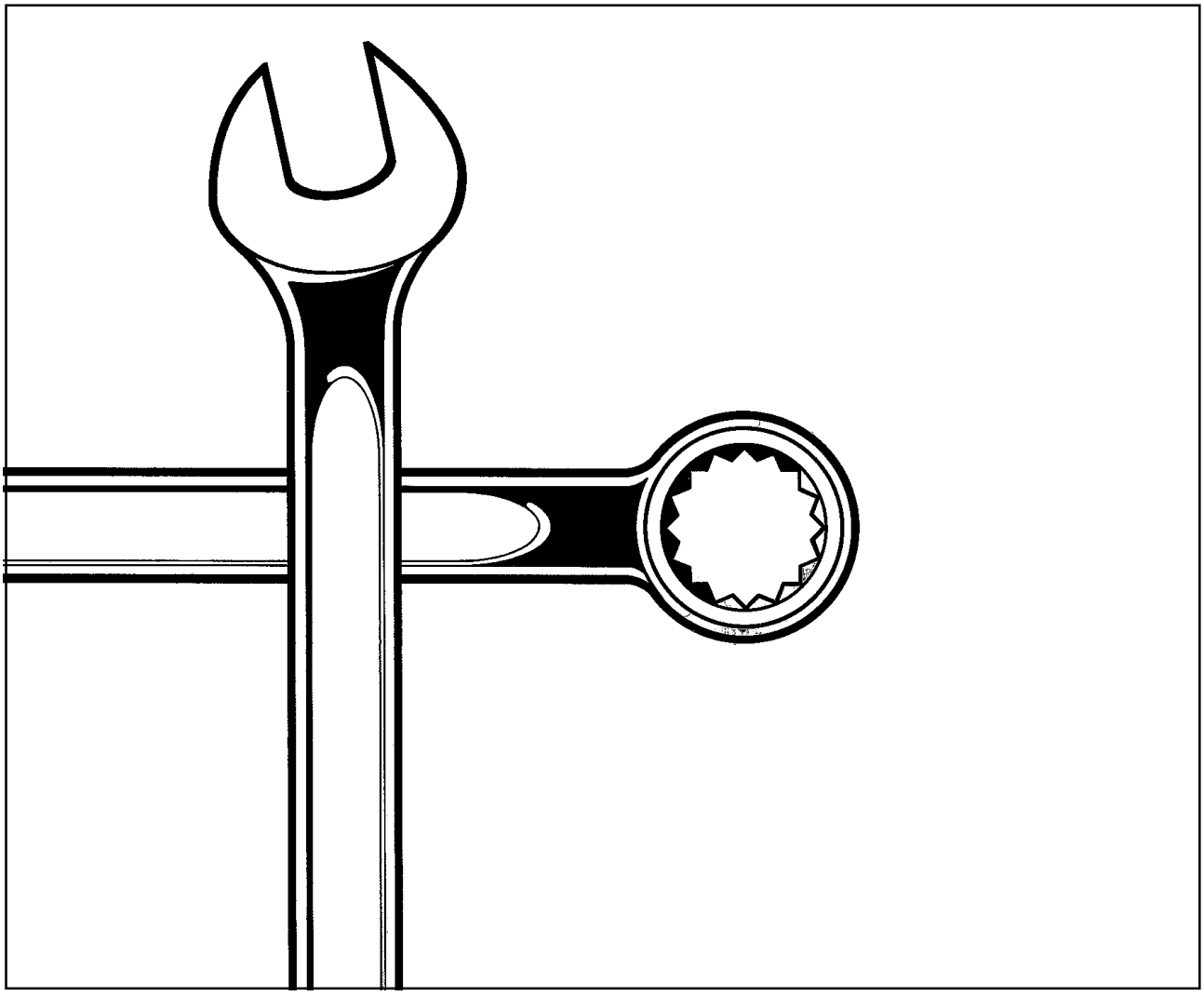
DYNAPAC CA250 WORKSHOP MANUAL ELECTRIC CIRCUIT DIAGRAM

W1070EN1



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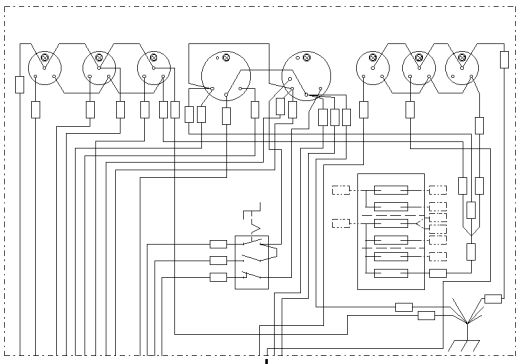
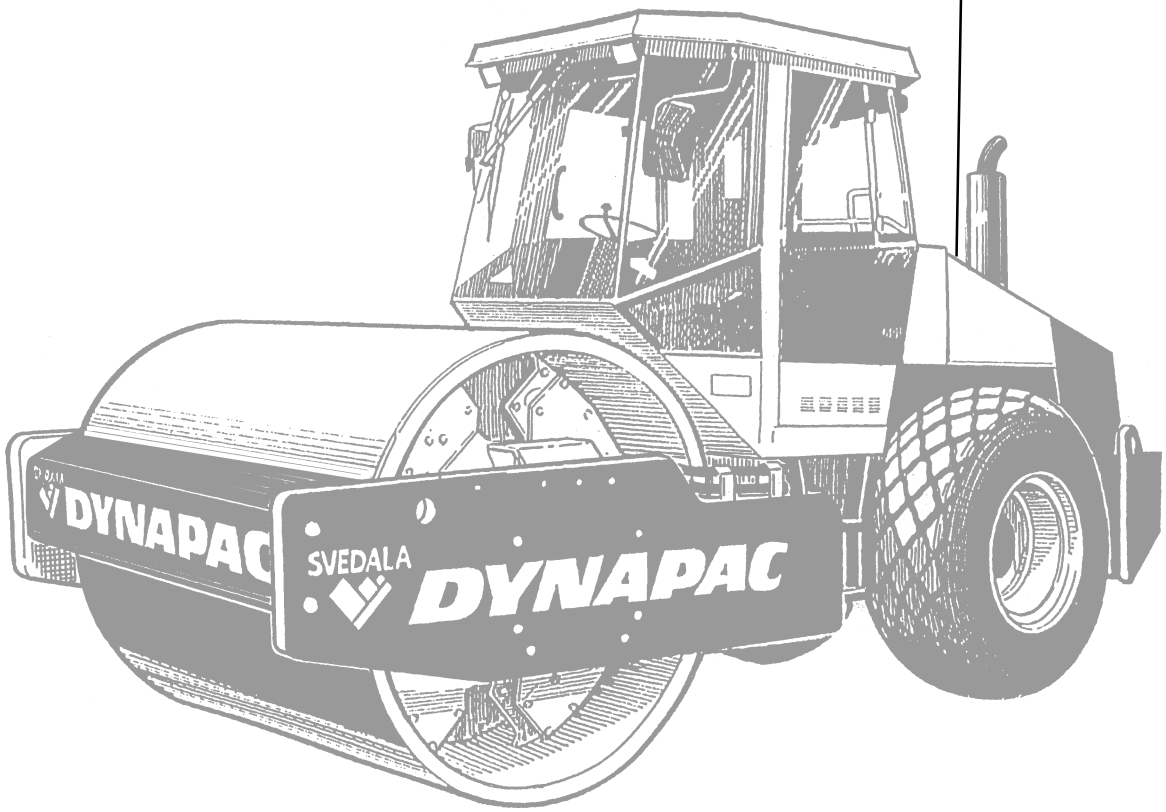
SVEDALA DYNAPAC

Workshop Instructions
CA250

Electric Circuit Diagrams
W1070EN1, January 2001





Reservation for alterations.
Printed in Sweden

CONTENTS

General advice

- Make yourself familiar with the equipment of the machine.
- Only operate the machine if your are completely familiar with the operating and control elements as well as the functioning of the machine.
- Use your safety equipment like helmet, safety shoes and hearing protection.
- Make yourself familiar with your working field.
- Only operate the machine for its intended purpose.

Please observe the guidelines of the machine manufacturer and safety manual.

Before starting

- Study and understand the operating instructions before starting.
- Check the machine for any serious faults.
- Do not operate the machine with defective instruments, warning lights or control elements.
- All safety devices must be in a secure position.
- Do not carry loose objects or secure them to the machine.
- Keep oily and inflammable material away from the machine.
- Before entering the driver's cab, check if persons or obstacles are in the way of or underneath the machine.
- Be careful when entering the driver's cab, use the steps.
- Adjust your seat before starting.

Start

- When starting, all operating levers must be in ”neutral position”.
- Only start the machine from the driver’s seat.
- Check the indicating instruments after start to ensure that all functions are in order.
- Do not leave the machine unattended when the engine is running.
- When starting with battery connection cables, connect plus to plus and minus to minus.
- Disconnect the earth (negative) first. Connect it last.

Warning

⚠ Exhaust fumes is dangerous. Ensure sufficient fresh air when starting in closed rooms!

Electrical and hydraulic equipment

1. Personal safety must be observed when batteries are handled or tested.
2. A fully equipped medical kit, including eye-wash facilities, should be available and protective clothing, including eye protection, should be worn.
3. ⚠ Acid splashes in the eye should be treated immediately with plenty of clean water and neutralized with sodium bicarbonate solution.
4. Acid splashes on clothing must be treated with an alkali, such as ammonia, if holes are to be avoided.
5. ⚠ A safety hazard exist during or after battery charging due to emission of a highly flammable hydrogen gas. Any testing involving production of sparks, e.g. electrical load test, must not be performed until the gas has dispersed from the cell. A similar hazard occurs when a battery is fitted on to a vehicle immediately after the battery has been removed from a charging plant.
6. ⚠ Hydraulic equipment is under high pressure.
   Fluids (fuel, hydraulic oil) which escape under high pressure can penetrate the skin and cause serious injury.
   Therefor immediately consult a doctor if such injury occurs.
7. ⚠ Notice that failure on the hydraulic or electrical system may give the roller an unpredictable and dangerous function.

Electrical circuit diagram for the CA250

The electrical diagram for the new CA rollers are made after a new standard in mobile electronics.
The electrical system are divided into 10 sections that are displayed horizontally on the drawings.
The identification of the cables, connectors and so on are shown in the drawing, for more information about the switches, relays etc. see the item designation list.
In the item designation list there are information regarding the function of the item and where it could bee found.

The benefits of this way of displaying an electrical system are that it´s easier to follow the cables and troubleshoot the system.

WIRING SYSTEM
Cable colours and number marking

1 Cable types and cable colours

For wiring systems in rollers cable types RKUB and RK shall be used.

The following cable colours are to be used:

- white - yellow
- red - blue
- violet - brown
- green - black for grounding (chassis)

2 Grouping of conductors

In order to establish a uniform identification of wiring systems within a limited extent of cable colours each circuit has to be associates with one of the following eight (8) groups using the feature or function of the component.

One cable colour has to be used for each group. Individual cables within each group are identified by a three (3)-digit code, where the first digit indicates the colour of the cable.

Group 1 LIGHTING

Cable colour: WHITE
Cable marking: 101-199

Group 1 includes all "white lighting":

- headlights, upper beam
- headlights, dipped beam
- work light
- auxiliary headlamps
- instruments, panel and gauge lighting
- cab lamp

Group 2 BATTERY

Cable colour: RED
Cable marking: 201-299

This group of circuits includes all live leads from battery and charging system to the live terminals of the various circuits when all switches are in "off" position with the exeption of the main switch and the battery master disconnect switch.

Group 3 ENGINE

Cable colour: VIOLET
Cable marking: 301-399

This group of circuits is concerned with the functioning of the engine including starter actuation, electrical ignition, engine run, engine stop and transmission.

Group 5 ACCESSORIES

Cable colour: GREEN
Cable marking: 501-599

Example:
- windshield wiper
- radio
- communication radio
- heater
- air conditioner

Group 6 COMMUNICATION

Cable colour: YELLOW
Cable marking: 601-699

Optical and acoustical warning devices.

Example:
- tail lamp
- stop lamp
- beacon
- side direction lamp
- horn
- back alarm
- buzzer

Group 7 CONTROL

Cable colour: BLUE
Cable marking: 701-799

This group of circuits is concerned with the control characteristics of the roller actuated by the operator.

Example:
- vibration control
- sprinkler system control
- timer

Group 8 MONITORING

Cable colour: BROWN
Cable marking: 801-899

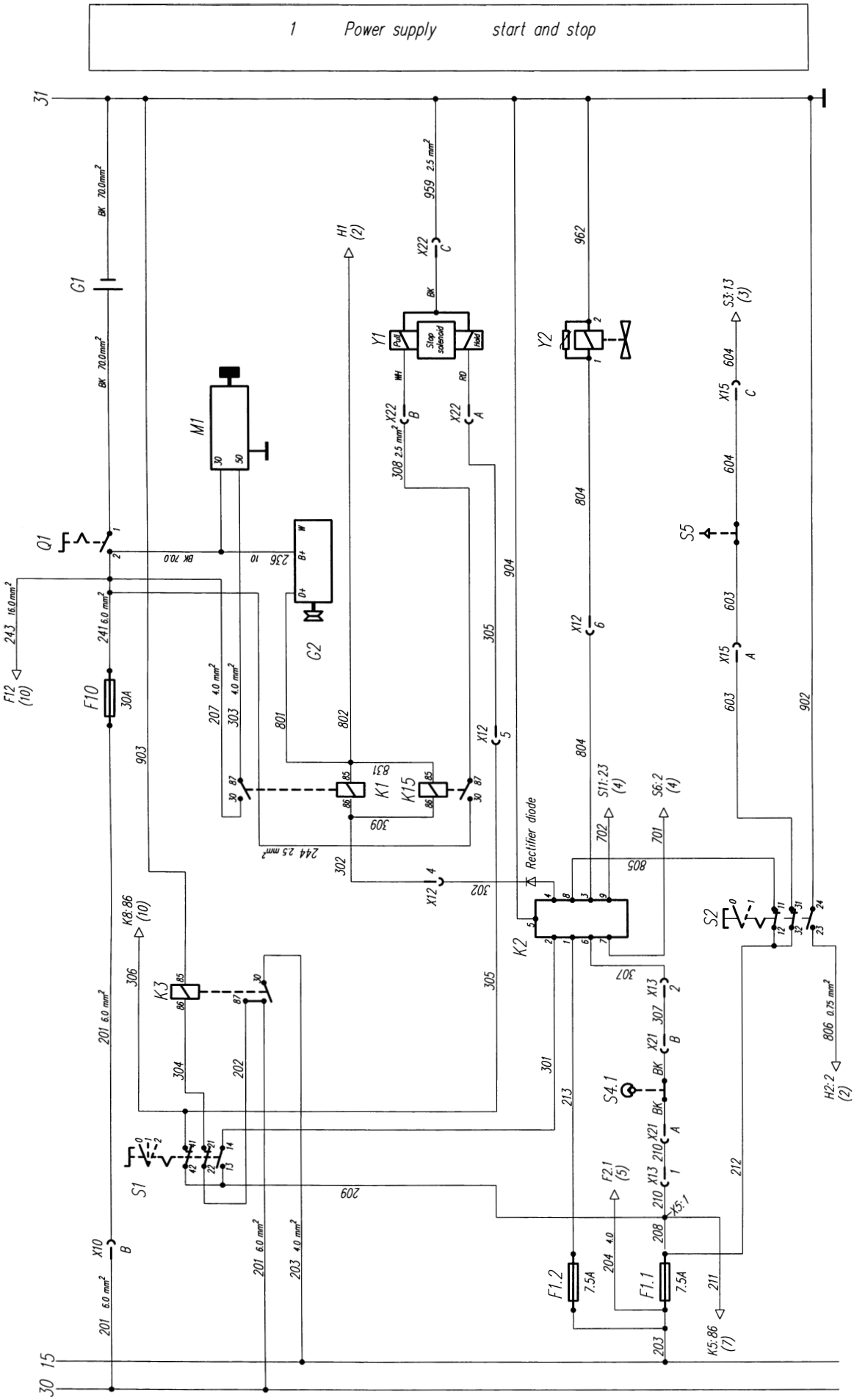
Group 8 includes all circuits indicating and warning the operator about temperature level, quality, pressure, position, etc.

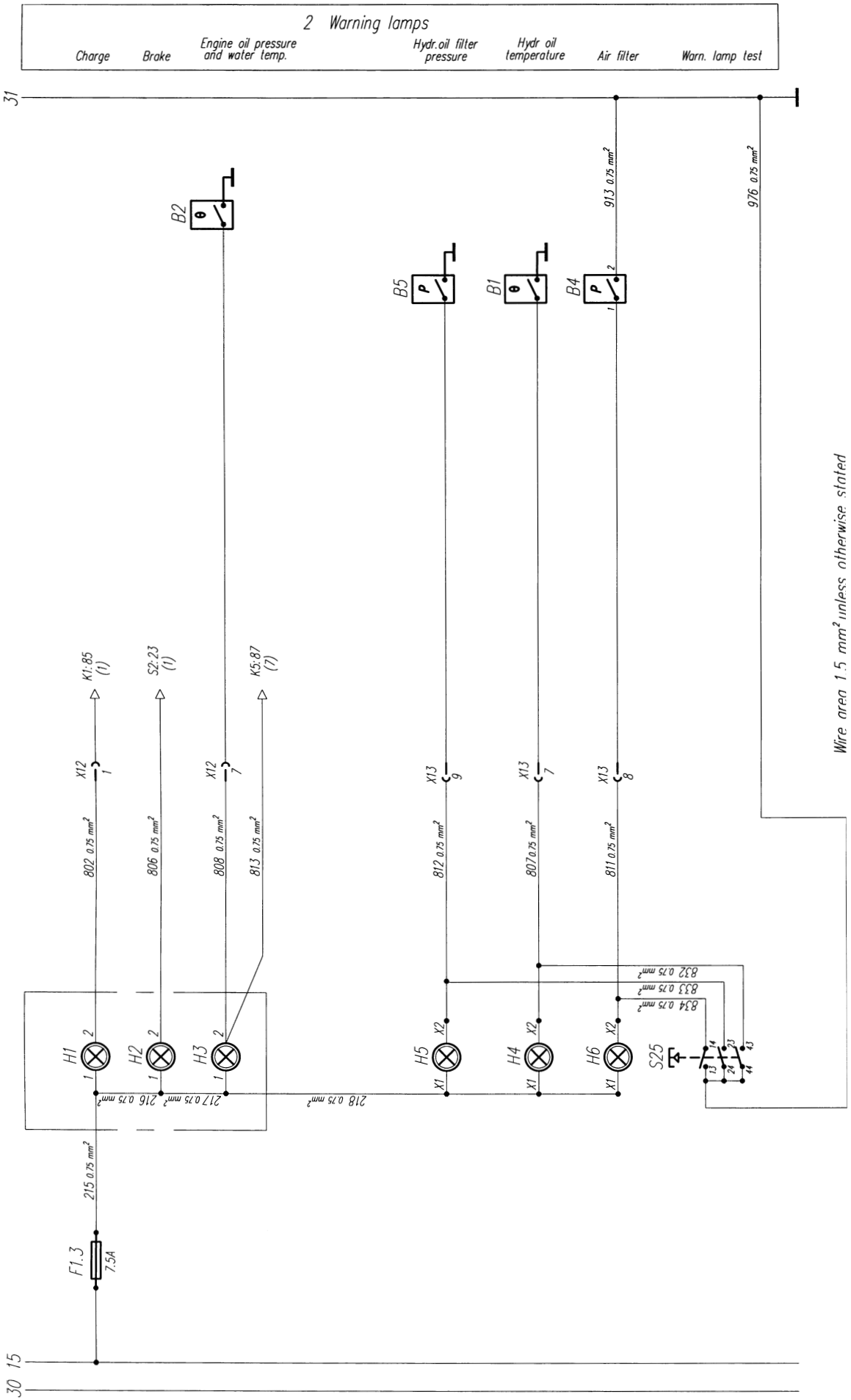
Example:
- oil pressure lamp
- charging lamp
- fuel level indicator
- oil temperature indicator
- fan belt indicator
- water level, sprinkler system indicator

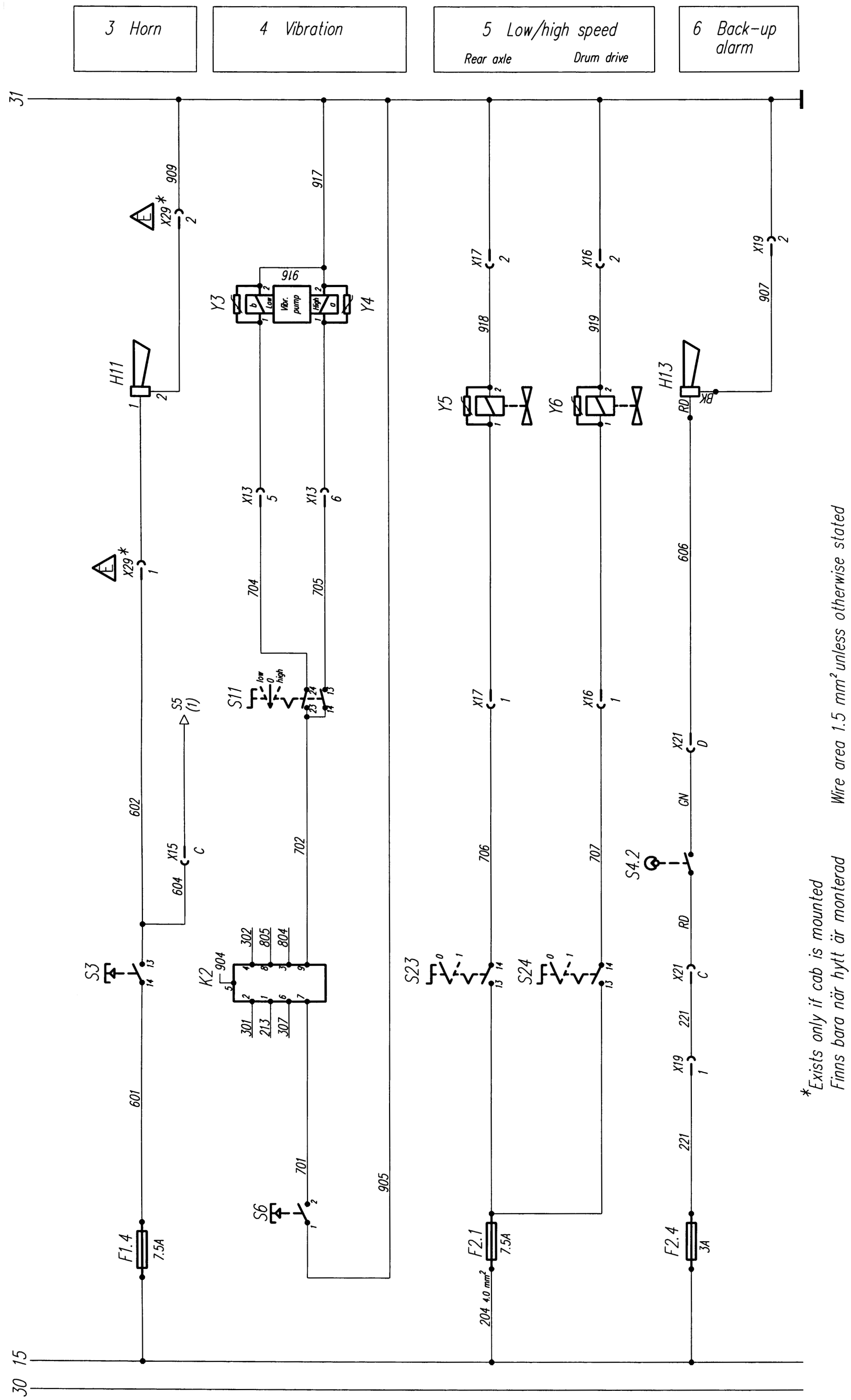
Group 9 CIRCUIT GROUNDING

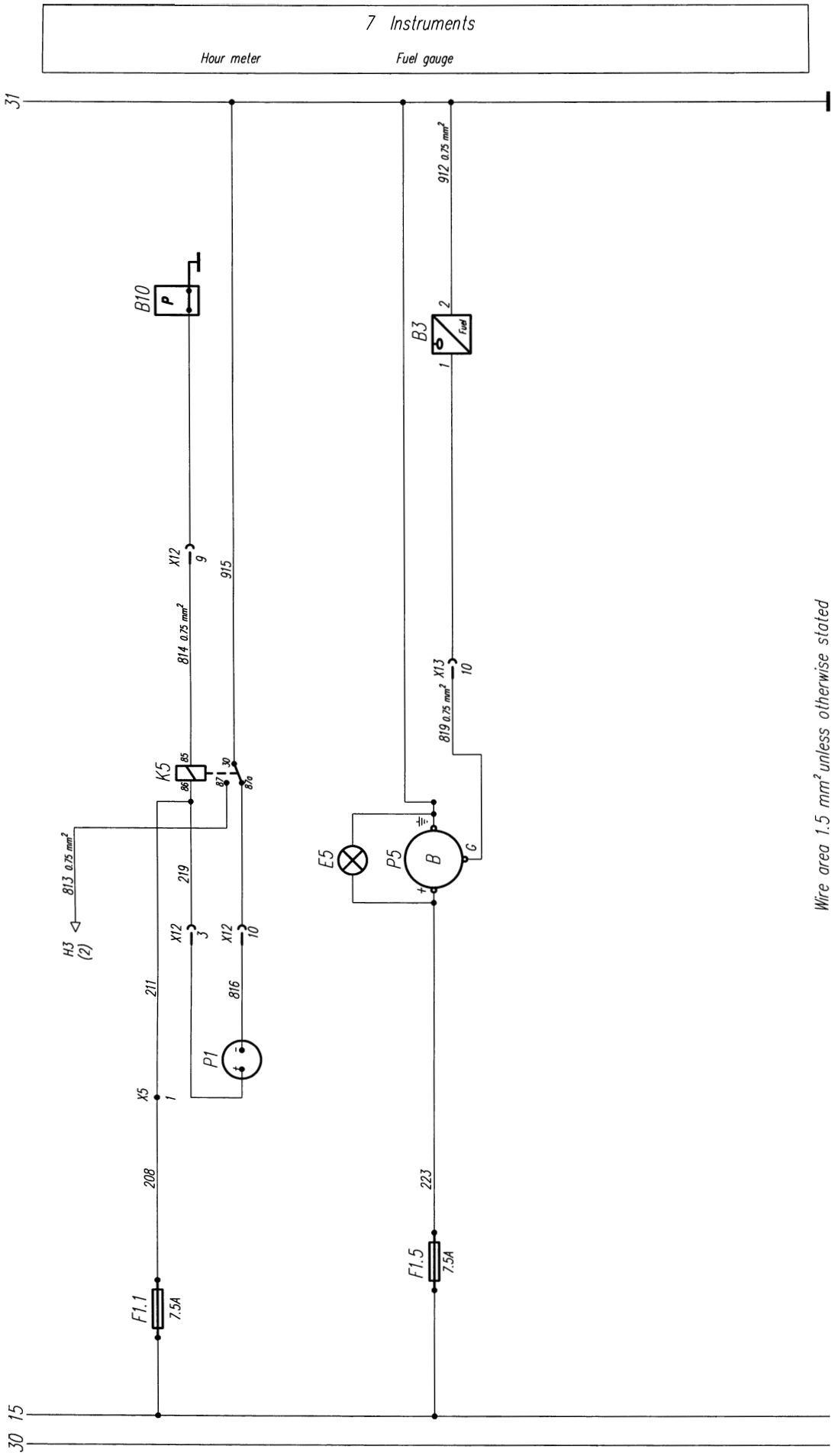
Cable colour: BLACK
Cable marking: 901-999

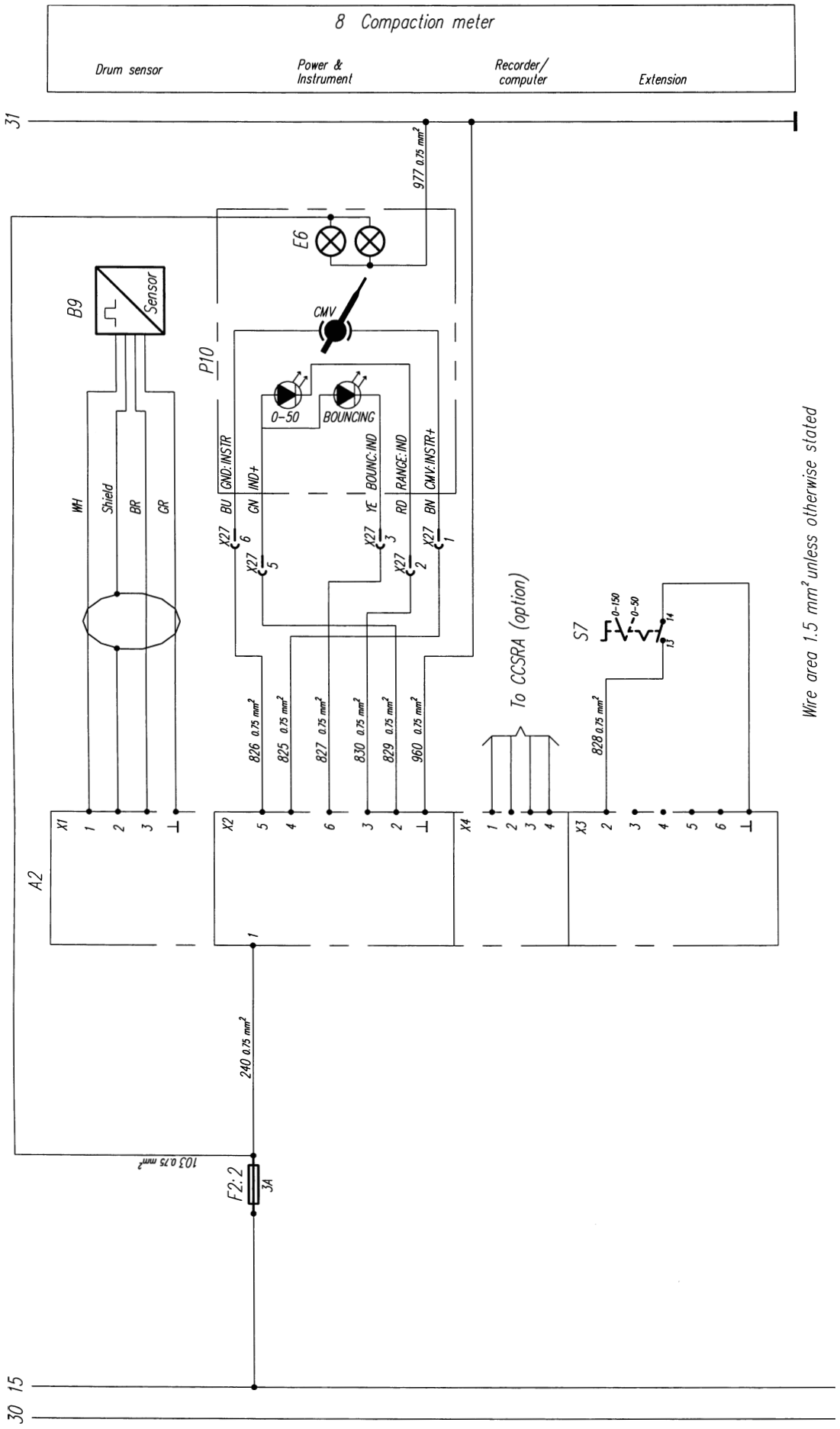
Negative (–) termination (chassis).

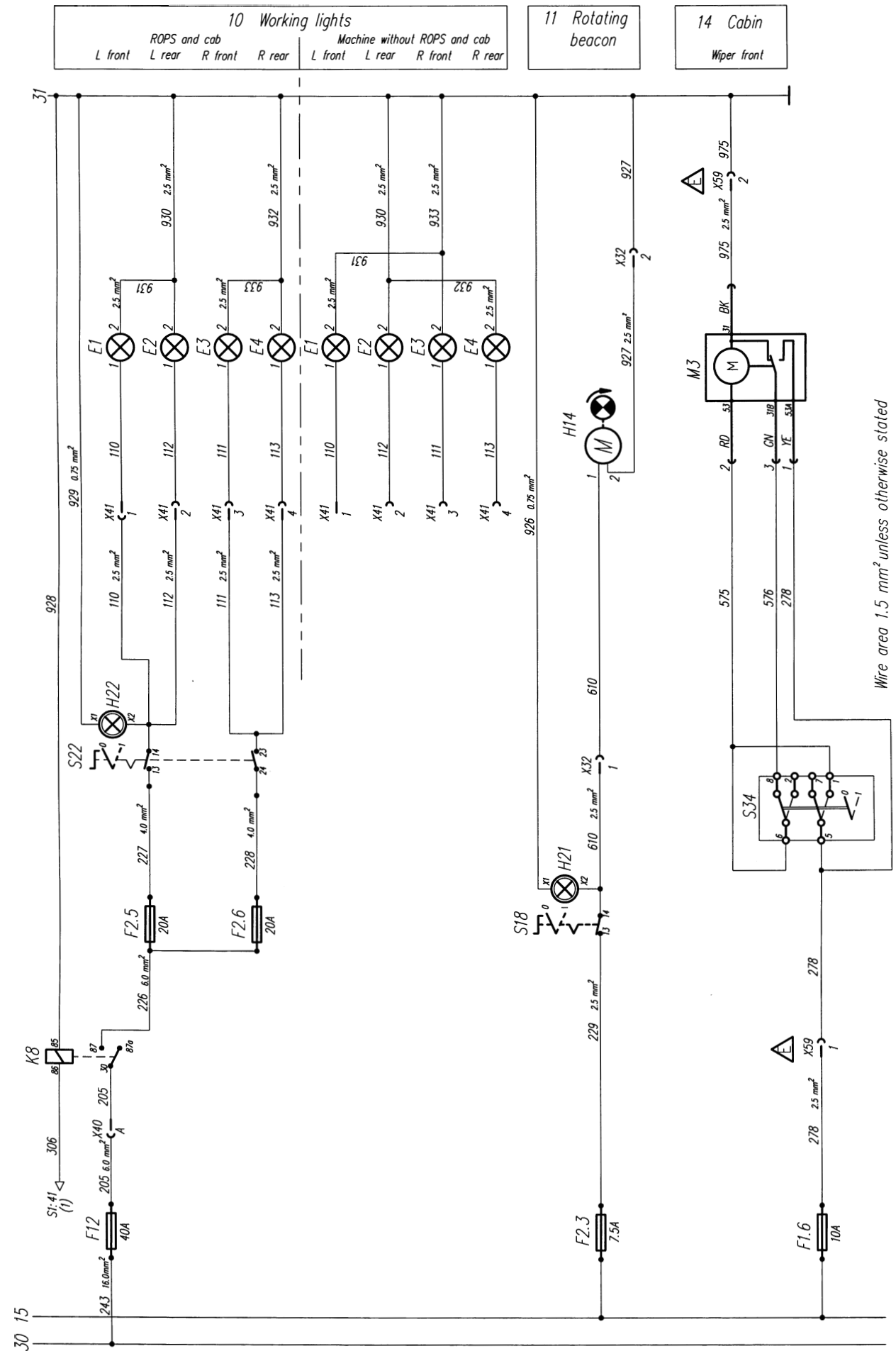

1 Power supply start and stop
Wire area 1.5 mm² unless otherwise stated
Rectifier diode
Stop solenoid
Pull
Hold
M1
G1
G2
Q1
F10
F12 (10)
F1.1
F1.2
F2.1 (5)
K1
K2
K3
K15
K5: 86 (7)
K8: 86 (10)
S1
S2
S4.1
S5
S6: 2 (4)
S11: 23 (4)
S3: 13 (3)
Y1
Y2
H1 (2)
H2: 2 (2)
X10
X12
X13
X15
X21
X22
Y5: 1
30
15
31


2 Warning lamps
Charge
Brake
Engine oil pressure and water temp.
Hydr.oil filter pressure
Hydr oil temperature
Air filter
Warn. lamp test
31
B2
B5
B1
B4
913 0.75 mm²
976 0.75 mm²
K1:85 (1)
S2:23 (1)
K5:87 (7)
X12
X13
802 0.75 mm²
806 0.75 mm²
808 0.75 mm²
813 0.75 mm²
812 0.75 mm²
807 0.75 mm²
811 0.75 mm²
832 0.75 mm²
833 0.75 mm²
834 0.75 mm²
H1
H2
H3
H5
H4
H6
S25
217 0.75 mm²
216 0.75 mm²
218 0.75 mm²
215 0.75 mm²
F1.3
7.5A
30
15
Wire area 1.5 mm² unless otherwise stated


3 Horn
4 Vibration
5 Low/high speed
Rear axle
Drum drive
6 Back-up alarm
31
15
30
H11
H13
Y3
Y4
Y5
Y6
S3
S6
S11
S23
S24
S4.2
K2
F1.4
7.5A
F2.1
7.5A
F2.4
3A
Wire area 1.5 mm² unless otherwise stated
*Exists only if cab is mounted
Finns bara när hytt är monterad


7 Instruments
Hour meter
Fuel gauge
31
912 0.75 mm²
B10
P
B3
2
Fuel
1
X12
9
915
814 0.75 mm²
X13
10
819 0.75 mm²
K5
85
87
30
86
87a
E5
P5
B
C
813 0.75 mm²
219
H3
(2)
X12
3
X12
10
211
816
P1
X5
1
208
223
F1.1
7.5A
F1.5
7.5A
15
30
Wire area 1.5 mm² unless otherwise stated


8 Compaction meter
Drum sensor
Power & Instrument
Recorder/ computer
Extension
31
977 0.75 mm²
E6
B9
Sensor
CMV
P10
0-50
BOUNCING
GND:INSTR
IND+
BOUNC:IND
RANGE:IND
CMV:INSTR+
BU
GN
YE
RD
BN
WH
Shield
BR
GR
X27
826 0.75 mm²
825 0.75 mm²
827 0.75 mm²
830 0.75 mm²
829 0.75 mm²
960 0.75 mm²
To CCSRA (option)
S7
0-150
0-50
828 0.75 mm²
A2
X1
X2
X3
X4
240 0.75 mm²
103 0.75 mm²
F2:2
3A
30 15
Wire area 1.5 mm² unless otherwise stated


10 Working lights
ROPS and cab
L front
L rear
R front
R rear
Machine without ROPS and cab
L front
L rear
R front
R rear
11 Rotating beacon
14 Cabin
Wiper front
31
30 15
E1
E2
E3
E4
H22
H21
H14
M3
S22
S18
S34
K8
F2.5
20A
F2.6
20A
F12
40A
F2.3
7.5A
F1.6
10A
Wire area 1.5 mm² unless otherwise stated

No.	Description	Section	Rated current	Note
A2	Compaction meter processor unit	8		Option
B1	Hydraulic oil temperature sensor	2		
B2	Engine temperature sensor	2		
B3	Fuel level sensor	7		
B4	Air filter sensor	2		
B5	Hydraulic oil pressure filter sensor	2		
B9	Compaction meter sensor	8		Option
B10	Engine oil pressure sensor	7		
E1	L front working light	10		Option
E2	L rear working light	10		Option
E3	R front working light	10		Option
E4	R rear working light	10		Option
E5	Instrument light, fuel gauge	7		
E6	Instrument light, compaction meter indicating instrument	8		Option
F1.1	Hour meter	1,7	7,5A	
F1.2	VBS relay	1	7,5A	
F1.3	Warning lamps	2	7,5A	
F1.4	Horn	3	7,5A	
F1.5	Fuel gauge	7	7,5A	
F1.6	Wiper motor, front	14	10A	Option
F2.1	High/Low speed	5	7,5A	Option
F2.2	Compaction meter	8	3A	Option
F2.3	Rotating beacon	11	7,5A	Option
F2.4	Back-up alarm	6	3A	Option
F2.5	Working light, left	10	20A	Option
F2.6	Working light, right	10	20A	Option
F10	Mainfuse, power supply	1	30A	
F12	Mainfuse, power supply lights	10	40A	Option

No.	Description	Section	Rated current	Note
G1	Battery	1		
G2	Alternator	1		
H1	Charge warning lamp	2		
H2	Brake indicator lamp	2		
H3	Engine oil press./temp. warning lamp	2		
H4	Hydraulic oil temperature warning lamp	2		
H5	Hydraulic oil filter warning lamp	2		
H6	Air filter warning lamp	2		
H11	Horn	3		
H13	Back-up alarm	6		Option
H14	Rotating beacon	11		Option
H21	Indicator lamp, rotating beacon	11		Option
H22	Indicator lamp, working lights	10		Option
K1	Starter relay	1		
K2	VBS relay	1,4		
K3	Main relay	1		
K5	Hour meter relay	7		
K8	Light relay	10		Option
K15	Fuel shut-off relay	1		
M1	Starter motor	1		
M3	Wiper motor, front	14		Option
P1	Hour meter	7		
P5	Fuel gauge	7		
P10	Comp. meter indicating instrument	8		Option

No.	Description	Section	Rated current	Note
Q1	Battery switch	1		Option
R1	Resistor 1.5 kΩ	7		
R2	Resistor 470 Ω	9		
S1	Ignition switch	1		
S2	Emergency stop switch	1		
S3	Horn button	3		
S4.1	Neutral start switch	1		
S4.2	Back-up alarm switch	6		Option
S5	Seat switch	1		Option
S6	Vibration on/off switch	4		
S7	CMV range selector switch	8		Option
S11	Vibration low/off/high switch	4		
S18	Rotating beacon switch	11		Option
S22	Working light switch	10		Option
S23	Low/high speed switch, rear axle	5		Option
S24	Low/high speed switch, drum drive	5		Option
S25	Warning lamp test button	2		
S34	Wiper switch front	14		Option
X5	Connecting block, control panel	1,7		
X10	2-ways MTA, Power supply	1		
X12	10-ways Cannon Control panel-engine	1,2,7		
X13	10-ways Cannon Control panel-engine	1,2,4,7		
X15	3-ways Deutch Seat switch	1,3		Option
X16	2-ways Cannon Low/high speed drum	5		Option
X17	2-ways Cannon Low/high speed axle	5		Option
X19	2-ways Cannon Back-up alarm	6		Option
X21	4-ways Packard Neutral start switch	1,6		
X22	3-ways Packard Fuel shut-off	1		
X27	6-ways AMP Compaction meter	8		Option
⚠E X29	2-ways Cannon Horn on cab	3		Option
X32	2-ways Cannon Rotating beacon	11		Option
X40	2-ways Cannon Working light	10		Option
X41	5-ways Cannon Working light	10		Option
⚠E X59	2-ways Cannon Front wiper cab	14		Option
Y1	Engine stop solenoid valve	1		
Y2	Brake valve	1		
Y3	Vibration low valve	4		
Y4	Vibration high valve	4		
Y5	Low/high speed valve, rear axle	5		Option
Y6	Low/high speed valve, drum drive	5		Option

Section Divisioning of function

1	Power supply start & stop
2	Warning lamps
3	Horn
4	Vibration control
5	Low/High speed
6	Back-up alarm
7	Instruments
8	Compaction meter
10	Working lights
11	Rotating beacon
14	Cabin

Coulor code abbreviation and number marking

Abbrev.	Colour	Number marking
WH	White	101-199
RD	Red	201-299
VT	Violet	301-399
GN	Green	501-599
YE	Yellow	601-699
BU	Blue	701-799
BN	Brown	801-899
BK	Black	901-999
GY	Grey	-

Wiring identification

ex: 210 1.5 (RD)
210 Wire No.
1.5 Section (mm²)
(RD) Colour

Wire No.		Connection A			Connection B		
		Item No.	Connection	Section	Item No.	Connection	Section
103	0.75	F2.2	B	8	E6	:	8
110	2.5	S22	14	10	E1	1	10
111	2.5	S22	23	10	E3	1	10
112	2.5	S22	14	10	E2	1	10
113	2.5	S22	23	10	E4	1	10
201	6.0	F10	:	1	K3	87	1
202	1.5	K3	87	1	S1	22	1
203	4.0	K3	30	1	F1.1	1	1
204	4.0	F1.1	1	1	F2.1	1	7
205	6.0	F12	:	10	K8	30	10
207	4.0	Q1	2	1	K1	30	1
208	1.5	F1.1	A	1	X5	1	1
209	1.5	X5	1	1	S1	13	1
210	1.5	X5	1	1	S4.1	X21:A(BK)	1
211	1.5	X5	1	1	K5	86	7
212	1.5	F1.1	A	1	S2	12	1
213	1.5	F1.2	B	1	K2	1	1
215	0.75	F1.3	C	2	H1	1	2
216	0.75	H1	1	2	H2	1	2
217	0.75	H2	1	2	H3	1	2
218	0.75	H3	1	2	H5	X1	2
219	1.5	K5	86	7	P1	(+)	7
221	1.5	F2.4	D	6	S4.2	X21:C(RD)	6
223	1.5	F1.5	E	7	P5	(+)	7
226	6.0	K8	87	10	F2.5	5	10
227	4.0	F2.5	E	10	S22	13	10
228	4.0	F2.6	F	10	S22	24	10
229	2.5	F2.3	C	11	S18	13	11
236	10.0	G2	B+	1	M1	30	1
240	0.75	F2.2	B	8	A2	1	8
241	6.0	Q1	2	1	F10	:	1
243	16.0	Q1	2	1	F12	:	10
244	2.5	Q1	2	1	K15	30	1
278	2.5	F1.6	F	14	S34	5	14
278	1.5	S34	5	14	M3	53A	14

Wire No.		Connection A			Connection B		
		Item No.	Connection	Section	Item No.	Connection	Section
301	1.5	S1	14	1	K2	2	1
302	1.5	K2	4	1	K1	86	1
303	4.0	K1	87	1	M1	50	1
304	1.5	S1	21	1	K3	86	1
305	1.5	S1	41	1	Y1	X22:A(RD)	1
306	1.5	S1	41	1	K8	86	10
307	1.5	S4.1	X21:B(BK)	1	K2	6	1
308	2.5	K15	87	1	Y1	X22:B	1
309	1.5	K1	86	1	K15	86	1
575	1.5	S34	6	14	M3	53	14
576	1.5	S34	8	14	M3	31B	14
601	1.5	F1.4	D	3	S3	14	3
602	1.5	S3	13	3	H11	1	3
603	1.5	S2	31	1	S5	:	1
604	1.5	S5	:	1	S3	13	3
606	1.5	S4.2	X21:D(GN)	6	H13	(RD)	6
610	2.5	S18	14	11	H14	1	11
701	1.5	S6	2	4	K2	7	4
702	1.5	K2	9	4	S11	23	4
704	1.5	S11	24	4	Y3	1	4
705	1.5	S11	13	4	Y4	1	4
706	1.5	S23	14	5	Y5	1	5
707	1.5	S24	14	5	Y6	1	5

Wire No.		Connection A			Connection B		
		Item No.	Connection	Section	Item No.	Connection	Section
801	1.5	G2	D+	1	K1	85	1
802	0.75	K1	85	1	H1	2	2
804	1.5	K2	3	1	Y2	1	1
805	1.5	S2	11	1	K2	8	1
806	0.75	S2	23	1	H2	2	2
807	0.75	H4	X2	2	B1	:	2
808	0.75	H3	1	2	B2	:	2
811	0.75	H6	X2	2	B4	1	2
812	0.75	H5	X2	2	B5	:	2
813	0.75	H3	1	2	K5	87	2
814	0.75	K5	85	7	B10	:	7
816	1.5	P1	(-)	7	K5	87a	7
819	0.75	P5	G	7	B3	1	7
825	0.75	A2.X2	4	8	P10	1	8
826	0.75	A2.X2	5	8	P10	6	8
827	0.75	A2.X2	6	8	P10	3	8
828	0.75	A2.X3	2	8	A2.X3	(-)	8
829	0.75	A2.X2	2	8	P10	5	8
830	0.75	A2.X2	3	8	P10	2	8
831	1.5	K1	85	1	K15	85	1
832	0.75	H4	X2	2	S25	23	2
833	0.75	H5	X2	2	S25	43	2
834	0.75	H6	X2	2	S25	14	2

* Valid for machine without Rops and cab/
Gäller för maskin utan Rops och hytt.

Wire No.		Connection A			Connection B		
		Item No.	Connection	Section	Item No.	Connection	Section
901	6.0	X1	:	1	X3	:	1
902	1.5	S2	24	1	X2	31	1
903	1.5	K3	85	1	X2	31	1
904	1.5	K2	5	1	X2	31	1
905	1.5	S6	1	4	X2	31	4
907	1.5	H13	(BK)	6	X1	31	6
909	1.5	H11	5	3	X1	31	3
912	0.75	B3	YE	7	X2	31	7
913	0.75	B4	2	2	X4	31	2
915	1.5	K5	30	7	X2	31	7
916	1.5	Y4	2	4	Y3	2	4
917	1.5	Y4	2	4	X4	31	4
918	1.5	Y5	2	5	X1	31	5
919	1.5	Y6	2	5	X2	31	5
926	0.75	H21	X1	11	X2	31	11
927	2.5	H14	2	11	X2	31	11
928	1.5	K8	85	10	X1	31	10
929	0.75	H22	X1	10	X1	31	10
930	2.5	E2	2	10	X4	31	10
930*	2.5	E2	2	10	X4	31	10
931	2.5	E1	2	10	E2	2	10
931*	2.5	E1	2	10	E3	2	10
932	2.5	E4	2	10	X4	31	10
932*	2.5	E4	2	10	E2	2	10
933	2.5	E3	2	10	E4	2	10
933*	2.5	E3	2	10	X4	31	10
959	2.5	Y1	X22:C(BK)	1	X4	31	1
960	0.75	A2.X2	(-)	8	X1	31	8
962	1.5	Y2	2	1	X3	31	1
975	2.5	M3	31	14	X1	31	14
976	0.75	S25	13	2	X1	31	2
977	0.75	E6	:	8	X1	31	8