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Operating manual

Crawler dozer
SR 712 B Litronic

from S/N 5514

Document identification

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Product identification

Manufacturer: LIEBHERR Werk Telfs GMBH

Model: SR 712B

Model No.: 952

Conformity: CE

Address

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Technical Description Welding Tractor

SR712 BM

Litronic®

Engine output 120 kW/163 HP
Operating weight 16.9 – 17.5 t/37,300 – 38,600 lb
Hydrostatic travel drive with electronic steering control



LIEBHERR

The Better Machine.

1.2 Tightening torques

Installation preload F_M and tightening torques M_A for shank screws with metric standard or fine threads according to DIN ISO 262 and DIN ISO 965 T2 (replacement for DIN 13 part 13) and head dimensions of hex head screws with shank DIN EN 24014 (replacement for DIN 931 part 1) or Allan head screws DIN EN ISO 4762 (replacement for DIN 912)

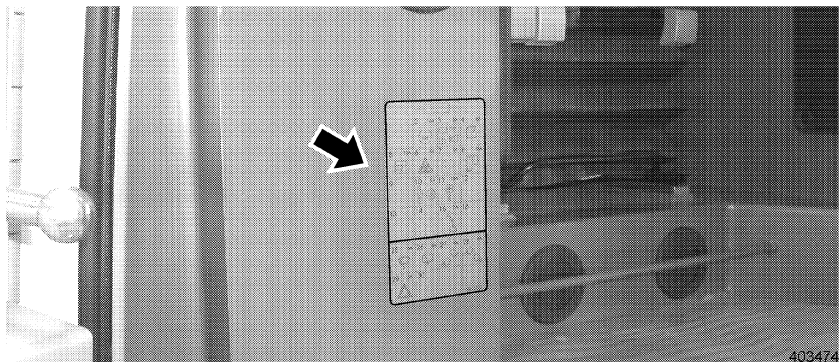
The chart values are valid for screws with "black" surface or phosphated, zinc-plated and DACROMET 500. Screws and nuts with "black" surface, phosphated or galvanized, lightly lubricated. Medium friction $\mu_G = 0,10$.

Any tightening torque values given in drawings / parts lists, instructions or component descriptions and / or tightening procedures must always be used and observed before using the factory standard values.

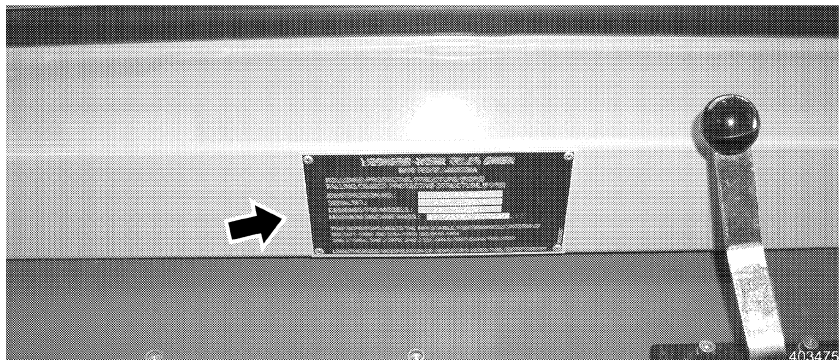
Beginning with grade 10.9, the use of lock washers does no longer provide any safety actions.

Always use a torque wrench of the correct size - the torque momentum according to the chart should be in the upper third of the present test range.

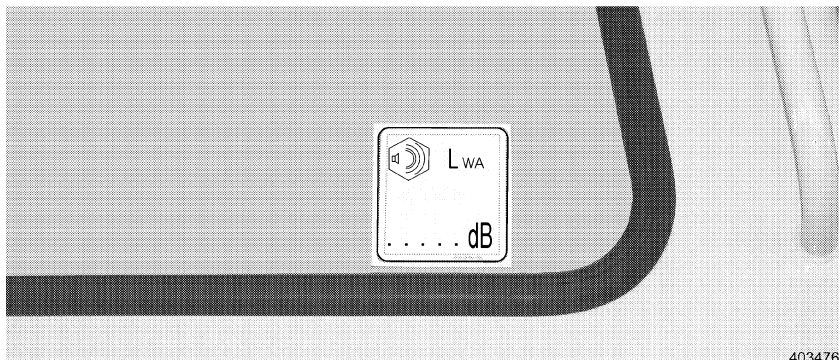
When using impact wrenches, care must be taken that the given torque values are retained - use a torque wrench for prechecks and intermediate checks.

*Sign – Fuses***Sign – Fuses**

The sign is installed on the front on the operator's platform. Shows the location and size of the fuses.

*Sign - Rops / Fops***Sign - Rops / Fops**

The sign is installed on the operator's cab, on the left of the operator's seat. Shows the maximum load for roll over protective structure.

*Sign – Sound protection***Sign – Sound protection**

The sound protection sign is installed inside on the operator's cab windshield. LWA = Sound output level (sound output level emitted to the surrounding area).

- Make sure that during cleaning work, the temperature sensors for the fire warning and sprinkler system do not come in contact with the hot cleaning fluid, or the sprinkler system could be actuated
 - After the cleaning procedure, completely remove all covers and tapes.
 - After cleaning the machine, check all fuel, engine oil, and hydraulic lines for leaks, for loose connections, for chafed and damaged areas.
 - All problems must be remedied immediately.
18. Adhere to the product safety instructions issued for handling oils, grease and other chemical substances.
 19. Make sure to dispose of any operating and service fluids as well as replacement parts properly and in an environmentally sound manner.
 20. Be very careful when handling any hot components or fluids on the machine as there is a danger of burns and scalding.
 21. Use combustion motors and fuel operated heaters only in areas with adequate ventilation. Before start up, make sure that the ventilation is adequate. Follow and adhere to any local regulations and guidelines and instructions pertaining to the present jobsite.
 22. Perform any welding, cutting or grinding work on the machine only if this work has been explicitly authorized, as there can be a danger of fire and / or explosion.
 23. The window panes in the operator's cab are made of safety glass. Always replace damaged window panes in the operator's cab immediately.
 - The window panes in the operator's cab must be made of safety glass.
 - Use only Original LIEBHERR spare parts.
 24. Do not try to lift heavy parts. Always use appropriate lifting aids and devices with sufficient load carrying capacity.

Procedure:

 - To lift spare parts and component assemblies for replacement on the machine, they must be securely mounted and secured onto the lifting device to prevent accidents.
 - Use only suitable and flawless lifting devices as well as hooks, ropes, slings, shackles, etc. with sufficient load carrying capacity.
 - **Do not allow anybody to work or remain underneath a suspended load.**
 25. Do not use damaged or insufficient wire ropes. Always wear gloves when handling wire ropes and cables.
 26. Only experienced personnel may attach loads and signal the operator. The person used as a guide must be visible by the operator or be in direct voice contact with the operator via a two way radio.
 27. When installing parts higher up or when working overhead, always use safe scaffolding, ladders or working platforms. Do not step on any parts to get closer to the work area. You must wear safety harnesses or similar safety equipment when working higher up. Make sure that all handles, steps, walk ways, cat walks, and ladders etc. are always free of dirt, snow and ice.
 28. When working on or changing any part of the attachment, for example when changing the teeth, make sure that the attachment is properly supported. Never use metal on metal supports.
 29. Never work underneath the machine if the machine has been raised by its attachment. Prior to working underneath, the machine and / or its attachment must always be properly blocked and supported with wooden blocks.



41 Indicator light - Preglow system

Color: yellow

- Lights up for approx. 20 seconds when the ignition key is in preglow position.

As soon as the indicator light turns off, continue to turn the ignition key to start the Diesel engine.



42 Indicator light - Reduced travel speed range

Color: yellow

- Lights up in reduced travel speed range.

The travel speed of the machine is reduced by switching the switch on the joystick to position II or I.



43 Indicator light - Electronic

Color: red

- Lights up when there is a problem in the electrical system.

If the indicator light comes on, turn the machine off and restart. If the indicator light does not turn off or lights up again, contact Liebherr Service.



44 Fuses

The location as well as the fuse ratings are described later in this manual.



45 Electrical outlet 24 V

- Additional electrical users (maximum 10A) can be connected via the 24V electrical outlet.

Current is available only if the ignition key is in contact position.



46 Indicator light - Travel gear - Lifetime seal area, left

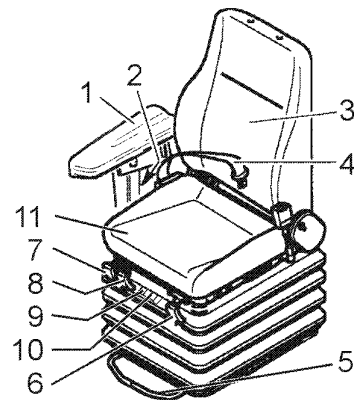
Color: red

- Lights up if the oil level in the lifetime seal area is too low.
- Lights up for approx. 3 seconds when the ignition key is in contact position (self check).

If the indicator light lights up, turn the machine off, check the travel gear externally for leaks.

Contact Liebherr Service.

- To be able to continue work in the meantime, add oil to bring the oil level to normal level.



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Operator's seat - main components and control elements

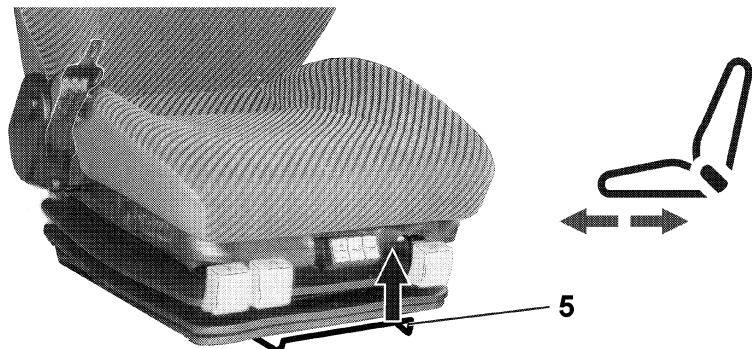
- | | |
|---------------------------------|------------------------------------|
| 1 Armrest | 7 Lever - incline position - front |
| 2 Adjustment - armrest | 8 Lever - incline position- rear |
| 3 Backrest | 9 Button - seat suspension |
| 4 Seatbelt | 10 Button - back support |
| 5 Lever - horizontal adjustment | 11 Seat surface |
| 6 Lever - adjustment - backrest | |

Individual adjustment for ergonomic seat position

The operator's seat can be adjusted for optimum operator comfort.

Horizontal adjustment

The seat can be moved forward or backward with the lever 5 on the front of the operator's seat.



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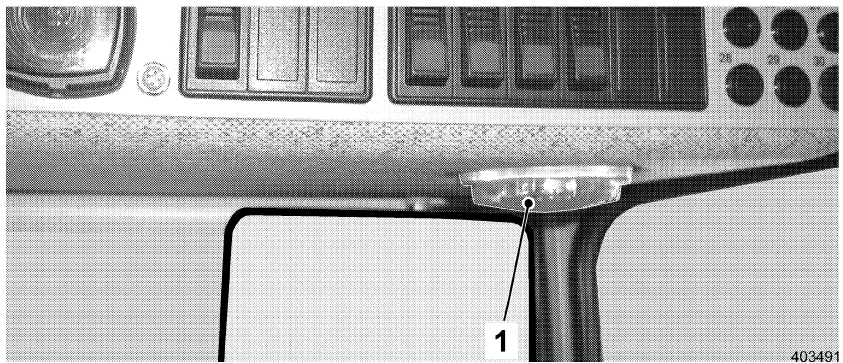
Horizontal adjustment

- 5 Lever - Horizontal adjustment

- Pull lever 5 in direction of the arrow,
- Set the operator's seat in horizontal position and release the lever.

Seat surface incline

The adjustment can be made with lever 7 and lever 8 on the right front of the operator's seat.



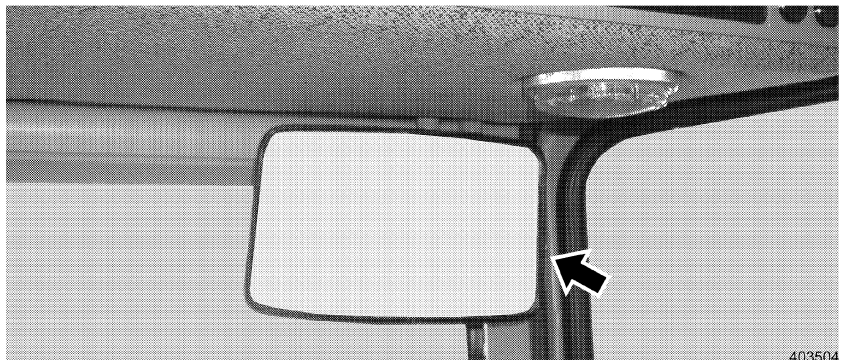
Interior light

- Turn the interior light on: Turn the light cover 1 to the right.
- Turn the interior light off: Turn the light cover 1 to the left.

3.2.13 Rear view mirror

Adjustment of mirror

The operator's cab is equipped with a rear view mirror.

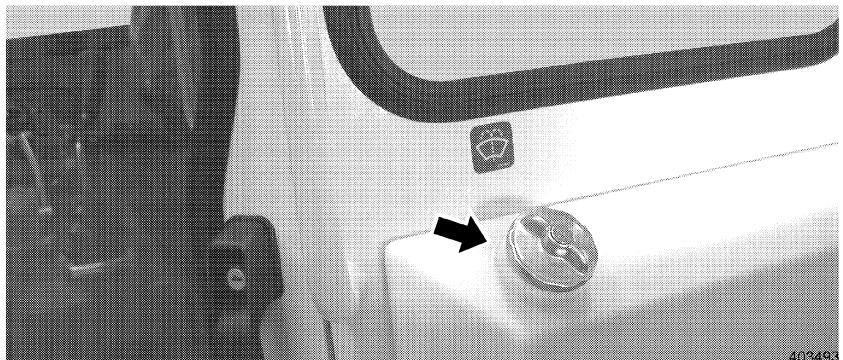


Adjustment - Mirror

- Adjust the mirror before starting to work, so you can see the complete rear area.

3.2.14 Reservoir for windshield washer fluid

The reservoir is integrated on the front in the operator's cab.



Reservoir - windshield washer fluid

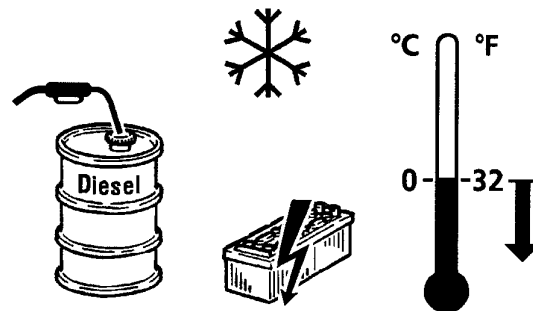


Throttle control lever – low idle

- Regulate the engine speed with the throttle control lever.
- Do not place a full load on the engine until after a short warm up period.

Preparations for starting at freezing temperatures

The following preparations improve the starting behavior at low ambient temperatures.



403046

Winter operation

Preparations:

- Check the battery charge, recharge the battery if necessary.
- Use Winter fuel. See section "Lubricants and service fluids" under Winter operation.

Danger



Danger of explosion of Diesel engine!

When using ether based starting aids to start Diesel engines with preheat system, there is a danger of explosion!

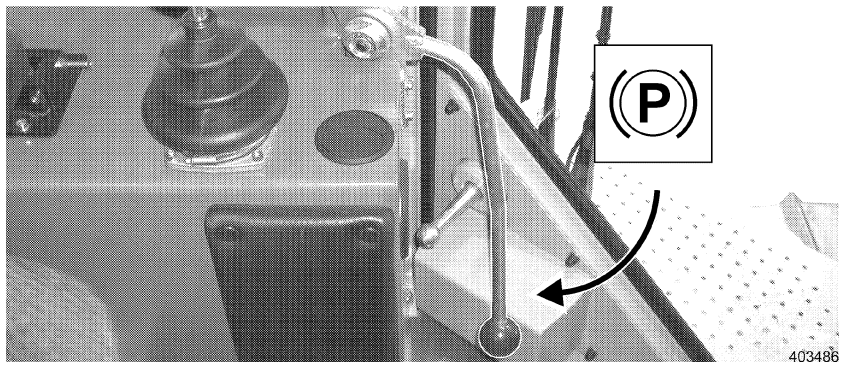
! Do not use ether based starting aids.

- Carry out the preparations for starting at freezing temperatures.

3.3.4 Travel operation

Preparations for travel

The preparations for travel should be carried out in the stated sequence. Make sure that the machine is in operating position. See paragraph "Operating position".

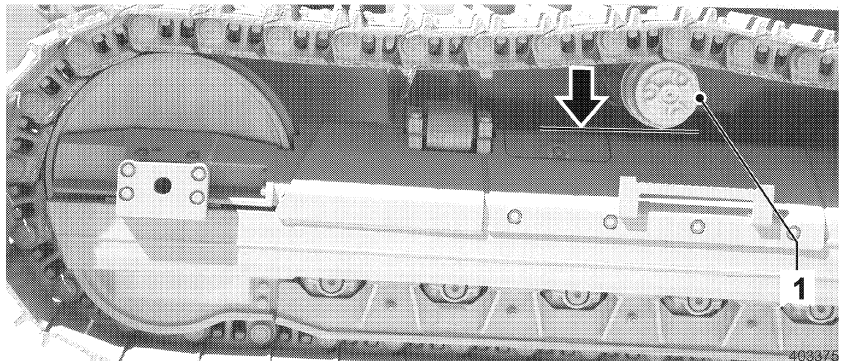


Safety lever down

Continue to work

- Move the travel joystick to neutral position.
- Move the safety lever to the full down position.
- Lift the emergency off button until it engages.
- Move the safety lever up.
- Deflect the travel joystick into the desired direction. See also section "Travel".

3.3.8 Guidelines for working in water



Lower edge - carrier roller

When driving through wet areas or when working in water, the maximum fording depth (lower edge of carrier roller 1) may not be exceeded.

- After working in water, lubricate all lube points.

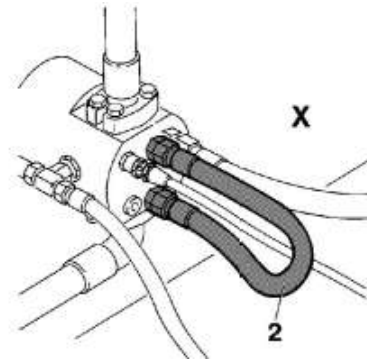
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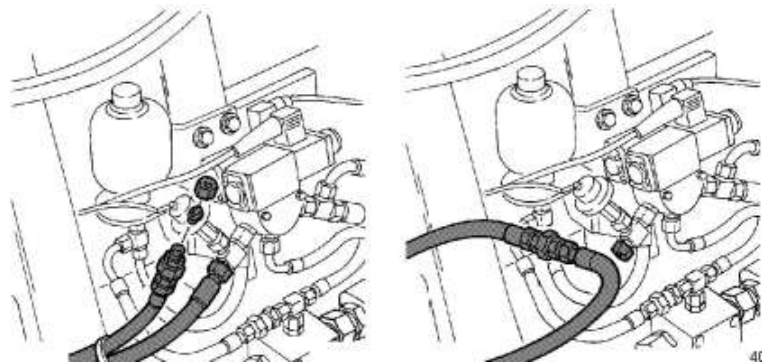
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Short circuit the connections

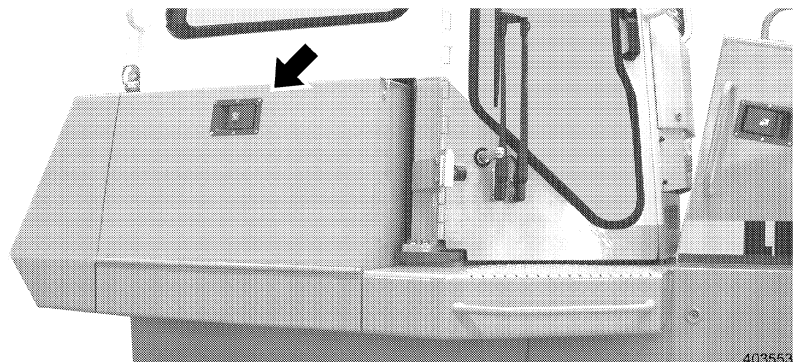
- Short circuit the connections with the hydraulic hoses 2, which are included for this purpose in the tool box.



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Brake pressure hose

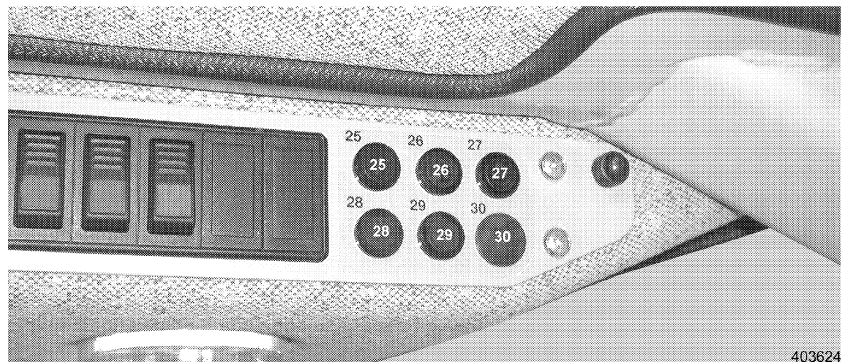
- On the free hydraulic hose (connection A) of the hand pump, which is attached on the brake pressure hose, remove the union nut and the plug and connect it with the brake pressure hose on the brake valve (connection B).
- Close off the cleared connection on the brake valve (connection B) with the plug and the union nut.
- Lower the operator's platform properly, but **do not** attach it on the carrier frame.



403553

Battery compartment door

- Open the battery compartment door.



Location of fuses F25 to F30

Fuses in roof console.

- Depending on the electrical problem, check the following chart – Fuse listing for the fuse.
- Pull the affected fuse and replace it with a new fuse (Amperage depending on placement).

Fuse chart

Fuse	Value	Unit	Description / function
F 2	16	A	Preheat system
F 3	5	A	Charge indicator, operator's platform illumination, radio, transformer
F 4	8	A	Electronic supply
F 5	10	A	Electrical socket
F 6	5	A	Display instruments, indicator lights, fan control
F 7	8	A	Auxiliary floodlights (Optional equipment)
F 8	25	A	Power supply roof console
F 9	10	A	Power supply crane control
F 10	5	A	Hydraulic valves
F 11	10	A	Heater fan, air conditioner, air-cushioned operator's seat
F 12	16	A	Condenser blower air conditioning system
F 13	20	A	Refueling pump
F 14			Not assigned (for optional equipment)
F 15			Not assigned (for optional equipment)
F 16			Not assigned (for optional equipment)
F 25	8	A	Windshield wiper and washer system, operator's cab door
F 26	8	A	Windshield wiper and washer system, front and rear
F 27	8	A	Headlight, left front and right rear, instrument illumination
F 28	8	A	Headlight, right front and left rear
F 29	2	A	Warning light – operator's cab
F 30	8	A	Auxiliary floodlight

Check the oil level in the corresponding component after every lubrication or service fluid change or after adding fluids.

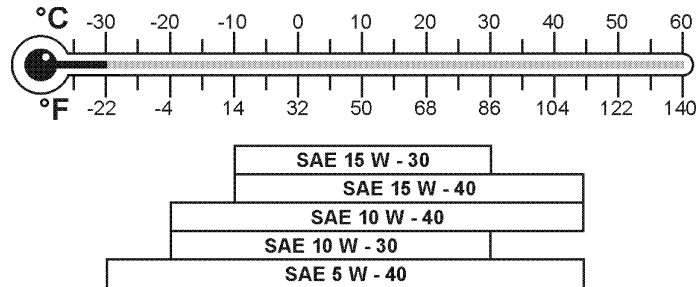
Specification Explanation:

API = American Petroleum Institute
ACEA (CCMC) = Association des Constructeurs Européens de l'Automobile
SAE = Society of Automotive Engineers



Diesel engine

Quantity	Service fluids	Specification
20 l (5.3 US gal.)	Engine oil, viscosity per SAE	API CF-4, CG-4, CH-4 ACEA E2, E3, E4, E5, (D4, D5)



403058

Temperature dependent selection of SAE classification

Lube oil viscosity

The lube oil viscosity is selected according to the SAE - classification (Society of Automotive Engineers).
The determining factor for the correct sections of the SAE - classification is the ambient temperature.
The selection of the SAE - classification provides no information regarding the quality of the lube oil.
If the viscosity is too high, the machine may be hard to start, if the viscosity is too low, it may provide insufficient lubrication.
The temperature ranges noted in the chart are guidelines and may be exceeded in either direction for a short time period.

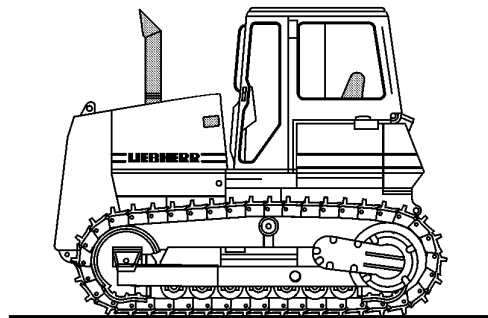
Lube oil maintenance interval

Maintenance interval
– Change the oil depending on climate zone, sulfur content in the fuel and oil quality, according to the following chart.
If the note operating hours are not reached, change the engine oil and filter once a year.

Aggravating circumstances

Various factors or difficult applications can change the maintenance intervals:
Aggravating circumstances or difficult applications are:
– repeated cold starts
– Sulfur content in fuel of more than 0.5%
– ambient temperature below -10°C
If aggravating circumstances or difficult applications are present, then the oil change intervals noted in the "maintenance and inspection schedule" must be cut in half, according to the following chart.

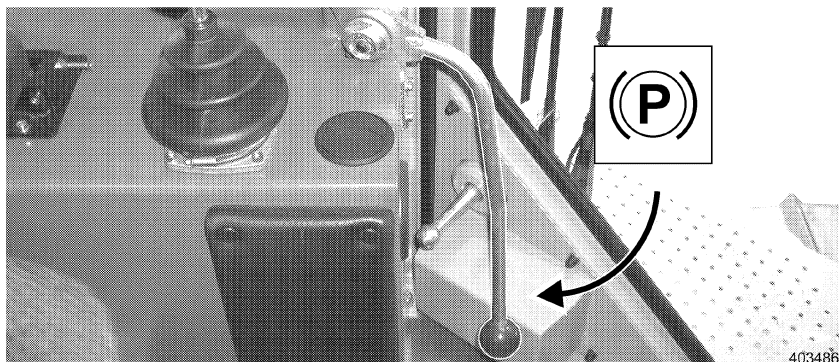
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Maintenance position

- Park the machine on level ground.



Safety lever down

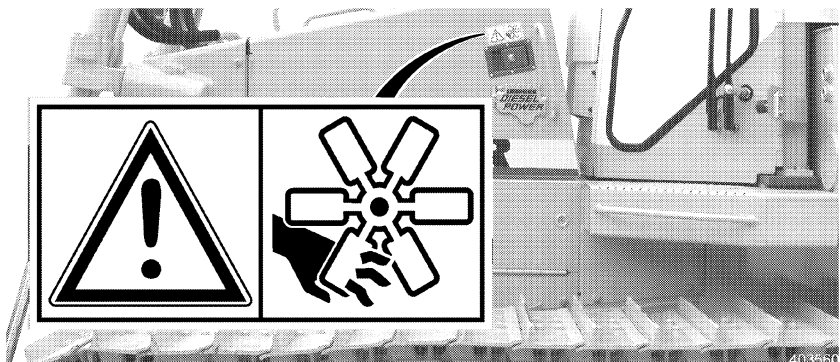
- Place the safety lever down.
- Turn the Diesel engine off.
- Pull the starter key.

Open the engine compartment doors

Open the service doors and hoods

When the doors are open, the following components can be accessed:

- Diesel engine
- Cooling system
- Air filter
- Splitterbox



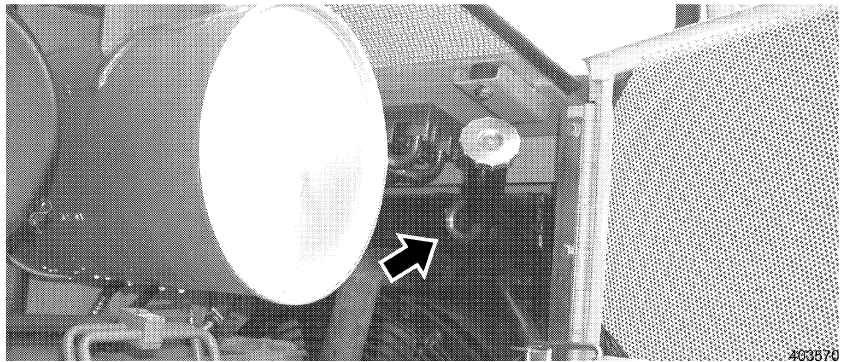
Open only if the engine is at a standstill!

5.6.1 Check the coolant level

The coolant expansion tank with filler fitting is on the upper side of the cooling unit. Access is provided via the right engine compartment door.

Make sure that:

- the machine is in maintenance position,
- the right engine compartment door is open.



Inspection port - coolant

- The coolant must be visible in the inspection port when the Diesel engine is turned off.
- If the coolant is not visible in the inspection port, add more coolant.

Antifreeze concentration

The coolant must have the correct antifreeze and DCA-4 concentration. For details, see "Check antifreeze and DCA-4 concentration in coolant".



Danger of scalding

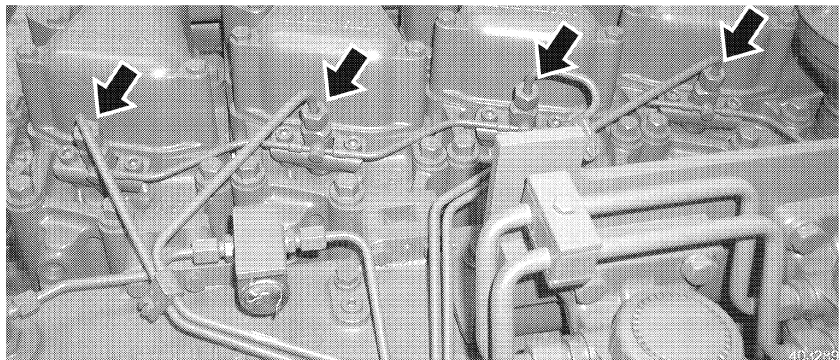
Bleeding the fuel system is necessary after:

- Changing the fuel filter.
- Cleaning the fuel tank.
- Repairs on the fuel system.
- Emptying the fuel tank.



Breather screw – fuel filter

- Back out the breather screw on the fuel filter by 2-3 turns.
- Actuate the hand pump until fuel free of air bubbles emerges on the breather screw.
- Tighten the breather screw again.



Union nuts

- Loosen the union nuts on the injection valves.
- Close the engine compartment doors.
- Actuate the starter switch until fuel free of air bubbles emerges. Retighten the union nuts.

Start the Diesel engine as described in section "Control, operation". If the Diesel engine does not start, repeat the bleeding procedure.

5.8 Air filter system

5.8.1 Clean / change the air filter

To ensure proper cooling function for all components, the cooler must be cleaned, as necessary. In dusty job applications, check the cooler daily and clean, as necessary.

Dirty cooler units cause overheating.

Dust and dirt can be removed from the cooling fins with water spray, steam or pressurized air. We recommend the use of pressurized air.

Make sure that:

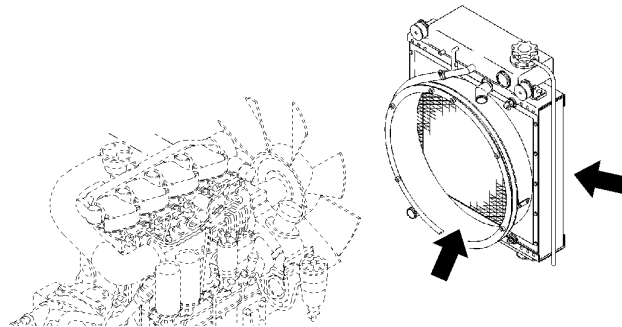
- the machine is in maintenance position,
- the left and the right engine compartment door are open.

Caution



Be careful not to damage the cooling fins.

! Do not use hard objects or high water pressure for cleaning.



Oil cooler

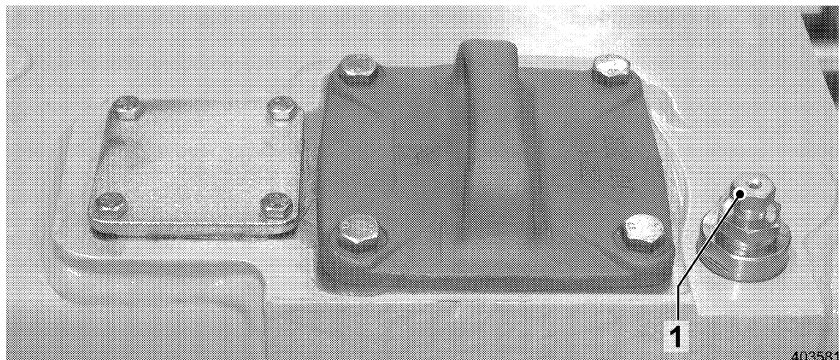
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- Clean cooler units with pressurized air, steam or water.
- Close the left and right engine compartment doors again.

5.9.7 Change the hydraulic oil

Make sure that:

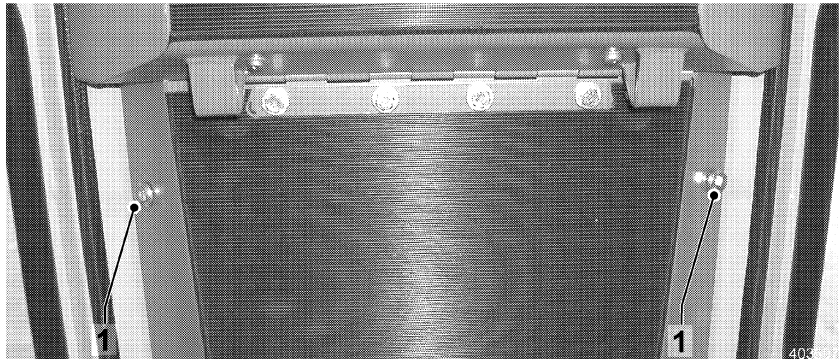
- the machine is at operating temperature,
- the machine is in maintenance position,
- a suitable container is available,
- oil with the correct oil specification and quantity according to the data in "Lubricants and Service fluids " is available.



Hydraulic tank bleeder screw

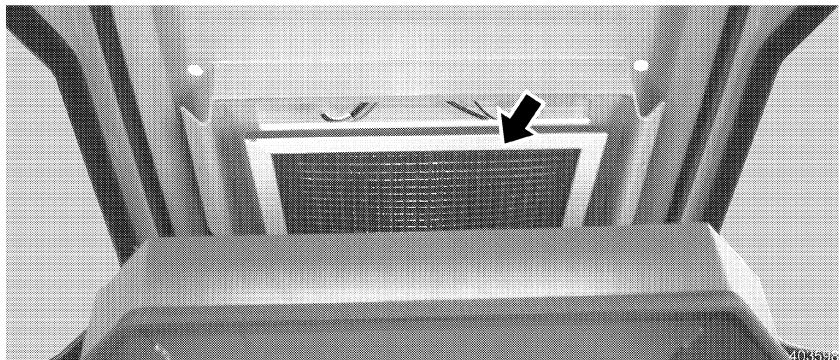
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- Relieve the tank pressure: Back out the bleeder screw 1 by two turns.



Hex head screws

- Remove the hex head screws and open the lock.



Location of fresh air filter

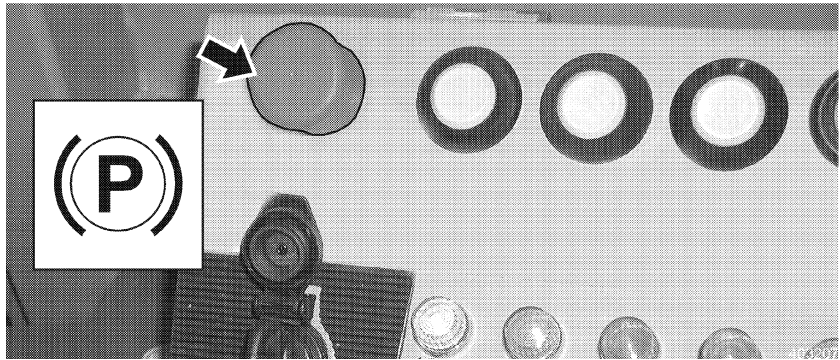
- Fold the cover down.
- Pull the filter out and remove.
- Clean the filter (blow out) or change, if necessary.
- Reinsert the cleaned or new filter.
- Fold the cover up and reinstall with hex head screws.

5.12.3 Air conditioning system

Proper function of the complete air conditioning system is only ensured if the maintenance tasks are carried out fully, properly and by especially trained personnel.

Only trained air conditioning mechanics may access and repair the cooling circuit.

The air conditioning system must be serviced once a year, before the begin of the warm season, by an authorized service center, the service must be recorded for warranty purposes.



Emergency off button

- Push the emergency off button in the instrument panel.

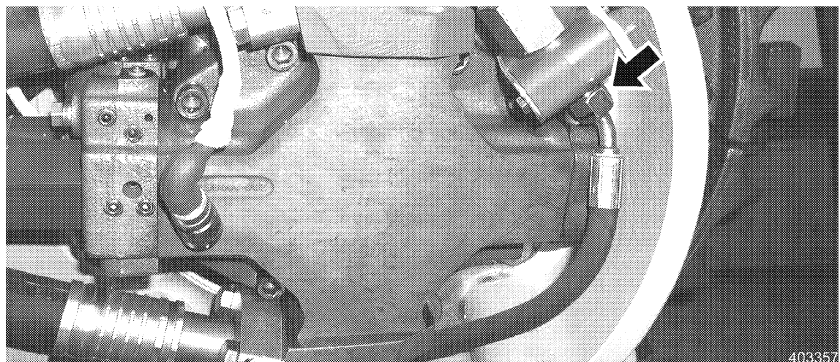
Caution



Danger of accidents!

! The emergency off button must be pushed during the oil change procedure, and the safety lever must remain in the down position!

- Start the Diesel engine in low idle RPM. See "Control, operation".
- Let the Diesel engine run until only clean oil emerges.
- Turn the Diesel engine off.
- Remove the filler line on the connection travel gear - top. Install the previously removed screw fitting on the filler.



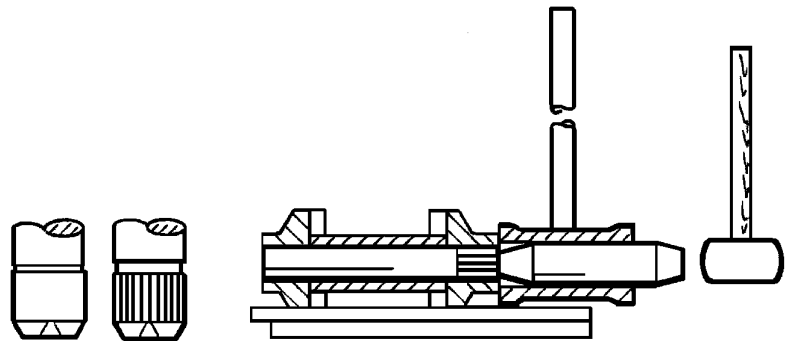
Sensor line, bottom

- Install the bottom sensor line.

Fill the lifetime seal area with oil

Drain the oil as described above, and flush the lifetime seal area.

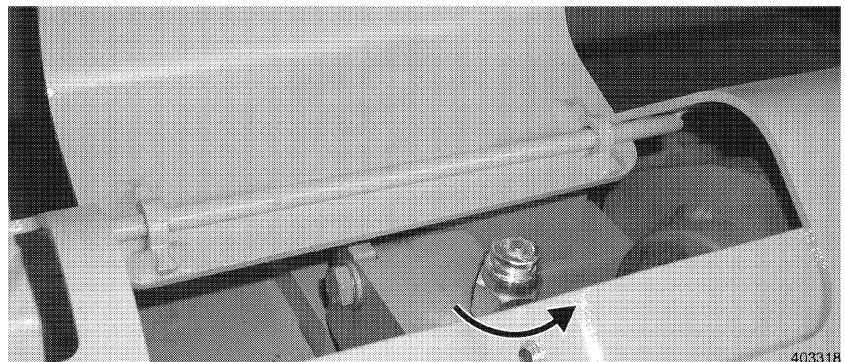
- Make sure the new chain and track pads are installed in the correct direction 1 = travel direction forward.
- Align the chain to the track frame and move the machine carefully onto the new chain until you get to the end of the new chain.
- Release the new chain from the old chain and attach the end of the new chain with a wire to the sprocket.
- Carefully drive the machine forward until the chain is on the sprocket on top.
- Release the wire from the chain and sprocket and continue to drive forward to bring the chain over the carrier roller and idler. Stop the machine when the idler approaches the last 2 track pads.



Press in the master pin

- Raise the last track pads, reinsert the spacer rings and press in or knock in the master pin from the outside to the inside.
- Tension the chain. See "Adjust chain tension".
- Park the machine on firm and level ground.

Remove a chain with split master link



Grease fitting

- Release the chain tension. See "Adjust chain tension".
- Back out the grease fitting by a few threads.
- Slowly move the machine with the idler against a wooden block, until the idler is pushed back all the way.

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