Repair Manual for Wheel Loader WL 55 / WL 57

Translation of the original repair manual

WDF-6011-00EN
2009
Edition 08/2009-1

This part of the repair manual contains special safety instructions relating to the loader's individual assemblies.

Warning notices

Warning notices are identified by a symbol, and differ in terms of the type and severity of the hazard described. The various types are shown below.

▶ **DANGER**

Identifies a hazard that will result in death or serious, irreversible injury if it is not prevented.

Follow the instructions in order to prevent the hazard.

▶ **WARNING**

Identifies a hazard that can result in death or serious, irreversible injury if it is not prevented.

Follow the instructions in order to prevent the hazard.

▶ **CAUTION**

Identifies a hazard that can result in minor reversible injury.

Follow the instructions in order to prevent the hazard.

▷ Identifies possible damage to the loader or to other property.

Notices

The following notices point out important items of information:

▷ Identifies a special item of information that is required for effective and efficient working.

▷ Identifies an environmental notice.

Do not start working until you have read and understood all safety instructions.

Sequence

The sequence of the described work is binding. Keep to the defined sequence in order to avoid hazards.

Safety instructions for working on the drive and axles

- When jacking up the loader, keep the load arm as low as possible in order to keep the center of gravity as close to the ground as possible.
- Use only suitable equipment, e.g. a garage jack, to jack up and support the loader.

▷ All values are approximate values.

The inspection holes, inspection glasses or dipsticks must be used to obtain a correct filling.

Engine (Deutz)

Location	Quantity in liters	Liquid	Specification
Fuel tank	90.0	Diesel fuel	DIN 51601 (see engine manual)
Engine oil with filter	10.5	Engine oil Ambient temperature -20 °C to +40 °C	SAE 10 W 40 API CG-4 / API CH-4 (see engine manual)
Content of cooling system	10.0	Water with standard HP coolant / antifreeze	HP coolant / antifreeze: ASTM D 4985

Engine (Perkins)

Fuel tank	90.0	Diesel fuel	DIN 51601 (see engine manual)
Engine oil with filter	8.0	Engine oil Ambient temperature -20 °C to +40 °C	SAE 10 W 40 API CG-4 / API CH-4 (see engine manual)
Content of cooling system	13.0	Water with standard HP coolant / antifreeze	HP coolant / antifreeze: ASTM D 4985

Hydraulic system

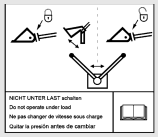
Complete hydraulic system	100.0	Hydraulic fluid	HLP ISO VG 46
Hydraulic fluid tank	80.0	Hydraulic fluid	HLP ISO VG 46
Brake hydraulics	1.0	Hydraulic fluid	ATF oil

Drive and axles

Front axle PA1422 (optional)	5.2	Transmission oil	SAE 90 GL 5
Rear axle PA1422 (optional)	6.1	Transmission oil	SAE 90 GL 5

Air-conditioning unit

Air-conditioning unit (additional equipment)	approx. 0.8 (1000 + 50 g)	Refrigerant	R 134 a

Sticker	Meaning
	**Hazard** Risk of injury from being run over. Never carry passengers in the loader. Never sit on the fenders.
	**Risk of equipment damage** The ROPS bar and the driver's canopy are safety components that must never be modified. Do not drill holes in the material. Do not weld the material. Only do work that is described in this documentation.
	**Hazard** Risk of crush injury. All persons must remain outside the working loader's danger area. Always maintain a safety clearance from the working loader. Always use the climbing aids to climb in and out of the loader.
	**Hazard** Risk of crush injury. Always lock the center joint when carrying out maintenance work.
	**Hazard** When hydraulically operated attachments are used, the lever must always be set to "Hydraulic connection".
	**Risk of equipment damage** Close both doors before tilting the cab.
	Identifies an attachment point

8.4 Driving bolts

Purpose

The driving bolts are used to drive in bearing bushes (e.g. sliding bearings on the short drawbar) straight and without damaging the bearing.

Configuration

- Metal, solid material
- Cylindrical
- Handle (Fig. 15,1)
- d < inside diameter of the bearing bush
- D > outside diameter of the bearing bush

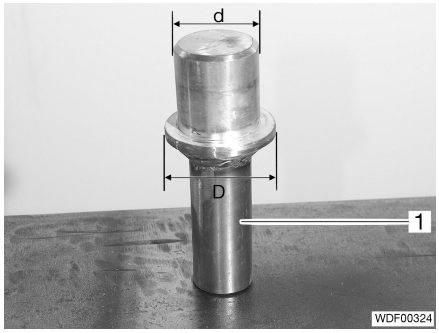


Fig. 15 Driving bolt

8.5 Electrical contact key

Purpose

The electrical contact key is used to remove and install the contacts on the tab connectors of the cables leading to the control unit.

Configuration

- Metal/plastic

Fig. 16 Electrical contact key

Availability

The electrical contact key, Article No. 124423, is available via:

Berner GmbH
Befestigungs- und Verbindungstechnik
Bernerstr. 4

74653 Künzelsau, Germany

This part of the repair manual contains inspection and adjustment procedures, details of special maintenance work (if applicable) and individual trouble-shooting lists, subdivided on the basis of the loader's assemblies.

Hydraulic system

▷ Only Wacker Neuson Customer Service may remove the lead seals. Unauthorized removal of the lead seals renders the warranty void. If in doubt, consult Wacker Neuson Customer Service.

▷ Some adjustment screws on the variable displacement pump and variable displacement motor have been lead-sealed by the manufacturer.

▷ For all inspections on the variable displacement motor, it must be operated across its entire control range, i.e. the variable displacement motor must be switched to "overdrive" (if present).

Maintenance The operator's manual contains a complete overview of the maintenance work and intervals.

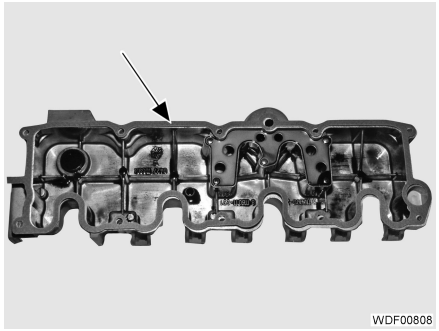


Fig. 6 Cylinder head cover seal

Installing the cylinder head cover

- Inspect the cylinder head cover seal (Fig. 6) and replace it if necessary.
- Put the cylinder head cover (Fig. 4,2) into position.
- Screw in the 10 screws (Fig. 4,1).
- Tighten screws from the inside outwards with a tightening torque of 8.5 Nm.
- Screw in the cover (Fig. 2,3 or Fig. 3,3).
- Attach the hose (Fig. 2,2 or Fig. 3,2) with clamps (Fig. 2,1 and 4 or Fig. 3,1) to the air filter, engine-breather hose and suction pipe.
- Tighten the 2 clamps (Fig. 2,1 or Fig. 3,1).
- Seal the hose with clamp (Fig. 2,4) (if present).

Final work

- Tilt the operator's platform back (see operator's manual "Tilting the operator's platform").

2.2 Checking and adjusting the valve play (Perkins)

▶ **WARNING**

Risk of injury by moving parts.

Do not open the engine hood when the engine is running, unless this manual expressly instructs you to do so.

▶ **WARNING**

Danger from penetration of fuel into the skin!

Immediately after the engine has been operated, the high-pressure fuel lines are still under very high pressure.

Do not open any high-pressure fuel lines and wait at least 60 seconds before working on the engine.

▷ The valve play may only be adjusted when the engine is cold.

▷ The adjustment sequence refers to the view of the engine from the fan side (see Fig. 7).

▷ Rotate the crankshaft clockwise.

▷ Valve play (inlet and outlet): 0.35 mm, cold

Symptom	Possible cause	Remedy
Engine pressed hard	High-pressure valves of the variable displacement pump incorrectly set	Adjust high-pressure valves or replace variable displacement pump
	Variable displacement pump defective (wear)	Replace variable displacement pump
	Transposition of the variable displacement pump incorrectly set	Have transposition set, check diameter of the diaphragm in the control cartridge or replace the variable displacement pump
	Control commencement of the variable displacement motor incorrectly set	Check and adjust control commencement of the variable displacement motor
	Variable displacement motor defective (wear)	Replace variable displacement motor
	Insufficient fuel supply	Inspect fuel filter and fuel pump and replace if necessary
	Injection pump defective	Replace engine and have injection pump inspected
Engine overheats	Radiator dirty	Clean radiator
	Liquid level too low	Top up liquid level (see operator's manual "Checking the coolant level/refilling the coolant")
	Radiator incorrectly installed	Check radiator installation
	Radiator defective	Inspect radiator and replace it if necessary
	Thermostat sticks	Replace thermostat (see the engine manufacturer's repair manual)
	V-belt on fan blade loose	Check and adjust V-belt tension (see the engine manufacturer's repair manual)
	Oil level too low or too high	Check oil level (see operator's manual "Checking the engine oil level")
Engine power too low	Air filter system dirty	Check air filter system for cleanliness
	Wrong fuel type	Change fuel
	Engine speed too low	See above

3.2 Testing the steering hydraulics

▷ Pay attention to the "Safety instructions for working on the hydraulic system" (see Part 1 "Safety").

Requirements

Ensure the following:

- The hydraulic system is depressurized (see Part 4, "Depressurizing the hydraulic system" section).
- The operator's platform is tilted (see operator's manual "Tilting the operator's platform").

Spare parts and auxiliary equipment

Designation	Quantity
Test pressure gauge 0 ... 600 bar	1
T-screw connection	1

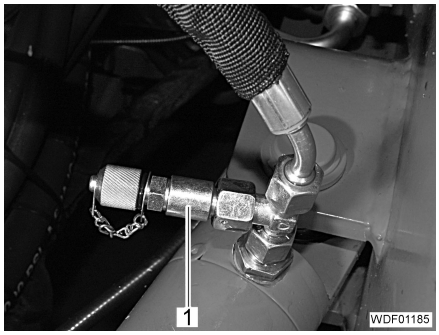


Fig. 38 Test connection

Testing the steering pressure

- Install the T-screw connection with the test adapter (Fig. 38,1) in the base hydraulic line of the steering cylinder.
- Connect a test pressure gauge, 0 ... 600 bar.
- Turn the steering wheel clockwise with the engine running until the articulated link is at the limit position.
- Read off the steering pressure on the test pressure gauge (setpoint value: 190 bar).
- If the steering pressure differs from the setpoint value, remove the orbital steering valve and set the steering pressure on a pressure test bench.

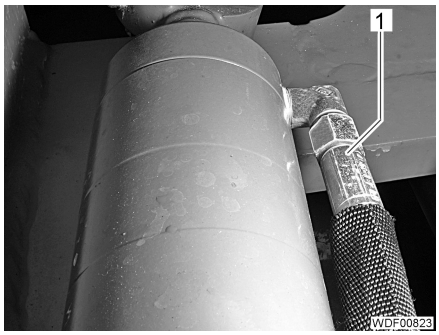


Fig. 39 Hydraulic connection, rod end

Checking the steering cylinder for internal leaks

- Extend the steering cylinder fully.
- Unscrew and close off the hydraulic line (Fig. 39,1).
- Leave the hydraulic connection on the steering cylinder open.

Symptom	Possible cause	Remedy
Positioning pressure ("X_1" or "X_2") of the variable displacement pump too low	Oil temperature too high (warning lamp lights up)	Clean cooling system and check for leaks, replace parts if necessary
	Supply pressure too low	Check supply pressure
	Incorrect starting speed set	Check and adjust starting speed
	Inching pedal incorrectly set	Check and adjust inching pedal
	Brake linkage incorrectly set	Check brake linkage and pedal play, adjust pedal play if necessary (set-point value: 2 mm)
	Main brake cylinder defective (pressure on the brake line without pedal actuation)	Replace main brake cylinder
	Inching actuator sticks	Inspect inching actuator and replace it if necessary
	Inching valve defective	Replace solenoid valve
	Pressure cut-off incorrectly set	Check and adjust pressure cut-off
	Positioning cylinder in the variable displacement pump leaks	Replace variable displacement pump or have it repaired
High pressure "M_A" or "M_B" insufficient	High-pressure valve is still in the towing position	Check high-pressure valve and set to Driving operation if necessary (see operator's manual "Disconnecting the drive")
	High-pressure valve dirty	Remove high-pressure valve, perform a visual inspection and clean if necessary (see the variable displacement pump manufacturer's repair instructions)
	Variable displacement pump defective	Replace variable displacement pump or have it repaired
	Variable displacement motor defective	Replace variable displacement motor or have it repaired
No or defective function of working hydraulics	Pilot control defective	Check pilot control and replace if necessary
	Control valve defective	Inspect control valve and replace it if necessary

7.1 Checking the generator

▶ **DANGER**

Exhaust fumes are toxic and potentially lethal!

Do not inhale exhaust fumes.

Ensure that the area where you are carrying out the inspection is sufficiently well ventilated.

▶ **WARNING**

Risk of injury by moving parts.

Do not open the engine hood when the engine is running, unless this manual expressly instructs you to do so.

▷ If possible, test the generator with a generator tester (see Part 2, "Generator tester" section) (setpoint values: see "Technical data").

▷ If no generator tester is available, the a basic test of the generator can be performed using the method described here.

Requirements

Ensure the following:

- The engine hood is open (see operator's manual "Opening the engine hood").

Measuring the battery voltage

- Start the engine.
- Measure the battery voltage at idling speed (setpoint value: 14 V).
- Switch on all headlamps.
- Measure the battery voltage at idling speed (setpoint value: 13.8 V).
- Measure the battery voltage at maximum speed (setpoint value: 14.4 V).
- Switch off the engine.

If damage is found:

Remedying the problem

- Replace the generator (see Part 4, "Replacing the generator" section).

Final work

- Close the engine hood.

7.2 Checking the starter

▶ **DANGER**

Exhaust fumes are toxic and potentially lethal!

Do not inhale exhaust fumes.

Ensure that the area where you are carrying out the inspection is sufficiently well ventilated.

▷ If possible, test the starter with the magnetic field tester (see Part 2, "Magnetic field tester" section).

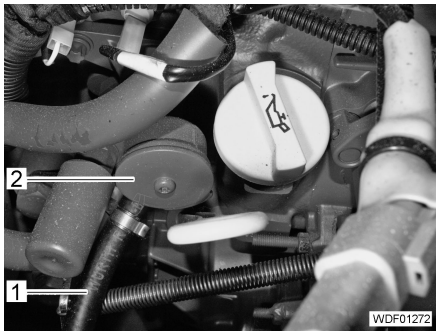


Fig. 19 Fuel line

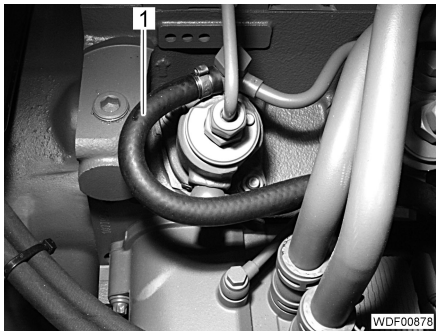


Fig. 20 Fuel return line

- Close off and separate the fuel line (Fig. 19,1) ahead of the sieve filter (Fig. 19,2) (e.g. using a hose clamp).
- Close off and separate fuel return line (Fig. 20,1) (e.g. with a hose clamp).
- Carefully remove all lines from the engine compartment.

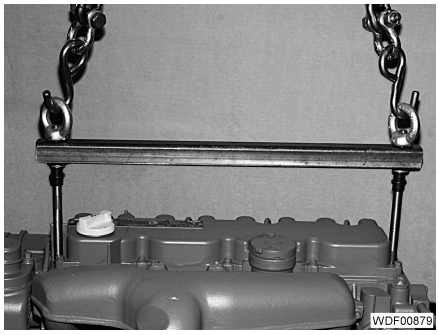


Fig. 21 Engine attachment

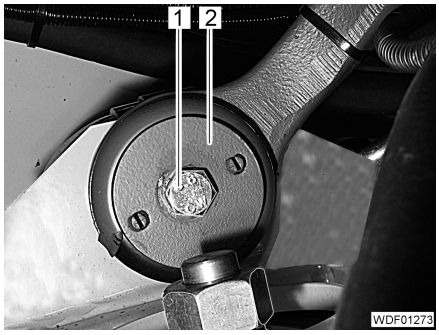


Fig. 22 Engine mount

Releasing the engine mounts

- Attach suitable lifting gear to the engine (e.g. workshop crane and traverse) (Fig. 21).
- Undo 1 screw (Fig. 22,1) on each engine mount (Fig. 22,2).

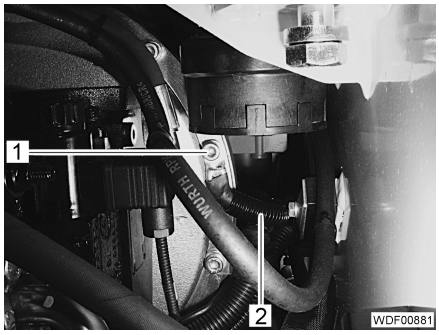


Fig. 23 Clutch bell attachment

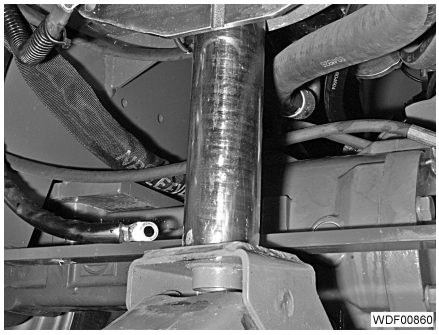


Fig. 24 Clutch bell support

Lifting out the engine

- Unscrew the 11 screws (Fig. 23,1) for securing the clutch bell.
- Remove the grounding strips (Fig. 23,2).
- Using a suitable tool (e.g. a jack) support the clutch bell or carefully raise it up slightly (Fig. 24).
- Carefully lift out the engine upwards and towards the rear.
- If necessary, remove the clutch PA flange (see the section 2.1.7 "Replacing the clutch PA flange").

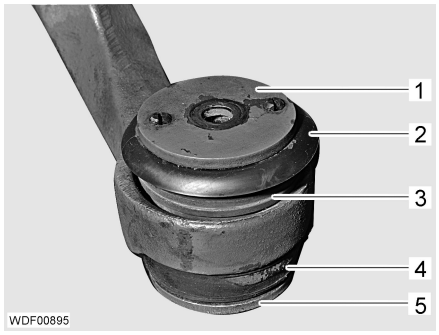


Fig. 64 Rubber buffer

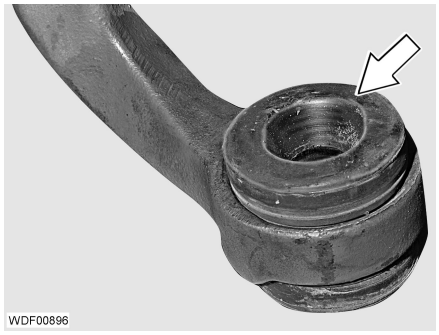


Fig. 65 Installation position

Replacing the rubber buffer

- Remove the washer (Fig. 64,1).
- Remove cap (Fig. 64,2) and lower section (Fig. 64,5).
- Detach the rubber buffers (Fig. 64,3 and 4).
- Position the new rubber buffers in such a way that the sinkhole points away from the engine mount (Fig. 65).
- Push in the lower section (Fig. 64,5) and cap (Fig. 64,2).
- Fit the washer (Fig. 64,1) onto the cap.

Final work

- Install the engine (see the section 2.1.3 "Engine installation").

2.1.6 Replacing the spacer at the rear

Requirements

Ensure the following:

- The engine has been removed (see the section 2.1.1 "Engine removal").

Spare parts and auxiliary equipment

Designation	Quantity
Rubber buffer	2

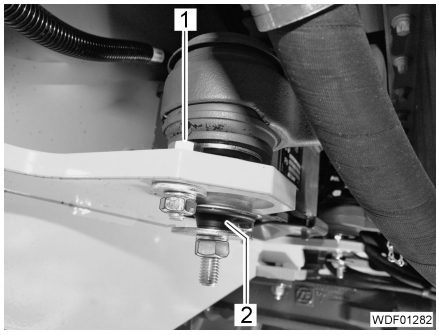


Fig. 66 Spacer

Replacing the spacer

- Unscrew the 2 screws (Fig. 66,1).
- Remove the spacer (Fig. 66,2).
- Insert the new spacer.
- Screw in and tighten the 2 screws (Fig. 66,1).

Final work

- Install the engine (see the section 2.1.3 "Engine installation").

▷ There are shim washers between the engine mounts and the rubber buffers.

Take out the shim washers during the removal procedure and reuse them during installation.

Securing the engine

- Screw in 1 screw (Fig. 97,1) on both sides but do not tighten.
- Screw in 1 screw (Fig. 98,1) on both sides but do not tighten.
- Carefully feed the fuel lines into the engine bay.
- Carefully feed the cable harness into the engine bay.

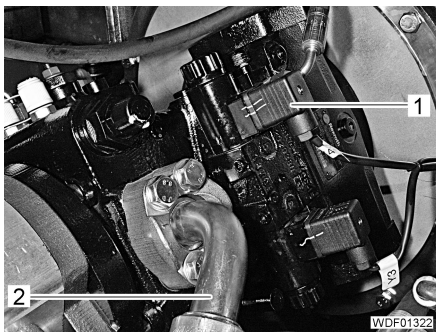


Fig. 99 Variable displacement pump

Connecting the lines (left)

- Connect the fuel return line, secure it with a clamp and open it (e.g. remove hose clamp).
- Plug the connectors (Fig. 99,1) onto the solenoid valves and secure with 1 screw for each.

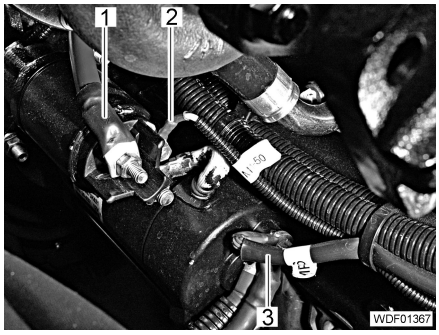


Fig. 100 Electrical connections

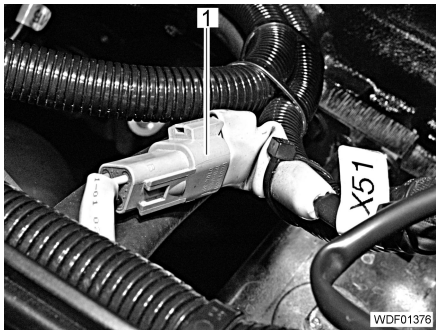


Fig. 101 Cable to the fuel level sensor

- Connect the electrical cables (Fig. 100,1 to 3) to the starter.
- Connect the plug (Fig. 101,1).

2.3.2 Installing the radiator

▷ The coolant must consist of equal amounts of water and antifreeze. This mixture guarantees an optimum ratio between cooling performance and corrosion protection.

▷ Do not fill with coolant too quickly. Fill at a maximum of **5 l/min**. If the cooling system is filled too quickly, air can be trapped in the cooling system and cause the engine to overheat.

▷ Pay attention to the "Safety instructions for working on the hydraulic system" (see Part 1 "Safety").

Spare parts and auxiliary equipment

Designation	Quantity
Water/oil cooler	1
Coolant	approx. 10 l

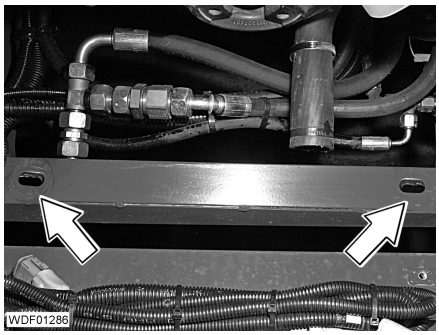


Fig. 129 Attachment points

Putting in the radiator

- If necessary, insert the sealing plate and shim washers.
- Put in the radiator carefully so that the screws on the underside of the radiator engage in the attachment point slots (Fig. 129).
- If necessary, attach the fan wheel (see the engine manufacturer's workshop manual).

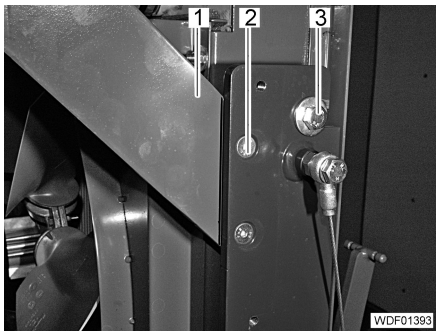


Fig. 130 Side attachment of the radiator

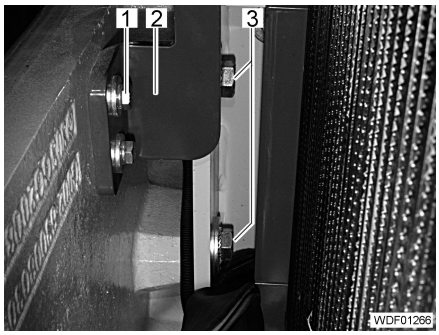


Fig. 131 Holder attachment

Attaching the radiator

- Carefully tilt the radiator forwards until the screws (Fig. 130,3) slide into the guides on both sides of the radiator with 1 washer each.
- Tighten 1 screw on both sides.
- Attach the holder (Fig. 130,1) with expansion tank to the rear carriage.
- Screw in and tighten the 2 screws (Fig. 130,2).

Final work

- Tilt the operator's platform back (see operator's manual "Tilting the operator's platform").
- Vent the fuel system (see operator's manual "Venting the fuel system").

2.5.4 Replacing the fuel line

▶ **WARNING**

Risk of injury by moving parts.

Do not open the engine hood when the engine is running, unless this manual expressly instructs you to do so.

▶ **WARNING**

Hot parts can cause burns.

Never work on the engine when it is at operating temperature.

Allow the engine to cool down or wear protective gloves.

▶ **WARNING**

Explosion and fire hazard!

Do not smoke when handling fuel, and avoid naked flame or fire.

Do not mix gasoline with the Diesel fuel.

▷ Avoid damaging the environment. Collect any escaping fuel and dispose of it in an environmentally responsible way.

Requirements

Ensure the following:

- The operator's platform is tilted (see operator's manual "Tilting the operator's platform").

▷ This section describes the replacement of a fuel line.

▷ The other fuel lines are replaced in the same way.

▷ Reuse fuel in the fuel line or dispose of it in an environmentally responsible manner.

Spare parts and auxiliary equipment

Designation	Quantity
Hose (meter goods)	as req.
Clamp	2

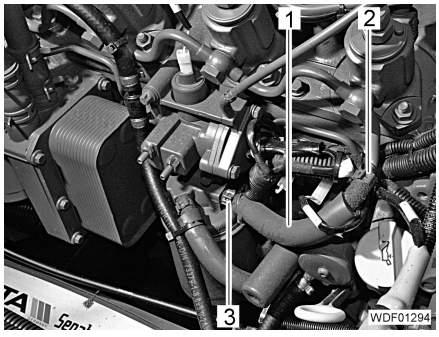


Fig. 150 Fuel line

Removing the fuel line

- Close off the fuel line (Fig. 150,1) at both ends.
- Remove the clamp (Fig. 150,2) and clamp (Fig. 150,3).

Fig. 168 Compression of the annular seal

Sealing the piston

- Clean the piston thoroughly.
- Place the O-ring in the middle groove.

▷ The annular seal is **always** widened slightly when it is removed.

- Place the annular seal (Fig. 167,3) over the O-ring.
- Wrap the annular seal securely in several layers of crepe tape (Fig. 168).
- Press the annular seal into its original shape with a clip.

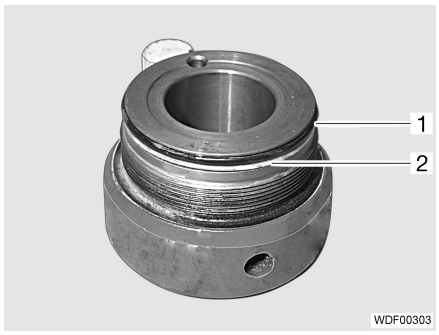


Fig. 169 Inside of the guide bush

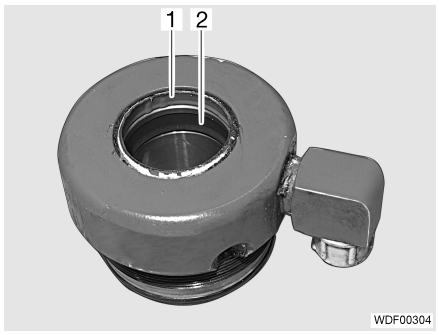


Fig. 170 Outside of the guide bush

Cleaning the guide bush

- Remove the O-ring (Fig. 169,1).
- Remove the support ring (Fig. 169,2).
- Remove the annular seal (Fig. 170,2).
- Remove the dust arrester (Fig. 170,1).
- Clean the guide bush thoroughly.

▷ If there are any scratches, furrows or similar on the guide bush, the complete hydraulic cylinder must be replaced.

- Inspect the guide bush for damage.

Spare parts and auxiliary equipment

Designation	Quantity
Orbital steering valve	1

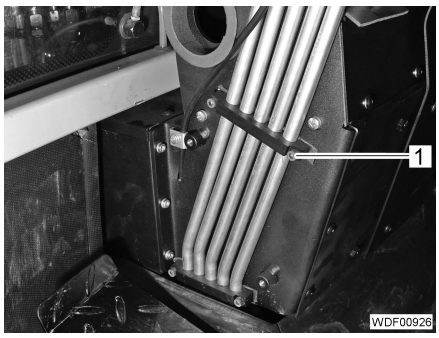


Fig. 189 Hydraulic lines

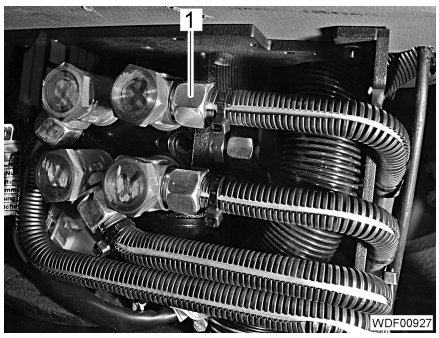


Fig. 190 Connections on the orbital steering valve

Removing the orbital steering valve

- Unscrew the 2 screws (Fig. 189,1) on the two holders.
- Mark the hydraulic lines in order to prevent mix-ups.
- Unscrew and close off the 5 hydraulic lines (Fig. 190,1).

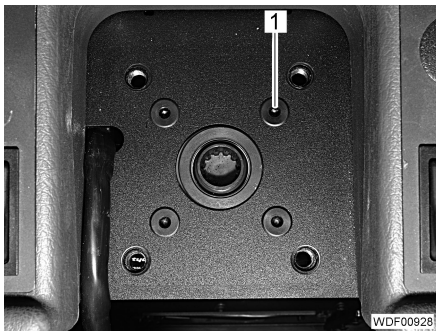


Fig. 191 Orbital steering valve attachment

- Unscrew the 4 screws (Fig. 191,1) and remove the orbital steering valve rearwards.

Installing the orbital steering valve

- Insert the orbital steering valve from behind.
- Screw in and tighten the 4 screws (Fig. 191,1).
- Screw and tighten the 5 hydraulic lines (Fig. 190,1) to the connections on the orbital steering valve.
- Tighten the 2 screws (Fig. 189,1) on each of the two holders.

Final work

- Attach the cladding of the steering column (see section 7.4.2 "Replacing the cladding of the steering column").
- Install the steering column (see the section 7.4.1 "Replacing the steering column").

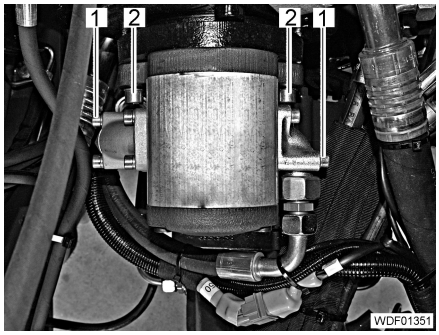


Fig. 207 Gear pump

Fig. 208 Gear pump seals

Removing the gear pump

- Unscrew 4 screws on each of the screw connections of the hydraulic lines (Fig. 207,1).
- Remove and close off the hydraulic lines.
- Unscrew the 2 screws (Fig. 207,2).
- Carefully remove the gear pump.

▷ Before installing the gear pump, replace the used seals with new ones.

Installing the gear pump

- Place a seal (Fig. 208,3) onto the flange (Fig. 208,1) of the gear pump.
- Place an O-ring (Fig. 208,2) onto the seal.
- Carefully position gear pump on the variable displacement pump.
- Tighten the 2 screws (Fig. 207,2) with spring lock washers.
- Put on the hydraulic lines (Fig. 207,1) with new O-rings.
- Tighten 4 screws with spring lock washers on each of the screw connections of the hydraulic lines.

Final work

- Tilt the operator's platform back (see operator's manual "Tilting the operator's platform").

3.5.2 Sealing the gear pump

▷ Pay attention to the "Safety instructions for working on the hydraulic system" (see Part 1 "Safety").

Requirements

Ensure the following:

- The gear pump has been removed (see the section 3.5.1 "Replacing the gear pump").

Spare parts and auxiliary equipment

Designation	Quantity
Set of seals	1

▷ Pay attention to the "Safety instructions for working on the hydraulic system" (see Part 1 "Safety").

Requirements

Ensure the following:

- The base plate has been removed (see the section 6.2.2 "Replacing the base plate").

Spare parts and auxiliary equipment

Designation	Quantity
Valve	1

Fig. 238 Load arm in lowered position

Releasing the stored pressure

- Fully lower and curl in the load arm (Fig. 238).
- Switch on the ignition.
- Switch on the vibration damping unit (see operator's manual "Lift frame - vibration damping unit").
- Move the multi-function lever **slowly** between the positions "Raise" and "Lower" a multiple number of times (see operator's manual "Control lever for lift frame").

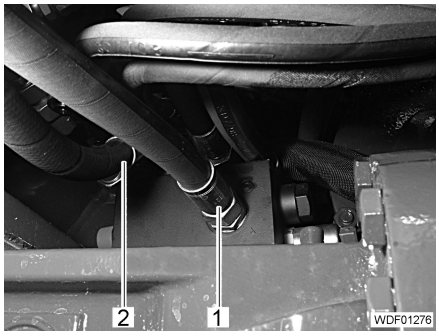


Fig. 239 Hydraulic lines

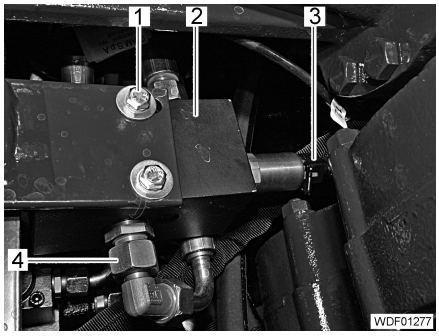


Fig. 240 Valve attachment

Removing the valve

- Unscrew and close off the 2 hydraulic lines (Fig. 239,1 and 2).
- Remove the plug (Fig. 240,3).
- Unscrew and close off the hydraulic line (Fig. 240,4).
- Unscrew the 2 screws (Fig. 240,1) and remove the valve (Fig. 240,2).

Installing the valve

- Place on the valve (Fig. 240,2).
- Insert and tighten 2 screws (Fig. 240,1) with spring lock washers and disks.

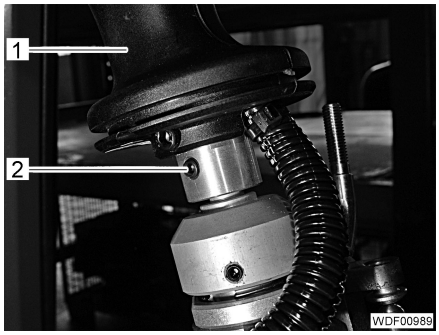


Fig. 259 Multi-function lever attachment

Removing the multi-function lever

- Loosen the stud screw (Fig. 259,2) but do not unscrew it.
- Unscrew the multi-function lever (Fig. 259,1).
- If necessary pull the cable from the pieces of tubing.

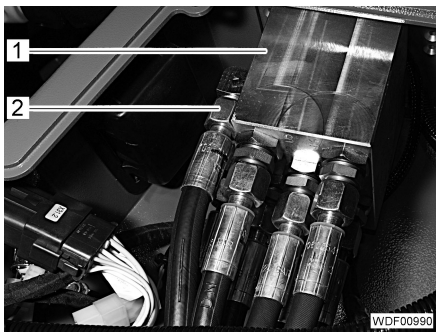


Fig. 260 Hydraulic lines

Replacing the pilot control

- Mark the hydraulic lines in order to prevent mix-ups.
- Unscrew the 8 hydraulic lines (Fig. 260,2).
- Remove the pilot control (Fig. 260,1) upwards.
- Unscrew the screw attachments and reuse them if necessary.
- Insert new pilot control (Fig. 260,1) from above.
- Screw the 8 hydraulic lines (Fig. 260,2) onto the connections on the pilot control and tighten.

Installing the multi-function lever

- If necessary, push the pieces of tubing over the cable.
- Screw the multi-function lever (Fig. 259,1) onto the thread and align it.
- Tighten the stud screw (Fig. 259,2) hand-tight.

Installing the cable

- Place a weight on the driver's seat and simultaneously push the cable with plug between the plate (Fig. 258,2) and console (Fig. 258,3).
- Thread the cable into the plate (Fig. 258,2) from the side.
- Push the hose (Fig. 258,1) from below through the sheet (Fig. 258,2) and secure (e.g. with cable ties).
- Insert and tighten 4 screws (Fig. 258,4) with spring lock washers and disks.
- Plug in the plug (Fig. 257) on the control unit.

Closing the console

- Pull the bellows (Fig. 256,2) carefully upwards over the control levers.
- Screw the nut (Fig. 256,1) onto the control lever of the auxiliary hydraulic and tighten it hand-tight.

3.9.5 Replacing the hydraulic line

▷ Pay attention to the "Safety instructions for working on the hydraulic system" (see Part 1 "Safety").

▷ This section describes replacement of a hydraulic line.
The other hydraulic lines are replaced in the same way.

▷ Reuse hydraulic fluid in the hydraulic line or dispose of it in an environmentally responsible manner.

Requirements

Ensure the following:

- The hydraulic system is depressurized (see the section 3.1.1 "Depressurizing the hydraulic system").

Spare parts and auxiliary equipment

Designation	Quantity
Hydraulic hose (prefabricated)	as req.

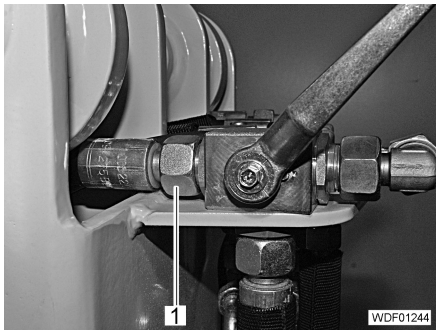


Fig. 278 Hydraulic connections

Fig. 279 Hydraulic connection

Removing the hydraulic line

- Unscrew and close off the hydraulic line (Fig. 278,1).
- Unscrew and close off the hydraulic line (Fig. 279,1).
- Loosen or remove all fixings along the hydraulic line.
- Remove the hydraulic line.

Installing the hydraulic line

- Select the required hydraulic line.
- Screw the hydraulic line (Fig. 279,1) onto the coupling and tighten.
- Screw the hydraulic line (Fig. 278,1) onto the connection of the valve and tighten.
- Tighten or replace loose or removed fixings along the hydraulic line.

Fig. 303 Rear axle support

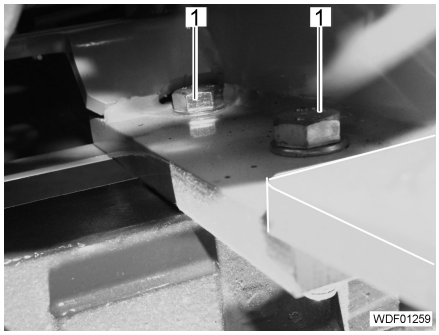


Fig. 304 Rear axle attachment

Removing the rear axle

- Provide a suitable support for the rear axle (e.g. pallet and lifting carriage) (Fig. 303).
- Unscrew 2 screws (Fig. 304,1) on each side of the rear axle.
- Carefully lower the rear axle.

▷ Make sure that the solenoid valves are not damaged.

- Carefully pull out the rear axle to the side.

4.3.2 Installing the rear axle

▷ Pay attention to the "Safety instructions for working on the hydraulic system" (see Part 1 "Safety").

▷ Rest the axle on a suitable support (e. g. a jack with a pallet) to prevent it from tipping over and to prevent damage.

▷ Make sure that the solenoid valves are not damaged.

Spare parts and auxiliary equipment

Designation	Quantity
Stop nut - hexagon M20	4

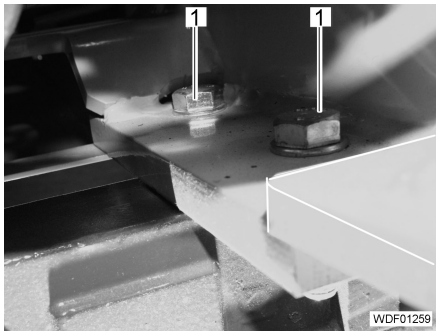


Fig. 305 Rear axle attachment

Securing the rear axle

- Clean the contact surfaces on the rear axle and rear carriage.
- Carefully push the rear axle under the rear carriage from the side.
- Carefully press the rear axle against the rear carriage from below.

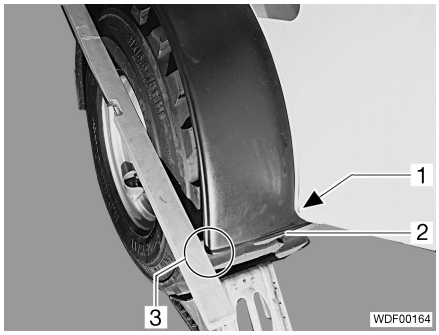


Fig. 321 Fender attachment

Attaching the fender

- Place the fender into position so that the bead (Fig. 321,2) is exactly below the rear carriage and the wheel projects approximately 10 mm over the fender (Fig. 321,3).
- Mark the position of the first hole (Fig. 321,1) and drill it.
- Press the threaded sleeve into the hole from the inside.
- Screw in the 1 screw (Fig. 321,1).
- Align the fender parallel to the wheel.
- Mark the position of the other holes and drill them.
- Press the threaded sleeves into the hole from the inside.
- Screw in the 10 screws (Fig. 320,1) and tighten all screws.

Final work

- Tilt the operator's platform back (see operator's manual "Tilting the operator's platform").

6.2.2 Replacing the base plate

▶ **CAUTION**

Risk of injury by a heavy component.

The base plate weighs approx. 29 kg.

When removing and installing the base plate, use suitable tools or work with a second person.

Spare parts and auxiliary equipment

Designation	Quantity
Base plate	1

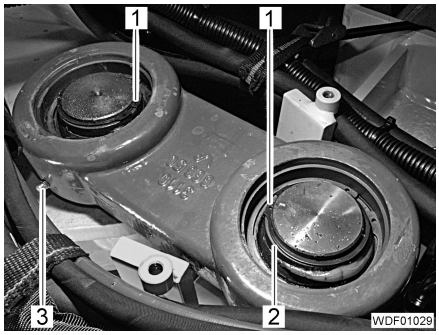


Fig. 345 Retaining mount of the self-aligning bearing

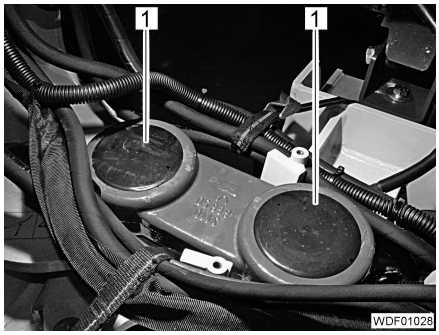


Fig. 346 Protective caps

Securing the self-aligning bearing

- If necessary, fit shim washers (Fig. 345,2) onto the pins.
- Insert 1 locking ring (Fig. 345,1) for each.
- Screw the grease nipple (Fig. 345,3) into the self-aligning bearing.

▷ Check that all locking rings are fitted correctly.

- Press 1 protective cap (Fig. 346,1) into each hole.

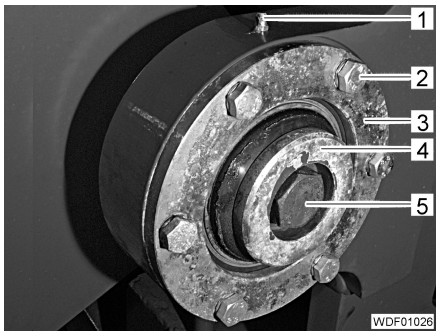


Fig. 347 Lower bearing attachment

Securing the front carriage at the bottom

- Coat the thread of the screw (Fig. 347,5) with locking agent.
- Screw in the liner (Fig. 347,4) with the disk.
- Screw in and tighten the screw (Fig. 347,5).
- Screw in the grease nipple (Fig. 347,1).

Final work

- Lubricate the load arm bearings.

6.5.5 Replacing the rear bearing of the load arm

▷ This section describes replacement of one bearing.
The second bearing is replaced in the same way.

Spare parts and auxiliary equipment

Designation	Quantity
Bearing	2
Lubricating grease	as req.

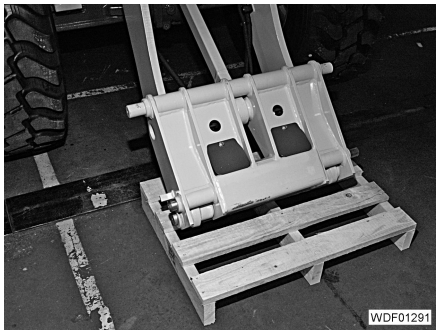


Fig. 372 Resting the tool attachment

Fig. 373 Securing the load arm

Securing the load arm

- Set down the tool attachment in a slightly raised position onto a suitable surface (e.g. pallets) (Fig. 372).
- Secure the load arm with suitable lifting gear (Fig. 373).

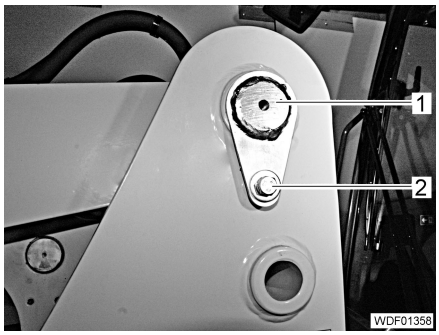


Fig. 374 Securing the pin

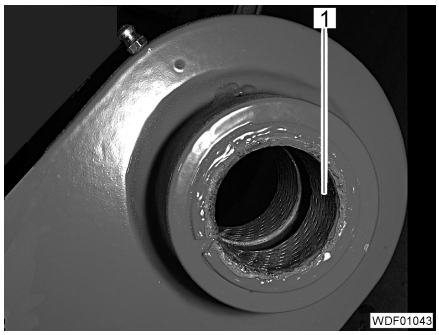


Fig. 375 Rear bearing (left)

Removing the bearing

- Unscrew 1 screw (Fig. 374,2) in each case.
- In each case, drive out 1 pin (Fig. 374,1) in an outwards direction.
- Use suitable lifting gear to raise the load arm until the rear bearings (Fig. 375) are free.
- Drive out the bearing (Fig. 375,1) outwards.

▷ Use a suitable tool to drive in the bearing without tilting it (see Part 2, "Driving bolts" section).

Installing the bearing

- Drive in a new bearing (Fig. 375,1) from the outside.
- Carefully lower the load arm so that the pin holders line up exactly.
- Grease pin and bearing slightly.

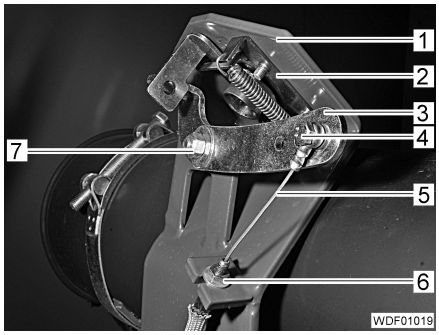


Fig. 398 Locking mechanism of engine hood

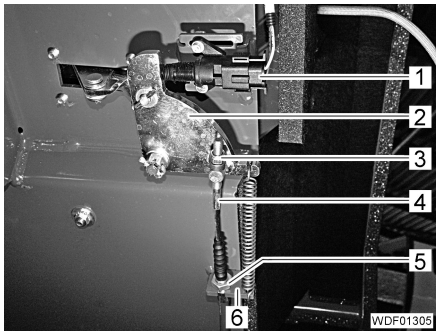


Fig. 399 Bowden cable attachment

Installing the Bowden cable of the parking brake

- Insert the Bowden cable (Fig. 398,5) into the mounting bracket (Fig. 398,1) from the front.
- Tighten the nut (Fig. 398,6).
- Screw in the screw (Fig. 398,4) with the eye and washer and tighten so that the eye can still be rotated.
- Insert the Bowden cable (Fig. 399,4) from the side into the mounting bracket (Fig. 399,6).
- Tighten the nut (Fig. 399,5).
- Insert the Bowden cable into the holder (Fig. 399,2).
- Screw the nut (Fig. 399,3) with washer onto the Bowden cable and tighten it so that the Bowden cable can still be rotated.
- Connect the plug to the switch (Fig. 399,1) of the parking brake.

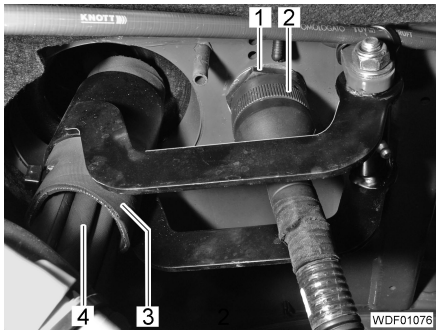


Fig. 400 Underside of the cab

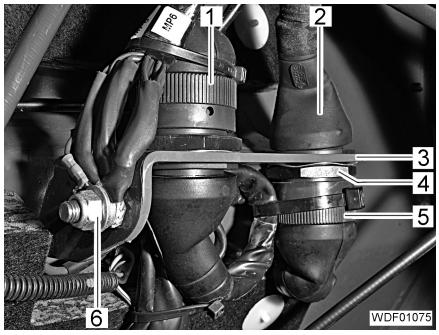


Fig. 401 Electrical plugs

Connecting the plug

- Carefully insert the hydraulic lines (Fig. 400,4) of the control hydraulic into the hose (Fig. 400,3).
- Insert the plug (Fig. 400,2).
- Insert the plug (Fig. 401,2) into the holder (Fig. 401,3).
- Screw the nut (Fig. 401,4) with the washer onto the connector and tighten.
- Attach the 2 plugs (Fig. 401,1 and 5).
- Attach the cable to the grounding point.
- Screw the nut (Fig. 401,6) with washer onto the thread of the grounding point and tighten.

7.3.2 Replacing the windshield washer container

Spare parts and auxiliary equipment

Designation	Quantity
Windshield washer container	1

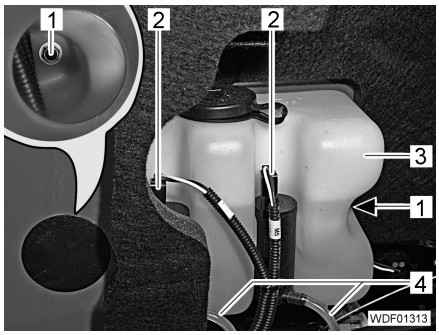


Fig. 423 Windshield washer container

Removing the windshield washer container

- In each case, detach 1 plug (Fig. 423,2) from each of the washer water pumps.
- In each case, unplug 1 transparent hose (Fig. 423,4) from the two washer water pumps and close them off.
- Unscrew the 2 screws (Fig. 423,1) and remove the windshield washer container (Fig. 423,3).

Installing the windshield washer container

- Put the windshield washer container (Fig. 423,3) into position.
- Screw in 2 screws (Fig. 423,1) with washers and tighten.
- In each case, connect 1 transparent hose (Fig. 423,4) to the two washer water pumps.
- Attach 1 connector (Fig. 423,2) to the two washer water pumps.

Final work

- Top up the washing water (see operator's manual "Filling the container for the windshield washer system").
- Check that the washer water pump is working.

7.3.3 Replacing a bonded-in window

▶ **WARNING**

Risk of injury from glass splinters.

Wear protective gloves and safety goggles.

▶ **WARNING**

Risk of injury by falling window.

Windows can be very heavy and unwieldy.

Use suitable lifting gear, or get a second person to assist you.

▷ Always follow the glass manufacturer's fitting instructions.

▷ Always follow the adhesive manufacturer's fitting instructions.

Spare parts and auxiliary equipment

Designation	Quantity
Bowden cable	1

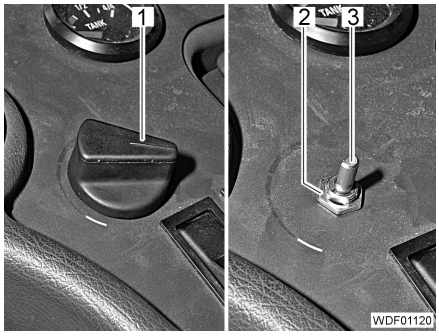


Fig. 449 Knob of the temperature controller

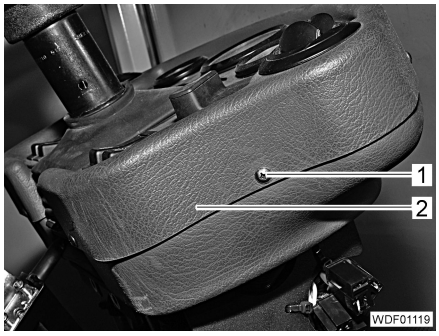


Fig. 450 Fixing of the instrument panel

Opening the instrument panel

- Remove the knob (Fig. 449,1) of the temperature controller.
- Unscrew the nut (Fig. 449,2).
- Unscrew the 6 screws (Fig. 450,1).
- Carefully lift up the instrument panel (Fig. 450,2) until the temperature controller is accessible.

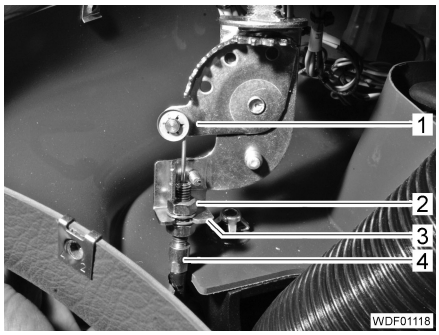


Fig. 451 Top fixing of Bowden cable

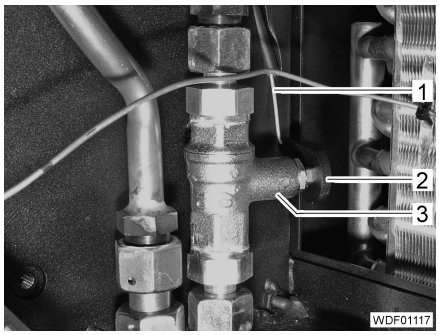


Fig. 452 Bottom fixing of Bowden cable

Removing the Bowden cable

- Undo the nut (Fig. 451,2).
- Disconnect the Bowden cable (Fig. 451,4) from the operating part (Fig. 451,1).
- Remove the Bowden cable to the side from the holder (Fig. 451,3).
- Unscrew the screw on the lever (Fig. 452,2).
- Remove the lever and unhook the Bowden cable (Fig. 452,1).
- Undo or remove all fastenings (e.g. cable ties) along the Bowden cable.

Fitting the Bowden cable

- Pull the Bowden cable up and out and simultaneously feed in a new Bowden cable.
- Hook in the Bowden cable (Fig. 452,1) on the lever (Fig. 452,2).
- Fit the lever onto the shut-off valve (Fig. 452,3).
- Screw in and tighten the screw on the lever (Fig. 452,2).
- Insert the Bowden cable (Fig. 451,4) from the side into the holder (Fig. 451,3).
- Connect the Bowden cable to the operating part (Fig. 451,1).
- Tighten the nut (Fig. 451,2) with washer.

8.1 Generator, battery and motors

8.1.1 Replacing the generator (Deutz)

▶ **WARNING**

Risk of injury by moving parts.

Do not open the engine hood when the engine is running, unless this manual expressly instructs you to do so.

▶ **WARNING**

Hot parts can cause burns.

Never work on the engine when it is at operating temperature.

Allow the engine to cool down or wear protective gloves.

Requirements

Ensure the following:

- The loader is secured (see operator's manual "Securing the loader").
- The engine hood is open (see operator's manual "Opening the engine hood").
- The battery has been removed (see operator's manual "Disconnecting and connecting the battery/changing the battery").

Spare parts and auxiliary equipment

Designation	Quantity
Generator	1

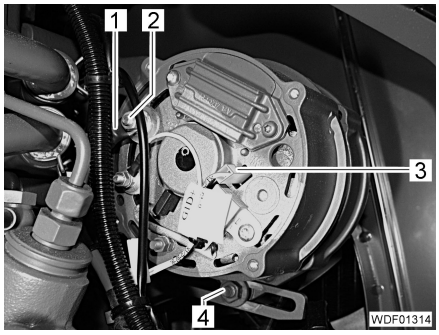


Fig. 466 Generator connections

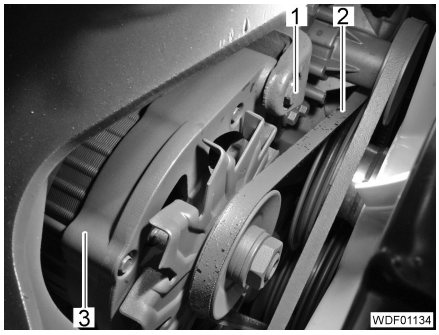


Fig. 467 Generator attachment

Removing the generator

- Unscrew the 2 nuts (Fig. 466,2) and remove the 2 cables (Fig. 466,1).
- Remove the plug (Fig. 466,3).
- Undo the nut (Fig. 466,4).
- Undo the screw (Fig. 467,1).
- Screw the generator (Fig. 467,3) sufficiently far towards the engine that the V-belt (Fig. 467,2) is free.
- Unscrew the nut (Fig. 466,4).
- Unscrew the screw (Fig. 467,1).
- Lift out the generator.

Installing the generator

- Insert the generator (Fig. 467,3).
- Screw in the screw (Fig. 467,1).
- Screw the nut (Fig. 466,4) with the washer onto the screw.
- Place the V-belt (Fig. 467,2) over the drive pulley.

- Unscrew the nut (Fig. 491,3).
- Carefully place the temperature switch (Fig. 491,2) to one side.
- Carefully remove the heater blower (Fig. 491,4) from above at the back.

Installing the heater blower

- Carefully insert the heater blower (Fig. 491,4) from above at the back.
- Carefully place the temperature switch (Fig. 491,2) into position.
- Screw the nut (Fig. 491,3) onto the temperature switch and tighten it.
- Attach the connector (Fig. 491,5) to the connections of the heater blower.
- Position the cover (Fig. 490,2), screw in 6 screws (Fig. 490,1) and tighten.

Final work

- Tighten or replace loose or missing fastenings (e.g. cable ties) along the cable.

8.2 Switches

8.2.1 Replacing the battery disconnect switch

Requirements

Ensure the following:

- The battery has been disconnected (see "Disconnecting and connecting the battery/changing the battery" in the operator's manual).

Spare parts and auxiliary equipment

Designation	Quantity
Switch	1

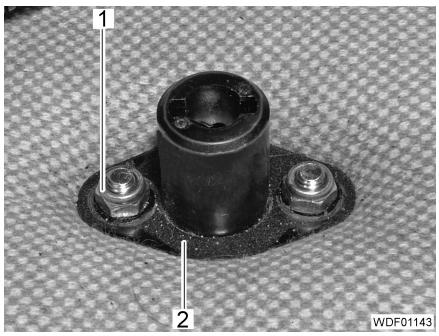


Fig. 492 Battery disconnect switch attachment

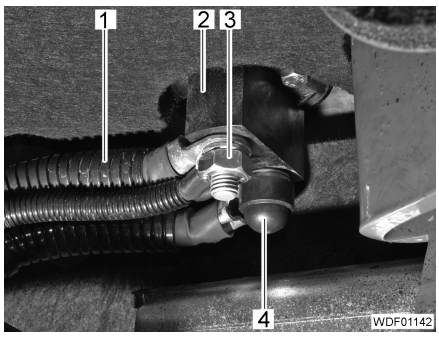


Fig. 493 Electrical connections

Removing the battery disconnect switch

- Undo the 2 nuts (Fig. 492,1) and unscrew the 2 screws on the underside.
- Remove the metal plate (Fig. 492,2).
- Remove the battery disconnect switch (Fig. 493,2) out of the step plate from below.
- Remove the 2 caps (Fig. 493,4).
- Unscrew the 2 nuts (Fig. 493,3).
- Disconnect the cable (Fig. 493,1) from the battery disconnect switch.

Installing the battery disconnect switch

- Connect the cable (Fig. 493,1) to the battery disconnect switch.
- Tighten the 2 nuts (Fig. 493,3).
- Fit the 2 caps (Fig. 493,4) onto the nuts.
- Insert the battery disconnect switch (Fig. 493,2) through the step plate from below.

8.3.3 Replacing the vacuum gauge

Requirements

Ensure the following:

- The engine hood is open (see operator's manual "Opening the engine hood").

Spare parts and auxiliary equipment

Designation	Quantity
Vacuum gauge	1

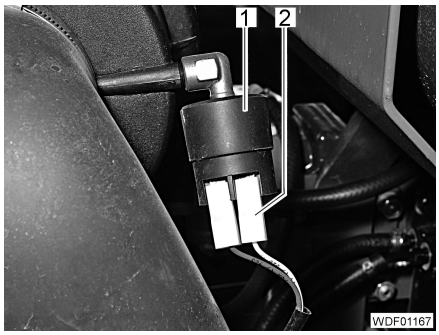


Fig. 508 Vacuum gauge

Replacing the vacuum gauge

- Remove the 2 plugs (Fig. 508,2).
- Unscrew the vacuum gauge (Fig. 508,1).
- Screw the new vacuum gauge onto the connector on the air filter.
- Connect the 2 connectors (Fig. 508,2) to the vacuum gauge.

Final work

- Close the engine hood.

8.4 Relays, coils and fuses

8.4.1 Replacing a relay

▷ This section describes replacement of one relay.
The other relays are replaced in the same way.

Requirements

Ensure the following:

- The cladding of the steering column is removed (see section 7.4.2 "Replacing the cladding of the steering column").

- Connect the 2 plugs (Fig. 527,3) to the new horn.
- Screw in and tighten the screw (Fig. 527,1) with the spring lock washer and washer.

8.5.5 Replacing the audible reverse warning device

Requirements

Ensure the following:

- The operator's platform is tilted (see operator's manual "Tilting the operator's platform").

Spare parts and auxiliary equipment

Designation	Quantity
Audible warning generator	1

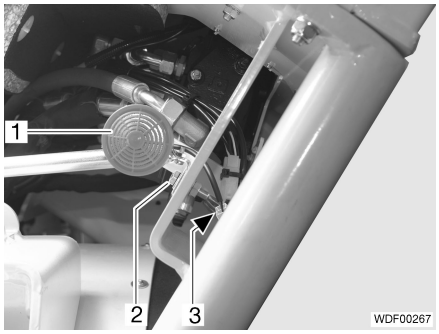


Fig. 528 Audible reverse warning device

- Unplug the plug (Fig. 528,3).
- Unscrew the screw (Fig. 528,2).
- Remove the audible reverse warning device (Fig. 528,1).
- Put a new audible reverse warning device into place.
- Screw in and tighten the screw (Fig. 528,2) with the washer.
- Connect and secure the plug (Fig. 528,3).

8.6 Lighting system

8.6.1 Replacing a complete headlamp with indicator

Spare parts and auxiliary equipment

Designation	Quantity
Headlamp	1

I

L

M

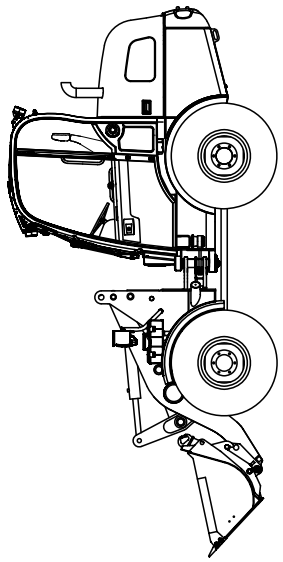
O

P

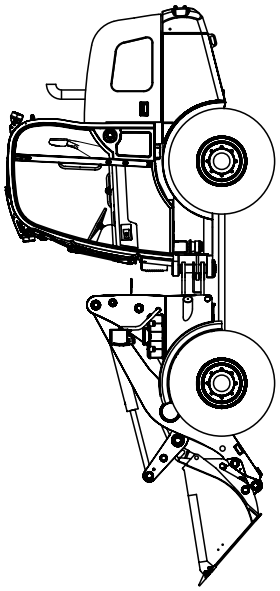
R

WACKER NEUSON

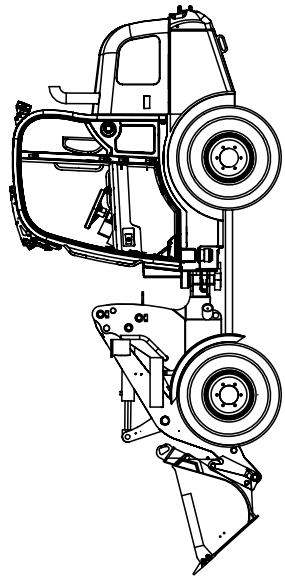
Elektric circuit diagram WL 36, 37, 48, 50, 55, 57



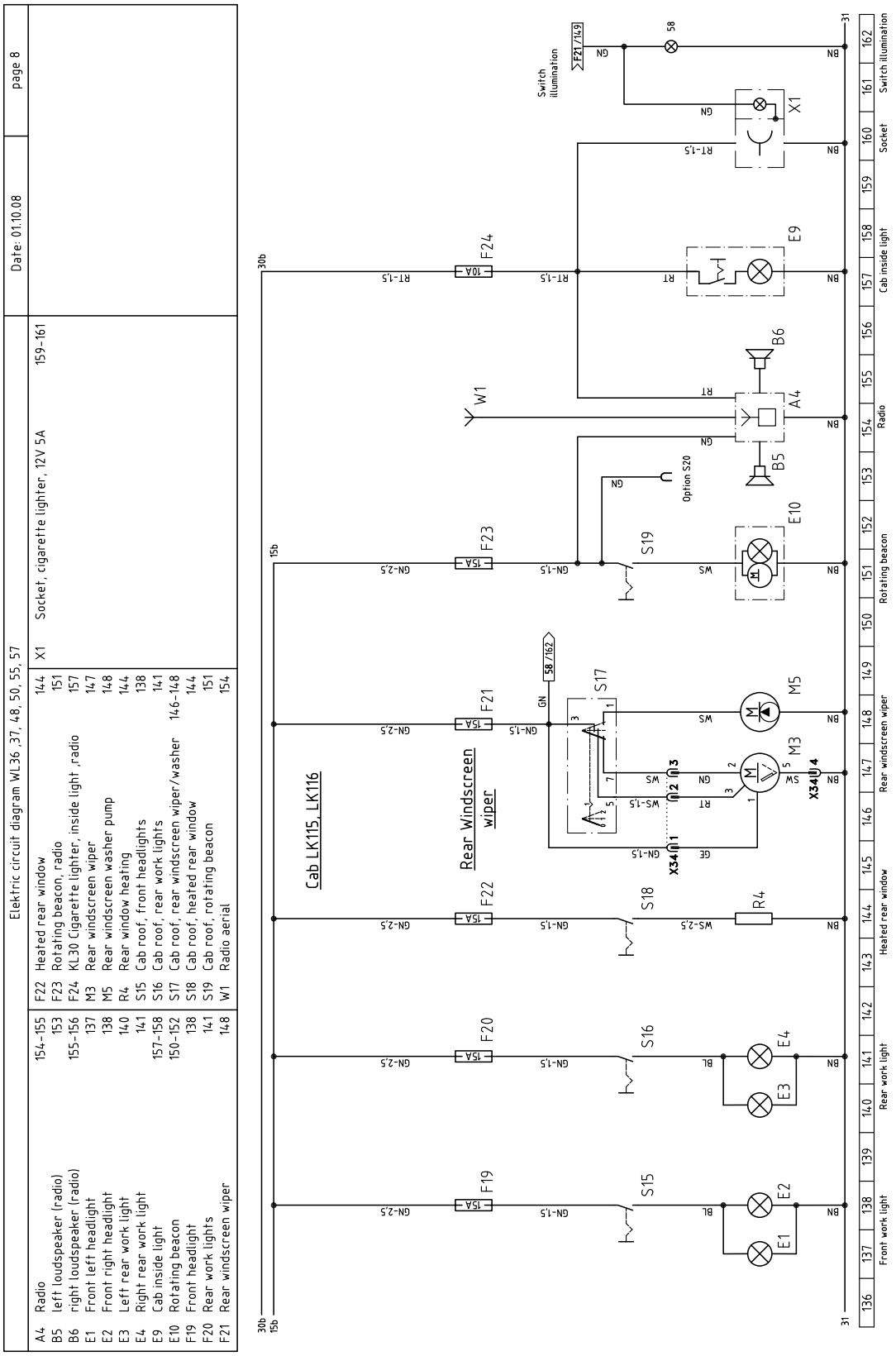
WL 48, 50



WL 55, 57



WL 36, 37


Elektric circuit diagram WL36 ,37, 48, 50, 55, 57
Date: 01.10.08
page 8
A4 Radio 154-155
B5 left loudspeaker (radio) 153
B6 right loudspeaker (radio) 155-156
E1 Front left headlight 137
E2 Front right headlight 138
E3 Left rear work light 140
E4 Right rear work light 141
E9 Cab inside light 157-158
E10 Rotating beacon 150-152
F19 Front headlight 138
F20 Rear work lights 141
F21 Rear windscreen wiper 148
F22 Heated rear window 144
F23 Rotating beacon, radio 151
F24 KL30 Cigarette lighter, inside light ,radio 157
M3 Rear windscreen wiper 147
M5 Rear windscreen washer pump 148
R4 Rear window heating 144
S15 Cab roof, front headlights 138
S16 Cab roof, rear work lights 141
S17 Cab roof, rear windscreen wiper/washer 146-148
S18 Cab roof, heated rear window 144
S19 Cab roof, rotating beacon 151
W1 Radio aerial 154
X1 Socket, cigarette lighter, 12V 5A 159-161
Cab LK115, LK116
Rear Windscreen wiper
Option S20
Switch illumination
Front work light
Rear work light
Heated rear window
Rear windscreen wiper
Radio
Rotating beacon
Cab inside light
Socket
Switch illumination

X10

JPT 6-pole Art. No. on request			
S	**Color**	**Ø [mm²]**	**Designation**
1	BK	1	S2 Preheater starting switch terminal 19
2	WH	1.5	K8-L (Deutz only)
3	WH	1.5	Option X60 contact 6
4	WH	1.5	Option X50 contact 2 Option X31.2 contact 5
5	WH	1.5	Option X54 contact 5
6	WH	1	Option X54 contact 4

X11

Molex XXX Art. No. on request			
S	**Color**	**Ø [mm²]**	**Designation**
1	WH	1	H2 Indicator lamp, electrical connection
2	GN	1	H1, H3, H5, H6, H7 Plus
3	BL	1	Terminal 58 Backlighting
4	BN	1	GND H1, H2, H8 ground
5	-	-	GND
6	BL	1	H8 Indicator lamp, indicator left
7	BL	1	H8 Indicator lamp, indicator right
8	BK	1	H1 Preheat indicator lamp, plus and minus switchable
9	WH	1	H3 Indicator lamp hydraulic fluid clogging
10	WH	1	H4 Reserve minus
11	WH	1	H4 Reserve plus
12	WH	1	H5 Indicator lamp, fuel reserve
13	WH	1	H6 Indicator lamp, cooling water temperature/hydraulic oil temperature
14	WH	1	H7 Indicator lamp, battery

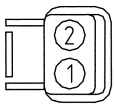
X12

Molex XXX Art. No. on request			
S	**Color**	**Ø [mm²]**	**Designation**
1	WH	1	H10 Indicator lamp, engine oil pressure
2	BN	1	GND H9, H14, H15, H16 ground
3	-	-	GND
4	-	-	GND
5	WH	1	H13 Indicator lamp, forwards driving
6	BL	1	Terminal 58 Backlighting
7	BL	1	H9 Indicator lamp, main beam
8	WH	1	H11 Indicator lamp, parking brake
9	WH	1	H12 Indicator lamp, air filter clogging

3.1.5 Plug connections - lighting

The following plug connections are located on the front carriage or on the rear carriage.

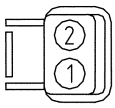
The assignment of the pin contacts (P) and the assignment of the socket contacts (S) are listed separately.



Deutsch 2-pole
Art. No. DT 04-02 Pxxx

X55

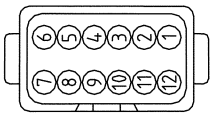
P	Color	Ø [mm²]	Designation
1	BL	1	E13-1 License plate lamp plus
2	BN	1	E13-2 License plate lamp ground



Deutsch 2-pole
Art. No. DT 06-02 Sxxx

X55

S	Color	Ø [mm²]	Designation
1	BL	1	F14 Fuse
2	BN	1	Grounding point 6



Deutsch 12-pole
Art. No. DT 04-12 Pxxx

X60

P	Color	Ø [mm²]	Designation
1	BN	1	E5 Headlamp left ground
2	BK/WH	1	E5 Headlamp left indicator
3	GR/BK	1	E5 Headlamp left parking light
4	YE	1	E5 Headlamp left dipped beam
5	WH	1	E5 Headlamp left main beam
6	-	-	Headlight front (optional)
7	-	-	Ground (optional)
8	WH	1	E6 Headlamp right main beam
9	YE	1	E6 Headlamp right dipped beam
10	GR/RD	1	E6 Headlamp right parking light
11	BK/GN	1	E6 Headlamp right indicator
12	BN	1	E6 Headlamp right ground

The adjustment is performed automatically and steplessly, but is dependent on the speed and load. The driving speed depends on the engine speed and the unit's load. Driving begins with the setpoint speed and ends with the max. engine speed by pressing the accelerator pedal. Depending on the loader's load, the variable displacement pump is automatically reduced, so that the most favorable speed is maintained. The greater the load on the loader (during loading work or driving uphill), the more the driving speed is reduced. This regulation makes optimum use of the entire power range. Pressing the inching pedal (inching delay, pedal in the left driving direction) enables the regulation to be additionally influenced, with the result that at any engine speed, the loader can be gradually slowed down until it comes to a standstill.

The figures below show the connections and adjustment devices of the variable displacement motor.

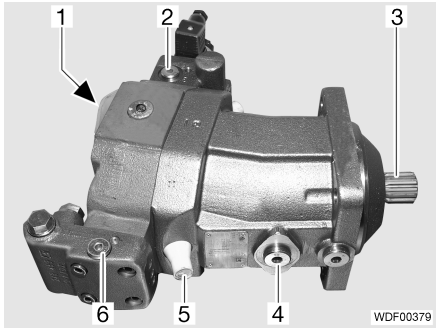


Fig. 10 Underside of the variable displacement motor

1 High pressure connection A
2 Measuring point, driving pressure G
3 Output
4 Cross flushing connection
5 Volume adjustment in overdrive
6 Measuring point, reversing pressure M_1

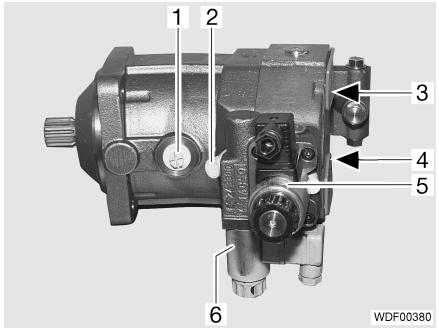


Fig. 11 Topside of the variable displacement motor

1 Cross flushing connection
2 Volume adjustment in working gear
3 High pressure connection A
4 High-pressure connection B
5 Gear selection solenoid valve
6 Driving direction recognition

The steering and working cylinders are supplied with fluid by a hydraulic gear pump. The gear pump is mounted on the variable displacement pump of the drive.

The hydraulic system is equipped with pressure control valves, filters and an oil cooler.

The steering is designed as fully-hydraulic articulated pendulum steering via a dual-action cylinder.

Drive and axles

The pto gear, which transfers the power to the rear axle and (via a drive shaft) to the front axle, is driven via the driving hydraulics.

The axles are configured as rigid axles.

Brakes

The drive also functions as the service brake. The service brake acts on the front and rear axle, and is actuated via the braking inching pedal. The drum brake on the differential is also actuated via the braking inching pedal. The parking brake acts mechanically on the drum brake via a Bowden cable.

Vehicle frame and load arm

The loading equipment consists of the lift frame with an integrated mechanical or hydraulic quick-change attachment, lifting and tipping cylinders and the corresponding attachments.

The loader has a rollover protective structure (ROPS structure).

Werkstatthandbuch

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