results.
- Can be mounted singly or in multiples for efficient inside diameter cleaning and polishing operations
- Adapter: 4C-8629 Mandrel

Part No.	Pkg. Qty.	Diameter	Maximum Operating Speed	Optimum Operating Speed	Use With:
4C-8624	1	38.1 mm (1 1/2 in)	24,000	18,000	Straight-shaft Tools
4C-8625	1	50.8 mm (2 in)	24,000	18,000	Straight-shaft Tools
4C-8626	1	76.2 mm (3 in)	18,000	15,000	Straight-shaft Tools
4C-8627	1	101.6 mm (4 in)	18,000	15,000	Straight-shaft Tools
4C-8628	1	114.3 mm (4 1/2 in)	18,000	15,000	Straight-shaft Tools



Surface Reconditioning Flex Hone Tools

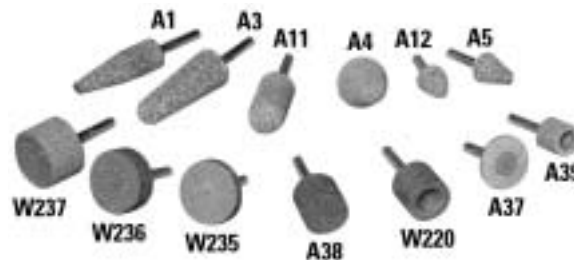
- The FLEX-HONE® process (Superfinishing) produces a controlled surface condition that will result in:
 - Lowered oil consumption
 - Less blow-by
 - Less friction
 - Plateaued finish over 50%
 - Finish free from cut, and folded metal
- All abrasive is silicone carbide.
- Resilient, flexible, honing tool with soft cutting action
- Abrasive (points) globules each have independent suspension that assures the hone to be self-centering, self-aligning to the bore, and self-compensating for wear.
- A low temperature abrading process that exposes the undisturbed base metal structure to produce a long wearing surface.
- Method of developing a surface on a metal part which is optically smooth and metallurgically free of any fragmented, amorphous or smeared metal from previous operations.
- Accomplished at a low pressure where the “stones” float
- Hone crosshatch is extremely efficient in providing a multiplicity of oil grooves or valleys for oil retention as opposed to the uni-directional or uneven valleys common to the conventional type rigid hone. A crosshatch that usually remains as the cylinder wall has been wear-reduced by the hone.



Part No.	Pkg. Qty.	Engine Bore Size	Grit
4C-6322	1	101.6 mm (4 in)	180
4C-6323	1	107.95 mm (4 1/4 in)	180
4C-6324	1	117.3 mm (4 1/2 in)	180
1U-9787	1	120.65-127 mm (4 3/4 in-5 in)	180
4C-6325	1	133.5-137.16 mm (5 1/4 in-5.4 in)	180
4C-6326	1	146.05-152.4 mm (5 3/4 in-6 in)	180
4C-6327	1	158.75 mm (6 1/4 in)	180
4C-6328	1	169.92-177.8 mm (6.69 in-7 in)	180
4C-6329	1	190.5 mm (7 1/2 in)	180
4C-6330	1	203.2 mm (8 in)	180
4C-6331	1	241.3 mm (9 1/2 in)	180
4C-6332	1	60.33 mm (2 3/8 in)	240
4C-6333	1	79.38 mm (3 1/8 in)	240
4C-6334	1	92.08 mm (3 5/8 in)	240
1U-7428	1	101.6 mm (4 in)	240
4C-6335	1	104.78 mm (4 1/8 in)	240
4C-6336	1	114.3 mm (4 1/2 in)	240
4C-6337	1	12.7 mm (1/2 in)	320
4C-6338	1	15.88 mm (5/8 in)	320
4C-6339	1	19 mm (3/4 in)	320
4C-6340	1	25.4 mm (1 in)	320
4C-6341	1	38.1 mm (1 1/2 in)	320

Mounted Points

- Manufactured by Norton for Caterpillar
- Mounted wheels are used with horizontal or straight shaft, die and pencil grinders on jobs where larger wheels will not fit.
- Offer maximum performance for grinding ferrous metals
- Accurate spindles ensure precision grinding and minimize run-out.
- A-shaped wheels are for medium to heavy-duty blending and contouring.
- W-shaped wheels are for off-hand and precision grinding of medium to heavy stock.



Part No.	Shape	Grit Spec.	Size Dia. x Length	Mandrel Dia.	Pkg. Qty.
1U-6820	A1	A36	19 mm x 63.5 mm (3/4 in x 2 1/2 in)	6.35 mm (1/4 in)	25
1U-6821	A1	A60	19 mm x 63.5 mm (3/4 in x 2 1/2 in)	6.35 mm (1/4 in)	25
1U-6822	A3	A36	25.4 mm x 69.85 mm (1 in x 2 3/4 in)	6.35 mm (1/4 in)	25
1U-6823	A3	A60	25.4 mm x 69.85 mm (1 in x 2 3/4 in)	6.35 mm (1/4 in)	25
4C-3845	A4	A60	31.75 mm x 31.75 mm (1 1/4 in x 1 1/4 in)	6.35 mm (1/4 in)	25
4C-3846	A5	A36	19 mm x 28.58 mm (3/4 in x 1 1/8 in)	6.35 mm (1/4 in)	25
1U-6824	A11	A36	22.23 mm x 50.8 mm (7/8 in x 2 in)	6.35 mm (1/4 in)	25
1U-6825	A11	A60	22.23 mm x 50.8 mm (7/8 in x 2 in)	6.35 mm (1/4 in)	25
4C-3849	A12	A36	26.9 mm x 31.75 mm (1 1/16 in x 1 1/4 in)	6.35 mm (1/4 in)	25
4C-3850	A12	A60	26.9 mm x 31.75 mm (1 1/16 in x 1 1/4 in)	6.35 mm (1/4 in)	25
6V-4802	A37	A60	31.75 mm x 31.75 mm (1 1/4 in x 1 1/4 in) with hub	6.35 mm (1/4 in)	25
1U-6826	A38	A60	25.4 mm x 25.4 mm (1 in x 1 in)	6.35 mm (1/4 in)	25
4C-3852	A39	A60	19 mm x 19 mm (3/4 in x 3/4 in)	6.35 mm (1/4 in)	25
4C-3853	W220	A60	25.4 mm x 25.4 mm (1 in x 1 in)	6.35 mm (1/4 in)	25
4C-3854	W235	A90	38.1 mm x 6.35 mm (1 1/2 in x 1/4 in) with hub	6.35 mm (1/4 in)	25
4C-3855	W236	A60	38.1 mm x 12.7 mm (1 1/2 in x 1/2 in) with hub	6.35 mm (1/4 in)	25
4C-3856	W237	A60	38.1 mm x 25.4 mm (1 1/2 in x 1 in)	6.35 mm (1/4 in)	25

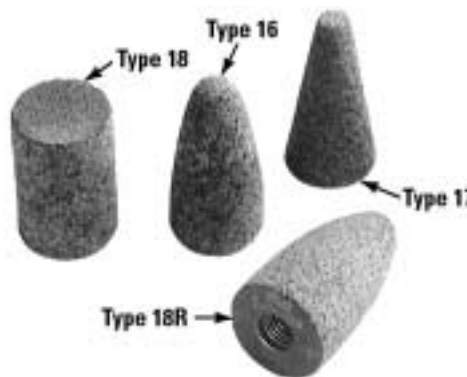
Cones and Plugs

- Manufactured by Norton for Caterpillar
- Use on horizontal shaft and vertical shaft grinders
- Choose these for welding shop jobs such as:
 - Grinding and smoothing fillets and corners
 - Internal grinding
 - Blending contours
 - Work in confined areas
- Center holes have molded-in bushings, available in 5/8 inch-11 threads to fit most popular grinder spindles.

Available in four shapes:

- Type 16 with rounded tip for grinding mild contours or flat surfaces.
- Type 17 with square tip for beveling workpiece edges prior to welding.
- Type 18 square plugs for use on straight shaft grinders for work on flat surfaces.
- Type 18R also called pot balls, for work requiring straight sides and rounded tips.

Item	Part No.	Grit Spec.	Size OD x Length x Thread	Pkg. Qty.
Type 18	1U-6814	A24	38.1 mm x 63.5 mm x 5/8 in-11 (1 1/2 in x 2 1/2 in x 5/8 in-11)	10
Type 18R	1U-6815	A24	38.1 mm x 63.5 mm x 5/8 in-11 (1 1/2 in x 2 1/2 in x 5/8 in-11)	10
Type 16	1U-6812	A24	38.1 mm x 76.2 mm x 5/8 in-11 (1 1/2 in x 3 in x 5/8 in-11)	10
Type 18R	1U-6816	A24	50.8 mm x 76.2 mm x 5/8 in-11 (2 in x 3 in x 5/8 in-11)	10
Type 17	1U-6813	A24	63.5 mm x 76.2 mm x 5/8 in-11 (2 1/2 in x 3 in x 5/8 in-11)	10



Spira Bands and Mandrels

- Manufactured by Norton for Caterpillar
- Ideal for grinding, blending, deburring, finishing and polishing flat and contoured surfaces
- Design eliminates lap bumping marks, provides chatter free operation
- Good alternative tools for flap wheels



Part No.	Grit	Size	Pkg. Qty.
4C-3778	60	19 mm x 25.4 mm (3/4 in x 1 in)	1
4C-3779	60	25.4 mm x 25.4 mm (1 in x 1 in)	1
4C-3780	60	38.1 mm x 38.1 mm (1 1/2 in x 1 1/2 in)	1
4C-3781	60	50.8 mm x 25.4 mm (2 in x 1 in)	1
4C-3782	Mandrel 1/4 in	19 mm x 25.4 mm (3/4 in x 1 in)	1
4C-3783	Mandrel 1/4 in	25.4 mm x 25.4 mm (1 in x 1 in)	1
4C-3784	Mandrel 1/4 in	38.1 mm x 38.1 mm (1 1/2 in x 1 1/2 in)	1
4C-3785	Mandrel 1/4 in	50.8 mm x 25.4 mm (2 in x 1 in)	1

Screen-Bak Durite Rolls

- Use for superfast makeready of copper pipe joints.
- Removes scale, corrosion and oxidations without clogging — sanding residue falls through the backing.
- Long abrasive life and clean, tight connections are ensured.
- Silicon carbide abrasive grain is coated on both sides of an open weave, cloth backing.

4C-8522	1 1/2 in x 25 ft (Grit 80)
4C-8523	1 1/2 in x 25 ft (Grit 120)
4C-8524	1 1/2 in x 25 ft (Grit 180)

Scotch Brite Decal Remover

- Fast and easy method to remove vinyl decals, graphics, tapes, films and adhesives without damaging paint — no fire danger because the discs are non combustible.
- Unique construction of the disc assures long life and allows easy conformability to contours.
- Discs are flexible and have no sharp edges — will not damage acrylic, enamel or urethane paint. (not recommended for use on acrylic lacquer paints or plexiglass)
- Faster and cleaner to use than solvent or chemical adhesive removers.
- RPM is critical for product performance — Maximum RPM is 4500; recommended RPM is 3,000 to 4,000.



Part No.	Description	Package Quantity	Diameter	Use with:
9U-6930	Decal Removal Disc	1	101.6 mm x 9.53 mm (4 in x 3/8 in)	Electric or Air Drill
9U-6931	Retainer Roloc and Holder	1	25.4 mm x 6.35 mm (1 in x 1/4 in)	

Drills

Caterpillar Service Technology Group has a comprehensive line of high quality drill bits. The product offering includes drills ranging from standard jobber length, general purpose drills, to high quality, long lasting cobalt drills, 118° and 135° split point configurations.

Standard Drills

- 118° point
- High quality M-7 steel
- Straight shank jobber length

Applications

- Mild steel
- Cast iron



1U-5889 Drill Set (Plus Index), 13 Piece	
Part No.	Size
1U-5589	1/16 in
1U-5590	5/64 in
1U-5591	3/32 in
1U-5592	7/64 in
1U-5593	1/8 in
1U-5594	9/64 in
1U-5595	5/32 in
1U-5596	11/64 in
1U-5597	3/16 in
1U-5598	13/64 in
1U-5599	7/32 in
1U-5600	15/64 in
1U-5601	1/4 in

1U-5714 Drill Set (Plus Index), 29 Piece							
Part No.	Size	Part No.	Size	Part No.	Size	Part No.	Size
1U-5589	1/16 in	1U-5597	3/16 in	1U-5605	5/16 in	1U-5613	7/16 in
1U-5590	5/64 in	1U-5598	13/64 in	1U-5606	21/64 in	1U-5614	29/64 in
1U-5591	3/32 in	1U-5599	7/32 in	1U-5607	11/32 in	1U-5615	15/32 in
1U-5592	7/64 in	1U-5600	15/64 in	1U-5608	23/64 in	1U-5616	31/64 in
1U-5593	1/8 in	1U-5601	1/4 in	1U-5609	3/8 in	1U-5617	1/2 in
1U-5594	9/64 in	1U-5602	17/64 in	1U-5610	25/64 in		
1U-5595	5/32 in	1U-5603	9/32 in	1U-5611	13/32 in		
1U-5596	11/64 in	1U-5604	19/64 in	1U-5612	27/64 in		

Individual Drills							
Part No.	Size	Part No.	Size	Part No.	Size	Part No.	Size
1U-5586	1/64 in	1U-5595	5/32 in	1U-5603	9/32 in	1U-5611	13/32 in
1U-5587	1/32 in	1U-5596	11/64 in	1U-6700	.290 in	1U-5612	27/64 in
1U-5588	3/64 in	1U-5597	3/16 in	1U-5604	19/64 in	1U-5613	7/16 in
1U-5589	1/16 in	1U-6699	.021 in	1U-5605	5/16 in	1U-5614	29/64 in
1U-5590	5/64 in	1U-5598	13/64 in	1U-5606	21/64 in	1U-5615	15/32 in
1U-5591	3/32 in	1U-5599	7/32 in	1U-5607	11/32 in	1U-5616	31/64 in
1U-5592	7/64 in	1U-5600	15/64 in	1U-5608	23/64 in	1U-5617	1/2 in
1U-5593	1/8 in	1U-5601	1/4 in	1U-5609	3/8 in		
1U-5594	9/64 in	1U-5602	17/64 in	1U-5610	25/64 in		

Reduced Shank Drills

- 118° point
- High quality M-7 steel
- 1/2 inch diameter shank
- Black finish

Applications

- Large hole drilling
- Mild steel
- Cast iron

Individual Drills							
Part No.	Size	Part No.	Size	Part No.	Size	Part No.	Size
1U-7433	33/64 in	1U-5688	23/32 in	1U-5696	31/32 in	1U-5707	1 5/16 in
1U-5682	17/32 in	1U-5689	3/4 in	1U-5697	1 in	1U-5709	1 3/8 in
1U-5683	9/16 in	1U-5690	25/32 in	1U-5698	1 1/32 in	1U-5711	1 7/16 in
1U-7434	37/64 in	1U-5691	13/16 in	1U-5699	1 1/16 in	1U-5713	1 1/2 in
1U-5684	19/32 in	1U-7436	53/64 in	1U-5700	1 3/32 in	1U-7437	1 9/16 in (3/4 in Shank)
1U-5685	5/8 in	1U-5692	27/32 in	1U-5701	1 1/8 in	1U-7438	1 13/16 in (3/4 in Shank)
1U-5686	21/32 in	1U-5693	7/8 in	1U-5702	1 5/32 in		
1U-5687	11/16 in	1U-5694	29/32 in	1U-5703	1 3/16 in		
1U-7435	45/64 in	1U-5695	15/16 in	1U-5705	1 1/4 in		

Heavy-Duty Drills, 135° Split Point

- Self-centering point
- More aggressive drill point — can cut drill time by 50%
- High quality M-7 steel
- Straight shank jobber length

Applications

- Drilling in alloy steels such as bolts
- Mild steel
- Cast iron



1U-5892 Drill Set (Plus Index), 13 Piece

Part No.	Size	Part No.	Size
1U-5621	1/16 in	1U-5628	11/64 in
1U-5622	5/64 in	1U-5629	3/16 in
1U-5623	3/32 in	1U-5630	13/64 in
1U-5624	7/64 in	1U-5631	7/32 in
1U-5625	1/8 in	1U-5632	15/64 in
1U-5626	9/64 in	1U-5633	1/4 in
1U-5627	5/32 in		

1U-5893 Drill Set (Plus Index), 29 Piece

Part No.	Size	Part No.	Size	Part No.	Size
1U-5621	1/16 in	1U-5631	7/32 in	1U-5641	3/8 in
1U-5622	5/64 in	1U-5632	15/64 in	1U-5642	25/64 in
1U-5623	3/32 in	1U-5633	1/4 in	1U-5643	13/32 in
1U-5624	7/64 in	1U-5634	17/64 in	1U-5644	27/64 in
1U-5625	1/8 in	1U-5635	9/32 in	1U-5645	7/16 in
1U-5626	9/64 in	1U-5636	19/64 in	1U-5646	29/64 in
1U-5627	5/32 in	1U-5637	5/16 in	1U-5647	15/32 in
1U-5628	11/64 in	1U-5638	21/64 in	1U-5648	31/64 in
1U-5629	3/16 in	1U-5639	11/32 in	1U-5649	1/2 in
1U-5630	13/64 in	1U-5640	23/64 in		

Individual Drills

Part No.	Size	Part No.	Size	Part No.	Size
1U-5620	3/64 in	1U-5630	13/64 in	1U-5640	23/64 in
1U-5621	1/16 in	1U-5631	7/32 in	1U-5641	3/8 in
1U-5622	5/64 in	1U-5632	15/64 in	1U-5642	25/64 in
1U-5623	3/32 in	1U-5633	1/4 in	1U-5643	13/32 in
1U-5624	7/64 in	1U-5634	17/64 in	1U-5644	29/64 in
1U-5625	1/8 in	1U-5635	9/32 in	1U-5644	27/64 in
1U-5626	9/64 in	1U-5636	19/64 in	1U-5645	7/16 in
1U-5627	5/32 in	1U-5637	5/16 in	1U-5647	15/32 in
1U-5628	11/64 in	1U-5638	21/64 in	1U-5648	31/64 in
1U-5629	3/16 in	1U-5639	11/32 in	1U-5649	1/2 in

Extra Heavy-Duty Cobalt Drills, 135° Split Point

- Excellent abrasion resistance coupled with high hardness characteristics
- Self-centering point
- Can cut drill time by 50%
- Straight shank jobber length

Applications

- Most high alloy steels
- Stainless steel
- Easily drills grade 8 bolts



1U-5890 Drill Set (Plus Index), 13 Piece

Part No.	Size
1U-5386	1/16 in
1U-5387	5/64 in
1U-5388	3/32 in
1U-5389	7/64 in
1U-5390	1/8 in
1U-5391	9/64 in
1U-5392	5/32 in
1U-5393	11/64 in
1U-5394	3/16 in
1U-5395	13/64 in
1U-5396	7/32 in
1U-5397	15/64 in
1U-5398	1/4 in

1U-5891 Drill Set (Plus Index), 29 Piece

Part No.	Size	Part No.	Size	Part No.	Size
1U-5386	1/16 in	1U-5396	7/32 in	1U-5406	3/8 in
1U-5387	5/64 in	1U-5397	15/64 in	1U-5407	25/64 in
1U-5388	3/32 in	1U-5398	1/4 in	1U-5408	13/32 in
1U-5389	7/64 in	1U-5399	17/64 in	1U-5409	27/64 in
1U-5390	1/8 in	1U-5400	9/32 in	1U-5410	7/16 in
1U-5391	9/64 in	1U-5401	19/64 in	1U-5411	29/64 in
1U-5392	5/32 in	1U-5402	5/16 in	1U-5412	15/32 in
1U-5393	11/64 in	1U-5403	21/64 in	1U-5413	31/64 in
1U-5394	3/16 in	1U-5404	11/32 in	1U-5414	1/2 in
1U-5395	13/64 in	1U-5405	23/64 in		

Individual Drills

Part No.	Size	Part No.	Size	Part No.	Size
1U-5386	1/16 in	1U-5397	15/64 in	1U-5408	13/32 in
1U-5387	5/64 in	1U-5398	1/4 in	1U-5409	27/64 in
1U-5388	3/32 in	1U-5399	17/64 in	1U-5410	7/16 in
1U-5389	7/64 in	1U-5400	9/32 in	1U-5411	29/64 in
1U-5390	1/8 in	1U-5401	19/64 in	1U-5412	15/32 in
1U-5391	9/64 in	1U-5402	5/16 in	1U-5413	31/64 in
1U-5392	5/32 in	1U-5403	21/64 in	1U-5414	1/2 in
1U-5393	11/64 in	1U-5404	11/32 in	1U-8764	5/8 in (1/2 in Shank)
1U-5394	3/16 in	1U-5405	23/64 in	1U-8765	3/4 in (1/2 in Shank)
1U-5395	13/64 in	1U-5406	3/8 in		
1U-5396	7/32 in	1U-5407	25/64 in		

Aircraft Drills

- 135° split point, self-centering capability
- High quality M-7 steel
- 12 inch length

Applications

- Drilling in alloy steels such as bolts
- Mild steel
- Cast iron

Individual Drills (set not available)

Part No.	Size	Part No.	Size
4C-4411	1/16 in	4C-4419	5/16 in
4C-4412	3/32 in	4C-4420	11/32 in
4C-4413	1/8 in	4C-4421	3/8 in
4C-4414	5/32 in	4C-4422	13/32 in
4C-4415	3/16 in	4C-4423	7/16 in
4C-4416	7/32 in	4C-4424	15/32 in
4C-4417	1/4 in	4C-4425	Drill, 1/2 in
4C-4418	9/32 in		

Metric Standard Drills

- 118° point
- High quality M-7 steel
- Black finish
- Wide range of diameters — 1 mm to 12.5 mm
- Straight shank

Part No.	Size	Part No.	Size	Part No.	Size	Part No.	Size
1U-8121	1.00 mm	1U-8136	2.80 mm	1U-8151	5.00 mm	1U-8166	9.00 mm
1U-8122	1.20 mm	1U-8137	2.90 mm	1U-8152	5.20 mm	1U-8167	9.50 mm
1U-8123	1.35 mm	1U-8138	3.00 mm	1U-8153	5.50 mm	1U-8168	10.00 mm
1U-8124	1.50 mm	1U-8139	3.20 mm	1U-8154	5.60 mm	1U-6865	10.00 mm (Premium Grade Steel)
1U-8125	1.70 mm	1U-8140	3.40 mm	1U-8155	5.80 mm	1U-8169	10.50 mm
1U-8126	1.80 mm	1U-8141	3.50 mm	1U-8156	6.00 mm	1U-8170	11.00 mm
1U-8127	1.90 mm	1U-8142	3.60 mm	1U-8157	6.50 mm	1U-8171	11.50 mm
1U-8128	2.00 mm	1U-8143	3.90 mm	1U-8158	6.80 mm	1U-8172	12.00 mm
1U-8129	2.10 mm	1U-8144	4.00 mm	1U-8159	7.00 mm	1U-6866	12.00 mm (Premium Grade Steel)
1U-8130	2.20 mm	1U-8145	4.10 mm	1U-8160	7.50 mm	1U-8173	12.20 mm
1U-8131	2.30 mm	1U-8146	4.30 mm	1U-8161	8.00 mm	1U-8174	12.50 mm
1U-8132	2.40 mm	1U-8147	4.50 mm	1U-8162	8.20 mm		
1U-8133	2.50 mm	1U-8148	4.60 mm	1U-8163	8.50 mm		
1U-8134	2.60 mm	1U-8149	4.70 mm	1U-8164	8.60 mm		
1U-8135	2.70 mm	1U-8150	4.80 mm	1U-8165	8.70 mm		

4C-3385 Drill Index

- Empty drill index for storing 29 different sizes of jobber length drill bits from 1/16 inch to 1/2 inch in 1/64 inch increments
- Typical use: left hand drills

4C-4426 Drill Extension

- Extends drill reach 304.8 mm (12 in)
- Accepts up to 1/4 inch diameter shank

Recommended Drill Sizes for Metric Thread

Thread Size	Drill Dia. Needed	Part No. Used	Thread Size	Drill Dia. Needed	Part No. Used	Thread Size	Drill Dia. Needed	Part No. Used
M1.6	1.35 mm	1U-8123	M6	5.20 mm	1U-8152	M20	18.00 mm	1U-8184
M2	1.70 mm	1U-8125	M8	7.00 mm	1U-8159	M24	21.50 mm	1U-8190
M2.5	2.20 mm	1U-8130	M10	8.70 mm	1U-8165	M27	23 mm	214-3634
M3	2.60 mm	1U-8134	M12	10.50 mm	1U-8169	M30	27.00 mm	1U-8194
M4	3.40 mm	1U-8140	M14	12.20 mm	1U-8173	M36	32.50 mm	1U-8201
M5	4.30 mm	1U-8146	M16	14.25 mm	1U-8177			

Taps and Dies

Abbreviations Used for Taps and Dies

NF	American National Fine Thread Series	PD	Pitch Diameters
NC	American National Coarse Thread Series	D5	Tolerance Limit of Ground Thread Metric Tap
NS	American National Thread — Special	D7	Tolerance Limit of Ground Thread Metric Tap
H1	Tolerance Limit of Ground Thread Tap	D9	Tolerance Limit of Ground Thread Metric Tap
H2	Tolerance Limit of Ground Thread Tap	NPT	National Standard Pipe Form
H3	Tolerance Limit of Ground Thread Tap	NPTT	American Standard Dryseal Pipe Form

Hand Taps

- Caterpillar offers five types of hand taps, available by individual part numbers and in sets (indexes).
 - Machine screw
 - Fractional
 - Taper pipe
 - Special thread taps
 - Metric
- Made of high speed M-7 steel for longer life
- These are ground thread taps providing tolerance designed for Class 2 Thread, exceeds quality of carbon steel taps
- Offered in tapered, plug and bottoming versions

Machine Screws

Machine Screw Sizes — Individual								
Nominal Size	Threads Per Inch	Pitch Dia. Limits	No. of Flutes	Part Numbers			Thread Length	Overall Length
				Taper	Plug	Bottoming		
0	80 NF	H1	2	—	1P-3001	—	5/16 in	1 5/8 in
1	64 NC	H1	2	—	1P-3002	—	3/8 in	1 11/16 in
1	72 NF	H1	2	—	1P-3003	—	3/8 in	1 11/16 in
2	56 NC	H2	3	—	1P-3004	—	7/16 in	1 3/4 in
2	64 NF	H2	3	—	1P-3005	—	7/16 in	1 3/4 in
3	48 NC	H2	3	—	1P-3006	—	1/2 in	1 13/16 in
3	56 NF	H2	3	—	1P-3007	—	1/2 in	1 13/16 in
4	40 NC	H2	3	4C-5008	1P-3008	4C-5015	9/16 in	1 7/8 in
4	48 NF	H2	3	—	1P-3009	—	9/16 in	1 7/8 in
5	40 NC	H2	3	—	1P-3010	—	5/8 in	1 15/16 in
5	44 NF	H2	3	—	1P-3011	—	5/8 in	1 15/16 in
6	32 NC	H3	3	4C-5009	1P-3012	4C-5016	11/16 in	2 in
6	40 NF	H2	3	—	1P-3013	—	11/16 in	2 in
8	32 NC	H3	4	4C-5010	1P-3014	4C-5017	3/4 in	2 1/8 in
8	36 NF	H2	4	—	1P-3015	—	3/4 in	2 1/8 in
10	24 NC	H3	4	4C-5011	1P-3016	4C-5018	7/8 in	2 3/8 in
10	32 NF	H3	4	4C-5012	1P-3017	4C-5019	7/8 in	2 3/8 in
12	24 NC	H3	4	4C-5013	1P-3018	4C-5020	15/16 in	2 3/8 in
12	28 NC	H3	4	4C-5014	1P-3019	4C-5021	15/16 in	2 3/8 in

1P-3020 Machine Screw Set

- Contains plug taps from 0-80 through 12-28 in National Fine and 1-64 through 12-24 in National Coarse Threads
- Includes plastic index



Fractional Size Taps

Fractional Size Taps — Individual

Nominal Size (inch)	Threads Per Inch	Pitch Dia. Limits	No. of Flutes	Part Numbers				Thread Length	Overall Length
				Taper	Plug	Bottoming			
1/4	20 NC	H3	4	4C-4989	1P-3021	4C-4971	1 in	2 1/2 in	
1/4	28 NF	H3	4	4C-4990	1P-3022	4C-4972	1 in	2 1/2 in	
5/16	18 NC	H3	4	4C-4991	1P-3023	4C-4973	1 1/8 in	2 23/32 in	
5/16	24 NF	H3	4	4C-4992	1P-3024	4C-4974	1 1/8 in	2 23/32 in	
3/8	16 NC	H3	4	4C-4993	1P-3025	4C-4975	1 1/4 in	2 15/16 in	
3/8	24 NF	H3	4	4C-4994	1P-3026	4C-4976	1 1/4 in	2 15/16 in	
7/16	14 NC	H3	4	4C-4995	1P-3027	4C-4977	1 7/16 in	3 5/32 in	
7/16	20 NF	H3	4	4C-4996	1P-3028	4C-4978	1 7/16 in	3 5/32 in	
1/2	13 NC	H3	4	4C-4997	1P-3029	4C-4979	1 21/32 in	3 3/8 in	
1/2	20 NF	H3	4	4C-4998	1P-3030	4C-4980	1 21/32 in	3 3/8 in	
9/16	12 NC	H3	4	—	1P-3031	—	1 21/32 in	3 19/32 in	
9/16	14NF	—	—	—	2B-9256	—	—	—	
9/16	18 NF	H3	4	—	1P-3032	—	1 21/32 in	3 19/32 in	
5/8	11 NC	H3	4	4C-4999	1P-3033	4C-4981	1 13/16 in	3 13/16 in	
5/8	18 NF	H3	4	4C-5000	1P-3034	4C-4982	1 13/16 in	3 13/16 in	
3/4	10 NC	H3	4	4C-5001	1P-3035	4C-4983	2 in	4 1/4 in	
3/4	12 NF	—	—	—	2B-2526	—	—	—	
3/4	16 NF	H3	4	4C-5002	1P-3036	4C-4984	2 in	4 1/4 in	
7/8	9 NC	H4	4	4C-5003	1P-3037	4C-4985	2 7/32 in	4 11/16 in	
7/8	14 NF	H4	4	4C-5004	1P-3038	4C-4986	2 7/32 in	4 11/16 in	
1	8 NC	H4	4	4C-5005	1P-3039	4C-4987	2 1/2 in	5 1/8 in	
1	12 NF	H4	4	4C-5006	1P-3040	4C-4988	2 1/2 in	5 1/8 in	
1	14 NF	H4	4	4C-5007	1P-7421	5P-3011	2 1/2 in	5 1/8 in	
1 1/16	12 NF	H4	4	—	1U-6539	—	2 1/2 in	5 1/8 in	
1 1/8	7 NC	—	4	—	1U-9707	—	2 1/2 in	5 4 in	
1 1/8	12 NF	H4	4	—	1P-3041	5P-3012	2 9/16 in	5 7/16 in	
1 1/4	7 NC	—	—	—	4C-5051	—	—	—	
1 1/4	12 NF	H4	6	—	1P-3042	—	2 9/16 in	5 3/4 in	
1 5/16	12 NF	H4	6	—	1U-6540	—	2 9/16 in	5 3/4 in	
1 3/8	6 NC	—	—	—	1U-9709	—	—	—	
1 3/8	12 NF	H4	6	—	1P-3043	5P-3013	3 in	6 1/16 in	
1 1/2	12 NF	H4	6	—	1P-3044	—	3 in	6 3/8 in	

1P-3070 Fractional Size Tap Set

- Contains 10 plug taps
- Includes plastic index



Nominal Size (inch)	Threads Per Inch
1/4	20 NC
1/4	28 NF
5/16	18 NC
5/16	24 NF
3/8	16 NC
3/8	24 NF

Nominal Size (inch)	Threads Per Inch
7/16	14 NC
7/16	20 NF
1/2	13 NC
1/2	20 NF

1P-3050 Fractional Size Tap Set

- Contains 20 plug taps
- Includes 1P-3047 and 1P-3048 Tap Wrenches



Nominal Size (inch)	Threads Per Inch
1/4	20 NC
1/4	28 NF
5/16	18 NC
5/16	24 NF
3/8	16 NC
3/8	24 NF
7/16	14 NC
7/16	20 NF
1/2	13 NC
1/2	20 NF

Nominal Size (inch)	Threads Per Inch
9/16	12 NC
9/16	18 NF
5/8	11 NC
5/8	18 NF
3/4	10 NC
3/4	16 NF
7/8	9 NC
7/8	14 NF
1	8 NC
1	14 NC

Rethreading Dies

- Caterpillar offers three types of rethreading dies, available by individual part number and in sets (indexes).
 - Hexagon and square rethreading fractional dies
 - Hexagon rethreading metric dies
 - Hexagon rethreading pipe dies
- Used to clean-up existing thread — not recommended to cut new threads
- Made of conventional carbon steel (unless otherwise specified)
- Conform to industry standards



1P-3000 Hexagon Rethreading Fractional Die Set

- Contains 10 fractional, coarse thread dies
- Contains 10 fractional, fine thread dies
- Includes plastic index

4C-4963 Hexagon Rethreading Metric Die Set

- Includes plastic index

Nominal Size (inch)	Threads Per Inch	Part No.	Dimensions Across Flat	
			Flat	Thickness
1/4	20 NC	1P-2979	19/32 in	1/4 in
	28 NF	1P-2980		
5/16	18 NC	1P-2981	11/16 in	5/16 in
	24 NF	1P-2982		
3/8	16 NC	1P-2983	25/32 in	3/8 in
	24 NF	1P-2984		
7/16	14 NC	1P-2985	7/8 in	7/16 in
	20 NF	1P-2986		
1/2	13 NC	1P-2987	1 1/16 in	1/2 in
	20 NF	1P-2988		
9/16	12 NC	1P-2989	1 1/16 in	1/2 in
	18 NF	1P-2990		
5/8	11 NC	1P-2991	1 1/4 in	5/8 in
	18 NF	1P-2992		
3/4	10 NC	1P-2993	1 7/16 in	3/4 in
	16 NF	1P-2994		
7/8	9 NC	1P-2995	1 5/8 in	7/8 in
	14 NF	1P-2996		
1	8 NC	1P-2997	1 13/16 in	1 in
	12 NF	1P-2998		
	14 NS	3P-2213 1P-2999 Case		

Nominal Size (inch)	Part No.	Dimensions Across Flat	
		Flat	Thickness
M6 x 1.00	8T-3064	19/32 in	1/4 in
M8 x 1.25	8T-3066	11/16 in	5/16 in
M10 x 1.50	8T-3070	7/8 in	7/16 in
M12 x 1.75	8T-3074	1 1/16 in	1/2 in
M14 x 2.00	4C-4961	1 1/16 in	1/2 in
M16 x 2.00	8T-3078	1 1/4 in	5/8 in
M20 x 2.50	4C-4962	1 5/8 in	7/8 in
M16 x 1.00	4C-4182	1 1/4 in	7/16

Hexagon Rethreading Fractional Dies — Individual

Nominal Size (inch)	Threads Per Inch	Part No.	Dimensions Across Flat	
			Flat	Thickness
1/4	20 NC	1P-2979	19/32 in	1/4 in
	28 NF	1P-2980		
5/16	18 NC	1P-2981	11/16 in	5/16 in
	24 NF	1P-2982		
3/8	16 NC	1P-2983	25/32 in	3/8 in
	24 NF	1P-2984		
7/16	14 NC	1P-2985	7/8 in	7/16 in
	20 NF	1P-2986		
1/2	13 NC	1P-2987	1 1/16 in	1/2 in
	20 NF	1P-2988		
9/16	12 NC	1P-2989	1 1/16 in	1/2 in
	18 NF	1P-2990		
5/8	11 NC	1P-2991	1 1/4 in	5/8 in
	18 NF	1P-2992		
3/4	10 NC	1P-2993	1 7/16 in	3/4 in
	16 NF	1P-2994		
7/8	9 NC	1P-2995	1 5/8 in	7/8 in
	14 NF	1P-2996		
1	8 NC	1P-2997	1 13/16 in	1 in
	12 NF	1P-2998		
	14 NS	3P-2213		

Nominal Size (inch)	Threads Per Inch	Part No.	Dimensions Across Flat	
			Flat	Thickness
1 1/8	12 NF	4C-5494	2 in	1 in
1 1/4	12 NF	4C-5495	2 3/16 in	1 in
1 3/8	12 NF	4C-5496	2 3/8 in	1 in
1 1/2	12 NF	4C-5497	2 9/16 in	1 in
1 3/4	5 NF	5P-4238	3 in	1 1/4 in
M4 x 0.70		8T-3062	19/32 in	1/4 in
M5 x 0.80		8T-3063	19/32 in	1/4 in
M7 x 1.00		8T-3065	11/16 in	5/16 in
M9 x 1.00		8T-3067	25/32 in	3/8 in
M9 x 1.25		8T-3068	25/32 in	3/8 in
M10 x 1.25		8T-3069	7/8 in	7/16 in
M11 x 1.50		8T-3071	7/8 in	7/16 in
M12 x 1.25		8T-3072	1 1/16 in	1/2 in
M12 x 1.50		8T-3073	1 1/16 in	1/2 in
M13 x 1.50		8T-3075	1 1/16 in	1/2 in
M14 x 1.50		9F-9398	—	—
M15 x 1.50		8T-3076	1 1/4 in	5/8 in
M16 x 1.00		4C-4182	1 1/4 in	7/16 in
M16 x 1.50		8T-3077	1 1/4 in	5/8 in

Hexagon Rethreading Metric Dies — Individual

Nominal Size and Pitch	Part No.	Dimensions Across Flat	Thickness
M6 x 1.00	8T-3064	19/32 in	1/4 in
M8 x 1.25	8T-3066	11/16 in	5/16 in
M10 x 1.50	8T-3070	7/8 in	7/16 in
M12 x 1.75	8T-3074	1 1/16 in	1/2 in
M14 x 2.00	4C-4961	1 1/16 in	1/2 in
M16 x 1.00	4C-4181	1 1/4 in	5/8 in
M16 x 2.00	8T-3078	1 1/4 in	5/8 in
M20 x 2.50	4C-4962	1 5/8 in	7/8 in
M30 x 3.50	4C-6722	2 3/16 in	1 in

Hexagon Rethreading Pipe Dies — Individual



Nominal Pipe Size (inch)	Threads Per Inch	Part No.	Dimensions Across Flat	Thickness
1/8	27	4C-4957	1 1/16 in	3/8 in
1/4	18	4C-4958	1 1/4 in	5/8 in
3/8	18	4C-4959	1 7/16 in	5/8 in
1/2	14	4C-4960	1 5/8 in	3/4 in

Universal Outside Thread Chasers

- Precision dies restore threads to their original condition to make reassembly of matching parts easier.
- Eliminates the need for expensive thread-cutting equipment
- Tighten the tool slightly on the good threads, then back off over the damaged thread area to restore the threads.

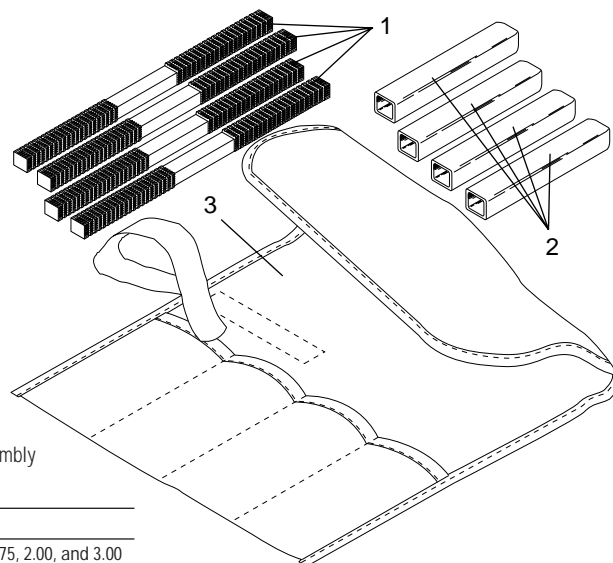


Part No.	OTC No.	Per Capacity	Description	Weight
1U-7521	7402	4, 5, 6, 7, 7 1/2, 8, 9, 10, 11, 11 1/2, 12, 14, 16, 18, 20, 24	Standard Thread Chaser (complete with 6 dies)	1.36 kg (3 lbs)
1U-7610	202817	1 mm-1.25 mm-1.5 mm-1.75 mm; 2 mm-2.5 mm-3.0 mm-3.5 mm; 4 mm	Dies only (3 dies)	.45 kg (1 lb)

154-9315 Thread File Group

SMCS Code: 4050-006, 0671
 Model: 311, 312, 312B, 315B, and 318B Excavators (Grenoble Version)

- Used to renew damaged external threads on any diameter shaft (right or left handed)
- Cross-cut and thread proportional to thread pitch (helps eliminate file skipping or jumping out of fine pitches)
- Each file has eight separate pitches
- Makes thread repairs without using a thread die
- Red plastic handle protects hands
- Each file is individually packaged in a plastic tube
- Carrying pouch keeps files together
- Files can also be ordered separately.



Reference

REN1113 Service Manual, 312B Excavators Machine Systems Disassembly and Assembly
 SENR6139 Service Manual, 311 and 312 Excavators Machine Systems Disassembly and Assembly

Item	Part No.	Description	Pitch
1	154-9316	Metric Thread File	0.75, 1.00, 1.25, 1.50, 1.75, 2.00, and 3.00
	154-9317	Inch Thread File	11, 12, 13, 14, 16, 18, 20, and 24 tpi
	154-9318	Inch Thread File	9, 10, 12, 16, 20, 27, 28, and 32 tpi
	154-9319	Pipe Thread File	8, 10, 11 1/2, 14, 16, 18, 24, and 27 tpi
2		Plastic handle	
3	160-1749	Roll-up Pouch	

Special Rethreading Dies

- Used for cleaning up damaged external threads
- Not readily obtainable on the market because the threads are not common standards



Part No.	Size
9F-9397	24 mm x 1.5 mm Pitch
9F-9398	14 mm x 1.5 mm Pitch
1P-2998	1 in-12 UNF
5P-4238	1 3/4 in-5 NC
6V-7052	1 5/16 in-12 NF

Taper Pipe Taps

Taper Pipe Taps — Individual					
Nominal Pipe Size (inch)	Threads Per Inch	No. of Flutes	Part No.	Thread Length	Overall Length
1/16	27	4	4C-9747	—	54.10 mm (2.13 in)
1/8	27	4	2P-5531	3/4 in	54.10 mm (2.13 in)
1/4	18	4	2P-5532	1 1/16 in	61.98 mm (2.44 in)
3/8	18	4	2P-5533	1 1/16 in	65.02 mm (2.56 in)
1/2	14	4	2P-5534	1 3/8 in	79.50 mm (3.13 in)
3/4	14	5	214-3635	1 3/8 in	82.55 mm (3.25 in)

2P-5530 Taper Pipe Tap Set

- Contains 4 taper pipe taps 1/8 inch, 1/4 inch, 3/8 inch and 1/2 inch NPTF, shown above
- Includes plastic index



NOTE: These are ground thread taps meeting requirements of right hand American Standard Pipe Form (NPT) and American Standard Dryseal Pipe Form (NPTF). Dryseal taps are used to tap fittings which will give a pressure tight joint without use of a "sealer".

Metric Size Taps — Individual						Metric Size Taps — Individual					
Nominal Size	Pitch Dia. Limits	No. of Flutes	Part Numbers		Overall Length inch	Nominal Size	Pitch Dia. Limits	No. of Flutes	Part Numbers		Overall Length inch
			Plug	Bottoming					Plug	Bottoming	
M4 x 0.7	—	4	8T-3079	—	—	M14 x 2	D7	4	4C-4965	—	3.59 in
M5 x 0.8	D4	4	8T-3080	—	2.375 in	M15 x 1.50	—	4	8T-3094	—	—
M6 x 1	D5	4	8T-3081	—	2.50 in	M16 x 1.50	—	4	8T-3095	—	—
M7 x 1.0	—	4	8T-3082	—	—	M16 x 2	D6	4	—	4C-9645 ²	8.00 in
M8 x 1.25	D5	4	8T-3083	—	2.72 in	M16 x 2	D7	4	8T-3096	—	3.81 in
M9 x 1.0	—	4	8T-3084	—	—	M18 x 1.5	D6	4	9U-7283	—	4.03 in
M9 x 1.25	—	4	8T-3085	—	—	M18 x 2.5	D7	4	4C-4966	—	4.03 in
M10 x 1	D6	4	—	4C-5894	3.16 in	M20 x 1.5	D7	4	9U-5794 ¹	—	4.47 in
M10 x 1.25	—	4	8T-3086	—	—	M20 x 2.5	D7	4	4C-4967	—	4.47 in
M10 x 1.50	D6	4	8T-3087	—	3.16 in	M22 x 1.5	D6	4	156-8166	—	4.69
M11 x 1.50	—	4	8T-3088	—	—	M24 x 3.0	D8	4	4C-4968	—	4.91 in
M12 x 1.25	—	4	8T-3089	—	—	M30 x 3.5	D9	4	4C-4969	—	5.44 in
M12 x 1.50	—	4	8T-3090	—	—	M36 x 4	D9	4	4C-4970	—	6.06 in
M12 x 1.75	D6	4	8T-3091	—	3.38 in	M42 x 4.5	D5	4 or 6	9U-6901	—	5.91 in
M13 x 1.50	—	4	8T-3092	—	—	M48 x 5	D5	6	9U-6503	—	7.62 in
M14 x 1	D7	4	—	4C-6924	3.59 in	M64 x 6.0	D5	4 or 6	9U-6902	—	8.74 in
M14 x 1.50	—	4	8T-3093	—	—						

¹ Used for 3406 Engines

² Used for aluminum heads

Special Thread Taps

- Used for cleaning up damaged threads
- Not readily obtainable on the market because the threads are not common standards

Part No.	Size
6V-2091	3/8 inch-16 Spirallock
9F-9396	24 mm-1.5 mm
7S-7093	7/8 inch-12 UN
5P-3012	1 1/8 inch-12 NF Bottom
1P-7422	2 inch-12 UN
1U-6600	1 1/8 inch-7 Spirallock
1U-9708	1 1/4 inch-7 Spirallock
1U-6725	1 3/8 inch-12 Buttress Bottoming Tap
1U-6726	1 3/4 inch-12 Buttress Bottoming Tap

Tap Wrenches

- Caterpillar offers two types of tap wrenches:
 - T-Handle
 - Straight
- Designed for use in hand tapping but can also be used with reamers, drills, screw extractor or other hand cutting tools
- Jaws are made of carefully hardened and tempered steel.
- Ruggedly built yet nicely furnished



T-Handle Tap Wrenches						
Description/Usage	Part No.	Length	Use With: Fractional Taps	Machine Screw Taps	Metric Taps	
Slip Handle The T-Handle may be "slipped" from side to side to permit a complete turn in close quarters.	4C-5026	69.85 mm (2.75 in)	1/16 in - 1/4 in	0-14	1 - 6 mm	
Plain Handle An all purpose wrench with fixed handle. Ideal for ordinary out in the open tapping jobs.	4C-5027	69.85 mm (2.75 in)	1/16 in - 1/4 in	0-14	1 - 6 mm	
Long Shank The long shank permits tapping in hard to get at places encountered in machine and automobile repair work.	4C-5028	222.25 mm (8.75 in)	1/16 in - 1/4 in	0-14	1 - 6 mm	
Ratchet The combination of ratchet and slip handle make this an all around wrench capable of handling most hand tapping jobs.	4C-5029	95.25 mm (3.75 in)	1/16 in - 1/4 in	0-14	1 - 6 mm	



Straight Tap Wrenches						
Description/Usage	Part No.	Length	Use With: Fractional Taps	Machine Screw Taps	Pipe Taps	Metric Taps
Solid Handle «These wrenches have solid handles, one of which is forged integral with the center. Adjustment is made by turning the movable handle.	1P-3047	279.40 mm (11 in)	5/32 in - 1/2 in	7-14	1/8	4 - 13 mm
	1P-3048	482.60 mm (19 in)	1/4 in - 1 1/8 in	—	1/8 - 3/4	6 - 24 mm

Thread Inserts

Screw Thread Inserts

Caterpillar Service Technology offers two different types of screw thread inserts. Both are used to repair damaged threads and can save money and speed up repairs.

Heli-Coil Inserts are:

- Effective and universally accepted
- Stainless steel
- Provide leak tight joints (ex. spark plugs)

Keenserts® are:

- Installed with standard drills and taps
- No prewinder tool required
- Easy to remove

Heli-Coil Inserts

- Effective and universally accepted method of thread repair
- Quickly and permanently restore stripped, worn or damaged threads to their original size and condition
- Inserts work in any material: aluminum, magnesium, cast iron, bronze, etc.
- Increasing use of lightweight (and soft) materials means more thread damage — there is a Heli-Coil repair for virtually every application.

Stainless Steel Heli-Coil inserts eliminate:

- Thread wear
- Corrosion
- Galling
- Rust

and provide...

- Stronger assemblies
- High quality and reliability
- Fastening integrity superior to the original



Reference

For detailed information on Heli-Coil Inserts order NEHP5567, "Screw Thread Inserts for Maintenance, Repair and Overhaul."

Master Thread Repair Sets

- Both sets contain repairs for the most commonly used thread sizes.
- Two Master Sets for inch sizes are available: one for Inch Coarse (4C-8364) and one for Inch Fine (4C-8365).
- The coarse set contains six sizes: 1/4 inch, 5/16 inch, 3/8 inch, 7/16 inch, 1/2 inch and 5/8 inch.
- The fine set has six sizes: #10, 1/4 inch 5/16 inch, 3/8 inch, 7/16 inch and 1/2 inch.
- Each set has a drill, tap, installation tool, a quantity of inserts for each size, and complete instructions.

NOTE: Installation tools, prewinder and mandrel included in Fine Series only.



4C-8364 — Inch Coarse Master Thread Repair Set					
Thread Size and Length	Insert Pkg. P/N	Insert Qty.	Tap P/N	Drill Size	Installation Tool P/N
1/4 in-20 x .375 in	4C-8419	12	4C-9681	17/64 in	8T-2692
5/16 in-18 x .469 in	4C-8420	12	4C-9682	21/64 in	8T-2695
3/8 in-16 x .562 in	4C-8421	12	4C-9683	25/64 in	8T-2698
7/16 in-14 x .656 in	4C-8422	6	4C-9684	29/64 in	8T-2703
1/2 in-13 x .750 in	4C-8423	6	4C-9685	17/32 in	8T-2706
5/8 in-11 x .938 in	4C-8425	6	4C-9686	21/32 in	6V-9083

4C-8365 — Inch Fine Master Thread Repair Set					
Thread Size and Length	Insert Pkg. P/N	Insert Qty.	Tap P/N	Drill Size	Installation Tool P/N
10-32 x .285 in	4C-8433	12	4C-9687	13/64 in	8T-2727
1/4 in-28 x .375 in	4C-8434	12	4C-9688	17/64 in	8T-2730
5/16 in-24 x .469 in	4C-8435	12	4C-9689	21/64 in	8T-2733
3/8 in-24 x .562 in	4C-8436	12	4C-9690	25/64 in	8T-2736
7/16 in-20 x .656 in	4C-8437	6	4C-9691	29/64 in	8T-2739
1/2 in-20 x .750 in	4C-8438	6	4C-9692	33/64 in	8T-2742

Inch Coarse Thread Repair Kits

- Kits include insert, tap, installation tool, tang break-off tool, and drill.
- Tang break-off tool included in 1/4-20 through 1/2-13 only
- Insert package contains inserts only.

Kit Contents and Replacement Part Numbers

Thread Size and Length	Kit P/N Cat	Inserts per Kit	Tap P/N Cat	Installation Tool P/N Cat	Insert Pkg. P/N Cat	Insert Qty.	Drill Size	Drill P/N
1/4-20 x .375 ¹	4C-8368	24	4C-9681	8T-2692	4C-8419	12	17/64	1U-5634
5/16-18 x .469 ¹	4C-8369	24	4C-9682	8T-2695	4C-8420	12	21/64	1U-5638
3/8-16 x .562 ¹	4C-8370	12	4C-9683	8T-2698	4C-8421	12	25/64	1U-5642
7/16-14 x .656 ¹	4C-8371	12	4C-9684	8T-2703	4C-8422	6	29/64	1U-5646
1/2-13 x .750 ¹	4C-8372	12	4C-9685	8T-2706	4C-8423	6	17/32	1U-5682
9/16-12 x .844	4C-8373	6	4C-9700	8T-2709	4C-8424	6	19/32	1U-5684
5/8-11 x .938 ¹	4C-8374	6	4C-9686	6V-9083	4C-8425	6	21/32	1U-5686
3/4-10 x 1.125	4C-8375	4	4C-9725	6V-9081	4C-8426	4	25/32	1U-5690
7/8-9 x 1.312	4C-8376	6	4C-9724	8T-2712	4C-8427	1	29/32	1U-5694
1-8 x 1.500	4C-8377	6	4C-9723	8T-2715	4C-8428	1	1-1/32	1U-5698
1-1/8-7 x 1.688	4C-8378	5	4C-9722	8T-2718	4C-8429	1	1-5/32	1U-5702
1-1/4-7 x 1.875	4C-8379	4	4C-9721	8T-2721	4C-8430	1	1-9/32	1U-5706
1-3/8-6 x 2.062	4C-8380	4	4C-8468	4C-8485	4C-8431	1	1-13/32	1U-5710
1-1/2-6 x 2.250	4C-8381	4	4C-9720	8T-2724	4C-8432	1	1-17/32	1U-5704

¹ Also included in Master Thread Repair Set — 4C-8364

Inch Fine Thread Repair Kits

- Kits include insert, tap, installation tool, tang break-off tool, and drill.
- Tang break-off tool included in 10-32 through 1/2-20 only
- Insert package contains inserts only.

Kit Contents and Replacement Part Numbers

Thread Size and Length	Kit P/N Cat	Inserts per Kit	Tap P/N Cat	Installation Tool P/N Cat	Insert Pkg. P/N Cat	Insert Qty.	Drill Size	Drill P/N
10-32 x .285 ¹	4C-8382	24	4C-9687	8T-2727	4C-8433	12	13/64	1U-5630
1/4-28 x .375 ¹	4C-8383	24	4C-9688	8T-2730	4C-8434	12	17/64	1U-5634
5/16-24 x .469 ¹	4C-8384	24	4C-9689	8T-2733	4C-8435	12	21/64	1U-5638
3/8-24 x .562 ¹	4C-8385	12	4C-9690	8T-2736	4C-8436	12	25/64	1U-5642
7/16-20 x .656 ¹	4C-8386	12	4C-9691	8T-2739	4C-8437	6	29/64	1U-5646
1/2-20 x .750 ¹	4C-8387	12	4C-9692	8T-2742	4C-8438	6	33/64	1U-7433
9/16-18 x .844	4C-8388	6	4C-8469	4C-8486	4C-8497	6	37/64	1U-7434
5/8-18 x .938	4C-8389	6	4C-9701	8T-2745	4C-8439	6	41/64	4C-8480
3/4-16 x 1.125	4C-8390	4	4C-9702	6V-9082	4C-8440	4	49/64	4C-8481
7/8-14 x 1.312	4C-8391	6	4C-9703	8T-2748	4C-8441	1	57/64	4C-8482
1-14 x 1.500	4C-8392	6	4C-9704	8T-2751	4C-8442	1	1-1/64	4C-8483
1-12 x 1.500	4C-8393	6	4C-8470	4C-8487	4C-8443	1	1-1/64	4C-8483
1-1/8-12 x 1.688	4C-8394	5	4C-9706	8T-2754	4C-8444	1	1-5/32	1U-5702
1-1/4-12 x 1.875	4C-8395	4	4C-9707	8T-2757	4C-8445	1	1-9/32	1U-5706
1-3/8-12 x 2.062	4C-8396	4	4C-8471	4C-8488	4C-8446	1	1-13/32	1U-5710
1-1/2-12 x 2.250	4C-8397	4	4C-9709	8T-2760	4C-8447	1	1-17/32	1U-5704

¹ Also included in Master Thread Repair Set — 4C-8365

4C-8366 Metric Master Thread Repair Set

- Contains repairs for the most commonly used thread sizes: M5, M6, M8 and M10 x 1.50
- Set has a drill bit, tap, installation tool, a quantity of inserts for each size, and complete instructions.

Thread Size and Length	Insert Pkg. P/N	Insert Qty.	Tap P/N	Drill Size	Installation Tool P/N
M5 x 0.8 7.5	4C-8448	12	4C-9727	13/64	8T-3121
M6 x 1 9.0	4C-8449	12	4C-9728	1/4	8T-2784
M8 x 1.25 12.0	4C-8451	12	4C-8475	21/64	8T-2790
M10 x 1.5 15.0	4C-8452	12	4C-9730	13/32	8T-2793

4C-8367 Metric Master Thread Repair Set

- Contains repairs for the most commonly used thread sizes: M5, M6, M8 and M10 x 1.25
- Set has a drill bit, tap, installation tool, a quantity of inserts for each size, and complete instructions.

Thread Size and Length	Insert Pkg. P/N	Insert Qty.	Tap aP/N	Drill Size	Installation Tool P/N
M5 x 0.8 ¹ 7.5	4C-8448	12	4C-9727	13/64	8T-3121
M6 x 1 ¹ 9.0	4C-8449	12	4C-9728	1/4	8T-2784
M8 x 1.25 12.0	4C-8451	12	4C-8475	21/64	8T-2790
M10 x 1.25 15.0	4C-8410	12	4C-9715	13/32	8T-2763

Metric Coarse Thread Repair Kits

- Kits include insert, tap, installation tool, tang break-off tool, and drill.
- Tang break-off tool included in M5 through M12 only

Kit Contents and Replacement Part Numbers									
Thread Size and Length	Kit P/N Cat	Inserts per Kit	Tap P/N Cat	Installation Tool P/N Cat	Insert Pkg. P/N Cat	Insert Qty.	Drill Size	Drill P/N	
M5 x 0.8 ^{1 2} 7.5	4C-8398	12	4C-9727	8T-3121	4C-8448	12	13/64	1U-5630	
M6 x 1 ^{1 2} 9.0	4C-8399	12	4C-9728	8T-2784	4C-8449	12	1/4	1U-5633	
M7 x 1 10.5	4C-8400	12	4C-9705	8T-2787	4C-8450	12	9/32	1U-5635	
M8 x 1.25 ^{1 2} 12.0	4C-8401	12	4C-8475	8T-2790	4C-8451	12	21/64	1U-5638	
M10 x 1.5 ¹ 15.0	4C-8402	12	4C-9730	8T-2793	4C-8452	12	13/32	1U-5643	
M12 x 1.75 18.0	4C-8403	12	4C-9731	8T-2796	4C-8453	6	15/32	1U-5647	
M14 x 2 21.0	4C-8404	12	4C-8472	4C-8489	4C-8454	6	37/64	1U-7434	
M16 x 2 24.0	4C-8405	6	4C-9732	8T-2799	4C-8455	6	21/32	1U-5686	
M18 x 2.5 27.0	4C-8406	6	4C-8473	4C-8490	4C-8456	6	47/64	—	
M20 x 2.5 30.0	4C-8407	4	4C-8474	4C-8491	4C-8457	3	13/16	1U-5691	

¹ Also included in 4C-8366 Master Thread Repair Set

² Also included in 4C-8367 Master Thread Repair Set

Metric Fine Thread Repair Kits

- Kits include insert, tap, installation tool, tang break-off tool, and drill.
- Tang break-off tool included in M5 through M12 only

Kit Contents and Replacement Part Numbers									
Thread Size and Length	Kit P/N Cat	Inserts per Kit	Tap P/N Cat	Installation Tool P/N Cat	Insert Pkg. P/N Cat	Insert Qty.	Drill Size	Drill P/N	
M8 x 1 12.0	4C-8408	12	4C-9729	4C-8492	4C-8458	12	21/64	1U-5638	
M10 x 1 15.0	4C-8409	12	4C-8476	4C-8493	4C-8459	12	13/32	1U-5643	
M10 x 1.25 ¹ 15.0	4C-8410	12	4C-9715	8T-2763	4C-8460	12	13/32	1U-5643	
M12 x 1.25 18.0	4C-8411	12	4C-9716	8T-2766	4C-8461	6	15/32	1U-5647	
M12 x 1.5 18.0	4C-8412	12	4C-9717	8T-2769	4C-8462	6	15/32	1U-5647	
M14 x 1.5 21.0	4C-8413	12	4C-9718	8T-2772	4C-8463	6	9/16	1U-5683	
M16 x 1.5 24.0	4C-8414	6	4C-9719	8T-2775	4C-8464	6	21/32	1U-5686	
M18 x 1.5 27.0	4C-8415	6	4C-8477	4C-8494	4C-8465	6	23/32	1U-5688	

¹ Also included in 4C-8367 Master Thread Repair Set

Spark Plug Thread Repair

Preferred method of repair specified by virtually all U.S. and foreign vehicle manufacturers.

- Kits are available in sizes M14, M18, and 7/8 inch.
- Each kit contains a piloted tap (no drilling necessary), an installation tool, and a quantity of inserts.
- The M14 Kit contains several insert lengths to accommodate all spark plug reaches.

Thread Size	Reach	Kit P/N Cat	Inserts per Kit	Tap P/N Cat	Installation Tool P/N Cat	Reach	Insert Pkg. P/N Cat	Insert Qty.
14-1.25 mm	3/8 in	4C-8416	6	8T-2801	8T-2802	3/8 in	9U-5121	6
	7/16 in	4C-8416	6			7/16 in	9U-5122	6
	1/2 in	4C-8416	6			1/2 in	9U-5123	6
	3/4 in	4C-8416	6			3/4 in	9U-5124	6
	.472 in	4C-8416	6			.472 in	9U-5125	6
18-1.50 mm	1/2 in	4C-8417	24	4C-8478	4C-8495	1/2 in	4C-8466	6
7/8 in-18	1/2 in-5/8 in	4C-8418	10	4C-8479	4C-8496	1/2 in-5/8 in	4C-8467	5



Carded Inserts

- Inserts are carded according to thread size for easy handling and display.
- Contained in a vial marked with part number, thread size, and length
- The length of insert in Inch and Metric packages is 1-1/2 times the diameter of the bolt — providing sufficient strength in most applications.
- Spark Plug Inserts are packaged in lengths corresponding to the various spark plug reaches.



Inch Coarse			
Thread Size	Thread Length	Pkg. P/N Cat	Insert Qty.
1/4-20	.375	4C-8419	12
5/16-18	.469	4C-8420	12
3/8-16	.562	4C-8421	12
7/16-14	.656	4C-8422	6
1/2-13	.750	4C-8423	6
9/16-12	.844	4C-8424	6
5/8-11	.938	4C-8425	6
3/4-10	1.125	4C-8426	4
7/8-9	1.312	4C-8427	1
1-8	1.500	4C-8428	1
1-1/8-7	1.688	4C-8429	1
1-1/4-7	1.875	4C-8430	1
1-3/8-6	2.062	4C-8431	1
1-1/2-6	2.250	4C-8432	1

Inch Fine			
Thread Size	Thread Length	Pkg. P/N Cat	Insert Qty.
10-32	.285	4C-8433	12
1/4-28	.375	4C-8434	12
5/16-24	.469	4C-8435	12
3/8-24	.562	4C-8436	12
7/16-20	.656	4C-8437	6
1/2-20	.750	4C-8438	6
9/16-18	.844	4C-8497	6
5/8-18	.938	4C-8439	6
3/4-16	1.125	4C-8440	4
7/8-14	1.312	4C-8441	1
1-14	1.500	4C-8442	1
1-12	1.500	4C-8443	1
1-1/8-12	1.688	4C-8444	1
1-1/4-12	1.875	4C-8445	1
1-3/8-12	2.062	4C-8446	1
1-1/2-12	2.250	4C-8447	1

Metric Coarse			
Thread Size	Thread Length	Pkg. P/N Cat	Insert Qty.
M5 x 0.8	7.5	4C-8448	12
M6 x 1	9.0	4C-8449	12
M7 x 1	10.5	4C-8450	12
M8 x 1.25	12.0	4C-8451	12
M10 x 1.5	15.0	4C-8452	12
M12 x 1.75	18.0	4C-8453	6
M14 x 2	21.0	4C-8454	6
M16 x 2	24.0	4C-8455	6
M18 x 5.25	27.0	4C-8456	6
M20 x 5.25	30.0	4C-8457	3

Metric Fine			
Thread Size	Thread Length	Pkg. P/N Cat	Insert Qty.
M8 x 1	12.0	4C-8458	12
M10 x 1	15.0	4C-8459	12
M10 x 1.25	15.0	4C-8460	12
M12 x 1.25	18.0	4C-8461	6
M12 x 1.5	18.0	4C-8462	6
M14 x 1.5	21.0	4C-8463	6
M16 x 1.5	24.0	4C-8464	6
M18 x 1.5	27.0	4C-8465	6

Spark Plug			
Thread Size	Reach	Pkg. P/N Cat	Insert Qty.
18-1.25 mm	1/2 in	4C-8466	6
7/8-18	1/2 in-5/8 in	4C-8467	5
14-1.25 mm	3/8 in	9U-5121	6
14-1.25 mm	7/16 in	9U-5122	6
14-1.25 mm	1/2 in	9U-5123	6
14-1.25 mm	3/4 in	9U-5124	6
14-1.25 mm	.472 in	9U-5125	6

Inserts for Specific Engine Applications

Engine Bore mm (inch)	Size Size	Drill Size	(1) Thread Tap	(2) Pilot	(3) Tap Guide	(4) Drill Guide	(5) Pre-Winder	(6) Sleeve Assembly	(7) Insert	(8) Nib
95.29 (3.75)	1.0 in		8F-5576	4H-0119 ¹	8F-5574	8F-5567	9F-7146	9F-7143	8F-5573	9F-7145
101.60 (4.00)	1.0 in		8F-5576	4H-0119 ¹	8F-5564	8F-5567	9F-7146	9F-7143	8F-5573	9F-7145
107.95 (4.25)	1 1/8 in		8F-5577	4H-0119 ¹	8F-5575	8F-5568	9F-7148	9F-7143	8F-5574	9F-7147
114.30 (4.50)	1 1/8 in		8F-5577	4H-0119 ¹	8F-5565	8F-5568	9F-7148	9F-7143	8F-5574	9F-7147
101.60 (4.00)	51/64 in	3/4 in-12	8M-8290		9M-1513	9M-1512	8M-8289	9F-7143	8M-8292	8M-8291
114.30 (4.50)	51/74 in	3/4 in-12	8M-8290		9M-1512	8M-8289	9F-7143	8M-8292	8M-8291	8M-8291
114.30 (4.50)	29/32 in	7/8 in-12	9M-6595		8S-6027	8S-6026	9M-6594	9F-7143	9M-6593	9M-6596
114.30 (4.50)	29/32 in		9M-6595		8S-6029	8S-6028	8S-6033	8S-6034	8S-6400	8S-6032
120.65 (4.75) V8	29/83 in		9M-6595		8S-6029	8S-6028	8S-6033	8S-6034	8S-6400	8S-6032
120.65 (4.75) 2-Valve	29/32 in		9M-6595		8S-6029	8S-6028	8S-6033	8S-6034	8S-6400	8S-6032
130.75 (5.12)	1 1/8 in		8F-5577	5H-8148	8F-5565	8F-5568	9F-7148	9F-7143	5H-8146	5H-8147
130.75 (5.12) Series F	1.0 in		8F-5576	4H-0119 ¹	8F-5564	8F-5567	9F-7146	9F-7143	8F-5573	9F-7145
137.31 (5.40) D343, 1693 90deltaV8	29/32 in	7/8 in-12	9M-6595		9M-6591	9M-6592	9M-6594	9F-7143	9M-6593	9M-6595
137.31 (5.40) 3400 Series	29/32 in	7/8 in-12	9M-6595		5P-2417	5P-2418	9M-6594	9F-7143	8S-6400	9M-6596
137.31 (5.40) 60deltaV8, V12, V16	29/32 in	7/8 in-12	9M-6595		7S-8739	7S-8740	9M-6594	9F-7143	9M-6593	9M-6596
146.05 (5.75)	1 1/4 in	1 1/4 in-12	8F-5578		8F-5566	8F-5569	9F-7150	9F-7143	8F-5575	9F-7149
146.05 (5.75)	1 1/8 in	1 1/8 in-12	8F-5577	1P-3571	8F-5565	8F-5568	9F-7148	9F-7143	5H-8146	5H-8147
158.75 (6.25)	1.0	1 in-12	8F-5576		8S-6031	8S-6030	9F-7146	9F-7143	8S-6402	9F-7145

¹ 4H-0119 Pilot is required to locate drill guide and tap guide in later cylinder heads using the larger retainers.

Special Length Inserts			
Thread Size and Length	Insert P/N Cat	Tap P/N Cat	Installation Tool P/N Cat
5/8-11 x 1.250	6V-9076	4C-9686	6V-9083
3/4-16 x 1.500	6V-9074	4C-9702	6V-9082
M8-1.25 x 16 mm	9U-5177	4C-8475	8T-2790
M16-2 x 32 mm	9U-5604	4C-9732	8T-2799

Keenserts® Thread Inserts

Strong, permanent, metal threads — coarse or fine

Individual kits are available containing inserts of one size per box or as master kits containing a selection of various size inserts in one package. These kits provide convenient storage and easy access to inserts and tools. Included in each kit are installation tools for driving “Kees” as well as complete instructions for installation of the keenserts. Refills for each kit may be ordered simply and easily so that an appropriate stock may be maintained at all times.

- Installed with standard drills and taps.
- No pre-winder tool required.
- Impossible to cross thread while installing.
- No tang break-off.
- Positive mechanical lock against rotation.
- May be used in virtually any material—aluminum, magnesium, cast iron, cold rolled steel and plastic.
- Provide high strength and reliability. One length per size provides maximum pullout strength.
- Easy to remove.
- No special skills required. Installation procedures can be learned in minutes.

Typical Applications

- Buses
- Trucks
- Heavy Equipment
- Marine Equipment
- Machinery
- Tooling
- Power Tools
- Recreational Vehicles
- Small Engines



Easy Installation/4 Simple Steps

1. Drill out old threads, using standard drill.
2. Tap new threads, using standard tap.
3. Screw in insert until slightly below surface. “Kees” act as depth stop.
“Kees” are driven into the surrounding base material to securely lock the insert against rotation.
4. Drive “Kees” down with several light taps on installation tool.
“Kees” firmly lock insert in place, preventing rotation.

Insert Removal Data

Internal Thread Size	Drill Size	Drill Depth	Internal Thread Size	Drill Size	Drill Depth
10-24 10-32	9/32 in	1/8 in	5/8-11 5/8-18	25/32 in	3/16 in
1/4-20 1/4-28	11/32 in	3/16 in	3/4-10 3/4-16	31/32 in	5/16 in
5/16-18 5/16-24	13/32 in	3/16 in	7/8-9 7/8-14	1 3/32 in	5/16 in
3/8-16 3/8-24	15/32 in	3/16 in	1-8 1-14	1 7/32 in	5/16 in
7/16-14 7/16-20	17/32 in	3/16 in	1 1/8-7 1 1/8-12	1 11/32 in	5/16 in
1/2-13 1/2-20	21/32 in	3/16 in	1 1/4-7 1 1/4-12	1 15/32 in	5/16 in
9/16-12 9/16-18	21/32 in	3/16 in	1 1/2-6 1 1/2-12	1 23/32 in	5/16 in

9S-3500 (UNF) and 9S-3700 (UNC) Thread Insert Master Kit

- #10 to 1 1/2 inch thread size provides strong, wear-resistant metal threads for the repair of damaged hole threads in steel, cast iron
- Available in the form of 2 master kits, 28 repair kits and 28 replacement kits. Usage instructions, Form SEHS8792, are enclosed with
- Both kits are contained in rugged metal boxes with individual compartments for each size of insert and driver.
- Each kit contains 10 different-sized inserts and drivers ranging from 1/4 inch to 1 inch threaded size.
- Decal for 9S-3500: SEHS7110
- Decal for 9S-3700: SEHS7111



Insert Kits Replacement Kits

Insert Kits

- These repair kits include inserts of one size and a driver.
- Repair kits range from #10 to 1 1/2 inch thread in both the fine and coarse thread series.

Replacement Kits

- Twenty-eight replacement kits provide replacement inserts for the master kits and repair kits.
- The replacement kits include a quantity of inserts of one size as illustrated.
- Replacement kits range from #10 to 1 1/2 inch thread in both the fine and coarse thread series.



Internal Thread No.	Insert Kit Part No.	No. of Inserts Per Kit	Replacement Kit Part No.	No. of Inserts Per Kit	External Thread	Inset Data		Installation Data		
						Length	Tap Drill Dia.	C'sink Dia.	Tap Size	
10-24	9S-3510	15	9S-3674	45	3/8 in-16	.31 in		Q	.38 in	3/8 in-16
10-32	9S-3509	15	9S-3673	45	3/8 in-16	.31 in		Q	.38 in	3/8 in-16
1/4 in-20	9U-5053	13	9U-5054	40	7/16 in-14	.37 in	.44 in	7/16 in-14		
1/4 in-28	9U-5055	13	9U-5056	40	7/16 in-14	.37 in	X	.44 in	7/16 in-14	
5/16 in-18	9U-5057	8	9U-5058	25	1/2 in-13	.43 in		29/64 in	.51 in	1/2 in-13
5/16 in-24	9U-5059	8	9U-5060	25	1/2 in-13	.43 in		29/64 in	.51 in	1/2 in-13
3/8 in-16	9S-3618	6	9S-3651	20	9/16 in-12	.50 in	33/64 in	.57 in	9/16 in-12	
3/8 in-24	9S-3515	6	9S-3641	20	9/16 in-12	.50 in	33/64 in	.57 in	9/16 in-12	
7/16 in-14	9S-3620	6	9S-3652	18	5/8 in-11	.62 in		37/64 in	.63 in	5/8 in-11
7/16 in-20	9S-3619	6	9S-3642	18	5/8 in-11	.62 in		37/64 in	.63 in	5/8 in-11
1/2 in-13	9S-3622	5	9S-3653	15	3/4 in-16	.62 in		45/64 in	.76 in	3/4 in-16
1/2 in-20	9S-3621	5	9S-3643	15	3/4 in-16	.62 in		45/64 in	.76 in	3/4 in-16
9/16 in-12	9S-3624	3	9S-3654	10	3/4 in-16	.81 in		45/64 in	.76 in	3/4 in-16
9/16 in-18	9S-3623	3	9S-3644	10	3/4 in-16	.81 in		45/64 in	.76 in	3/4 in-16
5/8 in-11	9S-3626	2	9S-3655	9	7/8 in-14	.87 in		53/64 in	.88 in	7/8 in-14
5/8 in-18	9S-3625	2	9S-3645	9	7/8 in-14	.87 in		53/64 in	.88 in	7/8 in-14
3/4 in-10	9S-3628	2	9S-3656	6	1 1/8 in-12	1.12 in	1 1/16 in	1.14 in	1 1/8 in-12	
3/4 in-16	9S-3627	2	9S-3646	6	1 1/8 in-12	1.12 in	1 1/16 in	1.14 in	1 1/8 in-12	
7/8 in-9	9S-3630	2	9S-3657	5	1 1/4 in-12	1.25 in	1 3/16 in	1.27 in	1 1/4 in-12	
7/8 in-14	9S-3629	2	9S-3647	5	1 1/4 in-12	1.25 in	1 3/16 in	1.27 in	1 1/4 in-12	
1 in-8	9S-3632	2	9S-3658	4	1 3/8 in-12	1.37 in	1 5/16 in	1.39 in	1 3/8 in-12	
1 in-14	9S-3631	2	9S-3648	4	1 3/8 in-12	1.37 in	1 5/16 in	1.39 in	1 3/8 in-12	
1 1/8 in-7	9S-3633	2	9S-3675	3	1 1/2 in-12	1.62 in	1 7/16 in	1.52 in	1 1/2 in-12	
1 1/8 in-12	9S-3634	2	9S-3676	3	1 1/2 in-12	1.62 in	1 7/16 in	1.52 in	1 1/2 in-12	
1 1/4 in-7	9S-3635	2	9S-3677	2	1 5/8 in-12	1.81 in	1 9/16 in	1.62 in	1 5/8 in-12	
1 1/4 in-12	9S-3636	2	9S-3678	2	1 5/8 in-12	1.81 in	1 9/16 in	1.62 in	1 5/8 in-12	
1 1/2 in-6	9S-3637	2	9S-3679	2	1 7/8 in-12	2.00 in	1 13/16 in	1.89 in	1 7/8 in-12	
1 1/2 in-12	9S-3638	2	9S-3680	2	1 7/8 in-12	2.00 in	1 13/16 in	1.89 in	1 7/8 in-12	

Reference

Special Instruction SEHS 8792 "Using Caterpillar Replacement Thread Inserts"

Installation Tools and Thread Inserts

Model: 141-7250—416C, 426C, 428C, 436C, and 438C Backhoe Loader; 178-7635—E529, E523, E530, E524, E531, E525, and various other models; 179-3571—various

141-7250 Installation Tool

- Used to install M6 x 1 threaded insert
- Used with standard hand tools to make repair
- Allows convenient field repair of stripped or damaged threads
- Compact design allows installation of insert in confined areas
- Used in applications such as repair of threaded M6 x 1.0 mounting holes inside cab of C-Series Backhoe Loaders

140-9921 Threaded Insert

- Used to repair stripped threads
- Used in material thickness of 0.7 to 3.0 mm (.028 to .118 in)

178-7635 Installation Tool

- Used to install 8-32 threaded insert
- Used with standard hand tools to make repair
- Allows convenient field repair of stripped or damaged threads
- Compact design allows installation of insert in confined areas

176-1691 Fastener

- Used to repair stripped threads
- Used in material thickness of .76 mm to 4.75 mm (.030 to .187 in)

179-3571 Installation Tool

- Used to install all 1/4-20 threaded insert
- Used with standard hand tools to make repair
- Allows convenient field repair of stripped or damaged threads
- Compact design allows installation of inserts in confined area

179-1628 Fastener

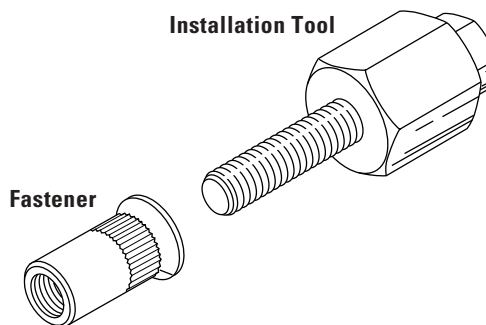
- Used to repair stripped threads
- Used in material thickness of .76 mm to 4.75 mm (.030 to .187 in)

Reference

NEHS0677 Tool Operating Manual containing installation instructions

Installation Tools			
Part No.	Hex	Length	Bolt Thread
141-7250	9/16 inch	12.7 mm (.50 in)	M6 x 1.0
178-7635	9/16 inch	10.2 mm (.400 in)	8-32
179-3571	9/16 inch	13.3 mm (.525 in)	1/4-20

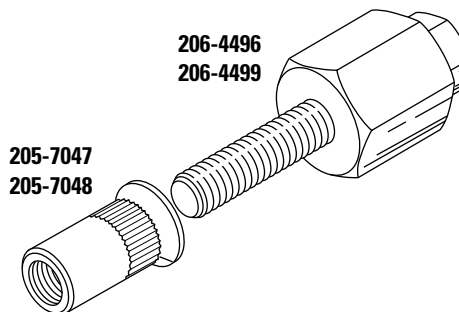
Threaded Inserts				
Part No.	Body Diameter	Flange Diameter	Length	Thread
140-9921	9.5 mm (.374 in)	10 mm (.393 in)	14 mm (.551 in)	M6 x 1.0
176-1691	6.34 mm (.250 in)	6.83 mm (.269 in)	9.4 mm (.370 in)	8-32
178-1628	9.51 mm (.375 in)	10.2 mm (.400 in)	13.1 mm (.515 in)	1/4-20



Installation Tools and Thread Insert

SMCS Code: 7564
Model: Backhoe Loaders

- Used to install M4 and M6 threaded inserts
- Used with standard hand tools
- Allows convenient field repair of stripped or damaged threads
- Compact design allows installation of insert in confined areas



Part No.	Description	Hex	Length	Bolt Thread
206-4496	Installation Tool (M4)	9/16 inch	12.7 mm (.50 in)	M4 x 0.7
206-4499	Installation Tool (M6)	9/16 inch	12.7 mm (.50 in)	M6 x 1.0

Part No.	Description	Body Diameter	Flange Diameter	Length	Thread	Pilot Hole Diameter	Grip Range
206-7047	Threaded Insert (M4)	6.73 mm (.265 in)	7.87 mm (.310 in)	10.67 mm (.420 in)	M4 x 0.7	6.75 mm (.266 in)	0.50 to 2.00 mm (.020 to .079 in)
206-7048	Threaded Insert (M6)	9.91 mm (.390 in)	11.56 mm (.455 in)	14.73 mm (.580 in)	M6 x 1.0	10.00 mm (.294 in)	0.70 to 4.20 mm (.028 to .165 in)

Main Bearing Bolt Hole Repair Tools

SMCS Code: 1203-023

Model: 3406, G3406, 3408, G3408, 3508, G3508, 3512, G3512, 3516, and G3516 Engines

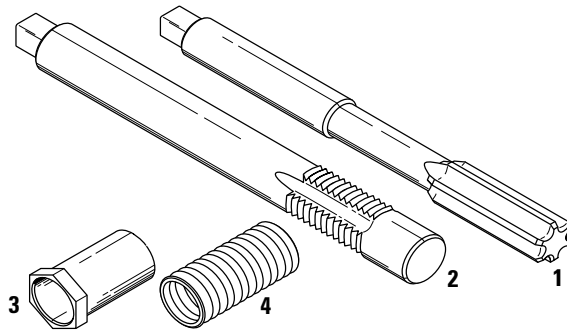
Essential Tool

- Used to salvage damaged blocks
- Repairs main bearing bolt holes to "like-new" condition

Main Bearing Bolt Hole Repair Tools for 3400 and 3500 Engines							
Engine Model	1st Ream	2nd Ream	3rd Ream	1st Tap	2nd Tap	Insert Sleeve	Insert
All 3400	178-2349	178-2350	178-2351	178-2353	178-2356	178-2467	178-2501
Early 3500 3/4 inch bolt hole	178-2462	N/A	N/A	178-2463	178-2465	178-2468	178-2502
Late 3500 7/8 inch bolt hole	178-2351	N/A	N/A	178-2353	178-2356	178-2467	178-2503

Reference

SEBF8387, Main Bearing Bolt Hole Repair in 3400 and 3500 Series Engines

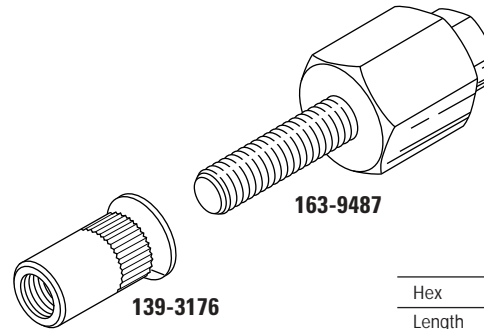


Item	Part No.	Description
1	178-2349	Reamer
	178-2350	Reamer
	178-2351	Reamer
	178-2462	Reamer
2	178-2353	Tap (1-14 UNS)
	178-2356	Tap (1-14 UNS)
	178-2463	Tap (7/8-16)
	178-2465	Tap (7/8-16)
3	178-2467	Insert, Sleeve
	178-2468	Insert, Sleeve
4	178-2501	Threaded Insert (All 3400 Models)
	178-2502	Threaded Insert (All Early 3500 Models)
	178-2503	Threaded Insert (All Late 3500 Models)

163-9487 Installation Tool

Model: PS150/200B Pneumatic Compactor

- Used to install 139-3176 Threaded Insert (M10 x 1.5)
- Used with standard hand tools
- Installation tool expands threaded insert in hole
- Allows convenient field repair of stripped or damaged threads
- Compact design allows installation in confined area



Hex	9/16 inch
Length	12.7 mm (.50 in)
Bolt thread	M10 x 1.5

Reference

NEHS0677 Special Instruction

204-6327 Insert Pliers

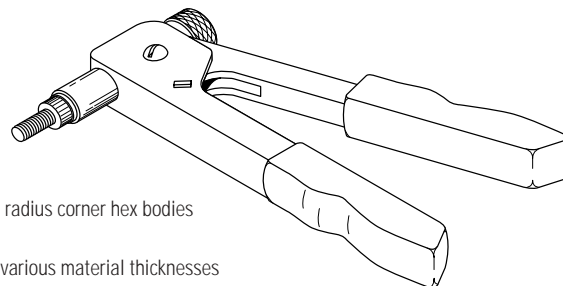
Insert Installers

SMCS Code: 7564, 0603

Model: All Skid Steer Loaders

Essential Tool

- Used to install M4, M5, M6, and M8 metric threaded inserts with radius corner hex bodies
- Installs into hex hole (radius corners expand to fill mounting hole)
- Combination pliers/insert installer properly installs insert even in various material thicknesses
- Insert installers sold separately and easily attach to pliers
- Overall length: 270 mm (10.6 in)



Insert Installers	
Part No.	Size
205-0569	M4 x 0.7
205-0570	M5 x 0.8
204-5905	M6 x 1
204-5906	M8 x 1.25

Gas Cutting/Welding Equipment

1U-6469 Heavy-Duty Oxy-Acetylene Deluxe Kit

- Complete outfit — V-Series (Victor-Style)
- Cuts to 25.4 mm (1 in), welds to 15.9 mm (5/8 in) [cuts to 152.4 mm (6 in) with optional tips]
- Torch handle with external check valves for safety
- Triangular-tube cutting attachment provides added strength
- Equal pressure mixer
- Victor style cutting tip (also accepts Victor series 1 tips)
- 3 welding tips
- Heating tip to 74,000 BTU/hour
- Oxygen and acetylene regulators
- Goggles, ignitor, and 6.4 mm x 7.6 m (1/4 in x 25 ft) twin hose
- Display box not included



Replacement Parts	
Part No.	Description
1U-6472	Torch Handle
1U-6477	Mixer
1U-6474	Cutting Attachment
4C-4132	Oxygen Regulator, Two Stage HD
4C-4129	Oxygen Regulator, Single Stage HD
4C-4128	Acetylene Regulator, Single Stage HD
4C-4131	Surge Guard for Oxygen Regulator
1U-6466	Valve Reverse Flow Oxygen
1U-6465	Propane Valve Reverse Flow Acetylen

Heating Tips		
Part No.	Oxygen and Acetylene Pressure Range (PSIG)	Heat Output Range BTU/Hour
1U-6479	2-6	30,000-51,000
1U-6480	3-7	44,000-74,000

Optional Tips			
Part No.	Metal Thickness (Inches)	Oxygen Pressure (PSIG)	Acetylene Pressure (PSIG)
Cutting Tips			
1U-6458	5/16-5/8	30-40	7
1U-6459	5/8-1	40-50	7
1U-6460	1-2	45-55	8
1U-6461	2-3	50-60	9
1U-6462	3-4	60-75	10
1U-6463	4-6	70-80	12
Welding Tips			
1U-6445	1/64	1	1
1U-6446	1/32	1	1
1U-6447	3/64	2	2
1U-6448	1/16	3	3
1U-6449	1/8	5	5
1U-6450	3/32	4	4
1U-6451	3/16	6	6
1U-6453	5/16	8	8
1U-6454	3/8	9	9
1U-6455	1/2	10	10

1U-6470 Heavy-Duty Oxy-Acetylene Deluxe Kit — Vac Pac

- Same as 1U-6469 but does not include heating tip and two welding tips



4C-4113 Heavy-Duty Oxy-Propane Deluxe Kit — Vac Pac

- Cuts to 25.4 mm (1 in) metal [to 152.4 mm (6 in) with optional tips]
- Heating output to 30,000-100,000 BTU/hour.
- Torch handle with external check valves for safety
- Triangular-tube cutting attachment provides added strength
- Cutting tip, brazing tip, and heating tip
- Brazing assembly
- Oxygen regulator with Surge Guard for protection against reverse flow
- Propane regulator — 510 connection
- Goggles and ignitor
- Display box not included



Optional Tips			
Part No.	Metal Thickness (Inches)	Oxygen Pressure (PSIG)	Propane Pressure (oz)
Cutting Tips			
4C-4114	3/8-5/8	30-40	4-7
4C-4115	5/8-1	35-50	4-7
4C-4116	1-2	40-55	4-7
4C-4117	2-3	45-60	4-7
4C-4118	3-6	50-75	4-7
Brazing Tips			
Part No.	Tip Size	Oxygen PSI	Fuel Gas PSI
9U-6715	4N	20	4 oz
9U-6716	6N	25	4 oz to 2 lb
9U-6717	10N	40	4 oz to 2 lb

Replacement Parts	
Part No.	Description
4C-4158	Torch Handle
4C-5833	Mixer
4C-4159	Cutting Attachment
4C-4130	Propane Regulator single stage HD
4C-4131	Surge Guard

MIG/TIG Flowmeter Regulators

- Construction incorporates regulator and flowmeter into one compact unit.
- Flow to 70 S.C.F.H.
- Strong easy-to-read Lexan flow tube and cover
- Flow tube is easily changed for different gases.
- Dual calibration on argon/carbon dioxide flow tube
- Regulator is pre-set at 50 P.S.I.G.
- Flowmeter is not affected by downstream pressure variations.
- Sensitive needle valve for fingertip control
- U.L. listed



Gas	Part Part No.	Flow Capacity (SCFH)	Cylinder Connection	Delivery Rate (SCFH)
Argon	4C-4125	0-70	580	70
Carbon Dioxide	4C-4126	0-70	320	70

MIG/TIG Flowgauge Regulators

- For accurate measurement of gas flow to 40 S.C.F.H.
- Sensitive brass adjusting key provides smooth action, and fingertip control.
- Lightweight, rugged design
- Easy-to-read gauges
- U.L. listed



Gas	Part Part No.	Flow Capacity (SCFH)	Cylinder Connection	Delivery Rate (SCFH)
Argon	4C-4123	0-40	580	40
Carbon dioxide	4C-4124	0-40	320	40

Welding Hose

Part No.	Description	Dimensions
1U-8215	Twin Welding Hose	4.76 mm x 3.66 m (3/16 in x 12 ft)
1U-8217	Twin Welding Hose	6.35 mm x 6.1 m (1/4 in x 20 ft)
1U-8218	Twin Welding Hose	6.35 mm x 15.25 m (1/4 in x 50 ft)



Check Valves

- External type for easy inspection
- For use on any torch with "B" hose connections (9/16 inch-18 threads)
- Stops reverse flow of gas

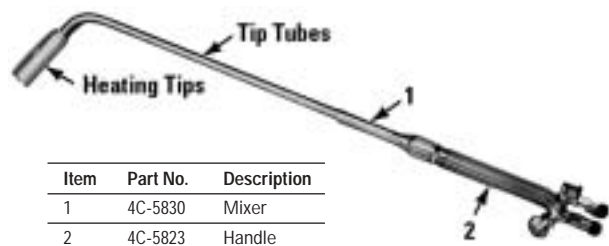
Oxygen or Fuel Gas Inlet	
Part No.	Description
1U-6465	Fuel Gas
1U-6466	Oxygen

1U-6573 Circle Cutting Attachment

- For cutting circles up to 762 mm (30 in) in diameter as well as straight line burning
- A swivel nut permits circle cutting without tangling hoses.
- Wheels are adjustable for individual torch height.
- Makes better quality cuts possible with hand torches



Heating and Flame Cleaning Equipment



Item	Part No.	Description
1	4C-5830	Mixer
2	4C-5823	Handle



Tip Tubes		Tip Tubes	
Part No.	Length	Part No.	Length
4C-5831	914.4 mm (36 in)	9U-6720	381 mm (15 in) Straight
9U-6718	711.2 mm (28 in)	9U-6721	266.7 mm (10 1/2 in)
9U-6719	711.2 mm (28 in) Straight	9U-6722	266.7 mm (10 1/2 in) Straight
4C-5832	381 mm (15 in)	9U-6801	914.4 mm (36 in) Straight

Heating Tips					
Part No.	Oxygen Pressure PSIG	Flow CFH	Propane Pressure PSIG	Flow CFH	Heat Output BTU/Hr.
4C-4160	10	160	4	40	101,200
	25	320	12	80	202,400
4C-4161	15	220	7	55	139,150
	45	520	22	130	328,900
4C-4162	25	340	8	85	215,050
	70	920	25	230	581,900
4C-4163	50	640	10	160	404,800
	110	1300	30	325	822,250
4C-4164	60	720	14	180	455,400
	135	1600	40	400	1,012,000



8T-7792 Mini Cutting Torch

- Will cut cast iron, stainless steel, high alumina refractory, and slag
- Can be used indoors, because the noise and smoke levels are very low
- Faster and less expensive than carbon arc and requires oxygen only
- Durable, comfortable, and less fatiguing to use
- Large squeeze trigger-type handle delivers oxygen precisely.
- Excellent tool for gouging hard facing. Unlike carbon arc, the rods contain no carbon, thus reducing the grinding requirement.

Rod Sizes Used by Mini Cutting Torch

General purpose rods for removing small bolts and pins by piercing
 4.76 mm x 55.24 cm (3/16 in x 21 3/4 in)
 6.35 mm x 55.24 cm (1/4 in x 21 3/4 in)

Rods for piercing track pins, washing away welds, and gouging hard facing
 9.52 mm x 46.67 cm (3/8 in x 18 3/8 in)

Cut off and gouging rod for piercing longer pins and rough cutting
 9.52 mm x 91.44 cm (3/8 in x 36 in)

Item	Part No.	Description
Included with Mini Cutting Torch		
1	8T-7792	Mini Cutting Torch
2	8T-9110	Washer
3	8T-7795	Collet, 4.76 mm (3/8 in)
4	8T-7794	Collet, 6.35 mm (1/4 in)
Not shown	8T-9202	Collet, 4.76 mm (3/16 in)
Not shown	8T-7793	Striker Plate
Not shown	8T-9287	Washer



Item	Part No.	Description
Purchase separately		
5	8T-7697	Rod, 9.52 mm x 914.4 mm (3/8 in x 36 in)
6	8T-7696	Rod, 6.35 mm x 55.24 cm (1/4 in x 21 3/4 in)
7	8T-7698	Rod, 4.76 mm x 45.72 cm (3/8 in x 18 in)
Not shown	8T-9201	Rod, 4.76 mm x 55.24 cm (3/16 in x 21 3/4 in)
Not shown	8T-7699	Igniter
Not shown	9U-5614	Shield
Not shown	9U-5615	Collet Nut-Brass
Not shown		Form SEHS8923

Plasma Arc Cutting

Before plasma cutting came into existence, service shops wanting to cut steel, stainless steel, or aluminum typically used several different methods. For example, they would use oxygen fuel flame cutting for steel and mechanical means such as shears or power saws for stainless steel and aluminum. With plasma arc cutting (PAC) these shops can now cut all common or exotic metals that conduct electricity.

Plasma arc cutting (PAC) with air uses electricity to create a superheated gas (called plasma) to melt metal and blow it away. The temperature at the nozzle opening of the cutting torch can reach 33 315.6°C (60,000°F). As a result, the arc melts and removes small portions of metal quickly, leaving behind a smooth, clean cut and a narrow heat affected zone (the area near the cut in which metallurgical changes often occur).

Plasma Arc Cutting Benefits

- **Cost savings** — Even though the initial cost of PAC equipment can be higher than with other cutting methods, the payback per cut can be better with PAC. For example, with faster cutting speeds, and because air and consumables are relatively inexpensive with PAC compared to the cost of gases for oxy-fuel, the payback per cut is less expensive with PAC than with oxyfuel.
- **Cutting speed** — PAC can cut much faster than oxy-fuel, especially on a thickness of less than one inch (see chart below). Besides faster cutting speeds, PAC requires no preheating of the metal, as does oxy-fuel.
- **Versatile cutting capability** — Besides mild steel, PAC does an excellent job of cutting stainless steel and aluminum. It will also do a good job on stacked material.
- **Precision cuts** — Because the faster cutting speeds (along with no preheating) produces a narrow heat-affected zone, metal distortion is minimal. It also causes a very clean cut which means PAC can eliminate the secondary operations needed of other cutting methods.
- **Air versus other gases** — The main advantage of cutting with air is, of course, the availability of air. Where air and power is available, PAC can be easily moved because of its portable design. Using air is inexpensive and safe compared to other cutting gases such as CO₂. PAC, because it uses air, requires no mixing controls. Low volume compressed air is preferred (i.e., 70 PSI at 300 Cubic Feet Per Hour).
- **Ease of use** — PAC requires minimum training and is an easy process to use.

Speed Comparison Using Mild Steel (inches per minute — IPM)		
Steel Thickness	PAC IPM	Oxy-Fuel IPM
3 mm (1/8 in)	80-120	20-30
6.4 mm (1/4 in)	34-60	18-20
10 mm (3/8 in)	18-40	16-18

The speed of the cut varies and is determined by the output of the PAC equipment and the thickness of material being cut.

Welding Consumables

Ultrashade Helmets

Warranty: Two Years

UltraShade welding helmets provide a more convenient, lower fatigue working environment for professional welders.

- Automatic shade cartridges improve efficiency and precision with the highest level of safety
- User-friendly design combined with precision optics and high-tech electronics enables top quality welding
- Adjustable settings for maximum personal comfort in all working conditions
- Made to the highest quality standards for long life
- Lightweight design
- Sensor bar eliminates the influence of surrounding bright light or when welding adjacent to other welders.
- Solar cells — solar energy is used eliminating the need for an on/off switch or inconvenient battery changeovers.
- Visibility — lens automatically darkens within a fraction of milliseconds to the correct level of protection when an arc is detected.
- Potentiometer knob (platinum model only) for infinite, fine adjustment from 9-13 according to the welder's degree of sensitivity.

	221-1376 UltraShade Platinum	221-1377 UltraShade Silver Plus
Type	Automatic shade cartridge with shade selection from 9 - 13. Make infinite fine adjustments using the potentiometer knob.	Selectable automatic shade cartridge, shades 10 or 11
Cartridge dimensions	89 mm x 110 mm x 7 mm (3.5 in x 4.3 in x .28 in)	89 mm x 110 mm x 7 mm (3.5 in x 4.3 in x .28 in)
Viewing dimensions	99 mm x 38 mm (3.9 in x 1.5 in)	99 mm x 38 mm (3.9 in x 1.5 in)
Light transmittance	Ultraviolet/infrared protection, maximum at any shade setting Visible range activated, shade level 9 - 13 Visible range not activated, shade level 4	Ultraviolet/infrared protection, maximum at any shade setting Visible range activated, shade level 10 or 11 Visible range not activated, shade level 4
Switching time advantage	Light to dark, 0.4ms (0.0004 s) at room temp. 0.1ms (0.0001 s) at 55°C (131°F)	Light to dark, 0.4ms (0.0004 s) at room temp. 0.1ms (0.0001 s) at 55°C (131°F)
Switching time advantage	Dark to light, Position "fast" 0.1 - 0.35 s ¹ Position "slow" 0.3 s - 0.6 s	Dark to light, 0.2 - 0.3 s
Operation temperature	-10°C to +70°C (14°F to 158°F)	-10°C to +70°C (14°F to 158°F)
Power supply sensors	Solar cells, two above the eyes variable detection angle with detachable sensor bar, no battery changes.	Solar cells, two above the eyes variable detection angle with detachable sensor bar, no battery changes.
Optically correct distortion free spatter shield	Curved, reflection-free front cover lens and inside cover lens	Curved, reflection-free front cover lens and inside cover lens
Water-resistance	Waterproof, according to IP 67 (testing time 30 minutes, testing depth 1 m (3.28 feet))	Waterproof, according to IP 67 (testing time 30 minutes, testing depth 1 m (3.28 feet))
Lightweight	482 g (17 oz.)	471 g (16.6 oz.)
Standards	CE, DIN, ANSI, CSA, AS/NZS	CE, DIN, ANSI, CSA, AS/NZS
Recommended application ranges for welding	All electric arc welding processes ² Stick electrode (SMAW) MIG/MAG (GMAW) GMAW high melting rate process Flux-cored welding (FCAW) TIG welding (GTAW) Plasma arc welding (PAW) Micro plasma arc welding	Stick electrode (SMAW) MIG steel (GMAW) MIG aluminum (GMAW) MIG stainless steel (GMAW)

¹ Ideal for fast production weld-tacking applications

² Usable in applications requiring shades 13 or less

Fleetweld 5P

AWS: E6010
Fast Freeze, Out-of-Position Pipe Welding, Mild Steel Stick Electrode

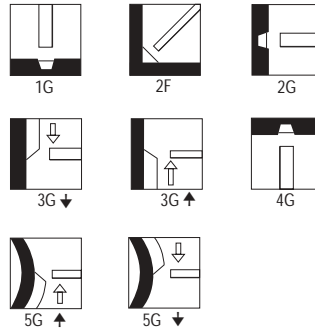
Good choice for welding on dirty, rusty, greasy or painted steel — especially in vertical or overhead applications

- Versatile, fast freeze electrode offering excellent arc stability
- A long-time favorite among operators who handle cross-country and in-plant pipe welding
- Truly all-position, particularly good for vertical and overhead
- Light slag with little slag interference for easy arc control
- Deep penetration with maximum admixture
- Capable of x-ray quality welds, out-of-position
- Manufactured under a quality system certified to ISO 9001 requirements

Typical Applications

- Tolerates galvanized, plated, dirty, painted or greasy steel which cannot be completely cleaned
- Pipe welding — cross country, in-plant, and non-critical small diameter piping
- Joints requiring deep penetration such as square edge butt welds
- Repair welding

Welding Positions



Diameters/Packaging

	4.5 kg (10 lb.) Easy Open Cans (40 lb. Master)
Diameter	
2.4 mm (3/32 in)	221-1294
3.2 mm (1/8 in)	221-1295
4.0 mm (5/32 in)	221-1297

Typical Operating Procedures

	Current (Amps)		
Polarity	2.4 mm (3/32 in)	3.2 mm (1/8 in)	4.0 mm (5/32 in)
DC+	40-70	75-130	90-175

Conformance

AWS A5.1 ¹	E6010
ASME SFA-5.1	E6010
Lloyd's	Grade 3M
ABS	E6010
CSA W48.1	E41010

Deposit Composition¹

	%C	%Mn	%Si	%S	%P
Requirements					
AWS E6010	Not Specified				
Test Results					
	.08-.12	.35-.55	.15-.25	.010-.020	.005-.010

¹ Typical all weld metal

Mechanical Properties¹

	As Welded per AWS A5.1-91				
	Yield Strength MPa (PSI)	Tensile Strength MPa (PSI)	Elongation (%)	Charpy V-Notch ft-lbs (Joules) @ -29°C (-20°F) @ -40°C (-40°F)	
Required					
AWS E6010	330 (48,000) min.	410 (60,000) min.	22 min.	27 (20) min.	—
Test Results					
As-welded	393 - 460 (57,000 - 67,000)	434 - 524 (63,000 - 76,000)	22 - 33	50 - 96 (31 - 71)	56 - 81 (41 - 60)
Stress-relieved 1 hour @ 620°C (1150°F)	330 - 420 (48,000 - 61,000)	427 - 475 (62,000 - 69,000)	28 - 36	68 - 75 (50 - 55)	53 (39)

¹ Typical all weld metal

Fleetweld 37

AWS: E6013
Fill Freeze, High Speed Mild Steel Stick Electrode

All-position electrode for low amperage welding on sheet metal — especially in applications where appearance is important

- Excellent performance with smaller AC welders with low open circuit voltages
- An all position electrode for the welding of mild steel
- Excellent choice for sheet metal lap and fillet welds
- Superior slag control, which makes it a great choice for vertical down
- Manufactured under a quality system certified to ISO 9001 requirements

Typical Applications

- Sheet metal lap and fillet welds
- Irregular or short welds that change direction or position, and downhill fillets and laps
- General purpose plate welding and maintenance

Diameters/Packaging

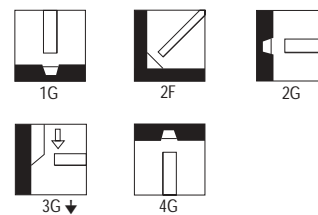
	2.3 kg (5 lb.) Carton	4.5 kg (10 lb.) Easy Open Cans (40 lb. Master)	22.7 kg (50 lb.) Carton (60 lb. Master)
Diameter			
2.4 mm (3/32 in)	221-1309	221-1313	—
3.2 mm (1/8 in)	221-1311	221-1315	221-1122
4.0 mm (5/32 in)	221-1312	221-1316	221-1123

Typical Operating Procedures

	Current (Amps)			
Polarity ¹	2.4 mm (3/32 in)	3.2 mm (1/8 in)	4.0 mm (5/32 in)	4.8 mm (3/16 in)
AC	75-105	110-150	160-200	205-260
DC±	70-95	100-135	145-180	190-235

¹ Preferred polarity is listed first.

Welding Positions



Conformance

AWS A5.1 ¹	E6013
ASME SFA-5.1	E6013
ABS	E6013
Lloyd's	Grade 3M
DNV	Grade 1
GL	Grade 1
BV	Grade 1
CSA W48.1	E41013

Mechanical Properties¹

	As Welded per AWS A5.1-91			
	Yield Strength MPa (PSI)	Tensile Strength MPa (PSI)	Elongation (%)	Charpy V-Notch Joules (ft-lbs) @ -18°C (0°F)
Required AWS E6013				
As-welded	330 (48,000) min.	410 (60,000) min.	17 min.	—
Test Results				
As-welded	392 - 480 (57,000 - 70,000)	455 - 538 (66,000 - 78,000)	25 - 32	34 - 76 (25 - 56)
Stress-relieved 1 hour at 621°C (1150°F)	379 - 470 (55,000 - 68,000)	460 - 510 (67,000 - 74,000)	17 - 29	—

¹ Typical all weld metal

Deposit Composition¹

	%C	%Mn	%Si	%S	%P
Requirements					
AWS E6013	Not Specified				
Test Results					
	.05-.10	.35-.50	.15-.25	.005-.020	.005-.020

¹ Typical all weld metal

Fleetweld 47

AWS: E7014
Fill Freeze, High Speed Mild Steel Stick Electrode

High deposition rates for lightning-fast performance

- Easy-to-use all position electrode for the welding of mild steel
- Easy to use with excellent operator appeal
- Excellent choice for sheet metal lap and fillet welds, especially diameters up to 4.8 mm (3/16 in)
- Manufactured under a quality system certified to ISO 9001 requirements

Typical Applications

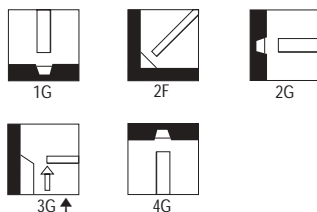
- Sheet metal lap and fillet welds
- Generally used for thicker steel than E6012 and E6013 electrodes
- General purpose plate welding and maintenance

Typical Operating Procedures

Polarity ¹	Current (Amps)				
	2.4 mm (3/32 in)	3.2 mm (1/8 in)	4.0 mm (5/32 in)	4.8 mm (3/16 in)	5.6 mm (7/32 in)
AC	80-100	110-160	150-225	200-280	260-340
DC±	75-95	100-145	135-200	185-235	235-305

¹ Preferred polarity is listed first.

Welding Positions



Conformance

AWS A5.1 ¹	E7014
ASME SFA-5.1	E7014
ABS	E7014
Lloyd's	Grade 1M
DNV	Grade 1
GL	Grade 1
BV	Grade 1
CSA W48.1	E43014

Mechanical Properties¹

As Welded per AWS A5.1-91				
	Yield Strength MPa (PSI)	Tensile Strength MPa (PSI)	Elongation (%)	Charpy V-Notch Joules (ft-lbs) @ 21°C (70°F)
Required AWS E7014				
As-welded	400 (58,000) min.	480 (70,000) min.	17 min.	—
Test Results				
As-welded	434 - 510 (63,000 - 74,000)	517 - 572 (75,000 - 83,000)	20 - 29	69 (51)
Stress-relieved 1 hour @ 620°C (1150°F)	379 - 480 (55,000 - 70,000)	461 - 530 (67,000 - 77,000)	24 - 30	69 (51)

¹ Typical all weld metal

Deposit Composition¹

	%C	%Mn	%Si	%S	%P	%Cr	%Mo	%Ni	%V
Requirements									
AWS E7014	—	1.25 max.	.90 max.	—	—	.20 max.	.30 max.	.30 max.	.08 max.
Test Results									
	.06-.11	.25-.55	.40-.65	.01-.02	.005-.010	.02-.06	.005-.02	.02-.10	.01-.02

¹ Typical all weld metal

Diameters/Packaging

Diameter	2.3 kg (5 lb.) Carton (40 lb. Master)	22.7 kg (50 lb.) Carton
2.4 mm (3/32 in)	221-1299	221-1063
3.2 mm (1/8 in)	221-1300	221-1078
4.0 mm (5/32 in)	221-1301	221-1079
4.8 mm (3/16 in)	—	221-1080
5.6 mm (7/32 in)	—	221-1298

Fleetweld 180

AWS: E6011
Fast Freeze, Out-of-Position Mild Steel Stick Electrode

Great for use with small AC welders

- Great arc stability for excellent performance with power sources as low as 50V open-circuit voltage (OCV)
- A great all-purpose stick electrode with the ability to start easily on low open circuit voltage welders
- Truly all-position, particularly good for vertical and overhead
- Light slag with little slag interference for easy arc control
- Deep penetration with maximum admixture
- Manufactured under a quality system certified to ISO 9001 requirements

Typical Applications

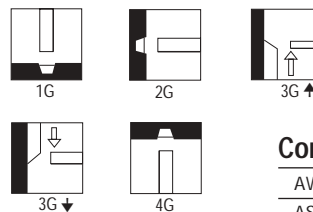
- Excellent for sheet metal welding on edge, corner and butt welds
- Great for use with small AC welders

Typical Operating Procedures

Polarity ¹	(Current) Amps		
	2.4 mm (3/32 in)	3.2 mm (1/8 in)	4.0 mm (5/32 in)
AC	40 - 90	60 - 120	115 - 150
DC±	40 - 80	55 - 110	105 - 135

¹ Preferred polarity is listed first.

Welding Positions



Conformance

AWS A5.1 ¹	E6011
ASME SFA-5.1	E6011
CSA W48.1	E41011

Mechanical Properties¹

As Welded per AWS A5.1-91				
	Yield Strength MPa (PSI)	Tensile Strength MPa (PSI)	Elongation (%)	Charpy V-Notch Joules (ft-lbs) @ -29°C (-20°F)
Required				
AWS E6011	330 (48,000) min.	410 (60,000) min.	22 min.	27 (20) min.
Test Results				
As-welded	427 - 480 (62,000 - 70,000)	523 - 579 (76,000 - 84,000)	25 - 35	35 - 72 (26 - 53)

¹ Typical all weld metal

Diameters/Packaging

Diameter	2.3 kg (5 lb.) Carton	4.5 kg (10 lb.) Easy Open Cans (40 lb. Master)	22.7kg (50 lb.) Easy Open Cans (60 lb. Master)
2.4 mm (3/32 in)	221-1302	221-1305	221-1307
3.2 mm (1/8 in)	221-1303	221-1306	221-1087
4.0 mm (5/32 in)	221-1304	—	221-1308

Deposit Composition¹

	%C	%Mn	%Si	%S	%P
Requirements					
AWS E6011			Not Specified		
Test Results					
	.10-.18	.40-.70	.25-.50	.005-.020	.005-.015

¹ Typical all weld metal

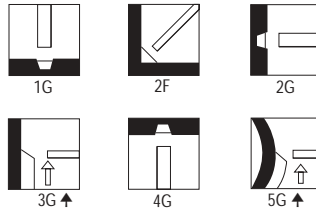
Excalibur 7018

AWS: E7018 H4R
Low Hydrogen, Mild Steel Stick Electrode

Good choice for jobs that involve steels with poor weldability

- Clean puddle, square coating burnoff, easy all-position handling, and excellent wash-in characteristics
- Designed for welding mild steel, low alloy steels and steels of poor weldability
- Capable of x-ray quality welds and excellent notch toughness
- Ability to tie-in to side walls without undercutting, especially for critical out-of-position applications
- Clean weld puddle and uniform slag follow make it easy for the welder to “see” and carry the puddle
- Manufactured under a quality system certified to ISO 9001 requirements

Welding Positions



Diameters/Packaging

Diameter	4.5 kg (10 lb.) Easy Open Cans	22.7 kg (50 lb.) Easy Open Cans (60 lb. Master)
2.4 mm (3/32 in)	221-1290	221-1057
3.2 mm (1/8 in)	221-1291	221-1058
4.0 mm (5/32 in)	221-1292	221-1059
4.8 mm (3/16 in)	221-1293	221-1060
5.6 mm (7/32 in)	—	221-1061
6.4 mm (1/4 in)	—	221-1062

Typical Applications

- Structural steel and bridges
- All-position welding of mild steels, some high strength, low alloy steels
- Tolerates steels with poor weldability, such as high sulfur and high silicon steels
- Welding of piping, fittings, and tie-ins in the petrochemical and power generation industries

Typical Operating Procedures

Polarity ¹	Current (Amps)					
	2.4 mm (3/32 in)	3.2 mm (1/8 in)	4.0 mm (5/32 in)	4.8 mm (3/16 in)	5.6 mm (7/32 in)	6.4 mm (1/4 in)
DC+	70-110	90-160	130-210	180-300	250-330	300-400
DC-	70-110	90-160	130-210	180-300	250-330	300-400
AC	80-120	100-160	140-210	200-300	270-370	325-420

¹ Preferred polarity is listed first.

Conformance

AWS A5.1	E7018, E7018 H4R
ASME SFA-5.1	E7018, E7018 H4R
ABS	E7018M, 3, 3YH5
Lloyd's	3M, 3YMH5
DNV	3YH5
GL	3YH5
BV	3YHHH
CSA W48.1	E48018

Mechanical Properties¹

	As Welded per AWS A5.1-91				Charpy V-Notch Joules (ft-lbs)	
	Yield Strength MPa (PSI)	Tensile Strength MPa (PSI)	Elongation (%)	@ -29°C (-20°F)	@ -46°C (-50°F)	
Required						
AWS E7018 H4R	400 (58,000) min.	480 (70,000) min.	22 min.	27 (20) min.	—	
Test Results						
As-welded	455 - 510 (66,000 - 74,000)	545 - 600 (79,000 - 87,000)	32 - 35	149 - 298 (110-220)	70 - 131 (52 - 97)	
Stress relieved 1 hour @ 620°C (1150°F)	386 - 441 (56,000 - 64,000)	496 - 510 (72,000 - 74,000)	32 - 38	276 - 356 (204 - 263)	314 - 344 (232 - 254)	

¹ Typical all weld metal

Deposit Composition¹

	%C	%Mn	%Si	%S	%P	%Cr	%Mo	%Ni	%V
Requirements									
AWS E7018 H4R	—	1.60 max.	.75 max.	—	—	.20 max.	.30 max.	.30 max.	.08 max.
Test Results									
	.04-.08	1.15-1.50	.30-.65	.005-.015	.010-.020	.01-.05	.01-.05	.01-.05	.001-.010

¹ Typical all weld metal

Jet-LH 8018-C3 MR

AWS: E8018-C3 H4R
Low Hydrogen, Low Alloy Steel Stick Electrode

Stick electrode with excellent impact properties

- Produces a nominal 1% nickel deposit that is a great fit for a wide range of welding application
- Good choice for welding on weathering type steels
- All-position welding
- Produces x-ray quality welds
- Manufactured under a quality system certified to ISO 9001 requirements

Typical Applications

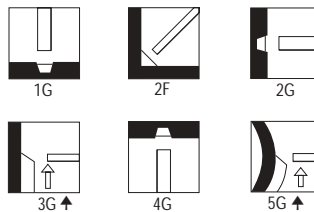
- Primarily designed for all position fabrication or repair of 1% nickel steels and a wide variety of other low alloy and carbon steels
- General purpose welding of many high strength alloy that require a deposit with a tensile strength of 80,000 PSI
- Also used for fillet welds on 110,000 PSI steel quenched and tempered such as ASTM A514 and A517

Deposit Composition¹

	%C	%Mn	%Si	%S	%P	%Cr	%Mo	%Ni	%V
Requirements									
AWS E8018-C3 H4R	.12 max.	.40-.125	.80 max.	.03 max.	.03 max.	.15 max.	.35 max.	.80-1.10	.05 max.
Test Results									
	.04-.08	.64-1.24	.32-.62	.012-.023	.006-.018	.01-.10	.01-.26	.83-1.09	.001-.013

¹ Typical all weld metal

Welding Positions



Diameters/Packaging

Diameter	23 kg (50 lb.) Easy Open Cans
3.2 mm (1/8 in)	221-1032
4.0 mm (5/32 in)	221-1033
4.8 mm (3/16 in)	221-1034

Typical Operating Procedures

Polarity ¹	Current (Amps)		
	3.2 mm (1/8 in)	4.0 mm (5/32 in)	4.8 mm (3/16 in)
DC+	110 - 150	130 - 190	180 - 270
AC	120 - 170	140 - 225	210 - 290

¹ Preferred polarity is listed first.

Conformance

AWS A5.5	E8018-C3 H4R
ASME SFA-5.5	E8018-C3 H4R
ABS	E8018-C3 H4R
Military	MIL-E-22200/1; MIL-8018-C3
CSA W48.3	E55018-C3

Mechanical Properties¹

	As Welded per AWS A5.5-96				
	Yield Strength MPa (PSI)	Tensile Strength MPa (PSI)	Elongation (%)	Charpy V-Notch Joules (ft-lbs) @ -40°C (-40°F) @ -59°C (-75°F)	
Required					
E8018-C3 H4R	470 - 550 (68,000 - 80,000)	550 (80,000) min.	24 min.	27 (20) min.	—
Test Result					
As welded	470 - 545 (68,000 - 79,000)	550 - 648 (80,000 - 94,000)	24 - 31	54 - 156 (40 - 115)	22 - 88 (16 - 65)
Stress relieved 2 hours at 621°C (1150°F)	462 - 503 (67,000 - 73,000)	524 - 579 (76,000 - 84,000)	30 - 32	—	—

¹ Typical all weld metal

Jet-LH 8018-B2 MR

AWS: E8018-B2 H4R
Low Hydrogen, Low Alloy Steel Stick Electrode

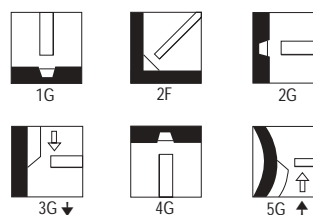
For welding involving 1 1/4% chromium and 1/2% molybdenum power pipe, tubes, boilers or castings

- Capable of producing 1 1/4% chromium, 1/2% molybdenum deposit for welding power piping, tubes, boilers and castings with design temperatures above 850°F
- All-position welding
- Produces x-ray quality welds and excellent notch toughness
- Manufactured under a quality system certified to ISO 9001 requirements

Typical Applications

- Primarily designed for all position fabrication or repair welding of power piping, tubes, boilers and castings of creep resistant steels
- May also be used in the marine equipment, chemical processing, utilities and shipbuilding industries

Welding Positions



Diameters/Packaging

Diameter	22.7 kg (50 lb.) Easy Open Cans
3.2 mm (1/8 in)	221-1035
4.0 mm (5/32 in)	221-1036

Conformance

AWS A5.5	E8018-B2 H4R
ASME SFA-5.5	E8018-B2 H4R

Mechanical Properties¹

	As Welded per AWS A5.5-96				
	Yield Strength MPa (PSI)	Tensile Strength MPa (PSI)	Elongation (%)	Charpy V-Notch ft-lbs (Joules) @ -29°C (-20°F) @ -46°C (-50°F)	
Required					
E8018-B2 H4R Stress relieved 1 hour at 690°C (1275°F)	460 (67,000) min.	550 (80,000) min.	19 min.	—	—
Test Results					
Stress relieved 1 hour at 690°C (1275°F)	558 - 641 (81,000 - 93,000)	641 - 710 (93,000 - 103,000)	25 - 28	85 - 146 (63 - 108)	43 - 70 (32 - 52)

¹ Typical all weld metal

Typical Operating Procedures

Polarity ¹	Current (Amps)	
	3.2 mm (1/8 in)	4.0 mm (5/32 in)
DC+	100 - 140	120 - 190
AC	110 - 150	135 - 200

¹ Preferred polarity is listed first.

Deposit Composition¹

	%C	%Mn	%Si	%S	%P	%Cr	%Mo
Requirements							
AWS E8018-B2 H4R	.05-.12	.90 max.	.80 max.	.03 max.	.03 max.	1.00-1.50	.40-.65
Test Results							
	.060-.085	.65-.80	.50-.75	.008-.012	.013-.016	1.15-1.30	.43-.51

¹ Typical all weld metal

Jetweld LH-110M MR

AWS: E11018-M H4R
Low Hydrogen, Low Alloy Steel Stick Electrode

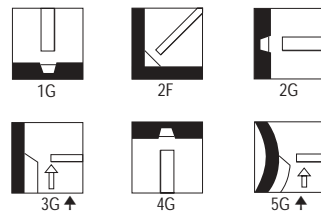
All-position electrode for welding high tensile steels such as T-1 steel and HY-80

- All position welding — weld metal freezes rapidly even though slag remains relatively fluid
- Excellent tensile strengths and yield strengths
- Produces x-ray quality welds
- Manufactured under a quality system certified to ISO 9001 requirements

Typical Applications

- For all position welding of high tensile, low alloy castings, forgings and steel plate such as T-1 and HY-80
- Certain ASTM quenched and tempered steels for structural work and pressure vessels
- General fabrication where weld deposit must meet the requirements of AWS ASME E11018-M

Welding Positions



Diameters/Packaging

Diameter	4.5 kg (10 lb.) Easy Open Cans	22.7 kg (50 lb.) Easy Open Cans (60 lb. Master)
2.4 mm (3/32 in)	—	221-1037
3.2 mm (1/8 in)	221-1124	221-1317
4.0 mm (5/32 in)	—	221-5244
4.8 mm (3/16 in)	—	221-1407

Typical Operating Procedures

Polarity ¹	Current (Amps)				
	2.4 mm (3/32 in)	3.2 mm (1/8 in)	4.0 mm (5/32 in)	4.8 mm (3/16 in)	6.4 mm (1/4 in)
DC+	70 - 100	90 - 155	120 - 190	160 - 280	230 - 360
AC	80 - 110	100 - 170	135 - 225	200 - 310	290 - 410

¹ Preferred polarity is listed first.

Conformance

AWS A5.5	E11018-M H4R
ASME SFA-5.5	E11018-M H4R
ABS	E11018-M
Military	MIL-E-22200/1; MIL-11018-M
CSA W48.3	E76018-M

Deposit Composition¹

	%C	%Mn	%Si	%S	%P	%Cr	%Mo	%Ni	%V
Requirements									
AWS E11018-M H4R	.10 max.	1.30-1.80	.60 max.	.030 max.	.030 max.	.40 max.	.25-.50	1.75-.250	.05 max.
Test Results									
	.04-.09	1.30-1.80	.26-.59	.008-.016	.008-.018	.03-.35	.30-.47	1.7-2.3	.005-.015

¹ Typical all weld metal

Mechanical Properties¹

As Welded per AWS A5.5-96				
	Yield Strength MPa (PSI)	Tensile Strength MPa (PSI)	Elongation (%)	Charpy V-Notch Joules (ft-lbs) @ -51°C (-60°F)
Required E11018-M H4R				
As welded	680 - 760 (98,000 - 110,000)	760 (110,000) min.	20 min.	27 (20) min.
Test Results				
As welded	680 - 751 (98,000 - 109,000)	760 - 882 (110,000 - 128,000)	20 - 25	47 - 93 (35 - 69)
Stress relieved 1 hour at 620°C (1150°F)	680 - 738 (98,000 - 107,000)	—	20 - 26	27 - 61 (20 - 45)

¹ Typical all weld metal

Superarc L-50

AWS: ER70S-3
Mild Steel MIG Wire

Most popular MIG wire

- Premium copper coated wire for a broad spectrum of single and multiple pass welding applications
- Low carbon, medium manganese, high silicon wire that has an excellent reputation for feedability and trouble-free performance.
- The electroplating process of the copper coating guarantees no copper flaking, which can clog liners and contact tips
- Copper coating provides superior arc-starting characteristics, for long contact tip life
- Well suited for applications where accurate and consistent wire feed are necessary
- Manufactured under a quality system certified to ISO 9001 requirements

Typical Applications

- Industrial, farming, construction, and mining equipment
- Single pass welds on sheet metal applications
- Multiple pass welds on thick steel section, especially on killed or semi-killed steels
- For welding on base material that is clean or has light surface rust or mill scale

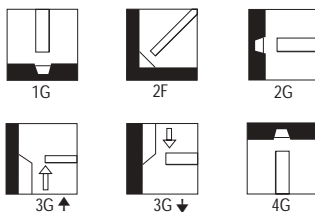
Conformance

AWS A5.18 ER70S-3

Shielding Gas

100% CO₂
75-95% Ar/Balance CO₂
95-98% Ar/Balance O₂
Flow Rate: 30 - 50 CFH

Welding Positions



Diameters/Small Packaging

Diameter mm (Inches)	20 kg (44 lb.) Fiber Spool	27.2 kg (60 lb.) Coil
0.9 (.035)	221-1111	—
1.1 (.045)	221-1146	221-1344
1.3 (.052)	—	221-1345

Typical Operating Procedures

Diameter, Polarity ESO mm (in) Shielding Gas	Wire Feed Speed m/min (in/min)	Arc Voltage (Volts)	Approx. Current (Amps)	Melt-Off Rate kg/hr (lbs/hr)	
.030 in, DC+	1.9 (75)	17	35	.4 (.90)	See Below ¹
	3.8 (150)	18	70	.8 (1.80)	See Below ¹
	7.6 (300)	22	130	1.6 (3.60)	See Below ¹
.035 in, DC+	2.5 (100)	18	80	.7 (1.6)	See Below ¹
	3.8 (150)	19	120	1.1 (2.4)	See Below ¹
	6.4 (250)	22	175	1.8 (4.0)	See Below ¹
	9.5 (375)	23	195	2.7 (6.0)	
	12.7 (500)	29	230	3.6 (8.0)	
.045 in, DC+	15.2 (600)	30	275	4.4 (9.6)	
	3.2 (125)	19	145	1.5 (3.4)	See Below ¹
	3.8 (150)	20	165	1.8 (4.0)	See Below ¹
	5.0 (200)	21	200	2.5 (5.4)	See Below ¹
.052 in, DC+	8.9 (350)	27	285	4.2 (9.2)	
	12.0(475)	30	335	5.7 (12.5)	
	12.7 (500)	30	340	6.0 (13.2)	
	7.6 (300)	30	300	4.8 (10.6)	
	8.1 (320)	30	320	5.2 (11.5)	
1/16 in, DC+	12.3 (485)	32	430	7.8 (17.1)	
	5.3 (210)	25	325	4.8 (10.7)	
	6.0 (235)	27	350	5.4(12.0)	
	7.4 (290)	28	430	6.7 (14.8)	

¹ Procedures are for short circuiting mode using 100% CO₂. When using 75% Argon, 25% CO₂ for short circuit transfer, reduce voltage by 1 to 2 volts.

NOTE: Welding position is dependent on arc transfer, mode, shielding gas, welding joint, material thickness and welding procedures.

Mechanical Properties

Test Conditions	Tensile Strength MPa (PSI)	Yield Strength MPa (PSI)	Elongation (%)	Charpy V-Notch Joules (ft-lbs)		
				@ -18°C (0°F)	@ -29°C (-20°F)	@ -40°C (-40°F)
Requirements						
ER70S-3 per AWS A5.18 AW with CO ₂	483 min. (70,000)	400 min. (58,000)	22 min.	27 min. (20)	Not Specified	Not Specified
MIL-70S-3 per MIL-E-23765/1 AW with CO ₂ and 98Ar/2O ₂	483 min. (70,000)	379 - 483 (55,000 - 70,000)	22 min.	Not Specified	Not Specified	Not Specified
MIL-70S-3 per MIL-E-23765/1 SR ² with CO ₂ and 98Ar/2O ₂	483 min. (70,000)	358 min. (52,000)	26 min.	Not Specified	27 min. (20)	Not Specified
Test Results						
AW with CO ₂	76,200 (525)	439 (63,700)	30	95 (70)	88 (65)	24 (18)
SR ¹ with CO ₂	68,900 (475)	364 (52,800)	34	118 (87)	100 (74)	88 (65)
AW with 75Ar/25CO ₂	78,700 (543)	441 (63,900)	27	106 (78)	102 (75)	81 (60)
SR ¹ with 75Ar/25CO ₂	70,700 (487)	366 (53,100)	33	165 (122)	163 (120)	141 (104)
AW with 90Ar/10CO ₂	79,200 (546)	467 (67,700)	22	142 (105)	122 (90)	88 (65)
SR ¹ with 90Ar/10CO ₂	70,200 (484)	367 (53,300)	35		214 (158)	198 (146)
AW with 98Ar/2O ₂	77,700 (536)	428 (62,100)	27	108 (80)	95 (70)	81 (60)
SR ¹ with 98Ar/2O ₂	68,500 (472)	352 (51,000)	33		339 (250)	179 (132)

AW - As welded. SR ¹ - Stress relieved 1 hour at 1150°F (621°C). SR ² - Stress relieved 2 hours at 1125°F (607°C).

Wire Composition

	%C	%Mn	%Si	%S	%P	%Cu
AWS Requirements	.06 - .15	.90 - 1.40	.45 - .75 max.	.035 max.	.025 max.	.50
Typical Range	.07 - .10	1.15 - 1.25	.50 - .60	.004 - .008	.005 - .010	.15 - .25

Superarc L-56

AWS: ER70S-6
Mild Steel MIG Wire

Premium copper coated, mild steel MIG wire for welding on metals with a medium to high presence of surface contaminants

- Low carbon, high manganese, very high silicon wire for excellent puddle fluidity, bead profile and spatter control
- Good reputation for feedability, even over long distances
- Consistent arc characteristics from package to package
- The electroplating process of the copper coating guarantees no copper flaking, which can clog liners and contact tips
- Copper coating provides superior arc-starting characteristics, for long contact tip life
- Manufactured under a quality system certified to ISO 9001 requirements

Typical Applications

- Industrial, farming, construction, and mining equipment
- Automotive repair
- For welding on metals with a medium-to-high presence of dirt, rust or mill scale

Mechanical Properties

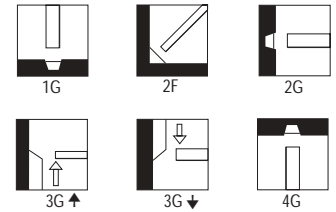
Test Conditions	Tensile Strength MPa (PSI)	Yield Strength MPa (PSI)	Elongation (%)	@-18°C (0°F)	Charpy V-Notch Joules (ft-lbs)	
					@ -29°C (-20°F)	@ -40°C (-40°F)
Requirements						
ER70S-6 per AWS A5.18 AW with CO ₂	483 min. (70,000)	400 min. (58,000)	22 min.	Not Specified	27 min. (20)	Not Specified
MIL-70S-6 per MIL-E-23765/1 AW with CO ₂ and 98Ar/2O ₂	483 min. (70,000)	379 - 552 (55,000 - 80,000)	22 min.	Not Specified	Not Specified	Not Specified
MIL-70S-6 per MIL-E-23765/1 SR ² with CO ₂ and 98Ar/2O ₂	483 min. (70,000)	358 min. (52,000)	26 min.	Not Specified	27 min. (20)	Not Specified
Test Results						
AW with CO ₂	564 (81,800)	468 (67,900)	29	61 (45)	54 (40)	37 (27)
SR ¹ with CO ₂	512 (74,200)	390 (56,600)	29	115 (85)	95 (70)	68 (50)
SR ² with CO ₂	536 (77,800)	420 (60,900)	31	—	—	119 (88)
AW with 75Ar/25CO ₂	586 (85,000)	515 (74,700)	29	119 (88)	108 (80)	95 (70)
SR ¹ with 75Ar/25CO ₂	538 (78,000)	416 (60,400)	31	149 (110)	140 (103)	122 (90)
AW with 90Ar/10CO ₂	587 (85,200)	489 (71,000)	22	217 (160)	196 (145)	190 (140)
SR ¹ with 90Ar/10CO ₂	546 (79,200)	443 (64,200)	32	217 (160)	183 (135)	156 (115)
AW with 98Ar/2O ₂	566 (82,100)	456 (66,200)	27	163 (120)	122 (90)	108 (80)
SR ¹ with 98Ar/2O ₂	541 (78,500)	416 (60,400)	34	217 (160)	190 (140)	176 (130)
SR ² with 98 Ar/2O ₂	548 (79,500)	437 (63,400)	33	—	156 (115)	—

AW - As welded. SR¹ - Stress relieved 1 hour at 612°C (1150°F). SR² - Stress relieved 2 hours at 607°C (1125°F).

Wire Composition

	%C	%Mn	%Si	%S	%P	%Cu
AWS Requirements	.06 - .15	1.40 - 1.85	.80 - 1.15	.035 max.	.025 max.	.50 max.
Typical Range	.07 - .09	1.40 - 1.50	.80 - .90	.001 - .010	.005 - .015	.15 - .25

Welding Positions



Diameters/Small Packaging

Diameter	20 kg (44 lb.) Fiber Spool	27.2 kg (60 lb.) Coil
	0.9 mm (.035 in)	221-1115
1.1 mm (.045 in)	221-1040	221-1341
1.3 mm (.052 in)	—	221-1343

Shielding Gas

100% CO ₂
75-95% Ar/Balance CO ₂
95-98% Ar/Balance O ₂
Flow Rate: 30 - 50 CFH

Conformance

AWS A5.18 ER70S-6

Typical Operating Procedures

Diameter, Polarity ESO mm (in) Shielding Gas	Wire Feed Speed m/min (in/min)	Arc Voltage (Volts)	Approx. Current (Amps)	Melt-Off Rate kg/hr (lbs/hr)	
.025 in, DC+	2.5 (100)	17	35	.4 (.8)	See Below ¹
9 - 12 (3/8 - 1/2)					See Below ¹
100% CO ₂					See Below ¹
.030 in, DC+	1.9 (75)	17	35	.4 (.90)	See Below ¹
9 - 12 (3/8 - 1/2)	3.8 (150)	18	70	.8 (1.80)	See Below ¹
100% CO ₂	7.6 (300)	22	130	1.6 (3.60)	See Below ¹
.035 in, DC+	2.5 (100)	18	80	.7 (1.6)	See Below ¹
9 - 25 (3/8 - 1)	3.81 (50)	19	120	1.1 (2.4)	See Below ¹
90% Ar/10% CO ₂	6.4 (250)	22	175	1.8 (4.0)	See Below ¹
	9.5 (375)	23	195	2.7 (6.0)	
	12.7 (500)	29	230	3.6 (8.0)	
	15.2 (600)	30	275	4.4 (9.6)	
.045 in, DC+	3.2 (125)	19	145	1.5 (3.4)	See Below ¹
9 - 25 (3/8 - 1)	3.8 (150)	20	165	1.8 (4.0)	See Below ¹
90% Ar/10% CO ₂	5.0 (200)	21	200	2.5 (5.4)	See Below ¹
	8.9 (350)	27	285	4.2 (9.2)	
	12.0 (475)	30	335	5.7 (12.5)	
	12.7 (500)	30	340	6.0 (13.2)	
.052 in, DC+	7.6 (300)	30	300	4.8 (10.6)	
19 - 25 (3/4 - 1)	8.1 (320)	30	320	5.2 (11.5)	
90% Ar/10% CO ₂	12.3 (485)	32	430	7.8 (17.1)	
1/16 in, DC+	5.3 (210)	25	325	4.8 (10.7)	
19 - 25 (3/4 - 1)	6.0 (235)	27	350	5.4 (12.0)	
90% Ar/10% CO ₂	7.4 (290)	28	430	6.7 (14.8)	

¹ Procedures are for short circuiting mode using 100% CO₂. When using 75% Argon, 25% CO₂ for short circuit transfer, reduce voltage by 1 to 2 volts.

NOTE: Welding position is dependent on arc transfer, mode, shielding gas, welding joint, material thickness and welding procedures.

Outershield 70

Mild Steel Flux-Cored Wire
AWS E70T-1 and E70T-9
Warranty: One Year

Optimum performance on materials with high levels of rust, oil, or mill scale—excellent for flat and horizontal groove and fillet welds

- For mild steel and many low alloy steels
- Designed for single and multiple pass, semiautomatic and automatic welding
- Especially recommended for applications requiring deep penetration
- Spray type transfer creates excellent bead wetting, low spatter, and fast follow characteristics
- Exceptional mechanical properties and x-ray quality
- Good resistance to porosity due to heavy scale or rust contamination
- CSA approved
- Manufactured under a quality system certified to ISO 9002 requirements

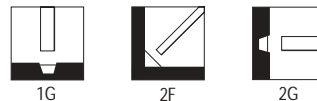
Typical Applications

- Bridge, ship, barge or offshore drilling rig construction
- General fabrication
- Machinery fabrication
- Structural fabricating

Diffusible Hydrogen

Shielding Gas	Typical Results (ml/100g weld deposit)
100% CO ₂	7-14

Welding Positions



Diameters/Packaging

Diameter	23kg (50 lb.) Coil
1.6 mm (1/16 in)	221-5346
2.0 mm (5/64 in)	221-1099
2.4 mm (3/32 in)	221-5345

Conformance

AWS A5.20-95	E70T-1, E70T-9
ASME SFA-5.20	E70T-1
CWB/CSA	E4802T-9-CH
ABS	2SA-2YSAH15
DNV	II YMSH15
Lloyd's	2S-2YSH15
Military Spec	MIL-70T-1C

Shielding Gas

100% CO ₂
Flow Rate: 40-50 CFH

Deposit Composition¹

	%C	%Mn	%P	%S	%Si
Requirements					
AWS E70T-1	.18 max.	1.75 max.	.03 max.	.03 max.	.90 max.
Test Results					
100% CO ₂	.084	1.41	.009	.011	.73

¹ Typical all weld metal

Mechanical Properties¹

As Welded per AWS A5.20					
	Yield Strength MPa (PSI)	Tensile Strength MPa (PSI)	Elongation (%)	Charpy V-Notch Joules (ft-lbs)	
				@ -18°C (0°F)	@ -29°C (-20°F)
Required					
AWS E70T-1	400 (58,000) min.	483 (70,000) min.	22 min.	27 (20) min.	—
AWS E70T-9	400 (58,000) min.	483 (70,000) min.	22 min.	—	27 (20) min.
Test Results					
100% CO ₂ As Welded	576 (83,500)	635 (92,100)	27	39 (28)	31 (23)
100% CO ₂ Stress Relieved for 1 hour at 621°C (1150°F)	527 (76,400)	555 (80,500)	27	27 (20)	24 (18)

¹ Typical all weld metal

Typical Operating Procedures

Wire Polarity Electrical Stickout Wire Weight	Wire Feed Speed m/min (in/min)	Arc Voltage (Volts)	Approx. Current (Amps)	Melt-Off Rate kg/hr (lbs/hr)	Deposition Rate kg/hr (lbs/hr)	Efficiency (%)
1/16 in	3.2 (125)	23 - 25	170	2.4 (5.3)	2.1 (4.6)	87
DC+	5.1 (200)	25 - 27	235	3.8 (8.5)	3.4 (7.4)	87
19 mm (3/4 in)	6.4 (250)	25 - 28	275	4.8 (10.6)	4.2 (9.2)	87
0.707 lbs/1000 in	7.6 (300)	27 - 29	310	5.8 (12.7)	5.0 (11.1)	87
	9.5 (375)	29 - 31	365	7.2 (15.9)	6.4 (14.0)	88
5/64 in	3.2 (125)	23 - 26	250	3.8 (8.4)	3.2 (7.0)	83
DC+	4.4 (175)	26 - 28	350	5.4 (11.8)	4.5 (10.0)	85
25 mm (1 in)	5.7 (225)	27 - 29	375	6.9 (15.2)	5.9 (13.0)	86
1.123 lbs/1000 in	6.4 (250)	29 - 31	400	7.7 (16.9)	6.5 (14.4)	86
	7.6 (300)	30 - 32	450	9.2 (20.2)	7.9 (17.4)	86
	8.3 (325)	31 - 33	470	9.9 (21.9)	8.5 (18.8)	86
3/32 in	3.2 (125)	24 - 27	335	5.3 (11.7)	4.4 (9.8)	84
DC+	5.1 (200)	28 - 31	455	8.5 (18.6)	7.3 (16.0)	86
29 mm (1 1/8 in)	6.4 (250)	30 - 32	530	10.6 (23.3)	9.2 (20.2)	87
1.554 lbs/1000 in	7.6 (300)	31 - 34	590	12.7 (28.0)	11.0 (24.3)	87
	8.3 (325)	33 - 35	615	13.7 (30.3)	12.0 (26.4)	87

Outershield 71 Elite

Mild Steel Flux-Cored Wire
AWS E71T-1 and E71T-9

Smooth arc behavior, low spatter, and excellent bead appearance

- Smooth, consistent arc behavior — not erratic or explosive
- The finished weld exhibits an extremely smooth bead appearance, even on testy, out-of-position welds
- Smaller droplets mean accurate, efficient, high deposition placement of the weld metal. This translates into reduced spatter and more filler metal being placed where it belongs — into the weld. Less time on clean-up adds up to higher productivity
- CSA approved
- Designed for general purpose, all-position, single and multiple pass welding
- Manufactured under a quality system certified to ISO 9002 requirements

Typical Applications

Outershield 71 Elite is designed for general purpose, all-position, single and multiple pass welding. Use Outershield 71 Elite for:

- Shipbuilding, barges and offshore platforms
- Heavy equipment fabrication
- Structural fabrication
- General fabrication

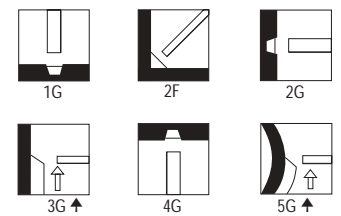
Diffusible Hydrogen

Shielding Gas	Typical Results (ml/100g weld deposit)
100% CO ₂	<10
75% Argon/ Balance CO ₂	<10

Conformance

AWS A5.20-95	E71T-1, E71T-9
ASME SFA-5.20	E71T-1, E71T-9
CWB/CSA	E4801T-9CH
ABS	3SA-3YSAH10
Lloyd's Register	3S-3YSH10
DNV	IIIYMS(H10)
BV	3YSAMHH
G.L.	3YH10S

Welding Positions



Diameters/Packaging

Diameter	15 kg (33 lb.) Spool	27.3 kg (60 lb.) Coil
1.1 mm (.045 in)	221-1114	221-1093
1.3 mm (.052 in)	221-1346	221-1103
1.6 mm (1/16 in)	221-1101	221-1089

Shielding gas

100% CO ₂
75-82% Argon/Balance CO ₂
Flow Rate: 40-50 CFH

Deposit Composition

	%C	%Mn	%Si	%P	%S
Requirements					
AWS E71T-1	.18 max.	1.75 max.	.90 max.	.03 max.	.03 max.
AWS E71T-9					
Test Results					
100% CO ₂	.04	1.50	.60	.013	.014
75% Ar/25% CO ₂	.04	1.65	.75	.013	.014

Typical Operating Procedures

Wire Polarity Electrical Stickout Wire Weight	Wire Feed Speed m/min (in/min)	Arc Voltage (Volts)	Approx. Current (Amps)	Melt-Off Rate kg/hr (lbs/hr)	Deposition Rate kg/hr (lbs/hr)	Efficiency (%)
.045 in	4.5 (175)	22 - 25	130	1.7 (3.8)	1.5 (3.3)	87
DC+	6.4 (250)	24 - 27	155	2.4 (5.4)	2.1 (4.7)	87
19mm (3/4 in)	7.6 (300)	25 - 28	180	2.9 (6.4)	2.5 (5.6)	87
.360 lbs/1000 in	8.9 (350)	26 - 29	205	3.4 (7.6)	3.0 (6.6)	87
	10.2 (400)	27 - 30	230	4.0 (8.7)	3.5 (7.6)	87
	12.8 (500)	28 - 31	260	5.0 (10.9)	4.3 (9.5)	87
	15.3 (600)	29 - 32	290	6.0 (13.1)	5.2 (11.4)	87
	17.9 (700)	32 - 35	315	6.9 (15.2)	6.0 (13.2)	87
	20.4 (800)	36 - 39	355	7.9 (17.4)	6.7 (15.1)	87
.052 in	3.8 (150)	22 - 25	150	2.1 (4.6)	1.8 (3.9)	86
DC+	5.1 (200)	23 - 26	180	2.8 (6.1)	2.4 (5.2)	86
19mm (3/4 in)	6.4 (250)	24 - 27	210	3.4 (7.6)	3.0 (6.5)	86
.507 lbs /1000 in	7.6 (300)	25 - 28	240	4.8 (10.6)	4.1 (9.1)	86
	10.2 (400)	27 - 29	315	6.2 (13.7)	5.4 (11.8)	86
	12.8 (500)	29 - 32	335	6.9 (15.2)	6.0 (13.1)	86
	15.3 (600)	31 - 34	375	8.3 (18.2)	7.1 (15.7)	86
	17.9 (700)	33 - 36	425	9.7 (21.3)	8.3 (18.3)	86
1/16 in	3.2 (125)	22 - 25	190	2.4 (5.2)	2.0 (4.4)	85
DC+	3.8 (150)	23 - 26	205	2.8 (6.2)	2.4 (5.3)	85
19mm (3/4 in)	5.1 (200)	23 - 27	240	3.8 (8.3)	3.2 (7.0)	85
.688 lbs/1000 in	6.4 (250)	24 - 28	290	4.7 (10.3)	4.0 (8.8)	85
	7.6 (300)	25 - 29	325	5.6 (12.4)	4.8 (10.5)	85
	10.2 (400)	28 - 32	400	7.5 (16.5)	6.4 (14.0)	85
	12.8 (500)	30 - 34	445	9.4 (20.7)	8.0 (17.6)	85
	15.3 (600)	32 - 35	510	11.3 (24.8)	9.6 (21.1)	85

Mechanical Properties

As Welded per AWS A5.20					
	Yield Strength MPa (PSI)	Tensile Strength MPa (PSI)	Elongation (%)	Charpy V-Notch Joules (ft-lbs) @ -18°C (0°F) @ 29°C (-20°F)	
Requirements					
AWS E71T-1	400 (58,000) min.	483 (70,000) min.	22 min.	27 (20) min.	—
AWS E71T-9	400 (58,000) min.	483 (70,000) min.	22 min.	—	27 (20) min.
Test Results					
100% CO ₂	545 (79,000)	586 (85,000)	28	74 (55)	58 (43)
75% Ar/25% CO ₂	586 (85,000)	627 (91,000)	28	92 (68)	70 (52)

Outershield 75C

Mild Steel Flux-Cored Wire
AWS E70T-5JH4

Low hydrogen choice for use on crack-sensitive steels—flux specifically formulated to reduce impurities that can lead to cracking

- Can produce hydrogen levels of less than 4 ml/100 grams
- Excellent for flat and horizontal semiautomatic and full automatic welding
- Soft globular type transfer and minimizes undercut on horizontal fillets
- Extremely low maximum hydrogen content gives it superior crack resistance unmatched by most cored electrodes
- For mild steel and many low alloy steels
- Manufactured under a quality system certified to ISO 9002 requirements

Typical Applications

- Bridge, ship, barge or offshore drilling rig construction
- General fabrication
- Machinery fabrication
- Structural fabrication

Shielding Gas

100% CO ₂
Flow Rate: 40-50 CFH

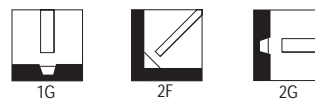
Conformance

AWS A5.20	E70T-5JH4
ASME SFA-5.20	E70T-5JH4

Diffusible Hydrogen

Shielding Gas	Typical Results (ml/100g weld deposit)
100% CO ₂	2-4

Welding Positions



Diameters/Packaging

Diameter	27kg (60 lb.) Coil
2.0 mm (5/64 in)	221-1090

Deposit Composition

	%C	%Mn	%P	%S	%Si
Requirements					
AWS E70T-5	.18 max.	1.75 max.	.03 max.	.03 max.	.90 max.
Test Results					
100% CO ₂	.08	1.42	.008	.010	.41

Mechanical Properties

As Welded per AWS A5.20					
	Yield Strength MPa (PSI)	Tensile Strength MPa (PSI)	Elongation (%)	Charpy V-Notch Joules (ft-lbs) @ -29°C (-20°F) @ -40°C (-40°F)	
Requirements					
AWS E70T-5	400 (58,000) min.	483 (70,000) min.	22 min.	27 (20) min.	—
AWS E70T-5J	400 (58,000) min.	483 (70,000) min.	22 min.	—	27 (20) min.
Test Results					
100% CO ₂	447 (64,900)	551 (80,000)	32	101 (75)	54 (40)

¹ Typical all weld metal

Typical Operating Procedures

Wire Polarity Electrical Stickout Wire Weight	Wire Feed Speed m/min (in/min)	Arc Voltage (Volts)	Approx. Current (Amps)	Melt-Off Rate kg/hr (lbs/hr)	Deposition Rate kg/hr (lbs/hr)	Efficiency (%)
5/64 in	3.8 (150)	24	220	4.7 (10.4)	4.2 (9.3)	89
DC+	5.1 (200)	28	290	6.1 (13.4)	5.4 (12.0)	89
25 mm (1 in)	6.4 (250)	31	320	7.6 (16.8)	6.5 (14.4)	86
1.15 lbs/1000 in	7.6 (300)	34	375	9.1 (20.1)	7.8 (17.2)	86
	8.9 (350)	36	425	10.6 (23.4)	9.2 (20.3)	87

Innershield NR-212

AWS A5.29-98: E71TG-G

Alternative to NR-211-MP when thicker applications are involved

- Excellent general purpose, all position wire for automatic and semiautomatic applications
- Designed for single and multiple pass welding on mild steel, sheet metal and plate; also performs well on coated steel
- Extremely versatile wire—weld in any position, on a wide range of materials including coated steel. Not recommended for vertical up
- A good choice when poor fitup is an issue
- Produces quality welds in moderate wind conditions with no tenting
- Self-shielded, flux-cored—no need for external gas or flux
- Quality driven manufacturing system – certified to ISO 9002 – and exceptionally high grade raw materials mean every coil of Innershield delivers great arc characteristics and superior feedability

Typical Applications

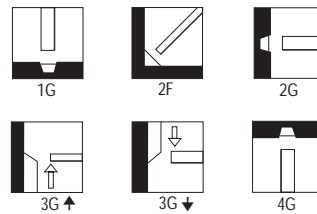
- Single or multiple pass, all position welding on materials 1.1 mm (.045 in) and thicker
- Can be used on weathering steels where a color match is important
- Structural fabrication where no seismic requirements are present
- Short assembly welds
- Coated steel welds
- Robotic applications

Conformance

AWS A5.29-98	E71TG-G
ASME SFA-5.29	E71TG-G

NOTE: NR-212 should not be used for applications requiring Charpy V-Notch properties.

Welding Positions



Diameters/Packaging

Diameter	25 lb. Readi-Reel®	50 lb. Coil
1.7 mm (.068 in)	221-1347	221-1348
2.0 mm (5/64 in)	221-1349	221-1350

Mechanical Properties¹

As Welded per AWS A5.29			
	Yield Strength MPa (PSI)	Tensile Strength MPa (PSI)	Elongation (%)
Requirements			
AWS E71TG-G	400 (58,000) min.	480 - 620 (70,000 - 90,000) min.	20 min.
Test Results			
Typical NR-212	465 (67,500)	594 (86,200)	27

¹ The strength and elongation properties reported were obtained from a .505 inch tensile specimen artificially aged at 104°C (220°F) for 48 hours, as permitted by AWS A5.29-80. A naturally aged tensile specimen may take months to achieve the specified properties. See AWS A5.20-95, paragraph A8.3. The time required for the natural aging of weld deposits is dependent upon ambient conditions, weldment geometry, the metallurgical structure of the weld deposit and other factors.

Deposit Composition

	%C	%Mn ¹	%P	%S	%Si ¹	%Al	%Ni ¹
Requirements							
AWS E71TG-G per A5.29	Report Only	1.75 min.	.04 max.	.03 max.	.80 max.	1.8 max.	.50 max.
Test Results							
	.10	.97	.007	.003	.31	1.52	1.10

¹ In order to meet the alloy requirements of the G group, the weld deposit needs to have the minimum, as specified in the table, of only one of these elements.

NOTE: R-212 will not produce weld deposits meeting the minimum Charpy V-Notch impact properties recommended in the "Seismic Provisions for Structural Steel Buildings" by AISC, dated April 15, 1997. For these and other applications specifying notch toughness, the following Innershield electrodes should be considered: NR-203MP, NR-203 Nickel C Plus, NR-203 Nickel (1%), NR-232, NR-305, NR-311 Ni.

Typical Operating Procedures

Wire, Polarity Electrical Stickout Wire Weight	Wire Feed Speed m/min (in/min)	Arc Voltage (Volts)	Approx. Current (Amps)	Melt-Off Rate kg/hr (lbs/hr)	Deposition Rate kg/hr (lbs/hr)	Efficiency (%)
.045 in	1.4 (55)	14.5	75	0.6 (1.3)	0.5 (1.1)	84
DC-	1.8 (70)	15.5	90	0.7 (1.6)	0.6 (1.4)	87
10 mm (3/8 in)	2.3 (90)	16.5	115	0.9 (2.1)	0.8 (1.8)	85
.393 lbs/1000 in	2.8 (110)	17.5	135	1.2 (2.6)	1.0 (2.2)	84
	3.3 (130)	18.5	155	1.4 (3.1)	1.2 (2.6)	83
	3.8 (150)	19.5	170	1.6 (3.5)	1.4 (3.0)	85
.068 in	1.5 (60)	16.5	145	1.4 (3.1)	1.1 (2.4)	77
DC-	1.9 (75)	18.5	180	1.7 (3.8)	1.4 (3.2)	84
19 mm (3/4 in)	2.3 (90)	19.5	200	2.0 (4.5)	1.7 (3.8)	84
820 lbs/1000 in	3.0 (120)	20.5	230	2.7 (6.0)	2.3 (5.2)	86
	3.8 (150)	21.5	255	3.3 (7.4)	2.9 (6.4)	86
	4.4 (175)	22.5	275	3.9 (8.7)	3.4 (7.5)	86
5/64 in	1.5 (60)	16.5	200	1.7 (3.8)	1.5 (3.3)	86
DC-	1.9 (75)	18.5	225	2.1 (4.7)	1.8 (4.1)	87
19 mm (3/4 in)	2.3 (90)	19.5	245	2.6 (5.7)	2.3 (5.0)	87
1.064 lbs/1000 in	2.8 (110)	20.5	275	3.2 (7.1)	2.8 (6.2)	87
	3.3 (130)	21.5	300	3.7 (8.3)	3.3 (7.3)	87
	3.8 (150)	22.5	325	4.3 (9.6)	3.8 (8.4)	87

NOTE: These are typical operating procedures and are not intended to serve as specific procedures for any applications.

Innershield NR-311

AWS A5.20-95: E70T-7

High deposition wire for use in all positions

- Designed for single and multiple pass, automatic and semiautomatic welding of thicker mild steels and some low alloy steels
- High deposition rates and fast travel speeds
- Smooth operation: Good bead shape
- Deep penetration
- Easy slag removal in deep grooves
- Resists weld cracking on high sulfur steels
- Self-shielded, flux-cored—no need for external gas or flux
- Produces quality welds in moderate wind conditions with no tenting
- Quality driven manufacturing system – certified to ISO 9002 – and exceptionally high grade raw materials mean every coil of Innershield delivers great arc characteristics and superior feedability

Welding Positions



Diameters/Packaging

Diameter	22 lb. Readi-Reel®	50 lb. Coil
2.0 mm (5/64 in)	221-5354	—
2.4 mm (3/32 in)	—	221-1359

Mechanical Properties¹

As Welded per AWS A5.20				
Condition	Yield Strength MPa (PSI)	Tensile Strength MPa (PSI)	Elongation (%)	Hardness Rockwell B
Requirements				
AWS E70T-7	400 (58,000) min.	480 (70,000) min.	22 min.	—
Test Results				
	414 - 455 (60,000 - 66,000)	565 - 620 (82,000 - 90,000)	22 - 26	87 - 92

¹ The strength and elongation properties reported were obtained from a .505 inch tensile specimen artificially aged at 104°C (220°F) for 48 hours, as permitted by AWS A5.20-95. A naturally aged tensile specimen may take months to achieve the specified properties. See AWS A5.20-95, paragraph A8.3. The time required for the natural aging of weld deposits is dependent upon ambient conditions, weldment geometry, the metallurgical structure of the weld deposit and other factors.

Typical Applications

- Fillet, lap and butt welds on 3.2mm (1/8 inch) and thicker steels
- Horizontal butt welds such as column-to-column structural connections not subject to seismic requirements
- General fabrication and assembly welding

Conformance

AWS A5.20-95	E70T-7
ASME SFA-5.20	E70T-7
ABS	E70T-7 per AWS A5.20-95

NOTE: NR-311 should not be used for applications requiring Charpy V-Notch properties.

Typical Operating Procedures

Wire, Polarity Electrical Stickout Wire Weight	Wire Feed Speed m/min (in/min)	Arc Voltage (Volts)	Approx. Current (Amps)	Melt-Off Rate kg/hr (lbs/hr)	Deposition Rate kg/hr (lbs/hr)	Efficiency (%)
5/64 in	2.5 (100)	21	190	2.9 (6.4)	2.3 (5.0)	78
DC-	4.1 (160)	25	275	4.7 (10.3)	3.6 (8.0)	78
32 mm (1 1/4 in)	6.1 (240)	26	355	7.0 (15.4)	5.6 (12.4)	80
1.07 lbs/1000 in	7.6 (300)	28	410	8.8 (19.3)	7.2 (15.8)	82
3/32 in	1.9 (75)	21	200	3.2 (7.0)	2.5 (5.4)	77
DC-	3.4 (135)	24	300	5.9 (13.1)	4.6 (10.2)	78
38 mm (1 1/2 in)	3.8 (150)	25	325	6.6 (14.6)	5.2 (11.4)	78
1.62 lbs/1000 in	5.3 (210)	27	400	9.3 (20.4)	7.5 (16.5)	81
	6.9 (270)	30	450	11.9 (26.2)	10.0 (22.0)	84

NOTE: These are typical operating procedures and are not intended to serve as specific procedures for any applications.

Deposit Composition

	%C	%Mn	%P	%S	%Si*	%Al
Requirements						
AWS E70T-7 per A5.20-95	Report Only	1.75 max.	.03 max.	.03 max.	.60 max.	1.8 max.
Test Results						
	.25	.50	.008	<.003	.10	1.46

NOTE: NR-311 will not produce weld deposits meeting the minimum Charpy V-Notch properties recommended in the "Seismic Provisions for Structural Steel Buildings" by AISC, dated April 15, 1997. For these and other applications specifying notch toughness, the following Innershield electrodes should be considered: NR-203MP, NR-203Nickel C Plus, NR-203 Nickel (1%), NR-232, NR-305, NR-311 Ni.

Innershield NS-3M

AWS A5.20-95: E70T-4

High deposition rate wire, designed for automatic and semiautomatic welding on mild steel and some low alloy steels, and also to join sulfur or high carbon steels

- High deposition rates for excellent productivity
- Resists porosity on mildly rusty, oil or dirty plate
- Easy slag removal – even in deep grooves
- Resists cracking on high sulfur steel
- Self-shielded, flux-cored—no need for external gas or flux
- Produces quality welds in moderate wind conditions with no tenting
- Soft, low penetration arc
- Quality driven manufacturing system – certified to ISO 9002 – and exceptionally high grade raw materials mean every coil of Innershield delivers great arc characteristics and superior feedability

Typical Applications

- Structural fabrication where no seismic requirements exist
- Machinery bases
- Heavy equipment repair
- Multiple pass fillet and lap welds
- Corner welds and single pass butt welds
- Single pass 6.4 - 12.7mm (1/4 - 1/2 inch) fillet and lap welds

Conformance

AWS A5.20-95	E70T-4
ASME SFA-5.20	E70T-4
ABS	E70T-4 per AWS A5.20-95

NOTE: NS-3M should not be used for applications requiring Charpy V-Notch properties.

Deposit Composition

	%C	%Mn	%P	%S	%Si*	%Al
Requirements						
AWS E70T-4 per A5.20	Report Only	1.75 max.	.03 max.	.03 max.	.60 max.	1.8 max.
Test Results						
Typical NS-3M	.25	.45	.006	<.003	.29	1.59

NOTE: NS-3M will not produce weld deposits meeting the minimum Charpy V-Notch properties recommended in the "Seismic Provisions for Structural Steel Buildings" by AISC, dated April 15, 1997. For these and other applications specifying notch toughness, the following Innershield electrodes should be considered: NR-203MP, NR-203 Nickel C Plus, NR-203 Nickel (1%), NR-232, NR-305, NR-311 Ni.

Welding Positions



Diameters/Packaging

Diameter	22 lb. Readi-Reel®	50 lb. Coil
2.0 mm (5/64 in)	221-1352	221-1353
2.4 mm (3/32 in)	—	221-1357
3.0 mm (.120 in)	—	221-1354

Mechanical Properties¹

	As Welded per AWS A5.20			
	Yield Strength MPa (PSI)	Tensile Strength MPa (PSI)	Elongation (%)	Hardness Rockwell B
Requirements				
AWS E70T-4	400 (58,000) min.	480 (70,000) min.	22 min.	—
Test Results				
Typical NS-3M	414 - 483 (60,000 - 70,000)	497 - 641 (72,000 - 93,000)	22 - 30	85 - 95

¹ The strength and elongation properties reported were obtained from a .505 inch tensile specimen artificially aged at 104°C (220°F) for 48 hours, as permitted by AWS A5.20-95. A naturally aged tensile specimen may take months to achieve the specified properties. See AWS A5.20-95, paragraph A8.3. The time required for the natural aging of weld deposits is dependent upon ambient conditions, weldment geometry, the metallurgical structure of the weld deposit and other factors.

Typical Operating Procedures

Wire, Polarity Electrical Stickout Wire Weight	Wire Feed Speed m/min (in/min)	Arc Voltage (Volts)	Approx. Current (Amps)	Melt-Off Rate kg/hr (lbs/hr)	Deposition Rate kg/hr (lbs/hr)	Efficiency (%)
5/64 in	5.1 (200)	30	280	5.5 (12.2)	4.6 (10.1)	83
DC+	6.1 (240)	31	315	6.7 (14.8)	5.5 (12.1)	82
51 mm (2 in)	6.6 (260)	31	330	7.3 (16.0)	6.0 (13.2)	83
1.03 lbs/1000 in	7.6 (300)	32	350	8.4 (18.6)	6.9 (15.2)	82
3/32 in	2.8 (110)	29	250	4.6 (10.1)	3.7 (8.2)	81
DC+	3.8 (150)	30	300	6.4 (14.0)	5.3 (11.7)	84
70 mm (2 3/4 in)	4.7 (185)	31	350	7.9 (17.4)	6.6 (14.6)	84
1.53 lbs/1000 in	5.8 (230)	32	400	9.8 (21.6)	8.3 (18.3)	85
	7.0 (275)	33	450	11.8 (26.0)	10.0 (22.0)	85
.120	3.6 (140)	29	380	9.0 (19.8)	7.0 (15.5)	78
DC+	4.4 (175)	30	450	11.2 (24.6)	9.1 (20.0)	81
70 mm (2 3/4 in)	5.1 (200)	31	500	12.7 (28.0)	10.5 (23.2)	83
2.34 lbs/1000 in	5.7 (225)	32	550	14.2 (31.4)	11.9 (26.2)	83
.120	5.3 (210)	36	450	13.2 (29.0)	11.3 (25.0)	86
DC+	6.4 (250)	37	500	15.6 (34.5)	13.2 (29.0)	84
95 mm (3 3/4 in)	7.6 (300)	38	550	18.8(41.5)	15.4 (34.0)	82
2.34 lbs/1000 in	9.0 (355)	39	600	22.2 (49.0)	18.0 (39.5)	81

NOTE: These are typical operating procedures and are not intended to serve as specific procedures for any applications.

Wearshield BU-30

Hardfacing Stick Electrode

Build-up and moderate hardness to resist shock

- Build-up with slightly higher hardness than Wearshield BU
- Machinable deposit for build-up on medium carbon and low alloy materials, or final overlay of medium hardness
- Use on mild, medium carbon, low alloy and high tensile steels
- High operator appeal, with easy restrike and slag removal
- Welds in the flat, horizontal and horizontal vertical (3 o'clock) positions
- Unlimited layers with proper preheat and interpass temperatures and procedures
- Manufactured under a quality system certified to ISO 9001 requirements

Diameters/Packaging

Diameter	4.5 kg (10 lb.) Carton	
	(40 lb. Master)	22.7 kg (50 lb.) Carton
3.2 mm (1/8 in)	221-1081	—
4.0 mm (5/32 in)	221-1082	—
4.8 mm (3/16 in)	—	221-1083

Manufactured in metric diameters, U.S. customary sizes are approximate.

Competitive Products

Stoody®
Buildup

Deposit Composition¹

On Carbon Steel	%C	%Mn	%Si	%Cr	%Mo
1 Layer	.15	.82	1.03	1.23	.48
2 Layers	.16	.87	1.14	1.49	.58

¹ Composition and properties depend upon dilution. Single layer deposit properties depend upon base metal and/or build-up material.

Typical Operating Procedures

Polarity ¹	Current (Amps)		
	3.2 mm (1/8 in)	4.0 mm (5/32 in)	4.8 mm (3/16 in)
DC+	90 - 130	140 - 180	170 - 220
AC	100 - 140	150 - 200	190 - 240

¹ Preferred polarity is listed first.

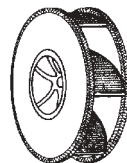
IMPORTANT: SPECIAL VENTILATION AND/OR EXHAUST REQUIRED

Fumes from the normal use of certain hardfacing welding products contain significant quantities of components such as chromium and manganese which can lower the 5.0 mg/m³ maximum exposure guideline for general welding fume.

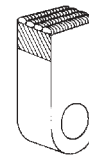
BEFORE USE, READ AND UNDERSTAND THE MATERIAL SAFETY DATA SHEET (MSDS) FOR THIS PRODUCT AND SPECIFIC INFORMATION PRINTED ON THE PRODUCT CONTAINER.

Typical Applications

For Build-up



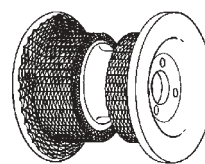
Pump Impellers



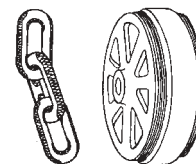
Crusher Hammers

- Shovel and Bucket Lips
- Pump Housings
- Dredge and Shovel Bucket Teeth
- Mill Hammers

For Hardfacing



Tractor Rolls



Links and Idlers

- Crane and Mine Car Wheels
- Trunnions and Shafts
- Gears
- Sprockets
- Clutch Jaws
- Cable Drums
- Churn Bit Points

NOTES: A preheat and interpass temperature of 150 - 260°C (300 - 500°F) is necessary to prevent cracking, especially on large, complex or restrained parts.

For most overlay applications, a drag technique in weaved pads of about 13 mm (1/2 inch) with all three diameter sizes can be used. Stringer beads can be used when welding on edges or around corners.

For ease of machinability, the following procedures should be adopted while welding:

- Preheat temperature should be in the 150 - 260°C (300 - 500°F) range
- Maintain interpass temperature of 150 - 260°C (300 - 500°F)
- Use the largest diameter electrode possible for the application, at the highest current in the typical operating procedure range
- Anneal or normalize after welding. Heat treat after machining

Wearshield ME

Hardfacing Stick Electrode

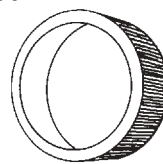
Resists metal-to-earth abrasion

- Provides greater abrasion resistance than Wearshield ABR or Wearshield 44
- Designed for downhand welding and horizontal overlay on vertical surfaces
- Low dilution weld metal provides eutectic mix of chromium carbides and austenite, with limited primary carbides
- High dilution on mild or low alloy steel base metal provides higher toughness and low abrasion resistance
- To be used on carbon and low alloy, austenitic manganese and austenitic stainless steels
- Limited to 4 layers
- Can easily be used with a drag technique for high operator appeal
- Manufactured under a quality system certified to ISO 9001 requirements

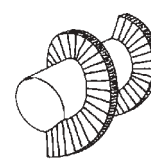
Diameters/Packaging

Diameter	4.5 kg (10 lb.) Carton	
	(40 lb. Master)	22.7 kg (50 lb.) Carton
3.2 mm (1/8 in)	221-1127	221-1335
4.0 mm (5/32 in)	221-1128	221-1401
4.8 mm (3/16 in)	221-1129	221-1402

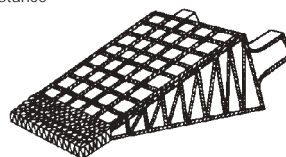
Typical Applications



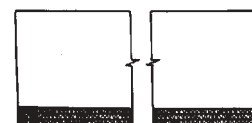
Muller Tires



Augers



Bucket Teeth



Dozer Blades

Competitive Products

Stoody®	McKay®
Stoody 35	Hardalloy 140
Stoody Super Chrome	

Deposit Composition¹

On Carbon Steel	%C	%Mn	%Si	%Cr
1 Layer	2.5	0.17	0.8	27.0
2 Layers	3.0	0.17	1.0	30.5
3 Layers	3.3	0.16	1.1	32.6

¹ Composition and properties depend upon dilution. Single layer deposit properties depend upon base metal and/or build-up material.

Mechanical properties¹

Rockwell Hardness (R _C)		
1 Layer	2 Layers	3 Layers
49	59	59

¹ Composition and properties depend upon dilution. Single layer deposit properties depend upon base metal and/or build-up material.

Typical Operating Procedures

Polarity ¹	Current (Amps)		
	3.2 mm (1/8 in)	4.0 mm (5/32 in)	4.8 mm (3/16 in)
DC+	125 - 175	175 - 250	220 - 300
AC	130 - 170	180 - 220	230 - 270

¹ Preferred polarity is listed first.

IMPORTANT: SPECIAL VENTILATION AND/OR EXHAUST REQUIRED

Fumes from the normal use of certain hardfacing welding products contain significant quantities of components such as chromium and manganese which can lower the 5.0 mg/m³ maximum exposure guideline for general welding fume.

BEFORE USE, READ AND UNDERSTAND THE MATERIAL SAFETY DATA SHEET (MSDS) FOR THIS PRODUCT AND SPECIFIC INFORMATION PRINTED ON THE PRODUCT CONTAINER.

NOTES: Wearshield ME is a heavily coated electrode which burns with a deep cup that permits light dragging of the stick during welding.

Deposits generally check crack except for single layers on thin base metal. Stringer beads produce a consistent crack spacing of about 13-25 mm (1/2-1 inch).

Wide weaves may produce very widely spaced check cracks which can lead to deposit spalling in multiple layers. Weaving is not recommended. For maximum spalling resistance on carbon and low alloy steels, especially in multiple layers, apply a butter layer of Wearshield 15CrMn, Lincore 15CrMn or an austenitic stainless steel electrode such as Blue Max 309/309L AC-DC, before applying Wearshield ME.

Wearshield 44

Hardfacing Stick Electrode

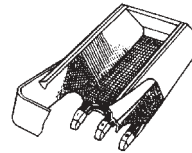
Resists abrasion and impact

- Moderate hardness to resist abrasion with impact up to 600°C (1100°F)
- Higher alloy results in improved spalling resistance than Wearshield ABR, with two or more layers
- Can be used on carbon steels, low alloy steels, cast irons, austenitic

manganese steels and austenitic stainless steels

- High operator appeal, with easy restrike, and slag removes very easily
- Welds in the flat, horizontal and horizontal vertical (3 o'clock) positions
- Limited to 4 layers
- Manufactured under a quality system certified to ISO 9001 requirements

Typical Applications



Buckets



Chain Links

- Rolling Mill Guides
- Pulleys
- Ingot Tongs
- Scrapers
- Blades
- Hammers

Diameters/Packaging

Diameter	4.5 kg (10 lb.) Carton 40 lb. Master
3.2 mm (1/8 in)	221-1084
4.0 mm (5/32 in)	221-1085
4.8 mm (3/16 in)	221-1086

Competitive Products

Stoody®	McKay®
19, 21, 31, 33	Hardalloy 40TIC

Deposit Composition¹

On Carbon Steel	%C	%Mn	%Si	%Cr	%Mo
1 Layer	1.56	.17	.77	19.5	1.92
2 Layers	1.96	.16	.87	24.2	2.48
4 Layers	2.21	.18	.93	27.1	2.86

¹ Composition and properties depend upon dilution. Single layer deposit properties depend upon base metal and/or build-up material.

Typical Operating Procedures

Polarity ¹	Current (Amps)		
	3.2 mm (1/8 in)	4.0 mm (5/32 in)	4.8 mm (3/16 in)
DC+	120 - 160	150 - 220	190 - 270
AC	130 - 160	180 - 220	220 - 260

¹ Preferred polarity is listed first.

Mechanical Properties¹

Rockwell Hardness (R _C)		
1 Layer	2 Layers	4 Layers
42	47	48

¹ Composition and properties depend upon dilution. Single layer deposit properties depend upon base metal and/or build-up material.

NOTES: Wearshield 44 operates best on DC+ polarity, though it also welds well on AC. It is designed for welding in the flat and horizontal positions.

Wearshield 44 electrodes burn with a deep cup, which permits light dragging of the electrode during welding. The arc is steady with little spatter in the DC+ mode. During AC welding, the arc is also steady, but the usable current range is reduced, and the melt-off rates are reduced at any current.

Since the amount of dilution does not affect the microstructure, the impact properties and abrasion resistance will be similar from the first layer to the last.

On cast irons, Wearshield 44 deposits usually check crack. These check cracks should be closely spaced to prevent spalling. This is obtained by using stringer beads.

IMPORTANT: SPECIAL VENTILATION AND/OR EXHAUST REQUIRED

Fumes from the normal use of certain hardfacing welding products contain significant quantities of components such as chromium and manganese which can lower the 5.0 mg/m³ maximum exposure guideline for general welding fume.

BEFORE USE, READ AND UNDERSTAND THE MATERIAL SAFETY DATA SHEET (MSDS) FOR THIS PRODUCT AND SPECIFIC INFORMATION PRINTED ON THE PRODUCT CONTAINER.

Wearshield MM

Hardfacing Stick Electrode

Resists metal-to-metal wear and mild abrasion

- Provides a martensitic wear-resistant steel deposit on carbon steel or low alloy steel parts
- Designed for all position welding except vertical-down
- The weld metal is heat treatable – can be tempered to soften and toughen it, annealed to make it machinable, and flame-hardened after annealing.
- A shorter arc is preferred when welding with Wearshield MM.
- Restrike is easy, slag removes very easily and cleanly, and spatter is low, which gives it a high operator appeal.
- Preheat and interpass temperatures of 149° to 260°C (300° to 500°F) are usually suitable for avoiding cracking. Temperatures of 316°C (600°F) or higher may be necessary in cases of severe restraint and/or heavy thickness.
- It is important to soak the preheat through the weldment before beginning.
- Manufactured under a quality system certified to ISO 9002 requirements.

After Welding

After welding is completed, the weldment should be covered and allowed to cool very slowly to near room temperature. Then, once cooled, postweld heat treatment can be used to temper martensite and toughen the deposit.

As deposited, Wearshield MM weld metal is not machinable, although the deposit can be shaped by grinding.

Tempering to toughen the deposit is typically accomplished at about 427°C (800°F), which will leave the weld metal near 50 Rockwell C. It can be annealed by heating to about 760°C (1400°F) for several hours, followed by slow cooling. Its hardness will then be less than 30 Rockwell C. In this condition, it can be easily machined.

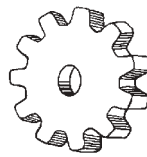
To fully reharden, it is best to reheat to about 954°C (1750°F) and hold for several hours to dissolve all carbides and homogenize the steel. Then it can be water or oil quenched (thin sections can be air cooled) to harden, followed by tempering.

Flame hardening is also possible after anneal, though full hardness may not be achieved due to inability to homogenize the steel in the brief high temperature part of the flame hardening cycle.

Typical Applications



Cable Sheaves



Sprockets

- Crane Wheels
- Skip Wheels
- Cams
- Gear Teeth
- Transfer Tables

Diameters 1/Packaging

Diameter	40/10 Ct. (EDO)	50 lb. Carton
3.2 mm (1/8 in)	221-9517	221-9519
4.0 mm (5/32 in)	221-9518	221-9520
4.8 mm (3/16 in)	—	221-9521

¹Manufactured in metric diameters, U.S. customary sizes approximate.

Mechanical Properties¹

1 Layer	Rockwell Hardness (Rc)		Deposit per Pound of Electrode
	2 or more Layers		
45 - 55	52 - 58	2.2 cubic in	

¹ Composition and properties depend upon dilution. Single layer deposit properties depend upon base metal and/or build-up material.

Competitive Products

Stoody®	McKay®
Multipass 22	Hardalloy 58

Recommended Procedures (Approximate Amps)

Polarity	3.2 mm (1/8 in)	4.0 mm (5/32 in)	4.8 mm (3/16 in)
AC or DC+	90 - 30	140 - 180	170 - 220

Deposit Composition¹

On Carbon Steel	%C	%Mn	%Si	%Cr	%Mo	%W
2 or more Layers	0.55	0.5	1.4	4.5	0.5	0.5

¹ Composition and properties depend upon dilution. Single layer deposit properties depend upon base metal and/or build-up material.

IMPORTANT: SPECIAL VENTILATION AND/OR EXHAUST REQUIRED
Fumes from the normal use of these products contain significant quantities of chromium compounds which may be harmful.

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Lincore 33

Hardfacing Self-Shielded, Flux-Cored Wire

Build-up prior to hardfacing and metal-to-metal wear

- Self-shielded, flux-cored wire with tough machinable deposit for build-up or final overlay for metal-to-metal wear
- Use for build-up of steel mill parts such as rougher couplings and under harder materials
- For semiautomatic and automatic welding build-up
- Build-up deposit on carbon steel and low alloy steel base metals
- It is ideal for rebuilding worn parts to near final dimensions before applying final hardfacing layers which are more wear resistant
- Welds in the flat, horizontal and horizontal vertical (3 o'clock) positions
- The number of layers is unlimited
- Manufactured under a quality system certified to ISO 9001 requirements

Diameters/Packaging

Diameter	10 kg (22 lb.) Readi-Reel	22.7 kg (50 lb.) Coil
1.6 mm (1/16 in)	221-1368	—
2.0 mm (5/64 in)	—	221-1369
2.8 mm (7/64 in)	—	221-1370

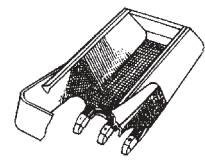
Competitive Products

Stoody®	McKay®
Super Buildup	242-0

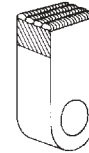
Typical Applications



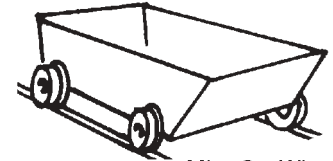
Tractor Rolls and Idlers



Shovel Parts



Mill and Crusher Hammers



Mine Car Wheels

- Dredge Pumps
- Pulverizer Plows
- Cable Drums
- Gears
- Trunnions
- Shafts

Deposit Composition¹

%	3 Layers .045 and 1/16	3 Layers 5/64 and 7/64
	C	.11 - .18
Mn	1.8 - 2.1	2.1 - 2.3
Si	.50 - .75	.45 - .60
Al	1.6 - 1.9	1.45 - 1.70
Cr	1.2 - 1.4	1.1 - 1.4
S	.002 - .005	.002 - .005
P	.004 - .012	.004 - .008

¹ Composition and properties depend upon dilution. Single layer deposit properties depend upon base metal or build-up material.

Mechanical properties¹

No. of Layers	As-welded	Rockwell Hardness (R _c)	
		Work Hardened	Flame Hardened Water Quenched
1	14 - 30	28 - 34	—
2	26 - 32	32 - 36	38 - 42
3	25 - 34	35 - 38	—

¹ Composition and properties depend upon dilution. Single layer deposit properties depend upon base metal or build-up material.

Typical Operating Procedures

Diameter, Polarity ESO mm (in) Wire Weight	Wire Feed Speed m/min (in/min)	Arc Voltage (Volts)	Approx. Current (Amps)	Deposition Rate kg/hr (lbs/hr)
.045 in, DC+	5.1 (200)	25	80	1.5 (3.3)
45 (1 3/4) .342 lbs/1000 in	8.9 (350) 12.7 (500)	28 31	130 150	2.7 (6.0) 3.9 (8.7)
1/16 in, DC+	3.8 (150)	26	125	2.1 (4.6)
45 (1 3/4) .633 lbs/1000 in	6.4 (250) 8.9 (350)	29 32	180 225	3.5 (7.8) 5.0 (11.1)
5/64 in, DC+	3.2 (125)	23	200	3.1 (6.9)
50 (2) 1.04 lbs/1000 in	5.1 (200) 6.4 (250)	27 29	290 325	4.9 (10.8) 6.1 (13.4)
7/64 in, DC+	3.4 (135)	26	360	5.7 (12.6)
65 (2 1/2) 1.92 lbs/1000 in	4.4 (175) 6.0 (235)	28 30	420 470	7.3 (16.0) 9.6 (21.1)

IMPORTANT: SPECIAL VENTILATION AND/OR EXHAUST REQUIRED

Fumes from the normal use of certain hardfacing welding products contain significant quantities of components such as chromium and manganese which can lower the 5.0 mg/m³ maximum exposure guideline for general welding fume.

BEFORE USE, READ AND UNDERSTAND THE MATERIAL SAFETY DATA SHEET (MSDS) FOR THIS PRODUCT AND SPECIFIC INFORMATION PRINTED ON THE PRODUCT CONTAINER.

Lincore 60-0

Hardfacing Self-Shielded, Cored Wire

Resists severe abrasion and moderate impact

- Self-shielded, cored wire with higher alloy levels than Lincore 50
- Resists higher levels of abrasion with moderate impact
- Can be used at temperatures up to 700°C (1300°F)
- For automatic and semiautomatic operation
- To be used on carbon, low alloy, manganese and stainless steels and cast iron. Deposits check crack
- May be used with 803 neutral flux to improve bead shape and minimize smoke
- Welds in the flat, horizontal and horizontal vertical (3 o'clock) positions
- Deposit is limited to two layers
- Manufactured under a quality system certified to ISO 9001 requirements

Deposit Composition¹

%	2 Layers	2 Layers
	Open Arc	Under 803 Flux
C	4.2	4.8
Mn	1.6	4.1
Si	1.3	1.2
Al	0.6	0.2
Cr	25.4	25.8

¹ Composition and properties depend upon dilution. Single layer deposit properties depend upon base metal or build-up material.

Competitive Products

Stoody®	McKay®
100HC	255-0
101HC	

Mechanical properties¹

Rockwell Hardness (R _c)
55 - 60

¹ Composition and properties depend upon dilution. Single layer deposit properties depend upon base metal or build-up material.

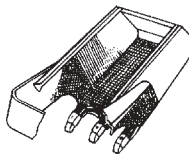
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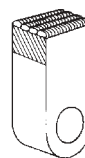
NOTE: Deposit thickness limit is two layers unless high travel speed is used to obtain very closely spaced check cracks. Many layers can be used with high travel speed and small bead sizes to ensure close spaced check cracks.

Lincore 60-S/803 deposit cross cracks (commonly called cross-checking) on cooling. This is desirable, since cross-cracking of the deposit relieves cooling stresses and prevents spalling.

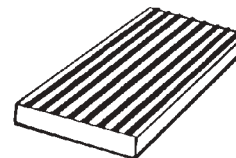
Typical Applications



Bucket Lips



Crusher Hammers



Ore Chutes

- Dozer blades
- Ripper teeth

Diameters/Packaging

Diameter	10 kg (22 lb.)	22.7 kg (50 lb.)
	Readi-Reel	Coil
1.6 mm (1/16 in)	221-1364	—
2.0 mm (5/64 in)	—	221-1365
3.0 mm (.120 in)	—	221-1366
2.8 mm (7/64 in)	—	221-1116

Typical Operating Procedures

Diameter, Polarity ESO mm (in) Wire Weight	Wire Feed Speed m/min (in/min)	Arc Voltage ² (Volts)	Approx. Current (Amps)	Deposition Rate kg/hr (lbs/hr)
.045, DC+	5.1 (200)	21	125	1.9 (4.1)
20 (3/4)	10.2 (400)	25	185	3.7 (8.2)
.364 lbs/1000 in	12.7 (500)	27	210	4.7 (10.3)
1/16, DC+	5.1 (200)	28	240	3.4 (7.6)
22 (7/8)	7.6 (300)	31	300	5.1 (11.2)
.664 lbs/1000 in	11.4 (450)	33	350	7.5 (16.6)
5/64, DC+	3.2 (125)	26	250	3.4 (7.4)
32 (1 1/4)	5.1 (200)	30	350	5.4 (12.0)
1.05 lbs/1000 in	6.4 (250)	32	400	6.9 (15.1)
7/64, DC+	1.9 (75)	27	250	3.4 (7.4)
30 (1 1/8)	3.2 (125)	30	340	5.4 (11.9)
1.87 lbs/1000 in	4.4 (175)	32	420	7.5 (16.5)
.120, DC+	1.3 (50)	28	215	2.6 (5.8)
30 (1 1/8)	7.6 (300)	36	580	14.7 (32.5)
2.23 lbs/1000 in	17.8 (700)	42	900	34.5 (76.0)
Under Flux				
7/64, DC+	2.5 (100)	30	295	4.4 (9.6)
30 (1 1/8)	3.2 (125)	32	340	5.4 (11.9)
1.87 lbs/1000 in	4.4 (175)	34	420	7.5 (16.5)

² Above voltages are starting points and may be adjusted as required.

Lincore 50

Hardfacing Self-Shielded, Cored Wire

Resists abrasion and moderate impact

- Self-shielded, cored wire for abrasion resistance with moderate impact
- Larger size diameters can be used in the submerged arc process
- For semiautomatic and automatic welding
- Can be used on low carbon, medium carbon, low alloy, manganese and stainless steels
- Welds in the flat, horizontal and horizontal vertical (3 o'clock) positions
- Limited to 4 layers
- The 2.0 and 2.8 mm (5/64 inch and 7/64 inch) diameters may be used with 801, 803 or 860 flux to improve bead appearance and to minimize smoke
- The 1.1 and 1.6 mm (.045 inch and 1/16 inch) diameters are especially suitable overlaying thin gauge materials, building up edges, horizontal stringer beads on sloped surfaces, or where minimum heat input is required
- Manufactured under a quality system certified to ISO 9001 requirements

Typical Applications

- Ore chute baffles
- Muller plows and tires
- Coal mining cutting teeth
- Conveyor buckets
- Screw flights
- Drill pipe collars
- Rolling mill guides

Diameters/Packaging

Diameter	10 kg (22 lb.)	22.7 kg (50 lb.)
	Readi-Reel	Coil
1.6 mm (1/16 in)	221-1371	—
2.0 mm (5/64 in)	—	221-1372
2.8 mm (7/64 in)	—	221-1373

Competitive Products

Stoody®	McKay®
117	240-O
121	244-O

Mechanical properties¹

Rockwell Hardness (R _c)	1 Layer	2 Layers	3 Layers
On Mild Steel	34 - 37	44 - 48	48 - 52
On .50% Carbon Steel	41 - 43	47 - 50	50 - 53
On Austenitic Mn Steel	—	43 - 45	48 - 50
Under 801 Flux	38 - 43	47 - 52	48 - 56

¹ Composition and properties depend upon dilution. Single layer deposit properties depend upon base metal or build-up material.

Typical Operating Procedures

Diameter, Polarity ESO mm (in) Wire Weight	Wire Feed Speed m/min (in/min)	Approx. Arc Voltage ² (Volts)	Approx. Current (Amps)	Deposition Rate kg/hr (lbs/hr)
1/16 in, DC+	3.8 (150)	22 - 24	175	2.7 (5.9)
25 (1)	8.4 (350)	29 - 31	325	6.2 (13.6)
.720 lbs/1000 in	11.4 (450)	32 - 34	365	7.9 (17.5)
5/64 in, DC+	3.2 (125)	27	210	3.4 (7.4)
32 (1 1/4)	5.1 (200)	31	325	5.4 (11.9)
1.10 lbs/1000 in	6.4 (250)	33	380	6.8 (14.9)
7/64 in, DC+	2.0 (80)	26	315	3.9 (8.6)
32 (1 1/4)	2.5 (100)	27	375	4.9 (10.7)
2.11 lbs/1000 in	3.3 (130)	29	450	6.4 (14.0)
7/64 in, DC+	2.5 (100)	27	315	4.9 (10.7)
65 (2 1/2)	3.3 (130)	29	370	6.4 (14.0)
2.11 lbs/1000 in	4.4 (175)	31	450	8.6 (19.0)
Under Flux				
7/64 in, DC+	2.5 (100)	29	400	5.2 (11.4)
32 (1 1/4)	3.0 (120)	30	450	6.2 (13.7)
2.11 lbs/1000 in	4.4 (175)	33	540	9.1 (20.0)

² Above voltages are starting points and may be adjusted as required.

Deposit Composition¹

%	Open Arc		Under Flux		
	.045 and 1/16	5/64 and 7/64	(801) 5/64 and 7/64	(803) 5/64 and 7/64	(860) 5/64 and 7/64
C	2.4	2.0	2.5	2.5	2.5
Mn	1.3	0.9	1.1	1.8	2.0
Si	1.0	1.0	1.3	1.2	1.7
Al	0.6	0.6	0.4	0.2	0.2
Cr	11.4	9.2	10.1	11.1	11.0
Mo	—	0.5	0.5	0.5	0.5

¹ Composition and properties depend upon dilution. Single layer deposit properties depend upon base metal or build-up material.

IMPORTANT: SPECIAL VENTILATION AND/OR EXHAUST REQUIRED
Fumes from the normal use of certain hardfacing welding products contain significant quantities of components such as chromium and manganese which can lower the 5.0 mg/m³ maximum exposure guideline for general welding fume.

BEFORE USE, READ AND UNDERSTAND THE MATERIAL SAFETY DATA SHEET (MSDS) FOR THIS PRODUCT AND SPECIFIC INFORMATION PRINTED ON THE PRODUCT CONTAINER.

Lincore 35-S

Hardfacing Sub-Arc Wire

Resists rolling, sliding and metal-to-metal wear

- Metal-cored wire for rolling and sliding metal-to-metal wear with moderate impact and abrasion
- Use on crane and mine car wheels, rollers, and shafts
- Can be used as build-up on continuous caster rolls prior to stainless overlay
- Metal-cored hardfacing wire for submerged arc applications
- For automatic and semiautomatic operation
- Recommended flux is 801. Can also be used with 802 and 880
- To be used on mild steel and low alloy steel parts
- Recommended as final overlay where medium hardness and good machinability are required
- Good resistance to cross checking
- Welds in flat, horizontal and circumferential positions only
- Deposit thickness is unlimited
- Lincore 35-S with 801 flux provides excellent resistance to impact and cold deformation
- Manufactured under a quality system certified to ISO 9001 requirements

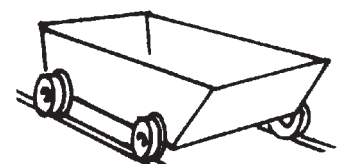
Typical Applications

For Build-up



Idlers

For Hardfacing



Mine Car Wheels

- Tractor Rollers
- Trunnions
- Crane Wheels
- Caster Rolls

- Track Rails
- Shafts
- Bearing Journals

Diameters/Packaging

Diameter	22.7 kg (50 lb.) Coil	136 kg (600 lb.) Speed Feed Drum
2.4 mm (3/32 in)	221-9527	221-9529
3.2 mm (1/8 in)	221-1105	221-1106
4.0 mm (5/32 in)	221-9528	221-9530

Competitive Products

Stoody®	McKay®
107	242-S

Deposit Composition¹

%	Under 801 Flux
C	.19
Mn	1.7
Si	.60
Cr	2.0
Mo	.50

¹ Composition and properties depend upon dilution. Single layer deposit properties depend upon base metal or build-up material.

Mechanical Properties¹

Rockwell Hardness (R _C)	39
-------------------------------------	----

¹ Composition and properties depend upon dilution. Single layer deposit properties depend upon base metal or build-up material.

Typical Operating Procedures

Diameter, Polarity ESO mm (in) Process	Wire Feed Speed m/min (in/min)	Arc Voltage ² (Volts)	Approx. Current (Amps)	Deposition Rate kg/hr (lbs/hr)
3/32 in, DC+	1.3 (50)	25	230	2.3 (5.0)
38 (1 1/2)	2.5 (100)	25	350	4.1 (9.0)
Under 801 Flux	3.8 (150)	25	460	5.9 (13.0)
1/8 in, DC+	1.3 (50)	28	340	3.6 (8.0)
40 (1 5/8)	2.5 (100)	28	500	7.5 (16.5)
Under 801 Flux	3.8 (150)	28	660	11.3 (25.0)
5/32 in, DC+	1.3 (50)	28	480	5.9 (13.0)
40 (1 5/8)	1.9 (75)	28	620	8.4 (18.5)
Under 801 Flux	2.5 (100)	28	750	10.9 (24.0)

² Above voltages are starting points and may be adjusted as required.

IMPORTANT: SPECIAL VENTILATION AND/OR EXHAUST REQUIRED
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Lincore 40-S

Hardfacing Sub-Arc Wire

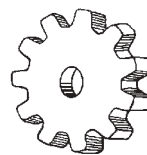
Resists rolling, sliding and metal-to-metal wear

- Metal-cored wire designed for rebuilding heavy equipment undercarriages
- Resists metal-to-metal wear in rolling and sliding applications
- Subarc tubular wire containing metal alloys and deoxidizers within the core
- Full automatic is recommended
- Recommended flux is 801; can also be used with 802 or 880 (801 and 802 standard flux are not sized for semiautomatic applications; however, they can be ordered in special sizing.)
- If desired, deposit can be made tougher with reduced hardness levels by heat treating
- Use on carbon and low alloy steels
- Improved puddle control on roundabout welding
- Easy slag removal and good resistance to cross checking
- Welds in flat, horizontal and circumferential positions only
- Limited to 4 layers maximum
- Deposits can be machined and hot forged
- Manufactured under a quality system certified to ISO 9001 requirements

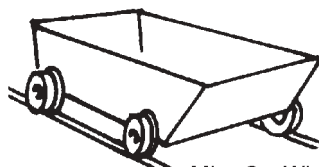
Typical Applications



Idlers



Drive Sprockets



Mine Car Wheels

Competitive Products

Stoody®	McKay®
105B/105	242-S

Deposit Composition¹

%	Under 801 Flux
C	0.12
Mn	2.75
Cr	3.30
Si	.50
Mo	0.85

¹ Composition and properties depend upon dilution. Single layer deposit properties depend upon base metal or build-up material.

Diameters/Packaging

Diameter	22.7 kg (50 lb.) Coil	136 kg (300 lb.) Speed Feed Drum	136 kg (300 lb.) Speed Feed Reel	227 kg (600 lb.) Speed Feed Drum
3.2 mm (1/8 in)	221-1367	221-9532	221-9531	221-1112

Typical Operating Procedures

Diameter, Polarity ESO mm (in) Process	Wire Feed Speed m/min (in/min)	Arc Voltage ¹ (Volts)	Approx. Current (Amps)	Deposition Rate kg/hr (lbs/hr)
1/8 in, DC+	1.7 (65)	27	330	4.4 (9.6)
3/2 (1 1/4)	2.3 (90)	28	425	5.9 (12.9)
Under 801 Flux	3.0 (120)	29	525	7.8 (17.3)
1/8 in, DC+	2.0 (80)	29	345	5.2 (11.5)
65 (2 1/2)	2.8 (110)	30	425	7.3 (16.0)
Under 801 Flux	3.7 (145)	31	500	9.4 (20.8)
1/8 in, DC+	2.5 (100)	31	375	6.5 (14.3)
90 (3 1/2)	3.3 (130)	32	435	8.6 (18.9)
Under 801 Flux	4.6 (180)	33	520	11.9 (26.1)

¹ Above voltages are starting points and may be adjusted as required.

Mechanical Properties¹

Rockwell Hardness (R _c) 3 or More Layers after 2 Hours Post Weld Heat Treat @ °C (°F)				
427 (800)	482 (900)	538 (1000)	593 (1100)	649 (1200)
40	39	37	28	21

¹ Composition and properties depend upon dilution. Single layer deposit properties depend upon base metal or build-up material.

IMPORTANT: SPECIAL VENTILATION AND/OR EXHAUST REQUIRED
Fumes from the normal use of certain hardfacing welding products contain significant quantities of components such as chromium and manganese which can lower the 5.0 mg/m³ maximum exposure guideline for general welding fume.

BEFORE USE, READ AND UNDERSTAND THE MATERIAL SAFETY DATA SHEET (MSDS) FOR THIS PRODUCT AND SPECIFIC INFORMATION PRINTED ON THE PRODUCT CONTAINER.

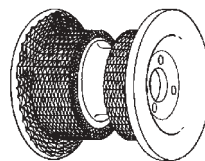
Lincore 42-S

Hardfacing Sub-Arc Wire

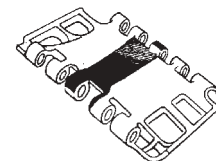
Resists rolling, sliding and metal-to-metal wear

- Improved crack resistance and toughness
- Intended primarily for overlaying tractor undercarriage components such as tractor rollers, tractor idlers and track pads
- Metal-cored hardfacing wire for submerged arc applications
- For automatic and semiautomatic operation
- Designed for use with 801. Can also be used with 802 or 880 flux
- For applications that require a machinable deposit that is resistant to rolling and sliding wear
- Good resistance to cross checking
- Welds in flat, horizontal and circumferential positions only
- Can be deposited in multiple layers
- To be used on carbon and low alloys steels
- Manufactured under a quality system certified to ISO 9001 requirements

Typical Applications



Tractor Rollers



Tractor Idlers

Track Pads

Diameters/Packaging

Diameter	22.7 kg (50 lb.) Coil	136 kg (300 lb.) Speed Feed Drum	272 kg (600 lb.) Speed Feed Drum
3.2 mm (1/8 in)	221-1039	221-9533	221-1108

Competitive Products

Stoody®	McKay®
Thermaclad 42	242-S

Mechanical properties¹

Rockwell Hardness (R _c) 1 Layer	40
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¹ Composition and properties depend upon dilution. Single layer deposit properties depend upon base metal or build-up material.

Typical Operating Procedures

Diameter, Polarity ESO mm (in) Process	Wire Feed Speed m/min (in/min)	Arc Voltage ¹ (Volts)	Approx. Current (Amps)	Deposition Rate kg/hr (lbs/hr)
3/32 in, DC+	1.9 (75)	27	295	3.2 (7.1)
20 (3/4)	3.2 (125)	29	440	5.3 (11.7)
Under 801 Flux	4.4 (175)	31	525	7.3 (16.2)
3/32 in, DC+	1.9 (75)	27	275	3.4 (7.6)
20 (3/4)	3.2 (125)	29	375	5.4 (12.0)
Under 801 Flux	4.4 (175)	31	480	7.4 (16.3)
1/8 in, DC+	1.3 (50)	27	350	3.8 (8.4)
320 (3/4)	2.5 (100)	28	565	7.5 (16.5)
Under 801 Flux	3.2 (125)	29	675	9.3 (20.5)
1/8 in, DC+	3.2 (50)	27	325	3.8 (8.3)
40 (1 5/8)	2.5 (100)	28	510	7.5 (16.6)
Under 801 Flux	3.2 (125)	29	605	9.4 (20.8)

¹ Above voltages are starting points and may be adjusted as required.

Deposit Composition¹

%	1 Layer	2 Layers	4 Layers	6 Layers
1/8 in Diameter (3/4 in ESO) under 801 Flux				
C	.14	.12	.11	.10
Mn	2.13	2.70	3.33	3.51
Si	.34	.39	.44	.46
Cr	1.45	2.22	2.95	3.20
Mo	.43	.66	.84	.80
1/8 inch Diameter (1 5/8 inch ESO) under 801 Flux				
C	.14	.13	.13	.13
Mn	2.49	3.05	3.41	3.55
Si	.33	.42	.47	.51
Cr	2.02	2.96	3.15	3.31
Mo	.60	.84	.99	1.06

¹ Composition and properties depend upon dilution. Single layer deposit properties depend upon base metal or build-up material.

IMPORTANT: SPECIAL VENTILATION AND/OR EXHAUST REQUIRED

Fumes from the normal use of certain hardfacing welding products contain significant quantities of components such as chromium and manganese which can lower the 5.0 mg/m³ maximum exposure guideline for general welding fume.

BEFORE USE, READ AND UNDERSTAND THE MATERIAL SAFETY DATA SHEET (MSDS) FOR THIS PRODUCT AND SPECIFIC INFORMATION PRINTED ON THE PRODUCT CONTAINER.

Lincore 30-S

Hardfacing Wire

Moderate hardness to resist metal-to-metal wear

- Metal-cored hardfacing wire for submerged arc applications
- or automatic and semiautomatic operation
- Recommended flux is 801, but 802 and 860 can also be used (860 flux is recommended for semiautomatic operation)
- To be used on mild steel and low alloy steel parts
- Recommended as final overlay where medium hardness and good machinability are required
- With 801 flux provides excellent resistance to impact and cold deformation
- Manufactured under a quality system certified to ISO 9002 requirements

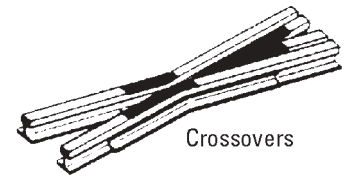
Typical Applications

For Build-up

For Hardfacing



Idlers



Crossovers

- Tractor rollers
- Trunnions
- Crane wheels
- Track rails
- Shafts
- Idlers

Recommended Equipment

Power Sources

Constant voltage or constant current power sources are recommended

Semiautomatic Wire Feeders

LN-7, LN-8, LN-9

Automatic Wire Feeders

NA-3, NA-5

Mechanical Properties¹

Rockwell Hardness (Rc) 6 Layers	
Under 801/802	Under 860
27	26

¹ Typical all weld metal on mild steel

Postweld Heat Treatment after 2 Hours ¹					
@ °C (°F)	427 (800)	482 (900)	538 (1000)	593 (1100)	649 (1200)
Rc	23.5	24.3	23.1	21.7	19.9

¹ Generally, longer postweld heat treatment will reduce hardness by 1 to 3 points.

Deposit Composition¹

Lincore 30-S	%C	%Mn	%Si	%Mo
Six layers under 801 and 802	.11	2.50	.40	.50
Six layers under 860	.11	2.70	.60	.50

¹ Typical all weld metal on mild steel

Recommended Procedures

Wire Polarity ESO mm (inches) Process	Wire Feed Speed m/min. (in/min.)	Arc Voltage ¹ (Volts)	Approx. Current (Amps)	Deposition Rate kg/hr. (lbs/hr.)
3/32 in, DC+	1.5 (60)	26	220	2.7 (6.0)
38 (1 1/2 in)	3.0 (120)	27	360	5.2 (11.5)
Subarc under 801 flux	4.6 (180)	28	500	7.7 (17.0)
1/8 in, DC+	1.3 (50)	27	310	3.4 (7.5)
41 (1 5/8 in)	2.0 (80)	28	450	6.4 (14.0)
Subarc under 801 flux	2.8 (110)	28	600	9.1 (20.0)

¹ Arc voltage should not vary more than 2 to 3 Volts in either direction to obtain satisfactory procedures.

Lincore 30-S has good resistance to cross checking and is not restricted with regard to deposit thickness. Special precautions, however, should be taken with any buildup or any hardfacing product on applications that are inherently crack sensitive. These applications include the surfacing of high carbon or alloy steels, previously surfaced parts and highly stressed parts. The surfacing of heavy cylinders, massive parts and parts having complex shapes would all be examples of applications producing high internal stresses.

These applications may require one or more of the following:

- Higher preheat temperatures of 204° to 260° C (400° to 500° F)
- Higher interpass temperatures
- Controlled slow cooling between passes and/or layers
- Stress relieving at 428° to 482° C (800° to 900° F) after every 3/8 to 1/2 inch of buildup. Stress relieving at temperatures in excess of 482° C (900° F) will result in a softening of the weld deposit.
- Minimize layer thickness

IMPORTANT: SPECIAL VENTILATION AND/OR EXHAUST REQUIRED

Fumes from the normal use of certain hardfacing welding products contain significant quantities of components such as chromium and manganese which can lower the 5.0 mg/m³ maximum exposure guideline for general welding fume.

BEFORE USE, READ AND UNDERSTAND THE MATERIAL SAFETY DATA SHEET (MSDS) FOR THIS PRODUCT AND SPECIFIC INFORMATION PRINTED ON THE PRODUCT CONTAINER.

Hardfacing Neutral Fluxes

- Neutral fluxes are those which will not produce any significant changes in the all weld metal composition as a result of a large change in the arc voltage, and thus the arc length

801

- Provides smooth beads and excellent slag removal
- Fast-freezing
- Use with Lincore 20, 30-S, 35-S, 40-S, 42-S, 4130, 8620, 410, 410NiMo, 420 and 96S

802

- Excellent hot slag removal with wire containing columbium, vanadium or very high chrome levels
- Use with Lincore 102W, 423L, 423Cr and 102HC

880

- Can be used in applications similar to 801 and 802 and may improve slag removal

Packaging

Product Name	22.5 kg (50 lb.) Bag	204 kg (450 lb.) Steel Drum	249 kg (550 lb.) Steel Drum
Neutral Fluxes			
801	221-9534		221-9535
802	221-9536	221-9538	
880	221-1142		221-1143

NOTE: Deposit carbon, alloy content and hardness depend upon the ratio of flux melted to wire melted.

High voltage promotes high carbon and alloy contents, while low voltage promotes lower carbon and alloy content.

Red Baron 308L MR

AWS: E308L-16
Stainless Steel Stick Electrode

Low carbon version of Red Baron 308/308H MR, providing better resistance to intergranular corrosion than the higher carbon deposits

- Distinctive red coating is uniquely formulated for outstanding resistance to moisture pickup and starting porosity
- Excellent for all-position welding, except vertical down
- Controlled ferrite content in weld deposit for maximum crack resistance
- Excellent slag removal, often self-peeling on downhand and horizontal welds
- Lot control numbers printed on each electrode
- Manufactured under a quality system certified to ISO 9001 requirements

Typical Applications

- A 20-10 chromium-nickel grade coated electrode, for joining the more common austenitic stainless steels
- Type 302, 304 and 308 stainless steels
- A743 and A744 Type CF-8 cast materials

Conformance

AWS A5.4	E308L-16
ASME SFA-5.4	E308L-16
ABS	E308L-16
Military	MIL-308L-16

Diameters/Packaging

Diameter	3.6 kg (8 lb.) Easy Open Cans (48 lb. Master)	4.5 kg (10 lb.) Easy Open Cans (60 lb. Master)
2.4 mm (3/32 in)	221-1319	—
3.2 mm (1/8 in)	—	221-1125
4.0 mm (5/32 in)	—	221-1320
4.8 mm (3/16 in)	—	221-1321

Mechanical Properties¹

	As Welded per AWS A5.4			
	Yield Strength MPa (PSI)	Tensile Strength MPa (PSI)	Elongation (%)	Ferrite No.
AWS Requirements				
AWS E308L-16	—	517 (75,000) min.	35 min.	—
Test Results				
Red Baron 308L MR	372 - 421 (54,000 - 61,000)	538 - 593 (78,000 - 86,000)	50 - 55	8 - 9

¹ Typical all weld metal

Deposit Composition¹

	%C	%Cr	%Ni	%Mo	%Mn	%Si	%S	%P	%Cu
AWS Requirements	.04 max.	18.0 - 21.0	9.0 - 11.0	.75 max.	0.5-2.5	.90 max.	.03 max.	.04 max.	.75 max.
Test Results	.02 - .03	19.5 - 19.8	7.7 - 10.3	.04 - .13	0.6 - 0.9	.29 - .36	.017	.030	.10

¹ Typical all weld metal

Typical Operating Procedures

Polarity	Current (Amps)			
	2.4 mm (3/32 in)	3.2 mm (1/8 in)	4.0 mm (5/32 in)	4.8 mm (3/16 in)
DC+	40 - 70	60 - 100	90 - 140	120 - 185

Red Baron 309/309L MR

AWS: E309-16, E309L-16
Stainless Steel Stick Electrode

Stick electrode designed for joining more highly alloyed austenitic stainless steels

- Distinctive red coating is uniquely formulated for outstanding resistance to moisture pickup and starting porosity
- High chromium level that improves corrosion and oxidation resistance
- Good for all-position welding, except vertical down
- Controlled ferrite content in weld deposit for maximum crack resistance
- Excellent slag removal, often self-peeling on downhand and horizontal welds
- Lot control numbers printed on each electrode
- Manufactured under a quality system certified to ISO 9001 requirements

Typical Applications

- A 24-13 chromium-nickel grade coated electrode, used for welding high alloy austenitic steels
- Excellent choice for joining stainless steels to carbon or low alloy steels

Typical Operating Procedures

Polarity	Current (Amps)			
	2.4 mm (3/32 in)	3.2 mm (1/8 in)	4.0 mm (5/32 in)	4.8 mm (3/16 in)
DC+	40 - 70	60 - 100	90 - 140	120 - 185

Conformance

AWS A5.4	E309-16, E309L-16
ASME SFA-5.4	E309-16, E309L-16
ABS	E309-16, E309L-16
Military	MIL-308-16

Diameters/Packaging

Diameter	3.6 kg (8 lb.) Easy Open Cans (48 lb. Master)	4.5 kg (10 lb.) Easy Open Cans (60 lb. Master)
2.4 mm (3/32 in)	221-1322	—
3.2 mm (1/8 in)	—	221-1323
4.0 mm (5/32 in)	—	221-1324
4.8 mm (3/16 in)	—	221-1325

Mechanical Properties¹

	As Welded per AWS A5.4			
	Yield Strength MPa (PSI)	Tensile Strength MPa (PSI)	Elongation (%)	Ferrite No.
AWS Requirements				
E309-16, 309L-16	—	552 (80,000) min.	30 min.	—
Test Results				
Red Baron 309/309L MR	455 - 469 (66,000 - 68,000)	579 - 586 (84,000 - 85,000)	38 - 47	7 - 10

¹ Typical all weld metal

Deposit Composition¹

	%C	%Cr	%Ni	%Mo	%Mn	%Si	%S	%P	%Cu
AWS Requirements	.04 max.	22.0 - 25.0	12.0 - 14.0	.75 max.	0.5 - 2.5	.90 max.	.03 max.	.04 max.	.75 max.
Test Results	.02 - .04	23.7 - 23.9	13.8 - 14.0	.05 - .09	0.7 - 0.9	.33 - .38	.021	.031	.09

¹ Typical all weld metal

Red Baron 316/316L MR

AWS: E316-16, E316L-16
Stainless Steel Stick Electrode

Designed for welding extra low carbon molybdenum bearing austenitic stainless steels

- Distinctive red coating is uniquely formulated for outstanding resistance to moisture pickup and starting porosity
- Good for all position welding except vertical down
- Controlled ferrite content in weld deposit for maximum crack resistance
- Excellent slag removal, often self-peeling on downhand and horizontal welds
- Lot control numbers printed on each electrode
- Manufactured under a quality system certified to ISO 9001 requirements

Typical Applications

- A 19-12 chromium-nickel, with over 2% molybdenum grade coated electrode, designed primarily for welding extra low carbon molybdenum bearing austenitic stainless steels such as type 316L

Typical Operating Procedures

Polarity	Current (Amps)			
	2.4 mm (3/32 in)	3.2 mm (1/8 in)	4.0 mm (5/32 in)	4.8 mm (3/16 in)
DC+	40 - 70	60 - 100	90 - 140	120 - 185

Diameters/Packaging

Diameter	3.6 kg (8 lb.) Easy Open Cans (48 lb. Master)	4.5 kg (10 lb.) Easy Open Cans (60 lb. Master)
2.4 mm (3/32 in)	221-5294	—
3.2 mm (1/8 in)	—	221-5296
4.0 mm (5/32 in)	—	221-1326
4.8 mm (3/16 in)	—	221-1328

Conformance

AWS A5.4	E316-16, E316L-16
ASME SFA-5.4	E316-16, E316L-16
ABS	E316-16, E316L-16
Military	MIL-316-16, MIL-316L-16

Mechanical Properties¹

	As Welded per AWS A5.4			
	Yield Strength MPa (PSI)	Tensile Strength MPa (PSI)	Elongation (%)	Ferrite No.
AWS Requirements				
E316-16, E316L-16	—	483 ² (70,000) min.	30 min.	—
Test Results				
Red Baron 316/316L MR	427 - 448 (62,000 - 65,000)	558 - 586 (81,000 - 85,000)	40 - 54	8 - 13

¹ Typical all weld metal

² Requirements for E316-16 is 75,000 PSI (517 MPa) min.

Deposit Composition¹

	%C	%Cr	%Ni	%Mo	%Mn	%Si	%S	%P	%Cu
AWS Requirements	.04 max. ²	17.0 - 20.0	11.0 - 14.0	2.0 - 3.0	0.5 - 2.5	.90 max.	.03 max.	.04 max.	.75 max.
Test Results	.03 - .04	18.7 - 19.2	11.4 - 12.1	2.2 - 2.4	0.7 - 0.9	.29 - .39	.019	.028	.26

¹ Typical all weld metal

² Requirements for E316-16 is .08% max. carbon.

Blue Max 2100

Stainless Steel Stick Electrode

Designed for hard-to-weld applications

- Very smooth arc with spray type metal transfer
- Excellent operator appeal — low spatter, smooth arc and exceptional wetting action. Can be lightly dragged without freezing to the weld
- Blue Max 2100 is designed for “hard-to-weld” applications
- Provides high resistance to cracking, yet high strength when joining steels that are normally difficult to weld
- Designed all position welding except vertical down
- Manufactured under a quality system certified to ISO 9001 requirements

Typical Applications

- Use on high carbon steels, low alloy, high strength steels, manganese steels, and tool steels
- Can be used for a base in hardfacing or stainless steel cladding applications

Diameters/Packaging

Diameter	0.5 kg (1 lb.) Tubes (20 lb. Master)	3.6 kg (8 lb.) Easy Open Cans (48 lb. Master)	4.5 kg (10 lb.) Easy Open Cans (60 lb. Master)
2.4 mm (3/32 in)	221-1329	221-1332	—
3.2 mm (1/8 in)	221-1330	—	221-1333
4.0 mm (5/32 in)	—	—	221-1334

Competitive Products

Eutectic®	McKay®	Welco®	Certanium®
680	GP	Super Missleweld	707

Typical Operating Procedures

Polarity	Current (Amps)		
	2.4 mm (3/32 in)	3.2 mm (1/8 in)	4.0 mm (5/32 in)
DC+	40 - 80	75 - 110	95 - 150

Blue Max Mig 308LSi

Stainless Steel Mig Wire

Premium quality Mig wire ideally suited for joining common austenitic stainless steel grades referred to as “18-8” steels

- Specially processed to provide superior feeding and arc stability
- Globular and spray transfer are recommended for downhand and horizontal only.
- Short circuiting transfer and pulsed arc can be used for out-of-position welding.
- Intended to be used with Argon/Oxygen blend or Helium-rich shielding gas mixtures.
- Manufactured under a quality system certified to ISO 9001 requirements.

Typical Applications

- For joining common austenitic stainless steel grades referred to as “18-8” steels.
- ASTM A240 Types 302, 304 and 304L.
- ASTM A743, A744 Types CF-8 and CF-3.

Deposit Composition¹

	%C	%Cr	%Ni	%Mo	%Mn	%Si	%S	%P	%Cu	%N	%Cb(Nb)
AWS Requirements											
	.03 max ²	19.5 - 22.0	9.0 - 11.0	.75 max	1.0 - 2.5	0.65 - 1.00	.03 max.	.03 max	.75 max	— ³	— ³
Test Results											
	.01	19.9	10.0	.16	2.1	.88	.01	.03	.17	.05	.01

¹ Typical all weld metal

² Requirement for ER308Si is .08% max. carbon.

³ Included in .50% maximum for other elements not specified

Diameters/Packaging

Diameter	11.3 kg (25 lb.) Spool
0.9 mm (.035 in)	221-1360
1.1 mm (.045 in)	221-1361

Mechanical Properties¹

	As Welded per AWS A5.9			
	Yield Strength MPa (PSI)	Tensile Strength MPa (PSI)	Elongation (%)	Ferrite No.
AWS Requirements				
ER308LSi, ER308Si				
Test Results				
Blue Max MIG 308LSi	455 (66,000)	634 (92,000)	46	13

¹ Typical all weld metal

Blue Max Mig 309LSi

Stainless Steel Mig Wire

Premium quality Mig wire ideally suited for joining alloyed austenitic stainless steels

- Specially processed to provide superior feeding and arc stability
- Globular and spray transfer are recommended for downhand and horizontal only.
- Short circuiting transfer and pulsed arc can be used for out-of-position welding.
- Intended to be used with Argon/Oxygen blend or Helium-rich shielding gas mixtures.
- Manufactured under a quality system certified to ISO 9001 requirements.

Typical Applications

- For joining higher alloyed austenitic stainless steels
- Can also be used on “18-8” steels, since it overmatches the corrosion resistance, if the weldment will not be exposed to temperatures of 538 to 927° C (1000 to 1700° F)
- ASTM A240 Type 309S
- ASTM A743, A744 Type CG-12.

Diameters/Packaging

Diameter	11.3 kg (25 lb.) Spool
0.9 mm (.035 in)	221-1362
1.1 mm (.045 in)	221-1363

Mechanical Properties¹

	As Welded per AWS A5.9			
	Yield Strength MPa (PSI)	Tensile Strength MPa (PSI)	Elongation (%)	Ferrite No.
AWS Requirements				
ER309LSi, ER309Si				
Test Results				
Blue Max MIG 309LSi	448 (65,000)	593 (86,000)	42	14

¹ Typical all weld metal

Deposit Composition¹

	%C	%Cr	%Ni	%Mo	%Mn	%Si	%S	%P	%Cu	%N	%Cb(Nb)
AWS Requirements	.03 max ²	23.0 - 25.0	12.0 - 14.0	.75 max	1.0 - 2.5	0.65 - 1.00	.03 max.	.03 max	.75 max	— ³	— ³
Test Results	.03	23.5	13.7	.28	2.0	.89	.01	.03	.22	.06	.03

¹ Typical all weld metal² Requirement for ER309Si is .12% max. carbon.³ Included in .50% maximum for other elements not specified

Procedures and Welding Techniques for Hardfacing Electrodes

Process Selection

Manual Electrode Welding

Recommended

For irregular shapes, out-of-position welding, low volume applications, and many small parts.

Advantages

- Highly versatile because it handles:
 - Nearly any shape or contour.
 - All positions. However, positioning for downhand welding is recommended.
 - Small or large parts.
 - Any deposit pattern.
- Inexpensive equipment. Requires only minimum fixturing and any conventional welder-motor-generator, engine driven, or rectifier. DC is recommended, but AC can be used with many electrodes.

Limitations

- Labor costs are relatively high because deposition rates are lower than mechanized processes.
- Human error can result in poor weld quality or a rough surface.

Mechanized Welding

Recommended

For large or repeated applications when labor savings offset equipment costs.

Advantages

- Low weld costs due to high deposition rates and fast welding speeds production.
- Consistent weld quality and a smooth surface are assured by mechanical guidance and automatic controls.
- Semiautomatic welding with Lincore self-shielded electrodes (no granular flux or shielding gas) approaches the versatility of stick electrode welding.
- Almost any conventional semiautomatic or automatic welder can be used.

Limitations

- Welding equipment costs can be substantial. Fixturing is also often required.
- Submerged arc welding is limited to the flat position or roundabouts. Its ability to weld contours and odd shapes is limited.

General Guidelines

IMPORTANT: SPECIAL VENTILATION AND/OR EXHAUST REQUIRED
Fumes from the normal use of these products contain significant quantities of Chromium and Manganese compounds which may be harmful.

BEFORE USE, READ AND UNDERSTAND THE MATERIAL SAFETY DATA SHEET (MSDS) FOR THIS PRODUCT AND SPECIFIC INFORMATION PRINTED ON THE PRODUCT CONTAINER.

Remember, when considering steps to avoid spalling and cracking problems, you are usually depositing the buildup layer on the base metal and the hardfacing on the buildup metal. Wearshield Mangjet®, Wearshield 22Mn5Cr Wearshield 15CrMn, Lincore® M and Lincore 15CrMn, Lincore 22Mn5Cr deposits are manganese steel. Wearshield BU, Wearshield BU30 Lincore 30, Lincore 33 and H-535/L-60 deposits are low carbon, low alloy steel. If underbead cracking becomes a problem when rebuilding high carbon or other crack-sensitive steel, an initial buttering layer with Jetweld® LH-70, NS-3M or mild steel flux and wire may be needed.

The Buildup Materials

Some hardfacing deposits have a limited practical deposit thickness. Therefore, rebuild badly worn parts to within 3/16-3/8 inch of original size before hardfacing. Choice of the buildup material depends primarily on the base metal of the part as follows:

- Buildup Manganese Steel Parts with Wearshield Mangjet, Wearshield 22Mn5Cr or Wearshield 15CrMn stick electrodes or Lincore M or Lincore 15CrMn Lincore 22Mn5Cr flux-cored wire.
- Buildup Carbon and Low Alloy Steels with either Wearshield BU or Wearshield BU30 stick electrode, H-535 submerged arc flux and L-60, Lincore 30-S/801 or Lincore 33.

Preparing the Surface

Remove grease and oil with a solvent and rust and dirt by wire brushing. If not removed, these contaminants can cause porosity, cracking and poor deposit quality.

To provide a good bond between base metal and weld, remove cracks, remains of old high alloy hardfacing deposits and badly work hardened or distorted surfaces by arc gouging or grinding. Fill cracks, gouges and surface depressions by manual welding. Use Wearshield BU or Wearshield BU30 on carbon and low alloy steels or Wearshield Mangjet on manganese steel.

Preheat and Interpass Temperature

Most applications require preheating, as a minimum to bring the part to room temperature of 70-100°F. Medium to high carbon and low alloy steels may require higher preheat to prevent underbead cracking, weld cracking, spalling, or stress failure of the part.

Higher preheat and interpass temperature are also needed for massive or rigid parts and when cracking actually occurs. Determine the preheat needed for each job from the information shown elsewhere in this manual.

Avoid localized heating of manganese steel above 260°C (500°F).

Surfacing cast iron parts requires special procedures.

How to Apply Preheat

Preheating is done with gas or oil torches, ovens, or electrical heating devices, depending upon the size of the part and the equipment available.

It does no good to heat a part, then let it cool before welding. Always be sure the area to be surfaced is at the specified temperature when starting to weld.

Checking the temperature of the part during welding may be needed to be sure it has not cooled. More heating may be needed if welding is stopped for lunch or any other reason.

Interpass temperature is the temperature of the surface when welding all layers except the first layer. It is just as important and should usually be as high as the preheat temperature. **Do not overheat manganese steel.**

Pattern of Deposit

Although the pattern is usually not important, here are a few general rules:

- The best pattern is usually the one most economical to apply.
- Since pattern affects shrinkage stresses, it can be used to help control distortion and cracking tendencies.
- A pattern with openings between beads is practical when the openings fill with the abrasive material in service.
- On jobs like crusher rolls, beads placed on the rolls across the flow of material help pull the material through the rolls.
- Beads placed parallel to the flow of abrasive material smooth the flow to reduce wear.

Buildup

Badly worn surfaces are normally rebuilt to within 3/16-3/8 inch of original size before hardfacing. Buildup carbon or low alloy steel with Wearshield BU, Wearshield BU30 or Lincore 33 or with L-60 and H535 submerged arc flux using low alloy procedure guides. Rebuild manganese steel with either Wearshield Mangjet or Lincore M.

Admixture and Cooling Rate

Small beads made with small electrodes and low currents have fast cooling rates and low admixture of base metal into weld metal. Using two layers reduces admixture in the final layer.

Welding Edges

Molten metal, slag, and granular submerged arc flux tends to spill off the edges particularly when the part is hot. Eliminate spillage by surfacing the edges first before the part becomes hot or else clamp copper bars or flux dams along the edges. Run beads along the edge rather than perpendicular to it for smooth welds.

To Obtain the Desired Wear Resistance, Control Alloy Content and Cooling Rate

How to Control Alloy Content

Carbon and alloy content are controlled by both procedures and admixture. Admixture of the electrode metal to the base plate has a very important effect on the wear resistance of the weld deposit. Effective weld metal composition is listed for deposits having the recommended number of weld passes. Lincore self-shielded wires and Wearshield stick electrodes produce consistent weld metal composition despite procedure variations within full normal ranges. A single layer of a highly abrasion resistant material, like Wearshield 60 or Lincore 60-O will not be nearly as abrasion resistant (due to dilution) as a second layer.

How to Control Cooling Rate

Although cooling rate affects wear resistance of some deposits, it is much more important for the control of spalling, cracking and distortion. Therefore, a slow cooling rate may be required even if it reduces wear resistance.

Methods of controlling cooling rate include the following:

- Preheating is the most effective way of slowing the cooling rate.
- Heat input from welding slows cooling by raising the temperature of the part.
- Insulating the hot part immediately after welding with dry sand, lime, glass fiber blanket, etc. slows cooling. This method helps minimize residual cooling stresses, weld cracking and distortion but does not affect wear resistance of most deposits. Remember also, large parts pull heat away from the weld more quickly than small parts. They naturally cool the weld faster.

To Avoid Weld Spalling

Spalling is the breaking of weld metal particles away from the base metal or previous hardfacing layers. Particle size varies from small chips to large pieces right down to the base metal. Spalling normally occurs only in service. To avoid spalling:

- Prepare the Surface: As in production welding, hardfacing welds must have a sound crack-free bond with the base metal. Therefore, clean the surface and repair cracks and surface damage.
- Avoid Underbead Cracking: Rapid cooling from welding temperature can cause brittle, crack-sensitive, heat-affected zones in some types of base metal. These zones tend to crack in service causing spalling. To avoid this problem, preheat as specified.
- Apply a layer of stable austenite before depositing hardfacing. This can be Type 309 stainless or highly alloyed austenitic manganese, such as Wearshield 15CrMn, Wearshield 22Mn5Cr, Lincore 15CrMn or Lincore 22Mn5Cr. Standard austenitic manganese, such as Wearshield Mangjet or Lincore M, may not provide enough alloy for stable austenite in a single layer over carbon or low alloy steel.
- Limit Deposit Thickness: Thick hardfacing deposits build up shrinkage stresses resulting in a greater tendency for spalling. Do not use more hardfacing layers than specified for each type deposit. If thicker deposits are required, utilize more buildup before hardfacing. Peen each layer of thick buildup deposits to relieve stresses.

To Avoid Underbead Cracking

Underbead cracks are small cracks that can occur in the heat affected zone of the base metal under the weld. The cracks do not usually show on the surface, but can cause spalling or cracking of the part in service.

Occurrence of underbead cracking depends primarily upon the carbon and alloy content of the base metal. See following text for specific preheat recommendations. Use of the non-low hydrogen electrodes — Wearshield 60, Wearshield ABR and Wearshield MM — may require 38-149°C (100-300°F) higher preheat than the other buildup or hardfacing materials. However, welding with these electrodes on hot buildup layers usually eliminates potential problems.

The easiest way to prevent underbead cracking is to slow the cooling rate by preheating. Always be sure the part is at least up to room temperature [21-38°C (70-100°F)] before welding. Use higher preheats if specified for your particular base metal below. When the base metal analysis is known, you can determine recommended preheat more closely using the Preheat Calculator.

Completing all buildup and hardfacing without long delays is recommended to keep the part hot. This minimizes danger of cracking and eliminates need for additional preheating.

Submerged arc welding, particularly with the Spreadarc attachment, is a high heat input process. It heats the part, slows the cooling rate and reduces underbead cracking problems. Spreadarc is not recommended on manganese steel.

Low Carbon Steel: to 0.30%C approx.

- Slightly hardenable. Preheat 21-149°C (70-300°F).
- Preheat heavy parts of over .20%C to 93-149°C (200-300°F). Use the higher temperature for massive, rigid or complex parts.

Medium Carbon Steel: 0.30 to 0.45%C approx.

- Moderately hardenable, especially in large parts and heavy sections. Preheat to 149-260°C (300-500°F). Use the higher temperature for higher carbon contents and for large, rigid or complex parts.

High Carbon Steel: over 0.45%C approx.

- Highly hardenable and crack sensitive in all sizes and shapes. Preheat to 260-427°C (500-800°F). Use the higher temperatures for the higher carbon contents and for large, rigid or complex shapes.
- When carbon content is near .80% deposit a buttering layer with Jetweld LH-70 (E7018) or a mild steel submerged arc flux and electrode prior to depositing buildup or hardfacing layers. The buttering layer minimizes underbead cracking danger and provides a good bond between base metal and hardfacing deposits.

Low Alloy Steel

- Varies from medium hardenable to highly hardenable depending upon carbon and alloy content. Preheat to 38-260°C (100-500°F). Use the higher temperatures for higher carbon and alloy contents and for large, rigid or complex shapes.
- Preheat temperatures up to 427°C (800°F) or a buttering layer may be required if the carbon content is over .35%C.

Manganese Steel: 12-14% Manganese

- Not hardenable or crack-sensitive. Preheat is not required.
- Preheat massive or highly rigid parts to 38-93°C (100-200°F). Prolonged heating over 260°C (500°F) can cause embrittlement of the manganese steel.
- On small parts, avoid high localized heating by using a skip welding technique.

Cast Iron

- Extremely crack sensitive. The heat affected zone may be full of cracks even with preheat temperatures of 650-760°C (1200-1400°F). Therefore, hardfacing cast iron is often uneconomical. If it must be welded, follow the standard cast iron welding precautions.

To Avoid Stress Failure of the Part

Some parts contain high retained internal stresses. When the welding stresses are added to these retained stresses, the part can break. This is stress failure.

Such failure can occur near the weld or at any weak point in the part. Look for this possibility when hardfacing the following types of parts:

- Highly rigid parts. Massive parts and complex shapes are inherently rigid.
- Shrink-fit parts.
- Some large castings, particularly when they are made of medium to high carbon steel or medium carbon low alloy steels.
- Parts hardened by heat treatment.

Stress failure can be avoided with the following steps:

1. Preheat slowly to the high side of the temperature range as previously specified for the particular type of base metal. As much as possible, this preheat should be uniform throughout the part.

Shrink-fit parts must be preheated to expand them until they are loose. Manganese steel requires a lower temperature because it has a high coefficient of expansion.

Parts which were hardened by heat treatment should be pack or controlled atmosphere annealed. Slow cool until the specified preheat temperature is reached.

2. Arrange the welding schedule so it can be completed without any interruptions.
3. The part should be slowly and uniformly cooled. This can be done by covering the part with a glass fiber blanket or some other insulating material or by cooling in a furnace.

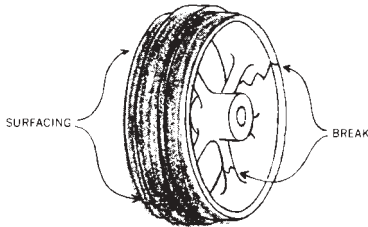
To Avoid Weld Cracking

Products Designed for Build-Up

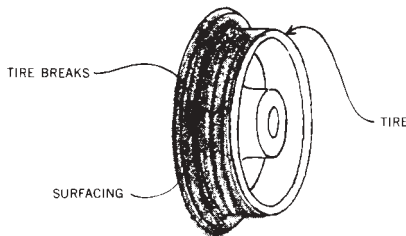
Hardfacing products designed for buildup applications have good resistance to cross cracking and are not restricted with regard to deposit thickness. These products include Wearshield BU, Lincore M, Lincore 30-S with 801 flux, Lincore 33, Wearshield 15CrMn, Lincore 15CrMn and H-535/L-60 (low alloy procedure), A-96S/L-60 and A-100/L-60 electrodes.

Special precautions, however, should be taken with any buildup or hardfacing product on applications that are inherently crack sensitive.

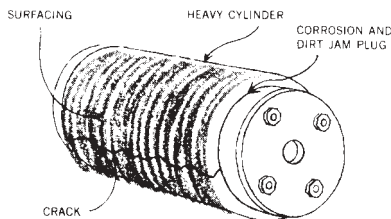
These applications include the surfacing of high carbon or alloy steels, previously surfaced parts and highly stressed parts. The surfacing of heavy cylinders, massive parts and parts having complex shapes are all examples of applications producing high internal stresses that may result in delayed cracking.



Complex shape is inherently rigid. Preheat to prevent stress failure at any weak point



Shrink-fit tire — Expand by preheating to prevent stress failure



Crusher roll — Loosen through bolts and expand the roll with preheat to loosen plugs

These applications may require one or more of the following precautions:

- Higher preheat temperature [204-260°C (400-500°F)].
- Higher interpass temperatures.
- Controlled slow cooling between passes and/or layers and after completion of the welding.
- Minimizing layer thickness.

Very severely stressed parts may require an intermittent or final drawing operation at 427-482°C (800-900°F).

Transverse or Cross Cracking

- The third and sometimes the second Wearshield ABR or Lincore 50 layer and all "Severe Abrasion" type deposits are designed to cross crack. This is beneficial because the cracking relieves stresses which can otherwise cause spalling or distortion. This cross cracking does not harm the wear resistance of the deposit.
- In other types of deposits, cross cracking can be a problem. It generally occurs in parts which are massive, rigid or of complex shape. If this cross cracking must be minimized, preheat to 650°C (1200°F). The preheating found necessary to prevent underbead or stress failure cracking will also minimize weld cross cracking.

Longitudinal or Center-line Cracking

This cracking is associated with poor bead shape. It is caused by too flat a bead, that is, a high ratio of bead width to bead height. If center-line cracking is a "problem":

- When welding with stick or Lincore flux-cored electrodes, use a stringer bead or minimum weaving technique and low current.
- Be sure fillet welds are slightly convex.
- In submerged arc surfacing when using Spreadarc attachment, center-line cracking does not often occur. This is because the high heat input of the process assures sufficiently slow cooling.
- In other submerged arc jobs this cracking can sometimes occur. If it does, decrease the step-over (or increase the bead overlap) enough to remelt the center of the previous bead, or adjust bead shape.
- For submerged arc jobs on roundabouts, be sure you set the correct electrode displacement distance and angle as specified in circumferential sub-arc hardfacing.

Complex shape is inherently rigid. Preheat to prevent stress failure at any weak point.

Shrink-fit tire — expand by preheating to prevent stress failure.

Crusher roll — Loosen through bolts and expand the roll with preheat to loosen plugs.

To Avoid Distortion Problems

Distortion in welding is caused principally by the unbalanced stresses which result from the expansion of the metal during heating and contraction during cooling. These stresses and their effects are uneven both in strength and direction. They depend on many factors.

In many cases the small amount of resultant distortion does not affect the performance of the part. Consequently, no more precaution than clamping the part in position for welding is needed.

In some cases the part is hardfaced oversize to allow for the distortion. It is then machined or ground to size. This method is most often used on parts which must be machined or ground to finish before using.

In some cases the part is allowed to distort, and it is straightened while still hot enough to bend without cracking.

In those cases where the distortion will ruin the usability of the part, the distortion forces must be controlled. Use one or a combination of the following methods. Generally, a study of the part to be surfaced and the equipment available will determine the best method to use.

Methods of Controlling Distortion

Preforming — Use with flat pieces and other relatively thin and simply shaped parts.

- Bend, form, or clamp the part with the proper preset before welding. The distortion forces will then pull the part back to its original shape.

Counterbalance the stresses — Use with parts which cannot be straightened after welding. Be sure the increased rigidity will not cause underbead cracking.

- Weld or clamp two similar parts back to back. Alternate the welding from one part to the other.
- Weld or clamp the part to a strongback, fixture or platen.

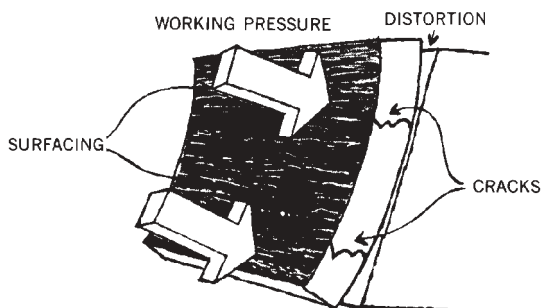
Limit the temperature of the part — This is an effective method particularly when high rigidity can cause cracking.

- Distribute the heat evenly by first welding one area, then welding a different area as the first cools.
- Reduce the heat input by using a procedure with low current.
- Remove some of the heat by blowing air, circulating water through the part, or clamping a water-cooled copper jacket to the part.
- Substitute properly welded inserts rather than making thick welds.

Relieve the stresses — Stress relieve very large parts, rigid shapes, shrink-fit parts, and other highly stressed pieces.

- Peen each layer during cooling. This is most effective with "Severe Impact" and "Abrasion-plus-Impact" type deposits.
- Preheat the entire part slowly and uniformly to expand the part prior to welding. Generally 66-93°C (150-200°F) is sufficient for manganese steel. Preheat carbon or low alloy steel to 149-260°C (300-500°F).

Cross-Cracking Deposit — The "Severe Abrasion" type deposits are designed to cross crack on cooling. These cracks minimize distortion by relieving the stresses.



Jaw Crusher — if distortion leaves crusher plate unsupported at the end, working pressure causes bending stresses which can lead to failure

General Welding Procedures

Manual Covered Electrodes - Table 1

Electrode Size mm (In)	2.4 3/32	3.2 1/8	4.0 5/32	4.8 3/16	6.4 1/4
DC+/AC (Amps)	80-100	90-165	140-220	175-260	210-325
Deposition Rate kg/Hr (Lb/Hr)	—	—	1.2-1.7 (2.7-3.8)	1.7-2.3 (3.7-5.0)	2.2-3.1 (4.9-6.9)

There is an optimum current for every application. Use the above listed guide to find the best setting for a particular Wearshield electrode and application.

Wearshield hardfacing electrodes may be used on flat, vertical and sometimes overhead surfaces. In the flat position, the excellent Wearshield arc operation will permit weaving the electrode up to 1/2 inch wide. When welding on vertical surfaces, deposit a stringer bead along the bottom of the area to be surfaced and build on that bead to cover the entire surface. Overhead applications require smaller diameter electrode, low operating currents and special welding techniques to prevent weld metal dripping. Wide weaves are not recommended with any hardfacing electrodes and in particular, not with manganese steel electrodes or base metals.

As in any type welding, proper plate preparation is necessary for good results.

Small diameter electrodes and low currents are recommended when welding on manganese steel castings. Procedures and techniques that will prevent overheating the manganese base plate are necessary to prevent cracking spalling, and embrittlement.

Lincore Open Arc Self-Shielded Electrodes

Typical Parameters Table 2

Electrode Size	Direct Current Electrode Positive (DC+) ¹			
	1.1 mm (.045 in)	1.6 mm (1/16 in)	2.0 mm (5/64 in)	2.8 mm (7/64 in)
WFS m/min (in/min)	5.1-15.2 (200-600)	3.8-11.4 (150-450)	3.2-6.4 (125-250)	2.3-4.4 (90-175)
Amps	85-250	125-350	190-400	280-420
Volts	21-31	24-33	25-32	26-32
ESO mm (inches)	19-29 (3/4-1 1/8)	22-45 (7/8-1 3/4)	32-45 (1 1/4-1 3/4)	38-70 (1 1/2-2 3/4)
Deposition Rate kg/hr Lb/Hr	1.5-5.6 (3.6-12.3)	2.2-7.5 (4.8-16.6)	3.2-6.9 (7.0-15.1)	3.8-7.5 (8.4-16.5)
Melt-Off Rate kg/hr Lb/Hr	2.0-5.9 (4.3-13.1)	2.7-7.9 (5.9-17.4)	3.6-7.2 (8.0-15.8)	4.8-8.9 (10.6-19.6)

¹ Constant voltage power supplies are recommended but constant current may also be used.

Table 2 lists typical parameters for the Lincore Open Arc Electrodes. Individual electrode sheets contain precise information relative to procedure and deposition rates. Small diameter Lincore semiautomatic electrodes can be used on vertical surfaces by depositing a stringer bead along the bottom of the area to be surfaced. A copper chill bar may be necessary to support this bead. Subsequent beads are deposited along the previous bead top surface until the area to be surfaced is covered.

Lincore semiautomatic electrodes are designed for optimum operator appeal and require no external shielding. It is possible to use these electrodes with 801 flux for a further reduction in smoke and spatter. Shielding gas may also be used (75Ar/25 CO₂) to reduce spatter and smoke.

Lincore Open Arc Self-Shielded Electrodes

Operating Characteristics - Table 3

When Lincore electrodes are used properly, the resulting smooth, uniform weld bead is fully covered (except Lincore 50, 60-O and 65-O), with easily removed slag and deposition rates are significantly higher than with manual (stick) welding.

Wire Feed Speed (Amps) Increasing	Increases Deposition Rate Increases Penetration Increases Heat Input
Voltage Increasing	Wider and Flatten Bead Excessive Voltage Results in Porosity
Electrical Stickout (ESO) Increasing	Increases Melt-Off Rate Excessively Long Stickout Results in Increased Spatter
Decreasing	Excessively Short Stickout Results in Porosity

Lincore Submerged Arc Electrodes

Typical Parameters - Table 4

A good starting point for general operating procedures when welding with submerged arc flux and the Lincore electrodes would be in the middle of the operating range.

Electrode Size	2.4 mm (3/32 in)	3.2 mm (1/8 in)	4.0 mm (5/32 in)
WFS m/min in/min	1.3-3.6 (50-140)	1.2-2.3 (48-90)	1.0-1.7 (40-65)
Amps	250-450	350-625	475-800
Volts	25-28	26-30	26-30
ESO mm inches	32 (1-1/4)	38 (1-1/2)	38 (1-1/2)
Deposition Rate kg/Hr Lb/Hr	2.9-8.0 (6.5-17.5)	4.3-10.0 (9.5-22.1)	6.0-12.4 (13.1-27.3)
Melt-Off Rate kg/Hr Lb/Hr	3.0-8.1 (6.6-17.8)	4.4-10.3 (9.7-22.6)	6.1-12.7 (13.4-27.9)

Electrode Sizes/Deposition Rates - Table 5

Change the parameters as suggested in Table 3 for individual applications. Using the maximum wire feed speed (amps) within the limits of good weld bead shape will result in the highest deposition rate and the most economical welding procedure.

Diameter mm (in)	WFS m/min (in/min)	Approx. (Amps)	Volts	ESO mm (in)	Travel Speed m/min (in/min)
2.4 (3/32)	3.0 (120)	375	26	32 (1-1/4)	.4-.6 (15-25)
3.2 (1/8)	2.5 (100)	500	27	38.5 (1-1/2)	.4-.6 (15-25)
4.0 (5/32)	2.2 (85)	650	28	38.5 (1-1/2)	.4-.6 (15-25)

Circumferential Submerged Arc Hardfacing

In circumferential hardfacing, 3 inch diameter and larger cylindrical objects are rotated under the welding head. The welds differ from those made in the flat position in that the flux and molten metal tends to sag or spill off the work.

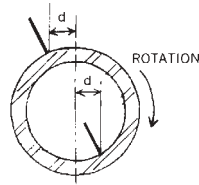
To prevent spilling or bead distortion, the weld must freeze as it passes the vertical center of the work. This requires the proper electrode displacement distance as listed in the following table and the proper wire feed speed and voltage from Table 4. The results of improper displacement distances are illustrated below. Speed must also be controlled to make small beads of the proper shape.

A faster, smaller bead tends to freeze quicker than a slow bead.

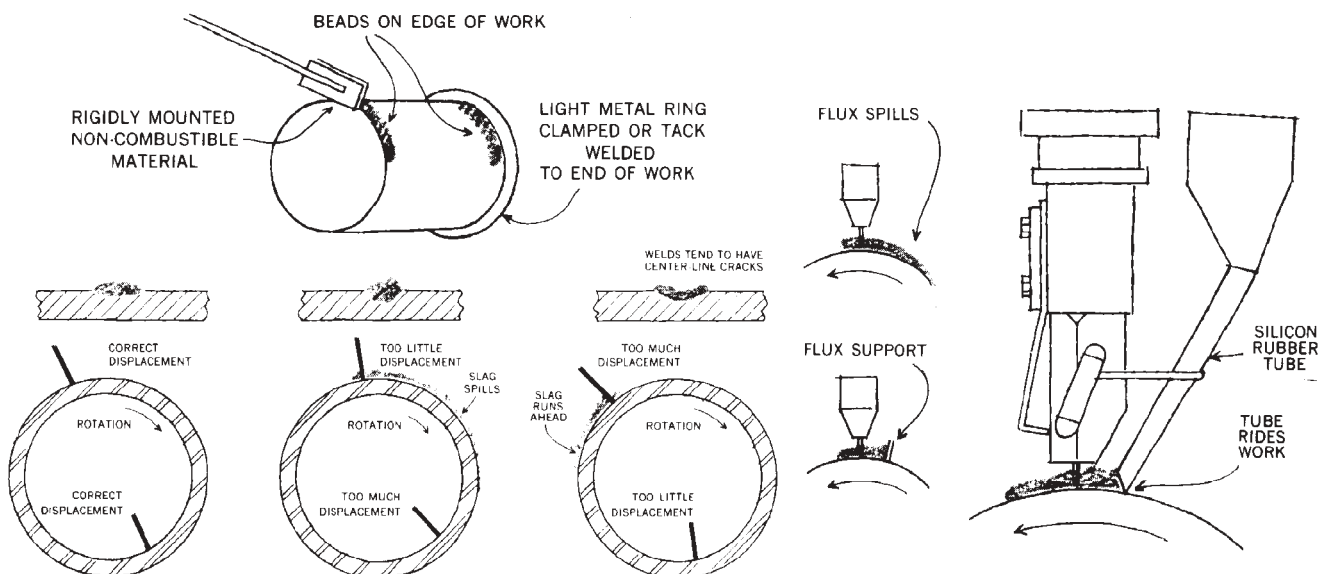
Temperature Control

The temperature of the work should be kept below 371°C (700°F) for easy slag removal and control of spilling. In addition to depositing small beads and using air jets or internal water cooling (when practical), temperature can be controlled by depositing a stringer bead.

Approximate Displacement (d) of the electrode



Girth Diameter	Electrode Position "d" (Inches ahead of vertical center)
3 in -18 in	3/4-1
18 in -36 in	11/4-11/2
36 in -48 in	11/2-2
48 in -72 in	2-21/2
over 72 in	3



The serviceability of a product or structure utilizing this type of information is and must be the sole responsibility of the builder/user. Many variables affect the results obtained in applying this type of information. These variables include, but are not limited to, welding procedure, plate chemistry and temperature, weldment design, fabrication methods and service requirements.

Overlap

The amount one bead overlaps the adjacent bead affects both admixture of base metal into weld metal — greater overlap reduces admixture — and appearance of the finished weld. Control overlap by adjusting the amount of longitudinal travel with each revolution.

Longitudinal travel is accomplished either by spiraling the bead or indexing the welding head across the work after each complete revolution (stepover). Unless a lathe with a slow screw feed mechanism or a very low speed travel carriage is available, the stepover method is recommended.

For automatic stepover, mount a limit switch that is operated by a cam type trip on the rotating fixture. Connect the limit switch into the travel carriage motor circuit so the motor runs when the switch is operated. The distance moved is controlled by the size of the cam and speed of the travel motor. A time delay can be used in place of the cam. Slag must be removed before each bead makes a complete revolution.

Neutral Hardfacing Flux Characteristics

880 — Light in color, fine mesh size most economical. Use with most hardfacing semiautomatic and automatic Lincore electrodes.

801 — Darker in color, larger mesh size. Use with most hardfacing semiautomatic and automatic Lincore electrodes.

802 — Use with electrodes containing Ti, V, Cb, Mo or W alloys. May be used in place of 801 flux.

803 — Use with Lincore 60-S.

Certain fluxes, described as "neutral" with regard to mild steel and low alloy steel joining, are not neutral when used with Lincore hardfacing electrodes. Some fluxes can remove considerable carbon and/or chromium, and produce weld metal of less than optimum composition and wear resistance.

Overlap

Welding Currents and Voltages

Diameter	Current
3 in -6 in	250-350 amps ¹
6 in -12 in	300-400 amps
12 in -18 in	350-500 amps
over 18 in	Standard hardfacing procedures (single electrode or twin arc).

¹ Voltage range is 24-32 volts.

Steel Group	Steel Designation	Carbon	Preheat-°C (°F) ¹ Base Metal 4 in thick
Carbon Steels	AISI-SAE ³	1015	.13-.18 66° (150°)
		1020	.18-.23 66° (150°)
		1030	.28-.34 93° (200°)
		1040	.37-.44 149° (300°)
		1080	.75-.88 316° (600°)
Manganese Steels	AISI-SAE	1330	.28-.33 121° (250°)
		1335	.33-.38 149° (300°)
		1340	.38-.43 177° (350°)
		1345	.43-.48 204° (400°)
		1345H	.42-.49 204° (400°)
Molybdenum Steels	AISI-SAE	4027H	.24-.30 121° (250°)
		4032H	.29-.35 149° (300°)
		4037H	.34-.41 177° (350°)
		4042H	.39-.46 204° (400°)
		4047H	.44-.51 232° (450°)
Chrome Molybdenum Steels	AISI-SAE	4118	.17-.23 121° (250°)
		4130	.27-.34 149° (300°)
		4135	.32-.39 204° (400°)
		4145	.41-.49 260° (500°)
		4145H	.42-.49 260° (500°)
Ni-Chrome and Ni-Moly. Steels	AISI-SAE	4340	.38-.43 260° (500°)
		4615	.18-.18 121° (250°)
		4620	.17-.22 121° (250°)
		4720H	.17-.23 149° (300°)
		4820H	.17-.23 149° (300°)

Steel Group	Steel Designation	Carbon	Preheat-°C (°F) ¹ Base Metal 4 in thick
Chromium Steels	AISI-SAE	5015	.12-.17 93° (200°)
		5046	.43-.48 232° (450°)
		5115	.13-.18 93° (200°)
		5145	.43-.48 232° (450°)
		5160	.56-.64 288° (550°)
Austenitic Manganese and Chrome-Ni. Steels	ASTM	11-14% Mn	.5-1.3 Preheat only to remove chill from base metal ²
		302	.15 Max.
		309	.20 Max.
		310	.25 Max.
		347	.08 Max.
Carbon Steel Plate Structural Quality	ASTM	A36	.27 Max. 121° (250°)
		A131 Gr.B	.21 Max. 93° (200°)
		A284 Gr.C	.29 Max. 121° (250°)
		A678 Gr.B ⁴	.20 Max. 93° (200°)
High Strength Low Alloy Steels	ASTM	A131-H.S.	.18 Max. 177° (350°)
		A242 Type 2	.20 Max. 93° (200°)
		A441	.22 Max. 93° (200°)
Structural Quality		A588 Gr.B	.20 Max. 149° (300°)
		A633 Gr.E	.22 Max. 121° (250°)
Alloy and Pressure Vessel Quality Steels	ASTM	A514 Gr.F ⁴	.10-.21 177° (350°)
		A514 Gr.H ⁴	.12-.21 149° (300°)
		A514 Gr.Q ⁴	.14-.21 288° (550°)
		A515 Gr.70	.35 Max. 149° (300°)
		A516 Gr.70	.30 Max. 121° (250°)

¹ These suggested preheats are recommended when Low Hydrogen processes are used on base metals that are 4 in thick. Lower preheats would be needed on thinner material while higher preheats would be necessary on thicker materials. When using non-Low Hydrogen processes increase suggested preheats by 149°C (300°F). The steels shown on the chart are only partially representative of the steels used in the manufacture of earth moving and other machinery. A Preheat Calculator makes it possible to figure suggested preheats for other steels based upon the chemistry of the steel and the thickness of the parts to be surfaced.

² It is sometimes advisable to preheat large, thick 11 to 14% Manganese parts prior to welding. Use a maximum of 200°F. preheat. (Do not exceed 260°C (500°F) preheat and/or interpass temperature). Check base metal with magnet. 11 to 14% Manganese and the ASTM 300 series of chrome-nickel steels are NOT magnetic.

³ Low Carbon Steel

⁴ Q & T Steels — see "Need for Preheat."

Heavy Construction — Hardfacing Consumables

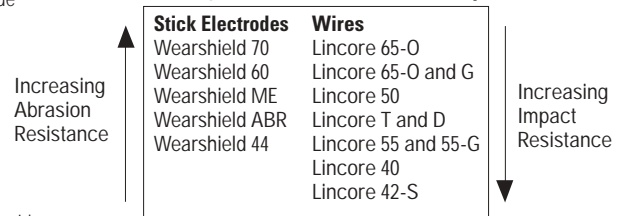
Huge pieces of equipment are used to build highways, shopping centers, dams airports, buildings and other projects. Typical example is earth moving tractors that require undercarriage and blade maintenance.

The equipment has many parts that wear from metal-to-metal friction. These parts can be restored by using build-up and metal-to-metal wear resistant hardfacing products.

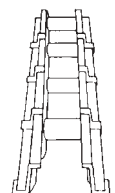
Much of the equipment will utilize a blade or plow to move the earth. These parts can be restored by using abrasion plus impact, metal-to-earth or severe abrasion resistant hard facing products.

Mining, crushing and grinding, and many other industries have combinations of impact and abrasion. No hardfacing material can be ideal for both. The following scale provides some guidance:

Hardfacing Products for Abrasion and Impact



Tractor Parts

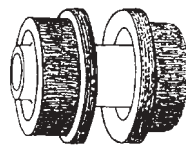


Rails

Process	for Build-up	for Hardfacing
Manual	Wearshield BU	Wearshield MM
	Wearshield BU30	Wearshield MM40
Semi-Automatic	Lincore 33	Lincore 55 and 55-G
	Lincore BU-G	Lincore 33
		Lincore 40-O
Automatic	Lincore 30-S/801	Lincore 30-S/801
	Lincore 20/801	Lincore 40-S/801
		H-535/L-60
		Lincore 35/801
		Lincore 42-S/801

Comments: Most economically rebuilt using submerged arc automatic welding methods.

Can be rebuilt for metal-to-metal wear with manual or semiautomatic methods using the materials recommended above. Start with stringer beads applied at the middle of the rail or link and work to the outside edges. Preheat is recommended.

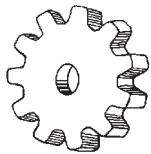


Top Carrier Rolls

Process	for Build-up	for Hardfacing
Manual	Wearshield BU	Wearshield MM
	Wearshield BU30	Wearshield MM40
Semi-Automatic	Lincore 33	Lincore 55
		Lincore 33
		Lincore 40-O
Automatic	Lincore 30-S/801	Lincore 40-S/801
	Lincore 20/801	Lincore 55
	Lincore BU	H-535/L-60
		Lincore 42-S/801

Comments: Prepare the rolls by cleaning the surfaces and removing bushings. Build-up with the recommended materials and add two layers of hardfacing to resist metal-to-metal wear.

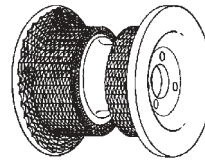
When rebuilding a number of rolls auto-matic submerged arc welding is most economical.



Drive Sprockets

Process	for Build-up	for Hardfacing
Manual	Wearshield BU Wearshield BU30	Wearshield MM Wearshield MM40
Semi-Automatic	Lincore BU-G Lincore 33 Lincore 40-O	Lincore 55 and 55-G

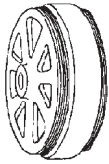
Comments: Rebuild the badly worn areas with the recommended build-up material, then hardface to resist metal-to-metal wear. Preheat is recommended.



Rollers

Process	for Build-up	for Hardfacing
Manual	Wearshield BU Wearshield BU30	Wearshield MM Wearshield MM40
Semi-Automatic	Lincore 33	Lincore 55 and 55-G Lincore 33 Lincore 40-O
Automatic	Lincore 30-S/801 H-535/L-60	Lincore 40-S/801 Lincore 30-S/801 H-535/L-60 Lincore 35-S/801 Lincore 42-S/801

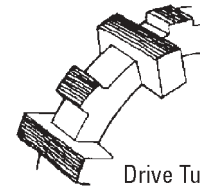
Comments: Rebuild close to size with the appropriate build-up material and hardface for metal-to-metal wear. Automatic welding with a flux-cored electrode and submerged arc flux or a solid electrode and alloy flux provides significant savings. Preheat is recommended.



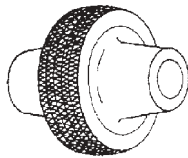
Idlers

Process	for Build-up	for Hardfacing
Manual	Wearshield BU Wearshield BU30	Wearshield MM Wearshield MM40
Semi-Automatic	Lincore 33	Lincore 55 and 55-G Lincore 33 Lincore 40-O
Automatic	Lincore 30-S/801 H-535/L-60	Lincore 40-S/801 H-535/L-60 Lincore 35-S/801 Lincore 42-S/801

Comments: Build the idlers to size and hardface with the recommended materials. Automatic submerged arc welding is most economical. Either stringer or transverse beads can be applied. Preheat is recommended.



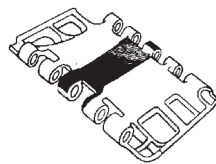
Drive Tumblers



Shovel Rollers

Process	for Build-up	for Hardfacing
Manual	Wearshield BU Wearshield BU30	Wearshield MM Wearshield MM40
Semi-Automatic	Lincore 33	Lincore 55 and 55-G Lincore 33 Lincore 40-O
Automatic	Lincore 30-S/801 H-535/L-60	Lincore 40-S/801 H-535/L-60 Lincore 35-S/801 Lincore 42-S/801

Comments: When rebuilding a quantity, automatic submerged arc is most economical. Rebuild with the recommended material. When manual welding one layer of Wearshield MM adds metal-to-metal wear resistance. Preheat is recommended.



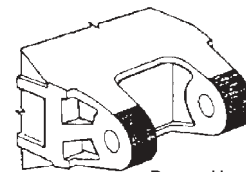
Track Pads

Base Metal: Carbon Steel		
Process	for Build-up	for Hardfacing
Manual	Wearshield BU Wearshield BU30	Wearshield MM Wearshield MM40
Semi-Automatic	Lincore 33	Lincore 55 and 55-G Lincore 40-O
Automatic	Lincore 30-S/801 H-535/L-60	Lincore 40-S/801 42-S/801 Lincore 55/801 H-535/L-60
Base Metal: Manganese Steel		
Process	for Build-up	for Hardfacing
Manual	Wearshield Mangjet Wearshield 15CrMn	Wearshield Mangjet Wearshield 15CrMn
Semi-Automatic	Lincore 15CrMn Lincore M	Lincore 15CrMn Lincore M Wearshield Frogmang

Comments: Rebuild pads to size and hardface with materials recommended for the base metal. Special ventilation and/or exhaust may be required.

Base Metal: Carbon Steel		
Process	for Build-up	for Hardfacing
Manual	Wearshield BU Wearshield BU30	Wearshield MM Wearshield MM40
Semi-Automatic	Lincore 33 Lincore BU-G	Lincore 55 and 55-G Lincore 33 Lincore 40-O
Base Metal: Manganese Steel		
Process	for Build-up	for Hardfacing
Manual	Wearshield Mangjet Wearshield Frogmang Wearshield 15CrMn	Wearshield Mangjet Wearshield Frogmang Wearshield 15CrMn
Semi-Automatic	Lincore 15CrMn Lincore M Wearshield Frogmang	Lincore 15CrMn Lincore M Wearshield Frogmang

Comments: Rebuild to size using the recommended material appropriate for the base metal and method. One layer of Wearshield MM can be added to carbon-steel tumblers manually for better metal-to-metal wear.



Boom Heels

Base Metal: Carbon Steel		
Process	for Build-up	for Hardfacing
Manual	Wearshield BU Wearshield BU30	Wearshield MM Wearshield MM40
Semi-Automatic	Lincore 33	Lincore 55 and 55-G Lincore 33 Lincore 40-O
Base Metal: Manganese Steel		
Process	for Build-up	for Hardfacing
Manual	Wearshield Mangjet Wearshield 15CrMn	Wearshield Mangjet Wearshield 15CrMn
Semi-Automatic	Lincore M Lincore 15CrMn	Lincore M Lincore 15CrMn

Comments: Rebuild to size using the material recommended for the base metal and welding method. Hardface to resist metal-to-metal wear.

Weld Protection

193-0070 Welding Respirator

- Meets NOISH 42 CFR 84 N95 requirements TC-84A0454
- Cool flow exhalation valve promotes worker comfort by offering easy exhalation for cooler, dry comfort.
- Contours easily to provide a comfortable, good seal
- Economical all-filter design with no spare parts to clean
- Suggested applications: welding, brazing, soldering, torch cutting, metal pouring, grinding, sanding, sweeping, bagging, general maintenance and operations involving liquid or non-oil based particle from sprays that do not emit harmful vapors
- Package quantity: 10 respirators



193-0593 Half Facepiece Respirator

- Used with 3M™ 2000, 5000, and 6000 series filters and cartridges
- Swept-back design of the filters/cartridges improves balance and visibility
- Reusable — just dispose of the cartridge/filters when used to capacity
- Comfortable, lightweight facepiece and easy to adjust head straps
- Two sizes: medium and large
- Package quantity: 6 respirators
- Filter not included



Replacement Filters

Package quantity: ten 2 packs of filters

193-0992 Organic Vapor Cartridge

This cartridge, when used with 6000 and 7000 Series facepieces, provides respiratory protection from certain organic vapors at concentrations up to 10 times the Permissible Exposure Limit (PEL) with half facepieces.

193-2187 P95 Particulate Filter

This filter is designed for applications such as grinding, sanding and welding. It is compatible with 3M™ 6000.

194-0897 P100 High Efficiency filter

This filter is designed for applications including welding, brazing, torch cutting, pouring and soldering, as well as protection against OSHA substance specific particle exposures such as lead, asbestos, cadmium, arsenic and MDA. This filter is compatible with the 3M™ 6000.



193-0992

193-2187

194-0897

1U-8097 Welding Helmet

- 51 mm x 108 mm (2 in x 4 1/4 in), "shade 10" lens
- Ratcheting headgear adjusts to fit any head size.
- Nylon material is lightweight and durable.



1U-8103 Welding Goggles

- Feature a shade 5 lens, good ventilation, and a light-tight fit



1U-8104 Welding Goggles with Lift Front Lens

- Feature the shade 10 lens with a hinged front-lift door



1U-8100 Welding Helmet

- Features a shade 10 lens but in a larger size — 114 mm x 133 mm (4 1/2 in x 5 1/4 in)
- Has ratcheting head gear
- Made of sturdy nylon material



Replacement Lens for 1U-8097 and 1U-8100 Welding Helmets

Lens Part No.	Type	Use For:
1U-8098	Shade 5 Tinted Glass ¹	1U-8097
1U-8209	Shade 10 Tinted Glass ²	1U-8097
1U-8101	Shade 10 Tinted Glass ²	1U-8100
1U-8099	Plastic Cover Plates ³	1U-8097
1U-8102	Plastic Cover Plates ³	1U-8100

¹ Shade 5 lens used for medium to heavy gas torch cutting [25 mm (1 in) and up] and light to medium gas torch welding [up to 13 mm (1/2 in)]

² Shade 10 lens used for welding with manual weld electrodes

³ Two needed, one inside and one outside of your tinted glass lens

1U-8105 Eye Cup Welding Goggles

- Shade 5 lens eye goggles that conform to eye area assuring tight and safe seal
- Feature anti-fog ventilation



Replacement Lens for 1U-8105 Eye Cup Welding Goggles

Part No.	Description
1U-8106	Shade 5 tinted replacement lens ¹
1U-8107	Clear replacement lens

¹ Shade 5 lens used for medium to heavy gas torch cutting [25 mm (1 in) and up] and light to medium gas torch welding [up to 13 mm (1/2 in)]

Welding Jacket

- Made of flame resistant, sturdy 269 g (9 oz) sateen fabric treated for permanent fire retardant
- Finished in a dark green color
- Lightweight and provides excellent protection from flash, flame, and sparks
- Black no-glare snaps
- Adjustable snaps at the cuff
- Roll collar can be turned up
- Flame retardant good up to 50 washes in mild soap



Part No.	Description	Size
1U-6586	Welding Jacket	Large
1U-6587	Welding Jacket	Extra Large

185-0153 Leather Welding Gloves

- Chrome tanned, split leather glove with Cat logo
- Premium glove for an economical price
- Gunn pattern with a straight thumb
- Comfortable full semi-sock, flame retardant lining
- One-piece back
- Weltd thumb and forefinger for extra life
- One size: large
- CE compliant



185-0151 Welding Coat (Large)
185-0152 Welding Coat (Extra Large)

- 30 inch leather jacket with raglan shoulder design for utmost mobility
- Double stitched seams with 5 ply Kevlar thread provide superior strength
- Multiple position snap adjustment provides maximum protection and comfort
- Roll-up collar with three-snap adjustment
- Locker handling loop, soap stone shoulder pocket, and inner leather pocket
- CE compliant



Part No.	Description	Chest Size
185-0151	Welding Coat (Large)	44 inch to 46 inch
185-0152	Welding Coat (Extra Large)	48 inch to 50 inch

185-0143 Cape (Large)
185-0144 Cape (Extra Large)
185-0145 Bib

- Leather cape with raglan shoulder sleeves for mobility
- Double stitched seams with 5 ply Kevlar thread
- Roll-up collar with three snap adjustment
- Includes locker hanging loop and soap stone shoulder pocket
- Bib is cut extra wide — 22 inches wide x 20 inches long
- CE compliant



4C-6695 Specialty Gloves (Large)

- Gold split leather heavy-duty welder's glove with a full gauntlet cuff, wing thumb
- Fully lined, Gunn cut pattern
- Package quantity: 12 pair



Welding Blanket

Warranty: Manufacturer's

- Made of a fiberglass textile material
- Light gold neoprene coating on one side to reduce fraying
- Hemmed and seamed with Kevlar thread
- Retains heat
- Protects welding area



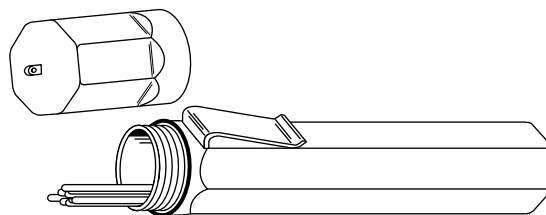
Part No.	Description	Dimensions
4C-9616	Blanket	183 cm x 183 cm (6 ft x 6 ft)
4C-9617	Blanket	183 cm x 244 cm (6 ft x 8 ft)
4C-9618	Blanket	183 cm x 305 cm (6 ft x 10 ft)

1U-5421 Rod Keeper

Model: All Models

Warranty: Manufacturer's

- Used to keep electrodes free from moisture, resulting in higher quality welds
- Also used to hold maintenance schedules and operators manuals in cabs of vehicles, preventing fade and water damage
- Air-tight, waterproof container with twist-off cap
- Made of high impact polymers to withstand worksite/shop abuse
- Belt clip for portability
- Holds up to 10 pounds of electrodes
- Hundreds of other air-tight usages
- 1 year replacement warranty by manufacturer



Tape and Packaging Products

General Purpose Masking Tape

- Can be used for holding, bundling, sealing, tabbing non-critical masking and many other miscellaneous applications where an economical grade of paper tape is needed



Part No.	Size — 55 m (60 yd) rolls	Rolls/Case
4C-6570	19 mm (3/4 in)	48
4C-6571	25.4 mm (1 in)	36
4C-6572	51 mm (2 in)	24
4C-6573	76.2 mm (3 in)	12

Masking Paper

- Specially formulated, high density masking paper that helps reduce labor cost, decreases rework, and minimizes cleanup
- Its unique, virtually “pinhole-free” construction delivers exceptional paint and solvent resistance to help eliminate bleed-through.
- For protection, each roll is individually wrapped.
- The paper’s balanced construction offers conformability, strength, and easy handling.



Part No.	Description	Size	Rolls/Case
1U-9731	Masking Paper	76.2 mm x 304.8 m (3 in x 1000 ft)	6
1U-9732	Masking Paper	304.8 mm x 304.8 m (12 in x 1000 ft)	3
1U-9733	Masking Paper	609.6 mm x 304.8 m (24 in x 1000 ft)	1
1U-9734	Masking Paper	914.4 mm x 304.8 m (36 in x 1000 ft)	1

Masking Tape

- Six sizes available — 13 mm (1/2 in) to 76.2 mm (3 in) wide, 60 yd. roll
- Clean removal — less adhesive transfer reduces residue which can stick to work surface.
- Sharp paint edge — thin, smooth backing gives a superior, straight paint line with no jagged edges.
- One-piece removal — balanced construction allows for one-piece removal.
- Heat resistant — will generally function well in conditions up to 93° C (200° F)



Part No.	Size — 55 m (60 yd) rolls	Rolls/Case
1U-6705	13 mm (1/2 in)	72
1U-6706	19 mm (3/4 in)	48
1U-6707	25.4 mm (1 in)	36
1U-6708	51 mm (2 in)	24
1U-6709	63.5 mm (2 1/2 in)	12
1U-6710	76.2 mm (3 in)	12

1U-9729 Dispenser

- Dispenses single aprons through 914.4 mm (36 in) width
- Offers a practical and convenient way to speed masking operations
- Attaches tape to outer edge of paper; automatically maintains proper tape edge alignment
- Features serrated blade to cut paper cleanly and evenly

4C-4094 Filament Tape

- Stain resistant and transparent with reinforced continuous glass yarn filaments
- Used for closure and reinforcement of corrugated fiberboard boxes and performs well in holding, reinforcing, combining, bundling, and unitizing applications
- Size: 19 mm (3/4 in) x 55 m (60 yd) roll
- Package quantity: 48



4C-4095 Transparent Tape

- Good for general purpose packaging needs
- Was developed primarily for single strip closure of regular slotted containers
- Has very good resistance to edge tear and splitting due to shock from impact
- Adhesive sticks at a touch to fiberboard.
- Size: 48 mm (1/2 in) x 100 m
- Package quantity: 36



190-9792 Duct Tape

Warranty:

- Use this silver, polyethylene-coated, cloth tape for sealing and/or waterproofing applications.
- Has an extremely tough rubber adhesive
- Size: 51 mm (2 in) wide and 55 m (60 yds) long
- Package quantity: 1



9U-5922 High Performance Duct Tape

- Use this olive drab, polyethylene-coated, cloth tape for sealing and/or waterproofing applications.
- Conforms to mil spec PPP-T-60D.
- Rubber adhesive adheres securely.
- Thickness: 12 mils
- Tensile strength: 42 lbs per inch
- Size: 51 mm wide x 55 m long (2 in wide x 60 yd long)
- Package quantity: 1



1P-0810 Electrical Tape

- Premium quality vinyl tape with many electrical insulation applications
- Size: 19 mm x 20.12 m long (3/4 in wide x 66 ft long)
- Package quantity: 10



Aluminum Tape

- A variety of sizes of aluminum tape that can be used to seal openings of various machine components such as cylinder assembly tubes during shipping and storage
- Also useful to seal pump ports and other openings
- 3.5 Mil thick
- Tough but flexible
- Hi-tack
- Waterproof



Part No.	Description	Size
9U-6910	Aluminum Tape	63.5 mm x 45.7 m (2 1/2 in x 50 yds)
9U-6911	Aluminum Tape	101.6 mm x 45.7 m (4 in x 50 yds)
9U-6912	Aluminum Tape	152.4 x 45.7 m (6 in x 50 yds)
9U-7042	Aluminum Tape	304.8 x 45.7 m (12 in x 50 yds)

4C-4099 Box Sealing Tape Dispenser

- Provides quick, easy method for dispensing 4C-4095 Transparent Tape, or any other film-backed box sealing tape directly from the roll
- Hand-held and portable — excellent on center seam sealing of regular slotted boxes
- Sturdy, durable, easy to load and operate; handles tape widths from 38 mm (1-1/2 in) to 51 mm (2 in)
- Package quantity: 1



4C-4100 Filament Tape Dispenser

- Fast and economical clips of 4C-4094 Filament Tape can be applied.
- Dispenser cuts and buffs tape with one-hand motion.
- Features hand brake in the core that allows operator to adjust tension for tighter box reinforcement and bundling applications
- High impact plastic and one piece construction makes the dispenser very durable.
- Handles filament tapes up to 19 mm (3/4 in) wide
- Package quantity: 1



4C-4101 Filament Tape Dispenser

- Features a hand brake in the core that allows operator to adjust tension for tighter box reinforcement and bundling applications
- Made from high impact, durable plastic
- Handles 4C-4094 Filament Tape
- Package quantity: 1



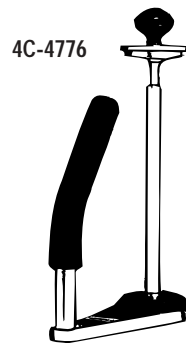
4C-4102 Filament Tape Dispenser

- Durable metal dispenser for carton taping
- Holds 55 m (60 yd) roll of filament tape
- Portable, refillable in seconds
- Package quantity: 1



Handwrappers

- Sturdy zinc-die cast construction
- Lightweight, easy-to-use, 1.6 kg (3.5 lbs)
- Wide base, reduces “tip over”
- Repeatable film stretch levels
- Comfortable foam grip
- Teflon coated bottom core



Part No.	Description	Use
4C-4776	Handwrapper	all 305 mm (12 in), 381 mm (15 in), 457 mm (18 in) films with 76 mm (3 in) cores
4C-4777	Handwrapper	all 305 mm (12 in), 381 mm (15 in), 457 mm (18 in) films with 57 mm (2.25 in) and 76 mm (3 in) cores
4C-4778	Handwrapper	all 457 mm (18 in), 508 mm (20 in) films

4C-4779 Adjustable Stretch Band-it Tool

- Fully mechanical
- Adjustable stretch control
- No spare parts—no parts to replace or wear out.
- Use with 4C-4880 Film



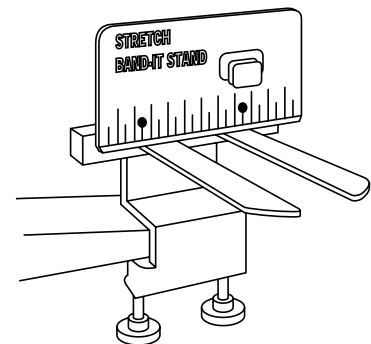
4C-4780 Stretch Band-it Tool

- “Hand Squeeze” control
- No assembly, no maintenance, no additional adhesives
- Use with 4C-4880 Film



4C-4781 Stretch Band-it Stand

- Portable
- Mounts on any table surface
- Accommodates up to 16 kg (35 lbs)
- Adjustable zinc-plated support
- Allows wrapping of smaller items using 4C-4880 Film and 4C-4779 or 4C-4780 Stretch Band-it Tools



4C-4880 Heavy-Duty Master Wrap Film

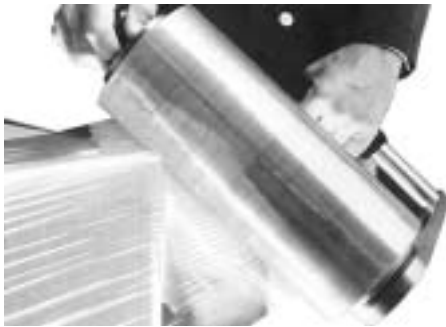
- Holds anything, any shape, anywhere
- Applicator packed in all cases
- Heavy-duty gauge



Part No.	Rolls/Case	Film Gauge	Film Width	Roll Length	Film Color
4C-4880	12	135	127 mm (5 in)	198 m (650 ft)	Blue

Mobilrap® Stretch Film

- Dispenser ready
- 76 mm (3 in) diameter cores on all items
- Visually able to see through to wrapped product
- Light to standard gauge



Part No.	Description	Rolls/Case	Film Gauge	Film Width	Roll Length	Film Color
4C-4882	Mobilrap® X-80 Stretch Film	4	80	305 mm (12 in)	457 m (1500 ft)	Green
4C-4883	Mobilrap® X-80 Stretch Film	4	80	457 mm (18 in)	457 m (1500 ft)	Green
4C-4884	Mobilrap® XP Stretch Film	4	60	305 mm (12 in)	610 m (2000 ft)	Clear
4C-4885	Mobilrap® XP Stretch Film	4	60	457 mm (18 in)	610 m (2000 ft)	Clear

4C-4879 Mobil Hand Wrap II Standard-Duty Stretch Film

- Convenient stretch film system
- Pair of Mobilrap® gloves in all cases
- Extra wide—508 mm (20 in) compared to 457.2 mm (18 in)
- Standard-duty gauge

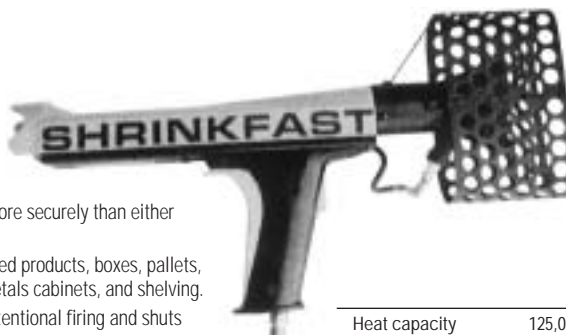
Part No.	Rolls/Case	Film Gauge	Film Width	Roll Length	Film Color
4C-4879	4	80	508 mm (20 in)	305 m (1000 ft)	Clear



4C-4515 Shrinkfast Shrink Gun

Warranty: Manufacturer's

- Portable — 3.5 lbs
- Fast — shrinkwrap a 1016 mm x 1219.2 mm x 1524 mm (40 in x 48 in x 60 in) pallet in less than two minutes
- UL listed
- Fast shrinkwrapping — the shrink gun is faster and holds more securely than either stretch-wrapping or banding.
- Versatile — the shrink gun can be used on machinery, bagged products, boxes, pallets, construction materials, chemicals, petroleum containers, metals cabinets, and shelving.
- Safe — operates with a safety latch trigger to prevent unintentional firing and shuts off automatically when put down
- Product support — repair parts are available through the Caterpillar Parts Distribution system



Repair Parts (Warranty: Six Months)

Part No.	Description
4C-4511	Fuel Line
4C-4512	Valve Assembly
4C-4513	Hose Adapter
4C-4514	Spark Plug
4C-4516	Regulator Assembly
4C-4517	Gauge (Pressure)
4C-4518	U.L. Guard

Heat capacity	125,000 BTU/hr.
Propane usage	2.59 kg/hr (5.7 lbs/hr)
Operating pressure	22 PSIG
Air consumption	21 CFM

9U-7918 Label Maker Kit

Warranty: Manufacturer's

- Create metal labels that stand up to harsh weather, temperature and corrosion.
- For tagging hoses, castings, engine components, pipes, etc.
- Heavy-duty cast aluminum body construction
- Built-in hole punch
- Front scissors cut-off—cuts tape exactly where required
- Tape advance and rewind control
- Wheel characters-selection window helps reduce embossing errors
- Also embosses 12.6 mm (1/2 in) vinyl tape



9U-7918 Label Maker Kit		
Part No.	Description	Size
	Label maker	
9U-7919	Character Wheel, A-Z, 2-9	Character height 4.8 mm (188 in)
9U-7920	Aluminum Tape Roll, no adhesive	1/2 in x 16 ft
	Black vinyl tape roll	12.6 mm x 3.66 m (1/2 in x 12 ft)

Optional			
Part No.	Description	Quantity	Size
9U-7920	Aluminum Tape Roll, no adhesive	10 per box	12.7 mm (1/2 in) x 4.88 mm (16 ft) x 0.1524 mm (0.006 in thick)
9U-7921	Aluminum Tape Roll, with adhesive	10 per box	12.6 mm (1/2 in) x 3.66 m (12 ft) x 0.33 mm (0.13 in thick)
9U-7922	Stainless Steel Tape Roll, no adhesive	10 per box	12.7 mm (1/2 in) x 6.41 m (21 ft) x 0.127 mm (.005 in thick)

9U-7923 Date/Time Stamp

Warranty: Manufacturer's

Multi-functional date/time stamp is also a full-featured digital alarm clock and a quick-reference desk calendar.

Size: 76.2 mm (3 in) H x 104.8 mm (4 1/8 in) W x 44.45 mm (1 7/8 in) D

Comprehensive Stamping Functions

- Prints any combination of date, time, and 7 different status messages (IN, OUT, PAID, FILE, REF, CFMD, RCVD) providing many varied options for identifying documents
- Prints 4-digit or 6-digit sequential numbers as part of date/time/message, or independently, for even more versatility
- Programmable security code prevents tampering, ensures stamping accuracy

Easy-Read Digital Alarm Clock

- Displays hour, minute, AM/PM in large characters for at-a-glance reference
- "Bell" icon indicates when daily alarm is activated

Pre-Programmed Calendar

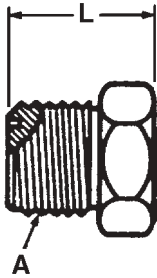
- Gives month, date, year, day of week
- Programmed 200 years into the future with automatic leap-year adjustment



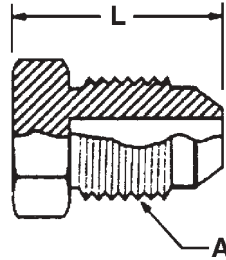
Caps and Plugs

Caps and Plugs

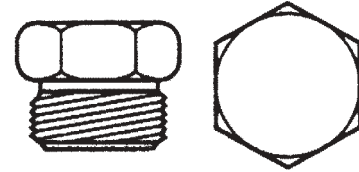
- Used to help protect against damage, dirt and moisture contamination, and corrosion during shipping and storage



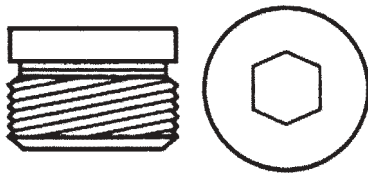
ORFS Plugs				
PART NO.	A THREAD DASH SIZE	A THREAD SIZE (in - TPI)	L LENGTH (in) (mm)	
6V-9507	-4	9/16 - 18	0.67	17
6V-9508	-6	11/16 - 16	0.75	19
6V-9509	-8	13/16 - 16	0.87	22
6V-9510	-10	1 - 14	1.02	26
6V-9511	-12	1 3/16 - 12	1.06	27
6V-9512	-16	1 7/16 - 12	1.10	28
6V-9513	-20	1 11/16 - 12	1.10	28



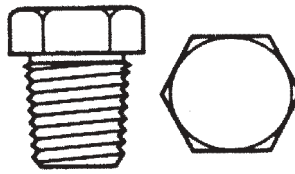
JIC 37° Plugs					
PART NO.	A THREAD DASH SIZE	A THREAD SIZE (in - TPI)	L LENGTH (in) (mm)		
9S5518	-4	7/16 - 20	0.79	20	
5P-4996	-5	1/2 - 20	0.79	20	
9S-8927	-6	9/16 - 18	0.83	21	
5P-2909	-8	3/4 - 16	0.94	24	
2P-9697	-10	7/8 - 14	1.10	28	
9S-8895	-12	1 1/16 - 12	1.26	32	
5P-4299	-14	1 3/16 - 12	1.30	33	
5P-2299	-16	1 5/16 - 12	1.34	34	



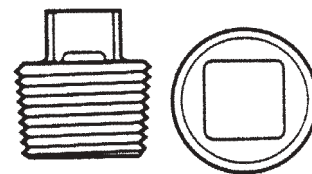
Straight Thread O-Ring — Hex Head Plugs		
PART NO.	THREAD SIZE (in - TPI)	O-RING SEAL
9S-4180	5/16 - 24	4J-7533
1N-5999	3/8 - 24	7J-0204
9S-4182	7/16 - 20	3J-7354
3K-8460	1/2 - 20	1J-9671
9S-4191	9/16 - 18	3J-1907
9S-4185	3/4 - 16	3K-0360
9S-4190	7/8 - 14	2M-9780
9S-4183	1 1/16 - 12	3D-2824
9S-4188	1 3/16 - 12	4K-1388
9S-4181	1 5/16 - 12	7M-8485
9S-6130	1 5/8 - 12	2S-4078
1N-5998	1 7/8 - 12	6K-6307
9S-7583	2 1/2 - 12	030-4606



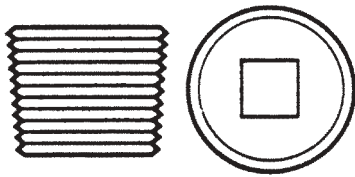
Straight Thread O-Ring — Allen Drive Plugs		
PART NO.	THREAD SIZE (in - TPI)	O-RING SEAL
9S-8001	5/16 - 24	4J-7533
9S-8007	3/8 - 24	7J-0204
9S-8002	7/16 - 20	3J-7354
9S-8003	1/2 - 20	1J-9671
9S-8004	9/16 - 18	3J-1907
9S-8005	3/4 - 16	3K-0360
9S-8006	7/8 - 14	2M-9780
9S-8008	1 1/16 - 12	3D-2824
9S-8009	1 3/16 - 12	4K-1388
9S-9334	1 5/16 - 12	7M-8485
9S-8010	1 5/8 - 12	2S-4078
5P-7684	1 7/8 - 12	6K-6307



Pipe — Hex Head Plugs	
PART NO.	THREAD SIZE (in - TPI)
2S-7905	1/16 - 27
5M-6214	1/8 - 27
5M-6213	1/4 - 18
3J-5390	3/8 - 18
4J-4382	1/2 - 14
3M-7045	3/4 - 14
090-9019	1 - 11 1/2

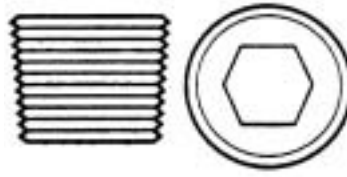


Pipe — Square Head Plugs	
PART NO.	THREAD SIZE (in - TPI)
2B-7408	1/8 - 27
2B-7409	1/4 - 18
2B-7457	3/8 - 18
5B-9169	1/2 - 14
5P-3320	3/4 - 14
7L-2505	1 - 11 1/2
068-0710	1 1/4 - 11 1/2
4B-8586	2 - 11 1/2



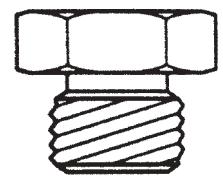
Pipe — Square Drive Plugs

PART NO.	THREAD SIZE (in - TPI)
7F-9504	1/4 - 18
4B-4845	3/8 - 18
2B-0858	1/2 - 14
1B-5174	3/4 - 14
3B-0551	1 - 11 1/2
1B-5170	1 1/4 - 11 1/2
7B-9665	1 1/2 - 11 1/2
6V-1897	2 - 11 1/2
6V-3280	2 1/2 - 8
6V-3257	3 1/2 - 8



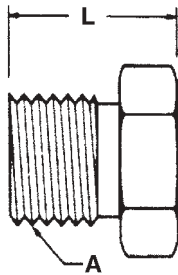
Pipe — Allen Drive Plugs

PART NO.	THREAD SIZE (in - TPI)
4D-0514	1/16 - 27
9F-2247	1/8 - 27
7H-3171	1/4 - 18
7M-7410	3/8 - 18
3L-1850	1/2 - 14
6L-8355	3/4 - 14
2R-5657	1 - 11 1/2



JIS-BSPP Shipping Plugs

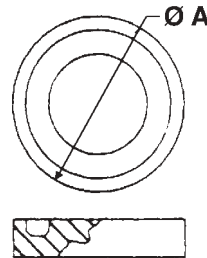
PART NO.	JIS-BSPP THREAD SIZE (in - TPI)
093-1321	1/4 - 19
096-6073	3/8 - 19
093-1322	1/2 - 14
093-1323	3/4 - 14
096-3829	1 - 11



Metric Plugs

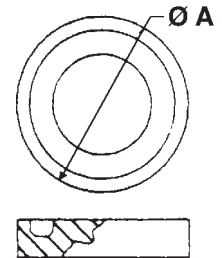
PART NO.	A METRIC THREAD SIZE (dia x pitch)	TUBE O.D.		L LENGTH	
		LIGHT DUTY (mm)	HEAVY DUTY (mm)	(in)	(mm)
105-5211	M12 x 1.5	6	¹	0.65	17
2Y-6462	M14 x 1.5	8	6	0.63	16
9T-6322	M14 x 1.5	8	6	0.87	22
2Y-5841	M16 x 1.5	10	8	0.63	16
2Y-6461	M16 x 1.5	10	8	0.71	18
8C-4424	M22 x 1.5	14	14	1.06	27

¹ Size not available.



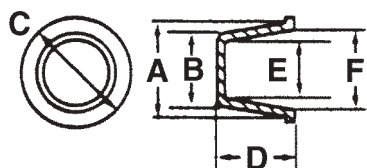
SAE Code 61 Flange Port Cover

PART NO.	A HEAD SIZE		A FLANGE DASH SIZE
	(in)	(mm)	
5H-4017	1.19	30.2	-8
5H-4018	1.50	38.1	-12
5H-4019	1.75	44.5	-16
5H-4020	2.00	50.8	-20
2J-2668	2.38	60.3	-24
2J-5608	2.81	71.4	-32



Caterpillar Flange Port Cover

PART NO.	A HEAD SIZE		A FLANGE DASH SIZE
	(in)	(mm)	
5P-0045	1.25	31.8	-8
5P-0046	1.63	41.3	-12
5P-0047	1.88	47.6	-16
5P-0048	2.12	54.0	-20
5P-0049	2.50	63.5	-24
5P-0050	3.13	79.4	-32

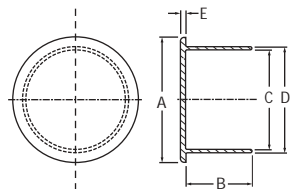


Tapered Cap and Plug Protectors

PART NO.	PKG. QTY.	MAT. ¹	A (mm)		B (mm)		C (mm)		D (mm)		E (mm)		F (mm)		COMMON USES CAPS	COMMON USES PLUGS
9U-7067	250	1	0.40	10	0.33	8	0.56	14	0.38	10	0.27	7	0.33	8		1/8 in NPT
9U-7068	250	1	0.43	11	0.36	9	0.59	15	0.38	10	0.30	8	0.37	9		7/16 in Std. Thd.
9U-7069	250	1	0.49	12	0.42	11	0.59	15	0.38	10	0.36	9	0.42	11	1/8 in NPT	1/4 in NPT 1/2 in Std. Thd.
9U-7070	250	1	0.55	14	0.49	12	0.72	18	0.50	13	0.41	10	0.49	12	1/2 in Std. Thd.	9/16 in Std. Thd.
9U-7071	250	1	0.62	16	0.53	13	0.75	19	0.50	13	0.47	12	0.55	14	1/4 in NPT	5/8 in Std. Thd.
9U-7072	250	1	0.63	16	0.55	14	0.78	20	0.50	13	0.49	12	0.57	14	9/16 in Std. Thd.	3/8 in NPT
9U-7073	250	1	0.73	18	0.64	16	0.88	22	0.50	13	0.58	15	0.67	17		3/4 in Std. Thd.
9U-7074	250	1	0.75	19	0.67	17	0.88	22	0.63	16	0.62	16	0.69	18	3/8 in NPT	
9U-7075	250	1	0.79	20	0.69	18	0.94	24	0.63	16	0.63	16	0.72	18		1/2 in NPT
9U-7076	250	1	0.85	22	0.75	19	1.03	26	0.63	16	0.69	17	0.79	20		7/8 in Std. Thd.
9U-7077	250	1	0.91	23	0.80	20	1.09	28	0.75	19	0.74	19	0.85	21	1/2 in NPT	
9U-7078	250	1	0.98	25	0.87	22	1.11	28	0.63	16	0.81	21	0.92	23		3/4 in NPT
9U-7079	250	1	1.04	26	0.90	23	1.16	29	0.75	19	0.83	21	0.98	25		11/16 in Std. Thd.
9U-7080	250	1	1.09	28	0.97	25	1.25	32	0.75	19	0.90	23	1.03	26	3/4 in NPT	
9U-7081	250	1	1.15	29	1.00	25	1.31	33	0.75	19	0.94	24	1.08	27	11/16 in Std. Thd.	
9U-7082	250	1	1.23	31	1.11	28	1.52	39	0.75	19	1.04	26	1.18	30		1 in NPT
7E-8716	250	1	1.29	33	1.18	30	1.44	37	0.75	19	1.11	28	1.22	31		15/16 in Std. Thd.
9U-7084	250	1	1.35	34	1.24	31	1.50	38	0.75	19	1.17	30	1.30	33	1 in NPT 15/16 in Std. Thd.	
9U-7085	250	1	1.60	41	1.45	37	1.75	44	0.75	19	1.39	35	1.54	39		11/4 in NPT
9U-7086	100	1	1.60	41	1.52	39	1.75	44	0.75	19	1.46	37	1.54	39		15/8 in Std. Thd.
9U-7087	100	1	1.68	43	1.56	40	1.88	48	0.75	19	1.50	38	1.62	41	11/4 in NPT 15/8 in Std. Thd.	13/4 in Std. Thd.
9U-7088	100	1	1.88	48	1.75	44	2.03	52	0.75	19	1.69	43	1.82	46		11/2 in NPT 17/8 in Std. Thd.
9U-7089	100	1	1.94	49	1.81	46	2.13	54	1.00	25	1.75	44	1.88	48	1 1/2 in NPT 17/8 in Std. Thd.	
9U-7090	50	1	2.26	57	2.23	57	2.50	64	0.50	13	2.17	55	2.20	56		2 in NPT
9U-7091	50	1	2.47	63	2.30	58	2.63	67	1.00	25	2.24	57	2.40	61	2 in NPT	
9U-7092	50	1	2.79	71	2.65	67	3.00	76	0.50	13	2.58	66	2.73	69		2 1/2 in NPT
6V-7494	50	1	3.00	76	2.74	70	3.13	79	1.00	25	2.68	68	2.94	75	2 1/2 in NPT	
9U-7094	50	1	3.45	88	3.32	84	3.63	92	0.50	13	3.24	82	3.37	86		3 in NPT
9U-7095	50	1	3.58	91	3.24	82	3.94	100	1.00	25	3.16	80	3.49	89	3 in NPT	
9U-7096	50	1	4.46	113	4.22	107	5.00	127	1.00	25	4.14	105	4.38	111		4 in NPT
6V-7496	50	1	4.62	117	4.37	111	5.00	127	1.00	25	4.29	109	4.50	114	4 in NPT	

¹ 1 - Grade 1 Virgin Polyethylene 2 - Low Density Polyethylene 3 - High Density Polyethylene

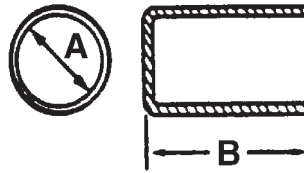
NOTE: To assure a proper fit, dimension "E" should be approximately .020 in smaller than the opening diameter of the part to be protected, or dimension "A" should be approximately .020 in larger than the opening diameter of the part to be protected.



ID: illus 19p6,06p0, C80498T1

Straight Cap

PART NO.	PKG. QTY.	MAT.	A (mm)		B (mm)		C (mm)	D (mm)		E (mm)	
217-1591	50	1	1.25	31.65	0.67	17	1	25.22	1.06	26.82	0.05 1.4



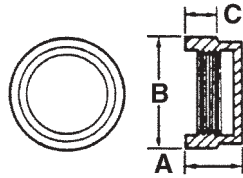
Non-threaded Cap Protectors

PART NO.	PKG. QTY.	MATERIAL ¹	Diam. A		Length B	
			(in)	(mm)	(in)	(mm)
9U-7166	250	1	0.13	3	0.63	16
9U-7167	250	1	0.25	6	0.88	22
9U-7168	250	1	0.30	7	0.88	22
9U-7169	250	1	0.38	10	0.88	22
9U-7170	250	1	0.44	11	0.88	22
9U-7171	250	1	0.50	13	0.88	22
9U-7172	250	1	0.56	14	0.88	22
9U-7173	250	1	0.63	16	0.88	22
9U-7174	100	1	0.69	17	0.88	22
9U-7175	100	1	0.75	19	0.88	22
9U-7176	100	1	0.81	21	0.88	22
9U-7177	100	1	0.88	22	0.88	22
9U-7178	100	1	1.00	25	0.75	19
9U-7179	100	1	1.06	27	0.88	22
9U-7180	100	1	1.19	30	1.00	25

PART NO.	PKG. QTY.	MATERIAL ¹	Diam. A		Length B	
			(in)	(mm)	(in)	(mm)
9U-7181	100	1	1.25	32	0.88	22
9U-7182	100	1	1.31	33	0.88	22
9U-7183	100	1	1.38	35	0.88	22
9U-7184	100	1	1.44	37	0.88	22
9U-7185	100	1	1.50	38	0.88	22
9U-7186	100	1	1.63	41	1.00	25
9U-7187	100	1	1.69	43	0.88	22
9U-7188	100	1	1.75	44	0.88	22
9U-7189	100	1	1.88	48	0.88	22
9U-7190	100	1	2.00	51	0.88	22
9U-7191	100	1	2.13	54	0.88	22
9U-7192	100	1	2.38	60	0.88	22
9U-7193	100	1	2.50	64	0.88	22
9U-7194	50	1	3.13	79	1.38	35

¹ 1 - Grade 1 Virgin Polyethylene
 2 - Low Density Polyethylene
 3 - High Density Polyethylene

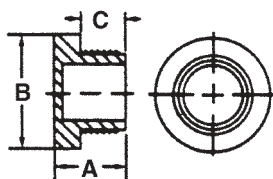
Metric Threaded Cap Protectors



PART NO.	PKG. QTY.	MATL. ¹	METRIC THREAD SIZE (dia x pitch)	A		B		C	
				(in)	(mm)	(in)	(mm)	(in)	(mm)
9U-7145	100	2	M10 x 1.0	0.39	10	0.54	14	0.29	8
9U-7146	100	2	M12 x 1.5	0.47	12	0.62	16	0.37	10
9U-7147	100	2	M14 x 1.5	0.47	12	0.70	18	0.37	10
9U-7148	100	2	M16 x 1.5	0.47	12	0.78	20	0.37	10
9U-7149	100	2	M18 x 1.5	0.55	14	0.85	22	0.45	12
9U-7150	100	2	M20 x 1.5	0.55	14	0.92	24	0.37	10
9U-7151	50	2	M22 x 1.5	0.54	14	1.02	26	0.45	12
9U-7152	50	2	M24 x 1.5	0.55	14	1.14	29	0.45	12
9U-7153	50	2	M26 x 1.5	0.55	14	1.18	30	0.45	12

¹ 1 - Grade 1 Virgin Polyethylene 2 - Low Density Polyethylene 3 - High Density Polyethylene

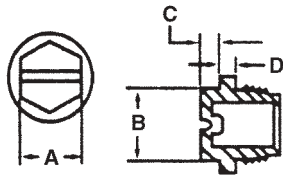
Metric Threaded Plug Protectors



PART NO.	PKG. QTY.	MATL. ¹	METRIC THREAD SIZE (dia x pitch)	A		B		C	
				(in)	(mm)	(in)	(mm)	(in)	(mm)
9U-7136	100	2	M10 x 1.0	0.57	15	0.60	15	0.41	10
9U-7137	100	2	M12 x 1.0	0.66	17	0.73	19	0.42	11
9U-7138	50	2	M14 x 1.5	0.68	17	0.73	19	0.37	10
9U-7139	50	2	M16 x 1.5	0.68	17	0.87	22	0.50	13
9U-7140	50	2	M18 x 1.5	0.72	18	0.96	24	0.54	14
9U-7141	50	2	M20 x 1.5	0.72	18	1.04	26	0.55	14
9U-7142	50	2	M22 x 1.5	0.72	18	1.11	28	0.54	14
9U-7143	50	2	M24 x 1.5	0.73	19	1.23	31	0.54	14
9U-7144	50	2	M26 x 1.5	0.73	19	1.46	37	0.54	14

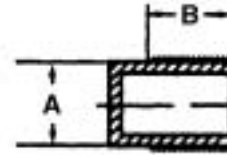
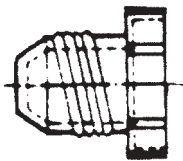
¹ 1 - Grade 1 Virgin Polyethylene 2 - Low Density Polyethylene 3 - High Density Polyethylene

Threaded and Slotted Plug Protectors



PART NO.	PKG. QTY.	MATL ¹	THREAD SIZE (in - TPI)	TUBE DIAMETER		A		B		C		D	
				(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)		
9U-7104	250	3	7/16 - 20			0.43	11	0.62	16	0.18	5	0.30	8
9U-7105	100	3	1/2 - 20			0.50	13	0.68	12	0.18	5	0.36	9
9U-7106	100	3	9/16 - 18			0.50	13	0.75	19	0.18	5	0.33	8
9U-7107	100	3	3/4 - 16			0.68	17	0.94	24	0.19	5	0.44	11
9U-7108	100	3	7/8 - 14			0.75	19	1.06	27	0.24	6	0.50	13
9U-7109	100	3	1 1/16 - 14			0.87	22	1.31	33	0.25	6	0.62	16
9U-7110	50	3	1 3/16 - 12			1.00	25	1.50	38	0.30	8	0.70	18
9U-7111	50	3	1 5/16 - 12	1.00	25.4	1.07	27	1.62	41	0.30	8	0.70	18
9U-7112	50	3	1 5/8 - 12			1.13	29	1.88	43	0.30	8	0.75	19
9U-7113	50	3	1 7/8 - 12			1.50	38	2.13	54	0.30	8	0.75	19

¹ 1 - Grade 1 Virgin Polyethylene 2 - Low Density Polyethylene 3 - High Density Polyethylene



Threaded Plug Protectors for Flared Fittings

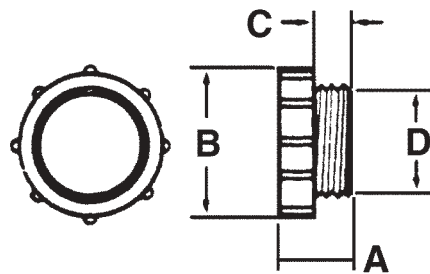
PART NO.	PKG. QTY.	MATL ¹	THREAD SIZE (in - TPI)	TUBE DIAMETER	
				(in)	(mm)
9U-7114	250	1	7/16 - 20	0.25	6.4
9U-7115	250	1	9/16 - 18	0.38	9.5
9U-7116	250	1	3/4 - 16	0.50	12.7
9U-7117	100	1	7/8 - 14	0.63	15.9
9U-7118	100	1	1 1/16 - 12	0.75	19.1
9U-7119	100	1	1 5/16 - 12	1.00	25.4

¹ 1 - Grade 1 Virgin Polyethylene
2 - Low Density Polyethylene
3 - High Density Polyethylene

Plug Protectors for NPT Thread — Square Head

PART NO.	PKG. QTY.	MATERIAL ¹	THREAD SIZE (in - TPI)	A		B	
				(in)	(mm)	(in)	(mm)
9U-7098	250	3	1/8 - 27	0.28	7	0.38	10
9U-7099	250	3	1/4 - 18	0.38	10	0.44	11
9U-7100	250	3	3/8 - 18	0.44	11	0.50	13
9U-7101	250	3	1/2 - 14	0.56	14	0.56	14
9U-7102	100	3	3/4 - 14	0.69	17	0.63	16

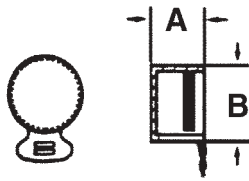
¹ 1 - Grade 1 Virgin Polyethylene
2 - Low Density Polyethylene
3 - High Density Polyethylene



Plug Protectors for NPT Thread — Knurled Head

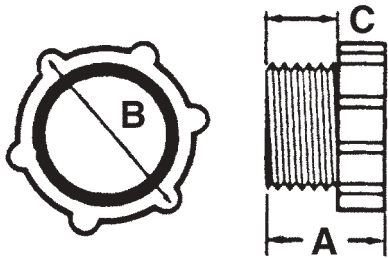
PART NO.	PKG. QTY.	MATERIAL ¹	THREAD SIZE (in - TPI)	A		B		C		D	
				(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)
9U-7103	100	3	1 - 1 1/2	0.50	13	1.57	40	0.25	6	1.18	30

¹ 1 - Grade 1 Virgin Polyethylene 2 - Low Density Polyethylene 3 - High Density Polyethylene



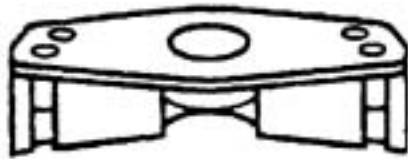
Tear Cap Protectors for Standard Thread									
PART NO.	PKG. QTY.	MATERIAL ¹	THREAD SIZE (in - TPI)	JIC/SAE FITTING	A (in)	A (mm)	B (in)	B (mm)	
9U-7120	250	1	7/16 - 20	4-TS	0.46	12	0.43	11	
9U-7121	250	1	1/2 - 20	5-TS	0.46	12	0.49	12	
9U-7122	250	1	9/16 - 18	6-TS	0.48	12	0.55	14	
9U-7123	250	1	11/16 - 16	7-TS	0.48	12	0.67	17	
9U-7124	250	1	3/4 - 16	8-TS	0.56	14	0.74	19	
9U-7125	250	1	13/16 - 16	9-TS	0.56	14	0.80	20	
9U-7126	250	1	7/8 - 14	10-TS	0.65	17	0.87	22	
9U-7127	250	1	1 - 14	11-TS	0.65	17	0.99	25	
9U-7128	250	1	11/16 - 12	12-TS	0.75	19	1.05	27	
9U-7129	250	1	13/16 - 12	13-TS	0.75	19	1.17	30	
9U-7130	100	1	15/16 - 12	16-TS	0.75	19	1.30	33	
9U-7131	100	1	17/16 - 12	17-TS	0.75	19	1.43	36	
9U-7132	100	1	15/8 - 12	20-TS	0.83	21	1.62	41	
9U-7133	100	1	111/16 - 12	21-TS	0.83	21	1.67	42	
9U-7134	100	1	17/8 - 12	24-TS	0.95	24	1.87	48	
9U-7135	50	1	21/2 - 12	32-TS	1.20	30	2.49	63	

¹ 1 - Grade 1 Virgin Polyethylene 2 - Low Density Polyethylene 3 - High Density Polyethylene



British Thread — BSP/GAS Plug Protectors									
PART NO.	PKG. QTY.	MATERIAL ¹	THREAD SIZE (in - TPI)	(in)	A (mm)	B (in)	B (mm)	C (in)	C (mm)
9U-7195	100	2	1/8 - 28	0.41	11	0.65	16	0.16	4
9U-7196	100	2	1/4 - 19	0.50	13	0.74	19	0.26	7
9U-7197	100	2	3/8 - 19	0.47	12	0.90	23	0.27	6
9U-7198	100	2	1/2 - 14	0.68	17	1.10	28	0.41	10
9U-7199	50	2	5/8 - 14	0.72	18	1.23	31	0.51	13
9U-7200	50	2	3/4 - 14	0.67	17	1.27	32	0.43	11
9U-7201	50	2	7/8 - 14	0.71	18	1.50	38	0.53	14
9U-7202	50	2	1 - 11	0.66	17	1.57	40	0.42	11

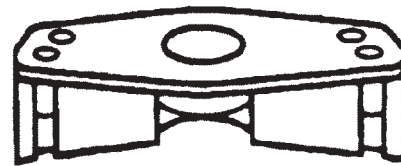
¹ 1 - Grade 1 Virgin Polyethylene 2 - Low Density Polyethylene 3 - High Density Polyethylene



SAE Code Flange 61 Bolted Protectors

PART NO.	PKG. QTY.	MATERIAL ¹	THREAD SIZE (in - TPI)
9U-7154	25	1	1/2 NPT
9U-7155	25	1	3/4 NPT
9U-7156	25	1	1 NPT
9U-7157	25	1	1 1/4 NPT
9U-7158	25	1	1 1/2 NPT
9U-7159	25	1	2 NPT
9U-7160	25	1	2 1/2 NPT

¹ 1 - Grade 1 Virgin Polyethylene
2 - Low Density Polyethylene
3 - High Density Polyethylene



SAE Code 62 and Caterpillar Flange Bolted Protectors

PART NO.	PKG. QTY.	MATERIAL ¹	THREAD SIZE (in - TPI)
9U-7161	25	1	3/4 NPT
9U-7162	25	1	1 NPT
9U-7163	25	1	1 1/4 NPT
9U-7164	25	1	1 1/2 NPT
9U-7165	25	1	2 NPT

¹ 1 - Grade 1 Virgin Polyethylene
2 - Low Density Polyethylene
3 - High Density Polyethylene

Adhesives/Sealants

Introduction

For helpful information on usage of these and other chemicals see the following:

Publications

Questions and Answers about Caterpillar Adhesives, Sealants and Maintenance Products, NEXG4502

Videos

- Chemical Products — How to Use Them and What to do — covers Caterpillar/Loctite Products and Caterpillar Greases
NEVN3778 (1/2 in VHS) July 1996
- Crack and Leak Detection, and Anti-Seizes
NEVN3902 (1/2 in VHS) October 1996
- Rust Preventatives and Paint
NEVN3944

For MSDS information

Call 309-675-5182
FAX 309-675-1876
or send Email to fritz@cat.e-mail.com

For medical emergency, call

800-458-5924 in USA or call
303-893-1322 in other countries

173-0531 Sealant Repair Kit



Part No.	Description	Size
4C-9507	Retaining Compound	50 ml (1.69 fl oz)
7M-7456	Bearing Mount	50 ml (1.69 fl oz)
9S-3263	Thread Lock	50 ml (1.69 fl oz)
5P-3413	Pipe Sealant	50 ml (1.69 fl oz)
169-5464	Quick Cure Primer	133 ml (4.5 fl oz)

154-8874 DEPEND® No-Mix Adhesive Kit

- Bond wood, metal, glass, most rubbers and plastics — bond serial number plates to engine blocks, transmission, etc.; bond rear view mirrors
- Fast curing — handling strength in minutes; full strength in 2-4 hours
- Heat resistant to 121°C (250°F)
- High strength, vibration and oil resistant



Description	Size	Quantity
Adhesive	25 ml (.85 fl oz)	
Activator	1.25 g (.88 oz)	10

1U-6142 Belzona® Kit for Block Repair

- Used for repair of pitting/cavitation erosion in engine blocks
- Contains metal filled epoxy compounds to replace the metal which has been eroded away by pitting/cavitation in engine blocks

1U-6136 (or 207-7530 EAME only) Belzona 1111 Super Metal

- Can be molded or hand formed and machined after it is cured
- At 25° C (77°F), has a 15 minute pot life
- Can be machined after 1 hour; has full mechanical properties after 24 hours; and can be immersed in chemicals after 48 hours

1U-6132 (or 207-7531 EAME only) Belzona 1311 Ceramic R Metal

- Can be molded or hand formed but it must be machined with diamond tooling or ground after it is cured.
- At 25° C (77°F), has a 15 minute pot life
- Can be machined or ground after 1 hour; has full mechanical properties after 24 hours; and can be immersed in chemicals after 48 hours

1U-6140 (or 207-7532 EAME only) Belzona 1221 Super E-Metal

- Can be molded or hand formed and machined after it is cured.
- At 25° C (77°F), has a 3 minute pot life
- Can be machined after 35 minutes; has full mechanical properties after 60 minutes; and can be immersed in chemicals after 20 hours



Come in handy plastic tool box; knives, spatulas, work surface and tool box are not serviced separately

Part No.	Description	Quantity
1U-6132	Belzona 1311 Ceramic R Metal (2 Kg) Kit	1
1U-6136	Belzona 1111 Super Metal (2 Kg) Kit	1
1U-6140	Belzona 1221 Super E-Metal (125 gram) Kit	4
1U-6128	Reinforcement Tape (10 meter)	1
	Knives (Plastic)	2
	Work Surface (Plastic)	1
	Spatulas (Plastic)	2
	Instructions for Use	3
	MSDS for all products in kit	6

NOTE: These products are packaged in kits to provide the correct ratio for mixing. They must be mixed only in the correct ratio in order to get satisfactory results. The various bases and solidifiers are not serviced individually. Instructions for use of each of these compounds are included in the kit and the correct mix ratios are specified for each. If desired, the cure speed of the Belzona compounds can be accelerated by the application of heat. You can apply the heat by either heat lamps, ovens or heat guns.

Reference

SEHS8869 Special Instruction; contains instructions for making repairs to engine blocks with 1U-6132 Belzona® 1311 Ceramic R Metal

SELD0458 Reconditioning Bulletin for 3500 Cylinder Block Pitting; instructions for repairing water port damage with 1U-6132 Belzona 1311 Ceramic R Metal

SEBF8263 Reuse and Salvage Guide for 3500 Top Deck Repair on cylinder blocks; instructions for repairing top deck damage with 1U-6132 Belzona 1311 Ceramic R Metal

NEVN3860 "The Rest of the Adhesives," 1/2 inch VHS; demonstration of how to prepare, measure and mix components, and application techniques

144-7779 Belzona® Kit for Challenger Track Belt Repair

- Used for repair cuts, tears and severe localized wear on the belt of the Challenger track.
- Contains durable and abrasion resistant two component elastomeric repair system for repairing, rebuilding and protecting rubber and metal substrates.
- Belzona D&A can be handformed during application to conform to any contour. Cured material may be dressed down or trimmed (as you would the base material).

Comes boxed as a kit; knives, spatulas and mixing bowls are not serviced separately

Part No.	Description	Quantity
	Belzona 2111 D&A Hi-Build Elastomer Kit, 500 gm unit (15.65 fl oz)	1
144-7783	Belzona 2911 Q.C. Conditioner, 150 gm unit	1
	Knife	1
	Spatula	1
	Mixing bowl	1
	Instructions, MSDS's	1

NOTE: These products are packaged in kits to provide the correct ratio for mixing. They must be mixed only in the correct ratio achieved by carefully emptying both the base and solidifier container. Do not open these containers until you are ready to complete the mixing and application. The material is not useable after extended exposure to air. The base and solidifier are not serviced separately. The 2911 Q.D. Conditioner is used as required to produce a thin even coat. It is serviced separately to enable replacement of out of date units.

A 156-2732 Roughing Brush is available separately to assist in properly preparing the edge of the area to be repaired. It is specially-designed to prepare the rubber surface prior to repair. (Service Part: 156-2733 Refill Teeth)

Thread Lock

- Removeable strength
- Breakaway torque — 115 in. lb
- Prevail torque — 53 in. lb
- Service temperature up to 149° C (300° F)
- Medium Gap fill, up to 0.13 mm (0.005 in)
- 10 minute fixture — 24 hour full cure time
- Used to seal, lock in place, and prevent rust lock:
 - Small bolts, set screws, terminal screws, deck plate cap screws, radiator guard bolts
 - Roller guard rolls



Part No.	Size	Quantity
9S-3263	50 ml (1 2/3 fl oz)	5
4C-4030	10 ml (.34 fl oz)	10

High Strength Thread Lock

- High strength — permanent
- Breakaway torque — 230 in. lb
- Prevail torque — 320 in. lb
- Service temperature up to 149° C (300° F)
- Medium Gap fill, up to 0.15 mm (0.007 in)
- 10 minute fixture — 24 hour full cure time



Part No.	Size	Quantity
154-9731	10 ml (.34 fl oz)	5
155-0695	50 ml (1.23 fl oz)	10

High Strength/High Temperature Retaining Compounds

- High temperature capacity — 232°C (450°F)
- Large gap fill .38 mm (0.015 in)
- High shear strength — 21 mPa (3000 psi)
- Medium cure speed — cure time 2-4 hours
- Seals/locks in place, augment press/slip fits on:

- Large bolts and studs
- Lip seals and wear sleeves
- Pins, gears and pulleys

Part No.	Size	Quantity
4C-9506	10 ml (.34 fl oz)	10
4C-9507	50 ml (1 2/3 fl oz)	5



1Y-3904 Clear Adhesive Sealant

- Holds seals in place during assembly
- Contents comes in a syringe
- Used for Single Cylinder Oil Test Engines (SCOTE)
- Size: 20 ml (.68 fl oz)

Bearing Mounts

- High shear strength — 21mPa (3000 psi)
- Service temperature up to 149°C (300°F).
- Medium gap fill, up to .13 mm (.005 in).
- Fast cure speed — full cure time 1-2 hours at room temperature
- Used to seal, lock in place, augment press fits and slip fits on:
 - Large bolts
 - Lip seals
 - Ball bearings in housings or on shafts
 - Thin wall bushings in housings
 - Sintered bearings
 - Plain bearings
 - Needle bearings
 - Core plugs
 - Wear sleeves
 - Cartridge pins on loader linkages
 - Gears
 - Pulleys
 - Fan hubs



Part No.	Size	Quantity
7M-7456	50 ml (1 2/3 fl oz)	5
4C-4032	10 ml (.34 fl oz)	10

Wicking Sealants

- Locks and seals fasteners after assembly
- Low viscosity approximately 12 mPa (12 cP's)
- Small gap Fill 0.1 mm (.004 inch) diametral
- High shear strength 21 mPa (3000 psi) on steel
- Fast cure time 1 hr to full cure
- High heat resistance — up to 204°C (400°F)
- Low viscosity (almost as thin as water):
 - makes this material ideal for sealing and locking tight press fits
 - allows this material to wick into joints that are already assembled, then cure in between the mating parts to seal and lock parts in place, prevent loosening from vibration
- Apply Wicking Sealant
 - to screws in terminal strips on generator sets, lift trucks, on and off-road equipment to prevent loosening from vibration. (Normally the screws must be removed individually, cleaned, threadlocker applied and then the screws must be reinstalled
 - to seal minor porosity in welded joints, castings, and die castings to prevent weeping/seeping type leaks. For best results, apply to suspect areas before they are contaminated with oils, etc.



Part No.	Size	Quantity
4C-9508	10 ml (.34 fl oz)	10
4C-9509	50 ml (1.69 fl oz)	10

5H-2471 Cement

- Bond, seal or patch
- Bond cork, leather, rubber, metal — bond headliners and wall insulation in cabs
- Contains flammable solvent
- Size: 236 ml (8 fl oz)
- Quantity: 12



222-3113 Spray Adhesive

- Convenient aerosol application
- Excellent general purpose adhesive
- Quickly fix problems in the shop or field
- Size: 339 g (12 oz)
- Quantity: 12



5P-3321 Epoxy Mixer Cup Kit

- 10 pre-measured mixer cups in each can — each one contains the correct ratio of resin and catalyst.
- General purpose, high strength, bonding and sealing
- Size: 42.5 g (1.5 oz)
- Quantity: 10



143-9508 Epoxy Adhesive

143-9509 Nozzle Mixer

143-9510 Applicator

143-9511 Plunger Replacement

Model: 3500 Engines

- Fast cure adhesive
- 30 minute handling strength

Shear strength	2500 psi
Pot life	9 minutes
Mix ratio	1:1
Size	48.2 g (1.07 oz)

5P-3413 Pipe Sealant w/Teflon

- Very low shear strength: large gap fill
- Service temperature up to 149°C (300°F)
- Very slow cure speed
- Seal and lock tapered pipe plugs, nipples, and fittings.
- Size: 50 ml (1.69 fl oz)
- Quantity: 10



169-5464 Quick Cure Primer

- Removes grease and oil from surface
- Reduces cure time on anaerobic sealants and adhesives such as thread lock, retaining compound, and bearing mount
- Convenient aerosol application
- Single-component, non-CFC solvent-based surface activator
- Use when temperature is below 15°C (59°F)
- Size: 133 mL (4.5 fl oz)



RTV Silicone Adhesive Sealant

- Makes formed-in-place gaskets of any size and shape filling voids and irregular surfaces for a positive seal
- Pressurized dispenser produces a consistent and even bead size
- Can be applied faster with less waste than using standard squeeze tubes
- Ready-to-use, no mixing and cures at room temperature
- Excellent weather resistance and extreme flexibility — will not harden or crack
- Adheres to metal, glass, natural and synthetic rubbers, wood, ceramic, other silicone rubbers, painted surfaces, and many plastics
- Resistant to most chemicals, solvents, and oils
- Works for electrical insulating applications
- Non-sag — can be applied to horizontal or vertical surfaces
- Low odor, non corrosive sealant
- Will not harm oxygen sensors



Part No.	Size	Color
141-5830	205 g (7.25 oz)	Black
141-5831	248 g (8.75 oz)	Blue

6V-6640 Gasket Maker

- Medium strength for rigid flanges where extra shear strength is desired
- Service temperature up to 175°C (350°F)
- Large gap fill, up to .5 mm (.020 in)
- Fast cure speeds
- Also see 1U-8846 Flexible Gasket Maker.
- Size: 50 ml (1.69 fl oz)
- Quantity: 5
- Uses:
 - original equipment gasket for many applications
 - seals and locks tapered pipe plugs, nipples, and fittings
 - core plugs; some final drive flanges
 - replaces flywheel housing gasket in several applications.



4C-9501 Form-A-Gasket No. 1

- Dries hard, machinable
- Resists gasoline, diesel fuel, oils, antifreeze, alkali, acids, steam
- Withstands pressures to 34474 kPa (5000 psi)
- Withstands temperature to 204°C (400° F)
- Size: 85 g (3 oz) tube
- Quantity: 12



4C-9502 Form-A-Gasket No. 2

- Non-hardening; thick, pasty
- Resists gasoline, diesel fuel, oils, antifreeze, alkali, acids, steam
- Withstands pressures to 34474 kPa (5000 psi)
- Withstands temperature to 204°C (400°F)
- Seals joints in segmented gaskets, and "T" joints
- Size: 85 g (3 oz) tube
- Quantity: 12



4C-9505 Form-A-Gasket No. 3

- Thin, brushable, for sealing finely machined surfaces
- Resists gasoline, diesel fuel, oils, antifreeze, alkali, acids, steam
- Withstands pressures to 34474 kPa (5000 psi)
- Withstands temperature to 204°C (400°F)
- Seal many types of gear type pumps: seals rubber hose to nipple connections
- Size: 120 ml (4 fl oz) can
- Quantity: 12



Flexible Gasket Makers

- Moderate strength for thin flexible flanges
- Service temperature up to 177°C (350°F)
- Large gap fill, up to .5 mm (.020 in)
- Fast cure speed
- Uses:
 - original equipment gasket for many applications
 - seals and locks tapered pipe plugs, nipples and fittings
 - some final drive flanges.



Part No.	Size	Quantity
1U-8846	50 ml (1.69 fl oz)	5
4C-5300	300 ml (10.3 fl oz)	1

Liquid Gasket

- For use on 3176 Engine
- Permanently flexible
- Seals up to .08 mm (.003 in)
- Temperature resistance is 149°C (300°F)
- Will not cause corrosion on aluminum parts
- Contains acetone (highly flammable); does not contain chlorine



Part No.	Size	Quantity
9U-5839	118 ml (4 fl oz)	12
138-8436 (not shown)	236 ml (8 fl oz) brush-top can	12

Room Temperature Vulcanizing (RTV) Silicone Adhesive/Sealants

- General purpose bonding and sealing applications.
- Resists cracking, shrinking, and migration.
- Excellent temperature range.
- Can be used for some low pressure gasketing applications.
- Minimum temperature: -73°C (-100°F)
- Also see Window Bonding.

High Temperature Adhesive Sealant



Standard cure for most applications



Electronic application RTV (non-corrosive cure); Sensor Safe RTV; Glass to glass bonding — Windshield seam RTV



Part No.	Qty.	Color	Max. Temp. (intermittent)	Max. Temp. (continuous)	Size
Standard cure for most applications:					
8T-9022	10	Blue	260°C (500°F)	260°C (500°F)	300 ml (10.15 fl oz)
8T-9014	10	Clear	249°C (480°F)	204°C (400°F)	300 ml (10.15 fl oz)
4C-9613	1	Clear	249°C (480°F)	204°C (400°F)	82.8 ml (3 fl oz)
3S-6252	1	Black	260°C (500°F)	204°C (400°F)	82.8 ml (3 fl oz)
High Temperature Adhesive Sealant					
8T-9013	10	Red	343°C (650°F)	316°C (600°F)	300 ml (10.15 fl oz)
4C-9614	1	Red	343°C (650°F)	316°C (600°F)	82.8 ml (3 fl oz)
Electronic application RTV (Non-corrosive cure)					
8T-0065	1	White	260°C (500°F)	204°C (400°F)	82.8 ml (3 fl oz)
Sensor Safe RTV					
4C-9612	1	Ultra-Black	260°C (500°F)	204°C (400°F)	82.8 ml (3 fl oz)
Glass to glass bonding — Windshield seam RTV					
119-0781	1	Clear	249°C (480°F)	204°C (400°F)	300 ml (10.15 fl oz)

4C-6715 Thermally Conductive RTV

- Increases thermal conductivity between diode and aluminum heat sink assembly on rotating field of power generator
- High thermal conductivity and electrical isolation
- Conformable, cure in place thermal interface
- Material has a 6 month shelf life when stored at 24° C (75° F).
- Storage at or near freezing (0° C (32° F) prolongs product life
- Also see heat sink compound.

4C-6507 Heavy-Duty Air Powered Caulking Gun

Warranty: Manufacturer's

- Easy twist-lock loading
- Smooth uniform bead dispensing
- No after-dripping
- Pistol handle grip for comfort
- All metal construction
- Air pressure requirements are 5-100 PSI
- 10 ft air line with standard 1/4 inch fittings supplied



4C-6922 Superior E-Z Thrust Caulker

Warranty: Manufacturer's

- Holds any 12 oz. tube designed for use with a caulking gun
- Recommended for all grades of caulks, sealants and adhesives from heavy to light consistencies
- Caterpillar products available for use in the caulking guns:
 - 4C-5300 Flexible Gasket Maker
 - 5N-5561 Silicone Lubricant
 - 8T-9013 Red RTV Adhesive/Sealants
 - 8T-9014 Clear RTV Adhesive/Sealants
 - 8T-9022 Blue RTV Adhesive/Sealants
- Size of cartridge: 1/10 Gal.



4C-6923 Super Ratchet-Type Caulker

Warranty: Manufacturer's

- Designed for the professionals who prefer ratchet guns
- Will outlast, outperform all other ratchet guns
- Engineered to withstand heavy use
- Equipped with ladder hook, built-in spout cutter, seal puncture tool, and convenient "D" ring and wrist strap
- Size of cartridge: 1/10 Gal.



Window Bonding Adhesives and Tooling

To reseal windows with weather-strip:

- 9U-7239 Liquid Butyl Resealant, 1/10 gallon caulking gun cartridge
- 9U-6919 Butyl Sealant, 3/8 inch x 1/8 inch x 50 foot roll

To bond windows to full cure within 2 hours:

Caution: Window must be installed within 10 minutes using this system.

- 121-3911 Window Primer, 250 m. (8.5 oz) tube
- 175-2934 Activator, 250 ml tube
- 175-2935 Fast Cure Window Adhesive and Booster, 10.5 oz tube
- 175-2936 Heating Oven

Pre-heat 175-2935 inside 175-2936 Oven for 1 hour prior to repairs. Clean the area to be repaired with 9U6917 (pour top quart) or 138-8441 (aerosol).

If glass is supplied without ceramic coating, use 121-3911 to prepare the area. Wait 10 minutes, then use 175-2934 to activate the area. Wait 10 minutes, then apply the pre-heated 175-2935 to the area.

1-hour drive-away time, 2-hour full cure. See SEHS9824-01 Special Instruction (6/99) for detailed instructions.

To bond large windows:

- 121-3911 Window Primer, 250 m. (8.5 oz) tube
- 175-2934 Activator, 250 ml tube
- 121-3908 Window Adhesive, 310 ml (10.5 oz) tube

Clean the area to be repaired with 9U-6917 (pour top quart) or 138-8441 (aerosol).

Use 121-3911 to prepare the area. Wait 10 minutes, then use 175-2934 to activate the area. Wait 10 minutes, then apply 121-3908 to the area.

See SEHS9824-01 Special Instruction (6/99) for detailed instructions.

Seal glass to glass joints:

- 119-0781 Clear Silicone Adhesive, 300 ml. cartridge

Primer for polycarbonate

- 166-1358 Polycarbonate Primer

Primer for ABS plastic:

- 166-1359 ABS Primer

Cleaner:

- 154-5835 Cleaner

127-6421 Window Tool Kit	
Part No.	Description
121-9777	Cutout Wire
121-9780	Handles for cutout wire
121-9778	Cutout Knife
121-9779	Replacement Blades for 121-9778
121-9782	Suction Cup Holder
121-9781	Heavy Duty Caulking Gun
127-6883	Sponge Brushes

Caterpillar Aerosol Kits

154-1295 Equipment Operators Aerosol Kit

Warranty: Manufacturer's (Chemtool—Customer Satisfaction)



Part No.	Description
138-8445	Antistatic Glass Cleaner
138-8448	Plastic Protectant
154-1287	Spray Adhesive
154-1294	Light Penetrating Oil
138-8440	Component Cleaner
129-1949	Water and Temperature Grease

154-1296 Service Technicians Aerosol Kit

Warranty: Manufacturer's (Chemtool—Customer Satisfaction)



Part No.	Description
154-1288	Spray Antisieze
1U-8265	Penetrating Oil with MoS2
129-1968	White Assembly Grease
138-8437	Mineral Spirits
138-8440	Component Cleaner
138-8441	Brake Cleaner

154-1298 Machine Preparation Aerosol Kit (Urethane)

Warranty: Manufacturer's (Chemtool—Customer Satisfaction)



Part No.	Description
138-8448	Plastic Protectant
138-8449	Rubber Protectant
138-8445	Antistatic Glass Cleaner
154-1294	Light Penetrating Oil
4C-9817	Cat Yellow Urethane Paint
4C-9816	Cat Black Urethane Paint

155-4499 Machine Preparation Aerosol Kit (Alkyd)

Warranty: Manufacturer's (Chemtool—Customer Satisfaction)



Part No.	Description
138-8448	Plastic Protectant
138-8449	Rubber Protectant
138-8445	Antistatic Glass Cleaner
154-1294	Light Penetrating Oil
4C-4200	Cat Yellow
4C-5843	Cat Black — Medium Gloss

Cleaners

222-3120 Anti-Static Glass Cleaner

- Anti-static formula
- Non-streaking
- Safe for most surfaces



222-3122 Plastic Protectant

- Clean and protect vinyl, plastic, rubber
- Enhances appearance
- Helps prevent oxidation and cracking



138-8449 Rubber Protectant

- Cleans rubber style tires and parts
- Enhances appearance
- Safe on metal, painted, plastic and vinyl sur



169-0503 Seal Installation Kit

- Used to clean and lubricate Duo Cone seals prior to installation (developed by Cat MVC)
- Cleaner dries quickly and leaves no film
- For best results, use cleaner, lubricant, and critical task wipers



Seal cleaner	237 mL (8 oz.)
Lubricant	237 mL (8 oz.)
Critical task wipers	203 x 203 mm (8 x 8 in); 50 per package

Service Parts	
Part No.	Description
169-5418	Seal Lubricant (1 Gallon)
169-5420	Seal Cleaner (1 Gallon)
166-6384	Wipers

Cabinet Washers and Agitating Tanks

Cat Cabinet and Tank Liquid and Cat Cabinet and Tank Powder

- Strong alkaline cleaners that remove dirt, oils, paint, and carbon deposits from ferrous metal parts
- Clean better than previous Hydrosolv products due to increased levels of surfactants and wetting agents
- Well suited for use in cabinet pressure washers and hot tanks

Hydrosolv 4110

- Non-foaming aluminum safe cleaner
- Strong alkaline cleaner that removes dirt, oils, paint, and carbon deposits from aluminum and ferrous metal parts without discoloration
- Well suited for use in cabinet pressure washers and hot tanks

Part No.	Name	Quantity	Size
174-6854	Cat Cabinet & Tank Liquid	1	5 gallon
174-6855	Cat Cabinet & Tank Liquid	1	55 gallon
174-6856	Cat Cabinet & Tank Powder	1	5 gallon
174-6857	Cat Cabinet & Tank Powder	1	55 gallon
4C-8648	Hydrosolv 4110	1	1 gallon
4C-8650	Hydrosolv 4110	1	55 gallon



Pressure Washers

Cat Pressure Wash

- Heavy-duty, ready-to-use detergent and degreaser for use in hand held pressure washers
- Clean rinsing and can be used to wash engines, trucks, machines, etc.

Hydrosolv 4165

- Heavy-duty concentrated alkaline cleaner formulated for use in high-pressure washers
- Provides two weeks rust protection if you do not rinse the part after cleaning

Part No.	Name	Quantity	Size
174-6858	Cat Pressure Wash	1	5 gallon
174-6859	Cat Pressure Wash	1	55 gallon
1U-5490	Cat HD Pressure Wash	1	5 gallon



General Purpose Detergents

Cat GP Wash

- Economical ready-to-use general-purpose liquid cleaner for shop maintenance, machine washing, floor washing, etc.
- Provides good detergency for all types of light duty cleaning

Cat Citra Soap

- Concentrated detergent with great foaming action
- Can be used in scrubber machines, lotion soap dispensers, or any heavy-duty hard surface cleaning where one would not use solvent based chemicals

Part No.	Name	Quantity	Size
174-6860	Cat GP Wash	1	5 gallon
174-6861	Cat GP Wash	1	55 gallon
174-6885	Cat Citra Soap	1	5 gallon



Defoamant and Descaleant/Conditioner

Hydrosolv defoamant DK100

- Designed to knock down excess foam in hot tanks, cabinet washers, anti-freeze stills, or any other aqueous foaming solution

Hydrosolve Descaleant and Conditioner

- Can be used as a concentrate to remove scale from pumps, lines and coils
- Should be diluted 50% and used as a water conditioner for high-pressure washers having automatic water conditioner dispensers

Part No.	Name	Quantity	Size
1U-8813	Hydrosolv Defoamant DK100	12	Quart
1U-9698	Hydrosolv Descaleant and Conditioner	12	Quart



Coolant System

Diesel Engine Antifreeze/ Coolant — DEAC

- Helps prevent corrosion and pitting
- Conventional coolant technology-low silicate formula
- Requires supplemental coolant additives (SCA)



Extended Life Coolant — ELC

- Extends coolant life 3000 to 6000 hours over conventional coolant
- Costs up to 40% less than conventional coolant over coolant life
- Contains no silicates, phosphates, borates or molybdates
- Does not require supplemental coolant additives (SCA)
- Improves pump seal life
- Exceeds new CAT EC-1 coolant performance requirements
- Requires less disposal volume and is recyclable



Coolant Type	Bulk	55 Gal	5 Gal	1 Gal	1 Qt
Extended Life Coolant — ELC (50/50 pre-mix)	119-5148	101-2845	129-2151	101-2844	
Extended Life Coolant — ELC (concentrate)				119-5150	
Extended Life Coolant — ELC (extender)					119-5152
Diesel Engine Antifreeze/Coolant — DEAC (concentrate)	2P-9868	8C-3686		8C-3684	
Diesel Engine Antifreeze/Coolant — DEAC (50/50 pre-mix)	3E-9439				
Diesel Engine Antifreeze/Coolant — DEAC (40/60 pre-mix)	119-5147				

Supplemental Coolant Additives

- Helps stop rust and mineral deposit formation
- Use with CAT DEAC
- Not for use with Dowtherm 209 coolant
- Will not affect gaskets or hoses
- Protects all metals except aluminum

Part No.	Qty.	Size
6V-3542	12	8 oz
111-2372	12	12 oz
8T-1589	12	.47 l (1 pt)
3P-2044	12	.94 l (1 qt)
8C-3680	1	18.92 l (5 gal)
9X-8795	1	5 l
9X-8796	1	20 l
5P-2907	1	208 l (55 gal)

¹ 3A: No Emergency Order Fee



Antifreeze Additive

- Low silicate formulation
- Specially formulated for use in Cat diesel engines
- Add to distilled water and ethylene glycol from recycling still to produce antifreeze.

Part No.	Qty.	Size	
4C-9288	4	2.82 l (3 qt)	— correct amount to mix with 56.8 l (15 gal) of 50/50 ethylene glycol mixture
4C-9289	1	9.5 l (2.5 gal)	— correct amount to mix with 208 l (55 gal) of 50/50 ethylene glycol mixture
4C-9290	1	18.92 l (5 gal)	— for mixing as needed
4C-9291	1	208 l (55 gal)	— for mixing as needed

Cooling System Cleaner (Fast Acting)

- Cleans most cooling systems in 90 minutes
- Much faster acting than 6V-4511
- Use at 5-10% for maintenance dose to remove normal amounts of scale, lime or solder bloom.
- Use at 15-20% for cooling systems with heavy scale, lime or solder bloom.
- Not designed to remove large amounts of oil from cooling systems



Radiator Cleaner

Part No.	Qty.	Size
4C-4609	12	.47 l (1 pt)
4C-4610	12	.94 l (1 qt)
4C-4611	4	3.79 l (1 gal)
4C-4612	1	18.92 l (5 gal)
4C-4613	1	208 l (55 gal)
4C-9497	1	4.0 l (1.04 gal)
4C-9498	1	20.0 l (5.2 gal)

¹ 3A: No Emergency Order Fee

6V-4511 Standard Type Cooling System Cleaner

- Cleans cooling system while the machine works
- Leave in the system for several weeks for full effect.
- Size: 1.89 l (1/2 gal)
- Quantity: 6



1U-7297 Coolant and Battery Tester, °F 1U-7298 Coolant and Battery Tester, °C

Warranty: Manufacturer's

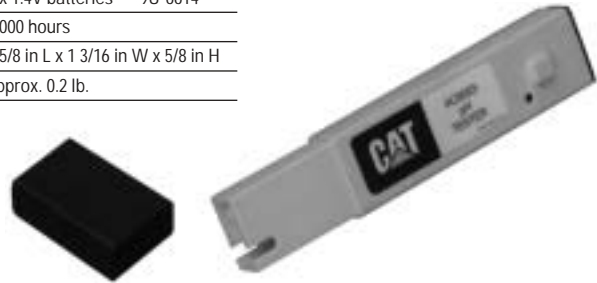
- Used for checking coolant freezing point and battery charge condition (specific gravity)
- Temperature compensating
- Can be used on either hot or cold radiators
- Can also accurately check some types of permanent antifreeze, such as DOWTHERM 209 Coolant



4C-8503 Pocket Size pH Tester

- Convenient pocket size
- Easy to use — just dip and read — no strips required
- Not for use in solutions above 122°F (50°C)
- Accuracy of ± 0.2 pH
- Simple calibration
- Use the pH meter to keep your hot/cold tanks and cabinet washers at their best soap concentration for fast efficient cleaning.
- Can be used in conjunction with either liquid (titration) or test strip type cooling system test kits and either refractometers or hydrometers to maintain engine cooling systems
- Checks pH of swimming pools, settling ponds, waste water etc

Range	0.0 to 14.0 pH
Resolution	0.1 pH
Accuracy	±0.2 pH
Calibration	offset trimmer
Oper. Temp.	0 to 50°C (32 to 122°F)
Battery	3 x 1.4V batteries — 9U-6614
Battery Life	1,000 hours
Dimensions	5 5/8 in L x 1 3/16 in W x 5/8 in H
Weight	approx. 0.2 lb.



NOTE: The pH reading by itself is not an adequate indication for cooling system maintenance.

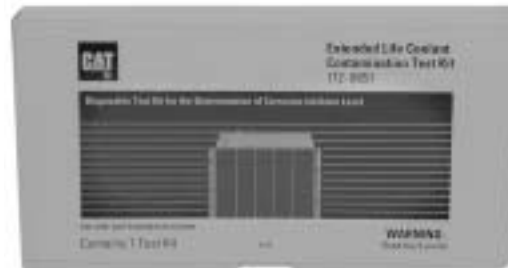
9U-6344 pH Buffer Kit

- Buffer solutions for checking calibration of pH meter

Part No.	Qty.	pH	Description	Size
9U-6344	3	4, 7, 10	Kit, 1 each of 4, 7, 10	226.8 g (8 oz) each
Service Parts				
9U-6341	12	4	Acid Solution	226.8 g (8 oz)
9U-6342	12	7	Neutral	226.8 g (8 oz)
9U-6343	12	10	Alkaline	226.8 g (8 oz)

172-8851 Extended Life Coolant (ELC) Test Kit

- Used to test inhibitor level of Cat Extended Life Coolant
- Simple pass/fail system is indicated by color
- Disposable — kit contains premeasured chemicals in sample tubes
- Kit contents: two sample tubes, one syringe, and one pipette



4C-9301 Coolant Conditioner Test Kit

SMCS Code: 1350-081
Model: All Engines

- For nitrite type systems
- Easy to use — gives results quickly
- Used to determine conditioner level; gives maintenance recommendations for cooling systems
- Specifically for use with Caterpillar liquid cooling system conditioners and coolant conditioner "precharge" and "maintenance" element filters
- Testing recommended on regular basis because conditioners are constantly depleted at rate that cannot always be predicted
- Use whenever a coolant leak has occurred and large antifreeze additions have been made.
- Not for use in antifreezes which use molybdate for gauging depletion of coolant conditioner



Part No.	Description
4C-9297	Coolant Conditioner Test Strip Bottle (Qty. 2, 50 strips each)
	Sample Bottle
	Pipette
	NEHS0559 Instruction Sheet
	Case for above items

8T-5296 Coolant Conditioner Test Kit 210-2606 Coolant Conditioner Test Kit (EAME only)

SMCS Code: 1350-081
Model: All Models with Air Conditioners
Warranty: One Year

- Checks both nitrites and molybdates levels in cooling systems (Exorbitant nitrate levels, caused by excessive coolant conditioner, may cause early failure of cooling system components.)
- Contains all equipment necessary to determine percentage of coolant conditioner in any cooling system using water only or water and ethylene glycol mixture; procedure involves two easy-to-run tests completed in less than five minutes
- Step-by-step instruction card included in each kit; card contains interpretation charts and also gives some general maintenance recommendations
- For best service life, do not store in direct sunlight or at temperatures higher than 37.7°C (100°F).
- Good for approximately 30 tests



⚠ WARNING

Solution A consists of a weak solution of sulphuric acid and may be irritating to the skin and eyes. In case of contact, flush with water for 15 minutes. If irritation persists, seek medical attention.

Part No.	Description	Size
1U-6863	Solution — A (Yellow)	14.8 ml (1/2 fl oz)
210-2608	Solution (EAME only) — A (Yellow)	14.8 ml (1/2 fl oz)
1U-6864	Solution — B (Red)	14.8 ml (1/2 fl oz)
210-2609	Solution (EAME only) — B (Red)	14.8 ml (1/2 fl oz)

Grease

Caterpillar Lubricating Greases

Cat Lubricating Greases				
Application	Arctic Platinum w/5% MoS ₂	ArcticPlatinum w/5% MoS ₂	ArcticPlatinum w/5% MoS ₂	ArcticPlatinum w/5% MoS
NLGI#	000	00	0	1
Cart-US, 454 g (16.0 oz)	N/A	N/A	N/A	129-1928
Cart-Australia, 454 g (16.0 oz)	N/A	N/A	N/A	129-1927
1 lb Can, 454 g (16.0 oz)	N/A	N/A	N/A	129-1929
Aerosol, 368.5 g (13 oz)	N/A	N/A	N/A	N/A
5 Gal Plastic Pail, 15.9 Kg (35 lbs)	131-6532	129-8717	129-8708	129-1931
5 Gal Metal Pail, 15.9 Kg (35 lbs)	131-6531	129-8716	129-8707	129-1932
16 Gal Keg, 54.4 Kg (120 lbs)	131-6533	129-8718	129-8709	129-1933
55 Gal Drum, 181.4 Kg (400 lbs)	131-6534	129-8719	129-8710	129-1934
Tote, 1587 Kg (3500 lb)	131-6536	129-8720	129-8711	129-1936
Application	Desert Gold w/5% MoS ₂	Multi-Purpose Grease w/3% MoS	Multi-Purpose Grease w/3% Moly	Multi-Purpose Grease w/o MoS ₂
NLGI#	2	2	1	2
Cart-US, 454 g (16.0 oz)	129-1938	5P-0960	155-0710	1P-0808
Cart-Australia, 454 g (16.0 oz)	129-1937	129-1952	155-0711	129-1950
1 lb Can, 454 g (16.0 oz)	129-1939	129-1922	155-0712	129-1916
Aerosol, 368.5 g (13 oz)	N/A	N/A	N/A	N/A
5 Gal Plastic Pail, 15.9 Kg (35 lbs)	129-1941	7X-7699	155-0708	7X-7664
5 Gal Metal Pail, 15.9 Kg (35 lbs)	129-1942	129-1924	155-0714	129-1919
16 Gal Keg, 54.4 Kg (120 lbs)	129-1943	9X-6489	155-0715	9X-6488
55 Gal Drum, 181.4 Kg (400 lbs)	129-1944	7X-7701	155-0709	7X-7665
Tote, 1587 Kg (3500 lb)	129-1946	129-1926	155-0716	129-1921

Application	Multi-Purpose White Lith. Comp. w/o MoS ₂	Water and Temp Resistant w/o MoS ₂	Water and Temp Resistant w/o MoS ₂
NLGI#	2	2	1
Tube, 227 g (8 oz), qty. 10	N/A	N/A	4C-9792
Cart-US, 454 g (16.0 oz)	129-1966	4C-4774	4C-9793
Cart-Australia, 454 g (16.0 oz)	129-2021	129-1953	N/A
1 lb Can, 454 g (16.0 oz)	129-1967	129-1948	N/A
Aerosol, 368.5 g (13 oz)	129-1968	129-1949	N/A
5 Gal Plastic Pail, 15.9 Kg (35 lbs)	129-1969	4C-5594	4C-9794
5 Gal Metal Pail, 15.9 Kg (35 lbs)	129-1970	129-1951	N/A
16 Gal Keg, 54.4 Kg (120 lbs)	129-1971	4C-5595	4C-9795
55 Gal Drum, 181.4 Kg (400 lbs)	129-1973	4C-5596	4C-9796
Tote, 1587 Kg (3500 lb)	129-1975	129-1955	N/A

Application	Auto Lube w/5% MoS ₂	Auto Lube w/5% Moly
NLGI#	1	2
Tube, 227 g (8 oz), qty. 10	N/A	N/A
Cart-US, 454 g (16.0 oz)	161-9203	183-3424
Cart-Australia, 454 g (16.0 oz)	N/A	183-3425
1 lb Can, 454 g (16.0 oz)	N/A	N/A
Aerosol, 368.5 g (13 oz)	N/A	N/A
5 Gal Plastic Pail, 15.9 Kg (35 lbs)	N/A	183-3426
5 Gal Metal Pail, 15.9 Kg (35 lbs)	N/A	N/A
16 Gal Keg, 54.4 Kg (120 lbs)	161-0970	183-3427
55 Gal Drum, 181.4 Kg (400 lbs)	161-0971	183-3428
Tote, 1587 Kg (3500 lb)	160-8028	183-3429

Arctic Platinum (APG)

A low temperature synthetic grease, arctic platinum provides outstanding pumpability, EP protection, and lubricity at temperatures ranging from -75° F to +100° F.

Desert Gold (DGG)

A high temperature synthetic grease with superior lubricating properties and EP protection. Temperatures ranges from +20° F to +450° F.

Multi-Purpose Grease with Molybdenum (MPGM)

MPGM is used when the application does not require a synthetic grease. MPGM is an enhanced grease with 3 and 5% moly for improved performance and endurance.

Multi-Purpose Grease (MPG)

For general purpose applications such as automotive, MPG is a premium quality grease.

Water and Temperature resistant (WTRG)

For applications where a high degree of resistance to water washout, hot operating temperatures and corrosion resistance is absolutely necessary.

White Lithium Complex (WLCG)

A clean, white lithium complex for assembly and other light duty applications.

Cat Auto-Lube Grease (with 5% moly)

A premium quality petroleum based grease that provides extremely high load carrying ability, exceptional mechanical stability, and very high resistance to water washout, oxidation, and corrosion. Provides excellent pumpability and dispensing properties in ambient temperatures from -28° C to +48° C (-20° F to +120° F).



2S-3230 Bearing Lubricant

- SR1 grease
- Compounded for ball and roller bearing service
- Temperatures from -34°C to 163°C (-30°F to 325°F)
- For charging alternator and generator bearings and other applications where long life is important
- Drum size: 411 g (14.5 oz)
- Qty. 10



108-8611 Grease, Synthetic Bearing, NLGI 1.5

- Synthetic bearing grease designed especially for rear bearings on 3500 Series Engines
- Excellent resistance to water washout and corrosion
- Excellent anti-fretting capability under oscillatory and vibratory conditions
- Uses a non-soap thickener

Operating temperature	-54 to 177°C (-65 to 350°F)
Cartridge size	411 grams (14 oz)

Leak Detection

9U-5031 Oil Dye, Red
9U-5032 Oil Dye, Blue

- Highly concentrated oil soluble dyes for adding color to lubricating oils, transmission oils, hydraulic oils and fuels
- Visible at concentrations of 1 part in 10,000 or more. It only takes 30 ml (1 oz) to color 473 l (125 gal) of light color oil
- Use it to color code oils to prevent mixups.
- Use it to identify the source of leaks when more than one source is possible.
- Hint: For sumps with dark colored oil, use oil dyes which are visible in black light (ultraviolet) such as 1U-5572 through 1U-5575.
- Size: 240 ml (8 oz) container
- Quantity: 1



Toolmaker's Ink/Layout Blue and Remover

- Use to check fit on fuel injectors/sleeves
- Check fits between engine valves and valve seats.
- Allow to dry and use for sheet metal layout.
- Deep blue color makes scribed lines stand out.

Part No.	Qty.	Description	Size
9U-6075	12	Toolmaker's Ink/Layout Blue	339 g (12 oz) Aerosol
9U-6076	12	Toolmaker's Ink/Layout Blue	222 ml (7.5 fl oz) Brush Top Can
9U-6077	12	Toolmaker's Ink Remover	397 g (14 oz) Aerosol

Aerosol Liquid Penetrant Kits

- Checks for surface cracks in ferrous and non-ferrous parts with regular light
- Kit contains 4 each of cleaner, 2 each of penetrant, 2 each of developer, a carrying case and complete instructions.
- Contains no chlorine or sulphur bearing solvent
- Conforms to MIL-1-25135, RDT F-3-6T standard and other military specifications
- Fully portable, simple and easy to use.
- Replacement aerosol cans can be ordered separately.



Description	Cross Reference Chart for Liquid Penetrant Kit					Min. Ship. Qty.
	Cat/Crown Fault Finder	Magnaflux Spot Check	Turco By Check	Sherwin Dubl-Check	Met-L-Check	
Penetrant, Aerosol	4C-4804	SKL-S	By Check	DP-40	VP-31	12 each
Developer, Aerosol	4C-4805	SKD-NF	By Check	D-100	D-70	12 each

¹ 3A: No Emergency Order Fee

4C-5623 Smoke Candles

- Quick and easy way to check for cab leaks
- Inexpensive
- Generates 4000 cu. ft. of dense white smoke
- Easy to use — light one smoke candle and set on floor of cab, close windows and doors with fan on HI. Watch for areas where white smoke is escaping.
- 1 dozen per box



4C-4735 Magnetic Particle Test Kit

- Magna-Flux crack detection
- Checks for surface and sub-surface cracks on ferrous parts only.
- Used to detect cracks in highly stressed areas like frames and welded joints
- Kit is fully portable.
- AC/DC Yolk Kit in a carrying case, plus a portable non-flourescent materials kit which includes a carrying case, a squeeze bulb, one pound each of gray, red and blue powder, one aerosol can of cleaner, and operating instructions

Reference

SEBF8162 Reusability Guide

4C-4735 Replacement Dry Powder Part Numbers

Part No.	Color	Size
4C-4800	Gray	2.3 kg (5 lb) Bag
4C-4801	Yellow	2.3 kg (5 lb) Bag
4C-4802	Black	2.3 kg (5 lb) Bag
4C-4803	Red	2.3 kg (5 lb) Bag

UV Visible Dyes for Leak Detection

- Detects leaks in light or dark oils, fuels, water solutions

Part No.	Description	Size	Recommended Dosage
To detect oil leaks in engines, transmission, hydraulic systems, etc.			
1U-5572	Oil Glo 22 Additive	28.4 g (1 oz) bottle	28.4 g (1 oz) per 7.58 L (2 gal) of oil
1U-5573	Oil Glo 22 Additive	47 L (1 pt) bottle	28.4 g (1 oz) per 7.58 L (2 gal) of oil
To detect fuel leaks or suspected fuel dilution			
1U-5574	Gas Glo 32 Additive	28.4 g (1 oz) bottle	28.4 g (1 oz) per 37.9 L (10 gal) of gasoline or diesel fuel
1U-5575	Gas Glo 22 Additive	47 L (1 pt) bottle	28.4 g (1 oz) per 37.9 L (10 gal) of gasoline or diesel fuel
To detect cooling system leaks, use:			
1U-5576	Water Glo 23 Additive	28.4 g (1 oz) bottle	28.4 g (1 oz) per 151.6 L (40 gal) of water
1U-5577	Water Glo 23 Additive	47 L (1 pt) bottle	28.4 g (1 oz) per 151.6 L (40 gal) of water

Leak Detection —

1U-5566 Black Light, 110 Volts

1U-6444 Black Light, 220 Volts

- Handheld
- Anodized aluminum lamp housing
- Makes it easier and quicker to detect leaks in oil, fuel and cooling systems
- Additives, available separately, can be put in the suspect system and the leak point will show in the black light (ultraviolet light)
- Instructions come with the kit.
- Also works with fluorescent penetrant kit
- Optional light cover, made of heat-resistant neoprene rubber, helps protect the user from possible burn injury, and also provides protection against mechanical shock damage.



Service Parts	
Part No.	Description
1U-5567	Black Light Filter
1U-5568	110V, 100 Watt Spot Bulb
Optional Items	
1U-5571	Spectacles, Ultraviolet Light Absorbing
1U-5570	Storage Case (Heat Resistant)
1U-5569	Ultraviolet Light Cover

Solvents/Lubricants

222-3118 Brake Cleaner

- Flammable
- Non-chlorinated formula
- Leaves no residue
- Cleans and dries quickly
- Quickly penetrates contaminants
- Size: 340 ml (11.5 oz)



222-3119 Component Cleaner

- Non-flammable
- Contains Perchloroethylene
- Cleans electrical components
- Leaves no residue
- Cleans and dries quickly
- Good general degreaser
- Size: 473 ml (16 fl oz)



Mineral Spirits

- For use in solvent stands, immersion tanks, and manual cleaning equipment
- Can be used with brush, rags, or spray
- Has minimum flash point of 96°C (205°F) COC
- High quality product with excellent solvency and is capable of being recycled indefinitely through a solvent reclaiming still
- If used in spray equipment, follow recommendations of spray equipment manufacturer.
- Always follow precautions from Material Safety Data Sheet.



Part No.	Size	Quantity
4C-6796	18.93 l (5 Gal)	1
4C-6797	208 l (55 Gal)	1
138-8437	355 ml (12 oz), Aerosol	12

222-3121 Rust Preventative

- An effective short term corrosion inhibitor with a multitude of uses
- Provides "water displacing" properties
- Used as a general purpose lubricant
- Acts as an effective penetrating oil
- Aerosol

Note: Read and follow all manufacturer's directions and safety precautions when using this product.



222-3123 Light Penetrating Oil

- Clean formula
- No excess graphite or MoS
- Good general lubricant
- Aerosol
- Size: 355 ml (12 oz)



222-3115 Caterpillar Penetrating Oil

- Heavy-duty penetrating oil
- Contains MoS₂ for extra lubrication
- Aerosol—CO₂ propellant
- Size: 339 g (12 oz)
- Quantity: 12



222-3116 Caterpillar Dry Film Lubricant

- Provides a dry, low friction lubricant for sliding surfaces
- Dry film does not attract dirt and dust.
- Motor grader blade circles
- Extendable sticks on backhoe-loaders
- Sideshift mechanism on backhoe loaders
- Contains MoS₂ for extra lubrication
- Aerosol—CO₂ propellant
- Size: 369 g (13 fl oz)
- Quantity: 12



222-3111 Caterpillar Battery Cleaner and Saver

- Cleans and prevents corrosion on battery and terminals, cable ends, etc.
- Contains MoS₂ for extra lubrication
- Aerosol—CO₂ propellant
- Size: 369 g (13 oz)
- Quantity: 12



Caterpillar Chain and Cable Lubricant

- Heavy-duty chain and cable lubricant
- Contains MoS₂ for extra lubrication
- Penetrates, then leaves behind a greasy film inside the cable, between the strands to prevent wear and corrosion, extend service life
- Lubricates hinges
- Quick, easy way to provide a temporary rust protective film on any metal part
- CO₂ propellant for 1U-8266 only (4C-4081 is non-aerosol.)



Part No.	Size	Quantity
222-3110	369 g (12 fl oz)	12
4C-4081 (not shown)	18.9 l (5 gal)	1

Caterpillar Thread Lubricant/Anti-Seize

- Moderate temperature
- High torque
- Prevents galling; eases disassembly
- Completely transparent to S-O-S analysis
- Use inside engines, transmissions, etc. where highly torqued undercarriage components.
- Extremely economical to use
- Comes in brush-top can



Part No.	Size	Quantity
4C-5591	113 g (4 oz)	12
4C-5592	227 g (8 oz)	12
4C-5593	1.13 kg (40 oz)	12

Caterpillar High Temperature Anti-Seize

- High temperature
- High torque
- Prevents galling
- Easy disassembly
- All exhaust system components
- Caution: Contains copper and aluminum which show up in S-O-S analysis



Part No.	Description	Size	Quantity
4C-5598	Brush-top can	113 g (4 oz)	12
4C-5599	Brush-top can	227 g (8 oz)	12
5P-3931	Brush-top can	1.13 kg (40 oz)	12
222-3114	Aerosol	355 ml (12 oz)	

Heat Sink Compound

- High thermal conductivity
- Does not break down
- No migration
- Protects high current carrying semi-conductors, power transistors, diodes, and SCR's
- Also see 4C-6715 Thermally Conductive RTV.

Part No.	Size	Quantity
5P-8937	142 g (5 oz)	1
5P-9210	397 g (14 oz)	1

6V-4876 Molybdenum Paste

- Prevents bushing to thrust ring galling on elevated track model tractors
- On head bolts on some model engines
- Size: 500 g (17.6 oz)
- Quantity: 1



Camshaft and Follower Lubricant

- Prevents galling on camshafts with slipper type followers.
- Apply during engine buildup to provide necessary lubrication at startup.
- Size: 236 ml (8 fl oz)
- Quantity: 12



Reference

NEVN3902 "Crack and Leak Detection and Anti-Seizes"

6V-2055 Silicone Turbo Grease

- Silicone grease for turbocharger rebuilding
- Not for use on silicone O-rings (yellow or white) or hoses
- Size: 150 g (5.3 oz)
- Quantity: 1



151-1340 Dielectric Tune-Up Grease

- Silicone grease — lubricate electrical connections
- Prevents fusing of sparkplug boots
- Prevents corrosion in multipin connectors on wiring harnesses
- Size: 9 ml (.33 fl oz)



Silicone Fluids

- For fan drive assemblies and clutches with viscous fluid drives

Part No.	Qty.	Size	For Use In:
8M-0553	1	150 cc	8M-4665 Fan Drive Clutch Equivalent to Schwitzer Part No. 136874
9M-5165	1	150 cc	2S-5562 Clutch Assembly 7M-3542 Clutch Assembly 9M-8437 Clutch Assembly Equivalent to Schwitzer Part No. C-138868
2S-2888	1	150 cc	3S-3019 Clutch Assembly 4S-7872 Clutch Assembly 2S-2480 Clutch Assembly Equivalent to Schwitzer Part No. C141433
4C-6508	1	300 ml	3600 Visconic Damper

5N-5561 Silicone Lubricant

- Silicone grease
- Extreme temperature resistance
- Lubricant for rubber boots on Caterpillar flexible drive couplings on marine engines
- Not for use on silicone O-rings (yellow or white) or hoses
- Size: 339 g (12 oz)
- Quantity: 10



Air Conditioning Pump Lubricants — PAG Oil

- Specially formulated lubricants for use with R-134a Refrigerants
- Size: 250 ml
- Pkg quantity: 1

4C-2959 PAG Oil

- Polyalkylene glycol oil for Sanden compressors
- High viscosity refrigerent oil for R-134a
- Meets GM spec 9985752

9U-7551 PAG Oil

- Polyalkylene glycol oil
- Low viscosity refrigerent oil for R-134a

4C-2960 POE Oil

- Polyol ester oil
- ISO viscosity 150° refrigerent oil for R-134a

9U-7804 O-ring Kit

- O-ring kit for air conditioning connections
- Compatible with both R-12 and R-134a systems
- Made of Nitrile 75 Duro

Consist		
Part No.	Quantity	O-Ring Size Diameter (mm)
9X-7378	15	1.83 x 8.92
9X-7379	15	1.42 x 4.47
9X-7380	15	1.78 x 7.65
9X-7381	15	1.78 x 10.82
9X-7382	15	1.78 x 14
9X-7383	10	1.78 x 17.17
9X-7384	10	1.78 x 26.6
9X-7385	15	3.53 x 20.22
4C-4787	1	Utility Box

Vacuum Pump Oil

- Approved for all Caterpillar vacuum pumps.
- All vacuum pump suppliers recommend changing the vacuum pump oil after every pump down to prevent contamination of the next system to be serviced.

Part No.	Qty.	Size
1U-9763	12	.95 l (1 qt)
1U-9764	4	3.79 l (1 gal)



2G-7781 Sealant for Liquid Filled Rims on Wheel Loaders

- Seals cracks and pinholes in rims
- Use one tube per rim.
- Quantity: 1 tube



207-1600 P-80 Lubricant (EAME only)

207-1601 P-80 Lubricant

SMCS Code: 0645
Warranty: Manufacturer's

- Specially formulated liquid that lubricates rubber so it is easy to install, remove, or otherwise manipulate
- Unique feature—its ability to provide temporary lubrication (Once the work with the rubber is complete, emulsion rubber lubricant disappears and surfaces return to original condition.)
- Provides high degree of lubricity while wet; stays wet long enough to complete the work, then it's gone; contains no silicones or other persistent ingredients so lubricity goes away completely
- Lubricated parts won't crumble, tear, or lose their elasticity; lubricant does not harm glass, metal, wood, or other materials
- Keep emulsion rubber lubricant out of freezing or near-freezing temperatures. In colder climates be especially careful not to leave emulsion rubber lubricant in any unheated area for lengthy periods.
- Size: .95 L (1 qt)



153-8538 A/C Refrigerant Flushing Solvent

Warranty:

- Flushes lubricant contaminants and solids from A/C system lines
- Compatible with CFC, HCFC and HFC refrigerants
- Compatible with mineral, ester and PAG oil lubricants
- Use in 153-9032 (portable) and 153-8537 (flushing/solvent recycler)
- See flushing unit operators manual for instructions on use.
- Size: 3.785 L (1 Gal)



190-8487 Vacuum Pump Oil

SMCS Code: 4480-039
Model: Uninterruptable Power Supply (UPS) 250
Warranty: One Year

- Used to service UPS 250 vacuum pump
- An annual service schedule for UPS 250 vacuum pump is recommended.

Reference

Other UPS Products:
NEXG5029 Caterpillar UPS View Software Group
190-8379 Insertion Tool Group
190-8385 Removal Tool Group
190-8386 Rotor Shim Tool
191-5217 Pin Guide

Capacity	Size	Quantity
0.42 to 0.7 L (14 to 24 oz)	1L (33.8 oz)	1

5P-3975 Rubber Lubricant

- Lubricates rubber to metal during tire mounting and dismounting
- Helps prevent rim corrosion and damage to bead surfaces
- Renews appearance of rubber and vinyl products
- Prevents squeaks in rubber parts
- Size: 3.79 l (1 gal)
- Quantity: 1



139-2398 Tire Lubricant

- Contains no soaps
- Leaves no residue — will not rust rims
- Helps seal tire to rim without bonding
- Reduces bead damage
- Nontoxic, odorless



Caterpillar 119 Cutting Oil

- Straight cutting oil for machining ferrous metal
- Drilling, tapping, honing
- Contains chlorine and sulfur for optimum tool life and finish
- Compounded for easy removal with no troublesome residues



1U-8805

Part No.	Qty.	Size
1U-8805	4	3.79 l (1 gal)
1U-6516	1	18.9 l (5 gal)
1U-6517	1	208 l (55 gal)

Caterpillar 250 Grinding Fluid

- Water soluble cutting oil, grinding fluid and coolant
- Drilling, tapping, honing non-ferrous metals
- Grinding on crankshafts, etc.
- Compounded for easy removal with no troublesome residues
- Formulated with built-in biocide to control bacteria that cause odors and dermatitis
- Bacteria control can be maintained by replenishing with Hydrosolv 174.



Part No.	Qty.	Size
1U-8808	4	3.79 l (1 gal)
1U-6520	1	208 l (55 gal)

V.C.I. Oil

- Use for storing vehicles and vehicle components such as engines and transmissions for periods of up to one year.
- Protects all ferrous parts when maintained at the proper concentration in a closed container
- Has a vapor phase that is more strongly attracted to bare ferrous metals than water
- Will continue to perform indefinitely as long as it stays sealed in the compartment
- Meets Mil-P-46002A



Part No.	Qty.	Description
4C-6792	12	.95 l (1 qt)
4C-6793	4	3.78 l (1 gal)
4C-6794	1	18.93 l (5 gal)
4C-6795	1	208 l (55 gal)

Reference

SEHS9031 Special Instructions
NEVN3944 "Rust Preventatives"

4C-6767 Compactor Oil

- Special synthetic oil used in vibrator drum of Compactors
- Packaged in 20 l (5 gal) pails
 - Large machines take 20 l (5 gal) per drum
 - Small machines take 10 l (2 1/2 gal) per drum
- Quantity: 1



Caterpillar 450 Rust Preventive Oil

- Water displacing rust preventive oil is more strongly attracted to bare metal than water.
- Apply by dipping, brushing, or spraying.
- Leaves a long lasting, rust preventive film that protects against rusting for a year in covered storage conditions
- Should be protected from dirt and dust accumulation to prolong its effectiveness



Part No.	Qty.	Size
1U-8809	4	3.79 l (1 gal)
1U-6523	1	208 l (55 gal)

Caterpillar 4A Rust Preventive Oil

- Long lasting, heavy-duty waxy film
- Apply by dipping, brushing, or spraying.
- Leaves a long lasting, rust preventive film that protects from damage by outside condensation, rainfall, etc. up to a year
- Must be removed by solvent or hot alkaline cleaner

Part No.	Qty.	Size
1U-8801	4	3.79 l (1 gal)
1U-6526	1	208 l (55 gal)



HydroSolv SI 40 (Lapping Compound)

- Proven efficiency in factory and service shop
- Cuts faster and gives superior finish
- Pre-mixed, ready to use as it comes from the container
- Available in convenient sizes
- Hint: to avoid problems from abrasive settling out, order smaller containers and rotate your stock to use oldest stock first.

Part No.	Size	Quantity
4C-4178	3.79 l (1 gal)	1
4C-4179	18.9 l (5 gal)	1
4C-4180	208 l (55 gal)	1



O-Ring Assembly Compound

- Retains O-rings in the groove in O-ring face seal (ORFS) fittings during assembly
- Holds in both horizontal and vertical positions
- Non-toxic
- Will not harm hydraulic system components
- Not for use on air conditioning systems

Part No.	Qty.	Size
1U-6395	4	3.79 l (1 gal)
1U-6396	12	236 ml (8 fl oz)



Governor Oil

Model: 3600 Engine

- For 3600 Engine Woodward Governor

Part No.	Qty.	Size
136-9642	1	.95 l (1 qt)

Automatic Transmission Fluid (ATF)

- Automatic transmission fluid — Type F

Part No.	Qty	Size
9U-7251	12	1 quart
9U-7252	4	1 gallon
9U-7253	1	5 gallons
9U-7254	1	55 gallons



1U-9891 Hydraulic Oil Additive 9U-7062 Oil Supplement

- Low friction additive for some hydraulic systems
- Relieves "stick-slip" on noisy hydraulic cylinders
- Not for use on machines which have a common sump for hydraulics, brake, and transmissions

Part No.	Quantity	Size
1U-9891	12	95 l (132 oz)
9U-7062 (not shown)		0.95 L (1.0 qt.) bottle



143-3655 Oil Stabilizer

- Reduces oil consumption
- Reduce engine wear
- Helps keep vital engine parts clean
- Reduce thermal oil and viscosity breakdown



Brake Fluid

- Meets DOT and SAE requirements

DOT 3

- Use where DOT 3 brake fluid is specified by service manual or operators guide.
- Loaders, lift trucks, and service trucks

DOT 5

- DOT 5 is for extreme service conditions where higher than normal temperatures will be encountered or where moisture absorption is a problem.
- High performance cars and offroad vehicles



Part No.	Qty.	Size
DOT 3		
4C-5585	12	.94 l (1 qt)
4C-5586	4	3.79 l (1 gal)
DOT 5		
4C-5588	12	.94 l (1 qt)
4C-5589	4	3.79 l (1 gal)

Conostan Oil Standards

- Five blends to cover your expected ranges
- Known accuracy
- Reliable and readily available
- Size: 236 ml (8 fl oz)

Element	4C-8339	4C-8340	4C-8341	4C-8342	4C-8343
Ag	10 ppm	25 ppm	100 ppm	—	—
AL	10 ppm	25 ppm	100 ppm	—	—
Cr	5 ppm	10 ppm	25 ppm	—	—
Cu	10 ppm	25 ppm	100 ppm	500 ppm	—
Fe	10 ppm	25 ppm	100 ppm	500 ppm	150 ppm
Mg	10 ppm	25 ppm	100 ppm	—	—
Mo	5 ppm	10 ppm	25 ppm	—	—
N2	10 ppm	25 ppm	100 ppm	500 ppm	—
Ni	10 ppm	25 ppm	100 ppm	—	—
Pb	10 ppm	25 ppm	100 ppm	—	—
Si	10 ppm	25 ppm	100 ppm	500 ppm	—
Sn	10 ppm	25 ppm	100 ppm	—	—
Zn	10 ppm	25 ppm	100 ppm	—	—

Part No.	Qty.	Size
4C-8339	1	236 ml (8 fl oz)
4C-8340	1	236 ml (8 fl oz)
4C-8341	1	236 ml (8 fl oz)
4C-8342	1	236 ml (8 fl oz)
4C-8343	1	236 ml (8 fl oz)
4C-8344	1	Consists of: 1 each 4C-8339 1 each 4C-8340 1 each 4C-8341 1 each 4C-8342 1 each 4C-8343

Calibration Fluid

- Fuel injection test benches
- Pop Testers

Part No.	Qty.	Size
9U-7411	1	3.79 l (1 gal)
6V-6068	1	18.9 l (5 gal)
6V-6067	1	208 l (55 gal)



Specialty Products

8T-9018 Radiator Repair

- Fills seams and holes in radiators
- For temporary in field repairs
- Cures in 15 minutes
- Withstands normal cooling system operating pressures
- Also see Iron-Stitch Repair Kit in Salvaging Equipment Section.
- Size: 14 g (.5 oz)
- Quantity: 10



4C-8654 Epoxy Paint for Radiators

- For protection of radiators in salt water or other highly corrosive applications
- Thin to working consistency with 4C-8655 Thinner.

Part No.	Description	Size	Quantity
4C-8654	Epoxy Paint for Radiators	19 l (5 gal)	1
4C-8655 (not shown)	Thinner	19 l (5 gal)	1



2P-2333 Caterpillar Manifold Sealer

- Seals and bonds at temperatures up to 1093°C (2000°F)
- Seals male/female joints in segmented exhaust manifolds
- Size: 473 ml (16 fl oz)



9U-7981 Couplant for Ultrasonic Wear Indicator

- Couplant applied to sensing end of 1U-9800 Ultrasonic Wear Indicator probe to allow sound to be transferred to part being measured
- Couplant container attaches to side of 1U-9800.
- Size: 181.44 g (6.4 oz) pump container
- Quantity: 12 per box

Ether Cylinder

- Cold weather starting aid
- Heavy-duty construction
- Quick starts from -45.5°C (-50°F)
- Easy to install, hand tighten

7N-0296

- Fits most 3400 series and smaller engine applications
- For measured shot systems

7X-1062

- Fits most 3500 series engine applications
- Comes with specially designed filter and foam disc collar to keep impurities out of the system



Part No.	Qty.	Size
7N-0296	24	509 g (18 oz) — 7.6 cm (3 in) diameter
7X-1062	12	594 g (21 oz) — 10 cm (4 in) diameter
130-8414	12	227 g (8 oz)

Extend® 8T-9017 Rust Treatment

- Chemically converts rust and leaves behind a tough, smooth black finish that prevents further corrosion
- Top coating recommended for best protection and for use in severe environment
- No primers or sandblasting required
- Temperature range to 177°C (350°F)
- Size: 946 ml (32 fl oz)
- Quantity: 10



8T-9019 Fuel Tank Repair

- Fill seams and holes in fuel tanks
- For temporary in field repairs
- Hardens in 15 minutes
- Will adhere to fuel wetted surfaces
- Also see 1U-8118 Fuel Tank Repair Kit for Plastic Fuel Tanks.
- Size: 7 g (.25 oz)
- Quantity: 10



Orange Hand Cleaner

- Excellent hand cleaning for dirty, oily, greasy hands. For exceptionally dirty or greasy hands, use Hand Cleaner with Pumice.
- Mild citrus smell
- Contains Corn Huskers Lotion, aloe, lanolin and jojoba to help prevent dermatitis
- Contains NO petroleum solvents
- Biodegradable
- Works with or without water

Part No.	Description	Size	Quantity
9U-5026	Orange Hand Cleaner (smooth)	225 ml (7.5 fl oz)	12
9U-5027	Orange Hand Cleaner (smooth)	3.8 l (1 gal)	4
9U-5028	Orange Hand Cleaner (w/ pumice)	225 ml (7.5 fl oz)	12
9U-5029	Orange Hand Cleaner (w/ pumice)	3.8 l (1 gal)	4
9U-5030	Wall Mount Bracket for 1 gal container		1

All 1 gallon jugs come with individual pumps included. 7.5 fl.oz. bottles have self-sealing flip top caps.



191-6310 Heavy-Duty Hand Cleaner (15 oz)

191-6311 Heavy-Duty Hand Cleaner (128 oz)

- Heavy-duty hand cleaner for oil, grease, tar, grime, soil, resins, printer's ink, epoxies, paint, and cements
- Works faster than standard orange hand cleaner
- Fine ground pumice provides a deep scrubbing action to remove difficult grease and grime
- Pleasantly scented, containing lanolin and aloe
- Will not irritate most hands and does not leave a greasy residue



Orange Hand Wipes

- Premoistened, heavy-duty towel with pumice like performance
- Removes grease, adhesive, oil, lubricant, ink, wax, sealant, paint, and much more
- Quickly absorbs dirt and grease from your hands
- Contains germ fighting Triclosan and hand conditioners
- Available in two sizes — 72 count bucket and 250 count counter display which includes one bucket
- Individually packaged towels are easy to store and carry (works great for field repair trucks, etc.) — keep in a pocket in freezing temperatures

Part No.	Towel Size	Quantity	Units per case	Minimum purchase
144-3393	266 x 311.2 mm (10.5 x 12.25 in)	72 per bucket	6	1 case
144-3394	203 x 311.2 mm (8.0 x 12.25 in)	250 per display	—	250 count counter display and one bucket



Anti-Spatter Compound

- Protects tips on MIG welding torches from weld spatter



Part No.	Qty.	Size
4C-4217	12	207 ml (7 fl oz)
4C-4218	12	710 ml (24 fl oz)

First Aid

First Aid Kits

SMCS Code: 0000
Model: All

- Small, portable kits for service trucks, tool boxes, or for personal use in family home, car, camper, or boat
- Soft shell case made of water resistant nylon
- Uses "Book Style" construction with zippered internal compartments (makes it easy to access items)



150-1578 First Aid Kits		
Description	Size	Quantity
Water resistant nylon container	190.5 x 38.1 x 107.95 mm (7.5 x 1.5 x 4.25 in)	1
Scissors	102 mm (4.0 in)	1
Tweezers	76.2 mm (3 in)	1
First aid booklet	—	1
Band-aids	19.05 x 76.2 mm (.75 x 3 in)	20
Alcohol swabs	—	4
Wet wipes	—	4
Sting stop swabs	—	2
Antiseptic swabs	—	12
Adhesive tape	2.3 m x 12.7 mm (2.50 yd x .5 in)	1
Sterile gauze pads	50.8 x 50.8 mm (2 x 2 in)	4
Sterile gauze pads	101.6 x 101.6 mm (4 x 4 in)	2
Sterile abdominal pad	127 x 228.6 mm (5 x 9 in)	1
Sterile pressure bandage	50.8 mm (2 in)	1
Conform gauze roll	4.57 m x 50.8 mm (5 yd x 2 in)	1
Triangular bandage	—	1
Safety pins	—	6
Vinyl gloves	—	1 pair
Acetaminophen	—	1 (2 per pack)



150-1579 First Aid Kits		
Description	Size	Quantity
Water resistant nylon container	228.6 x 76.2 x 127 mm (9 x 3 x 5 in)	1
Scissors	152.4 mm (6 in)	1
Stainless steel splinter forceps	114 mm (4.5 in)	1
First aid booklet	—	1
Cloth band-aids	22.2 x 76.2 mm (.87 x 3 in)	10
Finger tip band-aids	—	5
Knuckle band-aids	—	5
Alcohol swabs	—	18
Wet wipes	—	6
Sting stop swabs	—	6
Antiseptic swabs	—	16
Adhesive tape	4.6 m x 12.7 mm (5 yd x 1 in)	1
Sterile gauze pads	50.8 x 50.8 mm (2 x 2 in)	8
Sterile gauze pads	101.6 x 101.6 mm (4 x 4 in)	2
Sterile abdominal pad	127 x 228.6 mm (5 x 9 in)	2
Sterile pressure bandage	101.6 mm (4 in)	1
Conform gauze roll	4.57 m x 50.8 mm (5 yd x 2 in)	2
Triangular bandage	—	1
Safety pins	—	6
Vinyl gloves	—	1 pair
Multi-purpose pad	431.8 x 609.6 mm (17 x 24 in)	1
Tensor bandage	50.8 mm (2 in)	1
Instant cold pack (in box)	101.6 x 152.4 mm (4 x 6 in)	1
Emergency mylar blanket	—	1

First Aid Kits, 25 and 50-person

- Metal kits for your safety and first aid requirements
- Weather-proof kits mount on a wall, bolt on a service truck or stow under a desk
- Comply with OSHA 1910.151 for industry, and OSHA 1926.50 for construction
- 163-0798 contains supplies for 25 people; 163-0799 contains supplies for 50 people



Contents	163-0798 25-person	163-0799 50-person
Metal Case, 6.25 in H x 9.5 in L x 2.4 in W	1	—
Metal Case, 9 in H x 9 in L x 2.4 in W	—	1
Adhesive Strips, 3/4 in x 3 in	50	100
Adhesive Tape Roll, 1/2 in x 5 yd	1	1
Alcohol Wipes	10	20
Ammonia Inhalants	3	3
Instant Cold Pack	1	1
Combine Pad, 5 in x 9 in	1	1
Sterile Cotton, 1/2 oz roll	1	1
Disposable Gloves	1 pr	2 pr
Eye Irrigate Solution, 1 oz bottle	1	1

Contents (cont'd)	163-0798 25-person	163-0799 50-person
Eye Pads, oval, 1.75 in x 2.5 in	2	4
Gauze Pads, 4 in	2	4
Gauze Pads, 3 in	4	8
First Aid Cream, 7/8 oz	1	2
Sting Relief Pads	3	3
Triangular Bandage	1	1
Gauze Bandage, 2 in x 5 yd	2	2
Gauze Bandage, 4 in x 5 yd	—	1
Elastic Bandage, 2 in	—	1
Scissors	1	1
Tweezers	1	1

4C-9619 First Aid Blanket

Warranty: Manufacturer's

- Flame retardant, durable 90% wool, 10% nylon, gray blanket
- Dimensions: 157 cm x 203 cm (62 in x 80 in)
- Fluorescent, Rocket Red pouch with built-in carrying handle
- Made of nylon, vinyl-coated on both sides
- A must in case of emergency



Personal Protection Items

4C-4216 Ear Plugs

- Foam ear plugs conform to the unique shape of each ear for excellent hearing protection and comfort.
- Tapered to comfortably fit the ear canal
- Recommended for high noise situations (up to 100 dBA TWA)
- Noise reduction rating: 29 dB
- Package quantity: 1 box of 200 pair



1U-8093 Ear Plugs

- Made of soft, elastic material for greater comfort
- Bright orange color for high visibility
- Triple flange design fits a wide range of ear sizes.
- Carrying case features a chain and a belt clip for convenient attachment to clothing.
- Recommended for moderately high noise situations (up to 95 dBA TWA)



1U-8092 Ear Muffs

- General purpose ear muffs feature large, multi-position ear cups mounted on a wide, forked headband for comfort and secure fit.
- Recommended for moderately high noise situations (up to 95 dBA TWA)
- Noise reduction rating: 23 dB
- Package quantity: 2 pair muffs



4C-6581 Ear Muffs

- Hard hat-mounted ear muffs feature large, lightweight ear cups that attach to a variety of hard hats for convenience.
- Recommended for moderately high noise situations (up to 95 dBA TWA)
- Noise reduction rating: 23 dB
- Package quantity: 2 pair muffs



193-0899 Hearing Protection, 27 NRR

- Liquid-filled ear cushions
- Cushioned headband
- 4 point earcup connection system
- Weight — 220.75 g (7.8 oz)
- Moisture-proof head pad
- Heavy-duty construction
- Noise reduction rating: 27 dB



173-1941 Protective Hard Hat, White 173-1942 Protective Hard Hat, Yellow

- High-density, polyethylene protective hard hats with Cat logo
- Self-sizing, four-point suspension with brow pad
- Rain trough brim provides extra protection against snow, rain, dust, and dirt
- Accessory slots provide attachment points for earmuffs, face shields, flashlights, etc.
- Meets or exceeds ANSI Z89.1-1997 Class IG and IE requirements
- CE compliant



1U-8091 Hard Hat Winter Liner

- Wear with 173-1941 or 173-1942 Protective Hard Hat
- Dark blue cotton twill with fleece lining
- Comes with a Velcro chin strap fastener
- Will work with other similar hard hats



193-0766 Particulate Respirator

193-0071 Particulate Respirator

- Replaces 4C-8761 Dust/Mist Respirator
- 193-0766 and 193-0071 meet NOISH 42 CFR 84 N95 requirements. TC-84A2668 and TC-84A2669
- Three-panel respirator with innovative design allows better visibility and conforms to a wide range of face sizes.
- Soft cover web on inner panel is comfortable against face and helps provide a custom fit and secure seal.
- Individually packaged to help prevent contamination
- 193-0071 features the Cool Flow™ exhalation valve for easy exhalation and cool dry comfort.
- Suggested applications: grinding, sanding, sweeping, bagging, general maintenance, dusty operations and operations involving liquid or non-oil based particle from sprays that do not emit harmful vapors
- Quantity: 193-0766 (20 respirators per box); 193-0071 (10 respirators per box)



193-0766



193-0071

193-0593 Half Facepiece Respirator

- Used with 3M™ 2000, 5000, and 6000 series filters and cartridges
- Swept-back design of the filters/cartridges improves balance and visibility
- Reusable — just dispose of the cartridge/filters when used to capacity
- Comfortable, lightweight facepiece and easy-to-adjust head straps
- Two sizes: medium and large
- Package quantity: 6 respirators
- Filter not included



193-0593

Replacement Filters

Package quantity: ten 2 packs of filters

193-0992 Organic Vapor Cartridge

This cartridge, when used with 6000 and 7000 Series facepieces, provides respiratory protection from certain organic vapors at concentrations up to 10 times the Permissible Exposure Limit (PEL) with half facepieces.

193-2187 P95 Particulate Filter

This filter is designed for applications such as grinding, sanding and welding. It is compatible with 3M™ 6000.

194-0897 P100 High Efficiency Filter

This filter is designed for applications including welding, brazing, torch cutting, pouring and soldering, as well as protection against OSHA substance specific particle exposures such as lead, asbestos, cadmium, arsenic and MDA. This filter is compatible with the 3M™ 6000.



193-0992



193-2187



194-0897

193-0070 Welding Respirator

- Meets NOISH 42 CFR 84 N95 requirements. TC-84A0454
- Cool flow exhalation valve promotes worker comfort by offering easy exhalation for cooler, dry comfort.
- Contours easily to provide a comfortable, good seal
- Economical all-filter design with no spare parts to clean
- Suggested applications: welding, brazing, soldering, torch cutting, metal pouring, grinding, sanding, sweeping, bagging, general maintenance and operations involving liquid or non-oil based particle from sprays that do not emit harmful vapors
- Quantity: 10 respirators per box



1U-8084 Wrap Around Safety Glasses

- Will fit over personal glasses
- Individually wrapped
- Typical application: for visitors who walk through your shop
- Meet ANSI impact requirements



Safety Glasses

- Polycarbonate lens
- Universal bridge, plastic frame
- Meet ANSI Z87.1-1979



Part No.	Pkg. Qty.	Lens Type	Frame Color	Lens Size	Features
4C-8093	10	Clear	Mocha	54	Eyebrow and sideshield
4C-4120	10	Clear	Mocha	58	Eyebrow and sideshield
4C-8351	10	Gray	Mocha	58	Eyebrow and sideshield

212-2225 Safety Glasses (clear) 212-2226 Safety Glasses (smoke)

- Contemporary one-piece frame—sleek, lightweight, and comfortable
- Wrap-around protection
- One-piece polycarbonate lens with adjustable temples
- Meets ANSI Z87.1 standards



Uvex Astrospec 3000™ Safety Glasses

SMCS Code: None
Model: None

- Contemporary styling; frames have CAT® logo on temple
- Fully adjustable — patented lens inclination and adjustable temple length provide ultimate comfort
- Comes with impact resistant polycarbonate lenses
 - anti-fog (improves visibility in humid work areas)
 - anti-static (minimizes attraction of small dust and dirt particles)
 - anti-scratch (increases scratch resistance and extends lens life)
 - anti-UV coating (absorbs 99.9% of harmful UV light)
- Replacement lenses available
- Meet industry standards:
 - ANSI Z87.1 - 1989
 - CSA Z94.3 - 1992
 Model 3000 with clear or gray lens also CE Certified
- Made in USA
- Clear tint for indoor applications; gray and mirror gray tint for outdoor applications where sunlight and glare cause eye strain
- Universal nose bridge



Part No.	Frame Color	Lens Tint
139-2644	Yellow/Black	Clear
139-2645	Black	Clear
139-2647	Yellow/Black	Gray
139-2648	Black	Gray
139-2650	Yellow/Black	Mirror Gray
139-2651	Black	Mirror Gray

Replacement Lens	
Part No.	Lens Tint
139-2670	Clear
139-2671	Gray
139-2672	Mirror Gray

NOTE: Mirror gray lens coated for scratch resistance only.

4C-8098 Safety Goggles

- Clear mask, clear anti-fog lens
- Wrap-around lens offers wide angle of vision.
- Cylindrical lens has excellent distortion free vision.
- Vertical vent system helps prevent fogging.
- Wide back opening allows goggle to fit easily over large safety glasses.
- The wide nasal flare angle allows the goggles to be worn with most half-mask respirators.
- Ample 19 mm (3/4 in) wide headband distributes pressure more evenly for increased wearer comfort.
- DURALITE® polycarbonate lens for greater impact protection
- Wide facial flange means fewer pressure points for greater comfort.
- Packaged individually
- Meets requirements for chemical splashes



1U-8085 Safety Goggles

- Provide impact protection for grinding, chipping and cutting



166-3531 Lens Cleaning Towelettes Kit

- Can be used on plastic, glass and polycarbonate lenses, face shields, and goggles
- Towelettes are pre-moistened with anti-fog, anti-static formula
- Individually foil wrapped towelettes are great for service trucks and tool boxes
- Dispenser features pull out bottom for easy dispensing and built in tab for hanging
- Each dispenser contains (100) 5 x 8 inch towelettes



166-3530 Lens Cleaning Station Kit

- May be used on safety glasses, face shields, goggles, and full face respirators
- Economical lens cleaning station provide lens cleaning needs in shop or office
- Promotes proper lens cleaning, extending life of safety glasses
- Specially formulated solution cleans greasy and oily glasses while providing an anti-fog/anti-static coating
- Low lint non-abrasive tissues leave lenses clear and streak free
- Easily mounted on wall or table top
- Each station contains 8 oz. anti-fog/anti-static solution and 600 low lint, non-abrasive tissues



4C-8095 Heavy-Duty Headgear

- Headgear has precision ratchet head size adjustment for a comfortable snug fit.
- Floating window suspension distributes weight and reduces shock of impact.
- Five position pinlock crown band provides additional adjustment for proper support and a firm fit.
- Crown protector made of a new high-performance thermoplastic offers excellent impact resistance over a wide range of temperatures.
- Soft vinyl headband to cushion the forehead
- Packaged individually



Accessories for 4C-8095

4C-8096 Window — Clear Polycarbonate

4C-8097 Window — Dark Green for Glare Reduction

Note: Headgear and windows must be ordered separately.

4C-8096 and 4C-8097 Features

- 229 mm x 210 mm x 2.0 mm (9 in x 14 1/2 in x 0.080 in) thickness
- Polycarbonate for heavy-duty impact protection against flying particles
- Good heat resistance
- Provide excellent general face and eye protection
- Windows can be replaced in seconds.
- Windows mount inside crown protector for greater splash protection.
- Spring loaded pivot assemblies maintain proper friction and prevent annoying window drop.
- Blue color and matte finish resist smudges and show less daily grime.
- Packaged in quantities of 10



212-7530 Hard Hat Attachment Bracket

Warranty: Manufacturer's

- Turns an ordinary hard hat into a face shield
- Fits most makes and models of hard hat
- Bracket attaches directly to hard hat (hard hat not included)
- Uses a 1U-8096 Clear Acetate Visor or 4C-4404 Green Acetate Visor (not included)



1U-8095 Face Shield

- Clear 203 mm x 305 mm x 1 mm (8 in x 12 in x .040 in) window
- Comfortable and durable
- Provide excellent general face and eye protection



Replacement Windows for 1U-8095 Face Shield
(Also fit Glendale 5000, Huntsman K, K3, K4 and K10,
Norton 6300 and Jackson J-10 face shields)

Part No.	Description
1U-8096	Clear replacement window
4C-4404	Green replacement window

Hand Protection — Gloves

Mechanics Gloves

Warranty:

Standard Mechanics Glove

- Best fitting, most comfortable work glove available — provides ultimate dexterity and finger tip control
- Protects against nicks, cuts, and abrasions
- Offers dexterity for small intricate tasks
- Machine washable
- Easy entry, non-restrictive wrist opening with double elastic wrist cuff
- Stretch knit spandex top ensures snug fit
- Genuine Clarino wrap-around outer palm area, fingers, and thumb
- Seamless thumb and index finger design
- 1 year guarantee on workmanship and materials



Part No.	Size
197-7677	Medium
197-7678	Large
197-7679	Extra Large

Mechanics Glove with GEL Palm Padding

- Ultimate mechanics glove with exclusive “Split-Fit” palm design developed and tested by world’s finest race mechanics
- Anti-vibration GEL palm padding [3 mm (.1 in) thick]
- Provides protection, comfort, and dexterity demanded by race mechanics
- Great for working around heat, cold, vibration producing power tools, and sharp or abrasive surfaces
- Genuine Clarino palm, fingers, and thumb with 100% Clarino index finger
- Rubber “over the top”, non-restrictive, wrist closure
- Stretch knit spandex top ensures snug fit
- Hidden seam stitching reduces snagging
- Seamless, reinforced thumb and index finger design
- Lifetime guarantee on workmanship and materials

Part No.	Size
197-7674	Medium
197-7675	Large
197-7676	Extra Large

Cat Leather Gloves

Warranty:

- Unlined leather work gloves with Cat logo imprinted on each hand
- Full grain cowhide leather work gloves with adjustable buckle and strap
- Gunn cut pattern
- Six pair per package

Part No.	Size
174-8181	Medium
174-8182	Large
174-8183	Extra Large



Lined Leather Gloves

Warranty:

- Split cowhide leather glove with matching thumb shield
- Red jersey over foam lining for added warmth, shirred wrist and Gunn cut pattern



Part No.	Size	Quantity
4C-9867	Ex. Large	6 Pair
4C-9868	Large	6 Pair
4C-9869	Medium	6 Pair

4C-6660 Unlined Leather Gloves

Warranty:

- Split suede cowhide leather with a thumb shield for extended wear
- Slip-on style with double shirred elastic at wrist back
- Gunn cut pattern
- Size: large
- 6 pair per package



4C-6669 Leather Palm Gloves

Warranty:

- Pearl split leather palm, fingertips, knuckle strap and forefinger
- Continuous heel and safety cuff
- Size: large
- 12 pair per package



Split Cowhide Gloves

- Split cowhide leather (palm, fingertips, knuckle strap, and forefinger)
- Canvas back with safety cuff
- Wing thumb
- CAT® logo on both yellow canvas cuffs
- 12 pair per package



Part No.	Description
157-1452	Gloves, Large
157-1453	Gloves, Medium
157-1454	Gloves, Extra Large

156-1653 Rubberized Chore Gloves

- Rubberized, gold chore gloves with Cat logo
- Hob-Nob Dots on palm and forefinger
- Straight thumb
- Knit wrist, clute construction
- Size: Large
- Three pair per package



205-5270 Cotton Gloves

- Cotton flannel
- PVC dots on palm, index finger, and thumb enhance gripping power and prolong glove life
- Clute cut with natural knit wrist



4C-6700 Coated Gloves

- Claw Hand®
- Black neoprene coating over cotton backing
- 30.5 cm (12 in) gauntlet cuff for added protection
- Wing thumb
- Size: large
- 12 pair per package



156-1604 Gloves, Large

- Brown cotton with Hob-Nob dots on palm and forefinger
- Straight thumb
- Knit wrist
- Clute cut
- 6 pair per package



187-8238 Cat Chore Gloves

- Promotional yellow chore gloves with the Cat logo imprint
- Black knit wrist
- Size: large
- 12 pair per package



193-2256 Gloves, Large

- Comfortable cotton knit glove
- Designed for general purpose use
- Dot coated on both sides for longer life
- 12 pair per package



Chemical Resistant and Work Gloves

Warranty:

4C-5522
4C-5523



4C-5527
4C-5529



Part No.	Description	Application	Packaging	Chemical Resistance
4C-5522	"SOL-VEX" Nitrile, Flock Lined, Green, Gauntlet with Full Wrist Size 9 [15 mil — 33 cm (13 in)]	Chemical Handling Acids, Solvents, Caustics Oils, Grease, Degreasing Machine operations using cutting oil, metal fabrication	6 pair per box	Sodium Hydroxide, Freon, Xylene, Hydro-chloric Acid, Stoddard Solvent, Potassium Hydroxide, Perchloroethylene, Phosphoric Acid
4C-5523	"SOL-VEX" Nitrile, Green, Gauntlet with Full Wrist Size 10 [22 mil — 40.6 cm (15 in)]	Chemical Handling Acids, Solvents, Caustics Oils, Grease, Degreasing Better protection than 4C-5522 due to thickness.	6 pair per box	Sodium Hydroxide, Freon, Xylene, Hydro-chloric Acid, Stoddard Solvent, Potassium Hydroxide, Perchloroethylene, Phosphoric Acid
4C-5526	"EDGE" Nitrile Palm Coated, Knit Lined, Safety Cuff, Gray Color Size Large	Light to Med. duty, general purpose, fabrication, assembly, maintenance, shipping and receiving. Superior abrasion. Excellent grip in light oil appl.	12 pair per box	Oil, Grease
4C-5527	"NEOX" Coated Neoprene Supported Gauntlet [30.5 cm (12 in) Long] One Size Fits All	Resists Heat, Cutting, Use in Plating, Galvanizing Degreasing, Petrochemicals	12 pair per box	Acids, Solvents, (Ex.: Glycol Ether), Oils, Caustics, Soaps, Alcohols
4C-5529	"NEOX" Fully Coated Protects to Shoulder [78.7 cm (31 in) Long] One Size Fits All	Resists Heat, Cutting, Use in Plating, Galvanizing, Sandblasting Cabinet	1 pair per box	Acids, Solvents, (Ex.: Glycol Ether), Oils, Caustics, Soaps, Alcohols

Disposable Gloves

Warranty:

Nitrile Disposable Gloves

- 157-2270 Powdered Nitrile Disposable Gloves (Lg)
- 157-2274 Non-Powdered Nitrile Disposable Gloves (Lg)
- 100% nitrile
- More resistant to snags and tears than vinyl or latex
- Only 4 mil thick — gloves stay cool and comfortable
- Available powder-free for critical applications or lightly powdered for less critical ones
- Superior splash protection against irritating chemicals
- Beaded cuff keeps gloves securely in place
- Fit either hand
- Packaged 100 gloves per box
- Material thickness: 4 mil
- Length: 24.1 cm (9 1/2 in)

Latex Disposable Gloves

- 189-4839 Latex Disposable Gloves (Lg/X-Lg)
- 100% natural latex, white color
- Provides superior finger dexterity and grip
- Cornstarch dusting powder for easy on and off
- Chemical resistant to acids, bases, alcohols, and dilute water solutions of most chemicals
- Fit either hand
- Packaged 100 gloves per box
- Material thickness: 5 mil
- Length: 24.1 cm (9 1/2 in)

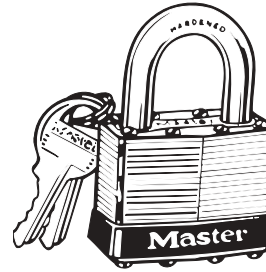
Padlocks

Medium Security Padlocks

Warranty: Manufacturer's

Locks are available in two types; solid brass and laminated brass.

- All of these medium security padlocks have a pair of keys with every lock.



1U-9781, 1U-9782

- Solid brass bodies and cylinders
- Pin-tumbler locking, and case-hardened steel shackle

1U-9777, 1U-9779

- Dual brass levers to independently lock each shackle leg
- Case hardened steel shackle

Carded for Display	1U-9782	1U-9781	1U-9777	1U-9779
Type	Solid Brass	Solid Brass	Laminated Brass	Laminated Brass
Pin Tumblers	5	4	4	4
Body Width	50.8 mm (2 in)	39.68 mm (1 9/16 in)	44.45 mm (1 3/4 in)	38.1 mm (1 1/2 in)
Shackle Diameter	7.14 mm (9/32 in)	6.35 mm (1/4 in)	7.94 mm (5/16 in)	7.14 mm (9/32 in)
Horizontal shackle clearance	25.4 mm (1 in)	20.63 mm (13/16 in)	19 mm (3/4 in)	15.88 mm (5/8 in)
Vertical shackle clearance	25.4 mm (1 in)	22.23 mm (7/8 in)	23.81 mm (15/16 in)	19 mm (3/4 in)

High Security Steel Body Padlocks

Warranty: Manufacturer's

Locks are available in two types of key systems to meet your specific security needs. Locks can be ordered keyed differently (each lock has a different key number) or keyed alike (each lock has the same key number; one key opens all locks).

- A pair of brass keys is included with every lock.
- All locks listed below are 4 Pin Tumbler, tough, laminated, cadmium rustproofed steel case; nickel-plated shackle.
- 1U-9776 has patented guard plates to resist attempts at rapping and picking to open locking lever.
- All other locks have exclusive dual steel locking levers independently lock each shackle leg for increased protection. Patented taper assures smooth vertical shackle movement and precise engagement of locking levers.
- All locks are carded for display, with the exception of 1U-9776. 1U-9776 comes boxed.
- 1U-9774 is a Four-Pack Padlock — with keyed-alike padlocks blister packed together in an attractive display card.



Boxed Carded for Display	1U-9776	1U-9772	1U-9773	1U-9770	1U-9775	1U-9771	1U-9774 ¹
Pin tumblers	4	4	4	4	4	4	4
Body width	28.58 mm (1 1/8 in)	38.1 mm (1 1/2 in)	38.1 mm (1 1/2 in)	44.45 mm (1 3/4 in)	50.8 mm (2 in)	44.45 mm (1 3/4 in)	38.1 mm (1 1/2 in)
Shackle diameter	4.76 mm (3/16 in)	7.14 mm (9/32 in)	7.14 mm (9/32 in)	7.14 mm (9/32 in)	7.94 mm (5/16 in)	9.5 mm (3/8 in)	7.14 mm (9/32 in)
Horizontal shackle clearance	12.7 mm (1/2 in)	15.88 mm (5/8 in)	15.88 mm (5/8 in)	19 mm (3/4 in)	23.81 mm (15/16 in)	19 mm (3/4 in)	15.88 mm (5/8 in)
Vertical shackle clearance	14.29 mm (9/16 in)	19 mm (3/4 in)	38.1 mm (1 1/2 in)	23.81 mm (15/16 in)	25.4 mm (1 in)	63.5 mm (2 1/2 in)	19 mm (3/4 in)

¹ The 1U-9774 is 4 padlocks keyed alike.

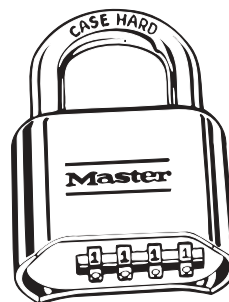
Combination Padlocks

Warranty: Manufacturer's

Choose the convenience of keyless locks.

1U-9783

- Strong double-armored construction with smooth 3-number dialing
- Black dial face—easy-to-read
- Self-locking, automatically disarranging tumblers
- Permanently lubricated rust resistant inner working parts



1U-9784

- Resettable combination lock makes it easy for owners to give employees or friends temporary access, and then restore private control in seconds by simply changing combination.
- Multiple padlock users also can set whole groups of locks "combination-alike" for added convenience.
- Corrosion resistant solid brass case
- Both locks carded for display

Carded for Display	1U-9783	1U-9784
Combination Type	Fixed	Resettable
Lock Mechanism	3-digit dialing	4-digit dialing
Body Width	47.63 mm (1 7/8 in)	50.8 mm (2 in)
Shackle Diameter	7.14 mm (9/32 in)	7.94 mm (5/16 in)
Horizontal shackle clearance	20.64 mm (13/16 in)	25.4 mm (1 in)
Vertical shackle clearance	19 mm (3/4 in)	25.4 mm (1 in)

Chemical Spill Protection

4C-5751 Floor Dry — Chemical Spill Protection

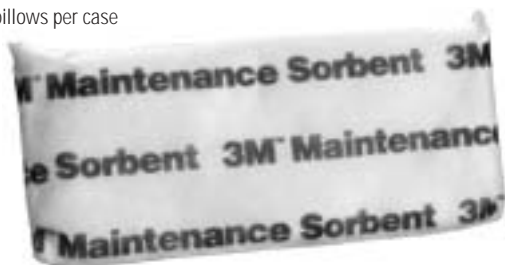
Floor Dry is a granular mineral (diatomaceous earth) that is mined and processed in Nevada. It possesses high absorptive properties for oil, grease, water, and other liquids that drop to the floor in industrial plant operations, fleet garages, truck service shops, petrochemical plants, metal working plants . . . wherever floor anti-slip safety and floor "good housekeeping" are vital to employee safety and profitable productivity.

- Can be spread by hand, trowel or scoop in a minimum of time
- Will absorb 54.4 kg (120 lbs) of oil/45.4 kg (100 lbs) of material
- Completely non-toxic, non-corrosive, non-combustible
- Provides a dependable, anti-slip surface which gives greater safety and better, cleaner working conditions
- Will not react and "eat into" other substances such as concrete, steel, blacktop, brick or wood block flooring because it is insoluble and chemically inert
- Low bulk density makes Floor Dry cost less by the shovelful or cubic foot.
- Greater absorption furthers economy
- Easier removal because it does not mud or pack
- Lighter color means safer and brighter work areas—reflects light.
- More resistant to crushing—can withstand more pounds per square inch
- Non-hygroscopic, will not pick up moisture from the air — contains maximum of 1% moisture
- Quality control—insures consistently uniform high quality product
- Minimum of dust on application
- Can be used outside on ramps and walks to give traction on rainy or snowy days
- Lightens floors—brings back original color
- 36 bags per pallet with a net weight of 408.24 kg (900 lbs)



193-0768 Maintenance Sorbent Pillow

- Each pillow absorbs 0.5 gallons.
- Designed with a scrim that encases particulate sorbent material
- Used in areas where more capacity is desired than can easily be achieved using a sorbent pad
- Non-selective sorbent which will "sorb" most non-aggressive liquids
- Designed for use in industrial maintenance applications
- 16 pillows per case



4C-8765 Oil Absorbent Pads

- 3M's exclusive "micro-webs" absorbs up to 100% more oil than other leading melt-blown oil absorbents.
- Improved absorbency means more liquid pickup, with less product, which can result in lower costs for the user.
- Very little lint to minimize contamination
- One bale picks up an average of 25 gallons of oil.
- Comes as one bale of 50, 43.2 cm x 48.3 cm (17 in x 19 in) pads



Sorbent Spill Kits

- Most versatile spill kit on today's market
- Chemical Sorbent Folded Spill Kit is a non-selective sorbent which will "sorb" most aggressive chemicals
- 170-8604 fits into small places where accessibility is important; unique construction and compressibility allows storage behind or under seats and/or lab benches where other spill kits will not fit
- 170-8605 is packaged in a 20 gallon drum and can be placed in key locations throughout a facility
- Most complete spill kit in a roll (material can be used as a pillow, pad, roll, or boom)
- Scrim coating on one side increases strength and eliminates linting
- Each kit contains a containment bag and tie
- Molded handles makes transportation easier

170-8604 Spill Kit, 5 Gallon

- Absorb 5 gallons of petroleum-based fluid
- Roll of folded sorbent, 13 x 66 cm (5 x 26 in); fully opened 48 x 66 cm (19 x 26 in); Qty 1
- Disposal bag and tie, Qty 1

170-8605 Spill Kit, 31 Gallon

- Absorb 31 gallons of petroleum-based fluid
- 20 gallon drum with lid and plastic closure ring, Qty 1
- Roll of folded sorbent, 13 x 127 cm (5 x 50 in); fully opened, 48 x 127 cm (19 x 50 in), Qty 2
- Sorbent pads, 43 x 48 cm (17 x 19 in), Qty 30
- Disposal bags and ties, Qty 3

Miscellaneous

9U-6000 WypAll® Paper Wipers

- Made with Scott's unique, patented manufacturing process
- Superior strength and durability
- Absorbs liquids, greases, oils and common solvents
- Wipes surfaces dry—leaves work surfaces ready to use
- Soft, cloth-like feel makes it popular with employees.
- Always fresh and clean right from the box—no chemical odors
- Saves the high cost of rental shop towels and rags
- 1U-5432 Paper Wipers Dispenser available separately



Part No. for Case	Part No. for Bundle or Carton	Towel Size	Color	Quantity
9U-6000	1U-9579	31.8 cm x 36.6 cm (12.5 in x 14.4 in)	white	56 wipers per bundle/ 18 bundles per case

Dealers must order case quantity part number.

WypAll Plus® Paper Wipers

- Made with the same patented manufacturing process as original WypAll — and 25% stronger.
- Combines clothlike softness with extra strength and durability.
- Sturdy, corrugated, pop-up dispenser carton for easy storage and extra protection — ideal for service truck and outdoor use.
- 1U-5352 Blue color hides stains, controls usage by encouraging employees to use the same wiper longer.
- Compatible with the 1U-5353 White Metal "Grabber" holder that mounts anywhere, putting wipers right at the worker's fingertips.



Part No. for Case	Part No. for Bundle or Carton	Towel Size	Color	Quantity
1U-5351	1U-9580	25.4 cm x 40.6 cm (10 in x 16 in)	white	100 wipers per carton, 9 cartons per case
1U-5352	1U-9581	25.4 cm x 40.6 cm (10 in x 16 in)	blue	100 wipers per carton, 9 cartons per case

Dealers must order case quantity part number.

Paper Wipers Dispensers

Part No.	Description	Usage
1U-5432	Plastic Paper Wiper Dispenser	use for 9U-6000 Paper Wiper and 162-5791 Shop Towel
1U-5353	Paper Wiper Grabber, White Metal	use for 1U-5351 and 1U-5352 Paper Wipers

162-5791 Shop Towel

- Controls contamination — low linting and tear resistant
- Safe to use for power train and hydraulic system repairs
- Reusable — heavy-weight rayon/polyester blend towel is washable/rinsable
- Solvent resistant — compatible with most industrial solvents
- Can be used with 1U-5432 Paper Wipers Dispenser
- Size: 34 cm x 38 cm (13.5 in x 15 in)
- Retail package: 100 towels/box



1U-7427 Engine Cover

- Protect engine from falling debris
- Can be used as a drop cloth/dust cover
- Affordable, disposable
- Packaged 50 sheets per case
- Size: 122 cm x 183 cm
(48 in x 72 in)



Rugs

- Keep shop floors cleaner and safer
- Absorb most shop fluids and oils
- Tough and tear resistant—won't break down
- Durable enough to withstand heavy traffic
- Coated rug has a poly-backed coating to provide extra protection to shop floors

Part No.	Description	Size	Absorbent Capacity
159-5155	Rug	91 x 91.5 m (36 x 300 in)	121 L (32 gal) per roll
159-5160	Rug (Coated)	91 x 254 cm (36 x 100 in)	40 L (10.5 gal) per roll



152-7051 Dome Cover, 55 gallon drum 152-7053 Dome Cover, 15 gallon keg

SMCS Code: None
Model: All

- Used to convert used oil and grease drums into reusable waste containers
- Made from durable plastic for long life
- Self-closing swing lid keeps odors in

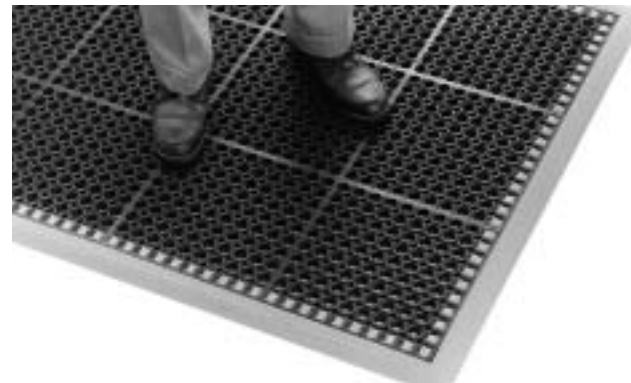


Part No.	Diameter	Height	Color
152-7051	63 cm (24.8 in)	32 cm (12.6 in)	gray
152-7053	39 cm (15.4 in)	26 cm (10.4 in)	brown

Industrial Worksafe Floor Mats

- Ideal for the toughest work areas . . . wet or dry
- Relieves worker fatigue, improves efficiency
- Slip resistant surface design
- Edges beveled for maximum safety
- High grade, grease resistant rubber compound
- Two year performance guarantee
- 22.23 mm (7/8 in) thickness
- Black with OSHA Orange Safety Borders

Part No.	Size
4C-8099	71 cm x 102 cm (28 in x 40 in)
4C-8100	102 cm x 132 cm (40 in x 52 in)
4C-8101	102 cm x 163 cm (40 in x 64 in)



Diamond Plate Sponge Cote Floor Mats

- Tough vinyl surface tile bonded to non-absorbent sponge base
- Diamond plate surface tread is durable and slip resistant
- 9.5 mm (3/8 in) vinyl sponge base reduces fatigue and strain
- Grease and chemical resistant, non-flammable
- Edges beveled for maximum safety

Part No.	Size
4C-8102	51 x 76 cm (2 ft x 3 ft)
4C-8103	76 x 127 cm (3 ft x 5 ft)



Safety-Zone Interlock Floor Mats

- The first molded, two-color interlocking runner matting
- Slip-resistant deck-plate surface ensures safe footing.
- Thousands of buoyant air pockets cushion feet, reducing strain to legs and back.
- Sections interlock to create runners of any length, zip apart easily for removal and cleaning.
- 12.7 mm (1/2 in) thick non-marking, non-staining high quality rubber



Part No.	Size	Unit
4C-8104	61 W x 91.4 cm L (24 in x 36 in)	Center
4C-8105	61 cm W x 91.4 cm L (24 in x 36 in)	End
4C-8106	91.4 W x 61 cm L (36 in x 24 in)	Center
4C-8107	91.4 W x 61 cm L (36 in x 24 in)	End

Abrasive Coated Kushion Walk Floor Mats

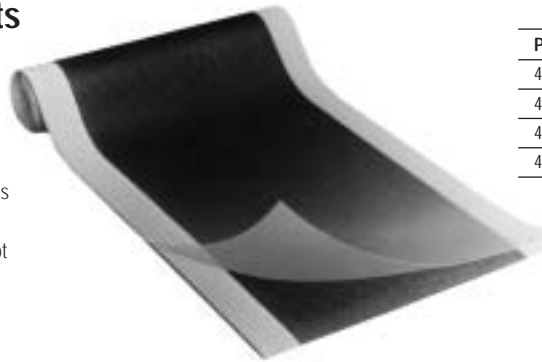
- Anti-slip protection in hazardous situations
- 9.5 mm (3/8 in) thick, 100% Koroseal vinyl, coated with abrasive diamond-hard mineral particles
- Underside is knobbed for aeration and sanitation.
- Reliable, anti-slip protection provides cushioned comfort and resiliency underfoot.
- Available in unslotted or slotted design for drainage.
- Edges beveled for maximum safety
- Earthtone gray



Part No.	Size
4C-8116	61 cm x 9.14 m (2 ft x 30 ft)
4C-8117	91.4 cm x 9.14 m (3 ft x 30 ft)
4C-8118	61 cm x 18.3 m (2 ft x 60 ft)
4C-8119	91.4 cm x 18.3 m (3 ft x 60 ft)
4C-8120	91.4 cm x 121 cm (3 ft x 4 ft)
4C-8121	91.4 cm x 182.9 cm (3 ft x 6 ft)

Ultra-Tred Armor Cote Floor Mats

- Long-lasting comfort and safety all in one
- Urethane coating protects against chemicals, abrasions, dirt and moisture.
- Wears five times longer than comparable uncoated products
- Yellow beveled edges maximize safety
- 9.5 mm (3/8 in) thick vinyl compound for buoyancy underfoot



Part No.	Size
4C-8112	61 cm x 91.4 cm (2 ft x 3 ft)
4C-8113	91.4 cm x 152.4 cm (3 ft x 5 ft)
4C-8114	61 cm x 18.3 m (2 ft x 60 ft)
4C-8115	91.4 cm x 18.3 m (3 ft x 60 ft)

TileTop Sponge-Cote Floor Mats

- Ultimate cushioned support for employees who stand at work
- Unlimited uses in industrial, professional, laboratory and commercial settings.
- Buoyant sponge dramatically reduces stress and back fatigue, improving efficiency.
- Comfortable 12.7 mm (1/2 in) thickness is beveled for safety.
- Marbleized rubber stays beautiful, is easy to maintain.
- Not for use with spike heels, casters or stool legs

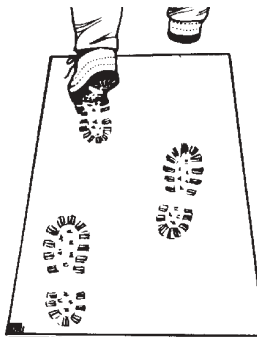
Part No.	Size
4C-8108	45.7 cm x 76.2 cm (18 in x 30 in)
4C-8109	45.7 cm x 121.9 cm (18 in x 48 in)
4C-8110	61 cm x 91.4 cm (24 in x 36 in)
4C-8111	91.4 cm x 152.4 cm (36 in x 60 in)



3M™ Clean Walk Mats

SMCS Code: 7951-580
Model: None

- Used to remove dirt and contamination from shoes, wheels, and other passing objects — keeps dirt and grease from being tracked into office area
- Comes in three sizes
- Provides an inexpensive way to keep carpets and office areas clean
- Ideal for shop-to-office, paint, or cleaning areas
- Mat has 30 peelable layer, providing a fresh cleaning surface with each exposed layer.



Part No.	Size
138-3852	457.2 mm x 914.4 mm (18 x 36 in)
138-3855	457.2 mm x 1143 mm (18 in x 45 in)
138-3856	609.6 mm x 1143 mm (24 in x 45 in)

4C-9820 Portable Microfiche Reader with One Lens and 120 VAC Transformer

Warranty: Manufacturer's

- Combines the portability of a personal size reader with the quality and features of larger desktop models
- Features a floating lens mount for positive focus, an auto opening carrier for precise indexing and a distortion free image



Options	
Part No.	Description
4C-9822	Transformer, 120 VAC
4C-9824	Cigarette Adapter, 12 VDC
4C-9825	Carrying Case for Microfiche Reader
4C-9826	Spare Lamp, 9W, 6V, FKY
4C-9827	Overall Size Bifold Microfiche Holder with 30 Slots Available, 190.5 mm (7 1/2 in)



Screen size	15 cm (6 in) H x 20 cm (8 in) W, Nonglare screen
Projection	Rear
Carrier	152 mm (6 in) x 102 mm (4 in) Auto-Opening Glass Flats
Lens	48x COM Lens
Lamp	9W, 6V FKY Quartz Halogen Lamp
Overall dimensions	10.5 cm (4 1/8 in) H x 25 cm (9 3/4 in) W x 27 cm (10 3/4 in) D Closed 32 cm (12 1/2 in) H x 25 cm (9 3/4 in) W x 27 cm (10 3/4 in) D Open
Weight	4 kg (9 lbs)

4C-6193 Hand Held Microfiche Viewer

Warranty: Manufacturer's

- Accepts microfiche, jackets or aperture cards
- Viewer operates on ambient light or internal batteries, 2 C-cells (not included).
- Spare bulb and vinyl carrying case included with each reader
- Overall dimensions: 66.7 mm W x 38.1 mm D x 149.3 mm L (2 5/8 in x 1 1/2 in x 5 7/8 in)
- Weight of unit (with batteries) is 339 g (12 oz)



8S-2257 Eye Loupe

Warranty: Manufacturer's

- 25.4 mm (1 in) depth
- 12X power
- Extremely portable



9U-7377 Metal Etching Pen

- Leaves distinctive, smudge-proof, black markings
- Indispensable anyplace where metals, hardened or thin-walled, have to be marked or identified
- Strong effect on heavy metals, stainless steel, iron, copper, brass, nickel, tin, lead
- No electrical flux necessary; special acid solution flows like ink in a felt-tip pen and a permanent etch is produced on the metal
- Ideal for toolroom use and marking in the machine shop
- Apply on clean surface; after application wipe dry with oily cloth.

4C-4870 Utility Knife 4C-4871 Utility Knife Blades

- 4C-4870 Utility Knife is a "slick lock" push-button knife, 152.4 mm (6 in) long.
- Includes 2 blades stored in the handle
- 4C-4871 Blades are 0.025 inch thick, 100 blades per box.



172-0852 Creeper

Dimensions	965 x 445 x 102 mm (38.0 x 17.5 x 4.0 in)
Wheel size	51 mm (2.0 in)
Clearance	22.2 mm (.87 in)

- Rugged, one-piece, plastic body construction
- Easy-to-clean surface is resistant to solvents, greases, and fuels
- Body-fitting design, contoured to provide optimum comfort
- Low profile, gives maximum workspace but still clears air hoses
- Six pop-in urethane wheels resist corrosion and provide a smooth ride



Cat® Mudflaps

- Yellow on black rubber fiber
- Sold individually



Part No.	Size
9U-7309	12 inch wide x 18 inch high
9U-7310	20 inch wide x 14 inch high

Diesel Power Mudflaps

- White or black rubber fiber



Part No.	Size	Color	Use
7X-2986	61 cm x 91.4 cm (24 in x 36 in)	Black	Large, on-highway trucks
154-6564	61 cm x 76.3 cm (24 in x 30 in)	Black	Large, on-highway trucks
7X-2982	61 cm x 35.6 cm (24 in x 14 in)	Black	Pickups, campers, trailers, and vans
7X-2984	61 cm x 91.4 cm (24 in x 36 in)	White	Large, on-highway trucks
7X-2983	61 cm x 35.6 cm (24 in x 14 in)	White	Pickups, campers, trailers, and vans

Paint Products

Caterpillar Water Reducible Enamel Topcoats

- Pure, lead free industrial enamel suitable for interior or exterior use on earthmoving, construction and material handling equipment, trucks, engines, machinery, and metal buildings
- Formulated to produce a finish that sets up in minutes, is tack-free in a few hours, and dries overnight to a hard film
- Very resistant to fading, chalking, cracking, and chipping
- Can be applied directly to either wood or metal without using a primer

Part No.	Description	Package Quantity	Size / Type
4C-4200	Yellow Paint High Gloss	12	340 g (12 oz) Aerosol Can
206-6417	Hiway Yellow Paint High Gloss	12	340 g (12 oz) Aerosol Can
4C-4202	Mojave Brown Paint Medium Gloss	12	340 g (12 oz) Aerosol Can
4C-4203	White Paint High Gloss	12	340 g (12 oz) Aerosol Can
4C-4198	Black Paint Medium Gloss	12	340 g (12 oz) Aerosol Can
4C-5842	Black Paint Flat	12	340 g (12 oz) Aerosol Can
4C-5843	Black Paint High Gloss	12	340 g (12 oz) Aerosol Can
4C-5844	Bright Red Paint High Gloss	12	340 g (12 oz) Aerosol Can
9U-7946	Bright Beige Paint Medium Gloss	12	340 g (12 oz) Aerosol Can
9U-7948	Dawn Gray Paint Medium Gloss	12	340 g (12 oz) Aerosol Can
9U-7950	Green Paint High Gloss for Barber-Greene Equipment	12	340 g (12 oz) Aerosol Can
127-4965	Medium Gray Paint High Gloss	12	340 g (12 oz) Aerosol Can
127-4966	Dark Gray Paint Medium Gloss	12	340 g (12 oz) Aerosol Can
127-4967	Slate Gray Paint High Gloss	12	340 g (12 oz) Aerosol Can
140-2576	Matterhorn White Paint High Gloss	12	340 g (12 oz) Aerosol Can
173-4060	Charcoal Gray Paint High Gloss	12	340 g (12 oz) Aerosol Can
4C-4184	Yellow Paint High Gloss Fast Drying	4	3.8 L (1 Gal) Can
4C-4192	Yellow Paint High Gloss Fast Drying	1	19 L (5 Gal) Pail
4C-4207	Yellow Paint High Gloss Fast Drying	1	208 L (55 Gal) Drum
4C-6129	Yellow Paint High Gloss	4	3.8 L (1 Gal) Can
4C-6122	Yellow Paint High Gloss	1	19 L (5 Gal) Pail
4C-6127	Yellow Paint High Gloss	1	208 L (55 Gal) Drum
4C-4185	Hiway Yellow Paint High Gloss	4	3.8 L (1 Gal) Can
4C-4193	Hiway Yellow Paint High Gloss	1	19 L (5 Gal) Pail
4C-4208	Hiway Yellow Paint High Gloss	1	208 L (55 Gal) Drum
4C-4186	Mojave Brown Paint Medium Gloss	4	3.8 L (1 Gal) Can
4C-4187	White Paint High Gloss	4	3.8 L (1 Gal) Can
4C-4194	White Paint High Gloss	1	19 L (5 Gal) Pail
4C-4209	White Paint High Gloss	1	208 L (55 Gal) Drum
4C-4183	Black Paint Medium Gloss	4	3.8 L (1 Gal) Can
4C-4191	Black Paint Medium Gloss	1	19 L (5 Gal) Pail
4C-4206	Black Paint Medium Gloss	1	208 L (55 Gal) Drum
9U-7947	Bright Beige Paint Medium Gloss	4	3.8 L (1 Gal) Can
9U-7949	Dawn Gray Paint Medium Gloss	4	3.8 L (1 Gal) Can
171-9773	Charcoal Gray Paint High Gloss	4	3.8 L (1 Gal) Can
9U-7951	Green Paint High Gloss for Barber-Greene Equipment	4	3.8 L (1 Gal) Can
140-2577	Matterhorn White Paint High Gloss	4	3.8 L (1 Gal) Can
140-2578	Matterhorn White Paint High Gloss	1	19 L (5 Gal) Pail
225-6502	Black Paint High Gloss	4	3.8 L (1 Gal) Can
9U-7714	Black Paint Flat	4	3.8 L (1 Gal) Can
4C-7719	Yellow Paint High Gloss 3.5 VOC	4	3.8 L (1 Gal) Can
4C-7720	Yellow Paint High Gloss 3.5 VOC	1	19 L (5 Gal) Pail
9U-7715	White Paint High Gloss 3.5 VOC	4	3.8 L (1 Gal) Can
9U-7716	White Paint High Gloss 3.5 VOC	1	19 L (5 Gal) Pail
9U-7717	Black Paint Medium Gloss 3.5 VOC	4	3.8 L (1 Gal) Can
9U-7718	Black Paint Medium Gloss 3.5 VOC	1	19 L (5 Gal) Pail

Part No.	Description	Package Quantity	Size / Type
4C-6131	Yellow Paint High Gloss Water Reducible 3.4 VOC	4	3.8 L (1 Gal) Can
4C-6124	Yellow Paint High Gloss Water Reducible 3.4 VOC	1	19 L (5 Gal) Pail
9U-7725	Yellow Paint High Gloss Water Reducible 2.8 VOC	4	3.8 L (1 Gal) Can
9U-7726	Yellow Paint High Gloss Water Reducible 2.8 VOC	1	19 L (5 Gal) Pail
9U-7727	Mojave Brown Paint Medium Gloss Water Reducible 3.4 VOC	4	3.8 L (1 Gal) Can
9U-7729	Black Paint High Gloss Water Reducible 3.4 VOC	4	3.8 L (1 Gal) Can
9U-7730	Black Paint High Gloss Water Reducible 3.4 VOC	1	19 L (5 Gal) Pail
9U-7731	Black Paint Medium Gloss Water Reducible 2.8 VOC	4	3.8 L (1 Gal) Can
9U-7732	Black Paint Medium Gloss Water Reducible 2.8 VOC	1	19 L (5 Gal) Pail
9U-7733	White Paint High Gloss Water Reducible 2.8 VOC	4	3.8 L (1 Gal) Can
9U-7734	White Paint High Gloss Water Reducible 2.8 VOC	1	19 L (5 Gal) Pail

Caterpillar Yellow Primer Paint

- Pure, lead free rust-inhibitive industrial primer sealer with excellent adhesion and durability
- Specially formulated to resist rusting, peeling, and fading
- Dries tack-free in a few hours and overnight to hard durable coating with excellent weather resistance
- Should be recoated with Caterpillar enamel topcoat paint.

Part No.	Description	Package Quantity	Size / Type
4C-4190	Yellow Primer Paint	4	3.8 L (1 Gal) Can
4C-4197	Yellow Primer Paint	1	19 L (5 Gal) Pail
4C-4211	Yellow Primer Paint	1	208 L (55 Gal) Drum
4C-4205	Yellow Primer Paint	12	340 g (12 oz) Aerosol Can

Caterpillar Yellow High Gloss Urethane Paint

- Specially formulated lead-free industrial 2K polyurethane for repairing or touching up urethane finishes
- Excellent adhesion to a urethane finish when the surface is properly sanded and prepared
- Produces a finish that sets up in minutes, is tack-free in a few hours, and dries overnight to a hard high-gloss finish
- Very resistant to fading, chalking, cracking, and chipping
- Recommended for equipment requiring long term outside durability and exposure to the elements

Part No.	Description	Package Quantity	Size / Type
9U-7721	Yellow Urethane Paint, High Gloss	4	3.8 L (1 Gal) Can

Caterpillar Paint and Primer Thinner

- Excellent solvent to be used with Caterpillar enamel paint and primer
- Leaves the film quickly and will not impair the setting-up or tack-free time of the enamel or primer paint
- Evaporates fast and is less likely to cause sagging and running
- Because of its high solvency, a relatively small amount of thinner is needed to reduce paint to a spray consistency

Part No.	Description	Package Quantity	Size / Type
4C-4189	Paint and Primer Thinner	6	3.8 L (1 Gal) Can
4C-4196	Paint and Primer Thinner	1	19 L (5 Gal) Pail
4C-4210	Paint and Primer Thinner	1	3.8 L (1 Gal) Can

Caterpillar Paint and Primer Thinner with Retarder

- Excellent solvent to be used with Caterpillar enamel paint and primer
- Leaves the film slowly to provide flow and leveling in hot or dry conditions and on large equipment where slower drying is desired
- Evaporates slowly and is less likely to cause dry over-spray
- Because of its high solvency, a relatively small amount of thinner is needed to reduce paint to a spray consistency

Part No.	Description	Package Quantity	Size / Type
4C-6130	Paint and Primer Thinner with Retarder	6	3.8 L (1 Gal) Can

Caterpillar Urethane Paint Reducer

- Specially formulated to be used with Caterpillar urethane paints
- Because of its high solvency, a relatively small amount of thinner is needed to reduce paint to a spray consistency
- Excellent thinner for cleaning and flushing spray equipment after application use

Part No.	Description	Package Quantity	Size / Type
9U-6360	Urethane Paint Reducer	6	3.8 L (1 Gal) Can

Caterpillar Paint and Decal Remover

- Quickly removes paint, decals, varnishes, lacquers, enamels, and synthetic finishes on wood and metal without damaging the surface
- Formulated to be used as packaged — no further dilution is required
- Do not use on plastics, vinyl, linoleum, fiberglass, or synthetic fibers

Part No.	Description	Package Quantity	Size / Type
4C-4204	Paint & Decal Remover	12	340 g (12 oz) Aerosol Can

Caterpillar Black Muffler Paint

- Formulated to resist temperatures up to 538°C (1000°F)
- Once properly cured, forms a hard, lasting finish that resists salt spray and will not chip or peel
- Ideal for use on mufflers, exhaust systems, or any surface exposed to very high heat

Part No.	Description	Package Quantity	Size / Type
4C-4199	Black Muffler Paint	12	340 g (12 oz) Aerosol Can

Caterpillar Aluminum-Safe Paint Stripper

- Strips iron, steel, even aluminum parts without damage or discoloration
- Useful in cold tanks
- Can be used warm [up to 65.6°C (150°F)] for faster cleaning
- Just soaks the paint off

Part No.	Description	Package Quantity	Size / Type
4C-8651	Aluminum-Safe Paint Stripper	4	3.8 l (1 gal)
4C-8652	Aluminum-Safe Paint Stripper	1	18.9 l (5 gal)
4C-8653	Aluminum-Safe Paint Stripper	1	208 l (55 gal)

Shop Equipment

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Major Equipment

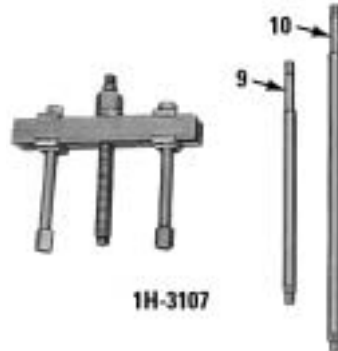
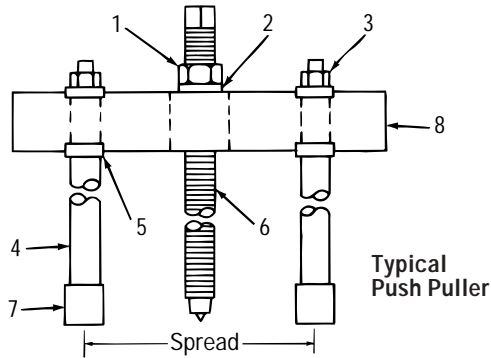
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Caterpillar Inc. warrants **all products** sold, against defects in workmanship or materials under normal use, for **Six Months** after date of purchase, **unless otherwise stated.**

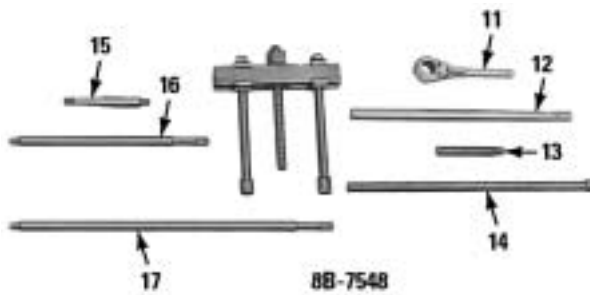
General Purpose Pullers and Attachments

Push Pullers

- Used alone or in combination with bearing pulling attachments for removal and installation of gears, bearings, shafts, and other press-fitted parts
- Pulling or pushing force can be applied, depending on how the pullers are set up.
- Legs of various lengths are available and legs can be joined together with adapters for added reach.
- The reversible ratchet with tubular handle is ideal for turning the 1 inch x 12 hex forcing nut on the 8B-7548 Push-Puller.
- Where more force is required, select an appropriate hydraulic puller.



1H-3107 Push Puller, 30 Ton Capacity (Spread 7 inch to 16 1/4 inch)		
Item	Part No.	Description
1	3H-0466	Nut
2	3H-0467	Washer
3	1B-4209	Nut
4	3H-0469	Leg (8 inch Reach)
5	3H-0468	Plate
6	3H-0470	Screw (1 1/2 inch-12 x 17 1/4 inch long)
7	5P-4807	Cap
8	1U-9889	Crossblock
Optional Accessories		
9	1H-3108	Leg (18 inch Reach)
10	1H-3109	Leg (28 inch Reach)

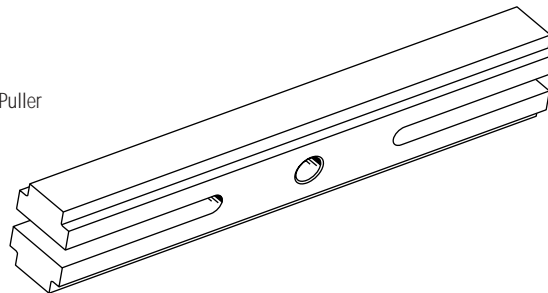


8B-7548 Push Puller, 17.5 Ton Capacity (Spread 3 1/8 inch to 11 3/4 inch)		
Item	Part No.	Description
1	5B-0637	Nut
2	5F-7353	Washer
3	1B-4207	Nut
4	5F-7369	Leg (9.5 in Reach)
5	3H-0465	Plate
6	5F-7366	Screw (1 in-14 x 13 1/4 in long)
7	5P-4808	Cap
8	1U-9895	Crossblock

Item	Part No.	Description
Optional Accessories		
11	8H-0684	Ratchet Wrench
12	8B-7563	Handle (for 8H-0684)
13	5H-9976	Screw (7.25 in long)
14	8S-6586	Screw (26 in long 1 in NF thread)
15	8B-7550	Leg (4.5 in Reach)
16	8B-7549	Leg (16.5 in Reach)
17	162-4206	Leg (22.5 in Reach)

150-1782 Cross Block

- Used in combination with 8B-7548 Push Puller
- Made from hardened steel



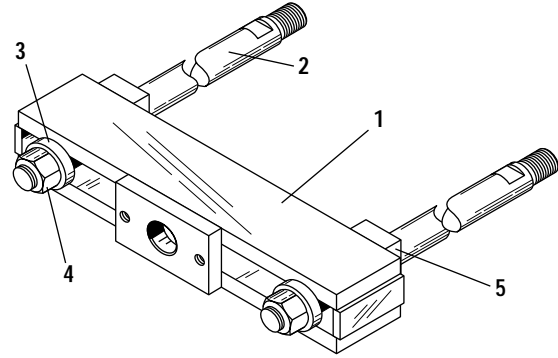
Thickness	50.8 mm (2.00 in)
Width	76.2 mm (3.00 in)
Length	609.6 mm (24.00 in)
Center hole diameter	26.0 mm (1.02 in)

149-5138 Puller Assembly, 50 Ton

- Used to apply force for pulling or pushing applications
- Used with 3H-0470 Screw (1 1/2-12 x 17.25 long), 3H-0466 Nut, and 3H-0467 Washer or with hydraulic cylinder
- 50 ton capacity

Spread	215.9 to 520.7 mm (8.50 to 20.50 in)
Reach	609.9 mm (24.0 in)
Capacity	50 Ton
Center hole diameter	42.9 mm (1.69 in)
Thread size (push/pull leg)	1.25-12

Item	Part No.	Description
1	150-1784	Cross Block
2	150-1785	Push Puller Leg [609.9 mm (24.0 in) reach]
3	150-1961	Leg Washer
4	7H-7539	Hex Nut (1.25-12 thread)
5	150-1786	Slide Plate

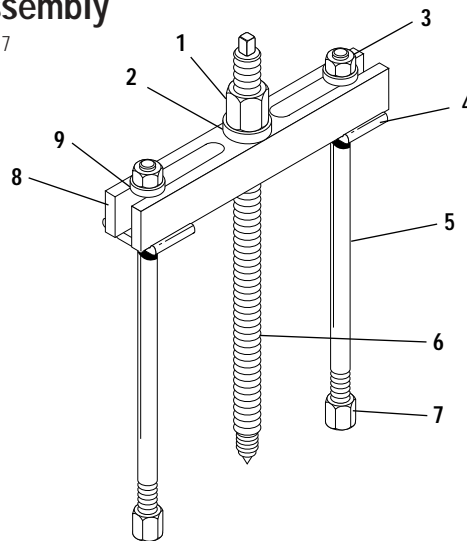


126-7175 Push Puller Assembly

SMCS Code: 0600-010, 011, 012, 015, 016, 017
Model: All Models

- Used to apply up to 13 tons of force for pulling or pushing applications
- Set includes four different lengths of extension legs (can be joined together with adapters for additional reach)
- Forcing screw has 1/2 inch square drive
- All parts can be ordered separately

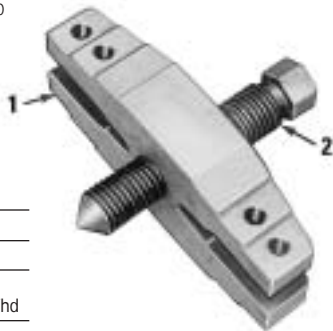
Capacity	13 ton
Spread	53.8 to 184.2 mm (2.12 to 7.25 in)
Square drive	1/2 inch



Item	Part No.	Description
1	126-7182	Forcing Screw Nut (3/4-16)
2	6V-2360	Hard Washer
3	6B-6684	Full Nut (1/2-20)
4	126-7181	Sliding Plate
5	126-7177	Puller Leg [158.8 mm (6.25 in) reach]
	126-7178	Puller Leg [209.6 mm (8.25 in) reach]
	126-7179	Puller Leg [336.6 mm (13.25 in) reach]
	126-7180	Puller Leg [438.2 mm (17.25 in) reach]
6	126-7176	Forcing Screw (3/4-16)
7	5P-4808	Cap (5/8-18)
8	126-7183	Cross Block
9	2M-0849	Hard Washer

No. 1 General Purpose Puller

- Small, versatile, and saves time when disassembling machines
- Especially valuable to servicemen who must select only essential tools for work that is to be done away from the shop
- The slots in the yoke accommodate studs, bolts, and cap screws up to 5/8 inch diameter. Holes are provided on the sides of the yoke for puller arms which adapt this tool to a wide range of work.



Item	Part No.	Description	Size
1	1B-6449	Yoke	—
2	1A-2701	Screw	5.75 in, 1 in-8 Thd

No. 2 General Purpose Puller

- Used for many pulling operations on older machines
- The two slots can accommodate studs or bolts up to 7/8 inch diameter.
- 0L-1772 Studs and 1D-4720 Nuts are available for use with this puller



Item	Part No.	Description
1	2B-1421	Bar, Spread Range with 7/8 inch bolts — 3 7/8 in-8 1/8 in
2	2B-1417	Screw, Length 11 3/4 inch, 1 3/4 inch-12 Thd.
	0L-1772	Stud, 5/8 inch-11 NC, 8 inch long, (two)
	1D-4720	Nut (two)

5F-7465 Puller 6V-3010 Puller Group

- Easier to use in many applications for removing gears, pulleys, flanges, etc.
- 6V-4871 Reaction Bar is not included in 5F-7465 and 6V-3010 Puller Groups but it is also available.



Service Parts		
Item	Part No.	Description
1	6V-4832	Screw
2	6V-3009	Crossbar

Service Parts		
Item	Part No.	Description
1	5F-7344	Block (also used on 8B-7554)
2	5F-7345	Screw

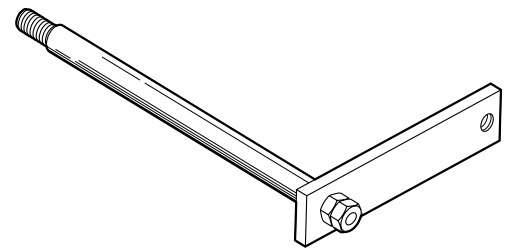
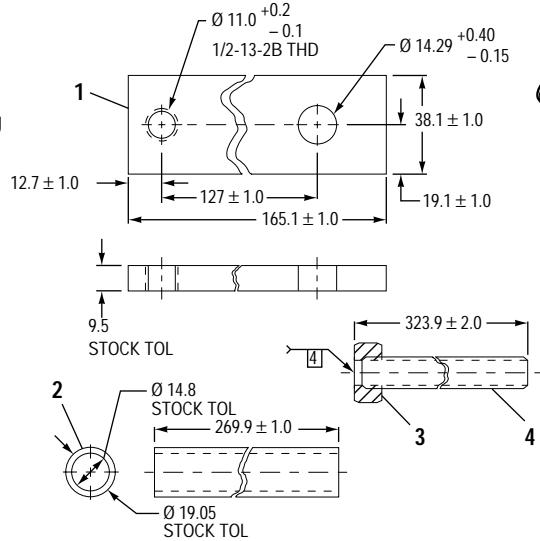
Part No.	Screw Length	Thread Size	Thread Length	Crossbar Dimensions	Crossbar Length	Crossbar Slot Width
6V-3010 ¹	11.6 in	3/4 in-16	10.00 in	1.38 in Square	8.25 in	.54 in
5F-7465	13.00 in	5/8 in-18	7.70 in	1.25 in Square	5.25 in	.495 in

¹ Spread range with 1/2 inch bolts 50.2-196.9 mm (2 in-7 3/4 in)

FT2681 Lifting Tool

SMCS Code: 5163-009, 5163-010, 0632
Model: 545 Skidder

- Used to lift bull gear from winch housing
- Also compresses clutch freespool springs with slight modification
- Material (plate and tube):
SAE1018 steel

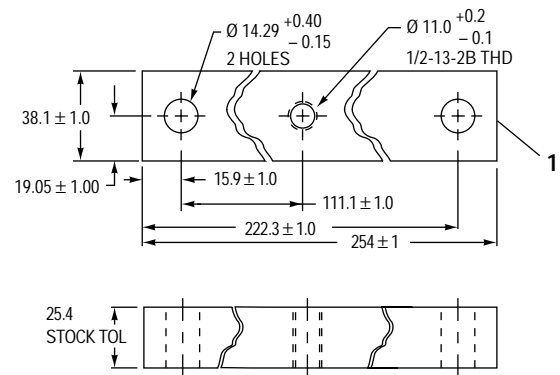
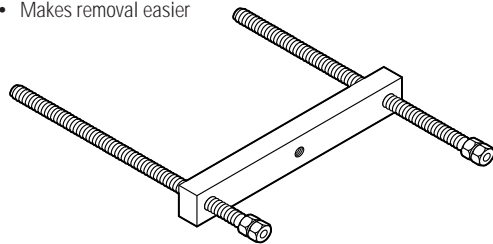


Item	Part No.	Description
1		Plate
2		Tube
3	1F-7958	Nut
4	7N-6613	Rod

FT2682 Lifting Tool

SMCS Code: 5163-009, 5163-010, 0632
Model: 545 Skidders

- Used to lift large reduction gear from winch housing (place zthreaded rod through drilled hole and attach bracket)
- Makes removal easier

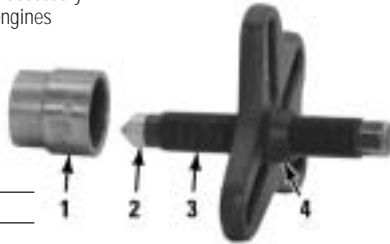


Material (plate and 9G-7450 Rod)	SAE1018 steel
Rod length (2)	200 ± 2 mm (7.9 ± .08 in)

Item	Part No.	Description
1		Plate
2	1F-7958	Nut
3	9G-7450	Rod

8S-2264 Puller Group 8S-8375 Sleeve

- Used for various pulling operations such as:
 - Removing accessory drive gears on D330C, D333C, 3304 and 3306 Engines
 - Removing crankshaft front pulley on 1100 and 3100 Series Engines
 - Water pump disassembly and assembly on D342, D353 and 3406 Engines
 - With an 8S-8375 Sleeve to remove the accessory drive gear on 4.75 inch bore two valve engines
 - In other general purpose applications
- Available separately: 6V-7837 Screw, 2.81 inch, 3/4 inch-16 Thd.



Item	Part No	Description
1	8S-8375	Sleeve (not part of 8S-2264 Group)
2	8S-5133	Plug
3	8S-6470	Screw
4	8S-5132	Puller Plate

1U-6671 Flange Puller Group

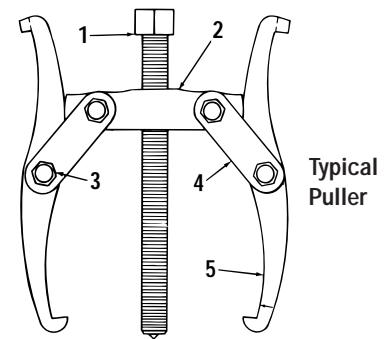


Item	Part No.	Description
1	1U-6693	Forcing Screw
2		Puller Plate
3	1U-6694	Shaft Protector
4	0S-1619	Bolt
5	6F-7031	Bolt

Jaw Pullers

Combination 2-Jaw or 3-Jaw Pullers

- Double-duty crosshead allows the puller to be converted to either a 2- or 3-Jaw operation.
- Used alone or in combination with bearing pulling attachments for numerous disassembly operations
- The more pressure that is applied with these pullers, the tighter they grip.
- Attachment arms available



**1P-2320 Combination 2- or 3-Jaw Puller,
5 Ton Capacity Service Parts
(Maximum Spread 7 inch, Maximum Reach 3.25 inch)**

Item	Part No.	Description
1	1P-2324	Screw
2	1P-2323	Head
3	3H-0462	Bolt and Nut
4	8H-0698	Strap
5	5F-7376	Jaw



**1P-2321 Combination 2- or 3-Jaw Puller, 7 Ton Capacity
(Maximum Spread 10.50 inch,
Maximum Reach 5.0 inch)**

Item	Part No.	Description
1	1P-2326	Screw
2	1P-2325	Head
3	3H-0462	Bolt and Nut
4	8H-0709	Strap
5	5F-7373 9S-9153 ¹	Jaw Jaw

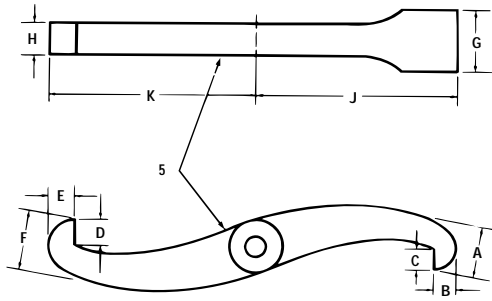
¹ Optional accessory



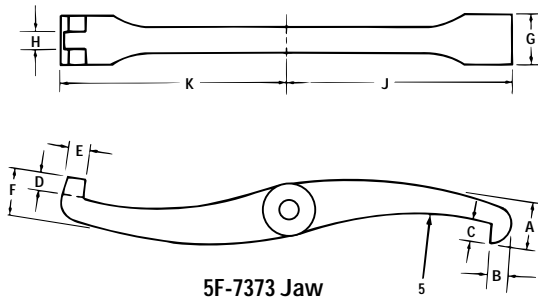
**1P-2322 Combination 2- or 3-Jaw Puller, 13 Ton Capacity
(Maximum Spread 14 inch,
Maximum Reach 11.00 inch)**

Item	Part No.	Description
1	1P-2328	Screw
2	1P-2327	Head
3	3H-0464	Bolt and Nut
4	8H-0704	Strap
5	5F-7370 4S-5415 ¹ 1P-0546 ¹	Jaw Jaw Jaw

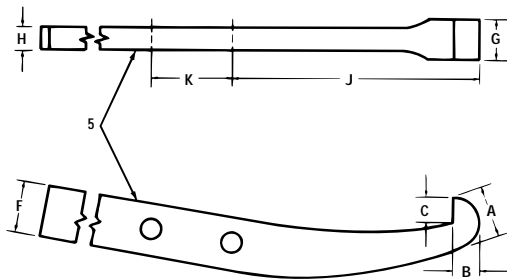
¹ Optional accessory



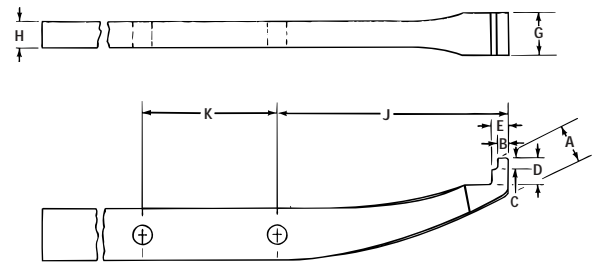
5F-7376 Jaw



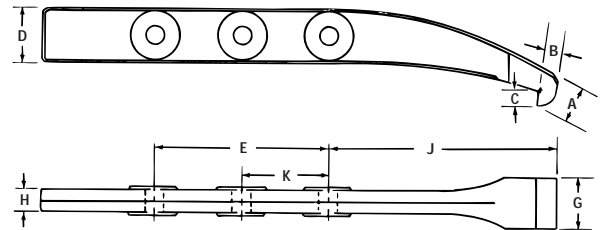
5F-7373 Jaw



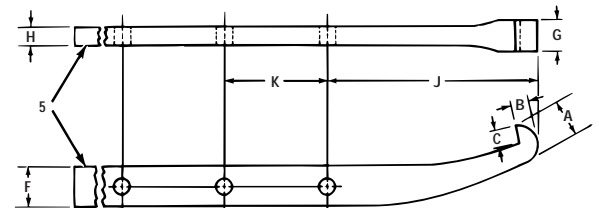
5F-7370 Jaw



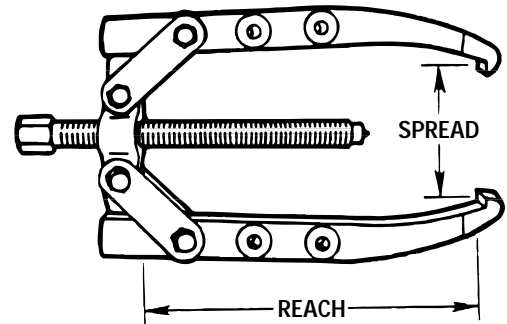
1P-0546 Jaw



9S-9153 Jaw



4S-5415 Jaw

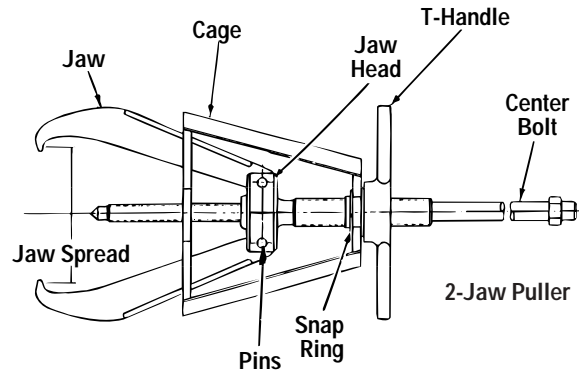


Puller Assembly Jaw Dimensions												
Part No.	A	B	C	D	E	F	G	H	J	K	Reach	Spread
5F-7376	.62 in	.25 in	.22 in	.25 in	.38 in	.75 in	.75 in	.34 in	2.13 in	2.13 in	3.25 in	7.00 in
5F-7373	.75 in	.34 in	.32 in	.44 in	.25 in	1.00 in	1.00 in	.38 in	4.25 in	4.25 in	5.00 in	10.50 in
5F-7370	1.13 in	.56 in	.56 in			1.25 in	1.00 in		5.75 in	2.00 in	11.00 in	14.00 in
4S-5415 ¹	1.13 in	.56 in	.56 in			1.25 in	1.00 in	.62 in	6.13 in	3.25 in		
1P-0546 ¹	1.00 in	.25 in	.25 in	.62 in	.38 in		1.00 in	.62 in	5.56 in	3.25 in		
9S-9153 ¹	.75 in	.38 in	.32 in	1.00 in	3.50 in		1.00 in	.44 in	4.56 in	1.75 in		

¹Optional jaw

Two- and Three-Jaw Puller Family

- These pullers with their attachments can be used for a variety of pulling applications such as bearings, bearing cages and gears.
- Cage to guide jaws for fast set up, solid contact and superior safety
- Forcing screw threads designed for less effort to apply high torque
- Hardened tip
- Slim tapered jaws allow for easier gripping and better access to tight spots.
- Nut recessed to avoid mushrooming and disfiguration from impact
- Cage prevents the jaws from snapping back or flying off during the pulling operation.
- Turning the T-handle moves the cage against the jaws and secures them to the component to be pulled.
- Restrainer holds the puller in position until the pulling operation has been completed and the puller released.
- Protector points are available to prevent damage to the forcing screw points when extreme force is applied.
- Extender points are also available for installation on some pullers to give 38 mm (1.5 in) more reach.



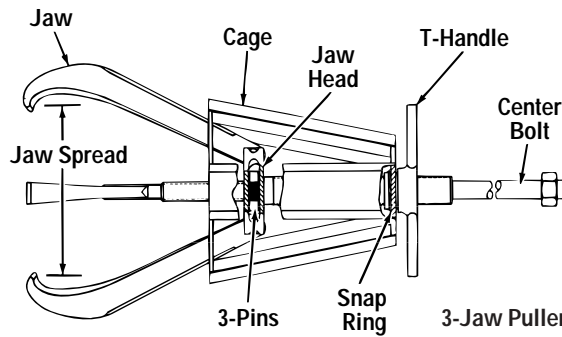
2-Jaw Puller Specifications						
Puller Part No. ¹	Puller Capacity U.S. Tons	2-Jaw Reach Maximum	2-Jaw Spread Min.-Max.	Forcing Screw Size Dia. x Length	Tool Weight kg (lb)	Input Max. Torque N-m (ft-lb)
4C-3082	6	152 mm (6 in)	13 to 178 mm (5 in to 7 in)	323.8 mm (5/8 in x 12.75 in)	3.2 (7)	116 (85)
4C-3085	14	254 mm (10 in)	25 to 381 mm (1 in to 15 in)	489.0 mm (3/4 in x 19.25 in)	6.4 (14)	367 (270)
4C-3088	25	330 mm (13 in)	64 to 457 mm (2.5 in to 18 in)	660 mm (1 1/8 in x 26 in)	13.6 (30)	680 (500)
4C-3091	35	406 mm (16 in)	76 to 635 mm (3 in to 25 in)	800.1 mm (1 1/4 in x 31.50 in)	22.7 (50)	1292 (950)

¹ Does not include protector or extender points

2-Jaw Puller Serviced Parts				
Description	Puller 4C-3082	Puller 4C-3085	Puller 4C-3088	Puller 4C-3091
Cage ¹	4C-3084	4C-3087	4C-3090	4C-3093
Jaw ¹	1U-6416	1U-6417	1U-6418	1U-6419
Jaw-Head ¹	4C-3083	4C-3086	4C-3089	4C-3092
T-Handle ¹	1U-6406	1U-6407	1U-6408	1U-6409
Center Bolt ¹	1U-6411	1U-6412	1U-6413	1U-6414
Pin (Need 2)	9U-6264	1U-6401	1U-6402	1U-6402
Snap Ring	2M-4287	1J-6474	8J-8322	5K-4627
Protector Point	1U-6397	1U-6398	1U-6399	1U-6399
Extender Point ²	1U-6403	1U-6404	—	—

¹ MAO (Made-As-Ordered) parts

² Extends length of forcing screws by 38.1 mm (1.50 in)



3-Jaw Puller Serviced Parts				
Description	Puller 1U-6400	Puller 1U-6405	Puller 1U-6410	Puller 1U-6415
Cage ¹	1U-6424	1U-6425	1U-6426	1U-6427
Jaw ¹	1U-6416	1U-6417	1U-6418	1U-6419
Jaw-Head ¹	1U-6420	1U-6421	1U-6422	1U-6423
T-Handle ¹	1U-6406	1U-6407	1U-6408	1U-6409
Center Bolt ¹	1U-6411	1U-6412	1U-6413	1U-6414
Pin (Need 3)	9U-6264	1U-6401	1U-6402	1U-6402
Snap Ring	2M-4287	1J-6474	8J-8322	5K-4627
Protector Point	1U-6397	1U-6398	1U-6399	1U-6399
Extender Point ²	1U-6403	1U-6404	—	—

¹ MAO (Made-As-Ordered) parts.

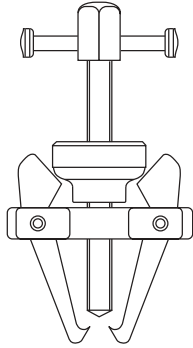
² Extends length of forcing screws by 38.1 mm (1.50 in).

3-Jaw Puller Specifications						
Puller Part No. ¹	Puller Capacity U.S. Tons	3-Jaw Reach Maximum	3-Jaw Spread Min.-Max.	Forcing Screw Size Dia. x Length	Tool Weight kg (lb)	Input Max. Torque N-m (lb ft)
1U-6400	10	152 mm (6 in)	13 to 178 mm (5 in to 7 in)	323.8 mm (5/8 in x 12.75 in)	4.1 (9)	175 (130)
1U-6405	20	254 mm (10 in)	25 to 381 mm (1 in to 15 in)	489.0 mm (3/4 in x 19.25 in)	8 (17)	410 (300)
1U-6410	30	330 mm (13 in)	64 to 457 mm (2.5 in to 18 in)	660 mm (1 1/8 in x 26 in)	20 (45)	1090 (800)
1U-6415	40	406 mm (16 in)	76 to 635 mm (3 in to 25 in)	800.1 mm (1 1/4 in x 31.50 in)	32 (70)	1350 (1000)

¹ Does not include protector or extender points.

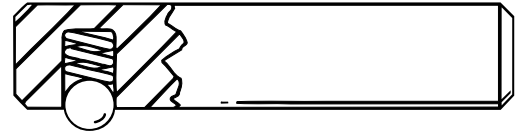
213-1067 Impeller Puller Assembly

- 3-jaw puller used to remove impeller from sea water pump on marine engines



Jaw Pins for Two- and Three-Jaw Pullers —

- 1U-6401 Jaw Pin
- 1U-6402 Jaw Pin
- 9U-6264 Jaw Pin



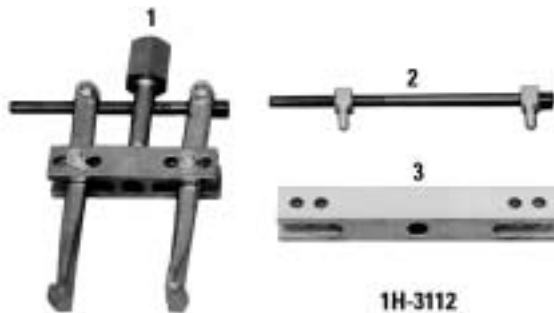
- A different pin design is now used for service repair of all two and three jaw pullers.
- The design incorporates ball and spring design, ensuring pin retention in the puller head and making assembly and disassembly easier (the former design relied on a knurled section on the pin to keep it in place).
- The current ball and spring design requires a slight modification to the pullers jaw head (the modification procedure is packaged with the pins).
- The new pin design will retain the existing 1U-6401 and 1U-6402 part numbers. The former pins are still useable, and only pins of the new design require head modification.
- A new shorter pin, 9U-6462, is now available to service the 4C-3082 and 1U-6400 pullers. (It was previously serviced with the 1U-6401 pin which was longer than required.)

	1U-6401	1U-6402	9U-6264
Diameter	9.5 mm (.375 in)	12.7 mm (.500 in)	9.5 mm (.375 in)
Length	44.5 mm (1.75 in)	66.5 mm (2.62 in)	35.6 mm (1.40 in)
Services Pullers	4C-3085, 1U-6405	4C-3088, 4C-3091, 1U-6410, 1U-6415	4C-3082, 1U-6400

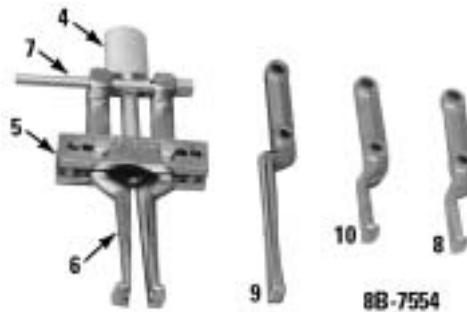
Bearing Pullers

Bearing Cup Pulling Attachments

- Used in conjunction with push-pullers to provide easy removal of bearing cups, oil seals, and bushings from blind holes without damage



1H-3112 Bearing Cup Puller Attachment, 15 Ton Capacity		
Service Part		
Item	Part No.	Description
1	6V-7888	Leg
Optional Accessories		
2	1P-5551	Screw (14 in long)
3	1P-5546	Cross Block (13 in long)



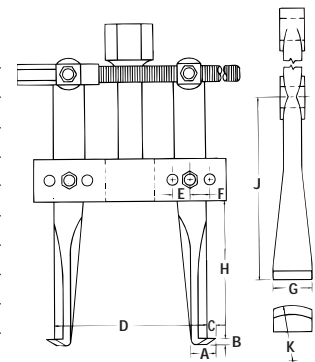
8B-7554 Bearing Cup Puller Attachment, 5.5 Ton Capacity		
Service Parts		
Item	Part No.	Description
4	8B-7553	Adapter
5	5F-7344	Cross Block
6	6V-7887	Leg
7	5P-4750	Screw
Optional Accessories		
8	1S-5188	Leg (7.13 in long)
9	7S-7786	Leg (10.5 in long)
10	1P-7461	Leg (7.06 in long)



5P-7311 Chain Puller (can be converted to a bearing cup puller by changing legs to those used on 8B-7554 Puller)		
Service Parts		
Item	Part No.	Description
11	5F-7344	Cross Block
12	5P-7341	Leg (10.5 in long)
13	5P-4750	Screw

Bearing Cup Pulling Attachment Dimensions											
Part No.	A	B	C	D (Min.)	D (Max.)	E	F	G	H	J	K
1H-3112 Puller											
6V-7888 ²	1.00 in	.25 in	.25 in	3.00 in	9.00 in	.75 in	.75 in	2.00 in	6.00 in	7.12 in	2.50 in
8B-7554 Puller²											
6V-7887 ²	.62 in	.12 in	.25 in	1.50 in	6.00 in	.50 in	.50 in	1.12 in	5.00 in	5.75 in	1.50 in
1S-5188 ¹	.56 in	.18 in	.18 in	1.50 in	5.00 in	.50 in	.50 in	.81 in	2.94 in	3.75 in	1.00 in
7S-7786 ¹	.44 in	.18 in	.18 in	1.50 in	7.00 in	.50 in	.50 in	.81 in	6.12 in	6.94 in	1.00 in
1P-7461 ¹	.50 in	.11 in	.11 in	1.50 in	5.00 in	.50 in	.50 in	.81 in	2.94 in	3.67 in	1.31 in

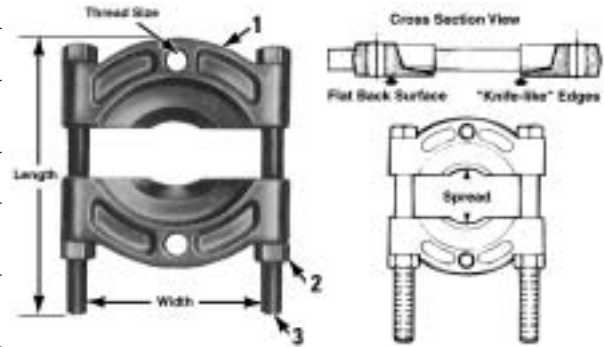
¹Optional legs
²Standard legs



Bearing Puller Assemblies

- Used for numerous operations where space does not permit attaching other types of pullers directly on the part to be pulled
- The knife-like edges can be forced behind gears or bearings and used in conjunction with push-pullers, or the forcing screws illustrated.

Part No.	Capacity	Spread	Length	Width	Thread Size	Service Parts			Qty.
						Item	Part No	Description	
9S-9152	4 Ton	.12 in to 2.00 in	4.19 in	2.44 in	3/8 in-16	1	9S-9151	Block	2
						2	1B-4204	Nut	2
						3	1P-1430	Bolt	2
8H-0663	9 Ton	.38 in to 4.62 in	8.50 in	4.25 in	5/8 in-18	2	1B-4206	Nut	4
						3	186-6569	Stud	2
8B-7551	15 Ton	.50 in to 5.25 in	10.50 in	6.00 in	5/8 in-18	1	3H-0453	Block	2
						2	1B-4207	Nut	4
						3	3H-0459	Stud	2
5F-7343	20 Ton	.625 in to 8.00 in	14.38 in	7.12 in	1 in-14	1	3H-0454	Block	2
						2	1B-4208	Nut	4
						3	3H-0460	Stud	2
1H-3110	20 Ton	.75 in to 13.38 in	20.50 in	10.25 in	1 in-14	1	3H-0455	Block	2
						2	3S-1356	Nut	4
						3	1U-7758	Stud	2



1P-0500 Bearing and Seal Driver Group

- Contains plate sizes from 7/16 inch to 1 inch diameter (in 1/16 inch increments)
- Particularly useful for work on small components such as oil and water pumps
- Plates in this group are also contained in the 1P-0510 Group.
- All bolts have 1/4 inch-20 threads.
- Proper installation of bearings, races and seals can be accomplished quickly and easily with these driver tools.
- Drive plates can be used in various combinations to install parts flush with a housing or some distance below a housing surface.
- Instructions included



Part No	Description
1P-0454	Plate, .437 inch Diameter
1P-0455	Plate, .500 inch Diameter
1P-0456	Plate, .562 inch Diameter
1P-0457	Plate, .625 inch Diameter
1P-0458	Plate, .687 inch Diameter
1P-0459	Plate, .750 inch Diameter
1P-0460	Plate, .812 inch Diameter

Part No	Description
1P-0461	Plate, .875 inch Diameter
1P-0462	Plate, .937 inch Diameter
1P-0463	Plate, 1.000 inch Diameter
1P-0528	Extension Tube
1P-0529	Handle
9S-9155	Spacer
6L-5897	Bolt, 7/8 inch long

Part No	Description
4L-7124	Bolt, 1 1/4 inch long
5L-9018	Bolt, 1 3/4 inch long
6L-5551	Bolt, 2 1/4 inch long
6J-2819	Bolt, 2 3/4 inch long
6B-7225	Wrench, 3/16 inch Hex
9S-1725	Case
	Instruction Sheet

1P-0510 Bearing and Seal Driver Group

- Contains plate sizes from 7/16 inch to 3.00 inch diameter (in 1/16 inch increments)
- All bolts have 1/4 inch-20 threads
- Proper installation of bearings, races and seals can be accomplished quickly and easily with these driver tools.
- Drive plates can be used in various combinations to install parts flush with a housing or some distance below a housing surface.
- Instructions included



Part No	Description
1P-0454	Plate, .438 inch Diameter
1P-0455	Plate, .500 inch Diameter
1P-0456	Plate, .562 inch Diameter
1P-0457	Plate, .625 inch Diameter
1P-0458	Plate, .687 inch Diameter
1P-0459	Plate, .750 inch Diameter
1P-0460	Plate, .812 inch Diameter
1P-0461	Plate, .875 inch Diameter
1P-0462	Plate, .937 inch Diameter
1P-0463	Plate, 1.000 inch Diameter
1P-0464	Plate, 1.062 inch Diameter
1P-0465	Plate, 1.125 inch Diameter
1P-0466	Plate, 1.187 inch Diameter
1P-0467	Plate, 1.250 inch Diameter

Part No	Description
1P-0468	Plate, 1.312 inch Diameter
1P-0469	Plate, 1.375 inch Diameter
1P-0470	Plate, 1.437 inch Diameter
1P-0471	Plate, 1.500 inch Diameter
1P-0472	Plate, 1.563 inch Diameter
1P-0473	Plate, 1.625 inch Diameter
1P-0474	Plate, 1.687 inch Diameter
1P-0475	Plate, 1.750 inch Diameter
1P-0476	Plate, 1.812 inch Diameter
1P-0477	Plate, 1.875 inch Diameter
1P-0478	Plate, 1.937 inch Diameter
1P-0479	Plate, 2.000 inch Diameter
1P-0480	Plate, 2.062 inch Diameter
1P-0481	Plate, 2.125 inch Diameter

Part No	Description
1P-0482	Plate, 2.187 inch Diameter
1P-0483	Plate, 2.250 inch Diameter
1P-0484	Plate, 2.312 inch Diameter
1P-0485	Plate, 2.375 inch Diameter
1P-0486	Plate, 2.437 inch Diameter
1P-0487	Plate, 2.500 inch Diameter
1P-0488	Plate, 2.562 inch Diameter
1P-0489	Plate, 2.625 inch Diameter
1P-0490	Plate, 2.687 inch Diameter
1P-0491	Plate, 2.750 inch Diameter
1P-0492	Plate, 2.812 inch Diameter
1P-0493	Plate, 2.875 inch Diameter
1P-0494	Plate, 2.937 inch Diameter
1P-0495	Plate, 3.000 inch Diameter

Part No	Description
1P-0528	Extension Tube
1P-0529	Handle
1P-0531	Handle
9S-9155	Spacer
6L-5897	Bolt, 7/8 inch long
4L-7124	Bolt, 1 1/4 inch long
5L-9018	Bolt, 1 3/4 inch long
6L-5551	Bolt, 2 1/4 inch long
6J-2819	Bolt, 2 3/4 inch long
6B-7225	Wrench, 3/16 inch Hex
	Instruction Sheet

1P-0520 Bearing and Seal Driver Group

- Contains plate sizes from 3 1/16 inch to 6 1/4 inch diameter (in 1/16 inch increments)
- All bolts have 1/4 inch-20 threads.
- Proper installation of bearings, races and seals can be accomplished quickly and easily with these driver tools.
- Drive plates can be used in various combinations to install parts flush with a housing or some distance below a housing surface.
- Instructions included



Part No	Description
1P-0496	Plate, 3.062 inch Diameter
1P-0497	Plate, 3.125 inch Diameter
1P-0498	Plate, 3.187 inch Diameter
1P-0499	Plate, 3.250 inch Diameter
1P-0501	Plate, 3.312 inch Diameter
1P-0502	Plate, 3.375 inch Diameter
1P-0503	Plate, 3.437 inch Diameter
1P-0504	Plate, 3.500 inch Diameter
1P-0505	Plate, 3.562 inch Diameter
1P-0506	Plate, 3.625 inch Diameter
1P-0507	Plate, 3.687 inch Diameter
1P-0508	Plate, 3.750 inch Diameter
1P-0509	Plate, 3.812 inch Diameter

Part No	Description
1P-0511	Plate, 3.875 inch Diameter
1P-0512	Plate, 3.937 inch Diameter
1P-0513	Plate, 4.000 inch Diameter
1P-0514	Plate, 4.062 inch Diameter
1P-0515	Plate, 4.125 inch Diameter
1P-0516	Plate, 4.187 inch Diameter
1P-0517	Plate, 4.250 inch Diameter
1P-0518	Plate, 4.312 inch Diameter
1P-0519	Plate, 4.375 inch Diameter
1P-0521	Plate, 4.437 inch Diameter
1P-0522	Plate, 4.500 inch Diameter
1P-0523	Plate, 4.750 inch Diameter
1P-0524	Plate, 5.000 inch Diameter

Part No	Description
1P-0525	Plate, 5.500 inch Diameter
1P-0526	Plate, 6.000 inch Diameter
1P-0527	Plate, 6.250 inch Diameter
1P-0531	Handle
1P-0532	Handle
1P-0535	Box-Brg Driver
4L-7124	Bolt, 1 1/4 inch long
5L-9018	Bolt, 1 3/4 inch long
6B-7225	Wrench, 3/16 inch Hex
6J-2819	Bolt, 2 3/4 inch long
6L-5551	Bolt, 2 1/4 inch long
6L-5897	Bolt, 7/8 inch long
9S-9155	Spacer

Single and Double Acting Cylinders

Double Acting Cylinder Groups

Specifications for Hydraulic Cylinders and Pullers									
Part No.	Capacity Rod Out	Capacity Rod In	Stroke	Weight	Overall Length	Cylinder Dia.	Max. Operating Pressure Rod Out	Max. Operating Pressure Rod In	Center Hole Dia.
5P-5201	150 tons		5.0 in	110 lb	11.1 in	8.5 in	10,000 PSI	10,000 PSI	2.52 in
9S-8901	103 tons	87 ton	6.5 in	160 lb	18.6 in	6.3 in	10,000 PSI	10,000 PSI	
8S-7172	103 tons	87 ton	14.0 in	158 lb	25.9 in	6.3 in	10,000 PSI	10,000 PSI	
6V-0014	100 tons		6.0 in	92 lb	11.7 in	7.3 in	10,000 PSI	10,000 PSI	2.10 in
9S-8900	71 tons	55 ton	7.0 in	109 lb	17.9 in ¹	5.3 in	10,000 PSI	10,000 PSI	
6V-0113	62 tons		5.0 in	65 lb	9.5 in	6.5 in	10,000 PSI	10,000 PSI	2.13 in
6V-3170	55 tons		0.5 in	21 lb	3.5 in	5.4 in	10,000 PSI	10,000 PSI	1.31 in
6V-3175	55 tons		2.0 in	29 lb	5.2 in	5.4 in	10,000 PSI	10,000 PSI	1.31
6V-3160	31 tons		2.0 in	15 lb	5.0 in	4.0	10,000 PSI	10,000 PSI	1.16 in

¹ Without 6F-0673 Cap

9S-8901 Double Acting Cylinder Group

- Provides a special crosshead which allows the puller to be converted to either a 2- or 3-jaw operation
- Especially well suited for removing final drive sprockets



Overall length	467 mm (18.6 in)
Cylinder diameter	160 mm (6.3 in)
Stroke	165 mm (6.5 in)
Weight	72.5 kg (160 lbs)
Capacity	78.9 t (87 tons) rod in 93.4 t (103 tons) rod out
Maximum operating pressure	68 950 kPa (10,000 PSI)
Decal	NEEG2098

9S-8900 Double Acting Cylinder Group

- Provides a special crosshead which allows the puller to be converted to either a 2- or 3-jaw operation
- Especially well suited for removing final drive sprockets



Overall length	455 mm (17.9 in)
Cylinder diameter	134 mm (5.3 in)
Stroke	180 mm (7.1 in)
Weight	49.4 kg (109 lbs)
Capacity	50 t (55 tons) rod in 64.4 t (71 tons) rod out
Maximum operating pressure	68 950 kPa (10,000 PSI)
Decal	NEEG2109

5P-4238 Rethreading Die

- Used to repair damaged threads on the rods of 6H-4150, 7F-9831, 8S-7172, 9S-8900 and 9S-8901 Cylinders
- Should not be used to cut new threads
- 1 3/4 inch-5 NC



8S-7172 Double Acting Cylinder Group

- Used with the 1P-3490 Master Pin Arrangement to remove and install track master pins
- Allows the operation to be accomplished in one stroke



Overall length	25.9 in
Cylinder diameter	6.3 in
Stroke	14.0 in
Weight	158 lbs
Capacity	87 tons rod in 103 tons rod out
Maximum operating pressure	10,000 PSI
Decal	NEEG2107

6V-0113 Double Acting Cylinder Group

- Has a large center hole through which forcing screws or other accessories may be extended for lifting and pulling applications



Overall length	9.5 in
Cylinder diameter	6.5 in
Stroke	5 in
Weight	65 lbs
Capacity	62 tons
Center hole diameter	2.13 in
Maximum operating pressure	10,000 PSI
Decal	NEEG2111

6V-3160, 6V-3170 and 6V-3175 Double Acting Hydraulic Cylinders

- These hydraulic cylinders are designed with an external relief valve for the rod end of the cylinder.
- The valve prevents an increase in pressure at the rod end if there is a restriction of the return oil to the pump.
- The relief valve setting is 10,500 PSI.
- When there is too much pressure a small amount of oil is released through the relief valve.



6V-3160



6V-3170



6V-3175

Part No.	6V-3170	6V-3160	6V-3175
Overall length	3.5 in	5.0 in	5.19 in
Cylinder diameter	5.44 in	4.0 in	5.44 in
Stroke	.5 in	2.0 in	2.0 in
Weight	21 lbs	15 lbs	15 lbs
Capacity	55 tons	31 tons	55 tons
Hole diameter	1.31 in	1.16 in	1.31 in
Maximum operating pressure	10,000 PSI	10,000 PSI	10,000 PSI
Decal	NEEG2113	NEEG2112	NEEG2113

5P-5201 Double Acting Cylinder Group

- Introduced primarily for final drive disassembly and assembly operations on large tractors and pipelayers
- Can be used in other applications



Overall length	11.12 in
Cylinder diameter	8.50 in
Stroke	5.00 in
Weight	110 lbs
Capacity	150 tons
Center hole diameter	2.52 in
Maximum operating pressure	10,000 PSI
Decal	NEEG2104

6V-0014 Cylinder Group

- Has center hole design
- Used with 6V-2074 Stud and 6V-2073 Bushing

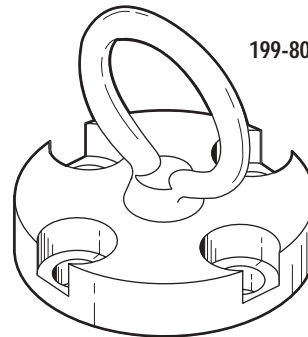


Overall length	11.7 in
Cylinder diameter	7.25 in
Stroke	6.0 in
Weight	92 lbs
Capacity	100.1 tons
Center hole diameter	2.1 in
Rod diameter	4.4 in
Maximum operating pressure	10,000 PSI
Decal	NEEG2110

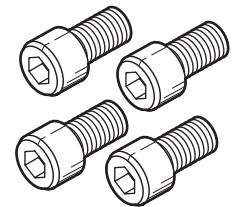
196-0222 Cylinder Group (100 Ton)

- Single-acting, spring-return cylinder
- Used with 194-4803 Puller Group
- Equipped with a quick disconnect fitting
- May be lifted with 199-8057 Lifting Group

Capacity	100 Ton
Stroke	168.3 mm (6.63 in)
Retracted height	337.0 mm (13.25 in)
Extended height	505.0 mm (19.88 in)
Outside diameter	160.0 mm (6.25 in)
Collar thread	6 1/4-12
Collar thread length	56.0 mm (2.25 in)
Working pressure	up to 68950 kPa (10,000 psi)



199-8057 Lifting Group



6V-3176 Relief Valve

- Used on cylinders without a relief valve
- Can be added to the rod end of any center hole two-way (double-acting) cylinder, which is rated for 10,000 PSI operation
- Gives extra protection to the service tool
- Prevents an increase in pressure caused by a restriction (blockage) of the return oil to the pump
- Beyond the relief valve setting of 10,500 PSI, the operator will see small amounts of oil released through the valve.

Replacement Parts	
Part No.	Description
6V-3169	Relief Valve
9U-5108	Cap Assembly



Single Acting Hydraulic Cylinders

Specifications for Single Acting Hydraulic Cylinders								
Part No.	Capacity	Height Retracted	Extended	Outside Diameter	Weight	Piston Thread (NPT)	Collar Thread (Straight)	Internal Base Thread (NPSM)
Single Acting Rams								
1U-7526	5 ton	5 11/16 in	8 11/16 in ¹	1 1/2 in	2 75 lb	—	—	—
1U-7527	5 ton	10 1/2 in	15 3/4 in	1 1/2 in	4 1/2 lb	3/4 in	1 1/2 in-16	3/4 in-14
1U-7528	5 ton	1 5/8 in	2 1/4 in	2 9/16 in	2 lb	—	—	—
1U-7529	10 ton	5 9/16 in	7 11/16 in	2 1/4 in	6 1/2 lb	1 1/4 in	2 1/4 in-14	—
1U-7530	10 ton	11 1/2 in	17 5/8 in	2 1/4 in	10 1/4 lb	1 1/4 in	2 1/4 in-14	1 1/4 in-11 1/2
1U-7531	10 ton	15 1/2 in	25 7/8 in	2 1/4 in	13 3/4 lb	1 1/4 in	2 1/4 in-14	1 1/4 in-11 1/2
1U-7532	25 ton	13 3/8 in	19 5/8 in	3 3/8 in	23 lb	2 in	3 5/16 in-12	2 in-11 1/2
1U-7533	55 ton	11 1/8 in	17 3/8 in	5 in	56 lb	—	—	—
1U-7534	100 ton	13 1/4 in	19 7/8 in	6 1/4 in	90 lb	—	—	—
Aluminum, Single Acting Rams								
1U-7535	55 ton	10 3/4 in	16 7/8 in	5 1/4 in	24 lb	—	—	—
1U-7537	100 ton	11 3/4 in	18 in	7 3/8 in	49 1/2 lb	—	—	—
Aluminum, Single Acting, Locking Collar Ram								
1U-7551 ²	55 ton	12 1/2 in	18 5/8 in	5 1/4 in	32 lb	—	—	—
Single Acting, Center Hole Ram (1.28 inch Center Hole)								
196-5056	30 ton	9 3/4 in	15 3/4 in	—	—	—	4 3/4 in-12	—
Single Acting, Center Hole Ram (1 19/64 inch Center Hole)								
1U-7552 ³	30 ton	6 1/4 in	8 3/4 in	4 3/4 in	26 lb	—	4 3/4 in-12	—
Single Acting, Center Hole, Shorty, Piston Return Ram (1 3/64 in Center Hole)								
1U-7538 ³	20 ton	6 1/16 in	9 1/16 in	4 in	18 lb	—	—	—
Shorty, Spring Return Rams								
1U-7539	10 ton	3 1/2 in	5 in	2 3/4 in	6 lb	—	—	—
1U-7540	20 ton	3 3/4 in	5 1/2 in	3 9/16 in	10 lb	—	—	—
1U-7541	30 ton	4 5/8 in	7 1/16 in	4 in	15 lb	—	—	—
1U-7542	50 ton	5 in	7 3/8 in	4 3/8 in	23 lb	—	—	—
1U-7543	100 ton	5 in	7 3/8 in	6 5/8 in	48 lb	—	—	—
Spring Return								
8S-7650	25 ton	12 in	20 in	3.4 in	—	—	—	—
External Spring Return								
1P-0820	17.5 ton	6.1 in	8.1 in	—	—	—	—	—
Single Acting, Center Hole Ram (.77 in Center Hole) Load Return								
5P-5247	11 ton	5.3 in	7.8 in	3.0 in	3.8 lb	—	—	—
Single Acting, Load Return								
5P-9725	10 ton	15.9 in	25.9 in	2.3 in	14.2 lb	—	—	—
Single Acting, Center Hole Ram (1.5 in Center Hole) Load Return								
6V-7047	20 ton	6.6 in	9.6 in	4.0 in	18 lb	—	—	—

¹ Has a piston screw-extension (1 1/2 in) which will extend the maximum height to 10 in

² Features a threaded piston and locking collar so it can mechanically support loads for a long time without tying up a hydraulic pump

³ Threaded for insert

5P-9725 Hydraulic Cylinder, Single Acting

- Primary use for this hydraulic cylinder is with the 5P-8639 Press Group
- Rod is extended by hydraulic pressure and returned by spring pressure



Overall length	15.88 in
Cylinder diameter	2.25 in
Stroke	10.12 in
Weight	14 lbs
Capacity	10 tons
Maximum operating pressure	10,000 PSI
Threaded cylinder	2 1/4 in-14 Thread
Decal	SEES625

6V-7047 Single Acting Hydraulic Cylinder

- Has center hole large enough for 1 inch puller stud
- Piston is extended by hydraulic pressure and retracted by spring pressure.



Overall length	6.62 in
Cylinder diameter	4 in
Stroke	3 in
Weight	18 lbs
Capacity	20 tons
Center hole diameter	.105 in
Maximum operating pressure	10,000 PSI
Decal	NEEG2097

1P-0820 Hydraulic Puller Group

- Lightweight and compact
- Can be used to pull or push bearings, gears, shafts, or other press-fitted parts
- Has a 17.5 ton capacity and generally can be used in place of the 8B-7548 Push-Puller Assembly
- Uses accessories found in 8B-7548



Stroke	2.0 in
Usable reach	11 5/8 in
Capacity	17.5 tons
Threadedinsert	1 in-8
Maximum operating pressure	10,000 PSI
Decal	NEEG2101
Repair Kit	9S-7355

Item	Part No.	Description
1	9S-6072	Adjusting Crank
2	9S-6074	Adjusting Screw
3	9S-7338	Cross Block
4	1P-2329	Threaded Insert
	or	
	1P-7361	Plain Insert (not part of 1P-0820)
(not shown)	SEES5617	Decal Pressure/Force

5P-5247 Hydraulic Puller

- Especially useful for pulling pins that have up to a .77 inch center tapped hole.
- Provides 11 tons pulling force
- Puller ram is extended by hydraulic pressure and returned by spring pressure.



Overall length	5.3 in
Cylinder diameter	3.00 in
Stroke	2.50 in
Weight	8.5 lbs
Capacity	11 tons
Center hole diameter	.77 in
Maximum operating pressure	10,000 PSI
Decal	NEEG2106

“Shorty” Rams

- Spring-Return
- Low collapsed height and the strokes you really need
- Ideal for a variety of applications
- Range in capacity from 10 to 100 tons and strokes from 1 1/2 inch to 2 7/16 inch with the largest being just 7 3/8 inch tall
- Working pressure up to 10,000 PSI



Part No.	Tons Cap.	Stroke	Retracted Height
1U-7539	10	1 1/2 in	3.50 in
1U-7540	20	1 3/4 in	3.75 in
1U-7541	30	2 7/16 in	4.62 in
1U-7542	50	2 3/8 in	5.00 in
1U-7543	100	2 1/4 in	5.00 in

196-5056 Cylinder Group

- Single-acting, spring-return 30 Ton cylinder
- Center hole design allows screws, cables, etc to go straight through ram
- External thread
- Long stroke design
- Quick-disconnect coupler

Capacity	30 ton
Center hole diameter	32.54 mm (1.28 in)
Retracted height	248 mm (9.75 in)
Extended height	400 mm (15.75 in)
Collar thread	4 3/4-12



Center-Hole Rams

- Single-acting, spring-return rams include quick disconnect, 3/8 inch NPTF half coupler.
- Interchangeable threaded or serrated piston head inserts may be ordered separately (plain insert is included with each ram).
- Forcing screws, cables or rods can be extended right through these pistons' center hole permitting hundreds of applications.
- Working pressure up to 10,000 PSI
- 4 3/4 inch-12 collar thread



Part No.	Tons Cap.	Stroke	Retracted Height	Center Hole Dia.
1U-7552	30	2 1/2 in	6 1/4 in	1 19/64 in
1U-7538	20	3 in	6 1/16 in	1 3/64 in

Single-Acting Rams

- Spring-Return
- Ranging in capacity from 5 to 100 tons and in strokes from 5/8 inch to 10 1/8 inch
- Compact and lightweight cylinders
- Provide maximum working pressures up to 10,000 PSI, yet require a minimum of mounting space



Part No.	Tons Cap.	Stroke	Threads
1U-7526	5	3	No
1U-7527	5	5 1/4 in	Yes
1U-7528	5	5/8 in	No
1U-7529	10	2 1/8 in	Yes
1U-7530	10	6 1/8 in	Yes
1U-7531	10	10 1/8 in	Yes
1U-7532	25	6 1/4 in	Yes
1U-7533	55	6 1/4 in	No
1U-7534	100	6 5/8 in	No

Aluminum Rams

- Lightweight and durable
- Light weight and low collapsed height means ram is easily carried and positioned.
- Special locking collar feature lets you mechanically support loads for a long time without relying on hydraulics alone and without tying up your hydraulic pump.



Part No.	Capacity	
	Tons	Stroke
1U-7535	55	6 1/8 in
1U-7551 ¹	55	6 1/8 in
1U-7537	100	6 1/4 in

¹With locking collar

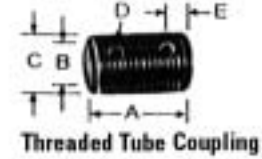
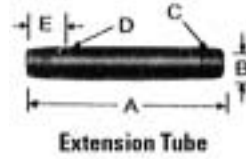
1U-7536 Aluminum Ram Base

- Serrated ram base (7 sp. in.) provides extra support and stability for 55 ton rams.
- Attaches with two 1/2 inch-20 screws (included)



Ram Accessories

- These accessories are rated for the full capacity of the rams, making the rams more versatile than they are already.
- Accessories thread directly onto ram top or base.



Accessories								
Part No.	Description	A	B	C	D	E	Ton Capacity	For Use With:
1U-9656	Tube Extension	10 in	7/8 in Dia.	3/4 in-14 NPT	21/64 in Dia.	1 1/32 in	5	1U-7527
1U-9659	Tube Extension	10 in	1 7/16 in Dia.	1 1/4 in-11 1/2 NPT	29/64 in Dia.	2 in	10	1U-7529 1U-7530 1U-7531
1U-8818	Threaded Tube Coupling	1 3/4 in	7/8 in Dia.	3/4 in-14 NPT	3/16 in Dia.	9/16 in	5	1U-7527
1U-8822	Threaded Tube Coupling	1 5/8 in	1 7/16 in Dia.	1 1/4 in-11 1/2 NPSM	5/16 in Dia.	9/16 in	10	1U-7529 1U-7530 1U-7531
1U-9658	90° "V" Base	1 3/8 in	1 1/16 in	3/4 in-14 NPSM			5	1U-7527
1U-9661	90° "V" Base	2 1/8 in	2 1/8 in	1 1/4 in-11 1/2 NPSM			10	1U-7529 1U-7530 1U-7531
1U-8816	Ram Flat Base	4 1/2 in	2 1/2 in	3/4 in-14 NPSM	1 11/32 in		5	1U-7527
1U-8819	Ram Flat Base	6 9/16 in	3 1/2 in	1 1/4 in-11 1/2 NPSM	1 7/16 in		10	1U-7529 1U-7530 1U-7531
1U-8817	Ram Flat Base	1 1/8 in	1 5/16 in Dia.	3/4 in-14 NPSM			5	1U-7527
1U-8820	Serrated Saddle	1 1/8 in	2 in Dia.	1 1/4 in-11 1/2 NPSM			10	1U-7529 1U-7530 1U-7531
1U-8824	Serrated Saddle	1 1/8 in	3 in Dia.	2 in-11 1/2 NPSM			25	1U-7532
1U-8821	Smooth Saddle	1 1/8 in	2 in Dia.	1 1/4 in-11 1/2 NPSM			10	1U-7529 1U-7530 1U-7531

Hydraulic Pumps

Specifications for Hydraulic Pumps

Specifications for Electric/Hydraulic Pumps

All pumps are equipped with an adjustable external relief valve except 1U-7519 and 1U-7520.

Pump Part No.	Voltage	Line Frequency	Reservoir Capacity	Motor HP	Max. Pressure PSI	Oil Delivery ¹ (cu. in./min.)				Control Valve	For Electronic Control	Use With:
						100 PSI	1,000 PSI	5,000 PSI	10,000 PSI			
2P-5550	115	50-60	0.45 gal	1/2	10,000	170	32	25	18	3-Position 4-Way Manual	Toggle Switch run/off/jog and Remote Switch on 6 ft Cord	Double Acting Rams
2P-5500	230	50-60	0.45 gal	1/2	10,000							
1U-7520	115	50-60	2.0 gal	1/2	10,000	170	32	25	18	3-Position 4-Way Manual	Toggle Switch run/off/jog	Double Acting Rams
3S-6224	115	50-60	2.0 gal	1 1/8	10,000	650	80	70	55	3-Position 4-Way Manual	Toggle Switch run/off/jog and Remote Switch on 6 ft Cord	Double Acting Rams
8S-8033	230	50-60	2.0 gal	1 1/8	10,000							
1U-5555	115	60	2.0 gal	1 1/2	10,000	425	45	45	45	4-Way Solenoid	Foot Controlled Switch	Double Acting Rams
1U-5565	230	50	2.0 gal	1 1/2	10,000							
4C-5080	230	60	2.0 gal	1 1/2	10,000							
1U-7519	115	50-60	2.0 gal	1/2	10,000	170	32	25	18	2-Position 3-Way	Toggle Switch and Remote Switch on 6 ft Cord	Single Acting Rams

¹ Conversion 231 cu. in. = 1 gal.

Specifications for Air/Hydraulic Pumps

Pump Part No.	Air Requirement	Reservoir Capacity	Motor HP	Max. Pressure PSI	Oil Delivery ² (cu. in./min.)				Control Valve	For Use With:
					100 PSI	1,000 PSI	5,000 PSI	10,000 PSI		
1U-7522	50 c.f.m. at 80 PSI	2.0 gal	3	10,000	465	50	25		3-Position 4-Way Manual	Double Acting Rams
1U-7545	9 c.f.m. at 100 PSI	80 cu. in.		10,000	59	30	4		3-Position Manual	Single Acting Rams
1U-7524	9 c.f.m. at 100 PSI	80 cu. in.		10,000	59	30	4		3-Position Finger-Tip Control on 12 ft Control Line	Single Acting Rams
1U-7554 ¹	9 c.f.m. at 100 PSI	80 cu. in.		8,800	59	30			3-Position Manual	Single Acting Rams

¹ Same as 1U-7545 except the relief valve is set to match the 1U-7484 and 1U-7485 Floor Cranes.

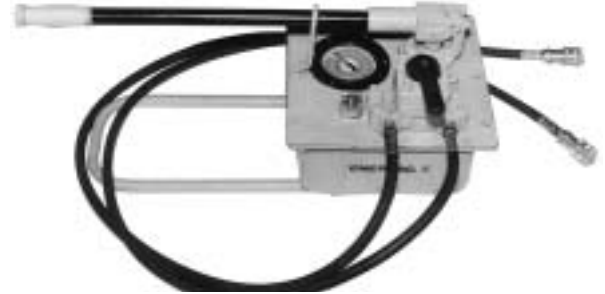
² Conversion 231 cu. in. = 1 gal.

Specifications for Manual/Hydraulic Pumps

Pump Part No.	Reservoir Capacity	Maximum Pressure at 1st Stage and 2nd Stage	Volume Per Stroke	Control Valve	For Use With:
1U-7544	140 cu. in.	1st Stage, 300 PSI 2nd Stage, 10,000 PSI	2.35 cu. in. .147 cu. in.	Built in 2-Way	Single Acting Rams
1U-5230	55 cu. in.	10,000 PSI	.160 cu. in.		Single Acting Rams
9U-6600	2.0 gal	1st Stage, 200 PSI 2nd Stage, 10,000 PSI	7.29 cu. in. .290 cu. in.	3-Position 4- Manual	Double Acting Rams

9U-6600 Hand Pump Group

- Replaced 4C-4865 Hydraulic Hand Pump
- Portable power source for Hydraulic Service Tools
- Square reservoir configuration and slightly larger pumping capacity
- Pump repair parts are explained in the Special Instruction Form SEHS9061 which is supplied with each unit.



Reservoir (tank) capacity	7.9 L (2.1 gal)
Usable capacity	7.6 L (2.0 gal)
Fluid	SAE 10 non-detergent petroleum oil
Weight (with oil)	26 kg (58 lb)
Valve port size	3/8 inch NPT
Approximate size	308 mm x 321 mm x 766 mm (12.12 in x 12.64 in x 30.16 in)

Specifications	Volume Per Stroke	Pressure
First Pressure Level	119 cc (7.29 cu.in.)	1380, ± 345 kPa (200, ± 50 PSI)
Second Pressure Level	4.75 cc (.290 cu.in.)	69,000, ± 3450 kPa (10,000, ± 500 PSI)

2P-5550 (115V) and 2P-5500 (230V) Electric Hydraulic Pump

- Powered by electric motors to provide much faster operation than the hand operated pump groups
- Both pumps are equipped with switches (1) for remote operation.
- Two 8F-0024 Hose Assemblies or two 6D-7726 Hose Assemblies, two 3B-7722 Bushings, two 1P-2376 Couplers, one 2N-1931 Fitting, and the 8T-0820 or 8T-5343 Gauge can be used with these pumps to operate hydraulic cylinders or pullers.
- Repair Kits available:
2P-2307 Pump and Control Valve Repair Kit
5P-0953 Pressure Regulator Repair Kit



Conversion Parts for Increasing Reservoir Capacity of 2P-5550 and 2P-5500 Pumps

Use these parts to convert the reservoir capacity of the 2P-5550 and 2P-5500 Electric Hydraulic Pumps from 0.45 gallons to 2 gallons. This conversion makes it possible for these pumps to actuate rams with larger displacements and thus provide electric hydraulic pumps that can be driven by a portable generating unit for such field jobs as final drive disassembly and assembly.

Item	Part No.	Description
1	5P-4233	Base Plate
2	5P-4234	Reservoir, 2 gal.
3	2P-2285	Gasket
4	5P-4231	Suction Tube Extension (3/8 inch-24 threads; for Model B) or: Suction Tube Extension (1/2 inch-20 threads; for Model C)
5	9G-5127	Breather-Vent
6	3B-7722	Bushing
7	5P-0947	Gasket
Not shown	5P-4232	Cap



3S-6224 (115V) and 8S-8033 (230V) Electric Hydraulic Pump

- Higher capacity motors in the 3S-6224 and 8S-8033 Pumps provide faster ram operation than afforded by the 2P-5550 and 2P-5500 Pumps.
- Motor operation can be controlled from a switch (1) mounted on the pump body or by a remote switch (2) attached to a 6 ft cord.
- The remote switch permits the operator to move to the most advantageous position when applying pressure to the tool setup.

Attachments for 3S-6224 (115V) and 8S-8033 (230V) Electric Hydraulic Pumps

Several additional items are required to attach these pumps to a hydraulic cylinder or puller. The parts are listed below and illustrated on a 3S-6224 Pump.



Item	Part No.	Description
1	8T-0820 or 8T-5343	Gauge
2	3B-7722	Bushing (two)
3	7J-8611	Street Elbow ¹
4	1P-2376	Coupler Assembly (two)
	1P-2377	Plug (two)
5	8F-0024 or 6D-7726	Hose Assembly, 183 cm (72 in) (two) Hose Assembly, 351 cm (138 in) (two)

¹ This fitting may be eliminated if desired. It is used to make both hoses come out in the same direction from the valve on top of the pump assembly. This provides a neater appearance and more usable hose length.

Hydraulic Shop Presses

Warranty: Manufacturer's

Part No.	OTC No.	Force	Weight	A Height	B Outside Width	G Inside Width	E Max. Working Height	Hydraulic Pump	Optional Accessory Group
4C-5642	30911 ¹	20 ton	284 lb					— ¹	
1U-7459	1850	55 ton	699 lb	70 3/4 in	47 1/2 in	35	41 1/8 in	Manual	1U-7466
1U-7461	1851	55 ton	692 lb	70 3/4 in	47 1/2 in	35 in	41 1/8 in	Air	1U-7466
1U-7463	1845	55 ton	926 lb	72 in	48 1/2 in	36 in	32 3/4 in	Electric	1U-7466
1U-7464	1846	55 ton	920 lb	72 in	48 1/2 in	36 in	32 3/4 in	Manual	1U-7466
1U-7465	1847	55 ton	916 lb	72 in	48 1/2 in	36 in	32 3/4 in	Air	1U-7466
1U-7468	1854	100 ton	1179 lb	86 5/8 in	47 1/2 in	35 in	45 1/2 in	Electric	
1U-7470	1857	100 ton	1470 lb	77 1/4 in	64 in	50 in	42 in	Manual	
1U-7471	1858	100 ton	1645 lb	77 1/4 in	64 in	50 in	42 in	Electric	
1U-7482	1865	100 ton	2780 lb	112 5/8 in	60 1/2 in	50 1/2 in	60 in	Electric	
1U-7483	1866	150 ton	4338 lb	123 1/4 in	63 1/4 in	51 1/4 in	64 in	Electric	
4C-5640	1868	150 ton	2960 lb	90 in	71 in	50 in	43 3/4 in	Electric	
4C-5641	1869	200 ton	3038 lb	90 in	71 in	50 in	43 3/4 in	Electric	
4C-5639	1867	200 ton	4455 lb	123 1/4 in	63 1/4 in	51 1/4 in	64 in	Electric	

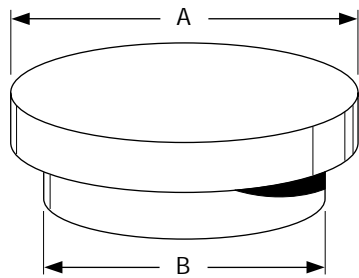
¹ Use the 1U-9755 20-ton Bottle Jack, not included.

Accessories for 80, 100 and 150 Ton Shop Presses			
Accessory	Use With Press:		
	80 Ton	100 Ton	150 Ton
Straightening Fixtures (Pr.)	1U-7472	1U-7472	1U-7472
V-Blocks (Pr.)	1U-7473	1U-7473	1U-7474
Pushing Adapter	1U-7476 ¹	1U-7476 ²	1U-7475
V-Pushing Adapter Adapter	1U-7477 ¹ 1U-7479 ¹	1U-7477 ² 1U-7480 ²	1U-7478

¹ These three components are used together on 80 ton presses and should be ordered together.

² These three components are used together on 100 ton presses and should be ordered together.

Accessories Used with 55 Ton Shop Presses	
Part No.	Description
1U-7456	Step Plate Adapter Set (OTC No. 8076), 11 sizes
1U-7457	Step Plate Adapter Set (OTC No. 8075), 6 sizes
1U-7458	V-Throat Press Plate (OTC No. 1889)



Step Plate Adapter

11 Sizes of Plates included with 1U-7456 Step Plate Adapter Set

Diameter A	Diameter B
1 in	3/4 in
1 1/8 in	7/8 in
1 1/4 in	1 in
1 3/8 in	1 1/8 in
1 5/8 in	1 1/4 in
1 3/4 in	1 3/8 in
1 7/8 in	1 1/2 in
2 in	1 5/8 in
2 1/8 in	1 3/4 in
2 3/8 in	1 7/8 in
2 1/2 in	2 in

6 Sizes of Plates included with 1U-7457 Step Plate Adapter Set

Diameter A	Diameter B
2 5/8 in	2 1/8 in
2 3/4 in	2 1/4 in
2 7/8 in	2 3/8 in
3 in	2 1/2 in
3 1/4 in	2 3/4 in
3 1/2 in	3 in

1U-7466 Press Accessory Set for 55 Ton Shop Presses

Bearing pulling attachment
Ram pushing adapter with 1 inch dia. shank
Ram pushing adapter with 1 1/4 inch dia. shank
V-pushing adapter
Pair of V-blocks
Ram forcing cap
Threaded adapter

1U-7459 and 1U-7461 Economy Shop Presses, 55 Ton

Warranty: Manufacturer's

- Durable steel frame resists buckling or bending and hand operated winch and cable mechanism adjusts lower press bolster.

1U-7459

- Includes a ram with 6 1/4 inch stroke, 1U-7544 Hydraulic Hand Pump, 1U-7547 Hose Gauge (1/4 inch I.D. x 6 ft), and pump mounting bracket
- Weight: 699 lbs

1U-7461

- Same as 1U-7459 except with 1U-7545 Air/Hydraulic Pump (1U-7545 requires 9 c.f.m. at 100 PSI at the pump)
- Weight: 692 lbs



1U-7463, 1U-7464 and 1U-7465 Heavy-Duty Shop Presses, 55 Ton

Warranty: Manufacturer's

- Larger versions of the 25 ton presses
- Side to side positioning of ram allows full capacity pressing along entire bolster length without buckling or bending.
- Single-acting ram has a 13 inch stroke.
- Choice of pumps is available to suit individual needs.

1U-7463

- Includes electric/hydraulic pump, 1U-7547 Hose Gauge (3/8 inch I.D. x 8 ft), and pump mounting bracket. (Pump: 1/2 HP, single-phase, 60 Hz, 115 Volt)
- Weight: 926 lbs

1U-7464

- Same as 1U-7463 except with 1U-7544 Hydraulic Hand Pump
- Weight: 920 lbs

1U-7465

- Same as 1U-7463 except has an air/hydraulic pump (requires 9 c.f.m. at 100 PSI at the pump) and hose (3/8 inch I.D. x 10 ft)
- Weight: 916 lbs



1U-7466 Press Accessory Set, 55 Ton

Warranty: Manufacturer's

- Use with 55 ton presses.
- Weight: 85 lbs



Item	Description
1	Bearing pulling attachment
2	Ram pushing adapter with 1 inch dia. shank
3	Ram pushing adapter with 1 1/4 inch dia. shank
4	V-pushing adapter
5	Pair of V-blocks
6	Ram forcing cap
7	Threaded adapter

Other Press Accessories (order separately)

Part No.	Description
1U-7456	Step plate adapter set
1U-7457	Step plate adapter set
1U-7458	V-throat press plate

1U-7468 Economy Shop Press, 100 Ton

Warranty: Manufacturer's

- Ready to tackle the tough pressing tasks encountered daily in construction, trucking and agricultural maintenance shops
- Large 35 inch opening between press uprights allows you to easily handle large gears, shafts, sprockets, etc.
- Hand operated winch and cable mechanism gives operator positive control in adjustment of lower press bolster to any height.

1U-7468

- Includes ram with 10 inch stroke, electric/hydraulic pump, 1U-7547 Hose Gauge (1/4 inch I.D. X 8 ft), and pump mounting bracket. (Pump: 1/2 HP, single-phase, 60 Hz, 115 Volt)
- Weight: 1,179 lbs



1U-7470 and 1U-7471 Heavy-Duty Shop Presses, 100 Ton

Warranty: Manufacturer's

- Handles all your really tough pressing jobs
- Construction is extremely rugged, assuring a frame that will withstand loads of full rated capacity across the upper bolster without structural damage.
- Wide open uprights (over 12 inch) allow easy side loading of bars and shafts for bending or straightening.
- Ram head glides smoothly along upper bolster on rollers, allowing fast and easy horizontal adjustments.
- Upper bolster can be lowered 8 inch for convenient positioning during repetitive jobs.

1U-7470

- Includes a single-acting ram with 10 inch stroke, hydraulic hand pump, hose gauge (3/8 inch I.D. x 10 ft), and pump mounting bracket
- Weight: 1,470 lbs

1U-7471

- Same as 1U-7470 except with double-acting ram with 13 inch stroke and electric/hydraulic pump and two hoses (1/4 inch I.D. x 10 ft) (Pump: 3 HP, 3-phase, 230V/460V, 60 Hz, 3450 rpm, 24V controls)
- Weight: 1,645 lbs



4C-5640 and 4C-5641 Heavy-Duty Shop Presses, 150 and 200 Ton

Warranty: Manufacturer's

- Ideal for heavy-duty truck and construction equipment maintenance shops
- Features heavy-duty, cold-rolled steel construction
- Movable workhead allows off-center pressing with no loss of pressing capacity across the entire width of the upper frame.
- Easy lowering and raising of the lower bed
- Upper bolster can be lowered 11 inches for added convenience in positioning parts.
- Open sides permit easy loading and unloading of long material.
- Include gauge, hoses, pump mounting bracket, and electric-driven hydraulic pump (3 HP, 3-phase, 230V/460V, 60 Hz, 3450 rpm, 24V controls)
- The electric/hydraulic pump with 10 ft remote control allows the operator to easily view work from all sides.
- Include hydraulic ram with 13 inch stroke
- Hydraulic rams meet ANSI B30.1 Standards.
- Weight: 2,960 lbs

4C-5640

- 150 ton capacity

4C-5641

- 200 ton capacity



1U-7482, 1U-7483, and 4C-5639 "Roll Bed"[®] Shop Presses, 100, 150 and 200 Ton

Warranty: Manufacturer's

- Patented "Roll Bed" feature allows you to roll out press bed to load and unload heavy work with overhead crane.
- Choice of hydraulics makes these presses as functional as you need for the big, bigger and biggest pressing jobs.
- Movable ram head and 10 ft remote control combined with large, open working area allow operator to easily view work from all sides.
- Heavy-duty, cold-rolled steel construction assures plenty of staying power to withstand full rated capacity loads.
- Bearings make bed positioning smooth and easy.
- Width adjusts from 4 inch to over 27 inch and is secured with locking bolts.
- Workhead moves on bearings across the upper bolster for off-center pressing jobs.
- Has off-center load capacity
- To raise or lower the upper bolster, simply turn a crank handle.
- Hydraulic rams meet ANSI B30.1 Standards.



1U-7482

- Includes ram with 13 inch stroke, hose gauge, pump mounting bracket, and electric/hydraulic pump (3 HP, 3-phase, 230V/460V, 60 Hz, 3450 rpm, 24V controls)
- 100 ton capacity
- Weight: 2,780 lbs

1U-7483

- Same as 1U-7482 except with a different ram with 13 inch stroke and hoses (1/4 inch I.D. x 12 ft)
- 150 ton capacity
- Weight: 4,338 lbs

4C-5639

- Same as 1U-7483 except with a different ram with 13 inch stroke
- 200 ton capacity
- Weight: 4,455 lbs

Miscellaneous

156-7100 Light-Duty Puller Group

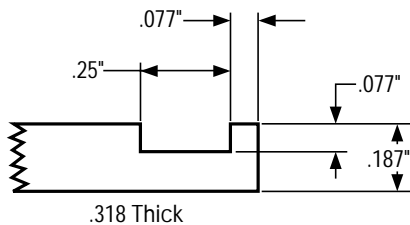
Warranty: Manufacturer's

- Includes 6V-2166 Hydrostatic Transmission Valve Puller Group
- Used to remove control valve venturi from transmission
- Kit includes multiple adapter and puller sizes with slide hammer for universal pulling applications
- Maximum pull: 2.25t (2.5 tons)

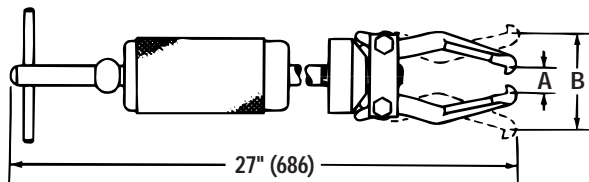


1P-0074 Slide Hammer Puller, 5 Ton Capacity

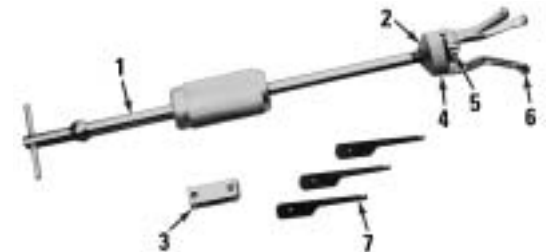
- Equipped with a 2.3 kg (5 lb) hammer and two or three jaws depending on the application
- The jaws can be reversed to handle inside pulling jobs such as bearing cups as well as regular outside pulling jobs on gears, bearings, etc.



Tip Dimensions for 2P-2312 Leg



Inside A (Min.)	Inside A (Max.)	Outside B (Min.)	Outside B (Max.)
2-Jaw Spread			
1.25 in	3.38 in	1.00 in	4.50 in
3-Jaw Spread			
1.31 in	4.75 in	1.50 in	4.50 in



Item	Part No.	Description
1	1P-0073	Shank
2	1P-0068	Cone
3	1P-0070	Two Jaw Head
4	1P-0069	Three Jaw Head
5	1A-8285	Nut (three)
	6H-0187	Bolt (three)
6	1P-0071	Jaw (three)
Optional Attachment (not part of 1P-0074 Puller)		
7	2P-2312	Leg 4.7 inch long, three required to pull seal retainer plates on the input and output shafts of Lift Truck Hydrostatic transmissions

1U-7600 Slide Hammer Puller Group

- Used for pulling lip type seals of all sizes
- Weight of hammer: 1.1 kg (2 1/2 lbs)



Item	Part No.	Description
1	1U-7603	Hammer
2	1U-7601	Rod
3	1U-7602	Adapter
4	1P-3073	Screw Tip (3)
5	1U-7649	Shank
6	1P-2868	Shaft
7	—	Metal box
Optional Accessory		
	5P-6521	Screw Tip — available for removing lip type crankshaft seals with thin metal walls

Threaded Adapters

- Used as ends or connectors for Push-Puller legs



Typical Adapter

Type 1			
Part No.	Male End	Female End	Capacity
8B-7557	3/8 in-16	5/8 in-18	3.5 Ton
153-8963	5/16 in-18	5/8 in-18	2 Ton
8T-9139	7/16 in-14	5/8 in-18	4 Ton
8B-7558	1/2 in-20	5/8 in-18	6.5 Ton
8B-7559	1/2 in-13	5/8 in-18	6.5 Ton
8B-7556	5/8 in-11	5/8 in-18	10.25 Ton
5F-7340	3/4 in-16	1 in-14	15 Ton
5F-7339	3/4 in-16	5/8 in-18	11.75 Ton
5F-7341	3/4 in-10	5/8 in-18	11.75 Ton
5P-4167	3/4 in-10	1 in-14	15 Ton
5H-1276	7/8 in-14	5/8 in-18	11.75 Ton
135-0482	7/8 in-9	5/8 in-18	10 Ton
5P-6581	7/8 in-14	1 in-14	21.25 Ton
5F-7342	1 in-14	5/8 in-18	11.75 Ton
5P-4768	1 in-8	1 in-14	17.75 Ton
5H-1274	1 1/4 in-12	5/8 in-18	11.75 Ton
8S-6587	1 1/4 in-12	1 in-14	30 Ton
5P-8677	1 1/2 in-12	1 1/4 in-12	60 Ton
8T-5270	2 in-12	1 1/2 in-12	100 Ton

4C-5648 — Male Metric Adapter Kit — Type 1			
Part No.	Male End	Female End	Capacity
4C-5649	5/8 in-18	M6 x 1.0	2 1/4 in
4C-5650	5/8 in-18	M8 x 1.0	2 1/4 in
4C-5651	5/8 in-18	M8 x 1.25	2 1/4 in
4C-5652	5/8 in-18	M10 x 1.25	2 1/4 in
4C-5653	5/8 in-18	M10 x 1.50	2 1/4 in
4C-5654	5/8 in-18	M12 x 1.25	2 1/4 in
4C-5655	5/8 in-18	M12 x 1.75	2 1/4 in

4C-5663 — Female Metric Adapter Kit — Type 2			
Part No.	Male End	Female End	Length
4C-5664	5/8 in-18	M6 x 1.0	1 5/8 in
4C-5665	5/8 in-18	M8 x 1.25	1 5/8 in
4C-5666	5/8 in-18	M10 x 1.5	1 5/8 in
4C-5667	5/8 in-18	M12 x 1.75	1 5/8 in
4C-5668	5/8 in-18	M14 x 2.0	1 5/8 in
4C-5669	5/8 in-18	M16 x 2.0	1 5/8 in
4C-5670	5/8 in-18	M20 x 2.5	1 5/8 in

Type 2			
Part No.	Male End	Female End	Capacity
8T-9140	1/2 in-20	5/8 in-18	7 Ton
8B-7555	5/8 in-18	3/4 in-16	11.75 Ton
154-6796	1 in-8	1 1/2 in-12	17.75 Ton
1H-3111	1 in-14	1 in-14	30 Ton
5P-8623	1 1/4 in-12	1 1/4 in-12	60 Ton
4C-9471	1 1/4 in-7	1 1/2 in-12	55 Ton
6V-3094	1 1/4 in-12	1 3/4 in-12	55 Ton
1M-6763	1 1/4 in-7	2 1/8 in-12	55 Ton
9H-4072	1 1/4 in-7	2 5/8 in-12	55 Ton
4C-9487	1 1/2 in-12	1 1/2 in-12	100 Ton
6H-1626	1 1/4 in-7	2 3/8 in-12	55 Ton
8T-7781	2 in-8	2 in-8	150 Ton

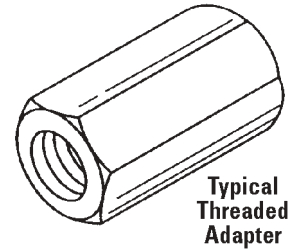
4C-5656 — Male Metric Adapter Kit — Type 2			
Part No.	Male End	Female End	Length
4C-5657	5/8 in-18	M14 x 1.5	2 1/4 in
4C-5658	5/8 in-18	M14 x 2.0	2 1/4 in
4C-5659	5/8 in-18	M16 x 1.5	2 3/4 in
4C-5660	5/8 in-18	M16 x 2.0	2 3/4 in
4C-5661	5/8 in-18	M20 x 1.5	2 3/4 in
4C-5662	5/8 in-18	M20 x 2.5	2 3/4 in

4C-5671 — Male Metric Adapter Kit — Type 1			
Part No.	Male End	Female End	Length
4C-5672	1 in-14	M16 x 1.5	3 in
4C-5673	1 in-14	M16 x 2.0	3 in
4C-5674	1 in-14	M18 x 1.5	3 in
4C-5675	1 in-14	M20 x 1.5	3 in
4C-5676	1 in-14	M20 x 2.5	3 in
4C-5677	1 in-14	M22 x 1.5	3 in
4C-5678	1 in-14	M24 x 2.0	3 in
4C-5679	1 in-14	M24 x 3.0	3 in

140-2183 Threaded Adapter (1-14 to M22)
140-2184 Threaded Adapter (1-14 to M20)
140-2185 Threaded Adapter (1-14 to M18)

SMCS Code: 0700
 Model: All Models

Part No.	Capacity	Thread size	Thread size	Length	Hex size
140-2183	27.5 tons	1-14 female	M22 x 1.5 female	76.2 mm (3.00 in)	38.1 mm (1.50 in)
140-2184	20 Tons	1-14 Female	M20 x 1.5 Female	76.2 mm (3.00 in)	38.1 mm (1.50 in)
140-2185	15 Tons	1-14 Female	M18 x 1.5 Female	76.2 mm (3.00 in)	38.1 mm (1.50 in)

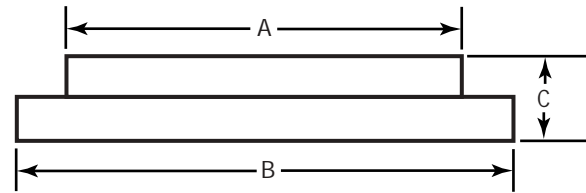


Typical Threaded Adapter

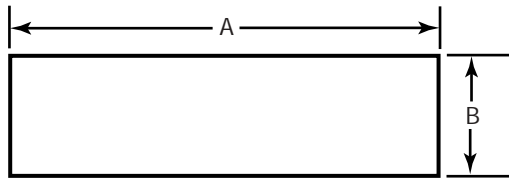
- Used to connect English and Metric threaded rods
- May be used with 8B-7548 Push Puller
- Also used as an adapter to install metric wheel studs

Step Plates and Centering Spacers

- Used to protect shaft centers from distortion when extreme pressures are applied through the puller screw
- Intended to use between the end of the puller screw and a hollow shaft



Step Plate



Spacer

Spacer Part No.	Dia. "A"	Thickness "B"
9S-9155	1.00 in	.75 in
0T-0774	1.44 in	.63 in
0L-1774	1.94 in	.75 in
0S-2398	2.50 in	1.25 in

Step Plate Part No.	Dia. "A"	Dia. "B"	Height "C"
8B-7560	1.25 in	1.63 in	.75 in
8B-7561	1.38 in	1.75 in	.75
9S-9154	1.62 in	2.0 in	.75 in
5P-4168	1.75 in	2.12 in	1.70 in
5P-4169	1.88 in	2.38 in	1.90 in
5P-4198	2.00 in	2.50 in	1.00 in
5P-2958	2.12 in	2.63 in	1.00 in

Step Plate Part No.	Dia. "A"	Dia. "B"	Height "C"
5P-4170	2.38 in	2.88 in	2.40 in
5P-3513	2.50 in	3.00 in	2.50 in
5P-7377	2.70 in	3.75 in	1.20 in
5P-7378	4.10 in	5.00 in	1.30 in
5P-4725 ¹	6.20 in	6.80 in	1.00 in
5P-4726 ¹	7.70 in	8.00 in	1.00 in

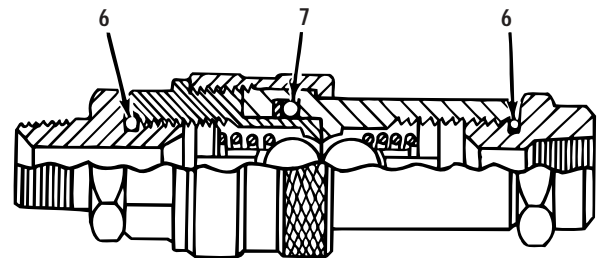
¹ Special tools for flywheel housing seal installation

Service Coupler Assemblies

- Quick disconnect couplers used on all Caterpillar Hydraulic Service Tools
- Have a higher disconnected pressure rating for the male half
- Allows additional protection in case of accidental pressurization



Item	Part No.	Description
1	1P-7437	Cap
2	1P-2378	Dust Cap
3	1P-2375	Coupler Assembly (male)
4	1P-2376	Coupler Assembly (female)
5	1P-2377	Protective Plug

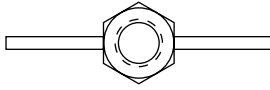


1P-2375 Coupler and 1P-2376 Coupler Connected

Item	Part No.	Description	Usage
6	4J-5268	Seal (Part of 1P-2375 and 1P-2376) ¹	—
7	2P-5539	Seal	Used on later 1P-2376 Couplers ¹
	4J-5140	Seal	Used on early 1P-2376 Couplers ¹
	306122	Ring, Back-up	Used on early 1P-2376 Couplers ¹

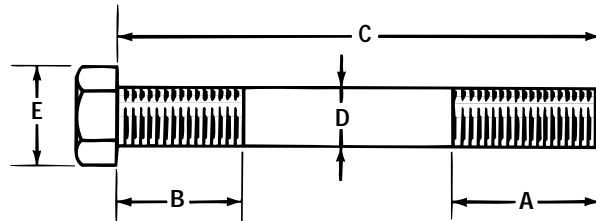
¹ With the threaded locking collar in extended position, later couplers measure 66.5 mm (2.62 in) and earlier couplers measure 77.7 mm (3.06 in) in length.

Fast Runner Nuts



Part No.	Description
9U-5345	Fast Runner Nut Assembly, M24 x 3.0
9U-5346	Fast Runner Nut Assembly, M30 x 3.5
9U-6809	Fast Runner Nut Assembly, M36 x 4.0
9U-6810	Fast Runner Nut Assembly, M48 x 5.0
1P-0543	Fast Runner Nut Assembly, 1 in-8
9U-6833	Fast Runner Nut Assembly, 1 in-14

Part No.	Description
1P-0544	Fast Runner Nut Assembly, 1 1/4 in-7
9U-6832	Fast Runner Nut Assembly, 1 1/4 in-12
Not Shown	
9U-6903	Speed Nut, M48 x 5
9U-6800	Speed Nut, M64 x 6



Dimensions of Inch forcing screws, puller bolts and studs

Part No.	Thread Size A	Thread Length A	Thread Size B	Thread Length B	Length C	Diameter D	Head ² Size E
1P-1430	7/16 in-20	2.70 in			4.50 in		.620 in H
1P-2324	9/16 in-20	5.90 in			7.00 in ¹		.620 in H
186-6569	5/8 in-18				8.50 in		
5F-7345	5/8 in-18				13.00 in ¹		.750 in H
1P-2326	11/16 in-18	7.90 in			9.10 in ¹		.750 in H
2S-4680	3/4 in in-10	1.62 in	3/4 in-16	1.50 in	17.00 in	.750 in	
6V-7837	3/4 in-16	1.50 in					
8S-6470	3/4 in-16	4.50 in					
3H-0459	3/4 in-16	Full Length			10.90 in ¹		1.100 in
2B-1957			3/4 in-10	3.30 in	5.50 in	.594 in	1.100 in
1P-2328	13/16 in-16	11.40 in			12.80 in ¹		.880 in H
3H-0460	7/8 in-14	Full Length			14.30 in ¹		H
5P-5265	7/8 in-14	4.60 in			5.30 in		1.300 in H
1M-6766	7/8 in-9	3.00 in	3/4 in-10	1.00 in	33.00 in	.875 in	
5P-2678	7/8 in-9	2.95 in	7/8 in-9	1.50 in	38.20 in	.870 in	
6V-2078	1 in-14	14.98 in			14.98 in	.990 in	
5P-8715	1 in-14	5.60 in			6.90 in		1.500 in H
5F-7366	1 in-14				11.80 in		.407 in S
8S-6586	1 in-14	24.40 in			26.00 in ¹		1.1 in H
5H-9976	1 in-14	5.80 in			7.30 in ¹		.680 in S
5F-7379	1 in-14	7.00 in			10.80 in		1.50 in H
5P-4776	1 in-14	Full Length			18.00 in		
9S-6074	1 in-8	10.50 in			19.70 in		.680 in S
9U-5267	1 in-8	Full Length			25.00 in		
4C-9633	1 in-14	Full Length			25.00 in		
1U-7758	1 1/8 in-12	Full Length			20.00 in		H
5P-0256	1 1/4 in-12	11.50 in			13.20 in ¹		1.500 in H
5P-8714	1 1/4 in-7	8.10 in	1 1/4 in-12	1.30 in	14.00 in	1.250 in	
4C-9634	1 1/4 in-12	Full Length			28.90 in		
5P-3020	1 1/4 in-7	9.50 in			18.10 in		2.400 in R
5P-4184	1 1/4 in-12	18.00 in			18.00 in		
165-3790	1 1/4 in 12	60.00 in			60.00 in		
6V-2074	1 1/2 in-12	32.09			32.09 in		
3H-0470	1 1/2 in-12				17.10 in		S
9U-6698	1 1/2 in-12	Full Length			48.00 in		
5F-9893	1 1/2 in-6	19.50 in	1 1/2 in-12	1.50 in	23.00 in		
5P-5264	1 1/2 in-12	4.50 in			4.50 in		
5P-7273	1 1/2 in-12	Full Length			23.60 in		
5P-5207	2 1/2 in-8		2 1/2 in-8		28.00 in		R
6V-6084	2 1/2 in-8	5.63 in	2 1/2 in-8	3.94 in	23.62 in	2.500 in	

Dimensions of Metric forcing screws, puller bolts and studs							
Metric Guide Studs							
Part No.	Thread Size A	Thread Length A	Thread Size B	Thread Length B	Length C	Diameter D	Head ² Size E
169-6969	M16x2.0	25.4 mm	M16x2.0	101.6 mm	435 mm	16 mm	—
128-5049	M20x2.5	32 mm	—	—	152 mm	20 mm	—
1U-6130	M24x3	70 mm	—	—	254 mm	24 mm	—
1U-9767	M24x3	70 mm	—	—	279 mm	24 mm	—
1U-9817	M24x3	70 mm	—	—	305 mm	24 mm	—
174-8986	M30x3.5	55 mm	—	—	220 mm	30 mm	—
154-6400	M30x3.5	75 mm	M30x3.5	75 mm	700 mm	30 mm	—
175-6853	M36x3.5	65 mm	—	—	285 mm	36 mm	—
Metric Forcing Bolts							
154-6360	M8x1.25	Full	—	—	150 mm ¹	8 mm	13 mm H
154-6181	M10x1.5	Full	—	—	150 mm ¹	10 mm	16 mm H
154-6182	M12x1.75	Full	—	—	150 mm ¹	12 mm	18 mm H
154-6183	M16x2.0	Full	—	—	300 mm ¹	16 mm	24 mm H
154-6184	M20x2.5	Full	—	—	300 mm ¹	20 mm	30 mm H
154-6185	M24x3.0	Full	—	—	300 mm ¹	24 mm	36 mm H
176-6536	M30x3.5	Full	—	—	250 mm ¹	30 mm	46 mm H

¹ Dimensions include bolt head

² R-Round Head H-Hex Head S-Square Head

³ Working Load 60.25 kN (13550 lbs.)

Metric Threaded Steel Rod

SMCS Code: 5058-015, 5058-016, 4351017, 5058-017, 4351-015, 4351-016, 5070-015
Model: General Use

- General usage service tools released for disassembly and assembly of various hydraulic pumps and motors
- Can be used wherever metric thread bolt, forcing screw or puller stud required as long as mechanical limits of rods are not exceeded
- Many components used on Caterpillar machines contain metric threads; threaded holes are often provided on those components to aid in disassembly and assembly; metric threaded bolts, however, are not always readily available in right size and length; versatile metric threaded rods come in 6 sizes and can be cut to correct length for the job.



Reference

SEN3358 Service Manual Disassembly and Assembly, calls for metric threaded rods for pumps and motors used in 205, 206, 211, 212, 213, 214 and 224 Excavators

Dimensions and Capacities for Metric Puller Studs			
Part No.	Metric Thread	Stud Length	Capacity in Tons
4C-8176	M4 x 0.7	914 mm (36 in)	
1U-6340	M6 x 1.0	1000 mm (39 in)	0.9
1U-6341	M8 x 1.25	1000 mm (39 in)	1.6
1U-6342	M10 x 1.5	1000 mm (39 in)	2.5
1U-6343	M12 x 1.75	1000 mm (39 in)	3.7
1U-6344	M14 x 2	1000 mm (39 in)	5.1
9U-7692	M16 x 2	1000 mm (39 in)	6.8
169-6969	M16 x 2	435 mm (17.12 in)	6.8
123-4370	M20 x 2.5	350 mm (14 in)	20
9U-5343	M24 x 3.0	650 mm (26 in)	30
162-4197	M24 x 3.0	1200 mm (47.2 in)	

Dimensions and Capacities for Metric Puller Studs			
Part No.	Metric Thread	Stud Length	Capacity in Tons
9U-5344	M30 x 3.5	800 mm (31.5 in)	50
137-8460	M30 x 3.5	1980 mm (77.9 in)	
9U-7998	M36 x 4.0	920 mm (36 in)	80
9U-6811	M36 x 4.0	1575 mm (62 in)	80
9U-6812	M48 x 5.0	381 mm (15 in)	100
9U-6813	M48 x 5.0	508 mm (20 in)	100
9U-6814	M48 x 5.0	920 mm (36 in)	100
9U-6815	M48 x 5.0	1575 mm (62 in)	100
136-5747	M48 x 5.0	2415 mm (96 in)	
4C-6504	M64 x 6.0	1200 mm (47 in)	150
4C-8150	M64 x 6.0	1800 mm (71 in)	150
9U-6702	M64 x 6.0	2600 mm (102 in)	150

Gauges

- Capacity 0 to 10,000 PSI
- Accuracy: Grade A
- Liquid filled
- 4 in diameter face

Part No.	Description	Scales
8T-0820	Bottom mount — Face in PSI and kPa	10,000 PSI 70,000 kPa
8T-5343	Bottom mount — Face in PSI and tonnage	10,000 PSI 30, 50, 70, 100 and 150 ton
8T-5342	Back mount — Face in PSI and tonnage	10,000 PSI 30, 50, 70, 100 and 150 ton
1U-7046	Back mount — Face in lb ft torque	1362, 2498 and 5676 lb ft

Hoses

Part No.	Description	Length	Inside Diameter	Pressure Capabilities	Coupling Thread Size
8F-0024	Hydraulic Hose	6 ft	1/4 in	10,000 PSI	1/4 in NPTF
6D-7726	Hydraulic Hose	11 1/2 ft	1/4 in	10,000 PSI	1/4 in NPTF

NOTE: The service couplers and adapters are for adapting the hoses to Caterpillar Hydraulic Pumps.

Optional Accessories	
Part No.	Description
1P-7437	Cap
1P-2378	Dust Cap
1P-2375	Coupler Assembly (male)
1P-2376	Coupler Assembly (female)
1P-2377	Protective Plug
3B-7722	Bushing, 3/8 in-18 NPTF to 1/4 in-18 NPTF
7J-8611	Street Ell, 90°, 1/4 in-18 NPTF Thd.
2N-1931	Street Ell ¹ , 45°, 1/4 in-18 NPTF Thd.

¹ Used for mounting the 8T-0820 or 8T-5343 Gauge in the pump gauge port; locates the gauge in an easy to read position

Hoists

1U-7484 Heavy-Duty Mobile Lifting Crane, 2,200 lb.

1U-7485 Heavy-Duty Mobile Lifting Crane, 4,400 lb.

- Versatile features and rugged construction of OTC heavy-duty cranes let you handle just about any lifting job with speed.
- Folds into a compact package for storage
- Leg spread adjusts to clear vehicles wheels, other obstacles for "close-in" work.
- Telescoping boom extension gives additional reach.
- A 2-speed hydraulic hand pump provides fast boom travel; descent of boom is under precise control of operator.
- Equipped with roller-bearing mounted wheels, crane rolls smoothly into position or storage location.
- Steering dolly provides easy maneuverability.
- Space saving "Fold-Away" feature



	1U-7484	1U-7485
Capacity, boom extracted	2,200 lb	4,400 lb
Capacity, boom extended	1,650 lb	3,300 lb
Maximum boom height - Boom extracted	107 in	111 in
Maximum boom height - Boom extended	117 in	122 in
Overall height, boom horizontal	80 in	82 in
Overall length	83 in	89 in
Minimum throat width	24 in	25 in
Inside leg length	54 in	57 1/2 in
Effective boom reach (retracted)	33 in	35 1/2 in
Effective boom reach (extended)	48 in	50 1/2 in
Inside leg width (3-position)	24 in-36 in-48 in	26 in-40 in-52 1/2 in
Leg height	8 in	9 1/2 in
Dolly wheel diameter	5 in	5 in
Wheel diameter	6 in	8 in
Caster diameter	6 in	6 in
Floor space, folded	27 in x 38 in	31 x 42 in
Height, folder	79 in	86 in
Lifting chain	16 7/8 in	18 3/8 in
Weight	471 lb	642 lb
Supplier part no.	1819	1820

Optional Hydraulics

- For greater speed and ease of operation, your crane can be powered with an air-driven, air/hydraulic pump such as the 1U-7554.

1U-7555 Mobile Lifting Crane, 6,000 lb.

Warranty: Manufacturer's

- Heavyweight, retractable-leg, mobile floor crane equipped with electric/hydraulic (115V) pump with remote motor control
- Three boom positions give you capacities of 4,000, 5,000 and 6,000 lbs — enough to lift the biggest engines.
- Features a boom swivel, and extendable legs
- Vertical and lateral swing
- Equipped with an electric/hydraulic pump with remote control for raising and lowering
- Includes a steering dolly for maneuverability; dolly also acts as a floor lock by lifting the rear wheel off the floor
- Built to take all the hard use you can give it.
- Ideal for freeing up an overhead crane, letting you pull engines from any bay in the shop
- Offers greater mobility and versatility than installing an overhead crane or gantry
- Coupled with the 6V-3145 Load Leveler and the 1U-5750 Revolver engine stand this crane gives you a complete set of heavy-duty engine equipment.



Boom Capacity	Ext. 4,000	Center 5,000	Ret. 6,000
Max. boom height	161 7/8 in	150 11/16 in	139 1/2 in
Min. boom height	6 in	17 3/8 in	28 3/4 in
Overall height, boom horizontal	87 in	87 in	87 in
Overall length	129 1/8 in	113 7/8 in	98 1/4 in
Legs in storage position: 80 7/8 in			
Inside leg length	91 11/16 in	76 1/8 in	43 1/4 in
Effective boom horizontal reach	94 1/4 in	78 3/4 in	63 1/4 in
Outside leg width	59 3/4 in	57 3/4 in	55 3/4 in
Legs in storage position: 53 1/2 in			
Boom swing	36 in	31 in	26 in
Inside leg width	—	35 3/4 in	—
Leg height	—	9 1/16 in	—
Dolly wheel diameter	—	5 in	—
Wheel diameter	—	8 in	—
Supplier part no.: 1814			

Hand Hoists

Warranty: Manufacturer's

- Compact lifting power — built of lightweight aluminum alloy
- Features a fully enclosed brake and rugged Hoistaloy load chain
- Requires no lubrication
- Design is compact and simple.
- 1/2 ton through 10 ton capacities
- Load limiter, CM's automatic overload protection, consists of a special hand wheel and friction clutch assembly.
- Load limiter is fully protected — does not require adjustment.
- Repairable
- For trolleys, see Electric Chain Hoist accessories.



Cat Part No.	Supplier Part No.	Capacity	Standard Lift	Net Weight	Shortest Distance Between Hooks	Chain Pull to Lift Load	Strands of Chain
1U-9206	4622	1/2 ton	8 ft	33 lb	12 7/8 in	46 lb	1
1U-9207	4624	1 ton	8 ft	36 lb	14 in	69 lb	1
1U-9208	4626	2 ton	8 ft	60 lb	17 5/16 in	83 lb	1
1U-9209	4629	5 ton	8 ft	122 lb	24 1/4 in	75 lb	3
1U-9210	4632	10 ton	8 ft	219 lb	35 1/2 in	95 lb	5

CM Economy Series 622 Hand Chain Hoists

Warranty: Manufacturer's

- Equipped with hardened load chain for flexibility, strength and long wear
- Guide slots in the wheel cover guard against chain slippage and jamming.
- Standard features include load sharing gears and a lubrication free Weston-type load brake.
- Compact design and low headroom make them simple to install in confined areas with no adjustments necessary.
- Available in capacities from 1/2 through 10 tons
- Rugged, lightweight and easy to handle

Cat Part No.	Supplier Part No.	Max. Capacity	Standard Lift	Net Weight	Shortest Distance Between Hooks	Chain Pull to Lift Rated Load	Strands of Chain
4C-6944	2207	3 ton	8 ft	69 lb	22 in	54	2



1U-5788 Air Operated Chain Hoist

Warranty: Manufacturer's

- Used for fast-moving production operations
- Thrust bearing-mounted latch hooks for hoist positioning
- Latch hooks allow free load rotation, lessen accidental unhooking.
- Heat treated alloy steel link chain provides strength and flexibility.
- Automatic limit stops prevent overtravel, even at fastest speeds.
- External screw adjustment for lift and descent rates
- Operator controllable speed
- Swivel-mounted air inlet permits free hoist movement.
- Exhaust muffler reduces sound level.

C/P part no.	CP-1100-1000
Pull cord	3.1 m (10 ft)
Rated capacity	1000 kg (2200 lb)
Lifting hook speed at rated capacity	6.4 m/min (21 ft/min)
Lift hook travel	4.6 m (15 ft)
Air inlet thread	3/8 inch (NPTF)
Net weight	22.7 kg (50 lb)
Tune-up Kit	1U-5978



Electric Chain Hoists

Warranty: Manufacturer's

- Heavy-duty motors
- Workings are completely enclosed and compact for low headroom.
- Safety features include: Lodestar Protector®, a friction clutch assembly designed to stop the hoist when overloading occurs. A dual braking system — heavy-duty magnetic and regenerative — plus upper and lower limit features.
- Snap action control station carries only 115 volts and is completely sealed, weatherproofed and waterproofed.
- Gears receive lifetime lubrication at factory.

NOTE: Due to various applications, suspension for hoist must be ordered separately. Please see part numbers listed under accessories.

Cat Part No.	Max. Capacity	Lifting Speed Per Min.	Maximum Lift	Motor HP	Electrical Requirements
1U-9194	1/2 ton	2.44 m/min (8 fpm)	4.5 m (15 ft)	1/4 hp	230/460V/3 Phase/60 Hz
4C-6953	1/2 ton	4.88 m/min (16 fpm)	4.5 m (15 ft)	1/2 hp	115 V/1 Phase/60 Hz
1U-9195	1/2 ton	4.88 m/min (16 fpm)	4.5 m (15 ft)	1/2 hp	230/460V/3 Phase/60 Hz
1U-9196	1 ton	2.44 m/min (8 fpm)	4.5 m (15 ft)	1/2 hp	230/460V/3 Phase/60 Hz
4C-6954	1 ton	4.88 m/min (16 fpm)	4.5 m (15 ft)	1 hp	115 V/1 Phase/60 Hz
1U-9197	1 ton	4.88 m/min (16 fpm)	4.5 m (15 ft)	1 hp	230/460V/3 Phase/60 Hz
4C-6956	2 ton	2.44 m/min (8 fpm)	6.1 m (20 ft)	1 hp	115 V/1 Phase/60 Hz
1U-9198	2 ton	2.44 m/min (8 fpm)	4.5 m (15 ft)	1 hp	230/460V/3 Phase/60 Hz
4C-6957	2 ton	2.44 m/min (8 fpm)	6.1 m (20 ft)	1 hp	230/460 V/3 Phase/60 Hz
4C-6955	2 ton	4.88 m/min (16 fpm)	4.5 m (15 ft)	2 hp	230/460 V/3 Phase/60 Hz
4C-6958	3 ton	1.68 m/min (5.5 fpm)	6.1 m (20 ft)	1 hp	115 V/1 Phase/60 Hz
1U-9810	3 ton	1.68m/min (5.5 fpm)	4.5 m (15 ft)	1 hp	230/460 V/3 Phase/60 Hz
4C-6959	3 ton	1.68 m/min (5.5 fpm)	6.1 m (20 ft)	1 hp	230/460 V/3 Phase/60 Hz

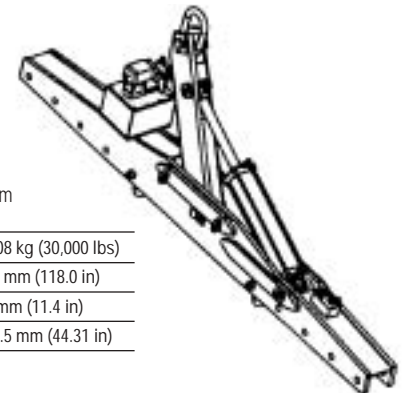


Accessories						
Cat Part No.	Capacity	Min. Radius Curve	Tread Dia. of Wheels	Length of Lift	Travel Speed	Use with Hoist:
Trolley (632 Series)						
1U-9556	1/2 ton	7 in	2 3/4 in	—	—	1U-9194, 1U-9195, 4C-6953, 1U-9206
1U-9557	1 ton	7 in	2 3/4 in	—	—	1U-9196, 1U-9197, 4C-6954, 1U-9207
1U-9558	2 ton	10 in	3 3/8 in	—	—	1U-9198, 4C-6956, 4C-6957, 4C-6955, 1U-9208
Low Headroom Trolley (635 Series)						
1U-9554	1/8 to 1 ton	24 in	3 1/8 in	—	—	1U-9194, 1U-9195, 4C-6953 1U-9196, 1U-9197, 4C-6954
1U-9555	2 ton	24 in	4 3/4 in	—	—	1U-9198, 4C-6956, 4C-6957, 4C-6955
1U-9814	3 ton	30 in	4 3/4 in	—	—	1U-9810, 4C-6959, 4C-6958
Motor Driven Trolley (635 Series)						
1U-9815	3 ton	30 in	—	—	75 fpm	1U-9810, 4C-6959
Rigid Hook Suspension						
1U-6360	—	—	—	—	—	1U-9194, 1U-9196
1U-6361	—	—	—	—	—	1U-9195, 4C-6953
1U-6362	—	—	—	—	—	1U-9197, 4C-6954
1U-6363	—	—	—	—	—	1U-9198, 4C-6955, 4C-6956, 4C-6957
1U-9812	—	—	—	—	—	1U-9810, 4C-6958, 4C-6959
Rigid Lug Suspension						
1U-9213	—	—	—	—	—	1U-9194, 1U-9196
1U-9214	—	—	—	—	—	1U-9195, 4C-6953
1U-9215	—	—	—	—	—	1U-9197, 4C-6954
1U-9216	—	—	—	—	—	1U-9198, 4C-6955, 4C-6956
1U-9811	—	—	—	—	—	1U-9810, 4C-6958, 4C-6959
Chain Container						
1U-9561	—	—	—	15 ft	—	1U-9194, 1U-9196, 1U-9197, 4C-6954
1U-9559	—	—	—	20 ft	—	1U-9195, 4C-6953
1U-9562	—	—	—	15 ft	—	1U-9198, 4C-6955
1U-9560	—	—	—	20 ft	—	1U-9197, 4C-6954, 1U-9194, 1U-9196
1U-9813	—	—	—	15 ft	—	1U-9810, 4C-6958, 4C-6959
4C-6960	—	—	—	20 ft	—	4C-6956, 4C-6957

137-4370 Leveling Assembly

Model: 994 and 994D with 3512 Engines and other similar applications
 Warranty: Manufacturer's

- Saves time by eliminating constant readjustment (raising and lowering) of lifting device to obtain a stable, level load
- Designed for engine use — can also be used on transmissions or other similar applications
- Used to adjust and keep load level during lifting procedures by retracting or extending hydraulic cylinder on leveling beam
- Adjusts center of gravity while load is suspended from overhead crane or other suitable device
- Allows small adjustments to keep a load level at all times
- Connects to overhead lifting hoist system for lifting heavy loads
- Uses a heavy-duty air over hydraulic system
- Includes a remote operation air hydraulic switch with a 7.62 m (25.0 ft) cable
- CE compliant as well as ASME B30.9, ANSI 120.74; Australian Standards AS1353.1 and AS1353.2



Capacity	13,608 kg (30,000 lbs)
Length	2997 mm (118.0 in)
Width	289 mm (11.4 in)
Height	1125.5 mm (44.31 in)

Reference

REN2018-00, 3516B Engine Supplement for 994D Wheel Loader

9S-9100 Load Positioner 9S-9101 Load Positioner

Warranty: Manufacturer's

- Used with a crane or hoist
- Useful for tilting heavy or bulky assemblies in confined areas
- Not for use in overhead lifting
- 138-7575 Link Bracket (two) is part of 9S-9101 and 9S-9100

	9S-9101	9S-9100
Load capacity	4000 lb	2000 lb
Chain size	5/16 in	1/4 in
Chain length	62 in	54 in
Chain grade (ASTM)	43	43
Gear ratio	82-1	34-1
Drive size	5/8 in Hex	5/8 in Hex



Reference

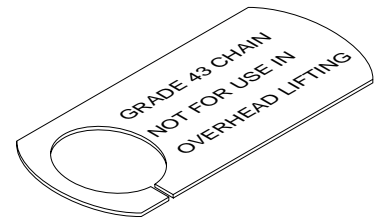
NEHS0823 Tool Operating Manual

205-5688 Warning Tag

- Used to warn technician against using load positioner for overhead lifting
- Attach tag to all 9S-9100 and 9S-9101 Sling Assemblies (load positioners) currently in use; required because the chain is grade 43
- Can be ordered free-of-charge

Reference

NEHS0823 Tool Operating Manual



Fabric Slings, Protective Sleeve, and Shackles

SMCS Code: 7500-010, 0632 7258-010, 7960

Model: 769, 773, 777, 785, 789, and 793 Off-Highway Trucks and General Usage

Warranty: Fabric Slings: M; Shackle, Spool, and Plate: G

- Used to lift truck bodies or other loads with a hoist or other lifting devices (provides strength of steel without drawbacks of weight, corrosion, or electrical conductivity)
- Reduces number of people required to perform a lift — fiber slings are up to 90% lighter than other rigging materials, can be easily handled by a single person, stored easily, do not require lubrication or reannealing like wire rope or chains, and will not scratch or mar surfaces that they contact
- Helps reduce injuries to mechanics such as hand punctures, pinching, back strain, etc., caused by heavy metal chains and hooks
- Slings provide a high-performance but low-cost method of lifting loads using vertical, basket, and choker-type hitches.
- Slings provide the most inspectable lifting device by using double layered, contrasting colors and two types of visible "Tell Tail" cords to indicate damage.
- Added protection can be gained by using a 140-7742 Protective Sleeve when slings are used in severe applications (made of the same bulked nylon material as the outer tubes).
- Sleeves feature velcro closures for easy installation and removal from slings.

Construction

- Made from two complete and separate slings (cords), combined into one (provides unique back-up system, in case of failure of either cord)
- Inner load carrying cords are constructed of interwoven high performance fibers which provide excellent chemical resistance and have less than 1 percent elongation at working load.
- Separate inner cords are encased in a double-walled fabric tube — inner tube (red) is made of polyester while outer tube (gray) is made of a bulked, abrasion-resistant nylon.
- All slings are labeled with model number, serial number, length, load capacities, and warnings.

Safety

- 140-7738 and 140-7741 Slings meet all applicable national, international, and industry standards, including, but not limited to: ASME B30.9, ANSI 120.74, and Japanese standards.
- 141-0288 and 141-0289 Slings meet all applicable national, international, and industry standards, including, but not limited to: CE Certification and Australian Standards AS4497.1 and AS4497.2.
- Contrasting color coded slings provide extra protection and early warning (if red inner tube or cords are visible, the sling should be immediately removed from service and repaired by manufacturer).
- Two "Tell Tail" cords are used as an indicator of shock or overloading of sling (cords should protrude 13 mm (.5 in) beyond label tag and if shorter, sling should be returned to manufacturer for evaluation).
- A "Fiber Optic Tell Tail" cord is used to determine if inner core fibers are damaged or broken — if light from one end of cord will not shine through to opposite end, the sling is probably damaged and should be returned to manufacturer for evaluation.
- All slings are proof-tested to twice their rated capacity.

Hardware

- A shackle is used to attach hooks, links, chains, or other lifting systems to fabric slings.
- Shackle's extra wide contact area gives increased load distribution to sling fabric and allows sling to achieve up to 100 percent of its rated load lifting capacity.
- A spool keeps the loaded hook centered on the shackle pin and spreads lifting load evenly across pin.
- A link plate allows attachment of two shackles to lifting hook.

Part No.	Description	Length	Width	Vertical	Lifting Capacity	
					Basket	Choker
140-7738 ¹	Fabric Sling	2.4 m (8.0 ft)	100 mm (4.0 in)	9,000 kg (20,000 lb)	18,000 kg (40,000 lb)	7,200 kg (16,000 lb)
141-0288 ²	Fabric Sling	2.4 m (8.0 ft)	100 mm (4.0 in)	9,000 kg (20,000 lb)	18,000 kg (40,000 lb)	7,200 kg (16,000 lb)
140-7741 ¹	Fabric Sling	2.4 m (8.0 ft)	75 mm (3.0 in)	4,500 kg (10,000 lb)	9,000 kg (20,000 lb)	3,600 kg (8,000 lb)
141-0289 ²	Fabric Sling	2.4 m (8.0 ft)	75 mm (3.0 in)	4,500 kg (10,000 lb)	9,000 kg (20,000 lb)	3,600 kg (8,000 lb)
140-7742 ³	Protective Sleeve	600 mm (24.0 in)	250 mm (10.0 in)	—	—	—

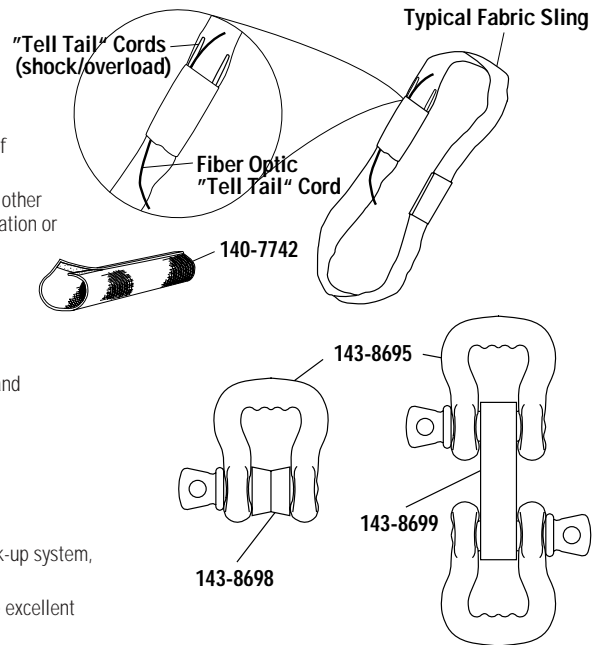
¹For use in all markets except Europe and Australia

²Required for use in Europe and Australia

³Recommended for use with all Fiber Slings

Reference

Special Instruction: REHS0033, 777D Off-Highway Truck; SEHS9980, 793C Off-Highway Truck; SEHS9992, 769D/771D Off-Highway Truck; SEHS9993 773D/775D Off-Highway Truck



143-8695 Shackle (Synthetic Sling Saver)	
Working load limit	18,600 kg (41,000 lb)
Throat width	54 mm (2.1 in)
Outside length	248 mm (9.8 in)
Maximum sling width	114 mm (4.5 in)
Inside depth	146 mm (5.8 in)
Outside width	191 mm (7.5 in)
Pin diameter	38 mm (1.5 in)
Weight	8.5 kg (18.7 lb)
Material	Alloy steel with threaded screw pin

143-8698 Shackle Spool (Synthetic Sling Saver)	
Outside diameter	63.5 mm (2.5 in)
Width	47.8 mm (1.88 in)
Inside diameter	41.4 mm (1.63 in)
Weight	1.3 kg (2.8 lb)
Material	alloy steel

143-8699 Shackle Link Plate (Synthetic Sling Saver)	
Working load limit	18,600 kg (41,000 lb)
Thickness	44.5 mm (1.75 in)
Width	76.2 mm (3.0 in)
Length	177.8 mm (7.0 in)
Hole diameter	41.2 mm (1.62 in)
Distance between holes	95.2 mm (3.75 in)
Weight	4.8 kg (10.6 lb)
Material	alloy steel

Nylon Lifting Slings



WARNING

Inspect sling for damage before each use and remove from service if damaged. Do not overload, cut, or expose to temperatures above 82°C (180°F). Use of damaged sling may result in personal injury.

Part No.	Length	Sling Width	Eye Length	No. of Body Plys	Rated Capacity Choker	Vertical	Basket
Endless Slings (Type V)							
1U-8221	3 ft	1 in	—	1	2,480 lb	3,100 lb	6,200 lb
1U-8222	4 ft	1 in	—	1	2,480 lb	3,100 lb	6,200 lb
1U-8223	6 ft	1 in	—	1	2,480 lb	3,100 lb	6,200 lb
1U-8224	8 ft	1 in	—	1	2,480 lb	3,100 lb	6,200 lb
1U-8225	6 ft	2 in	—	1	4,960 lb	6,200 lb	12,400 lb
1U-8226	8 ft	2 in	—	1	4,960 lb	6,200 lb	12,400 lb
1U-8227	10 ft	2 in	—	1	4,960 lb	6,200 lb	12,400 lb
1U-8228	6 ft	3 in	—	1	7,440 lb	9,300 lb	18,600 lb
1U-8229	8 ft	3 in	—	1	7,440 lb	9,300 lb	18,600 lb
1U-8230	10 ft	3 in	—	1	7,440 lb	9,300 lb	18,600 lb
1U-8231	8 ft	4 in	—	1	9,920 lb	12,400 lb	24,800 lb
1U-8232	10 ft	4 in	—	1	9,920 lb	12,400 lb	24,800 lb
1U-8233	12 ft	4 in	—	1	9,920 lb	12,400 lb	24,800 lb

Part No.	Length	Sling Width	Eye Length	No. of Body Plys	Rated Capacity Choker	Vertical	Basket
Eye and Eye Slings (Type III)							
1U-8234	3 ft	1 in	8 in	1	1,240 lb	1,550 lb	3,100 lb
1U-8235	4 ft	1 in	8 in	1	1,240 lb	1,550 lb	3,100 lb
1U-8236	6 ft	1 in	8 in	1	1,240 lb	1,550 lb	3,100 lb
1U-8237	8 ft	1 in	8 in	1	1,240 lb	1,550 lb	3,100 lb
1U-8238	10 ft	1 in	8 in	1	1,240 lb	1,550 lb	3,100 lb
1U-8239	12 ft	1 in	8 in	1	1,240 lb	1,550 lb	3,100 lb
1U-8240	4 ft	2 in	8 in	1	2,480 lb	3,100 lb	6,220 lb
1U-8241	6 ft	2 in	8 in	1	2,480 lb	3,100 lb	6,220 lb
1U-8242	8 ft	2 in	8 in	1	2,480 lb	3,100 lb	6,220 lb
1U-8243	10 ft	2 in	8 in	1	2,480 lb	3,100 lb	6,220 lb
1U-8244	12 ft	2 in	8 in	1	2,480 lb	3,100 lb	6,220 lb
1U-8245	14 ft	2 in	8 in	1	2,480 lb	3,100 lb	6,220 lb
1U-8256	6 ft	2 in	8 in	2	4,960 lb	6,200 lb	12,400 lb
1U-8257	8 ft	2 in	8 in	2	4,960 lb	6,200 lb	12,400 lb
1U-8258	10 ft	2 in	8 in	2	4,960 lb	6,200 lb	12,400 lb
1U-8259	12 ft	2 in	8 in	2	4,960 lb	6,200 lb	12,400 lb
Eye and Eye Slings (Tapered Eyes) (Type III)¹							
1U-8246	8 ft	3 in	9 in	1	3,720 lb	4,650 lb	9,300 lb
1U-8247	10 ft	3 in	9 in	1	3,720 lb	4,650 lb	9,300 lb
1U-8248	12 ft	3 in	9 in	1	3,720 lb	4,650 lb	9,300 lb
1U-8249	14 ft	3 in	9 in	1	3,720 lb	4,650 lb	9,300 lb
1U-8250	16 ft	3 in	9 in	1	3,720 lb	4,650 lb	9,300 lb
1U-8251	10 ft	4 in	10 in	1	4,960 lb	6,200 lb	12,400 lb
1U-8252	12 ft	4 in	10 in	1	4,960 lb	6,200 lb	12,400 lb
1U-8253	14 ft	4 in	10 in	1	4,960 lb	6,200 lb	12,400 lb
1U-8254	16 ft	4 in	10 in	1	4,960 lb	6,200 lb	12,400 lb
1U-8255	18 ft	4 in	10 in	1	4,960 lb	6,200 lb	12,400 lb
1U-8260	10 ft	3 in	9 in	2	7,440 lb	9,300 lb	18,600 lb
1U-8261	12 ft	3 in	9 in	2	7,440 lb	9,300 lb	18,600 lb
1U-8262	14 ft	3 in	9 in	2	7,440 lb	9,300 lb	18,600 lb
1U-8263	16 ft	3 in	9 in	2	7,440 lb	9,300 lb	18,600 lb

¹ On wider slings, tapered eyes provide a configuration designed for easier use with chain hooks.

Columbus McKinnon “Herc-Alloy 800” Chain

- Manufactured from special alloy steels and engineered for superior combinations of strength, lightness, and durability—qualities that give the “Herc-Alloy 800” system higher working load limits and longer life than conventional alloy chain products, and make it easier to handle
- Embossed approximately every 10 inches with the make (CM) and grade (HA-800) appearing alternately



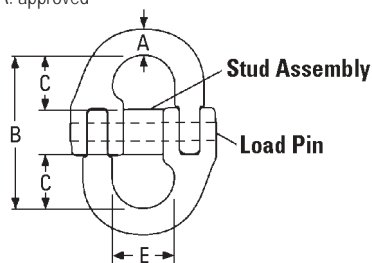
WARNING

Serious damage to a chain may occur when a force exceeding the maximum working load limit is applied to a chain or chain assembly. These maximum working load limits are not to be exceeded.

Description	Cat Part No.	Chain Size	Max. Working Load
Lifting Chain			
500 ft Drum	1U-9808	9/32 in	3,500 lb
500 ft Drum	1U-9806	3/8 in	7,100 lb
141 ft 5 gal Pail	4C-6938	9/32 in	3,500 lb
63 ft 5 gal. Pail	4C-6939	3/8 in	7,100 lb
40 ft 5 gal Pail	4C-6940	1/2 in	12,000 lb

Coupling Links

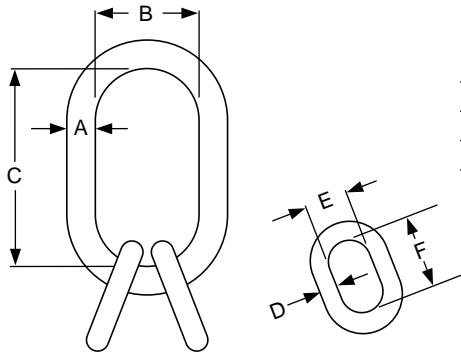
- Dependable and easy to use for fast assembly on the job, for attaching chain to master links and eye type hooks and for installing new body chain in old slings
- C.V.S.A. approved



Chain Size (inch)	Working Load Limit (lbs)	Part No.	A (inch)	B (inch)	C (inch)	E ¹ (inch)	Max. Width	Diameter hole to accept male leg
9/32	3,500	1U-9805	5/16	1 13/16	5/8	1/2	1 11/16	35/64
3/8	7,100	1U-9804	1/2	2 13/32	53/64	3/4	2 7/32	47/64
1/2	12,000	1U-9803	11/16	3 3/8	1 7/32	1	3 1/8	59/64
3/4	28,300	4C-3579	15/16	4 25/32	1 51/64	1 1/2	4 5/16	1 1/4
1	47,700	4C-3580	1 1/4	5 3/4	2 3/16	2	6 3/16	1 9/16

¹ Diameter of stock of largest master link intended to be used with Hammerlok

Master Link Sub-Assemblies

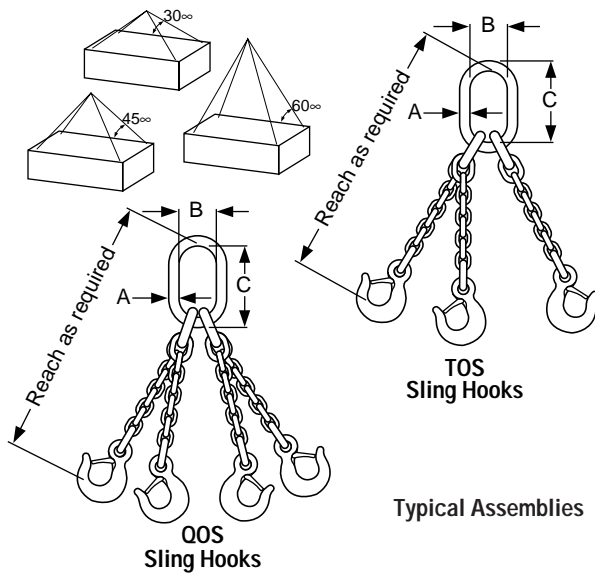


Chain Size (inch)	Working Load Limit (lbs)			Master Link Sub-Assembly Number	Dimensions (inches)		
	60°	45°	30°		Diameter Material A	Inside Width B	Inside Length C
9/32	9,100	7,400	5,200	4C-3576	3/4	2 3/4	5 1/2
3/8	18,400	15,100	10,600	4C-3577	1	3 1/2	7
1/2	31,200	25,500	18,000	4C-3578	1 1/4	4 3/8	8 3/4

Alloy Eye Hooks - Grab



Chain Size (inch)	Part No.	Max. Working Load Limit (lbs)
1/4	4C-3581	3,500
5/16	1U-9883	4,500
3/8	1U-9884	7,100
1/2	1U-9799	12,000

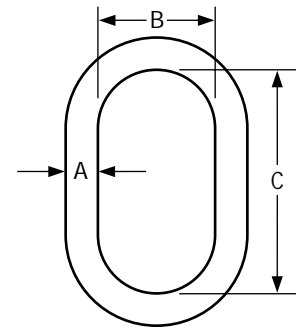


Information to Make Triple and Quad Chain Sling Type

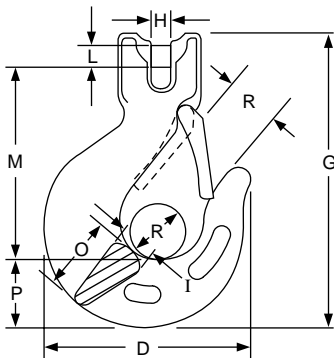
SAFETY NOTE: A quad branch chain sling usually does not sustain loads with even distribution to its four branches, especially when loads are of rigid structure. Therefore, maximum working load limits are set at the same values as for triple branch chain slings of equal quality and size and used with branches at the same angle of inclination.

Part No.	Working Load limit (lbs)	Link Size (inches)			Type and size of chain sling on which used			
		Diameter Material A	Inside Width B	Inside Length C	Single Type S and C	Double Type D	Triple Type T	Quad Type Q
4C-3573	6,100	1/2	2 1/2	5	9/32	9/32	7/32	7/32
4C-3574	12,300	3/4	2 3/4	5 1/2	3/8	3/8	9/32	9/32
4C-3575	20,800	1	3 1/2	7	1/2 or 5/8	1/2	3/8	3/8

Oblong Master Link



Clevlok Sling Hook with Latch

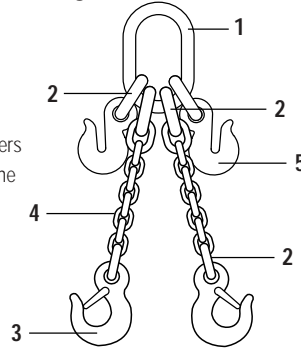


Chain Size (inch)	Working Load Limit (lbs)	Part No.	Dimensions (inches)								Replacement Latch Kit	
			D	G	H	I	L	M	O	P		R
9/32	3,500	1U-9795	3.500	5.156	.328	.734	.357	3.437	1.203	1.051	1.062	1U-9798
3/8	7,100	1U-9794	4.343	6.672	.453	.953	.507	4.468	1.453	1.281	1.312	1U-9797
1/2	12,000	1U-9793	5.500	8.000	.593	1.172	.625	5.265	1.938	1.656	1.562	1U-9796

FT2741 Lift Chain Assembly

SMCS Code: 1017-010
 Model: Skid-Steer Loaders
 Warranty: None

- Used to remove and install complete engine assembly in all skid-steer loaders
- Allows quick, efficient service of engine
- Designed with correctly sized chain and hooks to lift total engine weight including hydraulic pumps
- Made from high-quality, heat treated steel components
- Made from off-the-shelf parts

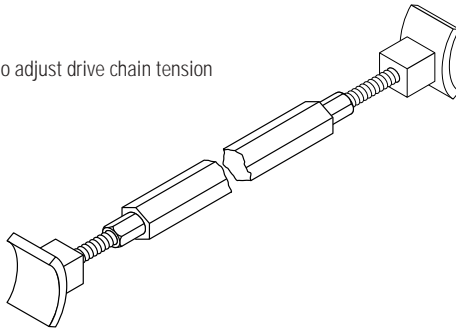


Item	Part No.	Description	Quantity
1	4C-3573	Master Link	1
2	1U-9805	Link	6
3	1U-9795	Hook	2
4	4C-6938	Chain, 762 mm (30.0 in)	2
5	4C-3581	Grab Hook	2

159-3337 Chain Adjuster

SMCS Code: 3261-025, 4208, 3260
 Model: 216, 226, 228, 236, 246, 248, 252, and 262 Skid Steer Loaders
Essential Tool

- Used to adjust drive chain tension



Lifting Eye Bolts

- Use these strong, high quality lifting eyebolts throughout the shop.
- Constructed from forged steel



Part No.	Thread Size	Vertical Working Load (0 degrees)
1P-7403	1/4 in-20	181 kg (398 lbs)
1P-7404	5/16 in-18	308 kg (677 lbs)
1P-7405	3/8 in-16	453 kg (996 lbs)
1P-7406	7/16 in-14	625 kg (1375 lbs)
1P-7407	1/2 in-13	834 kg (1834 lbs)
2D-1201	5/8 in-11	1333 kg (2932 lbs)
1P-7409	3/4 in-10	1968 kg (4329 lbs)
3L-9168 (shoulder)	3/4 in-10	1968 kg (4329 lbs)
9M-4021 (shoulder)	1 in-8	3574 kg (7862 lbs)
9U-6489 (shoulder)	2 in-12	14740 kg (32428 lbs)

Metric Eyebolts

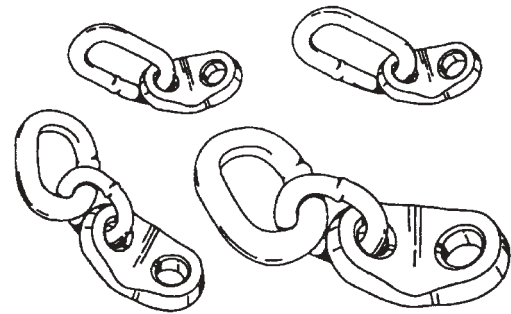
- Can be used to lift components within their working load range

Part No.	Thread Size	Rated Working Load (Metric Tons)
3E-3882	M8 x 1.25-6G	.16 ton (352 lbs)
4C-8358	M10 x 1.5-6G	.25 ton (550 lbs)
4C-8359	M12 x 1.75-6G	.40 ton (880 lbs)
3E-3879	M16 x 2-6G	.63 ton (1386 lbs)
188-1456	M16 x 2-6G	.63 ton (1386 lbs)
3E-3880	M20 x 2.5-6G	1.0 ton (2200 lbs)
3E-3881	M24 x 3-6G	1.6 ton (3520 lbs)
9U-5986	M30 x 3.5	2.5 ton(5500 lbs)
125-0962	M36 x 4	4.0 ton (8800 lbs)
125-0964	M42 x 4.5	6.3 ton (13,860 lbs)
9U-5887	M48 x 5	8 ton (17,600 lbs)
3E-3878	M64 x 6	16 ton (35,200 lbs)

Link Brackets

SMCS Code: 7063-017, 7063-010, 0632
 Model: 5000 Series Mining Excavators and General Usage

- Used to remove or install large components such as excavator swing gears (provides acceptable method of attaching hoist to component)
- 9U-6502 Link Bracket is used specifically to remove and install swing gear and bearing assembly on 5130 and 5230 Mining Excavators
- All link brackets meet ANSI Standards for lifting devices.
- Bolts directly onto swing bearing/gear or other component (always use Grade 8 bolts to attach link bracket to component)
- Requires less clearance than standard eye bolt and makes placement/alignment of swing gear/bearing much faster and simpler
- Used for any general purpose lifting where bracket can be attached to component
- These link brackets are 100% proof tested at two times the working load limit. They comply with the requirements of ANSI/ASME B30.9-1984 as noted on the Certificate of Proof Test contained with each piece.



Part No.	Bolt Size	Working Load Limit	Minimum Bolt Torque
163-6455	36 mm	5448 kg (12,000 lbs)	2700 N-m (2000 lb ft)
138-7576	30 mm (1 1/4 in)	4000 kg (9000 lbs)	1300 N-m (1300 lb ft)
138-7574	(3/4 in)	4000 kg (9000 lbs)	360 N-m (265 lb ft)
138-7575	(1/2 in)	1800 kg (4000 lbs)	95 N-m (70 lb ft)
138-7573	(3/8 in)	1000 kg (2250 lbs)	43 N-m (32 lb ft)

Reference

SEHS9721 Special Instruction, Assembly Procedure for Hydraulic Excavator (5130 only)

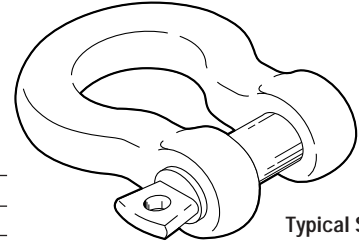
Lifting Shackles

Model: All Models
Warranty: Manufacturer's

NOTE: Be sure to read and understand the limited warranty that covers this product during the first 12 months following transfer of title to the purchaser. The manufacturer reserves the choice to repair, replace, or refund the purchase price of any product they determine to be defective.

- Used for a variety of lifting applications
- Assorted sizes and capacities for multiple shop or field uses
- Forged, quenched, and tempered
- Each shackle includes an alloy steel screw-pin to secure loads
- Working load limit is permanently imprinted on every shackle
- CE compliant

Working Load Limits	
189-0408 Shackle (2 ton)	1,814 kg (4,000 lbs)
189-0409 Shackle (3.25 ton)	2,948 kg (6,500 lbs)
189-0410 Shackle (4.75 ton)	4,309 kg (9,500 lbs)
189-0411 Shackle (8.5 ton)	7,711 kg (17,000 lbs)
189-0412 Shackle (9.5 ton)	8,618 kg (19,000 lbs)



Typical Shackle

Working Load Limits	
189-0863 Shackle (12 ton)	10,886 kg (24,000 lbs)
193-5474 Shackle (55 ton)	49,895 kg (110,000 lbs)

4C-3049 Tow Strap 4C-3050 Tow Strap

Part No.	Strap Width	Length	Ply	Breaking Strength	Hook Size
4C-3049	2 in	20 ft	Single	19,600 lb	3/8 in
4C-3050	2 in	25 ft	2	39,200 lb	1/2 in

- Ability to take shock — the stretching of the tow strap allows a cushion against sudden shock. When loaded at rated capacity, a nylon strap will stretch 6-8%. They will return to normal length when not loaded.
- Lightweight — tow straps are lightweight, tough, woven nylon which withstands grease, water and multiple folding.
- Flexible — tow strap flexibility makes handling in cold weather a snap.
- Storage — coiling and storing in vehicle or tool box is simple and easy.
- Alloy hooks — tow strap's alloy hooks are an integral part of the strap.



Jacks

“Bottle-type” Portable Hydraulic Jacks, 8 Ton and 12 Ton

Portable Hydraulic Jack, 50 Ton

Portable Hydraulic Jacks, 20 and 30 Ton

Warranty: Manufacturer's

- Designed for construction, industrial and agricultural jobs — lifting, pushing, bending and straightening

8T-5255 (8 Ton) and 1U-9754 (12 Ton)

- Centered pump and ram for balance and easy positioning
- Ribbed base adds extra strength.
- Pre-tapped bases accept pressure gauges.
- Hydraulic bypass circuit prevents ram overtravel.
- May be operated horizontally
- Extension screw allows low pickup height adjustment.
- Repairable

1U-9757 (50 Ton)

- Two speed raise, speed to contact and power to lift
- May be operated horizontally
- Heat treated lifting head adds durability.
- Tapped base accommodates gauges.
- Automatic valve prevents overloading.
- Repairable

1U-9755 (20 Ton) and 1U-9756 (30 Ton)

- May be operated horizontally
- Countersunk release valve prevents damage of unintentional load release.
- Tapped, solid machined steel base accepts hydraulic pressure gauge. Ideal for work requiring accurate pressure readings.
- Hydraulic bypass circuit prevents ram overtravel.
- Repairable



Part No.	Capacity	Height (Closed)	Max. Height	Power Raise	Base Size
8T-5255	7257 kg (16,000 lb)	23 cm (9 in)	49 cm (19 1/2 in)	16 cm (6 1/4 in)	4 1/2 in x 6 7/8 in
1U-9754	10 886 kg (24,000 lb)	23 cm (9 in)	45 cm (17 3/4 in)	14 cm (5 1/2 in)	4 3/4 in x 7 1/2 in
1U-9755	18 144 kg (40,000 lb)	27 cm (10 3/4 in)	47 cm (18 1/2 in)	20 cm (7 3/4 in)	5 1/2 in x 7 in
1U-9756	27 215 kg (60,000 lb)	28 cm (11 in)	45 cm (17 3/4 in)	17 cm (6 3/4 in)	7 7/8 in x 6 1/2 in
1U-9757	45 359 kg (100,000 lb)	30 cm (12 in)	48 cm (19 in)	18 cm (7 in)	9 5/8 in x 8 in

Rol-Toe Jack with Load Return

Warranty: Manufacturer's

- Ideal for rigging applications and for lifting off-center and eccentric loads
- Also used for lifting heavy machinery having low minimum jacking clearances.
- Roller bearing design eliminates scoring. Roller bearing behind toe transmits eccentric loading pressure to flat-milled post, preventing scoring of interfacing surfaces.
- Hydraulic stroke-limiting device prevents overtravel of roller.
- Grooved toe helps prevent load slippage.
- Safety by-pass mechanism prevents over-loading.

Cat Part No.	Max. Capacity	Closed Height	Lift	Eff. Area (in ²)	Operating Pressure at Capacity	Overall Base Size	Min. Height	Toe Dimensions	
								Min. Width	Weight
1U-9315	9071 kg (10 ton)	30 cm (11 3/4 in)	15.2 cm (6 in)	3.98	5025 psi	20.3 x 24 cm (8 in x 9 1/2 in)	5 cm (2 in)	7.6 cm (3 in)	24.5 kg (54 lb)
1U-9316	22,680 kg (25 ton)	35 cm (13 11/16 in)	16.35 cm (6 7/16 in)	8.30	6027 psi	24 x 30.5 cm (9 1/2 in x 12 in)	7.14 cm (2 3/16 in)	11.50 cm (4 1/2 in)	59 kg (130 lb)



Mechanical Screw Jacks, 20 and 24 Ton

Warranty: Manufacturer's

- To make leveling work easier, as well as exact, the floating cap on the screw jacks reduce operating friction by 88% over jacks not using this principle.
- A non-flattening, single chrome-moly ball gives the cap 9° float, to automatically level and center load forces.
- Floating cap construction also increases safety, by reducing the possibility of load twist-out. To prevent load slippage, the load cap is serrated.
- No maintenance is required. Housings are of malleable iron to prevent breakage, and are flared at the base to help assure stability.
- Safety peep hole lets you visually inspect the screw position, reducing the possibility of over extension.
- These screw jacks have long been accepted as reliable tools. Their sturdy, simple design provides safe support for machinery, general rigging, and construction applications.



Cat Part No.	Sustaining Capacity	Closed Height	Operable Rise	Effort per Ton	Handle Base Diameter	Weight	Optional Lever Bar ¹	Lever Bar Length
20 Ton Series								
1U-9324	18,144 kg (20 ton)	30 cm (11 3/4 in)	13 cm (5 in)	6.8 kg (15 lb)	15 cm (6 in)	7.7 kg (17 lb)	4C-4037	91 cm (36 in)
1U-9325	18,144 kg (20 ton)	35 cm (13 3/4 in)	18 cm (7 in)	6.8 kg (15 lb)	16 cm (6 1/2 in)	9 kg (20 lb)	4C-4037	91 cm (36 in)
24 Ton Series								
1U-9326	21,722 kg (24 ton)	33 cm (13 in)	11 cm (4 1/4 in)	6.8 kg (15 lb)	16 cm (6 1/2 in)	12.7 kg (28 lb)	4C-4038	1 m (42 in)
1U-9327	21,722 kg (24 ton)	43 cm (17 in)	21 cm (8 1/4 in)	6.8 kg (15 lb)	18 cm (7 1/4 in)	16.8 kg (37 lb)	4C-4038	1 m (42 in)
1U-9328	21,722 kg (24 ton)	58 cm (23 in)	36 cm (14 1/4 in)	6.8 kg (15 lb)	22 cm (8 1/2 in)	23.6 kg (52 lb)	4C-4038	1 m (42 in)

¹ Lever Bar not included as part of screw jack; see Steel Lever Bar chart.

Mechanical Ratchet Lever Jacks, 5 and 10 Ton

Warranty: Manufacturer's

5 Ton Series for lowest minimum heights

- Especially suited for moving machinery and for lifting or skidding mine and construction equipment
- Minimum toe height is 1 3/4 inch on all types of loads. Safety speed trigger lets you trip jack instantly when not under load.

10 Ton Series for fast, height lifting

- Designed for use with oil and drilling equipment, mining machinery, road building equipment, railroad bolster, and coupler repairs
- Minimum toe heights range from 1 3/4 inch to 2 inch, with strokes from 9 1/2 inch to 12 inch. Minimum cap heights from 17 inch to 20 1/2 inch.
- 1U-9322 has a lightweight aluminum alloy housing (weighing just 42 lbs total) for maximum mobility. Malleable-iron cap and large grooved lifting toe (2 1/4 inch x 3 1/4 inch) give added safety on all types of loads.
- Housings for other models are of malleable iron and include safety speed trigger for tripping jack when not under load.



Cat Part No.	Supplier No.	Capacity	Stroke	Effort per Ton	Handle Capacity Height	Min. Toe Min.	Base Size	Wt.	Optional Lever Bar ¹	Lever Bar Length
5 Ton Series										
1U-9318	01040	4536 kg (5 ton)	18 cm (7 in)	76 lb	36 cm (14 in)	1 3/4 in	5 in x 7 3/8 in (36 cm)	28 lb	4C-4034	91 cm (36 in)
1U-9319	01080	4536 kg (5 ton)	25 cm (10 in)	74 lb	43 cm (17 in)	1 3/4 in	5 in x 7 3/8 in	30 lb	4C-4034	91 cm (36 in)
1U-9320	01330	4536 kg (5 ton)	33 cm (13 in)	73 lb	51 cm (20 in)	1 3/4 in	5 in x 7 3/8 in	35 lb	4C-4034	91 cm (36 in)
10 Ton Series										
1U-9321	01200	9071 kg (10 ton)	24 cm (9 1/2 in)	30 lb	43 cm (17 in)	1 3/4 in	6 in x 8 3/4 in	40 lb	4C-4035	1.5 m (60 in)
1U-9322	01230	9071 kg (10 ton)	30 cm (12 in)	30 lb	52 cm (20 1/2 in)	2 in	6 1/2 in x 10 1/4 in	42 lb	4C-4035	1.5 m (60 in)

¹ Lever Bar not included as part of Mechanical Ratchet Lever Jacks; see Steel Lever Bar chart.

1U-9323 Ratchet Lever Jack, 20 Ton

Warranty: Manufacturer's

- For easier lifting of heavy loads
- Provides needed lifting capacity for repairing equipment used in heavy construction applications
- Can also be used in pairs in place of an overhead crane to load heavy machinery and equipment
- Easy lifting (just 34 lbs handle effort per ton) makes this jack exceptionally suited to both light and heavy applications.
- Minimum toe height is 57 mm (2 1/4 in), with 457 mm (18 in) stroke.
- Minimum cap height is 718 mm (28 1/4 in).

Cat Part No.	Capacity	Stroke	Handle Effort per Ton	Capacity Min. Height	Toe Min.	Base Size	Wt.	Optional Lever Bar ¹	Lever Bar Length
1U-9323	18,144 kg (20 ton)	46 cm (18 in)	34 lb	72 cm (28 1/4 in)	2 1/4 in	8 in x 11 in	104 lb	4C-4036	1.8 m (72 in)

¹Lever Bar not included as part of Ratchet Lever Jack; see Steel Lever Bar chart.



1U-9330 and 1U-9331 Mechanical Ratcheting Screw Jacks

Warranty: Manufacturer's

- 35 and 50 ton capacity
- Low profile for fast lifting, support and exact leveling of heavy loads
- The original journal jacks by Templeton, Kenly and Co., are used widely in all industries where powerful, all-position jacks are required.
- Beveled-gear construction combines the best principles of ratchet and screw jacks to give fast lifting and exact leveling of heavy loads, with minimal amount of handle effort per ton.
- The low minimum height of these "Superjacks" makes them ideal for low clearance loads.
- Equipped with a fully-enclosed ratchet mechanism, aluminum housings
- Can be lubricated through grease plug, without removing the base



Cat Part No.	Capacity	Stroke	Handle Effort per Ton	Min. Height	Base Dia.	Weight	Optional Lever Bar ¹	Lever Bar Length
1U-9330	31 752 kg (35 ton)	13 cm (5 in)	3 kg (6 lb)	26 cm (10 1/4 in)	147 mm (5 1/2 in)	14.5 kg (32 lb)	4C-4034	914.4 mm (36 in)
1U-9331	45 360 kg (50 ton)	10 cm (4 in)	1.8 kg (4 lb)	26 cm (10 5/16 in)	184 mm (7 1/4 in)	27 kg (59 lb)	4C-4039	1422 mm (56 in)

¹Lever Bar not included as part of Mechanical Ratcheting Screw Jacks; see Steel Lever Bar chart.

Steel Lever Bars (ordered separately)

Warranty: Manufacturer's

Cat Part No.	Length	Weight	For use with:
4C-4037	915 mm (36 in)	3 kg (6 lbs)	1U-9324 — 20 ton Jack 1U-9325 — 20 ton Jack
4C-4038	1067 mm (42 in)	5.5 kg (12 lbs)	1U-9326 — 24 ton Jack 1U-9327 — 24 ton Jack 1U-9328 — 24 ton Jack

Cat Part No.	Length	Weight	For use with:
4C-4034	915 mm (36 in)	3.6 kg (8 lbs)	1U-9318 — 5 ton Jack 1U-9319 — 5 ton Jack 1U-9320 — 5 ton Jack 1U-9330 — 35 ton Jack
4C-4035	152 mm (6 in)	7.7 kg (17 lbs)	1U-9321 — 10 ton Jack 1U-9322 — 10 ton Jack

Cat Part No.	Length	Weight	For use with:
4C-4036	1829 mm (72 in)	9 kg (20 lbs)	1U-9323 — 20 ton Jack
4C-4039	1422 mm (56 in)	4.5 kg (10 lbs)	1U-9331 — 50 ton Jack

1U-9744 Hydraulic Service Jack, 2 Ton

1U-9745 Air/Manual Hydraulic Service Jack, 10 Ton

Warranty: Manufacturer's

1U-9744 Hydraulic Service Jack, 2 Ton Capacity

- Removable handle for easy transportation and compact storage
- Flanged and ribbed sideplates
- Long handle for less lifting effort
- Full swivel rear casters and large lifting cap for handling ease
- Hydraulic unit is sealed to keep out grit, grime and moisture.
- Automatic valve prevents overloading.
- Chassis longer and wider to provide superior stability
- Picks up lower — raises higher to add value to your investment
- Adjusts to more models and gives you more working room
- Lifting cap totally behind center-line of axle for safety and stability
- In-line pump assembly and cast-iron handle socket permit direct alignment of pump with handle. No off-center forces.
- Fully repairable

1U-9745 Air/Manual Hydraulic Service Jack, 10 Ton Capacity

- Operates manually or with air
- Patented "Speed Pak" eliminates handle pumping — the air does the work.
- Loads moved into position hydraulically.
- Air hose may be disconnected for other uses.



Part No.	Capacity	Low Pickup Height	High Lifting Point	Cap Size	Handle Length	Chassis Length	Chassis Height (Max.)	Wheel (Dia.)	Min. PSI For Rated Load
1U-9744	1814 kg (4000 lb)	10 cm (3 3/4 in)	51 cm (20 in)	16 cm (6 1/8 in)	127 cm (50 in)	67 cm (26 1/2 in)	17 cm (6 3/4 in)	3 3/4 inch Front 2 1/2 inch Caster	—
1U-9745	9072 kg (20,000 lb)	14 cm (5 7/8 in)	64 cm (25 in)	19 cm (7 1/2 in)	127 cm (50 in)	136 cm (53 3/8 in)	25 cm (9 3/4 in)	—	140

4C-4093 Jack with Dual Forks, 5 Ton

Warranty: Manufacturer's

- Versatile lifting capability — easy lifting for lift trucks, machines or racks
- Easy maneuverability — simply roll the jack under the load and within a few strokes of the pump you are ready to change tires, put rollers in place, etc.
- Dependable/durable — jack is built tough to stay tough. Because of its solid welded construction, you can count on dependable and surefooted lifting for many years to come.

Part No.	Capacity	Lifting Min.	Lifting Max.	Lifting Pad Depth	Jack Length	Jack Width	Jack Height	Jack Height w/Handle	Wheels (steel)	Weight
4C-4093	4536 kg (5 ton) 10,000 lb	8 cm (3 in)	40 cm (15 1/2 in)	15 cm (6 in)	48 cm (19 in)	47 cm (18 1/2 in)	67 cm (26 1/2 in)	1 m (40 in)	10 cm (4 in)	50 kg (110 lb)



1U-9749 Hydraulic High Lift Transmission Jack, 1/4 Ton

1U-9751 Hydraulic Transmission Jack, 1/2 Ton

Warranty: Manufacturer's

1U-9749 Hydraulic High Lift Transmission Jack, 1/4 Ton Capacity

- Four adjustable load support arms
- Aligns splines and bolt holes. Adjustable to .030 inch or less
- Foot operated pump and release leaves operator's hands free.
- Wide base provides stability; four full swivel ball bearing casters.

1U-9751 Hydraulic Transmission Jack, 1/2 Ton Capacity

- Four adjustable load support arms swivel to fit around all transmission pan flanges.
- Aligns splines and bolt holes. Easily adjust to .030 inch or less.
- Double pump handle allows jack to be operated from either side.
- Lifting head tilts 60° forward, 18° backward, 12° sideways (right or left).
- Release valve easily accessible for sensitive load lowering
- Four full swivel ball bearing casters allow easy maneuvering, positioning.
- Wide support base provides stability.



Part No.	Capacity	Low Pickup Height	High Lifting Point	Lifting Head Size Max	Chassis Length (Max.)	Chassis Width (Max.)	Forward Tilt	Backward Tilt	Sideways Tilt
1U-9749	500 lb	38 in	76 1/2 in	15 1/2 in x 15 1/2 in	38 in	38 in	80°	18°	10° R and L
1U-9751	1000 lb	5 1/2 in	27 7/8 in	15 1/2 in x 15 1/2 in	33 in	20 in	60°	18°	12° R and L

1U-9753 Hydraulic Transmission Jack, 1 Ton

Warranty: Manufacturer's

- Smooth hydraulic operating permits precise positioning.
- Double pump handle allows jack operation from either side.
- Easily accessible release valve facilitates sensitive load lowering.
- Automatic valve prevents overloading.



Part No.	Capacity	Low Pickup Height	High Lifting Point	Lifting Head (Sq.)	Overall Length	Overall Width	Overall Height	Forward Tilt	Backward Tilt	Sideways Tilt
1U-9753	2000 lb	7 1/2 in	36 in	10 in	50 1/2 in	29 1/2 in	10 in	10°	10°	10°

1U-7505 Mobile Low Lift Transmission Jack, 2,000 lb.

Warranty: Manufacturer's (Warranty: G — Transmissions Adapters and Mountings)

- The transmission jack and equipment will be direct shipped from Owatana Tool Company.
- Permits easy one-man transmission removal and replacement
- Ideal for handling other assemblies too
- Wide-spaced ball-bearing swivel casters provide exceptional stability and mobility.
- Versatile "AdjustaGrip" mounting arms feature five-point adjustment, permitting attachment to any unit.
- Attachment chains furnished
- Flow control valve slows descent of load.
- Three-point screw adjustment allows precise tilting of saddle — essential for proper aligning of transmission with engine.
- Saddle rotates 360° for easily servicing transmission after removal from vehicle
- Worldwide reputation for dependability/reliability
- Includes four 1U-7558 mounting arms

Weight	297 lb
Lifting Range	10 in — 36 in

Transmissions Adapters and Mountings			
Part No.	Description	Weight	Usage
1U-7506	Transmission Adapter Kit	10 1/4 lbs	—
1U-7558	Transmission Mounting Arm	4 lbs	—



4C-4089 Transmission Jack, 1.5 Ton

Warranty: Manufacturer's

- Super low clearance—platform can be lowered all the way to the floor.
- Smooth rolling — loads move easily on 4 inch heavy duty caster wheels.
- Convenient hydraulic control — handle can be operated from rear or either side.
- Stable lifting platform — 21 inch wide pivots provide extra stability.
- Precise tilt control — adjusts platform in four different directions.
- Wide base — 31 inch wide base provides stable support for heavy, bulky loads.
- Detachable handle — allows easy movement without limiting access in tight spots.
- Adjustable cradles — adapt to different shapes and sizes providing improved stability.

Capacity	1.5 ton (3,000 lb)
Lift minimum	3 1/2 in
Lift maximum	40 in
Pad clearance (width)	23 1/4 in
Side tilt	9°
Front and rear tilt	25°
Four steel wheel casters	4 in
Frame length	45 in
Frame width	31 in
Frame height	14 1/2 in
Weight	295 lb



4C-4090 Drive Train Handler Accessory

Warranty: Manufacturer's

- Accessory from Meyer Hydraulics that adds even more versatility to the transmission jack
- Attaches to the top of the transmission jack platform to steady the "difficult-to-handle" components
- The wide lifting platform on the transmission jack is ideal for handling:
 - Drive shafts
 - Transfer cases
 - Rear differentials
 - Entire axle assemblies



5P-3050 Crankcase and Transmission Guard Jack

- The 5P-3050 Jack Group can be used for easy removal and installation of crankcase and transmission guards on any Caterpillar vehicle.
- Attaches directly to the guard at three support points. When the expandable arm and hook assemblies are detached, the table can be used to support smaller guards.
- Also designed to allow relocation of the arm and hook assemblies or attachment of fabricated adapters for other applications.

Maximum capacity:	
0-4 inch lift	2600 lb
4 inch to maximum lift	4000 lb (2 ton)
Overall Dimensions	51 in x 24 in
Dimensions, maximum — minimum:	
Table height	27.5 in — 8.8 in
Hook height	56.0 in — 20.5 in
Width between hooks	52.0 in — 30.0 in
Length between supports	36.0 in — 27.0 in

Item	Part No.	Description
1	5P-3047	6 inch Swivel Caster (two), 2 inch wide
2	5P-3048 5P-3049	6 inch Rigid Caster (two), 2 inch wide Jack Repair Kit (available separately)
3		Capacity Decal SEHS7448



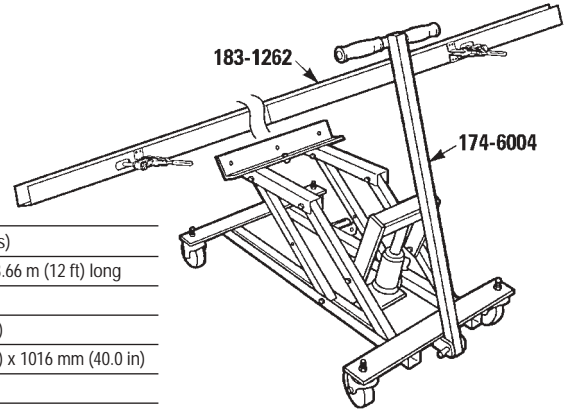
174-6004 Blade Lift Jack (Blade Master)

183-1262 Extension Tube

Model: All products with cutting edges
Warranty: Manufacturer's

- Used to replace cutting edges on front, wing, and underbody blades in less time and with far less effort
- One person can move heavy, awkward cutting edges and comfortably raise them into position.
- The 183-1262 Extension Tube (sold separately) allows the 174-6004 Blade Lift Jack to handle up to 3.7 m (12 ft) blades with great stability.

Maximum carrying capacity	113.5 kg (250 lbs)
Blade carrying capacity	0.92 m (3 ft) to 3.66 m (12 ft) long
Minimum cradle height	133 mm (5.3 in)
Maximum lifting height	483 mm (19.0 in)
Overall size	597 mm (23.5 in) x 1016 mm (40.0 in)
Weight	36 kg (80 lbs)



4C-3051 Dual Wheel Dolly

Warranty: Manufacturer's

- Allows one man to remove, transport and replace heavy truck dual wheel and tire assemblies without strain or struggle
- Ruggedly built unit
- Handles wheels weighing up to 1,500 lbs, any tire diameter
- Hydraulic jacking mechanism provides full 5 inch lift; gives serviceman fingertip control when positioning or lowering lifting arms.
- 6 ft. chain provided to hold wheel assembly in place during removal and transport
- Free-rolling swivel casters provide effortless maneuverability.

Capacity	1,500 lb
Floor space	45 in x 41 in
Lift travel	5 in
Tilt adjustment	2°
Front caster diameter	3 1/2 in
Rear caster diameter	4 in
Weight	175 lb



4C-4091 Service Jack, 25 Ton

4C-4092 Three Tube Extension Set

Warranty: Manufacturer's

- Flexible jacking height — from the 9 1/4 inch minimum, the optional 4C-4092 extension tubes allow you to lift 25 ton loads up to 30 1/2 inch high.
- Three tube extension set (4C-4092) — for extra lifting capability.
- Removable hydraulic cylinder — ram and hose detach in seconds to let you pack remarkable lifting power into difficult, hard-to-reach spots while pushing any direction.
- Alloy hardened head and heavy gauge skid plate — years of pounding and dragging over gravel, concrete and asphalt is the kind of routine handling that this jack is built to take.
- Low clearance — jack can burrow into spaces as tight as 9 1/4 inch x 6 inch.
- Plated cylinder and shaft — nickel plating delivers long service on critical components.

Capacity	22 680 kg/25 Tons (50,000 lb)
Width	6 in
Overall length w/handle	5 ft 2 in
Extension screw:	
Adjustment	4 1/4 in
Ram stroke	5 3/4 in
Operator-to-ram (max. distance)	6 ft
Lifting range, minimum — maximum:	
Standard	9 1/4 in — 19 1/4 in
w/single tube added	17 in — 22 1/2 in
w/two tubes added	21 in — 26 1/2 in
w/three tubes added	25 in — 30 1/2 in
Weight	65 lb

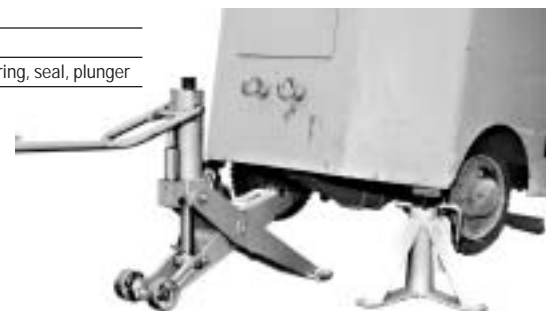


159-3175 Hydraulic Jack

SMCS Code: 7051-029, 7051-076, 7051-077

- Replaces discontinued 5P-2385
- Used for quick, easy lift truck service work
- Low initial height, high lifting capacity, small size and weight
- Can be used in shop or field to lift most lift trucks
- Folding handle (when in closed position allows jack to be carried)
- Handle can be locked in vertical position for moving unit across floor

Service Parts		
Part No	Description	Includes
4C-9482	Seal Kit	7 O-ring, 2 seals
4C-9483	Pump Kit	Pump housing, O-ring, seal, plunger
Capacity	3630 kg (8000 lbs)	
Minimum height	57 mm (2.25 in)	
Maximum lift height	40.6 cm (16.0 in)	
Weight	29 kg (63 lbs)	
Length (folded)	79 cm (31.0 in)	
Width	20 cm (8.0 in)	
Height	15.2 cm (6.0 in)	



Tune-up and Repair Kits for Discontinued Jacks

- Tune-up kits include blades, gaskets, rings, seals, etc.
- Repair kits include clutch parts plus tune-up kit parts

20-Ton Jacks, 1U-6301 and 1U-5981, both discontinued

1U-5980 Pneumatic Oil Pump Tune-up Kit

1U-5979 Jack Repair Kit

50-Ton Jacks, 1U-6303 and 1U-6302, both discontinued

1U-5980 Pneumatic Oil Pump Tune-up Kit

1U-9746 Air Operated End Lift, 1 1/2 Ton

1U-9747 Air Operated End Lift, 2 1/2 Ton

1U-9748 Air Operated End Lift, 7 Ton

Warranty: Manufacturer's

1U-9746 and 1U-9747 Air Operated End Lifts

- Hydraulic damper smooths operation, provides safety restraint if load is suddenly removed.
- Air operation provides effortless lift.
- Two stage air valve permits lifting speed selection.
- Spring loaded front caster permits base to contact ground under load for excellent stability, support.
- V-bar support base provides maximum stability.
- Extra wide saddle spread and 5-position lifting saddles assure maximum load contact.
- 8 inch semi-pneumatic tires provide easy maneuvering.
- Fold-up arms provide compact storage, easy maneuverability in close work areas.
- Multi-position lock prevents unintentional lowering of load.
- Air hose can be disconnected for other uses.



Air Pressure/Load (PSI/lb)		
1U-9746	1U-9747	1U-9748
135/3,000	150/5,000	200/14,000
120/2,600	130/4,350	180/12,500
110/2,300	100/3,350	160/11,000
100/2,100		140/9,500
		120/8,000

1U-9748 Air Operated End Lift, 7 Ton Capacity

- Dual hydraulic dampers smooth operation and provide safety restraint if load is suddenly moved.
- Two stage air valve permits lifting speed selection.
- Heavy duty wide base
- 6 inch spring loaded front caster permits full mobility and realignment of jack any time prior to load contact.
- 10 inch pneumatic rubber rear wheels
- Rotate saddles in 90° increments
- Ten saddle height adjustments;
5 with lifting arms up; 5 with arms down

Part No.	Capacity	Low Pickup Height	High Lifting Point	Power Raise	Saddle Spread	Min PSI for Rated Load	Clearance (Lifting Column to Front of Saddle)
1U-9746	3000 lb	9 in	36 3/4 in	27 3/4 in	19 in — 64 1/2 in	135	14 in
1U-9747	5000 lb	10 in	40 in	30 in	19 1/2 in — 66 in	150	16 in
1U-9748	14,000 lb	13 1/2 in	58 1/2 in	32 1/2 in	29 in — 47 in	200	13 in

Stands

The following vehicle stands are designed for use in pairs and are not sold separately.

180-3032 Stand, 3 Ton

180-3033 Stand, 6 Ton

180-3034 Stand, 10 Ton

Warranty: Manufacturer's

- Designed for use in pairs—not sold separately
- Saddle column provides ratchet action, height adjustment.
- Dual purpose handle serves as carry handle, saddle column release.
- Investment cast rack bar—50% stronger than ductile iron
- 180-3032 and 180-3033 have formed steel frames—tough, rugged construction.
- 180-3034 has rigid structural steel frame—adds strength.

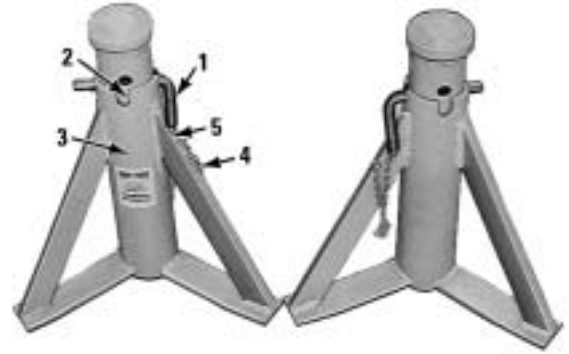


Part No.	Capacity (ton)	Low Height (w/.p pins)	High Height	Height Intervals	Base Size	Cap Size
180-3032	3	279.5 mm (11 in)	450.9 mm (17 3/4 in)	15.87 mm (5/8 in)	178 x 247.7 mm (7 in x 9 3/4 in)	25.4 x 127 mm (1 in x 5 in)
180-3033	6	396.9 mm (15 5/8 in)	708.0 mm (24 7/8 in)	19.05 mm (3/4 in)	254 x 317.5 mm (10 in x 12 1/2 in)	35 x 149 mm (1 3/8 in x 5 7/8 in)
180-3034	10	508 mm (20 in)	771.5 mm (30 3/8 in)	19.05 mm (3/4 in)	370.02 x 384.18 mm (12 7/8 in x 15 1/8 in)	35 x 149 mm (1 3/8 in x 5 7/8 in)

5P-6215 Stand

- Designed for use in pairs — not sold separately
- For blocking under D3 Tractors and 931 Track-type Loaders
- Can support up to 5 ton (10,000 lbs) each
- Adjustable from 368 mm (14.50 in) to 533 mm (21.00 in) in increments of 12.7 mm (.50 in)
- A positive pin lock furnishes support for the load

Item	Part No.	Description
1	1U-9583	Pin
2	5P-6216	Tube Assembly
3	5P-6228	Stand Assembly
4	5P-0149	Chain
5	4B-4161	Screw



1U-7498 and 1U-7499 Heavy-Duty Support Stands, 12 Ton

- Designed for use in pairs — not sold separately
- Features a spun steel base which won't dig or sink into asphalt or sand

Part No.	OTC No.	Description	Capacity	Weight	Reach
1U-7498	1778	"Low Boy" Stand	12 ton	15 kg (32 1/2 lb)	483 mm — 750 mm (19 in — 29 1/2 in)
1U-7499	1779	"High Boy" Stand	12 ton	18 kg (40 1/2 lb)	857 mm — 1124 mm (33 3/4 in — 44 1/4 in)

NOTE: Order numbers are for individual stands. Customers desiring a pair of stands must order two.

Extension Tubes				
Part No.	OTC No.	Description	Weight	
1U-7500	52507	For 1U-7499 "High Boy"	7.3 kg (16 lb)	
1U-7501	52508	For 1U-7498 "Low Boy"	3.9 kg (8 1/2 lb)	



Cat Lift Stands, 25, 55 and 100 Ton

Lift and support your largest equipment with these reliable lift stands designed by Caterpillar and tested to 3 times rated capacity.

- Sold individually but it is recommend they be purchased in pairs
- Infinitely variable blocking range
- Rolls easily on smooth, hard surface — simple to move with a fork lift truck or on attached 5 inch wheels
- Rugged construction of steel plate and tubing. Critical parts are heat treated for durability.
- Hydraulic system has 115/230 VAC single phase 50/60 Hz motor.
- Hydraulic system, 4C-5809, powers two stands at the same time for uniform lifting and lowering.
- Tested to 3 times rated capacity
 - exceeds requirements of ASME/ANSI PALD-4C-1991
 - exceeds requirements of Australia Standard AS 2538-1985
- Combines lifting and supporting functions
- Shipped assembled with 20 ft. hose — ready to use
- Completely self storing
- "Flip Over" saddle to match saddle to load point
- Velocity fuse valve prevents sudden dropping of load if pressure loss occurs.

Cat Lift Stands (pictured in pairs, back to front)			
Item	Part No.	Description	
1	9U-7489	Lift Stand, 100 Ton	
2	9U-7536	Lift Stand, 55 Ton	
3	9U-7540	Lift Stand, 25 Ton	
4	4C-5809	Hydraulic Pump with 4C-5749 Dolly	

Part No.	9U-7489	9U-7536	9U-7540
Rated capacity:			
kg	90,800	49,940	22,700
ton	100	55	25
Minimum height:			
mm	634	660	597
inches	25.87	26.0	23.5
Maximum Height:			
mm	1600	1613	1626
inches	62.97	63.5	64.0
Usable stroke:			
mm	241	318	286
inches	9.5	12.5	11.25
kPa	66,798	68,590	66,830
PSI	9695	9955	9700
Cylinder effective area:			
square cm	133	71	33
square inches	20.63	11.05	5.15
Approximate weight:			
kg	390	277	151
lbs	860	610	332
Base contact area:			
square cm	898	898	898
square inches	139.2	139.2	139.2



Reference

- NEHP5586 Lift Stand Brochure
- NEHS0603 Lift Stand Tool Operating Manual
- NEHS0602 Pump Tool Operating Manual

Tube Stands

- Used to lift and block track-type or rubber tired vehicles within their specified capacities
- Can also be used with the 9S-0019 Tractor Lifts for blocking after the lifts have raised the tractor
- The chart lists the proper selection of tools that will provide a lifting range from 12.75 inch to 83.75 inch. The lifting capacity is 20 ton for each stand and 25 ton for each cylinder and base combination. Using a suitable hydraulic pump with these tools, it is possible to lift and block most vehicles in about five minutes.
- Hydraulic pumps that will efficiently operate these tools must have a maximum output pressure of 69,000 kPa (10,000 PSI).



Item	Part No.	Description	Lifting Only Tool Height		Blocking Only Tool Height		Lifting and Blocking Tool Height		
			12.75 in— 27.50 in	20.25 in— 35.00 in	19.50 in— 30.50 in	29.50 in— 40.00 in	33.50 in— 54.25 in	48.00 in— 68.75 in	63.00 in— 83.75 in
1	8S-7641	Tube							1
2	4C-6486	Stand NEEG2453 Warning Decal NEEG2001 Cat Logo Decal			1		1	1	1
3	8S-7631	Tube						1	
4	8S-7640	Stand NEEG2025 Warning Decal			1				
5	8S-7621	Tube						1	
6	8S-7620	Base Assembly		1					
7	8S-7610	Base Assembly	1						
8	8S-7611	Tube			1	1			
9	8S-7650	Cylinder	1 ²	1 ²			1 ³	1 ³	1 ³
10	8S-7625	Collar					1	1	1
11	8S-8048	Saddle			1 ⁴	1 ⁴	1 ⁴	1 ⁴	1 ⁴
12	8S-7615	Pin			1	1	2	2	2
13	8S-7645	Hose Group	1 ¹	1 ¹					
(not shown)	1S-8937	Valve, Needle				1	1	1	
(not shown)	4C-6562	Pin Assembly (used with 4C-6486 Stand)							

¹ Hose (8S-7645) required if two cylinders are used with one pump.

² Lifting capacity of 8S-7650 Cylinder used with the 8S-7620 or 8S-7610 Base Assembly is 25 ton (50,000 lbs at 10,000 psi).

³ Lifting capacity of 8S-7650 Cylinder with offset 8S-7640 Stand is 20 ton (40,000 lbs at 10,000 psi).

⁴ Saddle (8S-8048) is used for lifting against convex surfaces.

Specifications for all Pumps for Use on Double and Single Acting Hydraulic Cylinders (8S-7650)

Electric Operated Pumps										
Part No.	Voltage	Line Frequency	Reservoir Capacity	Motor HP	Maximum Pressure PSI	Oil Delivery (cu. in./min.)				Control Valve
						100 PSI	1000 PSI	5000 PSI	10,000 PSI	
2P-5550	115	50-60	0.45 gal.	1/2	10,000					
2P-5500	230	50-60	0.45 gal.	1/2	10,000	170	32	25	18	3-position
1U-7520	115	50-60	2.0 gal.	1/2	10,000					4-Way
3S-6224	115	50-60	2.0 gal.	1 1/8	10,000					Manual
8S-8033	230	50-60	2.0 gal.	1 1/8	10,000	650	80	70	55	
1U-5555	115	60	2.0 gal.	1 1/2	10,000					
1U-5565	230	50	2.0 gal.	1 1/2	10,000	425	45	45	45	4-Way
4C-5080	230	60	2.0 gal.	1 1/2	10,000	425	45	45	45	Solenoid
Air Operated Pumps										
Part No.	Air Requirement	Reservoir Capacity	Motor HP	Maximum Pressure PSI	Oil Delivery (cu. in./min.)				Control Valve	
					0 PSI	5000 PSI	10,000 PSI			
1U-7522	50 C.F.M. at 80 psi	2.0 gal.	3	10,000	465	50	25		3-Position, 4-Way	
Hand Pumps										
Pump Part No.	Reservoir Capacity	Maximum Pressure at 1st Stage and 2nd Stage	Volume Per Stroke	Control Valve	For Use With:					
1U-7544	140 cu. in.	1st Stage, 300 psi 2nd Stage, 10,000 psi	2.35 cu. in. .147 cu. in.	Built in 2-way	Single Acting Rams					
1U-5230	55 cu. in.	10,000 psi	.160 cu. in.		Single Acting Rams					

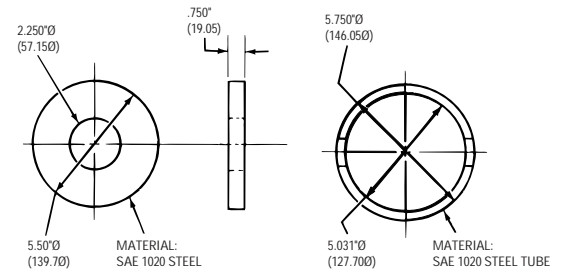
FT0890 Tube Holder

- Used to safely store and move the tubes for the 4C-6489 and the 8S-7640 Jackstands
- Fabricate an FT0890 Tube Holder and attach it to the 8S-9901 Tool Cart.



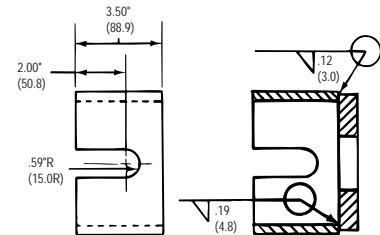
FT1292 Tube Cap

- Can be fabricated according to the dimensions shown
- Aid in supporting the rear of D9 Tractors and 594 Pipelayers when the machines are lifted and supported for components and reconditioning
- Used only with the 8S-7611 and 8S-7612 Tubes and the correct stand as shown. Position the stand so the bosses, on the bottom of the steering clutch case, will fit in hole (A) of the FT1292 Tube Caps. This will help hold the machine in a stable position while service work is being performed.



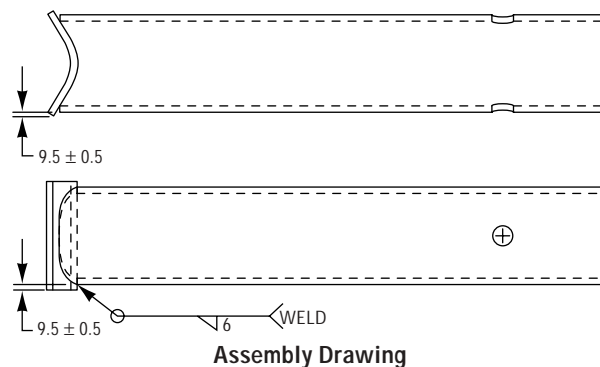
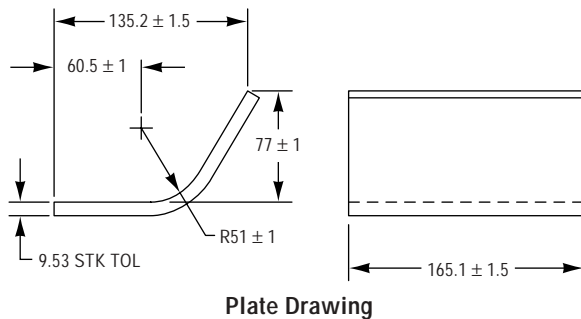
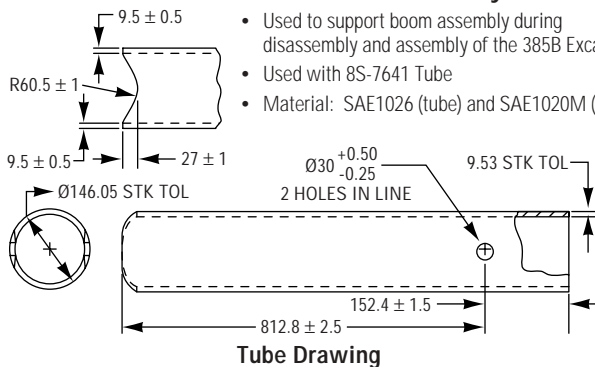
FT1603 Tube Cap

- Fitted to the 8S-7630 Stand
- Used to raise the upper frame when removing or installing the undercarriage on 225 Excavators, 51Y-2035-Up, 61X1-Up and 76Y-1200-Up
- The lower boom cylinder brackets on the later machines have a flat surface which accommodates the FT1603 Cap.



FT2823 Tube Assembly

- Used to support boom assembly during disassembly and assembly of the 385B Excavator
- Used with 8S-7641 Tube
- Material: SAE1026 (tube) and SAE1020M (plate)

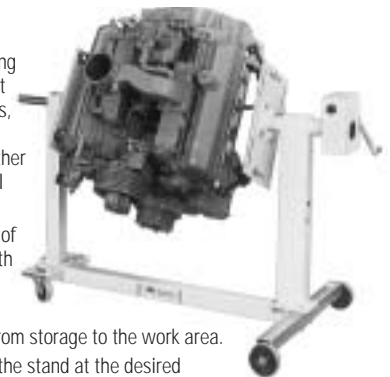


Reference

385B Excavator, Machine System Disassembly and Assembly

1U-7502 Heavy Duty Repair Stand, 2,000 lb.

- Adjustable universal mounting arms (4) enable you to mount an endless variety of engines, transmissions, torque converters, rear axles and other components, without special adapters being necessary.
- Gearbox allows full rotation of mounted unit for service, with just a turn of the crank—locks in position.
- Can be easily maneuvered from storage to the work area.
- Locking rear wheels anchor the stand at the desired work locations.
- Weight: 280 lbs



178-8906 Transmission Bracket

SMCS Code: 3400-017
Model: 950 Wheel Loader

- Used to mount constant mesh countershaft transmissions
- Used with 1U-7502 Heavy Duty Repair Stand, 2,000 lbs
- Transmission can be rotated 180 degrees for complete disassembly and repair



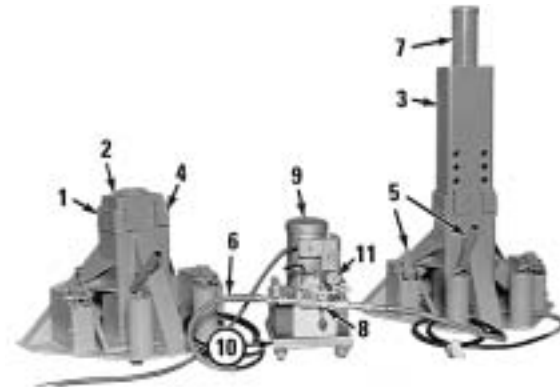
1U-7506 Transmission Adapter Kit

- Complete with mounting hardware for use on 1U-9352 and 1U-7502 Engine Stands
- Converts your engine stand into a transmission service stand in a matter of minutes
- Replaces the adjustable arms of the stand to hold and position the transmission for repair or overhaul
- The transmission is held at workbench height with three sides fully exposed for working convenience; and it can be rotated a full 360° for complete access to all parts.
- Weight: 10 lbs, 4 oz.

75-Ton Jack Stand

Warranty: Manufacturer's

- The 75 Ton Jack Stand arrangement should be used in pairs for vertical lift and support of larger tractors, off-highway trucks, loaders and excavators.
- The ability of this device is to lift a vehicle and give positive support at the same point for repair. This eliminates the frequent problem of finding suitable jacking points close to the final support points.
- The rated capacity of each stand is 75 ton. Support range is from 23 to 60 inches.
- The 1U-9980 Base has a 25 in x 38 in floor plate for stability. The center of the vertical column is 8 inch from the closest edge to allow location close to the track or wheels.
- The 1U-9981 and 1U-9982 Extensions lock in 2 1/2 inch increments with 2 visible double pins, providing positive retention.
- The 4C-5801 Yoke and Handle, with wheels and casters, assures easy mobility and placement under the vehicle.
- Needle valves control lift and lowering speeds of each cylinder.
- Special valves prevent a sudden drop if pressure fails.
- A pump retractor valve hastens the return of the unloaded cylinder.
- A pressure gauge placed in the line can indicate load on each jack. This can help prevent vehicle damage due to jacking force. The area of the 75 ton jack cylinder piston is 15,904 square inches.
- The jack stands can be used in remote locations in an emergency. The vehicle hydraulic system or a hand pump can power the jack in many instances.



Item	Part No.	Description	Quantity
1	1U-9980	Base Assembly	2
(not shown)	4C-5898	Nipple	2
(not visible)	4C-5808	Hyd. Cylinder	2
2	1U-9981	Short Extension	2
3	1U-9982	Long Extension	2
(not shown)	4C-9925	Mid-Range Extension	
4	1U-9983	Locking Pin Assembly	4
5	4C-5801	Yoke and Handle Assembly	2
6	9U-5227	Hose Group	2
7	1U-9984	Spacer Group	2
8	4C-5806	Tee Conn. Group	1
9	4C-5809	Hyd. Pump	1
10	4C-5749	Pump Dolly	1
11	8T-0820	Pressure Gauge	1
(not shown)	7J-8611	Street El	1

Jack Stand Specifications	
Capacity	75 Tons each
Maximum operating pressure	10,000 PSI
Height range:	
Short extension	584.2 mm to 914.4 mm (23 in to 36 in)
Long extension	965.2 mm to 1270.0 mm (38 in to 50 in)
Auxiliary extension	1270.0 mm to 1524.0 mm (50 in to 60 in)
Jack cylinder stroke	330 mm (13 in)
Positive locking range	317.5 mm (12.5 in)
Weight:	
Base	158 kg (348 lb)
Short Extension	54 kg (119 lb)
Long Extension	101 kg (223 lb)
Auxiliary Extension	0.63 kg (19 lb)
Base Dimensions	635 mm x 965.2 mm (25 in x 38 in)
4C-5809 Hydraulic Pump Specifications	
Motor Size	2 hp
Flow	380 cu. in./min. from 0 to 1500 psi, 65 cu. in./min. from 1500 psi to 10,000 psi
Reservoir Capacity	5 gallons
Voltage	Single Phase 115/230 Volts 11 Amp @ 230 Volts

The picture shows stands in the shortest and tallest configuration connected in parallel to the 4C-5809 Pump Group. Order component groups to make up the jackstand arrangements. Quantities shown are for the suggested basic arrangement for the large track-type tractors.

Suggested basic arrangement includes two base assemblies, each with a short and long extension to provide a range for 23 to 60 inches. Select short or long extensions for additional Base Assemblies according to expected applications.

Note that one 4C-5809 Pump Group powers two jackstands at once. Quick disconnect couplings and a pump dolly allow easy moving between pairs of jackstands with the same pump. User can also connect a single jackstand hose at the pump outlet coupling. Jacking speed will double.

Reference

SEHS9185 Special Instruction

4C-9925 Extension for 75-Ton Heavy-Duty Jack Stand

Warranty: Manufacturer's

- For use in the Caterpillar Heavy-Duty Jack Stand Arrangement
- Offers mid-range of lifting and support heights between that of the 1U-9981 Extension and the 1U-9982 Extension
- Chart summarizes the ranges of the three extensions which may be selected for use in the 1U-9980 Base Assembly.
- Use spacers from the 1U-9984 Spacer Group if necessary. Place the spacers around the stem under the load cap to give additional height as shown in the chart "Auxiliary Extension" column. Using spacer to extend beyond the lengths indicated reduces lateral stability at the stem, and is not recommended. If a greater maximum height is needed, contact Caterpillar Service Technology Group.

Part No.	Retracted Height	Extended Height	Auxiliary Extension	Max. Pinned Height
1U-9981	584 mm (23 in)	914 mm (36 in)	—	911 mm (36 in)
4C-9925	838mm (33 in)	1156 mm (45.5 in)	127 mm (5 in)	1283 mm (50.5 in)
1U-9982	953 mm (37.5 in)	1270 mm (50 in)	254 mm (10 in)	1524 mm (60 in)

Approximate Jack Point Heights for Typical Applications			
Model	Front Jack Point Height	Rear Jack Point Height	Measurement Location
D10N Tractor	1016 mm (40 in)	660 mm (26 in)	At frame front and at pivot shaft.
789 Truck	1143 mm (45 in)	1321 mm (52 in)	At collar pads and at rear body struts.



WARNING

The auxiliary extension item for the 1U-9982 Extension is 15.87 inch long while that for the 4C-9925 Extension is 11.38 inch long. DO NOT INTERCHANGE THEM.

9U-5227 Hose Group for 75-Ton Jack Stand

Warranty: Manufacturer's

- Used for connecting the service pump to the hydraulic cylinder in the 75 Ton Jack Stand
- Features a longer hose assembly and a bleeder valve assembly
- The 20 ft long 9U-5227 Hose Assembly allows the serviceman to operate the jack stand from a greater distance. This feature is especially beneficial when lifting the larger off-highway trucks and wheel loaders. The hose is rubber covered which makes it more resistant to high temperature conditions, and sparks that come from metal cutting and grinding operations.
- The 9U-5115 Bleeder Valve Assembly was added to enable the flow limit valve to be easily unlocked. The flow limit valve is built into the hose group. Its function is to prevent the jack stand from being accidentally lowered in case a hose is cut or broken. However, the flow limit valve can also be activated if the hydraulic cylinder is allowed to extend to its full length. If that happens, the bleeder valve must momentarily be opened to unlock the flow limit valve before the jack stand can be lowered.
- The 9U-5227 Hose Assembly is also compatible with the 4C-5806 Tee Connection Group. When the connection group is used, two jack stands can be controlled by a single hydraulic service pump.

Service Parts	
Part No	Description
4C-5805	Flow Limit Valve
4C-5807	Tee
4C-5898	Pipe Nipple
1P-2375	Coupling Assembly
9U-5115	Bleeder Assembly
9U-5116	Coupling
9U-5117	Hose Assembly

Vises

Tradesman Vises

Warranty: Manufacturer's

- Replaceable, hardened steel serrated jaw inserts and replaceable pipe jaws
- Precision, machined keyed slide bar
- Stressed parts are made of 60,000 PSI tensile strength ductile iron inserts.
- Built for maximum quality and performance
- Straight line design means no wear on spindle or nut.
- 360° swivel base, double lockdowns
- Side play is eliminated by precision machined slide bar — keyed for precision.
- Fully enclosed design keeps dirt and contaminants out.



Cat Part No.	Jaw Width	Pipe Capacity	Throat Depth	Max. Opening	Shipping Weight	Replacement Jaw Insert Kits	Replacement Pipe Jaw Inserts
188-2143	4 1/2 in	1/4 in-2 1/2 in	3 1/4 in	4 in	42 lb	188-2165	4C-4400
188-2145	5 1/2 in	1/4 in-3 in	3 3/4 in	5 in	53 lb	188-2167	4C-4400
188-2147	6 1/2 in	1/4 in-3 1/2 in	4 in	6 1/2 in	73 lb	188-2170	4C-4400
188-2163	8 in	1/8 in-3 1/2 in	4 3/4 in	7 in	109 lb	188-2171	188-2752

Replacement Parts for Non Current Vises				
Cat Part No.	Wilton Part No.	Jaw Width	Replacement Jaw Insert	Replacement Pipe Jaw Inserts
4C-3741	1740	4 in	4C-4391	4C-4400
4C-3742	1750	5 in	4C-4392	4C-4400
4C-3743	1760	6 in	4C-4393	4C-4400

Machinists' Vises

Warranty: Manufacturer's

- Stressed parts are made of 60,000 PSI tensile strength ductile iron.
- Straight line design guarantees a lifetime spindle and nut.
- Precision slide bar is moveable, maintained with hardened steel key, insuring a .002 mm fit.
- 360° slip proof swivel base—serrated teeth and double lockdowns
- Largest anvil of any machinists' vise

Cat Part No.	Wilton Part No.	Jaw Width	Throat Depth	Max. Opening	Shipping Weight	Replacement Jaw Inserts
4C-3751	350S	3 1/2 in	2 3/4 in	5 1/4 in	46 lb	4C-4397
4C-3752	400S	4 in	3 1/2 in	6 1/2 in	66 lb	4C-4398
4C-3753	450S	4 1/2 in	4 3/16 in	7 1/2 in	73 lb	4C-4394
4C-3754	500S	5 in	4 1/4 in	8 in	97 lb	4C-4399



Combination Pipe and Bench Vises

Warranty: Manufacturer's

- Stressed parts are made of 60,000 PSI tensile strength ductile iron.
- Replaceable hardened steel jaw inserts
- Hardened, replaceable steel pipe jaws
- Alloy steel slide bar

Cat Part No.	Wilton Part No.	Jaw Width	Pipe Capacity	Throat Depth	Max. Opening	Shipping Weight	Replacement Jaw Inserts	Replacement Pipe Jaw Inserts
4C-3744	C-1	4 1/2 in	1/8 in-3 1/2 in	4 3/4 in	6 in	80 lb	4C-4394	4C-4401
4C-3745	C-2	5 in	1/8 in-4 1/2 in	5 5/16 in	7 in	113 lb	4C-4395	4C-4402
4C-3746	C-3	6 in	3/8 in-6 in	6 5/8 in	9 in	209 lb	4C-4396	4C-4403



Model R — Rubber Face Magnefix Jaw Caps

- Aluminum alloy with synthetic rubber cover
- Jaw cap conforms to workpiece and grips firmly without slipping.
- Designed to prevent cushioning during use
- Use in combination with Prism Jaw Caps to clamp taper pins or tapered work-pieces.
- Mar-free
- Jaw caps sold separately



Cat Part No.	Jaw Width	Use with these Vises or any other with same jaw width:
4C-6830	4 in	4C-3741, 4C-3752
4C-6831	4 1/2 in	4C-3753, 4C-3744
4C-6832	5 in	4C-3742, 4C-3754, 4C-3745
4C-6833	6 in	4C-3743, 4C-3746



Model P — Prism Magnefix Jaw Caps

- Jaw construction includes a 120° horizontal Vee-Groove, 3 vertical Vee-Grooves and a 90° groove for marking out and center punching.
- Ideal for light tapping and thread cutting applications
- Capable of clamping a block of material in a vise to be utilized as a surface plate for light duty work
- Jaw caps sold separately



Cat Part No.	Jaw Width	Use with these Vises or any other with same jaw width:
4C-6834	4 in	4C-3741, 4C-3752
4C-6835	4 1/2 in	4C-3753, 4C-3744
4C-6836	5 in	4C-3742, 4C-3754, 4C-3745
4C-6837	6 in	4C-3743, 4C-3746



Jaw Caps

- Designed to avoid marring the surface of softer metals and to protect jaw faces
- Made to fit any size vise
- Polished faces and pliable copper extensions for a sure-grip fit on any make vise

Part No.	Description	Width
4C-3750	Jaw Cap	4 inch
4C-3749	Jaw Cap	4 1/2 inch
4C-3748	Jaw Cap	5 inch
4C-3747	Jaw Cap	6 inch



2P-8338 Holding Fixture

- Mounts on workbench
- Use to secure components during assembly and disassembly
- Capable of holding small transmissions, differentials, hydraulic pumps, water pumps and electrical components

Capacity	250 lb
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Regular Duty, Standard Throat C-Clamps

- Recommended for regular-duty work not requiring unusual throat depth
- Drop forged from specially selected steels
- Light enough for production line use
- Equipped with Wilton Permapads® and lifetime lubricated spindles of through-hardened steel
- Finished in grey enamel

Part No.	Capacity	Throat Depth	Spindle Dia.	Minimum Proof Test	Weight
4C-3755	0 - 2 in	1 13/16 in	9/16 in	2,700 lb	1 3/8 lb
4C-3756	0 - 3 in	1 15/16 in	9/16 in	3,000 lb	1 2/3 lb
4C-3757	0 - 4 in	2 5/16 in	5/8 in	3,700 lb	2 3/4 lb
4C-3758	0 - 6 in	2 15/16 in	5/8 in	4,500 lb	3 3/4 lb
4C-3759	2 in - 8 in	3 7/16 in	3/4 in	5,200 lb	7 lb
4C-3760	1 1/2 in - 10 in	3 3/4 in	3/4 in	6,000 lb	8 3/8 lb
4C-3761	1 1/8 in - 12 in	3 7/8 in	3/4 in	8,000 lb	12 lb



Miscellaneous

9S-0019 Tractor Lift and Cart Arrangement

- Using the Tractor Lifts illustrated, any track-type vehicle can be raised and blocked by two men in 3 to 5 minutes.
- The 9S-0019 Lift and Cart Arrangement consists of four 9S-0027 Lift Assemblies and a 9S-0020 Cart Group.
- Each tractor lift has a curved base 12 inch wide and has 18 inch radius which rolls easily on any concrete floor.
- The 9S-0020 Cart provides a convenient means of transporting the tractor lifts within the shop.

Item	Part No.	Description	Capacity	Quantity
1	9S-0020	Cart Group	—	1
2	9S-0027	Lift Assembly	30 ton	4
3	9S-0026	Wheel	—	2



1U-9724 Columbus-McKinnon Drop Forged Load Binder (overcenter)

1U-9722 and 1U-9723 Columbus-McKinnon Ratchet-Type Binder

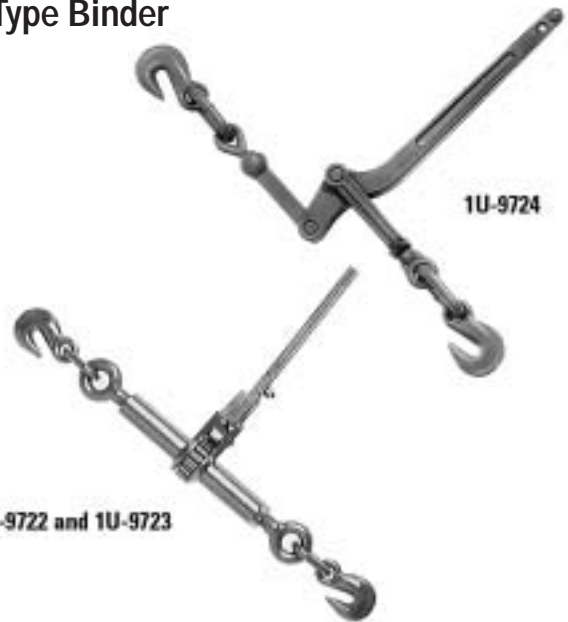
Warranty: Manufacturer's

1U-9724 Columbus-McKinnon Drop Forged Load Binder (overcenter)

- All steel
- Drop forged
- 360° swivel
- Each binder individually proof tested
- Short reach for maximum takeup
- Tie-down hole in handle
- Special manufacturing permits use with transport grade 70 chain.

1U-9722 and 1U-9723 Columbus-McKinnon Ratchet-Type Binder

- All steel
- Heavy-duty
- Short reach for maximum takeup
- Continuous take-up
- Infinite adjustment
- Meets D.O.T. specifications



Cat Part No.	1U-9722	1U-9723	1U-9724
Supplier Part No	D48365	D48366	320105
Type	Ratchet	Ratchet	Overcenter
Working Load Limit (See Warning below)	5400 lb Max.	9200 lb Max.	5400 lb Max.
Chain Size	5/16 inch Grade 70 3/8 inch Grade 43	3/8 inch Grade 70 1/2 inch Grade 43	5/16 inch Grade 70 3/8 inch Grade 43
Takeup	8 in	8 in	4 1/4 in Min.
Net Weight	12 1/2 lb	12 1/4 lb	8 lb

Load Binder Chain Assembly and Accessories			
Cat Part No.	Chain Size	Max. Working Load	Description
1U-9809	3/8 in	5400 lb	Grade 43 Load Binder Chain, 20 ft. long with a grab hook at each end (Not to be used for lifting chain)
4C-6961	5/16 in	4700 lb	Grade 43 Load Binder Chain, 20 ft. long with a grab hook at each end (Not to be used for lifting chain)

WARNING

Serious damage to a chain may occur when a force exceeding the maximum working load limit is applied to a chain assembly. The maximum working load limits are not to be exceeded.

Aluminum Alloy Lever Pullers

Warranty: Manufacturer's

- Aluminum alloy construction for strength and durability
- Hoist alloy hardened steel link type load chain provides strength, long wear life and flexibility.
- Compact, lightweight, simplified construction for ease of use and service
- Weatherized, automatic friction brake for positive load control
- Easy operating — with one hand control
- Forged steel upper and lower hooks
- Steel hook latches are standard.
- Longer replacement chain available

30 ft. Replacement Chain		
Cat Part No.	For Use With:	Chain Size
4C-4459	1U-9199, 1U-9200	1/4 in
4C-4460	1U-9201, 1U-9202, 1U-9203, 1U-9204, 1U-9205	5/16 in



Cat Part No.	Supplier Part No.	Max. Capacity	Standard Lift	Pull on Std. Lever to Lift Full Load	Net Weight	Min. Distance Between Hooks	Lever Length	Hook Throat Openings
1U-9199	4043	3/4 ton	5 ft	58 lb	14 lb	10 3/4 in	21 1/4 in	1 1/32 in
1U-9200	4060	3/4 ton	10 ft	58 lb	20 lb	10 3/4 in	21 1/4 in	1 1/32 in
1U-9201	4045	1 1/2 ton	5 ft	83 lb	24 lb	14 1/4 in	21 1/4 in	1 1/8 in
1U-9202	4062	1 1/2 ton	10 ft	83 lb	30 lb	14 1/4 in	21 1/4 in	1 1/8 in
1U-9203	4047	3 ton	5 ft	95 lb	34 lb	17 in	21 1/4 in	1 7/32 in
1U-9204	4065	3 ton	10 ft	95 lb	65 lb	17 in	21 1/4 in	1 7/32 in
1U-9205	4050	6 ton	5 ft	96 lb	65 lb	21 3/8 in	21 1/4 in	1 3/4 in

8S-9906 Ratchet Puller
5P-9694 Ratchet Puller

8S-9906 Ratchet Puller (used with track tool cart)	
Lifting capacity	1125 lb
Pulling capacity	2000 lb

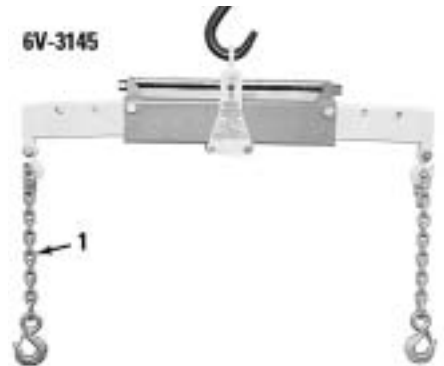
5P-9694 Ratchet Puller	
Single line capacity	1700 lb
Double line capacity	3400 lb



- Used for many pulling operations within their capability
- Capacities are given below.

6V-3145 Load Leveler
6V-6146 Load Leveler

Item	Part No	Description	Use with
1	6V-3144	Chain	6V-3145 and 6V-6146



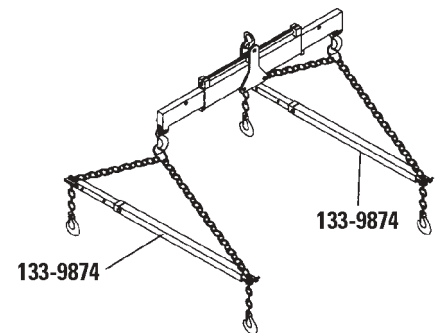
- Provides a much improved design over the conventional spreader bar
- Carriage on the main support beam is moved by turning the lead screw, which permits fine adjustment of the tilt angle of the component being lifted.
- Lead screw can be turned manually or with airpowered tools.
- Spreader bar adjustment is secured with locking bolts.
- Chain grade 80 (ASTM)

Cat Part No.	Maximum Lifting Capacity	Distance Between Hooks Minimum	Distance Between Hooks Maximum	Chain Grade (ASTM)	Weight
6V-3145	6,000 lb	30 in	46 in	80	75 lb
6V-6146	10,000 lb	36 in	56 in	80	95 lb

133-9874 Spreader Bar Assembly

- Requires double chain sling with 1/2 inch chain and 6V-3145 Load Leveler (not supplied with tool)
- Adjustable length from 1067 mm (42.0 in) to 1677 mm (66.0 in) in increments of 76 mm (3.0 in)
- Used with a double sling chain to lift cab vertically at attach points, eliminates side loading
- End pin keeps chain from becoming disengaged when device is being used

Lifting capacity (WLL)	454 kg (1000 lbs)
Adjustable length	1067 mm (42.0 in) to 1677 mm (66.0 in)
Incremental adjustment	76 mm (3.0 in)
Tube size (external)	44.5 mm (1.75 in)
Tube size (internal)	38.1 mm (1.50 in)



6V-4920 Cable Cutter Set

- Will cut cable up to 1 1/16 inch diameter
- Body is heavier and has a larger diameter base for better stability.
- A guard plate covers the cable while it is cut.
- Holes are also provided for attaching the cutter to a work bench.
- Warning and instruction tags are attached to each cable cutter with specific operation and safety instructions.

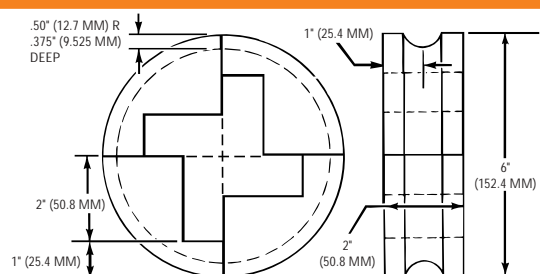
Item	Part No.	Description
1	4B-4158	Screw (two)
2	4F-2383	Pin (Blade to Plunger)
3	6V-6118	Plunger
4	6V-6122	Guard
5	6V-6119	Pin (Plunger Guide)
6	6V-6121	Die Group (two)
7	4F-2384	Blade



FT0600 Cable Saver Blocks

Warranty: None

- Used for cable-lifting any square section item
- Will accommodate any size cable and protect it from damage on sharp corners



Lubricating Equipment

8F-9866 Lever Grease Gun, Model Pro "L"

190-5622 Pistol Grip Grease Gun

- Heavy-duty construction
- Cast iron head equipped with a check valve and an air-bleed valve
- Spring primed
- Two way loading
- Uses standard Cat Grease cartridges (14.5 oz)
- Lever gun will operate with partial lever strokes for use in close quarters.
- Zinc plated
- Cat branded

Item	Part No.	Description
1	190-1668	Coupler
2	190-1669	Hose Assembly, 12 in long
Not shown	190-5623	Hose Assembly, 18 in long (optional)
Maximum operating pressure of assembly 68,948 kPa (10,000 PSI)		



Service Parts for Noncurrent 8F-9866
(This model is not marked Pro "L" and uses the 2M-2689 or 190-1670 Coupler with a check valve.)

Part No.	Description
190-1670	Coupler (valve with steel insert)
2M-2689	Coupler (valve with rubber insert)
9F-2689	Nozzle Assembly
9F-2638	Hose Assembly (part of 9F-2636)
9F-2637	Nipple (part of 9F-2636)

Item	Part No.	Description
1	190-1668	Coupler
2	190-5623	Hose Assembly, 18 in long
Not shown	190-1669	Hose Assembly, 12 in long (optional)
Maximum operating pressure of assembly 31,026 kPa (4,500 PSI)		



Reference
NEHS0793 Tool Operating Manual

194-3560 Grease Gun Group, 12 V

194-3561 Battery, Rechargeable

Warranty: Manufacturer's

- 12 Volt cordless, rechargeable grease gun
- Custom carrying case holds grease gun with battery, battery charger, and two grease cartridges (grease not included).
- 12 Volt motor delivers consistent grease flow up to 41368 kPa (6000 psi).
- Works great in construction and agricultural field conditions
- Provides faster, more effective lubrication (reduces mechanic's fatigue when lubricating large numbers of grease fittings)
- Three-way loading to fit your needs and equipment (suction, filler pump, and cartridge)
- Uses standard 14 ounce cartridges
- Comes with a 76 cm (30.0 in) flex hose with spring guards
- One hour "fast charge" charges batteries quickly; trickle charge keeps batteries fully charged when placed in charger.
- Replacement or additional 194-3561 Batteries can be ordered separately.

Motor	12 Volt
Battery	high-capacity, 12 Volt NiCad
Pressure capacity	41368 kPa (6000 psi)
Charge time	1 hour (110 V, 60 Hz)
Front outlet fitting	7/16 inch UNEF
Filler nipple thread	1/8 inch NPT
Lubricating capacity (under normal conditions)	3 cartridges minimum
Battery capacity	1300 m-A hour
Battery charger	110 Volt



Item	Part No.	Description
1		Grease Gun
2		Battery charger
3		Carrying case
4	194-3561	Rechargeable Battery (Qty. 1)
5	207-2736	Hose Assembly, 762 mm (30 in)

1U-7683 Suction Gun

- Used for removing oil from filter housings and other compartments



1U-7684 Grease Gun Holder

- Mounts on wall or on machinery
- Holds any standard size grease gun



Grease Cartridges

1P-0808 Grease Cartridge

- NLG1 grade 2 grease
- General purpose grease for chassis lubrication as recommended by service manuals and operating instructions

5P-0960 Grease Cartridge

- Multi-purpose lubricant; contains molybdenum disulfide; required in some applications to reduce wear and provide greater load carrying capacity
- Conforms to NLGI No. 2 Grade and military specification MIL-M-7866
- Can be used in place of 1P-0808 General Purpose Lubricant if desired



7H-1680 Lubrication Pump

Warranty: Manufacturer's

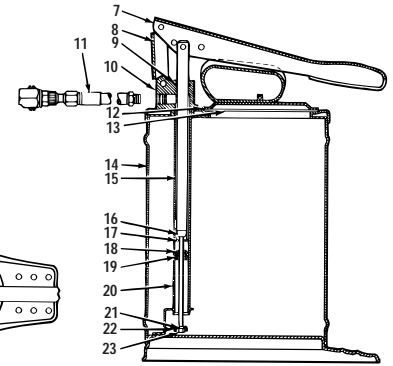
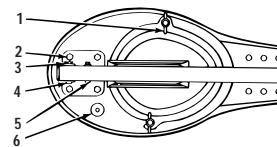
- Used in locations where a large amount of maintenance is performed regularly, such as in a maintenance shop or new machine assembly area
- Pressures corresponding to the pin positions indicated by the arrows can be attained using NLGI#1 Grease at a delivery rate of ten strokes per minute.

Item	Description
1	351 kg/cm ² , (5000 PSI) Pin Position
2	281 kg/cm ² , (4000 PSI) Pin Position
3	175 kg/cm ² , (2500 PSI) Pin Position



Item	Part No.	Description
1	7H-3955	Wing Screw (2)
2	0S-1614	Bolt (4)
3	3B-4607	Cotter Pin (3)
4	7H-3947	Pin (2)
5	7H-3946	Pin
6	7H-3945	Plug
7	7H-3953	Lever
8	7H-3939	Link
9	7H-3938	Quad Ring
10	7H-3954	Pump Body
11	7H-3933	Hose Assembly (optional)
	3B-5050	Hose Assembly (part of 7H-3933)
	7H-2985	Swivel Assembly (part of 7H-3933)
	3F-3915	Coupling Assembly (part of 7H-3933)
	1F-0356	Plunger Assembly (part of 3F-3915)
12	7H-3948	Cover Assembly
13	1F-0414	Gasket

Item	Part No.	Description
14	7H-3941	Shell Assembly
15	7H-3956	Rod and Plunger Assembly
16	7H-3952	Stop Tube
17	7H-3951	Washer
18	7H-3943	Valve
19	7H-3942	Sleeve
20	7H-3944	Tube Assembly
21	7H-3937	Lockwasher
22	7H-3940	Cup
23	1A-8285	Nut



Hydraulic Fitting Kits

- Individual bulk packs
- Ideal for display to customers or for shelf storage
- Feature positive seal with high pressure ball check
- Maximum pressure: 10,000 PSI

Part No.	Type Fitting	Size	Fittings/Package
9U-6773	Straight	1/8 in NPTF	10
9U-6781	30°	1/8 in NPTF	10
9U-6782	65°	1/8 in NPTF	10
9U-6784	90°	1/8 in NPTF	10
9U-6785	Straight	1/4 in NPTF	5

Part No.	Type Fitting	Size	Fittings/Package
9U-6787	45°	1/4 in-28	10
9U-6788	Straight	1/4 in-28	10
9U-6834	45°	1/8 in NPTF	10
9U-6835	90°	1/4 in-28	10

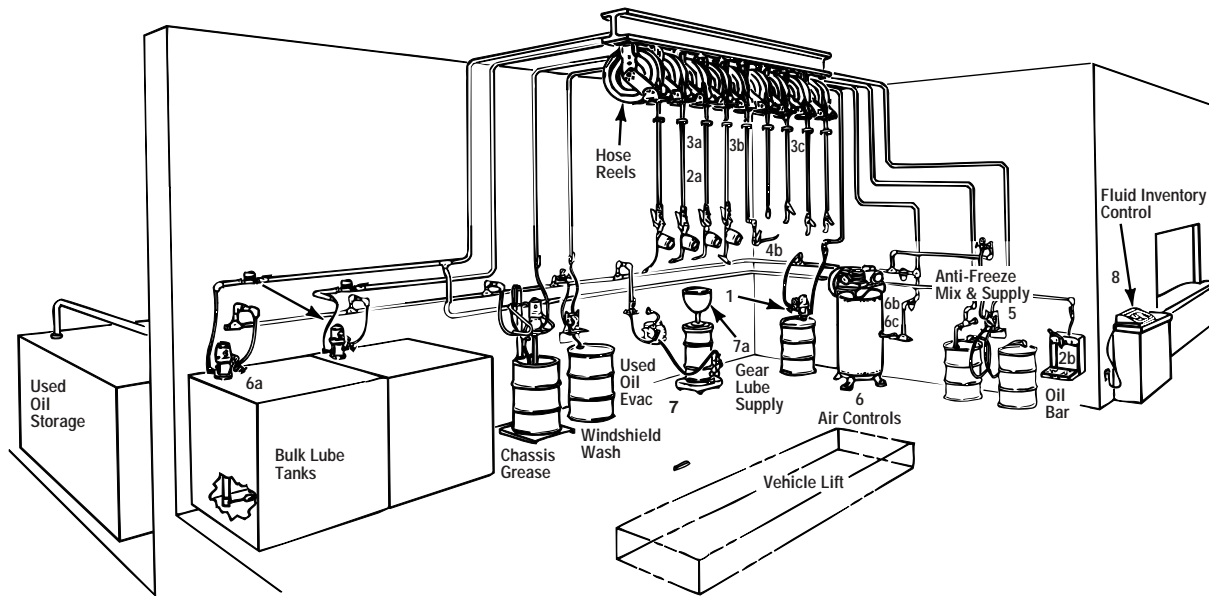
9U-6836 and 9U-6837 Easy-Out Fitting Tools

- All-in-one tool to extract broken fittings, rethread holes, and install new straight and angle-type fittings

Part No.	Description	Use for:
9U-6836	Easy-Out Fitting Tool	Fittings with 1/4 inch-28 Taper Thread
9U-6837	Easy-Out Fitting Tool	Fittings with 1/8 inch Pipe Thread



Typical Lubrication System



Fire-Ball Pump

- Industry leader for lubrication equipment in fast lubes, car dealerships, and medium-sized fleet and equipment service garages
- Quiet
- Provides the power to supply several remote outlets in stationary installations, yet is economical enough for use with portable lubricators
- 7.6 cm (3 in) air motor
- Available in stubby length for wall mounting or various tube lengths to fit containers from 20 to 1100 liters (5 gallon to 275 gallon) and larger

President Pump

- Power leader — top choice in large fleet and mass transit service installations
- 10:1 ratio
- Available in stubby length for wall mounting or various tube lengths to fit containers from 60 to 1100 liters (16 gallon to 275 gallon) and larger
- With a big 10.8 cm (4 1/4 in) air motor, it can supply many outlets for simultaneous use.
- Rugged, industrial design
- Valve-in-piston design—only four moving parts
- Balanced differential design
- Hard-coat aluminum construction
- Nonmetallic poppet air valves
- Open-exhaust porting
- Demand-only operation
- Simple in-line design
- Double acting
- Priming piston (grease only)
- Variable volume
- Adjustable throat packing
- Simple design for continuous use
- Provides uniform power on up and down strokes
- Corrosion-resistant — rust-free for longer working life
- Positive sealing even with contaminated air — provides high air flow
- Continuous operation without icing
- No operational costs while pump holds stalled pressure
- Rigid alignment for withstanding abuse
- Positive pump feed even with heavy greases
- Pump adjusts speed to match system demands
- Proven reliability for long life under demanding operating conditions and infrequent maintenance intervals

Item	Description
1	Oil Supply Pumps, also A.T.F., Gear Lube, and Hydraulic Oil
2a	Oil Valves and Meters
2b	Oil Dispense Bar
3a	Oil Reels
3b	Grease Reels
3c	Air and Water Reels
4a	Grease Pumps
4b	Grease Valve and Swivel
5	Anti-Freeze Supply
6	Air Controls
6a	Regulators
6b	Filters
6c	Lubricators
7	Used Oil Equipment
7a	Drain Funnels
7b	Evac Systems
8	Fluid Inventory Control System
9	Diaphragm Pumps
10	Portable Lube Units

Pump Performance Specifications

	Fast-Ball 1:1	Fire-Ball 5:1	President 10:1
Air motor size	3.6 cm (1.48 in)	7.6 cm (3 in)	10.8 cm (4.25 in)
Continuous duty flow rate	18.92 lpm (5 gpm)	9.56 lpm (2.5 gpm)	25 lpm (3 gpm)
Free flow	37.85 lpm (10 gpm)	22.71 lpm (6 gpm)	28.39 lpm (7.5 gpm)
Maximum fluid pressure	12 bar (180 PSI)	62 bar (900 PSI)	124 bar (1800 PSI)
Maximum air inlet pressure	12 bar (180 PSI)	12 bar (180 PSI)	7 bar (100 PSI)
Air inlet size	1/4 inch npt(f)	3/8 inch npt(f)	1/2 inch npt(f)
Fluid outlet size	3/4 inch npt(f)	1/2 inch npt(f)	3/4 inch npt(f)
Fluid inlet size	1 1/2 inch npt(f)	1 1/2 inch npt(f)	1 1/2 inch npt
Pump type	Double Ball	Double Ball	Double Ball
Stroke length	101.6 mm (4 in)	76.2 mm (3 in)	101.6 mm (4 in)
Air consumption	.042 m ³ /min. (1.5 cfm per gallon)	1.35 m ³ /min. (7.5 cfm per gallon)	6 m ³ /min. (13 cfm per gallon pumped)
Instruction manual	307-906	306-518	306-726
Air Motor Repair Kit	9U-6777	9U-6776	9U-6778

Lubrication Fast-Ball® Drum Pumps

Warranty: Manufacturer's

- 1:1 ratio
- 2.8-12.6 bar (40-180 PSI) air pressure range
- 1/4 inch(f) air inlet
- 3/4 inch(f) fluid outlet
- 15 lpm (5 gpm) maximum delivery

Part No.	Description
4C-7359	Stubby Length Fast-Ball Pump
4C-7379	Drum Length Fast-Ball Pump, 208 liter (55 Gallon) Comes complete with bung adapter for drum mounting
4C-7380	Drum Length Fast-Ball Pump, 275 Gallon (1041 liter) Comes complete with bung adapter for drum mounting
4C-7383	Metered Power-Fil ¹ Consists of Fast-Ball pump (bung mounted) for 208 liter (55 gallon) drum and metered dispense kit
4C-8969	Un-metered Power-Fil ¹ Consists of Fast-Ball pump (bung mounted) for 208 liter (55 gallon) drum and un-metered kit

¹ Power-Fil dispensers include a 0-60 PSI regulator to minimize splashing during dispensing. Power-Fil dispensers fit any workbench tank having a 35 inch height.

Fast-Ball Pump Accessories		
Part No.	Description	Use
4C-8964	Bung Adapter	Allows direct pump mounting into 50.8 mm (2 in) drum bung
4C-7346	60.5 l (16 gal) Suction Tube	Tubes can be used with stubby Fast-Ball to provide pump length to fit specific drum sizes
4C-7348	208 l (55 gal) Suction Tube	
4C-7349	1041 l (275 gal) Suction Tube	
4C-7190	Low Level Cut-Off	Prevents air from entering metered dispense valves by closing pump intake when oil supply is exhausted; has 1 1/2 inch npt(f) connection.
4C-7261	Suction Hose Kit	Consists of tube, hose and fittings; use with wall bracket; for use with 208 liter (55 gallon) drum
4C-7196	Wall Bracket	For wall mounting of stubby Fast-Ball pump
4C-7260	Open Drum Pump Clamp	Allows Fast-Ball pump to be mounted in any open head drum
4C-8962	457.2 mm (18 in) Hose and Fitting Kit	Comes with 6.4 mm (1/4 in) air hose, 19 mm (3/4 in) fluid
4C-8963	183 cm (72 in) Hose and Fitting Kit	Hose and swivel elbow adapter fittings
4C-8851	Air Filter	Prevents pipe scale, rust, etc. from damaging pump. 1/4 inch npt(f)
4C-8852	Air Regulator	Controls air pressure to pump. 0-200 PSI Adjustable range. 1/4 inch npt(f)
4C-8853	Air Lubricator	Adds controlled amount of lubricant to air supply; prolongs pump life. 1/4 inch npt(f)

Stubby Length Fast-Ball Pump



Drum Length Fast-Ball Pump



Metered Power-Fil



Un-metered Power-Fil



4C-7261 Suction Hose Kit

Warranty: Manufacturer's

- Consists of drum tube and hose to allow the use of Fire-Ball 5:1 or President 10:1 "Universal" pumps with barrels
- Kit includes 4C-8905 suction tube.
- Use with 4C-7190 low-level cutoff when metering fluids.
- Includes instruction form



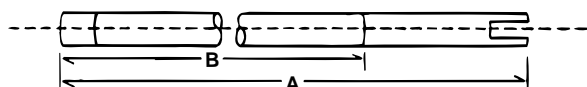
Suction Tube Extension Tubes

Warranty: Manufacturer's

- Used with universal Fire-Ball or President pumps to allow cover or bung mounting

Pump	16 gallon	55 gallon	275 gallon
5:1 Fire-Ball Cover Mtd.	4C-7345	4C-7347	N.A.
5:1 Fire-Ball Bung Mtd. ¹	4C-7346	4C-7348	4C-7349
10:1 President Cover Mtd.	4C-7345	4C-7347	N.A.
10:1 President Bung Mtd. ¹	4C-7346	4C-7348	4C-7249
3:1 President Cover Mtd.	N.A.	4C-7345	N.A.

¹Also order bung adapter.



Tube Extension Tube

Suction Tube Extension Tubes			
Part No. A	Dim. A	Part No. B	Dim. B
4C-7345	16.31 in	4C-9001	46.00 in
4C-7346	19.06 in		
4C-7347	23.81 in		
4C-7348	28.06 in		
4C-7349	38.06 in		
4C-8999	31.81 in		
4C-9000	41.81 in		

4C-8964 Bung Adapter

- Allows direct mounting of 5:1 Fire-Ball and 10:1 President pumps into standard 2 inch drum bung



4C-7190 Low-Level Cutoff

- Use with pumps supplying metered outlets
- Prevents air from entering pump by closing intake when supply is exhausted
- Connection thread: 1 1/2 inch npt(f)
- Can be used with suction hose kit or standard suction tube without changing tube length
- Replaces stand-off of suction tube



Oil Dispense Accessories

Warranty: Manufacturer's

4C-7044 Oil Line Shutoff Valve, 1/2 inch npt(f)

4C-7045 Oil Line Shutoff Valve, 3/8 inch npt(f)

- Shutoff valves for isolation of oil dispense lines
- Use 4C-7044 for branch lines
- Use 4C-7045 for main header lines
- Both valves rated for 138 bar (2000 PSI) working pressure



Oil Line Shutoff Valve

4C-7240 Thermal Relief Kit, 63 bar (900 PSI)

- Used to relieve heat-induced excess pressure from dispense system back to inlet of Fire-Ball and President pumps
- 1 1/2 inch npt(m) x 1 1/2 inch npt(f) porting on inlet adapter allows use on male or female threads.
- Recommended for use with Fluid Commander inventory control systems

4C-7215 Strainer, 60 Mesh

- Has 1/2 inch npt(f) Swivel x 1/2 inch npt(m) ports
- Prevents foreign material from entering dispense lines
- Not for use with grease systems
- 52.5 bar (750 PSI) working pressure

Replacement Elements	
Part No.	Description
4C-8868	40 Mesh
4C-8867	60 Mesh
4C-8866	100 Mesh

Dispense Pump Hose and Fitting Kits

Warranty: Manufacturer's

4C-7361 18 inch Hose and Fitting Kit for 5:1 Fire-Ball

4C-7362 72 inch Hose and Fitting Kit for 5:1 Fire-Ball

- Use 18 inch kit for connecting wall mounted pumps to piping.
- Use 72 inch kit with drum mounted pumps.
- Use 4C-7046 3/8 inch air regulator as required (not included).

Consist		
4C-7361	4C-7362	Description
4C-7208		3/8 inch Air Hose
4C-7102	4C-7102	3/8 inch Swivel Elbow
4C-7337	4C-7334	1/2 inch Fluid Hose
4C-7101	4C-7101	1/2 inch Swivel Elbow
306-520	307-883	Instruction Form

4C-7366 18 inch Hose and Fitting Kit for 10:1 President

4C-7364 72 inch Hose and Fitting Kit for 10:1 President

- Use 18 inch kit for connecting wall mounted pumps to piping.
- Use 72 inch kit with drum mounted pumps.
- Use 4C-7046 3/8 inch air regulator as required (not included).

Consist		
4C-7366	4C-7364	Description
—	4C-7221	1/2 inch Air Hose
4C-7101	4C-7101	1/2 inch Swivel Elbow
4C-7048	4C-7047	3/4 inch Fluid Hose
4C-7145	4C-7145	3/4 inch Swivel Elbow
306-520	307-883	Instruction Form

1/2 inch I.D. — 207 bar (3000 PSI)		
Part No.	Length	Fittings
4C-7340	12 in	1/2 in M x 1/2 in M
4C-7085	15 in	1/2 in M x 1/2 in M
4C-7337	18 in	1/2 in M x 1/2 in M
4C-7339	48 in	1/2 in M x 1/2 in M
4C-7334	72 in	1/2 in M x 1/2 in M
4C-7333	10 ft	1/2 in M x 1/2 in M
4C-7335	16 ft	1/2 in M x 1/2 in M
4C-7336	20 ft	1/2 in M x 1/2 in M
4C-7341	25 ft	1/2 in M x 1/2 in M
4C-7354	50 ft	1/2 in M x 1/2 in M



3/4 inch I.D. — 157.5 bar (2250 PSI)		
Part No.	Length	Fittings
4C-7048	18 in	3/4 in M x 3/4 in M
4C-7047	72 in	3/4 in M x 3/4 in M
4C-9019	10 in	3/4 in M x 3/4 in M
4C-9020	6 ft	3/4 in M x 3/4 in M



Air Operated Oil Pumps — Universal Length

Warranty: Manufacturer's

- Universal Length Dispense Pumps consist of a short "Stubby" length pump with a threaded inlet, allowing the use of a variety of inlet tubes or hoses.
- Can be wall mounted for use with a suction hose kit or add a suction tube to create a drum pump of the length of your choice.
- For cover mounting, add only the appropriate suction tube.
- For bung mounting, add the appropriate suction tube and a bung adapter.

4C-7195 Universal Fire-Ball 5:1

- The pump of choice for most installations
- Pump free flow is approximately 28.5 lpm (7 1/2 gpm) and will deliver 7.6-11.4 lpm (2-3 gpm) under typical operating conditions.
- Includes instruction form 306-518
- Does not include hoses or accessories

Maximum air inlet pressure	12.6 bar (180 PSI)
Air inlet	3/8 inch npt(f)
Fluid outlet	1/2 inch npt(f)
Fluid inlet	1 1/2 inch npt(f)



4C-7228 Universal Air Pump 10:1

- Use this pump for large installations having long dispense lines where low air pressures would otherwise limit pump performance, or for cold weather operation.
- Similar to 5:1 Fire-Ball but uses the President air motor and has a higher ratio
- Pump free flow is approximately 28.5 lpm (7 1/2 gpm) and will deliver 11.4-15.2 lpm (3-4 gpm) under typical operating conditions.
- Includes instruction form 306-726
- Does not include hoses or accessories.

Maximum air inlet pressure	12.6 bar (180 PSI)
Air inlet	1/2 inch npt(f)
Fluid outlet	1 inch npt(f)
Fluid inlet	1 1/2 inch npt(f)



4C-8973 Universal Air Pump 10:1

- Same as 4C-7228 except includes air and fluid hoses
- Use 4C-7033 1/2 inch Air Regulator as required (not included)

Consist	
Part No.	Description
4C-7228	Pump
4C-7366	Hose and Fitting Kit
306-520	Instruction Form

9U-6767 Air-Pump 4:1

- Intended for moderate dispense length installations where filling speed or multiple dispense points is a must
- Pump free flow is approximately 30 lpm (8 gpm).
- Can be wall-mounted or cover-mounted—not for bung mounting
- Order hoses and accessories separately.



Air Operated Oil Pumps — Cover-Mounted

Warranty: Manufacturer's

205 Liter (55 Gallon)
Drum-Length Pumps

9U-6762 Cannon-Ball 3:1

- Designed for direct mounting on 205 liter (55 gallon) open-head product drum
- Includes pump, cover, hose and fitting kit, 3/8 inch air regulator with gauge, shut-off valve, instruction manual



4C-7406 President 10:1

- Pump, cover, inlet and outlet hoses and all hardware needed for direct mounting on 205 liter (55 gallon) open-head product drum
- Order low level cut-off separately for metered dispense systems.
- Use 4C-7033 1/2 inch air regulator as required (not included).

Air Operated Oil Pumps — Bung-Mounted

Warranty: Manufacturer's

205 Liter (55 Gallon)
Drum-Length Pump

4C-7400 Fire-Ball 5:1

4C-7407 President 10:1

- Pumps are both designed for direct bung mounting in 51 mm (2 in) bung in 205 liter (55 gallon) closed-head drums.
- Order low level cut-off separately for metered dispense systems.



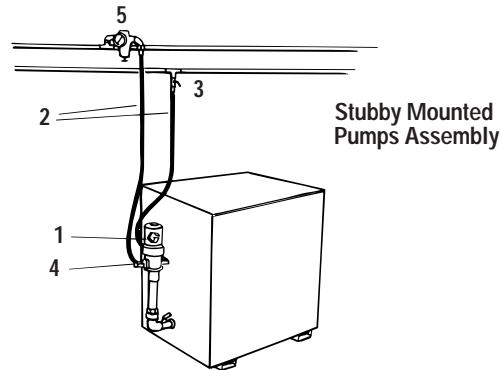
	4C-7400 Fire-Ball 5:1	4C-7407 President 10:1
Pump	4C-7195	4C-7228
Tube	4C-7348	4C-7348
Hose and Fitting Kit	4C-7362	4C-7364
Adapter	4C-8964	4C-8964

Bulk Tank Assembly — Air Operated

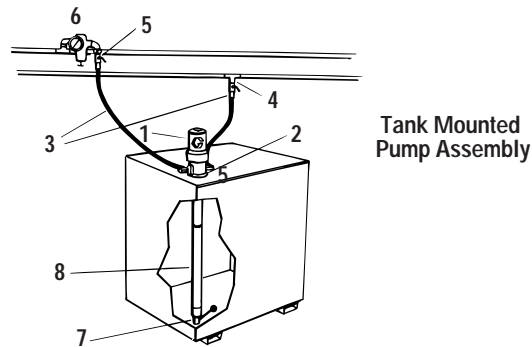
Warranty: Manufacturer's

- Order tanks separately

Stubby Mounted Pump Assembly—use on 120-2,000 gallon tanks		
Item	Part No.	Description
1	4C-7195	Fire-Ball 5:1 pump (Stubby)
2	4C-7362	Air/Fluid Hose Kit — 1.8 m (6 ft)
3	4C-7044	Fluid Shut Off Valve
4	4C-7092	Air Shut Off Valve
5	4C-7046	Air Regulator with Gauge



Tank Mounted Pump Assembly		
Item	Part No.	Description
1	4C-7195	Fire-Ball 5:1 pump (Stubby)
2	4C-8964	Bung Adapter
3	4C-7362	Air/Fluid Hose Kit — 1.8 m (6 ft)
4	4C-7044	Fluid Shut Off Valve
5	4C-7092	Air Shut Off Valve
6	4C-7046	Air Regulator with Gauge
7	4C-7190	Low Level Cut Off
8		Pump Tubes

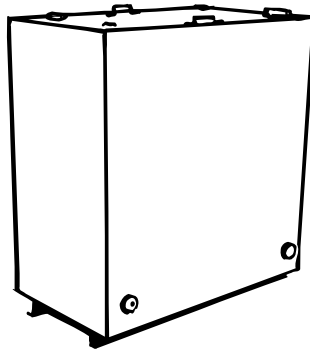


Above Ground Storage Tanks

Availability: NACD
Warranty: Manufacturer's

Multi-purpose tanks for storage of lubricants and used oil. 4 inch welded bottom skids keep the tank bottom off the floor.

- Tanks are painted Cat yellow.
- Locking fill cap
- In-tank level gauge provides a means of inventory control.
- Single and double wall available
- Portable
- Underwriters Laboratory approved
- 3-year manufacturer's warranty
- Call for quote.



Typical U/L Listed Single Wall Bulk Tank				
Capacity				
Gal.	Liter	Length	Width	Height ¹
120	456	2 ft 2 in	2 ft 6 in	3 ft
280	1064	5 ft	2 ft 6 in	3 ft
500	1900	5 ft	2 ft 8 in	5 ft
650	2470	6 ft 6 in	2 ft 8 in	5 ft
1000	3800	10 ft	2 ft 8 in	5 ft
1500	5700	15 ft	2 ft 8 in	5 ft
2000	7600	18 ft	2 ft 6 in	6 ft

¹Add 4 inch for skids.

Typical U/L Listed Double Wall Bulk Tank				
Capacity				
Gal.	Liter	Length	Width	Height ¹
120	456	2 ft 2 in	3 ft 1/2 in	3 ft 4 in
280	1064	5 ft 3 in	3 ft 1/2 in	3 ft 4 in
500	1900	5 ft 3 in	3 ft 2 1/2 in	5 ft 4 in
650	2470	7 ft 3 1/2 in	3 ft	5 ft 4 in
1000	3800	10 ft 9 1/2 in	3 ft	5 ft 4 in
1500	5700	15 ft 9 1/2 in	3 ft	5 ft 4 in
2000	7600	18 ft 9 1/2 in	2 ft 10 in	6 ft 4 in

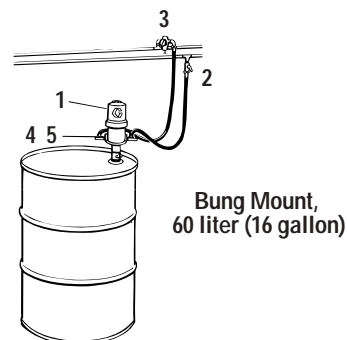
¹Add 1 1/2 inch for skids.

Remote Drum Pump Assemblies — Air Operated

Warranty: Manufacturer's

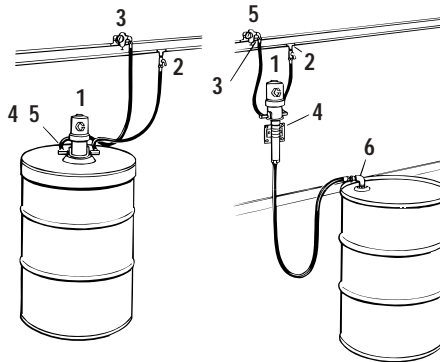
- Drum not included

Bung Mount, 60 liter (16 gallon)		
Item	Part No.	Description
1	4C-7400	Bung Mounted Fire-Ball 5:1 Pump, Bung Adapter, 1.8 m (6 ft) Air and Fluid Hoses with Fittings
2	4C-7044	Fluid Ball Valve
3	4C-7046	Air Regulator
4	4C-8858	Air Quick Disconnect Coupler 3/8 inch(f)
5	4C-7159	Air Quick Disconnect Nipple 3/8 inch(m)



**Drum Cover Mount,
60 liter (16 gallon)**

Drum Cover Mount, 60 liter (16 gallon)		
Item	Part No.	Description
1	4C-7394	Cover Mounted Fire-Ball 5:1 Pump, Drum Cover, 1.8 m (6 ft) Air and Fluid Hoses
2	4C-7044	Fluid Ball Valve
3	4C-7046	Air Regulator with Gauge
4	4C-8858	Air Quick Disconnect Coupler 3/8 inch(f)
5	4C-7159	Air Quick Disconnect Nipple 3/8 inch(m)



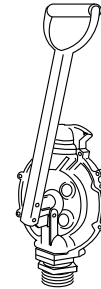
**Wall Mount,
60 liter (16 gallon)**

Wall Mount, 60 liter (16 gallon)		
Item	Part No.	Description
1	4C-7412	Wall Mounted Fire-Ball 5:1 Pump, 457.2 mm (18 in) Air and Fluid Hoses
2	4C-7044	Fluid Ball Valve
3	4C-7046	Air Regulator with Gauge
4	4C-8858	Air Quick Disconnect Coupler 3/8 inch(f)
5	4C-7159	Air Quick Disconnect Nipple 3/8 inch(m)
6	4C-7261	Suction Hose Kit

4C-9710 Hand-Lever Diaphragm Pump

Warranty: Manufacturer's

- 4C-9710 replaces discontinued 4C-9769 Quartstroke Pump
- Double-action, high volume diaphragm pump — transfers approximately 3.7 liters (1 gal) per 9 strokes
- Telescopic suction tube mounts in 2-inch npt bung opening of 60 or 205 liter (16 or 55 gal) drum
- Package includes 1.8 m (6 ft) hose and fitting kit and bung adapter



Pump Mounting Accessories

Warranty: Manufacturer's

4C-7166 400 lb (55 gallon) Drum Cover

- Use with 400 lb (55 gallon) open head drums
- Mounts any Fire-Ball or President lubrication pump
- Use with 4C-7146 Adapter for cover mounting bung pumps



4C-7360 35 lb (5 gallon) Pail Cover

- Use with 35 lb (5 gallon) pails
- Mounts 50:1 Fire-Ball pump using friction type clutch lock
- Allows use of 70 lb length pump with 35 lb pail



4C-7209 120 lb (16 gallon) or 70 lb (10 gallon) Drum Cover

- Use with 120 lb (16 gallon) or 70 lb (10 gallon) open head drums
- Mounts any Fire-Ball or President lubrication pump
- Use with 4C-7146 Adapter for cover mounting bung pumps



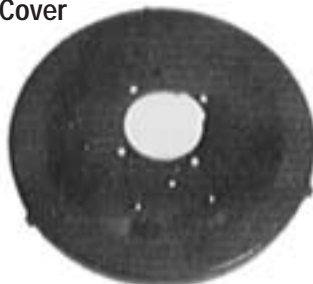
4C-7146 Cover to Bung Adapter Plate

- Mounts to standard 55 gallon (400 lb) or 16 gallon (120 lb) drum cover and converts mounting to standard 2 inch npt bung opening
- Allows use of bung-mounted pumps with drum covers



4C-7234 35 lb (5 gallon) Pail Cover

- Use with 35 lb (5 gallon) pails
- Mounts 50:1 Fire-Ball pump using friction type clutch lock
- Allows use of 70 lb length pump with 35 lb pail



4C-7196 Wall Bracket — "Universal"

- Use with 1:1 Fast-Ball, 5:1 Fire-Ball, 10:1 President
- Clamps on "Universal" pump tube

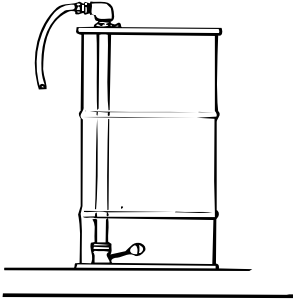


Bulk Lube Pump Accessories

Warranty: Manufacturer's

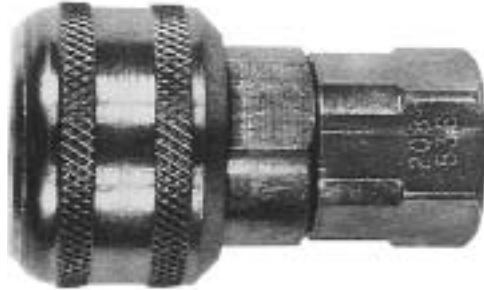
4C-7261 Suction Hose Kit

- Drum not included



Suction Hose Kit

4C-8858 Air Quick Disconnect Coupler, 3/8 inch (f)



Air Quick Disconnect Coupler

4C-7159 Air Quick Disconnect Nipple, 3/8 inch (m)



Air Quick Disconnect Nipple

Portable Bases

Warranty: Manufacturer's

4C-7216 Band Dolly, 5 gallon Pail 4C-7199 Band Dolly 10/16 gallon Drums

- Pail nests inside band ring.
- Ring clamps hold pail/drum secure.
- Casters provide portability.



4C-7187 Caster Base — 10/16 gallon Drums

- Drum fits into recess on formed base.
- Rim clamps hold drum securely onto base.
- Casters provide portability.



4C-7189 2 Wheel Cart — 10/16 gallon Drums

- Drum fits into recess on formed base.
- Rim clamps hold drum securely onto base.
- Wheels provide portability.



4C-7242 Un-metered Oil Dispensing Valve 4C-7182 Un-metered Gear Lube Dispensing Valve 4C-7241 Un-metered A.T.F. Dispensing Valve

Warranty: Manufacturer's

- In-line style gear lube and A.T.F. mechanical valves for dispensing oil
- Each valve includes non-drip nozzle

Flow rate	0-11.3 lpm (0-3 gpm)
Inlet	1/2 inch NPT



4C-7242



4C-7182



4C-7241

157-5548 Electronic Meter Valve

157-5550 Electronic Preset Meter Automatic Shut-off Valve

Warranty: Manufacturer's

- Meter valve dispenses bulk service fluids such as motor oil, gear oil, automatic transmission fluid, hydraulic oil, or antifreeze
- 157-5550 has preset capability to allow "hands-free" operation with automatic shut-off
- Dispenses in pints, quarts, gallons, or liters — change units of measure in seconds
- Other features include protective swivel cover, impact guard, non-drip nozzle, and battery operated internal memory
- Resettable memory totals will track daily or weekly volumes of fluids
- Non-resettable memory for lifetime accumulated total
- Comes with both flexible hose and rigid tube extensions
- FM and CSA approved — meets CE requirements

Maximum flow rate	18.5 lpm (5 gpm)
Operating pressure	6.9 to 69 bar (10 to 1000 psi)
Weight	1.14 kg (2.5 lbs)
Inlet thread	1/2 NPT
Outlet thread	3/8 NPT
Battery	1U-9534, 9V alkaline



157-5553 Metered Dispensing Valve (English)

157-5556 Metered Dispensing Valve (Metric)

Warranty: Manufacturer's

- Great for applications where up to 45 lpm (12 gpm) is required
- Locking trigger allows hands-free dispensing
- Easy trigger pull for operator comfort
- Electronic meter designed to withstand rugged environment
- Meets CSA and FM approvals
- 157-5556 meets CE requirements

Maximum recommended flow rate	45 lpm (12 gpm)
Maximum operating pressure	10.5 MPa, 105 bar (1500 psi)
Operating temperature range	-20 to 55°C (-4 to 130°F)
Inlet	3/4 inch NPT
Outlet	1/2 inch NPT



157-5567 Dispensing Valve

Warranty: Manufacturer's

- Great for applications where up to 45 lpm (12 gpm) is required
- Locking trigger allows hands-free dispensing
- Easy trigger pull for operator comfort
- Meets CSA and FM approvals

Maximum recommended flow rate	45 lpm (12 gpm)
Maximum operating pressure	10.5 MPa, 105 bar (1500 psi)
Weight	0.18 kg (.4 lbs)
Operating temperature range	-40 to 82°C (-40 to 180°F)
Inlet	3/4 inch NPT
Outlet	1/2 inch NPT



4C-7330 Meter Kit

Warranty: Manufacturer's

- Fluid meter can be added to any individual tap by the installation of a meter kit.
- Kit includes all necessary mounting hardware (mechanical meter).

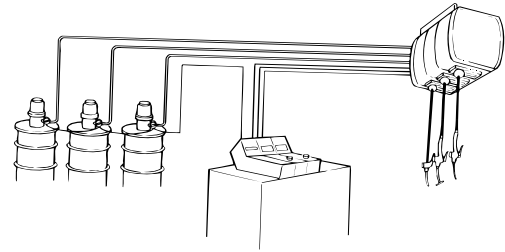


Inventory Control Systems

What It Does...

The Fluid Commander provides the key to making bulk dispensing of lubricants practical. From a centrally-mounted console, a manager can determine when and in what quantity lubricants are dispensed to a specific service location.

- Reduce Product Costs — By purchasing in bulk, product costs are reduced. The Fluid Commander allows dispensing from a hose reel or oil bar only in the quantity authorized.
- Prevent Theft — A key lock on the control prevents unauthorized dispensing of fluids, even after hours. Eliminates inventory shrinkage.
- Eliminate Forgotten Charges — By controlling dispense from a central point, entering charges on a job ticket or fleet record no longer depends on the memory or record-keeping ability of the service technician.
- Inventory Management — A digital display on each product module shows the total amount dispensed. This allows usage totals to be recorded and bulk tanks to be refilled according to actual demands, eliminating an out-of-stock situation.
- Labor Savings — Dispensing lubricants from bulk eliminates the costly and labor-intensive use of individual cans and containers, allowing the service technician to be more productive.



Fluid Commander

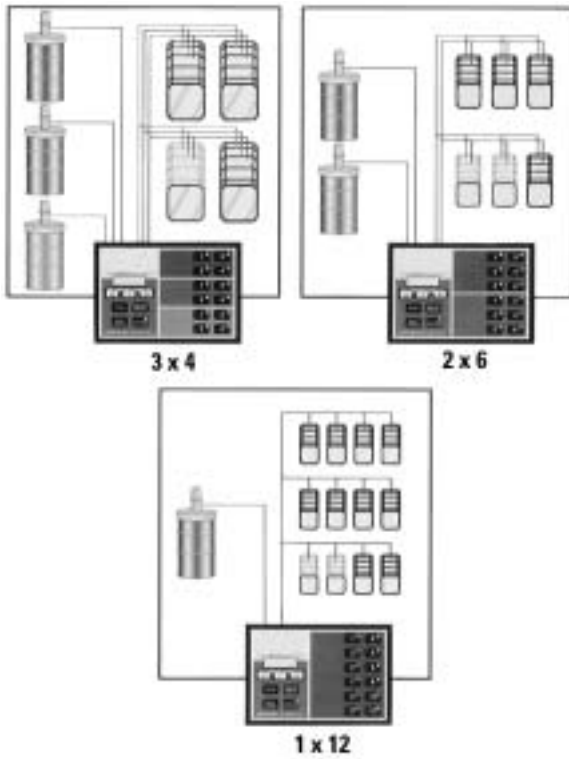
How It Works...

1. The service technician requests a desired quantity of product and gives his service bay number.
2. The manager then enters the type of product, the quantity, and the service location, and then activates a dispense button.
3. A ready light, located on the technician's hose reel or dispense bar, indicates when dispensing can begin.
4. As product is dispensed, the Fluid Commander keeps count of the amount dispensed and shuts off when the preset amount is reached. The system is then closed to further dispensing until again authorized.

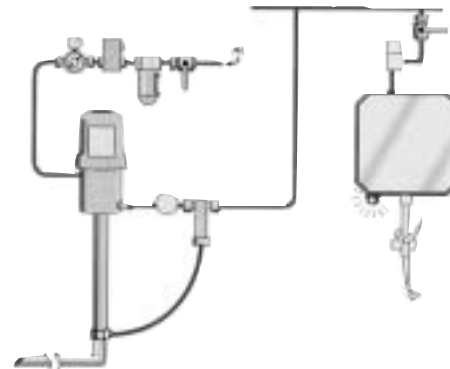
Contact Caterpillar Service Technology Group for design of these systems.

Electronic Fluid Commander — Fluid/Dispense Station Options

Warranty: Manufacturer's



Part No.	Description
9U-6014	Fluid Dispensing System, 3 x 4
9U-6013	Fluid Dispensing System, 2 x 6
9U-6012	Fluid Dispensing System, 1 x 12



Maximum number of fluids	3
Maximum dispense stations (bays)	4, 6, 12
Air solenoids required	One per pump
Fluid solenoids required	One per fluid dispense station
Electrical requirements	120 volt, 60 hz, single phase, .25 Amps
Digital readout	Liquid crystal display
Incremental measurements	Pints, quarts or gallons
Dimensions	234 mm L x 203 mm W x 114 mm H (9 1/2 inch x 8 inch x 4 1/2 inch)
Weight	1.6 kg (3 lbs, 7 oz)

Typical Fluid Dispensing System Consist

- Air shutoff valve, bleed type
- Air filter
- Air solenoid valve
- Air regulator
- Pump (as required) (See Air Operated Oil Pumps)
- Fluid strainer
- Pulse meter at each pump assures precise fluid flow measurement. Solid-state design for maintenance-free performance. Rated at 10 342 kPa (1500 PSI).
- Thermal relief kit protects the system from the potential damage of thermal pressure expansion. Excess fluid pressure is harmlessly directed through the valve back to the supply container.
- Fluid shutoff valve
- Fluid solenoid valve
- Hose reel
- Reel kit includes a low voltage solenoid with ready light mounted on the hose reel. Light remains illuminated until technician dispenses authorized fluid amount.
- Ready light
- Dispense valve (as required)

Accessories (order separately)	
Part No.	Description
4C-7215	Strainer (included in 4C-7308)
9U-6016	Pulse Meter
9U-6017	Air Solenoid
4C-7308	Fluid Solenoid Valve and Strainer Ready Light Kit
4C-7240	Thermal Relief Kit
4C-7215	Fluid Strainer
9U-6019	Wall Mounting Bracket
4C-7044	Fluid Shutoff Valve
9U-6020	Preconnected Cable — 30 m (100 ft)
9U-6021	Preconnected Cable — 3 m (10 ft)
9U-6022	Preconnected Cable — 15 m (50 ft)
9U-6026	Fluid Solenoid (included in 4C-7308)

Air-Operated Grease Pumps — Fire-Ball and President Pumps

Fire-Ball Pumps

- Heavy-duty quiet Fire-Ball pumps are the industry choice for manufacturing, process and maintenance applications.
- The 50:1 Fire-Ball provides the power to supply several remote outlets in stationary installations, yet is economical enough for use with portable lubricators.
- The 50:1 pump is available in three standard tube lengths to fit 15.8 kg (35 lb), 54.4 kg (120 lb) and 181.4 kg (400 lb) grease containers.

President Pumps

- Heavy-duty, high-capacity 50:1 President pump is the top choice for in-plant, construction, mining and railroad maintenance facilities.
- Available with tube lengths to fit 54.4 kg (120 lb) or 181.4 kg (400 lb) drums.
- With a big 10.1 cm (4 1/4 in) air motor, the President pump can supply grease to many outlets for simultaneous use.
- For use in supplying grease to heavy equipment in high volumes.

Air-operated grease pumps are available in the 76.2 mm (3 in) Fire-Ball and 108 mm (4 1/4 in) President, with a variety of tube lengths to fit any size container, from small pails to 181.4 kg (400 lb) drums to bulk tanks. These pumps are available as cover mounted, roll-around portable, or with elevators to facilitate drum changing.

	Pump Performance Specifications	
	Fire-Ball 50:1	President 50:1
Flow capacity (grease at 8 lbs/gal)		
Free flow	1.8 kg/min (4 lbs/min)	5 kg/min (11 lbs/min)
60 cycles/min	.90 kg/min (2 lbs/min)	1.8 kg/min (4 lbs/min)
Maximum fluid pressure	550 bar (8100 PSI)	510 bar (7500 PSI)
Fluid inlet	Priming piston (slot)	3/8 inch npt(f)
Fluid outlet	1/4 inch npt(f)	3/8 inch npt(f)
Pump design	Priming piston (shovel)	Priming piston (shovel)
Air motor diameter	3 in (7.6 cm)	4 1/4 in (10.1 cm)
Air inlet	3/8 inch npt(f)	1/2 inch npt(f)
Maximum inbound air pressure	10.2 bar (150 PSI)	23.3 bar (180 PSI)
Service kit for pump lower	204-164	206-928
Service kit for air motor	206-728	207-385

⚠ WARNING

Very high pressure. Read instruction manual for safe use of grease pumps.

Drum-Length Pumps

Warranty: Manufacturer's

50:1 Fire-Ball

- The pump of choice of most installations
- Free flow is approximately 1 gpm, and the pump will provide flow for up to two dispense valves, operated simultaneously, although the number of dispense drops is unlimited.
- Does not include hoses or accessories

Part No.	Description	Weight
4C-7193	Drum-Length Pump, 50:1 Fire-Ball	181.4 kg (400 lb)
4C-7194	Drum-Length Pump, 50:1 Fire-Ball	54.4 kg (120 lb)

Maximum inlet air pressure	180 PSI
Air inlet	3/8 inch npt(f)
Fluid outlet	1/4 inch npt(f)



50:1 President — High-Volume

- The pump of choice for applications where higher flow is necessary
- Free flow is approximately 1.4 gpm, and pump will provide flow for up to four dispense valves operated simultaneously, although the number of dispense drops is unlimited.
- Does not include hoses or accessories

Part No.	Description	Weight
4C-7220	Drum-Length Pump, 50:1 President	181.4 kg (400 lb)
4C-7219	Drum-Length Pump, 50:1 President	54.4 kg (120 lb)

Maximum inlet air pressure	180 PSI
Air inlet	1/2 inch npt(f)
Fluid outlet	3/8 inch npt(f)



Air Operated Portable Grease Dispensers

Warranty: Manufacturer's

E-Line System

- The caster base of this system provides maximum portability; the pump and cover mount directly on a 54.4 kg (120 lb) product drum.
- The exposed drum provides ready product identification.
- Includes pump, cover, base, follower plate, holster, 1.8 m (6 ft) dispense kit, instruction form
- Dispenser does not include drum.
- Use 4C-7046 3/8 inch Air Regulator as required (not included).



System with Cart

- Same as 4C-7389 but has a two-wheel cart
- Includes pump, cover, cart, follower plate, holster, dispense kit, instruction form
- Use 4C-7046 3/8 inch Air Regulator as required (not included).



Part No.	Description	Weight
4C-7389	Air Operated Portable Grease Dispenser, 50:1 Fire-Ball	54.4 kg (120 lb)

Part No.	Description	Weight
4C-7392	Air Operated Portable Grease Dispenser, 50:1 Fire-Ball	54.4 kg (120 lb)

Pail Dispenser

- Hand-portable assembly mounts directly on a 35 lb pail and is the best choice for maximum portability.
- Includes pump, cover, follower plate, 1.8 m (6 ft) dispense kit, instruction form
- Use 4C-7046 3/8 inch Air Regulator as required (not included).

Part No.	Description	Weight
4C-7367	16 kg (35 lb) Pail Dispenser, 50:1 Fire-Ball	16 kg (35 lb)



Hand Operated Portable Grease Dispenser

Warranty: Manufacturer's

Hand operated grease dispensers deliver lubricants from 16 kg (35 lb) pail or from portable bulk containers. They provide portability to the job site even when no source of power is available.

Pail Dispenser

- This lever operated pump and cover mount directly on a 35 lb (5 gallon) pail.
- The pump delivers 1/4 oz. of grease per stroke at pressures to 207 bar (3000 PSI).
- It includes a 1.5 m (5 ft) hose with coupler and 4C-7191 "Hot-Shot" Booster Gun.
- The pump can service fittings directly or can be used with a booster gun for more portability and higher pressures.

Part No.	Description	Weight
4C-7414	Pail Dispenser ("Buckshot" Luber with Booster Gun)	16 kg (35 lb)



"Topper" Inductor Pumps for Non-Pourable Greases and Oils

Warranty: Manufacturer's

Inductor or "topper" pumps reduce labor costs and downtime, and seal lubricant drums to prevent entry of foreign material.

- No wasted grease — a rubber wiper on the inductor plate wipes the drum clean as the grease is dispensed. No hand cleaning of the drum.
- Positive pump feed — the inductor plate seals against aeration and uses the weight of the plate and pump to provide positive pump feed. No aeration, and drum is sealed against entry of foreign material.
- Fast barrel changeover — air operated elevator provides fast drum changes resulting in increased production.

Stationary Topper Pump System

- The baseplate mounted elevator supports Fire-Ball or President grease pumps and inductor plates.
- Both systems include air valve and mounting hardware as follows: pump, carriage, elevator, base inductor, 1.8 m (6 ft) hose kit, instruction form.
- Use 4C-7046 3/8 inch Air Regulator as required (not included).

Part No.	Description	Weight
4C-7418	Stationary Topper Pump System, 50:1 Fire-Ball	181.4 kg (400 lb)
4C-7419	Stationary Topper Pump System, 50:1 President	181.4 kg (400 lb)



Cover Mounted Grease Pumps

Warranty: Manufacturer's

181.4 kg (400 lb) System

- Pump, cover, hoses and hardware are ready for direct mounting on 181.4 kg (400 lb) open-head product drum.
- Both systems consist of pump, cover, follower plate, 1.8 m (6 ft) hose and fitting kit, instruction kit.
- 4C-7391 — Use 4C-7046 3/8 inch Air Regulator as required (not included).
- 4C-7405 — Use 4C-7033 1/2 inch Air Regulator as required (not included).



Part No.	Description	Weight
4C-7391	Cover Mounted Grease Pump, 50:1 Fire-Ball	181.4 kg (400 lb)
4C-7405	Cover Mounted Grease Pump, 50:1 President	181.4 kg (400 lb)

54.4 kg (120 lb) System

- Pump, cover, hoses and hardware are ready for direct mounting on 181.4 kg (120 lb) open-head product drum.
- Includes pump, cover, follower plate, 1.8 m (6 ft) hose and fitting kit, instruction kit.
- Use 4C-7046 3/8 inch Air Regulator as required (not included).



Part No.	Description	Weight
4C-7390	Cover Mounted Grease Pump, 50:1 Fire-Ball	54.4 kg (120 lb)

Follower Plates

Warranty: Manufacturer's

- Follower plates ride on the surface of the grease in a drum to reduce aeration and channelling.
- The plates have a center rubber grommet to seal around the pump tube and a formed cone to allow the pump to fully empty the drum without uncovering the pump inlet slots.

Part No.	Drum Size	Fits Pumps
4C-7198	181.4 kg (400 lb)	50:1 and 15:1 Fire-Ball
4C-7218	181.4 kg (400 lb)	50:1 President
4C-7344 ¹	31.7/54.4 kg (70/120 lb)	50:1 and 15:1 Fire-Ball
4C-7343 ¹	16 kg (35 lb)	50:1 and 15:1 Fire-Ball

¹ Has flexible lip for use with tapered drums/pails.



Grease Dispense Hose and Fitting Kits

Warranty: Manufacturer's

4C-7368 72 inch Dispense Kit for 50:1 Fire-Ball

- For use with portable 50:1 Fire powered lubricators
- Use 4C-7046 3/8 inch Air Regulator, as required (not included).

Consist		
Part No.	Description	Size
4C-7300	Grease Dispense Valve	
4C-8863	Fluid Hose	1/4 inch x 72 inch
4C-7253	Air Coupler	1/4 inch npt
4C-7159	Air Nipple	3/8 inch npt
307-878	Instruction Form	

4C-7373 72 inch Hose and Fitting Kit for 50:1 President

- For use with stationary drum mounted 50:1 President pumps
- Use 4C-7046 3/8 inch Air Regulator, as required (not included).

Consist		
Part No.	Description	Size
4C-7221	Air Hose	1/2 inch x 72 inch
4C-7101	Swivel Elbow	1/2 inch npt
4C-8862	Fluid Hose	3/8 inch x 72 inch
4C-7102	Swivel Elbow	3/8 inch npt
307-880	Instruction Form	

Grease Dispense Valves and Accessories

A full selection of lubrication accessories to complete a lubrication system includes nozzles, meters, dispense valves, hydraulic couplers, and similar accessories to make all lubrication work easier and faster.

Dispense Valves

Warranty: Manufacturer's

4C-7300 Grease Dispense Valve

- High-pressure grease valve with knurled grip handle for operator comfort
- 545 bar (8000 PSI) working pressure
- Includes 4C-7167 Nozzle
- Order 4C-7169 Swivel separately.



4C-7171 Power-Shot Booster Gun

- Boosts pressure of incoming grease to 1260 bar (18,000 PSI)
- For use with any high-pressure lubricator or a booster/dispense valve with hose reels
- Has molded rubber grip handle
- Not for use with flexible hose nozzle
- Includes 4C-7167 Nozzle
- Order 4C-7170 Hose Swivel separately

Inlet and outlet	1/8 inch npt(f)
Maximum inlet pressure	560 bar (8000 PSI)



4C-7174 Grease Dispense Line Shut-off Valve

- 1/2 inch npt(f) ported valve for drop-line isolation
- Needle valve construction rated for 345 bar (5000 PSI)



4C-7169 Swivel, 1/4 inch npt(m) x 1/4 inch npt(f)

4C-7170 Swivel, 1/8 inch npt(m) x 1/4 inch npt(f)

- Three way z-type hose swivel
- High pressure ball bearing pivots 360°—prevents hose tangling and allows free movement of grease valves
- For use with 4C-7300 Valve



4C-7191 Hot-Shot Booster Gun

- For portable operation without continuous connection to grease supply
- Has 4 oz. self-contained grease reservoir in handle capable of servicing up to 100 fittings before recharge
- Has grease fitting for recharge from manual- or air-powered luber
- Single-hand operation squeeze handle develops up to 700 bar (10,000 PSI).
- Includes standard taper nose hydraulic coupler

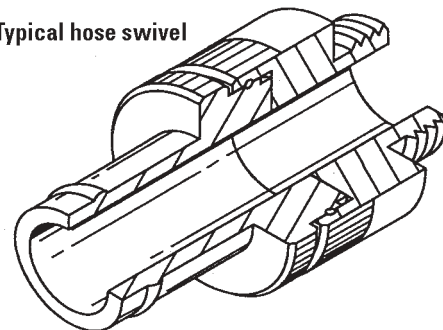


Hose Swivels

- Used with recommended ecology valve
- Used to quickly and easily drain oil from machine or component without spilling

Part No.	Ecology Valve	Thread Connection	Hose Connection
4C-8563	106-8186	1-5/16-12	25.4 mm (1.00 in)
126-7914	8J-8782	1-11 1/2 NPSM, 2B-THD	25.4 mm (1.00 in)
176-6545	193-7364	1-15/16-12	50.8 mm (2.00 in)
204-3559	173-0566	3/4-14 BSPP	25.4 mm (1.00 in)

Typical hose swivel



Grease Nozzles

Warranty: Manufacturer's

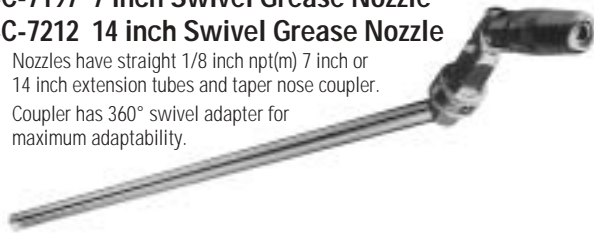
4C-7167 Standard Grease Nozzle

- Provided as standard with most grease dispense valves
- Has 1/8 inch npt(m)
- 6 inch extension tube to reach out-of-the-way fittings and taper nose coupler



4C-7197 7 inch Swivel Grease Nozzle 4C-7212 14 inch Swivel Grease Nozzle

- Nozzles have straight 1/8 inch npt(m) 7 inch or 14 inch extension tubes and taper nose coupler.
- Coupler has 360° swivel adapter for maximum adaptability.



4C-7176 360° Swivel/Lock Sleeve Nozzle

- Nozzle is similar to 4C-7197 Nozzle but includes 4C-7184 Lock Sleeve Connector for quick connection to any grease nozzle having taper nose coupler.

4C-7201 Hose Nozzle

4C-7185 Hose Nozzle with Lock Sleeve Connector

- 12 inch flex hose provides ability to reach difficult-to-reach fittings.
- Nozzles include taper nose coupler.
- 4C-7201 has 1/8 inch npt(m) inlet.
- 4C-7185 includes lock sleeve connector for quick connection to any grease nozzle having taper nose coupler.
- Warning: Potential injection hazard. Not for use above 345 bar (5000 PSI).

4C-7065 30 inch Hose Nozzle (Less Coupler)

- 30 inch flex hose having 1/8 inch npt(m) both ends.
- Use as alternate for rigid nozzle.
- Use with taper nose coupler.
- Warning: Potential injection hazard. Not for use above 345 bar (5000 PSI).

Hydraulic Couplers

Warranty: Manufacturer's

4C-7162 Standard Buttonhead Hydraulic Coupler

4C-7163 Giant Buttonhead Hydraulic Coupler

- Gives fast, positive seal on buttonhead fittings
- Choice of two sizes for standard or giant buttonhead fittings
- Both have 1/8 inch npt(f) inlet

Adapters

Warranty: Manufacturer's

6V-4057 Hydraulic-To-Push Adapter

4C-7222 Hydraulic-To-Steel Needle Adapter

4C-7225 Hydraulic-To-Nylon Needle Adapter

- Adapters have lock sleeve connector for quick connection to any grease nozzle having taper nose coupler.
- Use 6V-4057 for U-joints and low pressure service.
- Use 4C-7222 for flush fittings, and 4C-7225 for removable plugs.

4C-7186 360° Grease Swivel with Coupler

4C-7178 360° Grease Swivel Only

- Swivels and locks full 360°
- Use for maximum coupler adaptability and reach.
- 1/8 inch npt(f) x 1/8 inch npt(m)
- 4C-7186 includes taper nose coupler.

4C-7184 Lock Sleeve Connector

- Allows quick connection to taper nose coupler
- Inlet is standard grease fitting with sleeve to lock connector in place.
- Outlet is 1/8 inch npt(f).

4C-7213 Grease Loader Valve

- For use with lever operated high volume grease pumps
- Permits fast bulk refilling of hand-operated grease lever guns equipped with 4C-7214 Easy Fill Valve.
- Valve has 3/8 inch npt(f) inlet.

4C-7226 Hydraulic Adapter Assortment Pack

- Complete package contains assorted adapters for servicing bearings with plugs and flush fittings: needle adapter, 4C-7224 Plug Adapter, 4C-7225 Nylon Needle Adapter, 4C-7222 Hydraulic-to-Steel Needle Adapter, 4C-7185 Whip Hose Nozzle Connector.

"Supreme Duty" Hose Reels

Warranty: Manufacturer's

- Supreme duty construction — frames, discs and drums are fabricated of heavy gauge steel. Fully ported swivel for maximum fluid flow. All weather roller guides and premium grade hose. The reel of choice for the toughest applications—large fleet garages, manufacturing and assembly plants, construction sites and lube trucks.
- Double pedestal arm — welded and gusseted to eliminate bending due to angular hose pull
- Extra large ratchet latch — provides a positive, audible hose position lock, even in the toughest of applications
- Mounts to any position — multiple position roller guide and pedestal arm provide the perfect mounting position for wall, floor, ceiling, pit or truck mounting.
- Permanently lubricated bearings — assure positive reel recoil and extra long life
- Reels series interchange — mounting channels, brackets, panels and reel enclosures from the existing 400 series reel are all interchangeable to the new 500 series.
- Expanded product offering — expanded product selection to include reels with electronic meter assemblies

Description	Inlet	Outlet	Bearings	Max. Working Pressure	Wetted Parts	Weight
Oil Hose Reel	1/2 inch npsm(m)	1/2 inch npsm(f)	Oil impregnated porous bronze	126 bar (1800 PSI)	Carbon, steel, nitrile rubber, nylon	25.6 kg (56.5 lbs)
Grease Hose Reel	3/8 inch npsm(m)	3/8 inch npt(f)	Oil impregnated porous bronze	560 bar (8000 PSI) ¹	Carbon, steel, nitrile rubber, polyester elastomer, nylon	25.6 kg (56.5 lbs)

¹ Hose reel assembly pressure rating will vary depending on hose. See individual ratings by part number.



Open Reels

Warranty: Manufacturer's

- The 500 Series is an extreme duty reel for very heavy-duty installations such as mining, construction or bus/truck fleets.
- Heavy construction features such as double pedestal arms and double roller arms provide the industry's most rigid reel support, eliminating the need for external bracing.
- The larger, heavier design provides for a reel capacity of 60 ft of 3/8 inch air/water hose, 50 ft of 1/2 inch oil dispense hose, or 50 ft of 3/8 inch high pressure grease hose.



Open Dispense Reels

Grease			
Service	Part No.	Hose	Valve No.
Grease	4C-7276	1/4 in x 40 ft	None
5000 PSI (345 bar)	4C-7277	3/8 in x 40 ft	None ¹
	4C-7278	1/4 in x 50 ft	None

¹ Select correct grease valve.

Oils			
Service	Part No.	Hose	Valve No.
Motor Oil, A.T.F., Hydraulic Fluids 126 bar (1800 PSI)	4C-7284	1/2 in x 40 ft	None ¹
Gear Lube	4C-7285	1/2 in x 50 ft	None ¹

¹ Select correct grease valve.

Air/Water			
Service	Part No.	Hose	Valve No.
Air/Water	4C-7294	3/8 in x 40 ft	None
12.6 bar (180 PSI)	4C-7295	3/8 in x 60 ft	None

Dual Hose Reel

4C-7239 Dual Hose Reel

- For hydraulic tool or similar service.
- Holds one 3/8 inch x 50 ft hose and one 1/2 inch x 50 ft hose.
- Dual inlets provide separate flow to each hose.
- Reel is rated for 207 bar (3000 PSI).
- Hoses not included
- Not for use with oxygen

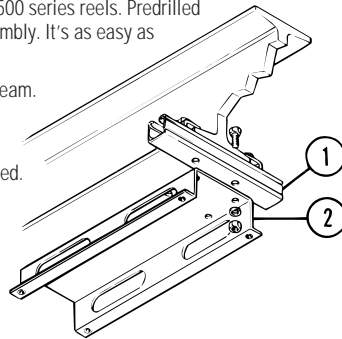
Service	Part No.	Hose	Valve No.
Hydraulic Oil 3000 PSI	4C-7239	3/8 inch x 50 ft 1/2 inch x 50 ft	None None



Mounting Bracket

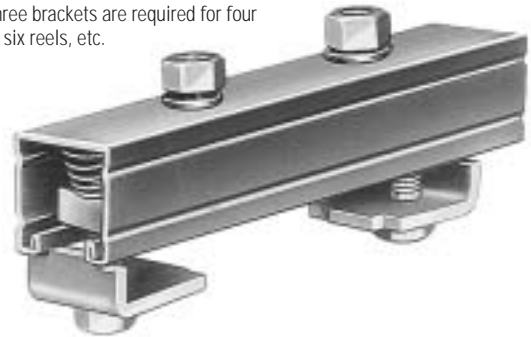
There's no drilling or welding required to hang 500 series reels. Predrilled and threaded brackets allow bolt-together assembly. It's as easy as one-two-three.

1. Attach channel-mounting bracket to "I" beam. Bolts and clamps included with bracket.
2. Bolt one to six reel-mounting channels to mounting brackets. Channel is pre-threaded.
3. Then just bolt the reels to the mounting channel. "Keyhole" slots eliminate lifting of reels while trying to engage a bolt, a definite plus when working on ladders or scaffolding.



4C-7210 Channel Mounting Bracket

- Secures 500 series reel channels to standard "I" beams; does not require drilling of holes, will fit "I" beams having up to 7 inch flange
- Two brackets will support one to three reels.
- Three brackets are required for four to six reels, etc.



4C-7320 — 1 Reel Mounting Channel

4C-7321 — 2 Reel Mounting Channel

- For mounting of from one to three open reels in a bank
- Channel is predrilled to allow individual mounting of reels.
- For reel banks over three, use multiple channels, i.e. for a four reel bank, use a 3 reel channel and a one reel channel or two 2 reel channels.

Reel Mounting Channel



Accessories

4C-7304 1/2 inch x 24 inch Medium Pressure Inlet Hose Kit

- 1/2 inch I.D. x 24 inch long inlet hose and fittings rated for 2000 PSI



4C-7305 3/8 inch x 24 inch High Pressure Inlet Hose Kit

- 3/8 inch I.D. x 24 inch long inlet hose and fittings rated for 276 bar (4000 PSI)
- Inlet hose must be ordered separately for 500 series reels.

4C-7092 1/2 inch Air Shutoff Valve

4C-7044 1/2 inch Fluid Shutoff Valve



4C-7174 Grease Dispense Line Shut-Off Valve

- 1/2 inch npt(f) ported valve for drop-line isolation
- Needle valve construction rated for 345 bar (5000 PSI)



Service Label Kits



Service Label Kits (3/4 inch x 4 1/4 inch metal labels and mounting hardware)

Part No.	Description
4C-7311	Motor Oil
4C-7312	Grease
4C-7313	Gear Lube
4C-7314	ATF
4C-7315	Hydraulic Oil
4C-7316	Air
4C-7317	Water
4C-7318	Anti-Freeze
4C-7319	Evacuation

Hose Reels

Warranty: Manufacturer's

- Compact hose reels can be used for air tools, fleet maintenance facilities, wash-down bays, service trucks, utility trucks, agricultural, industrial, mining, and many other applications
- Compact reel holds more hose and has greater reliability than conventional reels
- Weighs up to 35% less than conventional reels of the same size
- Base and guide arms are designed to prevent metal flexing and nearly eliminate guide arm bending when hose is pulled laterally
- Guide arm assembly is easily adjustable for floor, wall, ceiling, pit, or truck mounting positions
- Full-flow ball bearing swivel provides maximum working pressure with minimum spring retraction resistance
- Main shaft support assembly includes permanently lubricated and sealed ball bearings for smooth, long lasting, and trouble-free performance
- Unitized design eliminates possibility of seal leakage while providing precise alignment and structural integrity
- Drive springs are made from scaleless, blue-tempered spring steel for long life and durability
- CE and ISO 9001 approved

4C-7034 Hanger Kit

Warranty: Manufacturer's

- Mounts to side of hose reel for hanging oil and grease dispense valves

Overall size	609.6 x 266.7 x 644.7 mm (24.00 x 10.50 x 25.38 in)
Inlet	1/2 inch or 3/4 inch NPT(F) or 3/4 inch BSPT
Outlet	1/2 inch or 3/4 inch NPT(F) or 3/4 inch BSPT
Mounting holes	12.7 mm (.50 in), 4 holes
Mounting hole spacing	153 x 254 mm (6.0 x 10.0 in)

Part No.	Description	Weight	Maximum Temperature Rating	Pressure Rating (kPa, psi, bar)	Hose Type	Hose Inside Diameter	Hose Outside Diameter	Hose Length
191-2278	High-Pressure Reel, Grease	53 kg (117 lbs)	99°C (210°F)	27580 kPa (4000 psi), 275 bar	PVC hose	9.7 mm (.38 in)	16.3 mm (.64 in)	23 m (75.0 ft)
191-2282	Medium-Pressure Reel, Oil	46 kg (102 lbs)	99°C (210°F)	16030 kPa (2325 psi), 160 bar	SAE 100 R1T hose (one wire braid hose)	12.7 mm (.50 in)	21.1 mm (.83 in)	23 m (75.0 ft)
191-2283	Low-Pressure Reel, Air and Water	42 kg (92 lbs)	65°C (150°F)	2070 kPa (300 psi), 21 bar	SAE 100 R2T hose (two wire braid hose)	12.7 mm (.50 in)	22.1 mm (.87 in)	23 m (75.0 ft)

⚠ WARNING

These hose reels should only be used for their intended compressed air or fluid applications. Not following this warning could be dangerous. DO NOT convert compressed air hoses for use with oxygen. A hose contaminated with an oil coating could react explosively when oxygen is used, resulting in personal injury or death.

Reelcraft Heavy-Duty Low Pressure Hose Reel

Warranty: Manufacturer's



Dimensions

A	368 mm (14 1/2")
B	349 mm (13 3/4")
C	247 mm (9 3/4")
D	63.5 mm (2 1/2")
E	152 mm (6")

Four 7.9 mm (5/16 in) diameter mounting holes

Low Pressure Hose Reel—Air and Water

- All steel construction, heavy-duty reels
- More compact reel for applications with critical space requirements
- Incorporates contemporary engineering and manufacturing techniques to give trouble-free performance at a price competitive with less durable reels
- Maximum temperature: 98.9°C (210°F)
- Reel inlet: 1/2 inch nptf(f)

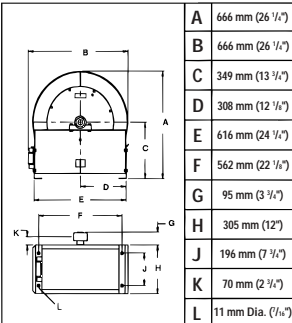
1U-7741 Heavy-Duty Low Pressure Hose Reel	
Weight	12.7 kg (28 lbs)
Working pressure	2068 kPa (300 PSI)
Hose assembly capacity:	
Inner diameter	9.5 mm (3/8 in)
Outer diameter	17.5 mm (.688 in)
Length	10 m (35 ft)
Hose Stop	9U-6286

Heavy-Duty High Capacity Hose Reels

Warranty: Manufacturer's

1U-7729

Dimensions



Four 11 mm (7/16 in) Diameter Mounting Holes



Low Pressure Hose Reel—Air and Water

- Twin pedestal reels for high volume air-water requirements
- Ideal for portable service trucks as well as permanent service or plant work areas
- Maximum temperature: 98.9°C (210°F)
- Reel inlet: 1 inch nptf(f)

191-2283 Heavy-Duty High Capacity Low Pressure Hose Reel	
Weight	42 kg (92 lb)
Working pressure	2068 kPa (300 PSI)
Hose assembly capacity:	
Inner diameter	12.5 mm (1/2 in)
Outer diameter	21 mm (.844 in)
Length	23 m (75 ft)

Medium Pressure Hose Reel—Air, Water, and Oil

- Furnished standard with S.A.E. 100 R1 T one wire braid hose suitable for air, water, or oil applications
- Maximum temperature: 98.9°C (210°F)
- Reel inlet: 1 inch nptf(f)

191-2282 Heavy-Duty High Capacity Medium Pressure Hose Reel	
Weight	59 kg (131 lb)
Working pressure	13 790 kPa (2000 PSI)
Hose assembly capacity:	
Inner diameter	12.5 mm (1/2 in)
Outer diameter	20 mm (.815 in)
Length	23 m (75 ft)

High Pressure Reel—Grease

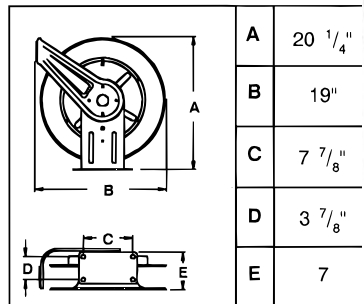
- Furnished with S.A.E. 100 R2 T two wire braid hose
- Reel inlet: 1/2 inch nptf(f)
- Do not use for anything but grease without factory approval.

191-2278 Heavy-Duty High Capacity High Pressure Hose Reel	
Weight	53 kg (117 lb)
Working pressure	27 580 kPa (4000 PSI)
Hose assembly capacity:	
Inner diameter	9 mm (3/8 in)
Outer diameter	19 mm (.750 in)
Length	23 m (75 ft)

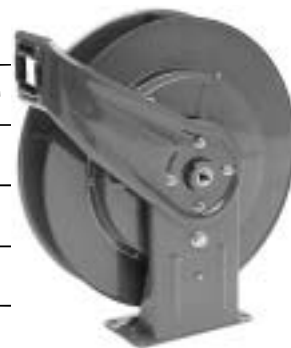
Heavy-Duty Standard Capacity Hose Reel

Warranty: Manufacturer's

Dimensions



Four 1/2" Diameter Mounting Holes.



Low Pressure Hose Reel—Air and Water

- All steel construction, heavy-duty reels with one piece wrap around guide arm
- More compact reel for applications with critical space requirements
- Maximum temperature: 98.9°C (210°F)
- Reel inlet: 1 inch nptf(f)

1U-7738 Heavy-Duty Standard Capacity Low Pressure Hose Reel	
Weight	57 lb
Working pressure	300 PSI
Hose assembly capacity:	
Inner diameter	1/2 in
Outer diameter	.844 in
Length	50 ft
Hose Stop	1U-7740

Air Operated Diaphragm Pumps

Warranty: Manufacturer's

4C-7342 1:1 Husky Diaphragm Pump — 62 lpm (16 gpm)

- With acetal plastic construction, Buna-N seals, and stainless steel trim, this 1:1 diaphragm pump is ideally suited for handling antifreeze and water or windshield wash solvent and water.
- It can also be used for short distance transfer of light oils such as A.T.F. and 10 wt. motor oil.



Accessories for 4C-7342 Pump

4C-8971 6 ft Suction Hose (1/2 inch) with Filter Screen

- Permits 4C-7342 pump to be wall mounted using 6 ft suction tube with a stainless steel filter



4C-7326 1:1 Husky Diaphragm Pump — 114 lpm (30 gpm)

- Cast aluminum construction and Buna-N seals for use in high volume transfer of light oils and service fluids such as A.T.F., 10 wt. motor oil, antifreeze or windshield wash solvent
- Can also be used in oil evacuation systems



Maximum free flow delivery	114 lpm (30 gpm)
Maximum free flow air consumption	45 scfm
Air pressure operating range	1.7-8.7 bar (25-125 PSI)
Maximum suction lift wet/dry	25 ft/16 ft
Air inlet size	3/8 inch npt(f) on 4C-7326
Fluid inlet size	1 inch npt(f)
Fluid outlet size	1 inch npt(f)

Accessories for 4C-7326 Pumps

4C-7351 Dual Inlet Manifold

- Kit allows for two pump inlets for pumping of antifreeze and water or windshield wash solvent and water in 1:1 proportion.
- Inlet conditions (hose diameters, lengths, etc.) must be identical for optimum proportioning accuracy. Pump has standard single outlet to provide mixing.

4C-8850 Replacement Air Valve

- Complete air valve replacement for 4C-7326

Fluid Pressure Relief Kit

- For use in systems with pressure rise due to thermal expansion
- Pump outlet manifold must be reversed so inlet and outlet face the same direction.
- To control air flow raise and lower ram
- Includes: nipple, adapter, air regulator, elbow, coupling hose

4C-6786 1:1 Husky Diaphragm Pump — 55 lpm (145 gpm)

- Cast aluminum construction and Buna-N diaphragm seals for use in high volume lubricant fluid transfer



Maximum free flow delivery	55 lpm (145 gpm)
Gallons/cycle	0.8 gal.
Fluid inlet size	2 inch npt(f)
Fluid outlet size	2 inch npt(f)
Air pressure operating range	.7-8.4 bar (10-120 PSI)
Maximum fluid pressure	8.4 bar (120 PSI)
Maximum fluid temperature	100°C (212°F)
Maximum pumpable solid size	1/4 inch
Maximum recommended viscosity	20,000 cps
Maximum suction lift wet	20 ft
Maximum suction lift dry	15 ft
Air inlet size	3/4 inch npt(f)
Maximum decibel level	90 dBA
Weight	Aluminum 33 kg (72.2 lbs)
Size	22 inch H x 18 inch W x 14 inch D
Mounting hole layout	10.4 inch x 13.3 inch

9U-6771 Used Oil Evacuation System

Warranty: Manufacturer's

- Provides a quick and simple method of evacuating used oil from portable roll-around style used oil receivers (not included); included are diaphragm pump, air on-off valving, air regulator and 6 ft suction hose with valving to eliminate spills.
- System fully groundable and bondable for safe transfer of waste oil
- Includes 3/4 inch U.L. approved pump, 4C-8854 Filter Regulator, hose and fitting kit, 9U-6772 Receiver Adapter Kit, wall mount bracket, piping kit

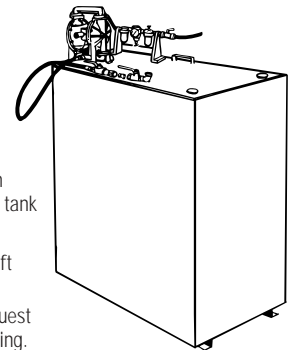


NOTE: Order 4C-7374 Grounding Kit or use locally supplied grounding wires and clamps in accordance with applicable codes. Funnel and drum not included; order separately.

4C-9013 Used Oil Pump Assembly for Tank Mounting

Warranty: Manufacturer's

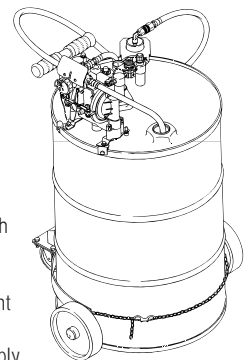
- Pump system used to suction used oil from portable containers and pump into holding tank
- Pump mounted on tank
- Assembly includes 4C-7377 Pump with 10 ft suction hose, air filter, and lubricator.
- Order UL double wall tank separately. Request mounting bracket for used oil pump mounting.



9U-6037 Drum-Mounted, Portable Fluid Evacuation System

Warranty: Manufacturer's

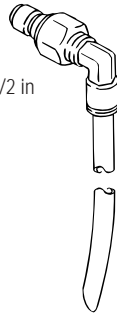
- Nothing is faster than the evacuation system for routine used fluid disposal—hydraulic oil, motor oil, cutting oils, and coolants.
- Drum-mounted, portable fluid evacuation system utilizing U.L. approved, air-powered double diaphragm pump
- Designed to empty used fluids from hard-to-reach reservoirs on many types of machinery and equipment
- Portable so you can move it wherever on the plant floor is convenient for you and your operation
- No installation required; just connect the air supply.
- Use 4C-8854 Filter-Regulator-Lubricator and 9U-6038 Mounting Bracket (not included).
- Mounts on a user-supplied 205 l (55 gal) closed head drum
- System includes a pump, hoses, dolly with casters and handle, and a 1/2 inch x 32 inch O.D. nylon wand



9U-6042 Suction Wand Kits for Fas-Vac

Warranty: Manufacturer's

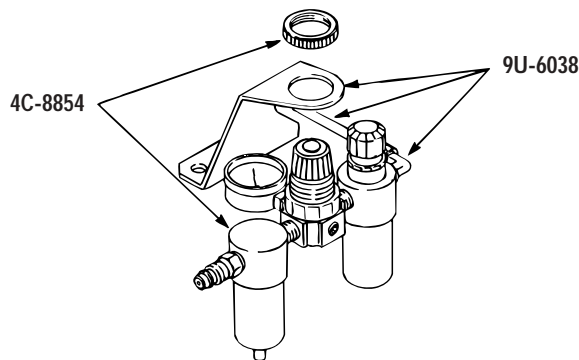
- All tubes are nylon unless otherwise specified.
- 4-wand kit with 48 inch tubes—O.D. 3/16 in, 1/4 in, 3/8 in, 1/2 in



4C-8854 Filter-Regulator-Lubricator Kit

Warranty: Manufacturer's

- Requires 9U-6038 Mounting Kit if mounted directly on the pump



Max. inlet pressure	17.5 bar (250 PSI)
Regulated range	0-12.4 bar (0-180 PSI)
Inlet and outlet	1/4 inch npt(f)
Gauge port (gauge included)	1/8 in
Capacity for filter and lubricator	1 oz.

187-1458 QuickEvac Service Kit

Model: Most Caterpillar Off-Highway Trucks

Essential Tool

Warranty: Manufacturer's

- Saves time on engine oil changes (removes and fills engines with oil)
- Evacuates most engine oil sumps in less than one minute
- Provides environmentally safe oil changes (minimizes oil spillage by pumping oil directly to PM truck or waste container)
- Contributes to increased profit margins
- Quick and easy connections (Flush Faced Quick Disconnects) to machine and/or containers
- Purging tool virtually eliminates oil spillage by removing trapped oil from filter elements and/or oil coolers
- Can be retrofitted to most machines
- Equipped with Deutsch electrical connectors

9U-6038 Filter Regulator Mounting Kit

Warranty: Manufacturer's

- Includes mounting Bracket, two 90° air fittings, air line

1P-2850 Oil Drain Cart

- Low profile and caster mounting
- Can be conveniently positioned under any machine
- Easily transports waste oil from machine to receptacle
- 45 gallon capacity; provided with baffles to prevent sloshing

Item	Part No.	Description
1	8S-9574	Caster
2	5B-7666	Elbow
3	8S-9573	Caster (Qty. 2)



Drum Cover and Hold-Down Kit

Warranty: Manufacturer's

16 Gallon (120 lb) Drum

4C-7203 Hold-Down and Cover Kit (Open-Head)

- Cover kit allows center mounting of Fire-Ball or President pumps on 16 gallon (120 lb) open head drums.
- Hold-down kit can be used with cover kit or separately to secure drums by clamping directly on drum chine.
- Includes: Cover kit, hold-down kit.

Hose and Fitting Kits

Warranty: Manufacturer's

4C-7362 72 inch Hose and Fitting Kit for 5:1 Fire-Ball

- For use with drum mounted 5:1 Fire-Ball pumps
- Use 4C-7046 3/8 inch Air Regulator as required (not included).

Consist			
Part No.	Description	Size	
4C-7102	Swivel Elbow	3/8 inch	
4C-7334	Fluid Hose	1/2 inch	
4C-7101	Swivel Elbow	1/2 inch	
307-883	Instruction Form		

4C-7364 72 inch Hose and Fitting Kit for 10:1 President

- For use with drum mounted 10:1 President pumps
- Use 4C-7033 1/2 inch Air Regulator as required (not included).

Consist			
Part No.	Description	Size	
4C-7221	Air Hose	1/2 inch	
4C-7101	Swivel Elbow	1/2 inch	
4C-7047	Fluid Hose	3/4 inch	
4C-7145	Swivel Elbow	3/4 inch	
307-883	Instruction Form		

Air Supply Accessories

Warranty: Manufacturer's

Air Filters

- Centrifugal action and 40 micron element remove water and foreign particles from plant air supply.
- Maximum working pressure: 13 bar (180 PSI)

Part No.	Description
4C-8851	Air Inlet 1/4 inch npt(f)
4C-7041	Air Inlet 3/8 inch npt(f)
4C-7042	Air Inlet 1/2 inch npt(f)
4C-7043	Air Inlet 3/4 inch npt(f)



Air Lubricator

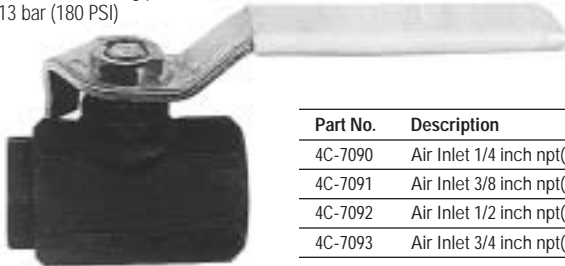
- Extends life of pump and smooths pump movement by applying measured lubricant to all moving parts within the pump air motor
- Control knob and sight window allow adjustment of lubricant dispensed.
- Maximum working pressure: 13 bar (180 PSI)

Part No.	Description
4C-8853	Air Inlet 1/4 inch npt(f)
4C-7266	Air Inlet 3/8 inch npt(f)
4C-7267	Air Inlet 1/2 inch npt(f)
4C-7268	Air Inlet 3/4 inch npt(f)



Shutoff Valve

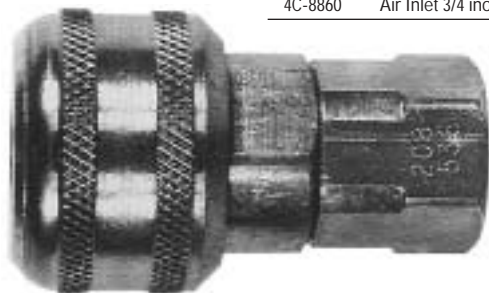
- Closes air inlet to pump and relieves trapped air pressure
- Recommended for each pump drop line
- Maximum working pressure: 13 bar (180 PSI)



Part No.	Description
4C-7090	Air Inlet 1/4 inch npt(f)
4C-7091	Air Inlet 3/8 inch npt(f)
4C-7092	Air Inlet 1/2 inch npt(f)
4C-7093	Air Inlet 3/4 inch npt(f)

Quick-Connect Coupler

- Fast, convenient air hose attachment
- Female thread allows easy attachment to air hoses.
- Maximum working pressure: 13 bar (180 PSI)



Air Quick Disconnect Coupler

Part No.	Description
4C-8858	Air Inlet 3/8 inch npt(f)
4C-8859	Air Inlet 1/2 inch npt(f)
4C-8860	Air Inlet 3/4 inch npt(f)

Air Regulators

- Precision control of outlet air pressure
- Feedback principle allows constant pressure to pump regardless of air demand rate and fluctuations in supply pressure.
- Maximum working pressure: 13 bar (180 PSI)



Part No.	Description
4C-8852	Air Inlet 1/4 inch npt(f)
4C-7046	Air Inlet 3/8 inch npt(f) with gauge
4C-7033	Air Inlet 1/2 inch npt(f)
4C-7248	Air Inlet 3/4 inch npt(f)

Combination Units

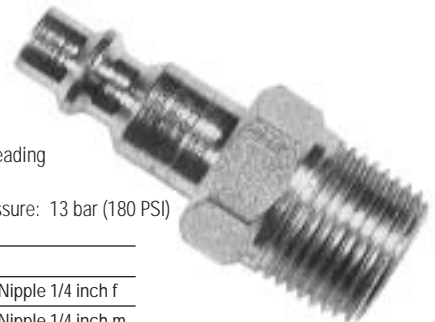
- Easy-to-install combination packaged units include filter, regulator, pressure gauge, lubricator, and connection fittings.
- Complete, convenient
- Maximum working pressure: 13 bar (180 PSI)

Part No.	Description
4C-8854	Air Inlet 1/4 inch npt(f)
4C-8855	Air Inlet 3/8 inch npt(f)
4C-7272	Air Inlet 1/2 inch npt(f)
4C-7273	Air Inlet 3/4 inch npt(f)
9U-6038	Filter Regulator Mounting Kit for all of the above



Quick-Connect Nipple

- Easy attachment to air motor inlet
- Male fitting allows threading directly into air motors
- Maximum working pressure: 13 bar (180 PSI)



Part No.	Description
4C-7156	Quick-Connect Nipple 1/4 inch f
4C-7158	Quick-Connect Nipple 1/4 inch m
4C-7159	Quick-Connect Nipple 3/8 inch m
4C-8856	Quick-Connect Nipple 1/2 inch m
4C-8857	Quick-Connect Nipple 3/4 inch m

4C-9017 Air Pressure Gauge

- Allows visual check of air pressure being supplied to pump
- Rated to 14 bar (200 PSI)
- Includes 1/4 inch npt(m) ports



Manifolds

- Supply several pumps from a common air supply line
- Air inlet port is larger than delivery ports to ensure adequate air flow to all pumps.
- Maximum working pressure: 13 bar (180 PSI)



4C-7138	
Two inlet ports	1/2 inch npt(f)
Four outlet ports	3/8 inch npt(f)

4C-9018 Tire Chuck

- Durable, full volume tool for maintaining, adding or relieving air pressure
- Maximum working pressure: 13 bar (180 PSI)



4C-8953 Tire Chuck

- Tire chuck with Quick-Disconnect coupler-nipple
- Use on air reel
- Maximum working pressure: 13 bar (180 PSI)

Lubrication Hose

Warranty: Manufacturer's

- Wire reinforced hose
- Use with oils, greases, and undercoating material
- Color: black

1/4 inch I.D. — 345 bar (5000 PSI)		
Part No.	Length	Fittings
4C-7062	12 in	1/8 in M x 1/8 in M (with Bend Restrictor)
4C-7065	30 in	1/8 in M x 1/8 in M (with Bend Restrictor)
4C-7068	15 ft	1/4 in M x 1/4 in M
4C-7069	20 ft	1/4 in M x 3/8 in M

3/8 inch I.D. — 276 bar (4000 PSI)		
Part No.	Length	Fittings
4C-7074	12 in	1/4 in F x 1/2 in M
4C-7075	24 in	3/8 in M x 3/8 in M
4C-7076	48 in	3/8 in M x 3/8 in M
4C-7077	72 in	3/8 in M x 3/8 in M
4C-7078	15 ft	1/4 in M x 1/4 in M
4C-7079	25 ft	1/4 in M x 1/4 in M
4C-7080	40 ft	1/4 in M x 3/8 in M
4C-7081	50 ft	1/4 in M x 3/8 in M

1/2 inch I.D. — 207 bar (3000 PSI)		
Part No.	Length	Fittings
4C-7340	12 in	1/2 in M x 1/2 in M
4C-7085	15 in	1/2 in M x 1/2 in M
4C-7337	18 in	1/2 in M x 1/2 in M
4C-7339	48 in	1/2 in M x 1/2 in M
4C-7334	72 ft	1/2 in M x 1/2 in M
4C-7333	10 ft	1/2 in M x 1/2 in M
4C-7335	16 ft	1/2 in M x 1/2 in M
4C-7336	20 ft	1/2 in M x 1/2 in M
4C-7341	25 ft	1/2 in M x 1/2 in M
4C-7354	50 ft	1/2 in M x 1/2 in M

3/4 inch I.D. — 157.5 bar (2250 PSI)		
Part No.	Length	Fittings
4C-7048	18 in	3/4 in M x 3/4 in M
4C-7047	72 in	3/4 in M x 3/4 in M

Suction Hose		
Part No.	Length	Fittings
4C-9019	10 ft	3/4 in M x 3/4 in M
4C-9020	6 ft	3/4 in M x 3/4 in M

Air/Water Hose

Warranty: Manufacturer's

- Fabric reinforced general-purpose hose
- Use with air or water, antifreeze, and windshield wash
- Color: red

1/4 inch I.D. — 12.6 bar (180 PSI)		
Part No.	Length	Fittings
4C-7049	18 in	1/4 in M x 1/4 in M
4C-7050	48 in	1/4 in M x 1/4 in M
4C-7051	72 in	1/4 in M x 1/4 in M
4C-7052	10 ft	1/4 in M x 1/4 in M
4C-7053	25 ft	1/4 in M x 1/2 in M
4C-7054	40 ft	1/4 in M x 1/2 in M

3/8 inch I.D. — 12.6 bar (180 PSI)		
Part No.	Length	Fittings
4C-7055	15 in	3/8 in M x 1/2 in M
4C-7208	18 in	3/8 in M x 3/8 in M
4C-7056	48 in	3/8 in M x 3/8 in M
4C-7057	10 ft	3/8 in M x 3/8 in M
4C-7058	25 ft	3/8 in M x 1/2 in M
4C-7059	30 ft	3/8 in M x 1/2 in M
4C-7060	40 ft	3/8 in M x 1/2 in M
4C-7061	60 ft	3/8 in M x 1/2 in M

1/2 inch I.D. — 12.6 bar (180 PSI)		
Part No.	Length	Fittings
4C-7221	72 in	1/2 in M x 1/2 in M
4C-7264	10 ft	1/2 in M x 1/2 in M
4C-7254	40 ft	1/2 in M x 1/2 in M

3/4 inch I.D. — 12.6 bar (180 PSI)		
Part No.	Length	Fittings
4C-7083	18 in	3/4 in M x 3/4 in M
4C-7084	48 in	3/4 in M x 3/4 in M
4C-7255	72 in	3/4 in M x 3/4 in M
4C-7269	10 ft	3/4 in M x 3/4 in M
4C-7256	25 ft	3/4 in M x 3/4 in M

Pipe Fittings — 345 bar (5000 PSI)

Warranty: Manufacturer's



NPT Bushing — Reducing, Standard, and Reducing

Part No.	Description	Thread Size, Male x Female
4C-7096	NPT Bushing	1/8 in x 1/8 in
4C-7142	NPT Bushing	1/8 in x 1/4 in
4C-7116	NPT Bushing	1/8 in x 3/8 in
4C-7000	NPT Bushing	1/4 in x 1/8 in
4C-7098	NPT Bushing	1/4 in x 3/8 in
4C-7143	NPT Bushing	1/4 in x 1/2 in
3B-7722	NPT Bushing	3/8 in x 1/4 in
4C-7097	NPT Bushing	3/8 in x 3/8 in

Part No.	Description	Thread Size, Male x Female
4C-7111	NPT Bushing	3/8 in x 1/2 in
4C-7005	NPT Bushing	1/2 in x 1/4 in
4C-7003	NPT Bushing	1/2 in x 3/8 in
4C-7154	NPT Bushing	1/2 in x 3/4 in
4C-7010	NPT Bushing	3/4 in x 1/4 in
4C-7009	NPT Bushing	3/4 in x 3/8 in
4C-7020	NPT Bushing	3/4 in x 1/2 in
4C-7136	NPT Bushing	1 in x 3/4 in

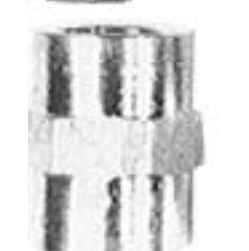
Street Elbow

Part No.	Description	Thread Size, Male x Female
4C-7016	Street Elbow	1/4 in x 1/4 in
4C-7109	Street Elbow	3/8 in x 3/8 in
4C-7137	Street Elbow	1/2 in x 1/2 in
4C-7161	Street Elbow	3/4 in x 3/4 in



NPT Coupling — Standard

Part No.	Description	Thread Size
4C-7007	NPT Coupling	1/8 in
4C-7004	NPT Coupling	1/4 in
4C-7150	NPT Coupling	3/8 in
4C-7135	NPT Coupling	1/2 in
4C-7006	NPT Coupling	3/4 in
4C-7008	NPT Coupling	1 in



NPT Hex Nipple — Standard and Reducing

Part No.	Description	Thread Size, Male x Female
4C-7099	NPT Hex Nipple	1/4 in x 1/8 in
4C-7121	NPT Hex Nipple	1/4 in x 1/4 in
4C-7115	NPT Hex Nipple	3/8 in x 1/8 in
4C-7153	NPT Hex Nipple	3/8 in x 1/4 in
4C-7120	NPT Hex Nipple	3/8 in x 3/8 in
4C-7151	NPT Hex Nipple	1/2 in x 1/4 in
4C-7140	NPT Hex Nipple	1/2 in x 3/8 in
4C-7133	NPT Hex Nipple	1/2 in x 1/2 in
4C-7122	NPT Hex Nipple	3/4 in x 1/2 in
4C-7160	NPT Hex Nipple	3/4 in x 3/4 in
4C-7134	NPT Hex Nipple	1 in x 3/4 in



NPT Square-Head Plug

Part No.	Description	Thread Size
4C-7032	NPT Square-Head Plug	1/4 in
4C-7001	NPT Square-Head Plug	3/8 in
4C-7011	NPT Square-Head Plug	1/2 in
4C-7039	NPT Square-Head Plug	3/4 in



Pipe Swivels — 345 bar (5000 PSI)

Warranty: Manufacturer's

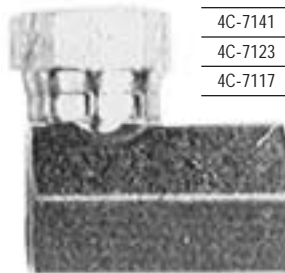
NPT Swivel Adapter — Male x Female — Straight

Part No.	Description	Rigid Thread x Swivel Thread
4C-7252	NPT Swivel Adapter	1/8 in x 1/4 in
4C-7125	NPT Swivel Adapter	1/4 in x 3/8 in
4C-7107	NPT Swivel Adapter	3/8 in x 3/8 in
4C-7152	NPT Swivel Adapter	3/8 in x 1/2 in
4C-7129	NPT Swivel Adapter	3/4 in x 3/4 in
4C-7175	NPT Swivel Adapter	1 in x 3/4 in
4C-7144	NPT Swivel Adapter	1 in x 1 in



NPT Swivel Adapter — Female x Female — 90°

Part No.	Description	Rigid Thread x Swivel Thread
4C-7124	NPT Swivel Adapter	1/4 in x 1/4 in
4C-7108	NPT Swivel Adapter	3/8 in x 3/8 in
4C-7141	NPT Swivel Adapter	3/8 in x 1/2 in
4C-7123	NPT Swivel Adapter	1/2 in x 1/2 in
4C-7117	NPT Swivel Adapter	3/4 in x 3/4 in

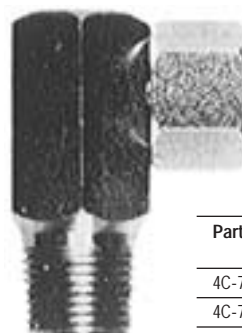


NPT Swivel Adapter — Female x Female — Straight

Part No.	Description	Rigid Thread x Swivel Thread
4C-7105	NPT Swivel Adapter	1/4 in x 1/4 in
4C-7139	NPT Swivel Adapter	3/8 in x 1/4 in
4C-7113	NPT Swivel Adapter	3/8 in x 3/8 in
4C-7106	NPT Swivel Adapter	1/2 in x 1/4 in
4C-7148	NPT Swivel Adapter	1/2 in x 3/8 in
4C-7112	NPT Swivel Adapter	3/4 in x 3/4 in
4C-7132	NPT Swivel Adapter	1 in x 1 in



NPT Swivel Adapter — Male x Female — 90°



Part No.	Description	Rigid Thread x Swivel Thread
4C-7104	NPT Swivel Adapter	1/4 in x 1/4 in
4C-7103	NPT Swivel Adapter	3/8 in x 1/4 in
4C-7102	NPT Swivel Adapter	3/8 in x 3/8 in
4C-7147	NPT Swivel Adapter	1/2 in x 3/8 in
4C-7101	NPT Swivel Adapter	1/2 in x 1/2 in
4C-7145	NPT Swivel Adapter	3/4 in x 3/4 in

NPT Swivel Adapter — Male x Female — 45°

Part No.	Description	Rigid Thread x Swivel Thread
4C-7149	NPT Swivel Adapter	3/8 in x 3/8 in



Fuel Injection Pump Cleaning

Ultrasonic Cleaner Groups

- Available for different power supplies — 110 V/60 Hz or 230V/50 Hz, single phase
- Groups include tank with a heater element and a timer switch, basket, and cover.
- Basket and cover are made of stainless steel.
- No parts for this group are available through the Caterpillar parts system.



Part No.	Description
6V-6050	Cleaner Group for 110V/60 Hz, single phase, power
6V-6060	Cleaner Group for 230V/50 Hz, single phase, power

6V-6188 Cleaning Tray

- Made to hold specific parts of the unit injectors in groups while the parts are cleaned in the ultrasonic cleaner tank
- Keeps plungers, bushings, tips, and needles in sequence so that parts which fit together and must be kept together can be cleaned but not mixed.
- Fits in the tank of either ultrasonic cleaner group



212-1503 Parts Washer Kit

Warranty: Manufacturer's

- Lightweight, portable parts washer designed with many features not found in other products
- Operates on compressed air
- Comes with lid that can be secured, preventing spills
- Primary filter is 25 micron and helps prevent solvent spills during transportation
- Two filters help extend solvent life
- Uses a cleaning solvent (TNT) and water mixture
- For cold weather conditions R.V. antifreeze can be used with solvent (TNT)
- Flo-thru brush and triggered sprayer aids in cleaning of parts and small components
- Designed with a stable base (use on work benches or back of service trucks)
- CE compliant



Capacity	13 liters (5 gal)
Air pressure requirements	147 kPa (21 psi)
Overall size	640 x 460 x 200 mm (2.25 x 18.1 x 7.9)

Part No.	Description
212-1504	Oil Absorbent Sock (PIG)
212-1505	25 mu Primary Filter Blanket
212-1506	Air Pump
212-1508	Flo-Thru Brush
212-0052	TNT 1 litre Container (US only)

Reference

NEHS0849 Tool Operating Manual

Pressure Washers

Electric Cart Units

Warranty: Manufacturer's (one year warranty on material and workmanship)

- Designed for quiet, smooth running operation when used in most applications (for industrial use only)
- Direct-drive pump eliminates any belt related problems and reduces horsepower loss (most efficient washer on market)
- High-density, rotationally molded polyethylene cart is durable, will not rust, or fade for long lasting appearance

Motor

- Equipped with an overload protector
- All electrical connections are water tight

Pump

- Three-cylinder ceramic plunger pump with easy replaceable valves, forged crankshaft, and roller bearings in oil bath lubrication
- Each pump will handle up to 60°C (140°F) water temperature

Soap Injection

- Equipped with hi-low downstream soap injection to apply soap at a pressure of 1724 kPa (250 psi)



4C-5983
4C-5985
4C-5987
4C-5988



4C-5989
164-2082
164-2083

Cat Part No.	4C-5983	4C-5985	4C-5987 4C-5988	4C-5989	164-2082	164-2083
Pressure (psi)	1000	1200	1500	2000	3000	2000
Volume (gpm)	2.2	3.0	3.5	4.5	4.0	8.0
Pump	—	—	—	Cat	Cat	Hypro
Horsepower	1.5	2.0	3.0	5.0	7.5	10.0
Electrical (V/A/Hz)	110/15/60	220/10/60	220/17/60	220/26/60	220/26/60	220/40/60
Soap control	Low Pressure	Low Pressure	Low Pressure	Low Pressure	Low Pressure	Low Pressure
Hose	12 m x 9 mm (40 ft x .38 in)	12 m x 9 mm (40 ft x .38 in)	12 m x 9 mm (40 ft x 3/8 in)	12 m x 9 mm (40 ft x .38 in)	8 m x 9 mm (30 ft x .38 in)	15 m x 9 mm (50 ft x 3/8 in)
Gun	Trigger Shut Off	Trigger Shut Off	Trigger Shut Off	Trigger Shut Off	Trigger Shut Off	Trigger Shut Off
Tip	Multi Jet	Multi Jet	Multi Jet	Multi Jet	Multi Jet	Multi Jet
Twist fasts	Standard	Standard	Standard	Standard	Standard	Standard
Adjustable pressure	Standard	Standard	Standard	Standard	Standard	Standard
Ship weight	50 kg (110 lbs)	50 kg (110 lbs)	59 kg (130 lbs)	100 kg (220 lbs)	100 kg (220 lbs)	127 kg (280 lbs)
Replacement Tip	4C-6066	4C-6066	4C-6067	164-2076	4C-6066	
Replacement Hose	4C-6018	4C-6018	4C-6018	4C-6018	4C-6018	164-2077

Electric Hand Carry Units

Warranty: Manufacturer's

- Portable, easy to service, smooth running, and dependable
- Rugged construction using quality materials and expert craftsmanship
- Excellent general purpose power washer



Housing

- High density polyurethane case is durable, fade resistant, and will not rust

Motor

- Equipped with an overload protector
- All electrical connections are water tight
- Each pump will handle up to 60°C (140°F) water temperature

Soap Injection

- Equipped with hi-low downstream injection to apply soap at 1724 kPa (250 psi)

Cat Part No.	4C-5977	4C-5981 4C-5982 ¹
Pressure (psi)	1000	1500
Gallons/minimum	2.2	3.5
Horsepower	1.5	3.0
Volts/Amps	110/15/60 Hz	220/17/60 Hz
Soap control	Low Pressure	Low Pressure
Hose	6 m x 9 mm (20 ft x .375 in)	12 m x 9 mm (40 ft x .375 in)
Gun	Trigger Shut Off	Trigger Shut Off
Tip	Multi Jet	Multi Jet
Twist fasts	Standard	Standard
Adjustable pressure	Standard	Standard
Ship weight	29 kg (65 lbs)	31 kg (69 lbs)
Replacement Tip	4C-6066	4C-6067
Replacement Hose	4C-6017	4C-6017

¹ Canadian Standard Approved

Electric Base Units

Warranty: Manufacturer's (one year warranty on material and workmanship)

- Designed for quiet, smooth running operation when used in most applications (industrial use only)
- Direct-drive pump eliminates belt related problems and reduces horsepower loss (most efficient washer type)
- Equipped with multi jet tips, twist fasts, adjustable pressure



Motor

- Built with a totally enclosed fan-cooled motor equipped with an overload protector
- All electrical connections are water tight

Pump

- Three cylinder ceramic plunger pump with easy replaceable valves, forged crankshaft, and roller bearings in oil bath lubrication
- Pumps handle up to 60°C (140°F) water temperature

Soap Injection

- Equipped with hi-low downstream soap injection to apply soap at a pressure of 1724 kPa (250 psi)

Cat Part No.	164-2079	164-2080	164-2081
Pressure (psi)	1500	2000	2000
Volume (gpm)	3.5	4.0	4.0
Horsepower	3.0	5.0	7.5
Electrical (V/A/Hz)	220/17/60	220/26/60	220/32/60
Soap control	Low Pressure	Low Pressure	Low Pressure
Hose	12 m x 9 mm (40 ft x .38 in)	12 m x 9 mm (40 ft x .38 in)	12 m x 9 mm (40 ft x 3/8 in)
Gun	Trigger Shut Off	Trigger Shut Off	Trigger Shut Off
Ship weight	35 kg (78 lbs)	68 kg (150 lbs)	82 kg (180 lbs)
Replacement Tip	4C-6029	50-9304	4C-6028
Replacement Hose	4C-6018	4C-6018	164-6018

Gas Cart Units

Warranty: Manufacturer's

- Perfect for any job, anywhere water is found
- Direct drive pump offers low maintenance and trouble free operation
- Handles tasks from gentle washing to paint stripping and water sandblasting
- Heavy-duty frame is made from powder-coated tube with 9.5 liter (2.5 gal) chemical tank and 254 x 102 mm (10 x 4 in) solid rubber tires
- Equipped with multi jet tips, twist fasts, adjustable pressure

Engine

- Honda engines feature 4-cycle, air cooled, electronic ignition, recoil starter with 3.8 liter (1 gal) fuel tank capacity and oil alert switch for lubrication protection
- Briggs and Stratton engines feature 4-cycle, air cooled, magnetron ignition, and recoil starter

Pump

- Plunger pump provides long lasting service
- Easy to service wet areas, fast replacement of valves, and seals to withstand up to 60°C (140°F) water temperature
- Equipped with pressure adjusting unloader valves

Soap Injection

- Equipped with hi-low downstream soap injection to apply soap at a pressure of 1724 kPa (250 psi)

Gun

- 10335 and 12402 kPa (1500 and 1800 psi) series has regular gun with two piece wand/multi jet tip
- 13780 and 20670 kPa (2000 and 3000 psi) series has trigger gun with lance handle



Cat Part No.	4C-5997	4C-6000	4C-6002
Pressure (psi)	1500	2000	3000
Volume (gpm)	3.5	4.5	4.5
Horsepower	5.0 Briggs	8.0 Honda	13.0 Honda
Soap control	Low Pressure	Low Pressure	Low Pressure
Hose	12 m x 9 mm (40 ft x .38 in)	12 m x 9 mm (40 ft x .38 in)	12 m x 9 mm (40 ft x .38 in)
Gun	Trigger Shut Off	Trigger Shut Off	Trigger Shut Off
Ship weight	45 kg (98 lbs)	68 kg (150 lbs)	77 kg (170 lbs)
Replacement Tip	4C-6067	164-2076	4C-6066
Replacement Hose	4C-6018	4C-6018	4C-6018

Diesel Units

Warranty: Manufacturer's

- Direct-drive pumps offer low maintenance and trouble-free operation
- Includes: gauge, quick coupled hose, chemical injection, and unloader valve with adjustable pressure
- Dry battery included with electric start models



Cat Part No.	4C-6009	164-2090
Pressure (psi)	2500	5000
Volume (gpm)	4.0	4.5
Horsepower	8.0	16.0
Pump	5 Plunger Axial with Oil Bath Lubrication	3 Plunger with Oil Bath Lubrication
Soap control	Low Pressure	Low Pressure
Hose	12 m x 9 mm (40 ft x .38 in)	12 m x 9 mm (40 ft x .38 in)
Gun	Trigger with Lance Handle	Trigger with Lance Handle
Ship weight	116 kg (255 lbs)	136 kg (300 lbs)
Replacement Hose	4C-6018	4C-6018

Master Series Units

Warranty: Manufacturer's

- Equipped with finest options available on a portable pressure washer today
- Direct-drive pumps offer low maintenance and trouble free operation
- Dry battery included with electric start units

Gas Engine

- Vanguard engine on gas powered unit
- Oil alert switch, compression release, 3.8 liter (1 gal) fuel tank, and electric starter are standard features

Electric Motor

- 5.6 kW (7.5 horsepower) motor available in both single and three phase
- Totally enclosed, fan-cooled motor with water tight magnetic starter

Pump

- Easy to service, fast replacement of valves, and seals
- Withstand up to 60°C (140°F) water temperature
- Equipped with pressure adjusting unloader valves



Cat Part No.	4C-6064	4C-6065 4C-6060
Pressure (psi)	4000	3000
Volume (gpm)	5.0	4.5
Horsepower	16.0 Vanguard	7.5 Electric
Soap control	Low Pressure	Low Pressure
Hose	12 m x 9 mm (40 ft x .38 in)	12 m x 9 mm (40 ft x .38 in)
Tip	Multi Jet	Multi Jet
Twist fasts	Standard	Standard
Adjustable pressure	Standard	Standard
Electrical (V/A/Hz)	N/A	220/35/60 Single 220-440/60 3 Phase
Ship weight	106 kg (235 lbs)	95 kg (210 lbs)
Replacement Tip		164-2076
Replacement Hose	4C-6018	4C-6018

Hot Water Pressure Washers

Warranty: Manufacturer's

- Standard features include: A.R. industrial pump and motor, a 12 meter (40 ft) pressure hose, trigger gun, low pressure chemical injection, dual wand with interchangeable tips, and power cord with GFCI protection
- Built with high-quality Beckett burner
- In-line fuel filter or optional fuel water separator
- Flow switch and pressure pop-off
- Easy to access fuel fill
- Temperature cut-out switch/discharge
- Blower operates continuous, prevents flooding and quick ignition of flame

Burner rating	230,000 BTU
Fuel nozzle	1.35 gph by 80 degree
Size (HxLxW)	42 x 31 x 24.25 inch
Fuel tank	5 gallon
Heavy steel tube frame	1.5 inch
Heavy duty tires	10 inch diameter
Axle	3/4 inch, solid
Stack diameter	10 inch
Heater coil	1/2 inch schedule 80 steel
Heater	12 inch diameter by 18 inches tall with stainless steel skin



Electric Powered Diesel Fired Hot Water Models — SHDE Series



Gas Powered Diesel Fired Hot Water Models — SHDH Series

Gas Powered Diesel Fired Hot Water Models — SHDH Series

Cat Part No.	164-2056	164-2057
Pressure (psi)	2000	3000
Volume (gpm)	4.0	4.0
Horsepower	11.0 Honda	13.0 Honda
Electrical (V/A/Hz)	12 Volt DC	12 Volt DC
Fuel type	Diesel	Diesel
Ship weight	258 kg (570 lbs)	258 kg (570 lbs)

Electric Powered Diesel Fired Hot Water Models — SHDE Series

Cat Part No.	164-2049	164-2054	164-2055
Pressure (psi)	1000	2000	3000
Volume (gpm)	3.0	4.0	4.0
Horsepower	2.0 Elec.	5.0 Elec.	7.5 Elec.
Electrical (V/A/Hz)	110/20/60	220/25/60	220/34/60
Fuel type	Diesel	Diesel	Diesel
Ship weight	159 kg (350 lbs)	258 kg (570 lbs)	272 kg (600 lbs)

Diesel and LP/Natural Gas Fired Hot Water Pressure Washers

Warranty: Manufacturer's

- All TR models come standard with A.R. pumps, low pressure chemical injection, 12 meter (40 ft) discharge hose with trigger gun, dual wand, interchangeable tips, and 3 meter (10 ft) power cord on electric models
- Equipped with a flow switch/pressure pop-off valve and temperature cut-out switch and discharge
- Heavy steel frame is made of square tubing for added strength
- Optional handle and wheel kits are available (TRDE units only)
- Electronic ignition on LP/natural gas units eliminates pilot light and improve efficiency (equipped with 1 inch pressure adjustment heater switch)
- The diesel fuel system is filtered by a Racor fuel/water separator
- Uses a high-quality Beckett burner with 2.25 diesel tip with 90 degree pattern
- Blower runs continuously to circulate air and promote quicker firing
- All sheet metal powder coated and easy to remove for servicing

BTU rating	450,000
Overall dimensions w/o wheel kit	45 x 23 x 44 inches tall
Dimensions w/wheel kit	45 x 32 x 52 inches tall
Water filter	80 mesh
Back tires	16 inch diameter semi-pneumatics
Front tires	8 inch semi-pneumatic tires
Stack	10 inch diameter
Heater coil	1/2 inch schedule 80 steel coil
Heater size	18 x 24 inches tall

Electric Powered Diesel Fired Hot Water Models — TRDE Series



Electric Powered Diesel Fired Hot Water Models — TRDE Series

Cat Part No.	164-2058	164-2059	164-2060
Pressure (psi)	2000	3000	2000
Volume (gpm)	4.0	4.0	8.0
Horsepower	5.0 Electric	7.5 Electric	10.0 Electric
Volts/Amps/Hz	220/25/60	220/34/60	220/40/60
Fuel type	Diesel	Diesel	Diesel
Ship weight	258 kg (570 lbs)	272 kg (600 lbs)	363 kg (800 lbs)



Electric Powered LP/ Natural Gas Fired Models — TRLE and TRNE Series

Electric Powered LP/Natural Gas Fired Models — TRLE and TRNE Series

Cat Part No.	164-2061	164-2062	164-2063	164-2064	164-2065	164-2066
Pressure (psi)	2000	2000	3000	3000	2000	2000
Volume (gpm)	4.0	4.0	4.0	4.0	8.0	8.0
Horsepower	5.0 Elec.	5.0 Elec.	7.5 Elec.	7.5 Elec.	10.0 Elec.	10.0 Elec.
Volts/Amps/Hz	220/25/60	220/25/60	220/34/60	220/35/60	220/40/60	220/40/60
Fuel type	LP	Nat. Gas	LP	Nat. Gas	LP	Nat. Gas
Ship weight	258 kg (570 lbs)	258 kg (570 lbs)	272 kg (600 lbs)	272 kg (600 lbs)	363 kg (800 lbs)	363 kg (800 lbs)
Replacement hose	164-2068	164-2068	164-2068	164-2068	164-2068	164-2068

164-2078 Aluminum Cart Unit

Warranty: Manufacturer's

- Perfect for any job, anywhere water is found
- Direct-drive pumps provide low maintenance and trouble free operation
- Works for gentle washing to paint stripping and water sandblasting
- Heavy-duty aluminum tube frame has 254 x 102 mm (10 x 4 in) solid rubber tires



Engine

- Honda engine is 4-cycle, air cooled, electronic ignition, recoil starter with 3.8 liter (1 gal) fuel tank capacity, and oil alert switch for lubrication protection

Pump

- Plunger pump design for long lasting service
- Easy to service wet areas, fast replacement of valves, and seals
- Withstands up to 60°C (140°F) water temperature
- Equipped with pressure adjusting unloader valves

Soap Injection

- Equipped with hi-low downstream soap injection to apply soap at a pressure of 1725 kPa (250 psi)

Pressure (psi)	5000
Volume (gpm)	4.5
Horsepower	20.0 Honda
Soap control	low pressure
Hose	15 m x 9 mm (50 ft x .38 in)
Gun	trigger shut off
Tip	interchangeable
Twist fasts	standard
Adjustable pressure	standard
Ship weight	113 kg (250 lbs)

Gun

- Trigger gun with lance handle

164-2084 High Pressure Water Pump

Warranty: Manufacturer's

- High pressure pump has a light-weight die cast aluminum housing
- Large pump casing allows for fast priming
- Built-in check valve for fast repriming
- Aluminum closed impeller for high efficiency and a cast iron volute for long life
- Stainless steel internal screws and shaft sleeve
- Other features include: horizontal discharge, threaded connections, NPT threads, carrying handle, and strainer to eliminate clogging



Suction and discharge ports	50 mm (2.0 in)
Maximum flow	455 l/min (120 gpm)
Maximum pressure	606 kPa (88 psi)
Maximum suction lift	5.5 m (18 ft)
Priming time at 15 ft.	1 minute
Ship weight	29 kg (64 lbs)

164-2088 Pressure Pump Hose Kit

Warranty: Manufacturer's

- Provides all the hoses and fittings required to make connections to a 2 inch high-pressure pump
- Contains 100 feet of 1.5 inch flame resistant high pressure hose with a maximum working pressure of 150 psi and a burst pressure of 450 psi
- Allows for suction lifts of up to 10 feet and water delivery within 100 feet of the pump (for greater distances, additional discharge hose can be added)
- Includes one each of the following: 1 1/2 inch spray/stream nozzle, lug wrench, 1 1/2 x 2 inch male/female adapter, 15 foot x 2 inch plastic suction hose, and 100 feet of 1 1/2 inch high-pressure discharge hose

164-2089 Trash Pump

Warranty: Manufacturer's

- High-volume pump with die cast aluminum housings
- Siliconized carbide mechanical seal with viton elastomers
- Built-in check valve for fast priming
- Ductile iron impeller and cast iron volute
- Other features include: horizontal discharge, threaded connections, stainless steel internal hardware, large pump casing, and a built-in carrying handle



Suction and discharge ports	76 mm (3.0 in)
Maximum flow	1140 l/min (300 gpm)
Maximum pressure	606 kPa (88 psi)
Maximum head	31 m (103 ft)
Maximum solids handling	32 mm (1.25 in)
Priming time at 15 feet	2 minutes
Ship weight	33.5 kg (74 lbs)

150-7745 Hot Water Trailer Unit

Warranty: Manufacturer's

- Combines quality of smaller hot water units with mobility of a trailer unit
- Developed for clean-up prior to repair of rear axles for mining trucks
- Has many specialized features which include: 4000-pound trailer, 300-gallon tank, 2 tool boxes, 100-foot pressure hose with reel, heavy duty gun/wand, three 3-foot extensions, standard wand, 4-gpm tip/orifices, one 0-degree orifice, one 15-degree orifice, one 25-degree orifice, one 40-degree orifice, straight turbo tip, Jenz right angle turbo tip, and repair kits
- Service parts for this unit were designed to meet CAT 4000 specifications and should not be used with other models



Maximum pressure	4000 psi
Maximum flow	4.0 gpm
Horsepower	16.0 Briggs Vanguard engine
Burner	12 volt diesel fired

Service Parts

150-7746	Rotating Head, Right Angle
150-7747	Rotating Head, Straight
150-7748	Repair Kit, Rotating Head Right Angle
150-7749	Repair Kit, Rotating Head Straight
150-7750	Wand, 3 Foot Extension
150-7751	Large Gun/Wand
150-7754	Orifice, 0 Degree
150-7755	Orifice, 15 Degree
150-7756	Orifice, 25 Degree
150-7757	Orifice, 40 Degree
150-7758	Water Bag Filter
150-7759	Burner Filter Element
150-7760	Oil Filter Element
150-7761	Air Filter Element
150-7763	Adapter (Extension Wand to Standard Orifice)
153-7093	Adapter Repair Kit

150-7762 Mobil Hot Water Unit

Warranty: Manufacturer's

- Combines the quality of a CAT hot water washer and an easy to pull cart
- Developed for clean-up prior to repair of rear axles for mining trucks
- Has many specialized features which include: battery operated backpack sprayer, battery charger, 100-foot pressure hose with reel, heavy-duty gun/wand, three 3-foot extensions, standard wand, 4-gpm tip/orifices, one 0-degree orifice, one 15-degree orifice, one 25-degree orifice, one 40-degree orifice, straight turbo tip, Jenz right angle turbo tip, and repair kits
- Service parts for this unit were designed to meet CAT 4000 specifications and should not be used with other models

Maximum pressure	4000 psi
Maximum flow	4.0 gpm
Horsepower	16.0 Briggs Vanguard engine
Burner	12 volt diesel fired



Service Parts	
150-7746	Rotating Head, Right Angle
150-7747	Rotating Head, Straight
150-7748	Repair Kit, Rotating Head Right Angle
150-7749	Repair Kit, Rotating Head Straight
150-7750	Wand, 3 Foot Extension
150-7751	Large Gun/Wand
150-7752	Battery Backpack Sprayer
150-7753	Battery Charger (Backpack Sprayer)
150-7754	Orifice, 0 Degree
150-7755	Orifice, 15 Degree
150-7756	Orifice, 25 Degree
150-7757	Orifice, 40 Degree
150-7758	Water Bag Filter
150-7759	Burner Filter Element
150-7760	Oil Filter Element
150-7761	Air Filter Element
150-7763	Adapter (Extension Wand to Standard Orifice)
153-7093	Adapter Repair Kit

Cold Water, Gas Powered Pressure Washers

Warranty: Manufacturer's

- Pump has 3 ceramic pistons, brass head, and thermostatic valve to protect valve seal gaskets
- Engine is a four stroke with recoil start (directly flanged to pump) and automatic decelerator for reduction of RPM in by-pass
- CE compliant

Standard Equipment

- Automatic gun with extension
- Lance complete with nozzle holder with angular regulation of water jet and detergent suction device
- High pressure rubber hose 10 mm (.312 in) diameter



Cat Part No.	164-2074	164-2075
Maximum flow rate	12 l/min	15 l/min
Minimum/maximum pressure	10-140 bar	10-200 bar
Pump RPM	3400	3400
Power absorbed, kW (CV)	3.0/4.0	5.5/7.5
Maximum temperature of water inlet	60°C	60°C
Engine power, kW (CV)	4.75 (5.5)	8.1 (11)
Weight	31.5 kg	67 kg
Dimensions LxHxW	64 x 55 x 89 cm	89 x 77 x 86 cm
Package weight	40 kg	88 kg
Package dimension	66 x 57 x 91 cm	76 x 80 x 89 cm

Hot Water, Oil Fired Electric Pressure Washers

Warranty: Manufacturer's

- High pressure delivery hose with quick couplings
- Quick coupling for water supply hose
- Electric cable
- Simple stainless steel barrelled lance with nozzle holder, nozzle, and protection
- CE compliant



Cat Part No.	164-2072	164-2073
Flow rate, l/min (US gpm)	11 (2.90)	15 (3.96)
Maximum pressure, bar (psi)	110 (1595)	200 (2900)
Voltage (V)	220 (1-50 Hz)	—
Absorbed power, kW (CV)	3.4 (4.6)	7.3 (9.9)
Gas-oil maximum consumption, Kg/h (lb/h)	4.6 (10.12)	5.7 (12.54)
Gas-oil tank, liter (US gal)	16 (3.96)	16 (3.96)
Weight, kg (lb)	135 (298)	135 (298)
Dimensions, cm (in)	108 x 58 x 75 (42 x 23 x 30)	108 x 58 x 75 (42 x 23 x 30)
Pallet dimensions, cm (in)	111 x 64 x 92 (44 x 25 x 36)	111 x 64 x 92 (44 x 25 x 36)

164-2071 Hot Water, Electric Powered Pressure Washer

Warranty: Manufacturer's

- Pump with integrated valve, ceramic plungers, brass head forged, and corrosion resistant
- Thermal protection on single and three phase models
- On three phase models, motor protected in case of phase failure
- Stamped-steel chassis, epoxy painted
- Double coil vertical boiler with high thermal efficiency
- Fuel and detergent tank (if needed, both tanks can be used for fuel in order to double working time)
- Low fuel safety system and warning light
- Standard equipment includes: manual stop, thermic relay, suction directly from pump, 250 mm diameter wheels, 10 m rubber hose, low pressure detergent output with control (on lance), lance and spray gun, and warning light for low fuel



Flow rate, l/h (US gph)	6 (1.58)
Maximum pressure, bar (psi)	120 (1740)
Voltage (V)	230 (1-50 Hz)
Power absorbed, kW (CV)	3 (4)
Motor power [kW (CV)]	2.2 (3)
Maximum water temperature, °C (°F)	60 (140)
RPM	2800
Weight, kg (lb)	110 (245)
Dimensions, cm (in)	97 x 71 x 86 (38 x 28 x 34)
Pallet dimensions, cm (in)	100 x 73 x 102 (39 x 29 x 40)

- This unit conforms to the following directives: Machine Directive 89/392/CEE and Subsequent Modifications; Low Tension Directive 73/23/CEE and Subsequent Modifications; Electromagnetic Compatibility 89/336/CEE
- CE compliant

Cold Water, Electric Powered Pressure Washers

Warranty: Manufacturer's

- Simple to connect accessories
- Lance is complete with adjustable jet for the classic use, and on request can be supplied with rotating nozzle
- Water proof electric box
- Incorporated detergent tank has a capacity of 15 liters (the biggest in its range)
- Made from highly resistant plastic to assure protection from corrosion
- All models are available with total stop that allows the automatic shut down of cleaner
- CE compliant



Pump

- Brass head
- Integral ceramic piston
- Stainless steel piston guide
- Highly efficient stainless steel check valves
- Special Al-Zn alloy or forged brass conrods
- Anodized aluminum die cast crankcase
- High and low pressure seals: high quality buna-textile "V" packing
- Optimal oil bath for high speed

Standard Equipment

- Gun and lance with adjustable nozzle jet
- High pressure hose

Cat Part No.	164-2067	164-2069	164-2070
Maximum flow rate, l/min (US gpm)	11 (2.90)	15 (3.96)	15 (3.96)
Minimum/maximum pressure bar (psi)	10/120 (145/1740)	10/170 (145/2465)	10/210 (145/3045)
Voltage (V)	230 (50 Hz)	230/400 (50 Hz)	230/400 (50 Hz)
Absorbed power, kW (CV)	2.7 (3.7)	5.3 (7.2)	6.7 (9.1)
Maximum temperature of water inlet, °C (°F)	60 (140)	60 (140)	60 (140)
Detergent tank, l (US gal.)	15 (4)	15 (4)	15 (4)
Weight, kg (lb)	35 (77)	48 (106)	50 (110)
Dimensions (L x W x H), cm (in)	70x48x87 (28x19x34)	76x48x87 (30x19x34)	76x48x87 (30x19x34)

209-2356 360 Degree Nozzle

209-2358 18 Inch Wand Extension

Warranty: Manufacturer's

- Used with 1000 psi pressure washer unit
- Allows 360 degree cleaning in 3 inch diameter and greater areas

210-5700 Spray Wand

Warranty: Manufacturer's

- 360 degree spray head
- Produces 25580 kPa (4000 psi) pressure at 15 Lpm (4 gpm)

4C-6025 Rotating Brush

Warranty: Manufacturer's

- 178 mm (7 in) diameter Lexan brush saves time and soap removing road film and dirt
- Feathered PVC bristles are safe to use on any surface without scratching
- Rated for use on any machine up to 4.0 GPM
- Rotates under garden hose pressure
- Features strong Lexan construction, bronze bearings, anti-splash design, and 178 mm (7 in) angle adjusting wand with twist fast adapter to hook up directly to wand
- Operates under low pressure enabling use of soap injector



4C-6022 Foamer

Warranty: Manufacturer's

- Creates foam when using chemical cleaners or soap
- Foam sticks to surface longer so detergent will have more time to work on film, dirt, or grease
- Used with washers having 4823 to 20670 kPa (700 to 3000 psi)
- Includes twist fast adapter to couple directly to wand



164-2091 Swivel Reel

164-2092 Mini Swivel Reel

Warranty: Manufacturer's

164-2091 Swivel Reel

- Hose reel holds up to 61 meters (200 ft) of 9.5 mm (3/8 in) hose
- Turns 360° (pull hose off in any direction)
- Rated up to 27560 kPa (4000 psi)
- Mounting bracket must be ordered separately

164-2092 Mini Swivel Reel

- Hose reel holds up to 30 meters (100 ft) of 9.5 mm (3/8 in) hose
- Turns 360° (pull hose off in any direction)
- Rated up to 27560 kPa (4000 psi)
- Mounting bracket must be ordered separately



Swivel Reel Brackets

164-2453, Universal Bracket

164-2454, Wall Mount Bracket

164-2455, Floor Mount Bracket

4C-6024 Stationary Brush

Warranty: Manufacturer's

- 152 mm (6 in) brush saves time and soap removing road film and dirt
- Feathered PVC bristles are safe to use on any surface
- Operates on any machine producing up to 4.0 gpm
- Strong Lexan construction with a twist fast connector adapts to end of wand
- Operates under low pressure enabling use of low pressure soap injector



164-2456 Hose Kit, 6 m

164-2457 Hose Kit, 12 m

164-2458 Hot Water Hose Kit, 12 m

Warranty: Manufacturer's

- 6 meter (20 ft) and 12 meter (40 ft) non-marking hoses are rated up to 20670 kPa (3000 psi)
- Comes with twist fast adapters to hook onto hose currently on machine

Multi-Reg Kits

Warranty: Manufacturer's

- Allows you to adjust both pressure and spray pattern
- You can select high or low pressure by pushing forward or pulling backward
- You can select spray pattern from 0 to 60 degrees by turning nozzle
- Operates up to 20670 kPa (3000 psi)

Machine Use	
4C-6028 #4 Multi-Reg Kit	1000 psi @ 2.0-2.2 gpm
4C-6029 #5 Multi-Reg Kit	1500 psi @ 3.0-3.5 gpm
164-2465 #6 Multi-Reg Kit	2000 psi @ 4.0-4.5 gpm

4C-6030 Medium Duty Sand Blaster

4C-6031 Heavy Duty Sand Blaster

Warranty: Manufacturer's

4C-6030 Medium Duty Sand Blaster

- Combines high pressure water with sand to remove graffiti, paint, baked on grease, rust, and much more
- Constructed of a bronze body, steel orifice, and a replaceable tungsten carbide tip
- Comes with sand blast head, hose, and probe with twist fast adapter to couple to end of wand
- For use up to 3500 psi at 4.0 gpm

4C-6031 Heavy Duty Sand Blaster

- Combines high pressure water with sand to remove graffiti, paint, baked on grease, rust, and much more
- Constructed of an aluminum body, hardened stainless steel tip, and tungsten carbide sand nozzle
- Comes with sand blast head, hose, and probe with twist fast adapter to couple to end of wand
- For use up to 4000 psi at up to 10.0 gpm



Turbo Lasers

Warranty: Manufacturer's

- High pressure water going in a circular motion boosts cleaning impact up to 85%
- Connects to a wand with a twist fast connection



Machine Use	
4C-6026 #4 Turbo Laser	1000 psi @ 2.0-2.2 gpm, 3000 psi @ 4.0-4.5 gpm
4C-6027 #5 Turbo Laser	1500 psi @ 3.0-3.5 gpm
164-2462 #6 Turbo Laser	2000 psi @ 4.0-4.5 gpm

Field Attachable Ground Fault Circuit Interrupter

Warranty: Manufacturer's

- Ground Fault Circuit Interrupter (G.F.C.I.) plug provides protection from dangerous ground fault hazards
- Handles wire sizes from 18 AWG to 12 AWG up to 10 amps

Part No.	Voltage
164-2466	110 Volt
164-2467	220 Volt

Quick Reference Replacement Parts

Warranty: Manufacturer's

Part No.	Description
4C-6011	#30 Gun (1000 to 1500 psi)
4C-6012	3000 lb Gun (2000 to 4000 psi)
4C-6013	Gun Repair Kit for 4C-6011
4C-6014	Gun Repair Kit for 4C-6012
4C-6016	1/4 inch Insulated Wand
4C-6017	20 ft Pressure Hose
4C-6018	40 ft Pressure Hose
4C-6019	50 ft x 3/16 in Hydraulic Hose
4C-6038	Twist Fast Plug x 1/4 Male
4C-6039	Twist Fast Plug x 1/8 Male
4C-6040	Twist Fast Plug x 1/4 Female
4C-6041	Twist Fast Socket x 1/4 Female
4C-6042	Twist Fast Socket x 1/8 Female
4C-6050	1/4 inch Quick Coupler Plug
4C-6051	1/4 inch Quick Coupler Socket
4C-6052	3/8 inch Quick Coupler Plug
4C-6053	3/8 inch Quick Coupler Socket
4C-6066	#4 Multi-Reg Tip
4C-6067	#5 Multi-Reg Tip
4C-6068	#4 Tip, 0° (1/4 inch)
4C-6069	#4 Tip, 15° (1/4 inch)
4C-6070	#6 Tip, 0° (1/4 inch)
4C-6071	#6 Tip, 15° (1/4 inch)
4C-6072	4030 Soap Tip, 1/4 inch

Blasting Equipment

163-3945 WADU™ Soluble Media Injector

Warranty: Manufacturer's for machine; Six Months for chemicals

- Used to inject water soluble media (Blast Media) into high-pressure water stream — increases cleaning capabilities of pressure washers
- Used with pressure washers capable of 2,500 psi or greater
- Works great for removing grease, oil, flaking paint, and soil
- Inexpensive means of converting a pressure washer to use Blast Media with very little capital investment
- For removal of heavy paint and corrosion use 163-3952 Soda Blaster (12SX Group)
- Blast Media is water soluble and environmentally safe

Blast Media	
Alkalinity	8.2 pH
Softness	2.5 Mohs
Crystal size	275 micron



163-3948 Hydroflex™ Formula XL

- Engineered to be injected with high-pressure water
- Superior for cleaning greases and oils (grease and oils will not be redeposited on surrounding substrates during cleaning process)

163-3946 Blast Cabinet System

Warranty: Manufacturer's for machine; Six Months for chemicals

- Complete system used to clean and strip parts using environmentally safe blast media
- Media is a single pass material (parts being blasted do not require prewashing as required with glass bead and steel shot blasting)
- Produces a superior finish and is safe for aluminum parts
- Will not damage bearing or gasket surfaces and will not roll threads orpeen cracks shut
- May reduce cost of other consumables such as wire wheels, sanding discs, etc.
- Greatly increases productivity over hand cleaning and scraping
- Uses Blast Media that is water soluble and environmentally safe
- Dimensions: 36 in x 48 in

Blast Media	
Alkalinity	8.2 pH
Softness	2.5 Mohs
Crystal size	
163-3951	70 micron
163-3947	275 micron
163-3950	275 micron



Blast Media

163-3951 Turbine Formula

- First choice for 163-3946 Blast Cabinet System
- Contains 10% hard abrasive
- Provides a superior finish on aluminum parts
- Excellent for removing gasket materials without damaging the gasket sealing surfaces

163-3947 Flow Formula XL

- Specifically engineered to resist moisture and high humidity, resulting in less clumping and flow problems
- Safe for all substrates and is an excellent multi-purpose media
- Good for cleaning and paint stripping

163-3950 Profile™ Formula XL with SupraKleen™

- Used on heavy corrosion, stains, and mill scale
- Contains 10% hard abrasive (most aggressive)
- Not to be used on delicate substrates, bearings, seals, hydraulic cylinders, or rotating elements

163-3952 Soda Blaster (12SX Group)

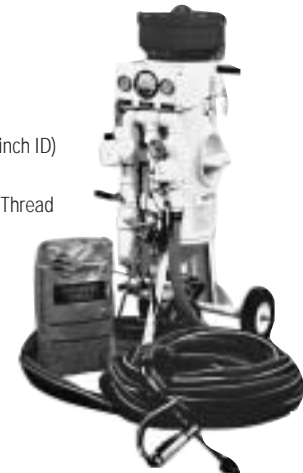
Warranty: Manufacturer's for machine; Six Months for chemicals

- Used to remove dirt, corrosion, paint, grease, and oil from any substrate without damage to the substrate
- Uses compressed air and Blast Media which will not damage bearings, seals, rotating equipment, or hydraulic cylinders
- Blast Media is water soluble and environmentally safe
- Blast pressure: adjustable from 103 to 689 kPa (15 to 100 psi)
- Media flow: adjustable from 0.23 to 2.3 kg (.5 to 5 lbs) per minute

Optional Parts

- 163-3941 Pneumatic Controls, Blast Hose Assembly (50 ft x 1 inch ID)
- 163-3943 #8 (1/2 in) Profile Performance Nozzle
- 163-3944 Nozzle Extension 3 ft, 50 mm male x 50 mm Female Thread

Service Parts	
Part No.	Description
163-3929	Media Valve Repair Kit
163-3930	4-Way Control Valve Rebuild Kit
163-3931	Air Inlet Coupling Gasket
163-3932	Blast Hose Coupling Gasket
163-3934	Tri-Clamp Gasket



12SX Group

- One 163-5682 Model 12SX 2 cu. ft. (100 lb capacity) unit with a 1 1/2 inch piping precision valve and pneumatic controls
- One 163-3941 Pneumatic Controls Blast Hose Assembly (50 ft length x 1 inch ID)
- One 163-5683 #6 (3/8 in) Profile Performance Nozzle
- One 163-5684 #6 (3/8 in) Fan Nozzle

Blast Media

163-3947 Flow Formula XL

- Specifically engineered to resist moisture and high humidity, resulting in less clumping and flow problems
- Safe for all substrates and is an excellent multi-purpose media
- Good for cleaning and paint stripping

163-3950 Profile™ Formula XL with SupraKleen™

- Used on heavy corrosion, stains, and mill scale
- Contains 10% hard abrasive (most aggressive)
- Not to be used on delicate substrates, bearings, seals, hydraulic cylinders, or rotating elements

Blast Media	
Alkalinity	8.2 pH
Softness	2.5 Mohs
Crystal size	
163-3947	275 micron
163-3950	275 micron

Miscellaneous

Filters and Chemicals

Waste water reclamation system filters and chemicals are available from your Caterpillar® dealer

Filters and Media for RGF, DMSL, DMSL-W

RGF Bag Filter (4 or 6 required)		
Part Number	Ref. Number	Specifications
157-0640 Poly Filter Bag, 5 Micron ¹	FL085	178 x 813 mm (7 x 32 in)
157-0641 Poly Filter Bag, 10 Micron ¹	FL084	178 x 813 mm (7 x 32 in)
157-0642 Poly Filter Bag, 25 Micron ^{1,2}	FL009	178 x 813 mm (7 x 32 in)
157-0643 Poly Filter Bag, 100 Micron ¹	FL010	(7 x 32 in) 178 x 813 mm

¹ Pressure suggested.

² Gravity suggested.

RGF Series I		
Part Number	Ref. Number	Specifications
157-0644 Filter Media	FL101	1 set required
157-0645 HCA-2	FL096X	1 each required

RGF Series II		
Part Number	Ref. Number	Specifications
157-0646 HCA-3	FL003X	1 each required
157-0647 HCA-3	FL059	1 each required; black high

solids

		systems only
157-0648 Polish Filter Cartridge ¹	FL046	7 each required

¹ The 157-0648 Filter is a triple length washable filter. If one section is damaged, the entire cartridge must be replaced. The filter also has depth plugs and cannot be continuously washed and reused like the single length pleated washable filters.

Pleated Cartridge Filters

- Offer an alternative to the 157-0648 Filter

Part Number	Ref. Number	Specifications
161-8365 Pleated Cartridge Filter, 1 Micron	IRM-001	248 mm (9.75 in)
161-8366 Pleated Cartridge Filter, 5 Micron	IRM-005	248 mm (9.75 in)
161-8367 Pleated Cartridge Filter, 10 Micron	IRM-010	248 mm (9.75 in)
161-8368 Pleated Cartridge Filter, 20 Micron	IRM-020	248 mm (9.75 in)
161-8369 Pleated Cartridge Filter, 50 Micron	IRM-050	248 mm (9.75 in)

Filters and Media for LSL, DLSL, LSL-W

RGF Series I		
Part Number	Ref. Number	Specifications
157-0649 Filter Media	FL102	1 set required
157-0650 HCA-2	FL001X	1 each required

RGF Miscellaneous Filter Parts	
Part Number	Ref. Number
157-0651 Harmsco Rim Gasket	FL007

Chemicals for Recycling Wash Water

Part Number	Ref. Number	Specifications
157-0652 Coagulant (Super Solids Settling)	6427	5 gallon container
157-0653 Detergent (Light-duty Quick Split)	5460	55 gallon drum
157-0654 Detergent (Medium-duty Quick Split)	5461	55 gallon drum
157-0655 Detergent (Heavy-duty Quick Split) ¹	5462	55 gallon drum
157-0656 Detergent (Very Heavy-duty Quick Split)	5463	55 gallon drum
157-0657 Hydrogen Peroxide 35%	HP-35-35	55 gallon drum

Stand Mounted Parts Cleaners

Warranty: Manufacturer's

- 300 GPH pump
- 165° F fusible linked fire cover
- Rectangular 30 gallon base tank
- Flow regulating valve
- Recirculating solvent flexhose
- Deluxe work lamp
- Drain assembly
- Cat black units are made of 14 Ga. steel

Part No.	Volt	Hz	Description
4C-3874	115	60	32 in x 22 in x 10 in tub with fire cover
4C-3875	115	60	48 in x 22 in x 10 in tub with fire cover
4C-3876	115	60	48 in x 28 in x 14 in tub with fire cover
191-4964	220	50	32 in x 22 in x 10 in tub with fire cover
191-4965	220	50	48 in x 22 in x 10 in tub with fire cover
191-4968	220	50	48 in x 28 in x 14 in tub with fire cover

Solvent Stand with 3-Stage Filtration



Solvent Stands with 3-Stage Filtration

- Include 3-stage filtration (polypropylene sock, canister fuel and an oil absorbent unit).
- Ensures fresh, clean solvent.
- Standard 15 micron fuel filter (2 micron available)

Unfiltered Stands

- Include a 25 micron polypropylene sock filter

Part No.	Volt	Hz	Description
194-3988	115	60	32 in x 22 in x 10 in tub with fire cover
194-3989	115	60	48 in x 22 in x 10 in tub with fire cover
194-3990	115	60	48 in x 28 in x 14 in tub with fire cover
194-3991	220	50	32 in x 22 in x 10 in tub with fire cover
194-3992	220	50	48 in x 22 in x 10 in tub with fire cover
194-3993	220	50	48 in x 28 in x 14 in tub with fire cover

Unfiltered Stand



Consumables

- 184-2319 Bag Filter (7 inch x 32 inch)
- 189-5637 Absorbent Filter
- 1R-1712 Fuel Filter, 15 Micron
- 4C-6796 Mineral Spirits (low odor)

Used on Solvent Stands with 3-Stage Filtration and Unfiltered Stands

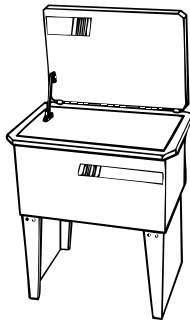
Part No.	Description
4C-8058	Recirculating/Agitating Pump — Includes steel housing, 1200 GPH submersible pump, 30 micron filter, flex hose, flow reg. valve, hand held spray gun, w/5 ft hose, agitation control valve and agitation venturi. 120 V.A.C.
4C-8061	Workshelf — Removable Platform 27 1/2 in x 20 in x 10 in
4C-8079	Fusible Link — Replacement

Rinse Tanks

Warranty: Manufacturer's

- 165° F fusible linked fire cover
- Heavy-duty steel removable legs
- 1 inch NPT drain with plug

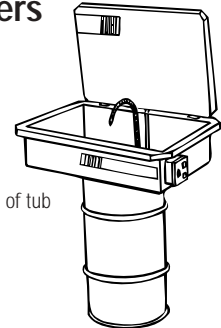
Part No.	Description
4C-3877	26 in x 17 in x 16 in deep tank
4C-3879	48 in x 28 in x 18 in deep tank



Drum Mounted Parts Cleaners (110 Volt Electric Powered)

Warranty: Manufacturer's

- 165° F fusible linked fire cover
- Rugged 14 gauge steel construction on DM 32
- Heavy duty flex nozzle, plumbed in through bottom of tub
- Formed down corners
- Baggie liners



Part No.	Description	Pump
4C-3872	26 in x 17 in x 7 in tub with fire cover 7.25 kg (16 gal) drum	170 GPH
4C-3873	32 in x 22 in x 10 in tub with fire cover 13.6 kg (30 gal) drum	300 GPH

4C-3883 Worklamp Assembly

Warranty: Manufacturer's

- Heavy-duty flexible worklamp assembly with shatterguard
- Deluxe for 4C-3873 Drum Mounted Parts Cleaner



4C-3884 Worklamp Assembly Upgrade Kit

Warranty: Manufacturer's

- For 4C-3874, 4C-3875, and 4C-3876

Flow Regulating Valves

Warranty: Manufacturer's

- Controls solvent flow through flexible nozzle.

Part No.	Description	For
4C-3885	Flow Regulating Valve	4C-3872
4C-3886	Flow Regulating Valve	4C-3873

Dual Flex Nozzle Conversion Kits

Warranty: Manufacturer's

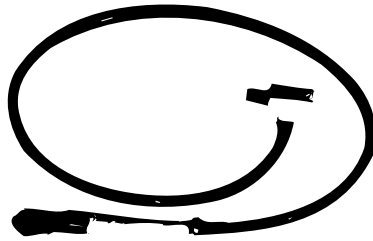
- Includes second flexhose, second valve, and necessary fittings

Part No.	Description	For
4C-3887	Dual Flex Nozzle Conversion Kit	4C-3873, 4C-3874
4C-3888	Dual Flex Nozzle Conversion Kit	4C-3875
4C-3889	Dual Flex Nozzle Conversion Kit	4C-3876

Flow Thru Cleaning Brush Assemblies

Warranty: Manufacturer's

- Includes nylon cleaning brush, hose, and necessary fittings

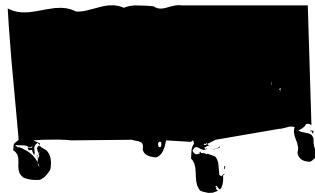


Part No.	Description	For
4C-3893	Flow Thru Cleaning Brush Assembly	4C-3872 and 4C-3915
4C-3894	Flow Thru Cleaning Brush Assembly	4C-3873, 4C-3916 and 4C-3874
4C-3895	Flow Thru Cleaning Brush Assembly	4C-3875 and 4C-3876

4C-3898 Caster Set

Warranty: Manufacturer's

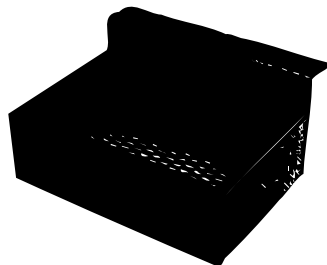
- Includes four 3 inch heavy-duty casters



Part No.	Description	For
4C-3898	Caster Set	4C-3874, 4C-3875 and 4C-3876

4C-3899 Small Parts Basket

Warranty: Manufacturer's

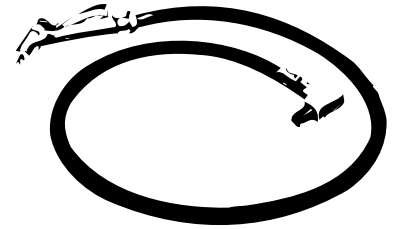


Part No.	Description	For	Size
4C-3899	Small Parts Basket	Fits all	203 mm (8 in) x 305 mm (12.0 in) 102 mm (4.0 in) Deep

Hand Held Spray Gun Assemblies

Warranty: Manufacturer's

- Pistol grip nozzle with adjustable spray
- Includes hose and necessary fittings

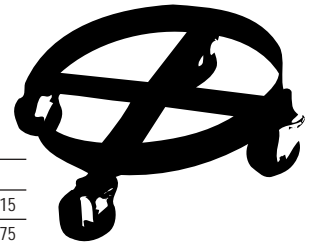


Part No.	Description	For
4C-3890	Hand Held Spray Gun Assembly	4C-3872 and 4C-3915
4C-3891	Hand Held Spray Gun Assembly	4C-3873, 4C-3916 and 4C-3874
4C-3892	Hand Held Spray Gun Assembly	4C-3875, 4C-3876

Caster Base

Warranty: Manufacturer's

- Includes base with four 3 inch heavy-duty casters



Part No.	Description	For
4C-3896	Caster Base	4C-3872 and 4C-3915
4C-3897	Caster Base	4C-3873 and 4C-3875

Baggie Liners

Warranty: Manufacturer's

- Reduces downtime during solvent changes by allowing the sludge to be lifted out within the baggie

Part No.	Description	For
4C-3901	Baggie Liners	4C-3872 and 4C-3915, 10 /CTN
4C-3903	Baggie Liners	4C-3873 and 4C-3916, 10 /CTN
4C-3905	Baggie Liners	4C-3874 and 4C-3875, 10 /CTN

Agi-Kleen Air Powered Immersion Cleaner

Warranty: Manufacturer's

- Special hanger bracket
- Convenient basket hook
- Durable steel reservoir pail or drum
- Heavy-duty reversing air motor rotates basket in both directions
- Operating air pressure range: 20-90 PSI
- Cover locking band
- Rugged 30 lb capacity metal spun basket has 1/8 inch diameter holes for containing extra small parts.



4C-3913

Part No.	Description
4C-3913	Cleaning Tank, 23 l (6 gal) pail, 254 mm (10 in) dia. parts basket

1U-9140 Shop Vacuum

Availability: NACD Only
Warranty: Manufacturer's



- Air operated, spark-free, maintenance free performance
- Liquid shut off valve for safe operation
- Easily converts from wet to dry pick-up
- Dual head adaptability for twice as fast pick-up
- Recommended air line for single powerhead operation is 1/2 inch I.D.
- Requires a 55 gallon, 18 gauge steel rolled top drum. (1U-9140 does not include a drum. If a drum is needed, order 1U-9141 Drum.)
- Tornado is the Breuer trade name for the 1U-9140 Vacuum and 1U-9141 Drum.

		Includes
Part No.	Description	
		Cover with one blocked port (not serviced)
1U-9155	Hose Adapter, 1 1/2 inch dia.	
1U-9146	Powerhead, 7/32 inch jet installed (3/16 inch and 1/4 inch jets are also shipped with the 1U-9140)	
1U-9148	Liquid Shut-off — prevents overflow and possible powerhead damage; automatic shut-off when liquid reaches predetermined levels	
1U-9143	Hose, 1 1/2 inch dia.	
		Operating/Instruction Manual

		Options
Part No.	Description	
1U-9141	Rolled Top Drum, 55 gallon, 18 gauge steel with 2 inch drain valve for easy emptying	
1U-9142	Dolly, 1120 lb capacity with tilt handle and non-marking wheels	

		Accessories - 1 1/2 inch Accessory Parts
Part No.	Description	
1U-9155	Hose Adapter (standard with 1U-9140 group)	
1U-9153	Squeegee (for wet pickup), 14 inch wide x 1 1/2 inch diameter neoprene blades	
1U-9154	Nozzle, 14 inch long, 2 1/2 inch dia, aluminum	
1U-9152	Wand, 4 1/2 ft x 1 1/2 inch dia.	
1U-9143	Hose, 1 1/2 inch dia.	

Blast Cabinets

Warranty: Manufacturer's

- Designed for cleaning and finishing jobs
- Remove corrosion, chemicals, and old paint. This will produce a metallurgically clean surface ready for painting or other finishing process.
- Clean dies, molds, stampings, and manufactured parts
- Remove burrs from parts after a machining or grinding operation
- Increase cutting tool life by blending surface imperfections
- Enhance lubrication by imparting a microscopically controlled dimpled surface
- Increase surface strength and relieve stress through peening
- Remove heat-treat scale
- Clean valves, pistons, and cylinders in engines with no dimensional change
- Clean odd shapes and hard to reach areas

Standard Features

- 100 CFM dust collector
- Regulator and gauge
- Fluorescent lighting
- 14 and 11 gauge welded steel cabinet
- Steel screen work table
- Cloth-lined work gloves
- Hopper door for easy media changes
- Foot operated blast gun — 25 CFM
- Tungsten carbide nozzle
- Tungsten carbide air jet
- Easy to change window
- Door safety switch
- Spring assist on flip top for 9U-5238 and 9U-6827

		Service Parts
Part No.	Description	
9U-5244	Gun Assembly — 25 CFM	
9U-5246	Gun Body — 25 CFM (Bronze)	
9U-5247	Nozzle — 25 CFM (Tungsten Carbide)	
9U-5255	Cloth Lined Gloves — (24 inch Long — 6 inch Dia.)	
9U-5257	Window Underlayment — (24 inch x 120 inch roll)	
9U-5258	Motor and Turbine Assembly	
9U-5259	Cartridge Filter	

		Consumables (50 Lb Plastic Pail)
Part No.	Description	
9U-5271	Glass Beads, R medium (Mesh 140)	



Part No.	Type	Approx. Shipping Weight	Overall	Working	Top Opening	Side Opening	Window
9U-5237	110V 60Hz, single phase	325 lbs	39 in W x 25 in D x 65 in H	36 in W x 24 in D x 23 in H	36 in x 13 in	17 in x 11 in	24 in W x 12 in H
9U-6826	220V 50Hz, single phase	325 lbs	39 in W x 25 in D x 65 in H	36 in W x 24 in D x 23 in H	36 in x 13 in	17 in x 11 in	24 in W x 12 in H
9U-5238	110V 60Hz, single phase	400 lbs	45 in W x 54 in D x 65 in H	42 in W x 24 in D x 23 in H	42 in x 24 in	17 in x 11 in	24 in W x 12 in H
9U-6827	220V 50Hz, single phase	400 lbs	45 in W x 54 in D x 65 in H	42 in W x 24 in D x 23 in H	42 in x 24 in	17 in x 11 in	24 in W x 12 in H

Blast Cabinets

Warranty: Manufacturer's

- Designed for cleaning and finishing jobs
- Remove corrosion, chemicals, and old paint. This will produce a metallurgically clean surface ready for painting or other finishing process.
- Clean dies, molds, stampings, and manufactured parts
- Remove burrs from parts after a machining or grinding operation
- Increase cutting tool life by blending surface imperfections
- Enhance lubrication by imparting a microscopically controlled dimpled surface
- Increase surface strength and relieve stress through peening
- Remove heat-treat scale
- Clean valves, pistons, and cylinders in engines with no dimensional change
- Clean odd shapes and hard to reach areas



9U-5240
9U-6829



Standard Features

- 100 CFM dust collector
- Regulator and gauge
- Fluorescent lighting
- 14 and 11 gauge welded steel cabinet
- Steel screen work table
- Cloth lined work gloves
- Hopper door for easy media changes
- Foot operated blast gun — 25 CFM
- Tungsten carbide nozzle
- Tungsten carbide air jet
- Easy to change window
- Door safety switch
- Counter balanced lid

Service Parts	
Part No.	Description
9U-5249	Gun Assembly — 25 CFM
4C-5529	Gloves — 31 inch Long
9U-5257	Underlayment — Window (24 inch x 120 inch roll)
9U-5246	Air Jet Assembly ¹ — 25 CFM
9U-5247	Nozzle ¹ — 25 CFM (Tungsten Carbide)

¹ For 9U-5240 and 9U-6829 only

Optional Parts	
Part No.	Description
9U-5248	Gun Assembly — 45 CFM
9U-5253	Nozzle — 45 CFM (Tungsten Carbide)
9U-5251	Air Jet Assembly — 45 CFM

Consumables (50 Lb Plastic Pail)	
Part No.	Description
9U-5271	Glass Beads, R medium (Mesh 140)

Part No.	Type	Approx. Shipping Weight	Overall	Working	Top Opening	Side Opening	Window
9U-5239	110V 60Hz, single phase	650 lbs	43 in W x 77 in D x 72 in H	40 in W x 40 in D x 30 in H	40 in x 40 in	20 in x 30 in	24 in W x 12 in H
9U-6828	220V 50Hz, single phase	650 lbs	43 in W x 77 in D x 72 in H	40 in W x 40 in D x 30 in H	40 in x 40 in	20 in x 30 in	24 in W x 12 in H
9U-5240	110V 60Hz, single phase	850 lbs	51 in W x 95 in D x 84 in H	48 in W x 48 in D x 40 in H	48 in x 40 in	20 in x 30 in	24 in W x 12 in H
9U-6829	220V 50Hz, single phase	850 lbs	51 in W x 95 in D x 84 in H	48 in W x 48 in D x 40 in H	48 in x 40 in	20 in x 30 in	24 in W x 12 in H

Blast Cabinets

Warranty: Manufacturer's

- Designed for cleaning and finishing jobs
- Remove corrosion, chemicals, and old paint. This will produce a metallurgically clean surface ready for painting or other finishing process.
- Clean dies, molds, stampings, and manufactured parts
- Remove burrs from parts after a machining or grinding operation
- Increase cutting tool life by blending surface imperfections
- Enhance lubrication by imparting a microscopically controlled dimpled surface
- Increase surface strength and relieve stress through peening
- Remove heat-treat scale
- Clean valves, pistons, and cylinders in engines with no dimensional change
- Clean odd shapes and hard to reach areas



9U-6831



Standard Features for 9U-5241 and 9U-6830

- 400 CFM dust collector
- Regulator and gauge
- Fluorescent lighting
- 14 and 11 gauge welded steel cabinet
- Steel screen work table
- Cloth lined work gloves
- Hopper door for easy media changes
- Foot operated blast gun — 25 CFM
- Tungsten carbide nozzle
- Tungsten carbide air jet
- Easy to change window
- Door safety switch
- Counter balanced lid

Standard Features for 9U-6831

- 100 CFM dust collector
- Regulator and gauge
- Fluorescent lighting
- 14 and 11 gauge welded steel cabinet
- Cloth lined work gloves
- Foot operated blast gun — 25 CFM
- Tungsten carbide nozzle
- Tungsten carbide air jet
- Door safety switch

Service Parts	
Part No.	Description
9U-5246	Air Jet Assembly ¹ — 25 CFM
9U-5247	Nozzle — 25 CFM (Tungsten Carbide)
9U-5249	Gun Assembly — 25 CFM
9U-5257	Window Underlayment (24 inch x 120 inch roll)
9U-6899	Assembly — Motor and Turbine for 9U-6830 and 9U-6831
4C-5529	Gloves — 31 inch Long

¹ For 9U-5241 and 9U-6830 only

Optional Parts	
Part No.	Description
9U-5248	Gun Assembly — 45 CFM
9U-5253	Nozzle — 45 CFM (Tungsten Carbide)
9U-5251	Air Jet Assembly — 45 CFM

Consumables (50 Lb Plastic Pail)	
Part No.	Description
9U-5271	Glass Beads, R medium (Mesh 140)

Part No.	Type	Approx. Shipping Weight	Overall	Working	Top Opening	Side Opening	Window
9U-5241	110V 60Hz, single phase	1100 lbs	63 in W x 95 in D x 84 in H	60 in W x 48 in D x 40 in H	48 in x 60 in	20 in x 30 in	24 in W x 12 in H
9U-6830	220V 50Hz, single phase	1100 lbs	63 in W x 95 in D x 84 in H	60 in W x 48 in D x 40 in H	48 in x 60 in	20 in x 30 in	24 in W x 12 in H
9U-6831	220V 50Hz, single phase	850 lbs	51 in W x 36 in D x 81 in H	48 in W x 36 in D x 40 in H	—	27 in x 34 in	24 in W x 12 in H

Floor Maintenance Equipment

4C-3402 Litter Vac

Availability: NACD Only
Warranty: Manufacturer's



Engine	8 HP 4-cycle
Vacuum cmf	1000
Mouth size	66 cm W x 13 cm D (26 inch x 5 inch)
Impeller	1/4 inch steel, 14 1/4 inch dia.
Impeller housing	10 gauge steel
Bag capacity	4C-3402
Adjustable snout	Settings up to 3 1/4 inch
Frame	Heavy duty steel
Dimensions (W x H x L)	66 cm x 99 cm x 173 cm (26 in x 39 in x 68 in)
Weight	79.38 kg (175 lbs)

- Fingertip controls
- 6 inch rubber swivel front castors
- 16 inch deep tread pneumatic rear tires
- 1/4 inch steel, pulverizing impeller rotates at 3600 RPM
- Top loading heavy duty synthetic felt bag with rear zipper
- With a wide 26-inch snout, powerful vacuum, and compaction action, littered areas come clean in one pass—parking lots, lawns, ramps, loading docks—most anywhere debris is strewn.
- Easy to operate—fingertip controls are located in the padded handle. Freewheeling, ball bearing wheels roll smoothly over hard, bumpy, smooth or soft surfaces. Turn on a dime without marring turf. Pick up everything in your path as fast as you can walk.
- 8 HP four-cycle engine coupled to the 1/4 inch steel impeller will compact cans, glass, twigs, and other litter to a fraction of its original size. The 26 inch x 5 inch adjustable mouth is funneled for full scope vacuum coverage. All the trash drops freely into the bag from the top and accumulates from the bottom up. The bag easily empties from the rear.

Long Range Automatic Floorkeepers

Warranty: Manufacturer's

- 50% faster brush/pad speed — each of the two brushes is powered by its own 3/4 hp permanent-magnet DC motor (1.25 Service Factor).
- "Floating" brush heads — brush heads "float" independently and self-adjust to uneven floors.
- "Gap-free" overlapping brush paths — counter-rotating, overlapping brushes eliminate streaks and coverage gaps. Solution is evenly distributed through the centers of both brushes. The bumper-guarded brush cover is offset to reach under fixtures and close to walls.
- Break-away "swing" squeegee — extra-long, curved squeegee, with two gum rubber blades, swings wide on turns to cover the scrub path completely. Should the squeegee encounter an obstruction, the Break-away design protects it from damage. A parking brake is standard.
- 66% greater tank capacities — go farther per filling. Super-sized, super tough 25 gallon solution and recovery tanks are impervious to cleaning solutions. Add solution quickly, easily — and less often.
- "No overflow" recovery tank — liquid shut-off ball prevents the recovery tank from overflowing. The tanks empty quickly through 1 1/2 inch ball-stopped drain hoses. Both tanks feature handy access doors for easy cleaning of residue.
- Automatic charger is included — engage just one Anderson Connector to re-energize all batteries simultaneously. The 115V, 60 hz, single phase ferro-resonant Charger automatically compensates for variances in line voltages, and automatically shuts off to prevent overcharging.
- Solid-state. Solid throughout — pulse width modulated (pwm) control adds to the compactness, efficiency, and reliability. Solid steel 7-gauge chassis, with thermopower finished 16-gauge steel outer panels that remove easily for wide-open service access.
- "No-slip" gearless brush drive — no worm gears to break or V-belts to slip. Notches-belt drive systems assure brush/pad speed during high pressure applications.
- 3/4 hp direct traction drive — 3/4 hp permanent-magnet, variable-speed motor with direct chain linkage to a lifetime-lubricated differential. Trouble-free all-electric activator. Sure-traction 10 inch solid or pneumatic tires, and 4 inch swivel casters.
- 76 CFM solution recovery system — Powerful 1 hp 3-stage bypass motor with a sponge filter and automatic liquid shut-off. 76 cfm (70 inch static waterlift) of vac strength leaves floors near dry. So simple to service. Just slide out the drawer.
- Five variable speeds — set your own pace. Lower the hand accelerator and go from 0-250 fpm forward. A "flashing" light signals that machine is operation.
- Full-view power control center — smart, full-view dashboard, featuring universal operating symbols puts the Power Switch and Vac Power Switch at your fingertips. An accurate, color-referenced energy gauge keeps you posted on battery strength.
- Color-correct solution dispensing — guides the operator. Eliminates solution waste. Simply set the four-color solution release for the work to be done — White: off; Green: light scrubbing; Blue: medium scrubbing and stripping; Red: heavy scrubbing and stripping.

Accessories

- Woodbacked scrub brushes — choose Bassine brushes for light scrubbing and polypropylene brushes for heavier duty work. Comes with steel mounting yokes and retainers.
- Woodbacked grit brushes — tough nylon grit-embedded brushes for work on excessive dirt and rougher surfaces. Comes with steel mounting yokes and retainers.
- Quick grip pad holders — full selection of stripping, scrubbing, and polishing pads available. Woodbacked plastic holders come with steel yokes and retainers.
- Squeegee replacement blades — standard replacements include a notched front blade and a standard rubber rear blade. A firm rubber rear blade for rough surfaces is also available.

Part No.	Brush Coverage	Tire Type
4C-3396	36 inch Wide	Pneumatic
4C-3397	36 inch Wide	Solid
4C-3398	32 inch Wide	Pneumatic
4C-3399	32 inch Wide	Solid

Brushes — Accessories for Floorkeepers

Warranty: Manufacturer's

- Soft Poly Brushes for light scrubbing
- Firm Poly Brushes for medium work
- Grit Brushes for heavy-duty dirt, and rough surfaces
- All brushes use iron yokes and retainers

Size	Soft	Firm	Grit
15 inch	9U-5700	9U-5701	9U-5702
13 inch	9U-5706	9U-5707	9U-5708



Pads — Accessories for Floorkeepers

Warranty: Manufacturer's

- Pads are impregnated with a strong cleaning agent.



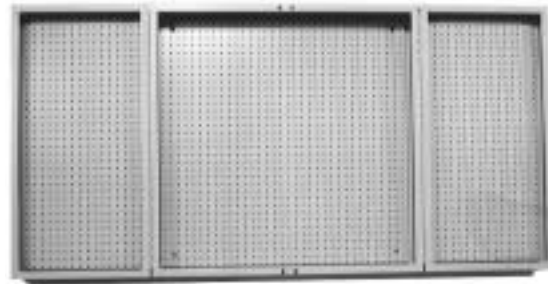
Size	Holder	Black Stripping ¹	Blue Scrubbing	Red Gloss
15 inch	9U-5699	9U-5711	9U-5712	9U-5713
13 inch	9U-5705	4C-4591	4C-4592	4C-4593

¹ Will remove wax and finish from some floors.

Shelving and Cabinets

9S-9087 Tool Cabinet

- Doors fold out to provide a large storage area
- Can be padlocked when not in use.
- Ample depth for most tools.
- Perforated steel panels in the center and door sections accept pegboard hooks.
- Hook assortment included with the cabinet



Dimensions with doors open	72 in W x 36 in H
Depth	
Overall	10 in
Center section	6 in
Doors	4 in
Hook diameter	.25 in



Disposal and Storage Products

4C-3148 Safety Drum Transfer Pump

Warranty: Manufacturer's

- Made of heavy cast iron for use with most petroleum based liquids and solvents
- Approved for flammables, light oils, etc.
- Mounts in 51 mm (2 in) bung opening



Safety Blow Guns

Warranty: Manufacturer's

- Supplies non-aspirating, high velocity, sharply defined, collimated air stream particularly suited for cleaning small blind holes and cavities
- Complies with OSHA standards for dead-ended nozzle pressure and noise limitation
- Uses 90 to 100 PSI line pressure without reduction
- Minimizes compressed air usage



Part No.	Description	Test Lab Listing
4C-3302	Air Blow Gun w/Nozzle Assembly	UL/FM
4C-3304	Nozzle w/152 mm (6 in) Extension	—

4C-3119 Funnel Attachment

Warranty: Manufacturer's

- Large receiving opening expedites use.
- Flexible hose funnel assembly has spring clip for quick, easy attachment to cans.
- Tern plate funnel and metal hose provide grounding path to prevent static sparks.

Use with	19.375 liter can (5 gal)
Receiving opening diameter	114.3 mm (4 1/2 in)
Hose O.D.	23.8 mm (15/16 in)
Height	304.8 mm (12 in)



4C-3238 Drum Tilt Cradle

Warranty: Manufacturer's

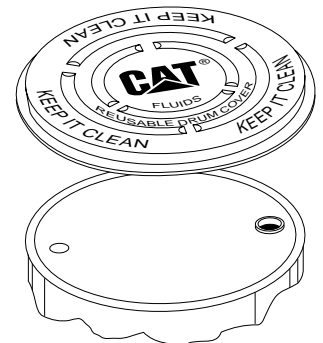
- Useful in all areas where flammable liquids are stored in drums and dispensed from faucets
- Use with 114 or 208 liter drums (30 or 55 gal)
- Enables one person to move, load, and unload full drums
- Rugged and durable steel
- Positions faucet approximately 482 mm (19 in) from floor
- Shipped unassembled
- Test lab listing: FM



1U-6156 Barrel Cover

- Used to cover open or closed top drums — cover snaps onto top of drum
- Supports the Caterpillar contamination control efforts
- Protects drum contents from water induction when stored outside
- Keeps drum top clean and contents ready for use
- Made of long lasting, low density polyethylene — resistant to petroleum-based fluids and ultraviolet rays
- 10 covers per package

Material thickness	1.5 mm (.06 in)
Inside diameter	571 mm (22.5 in)
Color	Yellow



Chargers

Multi-Battery Parallel Chargers

Warranty: Manufacturer's

- Each battery accepts the charge it requires, depending on its size, state of charge, and temperature; the initial high charge rates taper down to a safe finishing level.
- No moving parts — little maintenance
- Isolated transformer for safety
- Heavy-duty diode rectifier with deep reserve capacity
- Circuit breaker protection
- Mounts on wall or bench
- UL listed



Part No.	4C-4913	4C-4914	4C-9799
DC output rating	30 Amps, 14.9 Volts	110 Amps, 15.5 Volts	30 Amps, 14.9 Volts
AC input rating	108-132 Volts, 7.5 Amps 60 Hz, single phase	190-262 Volts, 13.8 Amps 50/60 Hz, single/3 phase	210-250 Volts, 4 Amps 50/60 Hz, 3 phase
Charging capacity	1-10, 12 Volt batteries	1-36, 12 Volt batteries	1-10, 12 Volt batteries
No. of charge rates	16	16	16
Voltmeter/ammeter	11-17/0-50	11-17/0-110	11-17/0-50
DC charging cables	1.83 m (6 ft)	1.524 m (5 ft)	1.83 m (6 ft)
AC connection	2.286 m (6 1/2 ft) AC cord	Permanent installation only	2.286 m (6 1/2 ft) AC cord
Weight	18.14 kg (40 lbs)	37.64 kg (83 lbs)	18.14 kg (40 lbs)
Dimensions (HWD)	38.1 x 30.5 x 28 cm (15 in x 12 in x 11 in)	55.9 x 38.1 x 28 cm (22 in x 15 in x 11 in)	40.6 x 33.7 x 62.2 cm (16 in x 13.25 in x 24.5 in)
4C-4917 Bus Bar Set	1	Up to 4	1



9U-5784 Battery Charging Rack

Warranty: Manufacturer's

- DC charging leads — 10 pair, 10 gauge, 914.4 mm (36 in) long with 300 Amp insulated safety clamps
- Insulated storage bars and connections ensure there are no live electrical connections
- 3-shelf rack stores up to 12 batteries
- Durable 3 mm (1/8 in) polypropylene sheet protects shelves from damage.
- Acid resistant — resists scratching and chipping
- Convenient snap together heavy-gauge steel construction



4C-4917 Bus Bar Set

Warranty: Manufacturer's

- Parallel charging — 10 battery capacity — use one bus bar or combine several for added capacity
- Insulated fiberglass backboard
- DC charging leads — 10 pair, 10 gauge, 914.4 mm (36 in) long with 300 Amp insulated safety clamps
- .9 m (3 ft) 4 AWG cables included to connect to charger or additional bus bars



Growler Armature Tester

Warranty: Manufacturer's

- Detects and locates defects in generator and starter armatures
- Also tests armatures in heaters, fans, electric tools, etc.
- Checks continuity and insulation
- Accepts armatures 22.2 mm (7/8 in) to 203.2 mm (8 in) diameter
- 609.6 mm (24 in) test leads with accompanying test light
- Chrome-plated handles help protect instrument panel
- UL listed



Part No.	Description
4C-4912	120 V, 50/60 Hz
4C-9800	220 V, 50/60 Hz

Heavy-Duty Commercial Fast Chargers

Warranty: Manufacturer's

- Highest performance fast chargers on the market
- Designed for the demands of the professional mechanic and fleet operator
- Model 4C-4920 has 16 rates of charge and the highest boost rating of any fast charger.
- Model 4C-4921 and 4C-4910 charge all 6, 12, 18, and 24 Volt batteries.
- Heavy-duty transformers, patented multi-diode rectifiers, long AC cords and DC leads
- Patented stop/go light and automatic timer
- Automatic reset AC and DC circuit breakers
- Heavy-duty chrome plated handle
- Rugged, 177.8 mm (7 in) wheels
- 500 Amp, fully insulated, flexi-spring clamps
- UL and CSA listed for indoor and outdoor use



Part. No.	Input Volt	UL Continuous Ratings (Amps)	UL Cranking Assist Rate (Amps)	UL Boost Rate (Amps)	AC Cord	DC Leads	Clamp Rating	Volt	Wt. kg	lbs
4C-4920	110	100/70	300	550	10 ft 14-3	8 ft 4AWG	500A	6/12	26.3	58
4C-4921	110	100/75/50/40	300	600	10 ft 14-3	8 ft 4AWG	500A	6/12/18/24	31.7	70
4C-4910	220	100/75/50/40	300	600	10 ft 14-3	8 ft 4AWG	500A	6/12/18/24	31.7	70

4C-4924 and 4C-4925 Portable Chargers

Warranty: Manufacturer's

- Charges all standard and maintenance-free batteries with four charging positions
- Heavy-duty chrome plated handles
- Fan cooled
- UL and CSA listed for indoor/outdoor use

4C-4924 also features

- Automatic timer — 90 minute and "hold" position
- AC and DC circuit overload protection
- Patented stop/go light



Part. No.	UL Continuous Ratings (Amps)	UL Cranking Assist Rate (Amps)	UL Boost Rate (Amps)	AC Cord	DC Leads	Clamp Rating	Volt	Weight kg	lbs
4C-4924	70/60	230	420	6 1/2 ft 16-3	7 ft 4AWG	500A	6/12	17.2	38
4C-4925	40/10/2	132	250	6 1/2 ft 18-3	6 ft 8AWG	200A	6/12	11.8	26

200-6319 Portable Charger, 110 V, 60 Hz

Warranty: Manufacturer's

- Charges 12 Volt systems, lead acid, AGM, and GEL batteries
- Automatically shuts off when battery is charged
- 3 LED indicators for power, charging, and proper polarity/charge complete
- Lightweight
- UL listed

Charging Output	AC/DC Cables	Weight
10 amps	16 ft, 16 gauge	11 lbs 4oz



201-5751 Heavy-Duty Starting Unit, 12 and 24 Volt

Warranty: Manufacturer's (1 Year)

- Used to start engines with 12 or 24 Volt electrical systems
- Gasoline powered (18 hp) starting unit produces 700 amps CCA at 12 Volts DC and 350 CCA at 24 Volts DC
- Built-in amp meter and voltage regulator protects electronic components
- Ideal for mounting on a service truck
- Comes with two sets of number two gauge starting cables, 500 amp connecting clamps, cable storage racks, and a protective canvas cover
- On line technical support provided by OEM

Overall size	81 x 84 x 53 cm (32.0 x 33.0 x 21.0 in)
Engine	18 hp, 4 cycle, twin cylinder, gasoline engine with cast iron sleeve and electric start
Output	700 amps CCA at 12 Volts DC or 350 CCA at 24 Volts DC
Length of starting cables	91 m (30.0 ft)
Shipping weight	181 kg (400 lbs)



Cables

Warranty: Manufacturer's

- Polarized plug on both ends
- Mates with either 4C-9917 or 4C-4943 Power Socket

Part No.	Description	Mates with
4C-9802	3.66 m (12 ft) 1 AWG	4C-9917 Power Socket
4C-9801	3.66 m (12 ft) 4 AWG	4C-4943 Power Socket



Booster Cables

Warranty: Manufacturer's

- Professional quality
- Ensure quick and efficient connections
- Designed for convenience and safety
- Flexi-spring cable guards
- Meets SAEJ1494 specifications

Part No.	Length	Gauge	Cir. Mil. Copper	Jacket ²	Amp Clamp	Side Terminal Adapters	Wt.
4C-4933	3.66 m (12 ft)	4	32,900	T-94	500	YES	3.6 kg (8 lbs)
4C-4934 ¹	3.66 m (12 ft)	4	32,900	T-94	500	YES	3.6 kg (8 lbs)
4C-4935	4.572 m (15 ft)	4	32,900	T-94	500	YES	4.1 kg (9 lbs)
4C-4936	6 m (20 ft)	4 AWG	41,300	T-94	500	YES	5.4 kg (12 lbs)
4C-4937	6 m (20 ft)	1 AWG	83,600	T-94	800	NO	7.7 kg (17 lbs)
4C-4938	4.572 m (15 ft)	1/0 AWG	106,400	T-94	800	NO	7.3 kg (16 lbs)

¹ Equipped with stop/go light — red L.E.D.s warn operator if polarity is reversed

² T-94: flexible to 4°C (-40°F)



Replacement Clamps

Warranty: Manufacturer's

- Professional quality clamps for all booster cables, chargers and testers
- Package: 1 pair per see-through display carton

Part No.	Amps	Jaws	Insulation	For Use With Cable	"Flexi-Spring"	Wt. Per Master
4C-4940	500	Copper	Bonded Vinyl	3, 4, 6 ga.	Yes	4.0 kg (9 lbs)
4C-4942	800	Heavy Gauge Copper	Bonded Vinyl	1, 2 ga.	Yes	4.5 kg (10 lbs)

4C-5638 and 4C-5637 Post Set

Warranty: Manufacturer's



Part No.	Description
4C-5637	10 mm (3/8 in) female for stud type batteries
4C-5638	10 mm (3/8 in) male for side terminal batteries

4C-4931 Flush Mount Power Socket

Warranty: Manufacturer's

- Alternative to cabinet style socket — stainless steel plate mounts flush on service vehicle
- Same features as power socket included in 4C-4929
- For a complete starting system, order 4C-4931 and 4C-4944 Plug-In Cables.



4C-4929 Heavy-Duty Plug-In Starting System

Warranty: Manufacturer's

Power Socket

- New stainless steel cabinet resists corrosion
- Polarized socket with solid copper contacts
- 1.5 m (5 ft) connecting cables for service battery hook-up (4 AWG)



Plug-In Cables

- Army/Navy Lexan® plug — won't break in coldest weather
- Heavy-duty cables, 7.62 m (25 ft) 4 AWG. Jacket resists oil and abrasion — stays flexible to 4.4°C (-40°F).
- 500 Amp insulated clamps with Flexi-Spring cable guards

Patented Safety Light

- Warns operator before a reversed connection is made
- Side terminal adapters — grip hard-to-reach side terminals
- Weight: 7.7 kg (17 lbs)

Service Parts	
Part No.	Description
4C-4943	Power Socket with battery cable
4C-4946	Polarized Lexan® Plug, .45 kg (1 lb)
4C-4945	Power Socket only
4C-4944	Plug-in Cable (includes clamps)

4C-4930 Extra Heavy-Duty Plug-In Starting System

Warranty: Manufacturer's

Power Socket

- New stainless steel cabinet resists corrosion.
- Polarized socket with solid copper contacts
- 1.5 m (5 ft) connecting cables for service battery hook-up (1 AWG)

Plug-In Cables

- Army/Navy Lexan® plug — won't break in coldest weather
- Heavy-duty cables, 7.62 m (25 ft) 1 AWG. Jacket resists oil and abrasion — stays flexible to 4.4°C (-40°F).
- 800 Amp insulated clamps with Flexi-Spring cable guards

Patented Safety Light

- Warns operator before a reversed connection is made
- Weight: 11.8 kg (26 lbs)

Service Parts	
Part No.	Description
4C-9917	Power Socket with battery cable



Battery Load Testers

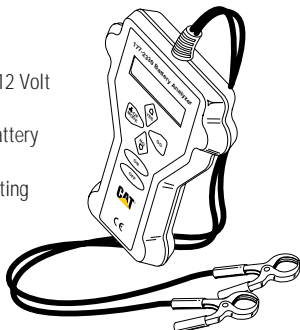
177-2330 Digital Battery Analyzer

SMCS Code: 1401-081, 0785

Model: All

Warranty: One Year

- Replaces 127-8078 Battery Analyzer
- Used to quickly and accurately test condition of 6 and 12 Volt batteries (even discharged to as low as one Volt)
- Check for full state charge, condition of battery, and battery voltage in 20 seconds
- Test batteries in machine or vehicle without disconnecting battery cables
- Battery does not have to be fully charged at time of testing
- Saves time and money by allowing dealers to test condition of a battery while customer is present (works great for warranty claims)
- Eliminates need to charge and discharge a battery to test its condition
- Compensates for cold temperatures when testing batteries in extreme conditions
- Power-down feature prolongs battery life in analyzer
- Analyzer has reverse polarity and over voltage protection



Battery rating range:	
Cold cranking amps (CCA)	50 to 4000
Cranking amps (CA)	65 to 5000
Amp hours (A-Hr)	6 to 500
DC voltmeter range	1.0 to 14 Volt
Voltmeter accuracy	±0.1 Volt
Power source	9 Volt battery or test battery
Test time	20 seconds
Analyzer cable length	815 mm (32 in)
Overall size	210 x 140 x 38 mm (8.25 x 5.5 x 1.5 in)
Weight	0.68 kg (1.5 lbs)
Operating temperature range	0 to 50°C (32 to 120°F)
Storage temperature range	-20 to 70°C (0 to 160°F)
Over voltage protection	up to 18 Volts

Repair Information

SPX Corporation
Wayland Facility
Attn: Depot Repair
801 South Main Street
Wayland, MI 49348
Phone: 1-800-833-3377-4-1

Reference

NEHS0764 Tool Operating Manual,
Using the 177-2330 Battery Analyzer

4C-4911 Battery Load Tester

Warranty: One Year

- Two, easy-to-read LCD displays show accurate measurements of voltage and current
- Voltage measured to one hundredth of a volt for super accurate readings
- Heavy-duty carbon pile, leads, and clamps
- 1000 Amp load capacity
- Fan cooled, internal fan turns on when load is applied.
- Tests 6, 8, and 12 Volt batteries

Load test	6, 8 and 12V batteries
Load current	0 to 1000 Amps (carbon pile)
Duty cycle	continuous, limited only by cable and clamp heating
Operating temperature	0-50°C (32°-122°F)
Voltmeter accuracy	0.1% full scale ±1 digit
Ammeter accuracy	±3% of reading ±1 digit
Size	330 mm x 330 mm x 305 mm (13 in x 13 in x 12 ft)
Weight	10.66 kg (23.5 lbs)



4C-6600 Battery Voltmeter

Warranty: One Year

- Designed to quickly determine the state of charge of 6 to 60 Volt batteries on or off the machine
- Can be used in place of a hydrometer and will work on all batteries including sealed maintenance free batteries
- Easier and faster than using a hydrometer to measure specific gravity
- Battery voltage is displayed on a bright red LED display which is easy to read outdoors and in low light condition
- A chart on the rear of the meter shows battery approximate percent of charge based on battery voltage for 12 Volt batteries.
- In addition, a chart in the Operating Manual includes 6, 8, and 12 Volt batteries. The voltmeter is powered by the type of battery being tested so there are no internal batteries to wear out.
- Portable — can be carried in a pocket or toolbox



Range	6.0 to 60.0 VDC
Operating temperature range	-30°C to +70°C (-22°F to +158°F)
Accuracy	0°C to +70°C (32°F to +158°F): ±.2 VDC and -30°C to 0°C (-22°F to +32°F): ±.23 VDC
Input voltage protection	±100 VDC max.
Power	Powered by battery being tested
Current requirement	0.18 Amp
Settling time	3 seconds
Weight	113 kg (4 oz)
Size	76 mm x 84 mm x 20 mm (3.0 in x 3.3 in x .8 in)



Service Parts	
Part No.	Description
4C-6777	Test Lead Kit

Warranty: Six Months

Reference
NEHS0538 Operating Manual

8T-0900 Clamp-on Ammeter

Warranty: One Year

- Reads alternator output, starting current, lamp current, and also the current of shop equipment
- Measures and displays both alternating and direct current up to 1200 Amperes
- Clamps on any cable up to 19 mm (3/4 in) diameter
- It measures without removing insulation or breaking the circuit



Reference

SEHS8420 Special Instruction.

Caterpillar Battery Cleaner and Saver

COSA, CFEL, COFA: See special instructions

- Cleans and prevents corrosion on battery and terminals, cable ends, etc.
- Contains MoS₂ for extra lubrication
- CO₂ propellant — 1U-8267



Part No.	Description	Size	Quantity
1U-8267	Aerosol	369 g (13 oz)	12
9U-6330	Non-aerosol	454 g (16 oz)	12

Caterpillar Brake and Electrical Component Cleaner

- General purpose cleaning solvent
- Non-flammable
- Non-aerosol pump type can — 138-8440
- CO₂ propellant — 4C-4079
- Pure 1,1,1 trichloroethane
- Cleans brake components, electrical contacts, armatures, etc.
- Leaves no oily residue
- Not for use on Deutsch multi-pin connectors



Part No.	Description	Qty.	Size	Ordering
138-8440	Non-aerosol	10	533 ml (18 fl oz)	Normal
4C-4079	Aerosol	12	454 g (16 oz)	3A or E (Antares) — NACD and CACO COSA, CFEL, COFA — See special instructions

Gasoline Engine

Gasoline Engine Driven Air Compressors

Warranty: Manufacturer's

- Cast iron frame and cylinders
- Ductile iron crankshaft
- Splash lubricated
- 2-stage design
- V-belt drive
- Kohler Magnum Series engine
- Constant speed control with engine slow-down
- Standard equipment: Kohler, aircooled gasoline engine, magneto ignition with 12-volt electric key start, 1.5 gallon fuel tank, 10-micron inlet filter on compressor, totally enclosed belt guard (TEBG), manual tank drain



Part No.	HP	Alternator		Air Delivery @ 175 PSIG	Receiver Size	Shipping Weight	Dimensions		
		Yes	No				L	W	H
4C-4440	12.5	X		24 CFM	30 gal	204 kg (450 lb)	1117.6 mm (44 in)	558.8 mm (22 in)	1168.4 mm (46 in)
4C-5681	12.5		X	24 CFM	30 gal	204 kg (450 lb)	1117.6 mm (44 in)	558.8 mm (22 in)	1168.4 mm (46 in)

Recovery, Recycling, and Recharging Systems

R-12 and R-134a Air Conditioning Recovery/Recycling Units

SMCS Code: 7820
Warranty: Manufacturer's

- 208-1323 replaces discontinued 9U-6499
- Simplest, easiest to use air conditioning service units on the market today (helps technicians meet today's tough service standards)
- Operation is quick and efficient (lowers air conditioning service costs)
- Easy-to-operate (just connect quick connect couplings to vehicle and push Recovery Recycle switch—unit completes recovery and recycle process)
- Built with quality components, such as 1/2 hp, oil-less compressor, new advanced shock resistant scale, dual protected solenoids, and more
- Vacuum timer allows technician to set time and two-stage vacuum pump automatically pulls a deep vacuum
- Easy to set LCD display (simply scroll to correct charge and push charge switch—system quickly receives refrigerant)
- Large 75 mm (3.5 in) gauges allows technician to easily monitor air conditioning system
- One-touch air purge eliminates non-condensables in system
- One-touch oil drain, after every service, tells how much is needed to keep compressor fully lubricated
- Automatic tank full and high pressure shut-offs
- Shock resistant scales for accurate charging
- Single-pass filtering system
- Built-in manifold gauge set
- Moisture indicator
- Tank refill adapter
- Modular design for easy repair
- Large pneumatic tires
- Premium hoses approved to SAE2197 standard
- Fully factory tested
- Built-in accessory and tool storage box

Recovery tank	50 pound
Overall size	63 x 68 x 134 cm (25 x 27 x 53 in)
Weight	54 kg (120 lbs)
Vacuum pump	two-stage 6 cfm
Hose length	4.5 m (15 ft)
208-1385	1/2 inch ACME female x 13 mm male adapter

Part No.	Description
208-1320	Air Conditioning Recovery/Recycling Unit (R-12, 110V, 60 Hz)
208-1323	Air Conditioning Recovery/Recycling Unit (R-134a, 110V, 60 Hz)
208-1326	Air Conditioning Recovery/Recycling Unit (R-134a, 220V, 50 Hz, CE)



Service Parts	
Part No.	Description
208-1317	Refrigerant Filter
208-1318	Refrigerant Prefilter
208-1385	Refill Adapter (R-134a)
208-1387	Blue Flex Hose (1/4 inch)
208-1388	Red Flex Hose (1/4 inch)

208-1316 Air Conditioning Recovery, Recycling, and Recharging Unit for R-12 and R-134a

SMCS Code: 7820
Warranty: Manufacturer's

- 208-1316 replaces discontinued 154-4615
- Dual-gas refrigerant management center in a convenient and economical package
- A single control pad provides easy control of two separate circuits
- Twin circuits prevents mixing refrigerants
- Independent R-12 and R-134a systems
- Automatic tank full and high pressure shut-offs
- Shock resistant scales for accurate charging
- Single-pass filtering system
- Built-in manifold gauge set
- Moisture indicator
- Tank refill adapter
- Modular design for easy repair
- Large pneumatic tires
- Premium hoses approved to SAE2197 standard
- Fully factory tested
- Built-in accessory and tool storage box
- Use 208-1385 Refill Adapter to adapt tank to this unit



Recovery tank	two 50 pound
Overall size	71 x 68 x 129 cm (25 x 27 x 53 in)
Weight	54 kg (120 lbs)
Vacuum pump	two-stage 6 cfm
Hose length	4.5 m (15 ft)
208-1385	1/2 inch ACME female x 13 mm male adapter

Service Parts	
Part No.	Description
208-1317	Filter/Dryer
208-1318	Filter
208-1385	Refill Adapter (R-134a)
208-1387	Blue Flex Hose (1/4 inch)
208-1388	Red Flex Hose (1/4 inch)

Change-Over Procedure

Changing from R-12 to R-134a is fast and easy. Recover with R-12 side and use oil flush feature to remove oil. Disconnect R-12 side, change vehicle fittings, reconnect R-134a side, and enter correct R-134a charge. Retrofits are quick with minimum of work and worry.

R-12 and R-134a Portable Refrigerant Recovery Systems

SMCS Code: 7820
Warranty: Manufacturer's

- 208-1337 replaces discontinued 9U-6078; 208-1338 replaces discontinued 9U-7939
- Quickly recover contaminated, known, or unknown refrigerants including mixtures and blends
- Perfect for scavenger work or to protect recover/recycle equipment and valuable refrigerant supply
- Pump straight liquid refrigerant at up to 4 lbs/minute; vapor at 1 lb/minute
- Very durable (oil-less compressor, direct drive, and permanently lubricated cylinder walls)
- Reliable and lightweight
- Built-in 200 mesh inlet filter to protect from dirty air conditioning systems
- Easy use (two hose setup and on-the-fly auto purge)
- A 16 piece, 208-1386 Compressor Rebuild Kit is available for both units

Recovery capabilities	vapor and liquid applications
Compressor	1/2 HP reciprocating, oil-less
Size	25 x 44 x 35 cm (9.7 x 17.2 x 14.0 in)
Refrigerant types	R-12 and R-134a
Voltage	115V 60 Hz, single phase
Recovery rate (liquid)	1.8 kg (4 lbs) per minute (maximum)
Recovery rate (vapor)	0.5 kg (1 lbs) per minute (maximum)
Weight	22 kg (48 lbs)



Part No.	Description
208-1337	R-12 Recovery System
208-1328	Yellow R-12 Charging Hose
208-1360	Refrigerant Cylinder (30 lb)
208-1389	Retention Valve
208-1338	R-134a Recovery
208-1331	Yellow R-134a Charging Hose

Additional Parts for 208-1337	
Part No.	Description
208-1362	Refrigerant Cylinder (50 lb)
208-1322	R-12 Charging Hose, Red 457 cm (15 ft)
208-1325	R-12 Charging Hose, Blue 457 cm (15 ft)
208-1327	R-12 Charging Hose, Yellow 457 cm (15 ft)
208-1329	R-12 Charging Hose, Blue 244 cm (8 ft)
208-1330	R-12 Charging Hose, Red 244 cm (8 ft)
208-1386	Compressor Rebuild Kit

Additional Parts for 208-1338	
Part No.	Description
208-1362	Refrigerant Cylinder
208-1332	R-134a Charging Hose, Blue 244 cm (8 ft)
208-1333	R-134a Charging Hose, Red 244 cm (8 ft)
208-1334	R-134a Charging Hose, Yellow 457 cm (15 ft)
208-1335	R-134a Charging Hose, Blue 457 cm (15 ft)
208-1336	R-134a Charging Hose, Red 457 cm (15 ft)
208-1386	Compressor Rebuild Kit

R-12 and R-134a Air Conditioning Recovery/Recycling Unit

Warranty: Manufacturer's

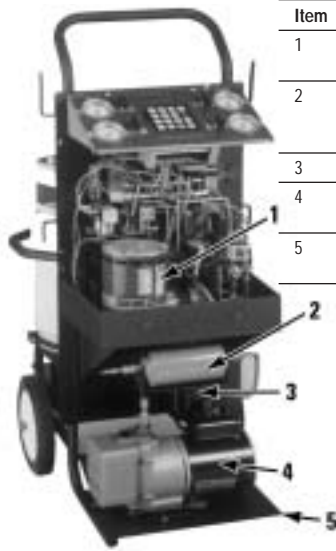
- Used to recover, recycle, and recharge air conditioning units
- Dual-station unit handles both R-12 and R-134a refrigerants
- UL listed and meets industry's standard for purity of recycled refrigerant
- Dual manifolds allows completion of all service work with just one vehicle hook-up
- Microprocessor controls evacuation time and amount of refrigerant put into system
- Refrigerant is recycled during evacuation (tank is always clean and ready to reuse)
- Any air in tank is automatically purged during recycling
- Typical recharge takes just 30 seconds and automatic shut-off allows personnel to do other service work
- Key pad messages indicate when to change filter dryer and pump oil
- Enviro-Charge Plus™ is ideal for retrofits. Recover R-12, and while unit is clearing, replace fittings and components. Once station is cleared, system can be recharged with R-134a.
- Quick and easy operation — display prompts operator through each step of programming
- Unit comes with instructional videotape
- 154-4617 meets CE requirements



**Typical
Air Conditioner
Refrigerant Unit**

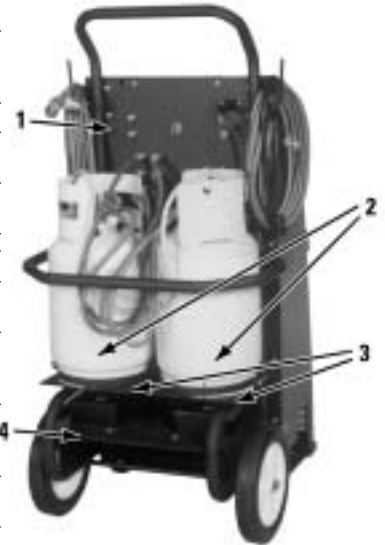
Voltage	220-240V, 50/60 Hz
Refrigerant tank	two, 14 kg (30 lb) refillable, D.O.T. approved
Operating range	11 to 49°C (50 to 120°F)
Recovery rate	0.2 kg/min (.5 lb/min)
Recycling rate	0.4 kg/min (1.0 lb/min)
Scale resolution	0.02 kg (1/100 lb)
Pump free air displacement	142 L/m (6 cfm)
Dimensions (h x w x d)	117 x 58 x 64 cm (46 x 23 x 25)
Weight	90 kg (185 lbs) without tank

Part No.	Description
154-4617	R-12 and R-134a Air Conditioning Recovery/Recycling Unit (220-240V, 50/60 Hz)
Service Parts	
4C-8575	Air Conditioning Charge Hose
4C-8576	Air Conditioning Charge Hose
9U-6062	Moisture Indicator Kit
9U-6505	Dryer Filter
9U-6506	Tank, 50 lb.
9U-6512	Air Conditioning Hose, Yellow
9U-6514	Air Conditioning Hose, Blue
9U-6516	Air Conditioning Hose, Red



Item	Description
1	Oil-less compressor Heavy-duty, 1/3 hp compressor eliminates problems of mixing different refrigerants and their oils
2	Quick change filter dryer Specially blended to remove moisture and contaminants; replace entire canister for fast changeovers
3	Heat exchanger/oil separator Removes oil and other condensibles from refrigerant
4	VacuMaster® vacuum pump Has capacity and power to reach deep vacuum conditions necessary for thorough evacuation
5	Front casters Provide greater maneuverability and make it easy to position unit near vehicle

Item	Description
1	Refrigerant-type switch Just flip switch to select refrigerant; it also signals clearing to prevent mixing of refrigerants
2	Refrigerant tanks Comes with two 14 kg (30 lb) tanks, one for R-12 and one for R-134a. Tank hoses remain connected at all times
3	Two scales One for R-12 and one for R-134a (always ready to use either refrigerant); charging is done by weight for greatest accuracy
4	Heavy-duty cart Strong tubular steel cart has extra heavy-duty wheels (moves easily between vehicles)



R-134a Air Conditioning Recovery/Recycling/Recharging Unit

Warranty: Manufacturer's

- Fast, convenient recovery/recycling/recharging operations with features to accommodate the special needs of R-134a service
- Hoses are designed for R-134a and come with the Quick Connect field service couplers necessary to access the system
- Built-in oil injector makes it simple to add the right amount of oil to the system.
- Full shroud is chemical- and scratch-resistant.
- Door allows easy access to the filter and pump.
- Ruggedly constructed holding bar on the back of the station holds the tank in place, even when moving over rough surfaces.
- Recovers as a single pass unit, recycling refrigerant on the way to the tank.
- Refrigerant is recycled automatically during evacuation.
- No need to recharge tanks since refrigerant in the tank is always ready for recharging.
- Air is purged automatically.
- 9U-6616 meets CE requirements

Voltage	220-240V 50 Hz, single phase
Refrigerant tank	23 kg (50-pound) refillable, D.O.T. approved
Operating range	11° to 49°C (50° to 120°F)
Recovery rate	.2 kg/min (1/2 lb/min)
Recycling rate	.4 kg/min (1 lb/min) flow rate; time depends on moisture content
Recycling filter	710 cc (43 cu in) Quick Change
Scale resolution	1/100 lb.
Vacuum pump free air displacement	93 l/min (4 cfm)
Dimensions	109 cm H x 53 cm W x 69 cm L (43 in x 21 in x 27 in)
Weight	73 kg (167 lbs) without tank

Part No.	Description
9U-6616	R-134a Air Conditioning Recovery/Recycling/Recharging Unit (220-240V 50 Hz)
Service Parts	
9U-6062	Indicator Kit
9U-6063	Dust Cover (optional)
9U-6505	Filter-Dryer
9U-6506	Tank, 50 lb.
9U-6512	Air Conditioning Hose, Yellow
9U-6514	Air Conditioning Hose, Blue
9U-6516	Air Conditioning Hose, Red



- Built-in storage — convenient place to store bottles of oil for system recharge
- Keypad and display — make it easy to program and operate the unit; microprocessor controls evacuation time and refrigerant charge
- Built-in manifold — do all your service work with just one hook-up
- Moisture indicator — changes from yellow to green when refrigerant is ready to be re-used



- Recovery compressor — heavy duty 1/3 HP; a fan cools the compressor for longer life
- Compressor return oil separator — keeps pump lubricated for greater efficiency, long life
- Quick change filter — specially blended to remove moisture and contaminants; replace entire canister for fast change-overs
- Heat exchanger/oil separator — patented design removes oil and other condensibles from the refrigerant
- VacuMaster vacuum pump — reaches the deep vacuum conditions necessary to thoroughly evacuate the system



- Hose and Quick Connect couplers — specially designed for R-134a systems. Hoses are clearly marked for R-134a to prevent cross-contamination
- Oil injector — makes it easy to add oil while system is in a vacuum
- Refillable tank — 50-pound D.O.T. approved tank comes with special valving system to accommodate recycling and recharging
- Calibrated oil catch bottle — makes it easy to measure the amount of system oil that must be replaced (behind tank)
- Electronic scale — automatically shuts off the unit when the tank is full for overflow protection; also weighs the amount of refrigerant recovered and provides accurate recharging by weight

197-1915 Air Conditioning Service Group

Warranty: Manufacturer's

- Used to recover and recycle refrigerant from a vehicle's air conditioning system
- Works with any non-explosive refrigerant such as R12, R134a, R22, R502

General Features

- Portable—ideally suited for mobile field use
- Complete air conditioning server—provides an "all-in-one" package
- Rugged construction
- Easily connects to air conditioning system using self-sealing, snap connectors

Filling and Recovery

- Set predetermined evacuation time and refill quantity
- Evacuates all air and moisture from air conditioning system
- Cleans oil and moisture from recovered fluid (exceeds SAE requirements)
- Uses either bottle pressure or internal pump to fill air conditioning system
- No fluid reservoir (uses bottled gas)
- Recharges air conditioning system with a defined quantity of refrigerant and oil
- Fast clean-up time allows rapid change over between refrigerant types

Operation

- Built-in gauges—one for bottle pressure and one for system pressure when emptying/filling
- Easy operation—computerized weighing scale displays operator prompts and filter life
- Manual air purge valve ensures environmental contamination is minimized
- Computer controlled weighing scale provides operator with a semi-automatic air conditioning service tool

Standards

- Conforms to CE, TUV, and TUV-GS standards

Supply voltage	230 VAC 50/60 Hz
Power consumption	205 watts
Scale discrimination	10 g
Dynamic filling correction accuracy	±10 g
Refrigerant tank	from gas supplier
Refrigerant pump rate	10 kg/h liquid at 20°C
Vacuum pump rate	142 L/h free air
Dimensions (D x W x H)	26 x 47 x 25 cm (10.2 x 18.5 x 9.8 in)
Weight of unit	22 kg (48.5 lbs)



Repair Information

Crypton Technology
Bristol Road
Bridgewater, Somerset, TA6 4BX England
Phone: 44 (0) 1278 436200 phone
Fax: 44 (0) 1278 450567

Service Parts

Part No.	Description	Size
197-1920	Red Service Hose	1/2 inch x 14 mm, 3 m (10 ft)
197-1922	Yellow Service Hose	1/2 inch x 14 mm, 3 m (10 ft)
197-1921	Blue Service Hose	1/2 inch x 14 mm, 3 m (10 ft)
197-1919	Blue Hose Adapter, R12	6 inch
197-1918	Red Hose Adapter, R12	6 inch
197-1917	Filter	
197-1924	Oil Coupling, R12	
197-1923	Oil Coupling, R134a	

R-134A Air Conditioning Refrigerant Recovery, Recycling, and Manual Recharging Stations

152-8256 (115V)

**Discontinued —
Service Parts Available**

154-4853 (220V)

**Discontinued —
Service Parts Available**

Service Parts	
Part No.	Description
9U-6062	Indicator Kit, Moisture
9U-6505	Filter Dryer
9U-6512	Air Conditioning Hose, Yellow
9U-6514	Air Conditioning Hose, Blue
9U-6516	Air Conditioning Hose, Red
9U-6063	Dust Cover (optional)

208-1317 Refrigerant Filter

208-1318 Refrigerant Prefilter

Warranty: Manufacturer's

- Service parts for:
208-1320 Air Conditioning Recovery/Recycling Unit (R-12, 110V),
208-1323 Air Conditioning Recovery/Recycling Unit (R-134a, 110V), and
208-1326 Air Conditioning Recovery/Recycling Unit (R-134a, 220V)



208-1317 Refrigerant Filter

Capacity	41 cubic inches
Color	blue
Overall size	29.2 cm (11.5 in) diameter by 24.4 cm (10.0 in) long

208-1318 Refrigerant Prefilter

Function	removes moisture and oil breakdown particles
Connections	1/4 inch male flare x 1/4 inch female flare
Overall size	76.2 mm (3.0 in) diameter by 88.9 mm (3.5 in) long

208-1355 Recharge Oil Pump

SMCS Code: 7820

Warranty: Manufacturer's

- Used to replace oil in air conditioning system or compressors after oil has been removed
- Easily works with system pressures up to 2070 kPa (300 psi)
- Includes bottle with calibration marks, hose, and low side R-134a coupler
- Can be used for R-12 systems (use a regular charging hose with 1/4 inch flare fittings)
- Volume per stroke: 1.5 ounces
- System pressures: up to 2070 kPa (300 PSI)



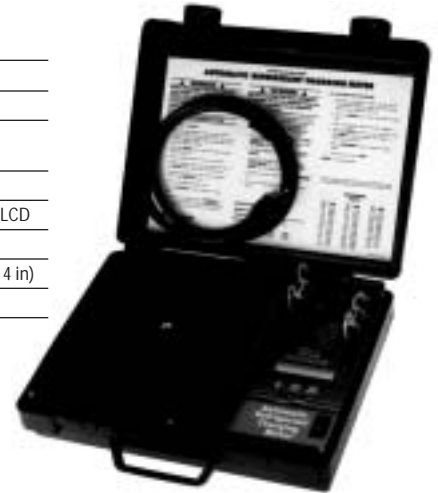
Charging Scales and Manifold Gauges

Automatic Refrigerant Charging Scales

Warranty: Manufacturer's

- Compatible with all refrigerants
- Program refrigerant amount and scale automatically shuts off when charging is complete
- Corner balancing for accurate charging
- Tare function zeros display for easy charging
- All connections located within case to protect against damage
- Pounds to kilogram switch
- 168-1961 meets CE requirements

168-1959	110V, 50 Hz
168-1961	220-240V, 60 Hz
Weight limit	50 kg (110 lb) bulk tank maximum
Weight resolution	0.01 kg (.02 lb)
Display	16 digit alpha numeric LCD
Operating temperature	10 to 49°C (50 to 120°F)
Dimensions (WxLxH)	34 x 28 x 10 (13.5 x 11 x 4 in)
Weight	4 kg (8 lbs)



Part No.	Description
168-1959	Automatic Refrigerant Charging Scale (110V, 50 Hz)
168-1961	Automatic Refrigerant Charging Scale (220-240V, 60 Hz)

Manual Refrigerant Charging Scale

Warranty: Manufacturer's

- Battery powered for portability — sleep mode extends battery life (batteries included)
- Compatible with all refrigerants
- Displays refrigerant weight while charging from tank
- Corner balancing for accurate charging
- Tare function zeros display for easy charging
- Pounds to kilogram switch

Power	six 1U-9533 AA Batteries
Weight limit	50 kg (110 lb) bulk tank maximum
Weight resolution	0.01 kg (.02 lb)
Display	16 digit alpha numeric LCD
Operating temperature	10 to 49°C (50 to 120°F)
Dimensions (WxLxH)	34 x 28 x 10 (13.5 x 11 x 4 in)
Weight	4 kg (8 lbs)



Part No.	Description
168-1958	Manual Refrigerant Charging Scale (Battery Powered)

Manifold Gauges for R-12 and R-134a

SMCS Code: 7320

Warranty: Manufacturer's

- 208-1341 replaces both 174-8185 and 5P-8578
- Used to check pressure in R-134a and R-12 cooling systems
- Bold, easy to read gauges (large bold numbers and colored scales are easy to read)
- Removable Lexan crystals resist breakage
- Gauge cases are color-coded red and blue
- Pressure tested for reliability
- Forged brass body with metal valve handles for durability
- Surge protector and silicone dampened movement helps minimize needle pulsation for easier, more accurate readings
- Sliding, double O-ring pistons with non-rotating design reduces wear and extends service life
- Fast acting valve (only 1-1/2 turns for full flow)



Part No.	Description
208-1341	Manifold Assembly (R-134a)
208-1321	Manifold Assembly (R-12)
Service Parts	
208-1376	Piston
208-1377	Handle Group

Liquid-Filled Manifold Gauges for R-12 and R-134a

SMCS Code: 7320

Accuracy	1.6 percent
Diameter	79.4 mm (3.125 in)

- Liquid-filled gauges have large 3 1/8 inch diameter for easy reading
- Dials are color coded
- Liquid-filled gauges dampen pulsation
- Designed with a recalibrator screw

Part No.	Description
208-1346	Liquid-Filled Manifold Gauge, Red, R-12
208-1347	Liquid-Filled Manifold Gauge, Blue, R-12
208-1344	Liquid-Filled Manifold Gauge, Red, R-134a
208-1345	Liquid-Filled Manifold Gauge, Blue, R-134a



Standard Manifold Gauges for R-12 and R-134a

SMCS Code: 7320

- 208-1348 replaces discontinued 4C-4620; 208-1349 replaces discontinued 4C-4619
- Bold, high-visibility dials have colored temperature scales for easy reading
- Flutterless technology and surge protection minimize needle pulsation

Part No.	Description	Pressure
208-1342	Manifold Gauge, Red, R-134a	0 to 3447 kPa (0 to 500 psi)
208-1343	Manifold Gauge, Blue, R-134a	206 to 0 to 827 kPa (30 to 0 to 120 psi)
208-1348	Manifold Gauge, Red, R-12	0 to 3447 kPa (0 to 500 psi)
208-1349	Manifold Gauge, Blue, R-12	206 to 0 to 827 kPa (30 to 0 to 120 psi)

Accuracy	3-2-3 percent
Diameter	63.5 mm (2.5 in)
Connections	1/8 inch NPT



Tanks and Hoses

R-134a Refrigerant Tanks

Warranty: Manufacturer's

- For R-134a refrigerant
- Refillable refrigerant tanks are D.O.T. approved for safety
- Come with the valving necessary for recovery and recycling
- Distinctive blue exterior clearly identifies these tanks as R-134a equipment



Part No.	Description	Float Switch
9U-6496	30 lb. Tank	No
4C-2977	30 lb. Tank	Yes
9U-6506	50 lb. Tank	No

R-12 Refrigerant Tanks

Warranty: Manufacturer's

- For R-12 refrigerant
- Complete selection of refillable refrigerant tanks for use with recovery/recycling and charging stations
- All tanks are D.O.T. approved and feature special valving systems to accommodate continuous loop recycling
- Extra tanks are necessary for multi-refrigerant service and are handy for rotation between recycling and recharging



Part No.	Description	Float Switch
9U-6079	13.6 kg (30 lb) D.O.T. Tank	Yes
9U-5793	23 kg (50 lb) D.O.T. Tank	No
4C-4577	13.6 kg (30 lb) D.O.T. Tank	No
9U-6388	23 kg (50 lb) D.O.T. Tank	Yes

Refrigerant Recovery Tanks

SMCS Code: 7820

Warranty: Manufacturer's

- Used to store recovered refrigerants
- 208-1360 and 208-1362 are equipped with 3-pin Brad Harrison connector
- Gray and yellow color coding
- Y-valve allows liquid/vapor collection
- Cylinders equipped with a protective collar and handle
- Float switch plug: 3/4 inch
- Pressure rating: 2400 kPa (350 PSI)



Part No.	Description
208-1360	Cylinder with Float, 30 pound
208-1361	Cylinder with Y-Valve (no float), 30 pound
208-1362	Cylinder with Float, 50 pound
208-1319	Cylinder with Y-Valve (no float), 50 pound

4C-5583 Heater Blanket (220-240V, 50/60 Hz)

Warranty: Manufacturer's

- Assures a complete transfer of refrigerant
- Wraps around a 13.6 or 23 kg (30 or 50 lb) refrigerant drum, maintaining an even temperature for a constant positive pressure that speeds the transfer of refrigerant to give you a complete charge every time
- Maximum temperature 55°C (125°F) with thermocouple protection
- 4C-5583 comes with no plug; meets CE requirements



208-1352 Wrap-Around Heater (115V)

SMCS Code: 7320

Warranty: Manufacturer's

- 208-1352 replaces discontinued 4C-4874 Heater Blanket
- Used to heat 30, 50, and 125 pound refrigerant cylinders
- Maintains an even temperature for constant positive pressure that speeds transfer of refrigerant for a complete charge every time
- Expandable (wraps around 30, 50, and 125 pound refrigerant tanks)
- Thermostat controlled



9U-6073 Recycled Refrigerant Tag

Warranty: Manufacturer's

- Used to identify recycled refrigerant
- An unidentified tank should indicate that refrigerant is dirty and needs to be recycled

R-12 Air Conditioning Charging Hoses

SMCS Code: 7320
Warranty: Manufacturer's

- 208-1328 replaces discontinued 4C-8574; 208-1329 replaces discontinued 4C-8576; 208-1330 replaces discontinued 4C-8575
- Proven performance
- Double barrier protection for R-12 and R-134a
- Nylon permeation barrier meets U.L. requirements for R-12, R-134a, R-22, and R-503 refrigerants
- Moisture barrier provides improved resistance to moisture (contaminates expensive refrigerant)
- SealRight fittings immediately trap refrigerant in hose when disconnected
- 45° end allows easier connection in tight areas
- Gaskets resist deterioration from R-12 and R-134a refrigerants and oils

Part No.	Description	Length
208-1322	R-12 Charging Hose, Red	457 cm (15 ft)
208-1325	R-12 Charging Hose, Blue	457 cm (15 ft)
208-1327	R-12 Charging Hose, Yellow	457 cm (15 ft)
208-1328	R-12 Charging Hose, Yellow	244 cm (8 ft)
208-1329	R-12 Charging Hose, Red (high)	244 cm (8 ft)
208-1330	R-12 Charging Hose, Blue (low)	244 cm (8 ft)



R-134a Air Conditioning Charging Hoses

SMCS Code: 7320
Warranty: Manufacturer's

- 208-1333 replaces discontinued 9U-6516; 208-1332 replaces discontinued 9U-6514; 208-1331 replaces discontinued 9U-6512
- 1/4 inch hoses for R-134a refrigerant
- 1/2 inch Acme fitting meets SAE requirements
- Double-barrier protection
- Threads:
1/2 inch Acme female
14 mm Acme male

Part No.	Description	Length
208-1331	R-134a Charging Hose, Yellow	244 cm (8 ft)
208-1332	R-134a Charging Hose, Blue	244 cm (8 ft)
208-1333	R-134a Charging Hose, Red	244 cm (8 ft)
208-1334	R-134a Charging Hose, Yellow	457 cm (15 ft)
208-1335	R-134a Charging Hose, Blue	457 cm (15 ft)
208-1336	R-134a Charging Hose, Red	457 cm (15 ft)



Service Couplers

SMCS Code: 7820
Warranty: Manufacturer's

- 208-1339 replaces discontinued 4C-2984; 208-1340 replaces discontinued 4C-2985
- Couplers interface with R-134a service ports
- Quick, easy connect/disconnect
- Control valve allows access to system even at working pressures
- Integral safety sleeve holds coupler securely to service port
- High-flow characteristics

Part No.	Description
208-1339	Coupler, chrome low side to 14 mm
208-1340	Coupler, chrome high side to 14 mm



Vacuum Pumps and Accessories

115 and 220 Volt 1.5 CFM Vacuum Pumps

SMCS Code: 7820
Warranty: Manufacturer's

- 208-1381 replaces discontinued 9U-6464
- 208-1382 replaces discontinued 9U-6490
- Rated as "free air displacement" pump
- Rugged metal construction with no plastic to crack or fall off
- Oil reservoir port has a wide-mouth for easier, neater filling; doubles as a pump exhaust; and is threaded to attach garden type hose for exhausting to remote location
- Large oil reservoir helps reduce operating temperature and dilute corrosive contaminants
- Large sight glass for easier monitoring
- Large oil drain valve for quicker draining
- Longer heat dissipation fins for a cooler running unit
- Low operating temperature improves efficiency and vacuum

Pump rating	1.5 cfm
Field rating	15 microns
Intake	1/4 flare and 1/2 inch ACME thread
Motor	1/6 horsepower at 1725 rpm
Internal capacitor thermal overload	temperature rise 40°C (104°F)
Voltage (single phase)	115 Volt, 60 Hz or 220 Volt, 50 Hz
Oil capacity	0.7 liter (24 oz)
Overall dimensions	26.67 x 12.95 x 23.37 cm (10.5 x 5.1 x 9.2 in)

- Low profile on/off switch to avoid breakage
- Vacuum indicator gauge at pump intake fitting shows evacuation progress at a glance (electronic gauge then provides more precise readings)
- Gas ballast speeds evacuation and keeps oil cleaner
- Tethered caps stay with the unit



Part No.	Description
208-1381	Vacuum Pump, 115V, 60 Hz
208-1382	Vacuum Pump, 220V, 50 Hz

115 and 230 Volt 4.0 CFM Vacuum Pumps

SMCS Code: 7820
Warranty: Manufacturer's

- 208-1356 replaces discontinued 9U-6465; 208-1357 replaces discontinued 9U-6491
- Rated as "free air displacement" pump
- Rugged metal construction with no plastic to crack or fall off
- Oil reservoir port has a wide-mouth for easier, neater filling; doubles as a pump exhaust; and is threaded to attach garden type hose for exhausting to remote location
- Large oil reservoir helps reduce operating temperature and dilute corrosive contaminants
- Large sight glass for easier monitoring
- Large oil drain valve for quicker draining
- Longer heat dissipation fins for a cooler running unit
- Low operating temperature improves efficiency and vacuum
- Low profile on/off switch to avoid breakage

Pump rating	4 cfm
Field rating	15 microns
Intake	1/4 and 1/2 inch ACME thread
Motor	1/3 horsepower at 1725 rpm
Internal capacitor thermal overload	temperature rise 40°C (104°F)
Voltage (single phase)	115 Volt, 60 Hz or 230 Volt, 50 Hz
Oil capacity	0.7 liter (24 oz)
Overall dimensions	38.7 x 17.1 x 30.5 cm (15.25 x 6.75 x 12.00 in)
Weight	13.4 kg (29.5 lbs)



- Vacuum indicator gauge at pump intake fitting shows evacuation progress at a glance (electronic gauge then provides more precise readings)
- Gas ballast speeds evacuation and keeps oil cleaner
- Tethered caps stay with the unit

Part No.	Description
208-1356	Vacuum Pump, 115V, 60 Hz
208-1357	Vacuum Pump, 230V, 50 Hz

R134-a 3-in-1 Valve for Vacuum/Charge/Recovery Core Tool

SMCS Code: 7820
Warranty: Manufacturer's

- Used as a vacuum monitoring valve (1/4 inch side port to attach electronic micron vacuum gauge for greater accuracy)
- Core remover (allows evacuation and charge through an unrestricted line for increased speed and higher vacuum)
- Core replacement tool
- Recovery valve (core removal allows recovery unit to work at maximum efficiency, speeding recovery process)

Part No.	Description
208-1383	Core Remover
208-1384	Core Remover



208-1353 LCD Vacuum Gauge

208-1354 Sensor

SMCS Code: 7820
Warranty: Manufacturer's

208-1353 LCD Vacuum Gauge

- 208-1353 replaces discontinued 9U-6061
- Vacuum gauge combines thermocouple sensor technology with advanced IC electronics for precise readings and repeatability not found with thermistor sensors or analog meters
- Precision circuitry to control sensor and then translate sensor input into micron readings
- Provides accurate readings on job after job from 1999 to 1 micron without calibration
- Large, high-contrast digital display for easy reading
- Female to female coupler to connect sensor into system
- Powered from one D cell battery
- Compact design with storage case for sensor, cable, and hose
- Rugged molded case protects electronic circuitry and sensor



208-1354 Thermocouple Sensor

- No adjustments or warmup
- Stays calibrated after on/off switching and long evacuations
- Automatic ambient temperature compensation
- Automatic battery compensation
- Replaceable thermocouple sensor with 1/4 inch flare (no calibration required)
- Comes with 182 cm (6 ft) long sensor cable

208-1365 Vacuum/Charge Valve (R-12)

SMCS Code: 7820
Warranty: Manufacturer's

- Replaces discontinued 1U-9686
- Used as a vacuum monitoring valve (1/4 inch side port to attach electronic micron vacuum gauge for greater accuracy)
- Core remover (allows evacuation and charge through an unrestricted line for increased speed and higher vacuum)
- Core replacement tool
- Recovery valve (core removal allows recovery unit to work at maximum efficiency, speeding recovery process)



Vacuum Manifolds

Warranty: Manufacturer's

- Pump, manifold and thermistor vacuum gauge all hook up to this valve assembly, providing a convenient central valve control
- Vacuum valve assemblies speed up servicing by eliminating the need to switch hoses, and work with any standard manifold
- Comes with 13 mm (1/2 in) FFL coupler and large internal porting for full flow



Part No.	Description
9U-6059	Vacuum Manifold (R-12)
9U-7942	Vacuum Manifold (R-134a)

Vacuum Pump Oil

- Recommended for use on all vacuum pumps sold by Caterpillar and is generally recommended for use on all vacuum pumps
- Oil lubricates and seals the vacuum pump during the pump down cycle
- Vacuum pump efficiency depends largely on purity of vacuum pump oil. After every use, oil should be replaced to keep pump operating at peak efficiency

Part No.	Description
1U-9763	.95 liter (1 quart)
1U-9764	3.79 liter (1 gallon)
1U-9765	18.9 liter (5 gallons)
1U-9766	208 liter (55 gallons)



Miscellaneous

208-1378 Refrigerant Analyzer

SMCS Code: 7320

Warranty: Manufacturer's

- 208-1378 replaces discontinued 174-0839
- Refrigerant identifier/analyzer with infrared sensor and 4 channels designed for R12 and R134a systems
- Identifies and measures purity (percent) of R134a, R12, R22, and hydrocarbons, with 98% accuracy
- One-button testing with total test cycle time of less than sixty seconds
- Audible and visual alarms for detecting flammable hydrocarbons
- Indicates presence of blends and contaminated refrigerants
- Built-in printer port
- Automatic altitude compensation
- 12 VDC or optional universal air conditioning power supply
- Meets SAE J1771 standards

Power requirements	11.5 VDC to 16 VDC, 1.5 amp
Power consumption	10 watts
Operating temperature	10 to 49°C (50 to 120°F)
Storage temperature	-20 to 70°C (-40 to 158°F)
Overall size	14 x 20 x 6 cm (5.4 x 8 x 2.5 in)
Contaminate filter	replaceable, color-indicating filter
Connectors	12 VDC power jack, quick-connect hose port, 25 pin printer port (centronics type)
Compounds measured	R12, R134a, R22, and HC (hydrocarbons)
Purity accuracy	+1 percent

Service Parts	
Part No.	Description
174-0840	Adapter Cord
174-0842	R134a Hose Assembly
174-0843	R-12 Hose Assembly
183-4749	Adapter
183-4750	Quick Disconnect Adapter
185-2326	O-Ring Seal



138-6629 Refrigerant Identifier

SMCS Code: 1809-546

Model: All

Warranty: Manufacturer's

- Used to measure amount of refrigerant or air inside an air conditioning system
- Meets SAE J1661 "98% Purity Standard"
- Separate horn and light alert technician when a flammable refrigerant is detected
- Can be connected to a printer for a hard-copy report

Size (W x D x H)	39 x 37 x 16 cm (15.5 x 14.5 x 6.5 in)
Weight	3.6 kg (8 lbs)
Power	110/220 VAC, 50/60 Hz

Service Parts	
Part No.	Description
208-1379	Adapter
138-8323	Filter Assembly
138-8324	Hose (R12)
138-8325	Hose (R134a)



153-8537 Air Conditioning Component Flusher (Solvent Recycler)

Warranty: Manufacturer's

- Used to flush air conditioning components (lines, evaporators, and condensers) and recycle solvent in one complete unit
- Operates by using shop air to atomize flushing solvent
- Built-in pulsator "scrubs" residue and other contaminants from components and lines
- Activated charcoal filter limits emissions and odors during flushing
- Self-contained cart makes flushing fast and easy
- Two gallons of 153-8538 Solvent required for each flush procedure
- Solvent can be recycled and reused many times
- Requires 153-9033 Adapter Kit



Size (h x w x d)	116 x 56 x 66 cm (46 x 22 x 26 in)
Weight	34 kg (75 lbs)
Powered by	compressed air

153-9032 Air Conditioning Component Flusher (Portable)

Warranty: Manufacturer's

- Used to flush lines or components in air conditioning systems — contains flushing unit with built-in pulsator, waste container, and hoses
- Uses shop air to atomize solvent and built-in pulsator "scrubs" residue and other contaminants out of components and lines
- Complete flushing job can be done in less than an hour
- Uses less than one gallon of 153-8538 Solvent per job
- Completely portable for shop or field service use
- Requires 153-9033 Adapter Kit
- Weight: 10 kg (22 lbs)



153-8538 Refrigerant Flush Solvent

- Used to flush particulates from air conditioning system lines and components
- Used with 153-9032 Air Conditioning Component Flusher (Portable) or 153-8537 Air Conditioning Component Flusher (Solvent Recycler) (Cart)
- Solvent is compatible with PAG, Ester, and mineral oils
- Container size: 3.8 L (1 gal)



153-9033 Adapter Kit (Air Conditioning Flushing)

- Provides necessary adapters to flush Caterpillar air conditioning system components
- Used with 153-8537 Air Conditioning Flusher and 153-9032 Air Conditioning Flusher
- Isolates components for closed loop flushing
- Flushes without removing component from vehicle
- Adapter fittings: 7/16-20 flare
- Air conditioning hose: 1/4 inch, standard

Service Parts	
Part No.	Description
4C-3723	Utility Box
9U-7936	Cap Kit
159-6114	Adapter
159-6115	Adapter
159-6116	Adapter
159-6117	Adapter
159-6118	Adapter
159-6169	Adapter
159-6122	Adapter
159-6134	Adapter
159-6135	Adapter
159-6144	Adapter
159-6146	Adapter
159-6119	Adapter
159-6147	Service Cap

208-1374 Refrigerant Leak Detector

SMCS Code: 7320

Warranty: Manufacturer's

- 208-1374 replaces discontinued 4C-2964
- Used to quickly locate leaks of any common refrigerant
- Unique heated triode dispersive electron technology and three-position sensitivity switch provide correct and reliable detection of R-12, R-22, R-134a, and R-410a
- Manual or automatic background compensation helps prevent false alarms
- Airflow system provides quick response (less than a second)
- Fast recovery from full alarm
- Four easy-to-read LEDs quantify leak size for accurate measurement of small, medium, large, or gross leaks
- Audible and visual alarms
- Lightweight
- Battery operated; battery status LED shows charge condition; changes from green to yellow to red

Probe lengths	20 or 30 cm (8 or 12 in)
R-134a sensitivity detection level	15 mL (.50 oz) per year or greater leak rate
R-12 sensitivity detection level	3 mL (.10 oz) per year or greater leak rate
Repeatability	SAE standard J1627
Ambient operating temperature	0 to 40°C (32 to 104°F)
Battery	quick-recharge, 7.2 VDC
Power consumption	4 hour continuous operation; up to 8 hours in normal on/off mode



1U-9690 Air Conditioning Charging and Testing Tool Group (R12)

Warranty: Manufacturer's



Service Parts

Part No.	Description	Part No.	Description
1U-8085	Vented Safety Goggles	4C-8575	Air Conditioning Charging Hose, Red
1U-9684	Gage Hold Block	4C-8576	Air Conditioning Charging Hose, Blue
1U-9685	Tray Block	5P-7277	Voltage Tester
208-1365	Valve Core Removal Tool (2)	5P-8567	Hose Adapter (2)
208-1363	Reducer Fitting	5P-8568	Valve Core Depressor Kit (2)
1U-9688	Grommet Kit (2)	5P-8569	Hose Adapter
1U-9689	Valve Core Depressor Kit (2)	5P-8571	Grommet Kit (2)
1U-9691	Straight Adapter	174-8185	Manifold Gage Assembly
1U-9692	90 Degree Adapter	6V-7145	Case
1U-9886	Coupler	8T-0500	Continuity Light
9U-7932	Leak Detector	9U-5323	Thermometer
4C-8574	Air Conditioning Charging Hose, Yellow (2)		NEEG2387 Form
			NEEG2378 Decal

9U-6494 Oil Injector (R-134a)

Warranty: Manufacturer's

- For R-134a refrigerant
- Installed in-line on the low side of the manifold, it pulls oil into the system while it's in a vacuum. Watch calibrations on the bottle and close the valve when enough oil has been added.



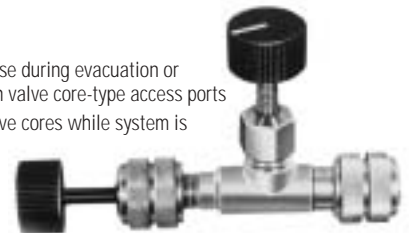
1U-9686 Valve Core Remover/Installer

Warranty: Manufacturer's

- Designed specifically for use during evacuation or recharging of systems with valve core-type access ports
- Can be used to replace valve cores while system is under pressure

Optional

208-1363 Straight Adapter, 1/4 in MFL to 3/16 in FFL



Recover/Recycling Filter-Dryers

Warranty: Manufacturer's

- Specially blended for maximum acid, moisture and condensable removal
- Keep extra filters on hand, especially during the busy air conditioning season

Part No.	Description	Works With
4C-4588	Filter Dryer Core	4C-4573, 4C-4574, 4C-4575, 4C-6365, 4C-8754, 4C-8755, 9U-5786, 9U-5787, 9U-5788, 9U-5789, 9U-5790, 9U-6064, 9U-6074, 9U-6081, 9U-6082, 9U-6083, 9U-6084, 9U-6085
9U-5190	Inlet Filter	9U-5188, 9U-5189, 9U-5788, 9U-5789, 9U-6085
9U-6080	Inlet Filter Dryer	9U-6078
9U-5182	Pre-Filter Kit	9U-5163, 9U-5182
9U-6224	In-line Filter Kit	9U-5163
9U-6505	Filter Dryer	152-8256, 154-4615, 154-4617, 154-4626, 154-4853, 9U-6498, 9U-6499, 9U-6616, 9U-6617, 9U-6618, 9U-6619

208-1375 Orifice Tube Remover Kit

SMCS Code: 7820

Warranty: Manufacturer's

- 208-1375 replaces discontinued 1U-9890
- Designed to remove all necessary parts of complete or damaged orifice tube



Adapters

Warranty: Manufacturer's

- Used for system evacuation



Adapters and Coupler

SMCS Code: 7820

Warranty: Manufacturer's

- 208-1379 replaces discontinued 1U-9340;
- 208-1363 replaces discontinued 1U-9687
- Adapt female quick connect to male thread
- Knurled fittings for easy connection



208-1363	Adapter, R-12, 3/16 female QD to 1/4 male flare
208-1379	Adapter, R-134a, 1/4 female QD to 1/2 male ACME
208-1390	Coupler, 1/4 female hex to 1/2 male ACME



5P-8567	Adapter, 90° Brass	1/4 MFL x 1/4 FFL
1U-9692	Adapter, 90° Brass	1/4 MFL x 3/16 FFL

5P-8569	Straight Brass Adapter	1/4 MFL x 1/4 FFL
1U-9691	Straight Brass Adapter	1/4 MFL x 3/16 FFL
1U-9886	Straight Brass Adapter	1/4 MFL x 1/4 MFL

Service Parts

Part No.	Description	Size
1U-9688	Gasket	5 mm (3/16 in)
5P-8571	Gasket	6.4 mm (1/4 in)
1U-9689	Valve Core Depressor	5 mm (3/16 in)
5P-8568	Valve Core Depressor	6.4 mm (1/4 in)

R-12 Service Adapter

SMCS Code: 7320
Warranty: Manufacturer's

- Used to service air conditioning systems on 1991 and later GM vehicles



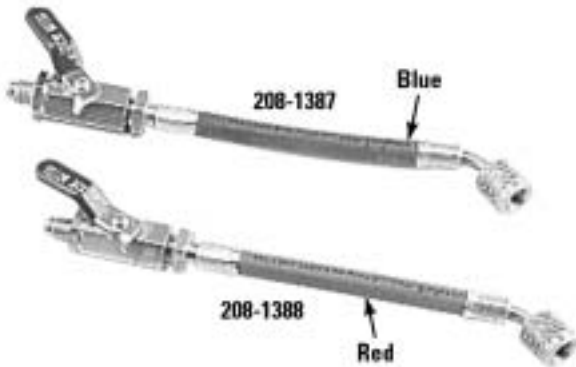
Part No.	Description
208-1364	Air Conditioning Adapter

Flex Hoses

Warranty: Manufacturer's

- 208-1387 used on low-pressure side of R-12 air conditioning recovery systems; 208-1388 used on high-pressure side
- Easy retrofit of existing hoses to provide ball valve capability
- Flexible hose between valve and fitting makes hook-up in tight areas much easier

Part No.	Description
208-1387	Blue Flex Hose (1/4 inch)
208-1388	Red Flex Hose (1/4 inch)



144-0235 Belt Tension Gauge

SMCS Code: 7461-036, 1357-036
Model: All

- Use to check tension of belts driving components such as air compressor, air conditioning compressor, alternator, water pump, or other belt-driven attachments
- Works on "A" section belts with top width of 9.0 to 13.0 mm (.37 to .50 in) and "K" section poly-v, 4, 5, and 6 rib belts
- Increased accuracy is provided by a belt thickness compensating feature
- Has a permanent dial decal



Height/width	102 x 203 mm (4.0 x 8.0 in)
Leg span	82.6 mm (3.25 in)
Weight	400 g (14 oz)
Accuracy	±10%
Range	130 to 800 Newtons (30 to 180 lbs)

208-1350 Fin Comb

SMCS Code: 7820
Warranty: Manufacturer's

- 208-1350 replaces discontinued 8T-9275
- Multi-head tools straightens 8, 9, 10, 12, 14, and 15 fins per inch
- Works on radiator evaporator coils and aluminum finned heat exchangers
- Breaks down easily for tool box storage
- Compact 10 cm (4 in) length



9U-7941 Fitting Kit (Flexible Adapters)

Warranty: Manufacturer's

- "Fits-all" adapter kits designed for accessing air conditioning systems for service procedures
- Flexible adapters have brass fittings and durable 6 inch neoprene-coated hose
- Solid brass 90° fittings ideal for tight spots or locations where making connections is difficult



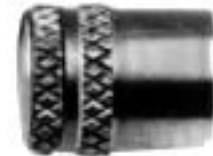
9U-7941 Fitting Kit includes one each of:

- 1/4 inch MFL x 1/8" FFL hose
- 1/4 inch MFL x 3/16" FFL hose
- 1/4 inch MFL x 1/4" FFL hose
- 1/4 inch MFL x 3/16" FFL adapter
- 1/4 inch MFL x 1/4" FFL adapter

9U-7936 Brass Seal Caps

Warranty: Manufacturer's

- 1/4 inch solid brass caps
- Knurled ridges for easy gripping
- Package of six



199-6268 Differential Pressure Gauge

199-9817 Carrying Case Group

Essential Tool

- Used to measure low air pressure and/or non-corrosive gas pressure
- Frictionless magnahelic movement
- Positive, negative (vacuum), and differential readings
- No manometer fluid to evaporate or freeze
- Does not have to be level to provide accurate readings
- Used with 199-9817 Carrying Case Group which includes carrying case, mounting bracket, and 3 m (9 ft) of 3/16 inch ID rubber tubing



Cab Pressurization Testing

- Used to measure cab pressurization standards
- Minimizes dust and noise in cab by making sure a positive pressure of 0.2 to 0.6 inches of water is maintained
- Helps air conditioning system to operate at maximum efficiency

Tips for Obtaining Accurate Pressurization Readings

- Route gauge pickup tube under door seal into cab
- Do not crush pickup tube between door seal and cab frame
- Make sure pickup tube is completely sealed (if door seal collapses it can cause air leaks)
- If complete seal cannot be achieved, replace door seal
- Insert pickup tube in approximate area of operator's head and chest

199-6268 Differential Pressure Gauge	
Vacuum range	0 to 1 inch of water
High and low-pressure connections	1/8 NPT
Accuracy	±2% of full scale

9U-6063 Dust Cover

Warranty: Manufacturer's

- Fits all cart-style units, Smart Cart and manual charging stations (will not fit 154-4615 or 154-4617)
- Protects your recovery/recycling equipment
- Made of top quality heavy-duty vinyl
- Seams are corded for extra durability
- Medium gray color



Thermometers

Warranty: One Year

- For most any temperature measuring application
- All have pocket clips.



Part No.	Description	Accuracy	Range
9U-5323	Digital Thermometer	±1%	-50° to 300°F
9U-5324	Digital Thermometer	±1%	-50° to 150°C
9U-5325	Analog Thermometer	±2%	-40° to 160°F

Air Conditioning Lubricants

- | | | | |
|---|--|---|--|
| <ul style="list-style-type: none"> • Specially formulated lubricants for use with R-134a refrigerants • Size: 250 ml • Package quantity: 1 | <p>4C-2959 PAG Oil</p> <ul style="list-style-type: none"> • Polyalkylene glycol oil for Sanden compressors • High-viscosity refrigerant oil for R-134a • Meets GM Spec 9985752 | <p>9U-7551 PAG Oil</p> <ul style="list-style-type: none"> • Polyalkylene glycol • Low-viscosity refrigerant oil for R-134a | <p>4C-2960 POE Oil</p> <ul style="list-style-type: none"> • Polyol ester oil • ISO viscosity 150° refrigerant oil for R-134a • Required for R-12 to R-134a retrofits |
|---|--|---|--|

150-3622 Bench Model Hose Machine

SMCS Code: 0684
Model: All

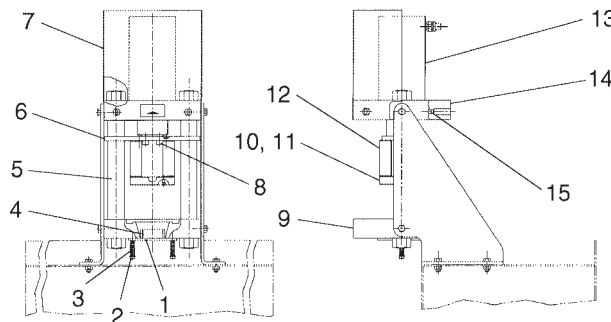
- Used to make permanent coupling hoses up through 1-1/4 inch
- Used with 161-5717 Hydraulic Power Supply or 163-5309 Power Supply (requires 162-1410 Hose Assembly)
- Compact size (easily mounted to top of workbench or optional stand)
- Uses same spacer rings as 4C-9900 or 150-2568 XT Hose Machines
- Optional 157-6123 Stand is available

Weight	159 kg (350 lbs)
Maximum pressure	68900 kPa (10,000 psi)
Size (w x d)	46 x 48 cm (18.0 x 19.0 in)
161-5717 Power Supply	115/220 VAC, 60/50 Hz, single phase
163-5309 Power Supply	220 VAC, 50 Hz, single phase, CE compliant

Service Parts		
Item	Part No.	Description
1	161-3956	Plate
2	161-4303	Shoulder Bolt
3	160-2525	Spring
4	160-3954	Tube Extractor
5	160-3953	Threaded Rod
6	161-3957	Plate
7	160-2526	Guard
8	160-3951	Spacer
9	162-0711	Bowl Plate
10	139-5446	Half Pusher
11	139-5445	Half Pusher Assembly
12	139-5444	Pusher Tube
13	150-3624	Hydraulic Cylinder
14	161-3955	Top Plate
15	161-4304	Set Screw
Not shown	160-2275	Pusher (optional) (1E1543/1E1028 Hose)



Item	Part No.	Description
1	150-3622	Hose Machine
2	157-6123	Stand
3	162-1410	Hose Assembly
4	161-5717 or 163-5309	Power Supply



Reference

NEHS0715 Special Instruction/
Tool Operating Manual

Die Sets

- Used in crimping permanent couplings onto air conditioner hose
- Color coded according to hose size
- Can be used on both crimp machines and hose presses
- Can be used on all three sizes of crimp machine and hydraulic hose presses as part of either the 8T-5120 or 8T-5130 Tool Group
- When using either 8T-5120 or 8T-5130 Tool Groups, a 4C-4625 Die Ring is needed

Part No.	Size
4C-3675	5/16 inch hose
4C-3676	13/32 inch hose
4C-3677	5/8 inch hose
189-0990	3/4 inch hose

Reference

SEHS8587 Special Instruction
SEHS9052 Special Instruction

208-1366 Seal and Gasket Kit

SMCS Code: 7320
Warranty: Manufacturer's

- Used to provide O-rings and gaskets for Plus II refrigerant hoses with SealRight fittings

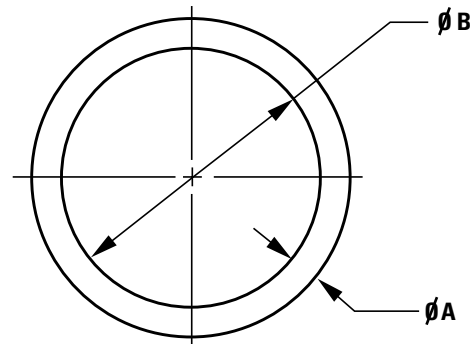


Part No.	Description	Quantity
208-1367	3/8 inch gasket	10
208-1368	1/4 inch gasket	10
208-1369	1/8 inch gasket	5
208-1370	O-ring 14 mm male fitting	10
208-1371	O-ring	10
208-1372	Plug Assembly	4
208-1373	Nut and Clip	4

9U-7804 O-ring Kit

- O-ring kit for air conditioning connections
- Compatible with both R-12 and R-134a systems
- Made of Nitrile 75 Duro

R134A Nitrile 75-Duro	R12 Nitrile 75-Duro	Tube O.D.		Thread Size	Thread Dash Size	A Seal Thickness		B Seal I.D.	
		(mm)	(in)	(in - TPI)		(mm)	(in)	(mm)	(in)
Inverted O-Ring Air Conditioning O-Ring Seals									
9X-7380	5F-9144	9.5	0.375	5/8 - 18	-6	1.8	0.07	7.7	0.30
9X-7381	6M-5062	12.7	0.500	3/4 - 18	-8	1.8	0.07	10.8	0.43
9X-7382	5L-4758	15.9	0.625	7/8 - 18	-10	1.8	0.07	14.0	0.55
Tube O-Ring Air Conditioning O-Ring Seals									
9X-7380	5F-9144	9.5	0.375	5/8 - 18	-6	1.8	0.07	7.7	0.30
9X-7381	6M-5062	12.7	0.500	3/4 - 16	-8	1.8	0.07	10.8	0.43
9X-7382	5L-4758	15.9	0.625	7/8 - 16	-10	1.8	0.07	14.0	0.55
Adapter To Self Sealing Fitting Air Conditioning O-Ring Seals									
9X-7383	1S-8947	—	—	7/8 - 20	—	1.8	0.07	17.2	0.68
9X-7384	5P-3944	—	—	1 1/4 - 18	—	1.8	0.07	27.7	1.05



Part No.	Quantity	O-Ring Size Diameter (mm)
9X-7378	15	1.8 x 8.9
9X-7379	15	1.4 x 4.5
9X-7380	15	1.8 x 7.7
9X-7381	15	1.8 x 10.8
9X-7382	15	1.8 x 14.0
9X-7383	10	1.8 x 17.2
9X-7384	10	1.8 x 26.7
9X-7385	15	3.5 x 20.2
4C-4787	1	Utility Box

Flashlights and Batteries

9U-7231 Mini-Maglite Flashlight

Warranty: Manufacturer's

- For people on-the-go, this flashlight can be carried on the hip in its own nylon belt holster.
- 5 3/4 inches long
- Includes two AA batteries



Heavy-Duty Professional Rechargeable Flashlight Accessories

Warranty: Manufacturer's

Part No.	Description
4C-9470	Halogen Replacement Bulb, Qty. 1 (Maglight)
209-9589	Halogen Replacement Bulb (Brinkman)
4C-9449	Battery Pack, 140 mm (5 1/2 in) D cell, 6 Volt Nicad

Heavy-Duty Flashlights

Warranty: Manufacturer's

- Water-resistant, made of high impact plastic, with corrosion resistant contact parts and a belt ring to prevent loss
- Battery barrier protects bulb and head contacts from impact force.
- Comes with spare bulb
- 4C-9620 meets military standards
- Batteries not included



Part No.	Size	Batteries	Switch	Comes with
1U-7319	210 mm (8 1/4 in) long	2 D cell batteries	—	—
1U-7320	279 mm (11 in) long	3 D cell batteries	—	—
4C-9620	203 mm (8 in) high	2 D cell batteries	3 position switch	Belt clip

141-1655 Inspection Light

Warranty: Manufacturer's

- Molded in Lexan®, designed to stand up to almost any punishment
- Lightweight, super compact light source
- Water-tight to 609.6 m (2000 ft)
- Shock proof, corrosion proof
- Economical, 30-hour long life lamp module
- Handy shirt clip
- Includes two AA batteries
- Includes 90° light bender
- Service Part: 4C-6741 Replacement Lamp Module (Qty. 12)



Heavy-Duty Professional Flashlights

Warranty: Manufacturer's

- High quality
- Designed and manufactured in the U.S.A.
- Precision machined, high strength aluminum exterior components
- Anodized internally and externally for optimum corrosion resistance
- Water resistant O-ring seals throughout protecting an internal self-actuating switch
- Hi-impact, scratch resistant Lexan® lens
- Fast action Linear-Focusing™ flood-to-spot beam with a twist of the wrist
- Extra long lamp life, equivalent of 3 or 4 sets of batteries
- Approximately 5 to 6 hours operating time per set of batteries
- Ambient candle mode for hands free operation
- Spare lamp in tail cap
- Includes two AA size alkaline batteries (4C-9463), available worldwide
- All flashlights have Cat logo.



Item	Part No.	Description	Length	Batteries
1	1U-7321	Flashlight	254 mm (10 in) long	2 D cell batteries (replacement lamp 4C-9464)
2	1U-7322	Flashlight	310 mm (12 3/16 in) long	3 D cell batteries (replacement lamp 4C-9465)
3	4C-9442	Flashlight	375 mm (14 3/4 in) long	4 D cell batteries (replacement lamp 4C-9466)
Accessories (Warranty: Six Months)				
4	4C-9446	Black, nylon, full flap holster for discontinued 1U-7323		
5	4C-9447	Black, leather holster for discontinued 1U-7323		
6	4C-9448	Mounting Clamp kit for all D cell flashlights, 2 clamps and screws		

1U-7318 Continuity Tester/Flashlight

- Made of high impact plastic
- Can be used as a flashlight or continuity tester
- Yellow with black cap
- 210 mm (8 1/4 in) long
- Uses 2 D cell batteries (not included)
- 1.82 m (72 in) length continuity wires shipped inside flashlight
- Magnet allows your hands to be free for testing
- Service Part: 1U-9532 D-Cell Battery



Flashlight Bulbs

Warranty: Manufacturer's

- Ultra high intensity Krypton
- Use for increased brightness and visibility
- Built with integral lens providing an even distribution of light with excellent focusing characteristics
- Use with alkaline batteries for best economy

Part No.	Description	Application
4C-9464	Bulb	2 cell C and D flashlights
4C-9465	Bulb	3 cell C and D flashlights
4C-9466	Bulb	4 cell C and D flashlights
Special Flashlight Bulbs		
4C-9463	Mini MagLite (Qty. 2)	
4C-9470	Mag Charg Rechargeable Flashlight	
4C-6741	Lamp Module (Qty. 12)	

Lantern Batteries

Warranty: Manufacturer's

- Offers dependable high performance for portable lighting uses
- Recommended for all industrial lanterns

Part No.	Description
1U-9546	Lantern Batteries, Barricade Lighting, 6 Volt
1U-9547	Lantern Batteries, Spring Terminal, 6 Volt



Industrial Batteries

Warranty: Manufacturer's

Alkaline

- Top-of-the-line for maximum service life
- Best for use in high-drain, continuous use situations

Heavy-Duty

- Ideally suited for normal industrial use



Size	Alkaline	Heavy-Duty
C, 1.5 Volt	1U-9531	1U-9536
D, 1.5 Volt	1U-9532	1U-9537
AA, 1.5 Volt	1U-9533	1U-9538
9 Volt	1U-9534	1U-9539
AAA, 1.5 Volt	1U-9535	

Work Lights and Extension Cords

189-3628 Magnetic Base Flood/Spot Light

Warranty: Manufacturer's

- Dual beam light, 7.36 amps
- Spotlight: 200,000 candlepower
Floodlight: 100,000 candlepower
- Magnetic base bracket mount has full swivel-tilt capability
- 15-foot straight cord with lighter plug
- 10 foot pigtail adapter with battery clips
- Standard cords allow a range of 25 feet from the vehicle battery for lighting field service repair areas.
- Operates on 12 volts
- Sealed switch with spot, flood, and off positions
- Portable — weighs 4 lbs.
- Service Part: 189-3658 Replacement Halogen Flood Sealed Beam



Portable Fluorescent Work Lights

Warranty: Manufacturer's

- 13 Watt fluorescent lamp is equivalent in light output to a 60 Watt incandescent, but four times more efficient and will last up to 10 times longer (10,000 hours).
- Built with the Saf-T-Lite design concept which places light and all electrical components inside a closed chamber for user safety.
- Protected on-off switch can be operated by depressing domed end of the light.
- Entire light is double insulated for user safety.
- Power cord is oil resistant, UL listed, and meets OSHA standards.
- Durable and shatter resistant butyrate outer tube gives long life.
- 4C-6478 and 4C-6479 include magnetic mounts and vapor clips.



Service Parts for 9U-7203

Part No.	Description
9U-6712	Replacement Lamp, 12V, 13 Watt
9U-6708	Clear Outer Tube
9U-6709	Switch Assembly

Part No.	Length	Cord Type	Voltage/Watt	Std. Color
4C-6477	7.62 m (25 ft) Cord	SJTO 18/2	110V/13 Watt	Yellow
4C-6478	15.24 m (50 ft) Cord	SJTO 18/2	110V/13 Watt	Yellow
Vapor Clamps and Mag Mount				
4C-6479	12.19 m (40 ft) Reel	SJT 18/2	110V/13 Watt	Yellow
Vapor Clamps and Mag Mount				
9U-7203	9.5 m (30 ft) Cord	SJTOW-A 18/2	12V/13 Watt	Yellow
Lighter Plug				



Accessories for Light Assemblies

9U-6010 Magnetic Mount

- Nickel plated magnet has 26.3 kg (58 lb) pull

9U-6011 Vapor Clamp Kit

- Consists of 2 large vinyl clamps and 1 small clamp
- Kit improves water resistance

9U-6009 Fluorescent Lamp

- 110 Volt, 13 Watt fluorescent rough service lamp
- Twin tube, cool white light emission



**9U-6010
Magnetic Mount**



**9U-6011
Vapor Clamp Kit**



**9U-6009
Fluorescent Lamp**

9U-6710 Fluorescent Light Kit

Warranty: Manufacturer's

- 110V kit which includes 13 Watt lamp, outer tube, switch assembly and installation instructions.
- Install onto any Saf-T-Lite reel or cordset which was originally equipped with a 110V/13 Watt "Stubby" light head, such as 4C-6477, 4C-6478 or 4C-6479



Replacement Parts

Part Mo.	Description
9U-6009	Fluorescent Lamp, 110V/13 Watt
9U-6708	Clear Outer Tube
9U-6709	Switch Assembly
9U-6711	Ballast
9U-6714	Ballast Box Kit

179-7043 Ratchet Light

Warranty: Manufacturer's

- 120 Volt/60 Hz light made from yellow, unbreakable aerospace plastic with a 10 amp tool-tap-plug
- 10,000 hour life, 13 Watt rough-service fluorescent bulb delivers output of a 60 Watt incandescent bulb.
- Cord is 7.62 m (25 ft) long, made from 16/3 wire
- STOW type cord — used for heavy duty service and with oil-resistant, thermoplastic jacket, is weather resistant for outdoor use
- Two year warranty on workmanship and material defects (not including bulb)
- 179-7044 Bulb and 179-7045 Lens are also sold separately.
- Handy magnetic base allows you to position the light where you need it.
- UL Approved



179-7046 Angle Light Reel

Warranty: Manufacturer's

- 120 Volt/60 Hz light (yellow) includes shatter/scratch resistant lens, 10 amp tool-tap-plug, and velcro magnet
- 10,000 hour life, 13 Watt rough service fluorescent bulb delivers output of a 60 Watt incandescent bulb.
- Black reel is made from shatter resistant ABS plastic.
- Cord is 15.2 m (50 ft) long, made from 16/3 wire
- STOW type cord — used for heavy duty service and with oil-resistant, thermoplastic jacket, is weather resistant for outdoor use
- Two year warranty on workmanship and material defects (not including bulb)
- 179-7048 Lens, 179-7049 Bulb, and 179-7050 Velcro Magnet are also sold separately.
- UL Approved



179-7047 Angle Light

Warranty: Manufacturer's

- 120 Volt/60 Hz light includes shatter/scratch resistant lens, 10 amp tool-tap-plug, and velcro magnet
- 10,000 hour life, 13 Watt rough service fluorescent bulb delivers output of a 60 Watt incandescent bulb
- Yellow case is made from unbreakable aerospace plastic
- Cord is 7.62 m (25 ft) long, made from 16/3 wire
- STOW type cord — Used for heavy duty service and with oil-resistant, thermoplastic jacket, is weather resistant for outdoor use
- Two year warranty on workmanship and material defects (not including bulb)
- 179-7048 Lens, 179-7049 Bulb, and 179-7050 Velcro Magnet are also sold separately
- UL Approved



179-7053 Triple-Tap Extension Cord

Warranty: Manufacturer's

- 120 Volt/60 Hz reel extension cord is 15.2 m (50 ft) long, made from 16/3 wire with a built-in 10 amp circuit breaker
- Case is made from shatter resistant ABS plastic
- Two year warranty on workmanship and material defects
- UL Approved



179-7054 Light Rover

Warranty: Manufacturer's

- 120 Volt/60 Hz light has large, shock-absorbent, easy-grip end caps and a scratch/shatter resistant lens
- 10,000 hour life, 13 Watt rough service fluorescent bulb delivers output of a 60 Watt incandescent bulb
- Unique plug base converts any extension cord into a light
- Two year warranty on workmanship and material defects (not including bulb)
- 179-7049 Bulb and 179-7055 Tube Assembly are also sold separately
- UL Approved



179-7056 Work Light

Warranty: Manufacturer's

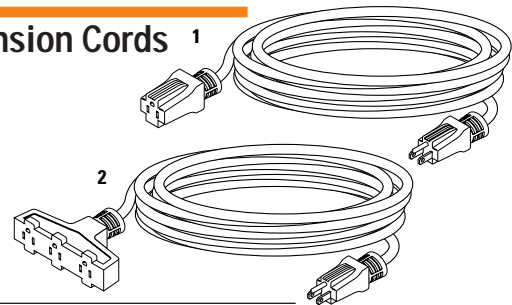
- 120 Volt/60 Hz light includes large, shock-absorbent, easy-grip end caps, and a scratch/shatter resistant lens
- 15 Watt rough service fluorescent bulb delivers output of an 80 Watt incandescent bulb
- Cord is 7.62 m (25 ft) long, made from 18/2 wire
- STOW type cord — Used for heavy duty service and with oil-resistant, thermoplastic jacket, is weather resistant for outdoor use
- Two year warranty on workmanship and material defects (not including bulb)
- 179-7057 Lens and 179-7058 Bulb are also sold separately
- UL Approved



Electrical Cord Definitions	
Abbreviations	
U.L.	Underwriters Laboratories
C.U.L.	Canadian Underwriters Laboratories
O.S.H.A.	Office of Safety and Health Administration
NEMA	National Electrical Manufacturers Association
Cord Designation by Letter	
"S"	Hard surface, flexible cord, general use
"J"	300 Volt cord or smaller
"E"	Elastic synthetic rubber, good low temp cord
"W"	Watertight cord
"O"	Oil resistant
"A"	Low-temperature rated
"T"	Thermo-grade plastic

Heavy-duty Contractor and Industrial Application Extension Cords ¹

- Designed for heavy-duty use by contractors and industrial applications
- Outer jacket protects against rough handling and extreme weather conditions
- Provides superior resistance to sunlight, ozone, cracking, oils chemicals, and moisture
- All cords have CAT logo printed on cord
- All extension cords are UL (Underwriters Laboratory) listed and meet OSHA (Office of Safety and Health Administration) requirements
- All plugs and outlets are NEMA (National Electrical Manufacturers Association) designated — 5-15P plug and 5-15R outlet



Item	Part No.	Length	Material	Outlet	Wire size	Rating	Voltage rating	Maximum voltage	Operating temperature	Weight	Other listings
1	165-4947 165-4948 165-4949	25 ft 50 ft 100 ft	outdoor vinyl	single	12 gauge, 3 conductor	SJTW-A1	—	300 volts	—	—	CUL (Canadian Underwriters Laboratory)
2	165-4950 165-4951 165-4952	25 ft 50 ft 100 ft	all-weather rubber (TPE material)	triple	12 gauge, 3 conductor	SJEOW-A1	300 volts	—	-50 to 107°C (-58 to 225°F)	one-third lighter than ordinary cords	—
2	165-4953 165-4954 165-4955	25 ft 50 ft 100 ft	all-weather rubber (TPE material)	triple	10 gauge, 3 conductor	SJEOW-A1	300 volts	—	-50 to 107°C (-58 to 225°F)	one-third lighter than ordinary cords	—

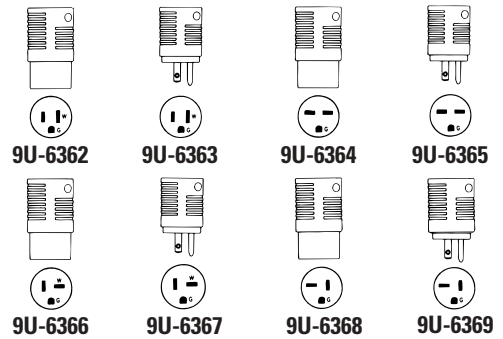
¹ (S) Hard Surface, Flexible Cord, General Use; (J) 300 Volt cord or smaller; (E) Elastic Synthetic Rubber, Good Low Temperature Cord; (W) Watertight Cord; (O) Oil Resistant; (A) Low Temperature Rated; (T) Thermo Grade Plastic

Plugs and Connectors

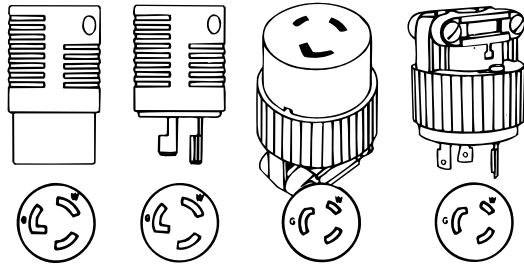
Warranty: Manufacturer's

- For use in construction sites, industrial, dusty, and damp environments
- For use with tools, motors, grinding machines, high pressure washers, outdoor lighting
- UL and CSA listed

Straight Blade Plugs and Connectors (15-20 Amp)			
Part No.	Type	Description	
9U-6362	15 Amp, 125V AC Connector	2 Pole, 3 Wire, NEMA 5-15P	
9U-6363	15 Amp, 125V AC Plug	2 Pole, 3 Wire, NEMA 5-15P	
9U-6364	15 Amp, 250V AC Connector	2 Pole, 3 Wire, NEMA 6-15P	
9U-6365	15 Amp, 250V AC Plug	2 Pole, 3 Wire, NEMA 6-15P	
9U-6366	20 Amp, 125V AC Connector	2 Pole, 3 Wire, NEMA 5-20P	
9U-6367	20 Amp, 125V AC Plug	2 Pole, 3 Wire, NEMA 5-20P	
9U-6368	20 Amp, 250V AC Connector	2 Pole, 3 Wire, NEMA 6-20P	
9U-6369	20 Amp, 250V AC Plug	2 Pole, 3 Wire, NEMA 6-20P	



Straight Blade Plugs and Connectors (15-20 Amp)



Turnlock Plugs and Connectors (15-20 Amp)

Turnlock Plugs and Connectors (15-20 Amp)			
Part No.	Type	Description	
9U-6370	15 Amp, 125V AC Heavy-Duty Connector	2 Pole, 3 Wire, Grounded NEMA L5-15	
9U-6371	15 Amp, 125V AC Heavy-Duty Plug	2 Pole, 3 Wire, Grounded NEMA L5-15	
9U-6372	20 Amp, 250V AC Heavy-Duty Connector	2 Pole, 3 Wire, Grounded NEMA L5-20	
9U-6373	20 Amp, 250V AC Heavy-Duty Plug	2 Pole, 3 Wire, Grounded NEMA L5-20	

Heavy-Duty Connectors and Plugs (20-30 Amps) with Insulating Cord Grip				
Part No.	Type	Description	Cord Diameter	
9U-6374	20 Amp, 125/250V Connector	Yellow High Impact, with Insulating Cord Grip	14.27 - 26.97 mm (.562 in - 1.062 in)	
9U-6375	20 Amp, 125/250V Plug	Yellow High Impact, with Insulating Cord Grip	14.27 - 26.97 mm (.562 in - 1.062 in)	
9U-6376	20 Amp, 250V Connector	Yellow High Impact, with Insulating Cord Grip	14.27 - 26.97 mm (.562 in - 1.062 in)	
9U-6377	20 Amp, 250V Plug	Yellow High Impact, with Insulating Cord Grip	14.27 - 26.97 mm (.562 in - 1.062 in)	
9U-6378	30 Amp, 125V Connector	Yellow High Impact, with Insulating Cord Grip	15.875 - 28.575 mm (.625 in - 1.125 in)	
9U-6379	30 Amp, 125V Plug	Yellow High Impact, with Insulating Cord Grip	15.875 - 28.575 mm (.625 in - 1.125 in)	
9U-6380	30 Amp, 250V Connector	Yellow High Impact, with Insulating Cord Grip	15.875 - 28.575 mm (.625 in - 1.125 in)	
9U-6381	30 Amp, 250V Plug	Yellow High Impact, with Insulating Cord Grip	15.875 - 28.575 mm (.625 in - 1.125 in)	



1U-6189 Control Panel Lamp Tool

SMCS Code: 1400-010, 0709
Model: All Models

- Used to remove and install small instrument panel lamps
- Protects technicians hands while removing or installing glass lamps
- Can be used to remove broken lamps
- Made of soft rubber
- Overall length: 76 mm (3.0 in)
- Opening (hole size): 8.9 mm (.38 in) and 19.0 mm (.75 in)



Miscellaneous

4C-6392 Rubber Mastic Tape

- 51 mm (2 in) wide X 1.7 mm (.065 in) thick by 3 m (10 ft) long rolls
- Great for quick buildup for moisture seal, for insulation, and for cushion on cable harness and wires
- Sticks fast, seals fast and stays tight
- Molds easily around irregular surfaces while holding its position through a range of temperatures
- 1 roll per package



4C-6393 Rubber Splicing Compound

- Linerless rubber tape, 19 mm (3/4 in) wide X .8 mm (.030 in) thick X 4.6 m (15 ft) long rolls
- Use for insulating and sealing on electrical cable installation and repair
- 1 roll per package



6V-7939 Wire Marker Tape Dispenser

- Provides a fast, convenient system for marking wire or cable
- Helps eliminate errors in the disassembly and assembly of hydraulic lines, wiring harness, generator sets and panels
- Ten refillable compartments with numbers from 0 to 9 let you choose the exact number/letter combinations needed
- Easy to use, easy to carry; convenient rolls — easy cutoff, no waste
- Tapes are an epoxy film with an acrylic adhesive
- Highly resistant to oils and solvents

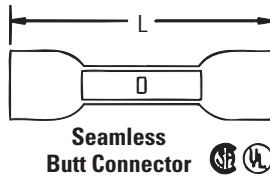


Marker Tape Replacement Rolls (10 rolls per box)

Part No.	Description
8T-5209	Tape No. 0
8T-5211	Tape No. 1
8T-5212	Tape No. 2
8T-5213	Tape No. 3
8T-5214	Tape No. 4
8T-5215	Tape No. 5
8T-5216	Tape No. 6
8T-5217	Tape No. 7
8T-5218	Tape No. 8
8T-5219	Tape No. 9

Heat Shrinking Butt Connector

- One piece, pre-insulated
- Use on inline electrical splice where moisture and corrosion are a concern
- Easy application



Application Procedure

1. Strip wires to appropriate length.
2. Insert wire into terminal and crimp.
3. Apply heat with recommended heat source — 9U-6070, 9U-6072 Heat Guns.

Part No.	Wire	Barrel L	I.D.	Color	Pkg Qty.
4C-6394	#22 to 18 AWG	.28	.062	Red	100
4C-6395	#16 to 14 AWG	.30	.095	Blue	100
4C-6396	#12 to 10 AWG	.38	.142	Yellow	100

4C-4870 Utility Knife

- A "slide lock" pushbutton knife
- 152 mm (6 in) long
- Includes 2 blades stored in the handle
- Service Part: 4C-4871 Replacement Blade Set, .635 mm (0.025 in), Qty: 100



Heat Shrinking Tubing

- Made from polyolefin
- Effectively resists abrasion, scoring, cut-through, and the effects of long term aging
- Easy to install
- Use on inline electrical splices to provide mechanical protection as well as corrosion and moisture seal



Part No.	Expanded I.D.	Recovered I.D.	Recovered Length	Pkg Qty.
4C-6387	10 mm (.400 in)	3.8 mm (.150 in)	152 mm (6 in)	25
4C-6388	20 mm (.800 in)	5.0 mm (.200 in)	152 mm (6 in)	5
4C-6389	28 mm (1.10)	9.4 mm (.370 in)	229 mm (9 in)	5
4C-6390	388 mm (1.50 in)	12.7 mm (.500 in)	229 mm (9 in)	5
4C-6391	51 mm (2.00 in)	16.5 mm (.650 in)	229 mm (9 in)	1

9U-6070 Heat Gun

- Lightweight source of directed heat, 260° and 399°C (500° and 750°F)—also has cold setting
- Fast heating and drying of materials
- Quick curing and drying of epoxies
- Applying shrink tubing
- Softening tubing for bending
- Speed drying of touch-up paint to eliminate haze
- Drying out condensation in motors, clutches, controls, etc.
- Shockproof and cool-running with tough Lexan® housing
- Weighs just 2 1/2 pounds
- American made
- 115 V, 50/60 Hz, single/3 phase



Cold Shrink Insulators

- Rubber insulators can be used on cable to insulate as well as to protect from moisture and corrosion while remaining flexible.
- Resists fungus, acids and alkalies, ozone and ultra-violet light
- Easy to install (no flame/torch needed) — unwind the expander core by pulling the insulator and tubing will shrink to cable diameter
- When shrunk, connection is water resistant.
- Very portable since no heat source is required

Part No.	Diameter Min.	Tube Max.	Relaxed Pkg. Length	Qty.
4C-6382	2.54 mm (.10 in)	21.65 mm (.82 in)	203 mm (8 in)	1
4C-6383	10.56 mm (.40 in)	21.65 mm (.82 in)	203 mm (8 in)	1
4C-6384	12.95 mm (.51 in)	25.4 mm (1.00 in)	229.0 mm (9 in)	1
4C-6385	17.53 mm (.69 in)	33.0 mm (1.30 in)	304.8 mm (12 in)	1
4C-6386	24.13 mm (.95 in)	48.26 mm (1.90 in)	304.8 mm (12 in)	1



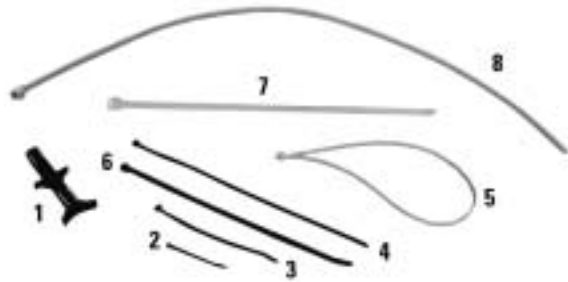
Application Procedure

1. Slip correct size cold shrink insulator over cable to be spliced.
2. Splice the cable.
3. Unwind the expander core by pulling the insulator over the splice and center.
4. Pull expander core from the cold shrink tubing. Insulator will seal splice.

Cable Ties and Applicators

Warranty: Six Months (applicators)

- Used to secure wires, cables, tubes, etc.



Item	Part No.	Bundle Diameter Range	Length	Strap Width	Pkg. Qty.	Installer (Item 1)
2	1S-9593	1.5 mm to 15.7 mm (.06 in to .62 in)	88.9 mm (3.50 in)	2.5 mm (.100 in)	100	1U-5228
2	8L-8413	1.5 mm to 28.4 mm (.06 in to 1.12 in)	134.6 mm (5.3 in)	3.8mm (.150 in)	200	1U-5228
3	3S-2093	1.5 mm to 44.5 mm (.06 in to 1.75 in)	170.2 mm (6.7 in)	4.9mm (.194 in)	500	1U-5228
4	6K-0806	1.5 mm to 101.6 mm (.06 in to 4.00 in)	355.6 mm (14.0 in)	4.9mm (.194 in)	250	1U-5228
5	341432	1.5 mm to 203 mm (.06 in to 8.00 in)	698.5 mm (27.5 in)	—	1	—
6	7K-1181	4.8 mm to 101.6 mm (.19 in to 4.00 in)	355.6 mm (14.0 in)	7.9mm (.310 in)	100	1U-5227
7	5P-5148	44.5 mm to 120.6 mm (1.75 in to 4.75 in)	510.5 mm (20.1 in)	12.7 mm (.500 in)	100	—
8	6V-7555	44.5 mm to 305 mm (1.75 in to 12.00 in)	1018.5 mm (40.1 in)	12.7 mm (.500 in)	1	—

Caterpillar Brake and Electrical Component Cleaner

- General purpose cleaning solvent
- Non-flammable
- Pure 1,1,1 trichloroethane
- Cleans brake components, electrical contacts, armatures, etc.
- Leaves no oily residue

138-8440

- Non-aerosol pump type can
- .5323 l (18 fl oz), Qty. 10

4C-4079

- Same solvent as 138-8440 except it's an aerosol can
- CO₂ propellant
- Not for use on Deutsch multi-pin connectors
- 454 g (16 oz), Qty. 12



1U-9187 Ground Fault Circuit Interrupter

- Assures you of reliable ground fault protection in wet or damp areas; plugs can be used with power tools and in marine and other wet locations
- High strength raintight nylon case is molded for easy gripping when inserting or removing unit from a receptacle.
- Slim design permits use in a standard duplex receptacle without blocking the other outlet.
- Neon lamp indicates if the Ground Fault Circuit Interrupter has tripped, giving a clear indication of the plug's status from a distance or in the dark.
- Unique design features an internal safety relay which prevents potentially faulty equipment from being energized when the supply circuit has an open or disconnected neutral.
- Protects even if the supply circuit polarity is unintentionally reversed.
- Four grommets are included to provide a secure, raintight seal. They accommodate cord diameters from 9.1 mm (.35 in) to 16.5 mm (.65 in). The screw-on relief cord grip will not damage or interfere with conductor terminators.



NOTE: Not to be used with double insulated equipment

Supply voltage	120 (+10, -15) VAC, 60 Hz, single phase
Ratings	15A., 125VAC
Configuration	NEMA 5-15P, 2-Pole, 3-Wiring Grndg.
Operating temperature	-35°C (-30°F) to 66°C (150°F)
Trip threshold	5 ± 1 mA
Trip time	0.025 sec. nominal as per U.L. Standard
Case material	gray nylon
Dimensions:	Length — 140 mm (5.50 in) Height — 70 mm (2.75 in) Width — 44 mm (1.75 in)
Cord type	AWG 14/3 or 12/3, SJ, SJO, SJO, SJO, S, SO, STO
Cord grip range	9.1 mm — 16.5 mm (.36 in — .65 in)
UL, Inc. Class A portable	Listed by Underwriters' Laboratories, Inc.

Machine Tools

Cut-Off Band Saw, 127 x 203 mm (5 in x 8 in)

Warranty: Manufacturer's

- Full 1/2 HP motor, rated 1725 RPM
- 3 cutting speeds: 85, 125, and 200 SFPM
- Excellent for cutting metal, plastic, and wood for wet or dry applications
- A steel heat-treated worm, driving a bronze gear, gives smooth and quiet operation of the gear box assembly.
- Equipped with a variable feed system which is assisted by an adjustable counter balance spring



Part No.	Style	HP	Phase	Voltage ¹	Weight
4C-8270	Dry	1/2	1	115	75 kg (165 lbs)
4C-8271	Wet	1/2	1	115	73 kg (160 lbs)

¹ Special voltages available — call for quote

Service Part

Part No.	Description	Size	For use with:
4C-9561	Saw Blade	12.7 mm x .635 mm x 174 cm, 10 tooth (.5 in x .025 in x 68.5 in)	4C-8270, 4C-8271

Cutting capacity	127 mm (5 in) round 190.5 mm W x 127 mm H rectangle (7 1/2 in x 5 in) 203.2 mm W x 25.4 mm H flat stock (8 in x 1 in) 114.3 mm W x 127 mm H at 45° (4 1/2 in x 5 in)
Blade size	12.7 mm x 635 mm x 173.9 cm (1/2 in x .025 in x 58 1/2 in)
Blade speeds	85, 125, 200 SFPM
Blade guides	Side: eccentric shaft, ball bearings Rear: ball bearing
Blade wheels	191 mm (7 1/2 in) diameter, flanged cast iron
Blade drive	Steel, heat-treated worm driving a bronze worm gear in oil bath
Motor	1/2 HP, 1725 RPM, capacitor start
Dimensions	96.5 cm L x 40.6 cm W x 196.5 cm H (cut-off position) (38 in x 16 in x 38 in)
Coolant pump	3.79 l (1 Gal) capacity, single phase motor. Wet cutting models complete with hose, flexible nozzle, shut-off valve, tank, and baffle.
Warranty	2 Year on machines 1 Year on electrical

Cut-Off Band Saw, 178 mm x 305 mm (7 in x 12 in)

Warranty: Manufacturer's

- Solid construction puts strength in stress areas to lessen vibration for precision cutting of metal, plastic, or wood in wet or dry applications
- Driven by an efficient double reduction gear train
- Blade operates at 60, 110, 155, and 205 SFPM.
- Rapid acting vise lifts for free sliding and engages automatically for continuous screw tightening action.



Part No.	Style	HP	Phase	Voltage ¹	Weight
4C-8275	Wet	3/4	1	115	204 kg (450 lbs)
4C-8276	Dry	3/4	1	115	200 kg (440 lbs)

Service Part

Part No.	Description	Size	For use with:
4C-9558	Saw Blade	19.05 mm x .81 mm x 256.5 cm, 10 Tooth (.75 in x .032 in x 101 in)	4C-8275, 4C-8276

Cutting capacity	178 mm (7 in) round 285.75 mm W x 178 mm H (11 1/4 in x 7 in) rectangle 304.8 mm W x 50.8 mm H (12 in x 2 in) flat stock 152.4 mm W x 178 mm H at (6 in x 7 in) 45°
Blade size	19.05 mm x .79 mm x 256.54 cm (3/4 in x .032 in x 101 in)
Blade speeds	60, 110, 155, 205 SFPM
Blade guides	Side: eccentric shaft, ball bearings Rear: ball bearing
Blade wheels	280.9 mm (11 1/16 in) diameter, cast iron
Blade drive	Double reduction, internal gear assembly
Motor	3/4 HP, capacitor start, 1725 RPM single phase, 115/230V
Vise	Rapid acting continuous screw tightening vise
Dimensions	147.3 cm L x 50.8 cm W x 116.8 cm H (58 in x 20 in x 46 in) (cut-off position)
Coolant pump	Submersible in 18.9 l (5 gal) tank. Wet cutting models complete with hose, flexible nozzle, shut-off valve, and tank baffle.
Warranty	2 Year on machines 1 Year on electrical

Vertical Band Saws

Warranty: Manufacturer's

- Four model sizes: 35.56 cm, 50.8 cm, 68.58 cm, and 101.6 cm (14 in, 20 in, 27 in, and 40 in)
- Manual blade tension and hand wheel and indicator
- Adjustable work lamp
- Built in chip blower
- Chip tray
- Blade speed and pitch selector
- Two speed gear box with variable speed belt drive
- Optional blade welder with grinder and annealer (must specify voltage)
- Blade shear
- Adjustable carbide blade guides
- All models equipped with 200/440V, 115V at switch, magnetic starter, 3 phase
- Warranty:
2 Year on machine
1 Year on electrical



4C-8278
Vertical
Band Saw

Part No.	4C-8277	4C-8278
Cutting capacity	1-170 mm (6 1/16 in)	1-270 mm (10 5/8 in)
Throat depth	360 mm (14 3/16 in)	500 mm (19 5/8 in)
Blade width	2-13 mm (1/8 in-1/2 in)	2-19 mm (1/8 in-3/4 in)
Length of saw blade	269.24-280.6 cm (106 in-110 1/2 in)	393.7-401.32 cm (155 in-158 in)
Belt stepless variable speed	(30-120 m/min) 98-394 ft/min	(25-400 m/min) 82-1312 ft/min
Main motor/grinder motor	1 HP, 1/8 HP	2 HP, 1/8 HP
Electric welder	2.0 KVA	5.0 KVA
Table tilt	R-45° L-15° F.B-10°	R-45° L-15° F.B-10°
Height of table	900 mm (35 7/16 in)	1035 mm (40 3/4 in)
Dimension of machine	1600 mm x 970 mm x 580 mm 63 in x 38 3/16 in x 22 13/16 in	1960 mm x 1200 mm x 740 mm 77 1/8 in x 47 1/4 in x 29 1/8 in
Net weight	321.6 kg (709 lbs)	500 kg (1102 lbs)
Table size	495.3 mm x 539.75 mm (19 1/2 in x 21 1/4 in)	616 mm x 616 mm (24 1/4 in x 24 1/4 in)
Service Part		
Saw blades	4C-9554	4C-9555
Optional Welder		
Part No.	4C-9552	4C-9553

Square Wheel Belt Grinder

Warranty: Manufacturer's

- Rugged construction for all your grinding needs
- Six different grinding surfaces in seconds
- From snagging and grinding to polishing and buffing

Part No.	Belt	HP	Phase	Voltage	Weight
4C-8291	50.8 mm x 1828.8 mm (2 in x 72 in)	1	1	115/230	52 kg (115 lbs)



Belt length	1829 mm (72 in)
Contact wheel diameters	38 mm, 76 mm, 203 mm (1 1/2 in, 3 in, 8 in)
Belt speed	4600 SFPM
Height	406 mm (16 in)
Depth	800 mm (31 1/2 in)
Width	387 mm (15 1/4 in)
Warranty	2 Year on machine 1 Year on electrical

Bench Grinder

Warranty: Manufacturer's

- Designed for the professional mechanic
- Extended frame models utilize a tapered body design which allows greater accessibility to the side and front of the wheels.
- Grinding of long or odd shaped pieces is possible without interference from the motor housing.
- When the wheels become worn, the body design acts to the operator's benefit.
- 36 and 60 grit grinding wheels
- Fully adjustable steel tool rests
- Plexiglass safety eyeshields
- Full guard covers
- Vented wheel guards
- Spark breakers
- Built-in water pots
- Motors are fully enclosed, splash-proof, and dust-proof.
- Lifetime lubricated motor shafts are mounted on precision ball bearings for smooth and quiet operation.
- All models meet OSHA safety standards.
- Warranty: 2 Year on machine
1 Year on electrical

Part No.	Service Duty	Wheel Diameter mm (in)	Dist. Arbor mm (in)	No. Face mm (in)	Between Wheels mm (in)	AC Volt. Load RPM	Overall Motor HP	1-Phase Motor	L mm (in)	H mm (in)	Ship Weight
4C-8292	Medium	152 (6)	13 (1/2)	19 (3/4)	317 (12 1/2)	3450	1/3	115V	432 (17)	241 (9 1/2)	13 kg (29 lbs)
4C-8293	Medium	152 (6)	13 (1/2)	19 (3/4)	317 (12 1/2)	3450	1/3	115V	422 (16 5/8)	241 (9 1/4)	14.5 kg (32 lbs)
4C-8294	Heavy	178 (7)	16 (5/8)	25 (1)	394 (15 1/2)	3450	1/2 ¹	115V	502 (19 3/4)	248 (9 3/4)	18.61 kg (41 lbs)
4C-8295	Heavy	178 (7)	16 (5/8)	25 (1)	394 (15 1/2)	3450	1/2 ¹	115V	502 (19 3/4)	248 (9 3/4)	18.61 kg (41 lbs)
4C-8296	Heavy	203 (8)	19 (3/4)	25 (1)	432 (17)	3450	3/4 ¹	115V	514 (20 1/4)	298 (11 3/4)	25.42 kg (56 lbs)
4C-8297	Heavy	254 (10)	19 (3/4)	25 (1)	482 (19)	1725	1 ¹	115V/230V	635 (23)	343 (13 1/2)	40.40 kg (89 lbs)
4C-8300	Pedestal Base for 4C-8292, 4C-8294, and 4C-8293										
4C-8301	Pedestal Base for 4C-8296, and 4C-8297										

¹ Feature capacitor start motors



Combination Belt and Disc Finishing Machine

Warranty: Manufacturer's

- Will handle all the finishing operations in your shop
- 1 1/2 HP motor provides speeds of 2400 RPM disc and 3260 FPM belt for working wood, metal, plastic compositions, leather, and more.
- Guarded drums and belt
- Solid support table
- Deluxe miter gauge
- Vibration-free operation
- Direct drive disc
- Table tilt scales
- Quick-stop links
- 2 Year Warranty on machine
1 Year Warranty on electrical

HP	1 1/2
Phase	1
Voltage	115V/230V
Weight	113.4 kg (250 lbs)

Part No.	Description	Table Size	Table Tilt	Miter Gauge Groove	Platen	Belt Size	Belt Speed	Disc Diameter	Disc Speed
4C-8302	Belt Machine	187 mm x 375 mm (7 3/8 in x 14 3/4 in)	45° out, 20° in	9.5 mm x 19 mm (3/8 in x 3/4 in)	159 mm x 375 mm (6 1/4 in x 14 3/4 in)	152 mm x 1214 mm (6 in x 48 in)	3260 SFPM	—	—
	Disc Machine	305 mm x 416 mm (12 in x 16 3/8 in)	45° out, 20° in	9.5 mm x 19 mm (3/8 in x 3/4 in)	—	—	—	305 mm (12 in)	2400 RPM



Disc Machine

Warranty: Manufacturer's

- Available in five different floor models complete with miter gauge



Table size	305 mm x 416 mm (12 in x 16 3/8 in)
Table tilt	45° out, 20° in
Miter gauge groove	9.5 mm x 19 mm (3/8 in x 3/4 in)
Disc	305 mm (12 in) diameter
Disc speed	2400 RPM
Weight	74 kg (164 lbs)
Overall size	1092.2 mm H x 406.4 mm W x 482.6 mm D (43 in x 16 in x 19 in)
Warranty	2 Year on machine 1 Year on electric

Part No.	Description
4C-8303	Single Phase 1 1/2 HP TEFC motor, 115/230 Volts and push button switch (connected 230V)
4C-8304	Three Phase 1 1/2 HP TEFC motor, 230V
4C-8305	Three Phase 1 1/2 HP TEFC motor, 230/460V magnetic starter and 24V push button switch (connected 230V)
4C-8306	Three Phase 1 1/2 HP motor, 230/460V, full JIC, 110V push button switch (connected 230V)
4C-8307	Same as 4C-8303 with base and motor unassembled

Belt Machine

Warranty: Manufacturer's

- Available in five different floor models complete with miter gauge



Table size	187 mm x 375 mm (7 3/8 in x 14 3/4 in)
Table tilt	45° out, 20° in
Miter gauge groove	9.5 mm x 19 mm (3/8 in x 3/4 in)
Platen	159 mm x 375 mm (6 1/4 in x 14 3/4 in)
Belt size	152 mm x 1219 mm (6 in x 48 in)
Belt speed	3260 SFPM
Weight	95.7 kg (211 lbs)
Belt in vertical position:	
Height	146.05 cm (57 1/2 in)
Belt in horizontal position:	
Width	64.77 cm (25 1/2 in)
Depth	48.3 cm (19 in)
Warranty	2 year on machine 1 year on electric

Part No.	Description
4C-8308	Single Phase 1 1/2 HP TEFC motor, 115/230 Volts and push button switch (connected 230V)
4C-8309	Three Phase 1 1/2 HP TEFC motor, 230V
4C-8310	Three Phase 1 1/2 HP TEFC motor, 230/460V magnetic starter and 24V push button switch (connected 230V)
4C-8311	Three Phase 1 1/2 HP motor, 230/460V, full JIC, 110V push button switch (connected 400V)
4C-8312	Same as 4C-8308 with base and motor unassembled

Vari-Speed Drill Press

Warranty: Manufacturer's

- Designed for instant speed selection from 400 to 5000 RPM
- Heavier, oversized components with a 76.2 mm (3 in) column for less column deflection, more head support, and greater quill rigidity
- #2 NT external spindle standard
- Table raiser standard

Part No.	HP	Phase	Voltage	Weight
4C-8317	3/4	1	115V/230V	108 kg (238 lbs)



Capacity (mild steel)	16 mm (5/8 in)
Capacity (steel)	13 mm (1/2 in)
Drills to center	381 mm (15 in)
Quill diameter	57 mm (2 1/4 in)
Spindle travel	152.4 mm (6 in)
Spindle speeds — vari-speed with 1725 RPM motor	400 to 5000
Column diameter	76.2 mm (3 in)
Table	Standard
Warranty	2 Year on machine 1 Year on electric

Variable Speed Gear Drill Press

Warranty: Manufacturer's

- Features low speed, large hole drilling capability without sacrificing power at the drill bit
- Includes variable speed pulleys for infinite speed changes and gears for high torque at low speeds
- Oversized 76.2 mm (3 in) quill and unique spindle
- Heavy-duty ball bearings to support upper spindle; tapered roller bearings to support bottom spindle
- Full 178 mm (7 in) stroke
- T-slotted table measures 457 mm x 635 mm (18 in x 25 in) and rotates 360° around the 114.3 mm (4 1/2 in) column.



Drills to center	508 mm (20 in)	Base slots	13 mm (1/2 in) for T-bolts — 2 slots
Capacity	Cast iron — 35 mm (1 3/8 in) Steel — 28 mm (1 1/8 in)	Spindle to base max.	279 mm (11 in)
Spindle nose	No. 3 Morse taper	Overall dimensions:	
Spindle travel	178 mm (7 in)	Width	607 mm (24 in)
Spindle speeds	80 to 1200 RPM	Depth	91 mm (36 in)
Quill diameter	75 mm (3 in)	Height	2032 mm (80 in)
Column diameter	114 mm (4 1/2 in)	Weight shipping	299 kg (698 lbs)
Table working surface	457 mm x 635 mm (18 in x 25 in)	Bench model with head:	
Table slots	13 mm (1/2 in) for T-Bolts — 2 slots	Raiser column height	1067 mm (42 in)
Table travel	762 mm (30 in) with head raiser 1041 mm (41 in) without head raiser	Head travel	546 mm (21 1/2 in)
Base working surface	406 mm x 483 mm (16 in x 19 in)	Base working surface	406 mm x 438 mm (16 in x 19 in)
		Base slots	13 mm (1/2 in) for T-bolts — 2 slots
		Weight shipping	173 kg (380 lbs)
		Warranty	2 Year on machine 1 Year on electric

Part No.	Feed	HP	Phase	Voltage	Weight
4C-8314	Hand	1 1/2	3	230/440V	313 kg (690 lbs)

Variable Speed Gear Drill Press (Power Feed)

Warranty: Manufacturer's

- Power feed for positive gear drive
- Feed gear box allows four speeds: .004, .006, .009, and .012 inches (.3 mm) per revolution
- Feed rate can be changed while running with the positive shifter.
- Has neutral position for setup or hand drilling
- Heavy-duty construction includes steel gears in oil bath, ground shafts, hardened worms, special alloy worm gear, anti-friction bearings, gear chain, and sprocket.
- Power feed installed on new machines at factory only



Drills to center	508 mm (20 in)
Capacity	Cast iron — up to 35 mm (1 3/8 in) Steel — up to 28.5 mm (1 1/8 inch)
Spindle nose	No. 3 Morse taper
Spindle travel	171.45 mm (6 3/4 in)
Spindle speeds	80 to 1200 RPM
Quill diameter	76.2 mm (3 in)
Column diameter	114.3 mm (4 1/2 in)
Table working surface	457.2 mm x 635 mm (18 in x 25 in)
Table slots	12.7 mm (1/2 in) for T-bolts — 2 slots
Table travel	762 mm (30 in) with head raiser 1041.4 mm (41 in) without head raiser

Base working surface	406 mm x 483 mm (16 X 19 in)
Spindle to base min.	1270 mm (50 in)
Head travel with raiser	279.4 mm (11 in)
Overall dimensions:	
Width	609.6 mm (24 in)
Depth	914.4 mm (36 in)
Height	2032 mm (80 in)
Bench model with head raiser:	
Column height	1066.8 mm (42 in)
Head travel	546.10 mm (21 1/2 in)
Base working surface	406.4 mm x 482.6 mm (16 in x 19 in)
Warranty	2 Year on machine 1 Year on electric

Part No.	Description
4C-8315	VSG floor model with P.F. 1 1/2 HP, 1 PH, 230V, 331 kg (730 lbs)
4C-8316	VSG floor model with P.F. 1 1/2 HP, 3 PH, 230V, 327 kg (720 lbs)

Fans

Air Circulators with Choice of Mountings

Warranty: Manufacturer's

- Heads come completely assembled and wired with mounting hardware.
- Mount to pedestal and floor base or wall bracket or I-Beam mount.
- 3-wing design fan blades
- Single speed, permanently lubricated motor, PSC motor, U.L. listed
- Meets OSHA standards.

Part No.	Volts/Hz	Speed	Blade Dia.	Head Dimensions	Cord	Plug	RPM	Amp	HP	Guards
9U-5620	115V - 50/60 Hz	Single	76.2 cm (30 in)	84 x 38 cm (33 in x 15 in)	SJT 18GA 4.6 m (15 ft)	Grounded	1100	2.6	1/4	Steel/ PVC Coated
9U-5621	230V - 50 Hz	Single	76.2 cm (30 in)	84 x 38 cm (33 in x 15 in)	SJT 18GA 4.6 m (15 ft)	Grounded	1100	1.2	1/4	Steel/ PVC Coated

Mounting Options

Part No.	Description	
9U-5656	Pedestal	47.6 mm (1 7/8 inch) steel tubing x 1.2 m (4 ft) long; bright zinc plate finish; mount length — 1.4 m (4 1/2 ft) closed, 2.1 m (7 ft) extended
9U-5657	Base	6.6 cm (26 inch) diameter; 11 kg (24 lbs); 10 Ga. steel with three vinyl feet to prevent slippage
9U-5658	Wall Bracket	Mounts both oscillating and non-oscillating fans; 360° pivot; bracket extends 381 mm (15 in); 11 Ga. steel
9U-5659	I-Beam Mount	Mounts both oscillating and non-oscillating fans; 360° pivot; bracket extends 76.2 cm (30 in); works up to 356 mm (14 in) I-beam; 47.6 mm (1 7/8 in) diameter steel tubing



Optional 9U-5886 Safety Cable

- When installing a fan in an overhead location, a safety cable is recommended. This safety cable will prevent the fan from falling if accidentally struck or if the mounting fails.
- 3.2 mm (1/8 in) diameter; 7 x 7 strand
- 3.7 mm (12 ft) long aircraft cable and two cable clamps
- Use with 9U-5658 Wall Bracket and 9U-5659 I-Beam Mount

Portable Personal Blower

Warranty: Manufacturer's

- Cools quietly with the highest volume of air obtainable
- Instantly adjustable air direction
- Powerfully moves .85 m³ (320 ft³) per minute of cooling air up to 9.14 m (30 ft) away
- Use to cool radiators, electrical equipment, machinery, etc.
- Dries wet surfaces including carpeting, floors, and paint
- Very portable and light weight [3.6 kg (8 lbs)] with a built-in carrying handle
- AC motor rated for continuous duty — permanently lubricated — no brushes
- No exposed blades — prevents accidents
- Two built-in 15 Amp, 120V grounded receptacles for power tools or appliances in 9U-5660 and 9U-5661
- 14 Ga. 20 ft. line cord — eliminates the need for separate extension cords
- Blue color is molded in the rugged ABS construction — BSR rubber contact pads assure stability and prevent scratching.
- AC or DC powered — see chart below.
- Engraveable stainless steel nameplate
- Power tools must be ordered separately
- UL Listed.
- Meets O.S.H.A. Standards



Part No.	9U-5660	9U-5662	9U-5663
Volts/Hz	115V-50/60 Hz	220V-50/60 Hz	12V DC
Amps	1.89	.91	—
CFM rating	320	320	330
HP	.059	.059	.059
Speed	Single	Single	Single
Cord description	6.1 m (20 ft), 14 ga.	6.1 m (20 ft), 14 ga.	6.1 m (20 ft), 14 ga.
120 Volt receptacle	Yes	No	No
Dimensions W x L x H	222 x 305 x 292 mm (8 3/4 in x 12 x 11 1/2 in)	222 x 305 x 292 mm (8 3/4 in x 12 in x 11 1/2 in)	222 x 305 x 292 mm (8 3/4 in x 12 in x 11 1/2 in)
Weight	3.6 kg (8 lbs)	3.6 kg (8 lbs)	3.6 kg (8 lbs)

Heaters

Oil Fired Portable Heaters

Warranty: Manufacturer's

- Designed to warm your space faster and more evenly than radiant type area heaters
- High capacity fan pulls cool air in and delivers forced air heating.
- Plugs into any 115 Volt or 220 Volt, single phase outlet
- Specially designed burner heads on oil heater assure cleaner, more thorough burning.
- Always use heater in a properly ventilated area in accordance with the operator's manual included with each unit.

To determine the right size heater:

- Determine the cubic feet of the area you will heat.
- Use the formula: length x width x height. For example, 8.5 x 7.6 x 3 m = 193.8 m³ (28 ft x 25 ft x 10 ft = 7,000 ft³)
- Next, decide the typical heat rise you'll require. For example, if the room temperature, unheated, drops to 9.44°C (15 °F) and you want it heated to 21.11°C (70°F), the heat rise requirement is [70°F (21.11°C minus 15° (9.44°C))] 55°F (12.78°C).
- Then use this formula: (Sample numbers inserted) 7,000 ft³ (193.8 m³ x 0.133 (constant) x 55°F (12.78°C) (temperature rise) = 51,205 Btu per hour required).

9U-5955 Oil Fired Low Pressure Heater, 150,000 Btu

- Efficiently heats up to 1061.9 m³ (37,500 ft³) based upon -1.11°C (30°F) heat rise



Cat Part No.	9U-5955	9U-5957	143-1320
Output (Btu's/hr.)	150,000	350,000	350,000
Tank capacity	51 l (13.5 gal)	114 l (30 gal)	
Designed fuel oil	Kerosene #1 Fuel Oil	Kerosene #1	Fuel Oil
Electrical	115V 60Hz Single phase	115V 60Hz Single phase	220V 50 Hz Single phase
Motor thermal protector	N/A	Yes	Yes
Approx. hours operation/filling	12.2	12	12
Transport wheels	Std.	Std.	Std.
Hot air flow	14.2 m ³ /min (500 CFM)	38 m ³ /min (1,350 CFM)	38 m ³ /min (1,350 CFM)
Automatic shut-off	Yes	Yes	Yes
Heated area ¹	1061.4 m ³ (37,500 ft ³)	2476 m ³ (87,500 ft ³)	2476 m ³ (87,500 ft ³)
Thermostat	Optional	Std.	Std.
Net weight	25 kg (55 lb)	82 kg (180 lb)	82 kg (180 lb)
Shipping weight	30 kg (65 lb)	109 kg (240 lb)	109 kg (240 lb)

¹ Approximate cubic feet based on 30° temperature rise

9U-5957 Oil Fired High Pressure Heater, 350,000 Btu, 110 V 60 Hz 143-1320 Oil Fired High Pressure Heater (350,000 Btu) 220 V 50 Hz

- High pressure heaters are designed to heat huge areas, year after year, under the most demanding industrial/commercial conditions.
- Will heat up to 2476 m³ (87,500 ft³) based upon -1.11°C (30°F) temperature rise
- High pressure pump assures constant fuel supply from the large capacity tank.
- Both models feature a 5,000 Volt transformer with spark plug ignitor for fast, sure starts.
- Extra durable with heavy, 14-22 gauge steel, reinforced for extra strength at all stress points.
- Built-in thermostat
- 143-1320 High Pressure Heater CE Certified



Service Parts	
Part No.	Description
143-1321	Solenoid Valve
143-1322	Nozzle
143-1323	Spark Plug
143-1324	Motor
143-1325	Fuel Filter As
143-1326	Filter Element
143-1327	Fuel Pump
143-1328	Flame Out Control
143-1329	Capacitor
143-1330	Photocell As
143-1331	Fan
143-1332	Fuel Line
143-1333	Fan Switch
143-1334	Thermostat
143-1335	Screen-Filler
143-1338	Pressure Gauge
Optional Accessory	
9U-5959	Remote Thermostat — for use with 9U-5955



9U-5959 Remote Thermostat
— for use with 9U-5955

9U-5927 Portable Propane Convection Heater, 200,000 Btu

Availability: NACD Only
Warranty: Manufacturer's

- Top of the line in convection heating to keep your work force working on even the coldest days.
- Features a pushbutton Pieze "matchless" ignition, debris shield, U.L. listed rubber hose and regulator, heat shields
- Requires no electricity
- Completely portable

Certified Heating space Height	AGA up to 50,000 cu ft 20 in
Depth	19.5 in
Length	20 in
Weight	20 lb



4C-6764 Waste Oil Furnaces

Warranty: Manufacturer's

- Swing-out door for easy maintenance
- No flame impingement on a target
- Fully automatic air atomizing burner
- Yearly cleanout
- An EPA accepted method of disposal (40 CFR 266)
- Complete line of UL listed furnaces for lower insurance and liability costs
- Adjustable heat rate regulator
- Variety of models and sizes to fit all installation requirer
- BTU rating is based on 150,000 BTU per gallon in used oil.
- Provincial or state/local rules and regulations must be adhered to for proper installation warranty application.
- UL tested and listed means safe, reliable and efficient performance and lower insurance costs. Electric eye monitors flame, and high-limit temperature controls prevent burner from reaching more than 93.33°C (200°F).
- 10 year limited warranty on combustion chamber constructed on 10-gauge heavy-duty steel
- Burns a variety of hydrocarbons without smoke or odor. Sunfire furnaces are listed for No. 2 fuel oil, all used motor oils, and used transmission fluid.
- Soft start — our air accumulator tank enriches the fuel mixture for reliable ignition, regardless of air pressure setting. This system also purges oil from the preheater nozzle and prevents dripping or coking.
- No return line necessary — Sunfire furnaces require only one pressurized line from the fuel source, resulting in lower installation costs, and less filter maintenance and pump wear.
- Quiet operation — bolting all moving parts onto the heavy-gauge metal cabinet reduces vibration and noise to a minimum.
- Comes complete with squirrel-cage blowers for whisper-quiet operation
- Easy-to-read gauges — No more squinting at the flame and guesswork sight adjustments. Gauges give accurate firing rates and include oil temperature readings.
- Adjustable burning rate — Different fuel viscosities require different burning rates. Make the adjustment on your furnace by simply turning a screw.
- No target burn-out design — The 10-gauge heavy-duty steel combustion chamber puts the target sufficiently distant from the flame so there is no flame impingement on the heat exchanger.



Cat Part No.	4C-6764
Firing rate (BTU)	185 to 245,000
Consumption rate (USGPH)	.7 to 1.6 (2.6 to 6.1 l)
Air fan type	Direct Drive Blower
Furnace line voltage single phase	220V 50/60 Hz
Furnace full load with 3.7 A fuel pump	16.5 A
Chimney size	177.8 mm (7 in)
Shipping weight	283.5 kg (625 lbs)
Dimensions (W x H)	66 x 71 cm (26 in x 28 in)
Overall length (inc. burner)	312.4 cm (123 in)
Fan output	762 m³/min (2,500 cfm)
Ductable	Yes
Plenum dimensions	35.6 x 61 cm (14 in x 24 in)

Reference
NEDG5053

Waste Oil Furnace Service Parts

Warranty: Manufacturer's

Part No.	Description	4C-6762	4C-6763	4C-6764	4C-6765
4C-6868	Preheater Assembly, Oil	X	X	X	X
4C-6869	Transformer Assembly (with cables)	X	X	X	X
4C-6870	Electrode Set (2)	X	X	X	X
4C-6871	Burner Gasket Set	X	X	X	X
4C-6872	Oil Pump 1 Coupling	X	X	X	X
4C-6873	Oil Pump 2 Coupling	X	X	X	X
4C-6874	Nozzle 9-5	X	X	—	—
4C-6875	Nozzle 9-8	—	—	X	—
4C-6876	Nozzle 9-11	—	—	—	X
4C-6877	Tridelta Air Switch	X	X	X	X
4C-6878	Primary Control	X	X	X	X
4C-6879	Cad Cell	X	X	X	X
4C-6880	Door Switch	X	X	X	X
4C-6881	Regulator (air or oil)	X	X	X	X
4C-6882	Solenoid Valve (air or oil)	X	X	X	X
4C-6883	Preheater Thermostat	X	X	X	X
4C-6884	Heating Element	X	X	X	X

Part No.	Description	4C-6762	4C-6763	4C-6764	4C-6765
4C-6885	Fan Limit Control	X	X	—	—
4C-6886	Fan Limit Control	—	—	X	X
4C-6887	Oil Pump Motor	X	X	X	X
4C-6888	Fan Motor	X	X	X	X
4C-6889	Fan Motor	—	X	—	—
4C-6890	Fan Motor	—	—	X	—
4C-6891	Fan Motor	—	—	—	X
4C-6892	Capacitor	—	X	—	—
4C-6893	Burner Fan and Motor	—	X	—	—
4C-6894	Burner Fan and Motor	—	—	X	X
4C-6896	Oil Pump ¹	X	X	X	X
4C-6897	Oil Pump ²	X	X	X	X
4C-6898	Blower Fan	—	X	—	—
4C-6899	Blower Fan	—	—	X	—
4C-6900	Blower Fan	—	—	—	X
4C-6901	Ceramic Chamber	—	—	X	X

¹ For Combu Pump

² For Suntec Pump

Coolant Reclaiming Stills

Coolant Reclaiming Stills

SMCS Code: 0708, 1352
Model: All Engines/Machines with Cooling Systems
Warranty: Manufacturer's

- Used to recycle antifreeze
- Produces a consistently high-quality output
- When antifreeze additive is added, finished antifreeze meets GM 6038-M low silicate antifreeze specification (required if antifreeze is used in Caterpillar products).

NOTE: Caterpillar approves recycled antifreeze if reclaimed by vacuum distillation and reinhibited with Caterpillar® Antifreeze Additive. It must meet GM 6038-M low silicate antifreeze specification for new antifreeze. 30% ethylene glycol is the minimum recommended antifreeze solution. This is required in order to maintain the correct lubricity for proper water pump operation.



Optional Parts

4C-7342 Air Operated Diaphragm Pump, 1:1 Husky

- Recommended for faster transfer of antifreeze to reclaiming still

Part No.	Capacity	Condenser (chiller)	Distillation rate	Process time	Length	Height	Depth	Approximate weight
9U-6846	208 L (55 gal)	air-cooled	12.13 Lph (3.2 gph)	16 to 18 hours	122 cm (48.0 in)	206 cm (81.0 in)	76 cm (30.0 in)	420 kg (925 lbs)
9U-6847								
9U-6848								

Electrical Requirements	
Part No.	Description
9U-6843	240 volt, single phase, 60 Hz, 20 amps
9U-6845	220 volt, single phase, 50 Hz, 15 amps
9U-6846	240 volt, 3 phase, 60 Hz, 40 amps
9U-6847	380 volt, 3 phase, 50 Hz, 18 amps
9U-6848	440 volt, 3 phase, 50 Hz, 15 amps

Antifreeze Additives		
Part No.	Size	Amount of 50/50 water and ethylene glycol mixture
4C-9288	2.82 L (3 qt)	56.8 L (15 gal)
4C-9289	9.5 L (2.5 gal)	208 L (55 gal)
4C-9290	18.9 L (5 gal); mix as needed	
4C-9291	208 L (55 gal); mix as needed	

NOTE: Add 5% by volume of Caterpillar® Antifreeze Additive to coolant mixture.

Cylinder Head Reclaiming

Heavy-Duty Valve Face Grinders

Warranty: Manufacturer's

- Precision chucking system
- Variable speed chuck 150-300 RPM
- Precision linear ball bearing chuck cross-slide
- Fingertip chuck release
- Easy angle adjustment
- Adjustable grinding head
- Micrometer feed
- Coolant tank easily removable for cleaning
- 7 inch valve face grinding wheel
- Single phase



Part No.	Chuck Capacity	Valve Head Max. Dia.	Voltage	Base Dimension	Net Weight
9U-5360	5.84 mm to 17.46 mm (.230 to 11/16 in)	152.4 mm (6 in)	115V / 60 Hz	495.3 mm x 457.2 mm (25 3/4 in x 18 in)	131.5 kg (290 lbs)
9U-5374	5.84 mm to 17.46 mm (.230 to 11/16 in)	152.4 mm (6 in)	230V / 50/60Hz / 1 Phase	495.3 mm x 457.2 mm (25 3/4 in x 18 in)	131.5 kg (290 lbs)

9U-5371 Rocker Arm Attachment

Warranty: Manufacturer's

- Grinds auto, truck and tractor rocker arm quickly and accurately
- For 9U-5360, 9U-5374, 9U-5375, 9U-5376, 9U-5377, 9U-5378, 9U-5379 and 9U-5380 Valve Face Grinding Machines



9U-5370 Grinding Oil

Warranty: Manufacturer's

- Specially formulated to be used with valve face grinding machines
- Size: 2 liters
- Use with 9U-5360, 9U-5374, 9U-5375 and 9U-5376

Grinding Wheels for Valve Face Grinding Machines

Warranty: Manufacturer's

- Applicable for various valve types
- Standard equipment on all machines in heavy-duty and extra heavy-duty valve face grinder lists

Part No.	Size Diameter	Thickness	Hole	For Valve Type:	Grit	Shape	Used On
9U-5361	101.6 mm (4 in)	12.7 mm (1/2 in)	15.87 mm (5/8 in)	Stellite Only	80	Offset	2075
9U-5362	101.6 mm (4 in)	12.7 mm (1/2 in)	15.87 mm (5/8 in)	Automotive	60	Offset	2075
9U-5363	101.6 mm (4 in)	25.4 mm (1 in)	15.87 mm (5/8 in)	Valve Ends	54	Cup	9U-5360
9U-5364	101.6 mm (4 in)	12.7 mm (1/2 in)	15.87 mm (5/8 in)	Stellite	60	Offset	2075
9U-5365	178 mm (7 in)	17.46 mm (11/16 in)	44.45 mm (1 3/4 in)	Nickel Alloy	60	Straight	See note
9U-5366	178 mm (7 in)	17.46 mm (11/16 in)	44.45 mm (1 3/4 in)	Stellite	80	Straight	See note

9U-5982 and 9U-5983 Valve Stem Polishers

Warranty: Manufacturer's

- Easily polishes valve stems, push rods, and rocker arm shafts in a fraction of the time compared to hand polishing
- Removes burrs and nicks while producing up to 300 valves per hour with a clean, uniform micro-finish
- Comes equipped with a dial load meter, which indicates applied pressure for optimum performance
- Precision engineered for ease and speed of operation — quality built to last
- Replacement Part: 9U-5984 Polishing Wheel

Electrical:	
9U-5982	120V, 8.5 Amps
9U-5983	220V/50 Hz, single phase
Motor RPM	1.725
Dimensions	523.88 in W X 361.95 in D X 425.45 mm in H (20 5/8 X 14 1/4 X 16 3/4)
Weight	31.75 kg (70 lbs)
Valve size capacity:	
Diameter	6 mm - 3/8 in (2 ranges) 3/8 in - 1/2 in
Length	222.25 mm (8 3/4 in) maximum
Output	300 Valves per hour



9U-5796 Air Valve Seat Grinder Set

Warranty: Manufacturer's

- For general automotive service



Part No.	Description
9U-5387	Air High Speed Driver
9U-5392	Wheel Holder (2)
9U-5368	Pin
9U-5402	Lifting Spring
9U-5403	Lifting Spring
9U-5505	Roughing Wheel, 33.3 mm (1 5/16 in), 45°
9U-5506	Roughing Wheel, 34.9 mm (1 3/8 in), 45°
9U-5508	Roughing Wheel, 38.1 mm (1 1/2 in), 45°
9U-5511	Roughing Wheel, 41.2 mm (1 5/8 in), 45°
9U-5513	Roughing Wheel, 44.4 mm (1 3/4 in), 45°
9U-5514	Roughing Wheel, 47.6 mm (1 7/8 in), 45°
9U-5515	Roughing Wheel, 50.8 mm (2 in), 45°
9U-5516	Roughing Wheel, 53.98 mm (2 1/8 in), 45°
9U-5517	Roughing Wheel, 57.1 mm (2 1/4 in), 45°
9U-5542	Roughing Wheel, 41.2 mm (1 5/8 in), 30°
9U-5544	Roughing Wheel, 47.6 mm (1 7/8 in), 30°
9U-5545	Roughing Wheel, 50.8 mm (2 in), 30°
9U-5546	Roughing Wheel, 53.98 mm (2 1/8 in), 30°
9U-5547	Roughing Wheel, 57.1 mm (2 1/4 in), 30°

Part No.	Description
9U-5437	Tapered Pilot
9U-5438	Tapered Pilot
9U-5439	Tapered Pilot
9U-5440	Tapered Pilot
9U-5443	Tapered Pilot
9U-5444	Tapered Pilot
9U-5445	Tapered Pilot
9U-5369	Tapered Pilot
9U-5449	Tapered Pilot
9U-5451	Tapered Pilot
9U-5452	Tapered Pilot
9U-5453	Tapered Pilot
9U-5454	Tapered Pilot
9U-5404	Expanding Guide Cleaner

9U-5382 Air Valve Seat Grinder Set

Warranty: Manufacturer's

- For general automotive service
- Metal box included



Part No.	Description
9U-5388	Air High Speed Driver
9U-5392	Wheel Holder (2)
9U-5397	Capacity 101.6 mm (4 in) Dressing Tool
9U-5368	Pin
9U-5402	Lifting Spring
9U-5403	Lifting Spring
9U-5487	Finishing Wheel, 33.3 mm (1 5/16 in), 45°
9U-5488	Finishing Wheel, 34.9 mm (1 3/8 in), 45°
9U-5489	Finishing Wheel, 38.1 mm (1 1/2 in), 45°
9U-5492	Finishing Wheel, 41.2 mm (1 5/8 in), 45°
9U-5494	Finishing Wheel, 44.4 mm (1 3/4 in), 45°
9U-5495	Finishing Wheel, 47.6 mm (1 7/8 in), 45°

Part No.	Description
9U-5496	Finishing Wheel, 50.8 mm (2 in), 45°
9U-5498	Finishing Wheel, 53.98 mm (2 1/8 in), 45°
9U-5499	Finishing Wheel, 57.1 mm (2 1/4 in), 45°
9U-5526	Finishing Wheel, 41.2 mm (1 5/8 in), 30°
9U-5529	Finishing Wheel, 47.6 mm (1 7/8 in), 30°
9U-5530	Finishing Wheel, 50.8 mm (2 in), 30°
9U-5532	Finishing Wheel, 53.98 mm (2 1/8 in), 30°
9U-5533	Finishing Wheel, 57.1 mm (2 1/4 in), 30°
9U-5508	Roughing Wheel, 38.1 mm (1 1/2 in), 45°
9U-5511	Roughing Wheel, 41.2 mm (1 5/8 in), 45°
9U-5513	Roughing Wheel, 44.4 mm (1 3/4 in), 45°
9U-5514	Roughing Wheel, 47.6 mm (1 7/8 in), 45°

Tapered Pilots, 1 Each	
Part No.	Description
9U-5437	Tapered Pilot
9U-5438	Tapered Pilot
9U-5439	Tapered Pilot
9U-5440	Tapered Pilot
9U-5443	Tapered Pilot
9U-5444	Tapered Pilot
9U-5445	Tapered Pilot
9U-5369	Tapered Pilot
9U-5449	Tapered Pilot
9U-5451	Tapered Pilot
9U-5452	Tapered Pilot
9U-5453	Tapered Pilot
9U-5454	Tapered Pilot
9U-5404	Expanding Guide Cleaner
	Metal Box

Air Seat Grinding Drivers

Warranty: Manufacturer's

- Lightweight
- Spline drive
- Governor controlled
- Spring loaded spindle for dual-action grinding
- Up to 63.5 mm (2 1/2 in) wheel capacity



Part No.	Angle of Drive	No Load Speed	Hose Conn.	Hose Size	Wheel Dia. Capacity	Length	Net Weight	Max. HP	Use with Holders:
9U-5387	Straight	10,000 RPM	6.4 mm (1/4 in PT)	9.52 mm (3/8 in)	63.5 mm (2 1/2 in)	282.6 mm (11 1/8 in)	2.5 kg (5 1/2 lb)	1	9U-5392 (1702)
9U-5388	15°	10,000 RPM	6.4 mm (1/4 in PT)	9.52 mm (3/8 in)	63.5 mm (2 1/2 in)	298.45 mm (11 3/4 in)	12 kg (4 3/4 lb)	1	9U-5392 (1702)

9U-5381 Electric Valve Seat Grinder Set (110 V)

Warranty: Manufacturer's

- For general automotive service
- Metal box included



Part No.	Description
9U-5385	High Speed Driver
9U-5392	Wheel Holder (2)
9U-5397	Capacity 101.6 mm (4 in) Dressing Tool
9U-5368	Pin
9U-5402	Lifting Spring
9U-5403	Lifting Spring
9U-5487	Finishing Wheels, 33.3 mm (1 5/16 in), 45°
9U-5488	Finishing Wheels, 34.9 mm (1 3/8 in), 45°
9U-5489	Finishing Wheels, 38.1 mm (1 1/2 in), 45°
9U-5492	Finishing Wheels, 41.2 mm (1 5/8 in), 45°
9U-5494	Finishing Wheels, 44.4 mm (1 3/4 in), 45°
9U-5495	Finishing Wheels, 47.6 mm (1 7/8 in), 45°

Part No.	Description
9U-5496	Finishing Wheels, 50.8 mm (2 in), 45°
9U-5498	Finishing Wheels, 53.98 mm (2 1/8 in), 45°
9U-5499	Finishing Wheels, 57.1 mm (2 1/4 in), 45°
9U-5526	Finishing Wheels, 41.2 mm (1 5/8 in), 30°
9U-5529	Finishing Wheels, 47.6 mm (1 7/8 in), 30°
9U-5530	Finishing Wheels, 50.8 mm (2 in), 30°
9U-5532	Finishing Wheels, 53.98 mm (2 1/8 in), 30°
9U-5533	Finishing Wheels, 57.1 mm (2 1/4 in), 30°
9U-5508	Roughing Wheels, 38.1 mm (1 1/2 in), 45°
9U-5511	Roughing Wheels, 41.2 mm (1 5/8 in), 45°
9U-5513	Roughing Wheels, 44.4 mm (1 3/4 in), 45°
9U-5514	Roughing Wheels, 47.6 mm (1 7/8 in), 45°

Tapered Pilots	
Part No.	Description
9U-5437	Tapered Pilot
9U-5438	Tapered Pilot
9U-5439	Tapered Pilot
9U-5440	Tapered Pilot
9U-5443	Tapered Pilot
9U-5444	Tapered Pilot
9U-5445	Tapered Pilot
9U-5369	Tapered Pilot
9U-5449	Tapered Pilot
9U-5451	Tapered Pilot
9U-5452	Tapered Pilot
9U-5453	Tapered Pilot
9U-5454	Tapered Pilot
9U-5404	Expanding Guide Cleaner
	Metal Box

Electric Seat Grinding Drivers

Warranty: Manufacturer's

- Spline drive
- Up to 152.4 mm (6 in) wheel capacity
- Spring loaded spindle for dual-action grinding



Part No.	Angle of Drive	No Load Speed	Volts	Amps	Wheel Dia. Capacity	Length	Net Weight	Max. HP	Use with Holder:
9U-5385	15°	10,000 RPM	115	6	63.5 mm (2 1/2 in)	292.1 mm (11 1/2 in)	3.4 kg (7 1/2 lb)	.6	9U-5392
9U-5587	15°	10,000 RPM	230	3	63.5 mm (2 1/2 in)	292.1 mm (11 1/2 in)	3.4 kg (7 1/2 lb)	.6	9U-5392
9U-5386	15°	8,000 RPM	115	7	76.2 mm (3 in)	317.5 mm (12 1/2 in)	4 kg (8.75 lb)	1	9U-5392
9U-5588	15°	8,000 RPM	230	3.5	76.2 mm (3 in)	317.5 mm (12 1/2 in)	4 kg (8.75 lb)	1	9U-5392

Lifting Springs

Warranty: Manufacturer's

- Recommended under all wheels
- Can be used on most jobs, saving drive unit and wheel breakage
- Made in 5 lengths
- Place the lifting spring on pilot and bring the wheel up to speed before grinding.

Part No.	Size	Usage
9U-5399	38.1 mm (1 1/2 in)	for use with "SK" Wheels
9U-5399	57.2 mm (2 1/4 in)	for use with "SK" Wheels
9U-5401	76.2 mm (3 in)	for use with TSS Pilots and "SK" Wheels
9U-5402	38.1 mm (1 1/2 in) long	for No. 2 Top Pilots
9U-5403	63.5 mm (2 1/2 in) long	for No. 2 Top Pilots



9U-5392 Ball Bearing Grinding Wheel Holder

Warranty: Manufacturer's

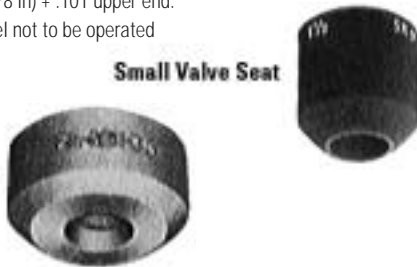
- Ball bearings are mounted between the inner and outer sleeves.
- The hardened and precision ground inner sleeve floats on the pilot and reduces friction and wear.
- For use with No. 2 upper end tapered or expanding pilots having 9.53 mm (3/8 in) + .101 upper end.
- Valve seat grinding wheel not to be operated above 6500 S.F.P.M.

Thread	17.5 mm-16 (11/16 in)
Diameter	31.8 mm (1 1/4 in)
Length	127 mm (5 in)



Standard Wheels for Iron and Steel

Size	45° Finish	45° Rough	30° Finish	30° Rough
Small Valve Seats				
Driver Numbers: 9U-5387, 9U-5388				
26.99 mm (1 1/16 in)	9U-5485	9U-5503		
28.6 mm (1 1/8 in)	9U-5484	9U-5502		
30.16 mm (1 3/16 in)	9U-5486			
31.75 mm (1 1/4 in)	9U-5550 ¹	9U-5504	9U-5520 9U-5567 ¹	9U-5536
33.34 mm (1 5/16 in)	9U-5487 9U-5551 ¹	9U-5505	9U-5521	9U-5537
34.93 mm (1 3/8 in)	9U-5488 9U-5552 ¹	9U-5506	9U-5522 9U-5568 ¹	9U-5538
36.5 mm (1 7/16 in)	9U-5553 ¹	9U-5507		
38.1 mm (1 1/2 in)	9U-5489	9U-5508 9U-5554 ¹	9U-5523	9U-5539 9U-5569 ¹



Standard Wheels for Iron and Steel

Driver Numbers: 9U-5387, 9U-5388				
38.1 mm (1 1/2 in)	9U-5490 9U-5555 ¹	9U-5509	9U-5524 9U-5570 ¹	9U-5540
39.69 mm (1 9/16 in)	9U-5491 9U-5556 ¹	9U-5510	9U-5525	9U-5541
41.28 mm (1 5/8 in)	9U-5492 9U-5557 ¹	9U-5511	9U-5526 9U-5571 ¹	9U-5542
42.86 mm (1 11/16 in)	9U-5493	9U-5512 9U-5558 ¹	9U-5527	
Driver Numbers: 9U-5385, 9U-5386, 9U-5387, 9U-5388				
44.45 mm (1 3/4 in)	9U-5494 9U-5559 ¹	9U-5513	9U-5528 9U-5572 ¹	9U-5543
47.63 mm (1 7/8 in)	9U-5495 9U-5560 ¹	9U-5514	9U-5529 9U-5573 ¹	9U-5544
50.8 mm (2 in)	9U-5496	9U-5515 9U-5561 ¹	9U-5530	9U-5545 9U-5574 ¹
Driver Numbers: 9U-5385, 9U-5386, 9U-5387, 9U-5388				
52.39 mm (2 1/16 in)	9U-5497 9U-5562 ¹		9U-5531	
53.98 mm (2 1/8 in)	9U-5498 9U-5563 ¹	9U-5516	9U-5532 9U-5575 ¹	9U-5546
57.1 mm (2 1/4 in)	9U-5499 9U-5564 ¹	9U-5517	9U-5533 9U-5576 ¹	9U-5547
60.33 mm (2 3/8 in)	9U-5500 9U-5565 ¹	9U-5518	9U-5534 9U-5577 ¹	9U-5548
63.5 mm (2 1/2 in)	9U-5501 9U-5566 ¹	9U-5519	9U-5535 9U-5578 ¹	9U-5549

¹Wheels available for stellite

Tapered Expanding Pilots [9.5 mm (3/8 in) + .010 No. 2 Upper End]

Warranty: Manufacturer's

- Self-centered in the valve guide
- Range of expansion will handle valve guides from -.002 to +.008 on all standard sizes, reducing the number of pilots necessary for worn guides.
- All pilots listed are for use with 9U-5392 Grinding Wheel Holder



Tapered Expanding Pilots			
Part No.	Size	A	B
9U-5406	5.99 mm (.236 in)	92 mm (3 5/8 in)	47.6 mm (1 7/8 in)
9U-5407	6.4 mm (1/4 in)	95.3 mm (3 3/4 in)	47.6 mm (1 7/8 in)
9U-5408	6.5 mm (.256 in)	95.3 mm (3 3/4 in)	47.6 mm (1 7/8 in)
9U-5409	6.99 mm (.275 in)	95.3 mm (3 3/4 in)	47.6 mm (1 7/8 in)
9U-5410	7.1 mm (9/32 in)	95.3 mm (3 3/4 in)	47.6 mm (1 7/8 in)
9U-5411	7.5 mm (.295 in)	95.3 mm (3 3/4 in)	47.6 mm (1 7/8 in)
9U-5412	7.9 mm (5/16 in)	95.3 mm (3 3/4 in)	57.2 mm (2 1/4 in)
9U-5413	8.0 mm (.315 in)	95.3 mm (3 3/4 in)	57.2 mm (2 1/4 in)
9U-5414	8.3 mm (21/64 in)	95.3 mm (3 3/4 in)	57.2 mm (2 1/4 in)

Tapered Expanding Pilots			
Part No.	Size	A	B
9U-5415	8.5 mm (.335 in)	95.3 mm (3 3/4 in)	57.2 mm (2 1/4 in)
9U-5416	8.7 mm (11/32 in)	95.3 mm (3 3/4 in)	63.5 mm (2 1/2 in)
9U-5417	8.99 mm (.354 in)	95.3 mm (3 3/4 in)	63.5 mm (2 1/2 in)
9U-5418	9.1 mm (23/64 in)	95.3 mm (3 3/4 in)	63.5 mm (2 1/2 in)
9U-5419	9.5 mm (3/8 in)	95.3 mm (3 3/4 in)	66.7 mm (2 5/8 in)
9U-5420	9.9 mm (25/64 in)	95.3 mm (3 3/4 in)	66.7 mm (2 5/8 in)
9U-5421	10.0 mm (.393 in)	95.3 mm (3 3/4 in)	69.9 mm (2 3/4 in)
9U-5422	10.1 mm (.396 in)	95.3 mm (3 3/4 in)	66.7 mm (2 5/8 in)
9U-5384	10.2 mm (.403 in)	95.3 mm (3 3/4 in)	73.0 mm (2 7/8 in)

9U-5579 Threaded Bushing

Warranty: Manufacturer's

- For using valve seat grinding wheels with Black and Decker holders

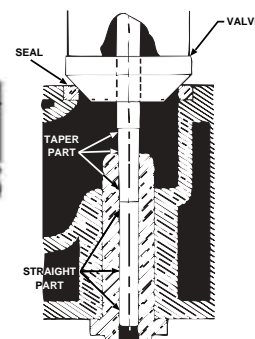


Tapered Expanding Pilots			
Part No.	Size	A	B
9U-5423	10.3 mm (13/32 in)	95.3 mm (3 3/4 in)	73.0 mm (2 7/8 in)
9U-5424	10.5 mm (.413 in)	95.3 mm (3 3/4 in)	69.9 mm (2 3/4 in)
9U-5425	11.0 mm (.433 in)	95.3 mm (3 3/4 in)	73.0 mm (2 7/8 in)
9U-5426	11.1 mm (7/16 in)	95.3 mm (3 3/4 in)	73.0 mm (2 7/8 in)
9U-5427	11.5 mm (29/64 in)	95.3 mm (3 3/4 in)	73.0 mm (2 7/8 in)
9U-5450	11.9 mm (15/32 in)	95.3 mm (3 3/4 in)	73.0 mm (2 7/8 in)
9U-5428	12.0 mm (.472 in)	95.3 mm (3 3/4 in)	73.0 mm (2 7/8 in)
9U-5429	12.7 mm (1/2 in)	114.3 mm (4 1/2 in)	85.7 mm (3 3/8 in)

Standard Stock Size Tapered Pilots and Plug Gauges

Warranty: Manufacturer's

- Patented pilot illustrated shows length of tapered pilot from end to end indicated as "overall length." The other section of the pilot is indicated as "upper end."
- All pilots listed are to be used with 9U-5392 Grinding Wheel Holder.



Tapered Pilots				
Part No.	Size Fractional	Size Decimal	Overall Length	Upper End
9U-5430	6.4 mm (1/4 in)	6.4 mm (.250 in)	15.6 mm (6 1/8 in)	101.6 mm (4 in)
9U-5431	6.4 mm (1/4 in + .001)	6.4 mm (.251 in)	15.6 mm (6 1/8 in)	101.6 mm (4 in)
9U-5432	6.4 mm (1/4 in + .010)	6.6 mm (.260 in)	15.6 mm (6 1/8 in)	101.6 mm (4 in)
9U-5433	6.7 mm (17/64 in — .004)	6.6 mm (.261 in)	15.6 mm (6 1/8 in)	101.6 mm (4 in)
9U-5434	6.7 mm (17/64 in — .003)	6.7 mm (.262 in)	15.6 mm (6 1/8 in)	101.6 mm (4 in)
9U-5435	7.1 mm (9/32 in — .005)	7.0 mm (.276 in)	15.6 mm (6 1/8 in)	101.6 mm (4 in)
9U-5436	7.1 mm (9/32 in — .004)	7.0 mm (.277 in)	15.6 mm (6 1/8 in)	101.6 mm (4 in)
9U-5437	7.9 mm (5/16 in)	7.9 mm (.312 in)	187.3 mm (7 3/8 in)	101.6 mm (4 in)
9U-5438	7.9 mm (5/16 in + .001)	7.95 mm (.313 in)	187.3 mm (7 3/8 in)	101.6 mm (4 in)
9U-5439	7.9 mm (5/16 in + .002)	7.97 mm (.314 in)	187.3 mm (7 3/8 in)	101.6 mm (4 in)
9U-5440	7.9 mm (5/16 in + .003)	8.0 mm (.315 in)	187.3 mm (7 3/8 in)	101.6 mm (4 in)
9U-5441	7.9 mm (5/16 in + .004)	8.0 mm (.316 in)	187.3 mm (7 3/8 in)	101.6 mm (4 in)
9U-5442	8.7 mm (11/32 in — .001)	8.7 mm (.342 in)	192.1 mm (7 9/16 in)	101.6 mm (4 in)

Tapered Pilots				
Part No.	Size Fractional	Size Decimal	Overall Length	Upper End
9U-5443	8.7 mm (11/32 in)	8.7 mm (.343 in)	192.1 mm (7 9/16 in)	101.6 mm (4 in)
9U-5444	8.7 mm (11/32 in + .001)	8.7 mm (.344 in)	192.1 mm (7 9/16 in)	101.6 mm (4 in)
9U-5445	8.7 mm (11/32 in + .002)	8.8 mm (.345 in)	192.1 mm (7 9/16 in)	101.6 mm (4 in)
9U-5369	8.7 mm (11/32 in + .003)	8.8 mm (.346 in)	212.7 mm (8 3/8 in)	127 mm (5 in)
9U-5446	8.7 mm (11/32 in + .010)	8.97 mm (.353 in)	192.1 mm (7 9/16 in)	101.6 mm (4 in)
9U-5447	9.1 mm (23/64 in — .005)	9.0 mm (.354 in)	192.1 mm (7 9/16 in)	101.6 mm (4 in)
9U-5448	9.1 mm (23/64 in — .004)	9.0 mm (.355 in)	192.1 mm (7 9/16 in)	101.6 mm (4 in)
9U-5449	9.5 mm (3/8 in — .002)	9.5 mm (.373 in)	203.2 mm (8 in)	101.6 mm (4 in)
9U-5451	9.5 mm (3/8 in — .001)	9.5 mm (.374 in)	203.2 mm (8 in)	101.6 mm (4 in)
9U-5452	9.5 mm (3/8 in)	9.5 mm (.375 in)	203.2 mm (8 in)	101.6 mm (4 in)
9U-5597	9.5 mm (3/8 in — .001)	9.5 mm (.375 in)	228.6 mm (9 in)	127.0 mm (5 in)
9U-5453	9.5 mm (3/8 in + .001)	9.6 mm (.376 in)	203.2 mm (8 in)	101.6 mm (4 in)
9U-5454	9.5 mm (3/8 in + .002)	9.5 mm (.377 in)	203.2 mm (8 in)	101.6 mm (4 in)
9U-5455	9.9 mm (25/64 in + .006)	10.1 mm (.396 in)	203.2 mm (8 in)	101.6 mm (4 in)

Tapered Pilots				
Part No.	Size Fractional	Size Decimal	Overall Length	Upper End
9U-5456	9.9 mm (25/64 in + .007)	10.1 mm (.397 in)	203.2 mm (8 in)	101.6 mm (4 in)
9U-5457	10.3 mm (13/32 in)	10.3 mm (.406 in)	203.2 mm (8 in)	101.6 mm (4 in)
9U-5458	10.3 mm (13/32 in + .001)	10.3 mm (.407 in)	203.2 mm (8 in)	101.6 mm (4 in)
9U-5459	11.1 mm (7/16 in)	11.1 mm (.437 in)	222.3 mm (8 3/4 in)	101.6 mm (4 in)
9U-5460	11.1 mm (7/16 in + .001)	11.1 mm (.438 in)	222.3 mm (8 3/4 in)	101.6 mm (4 in)
9U-5461	11.1 mm (7/16 in + .002)	11.2 mm (.439 in)	222.3 mm (8 3/4 in)	101.6 mm (4 in)
9U-5462	11.5 mm (29/64 in)	11.5 mm (.453 in)	222.3 mm (8 3/4 in)	101.6 mm (4 in)
9U-5464	12.7 mm (1/2 in)	12.7 mm (.500 in)	222.3 mm (8 3/4 in)	101.6 mm (4 in)
9U-5465	12.7 mm (1/2 in)	12.7 mm (.500 in)	279.4 mm (11 in)	127.0 mm (5 in)
9U-5466	12.7 mm (1/2 in + .001)	12.7 mm (.501 in)	222.3 mm (8 3/4 in)	101.6 mm (4 in)
9U-5467	12.7 mm (1/2 in + .002)	12.8 mm (.502 in)	222.3 mm (8 3/4 in)	101.6 mm (4 in)

9U-5368 Pin

Warranty: Manufacturer's

- 4.8 mm (3/16 in) pin for inserting and removing tapered pilots with No. 2 upper end

Large length	36.6 mm (1.44 in)
Overall length	82.6 mm (3.25 in)
Large diameter	6.4 mm (.25 in)
Small diameter	4.8 mm (.19 in)

High Speed Valve Guide Reamer

Warranty: Manufacturer's



Part No.	Size (Fractional)	Length
9U-5468	6.4 mm (1/4 in)	177.8 mm (7 in)
9U-5469	6.4 mm (1/4 in) +.010	177.8 mm (7 in)
9U-5470	7.1 mm (9/32 in) — .006	177.8 mm (7 in)
9U-5471	7.1 mm (9/32 in) — .004	177.8 mm (7 in)
9U-5472	7.9 mm (5/16 in)	177.8 mm (7 in)
9U-5473	7.9 mm (5/16 in) — .003	177.8 mm (7 in)
9U-5474	8.7 mm (11/32 in)	177.8 mm (7 in)
9U-5475	9.1 mm (23/64 in) — .005	177.8 mm (7 in)
9U-5476	9.5 mm (3/8 in)	177.8 mm (7 in)
9U-5477	9.9 mm (25/64 in) + .006	177.8 mm (7 in)
9U-5478	10.3 mm (13/32 in)	177.8 mm (7 in)
9U-5479	11.1 mm (7/16 in) — .004	228.6 mm (9 in)
9U-5480	11.1 mm (7/16 in)	228.6 mm (9 in)
9U-5481	11.5 mm (29/64 in)	228.6 mm (9 in)
9U-5482	12.7 mm (1/2 in)	228.6 mm (9 in)

9U-5383 Vacuum Tester

Warranty: Manufacturer's

- Checks entire valve train — valve, seat, stem, and guide — quickly and accurately

Consist
Vacuum tester
50.8 mm (2 in) disc
76.2 mm (3 in) disc
101.6 mm (4 in) disc
Hose
Spark plug adapter



Valve Grinding Wheel Diamonds

Warranty: Manufacturer's



Part No.	Description
9U-5393	Replacement Diamond, 1/4 KT
9U-5394	Replacement Diamond, 10 mm (3/8 in)-24 thread, 1/4 KT
9U-5395	Heavy-Duty Diamond, 10 mm (3/8 in)-24 thread, 3/8 KT
9U-5396	Replacement Hex Diamond, 3/8 KT
9U-5398	Pilot for use with 9U-5397 Dressing Tool

Reamers

- A taper pin reamer is a necessity in the reconditioning of cracked cylinder heads by taper pin method.
- Can also be used in general applications, like cleaning holes, deburring tubes, etc.



Item	Part No.	Description
1	8B-4422	Taper Reamer No.1
2	8B-8758	Taper Reamer No. 2
Not shown	5P-3051	Reamer, 8.33 mm (.328 in) diameter, 177.8 mm (7 in) long Straight Reamer

9U-5404 Valve Guide Cleaner, Expanding

Warranty: Manufacturer's



- Adjustable for valve guides from 7.9 mm to 15.9 mm (5/16 in to 5/8 in)
- Flat spring steel blades press against the guide by spring tension and scrape out the carbon without injury to the guides.
- Complete with one extra set of blades
- Service Part: 9U-5405 Replacement Blades for 9U-5404

9U-5397 Heavy-Duty Dressing Tool

Warranty: Manufacturer's

- Heavily built for extreme accuracy and ideal for production service
- Capacity up to 152.4 mm (6 in)
- Designed with complete adjustments for dressing all sizes of valve seat grinding wheels, including angles from zero to 90°
- Equipped with 9U-5394 Diamond adjusting screws, guard, and 9U-5398 Pilot for 9U-5392 Grinding Wheel Holder
- Height: 228.6 mm (9 in)
- Base: 152.4 mm x 152.4 mm (6 in x 6 in).



4C-9496 and 8S-2263 Valve and Brake Coil Spring Testers

Warranty: Manufacturer's

- Designed for rapid spring testing
- Well equipped to handle a variety of valve and brake coil springs, including the heavy-duty diesel types up to 51 mm (2 in) diameter and 114.3 mm (4 1/2 in) free length
- Single pointer can be read at a glance with a full 108 mm (4 1/4 in) diameter dial and bold numbers.
- Accurate to ±1% of total capacity
- Scale graduated in five pound increments and five kilogram increments.
- Holds maximum reading — has an adjustable maximum reading pointer
- Rugged aluminum housing with base plate drilled for bench mounting



Maximum test force	
4C-9496	545 kg (1,200 lb)
8S-2263	159 kg (350 lb)
Ram travel	127 mm (5 in)
Upper platform	57.15 mm (2 1/4 in)
Lower platform	82.6 mm (3 1/4 in)
Spring length scale	graduated in centimeters and inches
Spring pressure scale	graduated in kilograms and pounds
Height	387.35 mm (15 1/4 in)
Base	146 mm W X 260.35 mm D (5 3/4 in X 10 1/4 in)
Shipping weight	8 kg (18 lb)

Casting Salvage

Ironstitch® Kits

- Repairs holes and cracks in nonstructural area of castings
- Cold process — eliminates difficulties associated with welding
- Repair process is simple to perform and provides a permanent repair to cast iron damage.
- Ironstitch is a registered trademark of Reed Systems, Incorporated.
- It is recommended that you not perform any procedure, or order any parts, until you've ordered and read the Special Instruction SEHS8841 "Using the Ironstitch® Procedure for Casting Salvage."

1U-6393

- For use in the repair of material that is up to, and including, 16 mm (5/8 inch) thick

Part No.	Description	Quantity
1U-6367	Pin — No. 6A	250
1U-6368	Pin — No. 6B	250
1U-6369	Pin — No. 8	125
1U-6371	Tap — No. 6	6
1U-6372	Tap — No. 8	6
1U-6373	Locating Punch	1
1U-6374	Locating Punch	1
1U-6375	Lock — No. 1	25
1U-6376	Lock — No. 2	25
1U-6377	Lock — No. 3	25
1U-6380	Lock Drill Jig Set	1
1U-6381	Lock Drill Jig Set	1
1U-6382	Lock Drill Jig Set	1
1U-6385	Drill Collar Set	1
1U-6386	Drill Collar Set	1
1U-6387	Drill Collar Set	1

1U-6535

- For use in the repair of material that is over 16 mm (5/8 inch) thick

Part No.	Description	Quantity
1U-6369	Pin — No. 8A	125
1U-6370	Pin — No. 8B	125
1U-6372	Tap — No. 8	6
1U-6374	Locating Punch	1
1U-6378	Lock — No. 4	25
1U-6379	Lock — No. 5	25
1U-6383	Lock Drill Jig Set	1
1U-6384	Lock Drill Jig Set	1
1U-6388	Drill Collar Set	1
1U-6389	Drill Collar Set	1

Additional Supplies Needed (not included with repair kits)

Part No.	Description
1U-5499	Tapping Fluid
9S-3263	Thread Lock
	Carbide grinder bits
	Tap extractors
1U-5517	Disc 76.2 mm (3.00 in)
1U-5518	Threaded Shaft (mandrel)
1U-5520	Disc Pad
1U-6699	No. 7 Drill, 0.201 inch diameter for #6 pins
1U-6700	No. L Drill, 0.290 inch diameter for #8 pins
#1 Lock Drill Set	
1U-5590	Drill, 5/64 inch diameter
1U-5592	Drill, 7/64 inch diameter
1U-5595	Drill, 5/32 inch diameter
#2 Lock Drill Set	
1U-5592	Drill, 7/64 inch diameter
1U-5594	Drill, 9/64 inch diameter
1U-5597	Drill, 3/16 inch diameter
#3 Lock Drill Set	
1U-5594	Drill, 9/64 inch diameter
1U-5596	Drill, 11/64 inch diameter
1U-5597	Drill, 3/16 inch diameter
#4 Lock Drill Set	
1U-5596	Drill, 11/64 inch diameter
1U-5600	Drill, 15/64 inch diameter
1U-5605	Drill, 5/16 inch diameter
#5 Lock Drill Set	
1U-5598	Drill, 13/64 inch diameter
1U-5602	Drill, 17/64 inch diameter
1U-5609	Drill, 3/8 inch diameter

Test Equipment (pressure test)

- Water tank with rust inhibitor
- Test plates (for covering water ports)
- Compressed air supply [861 kPa (125 psi)]
- Air pressure regulator
- Non-corrosive soap solution and a squirt bottle
- Flashlight and mirrors

Measuring Tools

- Outside micrometers
- Vernier calipers
- Straight-edge, 914 mm (36.0 in) long

Hose Tooling

145-5161 Floor Model Hose Machine

SMCS Code: 0684
Model: All
Warranty: Manufacturer's

- Used to make hoses with inside diameter from 4.78 mm (3/16 in) up to 50.8 mm (2 in)
 - Works with permanent couplings on 1E716, 1E294, 1E844, 1E1028, 1E1543, 1E1956, 1E2760, XT-3, XT-5, and XT-6 hose
 - Automatic Delta Vertical Die Travel (DVDT) settings
 - Two die bowls — interchangeable and replaceable
 - Positive die retraction gives operator precise position control of coupling
 - Crimputer eliminates spacer rings and plates
 - Crimputer automatically adjusts for die or bowl wear
 - Crimp specifications stored internally for comparison to actual crimp diameters
 - Quick, easy quality control with integral electronic caliper and Crimputer

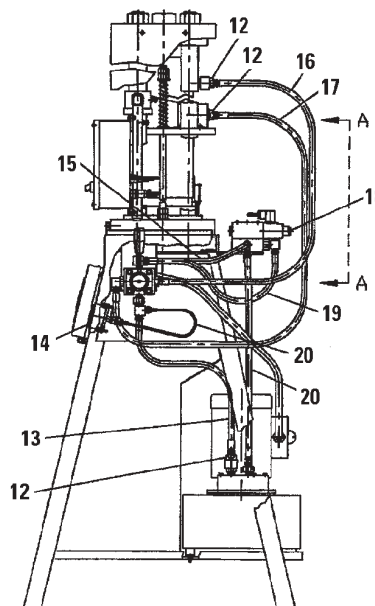
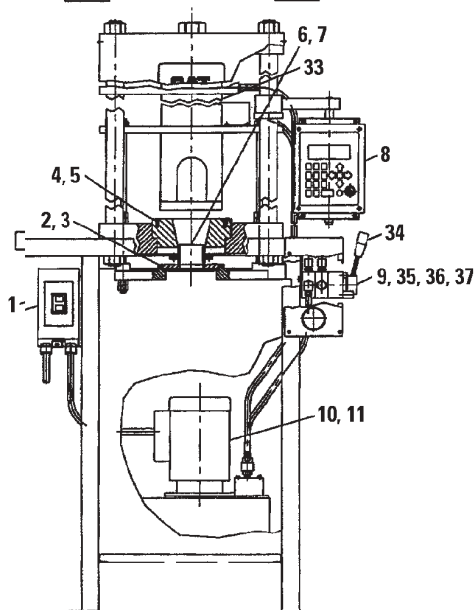
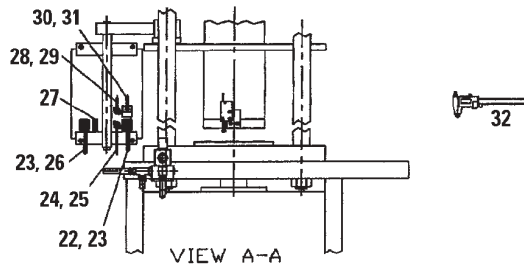
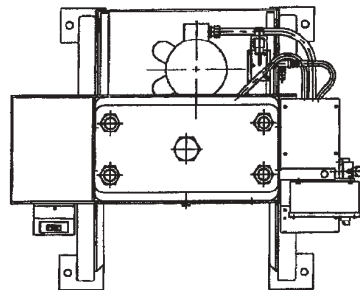


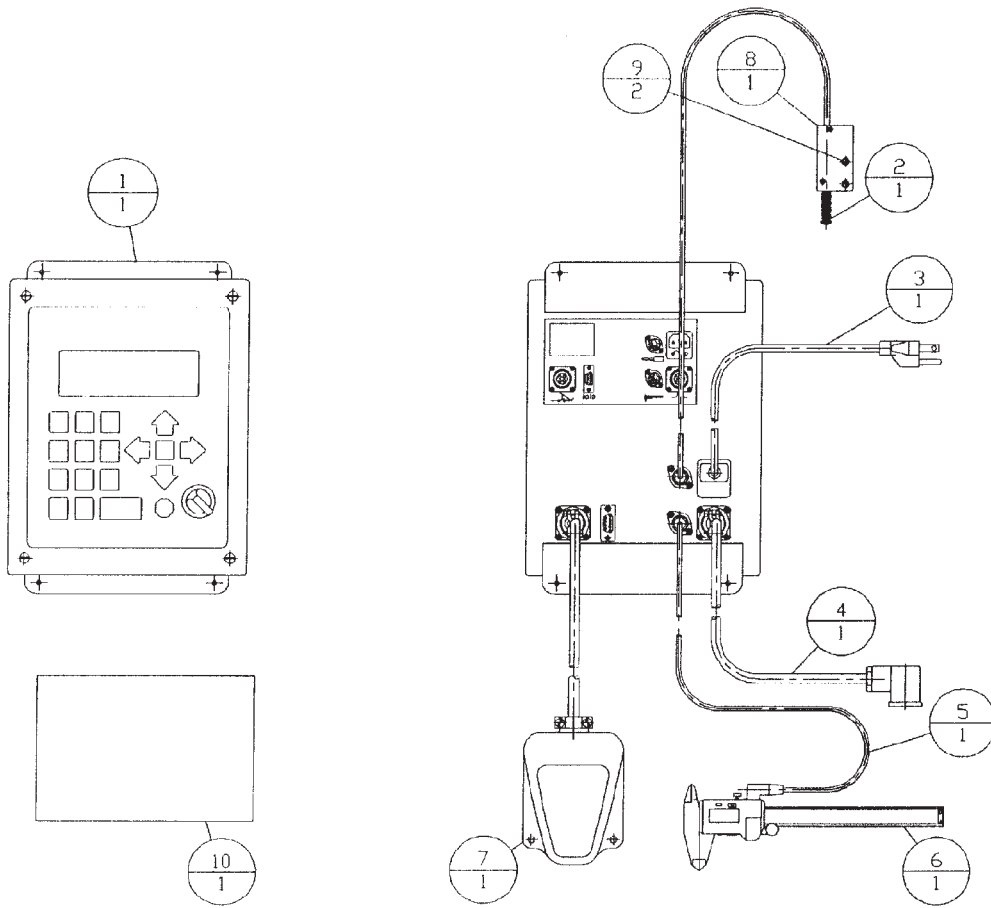
Power source for Crimputer and electronic caliper	115/230 VAC, 50/60 Hz
1E1028, 1E1543 hoses require	145-7838 Pusher 145-7836 Spacers (two)
Oil for power supply unit	
Specification	10W
Capacity	19 liters (5 gals)
Quantities available	2P-9063, Bulk
	8T-9581, 55 Gallon
	8T-9580, 5 Gallon
	8T-9579, 1 Gallon

Order the appropriate parts listed below.
The power supply unit is ordered according to voltage specifications of user.

Part No.	Description
146-5861	Crimputer Group
131-3035	Die Bowl (up to 1 1/4 inch hose)
134-1256	Extractor Plate (up to 1 1/4 inch hose)
134-1257	Extractor Tube (up to 1 1/4 inch hose)
133-9845	Die Bowl (1 1/2 to 2 inch hose)
133-9888	Extractor Plate (1 1/2 to 2 inch hose)
133-9847	Extractor Tube (1 1/2 to 2 inch hose)
136-7955	Tee (2 required)
1U-9484	Programming Cable
Power supply (choose one)	
147-4437	Power Supply Group (115/220 VAC, 60 Hz, 1 Phase)
147-4438	Power Supply Group (220 VAC, 50 Hz, 1 Phase)

Service Parts		
Item	Part No.	Description
1	149-5477	Starter Motor
2	134-1256	Extractor Plate (up to 1.25 inch)
3	133-9888	Extractor Plate (1.5 and 2.00 inch)
4	131-3035	Die Bowl (up to 1.25 inch)
5	133-9845	Die Bowl (1.5 and 2.00 inch)
6	134-1257	Extractor Tube (up to 1.25 inch)
7	133-9847	Extractor Tube (1.5 and 2.00 inch)
8	140-2845	Crimputer
9	136-1148	Valve, 4-Way
10	147-4437	Power Supply Group, 110/220 VAC, 60 Hz, 1 Phase
11	147-4438	Power Supply Group, 220 VAC, 50 Hz, 1 Phase
12	137-7713	Nipple Assembly
13	134-5407	Hose Assembly
14	147-4439	Pressure Gauge
15	136-1092	Hose Assembly
16	134-5408	Hose Assembly
17	134-5409	Hose Assembly
18	147-4440	Solenoid Valve
19	136-1093	Hose Assembly
20	1U-5754	Hose Assembly
21	134-5406	Hose Assembly
22	145-7046	Valve Cable
23	4P-3144	Socket
24	145-7045	Caliper Cable
25	146-5862	Socket (6-Pin)
26	145-7043	Cable Assembly
27	097-5986	Socket Housing
28	147-2641	Potentiometer
29	6V-7759	Socket (5-Pin)
30	1U-9485	Power Cable
31	146-5859	Plug Socket
32	145-7044	Caliper
33	191-6624	Relief Valve
34	191-6623	Valve Handle
35	173-3227	Retainer
36	173-3228	Valve Spring
37	0S-1615	Bolt





Item	Part No.	Description
1	140-2845	Crimper
2	147-2641	Potentiometer
3	1U-9845	Power Cable
4	145-7046	Valve Cable
5	145-7045	Caliper Cable
6	145-7044	Caliper
7	145-7043	Cable Assembly
8	147-2407	Plate
9	6D-3897	Socket Head Bolt
10	152-8008	Calibration Plate

Crimper Group

Seal Kit for 145-5161 Floor Model Hose Machine

The 172-7095 Seal Kit is used to replace cylinder seals during rebuild of the 145-5161.

Reference

- NENG7001 Hydraulic Hose Assembly Tools
- NEHS0664 Crimping Caterpillar 1E294, 1E716, and 1E844 Hose and Couplings
- PECP5030 Hose and Coupling Reference Guide
- SEHS9062 Special Instruction, Use of the 9U-5792, 4C-5052, 4C-5054, 4C-3670, and 4C-3680 Hydraulic Hose Presses
- NEHS0695 Tool Operating Manual, Floor Model Hose Machine

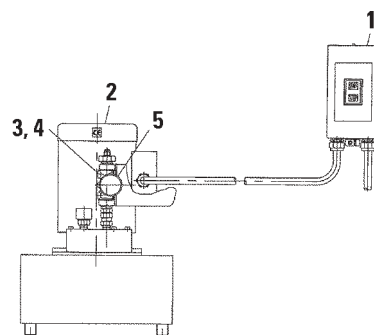


172-7095

147-4438 Power Supply Group

SMCS Code: 0684
Model: 145-5161 Floor Model Hose Machine
Warranty: One Year

- Used to supply hydraulic power
- Used with 145-5161 Floor Model Hose Machine
- Electrical: 220 VAC, 50 Hz, single phase
- CE compliant for European use



Item	Part No.	Description
1	149-5477	Starter Motor
2	136-1149	Power Supply
3	9U-6988	Head
4	9U-6978	Filter Element
5	9U-6986	Gauge

139-5439 Hose Machine (Shop Version)

145-3381 Hose Machine (Truck Version)

SMCS Code: 0684

Model: All

Warranty: Manufacturer's

- Used to make hoses with inside diameter from 4.78 mm (3/16 in) up to 32 mm (1.25 in)
- Works with reusable XT couplings or permanent couplings
- Quick, easy quality control with integral electronic caliper
- Automatic Delta Vertical Die Travel (DVDT) settings
- Crimp specifications stored internally for comparison to actual crimp diameters

Power source for Crimputer and electronic caliper	115/230 VAC, 50/60 Hz
Oil for power supply unit	
Specification	10W
Capacity	38 liters (10 gals)
Quantities available	2P-9063, Bulk 8T-9581, 55 Gallon 8T-9580, 5 Gallon 8T-9579, 1 Gallon

Depending on your application (Shop or Truck), order the appropriate parts listed below. The power supply unit is ordered according to voltage specifications of user.

Part No.	Description
Shop Version	
139-5439	Hose Machine
146-5861	Crimputer Group
145-7327	Bracket Assembly (Shop Version)
139-5442	Die Bowl
141-4868	Pusher Assembly
141-4869	Extractor Assembly
134-1257	Extractor Tube (-10 to -20)
153-9129	Extractor Tube (-3 to -8)
145-7838	Pusher (1E1543 and 1E1028 Hose)
1U-9484	Programming Cable
Power supply (choose one)	
146-2460	Power Supply Group (220 VAC, 50/60 Hz, 1 Phase)
146-2461	Power Supply Group (230/460 VAC, 60 Hz, 3 Phase)
140-6241	Power Supply Group (220/380/440 VAC, 50 Hz, 3 Phase)
149-7359	Power Supply Group (115 VAC, 60 Hz, 1 Phase)
Truck Version	
145-3381	Hose Machine
146-5861	Crimputer Group
139-5442	Die Bowl
141-4868	Pusher Assembly
141-4869	Extractor Assembly
134-1257	Extractor Tube (-10 to -20)
153-9129	Extractor Tube (-4 to -8)
160-2521	Separator (1E1543 and 1E1028 Hose)
Power supply (choose one):	
146-2460	Power Supply Group (220 VAC, 50/60 Hz, 1 Phase)
149-2941	Power Supply Group (Hydraulic Motor)



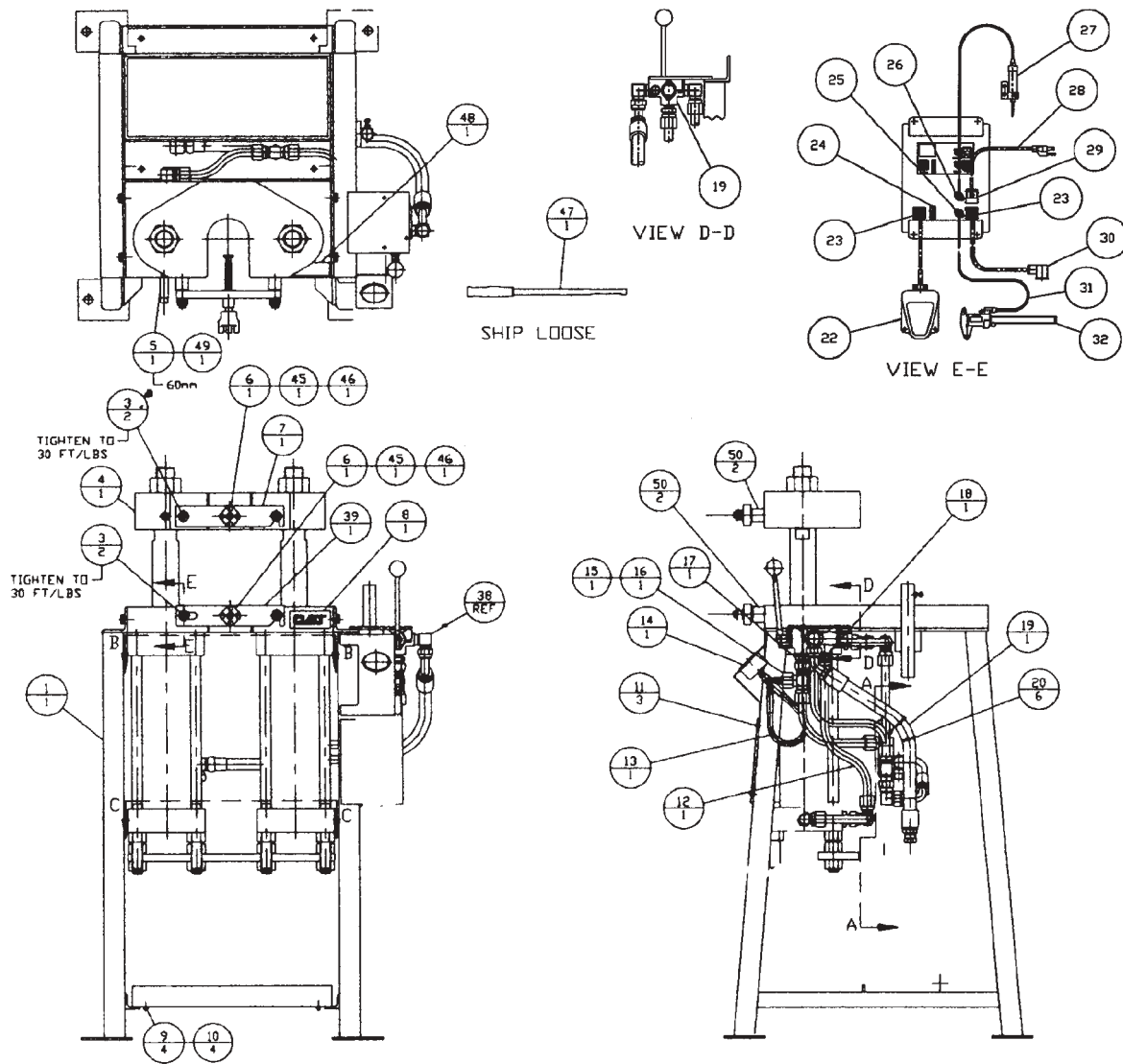
197-0718 Solenoid Valve

- Replacement valve for 139-5439 Combination Hose Machine and 145-3381 Van-Combination Hose Machine

Voltage	24VDC
Rating	90 Lpm (24 gpm) at 210 bar (3000 psi)
Orientation	normally closed

Service Parts

Part No.	Description
139-5450	Cartridge Valve
197-0720	Body Valve
145-3382	Coil Valve

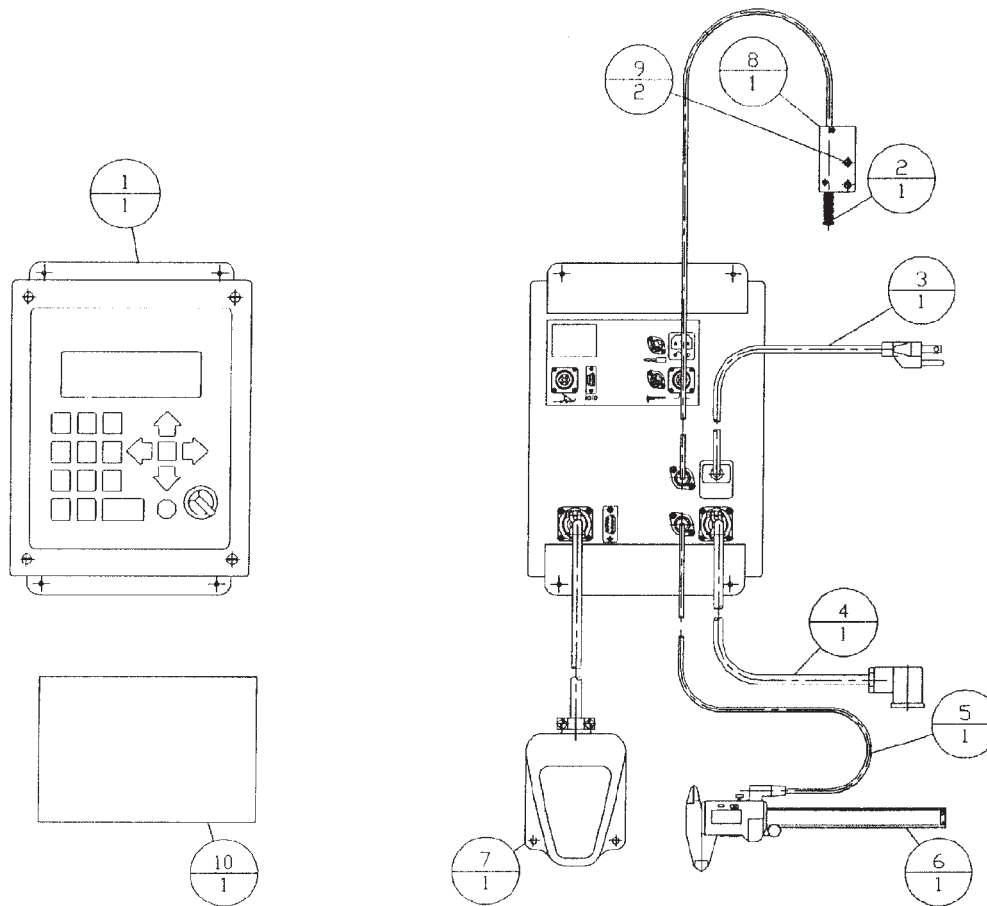


Service Parts for Combination Hose Machine

Item	Part No.	Description
1	141-2377	Stand Assembly
2	5P-3411	Elbow
3	8T-9377	Bolt
4	140-6235	Hydraulic Cylinder Group
5	9X-2384	Hose
6	176-2894	Clamp
7	160-2516	Clamp Plate
8		Decal
9	0S-1615	Bolt
10	9S-8750	Full Nut
11	2N-3478	Machine Screw
12	146-6165	Tube Assembly
13	146-5849	Hose Assembly
14	145-3383	Gauge
15	061-8268	Flared Reducer
16	8M-0744	Flared Nut
17	030-8310	Flared Connector

Item	Part No.	Description
18	7D-0978	Swivel Tee
19	146-5847	Hose Assembly
20	123-3202	Cable Strap
21	197-0718	Solenoid Valve
22	146-5848	Hose Assembly
23	2P-7211	Tee O-Ring Port
24	146-5850	Tube Assembly
25	146-5851	Tube Assembly
26	146-5852	Tube Assembly
27	2P-1297	Tee O-Ring Port
28	3R-9704	Swivel Elbow
29	2P-2061	Connector
30	146-5853	Tube Assembly
31	005-9702	Union Tee
32	146-5854	Tube Assembly
33	5P-3466	Elbow O-Ring
34	146-5855	Tube Assembly

Item	Part No.	Description
35	146-5856	Tube Assembly
36	139-5449	Directional Valve
37	7B-2742	Bolt
38	001-6301	Flared Elbow
39	159-0221	Clamp Plate
40	175-0055	Spacer
41	175-0057	Spring Washer
42	7X-0772	Hard Washer
43	8T-4223	Hard Washer
44	5P-8249	Hard Washer
45	9G-9923	Spring Pin
46	176-2895	Knob
47	160-2519	Tool Bar Assembly
48		Decal
49	6D-0119	Socket Head Bolt
50	175-0056	Spacer

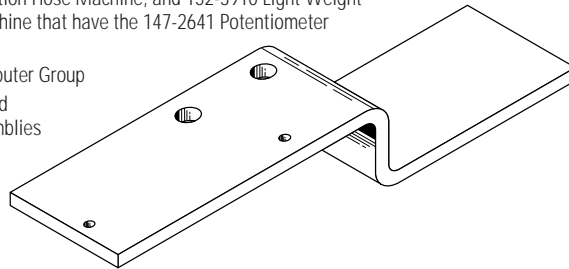


Item	Part No.	Description
1	140-2845	Crimper
2	147-2641	Potentiometer
3	1U-9485	Power Cable
4	145-7046	Valve Cable
5	145-7045	Caliper Cable
6	145-7044	Caliper
7	145-7043	Cable Assembly
8	147-2407	Plate
9	6D-3897	Socket Head Bolt
10	152-8008	Calibration Plate

Crimper Group

Optional 206-9983 Potentiometer Guard

- Used to protect 147-2641 Potentiometer from damage when changing tooling
- Can only be used on 139-5439 Combination Hose Machine, 145-3381 Van Combination Hose Machine, and 152-3910 Light Weight Combination Hose Machine that have the 147-2641 Potentiometer
- Can be used to replace 147-2407 Plate in Crimper Group
- Mounts to 141-4868 and 140-6238 Pusher Assemblies



Reference

NENG7001 Hydraulic Hose Assembly Tools
 NEHS0664 Crimping Caterpillar 1E294, 1E716, and 1E844 Hose and Couplings
 PECP5030 Hose and Coupling Reference Guide
 SEHS9062 Special Instruction, Use of the 9U-5792, 4C-5052, 4C-5054, 4C-3670, and 4C-3680 Hydraulic Hose Presses
 SEHS8587 Special Instruction, Use of 8T-5120 and 8T-5130 Crimp Tool Groups in Either the 7S-1100 Press Arrangement or 4C-9900, 1U-9160, and 6V-4880 Hydraulic Hose Service Press
 NEHS0686 Tool Operating Manual, Combination Hose Machine
 NEHS0695 Setup and Basic Operation of the 145-5161 Floor Model Hose Machine

164-0791 Seal Kit

172-0978 Piston and Rod Assembly

172-0979 Rod Gland

SMCS Code: 0684
 Warranty: Manufacturer's

- Used to replace cylinder parts during a rebuild
- Used with 139-5439 Combination Hose Machine and 145-3381 Van-Combination Hose Machine
- Seal kit repairs one cylinder (two required per hose machine)

Piston rod size	63.5 mm (2.50 in)
Piston size	152.4 (6.00 in)
Rod gland size	63.5 mm (2.50 in)

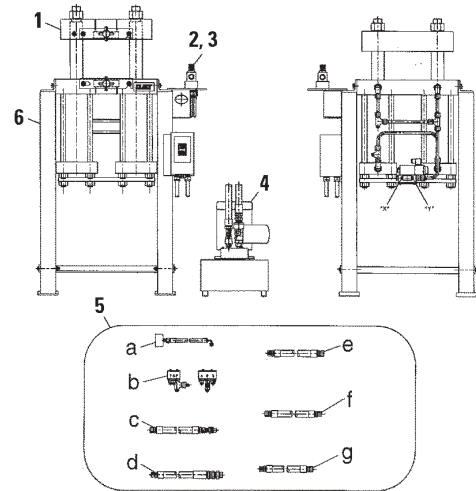


Lightweight Combination Hose Machine for Use on Service Trucks

SMCS Code: 0684

- Used to crimp -3 through -32 size hoses and all XT hoses
- Designed to be used in smaller, light-duty service trucks
- Stand assembly, cap end cylinder plate, and rod end cylinder plate are made from lightweight aluminum
- Approximately half the weight of standard combination hose machine
- Assembly required
- Supply voltage: 230 volt, 50 Hz, 1 phase

Item	Part No.	Description
1	168-8556	Cylinder Group
2	165-4215	Valve Group
3	165-4214	Directional Valve (part of 165-4215)
4	155-8532	Power Supply Group
5	168-8557	Hose Group
6	152-3914	Stand Assembly
Service Parts		
	155-8533	Power Supply
	152-8331	Cylinder Assembly
	165-4214	Directional Valve
	165-6055	Foot Switch
	165-6056	Directional Valve
	166-0655	Solenoid Valve



Hose	Hose size	Hose Installation Location Left Side	Hose Installation Location Right Side
Hose 5a	1.22 m (4 ft)	—	To tee on pressure port of subplate for directional valve
Plate 5b ¹	—	—	—
Hose 5c	1.83 m (6 ft), -8 DIN	To pressure port of subplate for directional valve	To pressure port of power supply
Hose 5d	1.83 m (6 ft), -8 1E0716	To "Y" side of tee on tank port of dump valve subplate	To filter on power supply
Hose 5e	1.22 m (4 ft), -8 DIN	To "B" port on subplate for directional valve	To tee on top end of cylinders
Hose 5f	1.22 m (4 ft), -8 DIN	To "A" port on subplate for directional valve	To tee on bottom end of cylinders
Hose 5g	1.22 m (4 ft), -8 1E0716	To "X" side of tee on tank port of dump valve subplate	To tank port of subplate for directional valve

¹ Subplate for directional valve

Reference
NEHS0726 Tool
Operating Manual

150-2568 Hydraulic Hose Machine Group

SMCS Code: 0684

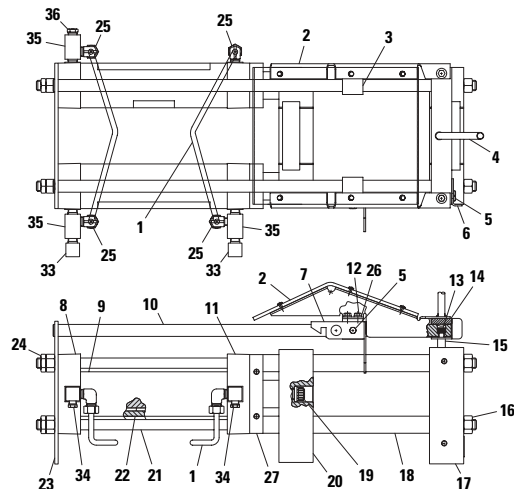
Model: All XT-3, XT-5, and XT-6 Caterpillar hydraulic hose with reusable couplings. Caterpillar hydraulic hose with permanent couplings; some size limitations on permanent couplings

- Used to assemble and disassemble all sizes of XT-3, XT-5, and XT-6 reusable couplings
- Also crimps Caterpillar permanent couplings with additional 136-3642 Crimp Tool Group and appropriate crimp dies and spacer rings
- Capable of crimping 1/4 inch through 1 1/4 inch low and medium pressure hoses

Crimping Capabilities (hose diameter in inches)

716	1/4 to 1 1/4	1E1543 ¹	3/8 to 3/4
1E294	1/4 to 1 1/4	1E1956	3/8 to 3/4
1E844	3/4 to 1 1/4	XT-3	3/8 to 3/4
1E1028	3/16 to 3/4	XT-5	3/4
1E2760	1/4 to 1/2	XT-6	3/8 to 3/4

¹ 1E1543 hose is not measured by hose I.D.



Recommended Power Supplies

1U-5555	115V, 50/60 Hz
1U-5565	230V, 50/60 Hz
4C-5080	230V, 60 Hz
171-5397	230V, 50 Hz (CE)

NOTE: A foot switch is included with each power supply listed above.

Reference

NEEG2746 Crimp Diameters Chart

NEHS0745 Assembling Reusable Couplings In the 4C-9900, 150-2568, and 173-9805 XT Hose Machines

NEHS0748 Crimping Permanent Couplings Using the 136-3642 Crimp Tool Group

NEHS0749 Crimping 1E1028 Thermoplastic Hose and 1E1543 Air Conditioning Hose

NEHS0750 Comprehensive Tooling List for Assembling and Disassembling Reusable Couplings

NEHS0768 General Information for Hose Assembly

SEBF8176 Guideline for Reusable Parts and Salvage Operation: Reusable Couplings for Caterpillar XT-3, XT-5, and XT-6 Hose

Item	Part No.	Description	Quantity	Item	Part No.	Description	Quantity
1	6V-4973	Oil Tube	2	20	150-2567	Rear Bolster	1
2	191-6671	Shield	1	21	4C-6074	Tie Rod	4
3	4C-9837	Block	2	22	191-6665	Piston Rod	2
4	1U-9681	Clamping Screw	1	23	4C-6079	Plate	1
5	4C-9835	Screw	2	24	1D-5120	Jam Nut	4
6	4C-9834	Stop	1	25	5P-4720	Fitting	4
7	195-3457	Latch	1	26	5P-0537	Hard Washer	6
8	191-6668	Piston End Cap	2	27	178-6918	Cylinder Flange	2
9	191-6670	Cylinder Barrel	2	28	NEHS0745 Manual	1	
10	4C-9833	Rail	2	29	NEHS0748 Manual	1	
11	191-6667	Rod End Cap	2	30	NEHS0749 Manual	1	
12	0S-1614	Hex Head Bolt	6	31	NEHS0745 Manual	1	
13	5S-2586	Hex Stock Head Bolt	2	32	NEHS0768 Manual	1	
14	6V-4914	Clamp Bar	1	33	135-2535	Adapter Fitting	2
15	4C-9836	Spacer	2	34	168-3349	Pipe Plug	2
16	6B-6682	Full Nut	8	35	136-2062	Fitting Adapter	3
17	173-9807	Front Bolster	1	36	3J-5390	Pipe Plug	1
18	150-2566	Spacer	4		2P-5480	Seal Kit (Not shown)	
19	1S-3794	Bolt	2				

Repair Parts for 150-2568, 4C-9900, and 173-9805 XT Hose Machines

SMCS Code: 0684
Model: 4C-9900, 150-2568, and 173-9805 XT Hose Machines

- Repair parts for repair or rebuild of XT hose machines

Repair Parts for 150-2568, 4C-9900, and 173-9805 XT Hose Machines

Part No.	Description
191-6665	Piston Assembly
5P-4720	Fitting
191-6667	Rod End Cap
191-6668	Piston End Cap
191-6670	Barrel
191-6671	Shield Group
178-6918	Cylinder Flange

150-3622 Bench Model Hose Machine

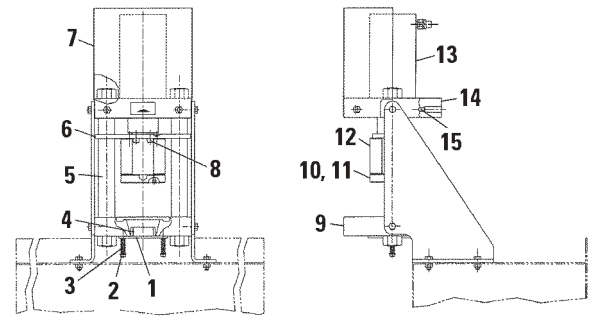
SMCS Code: 0684
Model: All

- Used to make permanent coupling hoses up through 1 1/4 inch
- Used with 161-5717 Hydraulic Power Supply or 163-5309 Power Supply (requires 162-1410 Hose Assembly)
- Compact size (easily mounted to top of workbench or optional stand)
- Uses same spacer rings as 4C-9900 or 150-2568 XT Hose Machines
- Optional 157-6123 Stand is also available

Weight	159 kg (350 lbs)
Max pressure	68900 kPa (10,000 psi)
Size (w x d)	46 x 48 cm (18.0 x 19.0 in)
161-5717 Power Supply	115/220 VAC, 60/50 Hz, single phase
163-5309 Power Supply	220 VAC, 50 Hz, single phase, CE compliant



Item	Part No.	Description
1	150-3622	Hose Machine
2	157-6125	Stand
3	162-1410	Hose Assembly
4	161-5717 163-5309	Power Supply or Power Supply



Service Parts

Item	Part No.	Description
1	161-3956	Plate
2	161-4303	Shoulder Bolt
3	160-2525	Spring
4	160-3954	Extractor Tube
5	160-3953	Threaded Rod
6	161-3957	Plate
7	160-2526	Guard
8	160-3951	Spacer
9	162-0711	Bowl Plate
10	139-5446	Half Pusher
11	139-5445	Half Pusher Assembly
12	139-5444	Pusher Tube
13	150-3624	Hydraulic Cylinder
14	161-3955	Top Plate
15	161-4304	Set Screw
Not shown	160-2275	Pusher (optional) (1E1543/1E1028 Hose)

Reference

NEHS0715 Special Instruction/Tool Operating Manual

163-5309 Power Supply (CE)

SMCS Code: 0684
Model: 150-3622 Bench Model Hose Machine
Warranty: Manufacturer's

Power supply	220 volt, 50 Hz, 1/2 HP, 2850 RPM
Pressure rating	68900 kPa (10,000 psi)
Hydraulic oil reservoir	7.6 L (2.0 gal)

- Used to provide CE compliant electric motor
- Used with 150-3622 Bench Model Hose Machine
- Operated using a remote control motor switch with 2.4 m (8 ft) cord
- Shipped with 5.7 L (1.5 gal) of hydraulic oil

Reference

NEHS0715 Tool Operating Manual

163-5469 Seal Repair Kit

SMCS Code: 0684
 Model: 150-3622 Bench Model Hose Machine
 Warranty: Manufacturer's

- Used to provide wear parts for repair of hydraulic cylinders for 150-3622 Bench Model Hose Machine

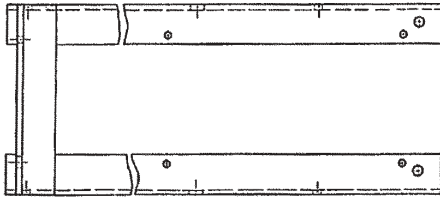
Reference

NEHS0715 Tool Operating Manual

Description	Quantity
Washers	2
Plastic Bag	1
Decal	1
Wiper	1
Retainer Ring	1
U-Cup	1
Label	1

FT2425 Stand Assembly

SMCS Code: 0684-590
 Model: All Models
 Warranty: None



- Used to adapt former 5S-2801 Press Assembly to 4C-6601 Stand Assembly to allow use of press in near vertical position
- Press will permanently crimp couplings on L/M and XT hose
- Used with 8T-5120 Tool Group

Reference

SEHS8587 and SEHS9221 Special Instructions

1U-5555 Hydraulic Pump, 60 cycle

4C-5080 Pump Group, 60 cycle

1U-5565 Hydraulic Pump, 50 cycle

SMCS Code: 0684
 Model: 6V-4900 Hose Press
 Warranty: Manufacturer's

- 1U-5555 and 4C-5080 Pump Groups replace discontinued 6V-4850 Pump Group
- 1U-5565 Pump Group replaces discontinued 6V-4890 Pump Group
- All 3 pumps equipped with electrically operated control valve, activated by foot switch; permits operator to align tools and couplings before press is activated
- 1U-5555 Pump is 1 1/2 horse-power hydraulic pump used to run either 6V-4900 Hose Press Arrangement or discontinued 7S-1100 Hose Press Arrangement
- Although 4C-5080, 1U-5555 and 1U-5565 Pumps are recommended, any of the following Caterpillar Service Pumps can be used with 6V-4900 Press:
 - 2P-5550 Pump, .5 HP, 115V 50/60 cycle
 - 2P-5500 Pump, .5 HP, 230V 50/60 cycle
 - 3S-6224 Pump, 1.12 HP, 115V 50/60 cycle
 - 8S-8033 Pump, 1.12 HP, 230V 50/60 cycle

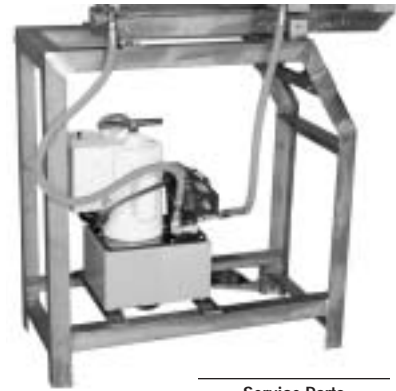


Part No.	Description
1U-5555	Hydraulic Pump
1U-5565	Hydraulic Pump
	Hose Press Stand (not included)
Not shown	
6V-4939	Foot Switch — Part of 1U-5555 and 1U-5565
1U-5557	Filter (Located in Tank)

Part No.	Description	Available power supply
1U-5555 and 4C-5080	Pump	110V 60 cycle 115V 60 cycle
1U-5565	Pump	220V 50 cycle 230V 50 cycle

4C-6601 Hose Press Stand Assembly

SMCS Code: 0684
 Model: 6V-4880 Press Assembly or 1U-9160 Press Assembly



- Alternate stand assembly for 150-2568 XT Hose Machine and 6V-4880 Press Assembly or 1U-9160 Press Assembly
- With modification, stand can be used to hold 5S-2801 Press Assembly
- Easier and faster access for crimp operations
- Welded stand for stability
- 4C-6604 Sleeve, replacement for 8T-5126 Sleeve, needed to hold 8T-5124 Bowl Assembly
- FT2357 Sleeve allows rework of 8T-5126 Sleeve from 8T-5130 Tool Group if desired
- 4C-6601 Stand Assembly holds Cat press in horizontal position for disassembly and assembly of all reusable XT3, XT5 and XT6 couplings, or in vertical position for assembly of crimped hose assemblies; vertical, or near vertical, position eliminates need to confine die sets in enclosed container giving better access to dies without removing them from press
- Pump not included with stand

Service Parts	
Part No.	Description
4C-6602	Bushing
4C-6603	Pin

6V-4974 Hose Press Stand (or FT1643 Hose Press Stand)

SMCS Code: 0684
 Model: 1U-9160 Press Assembly

- Designed to hold 150-2568 XT Hose Machine for use anywhere in the shop (not practical to install on standard work bench because 1U-9160 is larger than former 5S-2801 Press)
- Provides mounting for hydraulic pump and foot switch
- Can be fabricated if desired; drawings available
- Hydraulic pump not included with stand



Additional Parts Needed for Assembly of Either Stand		
Part No.	Description	Quantity
6F-7032	Bolt (Pump to Stand)	4
0S-0509	Bolt	14
1D-4717	Nut	12

215-9672 Oil Actuated Field Service Hose Press

SMCS Code: 0684
Model: Caterpillar XT-3 Hydraulic Hose

- Portable hose press units which make it possible to assemble and/or disassemble Caterpillar XT-3 hydraulic hose at job site
- Increases market potential for Caterpillar XT-3 hose and fittings by minimizing assembly costs and reducing downtime
- Capable of fabricating and reclaiming fittings from 3/8 inch through 1 1/4 inch I.D. hose assemblies
- Includes 1U-7541 Ram Group (30 ton), oil actuated with 38,1 (1.5 inch) stroke; 1U-7541 Ram Group requires hand operated 2D-2825 Hydraulic Pump which must be obtained separately
- Presses manually actuated with standard ratchet wrench for hose sizes 3/8 inch through 1 inch I.D.; hydraulic ram provides force necessary for sleeve installation for 1 1/4 inch I.D. hose
- 4C-4379 Ram Support was designed to support 1U-7541 Ram; 5P-8735 Ram Support will continue to be stocked for those having 5P-4166 Ram Group

Reference
SEHS6834 Special Instruction

Hose Cutting Tools for 5P-0170 and 5P-4180 Press

SMCS Code: 0684
Model: XT-3 Hydraulic Hose

- Used with 5P-0170 or 5P-4180 Hose Press Arrangement (tools available separately)
- Provide faster, easier method for cutting XT-3 Hydraulic Hose from sizes 9,7 mm (.38 in) to 32 mm (1.25 in)
- When hose press is mounted on FT1235 Bracket Assembly, a 102 mm (4.00 in) clearance opening in bracket provides access for insertion of hose into cut-off tools (drawing for FT1235 available)



Item	Part No.	Description
1	5P-4188	Anvil
2	5P-4186 5L-4719	Knife Holder Screw (three)
3	7S-5173	Knife — Not part of 5P-4186



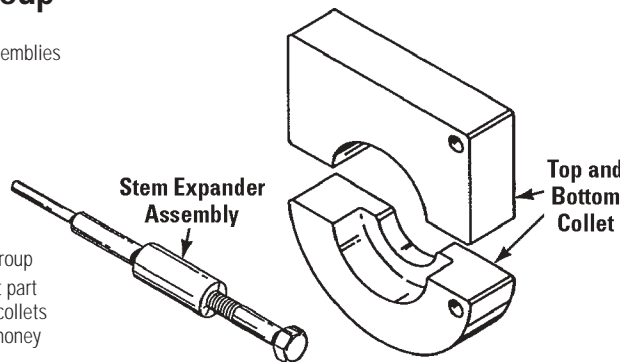
Part No.	Description
FT1235	Bracket Assembly

Reusable Couplings

4C-9480 Hose Tooling Group

SMCS Code: 0684
Model: All Models with XT5 and XT6 Hose Assemblies

- Used to attach sleeve and stem fittings onto XT5 and XT6 hoses using a 4C-9900 Hose Press Group (4C-9480 comes complete with all collets required for XT5 and XT6 Hoses)
- Replaces discontinued 4C-9903 Hose Tool Group
- New tool group contains additional tools not part of original 4C-9903 group (adding indicated collets will upgrade 4C-9903 to 4C-9480 and save money by utilizing existing collets)
- All collets are sold separately if replacement is required
- New collets are designed to better fit XT5 and XT6 hoses
- Collets are heat-treated for increased life and durability



4C-9422 and 4C-9423	1.25 in XT6 Stem
4C-9433 and 4C-9474	1.25 in XT5 and XT6 Sleeve
6V-4915 and 6V-4916	.75 in XT5 Stem
6V-4917 and 6V-4918	.75 in XT6 Stem and 1.00 in XT5 Stem
6V-4919 and 6V-4921	.75 in XT5 Sleeve and 1.25 in XT5 Stem
6V-4922 and 6V-4923	1.00 in XT6 Sleeve and 1.50 in XT6 Sleeve
6V-4924 and 6V-4925	1.50 in XT5 Sleeve, 1.50 in XT6 Sleeve, and 2.00 in XT6 Stem
6V-4926 and 6V-4927	2.00 in XT5 Sleeve
8T-0815 and 8T-0816	1.00 in XT5 Sleeve and 1.50 in XT5 Stem
122-7321 and 122-7322	1.25 XT5 Stem

Part No.	Description
4C-9422	Top Collet
4C-9423	Bottom Collet
4C-9433	Top Collet ¹
4C-9474	Bottom Collet ¹
6V-4915	Top Collet ¹
6V-4916	Bottom Collet ¹
6V-4917	Top Collet ¹
6V-4918	Bottom Collet ¹
6V-4919	Top Collet ¹
6V-4921	Bottom Collet ¹
6V-4922	Top Collet ¹
6V-4923	Bottom Collet ¹
6V-4924	Top Collet ¹
6V-4925	Bottom Collet ¹
6V-4926	Top Collet
6V-4927	Bottom Collet
8T-0815	Top Collet ¹
8T-0816	Bottom Collet ¹
122-7321	Top Collet
122-7322	Bottom Collet
170-5683	Stem Expander Assembly
170-5684	Stem Expander Assembly
170-5685	Stem Expander Assembly
170-5686	Stem Expander Assembly

Reference

SEHS7957 Special Instruction, Use of 6V-4900 Hydraulic Hose Service Press Arrangement

¹ These tools were part of discontinued 4C-9903 Hose Tooling Group

215-9673 Accessory Group

SMCS Code: 0684

Model: All Machines with Hydraulic Hose Assemblies

- Replaces discontinued 4C-9901 Hose Press Accessory Group
- Used with 4C-9900 Hose Press Group
- 215-9673 Accessory Group contains newly released 136-3604 Stem Pusher and 136-3603 Hose Mandrel
- Former 4C-9901 Group can be updated by adding 136-3604 and 136-3603

136-3604 Stem Pusher and 136-3603 Hose Mandrel

- Used to quickly and easily remove 51 mm (2.0 in) XT3 and XT5 hose couplings when used with new set screw type hose collets
- Both parts can be purchased separately
- All gripping areas have a knurled surface



Reference

SEHS7957 Special Instruction

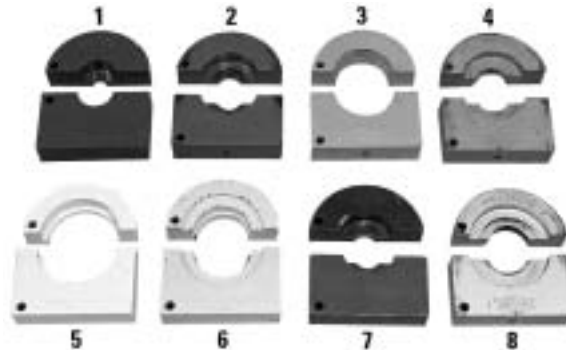
Item	Part No.	Description	Size
1	7S-1125	Protractor	
2	7S-1126	Skiving Group	
3	4C-6187	Collet	
	4C-6188	Collet	
	8T-3158	Plate	
4	4C-5887	Collet	3/8 inch
	4C-5888	Collet	1/2 inch
	4C-5889	Collet	3/4 inch
	4C-5890	Collet	1 inch
	4C-5891	Collet	1 1/4 inch
	4C-5892	Collet	1 1/2 inch
	4C-5893	Collet	2 inch
5	1U-9673	Top Collet	.38 inch, .50 inch, .75 inch
	1U-9674	Bottom Collet	.38 inch, .50 inch, .75 inch
	1U-9675	Top Collet	1 inch, 1.25 inch
	1U-9676	Bottom Collet	1 inch, 1.25 inch
	1U-9677	Top Collet	1.5 inch
	1U-9678	Bottom Collet	1.5 inch
	1U-9679	Top Collet	2 inch
	1U-9680	Bottom Collet	2 inch
6	6V-4913	Pusher Slotted Plate	
7	6V-4912	Pusher Plate	
8	5S-2805	Expander	3/8 inch
	5S-2811	Expander	1/2 inch
	5S-2823	Expander	3/4 inch
	5S-2837	Expander	1 1/4 inch
	5S-2843	Expander	1 1/2 inch
	5S-2849	Expander	2 inch
	5P-0973	Expander	1 inch
9	6V-4961	Mandrel	3/4 inch
	6V-4962	Pusher Assembly	3/4 inch
	6V-4963	Mandrel	1 inch
	6V-4964	Pusher Assembly	1 inch
	8T-3058	Mandrel	1 1/4 inch
	8T-3059	Pusher Assembly	1 1/4 inch
	8T-3060	Mandrel	1 1/2 inch
	8T-3061	Pusher Assembly	1 1/2 inch
	136-3603	Mandrel	2 inch
	136-3604	Pusher	2 inch
10	170-5688	Stem Expander Assembly	3/8 inch
	170-5687	Stem Expander Assembly	1/2 inch
	170-5689	Stem Expander Assembly	3/4 inch
	170-5690	Stem Expander Assembly	1 inch
	5P-5234	Stem Expander Assembly	1 1/4 inch
	5P-5235	Stem Expander Assembly	1 1/2 inch
	5P-5236	Stem Expander Assembly	2 inch
11	7S-5088	Arbor Assembly	3/8 inch, 1/2 inch, 5/8 inch
	5S-2858	Arbor Assembly	3/4 inch, 1 inch
	5S-2861	Arbor Assembly	1 1/4 inch, 1 1/2 inch, 2 inch
13	5S-2808	Stem Pusher	3/8 inch
	5S-2814	Stem Pusher	1/2 inch
	5S-2826	Stem Pusher	3/4 inch
	5S-2834	Stem Pusher	1 inch
	5S-2840	Stem Pusher	1 1/4 inch
	5S-2846	Stem Pusher	1 1/2 inch
	5S-2852	Stem Pusher	2 inch

4C-9902 Hose Tool Group, XT-3

SMCS Code: 0684

Model: Hydraulic Pump

- Used with 4C-9900 Hose Press Group



Item	Part No.	Description	Size
1	6V-4886	Top Collet	3/8 inch
	6V-4887	Bottom Collet	3/8 inch
2	9U-6743	Top Collet	1/2 inch
	9U-6744	Bottom Collet	1/2 inch
3	6V-4893	Top Collet	1 inch
	6V-4894	Bottom Collet	1 inch
4	6V-4891	Top Collet	3/4 inch
	6V-4892	Bottom Collet	3/4 inch
5	6V-4899	Top Collet	2 inch
	6V-4901	Bottom Collet	2 inch
6	6V-4897	Top Collet	1 1/2 inch
	6V-4898	Bottom Collet	1 1/2 inch
7	6V-4902	Top Collet	3/8 inch
	6V-4903	Bottom Collet	3/8 inch
8	6V-9069	Top Collet	1 1/4 inch
	6V-9070	Bottom Collet	1 1/4 inch

Reference

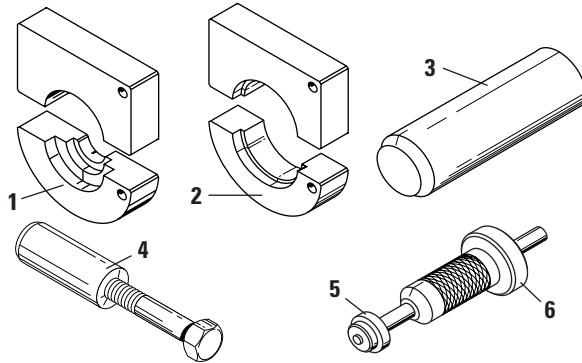
SEHS7957 Special Instruction

209-5516 Hose Tool Group (Integrated Hex)

SMCS Code: 0684

Model: 4C-9900, 150-2568, 173-9805, 139-5439, 145-3381, and 152-3910 Hose Machines
Essential Tool

- Used to assemble and disassemble XT-6 ES reusable couplings with integrated hex
- Used with 3/4 and 1 inch integrated hex design reusable couplings
- Color coded for easy identification
- 197-5396 and 197-5391 Stem Expander Assemblies are used with 6V-4961 and 6V-4961 Mandrels (not part of group)
- Material: steel



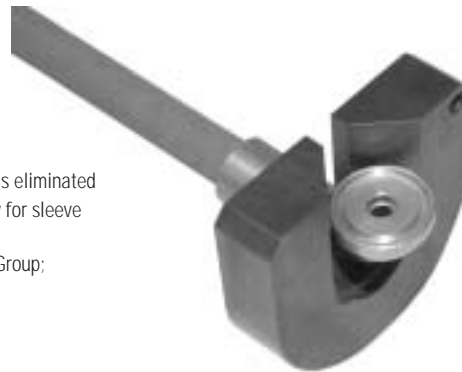
Service Parts		
Stem Collet (Item 1) and Sleeve Collet (Item 2)		
197-5379	Top Collet	-12 XT-6 ES Stem
197-5380	Bottom Collet	-12 XT-6 ES Stem
197-5381	Top Collet	-12 XT-6 ES Sleeve
197-5382	Bottom Collet	-12 XT-6 ES Sleeve
197-5383	Top Collet	-16 XT-6 ES Stem
197-5384	Bottom Collet	-16 XT-6 ES Stem
197-5385	Top Collet	-16 XT-6 ES Sleeve
197-5386	Bottom Collet	-16 XT-6 ES Sleeve
Stem Pusher (Item 3)		
197-5392	Stem Pusher	-12 XT-6 ES
197-5394	Stem Pusher	-16 XT-6 ES
Stem Expander Assemblies (Item 4)		
197-5396	Stem Expander Assembly	-12 XT-6 ES
197-5391	Stem Expander Assembly	-16 XT-6 ES
Stem Pusher Assemblies (Item 5)		
197-5393	Stem Pusher Assembly	-12 XT-6 ES
197-5395	Stem Pusher Assembly	-16 XT-6 ES
Mandrel (Item 6)—not part of group		

8T-3158 Plate

SMCS Code: 0684

Model: Bent-Stem or Large-Head Hose Couplings

- Used to service bent-stem or large-head hose couplings
- Solves clearance problem with a cutout where interference normally occurs
- Easy visual determination of when coupling is fully assembled because blind area is eliminated
- Can be used for hose insertion on both reusable and permanent couplings, but only for sleeve installation on reusable couplings
- Used in discontinued 6V-4880 Hose Press, which was part of 6V-4900 Hose Press Group; can service all configurations of .38 and .50 inch XT-3 couplings



1U-7614 Plate

SMCS Code: 0684

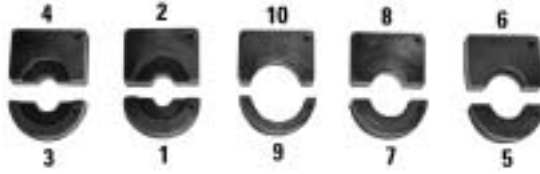
Model: XT-3 Bent Stem and Large Head Hose Couplings

- Used to service 0.38 inch and 0.50 inch XT-3 bent stem and large head hose couplings
- Designed for use with 5S-2801 Hydraulic Press Group, part of 7S-1100 Press Arrangement; cannot be used with 6V-4880 Hydraulic Press Assembly
- Similar to 8T-3158 Plate which is used with 6V-4880
- Eliminates clearance problem, experienced with bent stem and large head hose couplings, with cutout on plate where interference occurred
- Eliminates blind area to allow visual determination of when coupling is fully assembled
- Can be used for hose insertion on both reusable and permanent couplings, but for sleeve installation only on reusable couplings



5P-5255 Collet Group

SMCS Code: 0684
Model: XT-5 Hydraulic Hose



- Used with former 7S-1100 Hydraulic Press Arrangement when working with XT-5 Hydraulic Hose and reusable couplings

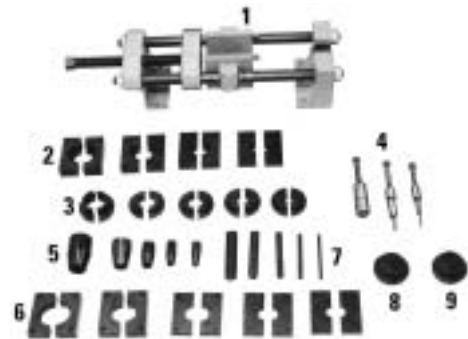
Parts included in 215-9672 Hose Presses

Item Quantity	Part No.	Description	Size	
1	Press Frame			
2	5P-0968	Stem Collet	1.25 inch I.D. Hose	2
	5P-0967	Stem Collet	1.00 inch I.D. Hose	2
	5P-0966	Stem Collet	.75 inch I.D. Hose	2
	5P-0965	Stem Collet	.38 inch and .50 inch I.D. Hose	2
Not shown	6V-9071	Stem Collet	.38 inch I.D. Hose	2
3	5P-0268	Hose Collet	.38 inch I.D. Hose	2
	5P-0269	Hose Collet	.50 inch I.D. Hose	2
	5P-0271	Hose Collet	.75 inch I.D. Hose	2
	5P-0272	Hose Collet	1.00 inch I.D. Hose	2
	5P-0273	Hose Collet	1.25 inch I.D. Hose	2
4	170-5688	Stem Expander Assembly	.38 inch I.D. Hose	2
	170-5690	Stem Expander Assembly	.75 inch I.D. Hose	2
	170-5687	Stem Expander Assembly	.50 inch I.D. Hose	2
	170-5689	Stem Expander Assembly	1.00 inch I.D. Hose	2
	5P-5234	Stem Expander	1.25 inch I.D. Hose	2
5	5S-2805	Finger Expander	.38 inch I.D. Hose	2
	5S-2811	Finger Expander	.50 inch I.D. Hose	2
	5S-2823	Finger Expander	.75 inch I.D. Hose	2
	5P-0973	Finger Expander	1.00 inch I.D. Hose	2
	5S-2837	Finger Expander	1.25 inch I.D. Hose	2
6	5P-0278	Sleeve Collet	1.25 inch I.D. Hose	2
	5P-0279	Sleeve Collet	1.00 inch I.D. Hose	2
	5P-0280	Sleeve Collet	.75 inch I.D. Hose	2
	5P-0281	Sleeve Collet	.50 inch I.D. Hose	2
	5P-0282	Sleeve Collet	.38 inch I.D. Hose	2
7	5S-2808	Stem Pusher	.38 inch I.D. Hose	2
	5S-2814	Stem Pusher	.50 inch I.D. Hose	2
	5S-2826	Stem Pusher	.75 inch I.D. Hose	2
	5S-2834	Stem Pusher	1.00 inch I.D. Hose	2
	5S-2840	Stem Pusher	1.25 inch I.D. Hose	2
8	5P-0283	Rear Abutment through hose		
9	5P-0284	Rear Abutment		
Not shown				
	1U-8760	Chain Wrench (replaces discontinued 6V-4988 Chain Wrench)		
	5P-8735	Ram Support		
	1U-7541	Ram	30 ton	
	7S-1126	Skiving Tool		
	7S-1125	Protractor Assembly		
Service Parts for the discontinued 5P-4166 Ram Group, 40 ton				
	5P-0267	Gland Nut		
	5P-0266	Seal Kit		
	1P-2375	Coupler Assembly		
	1P-7437	Cap		
Service Parts for the discontinued 5P-0174 Ram Group				
	5P-0267	Gland Nut		
	5P-0266	Seal Kit		
	2S-5925	Zerk Fitting Valve		
Service Parts for Hose Press Frame				
	5P-0256	Forcing Screw		
	5P-0257	Tie Rod		2
	5P-0259	Fork Plate		
	5P-0174	Ram Group	40 ton	
	5P-0262	Bolster		
	5P-0265	Foot		

Item	Part No.	Description	Size
1	5P-4780	Bottom Collet	.75 inch Backup
2	5P-4781	Top Collet	.75 inch Backup
3	5P-4782	Bottom Collet	1.00 inch Backup
4	5P-4783	Top Collet	1.00 inch Backup
5	5P-4784	Bottom Collet	.75 inch Sleeve
6	5P-4785	Top Collet	.75 inch Sleeve
7	5P-4786	Bottom Collet	1.00 inch Sleeve
8	5P-4796	Top Collet	1.00 inch Sleeve
9	5P-4797	Bottom Collet	1.50 inch Sleeve
10	5P-4798	Top Collet	1.50 inch Sleeve
	5P-5256	Warning Film	

Not shown

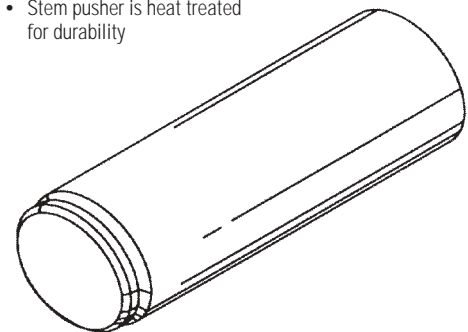
5S-2844	Top Collet	1.25 inch Sleeve
5S-2845	Bottom Collet	1.25 inch Sleeve



126-1023 Stem Pusher

SMCS Code: 5057-010
Model: All Models

- Used for sleeve and coupling removal on hose assembly of XT5, 2 inch hose assembly only, due to XT5 coupling stem I.D. being different than XT3 coupling stem I.D.
- Stem pusher is part of all new 4C-9480 Hose Tooling Group (part can be ordered separately to update former tool groups)
- Stem pusher is heat treated for durability



Reference

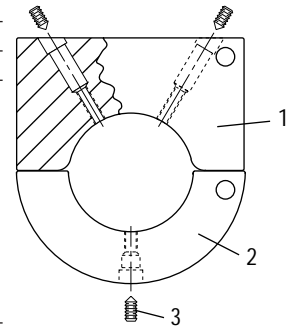
SEHS7957 Special Instruction

131-3961 Tool Group

SMCS Code: 5057
Model: All Models

Overall width	126.0 mm (4.96 in)
Thickness	31.0 mm (1.22 in)
Threaded setscrew holes	1/4-20

Item	Part No.	Description	Size
1		Top Collet	
2		Bottom Collet	
3	8C-3996	Setscrew	
	127-9924	Top Collet	19.0 mm (.75 in)
	127-9926	Bottom Collet	19.0 mm (.75 in)
	127-9928	Top Collet	25.4 mm (1.00 in)
	127-9929	Bottom Collet	25.4 mm (1.00 in)
	127-9930	Top Collet	31.8 mm (1.25 in)
	127-9931	Bottom Collet	31.8 mm (1.25 in)
	127-9933	Top Collet	38.1 mm (1.50 in)
	127-9934	Bottom Collet	38.1 mm (1.50 in)
	127-9936	Top Collet	50.8 mm (2.00 in)
	127-9937	Bottom Collet	50.8 mm (2.00 in)



Typical Top and Bottom Collet

- Used to remove couplings from XT hose assemblies [works on hoses from 19.0 mm (.75 in) to 50.8 mm (2.00 in)]
- Used with 4C-9900 Hose Press Group, 4C-9901 Hose Press Accessory Group, and three 8C-3996 Setscrews
- Collet setscrews penetrate rubber and steel belts of hose, firmly gripping hose, making coupling removal faster and easier
- Setscrews should extend approximately 6 mm (.2 in) through inside of collet
- Collets can be ordered individually or as a group (131-3961)
- All collets are heat treated for durability

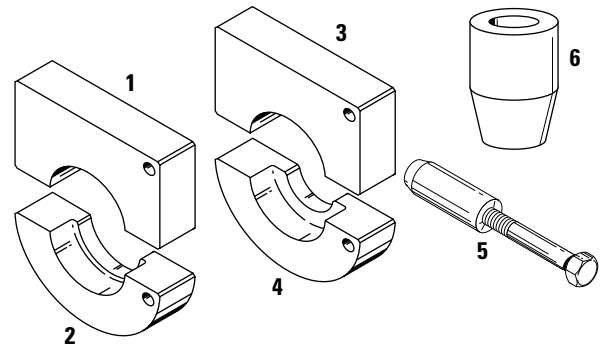
Reference

SEHS7957 Special Instruction

188-2157 Accessory Group (XT6)

SMCS Code: 0684

Item	Part No.	Description
1	188-1590	Top Collet
2	188-1591	Bottom Collet
3	188-1592	Top Collet
4	188-1593	Bottom Collet
5	188-1594	Stem Expander Assembly
6	188-1595	Finger Expander



- Used to assemble and disassemble XT6, 38 mm (1.5 in) reusable couplings
- Used with various hose assembly machines including 139-5439 Combination Hose Machine, 150-2568 XT Hose Machine, and 145-3381 Van Combination Hose Machine
- Heat-treated steel for added durability

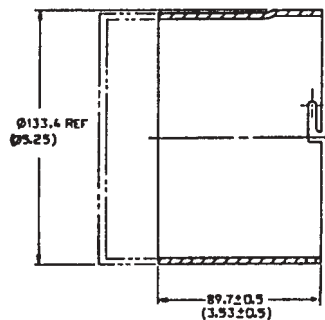
Description	Width	Steel thickness	Weight	Weight (tops)	Weight (bottoms)	Inside diameter	Outside diameter	Overall length
Top and bottom collet	127 mm (5.0 in)	31.8 mm (1.25 in)		2.04 kg (4.5 lb)	1.13 kg (2.5 lb)			
Stem expander assembly			0.68 kg (1.5 lb)				38 mm (1.5 in)	83 mm (3.3 in)
Finger expander						44.5 mm (1.75 in)	66.68 mm (2.625 in)	114 mm (4.5 in)

Permanent Couplings

8T-5120 Crimp Tool Group

SMCS Code: 0684
Model: XT-3 Permanent Couplings to XT-3 Hose

- Used to crimp XT-3 permanent couplings to XT-3 hose using discontinued 7S-1100
- Required for service support of all backhoe loaders, which are factory-equipped with permanently crimped O-ring face seal couplings



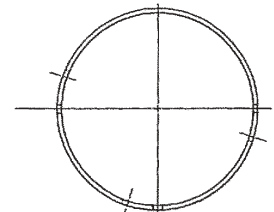
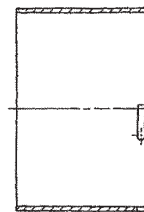
Item	Part No.	Description
1		Pusher
2		Mounting Plate
3		Bowl Assembly
Also available		
	4C-4375	Spring and Retaining Ring
	4C-4376	Spring and Retaining Ring
4		Press Ring
5		Sleeve (4C-8735 Sleeve — longer)
6		Die Set (not included)



Hose Press Crimp Tooling

8T-5120 Crimp Tooling Group for 7S-1100 Hose Press

Part No.	Description
1U-9646	Pusher
8T-5121	Mounting Plate
8T-5124	Bowl Assembly (1U-5535 Repair Kit)
8T-5125	Press Ring
4C-8735	Sleeve



Part No.	Description
4C-6604	Sleeve (replacement for 8T-5126 Sleeve)

Rework of 8T-5126 Sleeve is an option by using the fabricated drawing FT2357 Sleeve.

Part No.	Description
FT2357	Sleeve (made from 8T-5126 Sleeve)

Reference

SEHS8587 Special Instruction
SEHS9221 Special Instruction

1U-9646 Pusher

1U-9647 Pusher

1U-9648 Plate

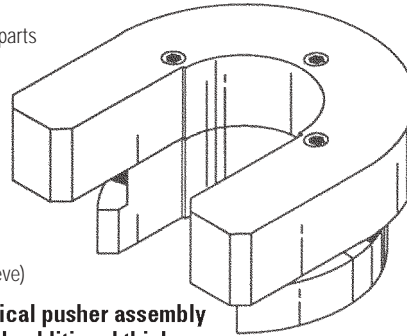
SMCS Code: 0684

Model: All Models Using XT-3 Hoses

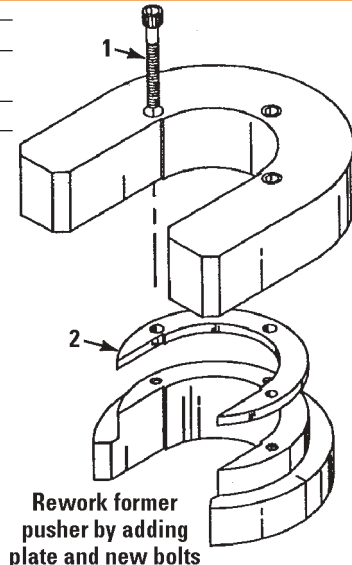
- Used to crimp permanent couplings onto XT-3 hose assemblies (new parts upgrade existing 8T-5119 and 8T-5122 Crimp Tool Groups)
- Used with 7S-1100 Hose Press Arrangement, 6V-4900 Hose Press Arrangement, and 4C-9900 Hose Press Group
- 1U-9646 Pusher replaces discontinued 8T-5119 Pusher (part of 8T-5120 Tool Group, Crimp) and 1U-9647 Pusher replaces discontinued 8T-5122 Pusher (part of 8T-5130 Tool Group, Crimp)
- Pushers are now thicker and provide 6.0 mm (.25 in) more travel
- Additional travel, provided by pusher, helps prevent lock-up of press (also prevents shearing of mounting plate pins if bolster contacts sleeve)
- Former pushers can be reworked by inserting 1U-9648 Plate between original two parts of pusher — saves expense of purchasing new tooling
- If former 8T-5119 tooling is reworked, use 2H-3764 Bolt (three required for each pusher) and if former 8T-5122 tooling is reworked, use 4L-7124 Bolt (three required for each pusher)

Overall size of 1U-9646	102 x 107 x 63 mm thick (4.0 x 4.2 x 2.5 inch thick)
Overall size of 1U-9647	125 x 127 x 69 mm thick (4.9 x 5.0 x 2.7 inch thick)
Thickness of 1U-9648	6.0 mm (.25 in)

Item	Part No.	Description
1	2H-3764 4L-7124	Bolt or Bolt
2	1U-9648	Plate



Typical pusher assembly with additional thickness



Rework former pusher by adding plate and new bolts

Reference

SEHS8587 Special Instruction

Die Groups

SMCS Code: 0684

Model: All Models

- Used to make new Caterpillar permanent coupling hose assemblies
- Used with 70 and 100 ton hose assembly machines
- Color coded for easy identification



Part No.	Dash Size	mm	Inch
XT-3 Hose (inside diameter)			
130-5381	-6	9.5	.375
130-5382	-8	12.7	.500
130-5383	-10	15.9	.625
130-5384	-12	19.1	.750
130-5385	-16	25.4	1.000
XT-5 Hose (inside diameter)			
130-5386	-12	19.1	.750
130-5387	-16	25.4	1.000
XT-6 Hose (inside diameter)			
130-5388	-6	9.5	.375
130-5389	-8	12.7	.500
130-5390	-12	19.1	.750
1028 Hose (inside diameter)			
4C-3668	-3	4.8	.188
4C-3669	-4	6.4	.250
4C-3671	-5	7.9	.312
4C-3672	-6	9.5	.375
4C-3673	-8	12.7	.500
4C-3674	-12	19.1	.750
294, 716, 844 Hose (inside diameter)			
130-2185	-4	6.4	.250
130-2186	-5	7.9	.312
130-2187	-6	9.5	.375
130-2188	-8	12.7	.500
130-2189	-10	15.9	.625
130-2190	-12	19.1	.750
130-2191	-16	25.4	1.000
130-2192	-20	31.8	1.250
130-2194	-24	38.1	1.500
130-2195	-32	50.8	2.000

Part No.	Dash Size	mm	Inch
1543 Hose (inside diameter)			
4C-3675	-6	7.9	.312
4C-3676	-8	10.3	.406
4C-3677	-12	15.9	.625
189-0990	-14	19.0	.750
1956 Hose (inside diameter)			
129-9183	-6	9.5	.375
129-9184	-8	12.7	.500
129-9185	-10	15.9	.625
129-9186	-12	19.1	.750
129-9187	-16	25.4	1.000
129-9188	-20	31.8	1.250
130-2561	-24	38.1	1.500
130-2562	-32	50.8	2.000
2760 Hose (inside diameter)			
144-4379	-4	6.4	.250
144-4380	-5	7.9	.312
144-4381	-6	9.5	.375
144-4382	-8	12.7	.500

Reference

NENG7001 Hydraulic Hose Assembly Tools
NEHS0664 Tool Operating Manual, Crimping Caterpillar 1E294, 1E716, and 1E844 Hose and Couplings
NEHS0686 Tool Operating Manual, 70 Ton Hose Assembly Machine
NEHS0695 Tool Operating Manual, 100 Ton Hose Assembly Machine

214-5155 Crimping Die Set

SMCS Code: 0685

Model: Current and non-current Hose Machines

- Used to assemble 1/2 inch (-10) air conditioning hose couplings
- Used with 134-9577 (Blue) Spacer Ring (150-2568, 150-3622, 139-5439, 145-3381, and 152-3910 Hose Machines without a crimpeter)
- Used with 134-9589 (Blue) Spacer Ring (4C-3660, 4C-5052, 4C-5053, 9U-5792, and 9U-7261 Non-current Hose Machines)
- For crimpeter controlled machines use a DV DT of 6.20 (This may vary slightly due to a stack-up of tolerances.).

Die Groups for XT6-ES Hose

SMCS Code: 0684

Model: All Hose Machines

- Used to crimp permanent couplings onto XT6-ES hose
- Used with hose crimping machines
- Dies are color coded and part number stamped
- Made of 4140 heat-treated steel
- Designed to meet Caterpillars crimp specifications

NOTE: Use BLACK spacer ring in all hose machines requiring spacer rings or use Menu on machines equipped with a Crimpeter. Contact CSTG for latest version of Crimpeter software.

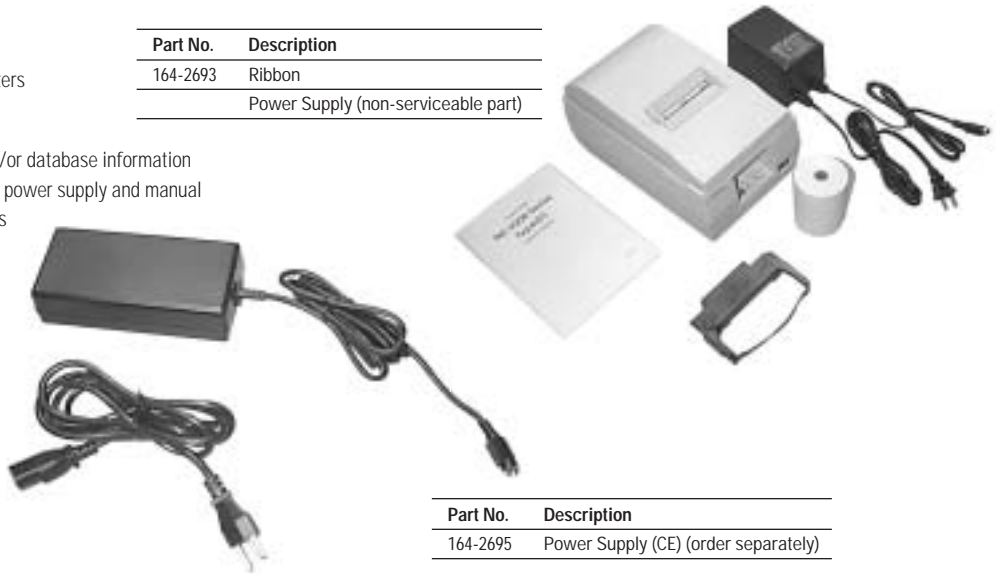
Part No.	Description
191-0800	Die Group XT6-ES (-6)
191-0801	Die Group XT6-ES (-8)
191-0802	Die Group XT6-ES (-10)
191-0803	Die Group XT6-ES (-12)
191-0804	Die Group XT6-ES (-16)
Service Parts	
138-9366	Belt for -6 and -8 dies
129-0460	Belt for -10, -12, and -16 dies

164-2691 Printer Group

SMCS Code: 0684
Model: Hose Machines Equipped with Crimputers
Warranty: One Year

Part No.	Description
164-2693	Ribbon
	Power Supply (non-serviceable part)

- Used to print crimp data from crimputer and/or database information
- Shipped with printer, ribbon, 1 roll of paper, power supply and manual
- Printer is matched to crimputer requirements
- Small and compact in size
- Uses 76 mm (3.0 in) roll paper, available locally
- Requires crimputer software, Rev. 1.10A or higher, for printing
- Requires 164-2692 Cable (order separately)
- Dimensions: 159 x 248 x 133 mm (6.3 x 9.8 x 5.3 in)
- Power supply: 115 VAC, 60 Hz
- 164-2695 Power Supply is CE compliant (not part of 164-2691)



Part No.	Description
164-2695	Power Supply (CE) (order separately)

136-3642 Crimp Tool Group for 4C-9900 and 6V-4900 Presses

SMCS Code: 5057-010

- Allows the 4C-9900 and 6V-4900 Hydraulic Hose Service Press to crimp through 1.25 inch I.D. hose
- Uses same die groups and spacer rings as modified 8T-5120 and 8T-5130 Crimp Tool Group

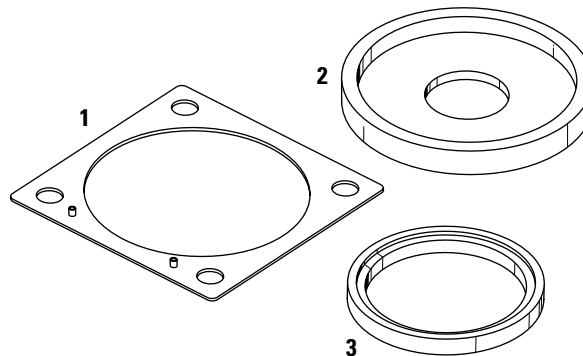
Item	Part No.	Description
1	136-3641	Pusher Group
2	136-3635	Sleeve
3	136-3640	Support Group
Not shown (order separately)		
	8T-5124	Bowl Assembly
	135-4561	Separator
	133-7362	Die Rest
	140-9360	SeparatorRing



Spacer Rings, Plate Stops, and Spacer Plate Assemblies

SMCS Code: 0684
Model: All Models

- Used to crimp permanent couplings using Caterpillar die groups
- Used with 70 ton hose assembly machine
- Provides an economical method to crimping couplings (does not require Crimputer)
- Allows die groups to crimp different types of hoses
- Color coded for easy identification



Item	Part No.	Description
1	135-4288	Spacer Plate Assembly
	135-4289	Spacer Plate Assembly
	135-4290	Spacer Plate Assembly
	135-4291	Spacer Plate Assembly
2	134-9581	Stop Plate
	134-9582	Stop Plate
	134-9583	Stop Plate
3	134-2787	Spacer Ring
	134-2788	Spacer Ring
	134-9571	Spacer Ring
	134-9572	Spacer Ring
	134-9573	Spacer Ring
	134-9574	Spacer Ring
	134-9575	Spacer Ring
	134-9576	Spacer Ring
	134-9577	Spacer Ring
	134-9578	Spacer Ring
	134-9579	Spacer Ring
	134-9580	Spacer Ring
	134-9585	Spacer Ring
	134-9586	Spacer Ring
	134-9587	Spacer Ring
	134-9588	Spacer Ring
	134-9589	Spacer Ring
	134-9590	Spacer Ring
	134-9593	Spacer Ring
134-9594	Spacer Ring	

Reference

NEHG0664 Tool Operating Manual, Crimping Caterpillar 1E294, 1E716, and 1E844 Hose and Couplings
NEHG0686 Tool Operating Manual, 70 Ton Hose Assembly Machine

1 1/2 and 2 Inch I.D. Hose Plate Selection					
DVDT	0.00	2.28	2.64	3.04	7.93
Pusher	134-9582	134-9582	134-9582	134-9582	134-9582
Color	BLACK	BLACK	BLACK	BLACK	BLACK
Spacer		135-4288	135-4289	135-4291	135-4290
Color		YELLOW	GREEN	RED	BLUE

Die Group and Spacer Rings for 4C-9900, 7S-1100, 150-2568 and 6V-4900 Hose Machines									
Crimping Die Group and DVDT Selection Chart									
	Hose ID (mm)	6.35		7.94		9.53		12.70	
	Hose ID (in)	1/4		5/16		3/8		1/2	
	Dash No.	-4		-5		-6		-8	
	Color	RED		PURPLE		YELLOW		BLUE	
Hose Type	Lay Line Color Type Color	Die Group	DVDT	Die Group	DVDT	Die Group	DVDT	Die Group	DVDT
1E294	PINK BLUE	130-2185	Varies	130-2186 PINK	Varies	130-2187	Varies	130-2188	Varies
1E716	BLUE BLUE	130-2185	Varies	N.A.	N.A.	130-2187	Varies	130-2188	Varies
1E844	ORANGE BLUE	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
1E1956	GREEN GREEN	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
1E736 (XT-3)	YELLOW YELLOW	N.A.	N.A.	N.A.	N.A.	130-5381	0	130-5382	0
1E1036 (XT-5)	RED RED	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
1E1136 (XT-6)	WHITE WHITE	N.A.	N.A.	N.A.	N.A.	130-5388	0	130-5389	0
	Hose ID (mm)	15.88		19.05		25.4		31.75	
	Hose ID (in)	5/8		3/4		1		1 1/4	
	Dash No.	-10		-12		-16		-20	
	Color	ORANGE		GREEN		BLACK		WHITE	
Hose Type	Lay Line Color Type Color	Die Group	DVDT	Die Group	DVDT	Die Group	DVDT	Die Group	DVDT
1E294	PINK BLUE	130-2189	Varies	130-2190	Varies	130-2191	Varies	130-2192	Varies
1E716	BLUE BLUE	130-2189	Varies	130-2190	Varies	130-2191	Varies	130-2192	Varies
1E844	ORANGE BLUE	N.A.	N.A.	130-2190	6.6	130-2191	5.4	130-2192	2.2
1E1956	GREEN GREEN	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
1E736 (XT-3)	YELLOW YELLOW	130-5383	0	130-5384	0	N.A.	N.A.	N.A.	N.A.
1E1036 (XT-5)	RED RED	N.A.	N.A.	130-5386	0	N.A.	N.A.	N.A.	N.A.
1E1136 (XT-6)	WHITE WHITE	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

Spacer Rings Selection Chart for Hose Up to 1.25 Inch I.D.									
DVDT	-0.4	0	+0.4	+1.4	+1.8	+2.2	+2.6	+3	+3.4
Upper									134-9578
Color									RED
Lower	134-2787	134-9572	134-2788	134-9573	134-9574	134-9575	134-9576	134-9577	134-9573
Color	PURPLE	BLACK	GRAY	RED	ORANGE	YELLOW	GREEN	BLUE	RED
DVDT	+5	+5.4	+5.8	+6.2	+6.6	+7			
Upper	134-9578	134-9580	134-9580	134-9580	134-9580	134-9580			
Color	RED	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW			
Lower	134-9577	134-9573	134-9574	134-9575	134-9576	134-9577			
Color	BLUE	RED	ORANGE	YELLOW	GREEN	BLUE			

Hose Presses 4C-3660, 4C-5052, 9U-5792 and 9U-7261 Crimping Die Group and DVDT Selection Chart											
	Hose ID (mm)	6.35		7.94		9.53		12.70		15.88	
	Hose ID (in)	1/4		5/16		3/8		1/2		5/8	
	Dash No.	-4		-5		-6		-8		-10	
	Color	RED		PURPLE		YELLOW		BLUE		ORANGE	
Hose Type	Lay Line Color	Die Group	DVDT	Die Group	DVDT	Die Group	DVDT	Die Group	DVDT	Die Group	DVDT
1E294	PINK	130-2185	3.00	130-2186	0.00	130-2187	1.80	130-2188	3.00	130-2189	1.40
	BLUE			PINK							
1E716	BLUE	130-2185	0.00	N.A.	N.A.	130-2187	0.00	130-2189	0.00		
	BLUE										
1E844	ORANGE	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
	BLUE										
1E1956	GREEN	N.A.	N.A.	N.A.	N.A.	129-9183	0.00	129-9184	0.00	129-9185	0.00
	GREEN										
1E736	YELLOW	N.A.	N.A.	N.A.	N.A.	130-5381	0.00	130-5382	0.00	130-5383	0.00
(XT-3)	YELLOW										
1E1036	RED	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
(XT-5)	RED										
1E1136	WHITE	N.A.	N.A.	N.A.	N.A.	130-5388	0.00	130-5389	0.00	N.A.	N.A.
(XT-6)	WHITE										
	Hose ID (mm)	19.05		25.4		31.75		38.10		50.8	
	Hose ID (in)	3/4		1		1 1/4		1 1/2		2	
	Dash No.	-12		-16		-20		-24		-32	
	Color	GREEN		BLACK		WHITE		RED		GREEN	
Hose Type	Lay Line Color	Die Group	DVDT	Die Group	DVDT	Die Group	DVDT	Die Group	DVDT	Die Group	DVDT
1E294	PINK	130-2190	2.60	130-2191	2.20	130-2192	1.80	130-2194	2.28	130-2195	2.64
	BLUE										
1E716	BLUE	130-2190	0.00	130-2191	0.00	130-2192	0.00	130-2194	0.00	130-2195	0.00
	BLUE										
1E844	ORANGE	130-2190	6.6	130-2191	5.4	130-2192	2.2	130-2194	7.93	130-2195	3.04
	BLUE										
1E1956	GREEN	129-9186	0.00	129-9187	0.00	129-9188	0.00	129-2561	0.00	129-2562	0.00
	GREEN										
1E736	YELLOW	130-5384	0.00	130-5385	0.00	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
(XT-3)	YELLOW										
1E1036	RED	130-5386	0.00	130-5387	0.00	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
(XT-5)	RED										
1E1136	WHITE	130-5390	0.00	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
(XT-6)	WHITE										

Spacer Rings Selection Chart for Hose Up to 1.25 Inch I.D.											
DVDT	-0.4	0.00	+0.40	+1.40	+1.80	+2.20	+2.60	+3.00	+3.40	+5.00	+5.40
	(PLATE)										
Upper	134-9581							134-9590	134-9590	134-9593	
Color	PURPLE	4C-4378						RED	RED	YELLOW	
	BOWL										
Lower		134-9594	134-9585	134-9586	134-9587	134-9588	134-9589	134-9585	134-9589	134-9585	
Color		GRAY	RED	ORANGE	YELLOW	GREEN	BLUE	RED	BLUE	RED	
DVDT	+5.80	+6.20	+6.60	+7.00							
Upper	134-9593	134-9593	134-9593	134-9593							
Color	YELLOW	YELLOW	YELLOW	YELLOW							
Lower	134-9586	134-9587	134-9588	134-9589							
Color	ORANGE	YELLOW	GREEN	BLUE							

Measuring Tools

SMCS Code: 0700

- Make crimp diameter measurement fast and easy
- Automatically averages four measurements
- Provides printed record of measurements
- Battery or AC operated

- Flexible for all measurements
- Convenient foot switch
- Measuring tool can be used with any hose machine without crimper
- If you have purchased the 100 Ton Cat Crimper Press you do not need this tool.

Part No.	Description
136-0536	Caliper
136-0538	Cable
136-0539	Foot Switch
136-0544	Processor
136-4219	AC Adapter



Miscellaneous

130-6061 Hose Cleaner Group

SMCS Code: 5057-070, 0738

Model: All Machines with Hydraulic Hoses, Tubes, and Hoses

Warranty: One Year

- Used to clean hydraulic lines while machine is at the job site (removes waste and contaminants from internal surfaces of tubes, lines and hoses)
- Tubes and/or lines do not have to be removed from machine; simply disconnected at both ends
- Cleaning inside diameters of tubes reduces risk of component failure and increases service life of filters
- Clean hydraulic systems result in reduced equipment maintenance costs (less wear) and increased productivity (more time on the job)
- Projectile is forced through tubes with air pressure or nitrogen gas
- Operating instructions and carrying case included
- Operating pressure: 600 to 800 kPa (90 to 115 psi)
- Maximum travel distance of projectile: 1000 m (3000 ft)

Hose Cleaning Projectiles		
Caterpillar Projectile No.	Ultra Clean Projectile No. (diameter x length)	Quantity per Bag
215-4565	UC06 x 11	100
215-4566	UC07 x 12	100
215-4567	UC10 x 14	100
215-4568	UC12 x 16	100
215-4569	UC14 x 18	100
215-4570	UC16 x 20	100
215-4571	UC18 x 22	100
215-4572	UC20 x 25	100
215-4573	UC22 x 25	100
215-4574	UC24 x 30	100
215-4575	UC26 x 33	50
215-4576	UC30 x 36	40
215-4577	UC33 x 40	40
215-4578	UC36 x 45	30
215-4579	UC40 x 50	30
215-4580	UC45 x 55	20
215-4581	UC50 x 60	20
215-4582	UC55 x 65	15
215-4583	UC60 x 70	15
215-4584	UC65 x 80	15

Part No.	Description
130-6062	Adapter Ring
130-6068	Coupling Assembly, 8 (.3)
130-6069	Nozzle, H06 (.2 in)
130-6070	Nozzle, H08 (.3 in)
130-6071	Nozzle, H10 (.4 in)
130-6072	Nozzle, H13 (.5 in)
130-6073	Nozzle, H16 (.6 in)
130-6074	Nozzle, H19 (.7 in)
130-6075	Nozzle, H25 (1.0 in)
130-6076	Nozzle, H32 (1.3 in)
130-6077	Nozzle, BSP06 (.2 in)
130-6078	Nozzle, BSP10 (.4 in)
130-6079	Nozzle, BSP13 (.5 in)
130-6080	Nozzle, BSP16 (.6 in)
130-6081	Nozzle, BSP19 (.7 in)
130-6082	Nozzle, BSP25 (1.0 in)
130-6083	Nozzle, J06 (.2 in)
130-6084	Nozzle, J08 (.3 in)
130-6085	Nozzle, J10 (.4 in)
130-6086	Nozzle, J13/T13 (.5 in)
130-6087	Nozzle, J16/T16 (.6 in)
130-6088	Nozzle, J19/T19 (.7 in)
130-6089	Nozzle, J25/T22 (1.0/.9 in)
130-6090	Nozzle, J32/T25 (1.3/1.0 in)



Part No.	Description
Optional Nozzles	
130-6091	Hose Nozzle (H38), 38 mm (1.5 in)
130-6092	Hose Nozzle (H50), 50 mm (2.0 in)
130-6093	Pipe Nozzle (BSP32), 32 mm (1.3 in)
130-6094	Tube Nozzle (T08), 8 mm (.3 in)
130-6095	Tube Nozzle (T10), 10 mm (.4 in)
130-6096	Tube Nozzle (T32), 32 mm (1.3 in)
130-6097	JIC/Tube Nozzle (J38/T38), 38 mm (1.5 in)
130-6098	JIC/Tube Nozzle (J50/T50) 50 mm (2.0 in)

Reference

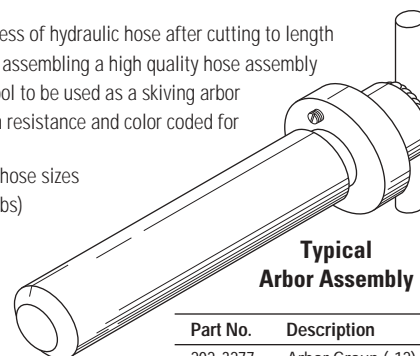
NEHS0643 Tool Operating Manual, Using the 130-6061 Hose Cleaner Group
NEHS0647 Video (operation and safety)

Hose Squareness Gauges and Skiving Arbors

SMCS Code: 0684

Model: All machines with hydraulic hose assemblies

- Used to quickly check squareness of hydraulic hose after cutting to length
- Squareness of cut is crucial in assembling a high quality hose assembly
- Dual-purpose design allows tool to be used as a skiving arbor
- Arbors are plated for corrosion resistance and color coded for easy identification
- Five arbors fit -12 through -32 hose sizes
- Weight: 0.3 to 0.9 kg (.6 to 2 lbs)
- Setscrew: 1/4-20 self-locking dog point, 12 mm (.5 in) long



Typical Arbor Assembly

Part No.	Description
202-3277	Arbor Group (-12)
202-3278	Arbor Group (-16)
202-3279	Arbor Group (-20)
202-3280	Arbor Group (-24)
202-3281	Arbor Group (-32)

Reference

NEHS0745 Tool Operating Manual, Assembling Reusable Couplings in the 4C-9900, 150-2568, and 173-9805 Hydraulic Hose Machines

NEHS0746 Tool Operating Manual, Assembly and Disassembly of Reusable Couplings in the 139-5439, 145-3381, and 152-3910 Combination Hose Machines

NEHS0768 Tool Operating Manual, General Information for Hose Assembly

127-1909 Skiving Vise

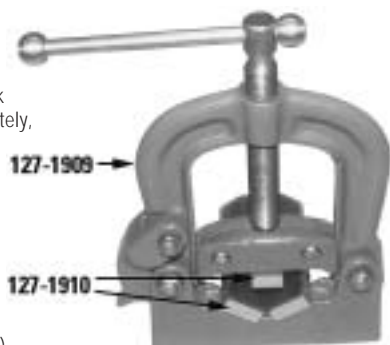
127-1910 Block Group

SMCS Code: 0684-011

Model: All Hose Sizes

Warranty: Manufacturer's

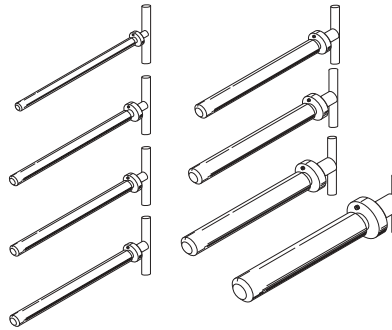
- Used to hold hydraulic hose while skiving (vise and block group are purchased separately, and then assembled)
- Vise design allows hose to be quickly removed or inserted for skiving
- Rubber blocks on vise provide a tight grip on hose (uniform block size allows skiving tool to make better and more uniform cut)
- Vise can be used for other operations with standard jaws installed
- Minimum hose size: 9.25 mm (.375 in)
- Maximum hose size: 102 mm (4.0 in)



Skive Arbor and Squareness Gauges

SMCS Code: 0684
Model: XT-3, XT-5, XT-6, and DIN Hoses

- Used to quickly and accurately check hose end for squareness
- One-piece design reduces time spent preparing hose ends
- Made from steel with zinc chromate finish (color coding matches hose identification colors)



Checking Squareness

- Squareness gauge quickly determines if hose end meets squareness specifications
- Set screw is set to specific squareness tolerance
- Check squareness by rotating gauge around hose end (if set screw touches hose all the way around, hose end is within tolerance)

Skiving Arbor

- Arbor allows hose skiving without crushing hose
- One-piece design eliminates removing squareness gauge and then inserting arbor

Part No.	Description	Hose Size	Color	Setscrew Protrusion
209-3320	Arbor Group	-6	yellow	0.762 ± 0.025 mm (.0300 ± .0010 in)
209-3322	Arbor Group	-8	blue	0.762 ± 0.025 mm (.0300 ± .0010 in)
209-3324	Arbor Group	-10	orange	1.016 ± 0.025 mm (.0400 ± .0010 in)
202-3277	Arbor Group	-12	green	1.143 ± 0.025 mm (.0450 ± .0010 in)
202-3278	Arbor Group	-16	black	1.524 ± 0.025 mm (.0600 ± .0010 in)
202-3279	Arbor Group	-20	white	2.032 ± 0.025 mm (.0800 ± .0010 in)
202-3280	Arbor Group	-24	red	2.540 ± 0.025 mm (.1000 ± .0010 in)
202-3281	Arbor Group	-32	green	3.175 ± 0.025 mm (.1250 ± .0010 in)

Reference

NEHS0750 Comprehensive Tooling List for Assembling and Disassembling Reusable Couplings

NEHS0768 General Information for Hose Assembly

XT-3 ES, XT-5, XT-6, XT-6 ES and DIN Skive Guides

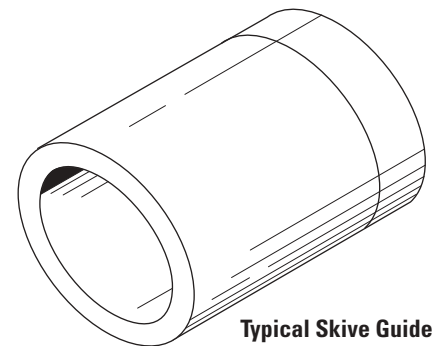
SMCS Code: 0684
Model: Used with Caterpillar XT-3 ES, XT-5, XT-6, XT-6 ES and DIN Hydraulic Hose

- Serves as a guide during skiving process to accurately mark skive length
- Made from heavy-duty steel for durability
- Color coded for easy identification

XT-5 and XT-6 Skive Guides

Material	Steel Tubing
Weight	0.2 lbs

	XT-3	XT-5	XT-6	XT-6 ES	DIN
-6	209-8633		209-8747	209-9142	133-7353
-8	209-8634		209-8748	209-9143	133-7355
-10	209-8635			209-9144	133-7356
-12	209-8636	202-6594	202-6599	209-9145	133-7357
-16	209-8637	202-6595	208-6900	209-9146	133-7358
-20	209-8638	202-6596	208-6901	209-9147	133-7359
-24	209-8639	202-6597	202-6600		133-7360
-32	209-8640	202-6598	202-8637		133-7361



Typical Skive Guide

202-6602 Hose Marking Pen

SMCS Code: 0684
Model: All Caterpillar Hose

- Used to accurately mark skive length on Caterpillar Hydraulic Hose
- Fine tipped gel pens allow precise marking
- Gold and silver color with three per package

2P-5571 Guard Kit

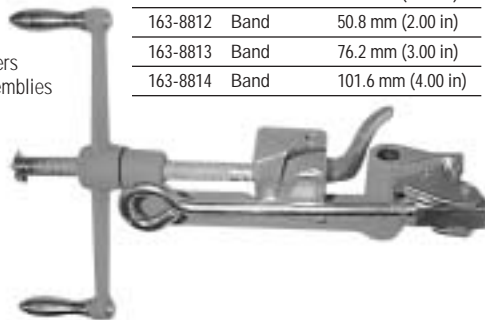
SMCS Code: 0684
Model: 5S-2801 Hydraulic Hose Press Group and 7S-1100 Press Arrangement

- Replaces 1P-1850 Guard Kit
- For use with discontinued 5S-2801 Hydraulic Hose Press Group used with former 7S-1100 Press Arrangement

166-5853 Banding Tool

SMCS Code: 0684
Warranty: Manufacturer's

- Used to clamp protective covers over hose assemblies with bands



Part No.	Description	Inside diameters
163-8811	Band	34.9 mm (1.37 in)
163-8812	Band	50.8 mm (2.00 in)
163-8813	Band	76.2 mm (3.00 in)
163-8814	Band	101.6 mm (4.00 in)



Reference

GMG00438, installation procedure

189-0990 Crimping Die Set

SMCS Code: 0684-016

Model: Current and Non-Current Caterpillar Hose Assembly Machines

- Used to crimp couplings onto 3/4 inch, dash 14 air conditioning hose
- Used with various hose machines

Material	Steel
Height	69.9 mm (2.75 in)
Diameter	102 mm (4.0 in)
Weight	2.3 kg (5 lbs)

Reference

NEHS0792 Tool Operating Manual

6V-7061 Battery Cable Crimping Die

SMCS Code: 0684

Model: 1/0, 2/0, 3/0 and 4/0 Cable Sizes

- Used with 6V-4880 Hose Press for fabrication and repair of battery cables
- Has 4 slots for crimping battery and cable terminals within size range of 1/0-4/0; each slot sized to provide proper compression when die halves are fully closed
- Can only be used in 6V-4880 Hose Press, part of 6V-4900 Hose Press Arrangement; cannot be used in former 5S-2801 Hose Press, part of 7S-1100 Press Arrangement
- 6V-7062 Repair Kit available for 6V-7061 Crimping Die; kit includes sliding die half, springs and shoulder bolts



Reference

SMHS8281 Special Instruction

8T-3046 Battery Cable Crimping Die

SMCS Code: 0684

Model: 1/0, 2/0, 3/0 and 4/0 Cable Sizes

- Replaces 9S-6331 Die Assembly
- Used with 5S-2801 Hydraulic Press Group to install terminals on 1/0, 2/0, 3/0 and 4/0 cable sizes
- Designed so terminal and cable receive correct amount of compression when die halves are fully closed



Reference

SMHS8281 Special Instruction

019-943 Hydraulic Hose Fitting Tool Kit

SMCS Code: 0684

Model: SAE 100R5 Type Hose

- Mandrels in this kit required to assemble Aeroquip J.I.C. Swivel Fitting Assemblies on SAE 100R5 type hose used on 613 Tractor-Scrapers and some lift truck models
- Mandrel used to hold nipple portion of swivel fitting while socket portion is tightened on hose



FT1798 Collet

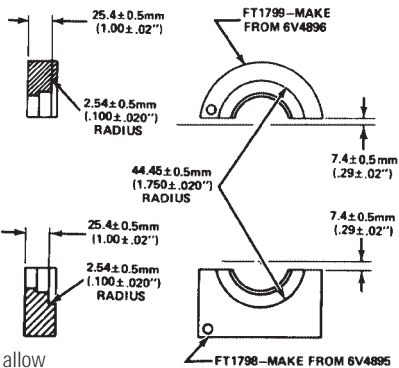
FT1799 Collet

SMCS Code: 0684

Model: 2P-0995 and 2P-0924 Couplings

Warranty: None

- Modifications of 6V-4895 Collet and 6V-4896 Collet (parts of 6V-4900 Hose Press Arrangement) so 2P-0995 and 2P-0924 Couplings can be serviced on the press (collets too thick — will not allow couplings to be properly located in press)



- Both collets must be counterbored so they can be used without interference

197-1438 Abrasive Cut Off Saw

Warranty: Manufacturer's

- Used to cut all metal shapes and reinforced hose products
- 100% ball and needle bearing motor construction
- Built-in carrying handle makes unit portable
- Quick release vise swivels 45 degrees
- Spindle lock makes cutting wheel removal fast and easy
- Includes wheel wrench for changing cutting wheels



Replacement blade	1U-6810 Abrasive Cutting Wheel
Cutting wheel diameter	35 cm (14 in)
Arbor size	25.4 mm (1.00 in)
Cutting capacity	133 mm (5.25 in) round, 70 mm (2.8 in) x 179 mm (7.0 in) rectangular, 108 mm (4.25 in) x 108 mm (4.25 in) square
Speed	3900 rpm
Voltage	120 Volt AC/DC, 25 to 60 Hz, 15 Amps
Overall size (H x W)	40 cm (15.8 in) x 27 cm (10.5 in)
Weight	20 kg (44 lbs)
Shipping weight	22 kg (49 lbs)

205-0594 Abrasive Cut Off Saw Guide Group

- Used to ensure hose end squareness when cutting hydraulic hoses to length (hose end squareness is vital to producing quality hose assembly)
- Used with 197-1438 Abrasive Cut Off Saw (only works on this model of saw)
- Works with all Caterpillar Hydraulic Hose except 1028 and 1543
- Rugged construction from 2 inch angle iron and steel plates
- Designed with handle and chain to pull hose down into cutting guide—ensures square cut
- Replaces current quick clamp on saw
- Adjustable (allows guide to be set square with blade)

Overall length	648 mm (25.5 in)
Weight	7 kg (15 lbs)
Construction	welded



Hose Cutoff Machines

SMCS Code: 0684
Model: Caterpillar XT-Hose
Warranty: Manufacturer's

- Capacity for cutting all sizes of Caterpillar XT-Hose
- Provides smoother cut surface; has lower operating cost than former 5P-6540 Cutoff Machine
- Includes cabinet base with "V" shaped hose vise and foot control hold-down chain
- Equipped with heavy-duty spindle bearings which are sealed and lubricated for life
- Cutoff wheel internally reinforced to prevent breakage
- Guards provided for cutoff wheel and drive belts
- Spark arrestor mounted in front of vise to deflect sparks
- Powered by 7.5 HP, 3 phase electric motor
- Uses 174-8912 Abrasive Cutoff Wheel, 41 cm (16 in) diameter
- Manual push button type starter equipped with thermal overload and low voltage protection
- Most electrical arrangements will drive the 7.5 HP motor by simply changing heater and coil in starter switch and changing wire connections in motor terminal box
- 6V-6015 motor comes from factory wired for 230 Volt, 3 phase, 60 Hz operation; if any other electrical supply is used, it is necessary to change three heaters and one coil in starter switch; chart lists parts used for each electrical arrangement

Part No.	Description
6V-6015	Hose Cutoff Machine, 230V, 3 Phase, 50/60 Hz
9U-7319	Hose Cutoff Machine, 230V, Single Phase, 50 Hz
9U-7320	Hose Cutoff Machine, 230V, Single Phase, 60 Hz
6V-6016	Cut-Off Wheel
Service Parts	
4C-9621	Belt Set (for all)

Optional Heaters and Coil for 6V-6015		
Electrical Supply	Heater ¹	Coil
230 V, 3 Ph, 60 Hz	2	2
230 V, 3 Ph, 50 Hz	6V-6972	2
380 V, 3 Ph, 50 Hz	6V-6974	6V-7071
460 V, 3 Ph, 50 Hz or 415 V, 3 Ph, 50 Hz ³	6V-6971	6V-7071
460 V, 3 Ph, 60 Hz	6V-6973	6V-7071

¹ Three required

² Part originally equipped at factory

³ Ph can be made special. Contact the Caterpillar Service Technology Group for more information



Optional 6V-6017 Fume Exhauster

- Only use with 6V-6015 Hose Cutoff Machine
- Wired for 220 V, 60 Hz, 3 Phase
- Optional accessory to exhaust fumes and to draw dust and debris into cabinet base where it is trapped for later removal
- Exhaust opening is 127 mm (5 in) diameter, but ducting is not included; for best efficiency use 127 mm (5 in) diameter ducting which is rigid and has smooth surface
- Ducting with maximum length of 6 meters (20 feet) and little or no bending recommended
- For use with 3 phase, 60 Hz cutoff machines only



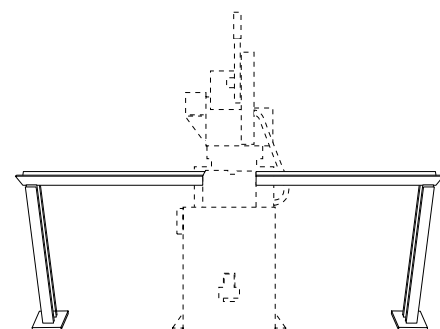
Reference

SMHS8316 Special Instruction

202-8959 Hose Cutting Guide

SMCS Code: 0684
Model: 6V-6015, 9U-7319, and 9U-7320 Hose Cutoff Machines

- Used to ensure square hose ends when cutting hydraulic hose
- Used with 6V-6015, 9U-7319, and 9U-7320 Hose Cutoff Machines
- Heavy-duty construction (made from angle iron and steel plate)
- Weld or bolt brackets to hose cutoff machine, then bolt angle iron channels to brackets
- Material: angle iron and steel plate
- Weight: 13.6 kg (30 lbs)



156-0058 Hose Cleaner Group

SMCS Code: 5057-070, 0738

Model: All Machines with Hydraulic Tubes and Hoses

Warranty: One Year



- Used to effectively remove contamination from bulk hose and hose assemblies (part of a dealer's effort to reduce hydraulic system contamination)
- Designed specifically for dealer and customer hose assembly areas (uses fewer nozzles to simplify nozzle and projectile selection than 130-6061 Hose Cleaner Group)
- Provides superior levels of cleanliness, eliminates residues of materials used in conventional cleaning methods, reduces the risk of component failure, reduces component wear, and reduces initial system flushing requirements and time
- Group includes: stand for projectile launcher (gun), nozzle rack, catcher assembly, and catcher bag kit
- Carrying case not included

NOTE: The 156-0058 Hose Cleaner Group does not replace the 130-6061 Hose Cleaner Group. This group is still serviced for dealers wanting a portable system for service vehicles or mobile hose service trucks.

Part No.	Description	Size
130-6062	Adapter Ring	
130-6068	Coupling Assembly	
130-6069	Nozzle	6 mm
130-6070	Nozzle	8 mm
130-6071	Nozzle	10 mm
130-6072	Nozzle	13 mm
130-6073	Nozzle	16 mm
130-6074	Nozzle	19 mm
130-6075	Nozzle	25 mm
130-6076	Nozzle	32 mm
130-6091	Nozzle	38 mm
130-6092	Nozzle	50 mm
130-6097	Nozzle	38 mm
156-0055	Nozzle Organizer Rack	
156-0050	Launcher Stand	
Available Separately		
130-6421	Catcher Bag Kit	

Hose Cleaner Projectile Size Chart for Hose and Hose Assemblies

Dash Size	Decimal	Cat Nozzle #	Mfg. Nozzle #	Mfg. Projectile #	Cat Projectile #
Hose					
-4	0.250	130-6069	H06	UC12	215-4568
-5	0.312	130-6070	H08	UC14	215-4569
-6	0.375	130-6071	H10	UC16	215-4570
-8	0.500	130-6072	H13	UC20	215-4572
-10	0.625	130-6073	H16	UC24	215-4574
-12	0.750	130-6074	H19	UC26	215-4575
-16	1.000	130-6075	H25	UC36	215-4578
-20	1.250	130-6076	H32	UC45	215-4580
-24	1.500	130-6091	H38	UC55	215-4582
-32	2.000	130-6092	H50	UC65	215-4584
JIC/Pipe Couplings					
-4	0.250	130-6083	J06	UC07	215-4566
-5	0.312	130-6084	J08/T06	UC10	215-4567
-6	0.375	130-6085	J10	UC12	215-4568
-8	0.500	130-6086	J13/T13	UC16	215-4570
-10	0.625	130-6087	J16/T16	UC22	215-4573
-12	0.750	130-6088	J19/T19	UC26	215-4575
-16	1.000	130-6089	J25/T22	UC33	215-4577
-20	1.250	130-6090	J232/T25	UC40	215-4579
-24	1.500	130-6097	J38/T38	UC50	215-4581
-32	2.000	130-6098	J50/T50	UC60	215-4583
O-Ring Face Seal Couplings					
-4	0.250	130-6069	H06	UC10	215-4567
-6	0.375	130-6069	H06	UC12	215-4568
-8	0.500	130-6071	H10	UC16	215-4570
-10	0.625	130-6072	H13	UC22	215-4573
-12	0.750	130-6073	H16	UC26	215-4575
-16	1.000	130-6074	H19	UC33	215-4577
-20	1.250	130-6075	H25	UC40	215-4579
Code 61, 62, & Cat Flange Couplings					
-12	0.750	130-6073	H16	UC26	215-4575
-16	1.000	130-6074	H19	UC33	215-4577
-20	1.250	130-6075	H25	UC40	215-4579
-24	1.500	130-6076	H32	UC50	215-4581
-32	2.000	130-6091	H38	UC60	215-4583

Hose Cleaner Projectile Size Chart for Tube and Pipe

Hydraulic Tubing				
OD X WALL	Cat Nozzle #	MFG. Nozzle #	Mfg. Projectile #	Cat Projectile #
1/4 in X .035 in	130-6084	JO8/TO6	UC07	215-4566
5/16 in X .035 in	130-6094	T08	UC10	215-4567
3/8 in X .035 in	130-6095	T10	UC12	215-4568
3/8 in X .049 in	130-6095	T10	UC12	215-4568
1/2 in X .035 in	130-6086	J13/T13	UC16	215-4570
1/2 in X .049 in	130-6086	J13/T13	UC16	215-4570
1/2 in X .065 in	130-6086	J13/T13	UC14	215-4569
5/8 in X .049 in	130-6087	J16/T16	UC20	215-4572
5/8 in X .065 in	130-6087	J16/T16	UC18	215-4571
5/8 in X .083 in	130-6087	J16/T16	UC16	215-4570
3/4 in X .049 in	130-6088	J19/T19	UC24	215-4574
3/4 in X .065 in	130-6088	J19/T19	UC24	215-4574
3/4 in X .095 in	130-6088	J19/T19	UC22	215-4573
7/8 in X .049 in	130-6089	J25/T22	UC30	215-4576
7/8 in X .065 in	130-6089	J25/T22	UC30	215-4576
7/8 in X .095 in	130-6073	H16	UC24	215-4574
1 in X .065 in	130-6090	J32/T25	UC30	215-4576
1 in X .095 in	130-6074	H19	UC30	215-4576
1 in X .120 in	130-6074	H19	UC30	215-4576
1 1/4 in X .065 in	130-6096	T32	UC40	215-4579
1 1/4 in X .095 in	130-6096	T32	UC36	215-4578
1 1/4 in X .120 in	130-6096	T32	UC36	215-4578
1 1/2 in X .065 in	130-6097	J38/T38	UC45	215-4580
1 1/2 in X .095 in	130-6097	J38/T38	UC45	215-4580
1 1/2 in X .120 in	130-6097	J38/T38	UC40	215-4579
2 in X .065 in	130-6098	J50/T50	UC60	215-4583
2 in X .095 in	130-6098	J50/T50	UC55	215-4582
2 in X .120 in	130-6098	J50/T50	UC55	215-4582
2 in X .134 in	130-6098	J50/T50	UC55	215-4582
Pipe				
SCH 40	Cat Nozzle #	MFG. Nozzle #	Mfg. Projectile #	Cat Projectile #
1/4 in	130-6071	H10	UC14	215-4569
3/8 in	130-6072	H13	UC18	215-4571
1/2 in	130-6073	H16	UC22	215-4573
3/4 in	130-6074	H19	UC30	215-4576
1 in	130-6075	H25	UC36	215-4578
1 1/4 in	130-6076	H32	UC40	215-4579
1 1/2 in	130-6091	H38	UC50	215-4581
2 in	130-6092	H50	UC60	215-4583

SCH 80	Cat Nozzle #	MFG. Nozzle #	Mfg. Projectile #	Cat Projectile #
1/4 in	130-6069	H06	UC12	215-4568
3/8 in	130-6071	H10	UC16	215-4570
1/2 in	130-6072	H13	UC22	215-4573
3/4 in	130-6073	H16	UC30	215-4576
1 in	130-6075	H25	UC36	215-4578
1 1/4 in	130-6076	H32	UC45	215-4580
1 1/2 in	130-6091	H38	UC50	215-4581
2 in	130-6091	H38	UC60	215-4583

SCH 160	Cat Nozzle #	MFG. Nozzle #	Mfg. Projectile #	Cat Projectile #
1/2 in	130-6071	H10	UC16	215-4570
3/4 in	130-6073	H16	UC22	215-4573
1 in	130-6074	H19	UC30	215-4576
1 1/4 in	130-6075	H25	UC40	215-4579
1 1/2 in	130-6076	H32	UC45	215-4580
2 in	130-6091	H38	UC55	215-4582
2 1/2 in	130-6092	H50	UC65	215-4584

NOTE: Use the coupling nozzles and projectiles for cleaning finished hose assemblies. The chart above applies to all coupling styles. For couplings that jump down in size, use the nozzle that fits the head size. For couplings that jump up in size, use the nozzle that fits the hose size.

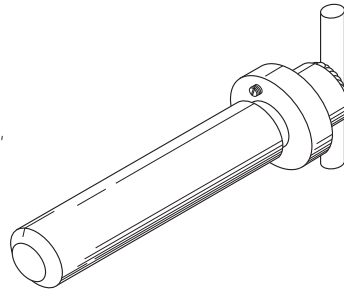
Reference

HOS96-4 IRM
NEHS0643 Tool Operating Manual, Using the 130-6061 Hose Cleaner Group
NENG7001 Hose Assembly Tooling Catalog

204-7915 Hose Gauge Kit

SMCS Code: 0684
Model: XT-3, XT-5, XT-6 and DIN hose

- Used to produce high-quality XT-3, XT-5, XT-6, and DIN hose assemblies
- Provides tools to accurately mark, cut, and skive Caterpillar Hydraulic Hose
- One-piece squareness gauge and skiving arbor quickly and accurately checks hose end for squareness
- Skive guides accurately mark skive length
- Hose cutting angle guide mounts to saw to ensure a square cut
- Hose marking pen draws fine line for accurate marking of skive length

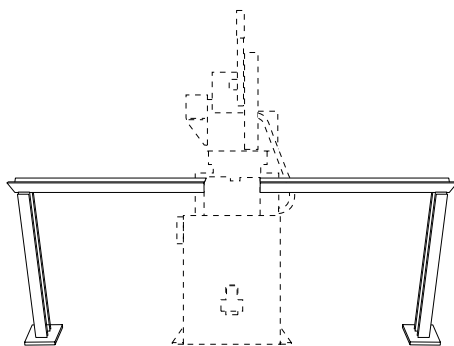


One-piece Squareness Gauge and Skiving Arbor

209-3320	Yellow	-6
209-3322	Blue	-8
209-3324	Orange	-10
202-3277	Green	-12
202-3278	Black	-16
202-3279	White	-20
202-3280	Red	-24
202-3281	Green	-32

Skive Guides

209-8633	Yellow/Yellow	XT3ES-6
209-8634	Yellow/Blue	XT3ES-8
209-8635	Yellow/Orange	XT3ES-10
209-8636	Yellow/Green	XT3ES-12
209-8637	Yellow/Black	XT3ES-16
209-8638	Yellow/White	XT3ES-20
209-8639	Yellow/Red	XT3ES-24
209-8640	Yellow/Green	XT3ES-32
202-6594	Gold/Green	XT5-12
202-6595	Gold/Black	XT5-16
202-6596	Gold/White	XT5-20
202-6597	Gold/Red	XT5-24
202-6598	Gold/Green	XT5-32
209-8747	Black/Yellow	XT6-6
209-8748	Black/Blue	XT6-8
202-6599	Black/Green	XT6-12
208-6900	Black/Black	XT6-16
208-6901	Black/White	XT6-20
202-6600	Black/Red	XT6-24
202-8637	Black/Green	XT6-32
209-9142	White/Yellow	XT6ES-6
209-9143	White/Blue	XT6ES-8
209-9144	White/Orange	XT6ES-10
209-9145	White/Green	XT6ES-12
209-9146	White/Black	XT6ES-16
209-9147	White/White	XT6ES-20
133-7353	Green/Yellow	DIN-6
133-7355	Green/Blue	DIN-8
133-7356	Green/Orange	DIN-10
133-7357	Green/Green	DIN-12
133-7358	Green/Black	DIN-16
133-7359	Green/White	DIN-20
133-7360	Green/Red	DIN-24
133-7361	Green/Green	DIN-32



Accessories	
Part No.	Description
201-8959	Hose Cutting Angle Guide
202-6602	Hose Marking Pen (Qty 3, not shown)

160-2521 Separator

SMCS Code: 0648
Model: All models using thermoplastic and air conditioning hose

- Used to hold dies which crimp couplings onto thermoplastic and air conditioning hoses
- Used with 139-5439 Combination Hose Machine
- Sits inside bowl on top of extractor assembly and holds all die sizes

Reference

NEHS0686 Tool Operating Manual, Setup and Basic Operation of the 139-5439 Combination Hose Machine

177-4271 Thermoplastic and Air Conditioning Hose Cutter

177-4272 Cutter Blade

SMCS Code: 0684
Warranty: Manufacturer's

- Used to quickly and cleanly cut thermoplastic, air conditioning, and air hoses
- Light-weight, hand-held cutter has plastic grips and a safety lock
- Replacement blade package includes two blades
- Cutting capacity: 25.4 mm (1.00 in) inside diameter hose
- Overall length: 241 mm (9.5 in)



Cabinets for Low and Medium Pressure and XT Couplings

SMCS Code: 0684

Warranty: Manufacturer's (see below)

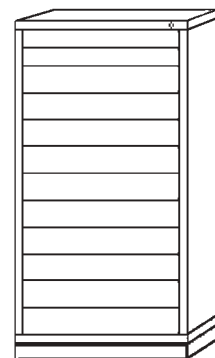
- Used to provide organized storage for hose couplings
- 12 drawer storage capacity with layout kit (provides individual pockets for each coupling size)
- Provides efficient storage and retrieval of couplings
- Overall size (w x h x d): 76 x 150 x 71 cm (30 x 59 x 28 in)
- Approximate weight: 329 kg (725 lbs)

193-4630 Cabinet Assembly (LM)

- Stores low and medium pressure couplings

193-4633 Cabinet Assembly (XT)

- Stores XT couplings



Typical Storage Cabinet

Warranty

Lyon Modular Drawer Cabinets are warranted against defect in materials and workmanship for the life of the product when used in accordance with the manufacturer's specifications and operating instructions.

Swaging Tools for Thermoplastic Hydraulic Hose

SMCS Code: 0684

Model: Thermoplastic Hydraulic Hose

- Used to install permanently attached couplings on Caterpillar thermoplastic hose Series 1028
- Used to easily assemble custom hose assemblies for lift truck over-the-mast applications
- Tools consist of 5P-4800 Swaging Tool and attachments for various hose sizes and couplings as indicated in application chart
- In operation, 5P-4800 Swaging Tool can be clamped in vise, mounted on bench with 5P-4804 Mounting Bracket, or hand held on floor using reaction handle and standard 1 1/8 inch socket and ratchet; in some applications, 5P-4802 Hand Crank is more convenient to use than standard handle



Item	Part No.	Description
1	5P-4800 1U-8826	Swaging Tool Assembly Bearing
2	5P-4803	Die Clamp (two)
3	5P-4801	Reaction Handle
Not included with 5P-4800		
4	5P-4802	Hand Crank
5	5P-5250	Vise Block (Hose)
6	5P-4804	Mounting Bracket
7	5P-4791 5P-4790 5P-4789 5P-4788 5P-4787	Internal Pusher Internal Pusher Internal Pusher Internal Pusher Internal Pusher

Item	Part No.	Description
8	5P-4805 5P-4806 5P-5257	Beni Tube Pusher Bent Tube Pusher Bent Tube Pusher
9	5P-4792 5P-5259 5P-5258	External Pusher External Pusher External Pusher
10	5P-4795 5P-4794 5P-4793	Die Die Die

Reference

SMHS6823 Special Instruction



Swage Typical Die



Internal Typical Pusher

Thermoplastic Hose Application

Pusher Hose I.D.	Cat Coupling Part No.	Cat Die Part No.	Cat Part No.
1/4	6V-9586	5P-4793	5P-4805
1/4	5P-5493	5P-4793	5P-5258
1/4	5P-5505	5P-4793	5P-4788
1/4	5P-5506	5P-4793	5P-4788
1/4	5P-5488	5P-4793	5P-5257
1/4	5P-5486	5P-4793	5P-5257
1/4	5P-5497	5P-4793	5P-5259
1/4	5P-5498	5P-4793	5P-5258
1/4	5P-5509	5P-4793	5P-4787
5/16	353386	5P-4794	5P-4805
5/16	350656	5P-4794	5P-4788
5/16	352181	5P-4794	5P-4805
5/16	379239	5P-4794	5P-4805
5/16	903623	5P-4794	5P-4805
5/16	903626	5P-4794	5P-4805
3/8	690478	5P-4795	5P-4789
3/8	5P-5492	5P-4795	5P-4792
3/8	5P-5479	5P-4795	5P-4806
3/8	692306	5P-4795	5P-4791
3/8	692120	5P-4795	5P-4790
3/8	5P-5480	5P-4795	5P-4806
3/8	5P-5485	5P-4795	5P-4806
3/8	5P-5489	5P-4795	5P-4806
3/8	5P-5490	5P-4795	5P-4806
3/8	5P-5496	5P-4795	5P-4792
3/8	6V-6222	5P-4795	5P-4806
3/8	6V-9587	5P-4795	5P-4805
3/8	6V-9591	5P-4795	5P-4805
3/8	6V-9594	5P-4795	5P-4805
1/2	5P-5503	6V-7785	6V-7786
1/2	5P-7452	6V-7785	1U-5270
1/2	5P-7453	6V-7785	1U-5270
1/2	5P-5503	6V-7785	1U-5270
1/2	6V-9588	6V-7785	1U-5270
1/2	6V-9592	6V-7785	1U-5270
1/2	6V-9595	6V-7785	1U-5270
3/4	6V-9596	1U-5272	1U-5271
3/4	6V-9589	1U-5272	1U-5271
3/4	8T-5377	1U-5272	1U-5271
3/4	5P-5494	1U-5272	1U-5271
3/4	5P-5501	1U-5272	1U-5271
3/4	6V-9600	1U-5272	1U-5271

7S-1125 Protractor Group

SMCS Code: 0684

Model: Caterpillar Hydraulic Hose Press Arrangements or Hose Crimp Machines

- Used to orient hose couplings when making new hoses or to check orientation of old hose assemblies
- Optional tool for use with any Caterpillar hydraulic hose press arrangements or hose crimp machines
- Has easy-to-read 360 degree dial face with bubble-type level and fits all hose up to and including 2-inch diameter

Reference

SEHS7957, SEHS6880 and SEHS9052 Special Instructions

Spare Parts for Non-Current Product

Hose Presses and Crimp Tooling

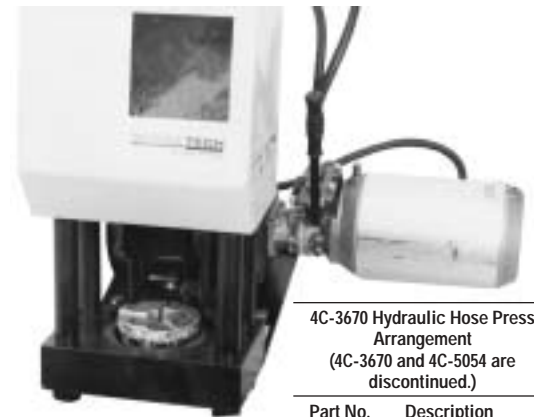


4C-5052 Hydraulic Hose Press Arrangement
(4C-5052, 9U-5792, and 9U-7261 are discontinued.)

Part No.	Description
4C-4372	Spacer Ring
4C-4373	Die Ring Assembly
4C-8702	Die Separator
4C-3059	Guard
4C-4375	Spring
4C-4376	Retaining Ring
4C-4378	Bowl Assembly
4C-5483	Plate

4C-3680 Hydraulic Hose Press Arrangement (discontinued)

Part No.	Description
4C-4359	Die Ring (black)
4C-4360	Die Ring (silver)
4C-4355	Speed Pin
4C-4356	Die Separator
4C-4357	Spring
4C-4358	Pusher
4C-5079	Hose Assembly



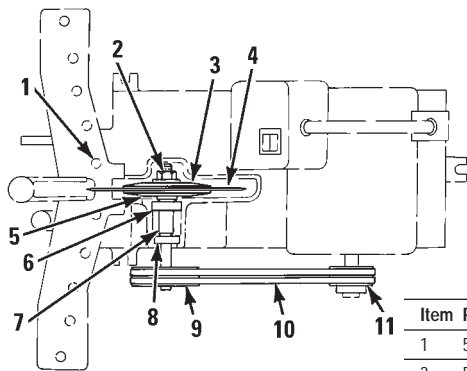
4C-3670 Hydraulic Hose Press Arrangement
(4C-3670 and 4C-5054 are discontinued.)

Part No.	Description
4C-4361	Die Ring (silver)
4C-4362	Die Ring (black)
4C-4363	Die Separator
4C-4364	Cam Follower
4C-4365	Ramp, lefthand
4C-4366	Ramp, righthand
4C-4367	Pusher Assembly
4C-4368	Pump Assembly
4C-4369	Handle
4C-4370	Valve Assembly
4C-4371	Tank Assembly
4C-3058	Guard
4C-4461	Motor



5P-6540 Hose Cutoff Saw Group
Discontinued — Service Parts Available

5P-6542 Hose Cutoff Saw Group
Discontinued — Service Parts Available



Item	Part No.	Description
1	5P-6547	Pin (two)
2	5P-6550	Nut
3	5P-6553	Disc
4	5P-6223	Blade1
5	5P-6552	Flange
6	7F-9993	Bearing
7	5P-6551	Shaft
8	5P-6836	Bearing
9	5P-6554	Pulley
10	5P-6549	V-Belt Set
11	5P-6548	Pulley

NOTE: Before sending blade, contact Curtis-Toledo for authorization number.

Reference
SMHS6970 Special Instruction

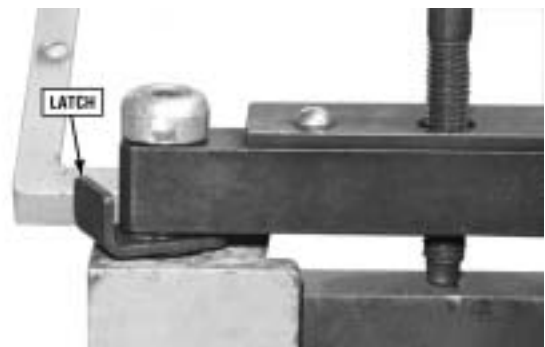
¹ Blade can be resharpened by sending to:
Curtis-Toledo
1905 Kienlen Avenue
St. Louis, MO 63133
Phone: (314) 383-1300

Reference
SEHS9052 Special Instruction

6V-9437 Latch Kit

SMCS Code: 0684
Model: 5S-2801 Hydraulic Press Group

- Can be installed on any 5S-2801 Hydraulic Press Group, part of 7S-1100 Press Arrangement
- Kit becomes part of clamping bar stop
- When clamping bar is pivoted toward stop, bar strikes latch and causes it to rotate so tank on latch prevents bar from moving away from stop; tool collets in front jaw can then be clamped without clamp bar moving
- When hose press operation is completed, manual rotation of latch allows clamping bar to pivot away from the stop and allows removal of tool collets



Hydraulic Cylinder Service

Hydraulic Cylinder Repair Stands—10,000, 25,000, and 50,000 Lb Ft

SMCS Code: 0685

Model: Caterpillar Hydraulic Cylinders

Warranty: Manufacturer's

- Used for disassembly and assembly of hydraulic cylinders
- 3 sizes to match shop requirements; unique design and tooling provide greater versatility and result in lower operating cost compared to previous and competitive repair stands
- Differ considerably from 1P-1784, 10 200 N-m (7,500 lb ft torque), and 6V-4947, 13 600 N-m (10,000 lb ft torque), Mechanical Multiplier Repair Stands which have been discontinued
- Offer up to 50,000 lb ft torque to hydraulically remove piston retaining nuts as well as various styles of cylinder heads
- Various accessories enable repair stands to service virtually all sizes and types of cylinders and mounting styles for Caterpillar and competitive machinery
- All 3 repair stands utilize "universal wrench" that is quickly adjusted to fit hex or square shaped piston retaining nuts from 63.5 mm (2 1/2 inches) through 127 mm (5.0 inches) across flats; will service majority of piston retaining nuts and eliminates need for many expensive, large drive, high torque sockets; 50,000 lb ft torque repair stand can service nuts larger than 127 mm (5.0 inches) or nuts requiring from 25,000 lb ft torque up to 50,000 lb ft torque with inexpensive quick change inserts
- Shipped F.O.B. from supplier, Tuxco Corporation, in Gurnee, Illinois, U.S.A.

Cat Part No	Maximum Torque Lb Ft	Power Required
1U-9900	10,000	Air
1U-9901	25,000	Air
1U-9902	50,000	230V 50-60 Hz 3 Phase
4C-4405	50,000	460V 50-60 Hz 3 Phase
4C-4406	50,000	575V 60 Hz 3 Phase
4C-4407	50,000	380V 50 Hz 3 Phase
4C-4408	50,000	415V 50 Hz 3 Phase
4C-4409	50,000	220V 50 Hz Single Phase

Reference

NEHC2004 Major Equipment Guide

125-0079 Hydraulic Cylinder Repair Stand—60 Hz, 3 phase, 30,000 lb ft

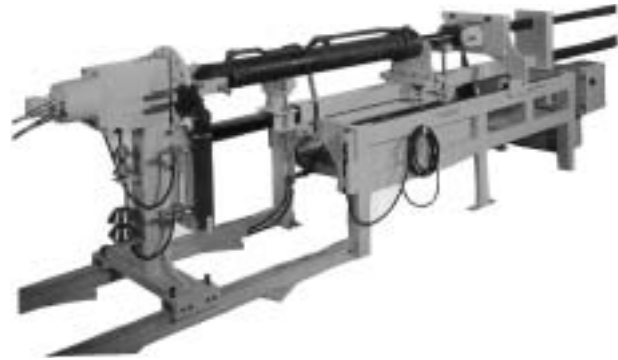
127-4903 Hydraulic Cylinder Repair Stand—50 Hz, 3 phase, 30,000 lb ft

SMCS Code: 0685

Model: Caterpillar Hydraulic Cylinders

Warranty: Manufacturer's

- Used to remove and install threaded barrel caps and piston retaining nuts of hydraulic cylinders being overhauled
- Repair stand is operated from one side (saves valuable floor space by installing unit next to wall)
- Hydraulic nut runner, conical mounting bushings, double acting torque head, indexing cylinder
- Adjustable tailstock for various cylinder lengths
- Fast and powerful rod extension and retraction
- Conical rod eye adapters make cylinder installation, with various rod eye diameters, much faster and easier (no need to search for just the right size adapter)
- Heavy-duty pendant control provides on/off, torque/detorque, screw/unscrew, and extend/retract functions at operator's finger tips (pendant uses a 8 m (25 ft) cable for operator convenience and safety)
- Designed to use a waste barrel to capture hydraulic fluid during overhaul procedures
- Adjustable support stand provides vertical, horizontal, and diagonal adjustment to prevent seal damage during assembly due to misalignment
- Eye-level torque gauge gives operator applied torque and break-away torque readings (assures factory torque specifications are met during assembly)
- Unit is completely wired and ready for installation (comes complete with mounting hardware and installation instructions)
- CE compliant



Extended cylinder length capacity	30 cm (1.0 ft) to 6 m (20 ft)
Cylinder extension	244 cm (8.0 ft) in less than one minute
Torque capacity	up to 40800 N-m (30000 lb ft)
Head nut runner capacity	5440 N-m (4000 lb ft)
Head nut runner speed	6 rpm
Indexing cylinder travel	122 cm (4.0 ft)
Small and medium size conical adapters	25 mm (1.0 in) to 146 mm (5.75 in) diameters
Large size conical adapter	152 mm (6.0 in) to 203 mm (8.0 in) diameters
Electric motor	5 hp
Hydraulic tank capacity	38 L (10 gal)

127-4904 Hydraulic Cylinder Repair Stand—60 Hz, 3 phase, 60,000 lb ft

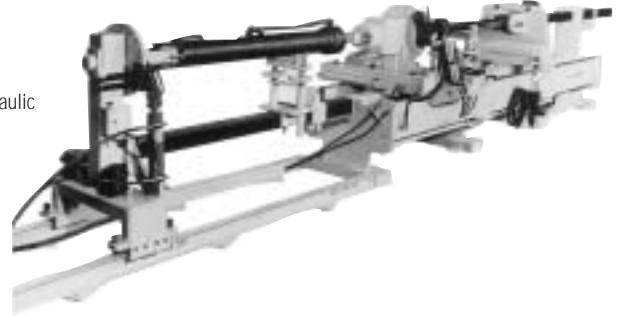
127-4905 Hydraulic Cylinder Repair Stand—50 Hz, 3 phase, 60,000 lb ft

SMCS Code: 0685

Model: Caterpillar Hydraulic Cylinders

Warranty: Manufacturer's

- Used to remove and install threaded or bolt-on barrel caps and piston retaining nuts of hydraulic cylinders being overhauled
- Unit includes universal spanner and high-torque wrench (eliminates buying expensive conventional sockets)
- Repair stand is operated from one side (saves valuable floor space by installing unit next to wall)
- Hydraulic workstation moves automatically between work position and park position (also has gauge that reads and records applied torque)
- Conical mounting bushings, double acting torque head, indexing cylinder
- Adjustable tailstock for various cylinder lengths
- Fast and powerful rod extension and retraction
- Conical rod eye adapters make cylinder installation, with various rod eye diameters, much faster and easier (no need to search for just the right size adapter)
- Heavy-duty pendant control provides on/off, torque/detorque, screw/unscrew, and extend/retract functions at operator's finger tips (pendant uses a 8 m (25 ft) cable for operator convenience and safety)
- Eye-level torque gauge gives operator applied torque and break-away torque readings (assures that factory torque specifications are met during assembly)
- Unit is completely wired and ready for installation (comes complete with mounting hardware and installation instructions)



Torque capacity	up to 81600 N-m (60000 lb ft)
Head nut runner capacity	5440 N-m (4000 lb ft)
Head nut runner speed	6 rpm
Indexing cylinder travel	122 cm (4.0 ft)
Conical adapters	38 mm (1.5 in) to 203 mm (8.0 in) diameters
Electric motor	7.5 hp
Hydraulic tank capacity	19 L (5 gal)
Weight	15400 kg (7000 lbs)
Overall dimensions	2 x 13 m (7 x 42 ft)

120-9143 Cylinder Washer Tank Group

SMCS Code: 7562-070

Model: Hydraulic Cylinders

- Used to clean honing oil and metal particles from inside of reconditioned cylinders (provides quick and efficient cleaning method)
- Cleans cylinders ranging from 101 to 343 mm (4.0 to 13.5 in) diameter and 1.8 to 3.6 m (6 to 12 ft) in length
- Unit can be positioned at end of manual or automatic hone group (allows cylinders to remain clamped in hone group during cleaning procedure)
- Washer uses an air powered drill to rotate cleaning brushes while a pump supplies cleaning solvent to brush head
- Uses a disposable filter paper to capture contaminants (keeps oil clean and clean-up and disposal much easier)
- Unit is shipped with 110 Volt capability but can easily be converted to 220 Volts (no additional parts are required for the conversion)
- NOT CE compliant (contact CSTG)



Service Parts	
Part No.	Description
120-9144	Rotating Valve Group
120-9146	Brush Assembly, Including Spray Nozzle
120-9150	Filter Element
120-9148	Brush, 76 mm (3.0 in), used for 101 to 190 mm (4.0 to 7.5 in) diameter cylinder bores
120-9147	Brush, 152 mm (6.0 in), used for 190 to 342 mm (7.5 to 13.5 in) diameter cylinder bores
120-9154	Aluminum Pipe, 1.8 m (6.0 ft)
120-9153	Aluminum Pipe, 3 m (10.0 ft)
120-9152	Aluminum Pipe, 3.6 m (12.0 ft)
135-7643	Brush Adapter, 2 in
4C-6343	Brush, 2 in
1U-8853	Pneumatic Drill(or equivalent)

Reference

NEHS0632 Tool Operating Manual

NEHP5605 Hydraulic Cylinder Washer Brochure

9U-6803 Cylinder Tester

SMCS Code: 7562-032

Model: Hydraulic Cylinders

Pump capacity	80 Lpm (21 gpm)
Reservoir	227 L (60 gpm)

- Used to test hydraulic cylinders after reconditioning or repair (ensures that cylinders perform to correct specifications)
- Provides an efficient and simple method of testing cylinders
- Pressures can be regulated between 2067 and 20670 kPa (300 and 3000 psi)
- Remote controlled, pressure-compensated pump provides fast cycling of cylinders
- Large hydraulic reservoir allows unit to test all Caterpillar and most other double-acting cylinders
- Control panel simplifies testing and gauges are large and easy to read
- After cylinder has been tested, oil is removed by using shop air pressure
- Unit is equipped with low-friction caster wheels
- Operates on 440 Volt, three phase power (can be customer adapted to 220 Volt, three phase)



Reference

NEHS0595 Tool Operating Manual, Cylinder Tester

1U-9001 Automatic Hone Group (110V, 60hz, single phase)

1U-9002 Automatic Hone Group (220V, 50hz, single phase)

Manual Hone Components Ordered Separately

SMCS Code: 7562-049, 0673

Model: Hydraulic Cylinders

- Used to automatically or manually hone cylinders during a reconditioning procedure

Automatic Hone

- New components will upgrade manual hone to automatic hone by replacing drill carriage and rail from manual hone configuration (converts low production operation to high production, less labor intensive, automatically controlled machine)
- Automatic hone units provide a more consistent and higher quality surface finish because carriage moves at a constant travel speed
- A variable speed control function helps provide proper cross hatch patterns
- Unit will function on its own until timer shuts it off (operators can perform other tasks while honing is automatically completed)
- Built-in limit switches are adjusted to vary stroke depending on length of cylinder
- Uses same honing head and consumable honing products as manual hone group
- Automatic unit consists of a hydraulic power pack, rack and pinion traverse system, electric control console, and automatic stone expansion system (hydraulic power pack comes complete with preassembled tank, pump, electric motor, valve group, hoses, and prewired electrical system; traverse system comes with carriage, hydraulic motor, carriage rail assembly, prewired limit switches and mounting brackets; electric control console is prewired with timer, amp meter, and switches)

Manual Hone

- Less expensive alternative when reconditioning cylinders (no longer necessary to send cylinders to outside suppliers)
- Unit works best in low production shops
- Honing ensures a quality, long-lasting repair by renewing the bore surface and removing irregularities or other cylinder damage
- Capable of honing 3.6 m (12 ft) long cylinders with diameters ranging from 63.5 to 406 mm (2.50 to 16 in)
- Power for hone is supplied by a four-speed electric drill
- A drill coupler absorbs forward and reverse thrust, removing direct force from drill gears and making drills last longer by reducing wear
- Used with a specially formulated honing oil
- Can be upgraded to an automatic hone as production demands increase

Part No.	Description	Electrical requirements	Motor specifications	Pump specifications	Reservoir capacity
1U-9001	Automatic Hone	110 Volts, 60 Hz, single phase	1.5 hp at 1725 rpm	28 Lpm at 2411 kPa (7.5 gpm at 350 psi)	113 L (30 gal)
1U-9002	Automatic Hone	220 Volts, 50/60 Hz, single phase	1.5 hp at 1450 rpm	23 Lpm at 2411 kPa (6.25 gpm at 350 psi)	113 L (30 gal)

Service Parts

Part No.	Description	Size
9U-6478	Finish Stone Set	119 to 381 mm (4.7 to 15.0 in)
9U-6479	Rough Stone Set	119 to 381 mm (4.7 to 15.0 in)
9U-6481	Finish Stone Set	89 to 140 mm (3.5 to 5.5 in)
9U-6480	Rough Stone Set	89 to 140 mm (3.5 to 5.5 in)
6V-7865	Finish Stone Set	68 to 104 mm (2.7 to 4.1 in)
9U-6483	Rough Stone Set	68 to 104 mm (2.7 to 4.1 in)
6V-7866	Finish Stone Set	63 to 68 mm (2.5 to 2.7 in)
9U-6746	Rough Stone Set	63 to 68 mm (2.5 to 2.7 in)
9U-6749	Master Holder Set	203 to 304 mm (8.0 to 12.0 in)
9U-6748	Dressing Stick	
9U-6484	Honing Oil	

Manual Hone (order for a complete unit)

Part No.	Description	Electrical requirements
9U-5797 or 9U-5888	Drill	110 Volts, 60 Hz, single phase
	Drill	220 Volts, 50/60 Hz, single phase
9U-6467	Thrust Coupler and Clamp Coupler	
9U-6463	Hone Group	
9U-6476	Drill Support Stand Group	
9U-6477	Barrel Cradle Stand Group	
9U-6759 or 1U-9031	Drain Tank and Pump	110 Volts, 60 Hz, single phase
	Drain Tank and Pump	220 Volts, 50/60 Hz, single phase



Automatic Hone Group



Manual Hone Group

Reference

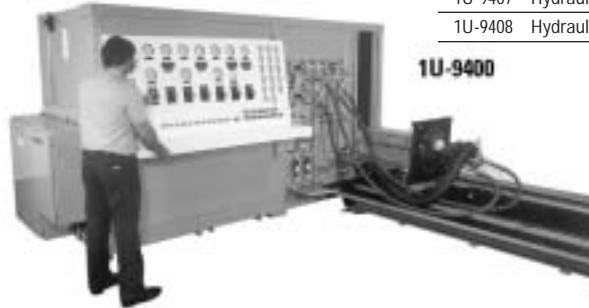
SEHS9538, Tool Operating Manual for Manual Hone Group
NEHS0627, Tool Operating Manual for Automatic Hone Group

Hydraulic Test Centers

Hydraulic Test Centers

SMCS Code: 0784

Model: Caterpillar Pumps, Motors and Transmissions



- Complete centers for testing and adjusting all Caterpillar pumps, motors and transmissions; designed from the beginning to test powershift transmissions, hydrostatic transmissions and hydraulic pumps and motors
- Traditional test benches on the market are primarily transmission test benches; designed to test transmissions so pump and motor testing capability is limited by initial design objective; difficult to test hydrostatic transmissions on these benches
- Caterpillar test centers developed for greater performance but using traditional-sized components where possible to minimize costs
- Using patent pending REGENERATION circuit and ELECTRONIC CONTROLS, test centers capable of developing over 400 input HP for testing pumps and over 200 input HP for testing motors; without regeneration this same performance would require 400+ HP electric drive motor and approximately 500 amp electrical service; expensive to install this much electrical power and requires costly reduced voltage starting controls

Models		
Part No.	Description	
1U-9400	Hydraulic Test Center, 460V, 150HP, 60Hz	
1U-9401	Hydraulic Test Center, 230V, 150HP, 60Hz	
1U-9402	Hydraulic Test Center, 460V, 200HP, 60Hz	
1U-9403	Hydraulic Test Center, 380V, 150HP, 50Hz	
1U-9404	Hydraulic Test Center, 575V, 150HP, 60Hz	
1U-9405	Hydraulic Test Center, 575V, 200HP, 60Hz	
1U-9406	Hydraulic Test Center, 415V, 150HP, 50Hz	
1U-9407	Hydraulic Test Center, 380V, 200HP, 50Hz	
1U-9408	Hydraulic Test Center, 415V, 200HP, 50Hz	

Service Parts for 1U-9400 Series Hydraulic Test Centers

Gauges	
Part No.	Description
2-1/2 inch Diameter, Panel Mount, Back Connection	
8T-0850	Gauge, 0-4135 kPa (0-600 psi)
4C-4615	Gauge, 0-1380 kPa (0-200 psi)
4C-4614	Gauge, 0-689 kPa (0-100 psi)
8T-0848	Gauge, 0-415 kPa (0-60 psi)
4C-4616	Gauge, 0-52500 kPa (0-7500 psi)
8T-0852	Gauge, 0-34450 kPa (0-5000 psi)
8T-0851	Gauge, 0-13780 kPa (0-2000 psi)
4 inch Diameter, Panel Mount, Lower Back Connection	
8T-0840	Gauge, 30/0/30, 30 In/Hg-0-30 psi
4C-4618	Gauge, 0-4130 kPa (0-600 psi)
1U-9697	Gauge, 0-52500 kPa (0-7500 psi)
4C-4617	Gauge, 0-6890 kPa (0-1000 psi)
Differential Pressure Gauge	
1U-5793	Gauge, 0-500 psi
Oil Filter Elements and Replacement Parts	
4C-3052	Oil Filter Element (2)
4C-6107	Oil Filter Seal Kit
	Sump and Super Charge filter systems
4C-3053	Oil Filter Element (2)
4C-6112	Oil Filter Seal Kit
	Regenerative circuit
4C-4878	Ring ¹ (2)
	Backup rings for regenerative circuit
4C-3054	Oil Filter Element (2)
4C-6110	Oil Filter Seal Kit
	Return filter (top of tank)
4C-3055	Oil Filter Element (2)
4C-6111	Oil Filter Seal Kit
	Pump and motor control circuits
4C-4877	Ring ¹ (2)
	Backup rings for pump and motor control filters
4C-3056	Oil Filter Element (1)
4C-6108	Oil Filter Seal Kit
	Auxiliary charge filter
4C-3057	Oil Filter Element (1)
4C-6109	Oil Filter Seal Kit
	Main charge filter
4C-5095	Oil Filter Element (1)
4C-6111	Oil Filter Seal Kit
	Motor control circuit (double length)
4C-5096	Oil Filter Element (1)
4C-6111	Oil Filter Seal Kit
	Main pump control circuit (double length)

¹ Replacement elements contain new bowl O-rings but not new backup rings. Backup rings are used to support the filter bowl O-rings. Replacement backup rings are serviced by themselves or within the filter seal kits. The double length elements have been installed on some machines but not all.

Hydraulic System Replacement Parts		
4C-8686	Flowmeter	Webster LT-760, 7-210 gal/min., 1-1/2 inch SAE 4 bolt flange, 6000 psi. (F1 and F4)
4C-8687	Flowmeter	Webster LT-500, 4-130 gal/min., 1-1/2 inch SAE 4 bolt flange, 6000 psi. (F2 and F3)
4C-8688	Flowmeter	Hedland 701-002, .1-2.0 gal/min., 3/4 inch NPT port, 3000 psi. Measures case drain
4C-8689	Flowmeter	Hedland 701-005, .5-5.0 gal/min., 3/4 inch NPT port, 3000 psi. Measures case drain
4C-8690	Valve	Vickers DG17V-3-2C10. Directional control for drive shaft table lift
4C-8656	Valve	Rexroth EL-24VDC-832575. Proportional control for main and auxiliary pumps
4C-8682	Valve	Rexroth 4WS2EM10-40. Servo valve for fluid motor control
4C-8684	Strainer	4 inch, 100 mesh, 200 GPM for oil supply inside reservoir
4C-8685	Strainer	1 1/2 inch, 100 micron, 50 GPM for work table sump. Two needed
4C-8692	Coupler	Snap-Tite VHC-16-16-EF, 1-5/16 inch female SAE thread valved. Super Charge outlet on manifold
Mechanical Parts		
4C-8683	Seal Kit	Meyers 11716A1 shaft seal, 5863A13 case gasket, 11718A special washer. Used on Meyers #125M-3 circulating sump pump
4C-8695	Bearing	Motion Industries 22313KTS drive shaft bearing
Electrical Parts		
4C-8691	Potentiometer	Allen Bradley 800TU24 pot with a JS-1 SPST switch attached
4C-8589	Tachogenerator	Rexroth TDPO.7/8-3-836706 low voltage tach generator. Located on end of fluid motor
4C-8693	Torque Sensor	Lebow 1805-12K drive shaft torque sensor
4C-8694	Relay	Red Lion PRS1-103-1/A overspeed relay

Reference

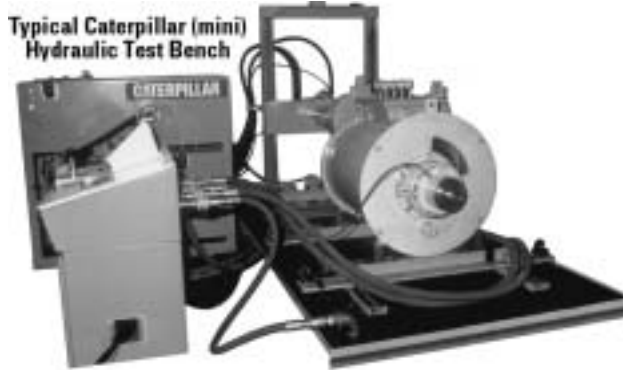
NEHC2007 Major Equipment Guide, complete product descriptions
 SEHS8892 Special Instruction, operating guidelines
 NEHT5000 Bench Testing Hydraulic Components, needed tooling to test Caterpillar components
 NEHG3498 HTC Filter Elements

Hydraulic Test Benches

SMCS Code: 5050-036
Model: All Models

- Used to test hydraulic pumps, motors, cylinders, and transmissions (including hydrostatic)
- Designed as an economical option for testing current and future components within the 125 hp range limit
- A “mini” bench having many of the same features as larger 1U-9400 Hydraulic Test Center including elevated component oil tank, full instrumentation, full filtration (down to 10 micron) with control panel indicator lights, two pressure oil supplies, and large, low-profile testing bed
- Additional features: two digital flow meters, connection for external flow meters, digital flow and temperature readouts, automatic heating and cooling of testing oil supply, automatic oil level control of work table sump, built-in protection circuits, and digital rpm readout
- Caterpillar test benches are direct competitive replacements for 100/125 hp class test benches.

Horsepower	125
Maximum drive output	2600 rpm
Gravity feed oil supply (flooded suction)	102 mm (4.0 in) diameter
Adjustable hydraulic supply #1	189 lpm at 20 670 kPa (50.0 gpm at 3000 psi)
Adjustable hydraulic supply #2	19 lpm at 2756 kPa (5.0 gpm at 400 psi)
Two flow meters	484 lpm (125 gpm)
External flow meter connections	pressure up to 46 850 kPa (6800 psi) with flow rates of 8 to 800 L/min (2 to 210 gpm)
Indicator lights	all filters



Part No.	Description
9U-5884	Hydraulic Test Bench (415 Volt/50Hz/3 phase)
9U-5001	Hydraulic Test Bench (380 Volt/50Hz/3 phase)
9U-5000	Hydraulic Test Bench (460 Volt/60Hz/3 phase)
9U-5882	Hydraulic Test Bench (230 Volt/60Hz/3 phase)
9U-5883	Hydraulic Test Bench (575 Volt/60Hz/3 phase)

Service Parts	
Gauges	
4C-4617	Gauge, 0-6890 kPa (0-1000 psi) — 102 mm (4.0 in) diameter
9U-5851	Gauge, 0-20 000 kPa (0-3000 psi) — 102 mm (4.0 in) diameter
9U-5852	Gauge, 0-20 000 kPa (0-3000 psi) — 64 mm (2.5 in) diameter
1U-9161	Minder Gauge — protects lower range gauges, located inside control panel

Service Parts (cont'd)	
Part No.	Description
Oil Filter Elements	
4C-9479	Element — hydrostat charge oil (13 Micron)
9U-5870	Element (13 micron absolute) — main pump case return, bypass, and sump filter
9U-5871	Element (10 micron absolute) — main oil supply
Electrical	
9U-5856	Fan — main electrical panel
9U-5853	Indicator — control console digital rpm readout
9U-5881	Magnetic Pickup — for digital rpm readout
9U-5845	Sump Pump — 230/460V, 3-phase, 60Hz application only
9U-5847	Sump Pump — 230/460V, 3-phase, 50Hz application only
9U-5846	Switch — three level sump pump float switch
9U-5876	Switch — dirty filter indicator
9U-5877	Switch — high level, low level reservoir float switch
Hydraulic System Replacement Parts	
9U-5859	Cooler — hydrostatic and bypass oil cooler
9U-5860	Heater — hydraulic reservoir
9U-5866	Nipple — 102 mm (4.0 in) gravity flow supply line
9U-5861	Strainer — inside oil reservoir 102 mm (4.0 in) diameter
9U-5862	Strainer — inside oil reservoir 50 mm (2.0 in) diameter
9U-5867	Strainer — inside oil reservoir 32 mm (1.25 in) diameter
4C-9910	Tester — digital flow meter
9U-5194	Tube — supply/return tube for flowmeter
9U-5873	Valve — on/off water control
9U-5848	Valve — 20 670 kPa (3000 psi) pressure regulating (main oil supply pressure)
9U-5849	Valve — 3445 kPa (500 psi) pressure reducing (control oil)
9U-5849	Valve — 3000 kPa (400 psi) control pressure adjustment
9U-5850	Valve — supply flow On/Off, two-way ball valve
9U-5875	Valve — water control valve to hydrostatic oil cooler
9U-5878	Valve — water control valve to bypass oil cooler
Mechanical Parts	
9U-5880	Winch — drive motor height adjustment
Miscellaneous Hardware	
9U-5192	Adapter — drive adapter assembly with magnetic pickup gear
9U-5212	Bolt — sliding drive plate mounting
9U-5854	Cable — pump displacement/direction control
9U-5855	Cable — motor speed control
9U-5865	Coupling — electric motor/pump drive couplings
9U-5826	Artwork Decal — decals for control console
9U-5210	Guard — short coupling guard
9U-5211	Guard — long guard for drive shaft
9U-5872	Insert — used with 9U-5865 Coupling
Repair Kits	
9U-5082	Kit — for Snaptite nipple
9U-5864	Kit — charge pressure relief valve
9U-5868	Kit — main hydraulic pump (60Hz applications)
9U-5869	Kit — main hydraulic pump (50Hz applications)
9U-5874	Kit — 9U-5873 Valve
9U-5879	Kit — fluid motor

Reference

NEHS0563 Tool Operating Manual

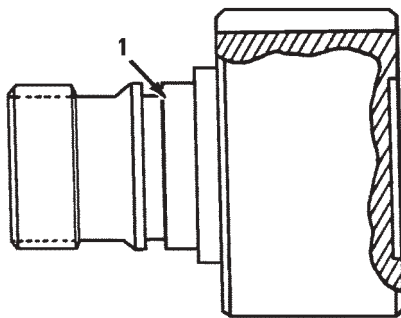
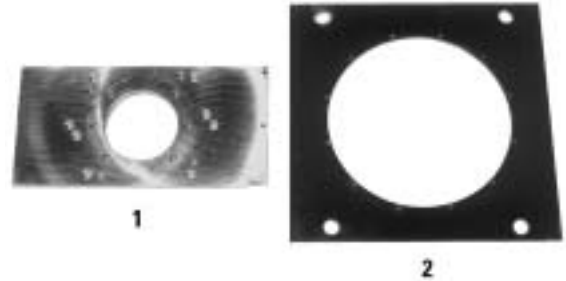
Mounting and Drive Hardware for Hydraulic Pump and Motor Testing

SMCS Code: 0784

Model: Caterpillar Pumps, Motors and Transmissions

- Used for hydraulic pump and motor testing
- Mounting plates used with 1U-9130 Mounting Stand
- Drive adapters work with any size 27 drive shaft, standard on Aidco, Wolff and Schroder benches; drive adapters also work with 1U-9359 Adapter and can be used with size 55 drive shaft on Caterpillar Hydraulic Test Center
- 4C-4702 Mounting Plate makes it easy to mount Caterpillar's track motors which do not conform to standard SAE mounting styles
- 4C-4703 and 4C-4705 Drive Adapters complement the various spline sizes required to run Caterpillar hydraulic components
- 1U-5738, 4C-4622 and 4C-4623 Mounting Adapters will mount SAE flywheel mount pumps and motors

Mounting adapters used with the 1U-9130 Mounting Stand		
Item	Part No.	Description
1	1U-5738	Mounting Adapter (accepts size 2 SAE flywheel mounted pumps)
	4C-4622	Mounting Adapter (accepts size 3 SAE flywheel mounted pumps)
	4C-4623	Mounting Adapter (accepts size 4 SAE flywheel mounted pumps)
2	4C-4702	Mounting Adapter (accepts Caterpillar hystat and travel motors)



Drive Adapter		
Item	Part No.	Description
1	4C-4703	Drive Adapter (hystat and travel motor splined drive adapter; male 32T-16/32; requires 4F-8824 Seal)
Not shown	4C-4705	Drive Adapter (splined drive adapter; female 30T-16/32 spline)

Flange Adapters

SMCS Code: 5050-030, 032, 038, 082

Model: All Models

- Used to aid mechanic in flow testing of various hydraulic systems — specifically used when flange-type XT3 and XT5 adapters are needed
- Straight, 45°, and 90° fittings available to orientate test hoses for easier accessibility to vehicle's hydraulic components
- New fittings now have longer length for faster/easier installation (allows use of conventional socket wrenches rather than flat wrenches used on former short adapters)
- Used with existing high pressure adapters and quick disconnects for flow testing on-vehicle or in shop
- Features 9/16-18 Thread diagnostic "T" port for pressure testing operating systems

	Working pressure	Fitting end	Nominal size flange
XT3 Fittings	27 560 kPa (4000 psi)	1 inch NPT female thread	1/2 to 1 1/2 inch
XT5 Fittings	41 340 kPa (6000 psi)	1 5/16 inch STOR male thread	3/4 to 1 1/2 inch

CRB Part No.	New Part No.	XT3 Hose	XT5 Hose
—	9U-7438 Flange Adapter	—	3/4 inch
1U-8292	9U-7439 Flange Adapter	—	1 inch
1U-8293	9U-7440 Flange Adapter	—	1 1/4 inch
—	9U-7441 Flange Adapter	—	1 1/2 inch
—	9U-7442 Flange Adapter	1/2 inch	—
—	9U-7443 Flange Adapter	3/4 inch	—
1U-8297	9U-7444 Flange Adapter	1 inch	—
1U-8298	9U-7445 Flange Adapter	1 1/4 inch	—
1U-8299	9U-7446 Flange Adapter	1 1/2 inch	—

Reference

NEHT5000; NEHT6000 through NEHT6045 Test Procedures

Automatic Welding

Bore Welding Groups

SMCS Code: 0672
Model: All Models

Part No.	Description
137-2700	Bore Welding Group (110V)
138-8215	Bore Welding Group (110V with auto-skip)
138-8212	Bore Welding Group (220V)
138-8213	Bore Welding Group (220V with auto-skip)

- Used to provide a very uniform and high quality weld deposit for building up worn or damaged bores (adds material to bores using the GMAW (MIG) welding process)
- Unit is fully automatic and microprocessor controlled
- Can be set up and used in any position
- Uses solid or flux core wire of 0.76 to 1.14 mm (.030 to .045 in) diameter
- Repair bores from 25.4 to 482.6 mm (1.00 to 19.00 in) with standard units
- Larger bore repair up to 685.8 mm (27.00 in) can be done using optional parts
- Each welding group includes:
 - Rotary welder
 - Wire feeder
 - Control cables
 - Adjustable base
 - Control box
 - Wire feed conduit, 1524 mm (5 ft)
 - Welding torches
 - Torch extensions
 - Spare torch tip diffusers
 - Setup tools and carrying case
 - Tool operating manual
 - Weld-calc time and material estimating program
- Auto-skip units can be adjusted so weld is applied to only part of a bore (for example, to bring a bore worn oval back to a round condition or prevent filling a keyway with weld)
- Optional components for the welder include: torches for 457.2 to 685.8 mm (18.00 to 27.00 in) bores, hand held MIG gun, torch extension support, torch counter balance, wire feed conduit [914 mm (3 ft.) long], 90 degree power connector
- Call Caterpillar Service Technology's technical experts to answer any other welding related questions

Additional Parts Requirement	
Power source	250 amp, 30 Volt, constant voltage (not supplied with unit)
Torch assemblies	#9, 10, 11, 12 (not supplied with unit)
Weld power source cables	not supplied with unit

Service Parts			
Part No.	Description	Part No.	Description
137-2682	Bulk Liner	137-2683	Limit Switch
137-2688	Wire Feed Roll, .024 in/.030 in	137-2684	Limit Switch
137-2689	Wire Feed Roll, .035 in/.045 in	137-2685	Worm Gear
137-2692	Wire Feed Conduit, 5 ft	137-2686	Pinion-Rack
137-2699	Tip #00	137-2693	Head Extension, 3 in
137-2704	Tip #.035	137-2694	Head Extension, 6 in
137-2705	Diffuser	137-2695	Head Extension, 12 in
137-2723	Tip #.030	137-2696	Head Extension, 18 in
137-2724	Tip #.045	137-2697	Radial Mount
137-2728	Conduit Wire, 3 ft	137-2698	Torch Assembly #00
137-3386	Nozzle Holder	137-2701	Torch Assembly #1
137-3387	Nozzle	137-2702	Torch Assembly #2
137-3586	Tip #0	137-2703	Torch Assembly #3
137-2700	Bore Welding Group, 110V	137-2711	Torch Assembly #4
137-1242	Bore Welder-AskP	137-2712	Torch Assembly #5
137-2726	Power Connector	137-2713	Torch Assembly #6
137-2709	Power Cable	137-2714	Torch Assembly #7
137-2708	Power Cable	137-2715	Torch Assembly #8
137-2707	Power Control Cable	137-2716	Torch Assembly #9
137-2706	Power Control Cable	137-2717	Torch Assembly #10
137-2691	Gas Hose, A1018 Bortech#	137-2718	Torch Assembly #11
137-2690	Control Box	137-2719	Torch Assembly #12
137-2687	Wire Feeder	137-3585	Torch Assembly #0
137-2680	Bore Welder	137-2722	MIG Gun
140-0458	Control Cable	137-2725	Offset Support
138-8765	Control Cable	137-2727	Counterbalance Torch
138-8216	Control Box	138-8209	Main Bearing Adapter
138-8213	Bore Welding Group	138-8218	Nut-Flange
138-8212	Bore Welding Group	139-1241	Electrode Holder
138-8215	Bore Welding Group	155-4152	Speed Reduction Pulley (used with torches (#9-12))
137-2721	Trammel Torch Assembly	155-4153	Speed Reduction Belt (used with torches (#9-12))
137-2720	Radial Torch Assembly	162-2744	Insulating Bushing
140-0459	Wire Feed Hose, 10176 Bortech#		
137-2681	Spindle Fittings		

Power Source Cables

When using a 1U-6162 Welder or 1U-6160 Welder (Miller XMT), use 137-2707 Power Control Cable and 137-2709 Power Cable.

For all other power sources, use 137-2706 Power Control Cable and 137-2708 Power Cable.

These cables have bare wires on cable end that connects to weld power source. Please contact your welding supplier for appropriate connectors.

Reference

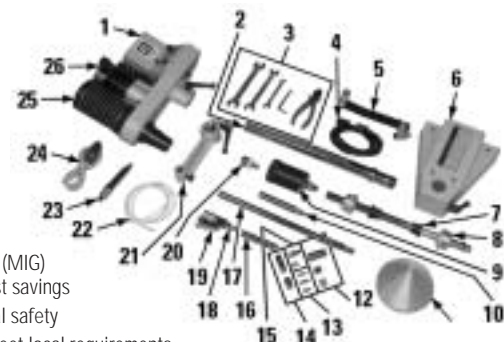
NEHS0665 Tool Operating Manual

Automatic Welding Groups

SMCS Code: 0679
Model: All Caterpillar Machines

Part No.	Description
1U-9600	Automatic Welding Group, 110V, 240V, 60 Hz
1U-9601	Automatic Welding Group, 110V, 240V, 50 Hz

- Unique, labor saving tool for welding or repairing worn and distorted bores
- Fully automatic—eliminates cumbersome, manual, time-consuming methods used previously
- Can weld bores from 30 mm (1.8 in) to 216 mm (8.5 in) in diameter; approximately 90% of all bores on Cat machines fall into this range
- Larger bores require optional 1U-9631 Drive Motor for speed reduction
- Instead of using conventional stick electrodes, this automatic bore welder uses existing Metallic Inert Gas (MIG) wire and equipment; weld wire is used more efficiently than electrodes, resulting in weld consumable cost savings
- Uses step-down transformer to distribute low voltage to drive motor and control panel, providing additional safety
- Can be connected to 110, 220 or 240V, 50 or 60 Hz, single phase power; transformer can be adjusted to meet local requirements
- Using technology from robotics industry, weld head assembly is the "heart" of the machine; consisting of speed control device, drive motor and clutch assembly, these components combine to provide steady torch rotation; lead screw provides constant 3mm of feed per revolution in and out of the bore; using charts provided in Operating Manual, a serviceman can set this tool to control speed, feed rate and weld material disposition, eliminating most of guesswork needed when using stick electrodes



Item	Part No.	Description
1	1U-9616	Speed Control Assembly
2	1U-9604	Column
3		Tool Group (not serviced) Open End Wrench, 17 to 19 mm Open End Wrench, 14 to 17 mm Open End Wrench, 8 to 10 mm Hex Wrench, 6 mm Diagonal Pliers
4	4C-9308 1U-9609	Power Cord — 1U-9600 only Power Cord — 1U-9601 only
5	1U-9610	Coil Cord
6		Magnetic Base (not serviced)
	1U-9633	Transformer
	1U-9602	Electromagnet (qty 4)
	1U-9620	Controls Fuse (250 V, 3.15 A) (qty 2)
	1U-9619	Power Fuse (250 V, 2 A)
7	1U-9625	Bushing (qty 2)
8	1U-9629	Barrel Clamp
9	1U-9628 1U-5134	Bruch Holder (former, 12 mm thread) Bruch Holder (16 mm thread)
10	1U-9639	Torch-Barrel Extension (Short)
11	1U-9606	Centering Cone
12	1U-9621 1U-9622 1U-9640	Gas Nozzle (Long) (qty 2) Gas Nozzle (Short) (qty 2) Gas Nozzle (Short — 1U-9622 Modified)

Item	Part No.	Description
13.	1U-9635 1U-9638 1U-9617 1U-9637	Contact Tip, (.035 in)(1U-9600 only)(qty 5) Contact Tip Short, (.035 in)(1U-9600 only)(qty 5) Contact Tip, (.08 mm)(1U-9601 only)(qty 5) Contact Tip Short, (.030 in — Short tip for 0.8 mm wire) (1U-9601 only)(qty 5)
14	1U-9614 1U-9615	Nozzle Extension (Long) Nozzle Extension (Short)
15	1U-9623 1U-9624	Nozzle Holder (Long)(qty 2) Nozzle Holder (Short)(qty 2)
16	1U-9630	Torch body
17	1U-9607	Barrel Extension (Long)(qty 2)
18	1U-9626	Nut
19	1U-9627	Torch Holder Assembly
20	1U-9612 9U-5135	Torch Adapter (former, 12 mm thread) Torch Adapter (16 mm thread)
21	1U-9605	Centering Fixture
22	1U-9613	Teflon Liner (10 Meter Pkg)
23	1U-9608	Adapter (No 3 Morse Taper)
24	1U-9611	Remote Control
25	1U-9603	Head and Clutch Assembly
26	1U-9634 1U-9632 1U-9631	Drive Motor (1:360 Gear Ratio) Gear and Clutch Assembly Drive Motor (Optional 1:500 Gear Ratio)

Reference

NEHS0513 Operating Manual

161-6202 Wire Feeder

SMCS Code: 0679

Model: All Models

- Used with 1U-9600 Bore Welder to weld worn or distorted bores (wire feeder designed with Caterpillar specifications)
- Automatic voltage sensing makes this wire feeder perfect for bore welding and general applications
- Includes stub burn-off to prevent wire from sticking inside bore
- Weld wire is non-conductive until gun trigger is pressed
- Operates entirely on Arc Voltage utilizing a single weld power supply
- Internal contact and gas solenoid valve
- Gas flow meter mounted on unit for ease of use
- Stainless steel case

Continuous duty rating	450 Amp with 12 foot MIG gun
Meters	voltage, amperage, and wire feed speed
Overall size	44.5 x 23 x 32 cm (17.50 x 9.0 x 12.5 in)
Spool size and weight	8 inch thru 30 lb. spools (including 14 lb. coils of wire)
Polarity	straight or reverse



Reference

NEHS0628 Tool Operating Manual

Service Parts

Part No.	Description	Part No.	Description
1U-6160	Welder Power Supply	1U-9005	Nozzle
1U-6162	Weld Power Supply	1U-9006	Nozzle
1U-6163	Hand Control	1U-9007	Contact Tip
1U-6164	Outlet Wire Guide	1U-9008	Contact Tip
1U-6165	Outlet Wire Guide	1U-9009	Contact Tip
1U-6166	Outlet Wire Guide	1U-9010	Contact Tip
1U-6167	Flow Meter (Four-way)	1U-9011	Contact Tip
1U-6168	Handle	1U-9012	Contact Tip
1U-6171	Drive Roll	1U-9013	Diffuser
1U-6172	Drive Roll	1U-9014	Insulator
1U-6173	Drive Roll	1U-9015	Neck
1U-6174	Drive Roll	1U-9016	Switch Assembly
1U-6175	Drive Roll	1U-9017	O-ring
1U-6176	Potentiometer	1U-9018	Liner, 12 Foot
1U-6177	Fuse, 8 Amp	1U-9019	Liner, 12 Foot
1U-6178	Polarity Switch	1U-9020	Liner, 12 Foot
1U-6179	On-Off Switch	1U-9021	Liner Retaining Nut
1U-6180	Gas Inlet Fitting	1U-9022	Connector
1U-6182	Inlet Guide	1U-9025	Handle
1U-6183	Connector Gun Switch	1U-9026	Neck Assembly
1U-6184	Drive Roll Smooth V	1U-9027	Switch
1U-6185	Drive Roll Smooth V	4C-6610	Input Connector
1U-6186	Drive Roll Smooth V	4C-6611	Knob
1U-6187	Work Clip Assembly	4C-6612	Hub Pin
1U-6188	Volt Meter	4C-6613	Cable Assembly
1U-6190	Inch Switch	4C-6614	Gun
1U-6191	Drive Roll Key	4C-6618	Gun
1U-6192	Fuse Holder	4C-8214	Liner, 15 Foot
1U-6193	Outlet Guide	4C-8215	Liner, 15 Foot
1U-6194	Outlet Guide	4C-8216	Liner, 15 Foot
1U-7644	Speed Control Dial	4C-8218	Switch Cable Extension
1U-7645	Drive Roll	4C-8219	Remote Switch Assembly
1U-9004	Welding Cable		

Boring Bar

Hydraulic and Portable Boring Bars

SMCS Code: 0679

Model: All Caterpillar Machines

- Used to repair worn bores — lowers customer machine operating costs and increases service shop revenue
- Used with 1U-9600 Welding Group
- Easy to set-up and operate
- One set-up for machining and welding (increases efficiency and produces more reworked holes per hour)
- Mounting hardware allows machining of hole before welding (helps eliminate impurities in weld)
- Two in-line bores can be welded and machined simultaneously (maximizes production by machining one bore while welding the other)

Portable Boring Bar Unit (110 and 220 Volts)

- Designed as light-duty boring machine
- Suited for field applications, small shops, and light machining

Hydraulic Boring Bar Unit

- Used to machine bores on dozer frames, loader lift arms, center hitches, scraper hitches, and many other locations
- Also used to counter bore and spot face

Boring Bar Power Units

- Exclusive load sensing hydraulic feed
- Remote pendant control
- Specially designed six-finger centering cones provide quick, accurate bar centering, even on badly worn bores
- Adjustable aluminum support bearings will rigidly support bar, feed/drive unit, and Bore Welder
- Prehardened to Rc65 and broached on 101.6 mm (4.00 in) centers for tool holders

Part No.	Power	Gear pump	Hydraulic	Pump reservoir	System relief valve	Back relief valve	Speed pressure	Full load rpm	No Load rpm	Input watts	Output watts	Weight of power unit	Weight of feed and drive unit
9U-5730	110 Volts, single phase, 60 Hz, 1725 rpm	3.8 Lpm (1.0 gpm) at 1800 rpm	5.7 Lpm (1.5 gpm)	2400 kPa (350 psi)	2070 kPa (300 psi)	965 kPa (140 psi)	4	100/150/260/420	170/250/450/700	900	500	73 kg (160 lbs)	33 kg (72 lbs)
9U-5889	220 Volts, single phase, 50 Hz, 1425 rpm	3.2 Lpm (.84 gpm) at 1500 rpm	5.7 Lpm (1.5 gpm)	2400 kPa (350 psi)	2070 kPa (300 psi)	965 kPa (140 psi)	4	100/150/260/420	170/250/450/700	900	500	73 kg (160 lbs)	33 kg (72 lbs)



1U-8660 Hydraulic Boring Bar	
Power	45 Amps at 230 VAC, 27 Amps at 460 VAC
Hydraulic fluid capacity	150 L (40 gal)
Weight	408 kg (900 lbs)

Reference

SEHS8985 Special Instruction, Using the 1U-8660 Boring Bar Hydraulic Unit and Attachments
 NEHS0579 Tool Operating Manual, Portable Boring Bar Unit
 NEHS0513 Tool Operating Manual, Using the 1U-9600 Welding Group
 NEHP5606 Product Brochure, Boring Bar/Bore Welder

Uninterruptible Power Supply

Uninterruptible Power Supply Tools

SMCS Code: 4480-039

Model: Uninterruptible Power Supply (UPS) 250

Warranty: One Year

190-8379 Insertion Tool Group

- Used to insert bearing cartridge onto flywheel assembly

190-8385 Removal Tool Group

- Used to remove bearing cartridge from flywheel assembly

190-8386 Rotor Shim Tool (4 required)

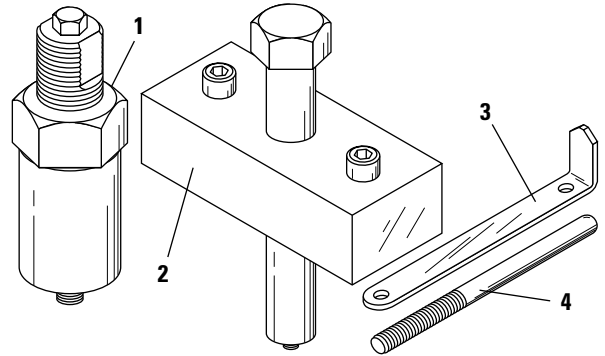
- Used to protect rotor assembly during installation and removal of bearing cartridge

190-8380 Spare Shim Kit

- Used to shim upper or lower bearing
- Shims included in kit: (shims are not sold separately)
 - 190-8381 Brass Shim — 0.05 mm (.002 in), Qty 8
 - 190-8382 Brass Shim — 0.13 mm (.005 in), Qty 4
 - 190-8383 Brass Shim — 0.25 mm (.010 in), Qty 2
 - 190-8384 Brass Shim — 0.50 mm (.020 in), Qty 1

191-5217 Guide Pin (2 required)

- Used to retain proper alignment of bearing cartridge on flywheel assembly during installation or removal



Item	Part No.	Description
1	190-8379	Insertion Tool Group
2	190-8385	Removal Tool Group
3	190-8386	Rotor Shim Tool
4	191-5217	Pin Guide

Reference

Other UPS Products:

NEX65029 Caterpillar UPS View Software Group

190-8487 Vacuum Pump Oil

216-7886 Rotar Position Sensor Shim Kit

SMCS Code: 4480-039

Model: Uninterruptible Power Supply (UPS) 250/500/750 and 300/600/900

- Used to set gap between Rotar Position Sensor and commutation wheel
- Includes ten 5 mil shims with 0.373 OD and 0.165 ID and ten 10 mil shims with 0.390 OD and 0.157 ID

NEXG5041 Caterpillar UPS View Software Group for UPS 250

SMCS Code: 4480-039

Model: Uninterruptible Power Supply (UPS) 250/500/750 and 300/600/900

Warranty: One Year

Caterpillar UPS View is a monitoring software designed to run on a personal computer under Microsoft Windows. With Caterpillar UPS View you can monitor the Uninterruptible Power Supply (UPS) 250/500/750 or 300/600/900 in real time and display these variables on the computer:

- Some of the data that is available in current, voltage, rotor speed, temperatures of components and event logs.
- Telemetry data, such as voltage, current and temperature are compared to desired range.
- Logged telemetry data can be saved to a disk.
- Configure data to be displayed as numerals, bar graphs or scrolling history graphs.
- Screen can be customized to rearrange, group or hide.
- User can monitor UPS's operation remotely (must use analog phone lines and analog modem must be installed in PC).
- User can setup software with alarm(s) and have operator(s) paged if alarm occurs.
- Connect to UPS using an analog modem, an RS-232 or RS-485 port or a network.

Ordering Information

- Caterpillar UPS View software can be ordered through the Corporate Literature Distribution System.
- NEXG5041 Caterpillar UPS View Software Group includes software on a floppy disk, a manual, and a DB9 Male/Female Communications cable 15 feet long.

Specifications/Technical Information

PC Requirements

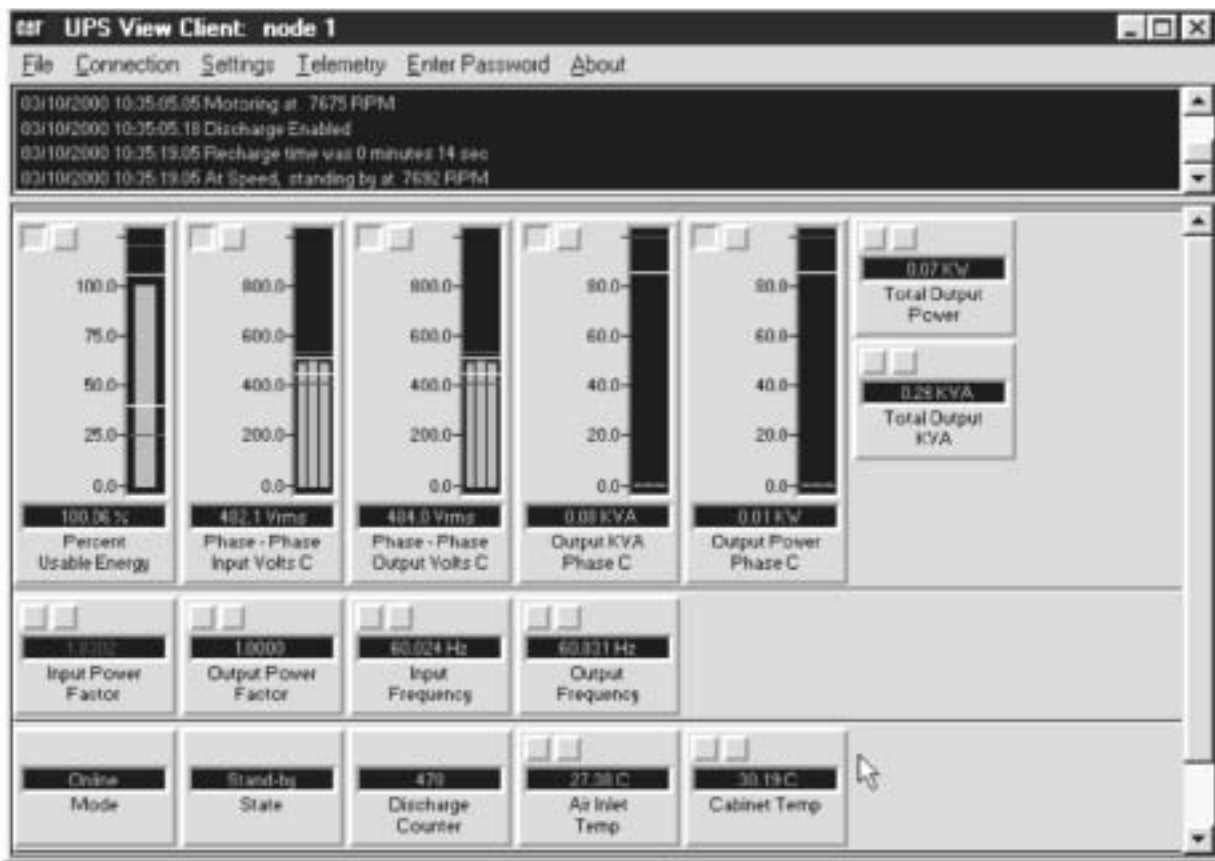
- IBM PC compatible with 133 MHz Pentium Processor or a compatible processor
- 16 Mb of RAM
- 3.5 inch 1.44 Mb diskette drive
- Built-in pointing device or mouse
- TCP/IP Network Protocols and UDP/IP Network Protocols
- Analog modem for communicating over analog phone lines
- Network Interface Card (NIC) for remote monitoring over a network

Software

- Microsoft Windows 95, 98 or NT4.

Reference

SEBU7311 Uninterruptible Power Supply (UPS) 250 Manual



Typical Caterpillar UPS View Software Screen Shot

Other UPS Products	
Part No.	Description
190-8487	Vacuum Pump Oil
190-8379	Insertion Tool Group
190-8380	Spare Shim Kit

Other UPS Products	
Part No.	Description
190-8385	Removal Tool Group
190-8386	Rotor Shim Tool
191-5217	Pin Guide
216-7886	RPS Shim Kit

Diagnostic Tool Repair

Caterpillar Service Technology's authorized Repair Centers provide limited repair service on selected diagnostic tools to our Dealers. The authorized Repair Centers have been successful in providing quality repair and fast turnaround time for the majority of the tools repaired.

The tools repaired by the Repair Centers are listed on the following pages. Tools not on the list were excluded for one or more of the following reasons:

- low cost makes replacement more economical
- requires special expertise or equipment
- existing supplier agreements
- repair parts not readily available

Diagnostic Tool Repair Program Policies and Procedures

Repair charge for:

1. Warranty repairs — must provide Repair Center with purchase order number to pay for repair and make warranty claim with Caterpillar. Call the CSTG Hotline for authorization number if claim is over \$200.
2. Normal repairs — basic repair price. Please contact Repair Center for current basic repair prices.
3. Repairable components with major damage (major damage means replacement is needed for a major component such as a transducer, power cord, or pc board) — basic repair price does not apply; the Repair Center will contact owner with a separate repair quote.
4. Additional components (something which is not included in the standard Tool Group) — advise owner if extra charges will exceed U.S. \$25.
5. Non repairable tools — The Repair Center will advise owner of condition and whether owner can obtain replacement from Caterpillar.

Freight/Shipping policy:

1. Owner pays shipping to the Repair Center. The Repair Center pays return shipping. This policy applies worldwide.
2. If you send tools not listed on the "Diagnostic Tool Repair List" sheet, you will be invoiced for the costs to return or reship the tools.

Instructions:

Documentation required when sending tools to Caterpillar Service Technology.

1. Sender's name, phone number, fax number and e-mail address.
2. Part number and name of each tool.
3. Brief description of problem.
4. Return shipping address of owner.
5. Billing address of owner.
6. Purchase order number is required (required for warranty also).
7. Owner outside the U.S. must specify what wording on customs declarations is required for the Repair Center to properly return the tool.



Advanced Technology Services
The Inventional company.SM
WWW.Advancedtech.com

8201 North University
Peoria, IL 61615
Attn: Caterpillar Diagnostic Tool Repair

For customer service contact Amy Booher at
1-800-328-7287, Outside US: 309-693-4000 Fax:
309-693-4170 or 309-693-4163 or e-mail at
depotCSR@advancedtech.com

TOOL REPAIR ORDER FORM FOR CATERPILLAR DIAGNOSTIC TOOLS

(THIS FORM IS TO BE COMPLETED AND FORWARDED , TO THE ABOVE ADDRESS , WITH EACH TOOL BEING SENT FOR REPAIR)

COMPANY NAME _____

NAME OF PERSON TO CONTACT _____

PHONE NUMBER (INCL. AREA CODE) _____

E-MAIL ADDRESS _____

FAX NUMBER (INCL. AREA CODE) _____

YOUR PURCHASE ORDER # _____

Warranty Policy

Advanced Technology Services will require a Purchase Order Number for repairs. If this repair is covered under Caterpillar Warranty, please follow your standard Caterpillar Warranty Claim Procedure to recoup your expenses (please remember to obtain an authorization number from Caterpillar Service Technology Group Hotline if claim is over \$200).

Caterpillar Service Technology Group Hotline phone numbers:
In Illinois: 1-800-541-8665 Outside Illinois: 1-800-542-8665
In Canada: 1-800-523-8665 Others: (309)-675-6277

TOOL PART NUMBER _____ TOOL SERIAL # _____

PROBLEM DESCRIPTION _____

TOOL RETURN ADDRESS _____
(STREET ADDRESS) _____

BILLING ADDRESS _____
(IF DIFFERENT) _____

020418T1



Authorized CAT Service Tool Repair Center

Model #	Description	Flat-Rate Price	Model #	Description	Flat-Rate Price
1U-5300	Fuel Flow Monitor	\$390	6V-7925	Fuel Rate Indicator	Priced by Repair
1U-5301	Supply Meter Group Sm.	\$170	6V-9060	Spark ADP. GP.	Priced by Repair
1U-5302	Return Meter Group Sm.	\$170	6V-9129	Temperature Adapter	\$25
1U-5303	Supply Meter	Priced by Repair	6V-9400	Transmission Shift Group	\$225
1U-5304	Return Meter Group Lg.	\$300	7X-1052	DDT 3176	\$164
1U-5430	Flow Monitor System Sm.	\$275	7X-1055	DDT GP. 3176	\$109
1U-5440	Flow Monitor System Lg.	\$350	7X-1400	Digital Diagnostic Tool	\$130
1U-5450	Fuel Flow Monitor Group	\$600	7X-1412	Harness Metal	\$40
1U-6245	Ultrasonic Thickness Gauge	\$150	7X-1690	DDT Challenger	Priced by Repair
1U-6246	Ultrasonic Probe	Priced by Repair	7X-1700	Comm. Adapter Group	\$170
1U-6249	Ultrasonic Thickness Gauge	\$150	7X-1701	Communication Adapter	\$140
1U-6602	Photo Tach	\$90	7X-1837	DDT EIS Monitor GP.	Priced by Repair
1U-6665	Pop Tester P. Supply	Priced by Repair	7X-5400	DDT PEEC GP.	Priced by Repair
1U-7446	Transmission Shift Group	\$235	8C-4629	DDT PEEC	Priced by Repair
1U-7447	Transmission Shift Analyzer	\$225	8C-9801	PWM Adapter	Priced by Repair
1U-7771	Photo Tach	\$90	8C-9902	DDT SIDT	\$140
1U-8860	Blowby Pickup Lg.	\$161	8C-9904	DDT	\$140
1U-9139	Universal Fueled Pickup	Priced by Repair	8T-0465	Therm Thermometer	\$194
1U-9500	Fuel Flow Communicator	Priced by Repair	8T-0470	Thermistor Thermometer	\$140
1U-9616	Borewelder Speed Control	\$250	8T-1000	Position Ind. Group.	\$180
1U-9800	Ultrasonic Wear Indicator	\$250	8T-1001	Electronic Position Indicator	\$140
1U-9801	Ultrasonic Wear Indicator	\$300	8T-1002	Probe Position Indicator	\$80
4C-4911	Battery Load Tester	\$300	8T-2685	Blowby/Airflow	Priced by Repair
4C-5485	Ultrasonic Probe	\$250	8T-2700	Blowby Indicator Group	\$200
4C-6090	Multi Channel Temp Group	\$343	8T-2701	Blowby/Airflow Indicator	\$175
4C-6500	Digital Thermometer Group	\$250	8T-5200	Signal Generator/Counter Group	\$175
4C-6501	Digital Thermometer	\$216	8T-5201	Signal/Generator Counter	\$135
4C-6800	Data Logger Group	\$561	8T-5250	Engine Timing Indicator	\$200
4C-6809	Position Amplifier	Priced by Repair	8T-5275	T-Harness Plastic Ecap	Priced by Repair
4C-6812	Injection Line Amp	Priced by Repair	8T-5300	Engine Timing Indicator	\$275
4C-6815	Data Logger	Priced by Repair	8T-5301	Adapter Group	Priced by Repair
4C-6816	Pressure Sensor	\$75	8T-8697	ECAP	\$225
4C-6817	Pressure Sensor 100	\$109	8T-8697	ECAP	\$225
4C-6818	Pressure Sensor 500	Priced by Repair	8T-9119	Flow Meter Sm.	\$164
4C-6819	Pressure Sensor 1000	\$109	8T-9121	Flow Meter Lg.	\$164
4C-6820	Pressure Sensor 7500	Priced by Repair	8T-9170	Elect. Comp. Tester	\$150
4C-6821	Inj. Line Pickup Gp.	Priced by Repair	8T-9171	MS Training Aid	\$218
4C-8195	No description	\$90	8T-9172	Elect. Switching Trainer	Priced by Repair
4C-8710	Emission Analyzer	Priced by Repair	8T-9280	Flow Monitor P. Supply	\$80
4C-9640	No description	Priced by Repair	8T-9300	Fuel Flow Monitor	\$225
4C-9758	Supply Meter	\$125	9S-9102	Thermistor Thermometer Group	\$200
4C-9759	Return Meter	\$275	9U-5140	Photo Pickup Multitach	\$35
4C-9760	Supply Meter Group Lg.	\$150	9U-6665	CMS Service Tool	Priced by Repair
4C-9761	Return Meter Group Lg.	\$150	9U-6700	Ultrasonic Wear Indicator Group	\$135
4C-9762	Flow Meter Sm.	\$150	9U-6701	Ultrasonic Wear Indicator II	\$180
4C-9763	Flow Meter Lg.	\$150	9U-6958	Magneto Peak Detector	Priced by Repair
4C-9764	Flow Monitor Group	\$300	9U-7330	Fluke Multi-Meter 67	\$80
5P-9698	Freq. Calibrator	Priced by Repair	9U-7370	Challenger Belt Tester	Priced by Repair
6V-0050	Timing Indicator	\$325	9U-7400	Multitach II	\$200
6V-0146	LDC Analyzer	\$180	9U-7401	Multitach II	\$175
6V-2100	Multitach	\$125	9U-7402	Multitach 2 Photo Group	\$175
6V-2150	Starting/Charging Analyzer	\$140	9U-7500	Transmission Shift Group	\$425
6V-2192	Injection Transducer	Priced by Repair	9U-7980	Ultrasonic Upgrade Kit	Priced by Repair
6V-3030	DMM	\$125	146-4080	Multi-Meter	\$80
6V-3100	Diesel Engine Timing Indicator	\$338	154-8102	Fuel Flowmeter Group 3500 Engines	Priced by Repair
6V-3121	Multitach Group I	\$215	154-8101	Fuel Flowmeter Group 3500 Engines	Priced by Repair
6V-3136	Photo Pickup	\$25	168-7720	Ultrasonic Wear Indicator 3 Gp.	Priced by Repair
6V-4050	Transmission Shift Analyzer	\$200	168-7721	Ultrasonic Gauge 3	Priced by Repair
6V-4060	Engine Set Point Indicator	\$110	168-7722	Ultrasonic Probe	Priced by Repair
6V-4930	Battery Load Tester	Priced by Repair	168-7730	Fuel Flowmeter Group 3600 Engines	\$350
6V-4950	Injection Line Pickup Group	\$218	168-7740	Fuel Flowmeter Group 3600 Engines	\$350
6V-4960	AC Current Probe	\$125	171-4400	Communication Adapter II Group	Priced by Repair
6V-6113	Amplifier	Priced by Repair	171-4401	Communication Adapter II	\$197
6V-6114	Fuel Pickup	Priced by Repair	179-0710	Burn Rate Meter Group, Small Engine	\$400
6V-7070	Digital Mutimeter	\$100	179-0711	Burn Rate Meter Group, Small Engine	\$400
6V-7800	DMM	\$100	187-8520	Wireless ET	Priced by Repair
6V-7910	Injection Transducer	\$275	189-1720	Analog Gauge Tester	Priced by Repair

* If unit is beyond economical repair due to excessive wear or damage, replacement pricing can be quoted. April 2001. All pricing subject to change.

Diagnostic Tools Repaired by Supplier

Caterpillar Part Number	Description	Supplier
212-2160	Low Cost Multimeter	Extech Instruments
146-4080	Cat Multimeter, RS232	Extech Instruments, 3 Year Warranty
198-4240	Digital Pressure Indicator	SPX
177-2330	Battery Analyzer	SPX
156-1060	Emission Analyzer	Ecom
156-1070	Emission Analyzer	Ecom
170-8500	Particle Analyzer Group	Pamas
188-0645	Particle Analyzer Group	Pamas
209-5545	Oxygen Analyzer	Testo
177-8906	Radar Sensor	O'Connor Engineering
177-8902	Power Link	Stress-Tek
142-5505	Insulation Tester	Transcat
9U-6003	Insulation Tester	Transcat
152-7213	Scopemeter 123	Fluke
9U-7330	Multimeter 87	Fluke
163-0096	Process Calibrator	Fluke
4C-5521	Phase Sequence Meter	Transcat
123-6471	Diagnostic Tool M300	Mannesman Rexroth
1U-5470	Engine Pressure Group	Carrier Oehler
213-4310	IR Thermometer	Raytek
192-3750	IR Thermometer	Raytek
192-3755	IR Thermometer	Raytek
148-2388	IR Thermometer	Raytek
148-2400	IR Thermometer	Raytek
164-3310	IR Thermometer	Raytek
164-3320	IR Thermometer	Raytek
166-9030	IR Thermometer	Raytek
8T-9290	Borescope	Lenox
1U-5268	Borescope	Lenox
9U-6940	Borescope	Lenox
186-0170	Borescope	Lenox
186-0180	Borescope	Lenox
1U-5266	Borescope Lightsource 110	Lenox
190-8160	Borescope Lightsource 220	Lenox
1U-5265	Borescope Lightsource	Lenox
146-1738	Borescope	Gradient Lens
123-6700	IR Thermometer	Raytek
131-5050	Dataview	SPX
4C-3030	Vibration Analyzer	CSI
6V-7830	Tetragauge	Mico-West
5P-8558	Calibrating Group, Guage	Carrier Oehler
8T-0900	Clamp-Ammeter	Sypris

Diagnostic Tool Repair Centers

Notice: The Diagnostic Tool Repair Centers listed on this page are the only Caterpillar authorized sites.

(NACD) North American Commercial Division

ADVANCED TECHNOLOGY SERVICES

(Diagnostic Tools, Analog Pressure Gauges and Torque Devices)

8201 N. University Avenue
Peoria, IL 61615 USA

Phone 1-800-328-7287
Fax 1-309-693-4170

E-mail depotCSR@advancedtech.com

Caterpillar S.A.R.L.

CERGYDIS

(Diagnostic Tools only)

Shipping:
Parc d'affaires Silic
Batiment B
95800 Cergy Saint Christophe/France

Mailing:
BP8256
95801 Cergy Partoise Ceolen
ATTN: Andre Morel

Phone 33 1 34 20 13 40
Fax 33 1 34 20 13 42

WBJ Ltd

(Diagnostic Tools, Analog Pressure Gauges and Torque Devices)

Dukinfield Road
Hyde
SK14 4SD
The U.K.

Phone 44 161 367 9898
Fax 44 161 367 9700

HYDROTECHNIK GmbH

(Diagnostic Tools, Analog Pressure Gauges and Torque Devices)

Holzheimer Strass 94-96
D-65549 Limburg
Germany

Phone 49 6431 40040
Fax 49 6431 45308

Africa Middle East Region

PTE Mining and Industrial

(Diagnostic Tools and Analog Pressure Gauges)

82 Kempton Road
Kempton Park
GAUTENG
South Africa
1619

Phone +27 - (0)11-975-8762
Fax +27 - (0)11-975-8907

Cell (mobile):
Pieter +27 - (0)83-453-1501
Patrick +27 - (0)83-271-4234
Helmut +27 - (0)83-273-3757
Corrie +27 - (0)82-851-6050

(CAPL) Caterpillar Asia PTE. LTD.

SINGAPORE TECHNOLOGIES

(Diagnostic Tools only)

ELECTRONICS LIMITED

24 Ang Mo Kio Street 65
Singapore 569061
ATTN: Mr. Joel Yit

(CCL) Caterpillar China LTD.

China Engineers Limited

(Diagnostic Tools, Analog Pressure Gauges and Torque Devices)

8 Fuk Wang Estate
Yuen Long, N.T.
Hong Kong, China

Phone 852 2882 9090
Fax 852 2476 1330

(COFA) Caterpillar of Australia

ATTILA

(Analog Pressure Gauges and Diagnostic Tools)

4/50 Lawrence Drive
Nerang Qld 4211
Australia

ATTN: Mr. Attila Szvetko

Phone 61 75 596 5233
Fax 61 75 596 0261
E-mail attila@omcs.com.au

IP&E Industrial Power and Electronics

(Diagnostic Tools only)

Unit 5, 22 Paramount Drive
Enterprise Park
Wangara, Western Australia 6065
ATTN: Mr. John Harris

Phone 61 8 9302 4441
Fax 61 8 9302 4442
E-mail indpwr@opera.iinet.net.au

Repair Centers

ACTRON MFG. CO.

9999 Walford Ave.
Cleveland, OH 44102-4696
Attn: Repair Dept.

(800) 334-6167
(216) 651-2233

WARRANTY:
Send tool.

OUT OF WARRANTY:
Call for flat rate. Repairs must be prepaid.

ADVANCED METALTECH MANUFACTURING

194 Speedvale Ave.
W. Guelph, Ontario N1H 1C3
Canada

(519) 824-7653
FAX (519) 822-9485

AEMC CORPORATION

Instrument Corporation
Bellamy Industrial Park
Faraday Drive
Dover, NH 03820

(603) 749-7366
FAX (603) 742-2346

Estimates for repairs, normal recalibration, and calibration traceable to NBS are available upon request. Overseas customers must receive authorization by fax or letter before returning instruments.

AIDCO

751 South Center
Adrian, MI 49221

(517) 265-7165
FAX (517) 265-2131

Call for authorization number.

AIRCO

Call Caterpillar Service Technology for name of nearest Service Center.

AMETEK INC.

See Carrier-Oehler.
ANACOMP INC.

(800) 234-7393 for Parts
(800) 752-1931
for Technical Assistance

ASSOCIATED EQUIPMENT CORPORATION

5043 Farlin Ave.
St. Louis, MO 63115

(314) 385-5178
(800) 654-0853
FAX (314) 385-3254

Call for authorized service center location or other service information.

AXONIX CORP.

1214 Wilmington Ave.
Suite 201
Salt Lake City, UT 84106

(801) 466-9797

Call for technical assistance and service.

BECKMAN INDUSTRIAL CORP.

Suite A
3883 Ruffin Road
San Diego, CA 92123

(619) 495-3310

Or

Contact Caterpillar Service Technology for nearest authorized service center.

BELL, F.W. (SYPRIS)

6120 Hanging Moss Road
Orlando, FL 32807

(800) 775-2550 x323
(407) 678-6900 x321

BIDDLE INSTRUMENTS

See Metermaster.

BOSCH POWER TOOLS

(800) 334-5730

Call for location of nearest authorized service center.

BREWER ELECTRIC MFG. CO.

(800) 822-8867

Or

Contact Caterpillar Service Technology for location of authorized service locations.

CAMSPRAY

P.O. Box 726
520 Brooks Road
Iowa Falls, IA 50126

(800) 648-5011
(515) 648-5011

CARRIER-OEHLER

16955 Vincennes Ave. (Shipping)
P.O. Box 40 (Mailing)
South Holland, IL 60473

(708) 339-8200
FAX (708) 339-9830

CENTURION INDUSTRIES

45 Capitol Drive
Oconomowoc, WI 53066

(414) 567-3993

Call before shipping.

CHICAGO PNEUMATIC

Don E. Williams
7920 W. 14th St.
Rock Island, IL 61201

(309) 787-8160

CITA INDUSTRIES (HYTORC)

(201) 488-9200

Ask for Customer Service.

COLUMBUS MCKINNON

Contact Service Technology for nearest authorized service center.

COMPUTATIONAL SYSTEMS INC.

835 Innovation Drive
Knoxville, TN 37932-2470

(865) 675-2400
www.CSImeansReliability.com

COOPER AIR TOOLS

(803) 359-1200

Ask for Tech Services.

CSI

World Headquarters
Computational Systems, Inc.
835 Innovation Drive
Knoxville, TN 37932

(865) 675-2110
FAX (865) 218-1401
www.compsys.com/contacts.html

CURTIS-TOLEDO

1905 Kielen Ave.
St. Louis, MO 63133

(314) 383-1300

Call for authorization number.

CURTISS-WRIGHT FLIGHT SYSTEMS/SHELBY INC.

201 Old Boiling Springs Road
Shelby, NC 28152

(704) 481-1150
FAX (704) 482-1903

Call for authorization number.

DAREX CORPORATION

Box 277
220 Hersey Street
Ashland, OR 97520

(503) 488-2224
(800) 488-2224

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FAX 49 2371 40305

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St. Petersburg Russia 191180

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FAX (708) 455-6030

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Mitutoya Mfg. Co.
16925 Gale Ave.
City of Industry, CA 91745
(213) 961-9661

Mitutoya Mfg. Co.
10699 Stemmlin's Freeway
Dallas, TX 75220

(214) 556-0533

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D-71277 Rutesheim
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Germany

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FAX 49 7152 5 48 62

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Sintech Scientific (SEA) Pet Ltd.
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Pantech Industrial Complex
Singapore 128384

06-57-79-00-07
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World Wide Web
www.rayteck.com

RAYTEK GMBH

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D-13189 Berlin, Germany
49 30 478 0080

RAYTEK JAPAN, INC.

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81 3 5976 1531

AIRPORT BERLIN TEGEL

(BLN TXL)
Raytex Sensorik GmbH
Borkumstrasse 2
0 — 1100 Berlin, Germany
37 2 4725126
FAX 37 2 4710251

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Columbus City, IN 46725
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(800) 444-3134
FAX (219) 248-2605

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(201) 384-7600
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(415) 382-0177

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Arvada, CO 80004

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Eastern Service Center
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Heatherwood Industrial Park
Harrisburg, PA 17111

(717) 652-7914

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Obetz (Columbus), OH 43207

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(414) 785-9996

Southern Service Center
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Norcross, GA 30091-6900

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Canada L4K-4L1

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United Kingdom Service Center
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Pytchley Lodge Road
Kettering, Northants
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Seven Hills, NSW 2147
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Poughkeepsie, NY 12601

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FAX 93 753 95 26

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