

Form No.  
**918114**  
Revision A

# 280

# All-Wheel-Steer

# Loader



# SERVICE MANUAL

**GEHL**<sup>®</sup>

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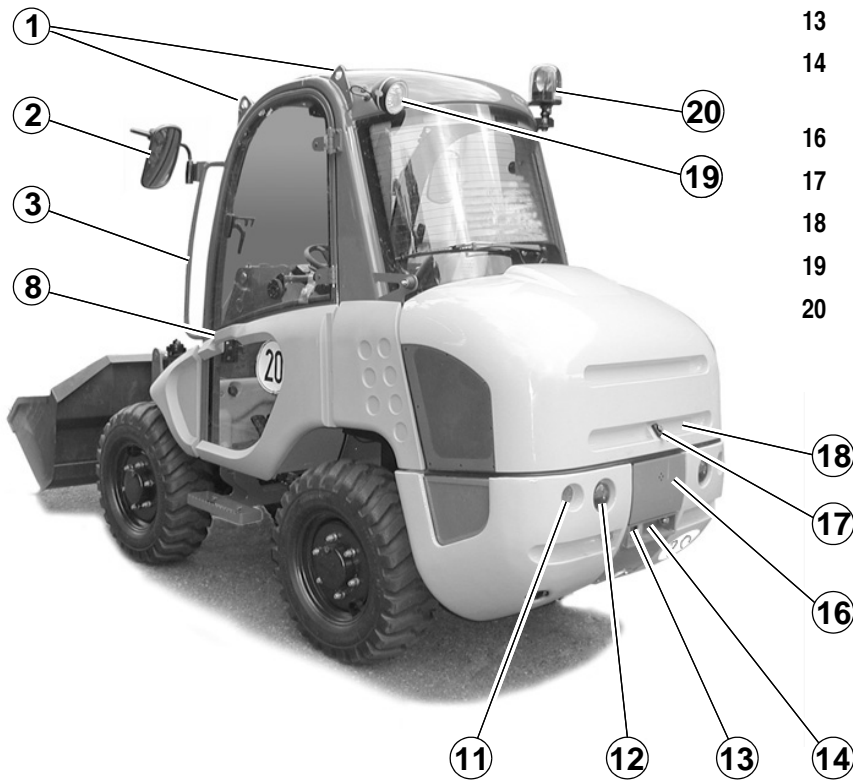
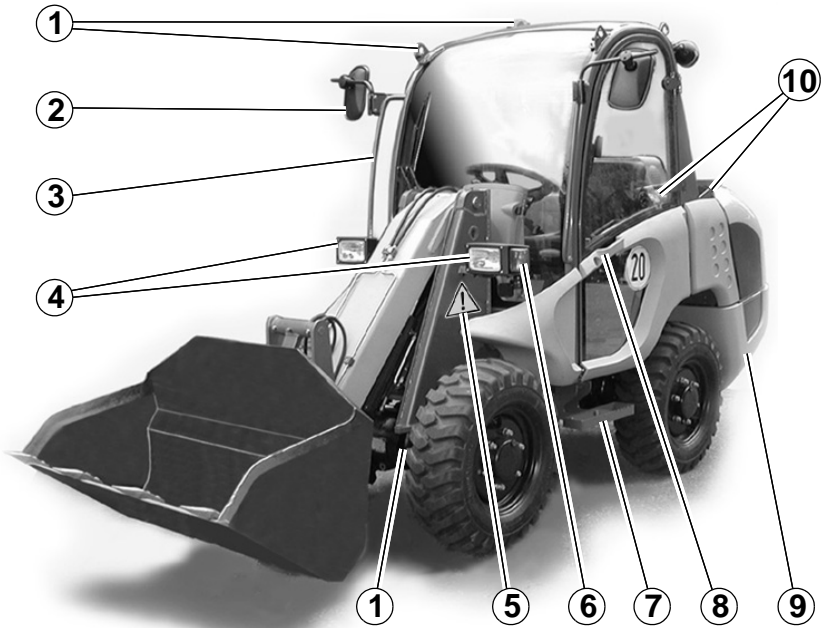


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## TD.2 Machine overview

- 1 Eye hook for loading or tying down the machine
- 2 Rearview mirror
- 3 Handle
- 4 Headlights
- 5 Warning decal
- 6 Turn indicator
- 7 Foothold
- 8 Door handle and lock
- 9 Speed decal
- 10 Door arrester



- 11 Reflectors
- 12 Turn indicator/brake/rear light
- 13 Socket for oil preheater (option)
- 14 Towing device/eye hook for loading/tying down the machine
- 16 Hydraulic ports (option)
- 17 Engine cover lock
- 18 Decal (Do not open engine cover)
- 19 Working light
- 20 Rotating beacon (option)

Fig. 9: Machine outside views

## TD.5.11 Electrical system

### Electrical system

Alternator	12 V, 55 A
Starter	12 V, 1.4 kW
Battery	12 V, 72 Ah
Socket (e.g., cigarette lighter)	15 A max.

## TD.5.12 Fuse box in control lever base

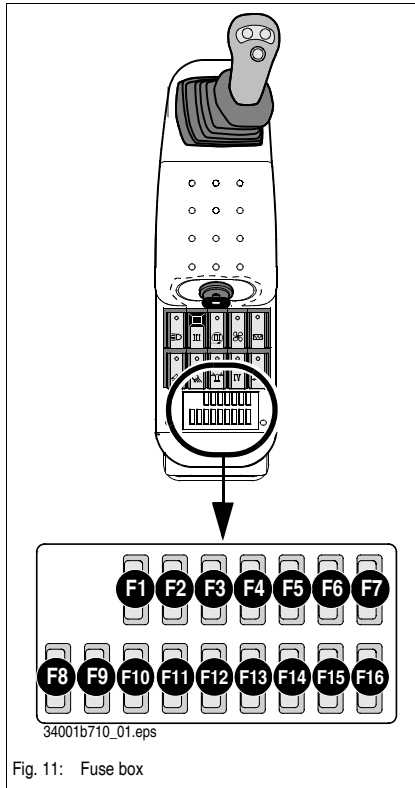


Fig. 11: Fuse box

Fuse no.	Rated current (A)	Protected circuit
F1	7.5 A	– High beam (left)
F2	7.5 A	– High beam (right)
F3	5 A	– Parking light (left)
F4	5 A	– Parking light (right)
F5	10 A	– Start
F6	25 A	– Additional lights
F7	25 A	– Lights
F8	7.5 A	– Low beam (left)
F9	7.5 A	– Low beam (right)
F10	5 A	– Relays, indicators, cutoff solenoid
F11	15 A	– Wiper
F12	15 A	– Valves
F13	7.5 A	– Maneuvering
F14	30 A	– Fan, rear window heating
F15	7.5 A	– Turn indicator
F16	5 A	– Radio

## TD.5.13 Main fuse box with relays in the engine compartment

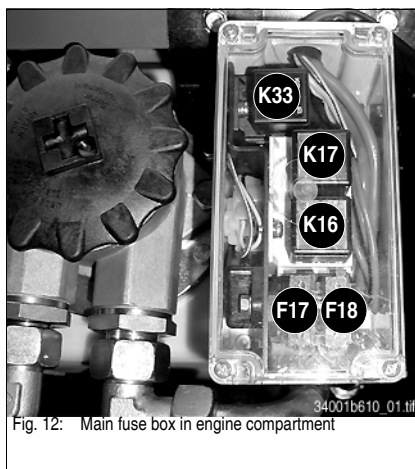


Fig. 12: Main fuse box in engine compartment

Fuse no.	Rated current (A)	Protected circuit
F17	80 A	– Main fuse
F18	40 A	– Preheating/start fuse (starter)

Relay no.	Protected circuit
K 16	– Preheating
K 17	– Start
K 33	– Cutoff solenoid

## 00.3 Maintenance schedule (overview)

### Work description

For service and maintenance work on the attachment, please refer to the Operator's and Maintenance Manual of the attachment manufacturer as well.

### Maintenance schedule/service hours

Maintenance work (daily)	Delivery inspection	every 50 service hours (weekly) "A"	1st Inspection <sup>a</sup> at 100 hours	every 500 service hours <sup>b</sup> 2nd Inspection "B"	every 1500 service hours (Yearly) "C"
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Check screws and nuts or screw connections for tightness on the following assemblies/components. Tighten if necessary

- see section 00.18.2, "Screw connections" on page 00-37

• Engine and engine bearing			●	●	●
• Steering system			●	●	●
• Hydraulic system			●	●	●
• Loader unit (pin locking)			●	●	●
• Axle mounting, axle suspension			●	●	●
• Counterweight (attachment)			●	●	●
• Fastening screws of propshafts			●	●	●
• Fastening screws of cab			●	●	●
• Wheel nuts	●		●	●	●
Electrical system: Wire and ground connections, chafe marks on wiring harness, battery terminals	●		●	●	●

### Lubrication service ( ):<sup>i</sup>

Lubricate the following assemblies/components:

• Rear axle oscillation-type bearing		●	●	●	●	●
• Front and rear axle planetary drive bearings, left and right		●	●	●	●	●
• Loader unit						
• Lift frame bearing		●	●	●	●	●
• Tilt rod bearing		●	●	●	●	●
• Tilt lever bearing		●	●	●	●	●
• Lift cylinder bearing		●	●	●	●	●
• Tilt cylinder bearing		●	●	●	●	●
• Quickhitch facility: Bearing on lift frame		●	●	●	●	●
• Hinges, joints and fittings (e.g., door arrester)			●	●	●	●

## 00.10 Checking/filling up the coolant level



### IMPORTANT!

Check the coolant level every 10 service hours or daily.  
We recommend checking it before starting the engine.

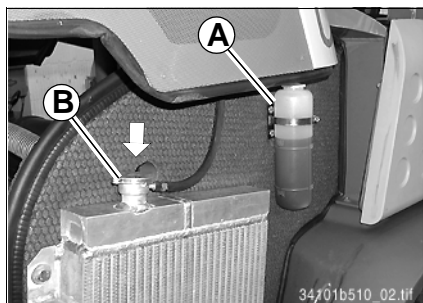


Fig. 12: Expansion tank for coolant

### Checking the coolant level

☞ *Proceed as follows:*

- Park the machine on level ground
- Turn off the engine!
- Apply the parking brake
- Open the engine cover
- Check the coolant level in the transparent expansion tank **A**
  - ☞ If the coolant level is below the **LOW** mark of the expansion tank:
- Fill up the coolant level

### Filling up the coolant level



### WARNING!

The cooling system is under high pressure – never open the coolant tank and never drain coolant if the engine is warm, because of

### Risk of burns!

- ☞ *Wait at least 10 minutes after turning off the engine!*
- ☞ *Wear protective gloves and clothing*
- ☞ *Open filler cap **B** to the first notch and allow pressure to escape*

After the engine has cooled down:

- ☞ *Reduce the pressure in the radiator. To do this:*  
*Press filler cap **B** down*
- ☞ *Open the cap to the first notch and allow the pressure to escape*
- ☞ *Open filler cap **B***
- ☞ *Add coolant to the lower edge of the radiator*
- ☞ *Close filler cap **B***
- ☞ *Start the engine and let it warm up for about 5 – 10 minutes*
- ☞ *Turn off the engine and check the coolant level again*
  - ☞ The coolant level must be between the **LOW and FULL** marks of the tank
- ☞ *If necessary, add coolant and repeat the procedure until the coolant level remains constant*

## 00.14 Gearboxes and axles

Maintenance of these components is limited to checking the oil levels and changing the oil at prescribed intervals – see maintenance schedules on pages 00-4 through 00-6. See Section 00.1, “Fluids and lubricants” for authorized oil types.



### IMPORTANT!

Only use new sealing rings for oil filler and drain plugs. Drain oil only after running the machine for a longer period of time!

### 00.14.1 Rear axle transfer gearbox

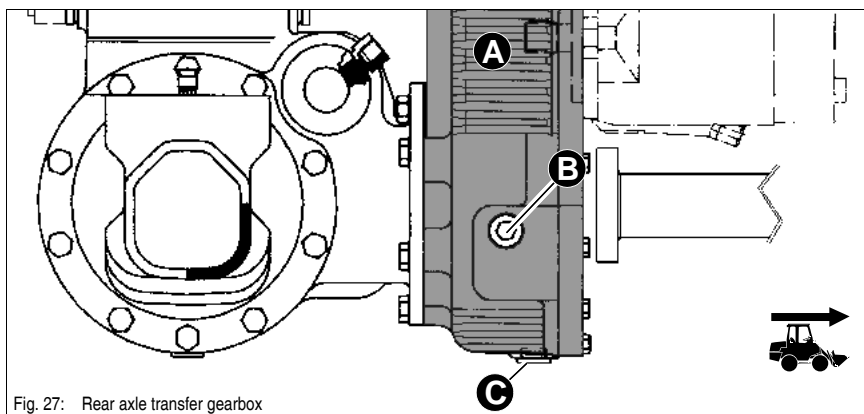


Fig. 27: Rear axle transfer gearbox

#### Checking the oil level

☞ *Proceed as follows:*

- Park the machine on level ground when the gearbox is at operating temperature
- Clean and unscrew plug **B** on transfer gearbox **A**

If the oil level is below the opening or if the oil level cannot be seen at all, add oil

If the oil level is correct:

- Tighten plug **B** with a new sealing ring to make an oil-tight seal

#### Filling up the oil level

☞ *Proceed as follows:*

- Park the machine on level ground when the gearbox is at operating temperature
- Clean and unscrew plug **B** on transfer gearbox **A**
- Fill in oil until it runs out of the filler opening

If the oil level in the gearbox remains constant:

- Tighten plug **B** with a new sealing ring to make an oil-tight seal

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## 00.18 General maintenance work

### 00.18.1 Cleaning

Cleaning the machine is divided into three separate areas:

- Inside the cab
- Exterior of the machine
- Engine compartment

The wrong choice of cleaning equipment and agents may impair the operating safety of the machine on the one hand, and on the other undermine the health of the persons in charge of cleaning the machine. It is therefore essential to follow these instructions.

#### General instructions for all areas of the machine

##### When using washing solvents

- Ensure adequate room ventilation
- Wear suitable protective clothing
- Do not use flammable liquids, such as petrol or diesel

##### When using compressed air

- Work carefully
- Wear goggles and protective clothing
- Do not aim the compressed air at the skin or other people
- Do not use compressed air for cleaning your clothing

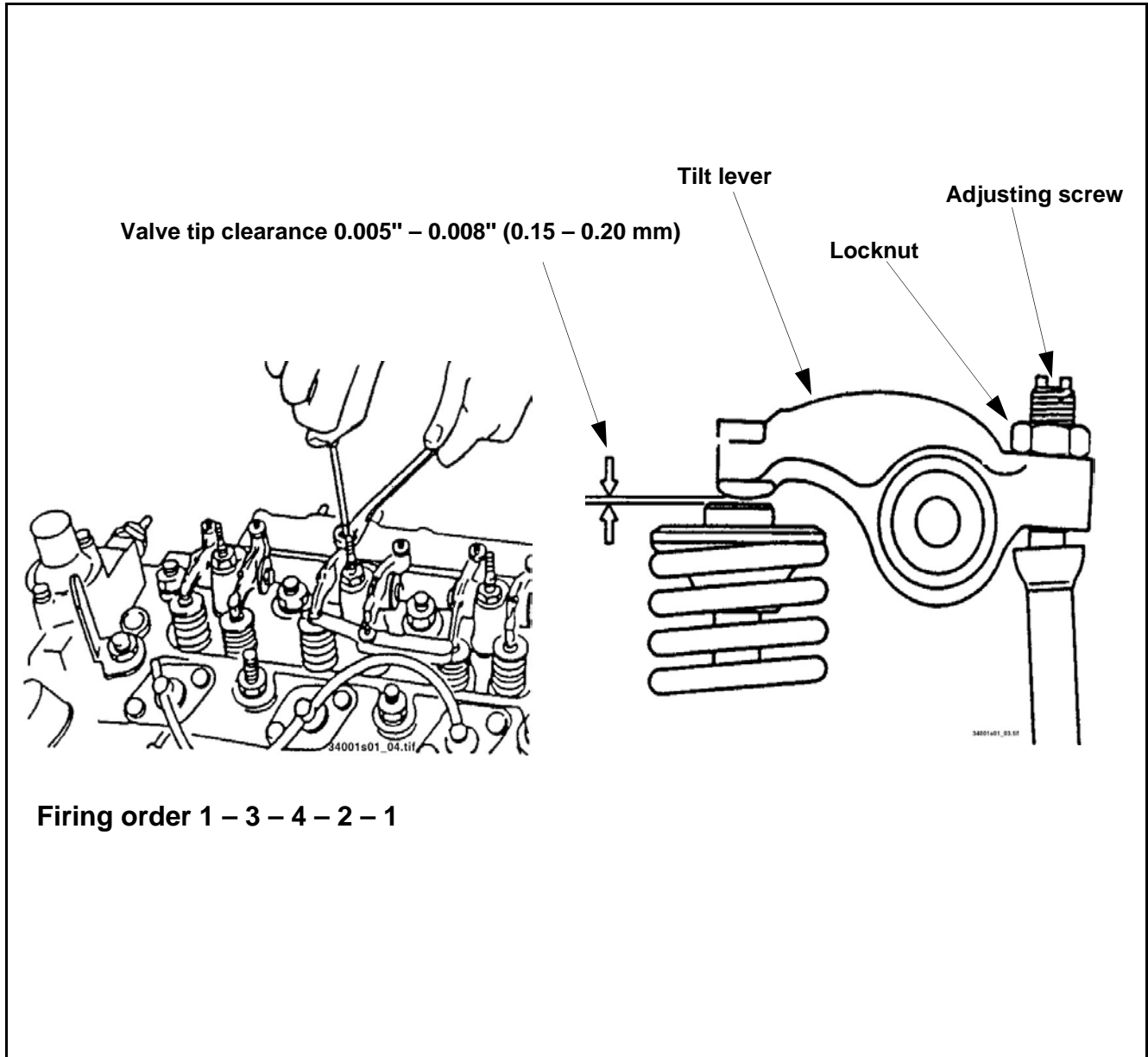
##### When using a high-pressure cleaner or steam jet

- Electrical components and damping materials should be covered and not directly exposed to the jet
- Cover the vent filter on the hydraulic oil tank and the filler caps for fuel, hydraulic oil, etc.
- Protect the following components from moisture:
  - Engine
  - Electrical components such as the alternator, etc.
  - Control devices and seals
  - Air intake filters etc.

##### When using volatile and easily flammable anticorrosion agents and sprays:

- Ensure adequate room ventilation
- Do not use unprotected lights or open flames
- Do not smoke!

### 01.6 Fuel valve tip clearance



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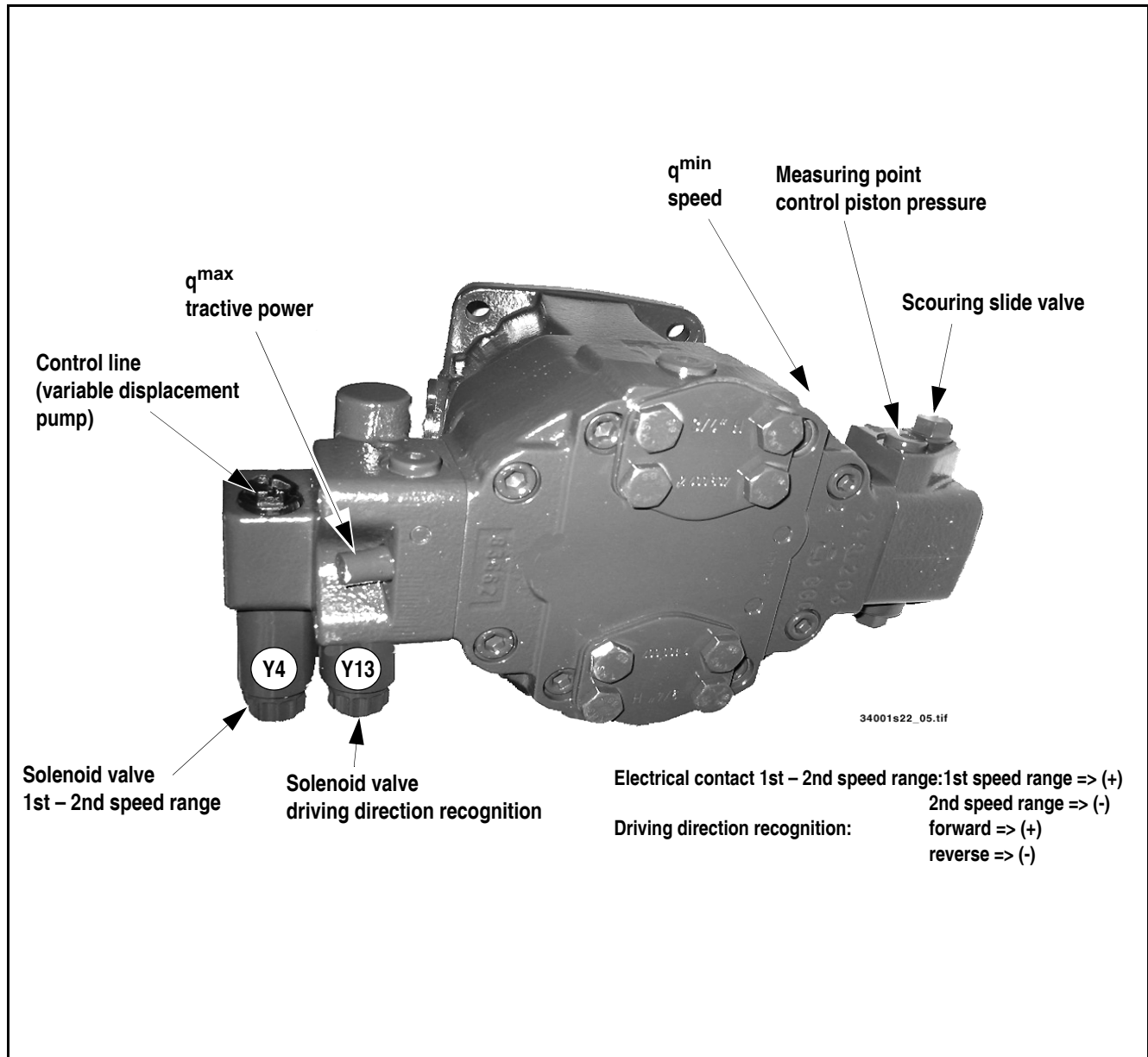
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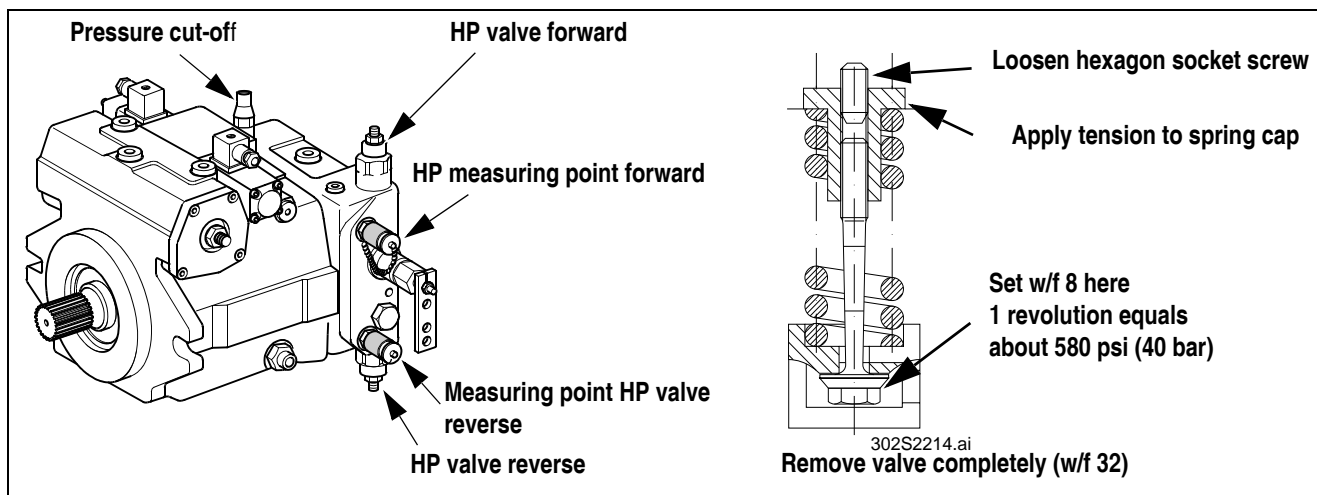
## 22.5 Overview: hydraulic motor



## 22.7.9 Adjusting high pressure/pressure cut-off

Tools required:

- Pressure gauge 8702 psi (600 bar)



☞ Check high pressure as follows:

- Connect the pressure gauge.
- Start the diesel engine and move the drive lever to 1st speed range (forward).
- Drive the machine against hydraulic resistance and read off the pressure on the gauge.
  - ➔ High pressure must be 4931 – 5076 psi (340 – 350 bar)

Adjust the pressure on the pressure cut-off

☞ Pressure increase:

- Screw in the pressure cut-off

☞ Pressure reduction:

- Unscrew the pressure cut-off

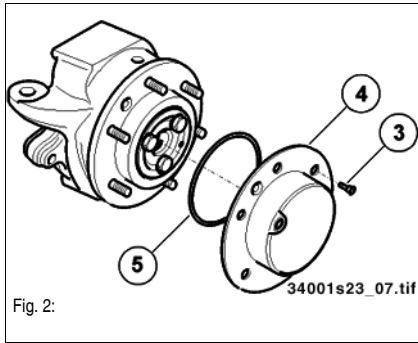
Pressure setting of the HP valves exceeds the pressure cut-off setting by about 10%.

☞ Check/adjust the HP valves as follows:

- Set pressure cut-off to “hydraulic resistance”
- Connect both pressure gauges to measurement ports HP forward and HP reverse
- Start the diesel engine and move the drive lever to 1st speed range (forward).
- Drive the machine against hydraulic resistance and read off the pressure on the gauge.
  - ➔ Do not allow the wheels to spin
  - ➔ High pressure must be about 5656 psi (390 bar)

☞ Pressure increase:

- Remove the respective pressure valve completely
- Remove the spring pile
- Clamp the spring cap in a vise
- Loosen hexagon socket screw
- Adjust with w/f 8
  - ➔ Once adjustment/measurement is finished, set the pressure back to 4931 – 5076 psi (340 – 350 bar).



- ☞ Remove fastening screws **3**
- ☞ Remove cover **4**
- ☞ Remove O-ring **5** from the wheel hub

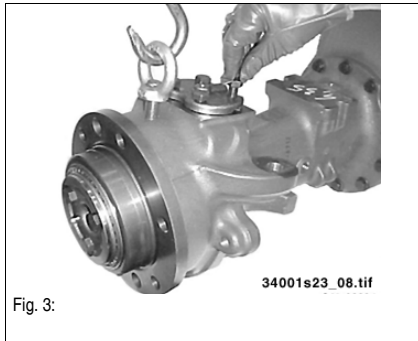


**WARNING!**

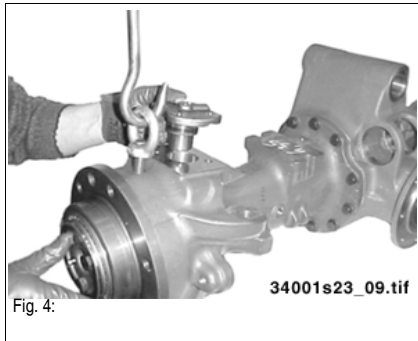
Be careful when removing the planetary drive –

**Risk of personal injury!**

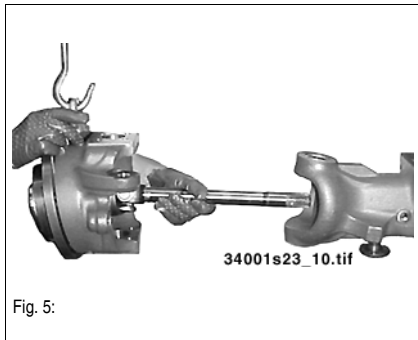
- ☞ Use a strap or cable to secure the planetary drive onto a lifting tackle or other lifting gear to avoid damage or personal injury



- ☞ Mount the eyebolt for lifting the planetary drive
- ☞ Remove screws **10/15**

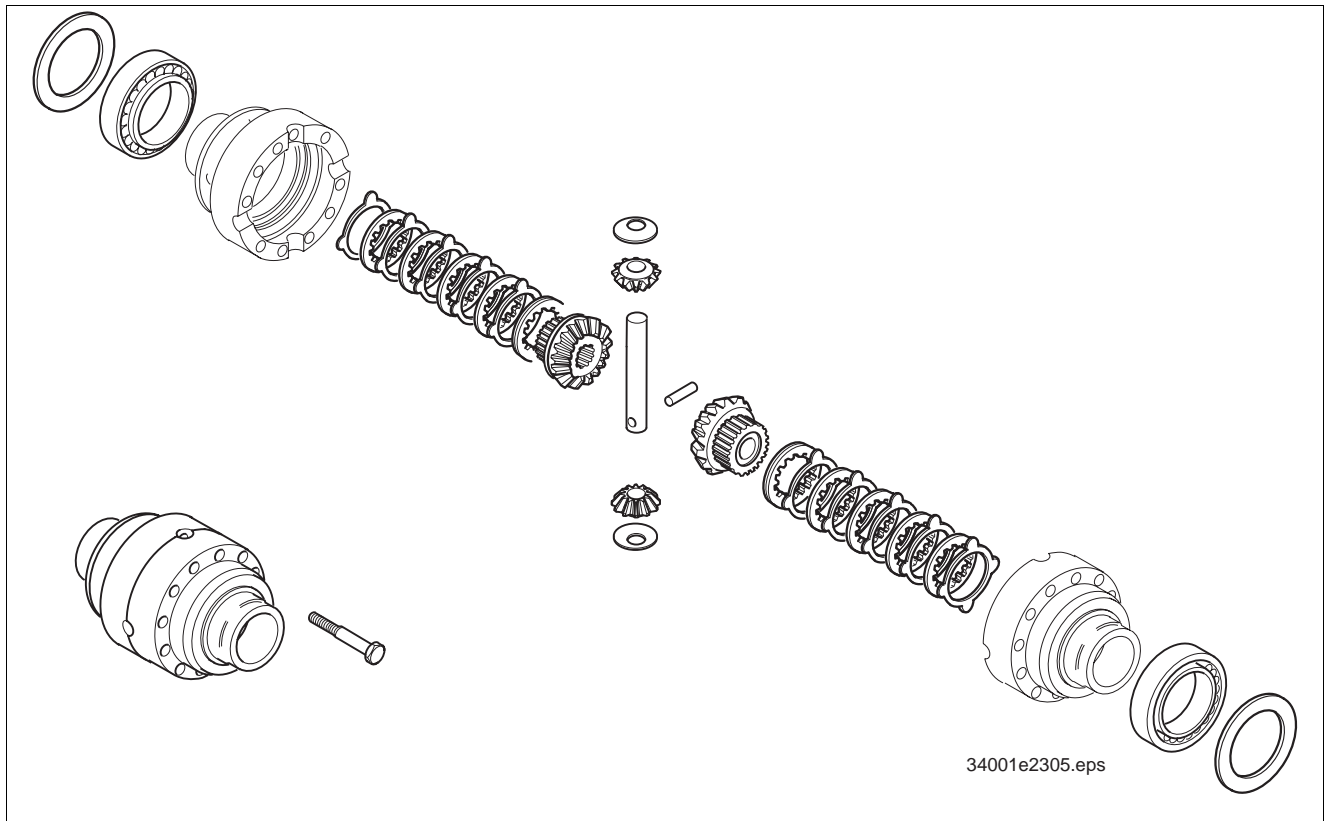


- ☞ Extract bearing pins **14** (upper) and **11** (lower)



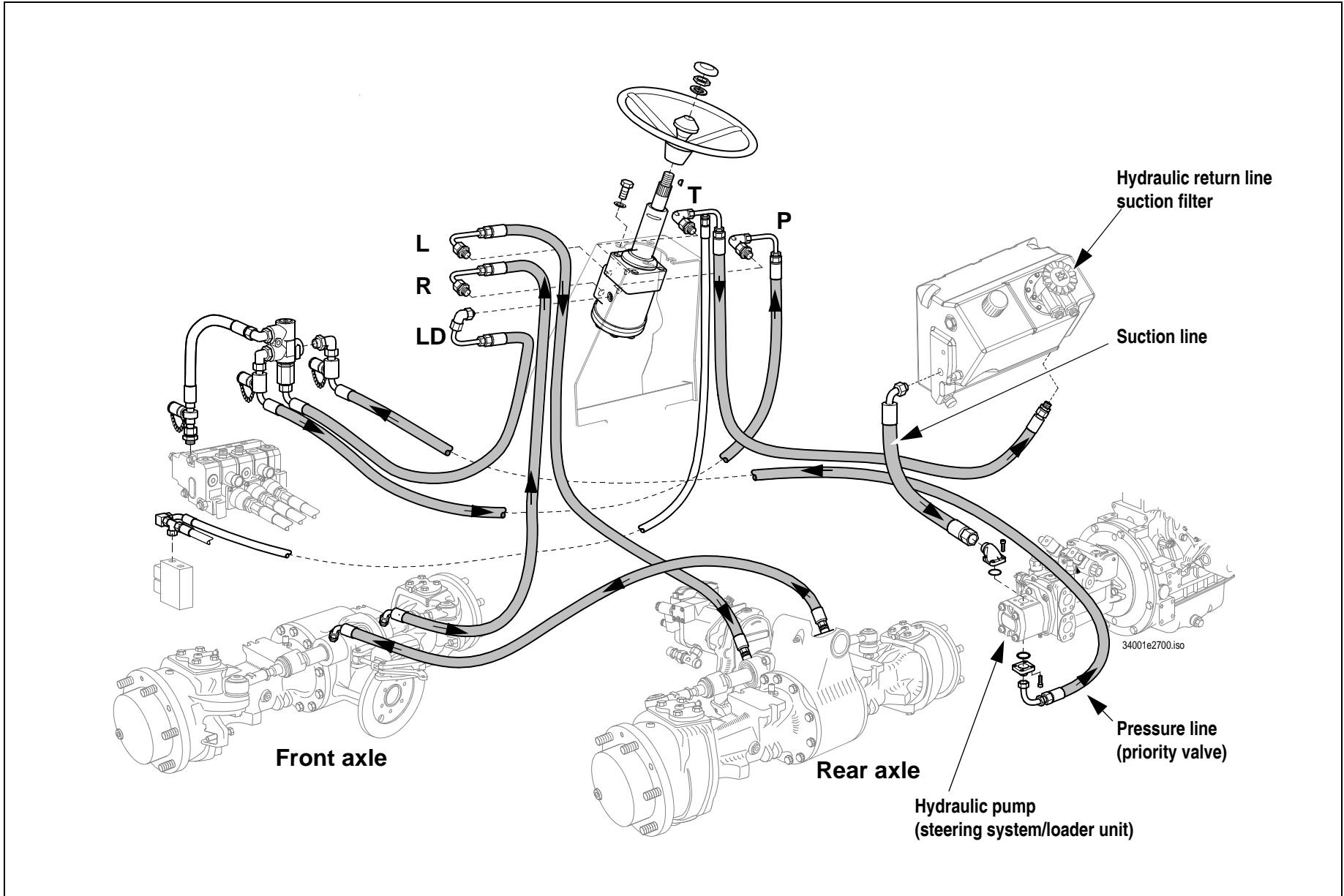
- ☞ Carefully remove the planetary drive with the double drive shaft from the axle carrier

## 23.6 Overview: Self-locking differential



- The self-locking differentials are fitted in the front and rear axles
- 10 outside discs
- 8 inner discs
- Efficiency 45%

### 27.3 Hydraulic circuit: Steered to the left



Extract from IEC 757, edition 1983

**Electrical engineering****Color coding**

Identical with IEC 757 edition 1983

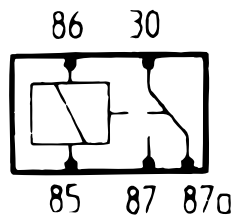
Color	Abbreviation	
	old	new
Black	sw	BK
Brown	br	BN
Red	rt	RD
Orange	or	OG
Yellow	ge	YE
Green	gn	GN
Blue	bl	BU
Violet	vi	VT
Grey	gr	GY
White	ws	WH
Pink	rs	PK
Gold	-	GD
Turquoise	tk	TQ
Silver	-	SR

## 33.5 Relays

### 33.5.1 Use, mode of function

Relays are used for switching electrical loads (high currents) whereby the control power of the relay coil is relatively low. Relays can therefore be controlled by micro electronics or micro switches (e.g., touchpad keyboards, sensors). The switch contacts can be make-contact, break-contact or changeover switches. These undertake the actual switching function.

### 33.5.2 Terminal description on relay



Zero-center relay

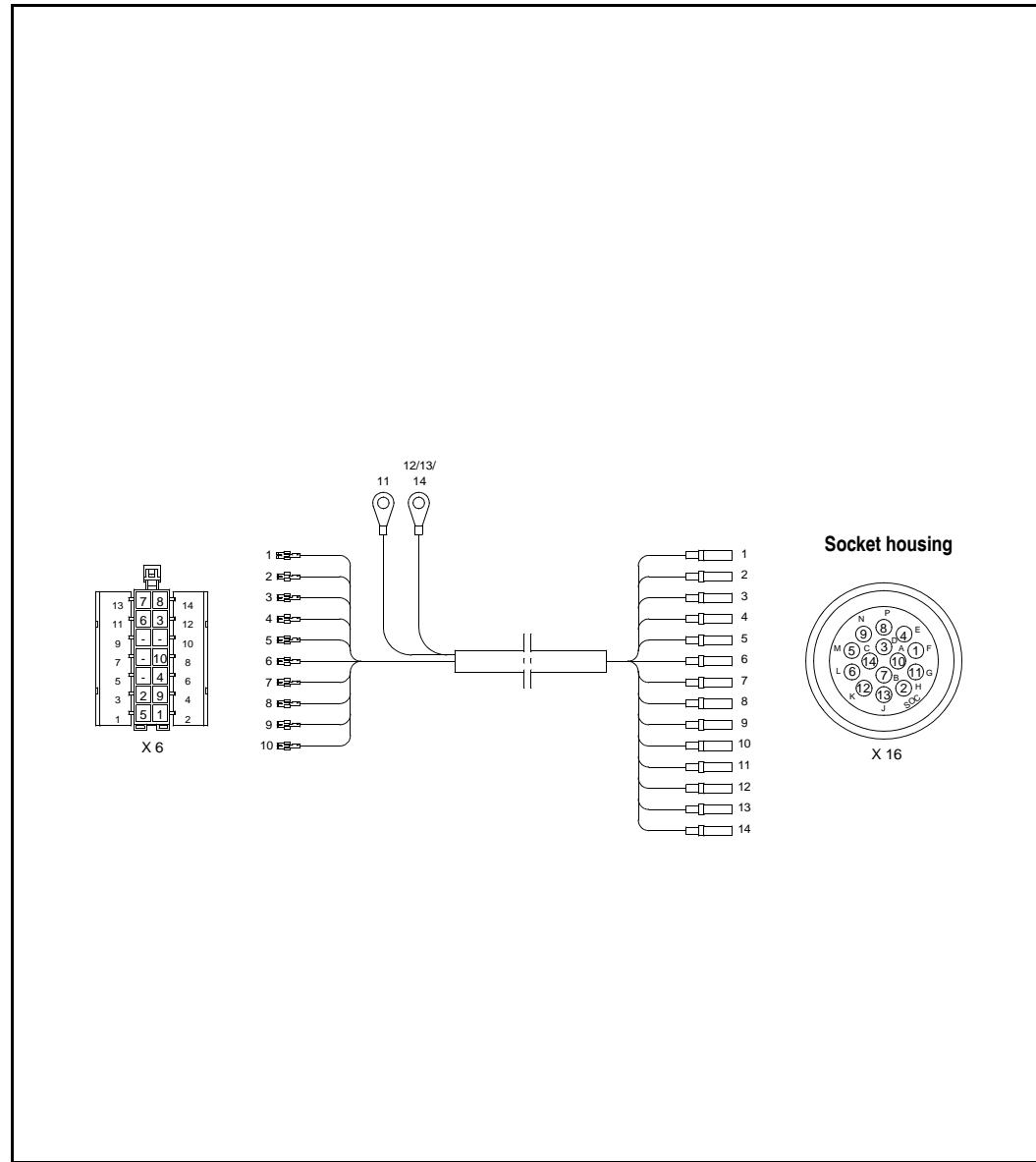
86 = Start of coil (control line)

85 = End of coil (ground)

30 = Input (load line)

87 = Make-contact switch output (load line)

87a= Break-contact switch output (load line)



33.16 Roof – wiring harness 209336

No.	From	To	Color	mm <sup>2</sup>
1	X6 (2) 14 pole plug (time lag relay) K31	X16 (F) 14 pole plug (heated rear window)	GY	2.0
2	X6 (3) 14 pole plug (blocking diode)	X16 (H) 14 pole plug (washer pump)	BU/GN	1.0
3	X6 (12) 14 pole plug (rear wiper switch)	X16 (D) 14 pole plug (rear wiper motor)	BU	1.0
4	X6 (6) 14 pole plug (rear wiper switch)	X16 (E) 14 pole plug (rear wiper motor)	BK/BU	1.0
5	X6 (1) 14 pole plug	X16 (M) 14 pole plug (front wiper motor)	GN/BK	1.0
6	X6 (11) 14 pole plug	X16 (L) 14 pole plug (wiper)	GN	1.0
7	X6 (13) 14 pole plug (fuse)	X16 (B) 14 pole plug (radio)	RD/BK	1.0
8	X6 (14) 14 pole plug (working light switch)	X16 (P) 14 pole plug (working light)	GY/GN	2.0
9	X6 (4) 14 pole plug (rotating beacon switch)	X16 (N) 14 pole plug (rotating beacon)	OG	1.0
10	X6 (8) 14 pole plug	X16 (A) 14 pole plug (interior light)	GY	1.0
11	X16(G) 14 pole plug (rear window ground)	Ground	BK	2.5
12	X16(K) 14 pole plug (front wiper, working light ground)	Ground	BK	1.5
13	X16(J) 14 pole plug (ground rear wiper, rotating beacon working light)	Ground	BK	1.5
14	X16(C) 14 pole plug (radio ground)	Ground	BK	1.0

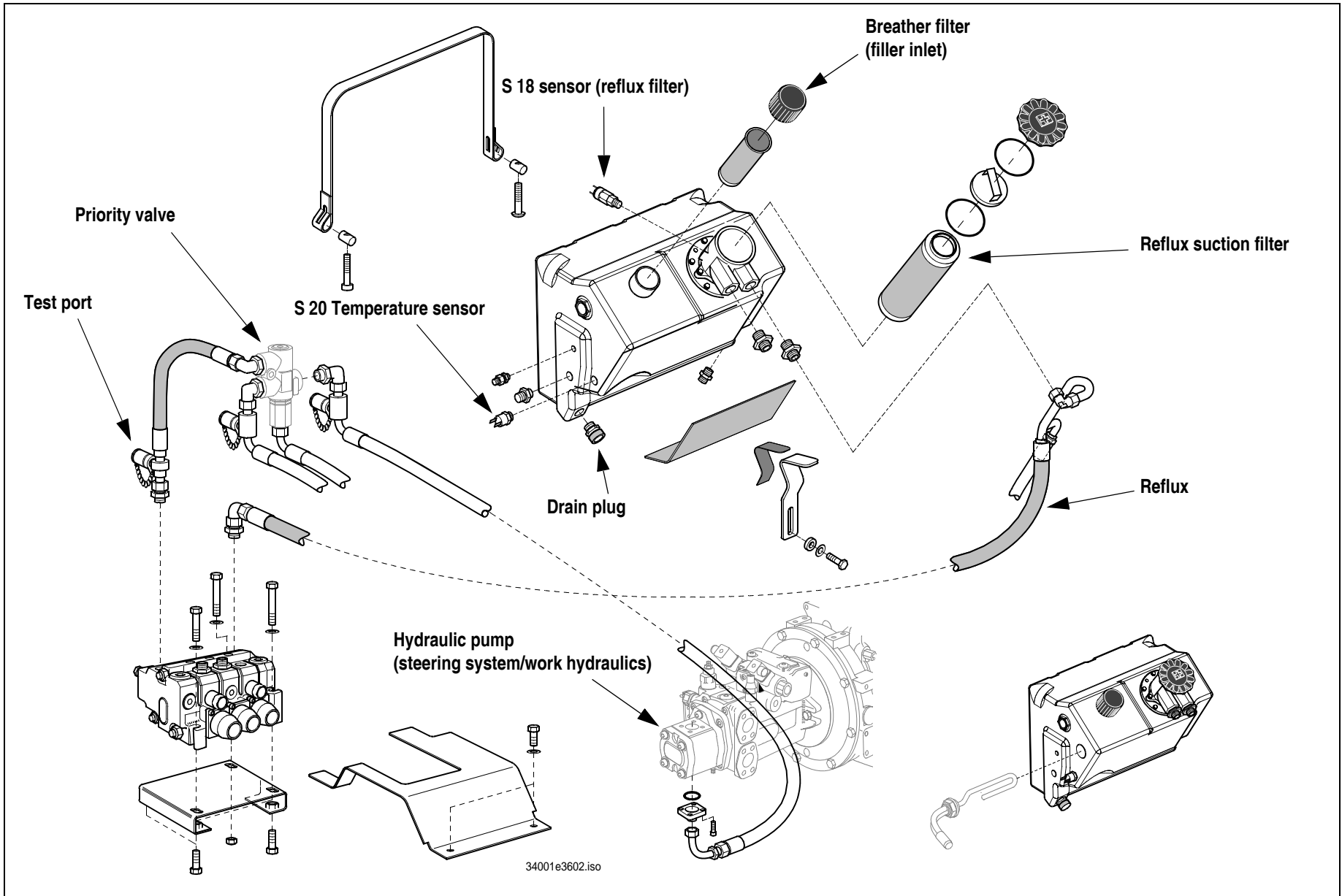


33.17 Roof – wiring harness 207414

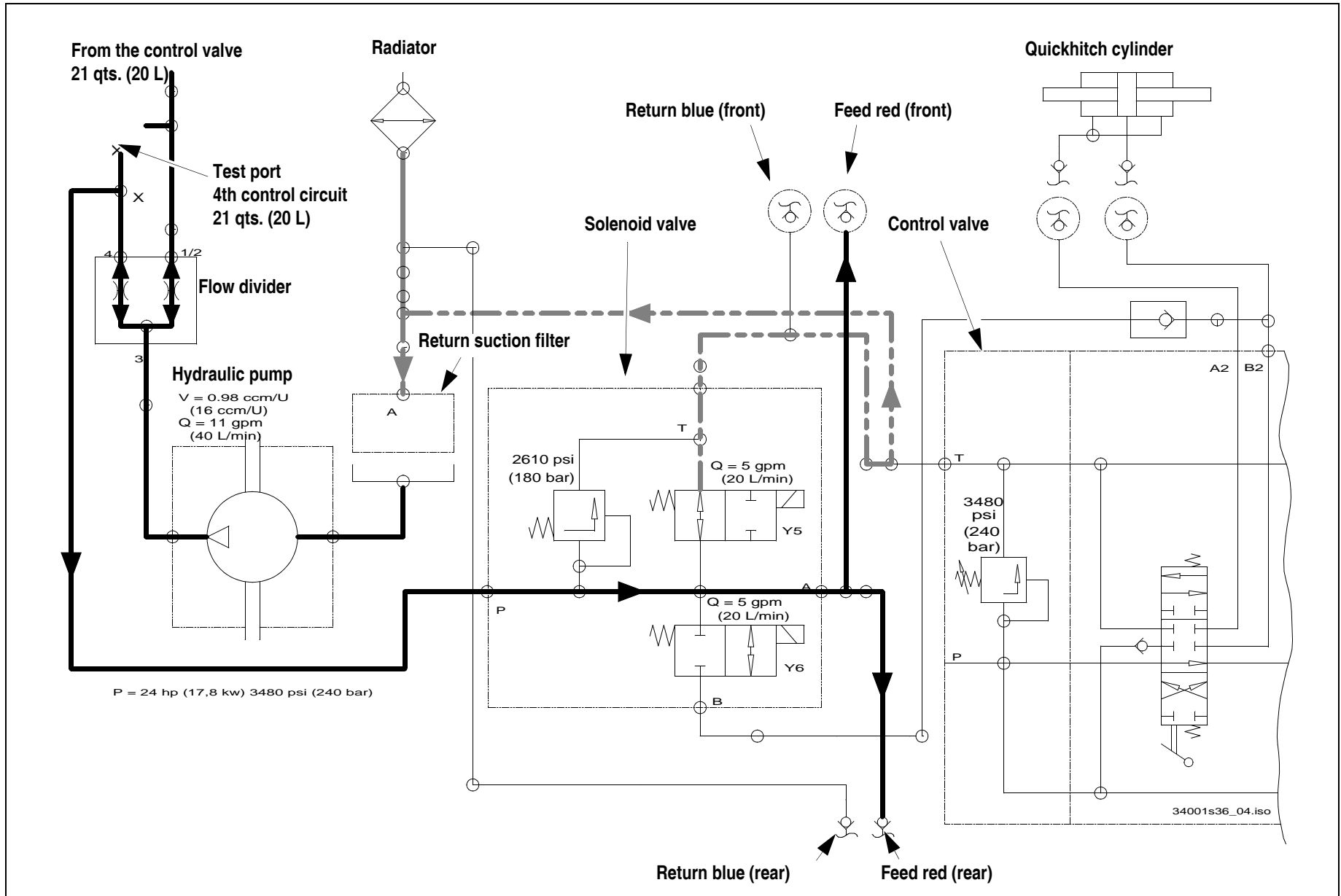
No.	mm <sup>2</sup>	Color	Assignment	From	To
1	1.0	GN	Interior light	A	P01 P09
2	1.0	RT/BK	Radio	B	P01 P02
3	1.0	BK	Radio (+)	C	P01 P02
4	1.0	BU	Rear wiper (+)	D	P01 P04
5	1.0	BU/BK	Rear wiper	E	P01 P04
6	2.5	WH	Rear window heating	F	P01 P03
7	2.5	BK	Rear window heating (-)	G	P01 P03
8	1.0	GN/BK	Washer system	H	P01 P10
9	2.0	BK	Connection 18, 19, 20, 21	J	P01 D01
10	2.0	BK	Connection 22, 23, 24, 25	K	P01 D03
11	1.0	GN	Front wiper	L	P01 P08
12	1.0	GN/BK	Front wiper (+)	M	P01 P08
13	1.0	GN	Rotating beacon	N	P01 D06/P06
14	2.0	VT	Connection 15, 16, 17	P	P01 D02

No.	mm <sup>2</sup>	Color	Assignment	From	To
15	1.0	VT/GN	Reversing light		D02 D10/P11
16	1.0	VT/GN	Headlight (right)		D02 D08/P07
17	1.0	VT/GN	Headlight (left)		D02 D12/P12
18	1.0	BK	Rotating beacon (-)		D01 D07/P06
19	1.0	BK	Rear working light (-)		D01 D11/P11
20	1.0	BK	Wiper (-)		D01 P04
21	1.0	BK	Washer system (-)		D01 P10
22	1.0	BK	Interior light (-)		D03 P09
23	1.0	BK	Headlight, right (-)		D03 D09/P07
24	1.0	BK	Headlight, left (-)		D03 D13/P12
25	1.0	BK	Front wiper (-)		D03 P08

### 36.3 Hydraulic circuit: Pump – control valve – tank



### 36.12 Hydraulics diagram: 4th control circuit – solenoid valve without contact (neutral circulation)



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