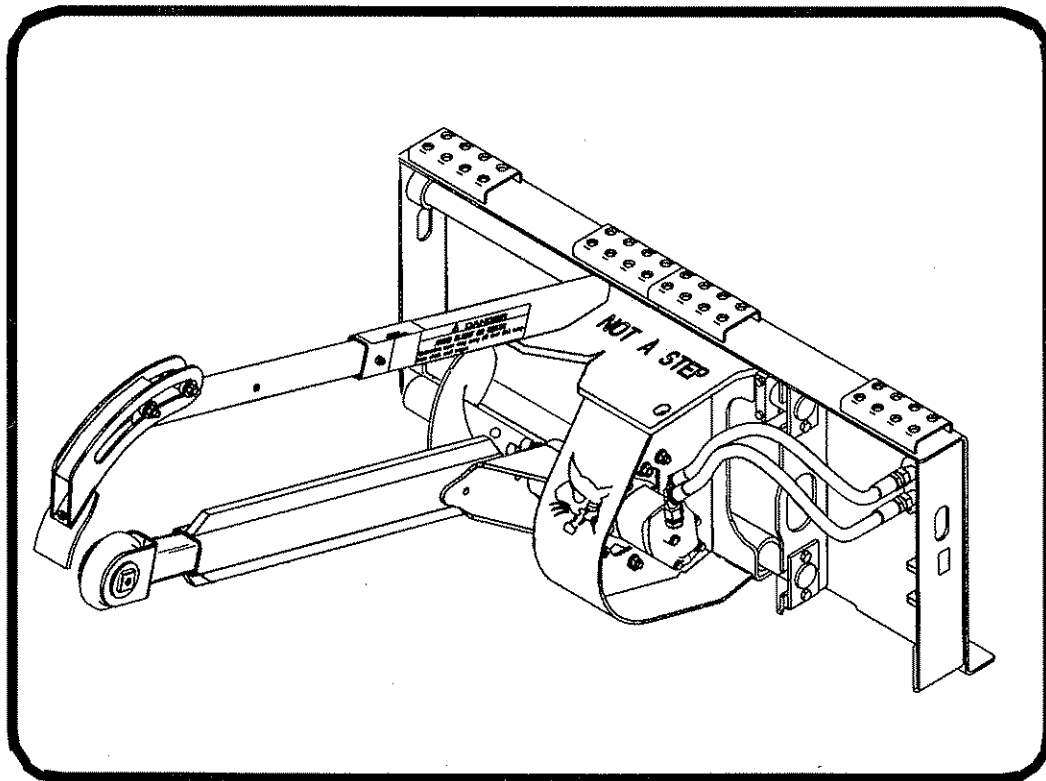




Bobcat®

Operation & Maintenance Manual Trencher

(Trencher LT213) - S/N 045300101 & Above
(LT313 Trencher) - S/N 045400101 & Above
(LT414 Trencher) - S/N A0RS00101 & Above





Bobcat®

FOREWORD

This Operation & Maintenance Manual was written to give the owner / operator instructions on the safe operation and maintenance of the Bobcat attachment. READ AND UNDERSTAND THIS OPERATION & MAINTENANCE MANUAL BEFORE OPERATING YOUR BOBCAT ATTACHMENT. If you have any questions, see your Bobcat dealer. This manual may illustrate options and accessories not installed on your Bobcat attachment.

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BOBCAT COMPANY IS ISO 9001 CERTIFIED



ISO 9001 is an international standard that specifies requirements for a quality management system that controls the processes and procedures which we use to design, develop, manufacture and distribute Bobcat products.

British Standards Institute (**BSI**) is the Certified Registrar Bobcat Company chose to assess the Company's compliance with the ISO 9001 at Bobcat's manufacturing facilities in Gwinner and Bismarck, North Dakota (U.S.A.), Pontchateau (France), Dobris (Czech Republic) and the Bobcat corporate offices (Gwinner, Bismarck & West Fargo) in North Dakota. Only certified assessors, like BSI, can grant registrations.

ISO 9001 means that as a company we say what we do and do what we say. In other words, we have established procedures and policies, and we provide evidence that the procedures and policies are followed.

CALIFORNIA PROPOSITION 65 WARNING

Diesel engine exhaust and some of its constituents are known to the state of California to cause cancer, birth defects and other reproductive harm.



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SERIAL NUMBER LOCATION

Attachment Serial Number

Figure 1

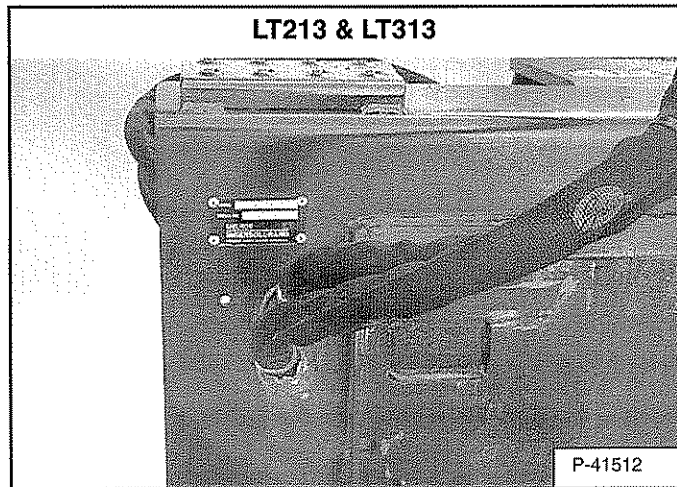
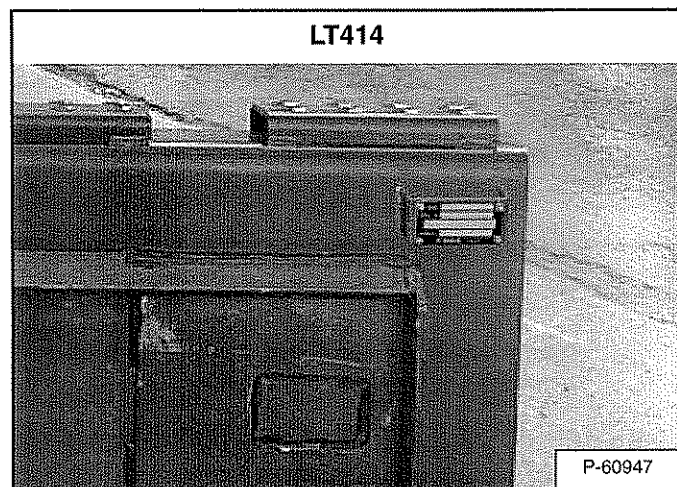


Figure 2



Always use the serial number of the Bobcat trencher when requesting service information or when ordering parts. Early or later models (identification made by serial number) may use different parts, or it may be necessary to use a different procedure in doing a specific service operation [Figure 1] and [Figure 2].

DELIVERY REPORT

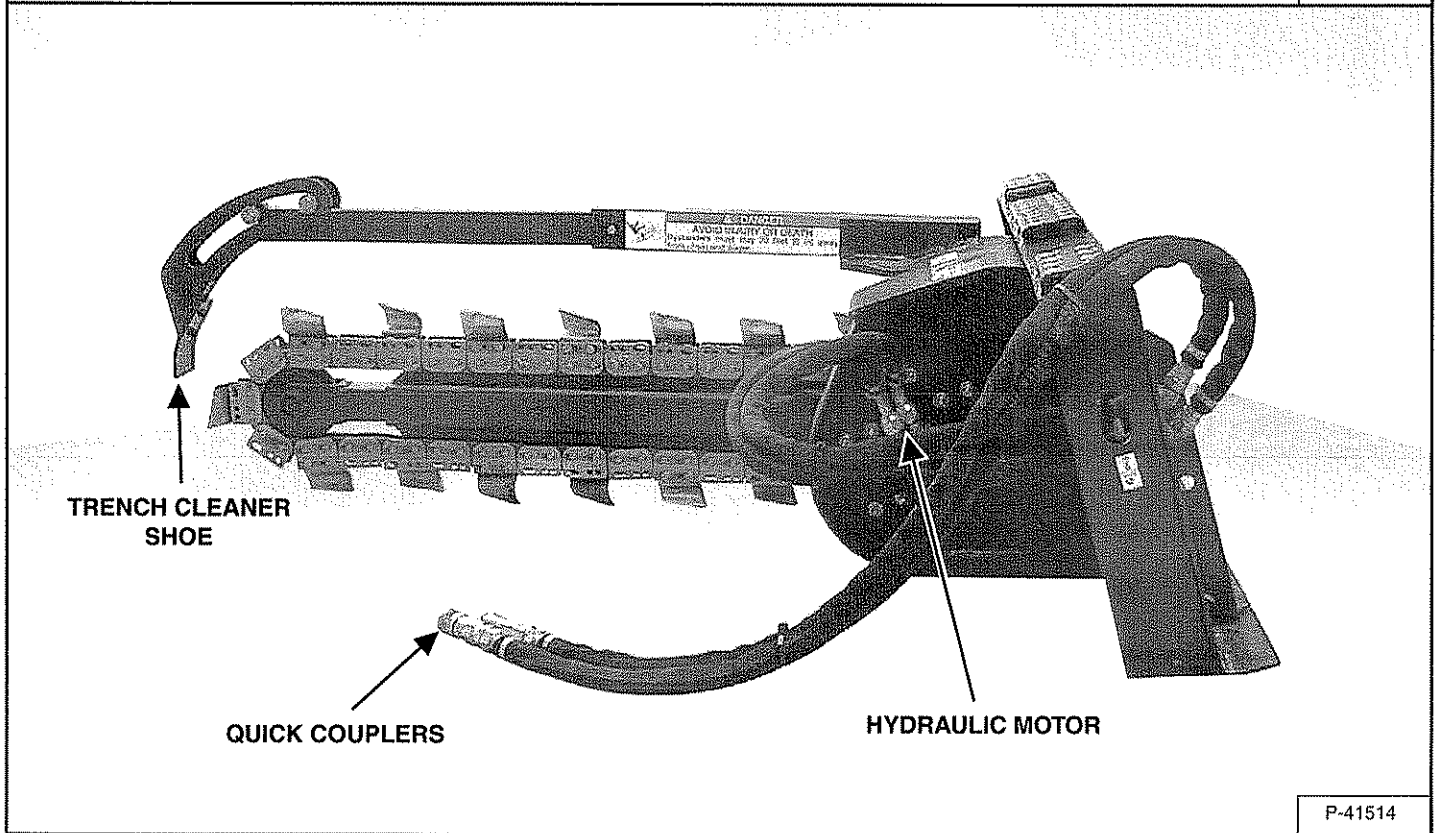
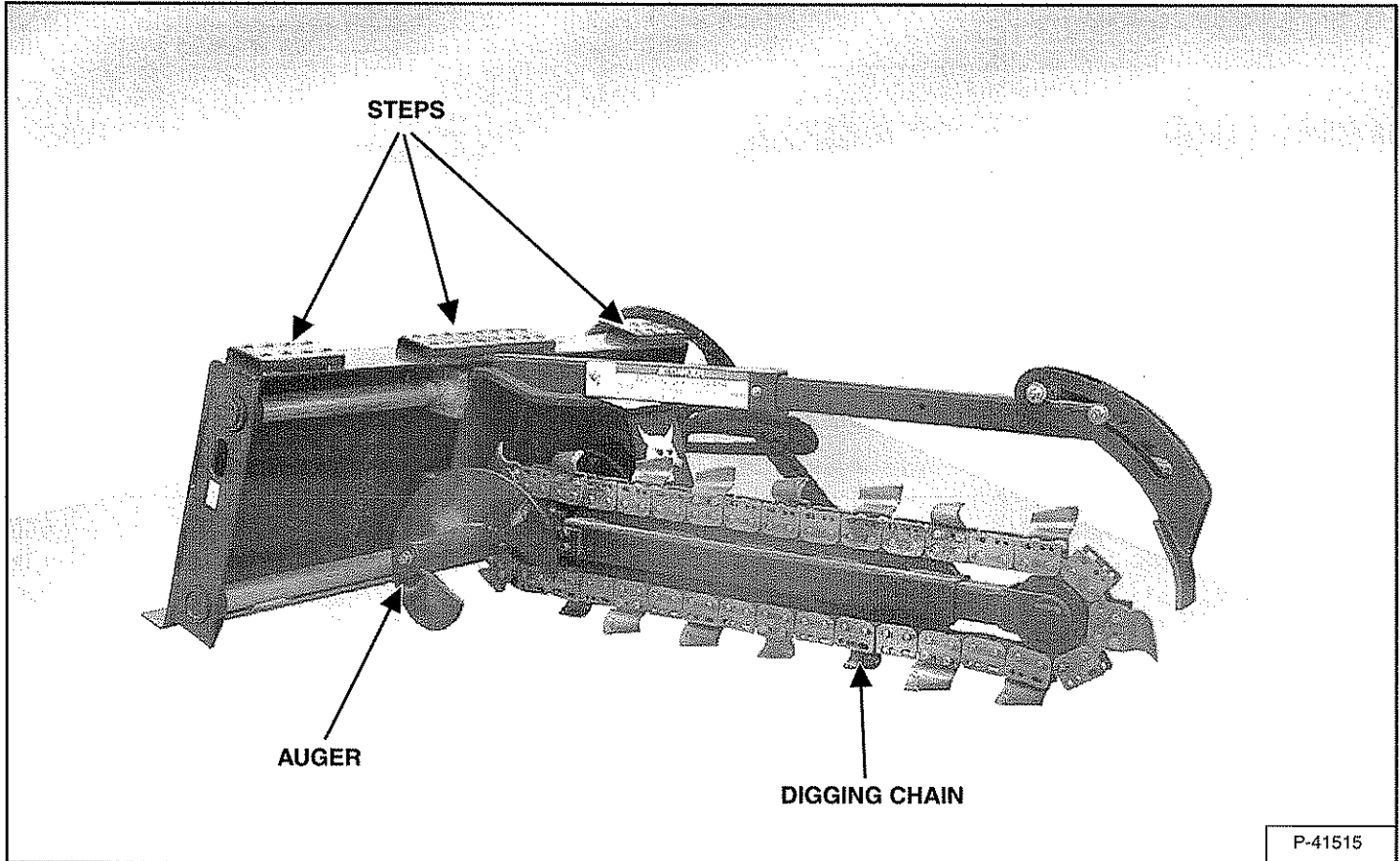
Figure 3

Figure 3 shows a sample of the Delivery Report form. The form is titled "DELIVERY REPORT" and includes a "WARNING" section. The form is labeled with the part number "P-20022" in the bottom right corner.

The delivery report [Figure 3] must be completed by the dealer and signed by the owner or operator when the Bobcat trencher is delivered. An explanation of the form must be given to the owner.

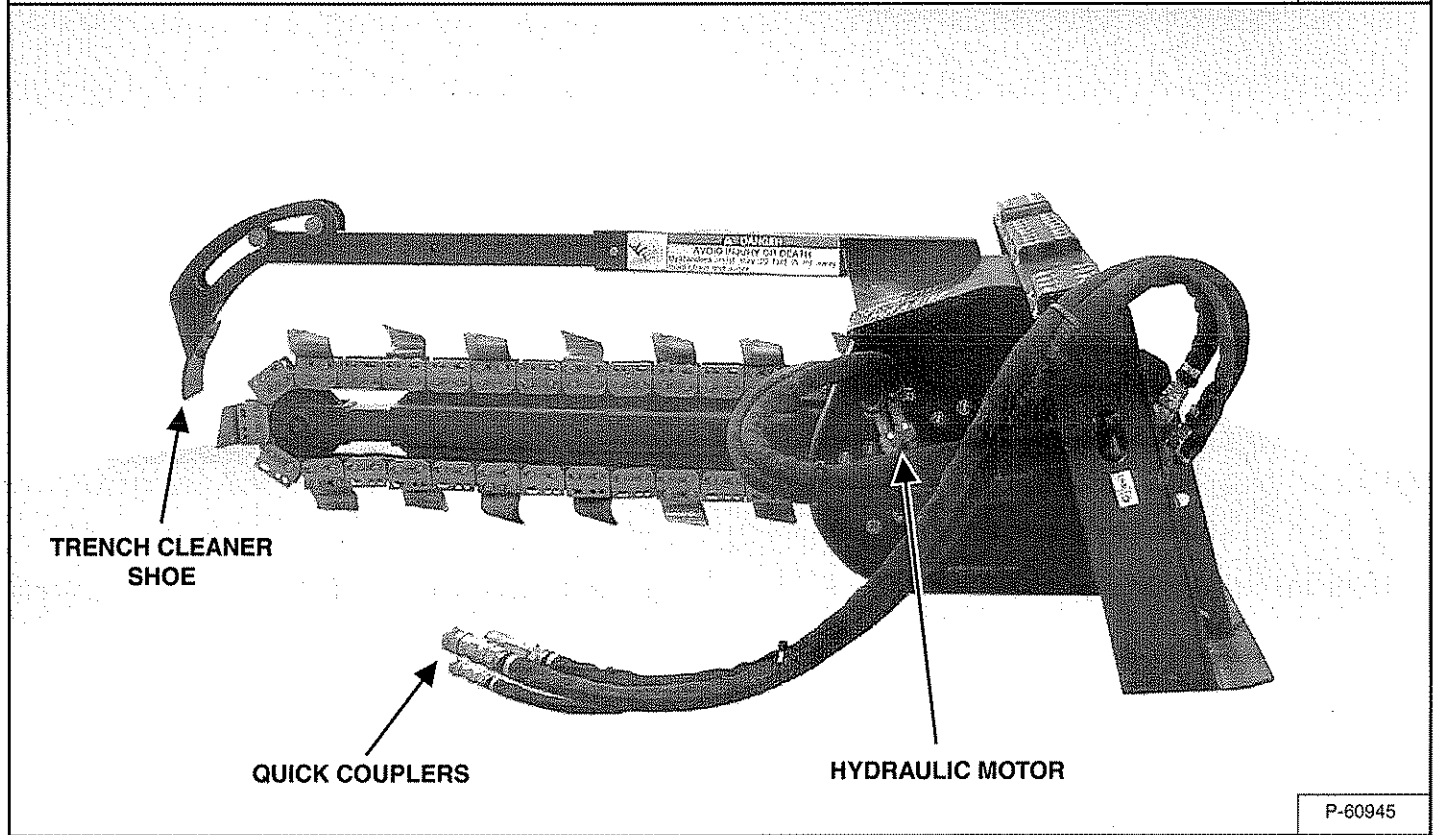
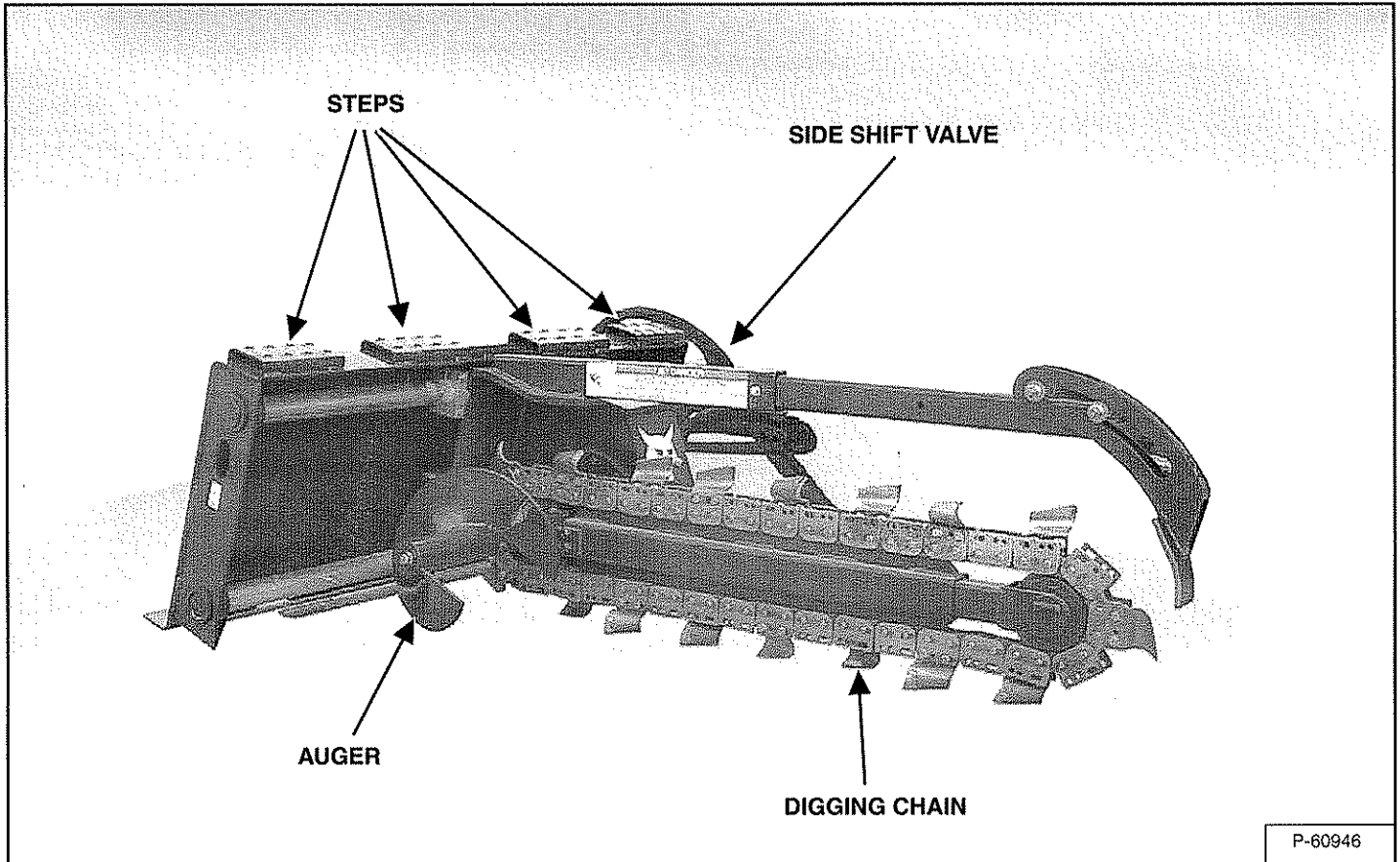
ATTACHMENT IDENTIFICATION

LT213 And LT313 Trencher



ATTACHMENT IDENTIFICATION (CONT'D)

LT414 Trencher



FEATURES AND ACCESSORIES

Standard Items

The trencher is equipped with the following standard items:

- The Trencher Features A Larger Diameter Auger With A Tapered Design.

Optional Items

Below is a list of Options available for your trencher. See your Bobcat dealer for other available Options and Accessories.

- Shark Tooth Digging Chain.

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SAFETY INSTRUCTIONS

Safe Operation Is The Operator's Responsibility

 Safety Alert Symbol
This symbol with a warning statement means: "Warning, be alert! Your safety is involved!" Carefully read the message that follows.

 WARNING
--

Operator must have instructions before operating the machine. Untrained operators can cause injury or death.

W-2001-0502

IMPORTANT

This notice identifies procedures which must be followed to avoid damage to the machine.

I-2019-0284

 DANGER

The signal word DANGER on the machine and in the manuals indicates a hazardous situation which, if not avoided, will result in death or serious injury.

D-1002-1107

 WARNING
--

The signal word WARNING on the machine and in the manuals indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

W-2044-1107

The Bobcat machine and attachment must be in good operating condition before use.

Check all of the items on the Bobcat Service Schedule Decal under the 8 - 10 hour column or as shown in the Operation & Maintenance Manual.

Safe Operation Needs A Qualified Operator

For an operator to be qualified, he or she must not use drugs or alcoholic drinks which impair alertness or coordination while working. An operator who is taking prescription drugs must get medical advice to determine if he or she can safely operate a machine and the attachment.

A Qualified Operator Must Do The Following:

Understand the Written Instructions, Rules and Regulations

- The written instructions from Bobcat Company include the Delivery Report, Operation & Maintenance Manual, Operator's Handbook, Safety Manual and machine signs (decals).
- Check the rules and regulations at your location. The rules may include an employer's work safety requirements. Regulations may apply to local driving requirements or use of a Slow Moving Vehicle (SMV) emblem. Regulations may identify a hazard such as a utility line.

Have Training with Actual Operation

- Operator training must consist of a demonstration and verbal instruction. This training is given by your Bobcat dealer before the product is delivered.
- The new operator must start in an area without bystanders and use all the controls until he or she can operate the machine and attachment safely under all conditions of the work area. Always fasten seat belt before operating.

Know the Work Conditions

- Know the weight of the materials being handled. Avoid exceeding the machine load capacities. Material which is very dense will be heavier than the same volume of less dense material. Reduce the size of load if handling dense material.
- The operator must know any prohibited uses or work areas, for example, he or she needs to know about excessive slopes.
- Know the location of any underground lines. Call local utilities or the TOLL FREE phone number found in the *Call Before You Dig* section of this manual.
- Wear tight fitting clothing. Always wear safety glasses when doing maintenance or service. Safety glasses, respiratory equipment, hearing protection, Special Applications Kits or a Front Window Guard are required for some work. See your Bobcat dealer about Bobcat safety equipment for your machine.

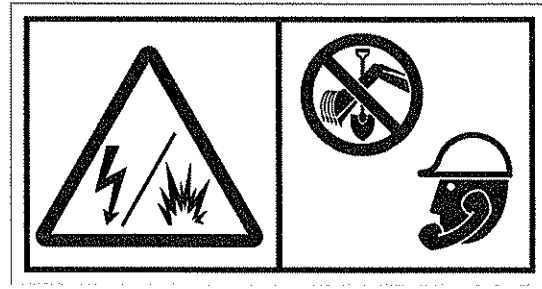
SI ATT-0511

SAFETY INSTRUCTIONS (CONT'D)

Call Before You Dig

Use Safety Rules

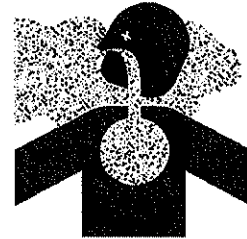
- Read and follow instructions in the machine and the attachment's Operation & Maintenance Manual before operating.
- Check for underground lines before operating attachment (if applicable).
- In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence and proper training of personnel involved in the operation, transport, maintenance and storage of equipment.
- Check that the Bob-Tach™ levers are in the locked position and the wedges are fully engaged into the holes of the attachment (if applicable).
- Check that the attachment is securely fastened to the machine.
- Make sure all the machine controls are in the NEUTRAL position before starting the machine.
- Operate the attachment only from the operator's position.
- Operate the attachment according to the Operation & Maintenance Manual.
- When learning to operate the attachment, do it at a slow rate in an area clear of bystanders.
- DO NOT permit personnel to be in the work area when operating the machine and attachment.
- The attachment must be used ONLY on approved machines. See your Bobcat dealer for updated list of approved attachments for each machine model.
- DO NOT modify equipment or add attachments that are not approved by the manufacturer.
- DO NOT make any adjustments or repairs on the machine or attachment while the engine is running.
- Keep shields and guards in place. Replace if damaged.



Call Before You Dig Dial 811 (USA Only) 1-888-258-0808 (USA & Canada)

When you call, you will be directed to a location in your state / province, or city for information about buried lines (telephone, cable TV, water, sewer, gas, etc.).

Avoid Silica Dust



Cutting or drilling concrete containing sand or rock containing quartz may result in exposure to silica dust. Do not exceed Permissible Exposure Limits (PEL) to silica dust as determined by OSHA or other job site Rules and Regulations. Use a respirator, water spray or other means to control dust. Silica dust can cause lung disease and is known to the state of California to cause cancer.

SI ATT-0511

FIRE PREVENTION



Maintenance

The machine and some attachments have components that are at high temperatures under normal operating conditions. The primary source of high temperatures is the engine and exhaust system. The electrical system, if damaged or incorrectly maintained, can be a source of arcs or sparks.

Flammable debris (leaves, straw, etc.) must be removed regularly. If flammable debris is allowed to accumulate, it can cause a fire hazard. Clean often to avoid this accumulation. Flammable debris in the engine compartment is a potential fire hazard.

The operator's area, engine compartment and engine cooling system must be inspected every day and cleaned if necessary to prevent fire hazards and overheating.

All fuels, most lubricants and some coolant mixtures are flammable. Flammable fluids that are leaking or spilled onto hot surfaces or onto electrical components can cause a fire.

Operation

Do not use the machine where exhaust, arcs, sparks or hot components can contact flammable material, explosive dust or gases.

Electrical



Check all electrical wiring and connections for damage. Keep the battery terminals clean and tight. Repair or replace any damaged part or wires that are loose or frayed.

Battery gas can explode and cause serious injury. Use the procedure in the Operation & Maintenance Manual for connecting the battery and for jump starting. Do not jump start or charge a frozen or damaged battery. Keep any open flames or sparks away from batteries. Do not smoke in battery charging area.

Hydraulic System

Check hydraulic tubes, hoses and fittings for damage and leakage. Never use open flame or bare skin to check for leaks. Hydraulic tubes and hoses must be properly routed and have adequate support and secure clamps. Tighten or replace any parts that show leakage.

Always clean fluid spills. Do not use gasoline or diesel fuel for cleaning parts. Use commercial nonflammable solvents.

Fueling



Stop the engine and let it cool before adding fuel. No smoking! Do not refuel a machine near open flames or sparks. Fill the fuel tank outdoors.

Starting

Do not use ether or starting fluids on any engine that has glow plugs. These starting aids can cause explosion and injure you or bystanders.

Use the procedure in the Operation & Maintenance Manual for connecting the battery and for jump starting.

Spark Arrester Exhaust System

The spark arrester exhaust system is designed to control the emission of hot particles from the engine and exhaust system, but the muffler and the exhaust gases are still hot.

Check the spark arrester exhaust system regularly to make sure it is maintained and working properly. Use the procedure in the Operation & Maintenance Manual for cleaning the spark arrester muffler (if equipped).

FIRE PREVENTION (CONT'D)

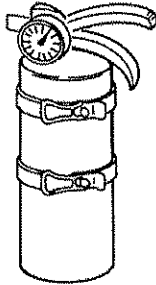
Welding And Grinding

Always clean the machine and attachment, disconnect the battery, and disconnect the wiring from the Bobcat controllers before welding. Cover rubber hoses, battery and all other flammable parts. Keep a fire extinguisher near the machine when welding.

Have good ventilation when grinding or welding painted parts. Wear dust mask when grinding painted parts. Toxic dust or gas can be produced.

Dust generated from repairing nonmetallic parts such as hoods, fenders or covers can be flammable or explosive. Repair such components in a well ventilated area away from open flames or sparks.

Fire Extinguishers

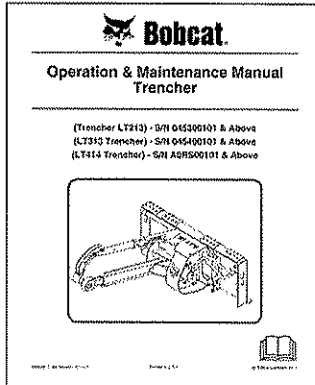


Know where fire extinguishers and first aid kits are located and how to use them. Inspect the fire extinguisher and service the fire extinguisher regularly. Obey the recommendations on the instructions plate.

PUBLICATIONS AND TRAINING RESOURCES

The following publications are also available for your Bobcat attachment. You can order from your Bobcat dealer.

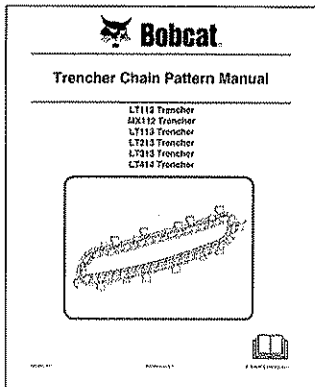
For the latest information on Bobcat products and the Bobcat Company, visit our web site at www.bobcat.com



OPERATION & MAINTENANCE MANUAL

6902546

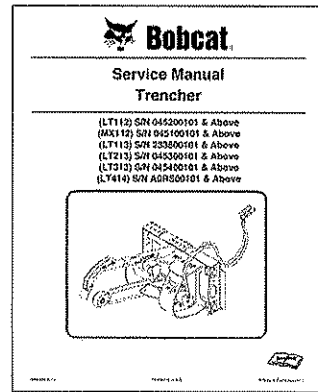
Complete instructions on the correct operation and the routine maintenance of the Bobcat Attachment.



CHAIN PATTERN MANUAL

6903853

Complete maintenance and overhaul instructions for your Bobcat Attachment.



SERVICE MANUAL

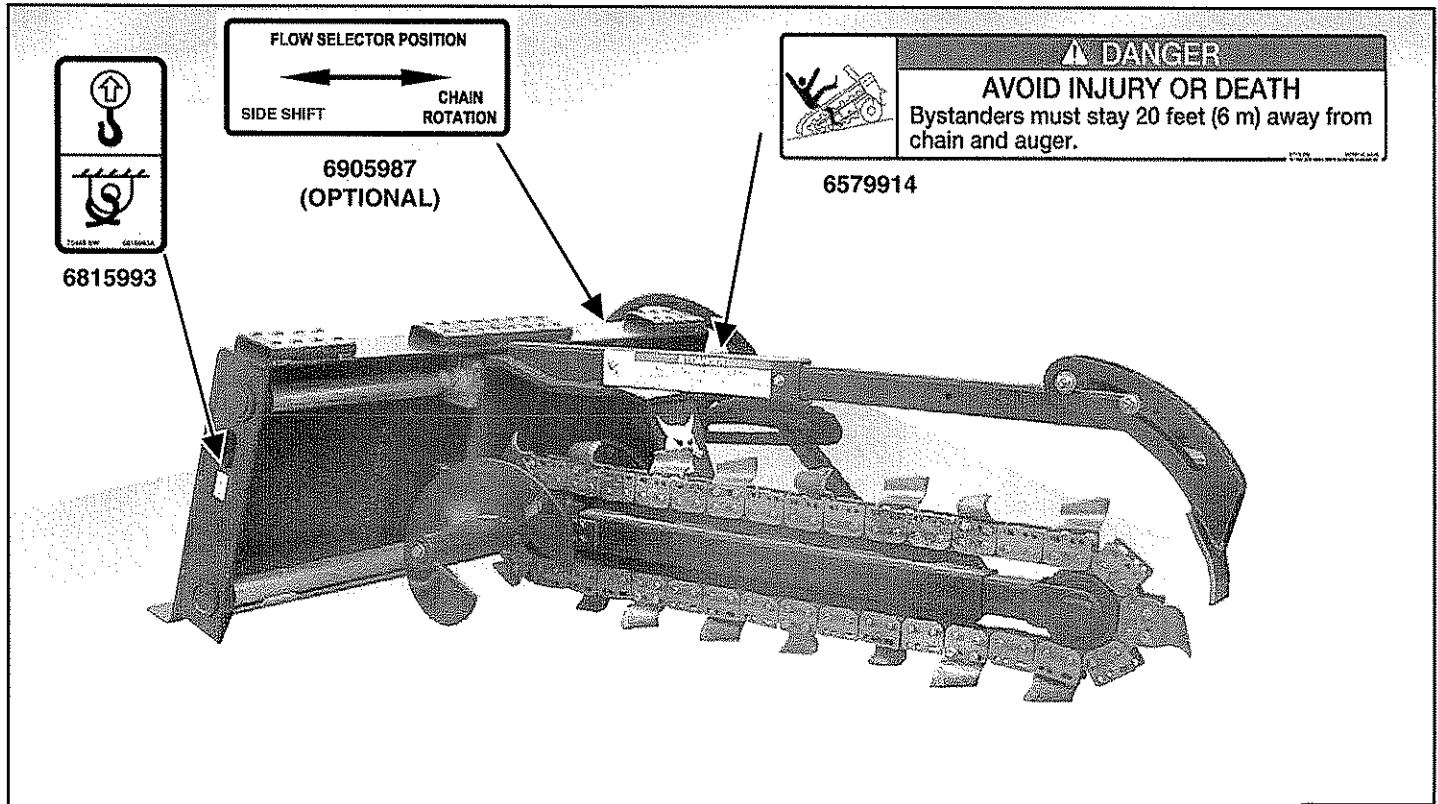
6900869

Complete maintenance and overhaul instructions for your Bobcat Attachment.

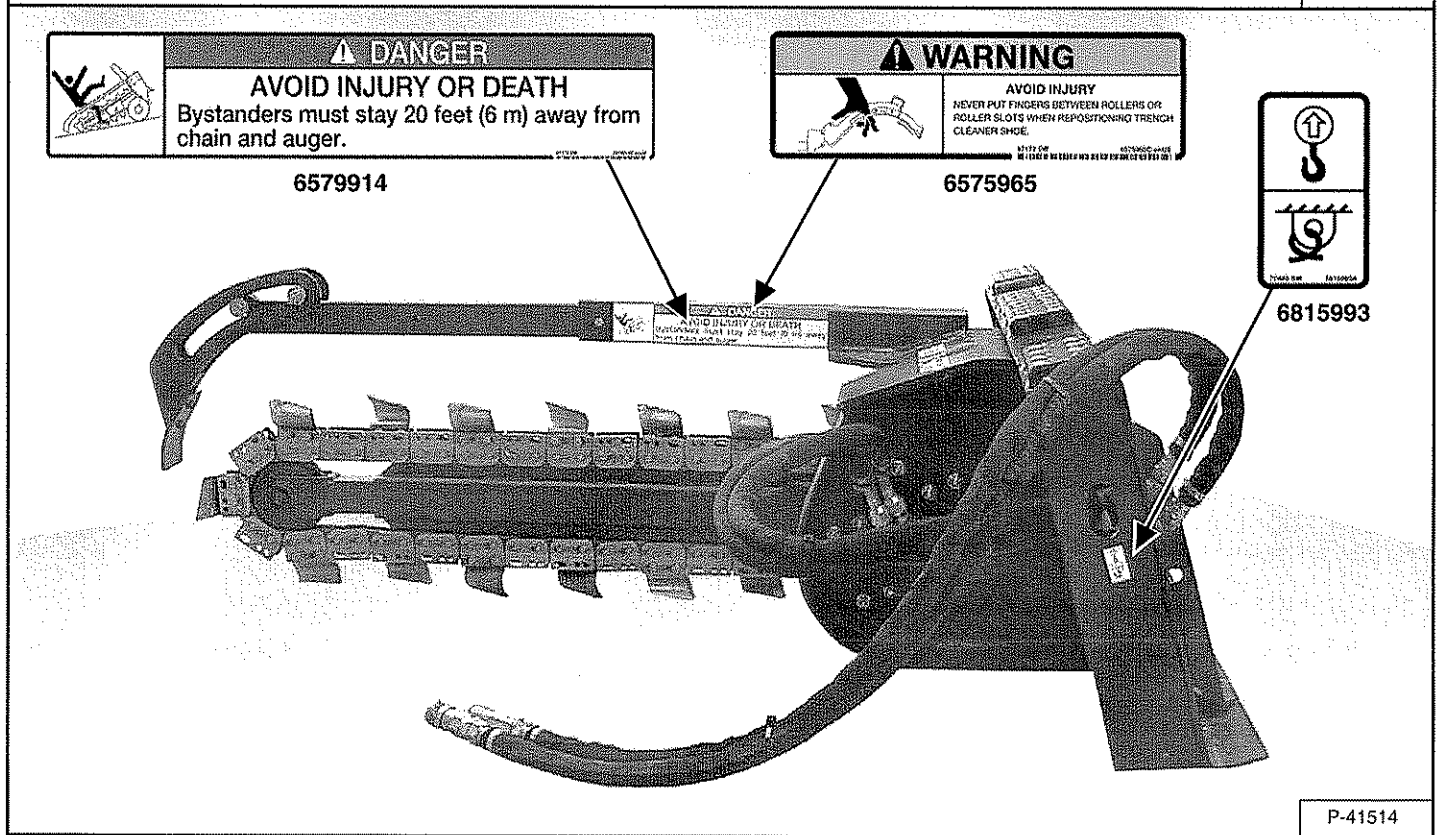
ATTACHMENT SIGNS (DECALS)

LT213 And LT313 Trencher

Follow the instructions on all the Attachment Signs (Decals) that are on the attachment. Replace any damaged attachment signs and be sure they are in the correct locations. Attachment signs are available from your Bobcat dealer.



P-41515

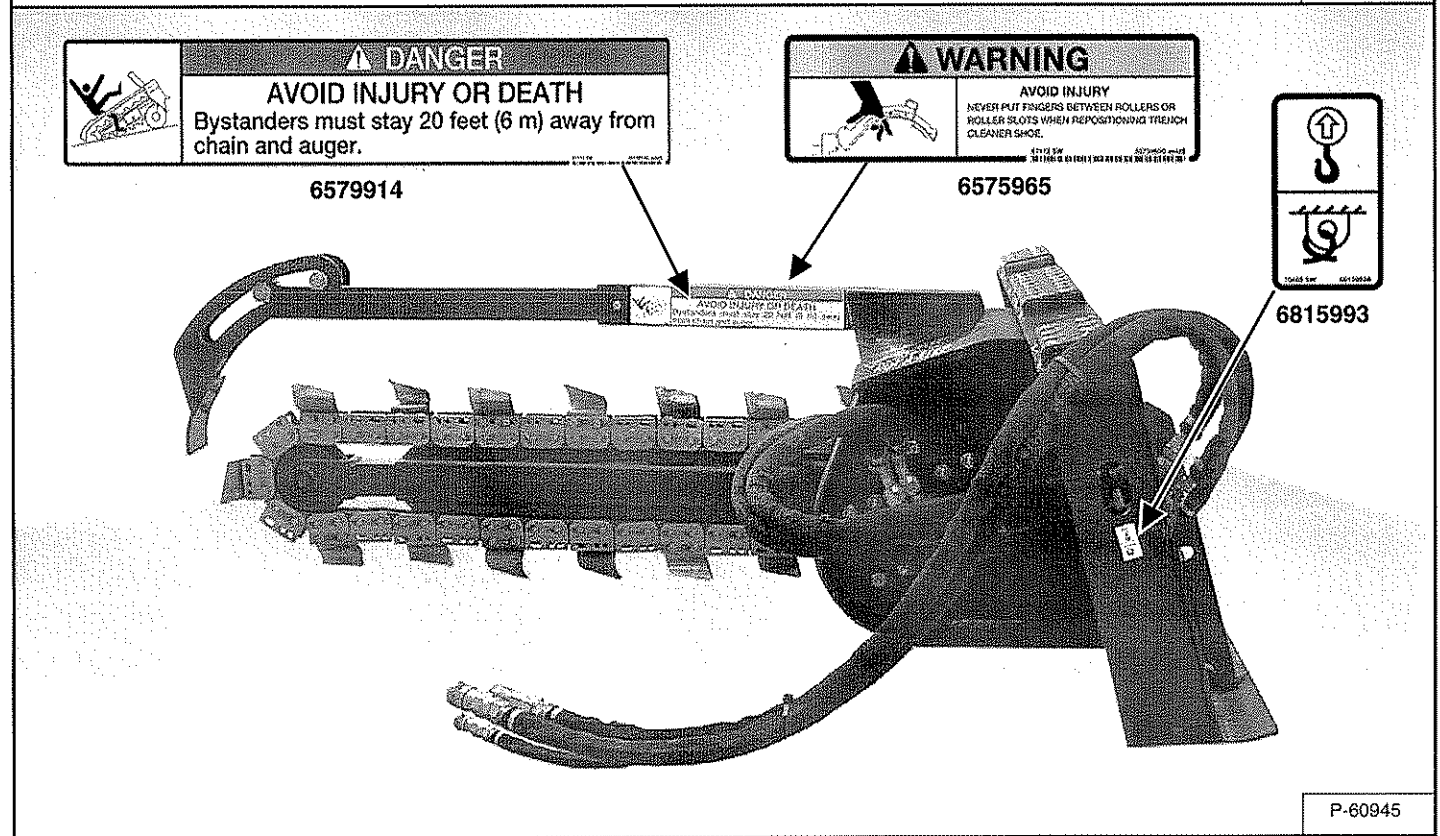
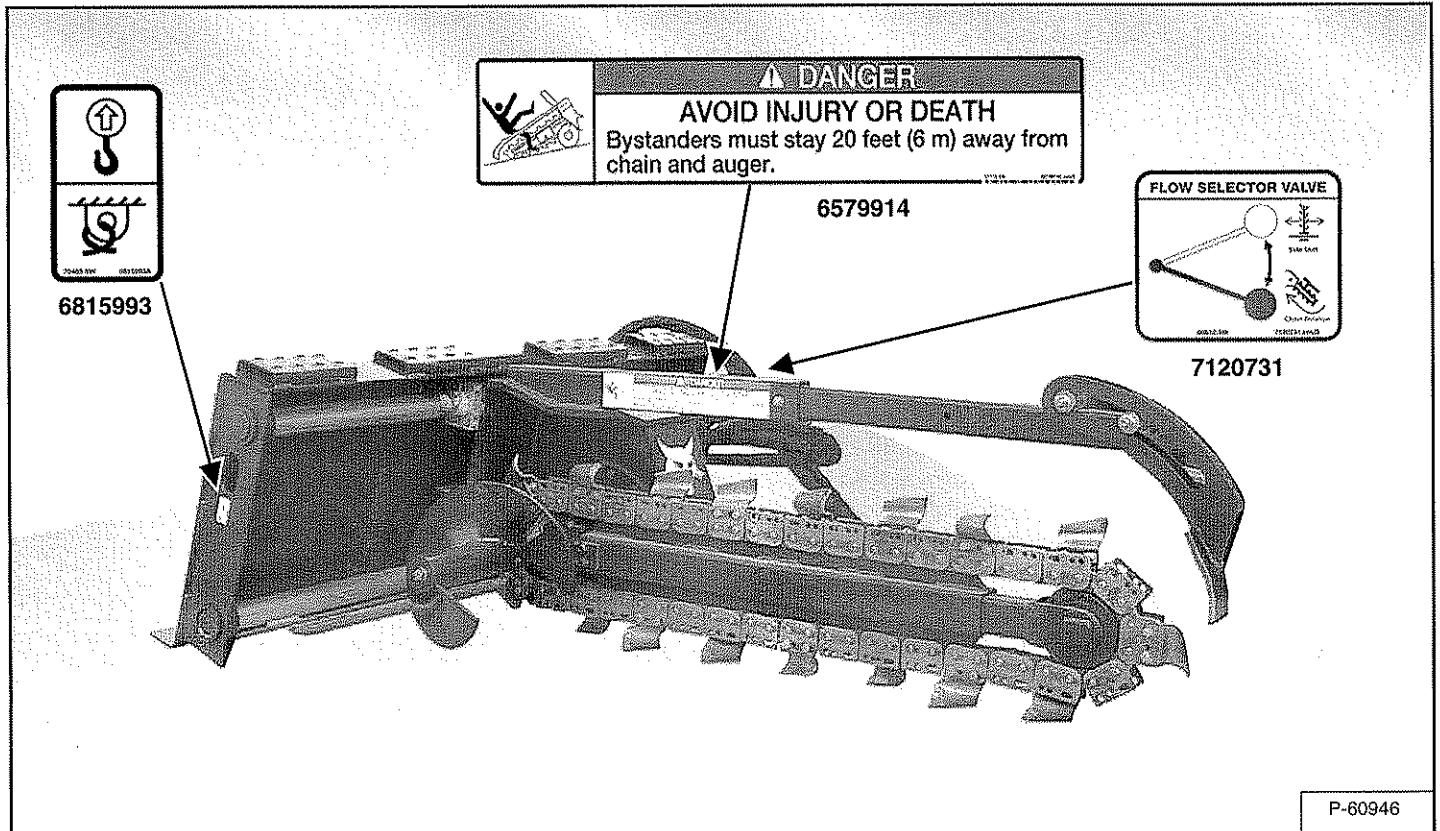


P-41514

ATTACHMENT SIGNS (DECALS) (CONT'D)

LT414 Trencher

Follow the instructions on all the Attachment Signs (Decals) that are on the attachment. Replace any damaged attachment signs and be sure they are in the correct locations. Attachment signs are available from your Bobcat dealer.





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Bobcat[®]

INITIAL SETUP

Optional Boom Extension

The LT213 / LT313 trenchers come factory equipped with a 914 mm (36 in) digging depth boom. The digging depth can be increased (LT313 Only) to 1219 mm (48 in). Order the following parts from your Bobcat dealer to extend the digging depth.

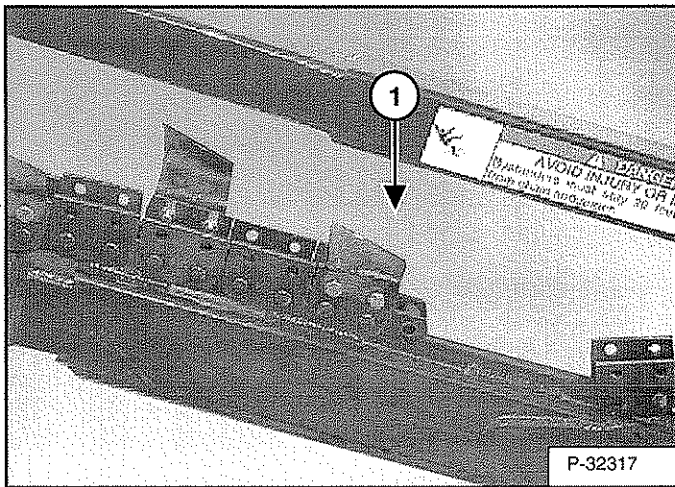
The LT414 trenchers come factory equipped with a 1219 mm (48 in) digging depth boom. The digging depth can be increased to 1524 mm (60 in). Order the following parts from your Bobcat dealer to extend the digging depth.

P/N	DESCRIPTION	QTY
6970072 (LT 313)	10 Pitch Chain	1
7108604 (LT 414)	84 Pitch Chain	1
6811684 (LT 313 & LT 414)	Filler Tube	1
84G-3712 (LT 313 & LT 414)	Self Tapping Screw	2

Installation

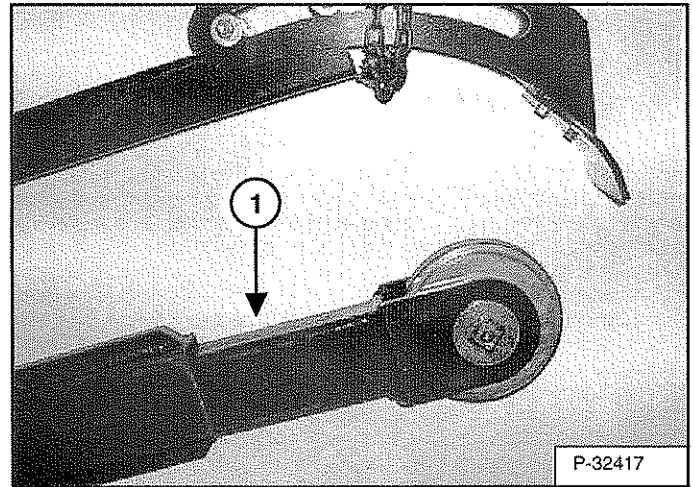
Split the chain. (See Split Procedure on Page 91.)

Figure 4



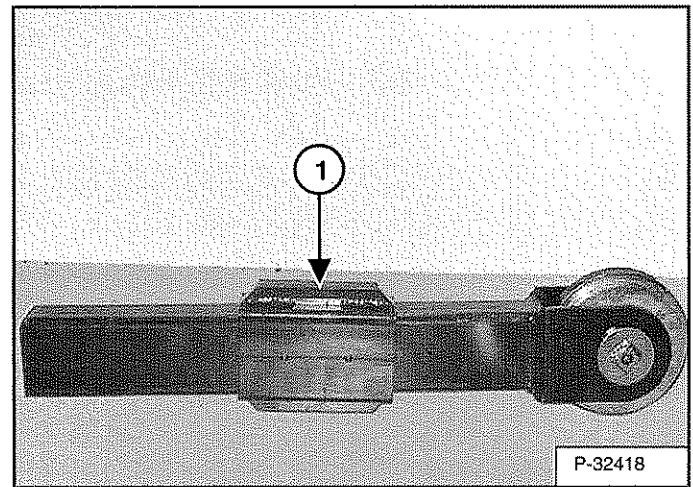
Slide the chain (Item 1) [Figure 4] off the boom.

Figure 5



Remove the boom end wheel and tube assembly (Item 1) [Figure 5] from the end of the boom.

Figure 6



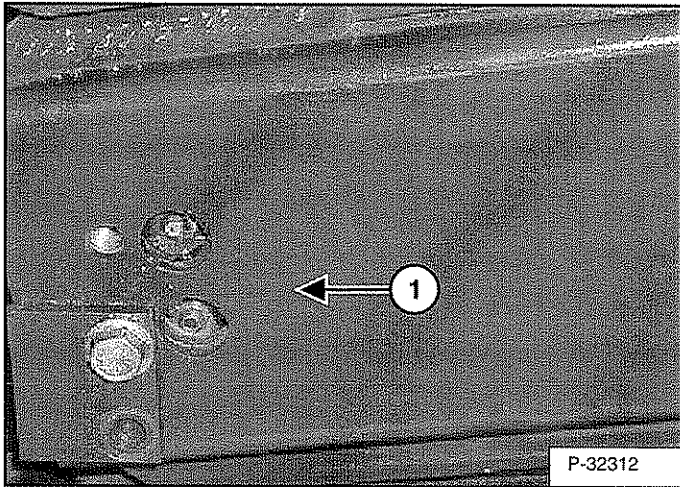
Install the filler tube (Item 1) [Figure 6] on the tube assembly.

INITIAL SETUP (CONT'D)

Optional Boom Extension (Cont'd)

Installation (Cont'd)

Figure 7



Tighten the bleed screw (Item 1) [Figure 7].

Figure 8

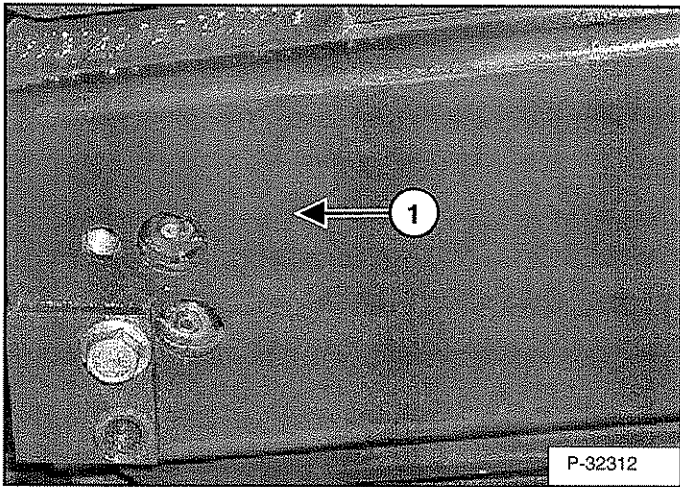
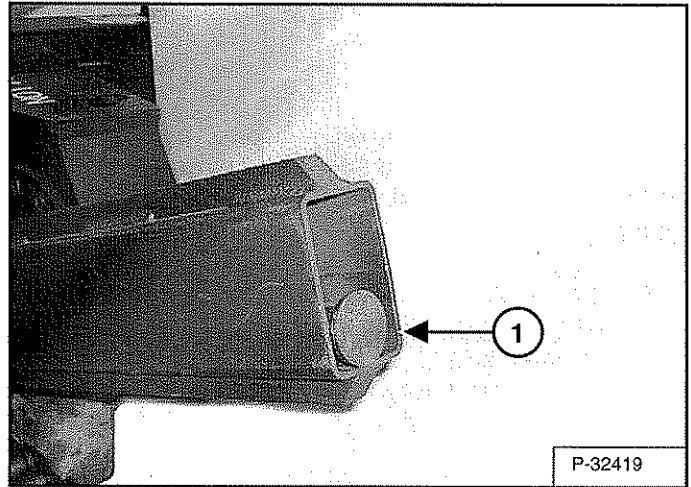
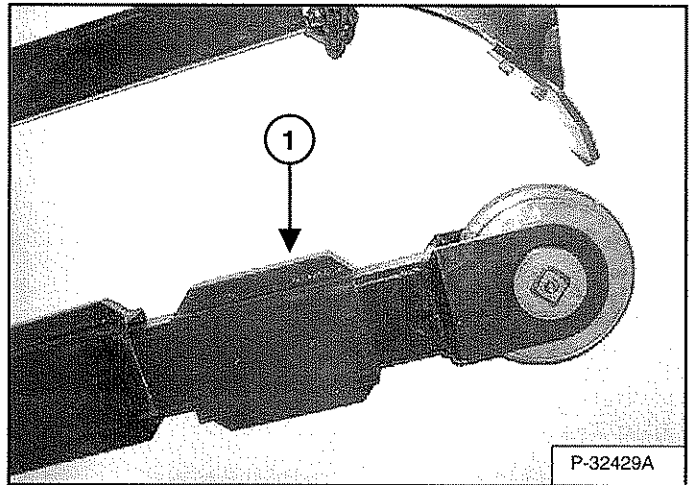


Figure 9



Apply grease to the grease fitting (Item 1) [Figure 8] until the end of the grease cylinder (Item 1) [Figure 9] is in the position shown.

Figure 10



Install the tube assembly (Item 1) [Figure 10] over the grease cylinder and into the boom.

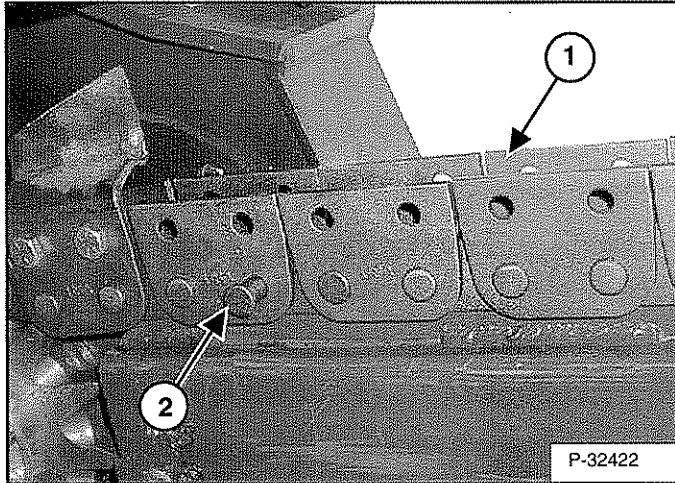
INITIAL SETUP (CONT'D)

Optional Boom Extension (Cont'd)

Installation (Cont'd)

NOTE: [Figure 11] show installing the chain extension for the LT313. When extending the LT414, a complete chain will be installed. (See Digging Chain on Page 89.)

Figure 11



Install the 10 pitch chain (Item 1) [Figure 11] onto the trencher chain.

Install the pin (Item 2) [Figure 11]. The pin is a slight press fit. Backup the chain using a large hammer while driving the pin in.

WARNING

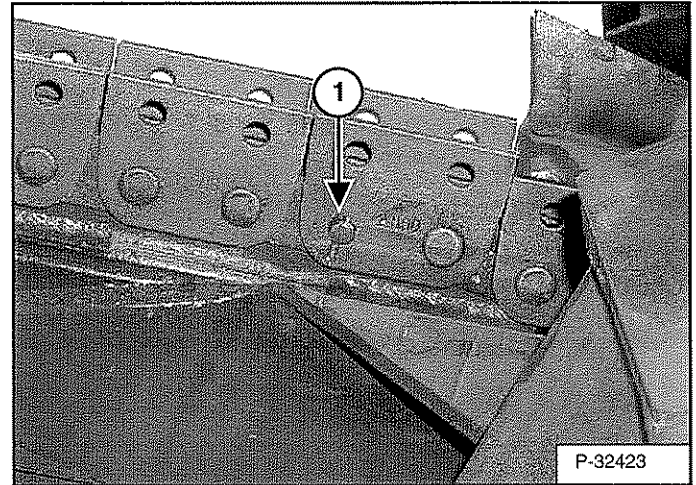
AVOID INJURY OR DEATH

Wear safety glasses to prevent eye injury when any of the following conditions exist:

- When fluids are under pressure.
- Flying debris or loose material is present.
- Engine is running.
- Tools are being used.

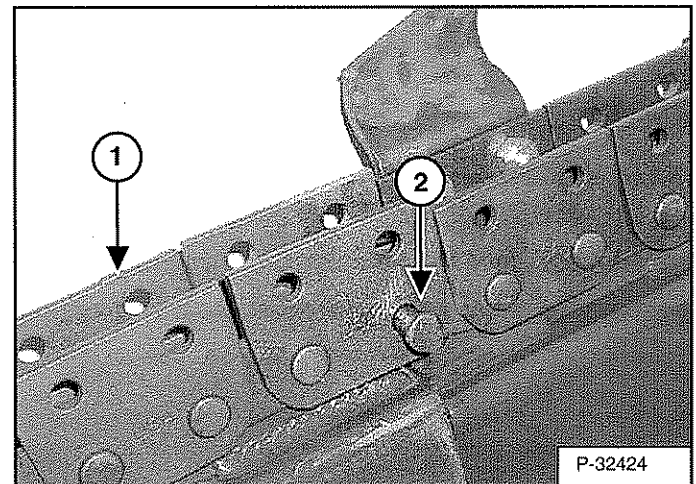
W-2019-0907

Figure 12



Install the retainer pin (Item 1) [Figure 12].

Figure 13



Install the 10 pitch chain (Item 1) [Figure 13] on the end of the trencher chain.

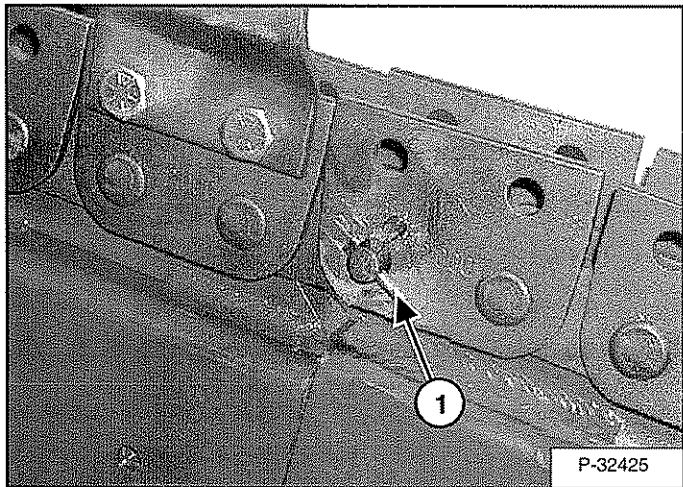
Install the pin (Item 2) [Figure 13]. The pin is a slight press fit. Backup the chain using a large hammer while driving the pin in.

INITIAL SETUP (CONT'D)

Optional Boom Extension (Cont'd)

Installation (Cont'd)

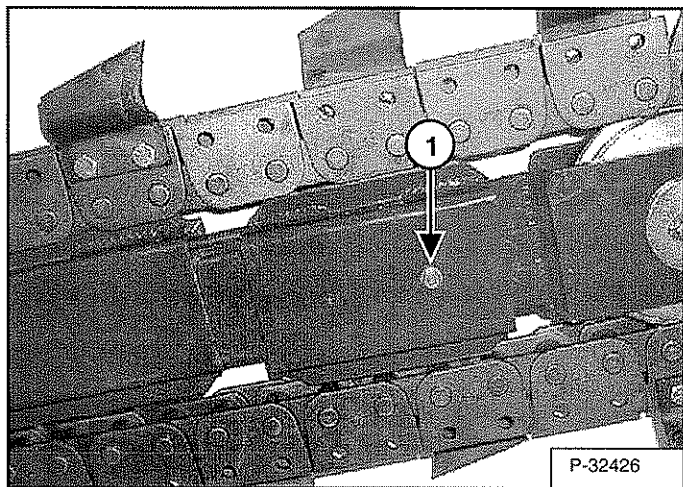
Figure 14



Install the retainer pin (Item 1) [Figure 14].

Adjust the chain. (See Adjustment on Page 87.)

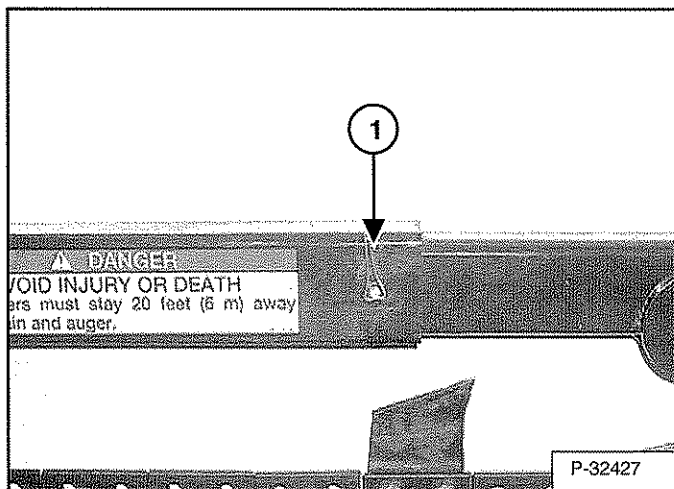
Figure 15



Align the front hole of the filler tube with the existing hole in the tube assembly and install the self tapping bolt (Item 1) [Figure 15] (one per side).

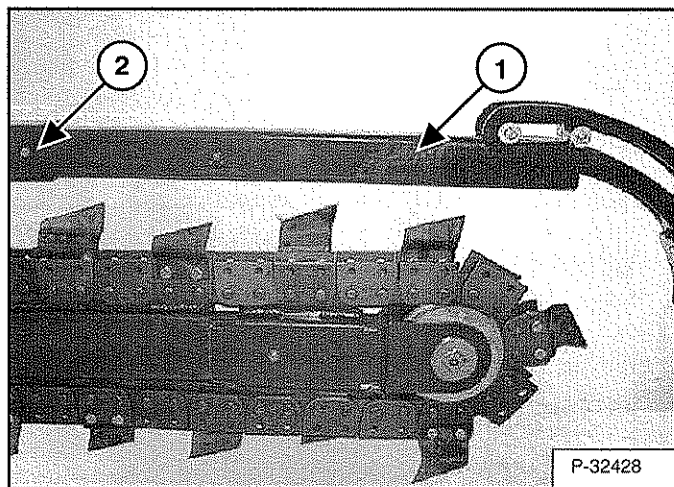
Remove the hoist from the trench cleaner boom.

Figure 16



Remove the bolt (Item 1) [Figure 16].

Figure 17



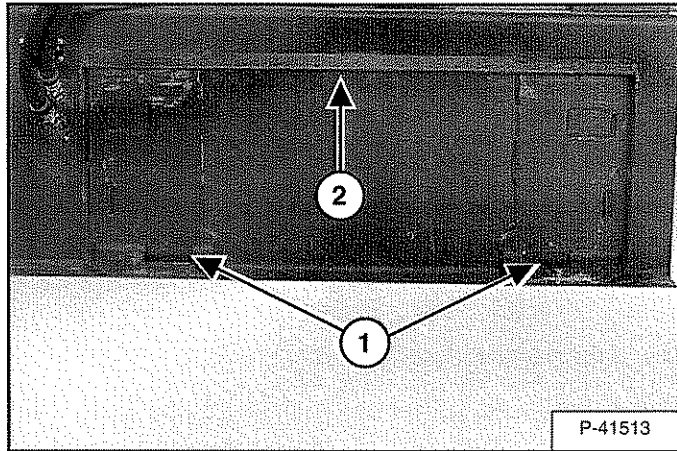
Extend the trench cleaner (Item 1) and install the bolt (Item 2) [Figure 17].

Adjust the chain to the correct tension (See Adjustment on Page 93.)

DAILY INSPECTION

Attachment Mounting Frame

Figure 18

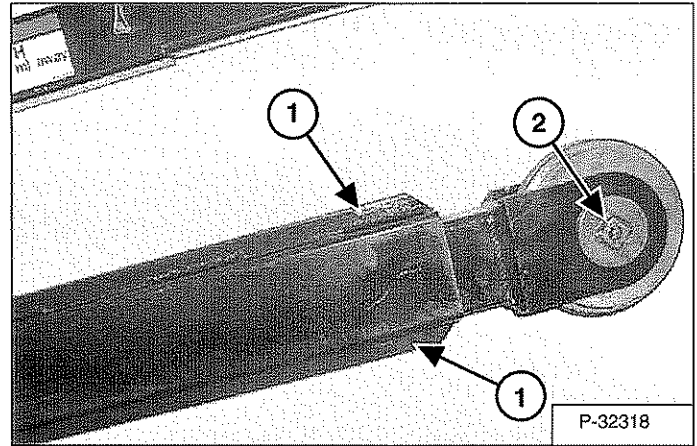


Inspect the Bob-Tach™ wedge mounts (Item 1), mounting flange (Item 2) and all welds on the trencher for wear and damage each time the trencher is removed from the machine [Figure 18].

Frequently inspect the trencher to ensure that all components are secure and that all bolts and nuts are thoroughly tightened.

Chain Guide

Figure 19



Inspect the top and bottom chain guide (Item 1) [Figure 19] for wear and damage.

NOTE: The digging chain is removed for photo clarity.

DAILY INSPECTION (CONT'D)

Bob-Tach

Hand Lever Bob-Tach

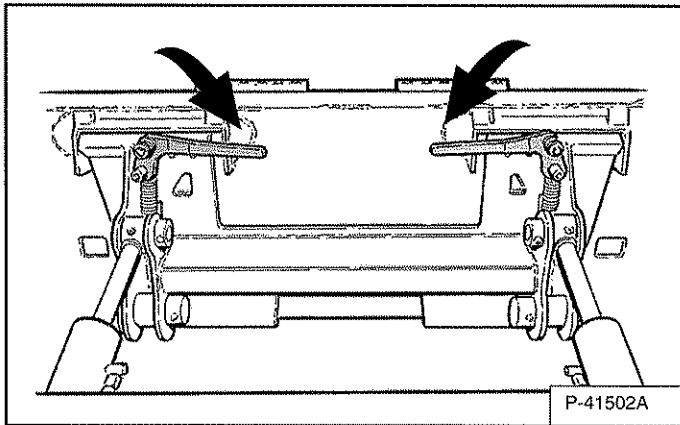
! WARNING

AVOID INJURY OR DEATH

The Bob-Tach wedges must extend through the holes in the attachment mounting frame. Levers must be fully down and locked. Failure to secure wedges can allow attachment to come off.

W-2715-0208

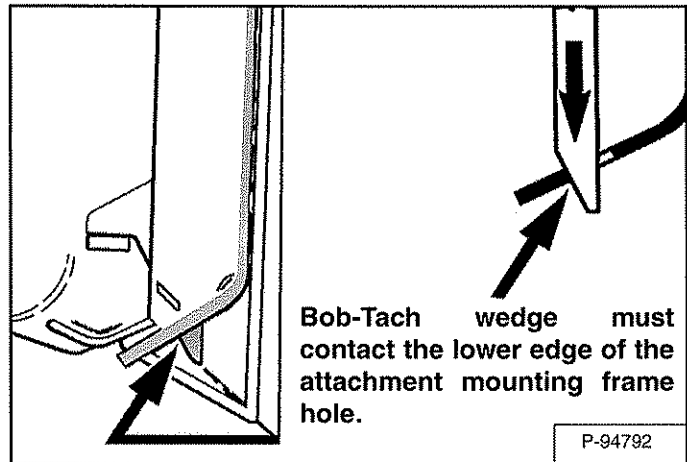
Figure 20



Push down on the Bob-Tach levers until they are fully engaged in the locked position [Figure 20] (wedges fully extended through the attachment mounting frame holes).

The levers and wedges must move freely [Figure 20].

Figure 21



The wedges must extend through the holes in the attachment mounting frame, securely fastening the attachment to the Bob-Tach [Figure 21].

NOTE: If the wedge does not contact the lower edge of the hole, the attachment will be loose and can come off the Bob-Tach.

Inspect the mounting frame on the snowblower. (See the machine's Operation & Maintenance Manual for inspecting the Bob-Tach). Replace any parts that are damaged, bent or missing. Keep all fasteners tight. Look for cracked welds. Contact your Bobcat dealer for repair or replacement parts.

Lubricate the wedges. (See the machine's Operation & Maintenance Manual for the correct procedure.)

DAILY INSPECTION (CONT'D)

Bob-Tach (Cont'd)

Power Bob-Tach



AVOID INJURY OR DEATH

The Bob-Tach wedges must extend through the holes in the attachment mounting frame. Levers must be fully down and locked. Failure to secure wedges can allow attachment to come off.

W-2715-0208

Figure 22

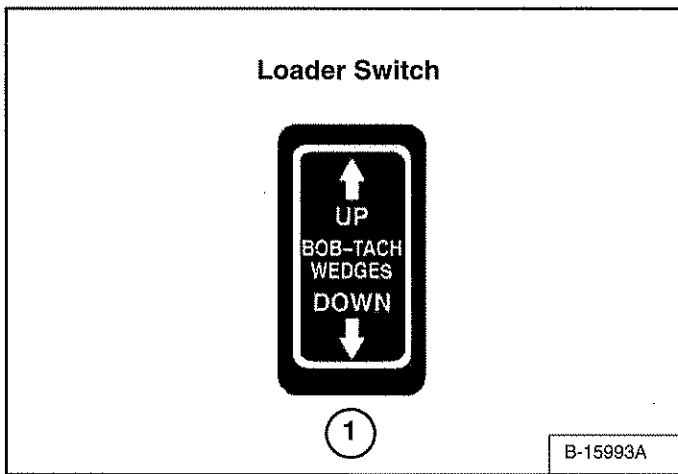


Figure 23

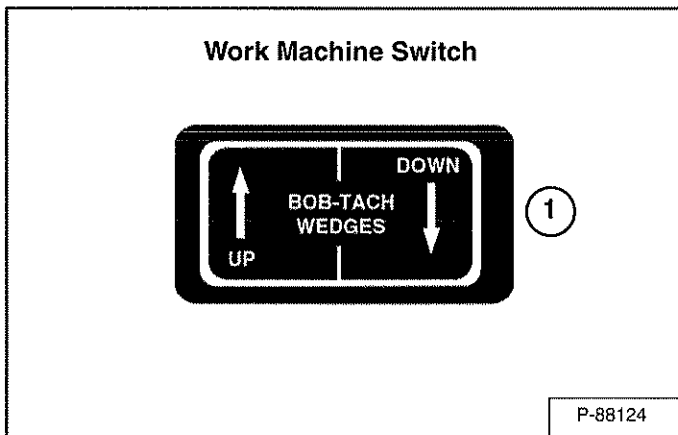
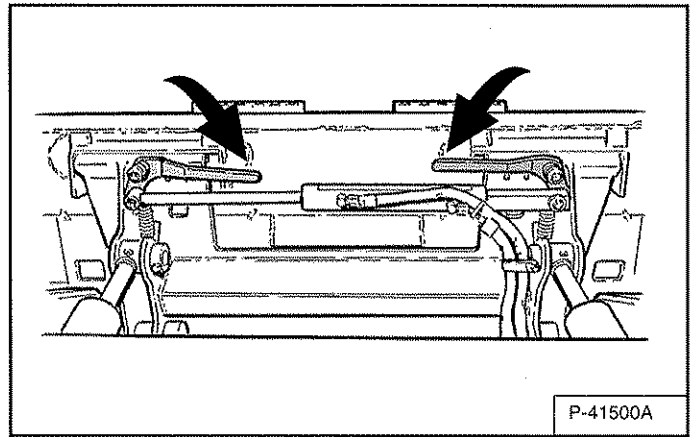
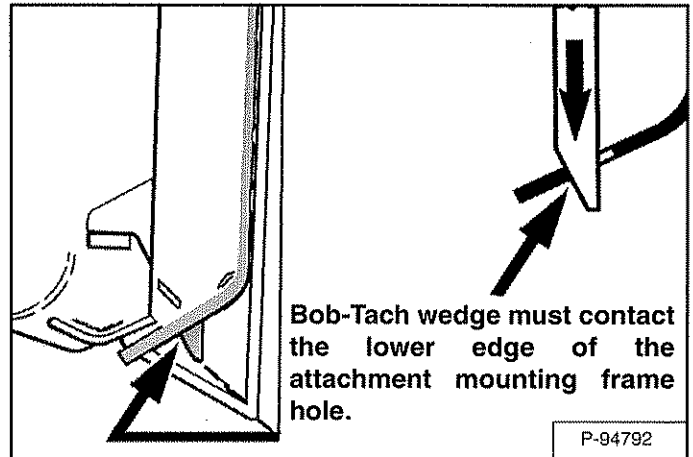


Figure 24



Push (Item 1) [Figure 22] or [Figure 23] and hold the BOB-TACH "WEDGES DOWN" switch until the levers are fully engaged in the locked position [Figure 24] (wedges fully extended through the attachment mounting frame holes).

Figure 25



The wedges must extend through the holes in the attachment mounting frame, securely fastening the attachment to the Bob-Tach [Figure 25].

NOTE: If the wedge does not contact the lower edge of the hole, the attachment will be loose and can come off the Bob-Tach.

Inspect the mounting frame on the attachment. (See the machine's Operation & Maintenance Manual for inspecting the Bob-Tach). Replace any parts that are damaged, bent or missing. Keep all fasteners tight. Look for cracked welds. Contact your Bobcat dealer for repair or replacement parts.

Lubricate the wedges. (See the machine's Operation & Maintenance Manual for the correct procedure.)

OPERATING PROCEDURE WITH LOADERS

Approved Loader Models And Requirements

Figure 26

LOADER MODEL	TRENCHER		
	LT213	LT313	LT414
553	X		
753 All Models	X		
753 S/N 515844249 & Above 3 ft Depth Only		X	
753 S/N 515844250 & Above 3 ft 4 ft Depth		X	
763	X	X	
773	X	X	
863		X	
873		X	
883		X	
A220		X	
A300		X	X
S100			X
S160 High Flow Only 4 ft Depth Only			X
S175 All Models	X	X	
S175 High Flow Only 4 ft Depth Only			X
S185 All Models	X	X	
S185 High Flow Only 4 ft Depth Only			X
S205 High Flow Only 4 ft Depth Only			X
S220			X
S250		X	X
S300		X	X
S330			X
T180 High Flow Only 4 ft Depth Only			X
T190 All Models	X	X	
T190 High Flow Only 4 ft Depth Only			X
T200		X	
T250			X
T300			X

X = Approved

The chart [Figure 26] shows the approved trencher models for each loader model.

OPERATING PROCEDURE WITH LOADERS (CONT'D)

Approved Loader Models And Requirements (Cont'd)

NOTE: The LT213 and LT313 trenchers are not approved for use with the High Flow Hydraulic Operation.

The warranty is void if this attachment is used on a non-approved carrier. See your Bobcat dealer for an updated list of approved carriers.

WARNING

Never use attachments or buckets which are not approved by the Bobcat Company. Attachments and buckets for safe loads of specified densities are approved for each model. Unapproved attachments and buckets can cause injury or death.

W-2662-0108

Figure 27

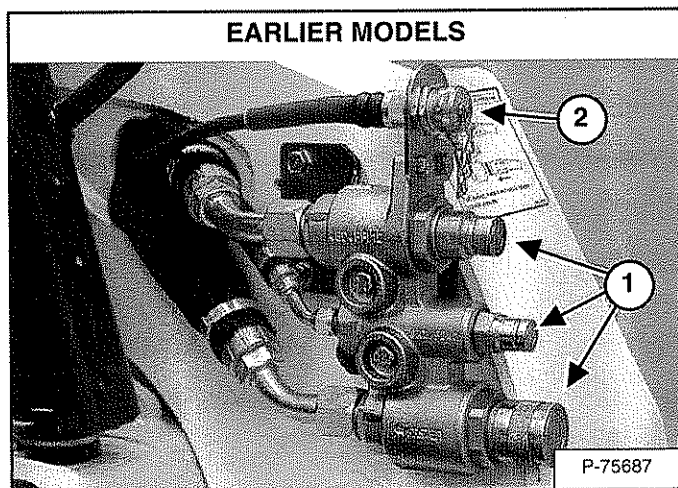
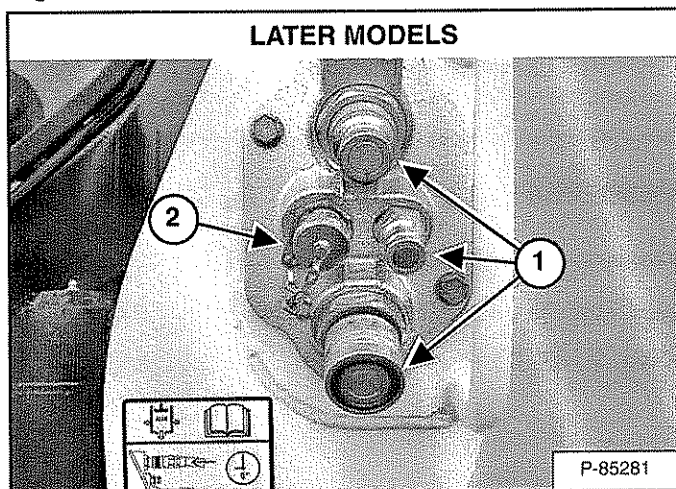


Figure 28



The loader must be equipped with front auxiliary hydraulics [Figure 27] or [Figure 28]. See your Bobcat dealer for available kits for your model loader.

OPERATING PROCEDURE WITH LOADERS (CONT'D)

Entering And Exiting The Loader

WARNING

AVOID INJURY OR DEATH

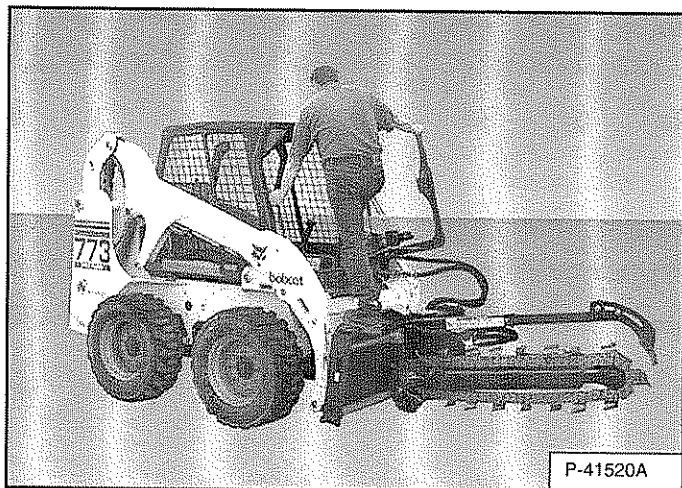
When operating the machine:

- Keep the seat belt fastened snugly.
- The seat bar must be lowered.
- Keep your feet on the pedal controls or footrests and hands on the controls.

W-2261-0909

Entering

Figure 29



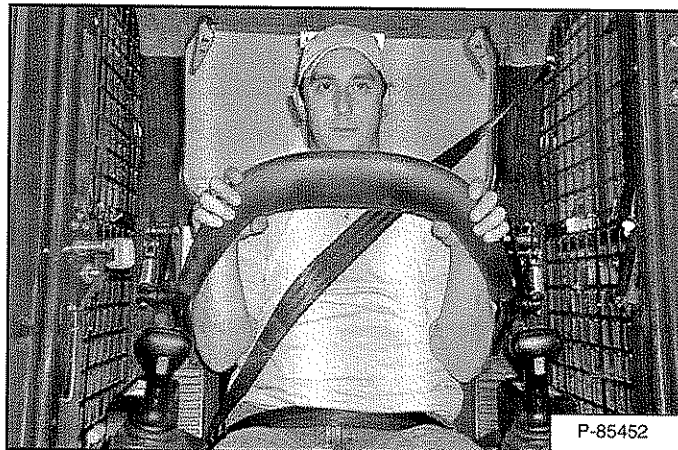
Use the trencher steps, grab handles (on cab) and the safety treads (on top of the loader lift arms and frame) to enter and exit the loader [Figure 29].

Figure 30



Enter the loader. Fasten the seat belt and adjust it so the buckle is centered between your hips [Figure 30].

Figure 31



Lower the seat bar and engage parking brake [Figure 31].

Put the foot pedals or hand controls in neutral position.

NOTE: Keep your hands on the steering levers and your feet on the foot pedals (or footrests) while operating the loader.

See the loader's Operation & Maintenance Manual and Operator's Handbook for detailed information on operating the loader.

OPERATING PROCEDURE WITH LOADERS (CONT'D)

Entering And Exiting The Loader (Cont'd)

Exiting

Lower the lift arms and put the attachment flat on the ground.

Stop the engine and engage the parking brake.

Lift the seat bar and make sure the lift and tilt functions are deactivated.

Remove the key.

Exit the loader.



AVOID INJURY OR DEATH

Before you leave the operator's position:

- Lower the lift arms, put the attachment flat on the ground.
- Stop the engine and engage the parking brake.
- Move all pedals, handles, joysticks, and other controls until they are **LOCKED** or in the **NEUTRAL** position.

SEE THE MACHINE OPERATION & MAINTENANCE MANUAL FOR MORE INFORMATION.

W-2722-0208

OPERATING PROCEDURE WITH LOADERS (CONT'D)

Installation

Hand Lever Bob-Tach

NOTE: The illustrations and instructions provided explain how to install a bucket attachment on to a loader. Follow these same instructions if you are installing different attachments such as a grapple, tiller, combo bucket, etc.

The attachment mounting frame for the attachment has a top flange that is designed to receive the top edge of the Bob-Tach and the lower part of the frame is designed to receive the Bob-Tach wedges.

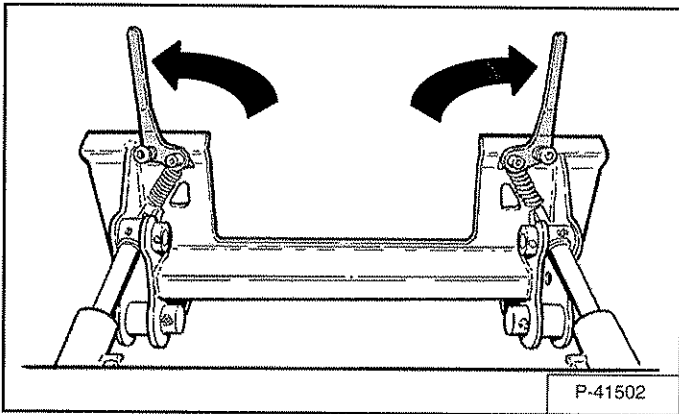
! WARNING

Warnings on the machine and in the manuals are for your safety. Failure to obey warnings can cause serious injury or death.

W-2744-0608

Always inspect the loader's Bob-Tach and the attachment mounting frame before installation. See the loader's Operation & Maintenance Manual. (See DAILY INSPECTION on Page 27.)

Figure 32

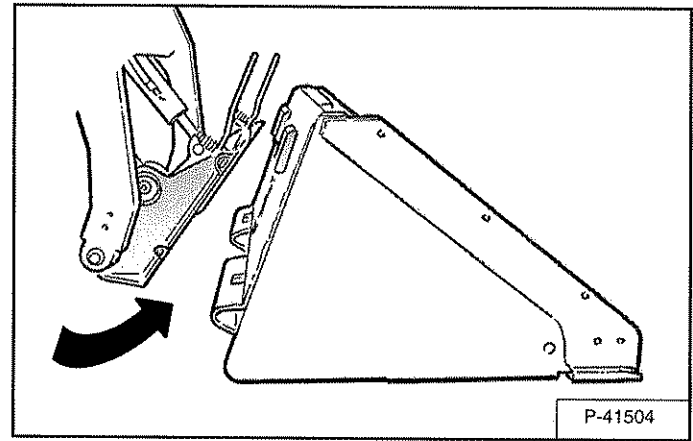


Pull the Bob-Tach levers up until they are fully raised (wedges fully raised) [Figure 32].

Enter the loader. (See Entering And Exiting The Loader on Page 32.)

Start the engine, press the PRESS TO OPERATE LOADER button and release the parking brake.

Figure 33

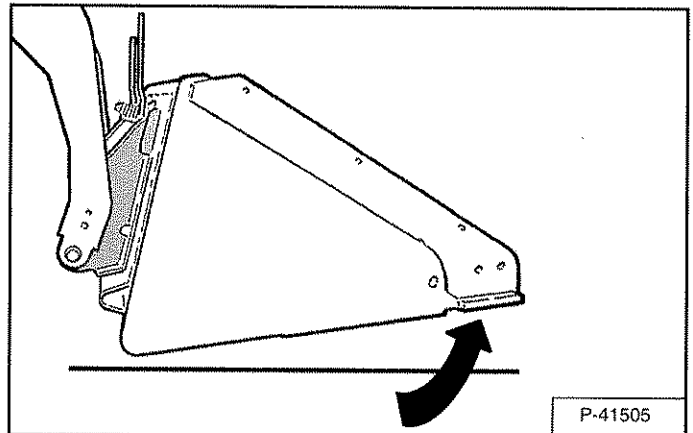


Lower the lift arms and tilt the Bob-Tach forward.

Drive the loader slowly forward until the top edge of the Bob-Tach is completely under the top flange of the attachment mounting frame [Figure 33].

NOTE: Be sure the Bob-Tach levers do not hit the attachment.

Figure 34



Tilt the Bob-Tach backward until the attachment is slightly off the ground [Figure 34]. This will cause the attachment mounting frame to fit up against the front of the Bob-Tach.

NOTE: When leaving the operator's seat to install an attachment, tilt the attachment until it is slightly off the ground.

Stop the engine and exit the loader. (See Entering And Exiting The Loader on Page 32.)

OPERATING PROCEDURE WITH LOADERS (CONT'D)

Installation (Cont'd)

Hand Lever Bob-Tach (Cont'd)

! WARNING

AVOID INJURY OR DEATH

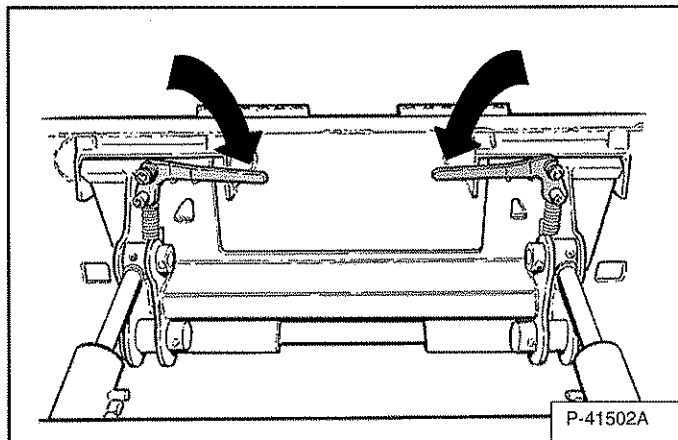
Before you leave the operator's seat:

- Lower the lift arms and put the attachment flat on the ground.
- Stop the engine.
- Engage the parking brake.
- Raise the seat bar.
- Move all controls to the **NEUTRAL / LOCKED** position to make sure the lift, tilt and traction drive functions are deactivated.

The seat bar system must deactivate these functions when the seat bar is up. See your Bobcat dealer for service if controls do not deactivate.

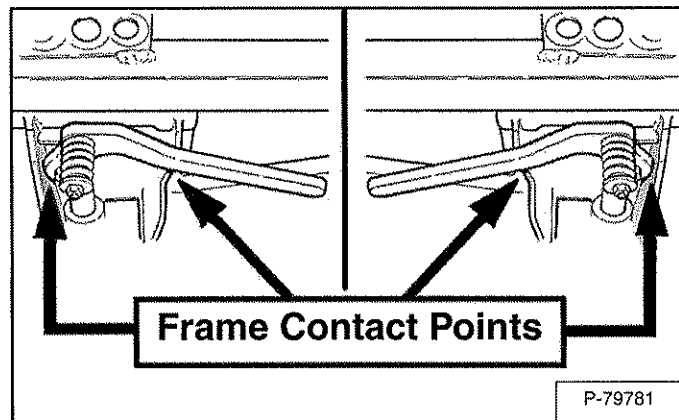
W-2463-1110

Figure 35



Push down on the Bob-Tach levers until they are fully engaged in the locked position [Figure 35] (wedges fully extended through the attachment mounting frame holes).

Figure 36



Both levers must contact the frame as shown when locked [Figure 36].

If both levers do not engage in the locked position, see your Bobcat dealer for maintenance.

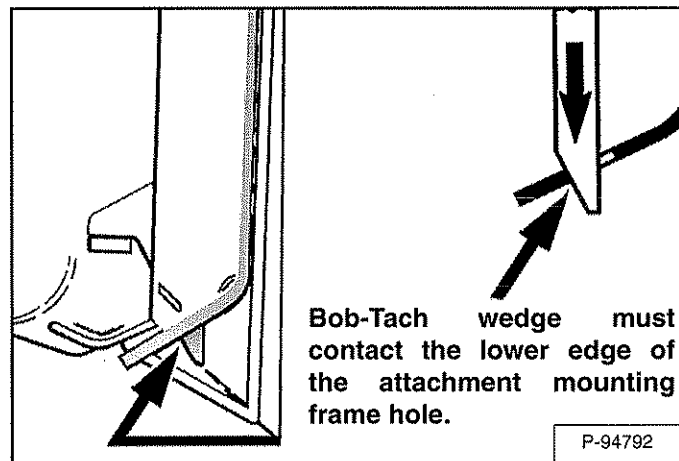
! WARNING

AVOID INJURY OR DEATH

The Bob-Tach wedges must extend through the holes in the attachment mounting frame. Levers must be fully down and locked. Failure to secure wedges can allow attachment to come off.

W-2715-0208

Figure 37



The wedges must extend through the holes in the attachment mounting frame, securely fastening the attachment to the Bob-Tach [Figure 37].

Connect auxiliary hydraulic hoses. (See Hydraulic Quick Couplers on Page 40.)

OPERATING PROCEDURE WITH LOADERS (CONT'D)

Installation (Cont'd)

Power Bob-Tach

! WARNING

Warnings on the machine and in the manuals are for your safety. Failure to obey warnings can cause serious injury or death.

W-2744-0608

This loader may be equipped with a Power Bob-Tach.

Enter the loader. (See Entering And Exiting The Loader on Page 32.)

Start the engine, press the PRESS TO OPERATE LOADER button and release the parking brake.

Figure 38

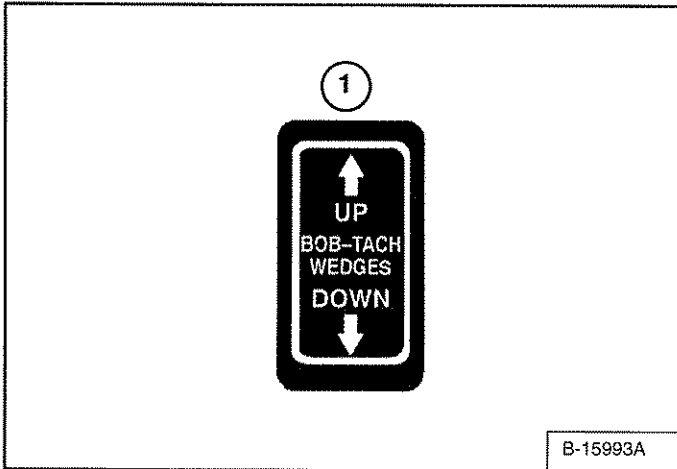
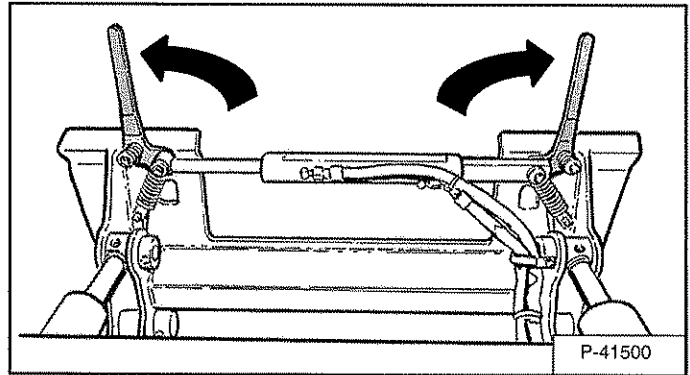
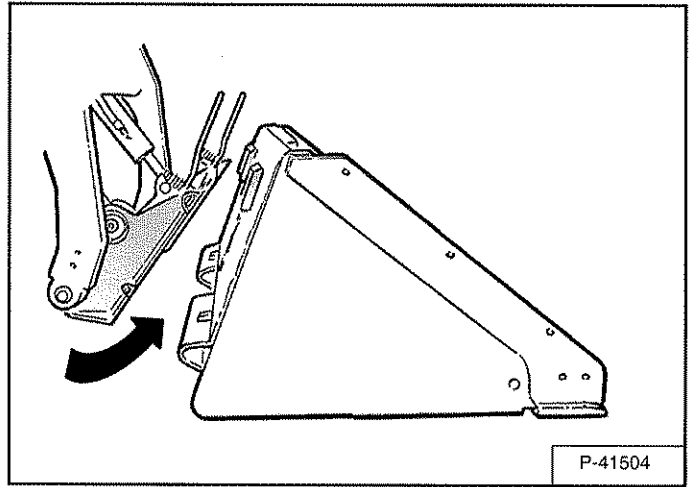


Figure 39



Push and hold the BOB-TACH "WEDGES UP" switch (Item 1) [Figure 38] until the levers are fully raised (wedges fully raised) [Figure 39].

Figure 40



Lower the lift arms and tilt the Bob-Tach slightly forward.

Drive the loader slowly forward until the top edge of the Bob-Tach is completely under the top flange of the attachment mounting frame [Figure 40].

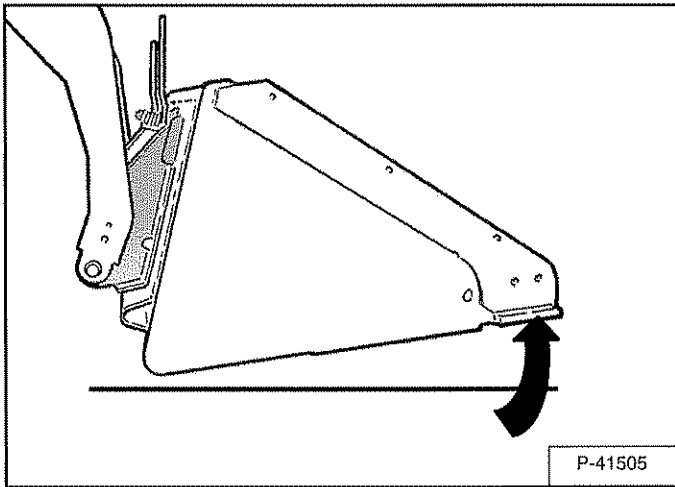
NOTE: Be sure the Bob-Tach levers do not hit the attachment.

OPERATING PROCEDURE WITH LOADERS (CONT'D)

Installation (Cont'd)

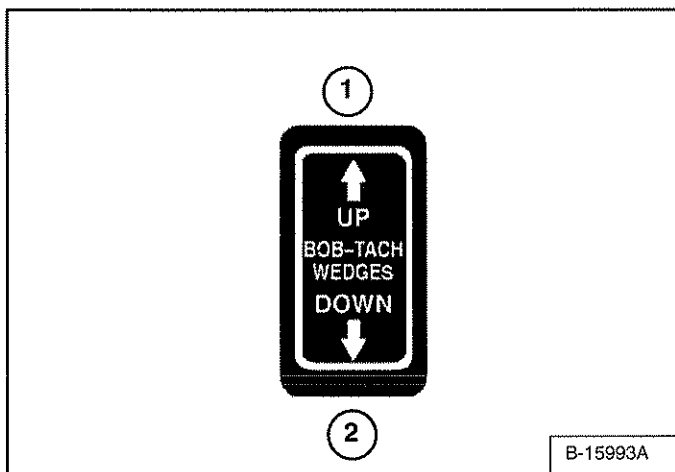
Power Bob-Tach (Cont'd)

Figure 41



Tilt the Bob-Tach backward until the attachment is slightly off the ground [Figure 41]. This will cause the attachment mounting frame to fit up against the front of the Bob-Tach.

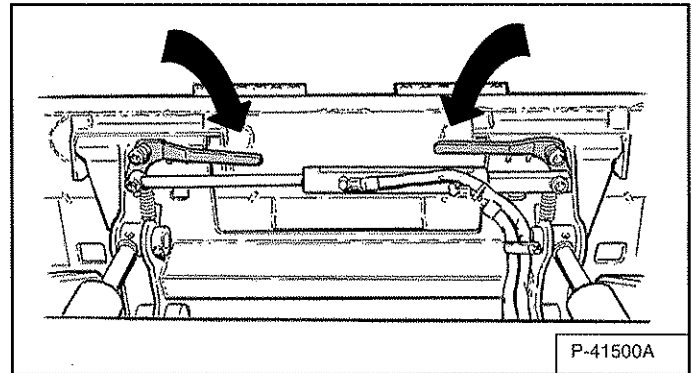
Figure 42



NOTE: The Power Bob-Tach system has continuous pressurized hydraulic oil to keep the wedges in the engaged position and prevent attachment disengagement. Because the wedges can slowly lower, the operator may need to reactivate the switch (BOB-TACH “WEDGES UP”) to be sure both wedges are fully raised before installing the attachment.

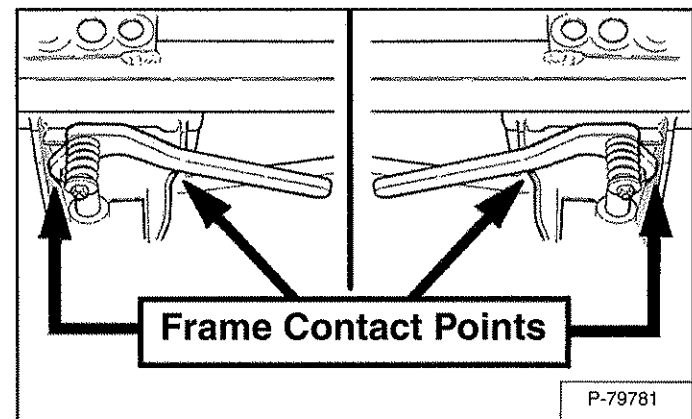
Push and hold the BOB-TACH “WEDGES UP” switch (Item 1) [Figure 42] until the levers are fully raised (wedges fully raised).

Figure 43



Push and hold the BOB-TACH “WEDGES DOWN” switch (Item 2) [Figure 42] until the levers are fully engaged in the locked position [Figure 43] (wedges fully extended through the attachment mounting frame holes).

Figure 44



Both levers must contact the frame as shown when locked [Figure 44].

If both levers do not engage in the locked position, see your Bobcat dealer for maintenance.



AVOID INJURY OR DEATH

The Bob-Tach wedges must extend through the holes in the attachment mounting frame. Levers must be fully down and locked. Failure to secure wedges can allow attachment to come off.

W-2715-0208

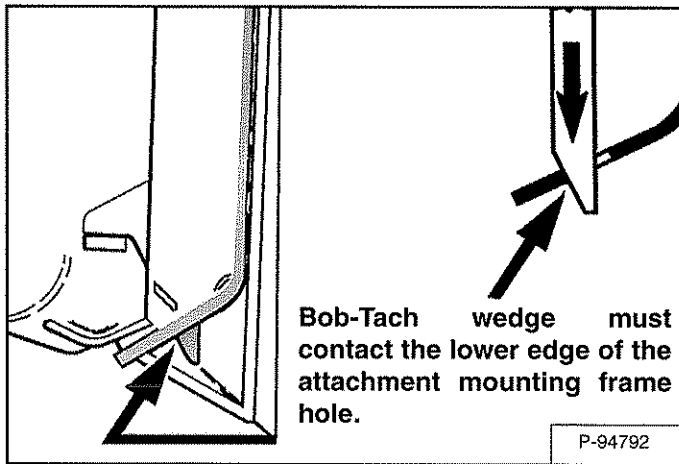
OPERATING PROCEDURE WITH LOADERS (CONT'D)

Connect auxiliary hydraulic hoses. (See Hydraulic Quick Couplers on Page 40.)

Installation (Cont'd)

Power Bob-Tach (Cont'd)

Figure 45



The wedges must extend through the holes in the attachment mounting frame, securely fastening the attachment to the Bob-Tach [Figure 45].

Lower the lift arms and put the attachment flat on the ground.

Stop the engine and exit the loader. (See Entering And Exiting The Loader on Page 32.)

WARNING

AVOID INJURY OR DEATH

Before you leave the operator's seat:

- Lower the lift arms and put the attachment flat on the ground.
- Stop the engine.
- Engage the parking brake.
- Raise the seat bar.
- Move all controls to the **NEUTRAL / LOCKED** position to make sure the lift, tilt and traction drive functions are deactivated.

The seat bar system must deactivate these functions when the seat bar is up. See your Bobcat dealer for service if controls do not deactivate.

W-2463-1110

OPERATING PROCEDURE WITH LOADERS (CONT'D)

Installation (Cont'd)

For First Time Installation

New attachments and new loaders are factory equipped with flush face couplers. If installing an attachment equipped with poppet style couplers, the attachment couplers will have to be changed to match the loader. See your Bobcat dealer for parts information.

IMPORTANT

- **Thoroughly clean the quick couplers before making connections. Dirt can quickly damage the system.**
- **Contain and dispose of any oil leakage in an environmentally safe manner.**

I-2278-0608

With the loader engine off and using the hose guides (if equipped), route the attachment hydraulic hoses to the loader. Connect the attachment hydraulic quick couplers to the loader couplers. (See Hydraulic Quick Couplers on Page 40.)

Check that the attachment hydraulic hoses are not twisted or contacting any moving parts of the loader or attachment.

NOTE: It may be necessary to loosen the quick couplers on the attachment hydraulic hoses to remove any twists in the hoses.

! WARNING

AVOID INJURY OR DEATH

Wear safety glasses to prevent eye injury when any of the following conditions exist:

- **When fluids are under pressure.**
- **Flying debris or loose material is present.**
- **Engine is running.**
- **Tools are being used.**

W-2019-0907

Loosen the quick coupler connections on the attachment hydraulic hoses while connected to the loader. Do not remove the quick couplers.

Rotate the attachment hydraulic hoses as needed so the hoses are not twisted or contacting any moving parts of the loader or attachment.

With the twist(s) removed from the hydraulic hoses, tighten the attachment quick coupler connections while the couplers are still connected to the loader. This will help hold the hydraulic hoses in position while tightening.

Tighten the quick couplers connections to 63 N•m (46 ft-lb) torque before starting the loader.

Enter the loader. (See Entering And Exiting The Loader on Page 32.)

Start the engine, press the PRESS TO OPERATE LOADER button and release the parking brake.

Engage auxiliary hydraulics. (See the loader's Operation & Maintenance Manual and Operator's Handbook for correct procedure.)

! WARNING

AVOID INJURY OR DEATH

Diesel fuel or hydraulic fluid under pressure can penetrate skin or eyes, causing serious injury or death. Fluid leaks under pressure may not be visible. Use a piece of cardboard or wood to find leaks. Do not use your bare hand. Wear safety goggles. If fluid enters skin or eyes, get immediate medical attention from a physician familiar with this injury.

W-2072-0807

Check the attachment hydraulic quick coupler connections for leaks.

Hydraulic Quick Couplers

IMPORTANT

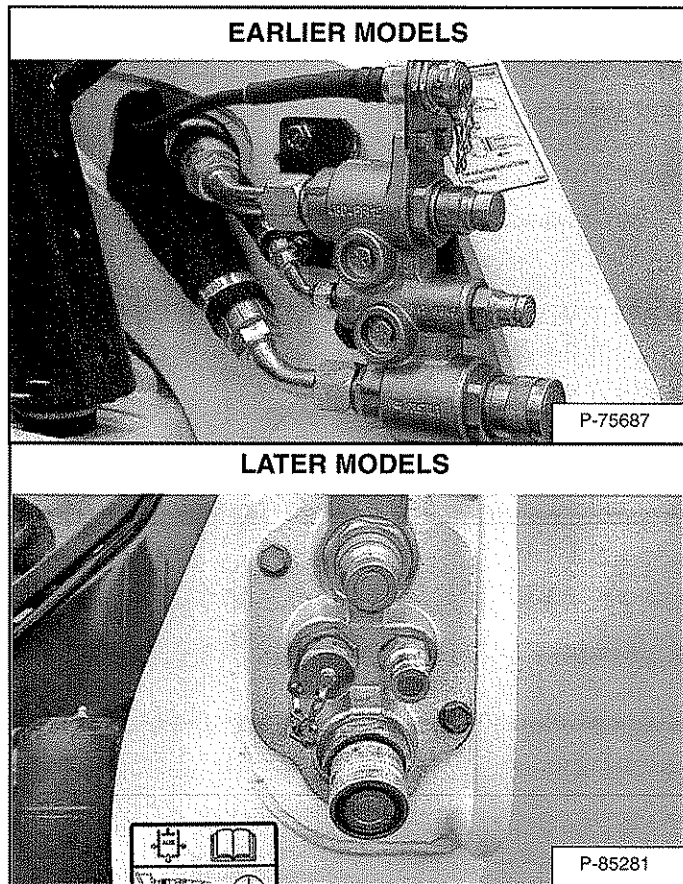
- Thoroughly clean the quick couplers before making connections. Dirt can quickly damage the system.
- Contain and dispose of any oil leakage in an environmentally safe manner.

I-2278-0608

New attachments and new loaders are factory equipped with flush face couplers. If installing an attachment equipped with poppet style couplers, the attachment couplers will have to be changed to match the loader. See your Bobcat dealer for parts information.

NOTE: Make sure the quick couplers are fully engaged. If the quick couplers do not fully engage, check to see that the couplers are the same size and type.

Figure 46



! WARNING

AVOID BURNS

Hydraulic fluid, tubes, fittings and quick couplers can get hot when running machine and attachments. Be careful when connecting and disconnecting quick couplers.

W-2220-0396

To Connect:

Remove any dirt or debris from the surface of both the male and female couplers, and from the outside diameter of the male coupler. Visually check the couplers for corroding, cracking, damage, or excessive wear. If any of these conditions exist, the coupler(s) must be replaced [Figure 46].

Install the male coupler into the female coupler. Full connection is made when the ball release sleeve slides forward on the female coupler [Figure 46].

NOTE: Check that the attachment hydraulic hoses are not twisted or contacting any moving parts of the loader or attachment. (See For First Time Installation on Page 39.) for proper adjustment.

To Disconnect:

Relieve hydraulic pressure. (See the loader's Operation & Maintenance Manual and Operator's Handbook for correct procedure.)

Push the couplers together, retract the sleeve on the female coupler until the couplers disconnect.

OPERATING PROCEDURE WITH LOADERS (CONT'D)

Control Functions



Keep all bystanders 6 m (20 ft) away from equipment when operating. Contact with moving parts, a trench cave-in or flying objects can cause injury or death.

W-2119-0910

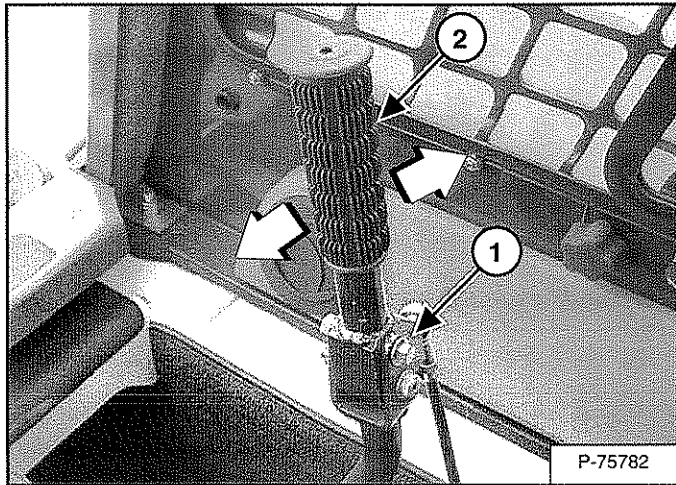
With the operator in the operators seat of the loader, the seat belt fastened and the seat bar lowered, start the engine.

Engage auxiliary hydraulics. (See the loader's Operation & Maintenance Manual and Operator's Handbook for correct procedure.)

Note: The auxiliary hydraulics must be activated prior to attachment operation.

S100 Auxiliary Hydraulics Controls

Figure 47



NOTE: Remove the auxiliary control lockout bolt and nut (Item 1) [Figure 47] before using the auxiliary control for the first time.

The handle of the right steering lever (Item 2) [Figure 47] is also the control lever for the front auxiliary hydraulics.

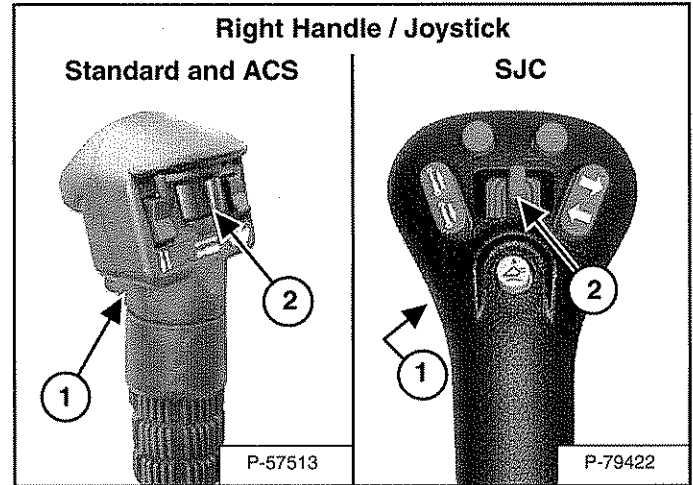
Move the handle to the right for trencher chain forward rotation, to the left will reverse trencher chain rotation. Move the handle to the center to stop chain rotation.

Move the handle all the way to the right to put the control valve in the locked position for continuous trencher chain rotation.

Move the handle out of the locked position before leaving the operator cab.

All Models (Other Than S100)

Figure 48



Press the button (Item 1) [Figure 48] for continuous trencher chain forward rotation. Press the button a second time to stop trencher chain rotation.

To reverse trencher chain rotation, press and hold switch (item 2) [Figure 48] to the left. Release the switch to stop trencher chain rotation.

OPERATING PROCEDURE WITH LOADERS (CONT'D)

Operation With The Loader

Hydraulic Side Shift (If Equipped)

Hydraulic side shift is optional for the LT213 and LT313 trenchers. It is available as a field installed kit from your Bobcat dealer.

Hydraulic Side Shift is standard on the LT414 trenchers.

Stop the engine and exit the loader when changing the hydraulic side shift selector valve. (See Entering And Exiting The Loader on Page 32.)



AVOID INJURY OR DEATH

Before you leave the operator's seat:

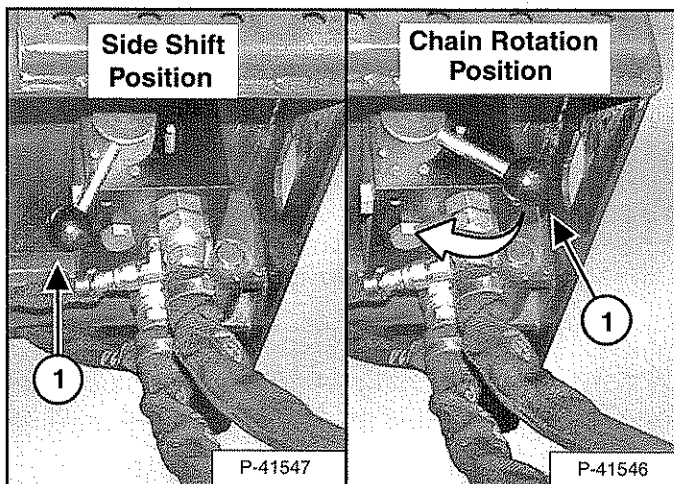
- Lower the lift arms and put the attachment flat on the ground.
- Stop the engine.
- Engage the parking brake.
- Raise the seat bar.
- Move all controls to the NEUTRAL / LOCKED position to make sure the lift, tilt and traction drive functions are deactivated.

The seat bar system must deactivate these functions when the seat bar is up. See your Bobcat dealer for service if controls do not deactivate.

W-2463-1110

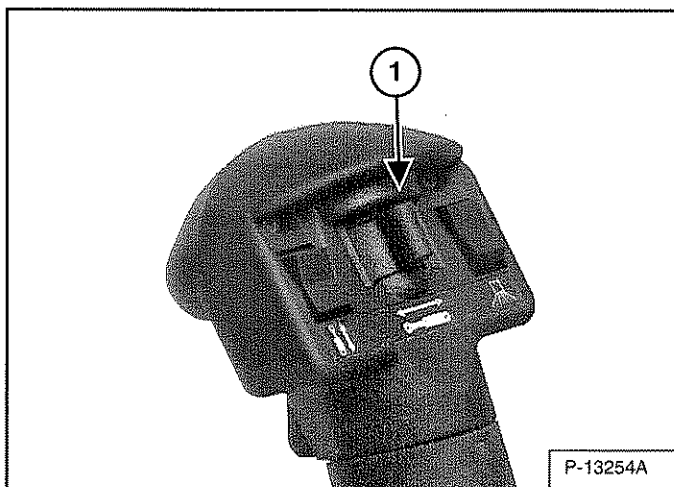
LT213 And LT313 Trenchers

Figure 49



Move the selector valve lever (Item 1) to the side shift position [Figure 49].

Figure 50



Pressing the switch (Item 1) [Figure 50] to the left will side shift the trencher to the right.

Pressing the switch (Item 1) [Figure 50] and to the right will side shift the trencher to the left.

NOTE: The 'backwards' switch function for side shifting is intentional and is used to avoid undesired boom drifting. **DO NOT** make changes to the trencher to change the direction of the side shift function.

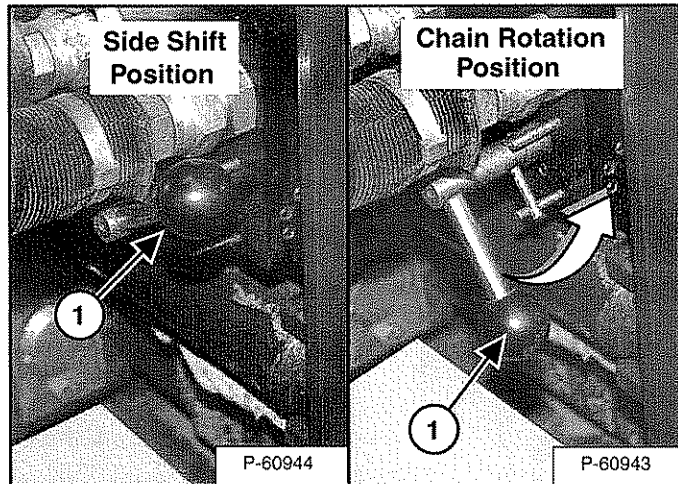
OPERATING PROCEDURE WITH LOADERS (CONT'D)

Operation With The Loader (Cont'd)

Hydraulic Side Shift (If Equipped) (Cont'd)

LT414 Trenchers

Figure 51

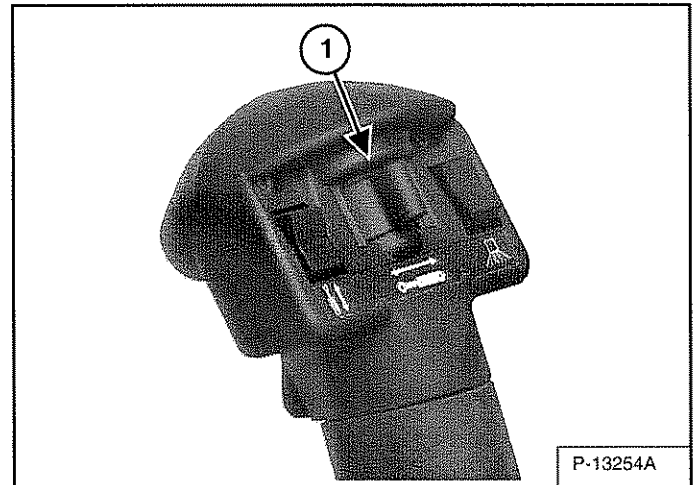


Move the selector valve lever (Item 1) to the side shift position [Figure 51].

Enter the cab and fasten the seat belt, lower the seat bar, and start the engine. Release the parking brake.

The auxiliary hydraulics must be activated prior to operation.

Figure 52



Pressing the switch (Item 1) [Figure 52] to the left will side shift the trencher to the right.

Pressing the switch (Item 1) [Figure 52] to the right will side shift the trencher to the left.

NOTE: The 'backwards' switch function for side shifting is intentional and is used to avoid undesired boom drifting. DO NOT make changes to the trencher to change the direction of the side shift function.

Move the trencher to the desired position.

Stop the engine and exit the loader. (See Entering And Exiting The Loader on Page 32.)

OPERATING PROCEDURE WITH LOADERS (CONT'D)

Operation With The Loader (Cont'd)

Hydraulic Side Shift (If Equipped) (Cont'd)

Figure 53

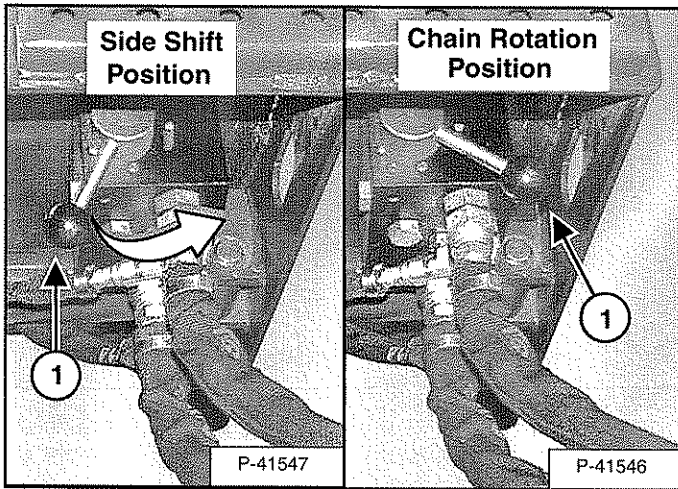
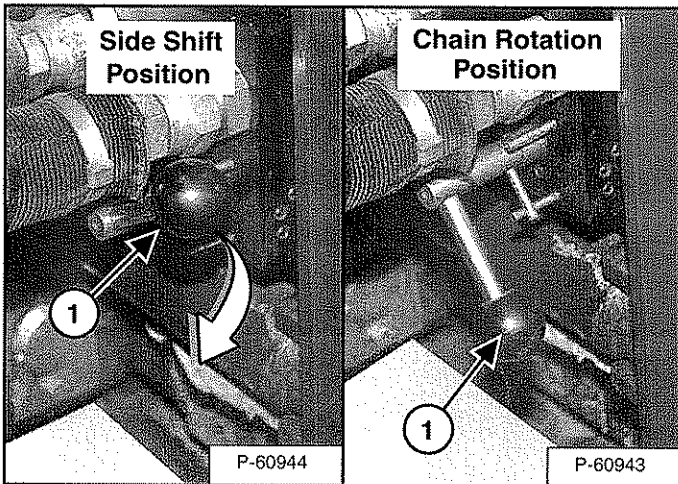


Figure 54



To resume trenching operation, move the selector valve lever (Item 1) [Figure 53] or [Figure 54] to the chain rotation position.

Enter the cab and fasten the seat belt, lower the seat bar, and start the engine. Release the parking brake.

The auxiliary hydraulics must be activated prior to operation.

OPERATING PROCEDURE WITH LOADERS (CONT'D)

Operation With The Loader (Cont'd)

Manual Side Shift

If the trencher is not equipped with hydraulic side shift, the trencher must be side shifted manually. For availability and operation (See Hydraulic Side Shift (If Equipped) on Page 42.)

Stop the engine and exit the loader when changing the side shift position. (See Entering And Exiting The Loader on Page 32.)

WARNING

AVOID INJURY OR DEATH

Before you leave the operator's seat:

- Lower the lift arms and put the attachment flat on the ground.
- Stop the engine.
- Engage the parking brake.
- Raise the seat bar.
- Move all controls to the NEUTRAL / LOCKED position to make sure the lift, tilt and traction drive functions are deactivated.

The seat bar system must deactivate these functions when the seat bar is up. See your Bobcat dealer for service if controls do not deactivate.

W-2463-1110

Figure 55

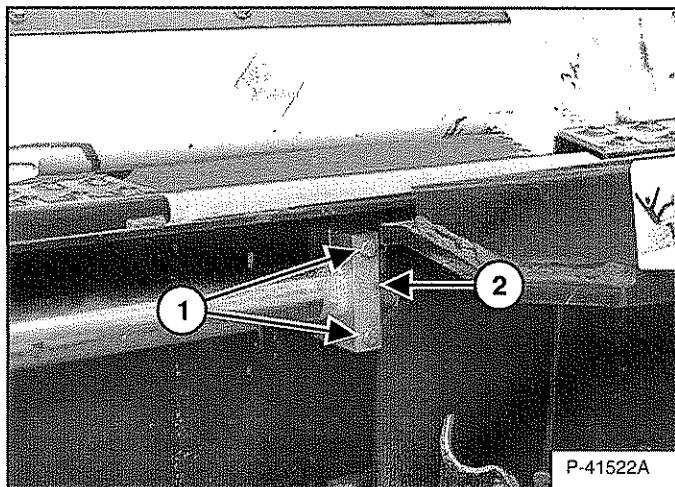
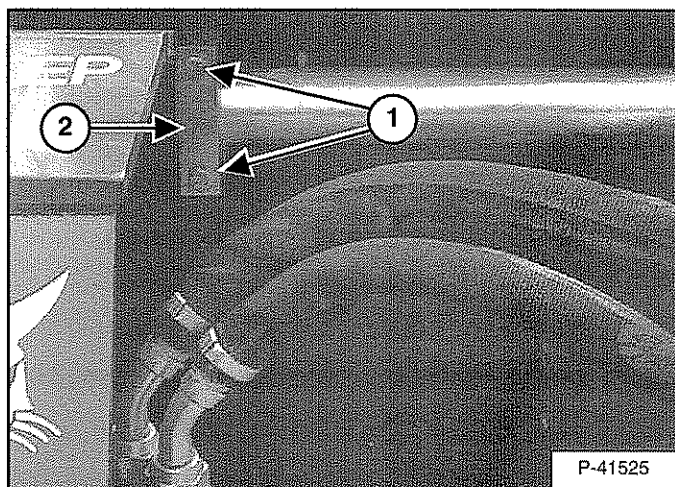


Figure 56



Loosen the two bolts (Item 1) [Figure 55] and [Figure 56] from the blocks (Item 2) [Figure 55] and [Figure 56].

Move the trencher to the desired position.

Slide the blocks (Item 2) [Figure 55] and [Figure 56] against the trencher frame.

Tighten the bolts to 34 - 38 N•m (25 - 28 ft-lb) torque.

OPERATING PROCEDURE WITH LOADERS (CONT'D)

Operation With The Loader (Cont'd)

Trenching Procedure

! WARNING

Keep all bystanders 6 m (20 ft) away from equipment when operating. Contact with moving parts, a trench cave-in or flying objects can cause injury or death.

W-2119-0910

! WARNING

AVOID INJURY OR DEATH

Check for underground utility lines before digging.

W-2120-0788

Figure 57

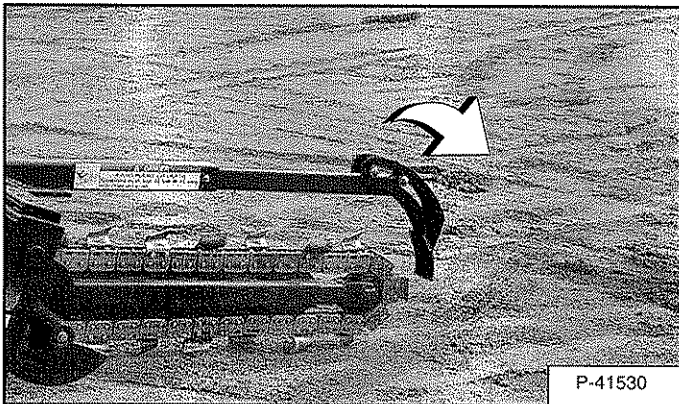


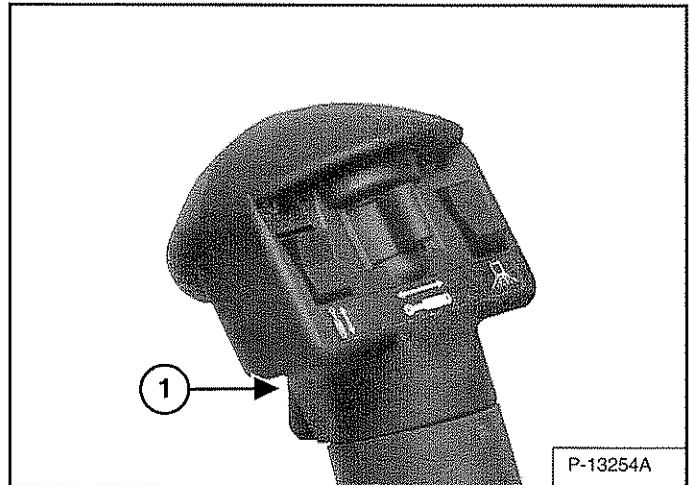
Figure 58



Activate the auxiliary hydraulics.

Tilt the trencher forward [Figure 57].

Figure 59



Press the switch (Item 1) [Figure 59] to start trencher chain rotation.

Tilt the Bob-Tach forward slowly until the end of the attachment contacts the ground [Figure 58] and starts digging the trench.

NOTE: Tilt the Bob-Tach into the ground [Figure 58] SLOWLY or damage to the trench cleaner shoe may occur.

When the attachment is approximately at a 60° angle to the ground, it is at the best digging position.

Drive backward and continue trenching until the desired length of trench is reached.

NOTE: The 'backwards' switch function for side shifting is intentional and is used to avoid undesired boom drifting. DO NOT make changes to the trencher to change the direction of the side shift function.

OPERATING PROCEDURE WITH LOADERS (CONT'D)

Removal

Hand Lever Bob-Tach

Lower the lift arms and put the attachment flat on the ground. Lower or close the hydraulic equipment (if equipped).

NOTE: In muddy conditions or to prevent the attachment from freezing to the ground, put the attachment on planks or blocks before removing the attachment from the loader.

Stop the engine and release auxiliary hydraulic pressure (if applicable). (See the loader's Operation & Maintenance Manual and Operator's Handbook for correct procedure.)

Exit the loader. (See Entering And Exiting The Loader on Page 32.)

! WARNING

AVOID INJURY OR DEATH

Before you leave the operator's seat:

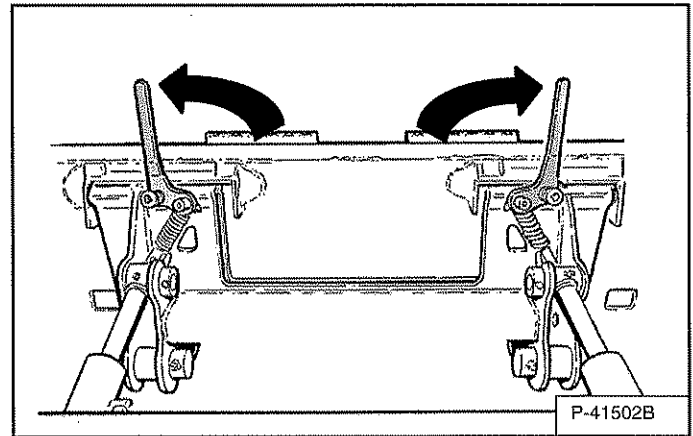
- Lower the lift arms and put the attachment flat on the ground.
- Stop the engine.
- Engage the parking brake.
- Raise the seat bar.
- Move all controls to the **NEUTRAL / LOCKED** position to make sure the lift, tilt and traction drive functions are deactivated.

The seat bar system must deactivate these functions when the seat bar is up. See your Bobcat dealer for service if controls do not deactivate.

W-2463-1110

Disconnect auxiliary hydraulic hoses (if applicable). (See Hydraulic Quick Couplers on Page 40.)

Figure 60



Pull the Bob-Tach levers up [Figure 60] until they are fully raised (wedges fully raised).

! WARNING

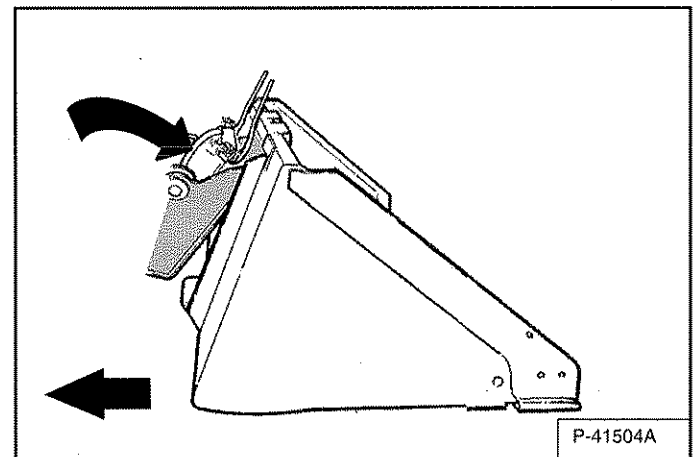
Bob-Tach levers have spring tension. Hold lever tightly and release slowly. Failure to obey warning can cause injury.

W-2054-1285

Enter the loader. (See Entering And Exiting The Loader on Page 32.)

Start the engine, press the **PRESS TO OPERATE LOADER** button and release the parking brake.

Figure 61



Tilt the Bob-Tach forward and drive the loader backward, away from the attachment [Figure 61].

OPERATING PROCEDURE WITH LOADERS (CONT'D)

Removal (Cont'd)

Power Bob-Tach

Lower the lift arms and put the attachment flat on the ground. Lower or close the hydraulic equipment (if equipped).

NOTE: In muddy conditions or to prevent the attachment from freezing to the ground, put the attachment on planks or blocks before removing the attachment from the loader.

Stop the engine and release auxiliary hydraulic pressure (if applicable). (See the loader's Operation & Maintenance Manual and Operator's Handbook for correct procedure.)

Exit the loader. (See Entering And Exiting The Loader on Page 32.)



WARNING

AVOID INJURY OR DEATH

Before you leave the operator's seat:

- Lower the lift arms and put the attachment flat on the ground.
- Stop the engine.
- Engage the parking brake.
- Raise the seat bar.
- Move all controls to the NEUTRAL / LOCKED position to make sure the lift, tilt and traction drive functions are deactivated.

The seat bar system must deactivate these functions when the seat bar is up. See your Bobcat dealer for service if controls do not deactivate.

W-2463-1110

Disconnect auxiliary hydraulic hoses. (See Hydraulic Quick Couplers on Page 40.)

Enter the loader. (See Entering And Exiting The Loader on Page 32.)

Start the engine, press the PRESS TO OPERATE LOADER button and release the parking brake.

Figure 62

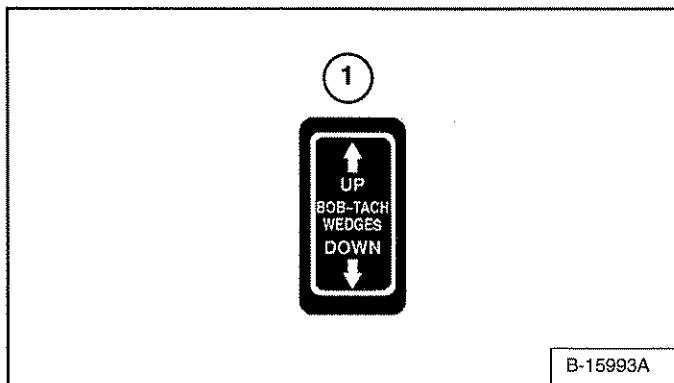
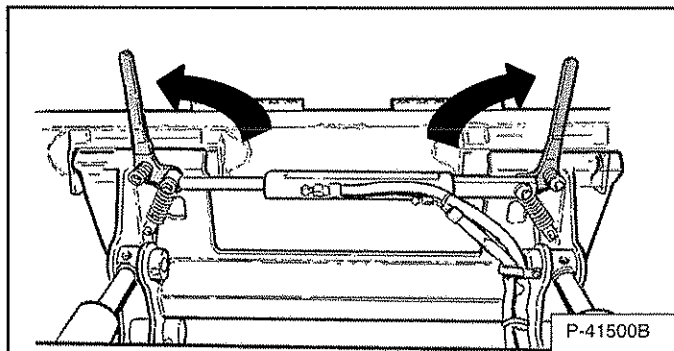
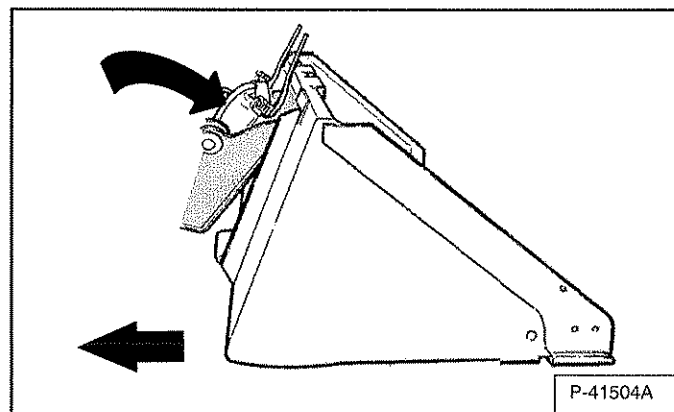


Figure 63



Push and hold the BOB-TACH "WEDGES UP" switch (Item 1) [Figure 62] (Front Panel) until the levers [Figure 63] are fully raised (wedges fully raised).

Figure 64



Tilt the Bob-Tach forward and drive the loader backward, away from the attachment [Figure 64].

NOTE: The Power Bob-Tach system has continuous pressurized hydraulic oil to keep the wedges in the engaged position and prevent attachment disengagement. Because the wedges can slowly lower, the operator may need to reactivate the switch (BOB-TACH "WEDGES UP") when removing an attachment to be sure both wedges are fully raised.

OPERATING PROCEDURE WITH VERSAHANDLERS

Approved VersaHANDLER Models And Requirements

Figure 65

VERSAHANDLER MODEL	TRENCHER
	LT313 S/N 045400101 & Above
V417	X

X = Approved

The chart [Figure 65] shows the approved trencher model for the V417 VersaHANDLER.

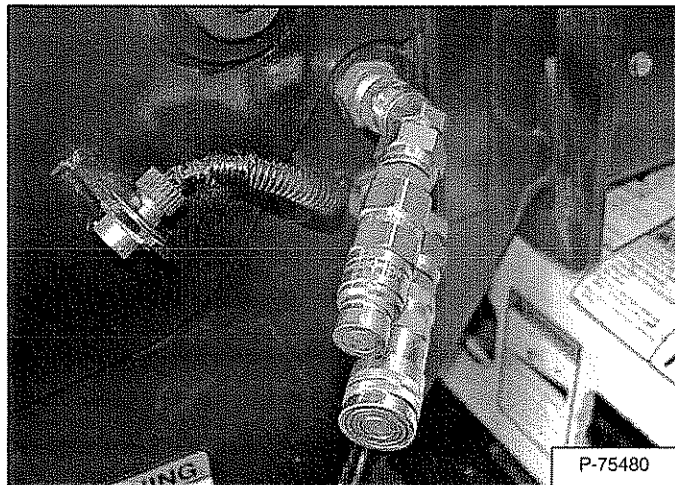
The warranty is void if this attachment is used on a non-approved carrier. See your Bobcat dealer for an updated list of approved carriers.



Never use attachments or buckets which are not approved by the Bobcat Company. Attachments and buckets for safe loads of specified densities are approved for each model. Unapproved attachments and buckets can cause injury or death.

W-2662-0108

Figure 66



The VersaHANDLER must be equipped with front auxiliary hydraulics [Figure 66] for proper operation of the trencher. See your Bobcat dealer for available kits.

OPERATING PROCEDURE WITH VERSAHANDLERS (CONT'D)

Entering And Exiting The VersaHANDLER

! WARNING

AVOID INJURY OR DEATH

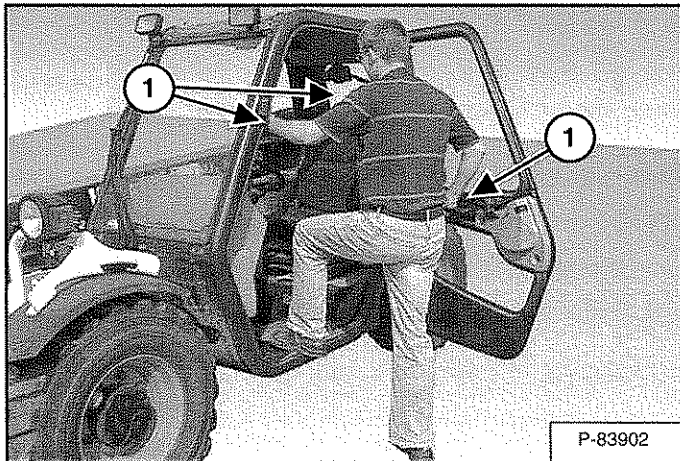
When operating the machine:

- Keep the seat belt fastened snugly.
- Lower the restraint bar (if equipped).
- Keep your feet and arms inside the cab.

W-2810-1109

Entering

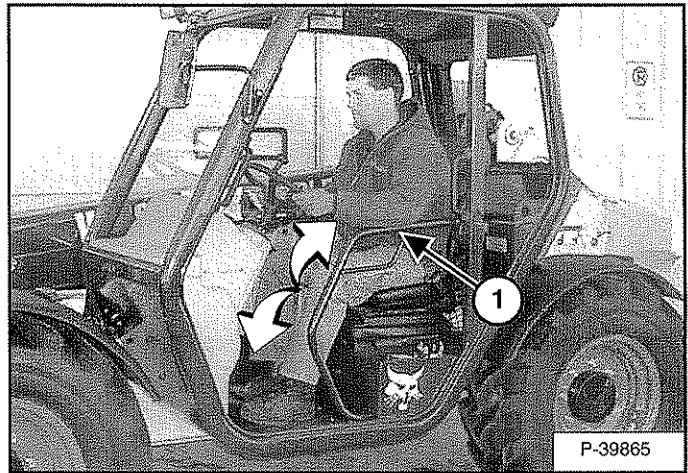
Figure 67



Use the hand grabs (Item 1) [Figure 67] to enter the operator cab.

NOTE: Maintain three-point contact at all times while entering or exiting the VersaHANDLER. Do not jump.

Figure 68



Fasten seat belt and lower the restraint bar (Item 1) [Figure 68] (if equipped), and engage the parking brake.

Put the Travel Direction Control lever and joystick in neutral.

See the VersaHANDLER's Operation & Maintenance Manual and Operator's Handbook for detailed information on operating the VersaHANDLER.

OPERATING PROCEDURE WITH VERSAHANDLERS (CONT'D)

Entering And Exiting The VersaHANDLER (Cont'd)

Exiting

Put the Travel Direction Control Lever and the Joystick in neutral.

Engage the parking brake.

Retract and lower the boom and attachment flat on the ground.

Stop the engine.

Raise the restraint bar (*if equipped*) and make sure the lift, tilt, boom extend, auxiliary hydraulic and traction drive functions are deactivated.

Remove the key.

Exit the VersaHANDLER.



Before you leave the operator's position:

- Put the travel Direction Control Lever and the Joystick in neutral.
- Engage the parking brake.
- Retract and lower the boom and attachment flat on the ground.
- Stop the engine. Raise the restraint bar (if equipped).

SEE THE MACHINE OPERATION & MAINTENANCE MANUAL FOR MORE INFORMATION.

W-2637-0607

OPERATING PROCEDURE WITH VERSAHANDLERS (CONT'D)

Installation

Hand Lever Bob-Tach

NOTE: The illustrations and instructions provided explain how to install a bucket attachment on to a VersaHANDLER. Follow these same instructions if you are installing different attachments such as a grapple, tiller, combo bucket, etc.

The attachment mounting frame for the attachment has a top flange that is designed to receive the top edge of the Bob-Tach and the lower part of the frame is designed to receive the Bob-Tach wedges.

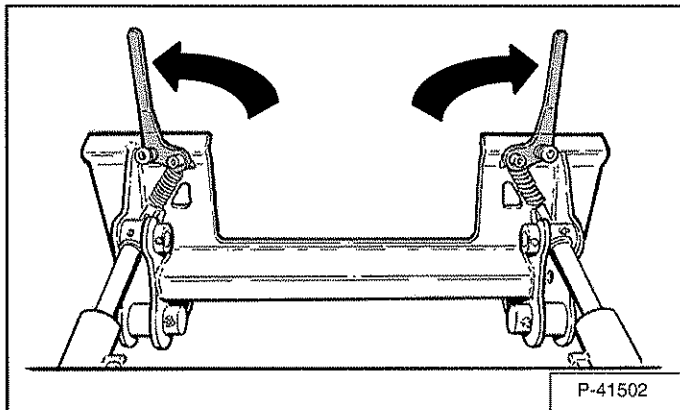
! WARNING

The signal word **WARNING** on the machine and in the manuals indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

W-2044-1107

Always inspect the VersaHANDLER's Bob-Tach and the attachment mounting frame before installation. See the VersaHANDLER's Operation & Maintenance Manual. (See **DAILY INSPECTION** on Page 27.)

Figure 69

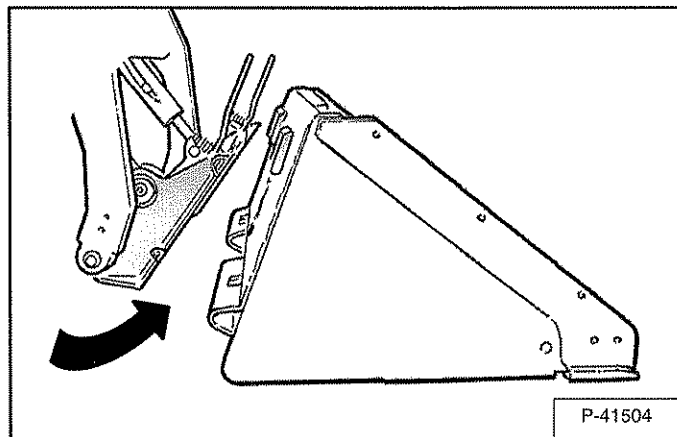


Pull the Bob-Tach levers up until they are fully raised (wedges fully raised) [Figure 69].

Enter the VersaHANDLER. (See Entering And Exiting The VersaHANDLER on Page 50.)

Start the engine and release the parking brake.

Figure 70

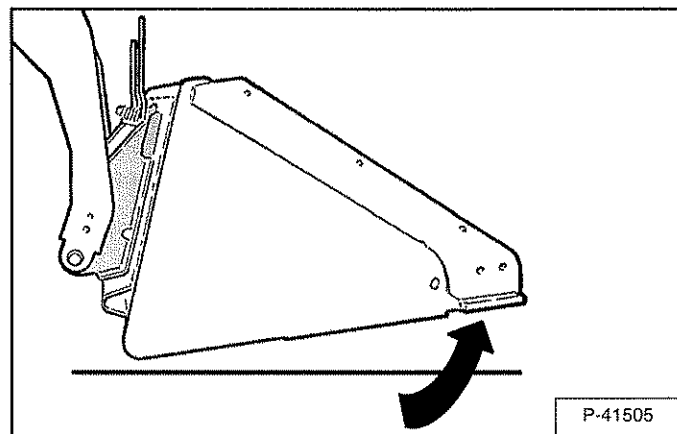


Lower the boom and tilt the Bob-Tach forward.

Drive the VersaHANDLER slowly forward until the top edge of the Bob-Tach is completely under the top flange of the attachment mounting frame [Figure 70].

NOTE: Be sure the Bob-Tach levers do not hit the attachment.

Figure 71



Tilt the Bob-Tach backward until the attachment is slightly off the ground [Figure 71]. This will cause the attachment mounting frame to fit up against the front of the Bob-Tach.

NOTE: When leaving the operator's seat to install an attachment, tilt the attachment until it is slightly off the ground.

Stop the engine and exit the VersaHANDLER. (See Entering And Exiting The VersaHANDLER on Page 50.)

OPERATING PROCEDURE WITH VERSAHANDLERS (CONT'D)

Installation (Cont'd)

Hand Lever Bob-Tach (Cont'd)



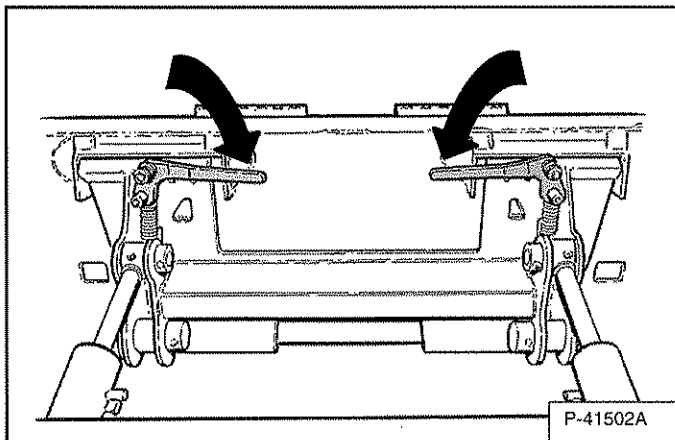
Before you leave the operator's position:

- Put the travel Direction Control Lever and the Joystick in neutral.
- Engage the parking brake.
- Retract and lower the boom and attachment flat on the ground.
- Stop the engine. Raise the restraint bar (if equipped).

SEE THE MACHINE OPERATION & MAINTENANCE MANUAL FOR MORE INFORMATION.

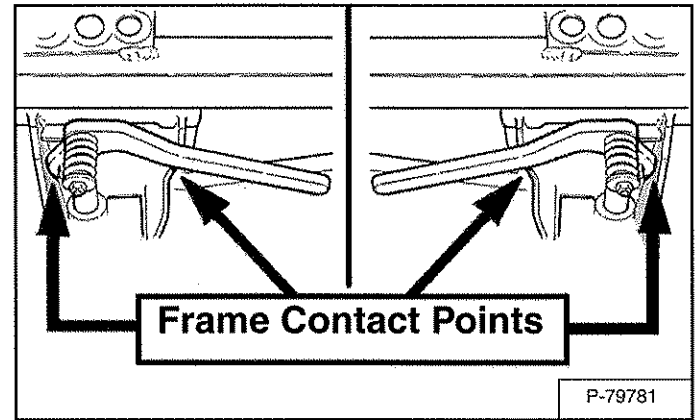
W-2637-0607

Figure 72



Push down on the Bob-Tach levers until they are fully engaged in the locked position [Figure 72] (wedges fully extended through the attachment mounting frame holes).

Figure 73



Both levers must contact the frame as shown when locked [Figure 73].

If both levers do not engage in the locked position, see your Bobcat dealer for maintenance.

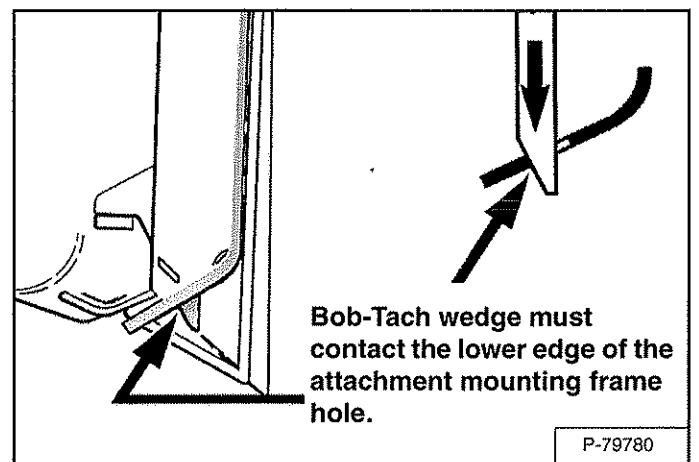


AVOID INJURY OR DEATH

The Bob-Tach wedges must extend through the holes in the attachment mounting frame. Levers must be fully down and locked. Failure to secure wedges can allow attachment to come off.

W-2715-0208

Figure 74



Bob-Tach wedge must contact the lower edge of the attachment mounting frame hole.

The wedges must extend through the holes in the attachment mounting frame, securely fastening the attachment to the Bob-Tach [Figure 74].

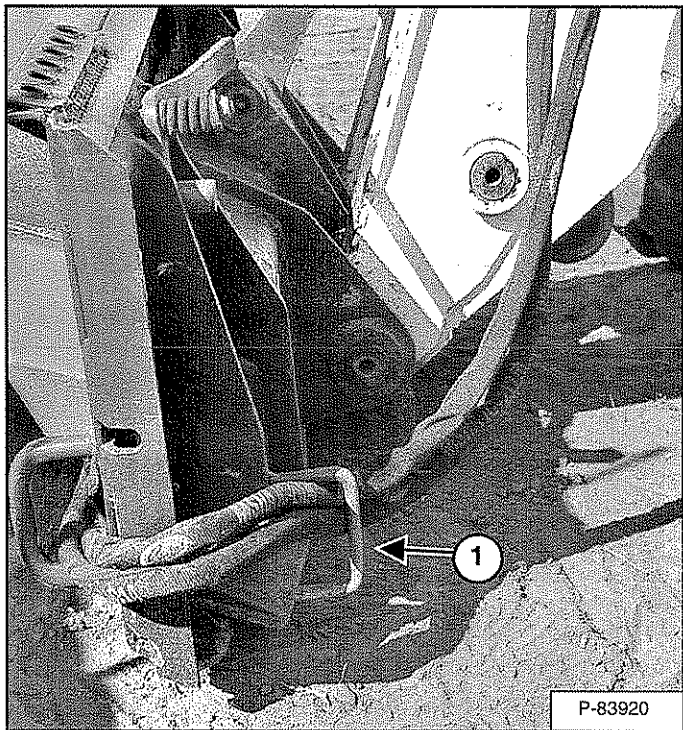
Connect auxiliary hydraulic hoses. (See Hydraulic Quick Couplers on Page 56.)

OPERATING PROCEDURE WITH VERSAHANDLERS (CONT'D)

Installation (Cont'd)

Hose Routing

Figure 75



Route the hydraulic hoses through the hose guide (Item 1) **[Figure 75]** and connect quick couplers to the VersaHANDLER. (See Hydraulic Quick Couplers on Page 56.)

OPERATING PROCEDURE WITH VERSAHANDLERS (CONT'D)

Installation (Cont'd)

For First Time Installation

New attachments and new VersaHANDLERS are factory equipped with flush face couplers. If installing an attachment equipped with poppet style couplers, the attachment couplers will have to be changed to match the VersaHANDLER. See your Bobcat dealer for parts information.

IMPORTANT

- **Thoroughly clean the quick couplers before making connections. Dirt can quickly damage the system.**
- **Contain and dispose of any oil leakage in an environmentally safe manner.**

I-2278-0608

With the VersaHANDLER engine off and using the hose guides (if equipped), route the attachment hydraulic hoses to the VersaHANDLER. Connect the attachment hydraulic quick couplers to the VersaHANDLER couplers. (See Hydraulic Quick Couplers on Page 56.)

Check that the attachment hydraulic hoses are not twisted or contacting any moving parts of the VersaHANDLER or attachment.

NOTE: It may be necessary to loosen the quick couplers on the attachment hydraulic hoses to remove any twists in the hoses.

! WARNING

AVOID INJURY OR DEATH

Wear safety glasses to prevent eye injury when any of the following conditions exist:

- **When fluids are under pressure.**
- **Flying debris or loose material is present.**
- **Engine is running.**
- **Tools are being used.**

W-2019-0907

Loosen the quick coupler connections on the attachment hydraulic hoses while connected to the VersaHANDLER. Do not remove the quick couplers.

Rotate the attachment hydraulic hoses as needed so the hoses are not twisted or contacting any moving parts of the VersaHANDLER or attachment.

With the twist(s) removed from the hydraulic hoses, tighten the attachment quick coupler connections while the couplers are still connected to the VersaHANDLER. This will help hold the hydraulic hoses in position while tightening.

Tighten the quick couplers connections to 63 N•m (46 ft-lb) torque before starting the VersaHANDLER.

Enter the VersaHANDLER. (See Entering And Exiting The VersaHANDLER on Page 50.)

Start the engine and release the parking brake.

Engage auxiliary hydraulics. (See the VersaHANDLER's Operation & Maintenance Manual and Operator's Handbook for correct procedure.)

! WARNING

AVOID INJURY OR DEATH

Diesel fuel or hydraulic fluid under pressure can penetrate skin or eyes, causing serious injury or death. Fluid leaks under pressure may not be visible. Use a piece of cardboard or wood to find leaks. Do not use your bare hand. Wear safety goggles. If fluid enters skin or eyes, get immediate medical attention from a physician familiar with this injury.

W-2072-0807

Check the attachment hydraulic quick coupler connections for leaks.

Hydraulic Quick Couplers

IMPORTANT

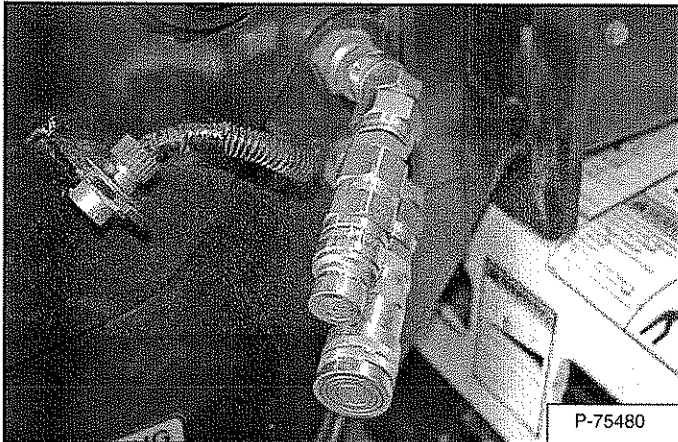
- Thoroughly clean the quick couplers before making connections. Dirt can quickly damage the system.
- Contain and dispose of any oil leakage in an environmentally safe manner.

I-2278-0608

New attachments and new VersaHANDLERS are factory equipped with flush face couplers. If installing an attachment equipped with poppet style couplers, the attachment couplers will have to be changed to match the VersaHANDLER. See your Bobcat dealer for parts information.

NOTE: Make sure the quick couplers are fully engaged. If the quick couplers do not fully engage, check to see that the couplers are the same size and type.

Figure 76



! WARNING

AVOID BURNS

Hydraulic fluid, tubes, fittings and quick couplers can get hot when running machine and attachments. Be careful when connecting and disconnecting quick couplers.

W-2220-0396

To Connect:

Remove any dirt or debris from the surface of both the male and female couplers, and from the outside diameter of the male coupler. Visually check the couplers for corroding, cracking, damage, or excessive wear. If any of these conditions exist, the coupler(s) must be replaced [Figure 76].

Install the male coupler into the female coupler. Full connection is made when the ball release sleeve slides forward on the female coupler [Figure 76].

NOTE: Check that the attachment hydraulic hoses are not twisted or contacting any moving parts of the VersaHANDLER or attachment. (See For First Time Installation on Page 55.) for proper adjustment.

To Disconnect:

Relieve hydraulic pressure. (See the VersaHANDLER's Operation & Maintenance Manual and Operator's Handbook for correct procedure.)

Push the couplers together, retract the sleeve on the female coupler until the couplers disconnect.

OPERATING PROCEDURE WITH VERSAHANDLERS (CONT'D)

Control Functions

! WARNING

Keep all bystanders 6 m (20 ft) away from equipment when operating. Contact with moving parts, a trench cave-in or flying objects can cause injury or death.

W-2119-0910

IMPORTANT

When using ground engaging attachments, boom extension must not exceed 250 mm (9.8 in). Exceeding this limit can cause boom and/or hydraulic cylinder damage.

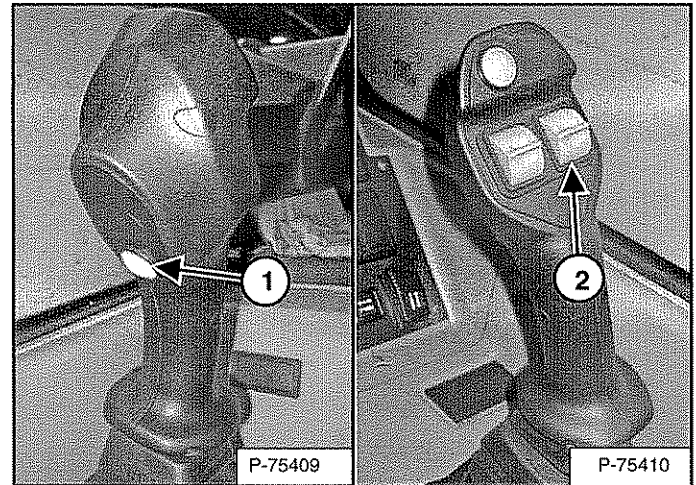
I-2266-0910

Engage auxiliary hydraulics. (See the VersaHANDLER's Operation & Maintenance Manual and Operator's Handbook for correct procedure.)

Note: The auxiliary hydraulics must be activated prior to attachment operation.

Move to the operator position, fasten seat belt and lower the restraint bar (*If Equipped*), start engine and disengage the parking brake.

Figure 77



Press the button (Item 1) to start forward trencher chain rotation. Press the button a second time to stop trencher chain rotation [Figure 77].

To reverse the trencher chain rotation, push and hold the switch (Item 2) down, then press the button (Item 1) [Figure 77]. Release both the switch and the button for continuous reverse trencher chain rotation.

Press button (Item 1) [Figure 77] a second time to stop trencher chain rotation.

OPERATING PROCEDURE WITH VERSAHANDLERS (CONT'D)

Operation With The VersaHANDLER

Hydraulic Side Shift (If Equipped)

Hydraulic side shift is optional for the LT313 trencher. It is available as a field installed kit from your Bobcat dealer.

Stop the engine and exit the VersaHANDLER when changing the hydraulic side shift selector valve. (See Entering And Exiting The VersaHANDLER on Page 50.)

WARNING

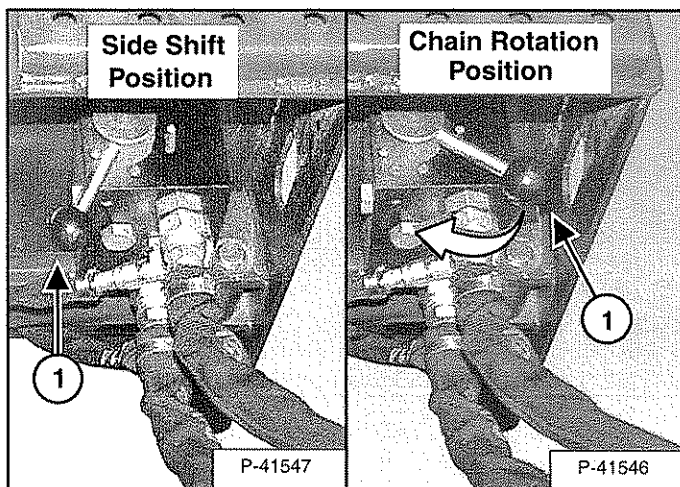
Before you leave the operator's position:

- Put the travel Direction Control Lever and the Joystick in neutral.
- Engage the parking brake.
- Retract and lower the boom and attachment flat on the ground.
- Stop the engine. Raise the restraint bar (if equipped).

SEE THE MACHINE OPERATION & MAINTENANCE MANUAL FOR MORE INFORMATION.

W-2637-0607

Figure 78

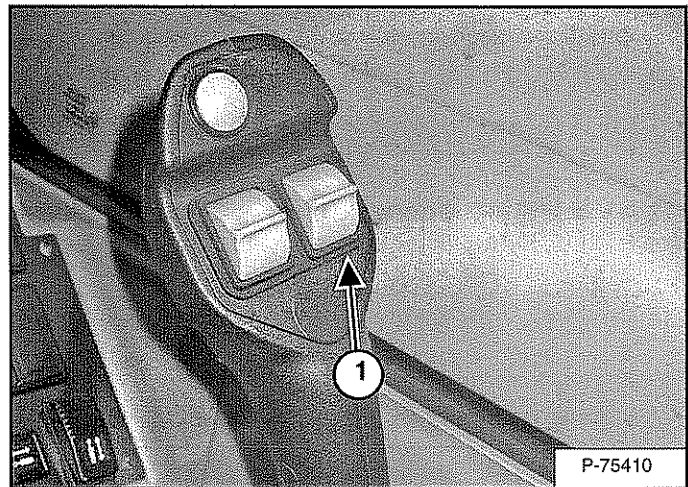


Move the selector valve lever (Item 1) to the side shift position [Figure 78].

Move to the operator position, fasten seat belt and lower the restraint bar (If Equipped), start engine and disengage the parking brake.

Engage auxiliary hydraulics. (See the VersaHANDLER's Operation & Maintenance Manual and Operator's Handbook for correct procedure.)

Figure 79



Pressing the switch (Item 1) [Figure 79] down will side shift the trencher to the right.

Pressing the switch (Item 1) [Figure 79] up will side shift the trencher to the left.

NOTE: The 'backwards' switch function for side shifting is intentional and is used to avoid undesired boom drifting. **DO NOT** make changes to the trencher to change the direction of the side shift function.

Move the trencher to the desired position.

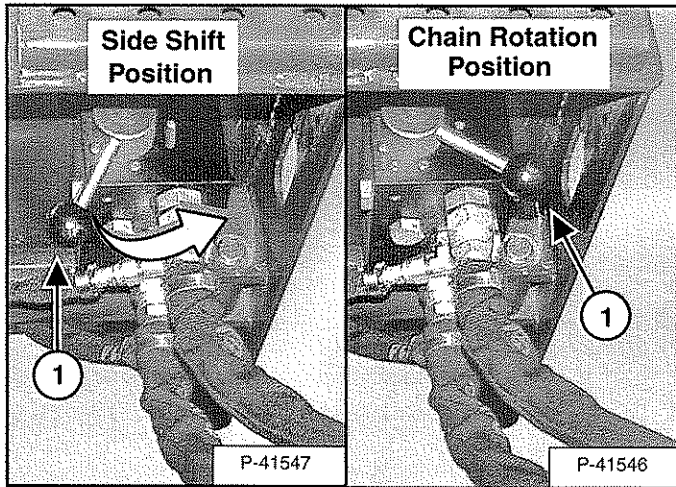
Stop the engine and exit the VersaHANDLER. (See Entering And Exiting The VersaHANDLER on Page 50.)

**OPERATING PROCEDURE WITH VERSAHANDLERS
(CONT'D)**

Operation With The VersaHANDLER (Cont'd)

Hydraulic Side Shift (If Equipped) (Cont'd)

Figure 80



To resume normal trenching operation, move the selector valve lever (Item 1) to the chain rotation position [Figure 80].

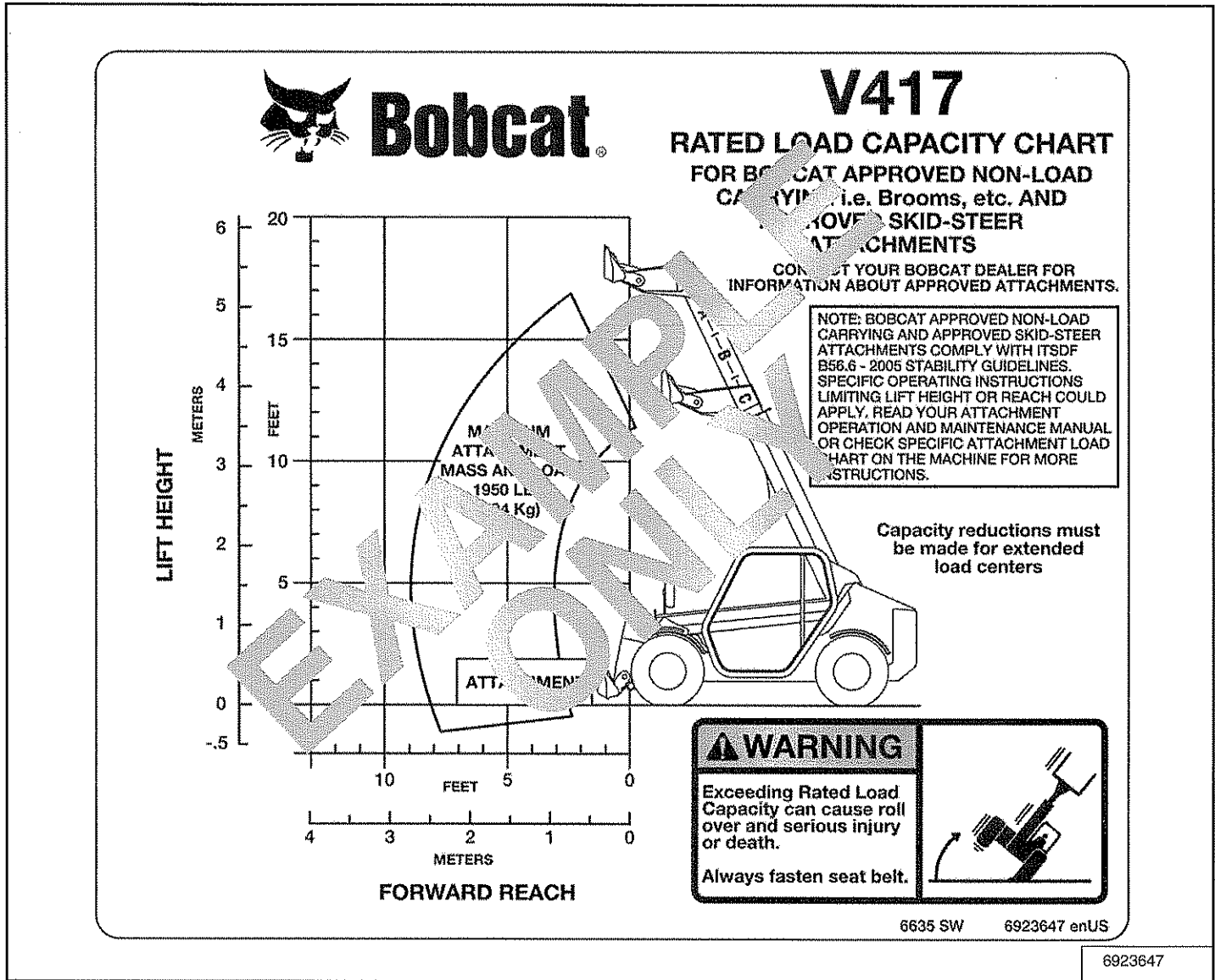
Move to the operator position, fasten seat belt and lower the restraint bar (If Equipped), start engine and disengage the parking brake.

OPERATING PROCEDURE WITH VERSAHANDLERS (CONT'D)

Operation With The VersaHANDLER

Load Capacity Chart

Figure 81



The Load Capacity Chart [Figure 81] is an "EXAMPLE ONLY". See the VersaHANDLER's Operation & Maintenance Manual and Operator's Handbook for more information on the Load Capacity Charts for your VersaHANDLER.

OPERATING PROCEDURE WITH VERSAHANDLERS (CONT'D)

Operation With The VersaHANDLER (Cont'd)

Manual Side Shift

If the trencher is not equipped with hydraulic side shift, the trencher must be side shifted manually. For availability and operation (See Hydraulic Side Shift (If Equipped) on Page 58.)

Stop the engine and exit the VersaHANDLER when changing the side shift position. (See Entering And Exiting The VersaHANDLER on Page 50.)

WARNING

Before you leave the operator's position:

- Put the travel Direction Control Lever and the Joystick in neutral.
- Engage the parking brake.
- Retract and lower the boom and attachment flat on the ground.
- Stop the engine. Raise the restraint bar (if equipped).

SEE THE MACHINE OPERATION & MAINTENANCE MANUAL FOR MORE INFORMATION.

W-2637-0607

Figure 82

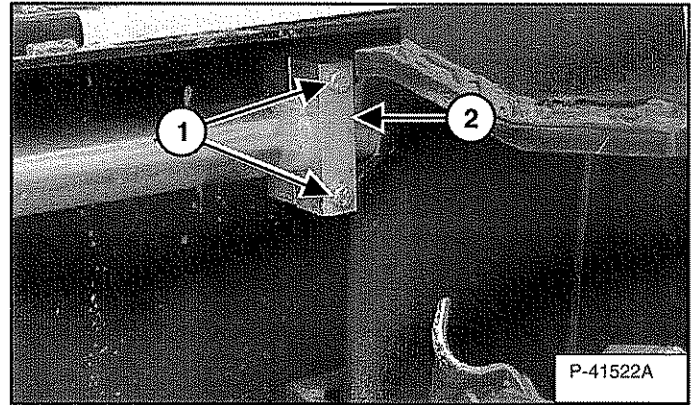
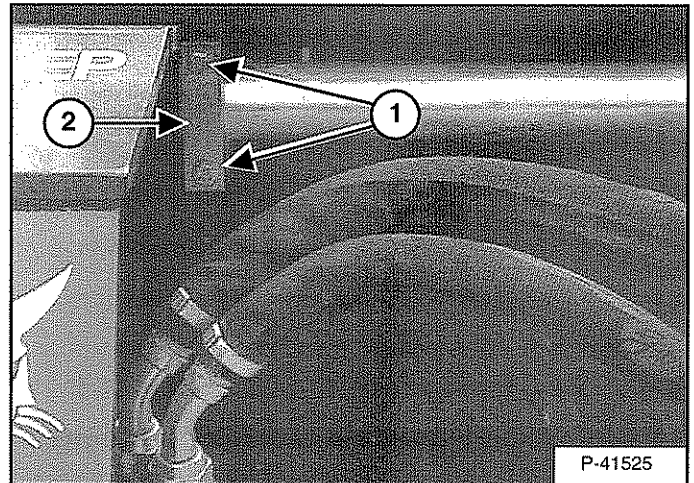


Figure 83



Loosen the two bolts (Item 1) from the blocks (Item 2) [Figure 82] and [Figure 83].

Move the trencher to the desired position.

Slide the blocks (Item 2) [Figure 82] and [Figure 83] against the trencher frame.

Tighten the bolts to 34 - 38 N•m (25 - 28 ft-lb) torque.

OPERATING PROCEDURE WITH VERSAHANDLERS (CONT'D)

Operation With The VersaHANDLER (Cont'd)

Trenching Procedure

WARNING

Keep all bystanders 6 m (20 ft) away from equipment when operating. Contact with moving parts, a trench cave-in or flying objects can cause injury or death.

W-2119-0910

WARNING

AVOID INJURY OR DEATH

Check for underground utility lines before digging.

W-2120-0788

Figure 84

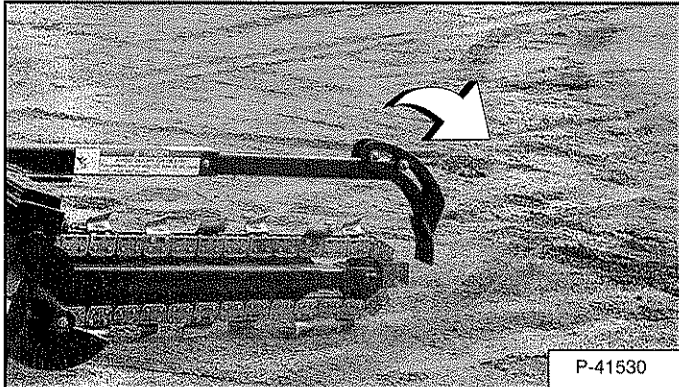


Figure 85



Activate the auxiliary hydraulics.

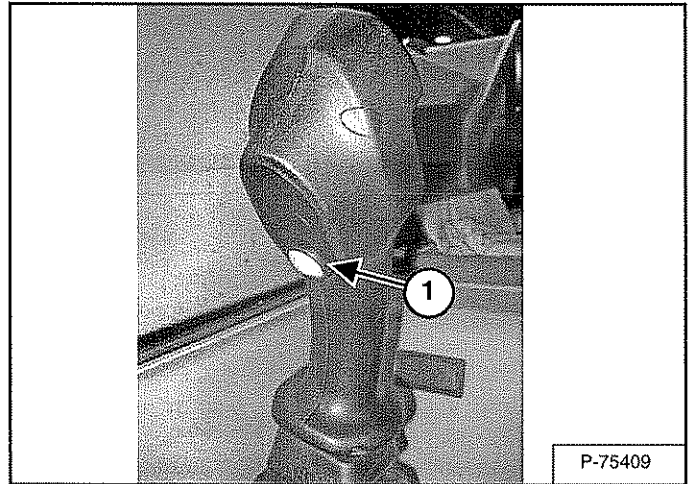
Tilt the trencher forward [Figure 85] and [Figure 86].

IMPORTANT

When using ground engaging attachments, boom extension must not exceed 250 mm (9.8 in). Exceeding this limit can cause boom and/or hydraulic cylinder damage.

I-2266-0910

Figure 86



Press the button (Item 1) [Figure 86] to start trencher chain rotation.

Tilt the Bob-Tach forward slowly until the end of the attachment contacts the ground [Figure 85] and starts digging the trench.

NOTE: Tilt the Bob-Tach into the ground SLOWLY or damage to the trench cleaner shoe may occur.

When the attachment is approximately at a 60° angle to the ground, it is at the best digging position.

Drive backward and continue trenching until the desired length of trench is reached.

NOTE: The 'backwards' switch function for side shifting is intentional and is used to avoid undesired boom drifting. DO NOT make changes to the trencher to change the direction of the side shift function.

OPERATING PROCEDURE WITH VERSAHANDLERS (CONT'D)

Removal

Hand Lever Bob-Tach

Lower the boom and put the attachment flat on the ground. Lower or close the hydraulic equipment (if equipped).

NOTE: In muddy conditions or to prevent the attachment from freezing to the ground, put the attachment on planks or blocks before removing the attachment from the VersaHANDLER.

Stop the engine and release auxiliary hydraulic pressure (if applicable). (See the loader's Operation & Maintenance Manual and Operator's Handbook for correct procedure.)

Exit the VersaHANDLER. (See Entering And Exiting The VersaHANDLER on Page 50.)

! WARNING

Before you leave the operator's position:

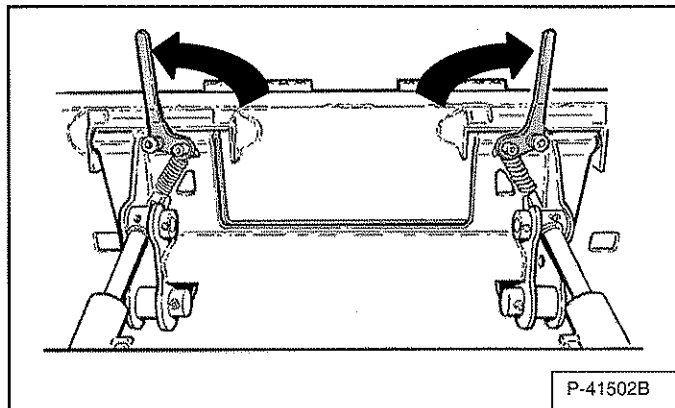
- Put the travel Direction Control Lever and the Joystick in neutral.
- Engage the parking brake.
- Retract and lower the boom and attachment flat on the ground.
- Stop the engine. Raise the restraint bar (if equipped).

SEE THE MACHINE OPERATION & MAINTENANCE MANUAL FOR MORE INFORMATION.

W-2637-0607

Disconnect auxiliary hydraulic hoses (if applicable). (See Hydraulic Quick Couplers on Page 56.)

Figure 87



Pull the Bob-Tach levers up [Figure 87] until they are fully raised (wedges fully raised).

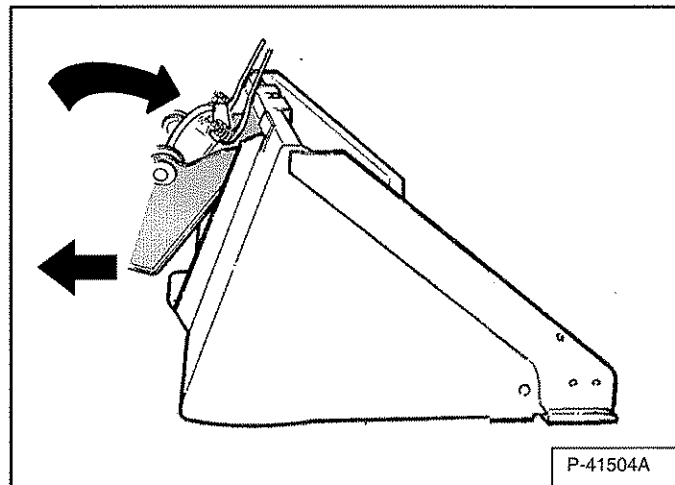
! WARNING

Bob-Tach levers have spring tension. Hold lever tightly and release slowly. Failure to obey warning can cause injury.

W-2054-1285

Move to the operator position, fasten seat belt and lower the restraint bar (If Equipped), start the engine and disengage the parking brake.

Figure 88



Tilt the Bob-Tach forward while backing the VersaHANDLER away from the attachment [Figure 88].

OPERATING PROCEDURE WITH UTILITY WORK MACHINES

Approved Work Machine Models And Requirements

Figure 89

WORK MACHINE MODEL	TRENCHER	
	LT213 S/N 045300101 & Above	LT313 S/N 045400101 & Above
5600	X	X
5610	X	

X = Approved

The chart [Figure 89] lists the work machine models approved for use with the trencher.

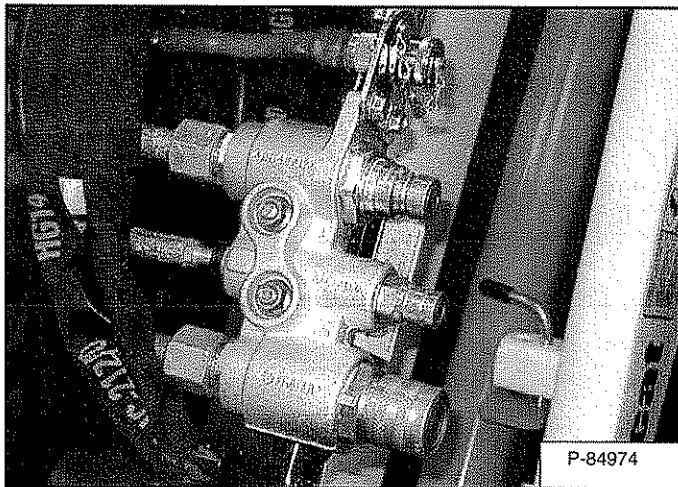
The warranty is void if this attachment is used on a non-approved carrier. See your Bobcat dealer for an updated list of approved carriers.

WARNING

Never use attachments or buckets which are not approved by the Bobcat Company. Attachments and buckets for safe loads of specified densities are approved for each model. Unapproved attachments and buckets can cause injury or death.

W-2662-0108

Figure 90



The work machine must be equipped with front auxiliary hydraulics [Figure 90] for proper operation of the trencher. See your Bobcat dealer for available kits.

OPERATING PROCEDURE WITH UTILITY WORK MACHINES (CONT'D)

Entering And Exiting The Work Machine

! WARNING

AVOID INJURY OR DEATH

When operating the machine:

- Keep the seat belts fastened snugly.
- The arm rest must be lowered.
- Keep your feet and arms inside the cab.

W-2454-1102

Entering

Enter and exit the operator seat of the work machine from the left side.

NOTE: The left side of the work machine as viewed from the operator seat.

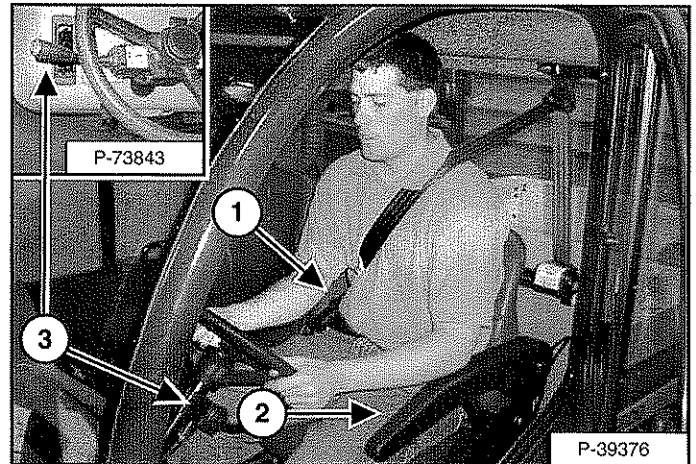
Figure 91



Enter the cab [Figure 91].

NOTE: Maintain three-point contact at all times while entering or exiting the work machine. Do not jump.

Figure 92



Fasten the seat belt (Item 1) and lower the operator arm rest (Item 2) [Figure 92].

Put the Travel Direction Control Lever (Item 3) [Figure 92] in "PARK".

See the work machine's Operation & Maintenance Manual and Operator's Handbook for detailed information on operating the work machine.

Exiting

Put the Travel Direction Control Lever (Item 3) [Figure 92] in "PARK".

Lower the lift arm and put the attachment flat on the ground.

Lower the implement to the ground (if equipped).

Stop the engine.

Raise the operator arm rest, unfasten seat belt and remove the key.

Exit the work machine.

! WARNING

AVOID INJURY OR DEATH

Before you leave the operator's seat:

- Fully lower the lift arm, put the attachment flat on the ground.
- Fully lower the implement to the ground (if equipped).
- Put the Travel Direction Control Lever in PARK.
- Place all controls in neutral.
- Stop the engine, unfasten the seat belt, raise the arm rest, remove the key, and exit the cab.

W-2729-0608

OPERATING PROCEDURE WITH UTILITY WORK MACHINES (CONT'D)

Installation

Hand Lever Bob-Tach

NOTE: The illustrations and instructions provided explain how to install a bucket attachment on to a work machine. Follow these same instructions if you are installing different attachments such as a grapple, tiller, combo bucket, etc.

The attachment mounting frame for the attachment has a top flange that is designed to receive the top edge of the Bob-Tach and the lower part of the frame is designed to receive the Bob-Tach wedges.

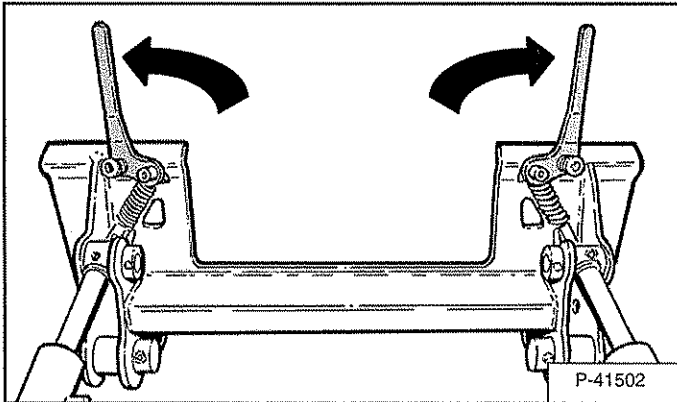
WARNING

Warnings on the machine and in the manuals are for your safety. Failure to obey warnings can cause serious injury or death.

W-2744-0608

Always inspect the work machine's Bob-Tach and the attachment mounting frame before installation. See the work machine's Operation & Maintenance Manual. (See DAILY INSPECTION on Page 27.)

Figure 93

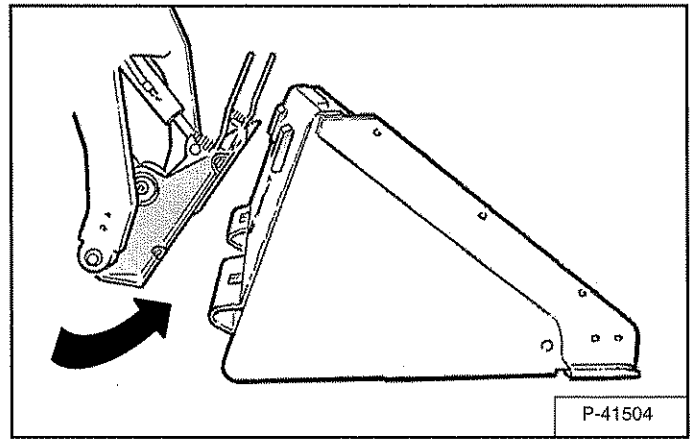


Pull the Bob-Tach levers up until they are fully raised (wedges fully raised) [Figure 93].

Enter the work machine. (See Entering And Exiting The Work Machine on Page 65.)

Start the engine.

Figure 94

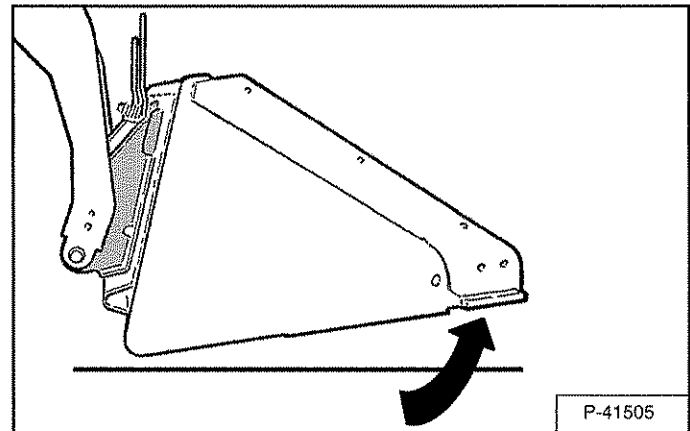


Lower the lift arm and tilt the Bob-Tach forward.

Drive the work machine slowly forward until the top edge of the Bob-Tach is completely under the top flange of the attachment mounting frame [Figure 94].

NOTE: Be sure the Bob-Tach levers do not hit the attachment.

Figure 95



Tilt the Bob-Tach backward until the attachment is slightly off the ground [Figure 95]. This will cause the attachment mounting frame to fit up against the front of the Bob-Tach.

NOTE: When leaving the operator's seat to install an attachment, tilt the attachment until it is slightly off the ground.

Stop the engine and exit the work machine. (See Entering And Exiting The Work Machine on Page 65.)

OPERATING PROCEDURE WITH UTILITY WORK MACHINES (CONT'D)

Installation (Cont'd)

Hand Lever Bob-Tach (Cont'd)

! WARNING

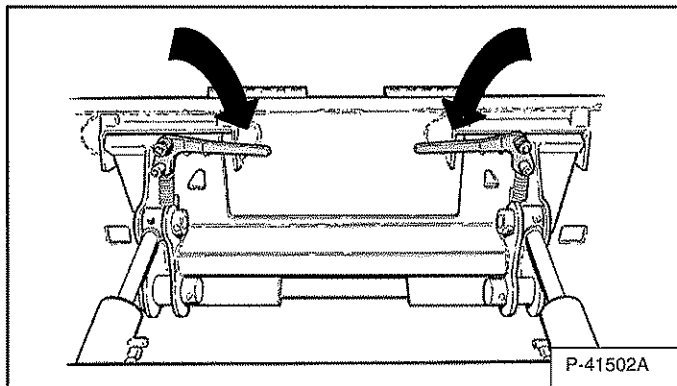
AVOID INJURY OR DEATH

Before you leave the operator's seat:

- Lower the lift arm, put attachment and implement (if equipped) flat on the ground.
- Put Travel Direction Control Lever in PARK.
- Stop the engine.
- Raise operator arm rest.

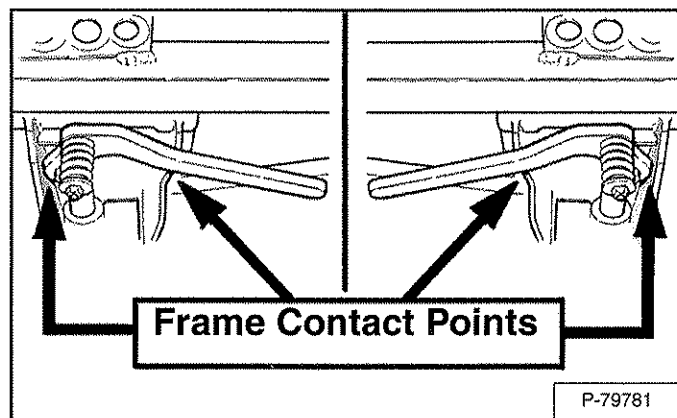
W-2740-0608

Figure 96



Push down on the Bob-Tach levers until they are fully engaged in the locked position [Figure 96] (wedges fully extended through the attachment mounting frame holes).

Figure 97



Both levers must contact the frame as shown when locked [Figure 97].

If both levers do not engage in the locked position, see your Bobcat dealer for maintenance.

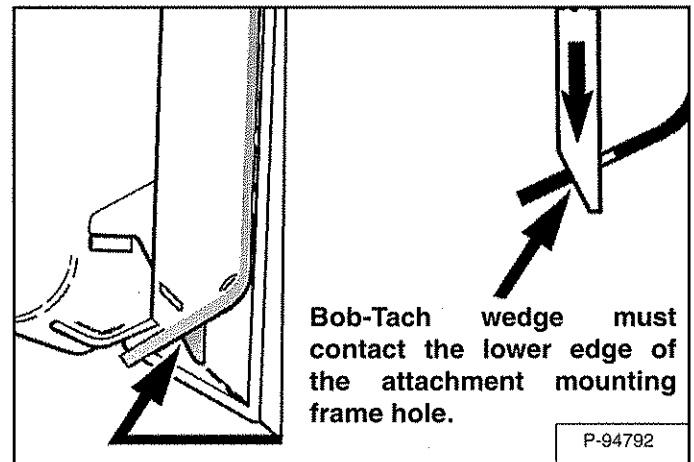
! WARNING

AVOID INJURY OR DEATH

The Bob-Tach wedges must extend through the holes in the attachment mounting frame. Levers must be fully down and locked. Failure to secure wedges can allow attachment to come off.

W-2715-0208

Figure 98



The wedges must extend through the holes in the attachment mounting frame, securely fastening the attachment to the Bob-Tach [Figure 98].

Connect auxiliary hydraulic hoses. (See Hydraulic Quick Couplers on Page 72.)

OPERATING PROCEDURE WITH UTILITY WORK MACHINES (CONT'D)

Installation (Cont'd)

Power Bob-Tach

! WARNING

Warnings on the machine and in the manuals are for your safety. Failure to obey warnings can cause serious injury or death.

W-2744-0608

This work machine may be equipped with a Power Bob-Tach.

Enter the work machine. (See Entering And Exiting The Work Machine on Page 65.)

Start the engine.

Figure 99

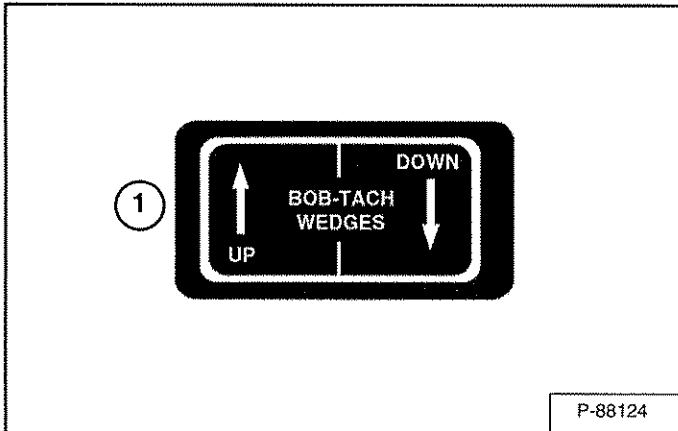
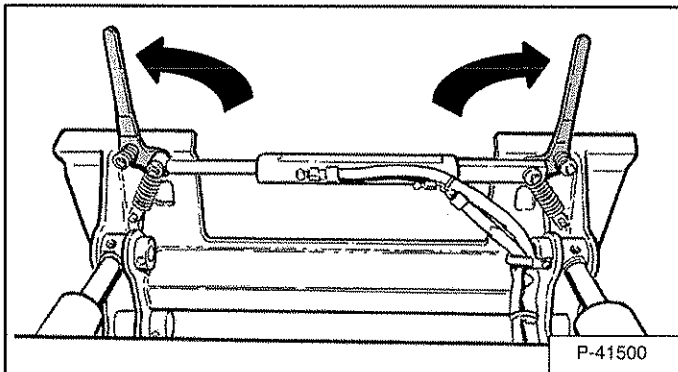
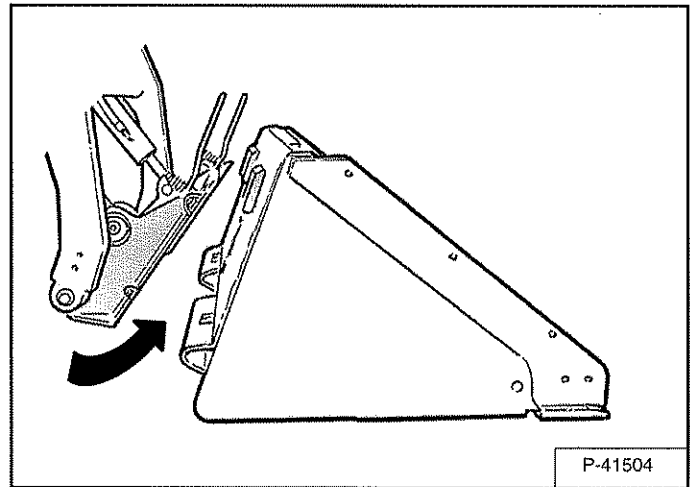


Figure 100



Push and hold the BOB-TACH "WEDGES UP" switch (Item 1) [Figure 99] until the levers are fully raised (wedges fully raised) [Figure 100].

Figure 101

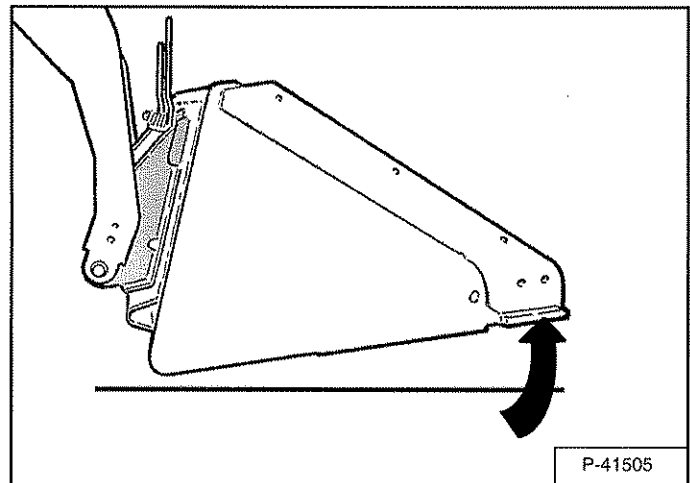


Lower the lift arm and tilt the Bob-Tach slightly forward.

Drive the work machine slowly forward until the top edge of the Bob-Tach is completely under the top flange of the attachment mounting frame [Figure 101].

NOTE: Be sure the Bob-Tach levers do not hit the attachment.

Figure 102



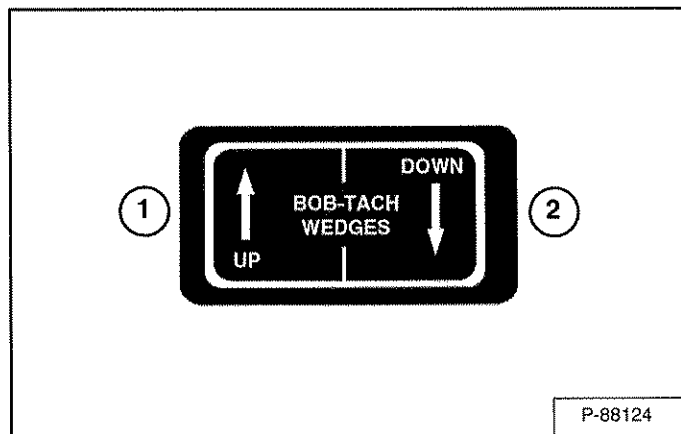
Tilt the Bob-Tach backward until the attachment is slightly off the ground [Figure 102]. This will cause the attachment mounting frame to fit up against the front of the Bob-Tach.

OPERATING PROCEDURE WITH UTILITY WORK MACHINES (CONT'D)

Installation (Cont'd)

Power Bob-Tach (Cont'd)

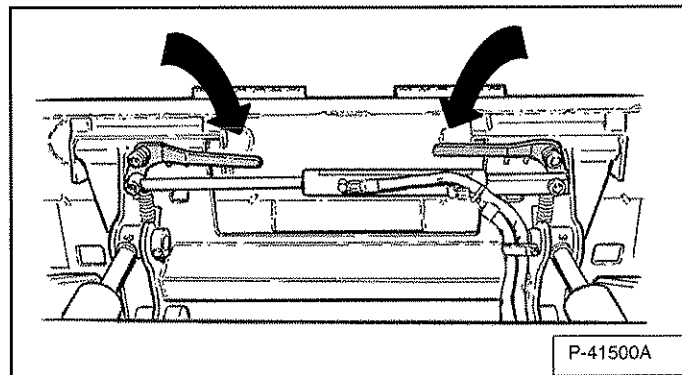
Figure 103



NOTE: The Power Bob-Tach system has continuous pressurized hydraulic oil to keep the wedges in the engaged position and prevent attachment disengagement. Because the wedges can slowly lower, the operator may need to reactivate the switch (BOB-TACH "WEDGES UP") to be sure both wedges are fully raised before installing the attachment.

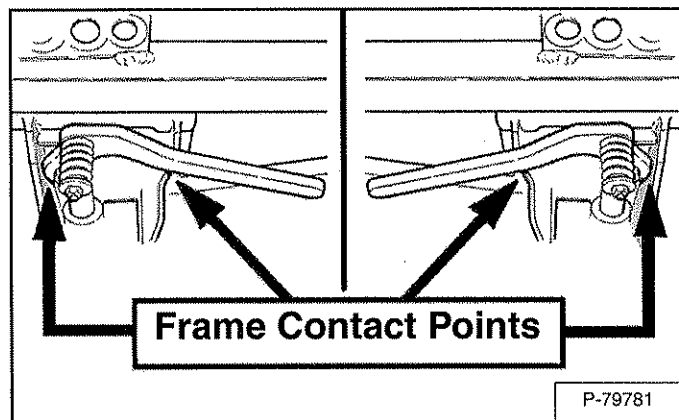
Push and hold the BOB-TACH "WEDGES UP" switch (Item 1) [Figure 103] until the levers are fully raised (wedges fully raised).

Figure 104



Push and hold the BOB-TACH "WEDGES DOWN" switch (Item 2) [Figure 103] until the levers are fully engaged in the locked position [Figure 104] (wedges fully extended through the attachment mounting frame holes).

Figure 105



Both levers must contact the frame as shown when locked [Figure 105].

If both levers do not engage in the locked position, see your Bobcat dealer for maintenance.

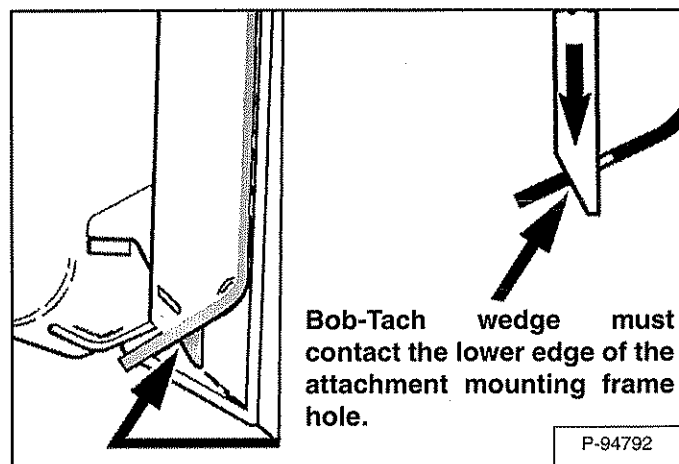


AVOID INJURY OR DEATH

The Bob-Tach wedges must extend through the holes in the attachment mounting frame. Levers must be fully down and locked. Failure to secure wedges can allow attachment to come off.

W-2715-0208

Figure 106



The wedges must extend through the holes in the attachment mounting frame, securely fastening the attachment to the Bob-Tach [Figure 106].

Lower the lift arm and put the attachment flat on the ground.

**OPERATING PROCEDURE WITH UTILITY WORK
MACHINES (CONT'D)**

Installation (Cont'd)

Power Bob-Tach (Cont'd)

Stop the engine and exit the work machine. (See Entering And Exiting The Work Machine on Page 65.)



AVOID INJURY OR DEATH

Before you leave the operator's seat:

- Fully lower the lift arm, put the attachment flat on the ground.
- Fully lower the implement to the ground (if equipped).
- Put the Travel Direction Control Lever in PARK.
- Place all controls in neutral.
- Stop the engine, unfasten the seat belt, raise the arm rest, remove the key, and exit the cab.

W-2729-0608

Connect auxiliary hydraulic hoses. (See Hydraulic Quick Couplers on Page 72.)

OPERATING PROCEDURE WITH UTILITY WORK MACHINES (CONT'D)

Installation (Cont'd)

For First Time Installation

New attachments and new work machines are factory equipped with flush face couplers. If installing an attachment equipped with poppet style couplers, the attachment couplers will have to be changed to match the work machine. See your Bobcat dealer for parts information.

IMPORTANT

- **Thoroughly clean the quick couplers before making connections. Dirt can quickly damage the system.**
- **Contain and dispose of any oil leakage in an environmentally safe manner.**

I-2278-0608

With the work machine engine off and using the hose guides (if equipped), route the attachment hydraulic hoses to the work machine. Connect the attachment hydraulic quick couplers to the work machine couplers. (See Hydraulic Quick Couplers on Page 72.)

Check that the attachment hydraulic hoses are not twisted or contacting any moving parts of the work machine or attachment.

NOTE: It may be necessary to loosen the quick couplers on the attachment hydraulic hoses to remove any twists in the hoses.

! WARNING

AVOID INJURY OR DEATH

Wear safety glasses to prevent eye injury when any of the following conditions exist:

- **When fluids are under pressure.**
- **Flying debris or loose material is present.**
- **Engine is running.**
- **Tools are being used.**

W-2019-0907

Loosen the quick coupler connections on the attachment hydraulic hoses while connected to the work machine. Do not remove the quick couplers.

Rotate the attachment hydraulic hoses as needed so the hoses are not twisted or contacting any moving parts of the work machine or attachment.

With the twist(s) removed from the hydraulic hoses, tighten the attachment quick coupler connections while the couplers are still connected to the work machine. This will help hold the hydraulic hoses in position while tightening.

Tighten the quick couplers connections to 63 N•m (46 ft-lb) torque before starting the work machine.

Enter the work machine. (See Entering And Exiting The Work Machine on Page 65.)

Start the engine and release the parking brake.

Engage auxiliary hydraulics. (See the work machine's Operation & Maintenance Manual and Operator's Handbook for correct procedure.)

! WARNING

AVOID INJURY OR DEATH

Diesel fuel or hydraulic fluid under pressure can penetrate skin or eyes, causing serious injury or death. Fluid leaks under pressure may not be visible. Use a piece of cardboard or wood to find leaks. Do not use your bare hand. Wear safety goggles. If fluid enters skin or eyes, get immediate medical attention from a physician familiar with this injury.

W-2072-0807

Check the attachment hydraulic quick coupler connections for leaks.

OPERATING PROCEDURE WITH UTILITY WORK MACHINES (CONT'D)

Hydraulic Quick Couplers

IMPORTANT

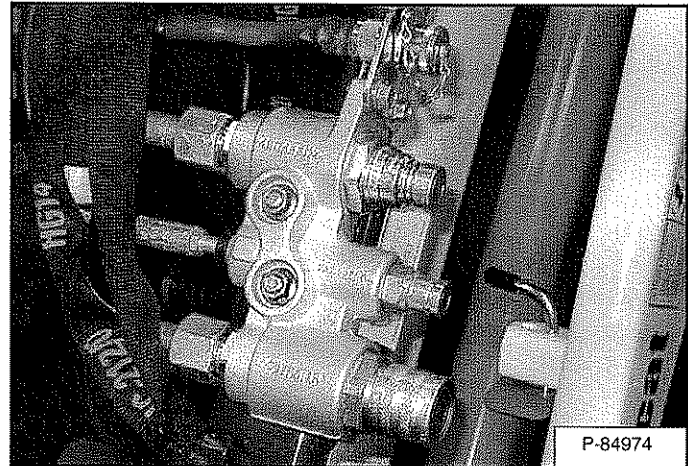
- Thoroughly clean the quick couplers before making connections. Dirt can quickly damage the system.
- Contain and dispose of any oil leakage in an environmentally safe manner.

I-2278-0608

New attachments and new work machines are factory equipped with flush face couplers. If installing an attachment equipped with poppet style couplers, the attachment couplers will have to be changed to match the work machine. See your Bobcat dealer for parts information.

NOTE: Make sure the quick couplers are fully engaged. If the quick couplers do not fully engage, check to see that the couplers are the same size and type.

Figure 107



WARNING

AVOID BURNS

Hydraulic fluid, tubes, fittings and quick couplers can get hot when running machine and attachments. Be careful when connecting and disconnecting quick couplers.

W-2220-0396

To Connect:

Remove any dirt or debris from the surface of both the male and female couplers, and from the outside diameter of the male coupler. Visually check the couplers for corroding, cracking, damage, or excessive wear. If any of these conditions exist, the coupler(s) must be replaced [Figure 107].

Install the male coupler into the female coupler. Full connection is made when the ball release sleeve slides forward on the female coupler [Figure 107].

NOTE: Check that the attachment hydraulic hoses are not twisted or contacting any moving parts of the work machine or attachment.

To Disconnect:

Relieve hydraulic pressure. (See the work machine's Operation & Maintenance Manual and Operator's Handbook for correct procedure.)

Push the couplers together, retract the sleeve on the female coupler until the couplers disconnect.

OPERATING PROCEDURE WITH UTILITY WORK MACHINES (CONT'D)

Control Functions

WARNING

Keep all bystanders 6 m (20 ft) away from equipment when operating. Contact with moving parts, a trench cave-in or flying objects can cause injury or death.

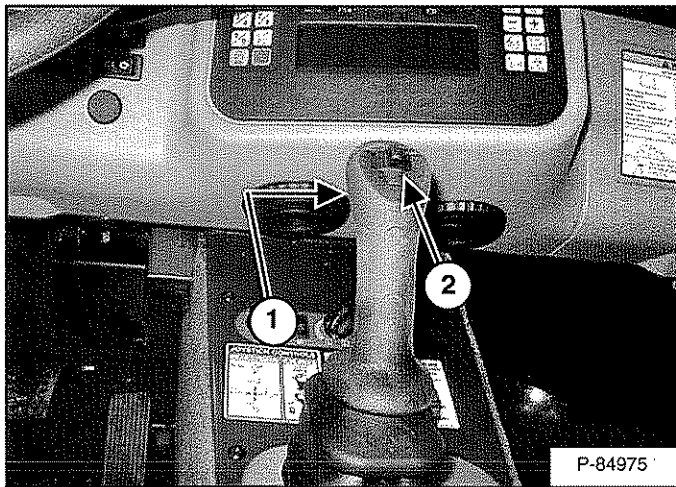
W-2119-0910

With the operator in the operator's seat, seat belt fastened, operator arm rest lowered, start the engine.

Engage auxiliary hydraulics. (See the work machine's Operation & Maintenance Manual and Operator's Handbook for correct procedure.)

Note: The auxiliary hydraulics must be activated prior to attachment operation.

Figure 108



Press the button (Item 1) [Figure 108] for continuous trencher chain forward rotation. Press the button a second time to stop trencher chain rotation.

To reverse trencher chain rotation, press and hold switch (item 2) [Figure 108] to the left. Release the switch to stop trencher chain rotation.

Operation With The Work Machine

Hydraulic Side Shift (If Equipped)

Hydraulic side shift is optional for the LT213 and LT313 trenchers. It is available as a field installed kit from your Bobcat dealer.

Stop the engine and exit the work machine when changing the hydraulic side shift selector valve. (See Entering And Exiting The Work Machine on Page 65.)

WARNING

AVOID INJURY OR DEATH

Before you leave the operator's seat:

- Lower the lift arm, put attachment and implement (if equipped) flat on the ground.
- Put Travel Direction Control Lever in PARK.
- Stop the engine.
- Raise operator arm rest.

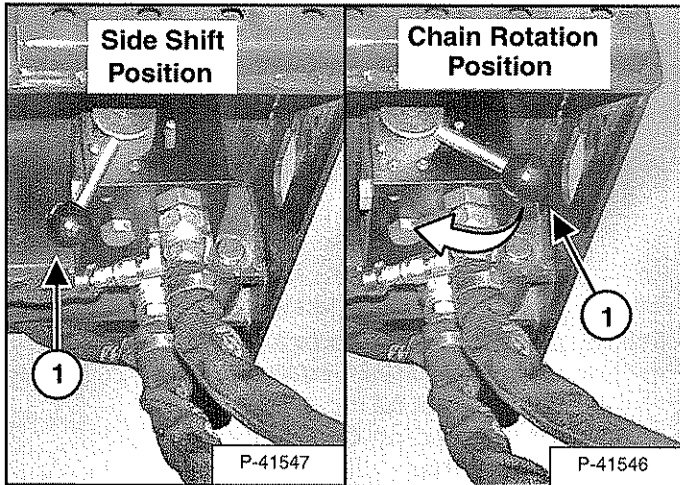
W-2740-0608

OPERATING PROCEDURE WITH UTILITY WORK MACHINES (CONT'D)

Operation With The Work Machine (Cont'd)

Hydraulic Side Shift (If Equipped) (Cont'd)

Figure 109

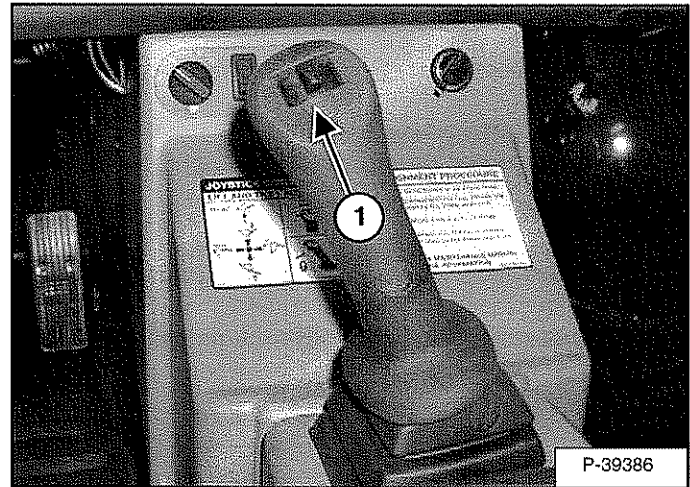


Move the selector valve lever (Item 1) to the side shift position [Figure 109].

Enter the cab and fasten the seat belt, lower the operator arm rest, and start the engine. Release the parking brake.

The auxiliary hydraulics must be activated prior to operation. (See the work machine's Operation & Maintenance Manual for correct procedure.)

Figure 110



Pressing the switch (Item 1) [Figure 110] to the left will side shift the trencher to the right.

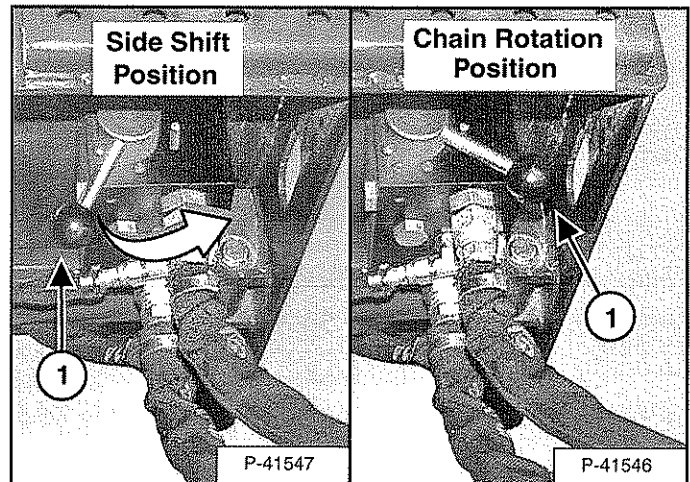
Pressing the switch (Item 1) [Figure 110] to the right will side shift the trencher to the left.

NOTE: The 'backwards' switch function for side shifting is intentional and is used to avoid undesired boom drifting. **DO NOT** make changes to the trencher to change the direction of the side shift function.

Move the trencher to the desired position.

Stop the engine and exit the work machine. (See Entering And Exiting The Work Machine on Page 65.)

Figure 111



To resume normal trenching operation, move the selector valve lever (Item 1) to the chain rotation position [Figure 111].

OPERATING PROCEDURE WITH UTILITY WORK MACHINES (CONT'D)

Operation With The Work Machine (Cont'd)

Manual Side Shift

If the trencher is not equipped with hydraulic side shift, the trencher must be side shifted manually. (See Hydraulic Side Shift (If Equipped) on Page 73.) for availability and operation.

Stop the engine and exit the work machine when changing the side shift position. (See Entering And Exiting The Work Machine on Page 65.)



AVOID INJURY OR DEATH

Before you leave the operator's seat:

- Lower the lift arm, put attachment and implement (if equipped) flat on the ground.
- Put Travel Direction Control Lever in PARK.
- Stop the engine.
- Raise operator arm rest.

W-2740-0608

Figure 112

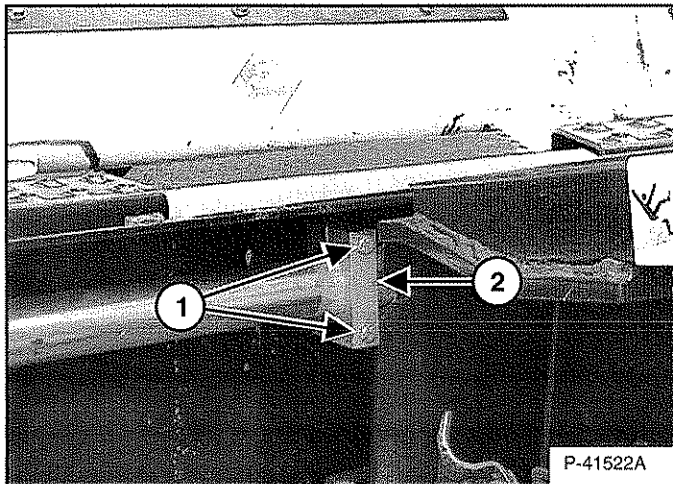
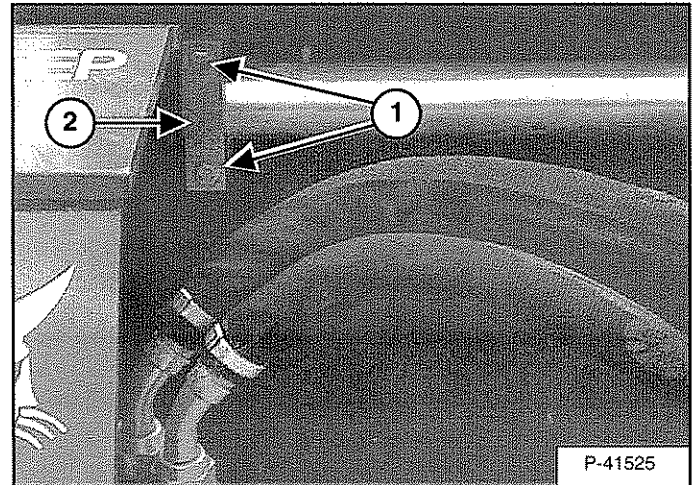


Figure 113



Loosen the two bolts (Item 1) [Figure 112] and [Figure 113] from the blocks (Item 2) [Figure 112] and [Figure 113].

Move the trencher to the desired position.

Slide the blocks (Item 2) [Figure 112] and [Figure 113] against the trencher frame.

Tighten the bolts to 34 - 38 N•m (25 - 28 ft-lb) torque.

OPERATING PROCEDURE WITH UTILITY WORK MACHINES (CONT'D)

Operation With The Work Machine (Cont'd)

Trenching Procedure

WARNING

Keep all bystanders 6 m (20 ft) away from equipment when operating. Contact with moving parts, a trench cave-in or flying objects can cause injury or death.

W-2119-0910

WARNING

AVOID INJURY OR DEATH

Check for underground utility lines before digging.

W-2120-0788

Enter the cab and fasten the seat belt, lower the operator arm rest, and start the engine. Release the parking brake.

Engage auxiliary hydraulics. (See the work machine's Operation & Maintenance Manual and Operator's Handbook for correct procedure.)

Note: The auxiliary hydraulics must be activated prior to attachment operation.

Figure 114

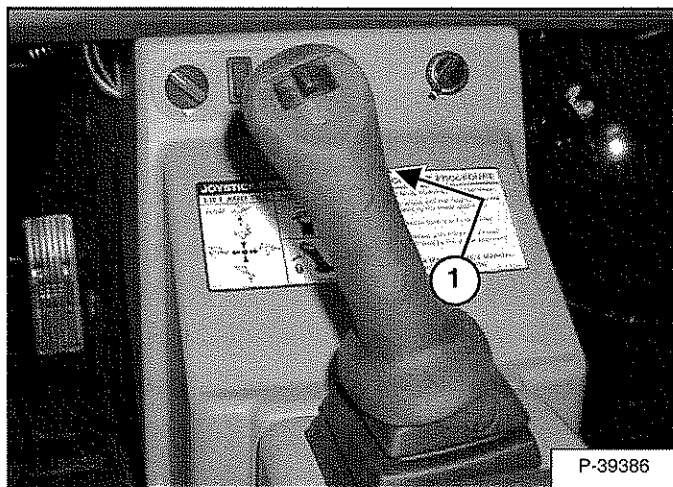


Figure 115



Tilt the trencher forward [Figure 115].

Figure 116



Press the switch (Item 1) [Figure 116] to start trencher chain rotation.

Tilt the Bob-Tach forward slowly until the end of the attachment contacts the ground [Figure 114] and starts digging the trench.

NOTE: Tilt the Bob-Tach into the ground [Figure 115] SLOWLY or damage to the trench cleaner shoe may occur.

When the attachment is approximately at a 60° angle to the ground, it is at the best digging position.

Drive backward and continue trenching until the desired length of trench is reached.

NOTE: The 'backwards' switch function for side shifting is intentional and is used to avoid undesired boom drifting. DO NOT make changes to the trencher to change the direction of the side shift function.

OPERATING PROCEDURE WITH UTILITY WORK MACHINES (CONT'D)

Removal (Cont'd)

Hand Lever Bob-Tach

Lower the lift arm and put the attachment flat on the ground. Lower or close the hydraulic equipment (if equipped).

NOTE: In muddy conditions or to prevent the attachment from freezing to the ground, put the attachment on planks or blocks before removing the attachment from the work machine.

Stop the engine and release auxiliary hydraulic pressure (if applicable). (See the work machine's Operation & Maintenance Manual and Operator's Handbook for correct procedure.)

Exit the work machine. (See Entering And Exiting The Work Machine on Page 65.)

WARNING

AVOID INJURY OR DEATH

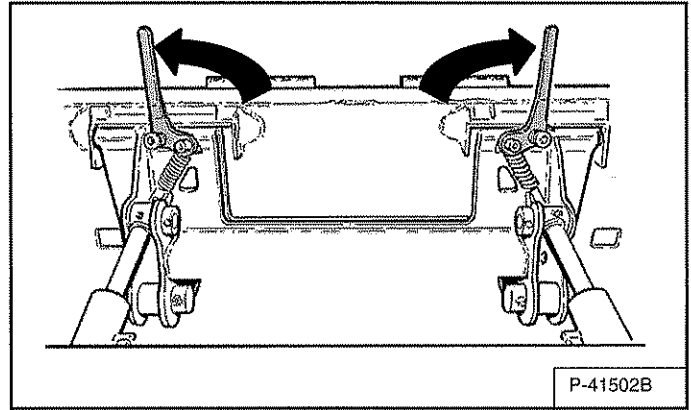
Before you leave the operator's seat:

- Fully lower the lift arm, put the attachment flat on the ground.
- Fully lower the implement to the ground (if equipped).
- Put the Travel Direction Control Lever in PARK.
- Place all controls in neutral.
- Stop the engine, unfasten the seat belt, raise the arm rest, remove the key, and exit the cab.

W-2729-0608

Disconnect the hydraulic quick couplers. (See Hydraulic Quick Couplers on Page 72.)

Figure 117



Pull the Bob-Tach levers up until they are fully raised (wedges fully raised) [Figure 117].

WARNING

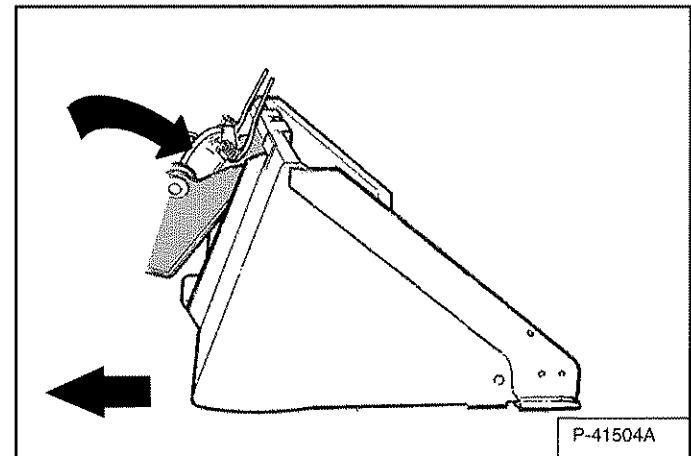
Bob-Tach levers have spring tension. Hold lever tightly and release slowly. Failure to obey warning can cause injury.

W-2054-1285

Enter the work machine. (See Entering And Exiting The Work Machine on Page 65.)

Start the engine.

Figure 118



Tilt the Bob-Tach forward and drive the work machine backward, away from the attachment [Figure 118].

OPERATING PROCEDURE WITH UTILITY WORK MACHINES (CONT'D)

Removal (Cont'd)

Power Bob-Tach

Lower the lift arm and put the attachment flat on the ground. Lower or close the hydraulic equipment.

NOTE: In muddy conditions or to prevent the attachment from freezing to the ground, put the attachment on planks or blocks before removing the attachment from the work machine.

Stop the engine and release auxiliary hydraulic pressure (if applicable). (See the work machine's Operation & Maintenance Manual and Operator's Handbook for correct procedure.)

Exit the work machine. (See Entering And Exiting The Work Machine on Page 65.)

WARNING

AVOID INJURY OR DEATH

Before you leave the operator's seat:

- Fully lower the lift arm, put the attachment flat on the ground.
- Fully lower the implement to the ground (if equipped).
- Put the Travel Direction Control Lever in PARK.
- Place all controls in neutral.
- Stop the engine, unfasten the seat belt, raise the arm rest, remove the key, and exit the cab.

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Disconnect the hydraulic quick couplers. (See Hydraulic Quick Couplers on Page 72.)

Enter the work machine. (See Entering And Exiting The Work Machine on Page 65.)

Start the engine.

Figure 119

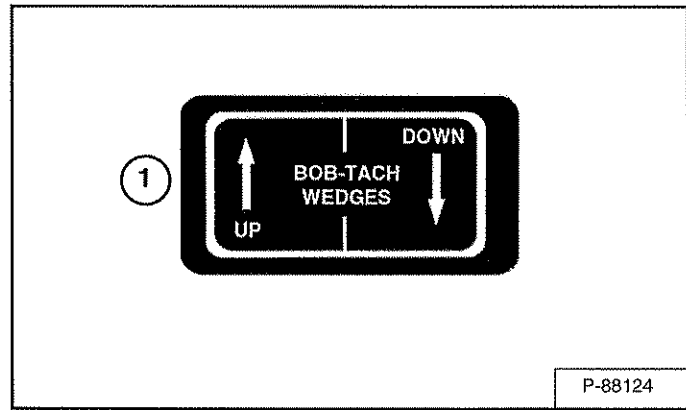
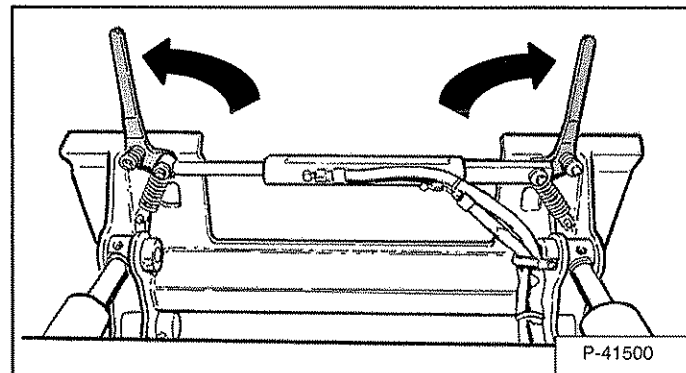
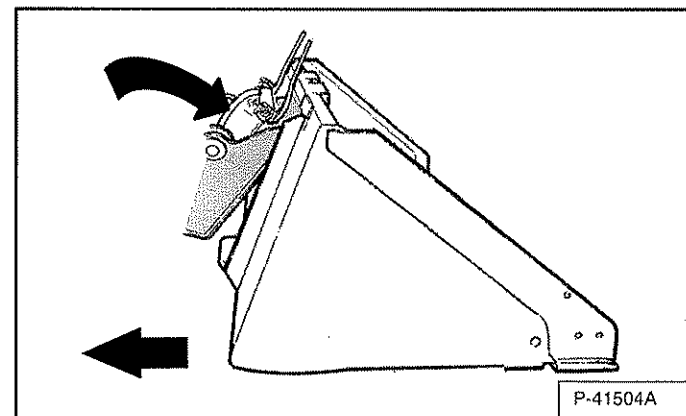


Figure 120



Push and hold the BOB-TACH "WEDGES UP" switch (Item 1) [Figure 119] until the levers are fully raised (wedges fully raised) [Figure 120].

Figure 121



Tilt the Bob-Tach forward and drive the work machine backward, away from the attachment [Figure 121].

NOTE: The Power Bob-Tach system has continuous pressurized hydraulic oil to keep the wedges in the engaged position and prevent attachment disengagement. Because the wedges can slowly lower, the operator may need to reactivate the switch (BOB-TACH "WEDGES UP") when removing an attachment to be sure both wedges are fully raised.

LIFTING THE ATTACHMENT

Procedure

Figure 122

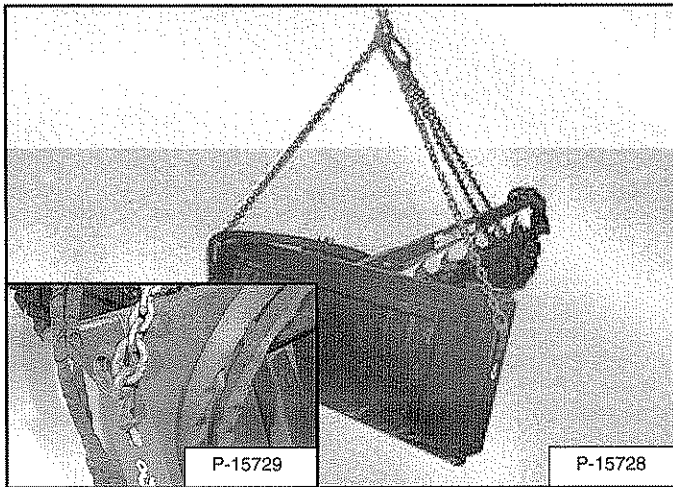
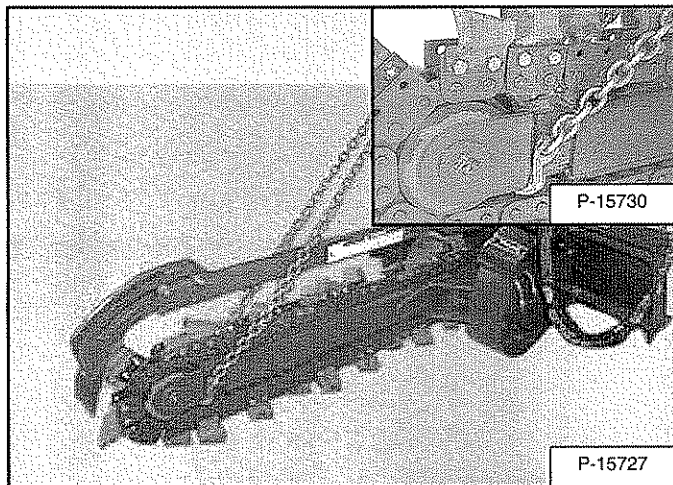


Figure 123



NOTE: Use chains that are in good condition and of adequate size to lift the attachment [Figure 122] and [Figure 123].

Fasten the chains to the trencher [Figure 122] and [Figure 123].

TRANSPORTING THE ATTACHMENT ON A TRAILER

Fastening

Figure 124

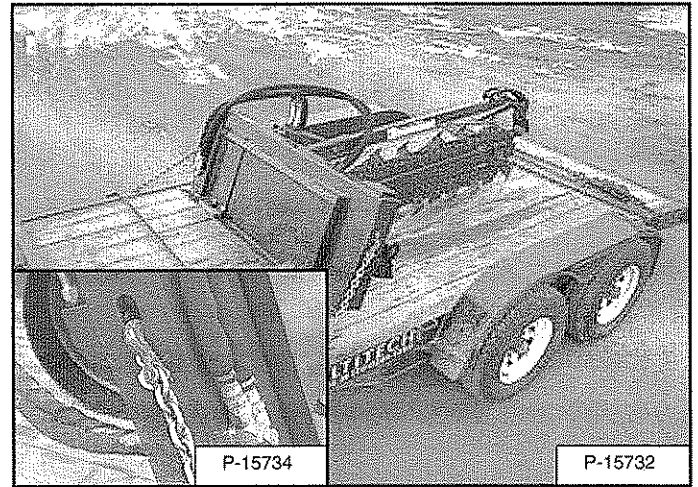
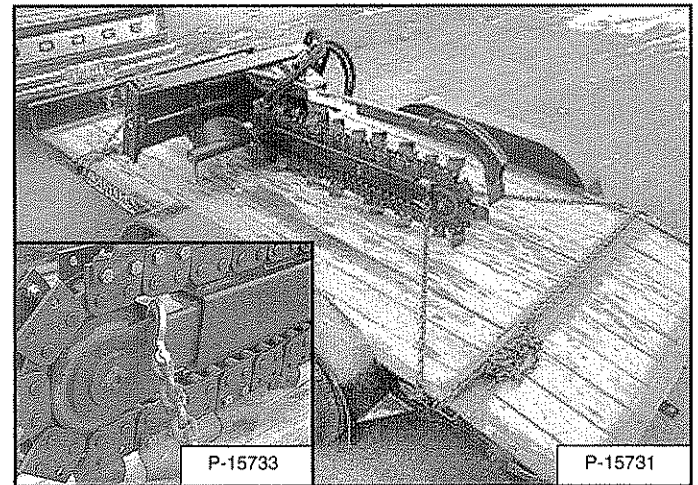


Figure 125



Fasten the chains to the trencher [Figure 124] and [Figure 125].

Use chain binders to prevent the trencher from moving during transport.

Secure the hydraulic hoses to the trencher.

TRANSPORTING THE ATTACHMENT AND MACHINE ON A TRAILER

Loading And Fastening



AVOID SERIOUS INJURY OR DEATH

Adequately designed ramps of sufficient strength are needed to support the weight of the machine when loading onto a transport vehicle. Wood ramps can break and cause personal injury.

W-2058-0807

Be sure the transport and towing vehicles are of adequate size and capacity for weight of machine and attachment combination. (See machine and attachment Operation & Maintenance Manuals for specifications.)

Loading

The rear of the trailer must be blocked or supported when loading and unloading to prevent the front of the trailer from raising.

- Load the heaviest end of the machine and attachment combination first.
- Lower the attachment to the floor.
- Stop the engine.
- Engage the parking brake (if equipped).
- Exit the machine. (See the machine's Operation & Maintenance Manual for the correct procedure.)

Fastening

Install the chains at the front and rear tie down positions on the machine. (See the machine's Operation & Maintenance Manual to properly chain the machine to the transport vehicle.)

- Install chains on the attachment (if needed).
- Fasten each end of the chain to the transport vehicle.

NOTE: Use chain binders to prevent the attachment and machine from moving during transport.

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MAINTENANCE SAFETY



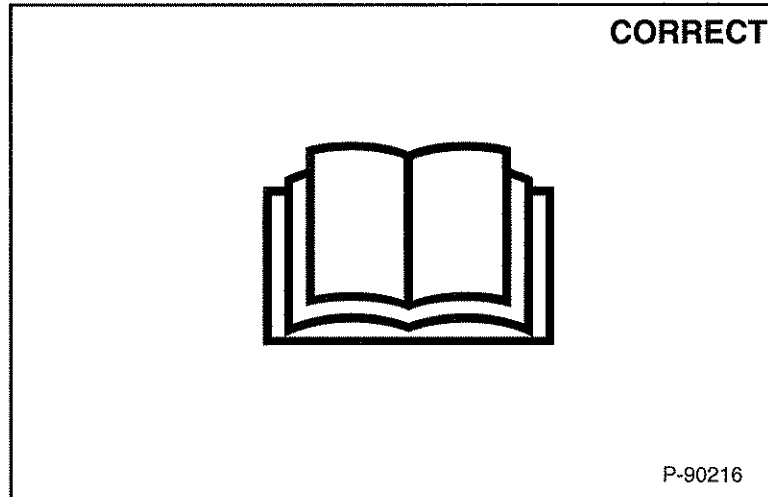
WARNING









Instructions are necessary before operating or servicing machine. Read and understand the Operation & Maintenance Manual, Operator's Handbook and signs (decals) on machine. Follow warnings and instructions in the manuals when making repairs, adjustments or servicing. Check for correct function after adjustments, repairs or service. Untrained operators and failure to follow instructions can cause injury or death.

W-2003-0807



Safety Alert Symbol: This symbol with a warning statement, means: "Warning, be alert! Your safety is involved!" Carefully read the message that follows.



-  **Never service attachments / implements without instructions. See Operation & Maintenance Manual and Attachment / Implement Service Manual.**
-  **Cleaning and maintenance are required daily.**
-  **Never service or adjust attachment / implement with the engine running unless instructed to do so in manual.**
-  **Always lower the attachment / implement to the ground before lubricating or servicing.**
-  **Avoid contact with leaking hydraulic fluid or diesel fuel under pressure. It can penetrate skin or eyes.**
-  **Stop, cool and clean engine of flammable materials before checking fluids.**
-  **Keep body, loose objects and clothing away from moving parts, electrical contacts, hot parts and exhaust.**
-  **Safety glasses are needed for eye protection from electrical arcs, battery acid, compressed springs, fluids under pressure and flying debris or when tools are used. Use eye protection approved for type of welding.**


MSW30-0409



Bobcat®

TROUBLESHOOTING

Chart

 <b style="font-size: 24px; margin-left: 10px;">WARNING	<p>Instructions are necessary before operating or servicing machine. Read and understand the Operation & Maintenance Manual, Operator's Handbook and signs (decals) on machine. Follow warnings and instructions in the manuals when making repairs, adjustments or servicing. Check for correct function after adjustments, repairs or service. Untrained operators and failure to follow instructions can cause injury or death.</p> <p style="text-align: right; font-size: 10px;">W-2003-0807</p>
--	---

If the attachment is not working correctly, check the hydraulic system of the machine thoroughly before making any repairs on the attachment. Attachment problems can be affected by a hydraulic system that is not operating to specifications. Connect a flow meter to the machine to check the hydraulic pump output, relief valve setting and tube lines to check flow and pressure. (See the machine's Service Manual for the correct procedure to connect the flow meter.)

Use the following troubleshooting chart to locate and correct problems which most often occur with the attachment.

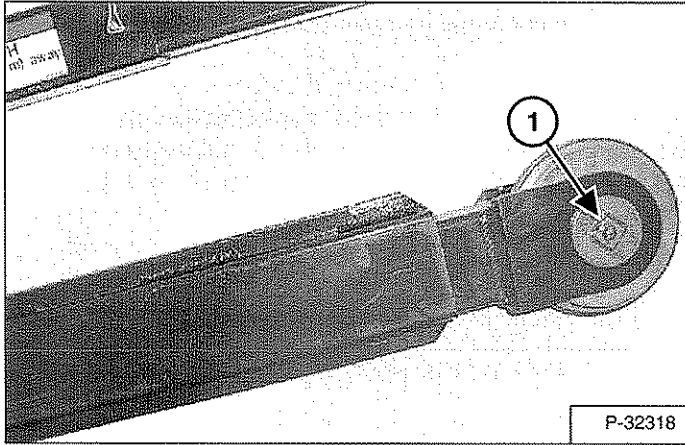
PROBLEM	CAUSE	CORRECTION
Trencher does not mount properly on the Bob-Tach.	Bob-Tach wedges are not fully retracted before installing.	Retract Bob-Tach wedges before installing.
	Mud, dirt or stones are lodged between the Bob-Tach and the trencher mount.	Remove debris between Bob-Tach and trencher mount.
Trencher does not operate.	No hydraulic flow.	Activate machine front auxiliary hydraulics.
		Check quick couplers connection. Check for damaged hose ends and fittings.
Digging chain does not stay adjusted to the correct tension.	Damaged grease cylinder.	Repair or replace grease cylinder.

LUBRICATING THE ATTACHMENT

Lubrication Locations

Always use a good quality lithium base grease when lubricating the trencher.

Figure 126

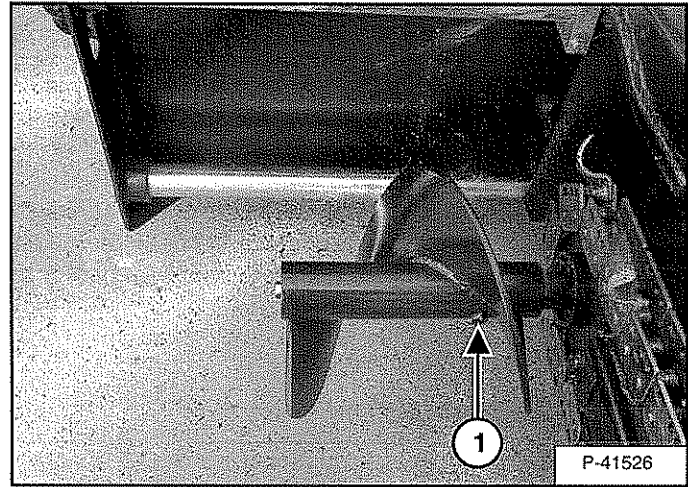


Add grease daily to the idler wheels (Item 1) [Figure 126] on the LT313 and LT414 trenchers.

REMOVAL AND INSTALLATION AUGER

Procedure(s)

Figure 127

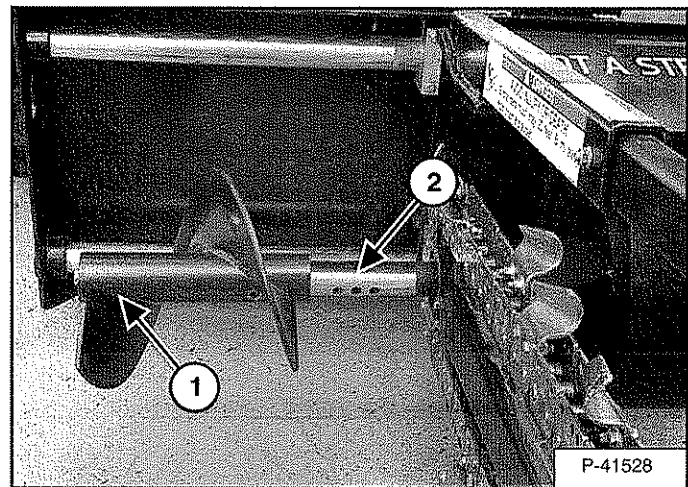


Remove the mounting bolt (Item 1) [Figure 127] and nut from the auger mounting shaft.

LT213 And LT313 Installation: Tighten auger mounting bolt and nut to 88 - 95 N•m (65 - 70 ft-lb) torque.

LT414 Installation: Tighten auger mounting bolt and nut to 170 - 190 N•m (125 - 140 ft-lb) torque.

Figure 128



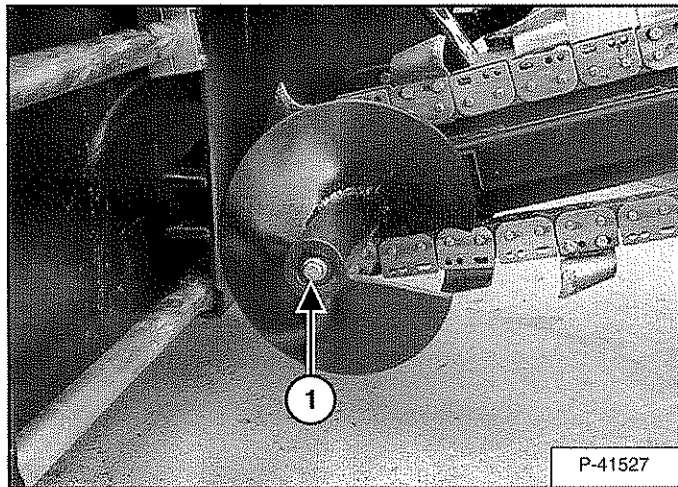
Slide the auger (Item 1) [Figure 128] off the mounting shaft.

Apply anti-seize to the shaft (Item 2) [Figure 128] when installing the auger.

REMOVAL AND INSTALLATION AUGER (CONT'D)

Procedure(s)

Figure 129



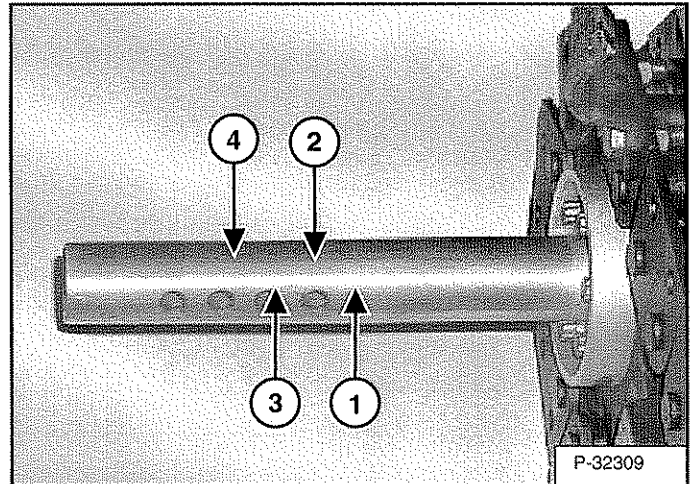
NOTE: It may not be possible to loosen the auger by hand. If so, remove the bolt (Item 1) [Figure 129] from the end of the auger and install a puller to loosen the auger.

LT213 And LT313 Installation: Tighten auger mounting bolt and nut to 88 - 95 N•m (65 - 70 ft-lb) torque.

LT414 Installation: Tighten auger mounting bolt and nut to 170 - 190 N•m (125 - 140 ft-lb) torque.

Adjustment

Figure 130



LT 213 Trencher (Three holes in shaft)

Locate the auger in the hole (Item 1) [Figure 130] closest to the chain sprocket when using the 102 mm (4 in) digging width.

Locate the auger in the second hole (Item 2) [Figure 130] when using the 152 mm (6 in) digging width.

Locate the auger in the third hole (Item 3) [Figure 130] when using the 104 mm (8 in) digging width.

LT 313 And LT414 Trencher (Four holes in shaft)

Locate the auger in the hole (Item 1) [Figure 130] closest to the chain sprocket when using the 152 mm (6 in) digging width.

Locate the auger in the second hole (Item 2) [Figure 130] when using the 104 mm (8 in) digging width.

Locate the auger in the third hole (Item 3) [Figure 130] when using the 254 mm (10 in) digging width.

Locate the auger in the fourth hole (Item 4) [Figure 130] when using the 304 mm (12 in) digging width.

REMOVAL AND INSTALLATION TRENCH (CONT'D)

Trench Cleaner

! WARNING

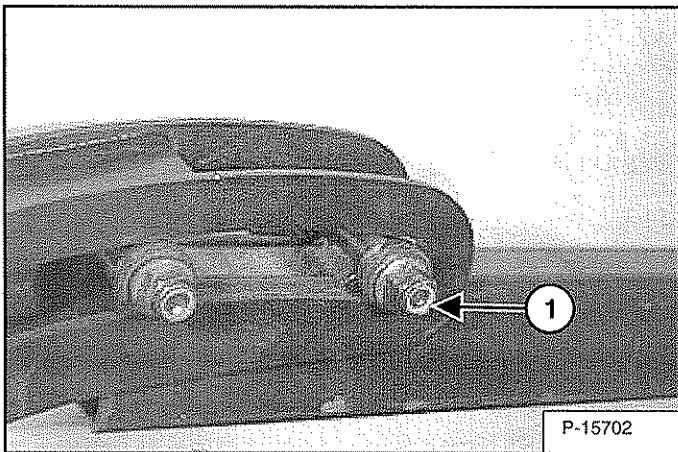
AVOID INJURY OR DEATH

Wear safety glasses to prevent eye injury when any of the following conditions exist:

- When fluids are under pressure.
- Flying debris or loose material is present.
- Engine is running.
- Tools are being used.

W-2019-0907

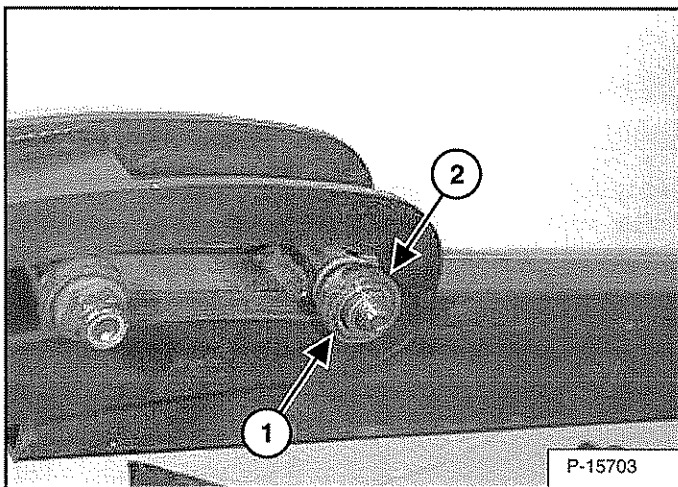
Figure 131



Remove the nut (Item 1) [Figure 131] and washer.

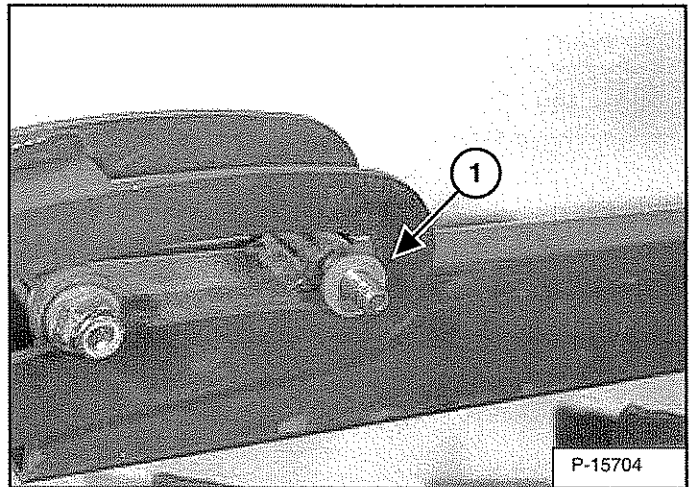
Installation: Tighten the nut and bolt to 88 - 95 N•m (65 - 70 ft-lb) torque.

Figure 132



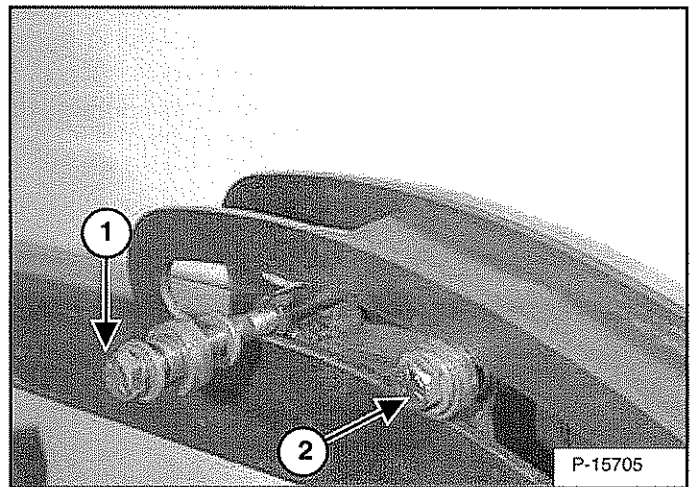
Remove the spacer (Item 1) and roller (Item 2) [Figure 132].

Figure 133



Remove the washer (Item 1) [Figure 133].

Figure 134



Remove the bolt (Item 1) [Figure 134], washer, spacer, roller and washer.

Repeat the procedure for the front bolt (Item 2) [Figure 134]. Remove the trench cleaner.

REMOVAL AND INSTALLATION (CONT'D)

Digging Chain

One Piece Procedure

NOTE: The chain may be removed in one piece or split. Both procedures are shown.

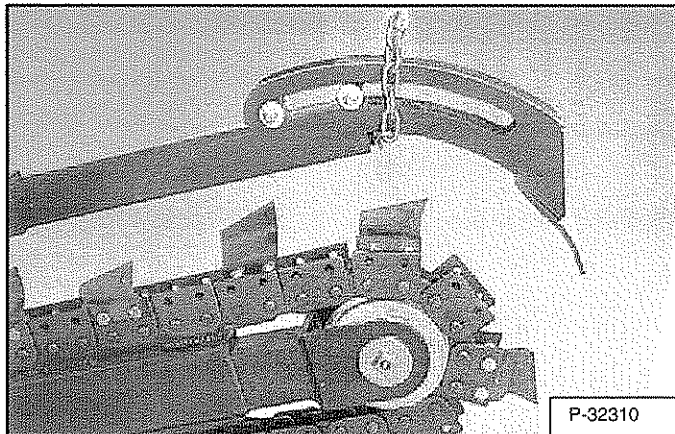


AVOID INJURY

Grease and fitting can be under high pressure. Stand on side of boom opposite lube fitting when applying or removing tension from digging chain. Keep bystanders away. Use correct fitting to prevent pressure from blowing it off.

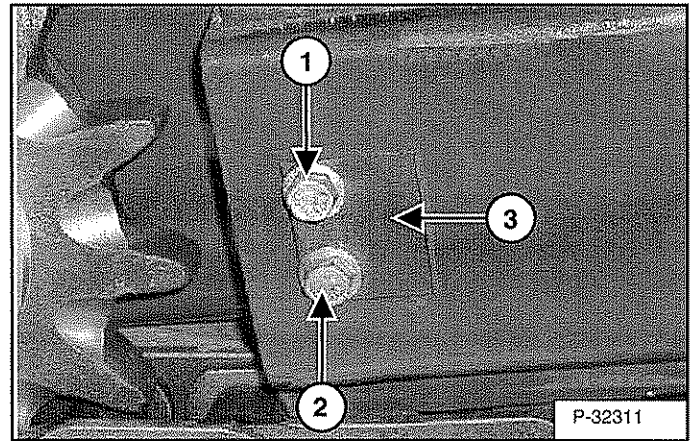
W-2110-0695

Figure 135



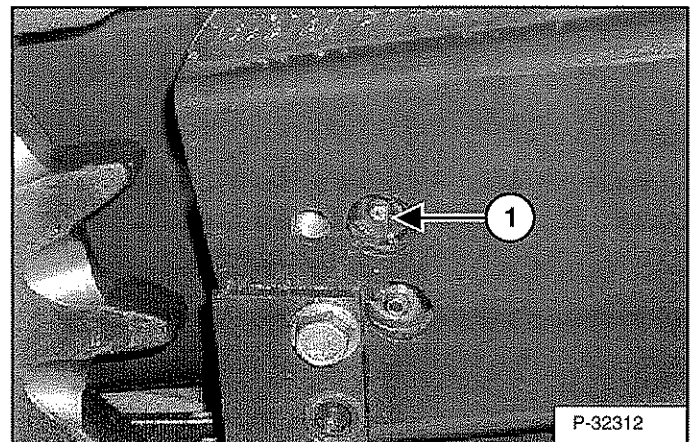
With the trencher installed on the loader, disconnect the auxiliary hydraulic hoses and install a hoist on the end of the boom [Figure 135].

Figure 136



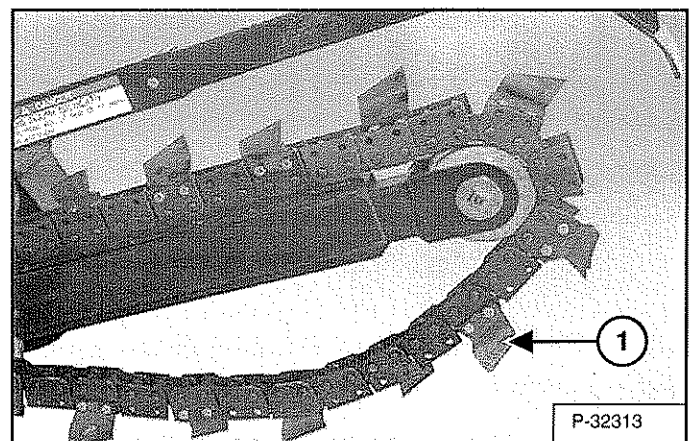
Remove the top bolt (Item 1) and loosen the bottom bolt (Item 2). Pivot the cover (Item 3) down [Figure 136].

Figure 137



Loosen the bleed screw (Item 1) [Figure 137].

Figure 138



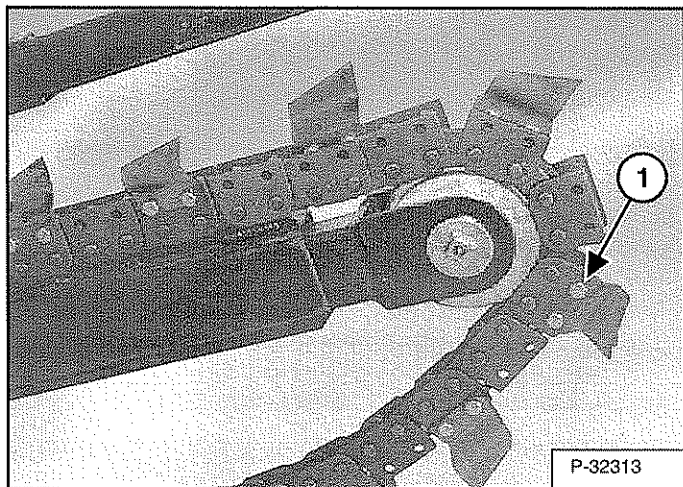
Push the cylinder back to put slack in the chain (Item 1) [Figure 138].

REMOVAL AND INSTALLATION (CONT'D)

Digging Chain (Cont'd)

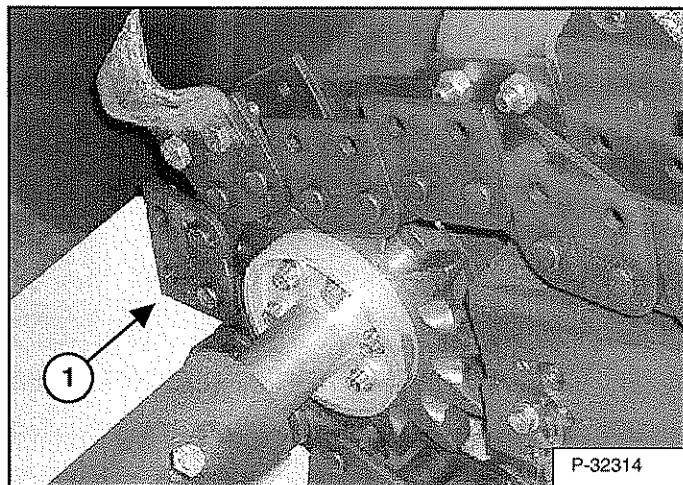
One Piece Procedure (Cont'd)

Figure 139



Remove the chain (Item 1) [Figure 139] from the boom end.

Figure 140



Remove the chain (Item 1) [Figure 140] from the drive sprocket.

Remove the chain.

NOTE: When replacing an old chain with a new one, always replace the worn sprockets at the same time. Sprockets should be replaced if they have worn into a hook shape. A new chain installed on worn sprockets will wear out more rapidly than normal.

REMOVAL AND INSTALLATION (CONT'D)

Digging Chain (Cont'd)

Split Procedure

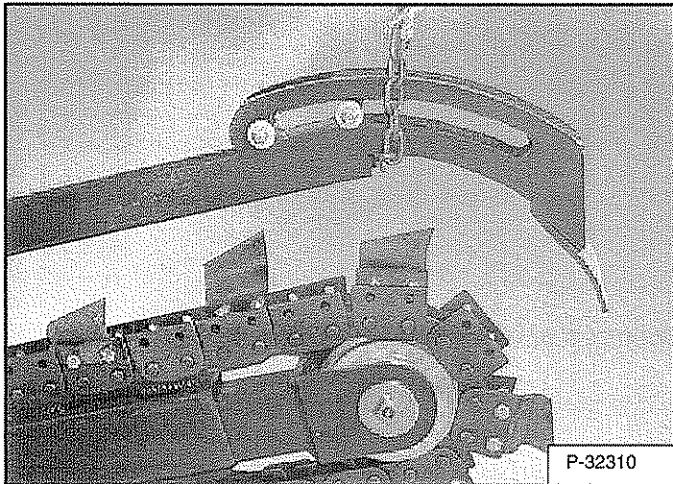
! WARNING

AVOID INJURY

Grease and fitting can be under high pressure. Stand on side of boom opposite lube fitting when applying or removing tension from digging chain. Keep bystanders away. Use correct fitting to prevent pressure from blowing it off.

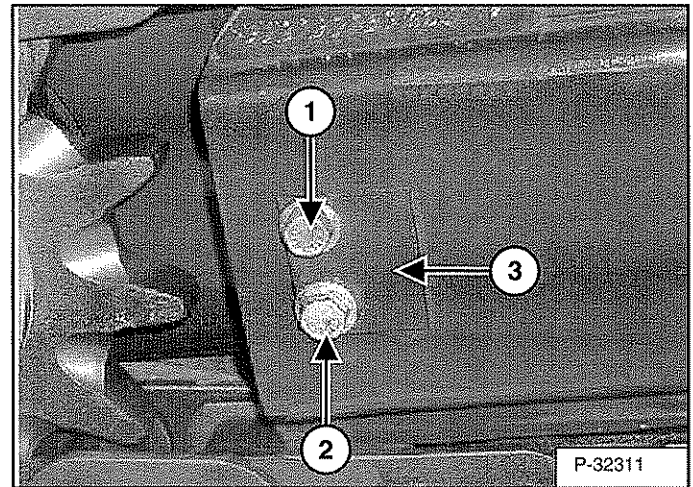
W-2110-0695

Figure 141



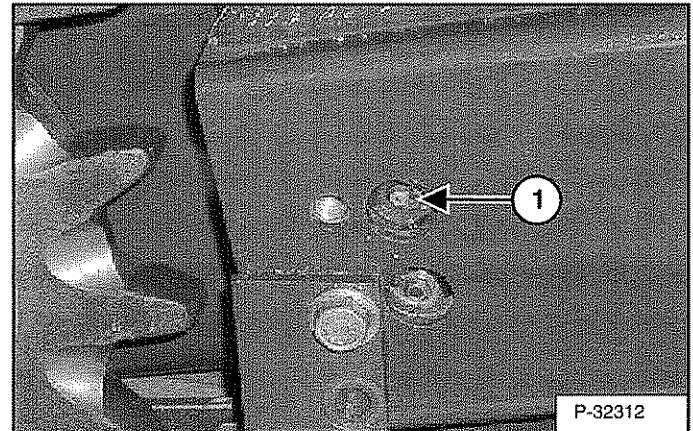
With the trencher installed on the loader, disconnect the auxiliary hydraulic hoses and install a hoist on the end of the boom [Figure 141].

Figure 142



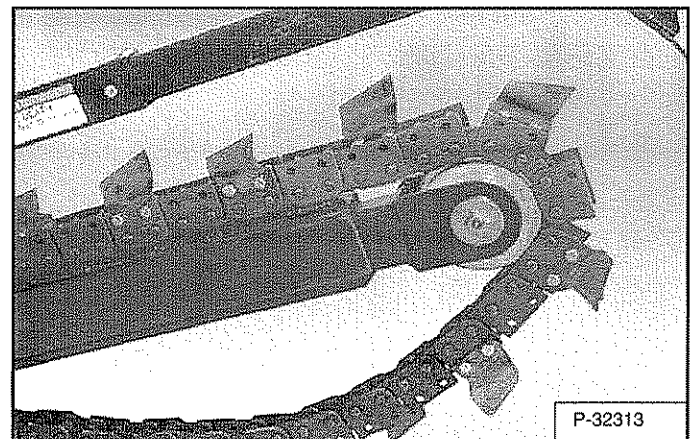
Remove the top bolt (Item 1) and loosen the bottom bolt (Item 2). Pivot the cover (Item 3) down [Figure 142].

Figure 143



Loosen the bleed screw (Item 1) [Figure 143].

Figure 144



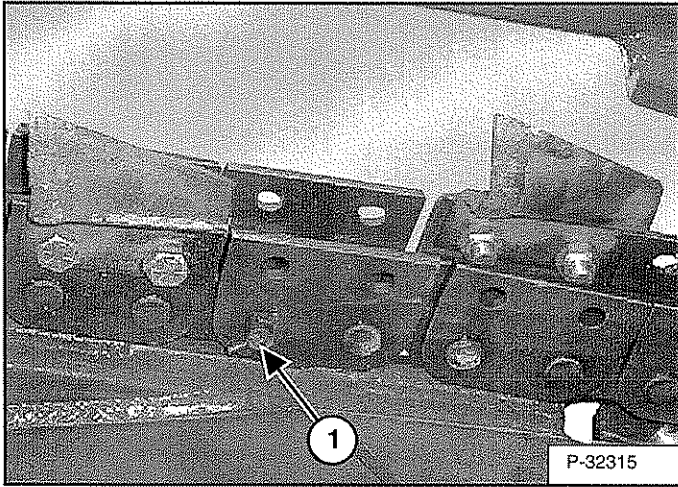
Push the cylinder back to put slack in the chain [Figure 144].

REMOVAL AND INSTALLATION (CONT'D)

Digging Chain (Cont'd)

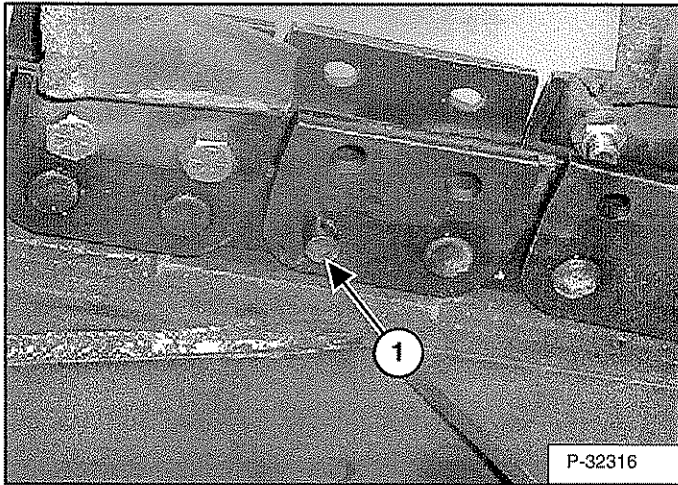
Split Procedure (Cont'd)

Figure 145



Remove the retainer pin (Item 1) [Figure 145].

Figure 146



The pin (Item 1) is a slight press fit. Back-up the chain using a large hammer while driving the pin (Item 1) [Figure 146] out.

WARNING

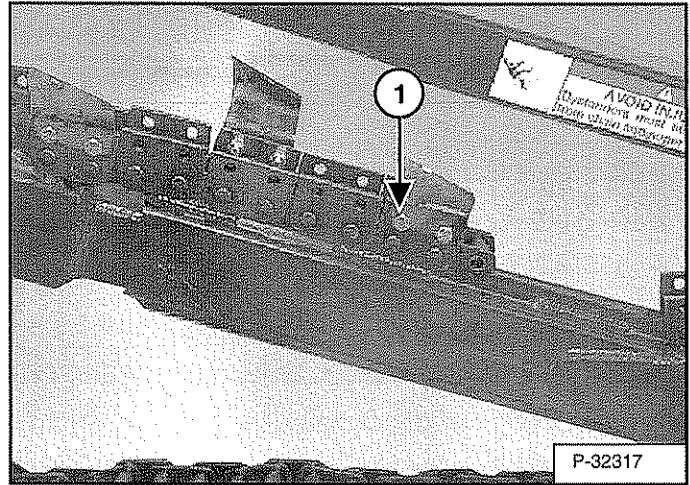
AVOID INJURY OR DEATH

Wear safety glasses to prevent eye injury when any of the following conditions exist:

- When fluids are under pressure.
- Flying debris or loose material is present.
- Engine is running.
- Tools are being used.

W-2019-0907

Figure 147



Slide the chain (Item 1) [Figure 147] off the boom.

REMOVAL AND INSTALLATION (CONT'D)

Digging Chain (Cont'd)

Adjustment

IMPORTANT

Boom cylinder must be full of grease to work correctly, any air in cylinder can cause damage. Do not put excessive tension on the chain. This will cause faster chain wear and horsepower loss.

I-2046-0695

Figure 148

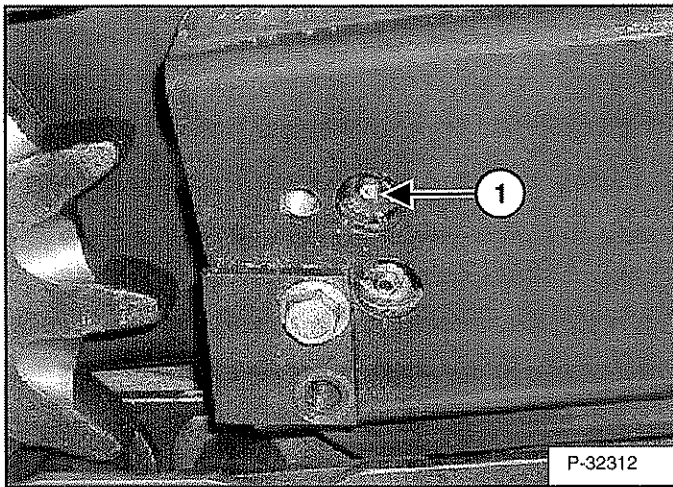
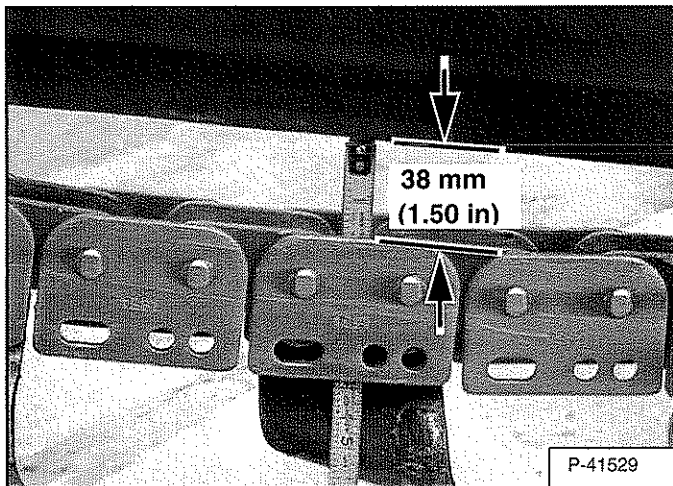


Figure 149



Add grease to the grease fitting (Item 1) [Figure 148] until there is 38 mm (1.50 in) clearance between the bottom of the chain guide and the top of the chain [Figure 149].

Tooth Removal And Installation

! WARNING

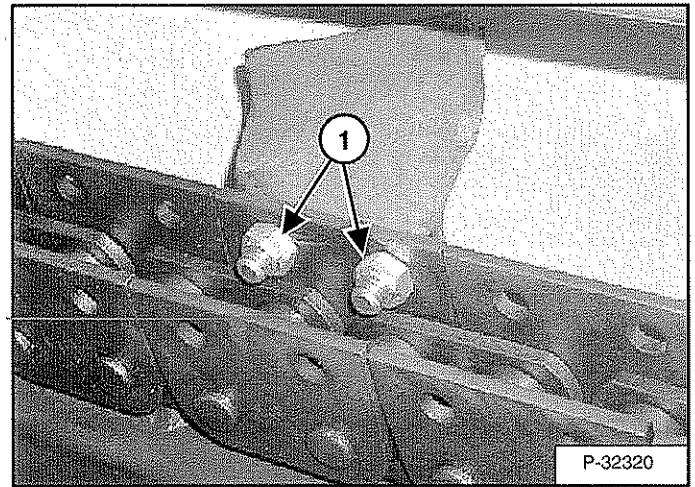
AVOID INJURY OR DEATH

Wear safety glasses to prevent eye injury when any of the following conditions exist:

- When fluids are under pressure.
- Flying debris or loose material is present.
- Engine is running.
- Tools are being used.

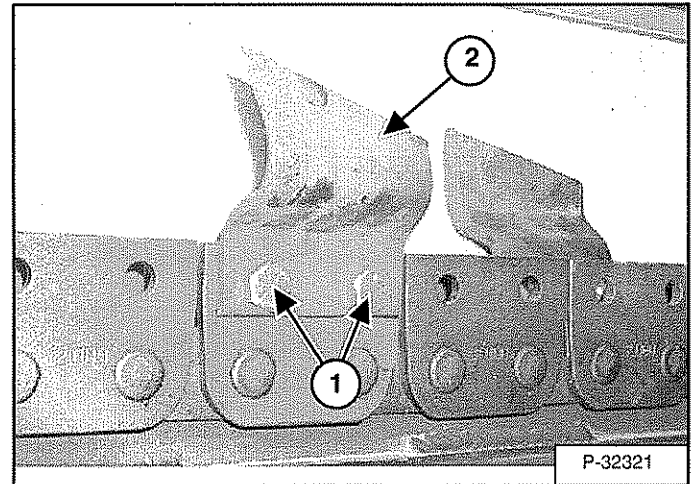
W-2019-0907

Figure 150



Remove the two nuts (Item 1) [Figure 150].

Figure 151



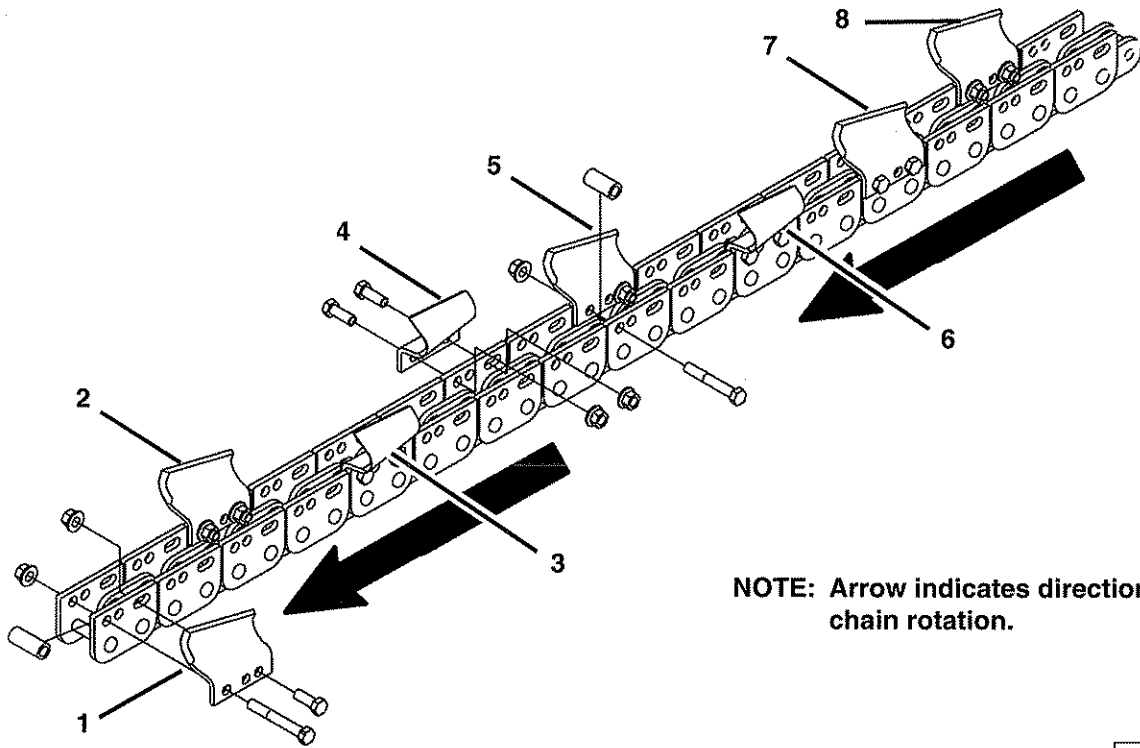
Remove the two bolts (Item 1) and tooth (Item 2) [Figure 151].

Installation: Tighten the bolts to 125 - 135 N•m (90 - 100 ft-lb) torque.

LT213 CHAIN PATTERNS

3 FT DS SS / 4IN - Digging Chain

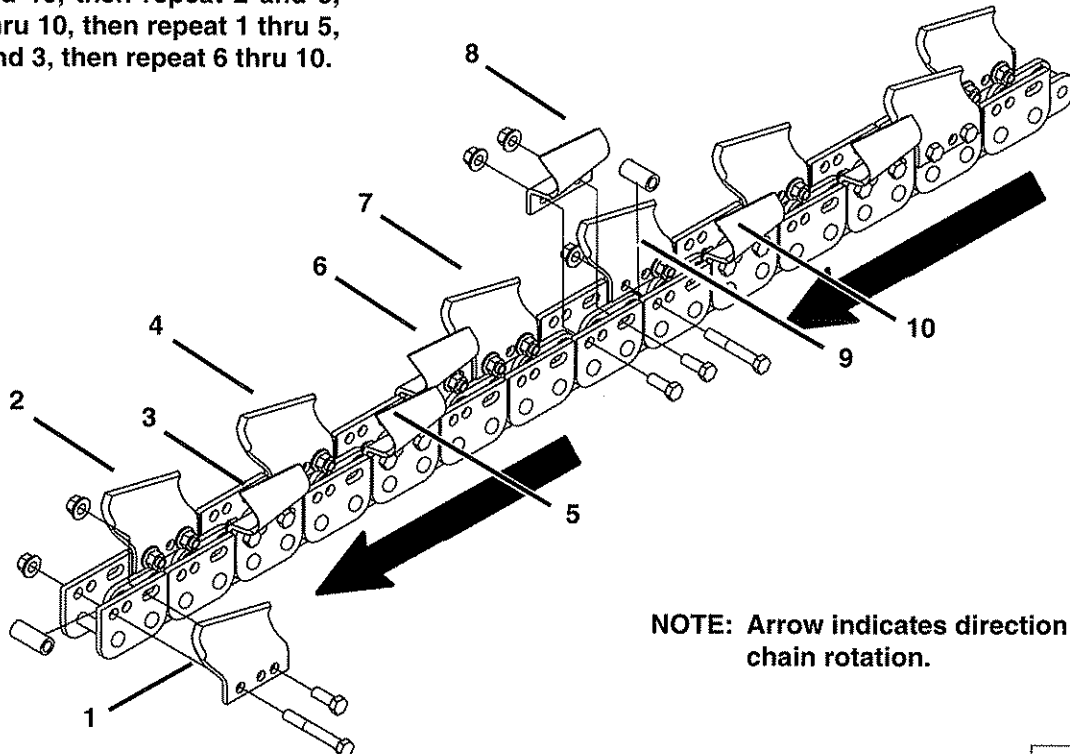
Repeat 1 thru 6 two times, then repeat 4 thru 8.



6959304

3FT DS / 4 IN - Digging Chain

Start with 1 thru 10, then repeat 2 and 3, then repeat 1 thru 10, then repeat 1 thru 5, then repeat 2 and 3, then repeat 6 thru 10.

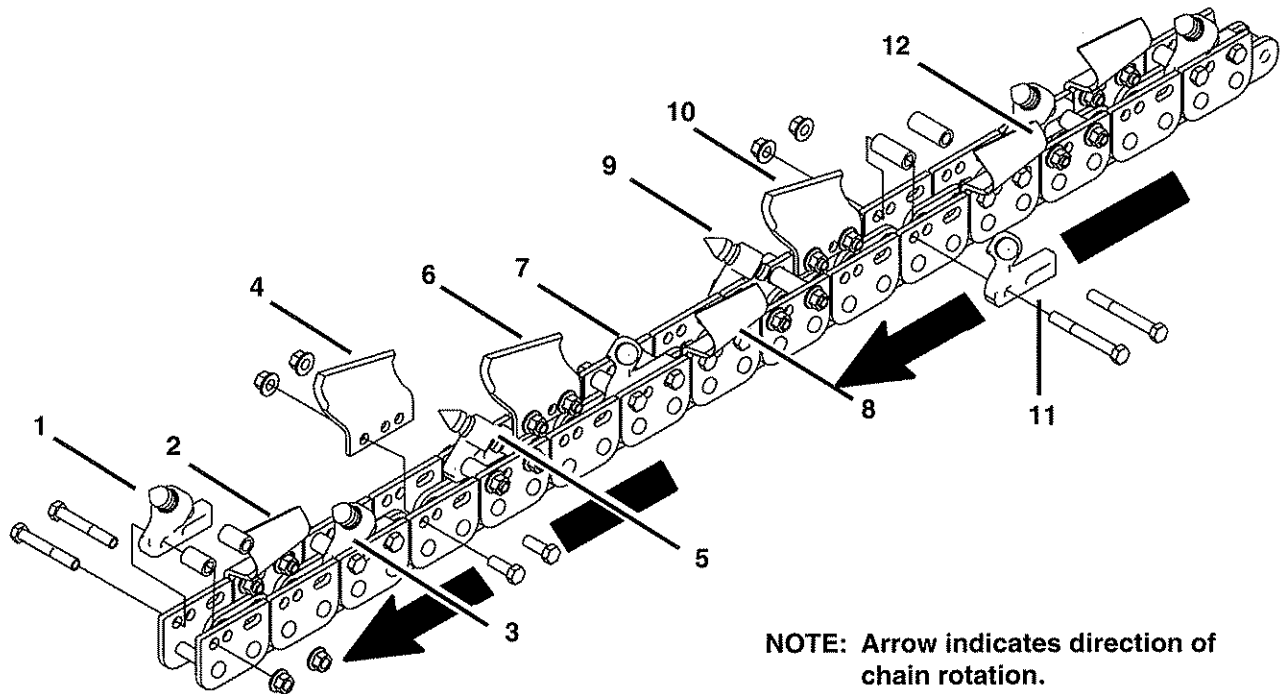


6959305

LT213 CHAIN PATTERNS (CONT'D)

3 FT DS CC / 4IN - Digging Chain

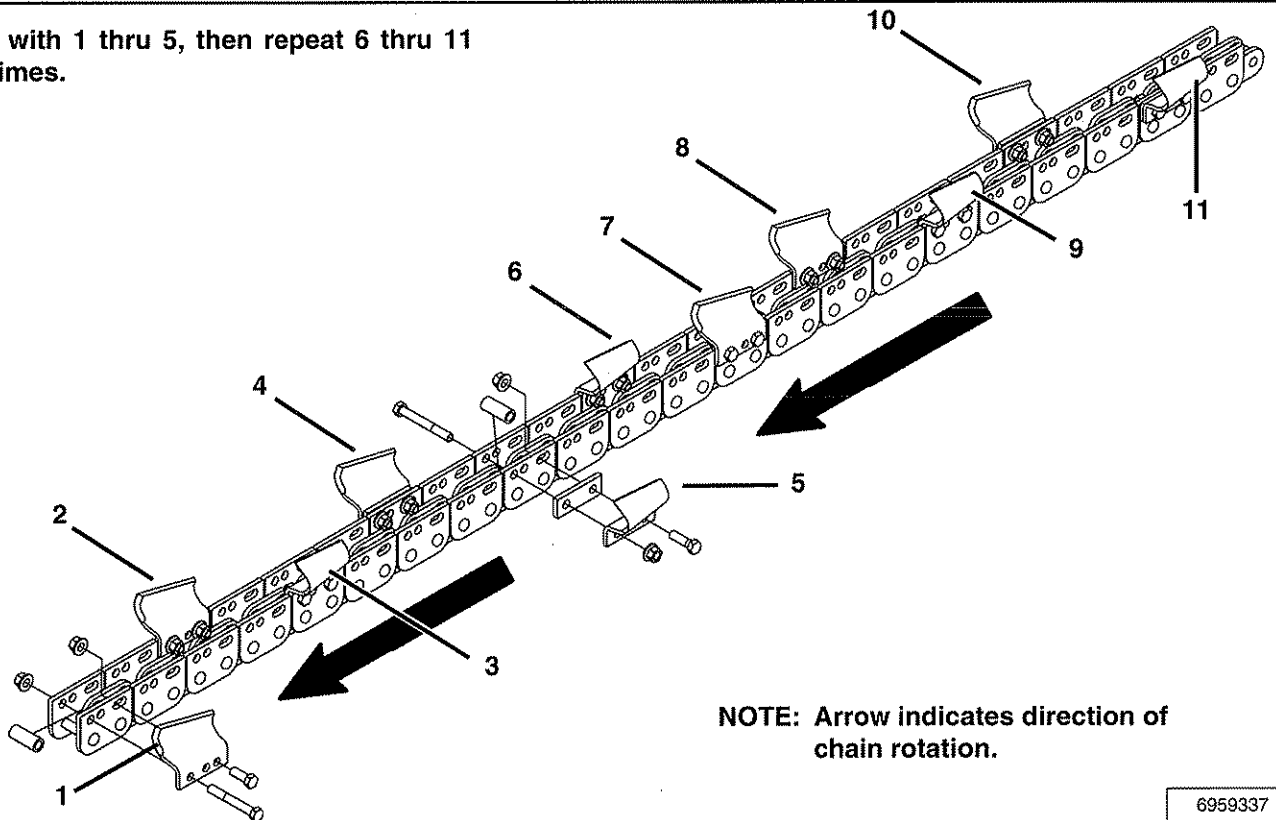
Start with 1 thru 12 two times, then repeat 3 thru 12.



6959306

3 FT DS SS / 6 IN - Digging Chain

Start with 1 thru 5, then repeat 6 thru 11 two times.

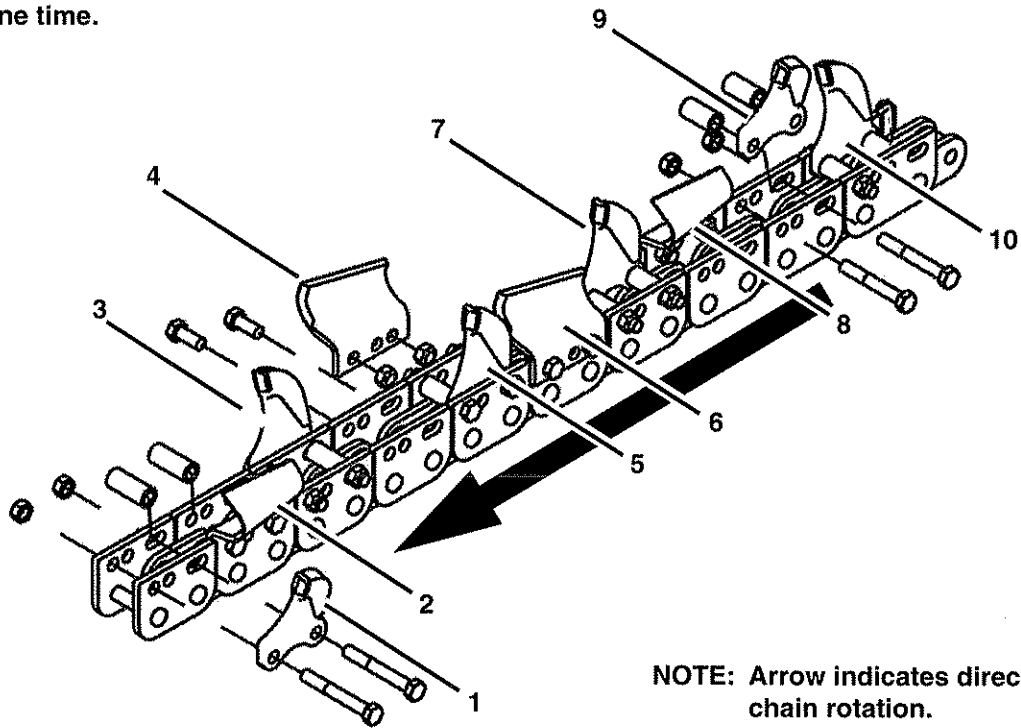


6959337

LT213 CHAIN PATTERNS (CONT'D)

3 FT / 4 IN - Shark Tooth Digging Chain

Start with 1 thru 10 two times, then repeat 1 thru 4 one time.

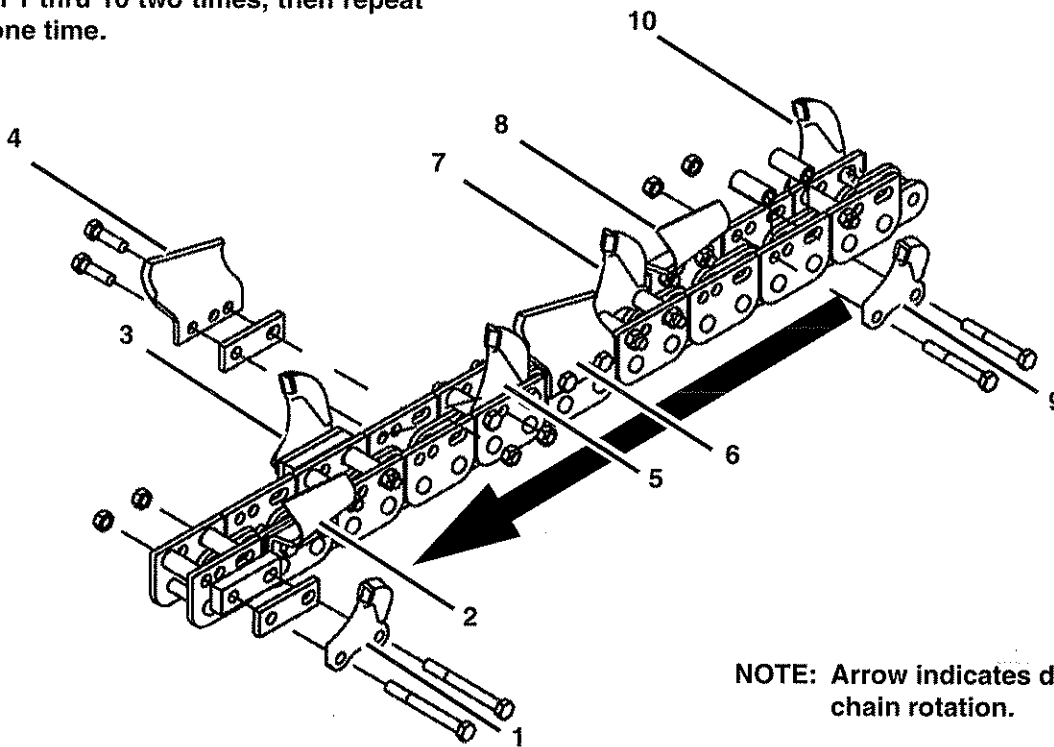


NOTE: Arrow indicates direction of chain rotation.

NA7087

3 FT / 6 IN - Shark Tooth Digging Chain

Start with 1 thru 10 two times, then repeat 1 thru 4 one time.



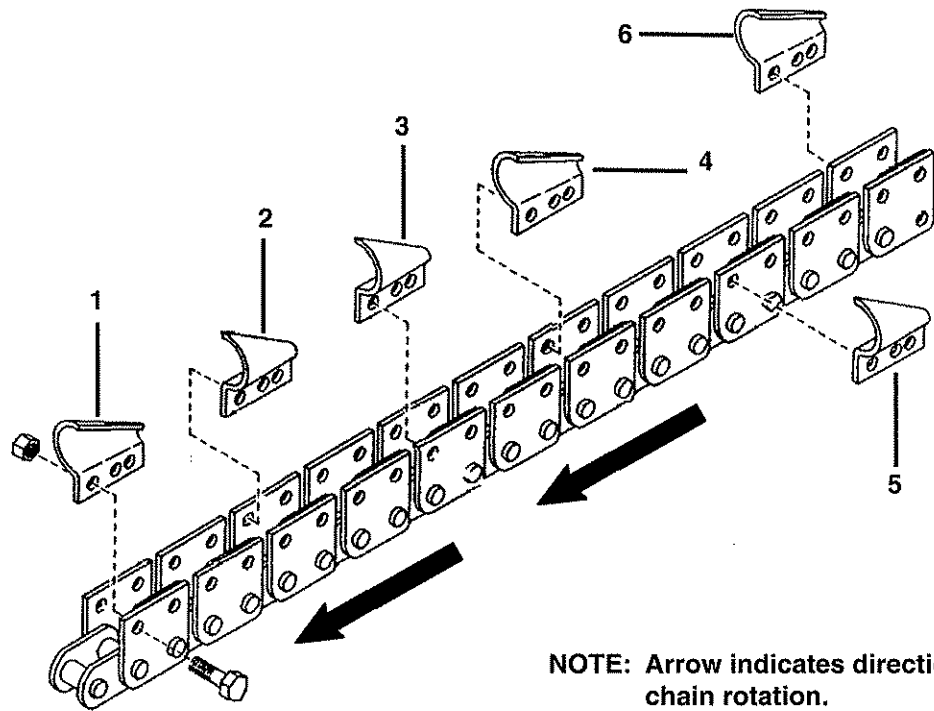
NOTE: Arrow indicates direction of chain rotation.

NA7088

LT313 CHAIN PATTERNS

4 FT DS SS / 6IN - Digging Chain

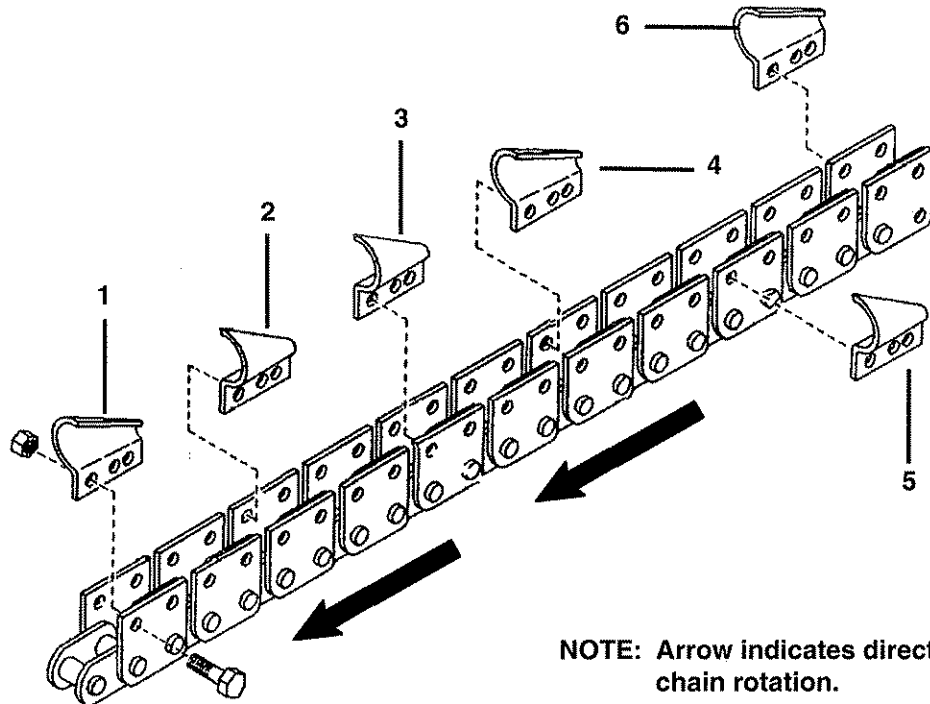
Repeat 1 thru 6 three times, on the third pattern DO NOT skip a station between 5 and 6.



B-17306A

3 FT DS SS / 6IN - Digging Chain

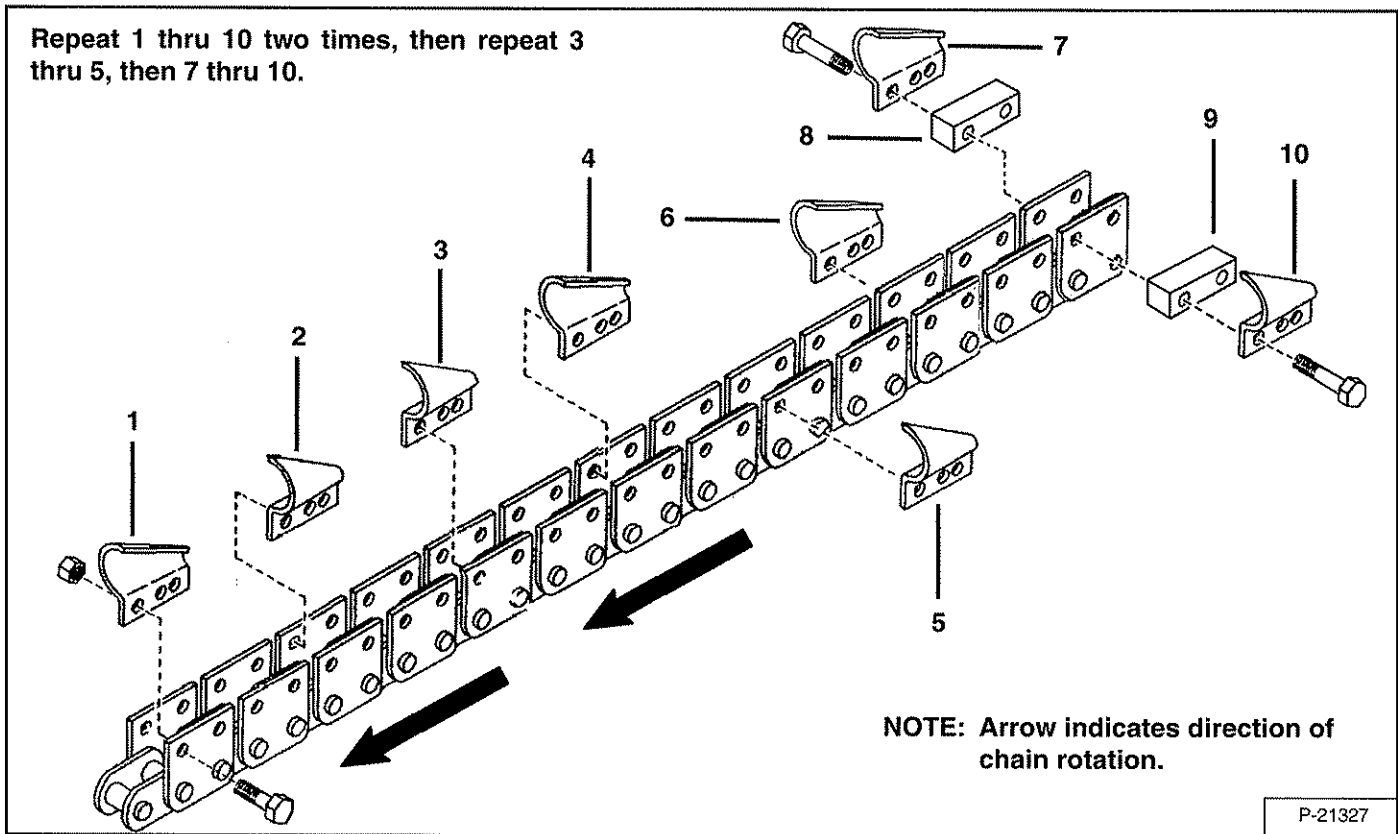
Repeat 1 thru 6 two times, then repeat 3 and 6.



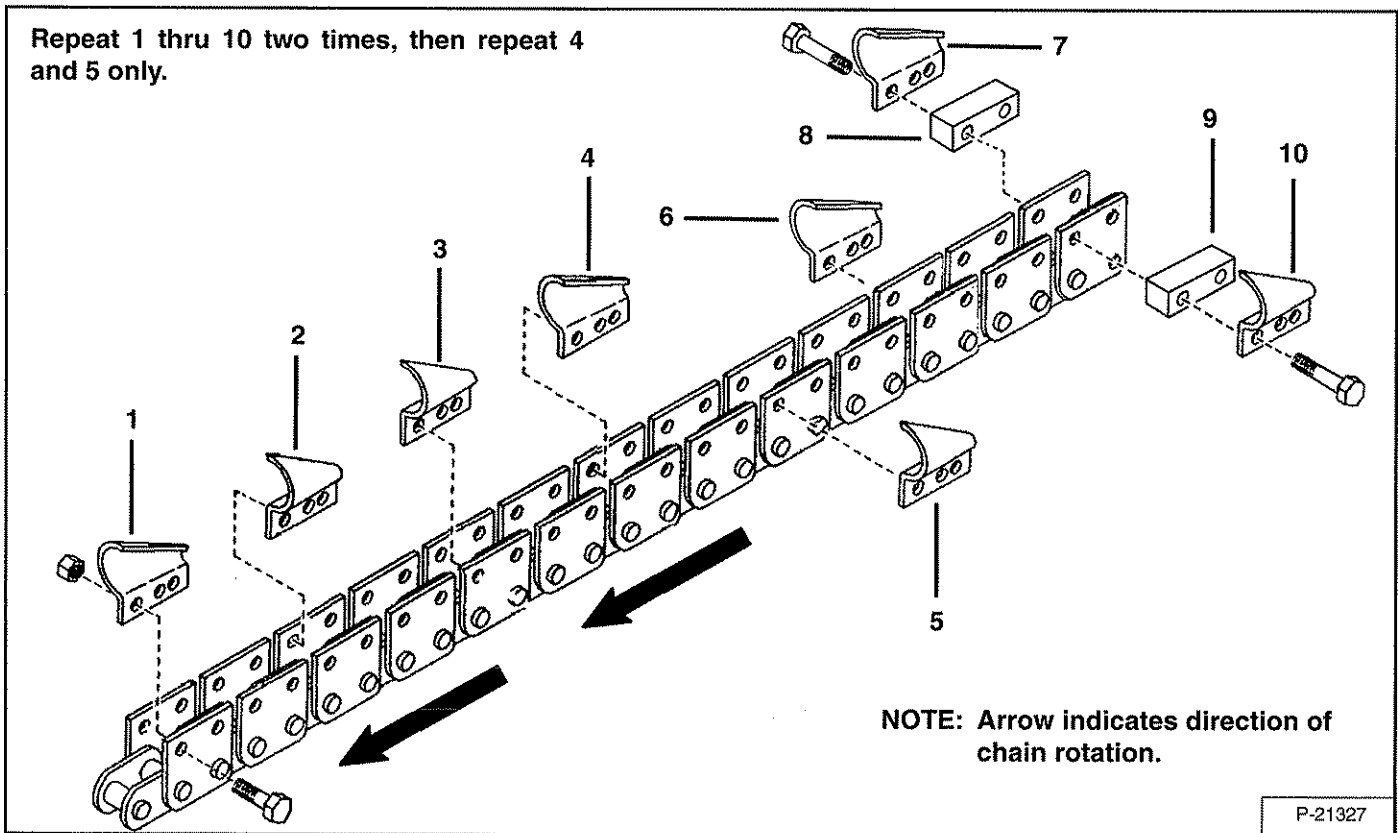
B-17306A

LT313 CHAIN PATTERNS (CONT'D)

4 FT DS / 8IN - Digging Chain



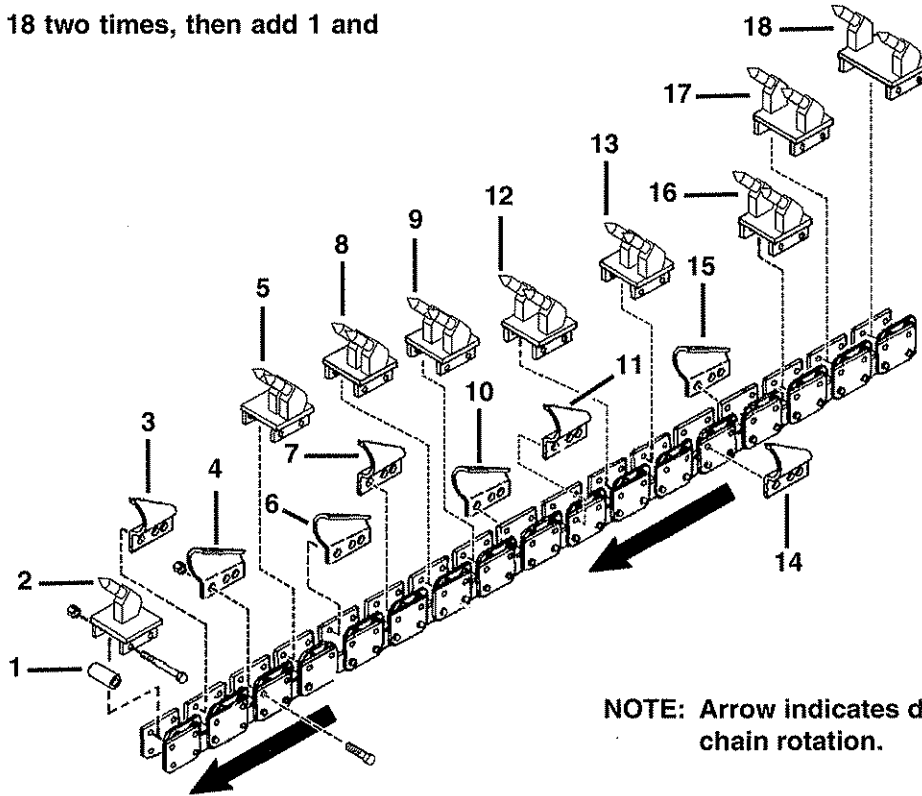
3 FT DS / 8IN - Digging Chain



LT313 CHAIN PATTERNS (CONT'D)

4 FT DS CC / 8IN - Digging Chain

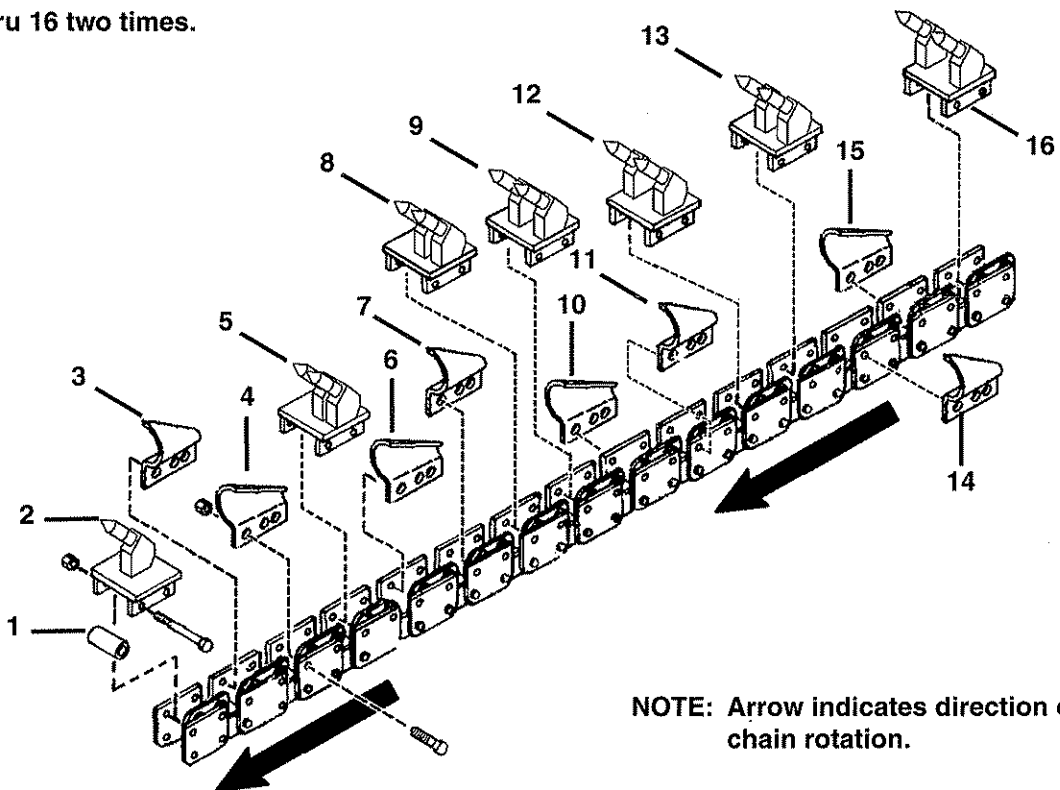
Repeat 1 thru 18 two times, then add 1 and 2.



B-17311A

3 FT DS CC / 8IN - Digging Chain

Repeat 1 thru 16 two times.

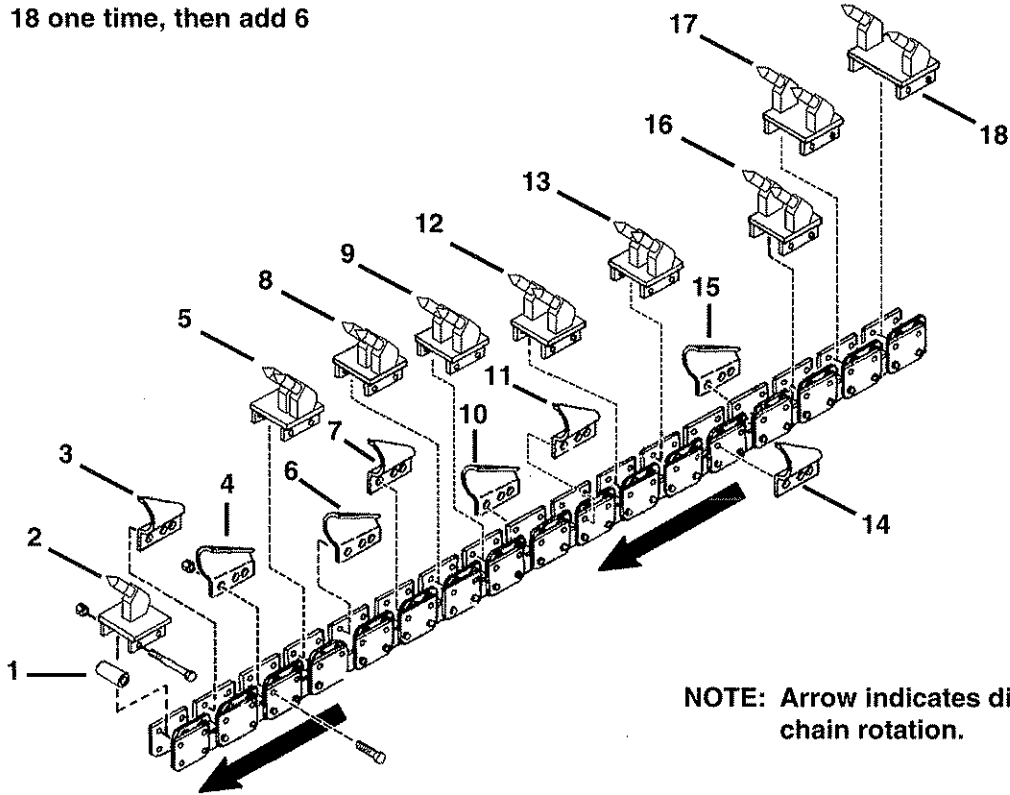


B-17310A

LT313 CHAIN PATTERNS (CONT'D)

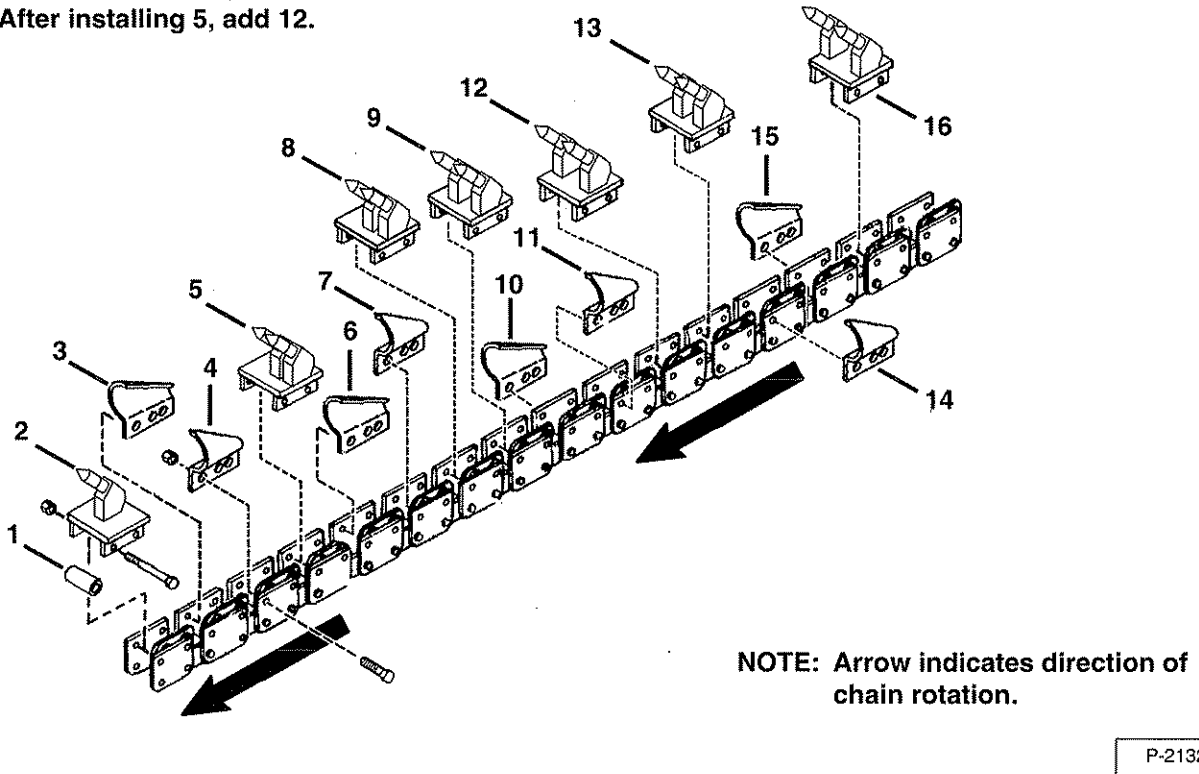
3 FT DS CC / 8IN - Digging Chain

Repeat 1 thru 18 one time, then add 6 thru 18.



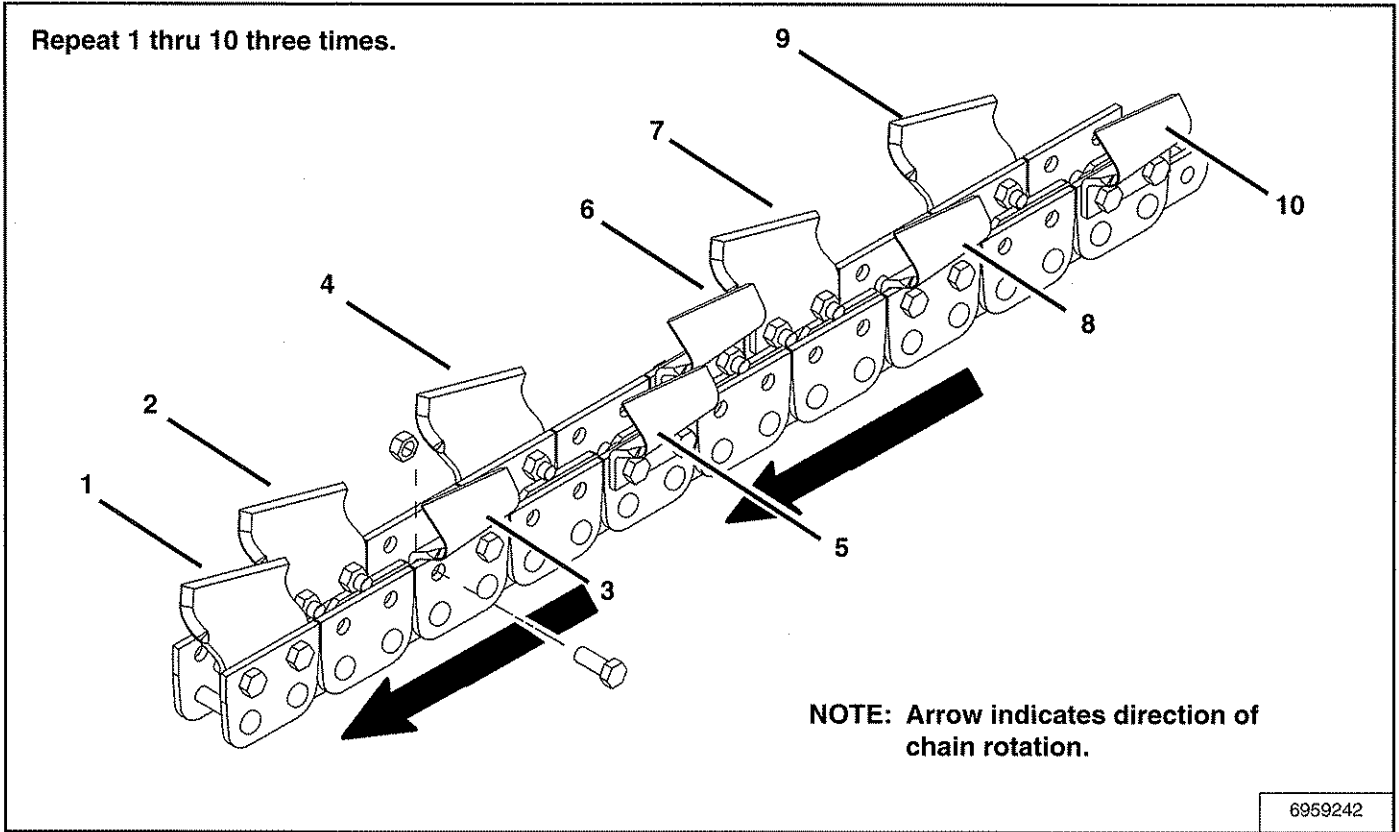
4 FT DS CC / 6IN - Digging Chain

Repeat 1 thru 16 two times, then add 1 thru 5. After installing 5, add 12.

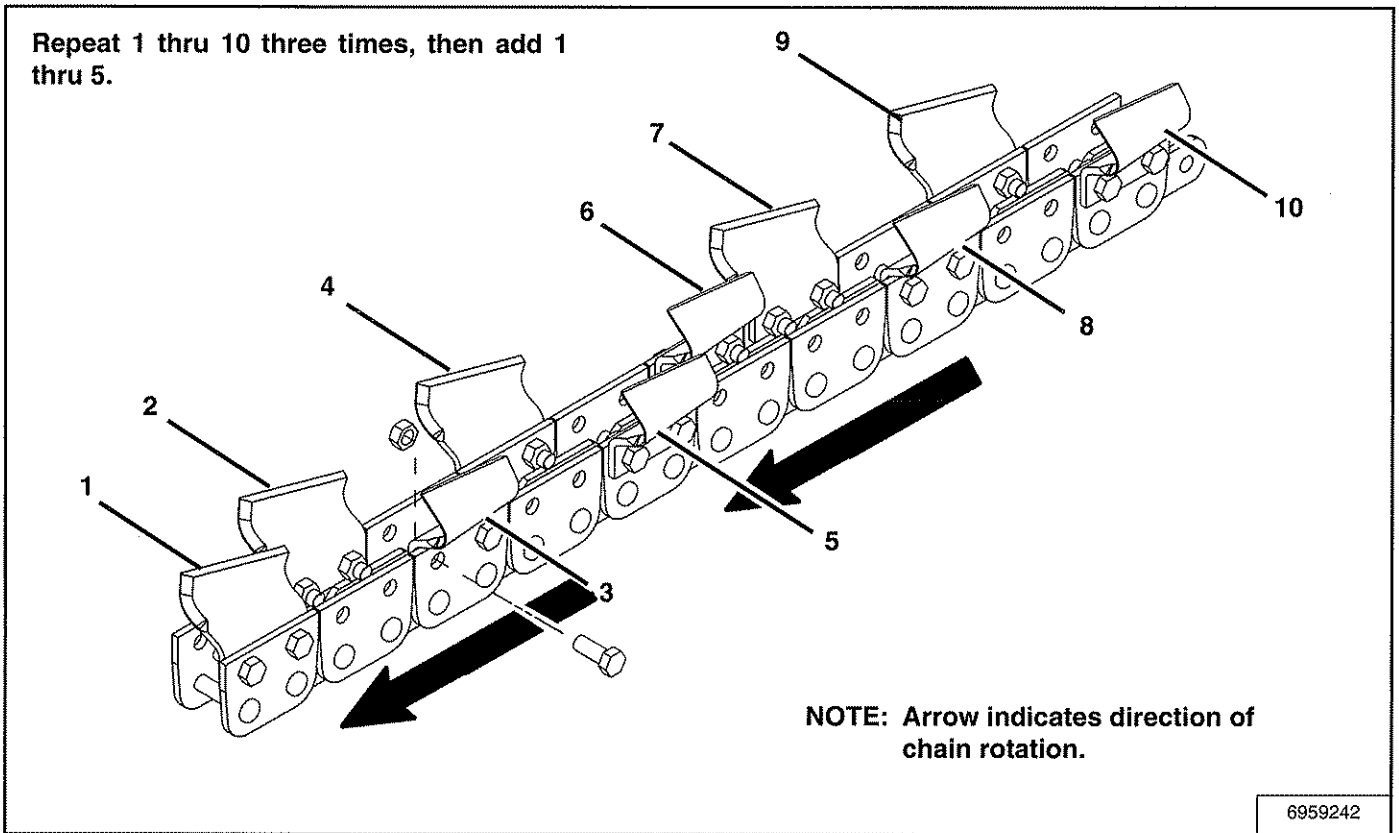


LT313 CHAIN PATTERNS (CONT'D)

3 FT DSP / 6IN - Digging Chain

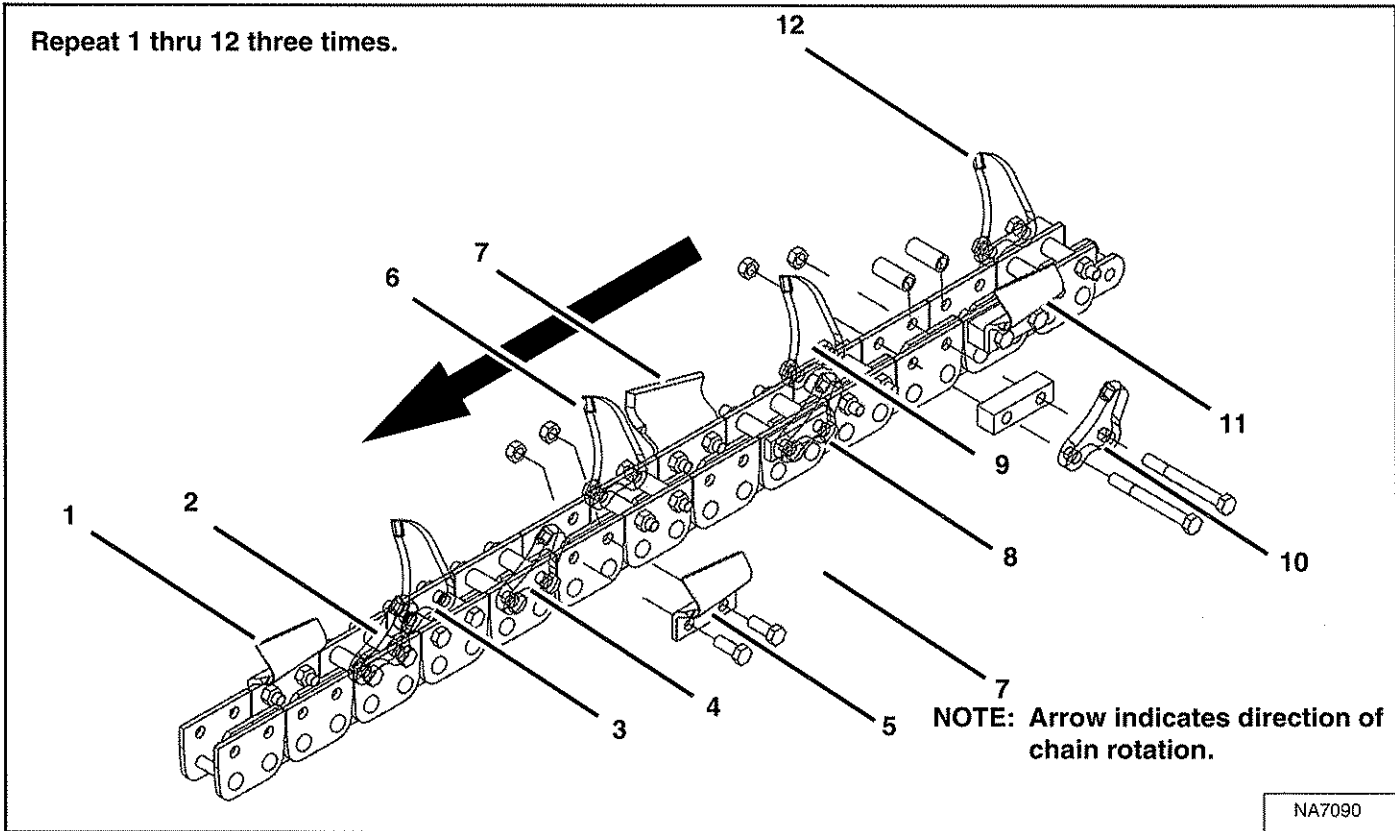


4 FT DSP / 6 IN - Digging Chain



LT313 CHAIN PATTERNS (CONT'D)

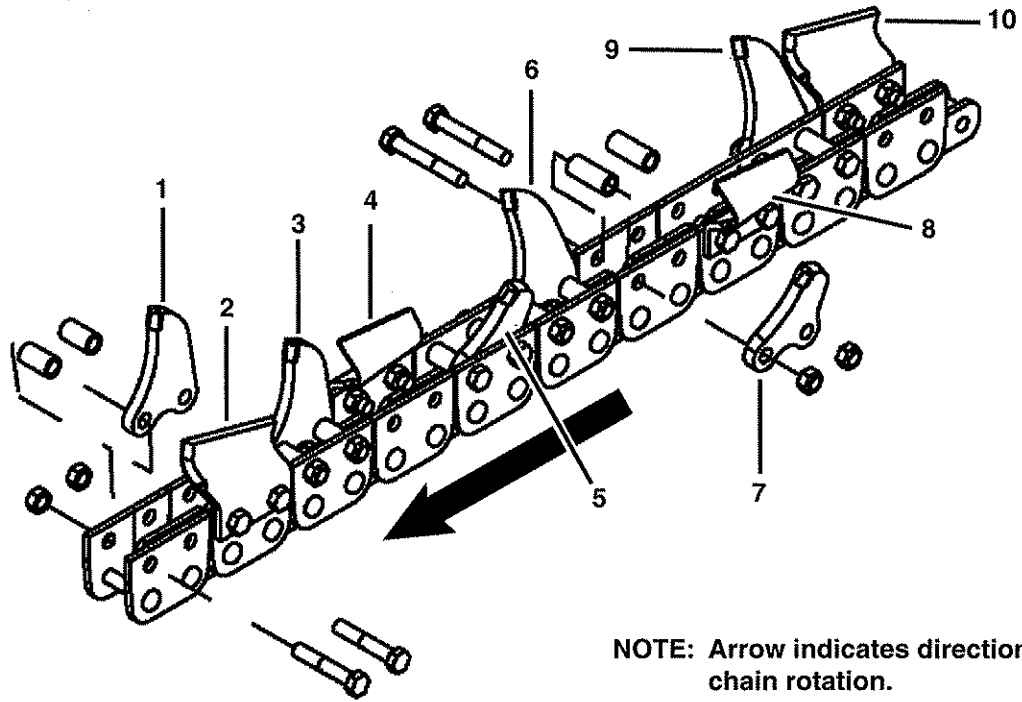
4 FT / 8 IN - Shark Tooth Digging Chain



LT414 CHAIN PATTERNS

4 FT Shark Tooth / 6 IN - Digging Chain

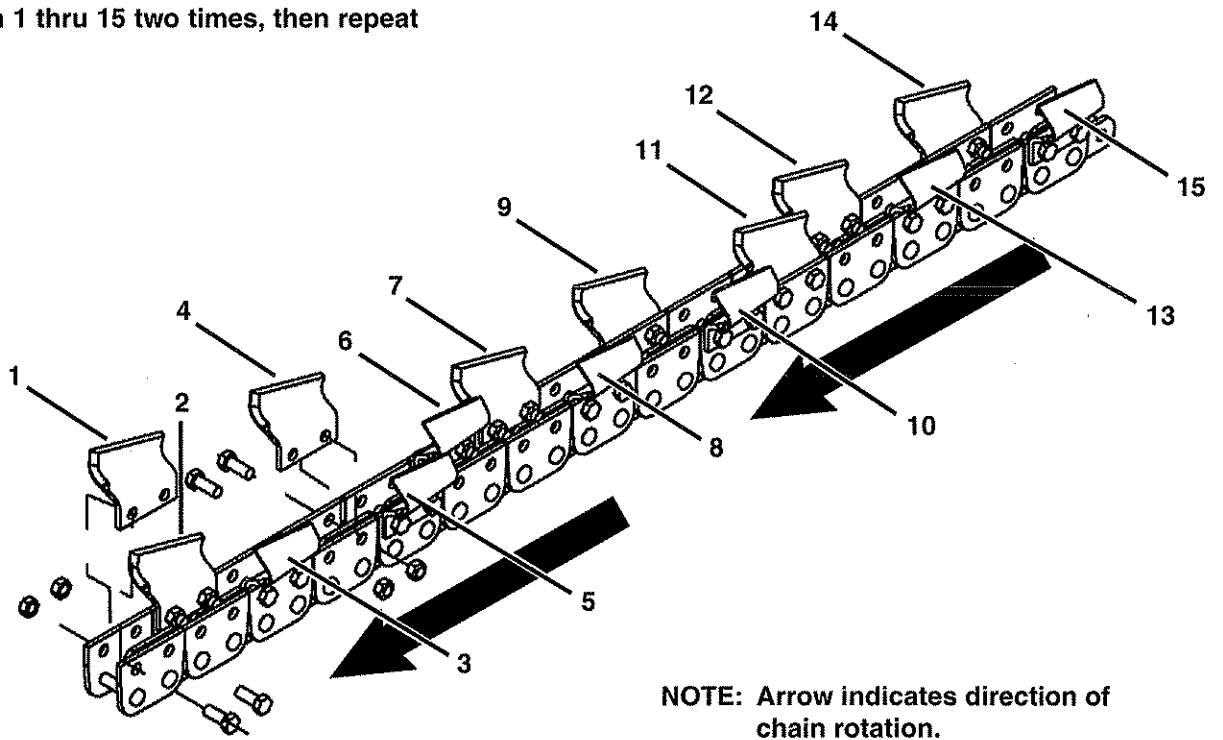
Repeat 1 thru 10 three times, repeat station 3, then repeat stations 7 thru 10.



P-60948

4 FT DS Cup / 6 IN - Digging Chain

Start with 1 thru 15 two times, then repeat 1 thru 5.

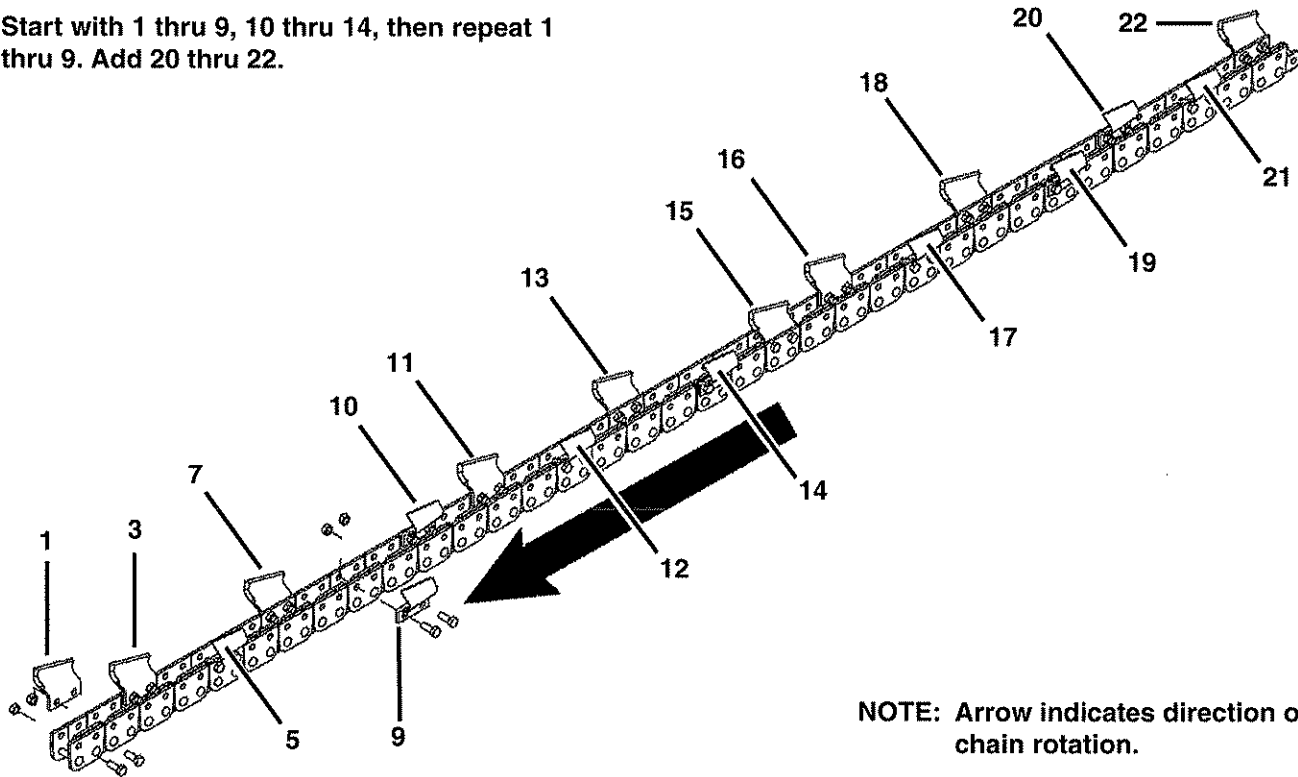


P-60949

LT414 CHAIN PATTERNS (CONT'D)

4 FT SS Cup / 6 IN - Digging Chain

Start with 1 thru 9, 10 thru 14, then repeat 1 thru 9. Add 20 thru 22.

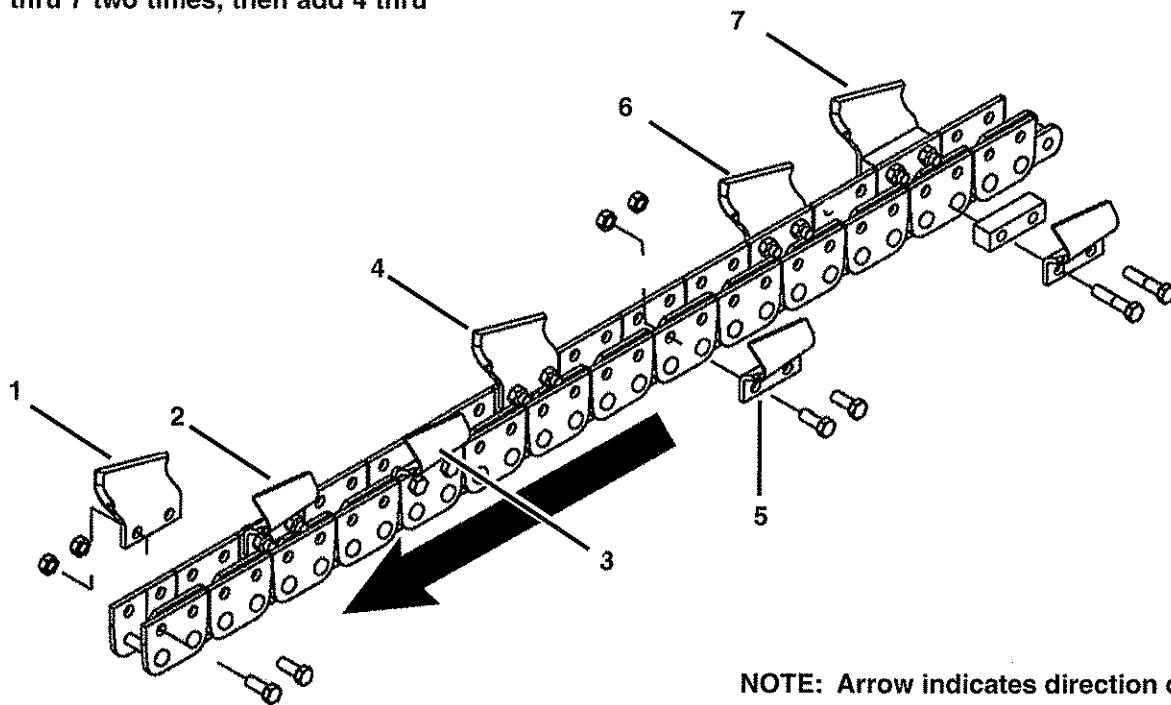


NOTE: Arrow indicates direction of chain rotation.

P-60950

4 FT SS Cup / 8 IN - Digging Chain

Repeat 1 thru 7 two times, then add 4 thru 6.



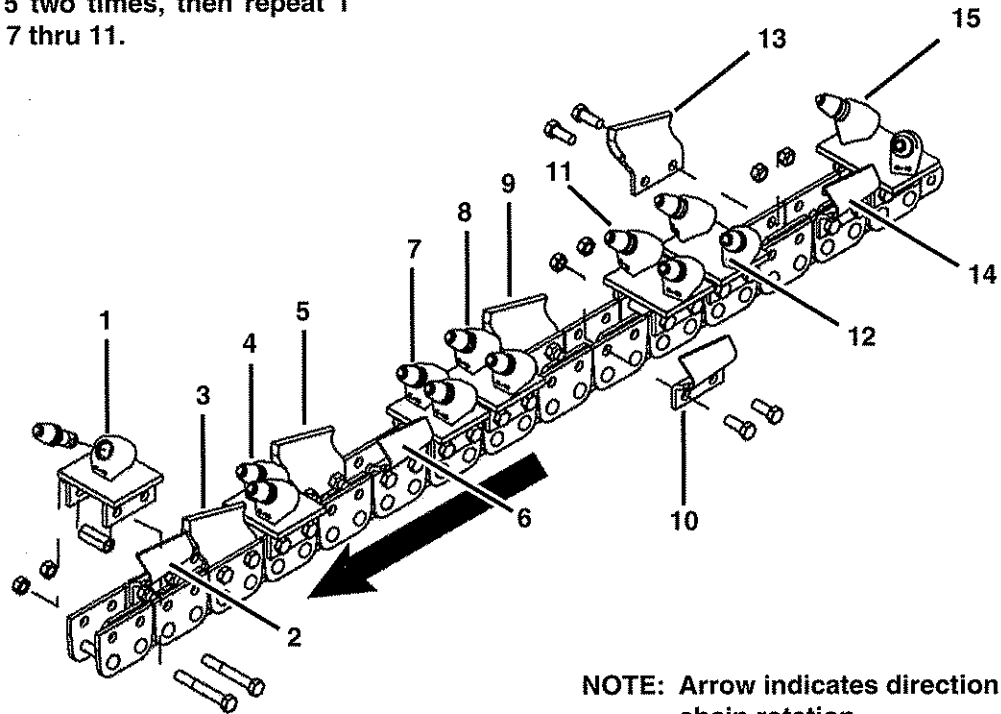
NOTE: Arrow indicates direction of chain rotation.

P-60951

LT414 CHAIN PATTERNS (CONT'D)

4 FT DS Carbide Cup / 6 IN - Digging Chain

Repeat 1 thru 15 two times, then repeat 1 thru 3, then add 7 thru 11.

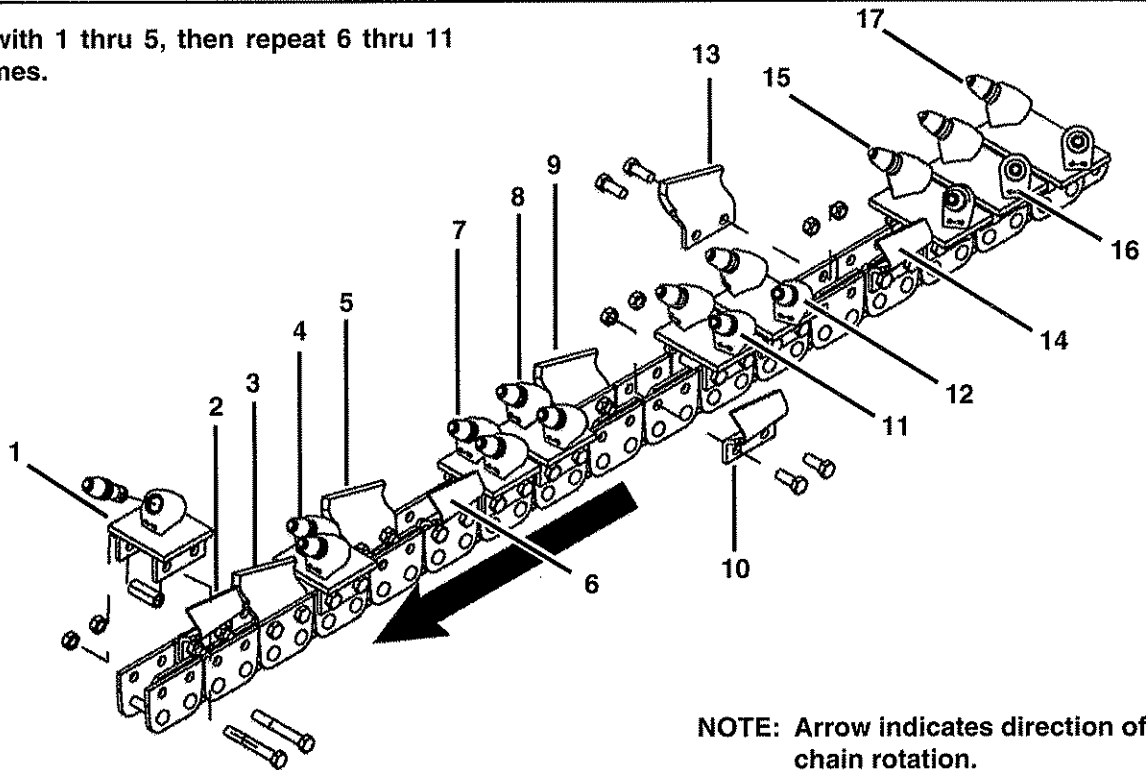


NOTE: Arrow indicates direction of chain rotation.

P-60952

4 FT DS Carbide Cup / 8 IN - Digging Chain

Start with 1 thru 5, then repeat 6 thru 11 two times.



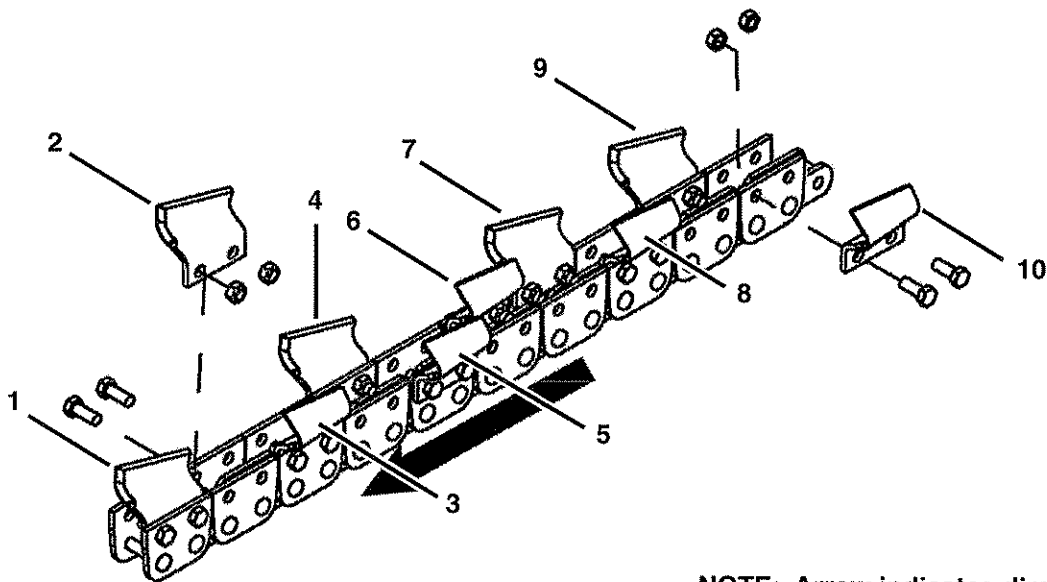
NOTE: Arrow indicates direction of chain rotation.

P-60953

LT414 CHAIN PATTERNS (CONT'D)

5 FT DS Cup / 6 IN - Digging Chain

Start with 1 thru 10 four times, then add 4 and 5.

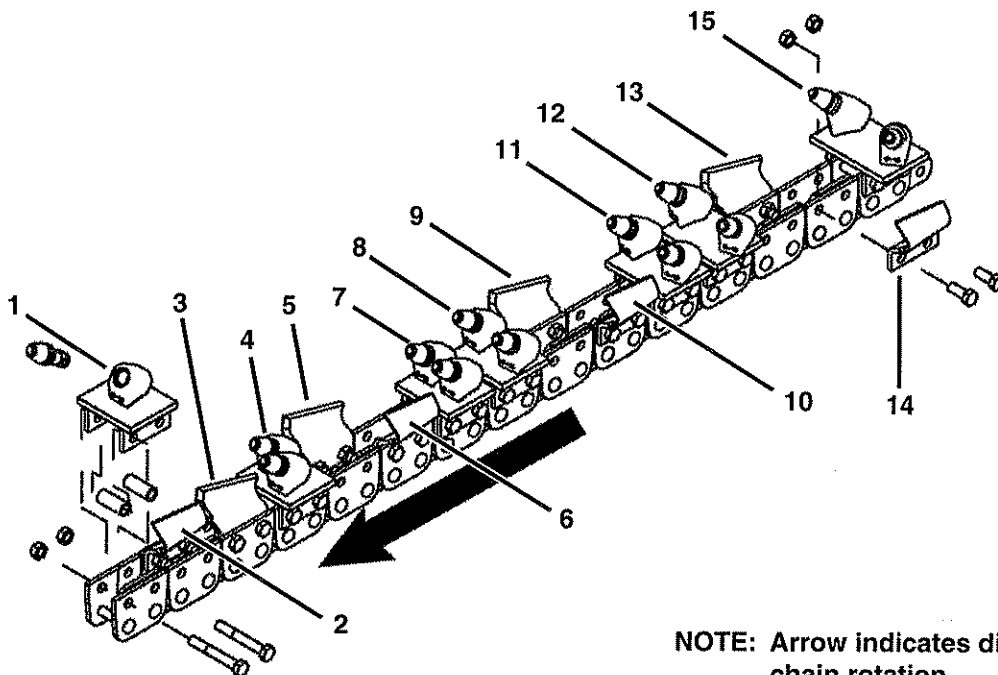


NOTE: Arrow indicates direction of chain rotation.

P-60954

5 FT DS Carbide Cup / 6 IN - Digging Chain

Start with 1 thru 15 two times, then add 4 and 15.



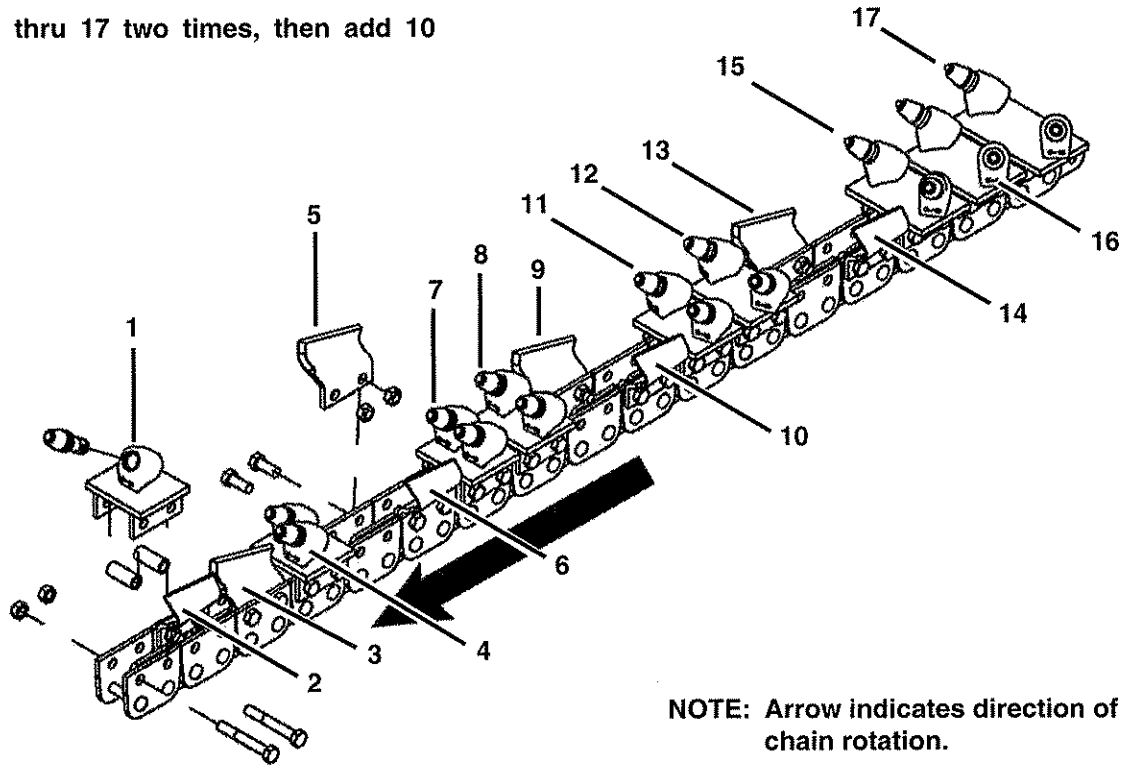
NOTE: Arrow indicates direction of chain rotation.

P-60955

LT414 CHAIN PATTERNS (CONT'D)

5 FT DS Carbide Cup / 8 IN - Digging Chain

Repeat 1 thru 17 two times, then add 10 thru 17.

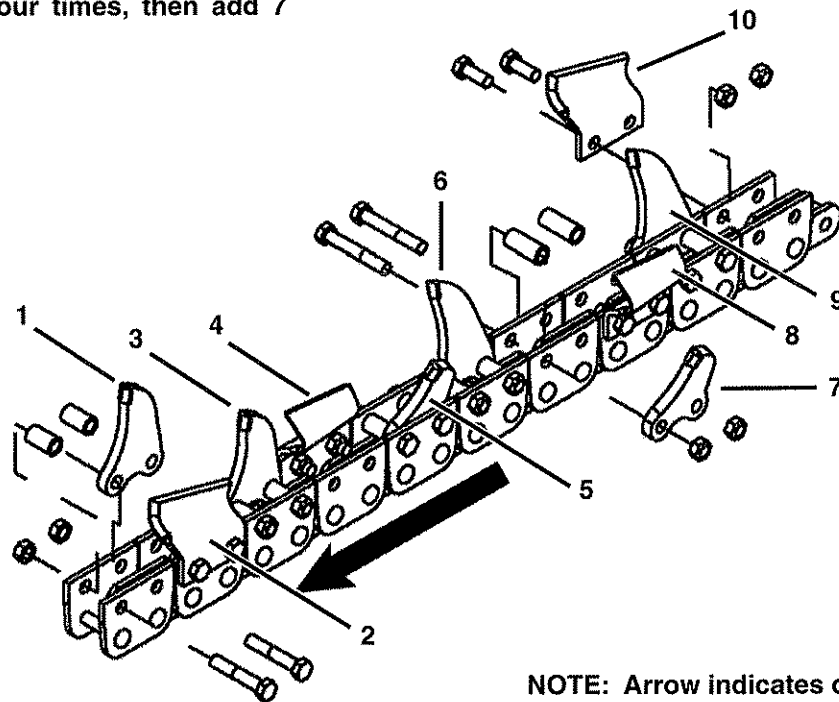


NOTE: Arrow indicates direction of chain rotation.

P-60956

5 FT DS Shark Tooth / 6 IN - Digging Chain

Repeat 1 thru 10 four times, then add 7 and 8.



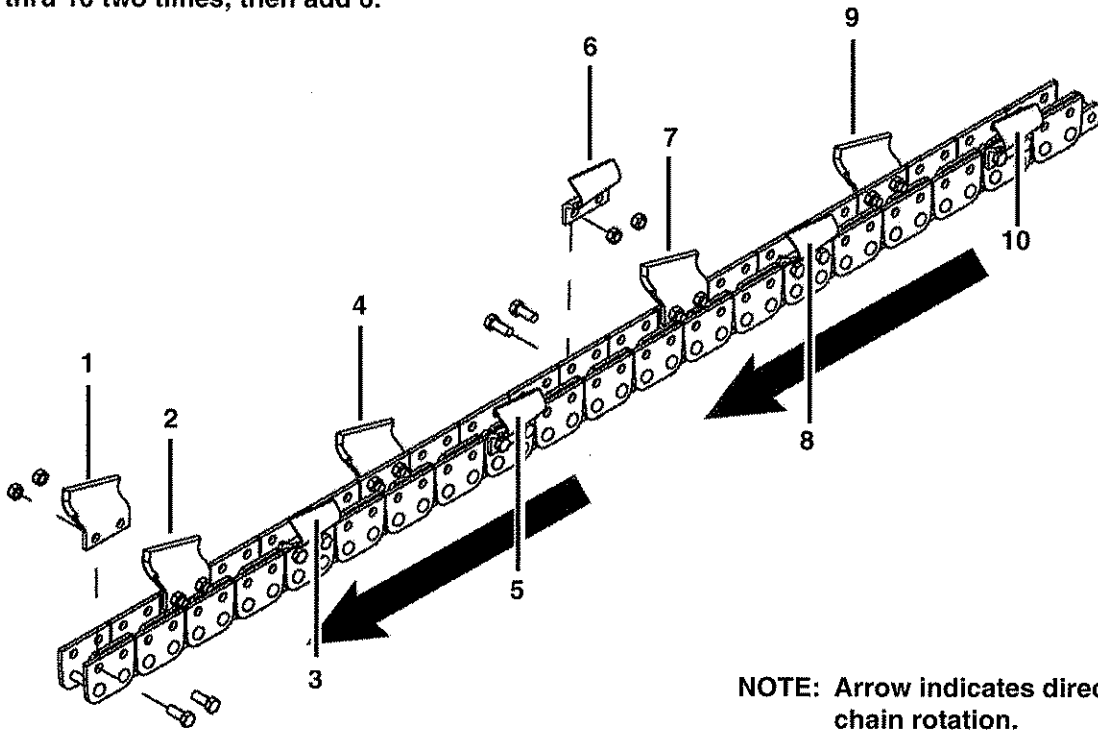
NOTE: Arrow indicates direction of chain rotation.

P-60957

LT414 CHAIN PATTERNS (CONT'D)

5 FT SS Cup / 6 IN - Digging Chain

Repeat 1 thru 10 two times, then add 6.

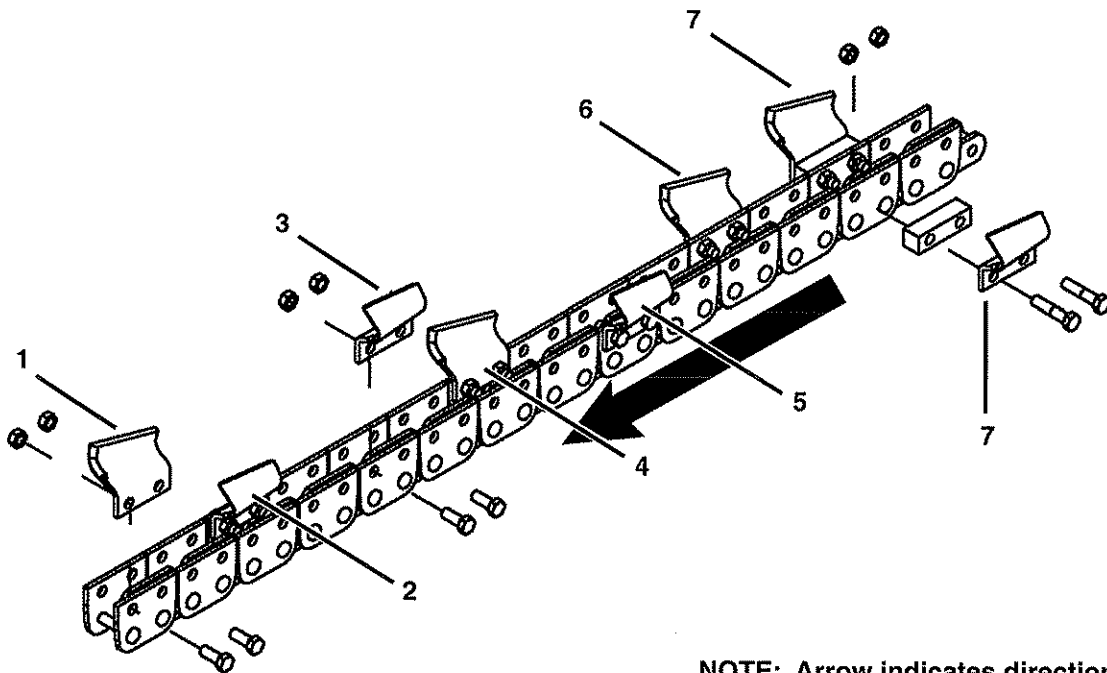


NOTE: Arrow indicates direction of chain rotation.

P-60958

5 FT SS Cup / 8 IN - Digging Chain

Repeat 1 thru 7 three times.

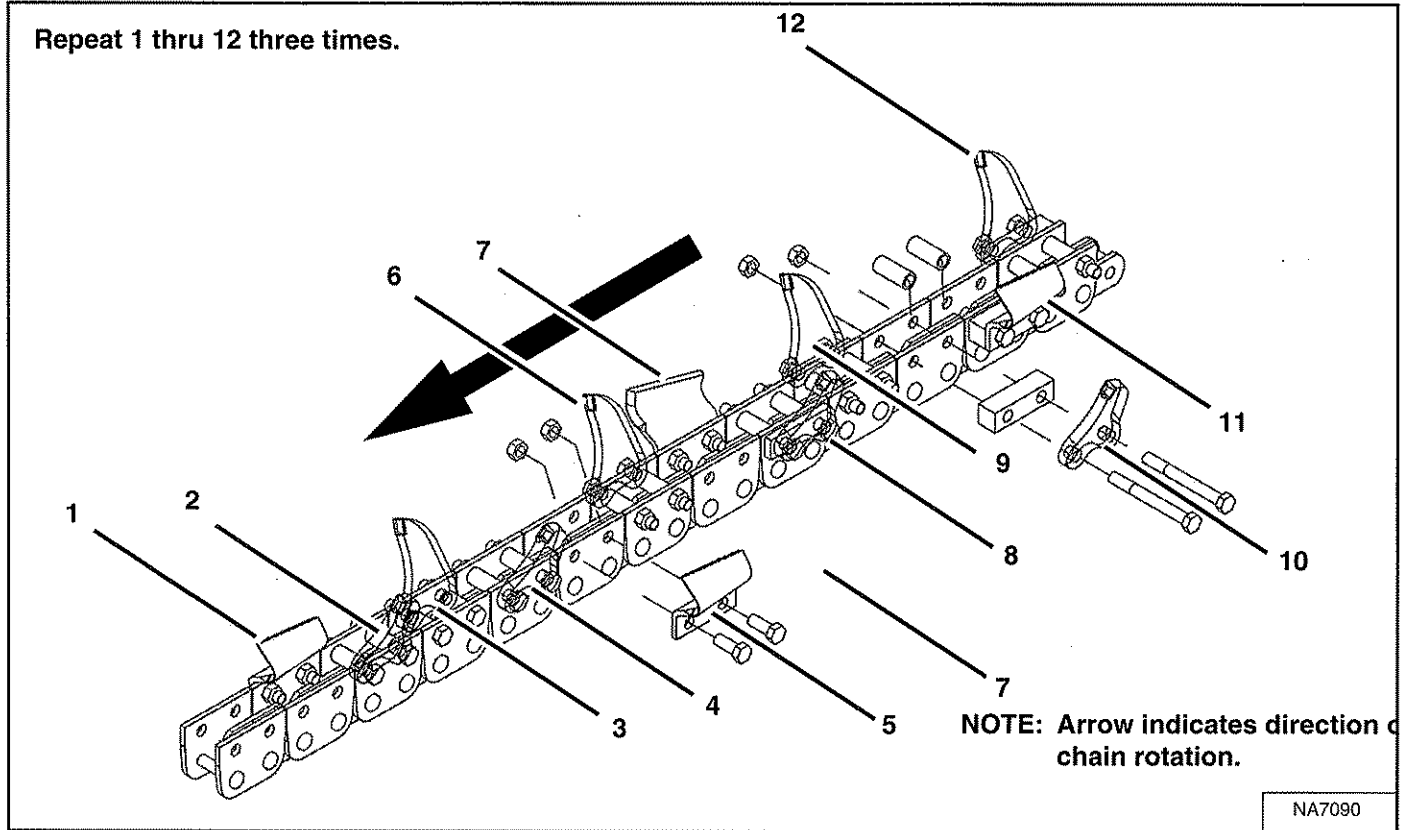


NOTE: Arrow indicates direction of chain rotation.

P-60959

LT414 CHAIN PATTERNS (CONT'D)

4 FT / 8 IN - Shark Tooth Digging Chain



ATTACHMENT STORAGE AND RETURN TO SERVICE

Storage

Sometimes it may be necessary to store your Bobcat attachment for an extended period of time. Below is a list of items to perform before storage:

- Thoroughly clean and wash the attachment.
- Lubricate the attachment.
- Inspect the mounting frame and all welds on the attachment for wear and damage.
- Check for loose hardware, missing guards, or damaged parts.
- Replace worn or damaged parts.
- Check for damaged or missing decals. Replace if necessary.
- Place the attachment in a dry protected shelter.
- Place the attachment flat on the ground.

NOTE: In muddy conditions or to prevent the attachment from freezing to the ground, put the attachment on planks or blocks before removing the attachment from the machine.

Return To Service

After the Bobcat attachment has been in storage, it is necessary to follow a list of items to return the attachment to service:

- Check for damaged or missing decals. Replace if necessary.
- Be sure all shields and guards are in place.
- Lubricate the attachment.
- Check for loose hardware, missing or damaged parts.
- Check for leaks. Repair as needed.
- Install and operate attachment, check for correct function.

MACHINE SIGN TRANSLATIONS

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Warning (6575965)	113
Warning (6579914)	114



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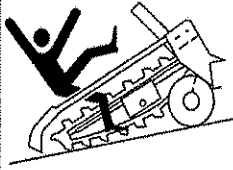
Warning (6575965)

 WARNING	
	<p style="text-align: center;">AVOID INJURY</p> <p>NEVER PUT FINGERS BETWEEN ROLLERS OR ROLLER SLOTS WHEN REPOSITIONING TRENCH CLEANER SHOE.</p> <p style="text-align: right;">67172 SW 6575965C enUS</p>

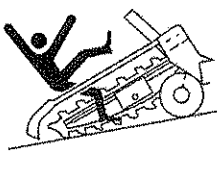
 ADVERTENCIA	
	<p style="text-align: center;">EVITE LESIONES</p> <p>NO INTRODUZCA LOS DEDOS ENTRE LOS RODILLOS O LAS RANURAS DE LOS RODILLOS MIENTRAS SE ESTÁ REPOSICIONANDO LA ZAPATA DEL LIMPIADOR DE ZANJAS.</p> <p style="text-align: right;">67172 SW 6575965C esAR</p>

 AVERTISSEMENT	
	<p style="text-align: center;">RISQUE DE BLESSURE</p> <p>NE METTEZ JAMAIS LES DOIGTS ENTRE LES GALETS ET LES RAINURES À GALET LORS DE LA REMISE EN PLACE DU SABOT NETTOYEUR DE TRANCÉE.</p> <p style="text-align: right;">67172 SW 6575965C frCA</p>

Warning (6579914)

	⚠ DANGER
	AVOID INJURY OR DEATH Bystanders must stay 20 feet (6 m) away from chain and auger.

07172 SW 0579914C enUS

	⚠ PELIGRO
	EVITE LESIONES O LA MUERTE Los transeúntes deben permanecer alejados a una distancia de 20 pies (6 m) de la cadena y el taladro.

07172 SW 0579914C esAR

	⚠ DANGER
	RISQUE DE BLESSURE OU DE MORT Tous les spectateurs doivent être tenus à 20 pieds (6 m) de la chaîne et de la vis sans fin.

07172 SW 0579914C frCA

SPECIFICATIONS

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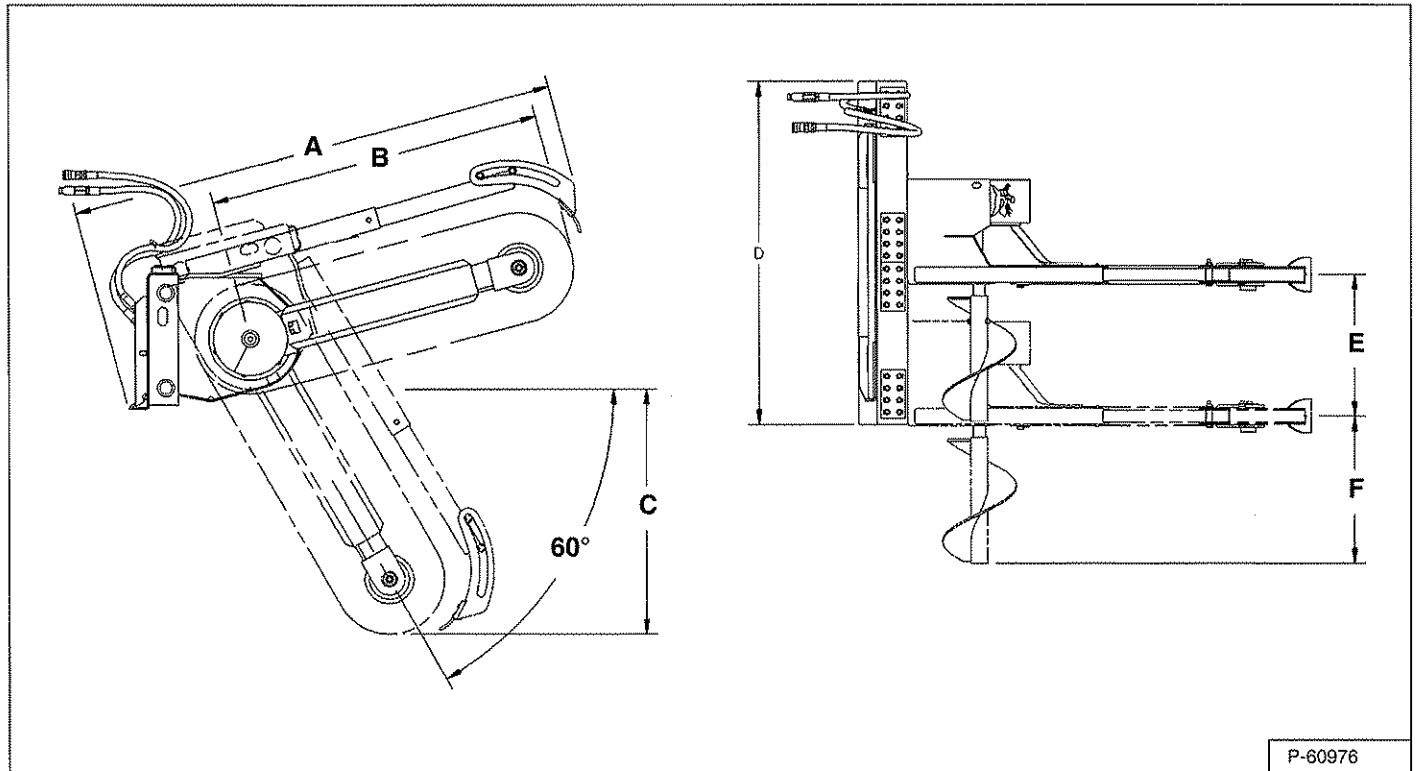


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(LT213 AND LT313) TRENCHER SPECIFICATIONS

Dimensions

- Where applicable, specifications conform to **SAE and ISO** standards and are subject to change without notice.



DESCRIPTION	LT213 (2 FT)	LT313 (3 FT)	LT313 (4 FT)
Overall Length (A)	1880 mm (74.0 in)	2019 mm (79.5 in)	2273 mm (89.5 in)
Standard Boom Length (B)	1334 mm (52.5 in)	1410 mm (55.5 in)	1664 mm (65.5 in)
Digging Depth @ 60° (C)	.9 m (3 ft)	.9 m (3 ft)	1.2 m (4 ft)
Frame Width (D)	1422 mm (56.0 in)	1422 mm (56.0 in)	1422 mm (56.0 in)
Auger Clearance (F)	351 - 401 mm (13.8 - 15.8 in)	607 - 686 mm (24- 27 in)	607 - 686 mm (24- 27 in)
Side Shift Travel (E)	587 mm (23.1 in)	587 mm (23.1 in)	587 mm (23.1 in)

Performance

DESCRIPTION	LT213 (2 FT)	LT313 (3 FT)	LT313 (4 FT)
Operating Weight (Without Teeth)	329 kg (725 lb)	433 kg (955 lb)	444 kg (980 lb)
Chain Size	42 mm (1.654 in)	50.8 mm (2 in)	50.8 mm (2 in)
Chain Speed @ 18 U.S. gpm (68 L/min)	98.5 m/min (323 ft/min)	106.7 m/min (350 ft/min)	106.7 m/min (350 ft/min)
Chain Tightener	Grease Cylinder	Grease Cylinder	Grease Cylinder
Auger Diameter	305 mm (12 in)	305 mm (12 in)	305 mm (12 in)
Trenching Widths Available	101 - 203 mm (4 - 8 in)	152 - 305 mm (6 - 12 in)	152 - 305 mm (6 - 12 in)

(LT213 AND LT313) SPECIFICATIONS (CONT'D)

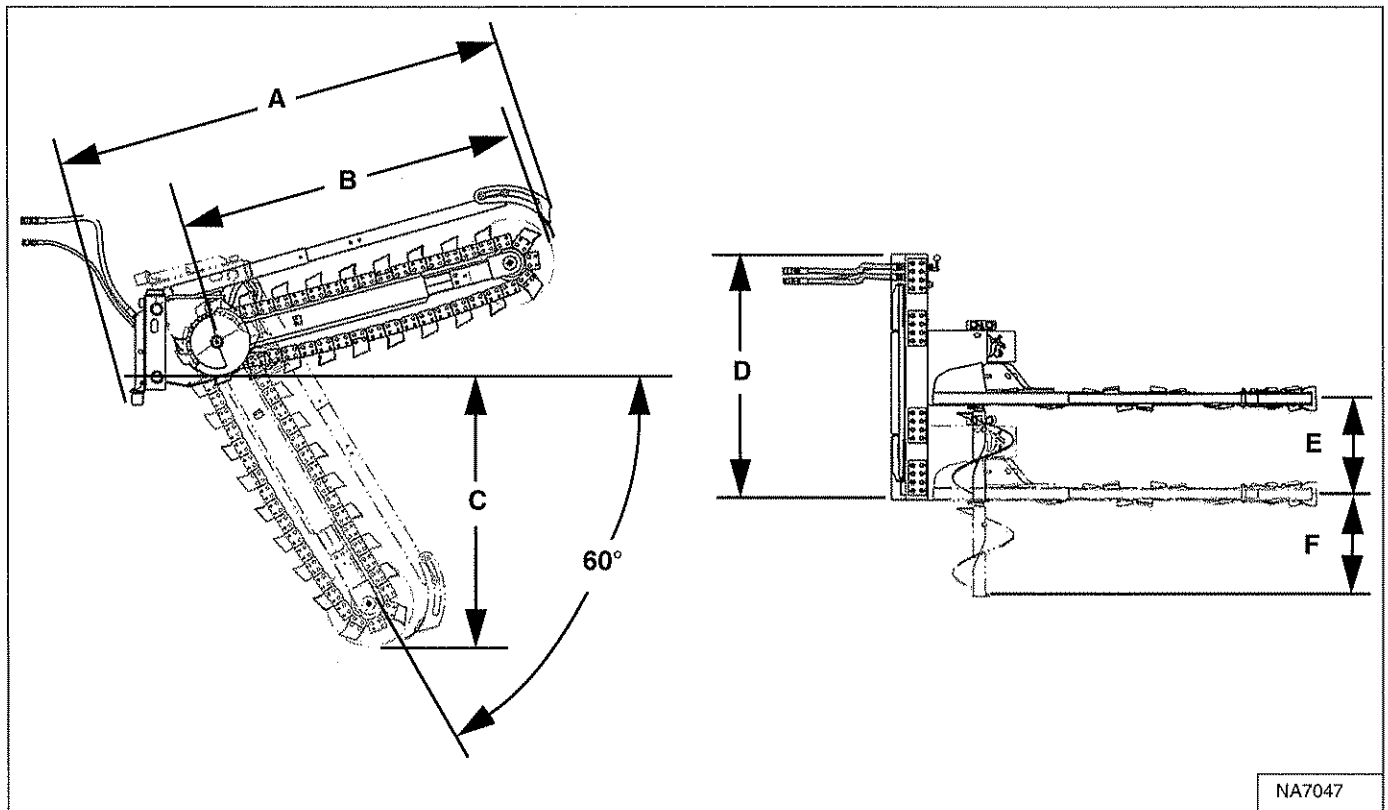
Hydraulic System

DESCRIPTION	LT213 (2 FT)	LT313 (3 FT)	LT313 (4 FT)
Flow Range	42 - 68 L/min (11 - 18 U.S. gpm)	57 - 83 L/min (15 - 22 U.S. gpm)	57 - 83 L/min (15 - 22 U.S. gpm)
Maximum Operating Pressure	20684 KPa (207 bar) (3000 psi)	20684 KPa (207 bar) (3000 psi)	20684 KPa (207 bar) (3000 psi)

(LT414) TRENCHER SPECIFICATIONS

Dimensions

- Where applicable, specifications conform to **SAE and ISO** standards and are subject to change without notice.



DESCRIPTION	LT414 (4 FT)	LT414 (5 FT)
Overall Length (A)	2286 mm (90 in)	2642 mm (104 in)
Standard Boom Length (B)	1651 mm (65 in)	2011 mm (79 in)
Digging Depth @ 60° (C)	1270 mm (50 in)	1575 mm (62 in)
Frame Width (D)	1428.8 mm (56.25 in)	1428.8 mm (56.25 in)
Side Shift Travel (E)	554 mm (21.8 in.)	554 mm (21.8 in)
Auger Clearance (F)	594 - 671 mm (23.4 - 26.4 in)	594 - 671 mm (23.4 - 26.4 in)

Performance

DESCRIPTION	LT414 (4 FT)	LT414 (5 FT)
Operating Weight (Without Teeth)	539 kg (1188 lb)	556 kg (1225 lb)
Chain Size	50.8 mm (2 in)	50.8 mm (2 in)
Chain Speed @ 68 L/min (18 U.S. gpm)	100 m/min (330 ft/min)	100 m/min (330 ft/min)
Chain Tightener	Grease Cylinder	Grease Cylinder
Auger Diameter	305 mm (12 in) / 362 mm (14.25 in)	305 mm (12 in) / 362 mm (14.25 in)
Trenching Widths Available	152 - 305 mm (6 - 12 in)	152 - 203 mm (6 - 8 in)

(LT414) TRENCHER SPECIFICATIONS (CONT'D)

Hydraulic System

DESCRIPTION	LT414 (4 FT)	LT414 (5 FT)
Flow Range	98 - 151 L/min (26 - 40 U.S. gpm)	98 - 151 L/min (26 - 40 U.S. gpm)
Maximum Operating Pressure	22753 KPa (227 bar) (3300 psi)	23753 KPa (227 bar) (3300 psi)

WARRANTY

WARRANTY123



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WARRANTY

Bobcat Attachments

Bobcat Company warrants to its authorized dealers and authorized dealers of Bobcat Equipment Ltd., who in turn warrant to the original owner, that each new Bobcat attachment will be free from proven defects in material and workmanship for twelve (12) months after delivery by the authorized Bobcat dealer to the original buyer.

During the warranty period, the authorized Bobcat dealer shall repair or replace, at Bobcat Company's option, without charge for parts and labor, any part of the Bobcat product which fails because of defects in material or workmanship. The owner shall provide the authorized Bobcat dealer with prompt written notice of the defect and allow reasonable time for replacement or repair. Bobcat Company may, at its option, require failed parts to be returned to the factory. Travel time of mechanics and transportation of the Bobcat product to the authorized Bobcat dealer for warranty work are the responsibility of the owner. The remedies provided in this warranty are exclusive.

This warranty does not cover replacement of scheduled service items and high wear items. The owner shall rely solely on the warranty, if any, of the respective manufacturers thereof. This warranty does not cover damages resulting from abuse, accidents, alterations, use of the Bobcat product as an attachment on any equipment not approved by Bobcat Company, air flow obstructions, or failure to maintain or use the Bobcat product according to the instructions applicable to it.

THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES AND CONDITIONS, EXCEPT THE WARRANTY OF TITLE. BOBCAT COMPANY DISCLAIMS ALL OTHER WARRANTIES AND CONDITIONS, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL BOBCAT COMPANY OR THE AUTHORIZED BOBCAT DEALER BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT OR CONSEQUENTIAL DAMAGES, WHATSOEVER, INCLUDING, BUT NOT LIMITED TO, LOSS OR INTERRUPTION OF BUSINESS, LOST PROFITS, OR LOSS OF MACHINE USE, WHETHER BASED ON CONTRACT, WARRANTY, TORT, NEGLIGENCE, STRICT LIABILITY, STATUTE OR OTHERWISE, EVEN IF BOBCAT COMPANY OR THE AUTHORIZED BOBCAT DEALER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. THE TOTAL LIABILITY OF BOBCAT COMPANY AND THE AUTHORIZED BOBCAT DEALERS WITH RESPECT TO THE PRODUCT AND SERVICES FURNISHED HEREUNDER SHALL NOT EXCEED THE PURCHASE PRICE OF THE PRODUCT UPON WHICH SUCH LIABILITY IS BASED.



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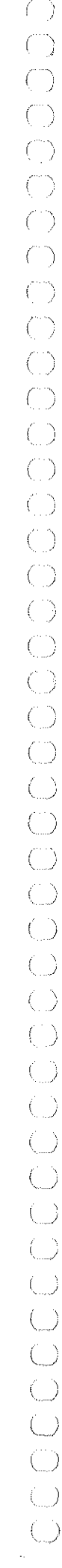
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