2.02 Dismounting and installing the engine

Installation Weight:
Engine 400 kg

Note for Installation:
Prepare the engine for operation, refer to the corresponding chapter.

1. Open the battery compartment flap (Fig. 1/1).
2. Unscrew the thumb screw (Fig. 1/2) and pull the battery (Fig. 1/3) with supporting plate out completely (Fig. 2).

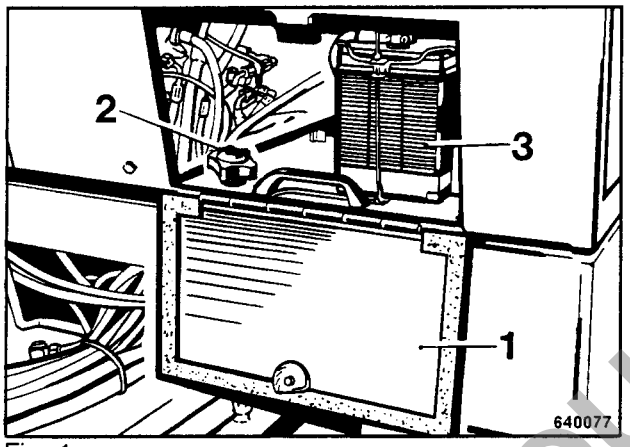


Fig. 1

Danger

When working on batteries no open fire, do not smoke!
Do not let acid get in contact with skin or clothes!
Wear goggles!
Do not place any tools on batteries!

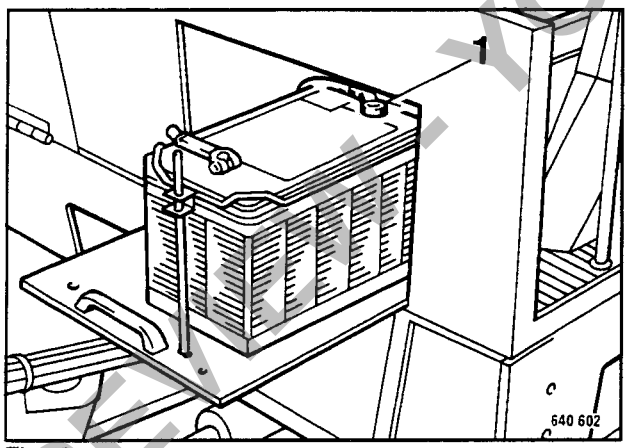


Fig. 2

3. Disconnect the negative pole (Fig. 2/1) of the battery.

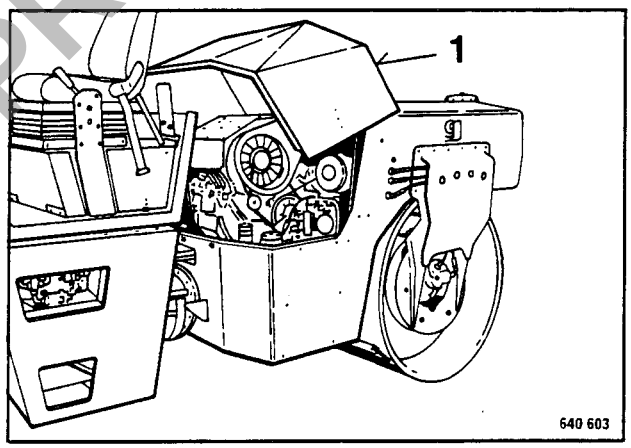


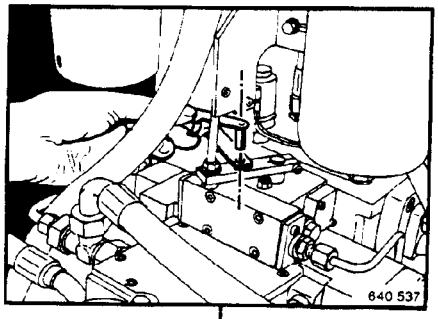
Fig. 3

4. Unscrew the mounting screws (Fig. 3/1) for the engine hood, remove the engine hood.
5. Remove the left hand vibration pump, refer to the corresponding chapter.

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Machine Travels with Travel Actuation Lever at „Neutral"



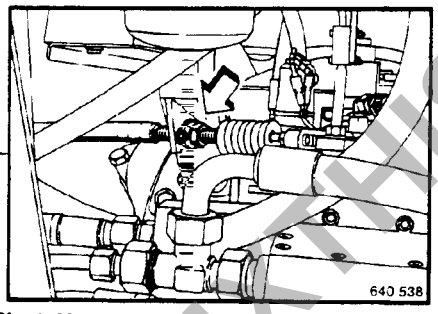
Check Neutral Position

- Move travel actuation lever to „Neutral"
- Detach travel actuation cable from pump
- Check whether bore of clevis is aligned with bore of control lever

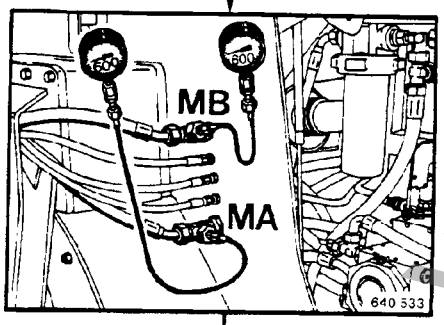
Neutral position OK?

no

yes



Adjust Travel Actuation Cable



Check Mechanical 0 Position

Note: Actuate seat switch

- Actuate "Emergency OFF" switch
- Connect 600-bar pressure gauge to MA and MB
- Secure drums with wedges
- Run diesel engine at max. speed
- Read off pressure gauge

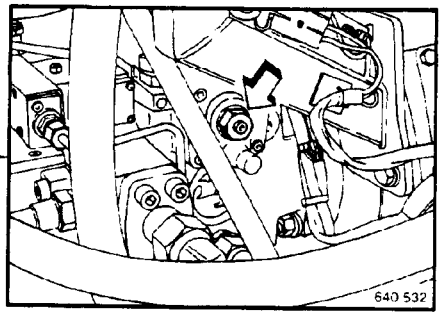
Nominal Value: The same pressure should be shown on both gauges

- Repeat test with 60-bar pressure gauge

Pressure OK?

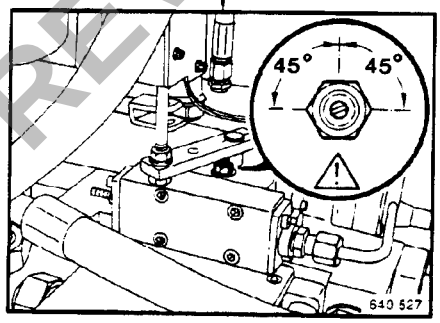
no*

yes*



Adjust Mechanical 0 Position

- Adjust mechanical 0 position so that the same pressure (approx. charge pressure) is indicated at MA and MB when the travel actuation lever is actuated and the machine braked



Adjust Hydraulic 0 Position

- Unlock "Emergency OFF" switch
- Adjust hydraulic 0 position so that the same pressure (approx. charge pressure) is indicated at MA and MB when the machine is braked

* Inform BOMAG service department!

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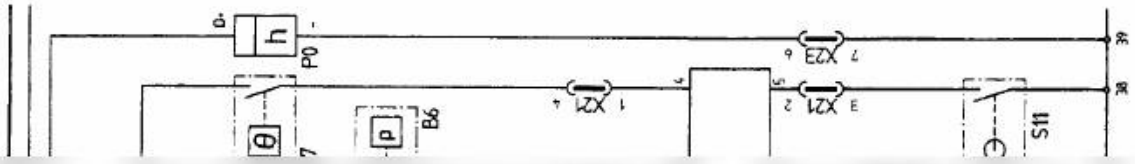
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2.01 Checking the Diesel Engine Speed

2.02 Dismounting and Installing the Engine

2.03 Preparing the Engine for Operation

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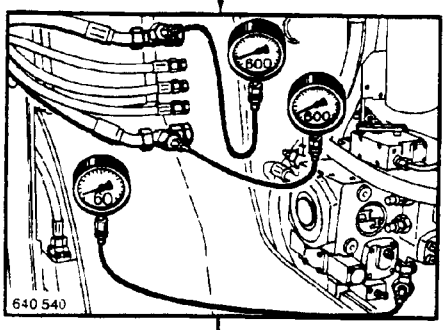
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Check High-Pressure and Charge Pressure

- Connect 600-bar pressure gauge to test connections MA and MB
- Run diesel engine at max. speed
- Block drums, move travel actuation lever briefly
- Read off pressure gauge

Nominal Value:

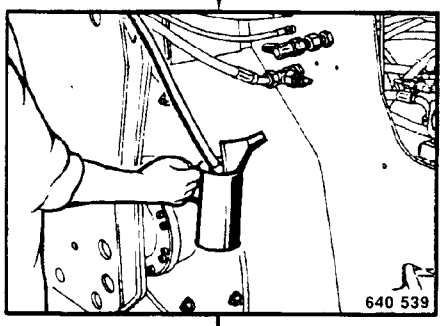
Charge pressure 18 bar
High-pressure 400 bar
(operating temperature)



Charge pressure OK?

no

yes



Check Leakage Oil of Travel Motors

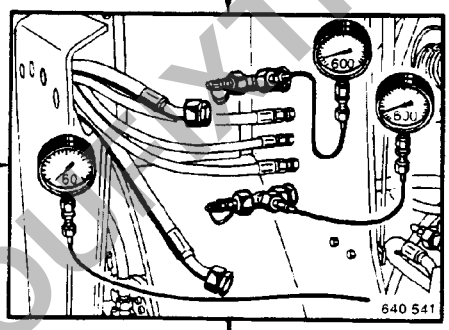
- Unscrew leakage oil line
- Measure leakage oil at approx. 200 bar

Nominal Value: Max. 2 l/min.

Leakage oil OK?

no → Exchange travel motor concerned

yes



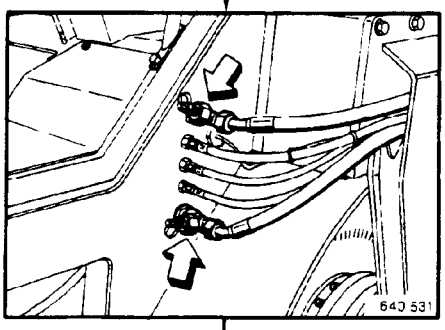
Individual Test of Travel Motors

- Plug high-pressure hoses of front travel motor
- Repeat pressure test

Charge pressure OK?

yes → Exchange rear travel motor

no



- Plug high-pressure hoses of front travel motor
- Repeat pressure test

Charge pressure OK?

yes → Exchange front travel motor

no

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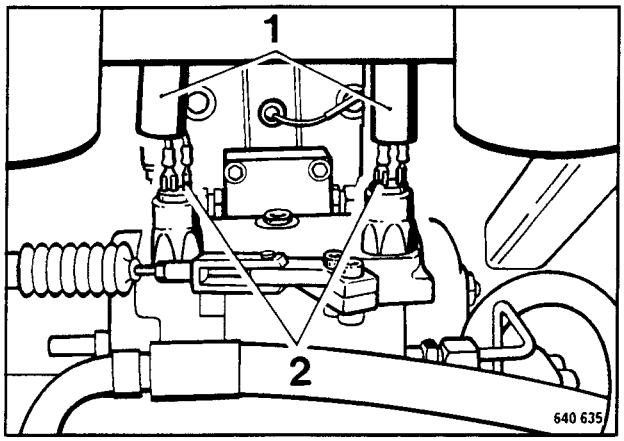


Fig. 5

5. Push the rubber caps (Fig. 5/1) up. Mark the electric wires (Fig. 5/2) and pull them off the terminals on the pressure switches.

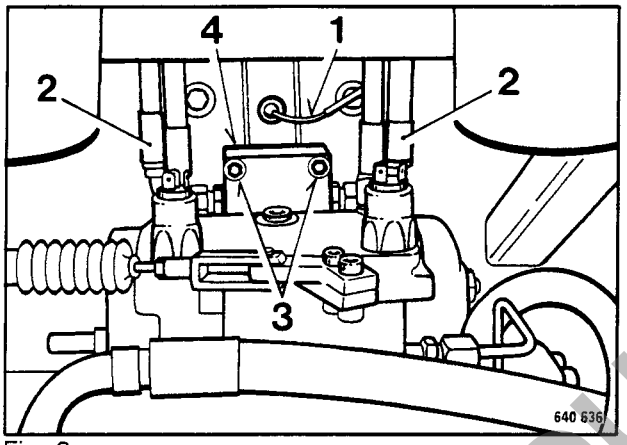


Fig. 6

6. Pull the wires (Fig. 6/1) off the control block. Disconnect the hoses (Fig. 6/2) from the ports on the pump case. Unscrew the bolts (Fig. 6/3) and take the control block (Fig. 6/4) off.

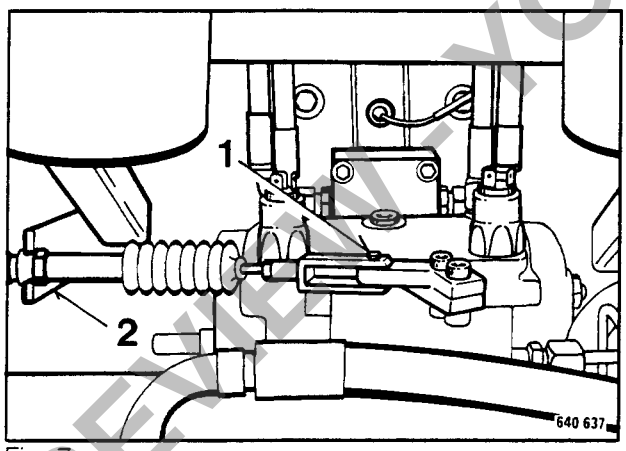


Fig. 7

7. Unlock the cotter pin (Fig. 7/1) of the travel cable and pull it out.

8. Unscrew the mounting screws (Fig. 7/2) for the travel cable, place the travel cable to the side.

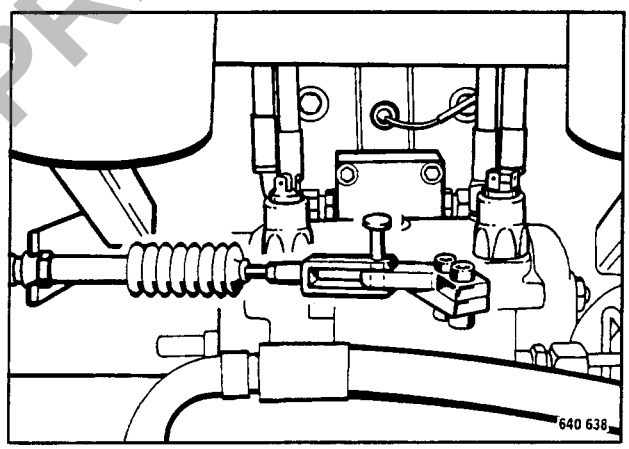


Fig. 8

Note for Installation:
Check the adjustment of the travel cable. Set the travel lever to "neutral position". The travel cable is detached from the pump. Check whether the bore in the fork head and the bore in the pump control lever are flush (Fig. 8).

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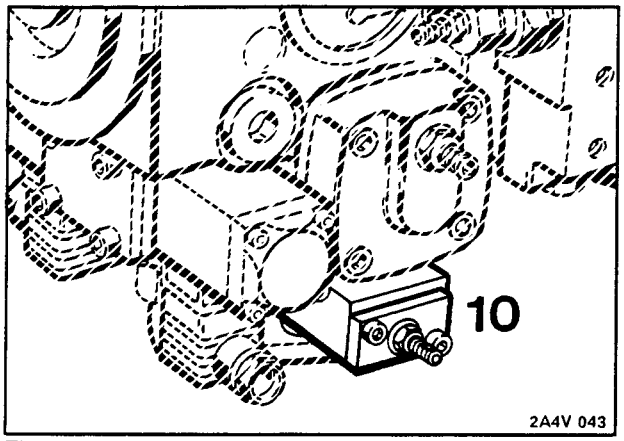


Fig. 1

4.22 Sealing/replacing the pressure cut-off valve in the vibration system (Fig. 1).

Caution

When changing the pressure cut-off valve check the setting after installing the tandem pump.

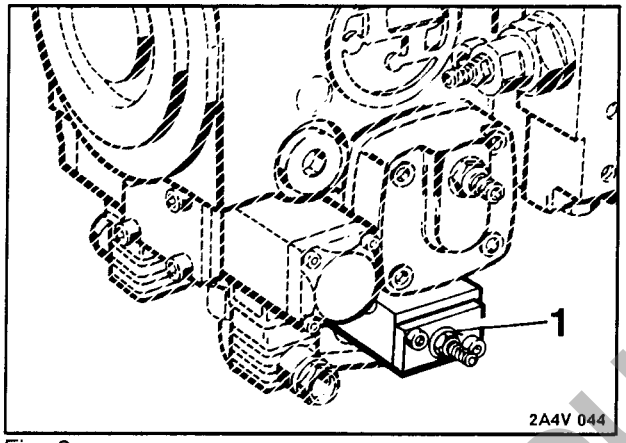


Fig. 2

1. Replace the seallock nut 1 (Fig. 2) as described in the section "Replacing the seallock nut".

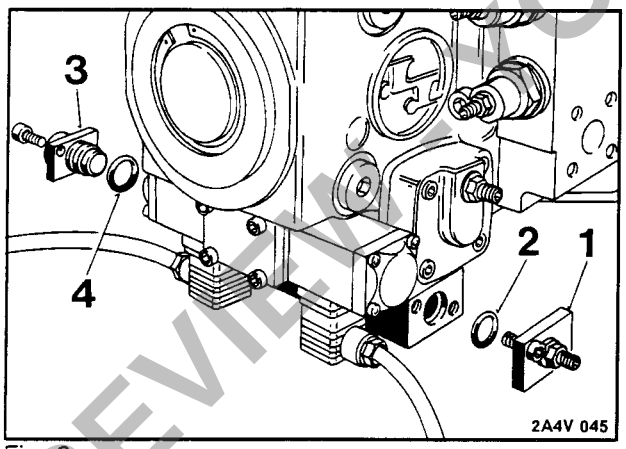


Fig. 3

2. Remove the cover 1 (Fig. 3) and the conecting housing (3).

3. Insert the new Loop rings (2) and (4) with some grease and assemble in reverse order.

Note

Make sure that the Loop rings are fitted correctly.

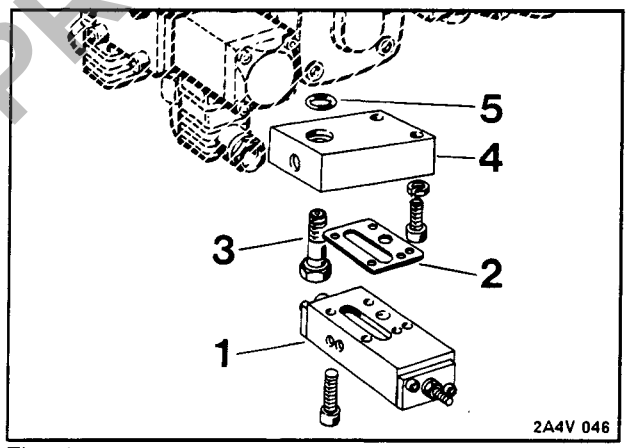


Fig. 4

4. Remove the pressure cut-off valve 1 (Fig. 4), the hollow screw (3) and the intermediate plate (4).

5. Insert the new Loop ring (5) with some grease, stick the new gasket (2) on with oil and assemble in reverse order.

Note

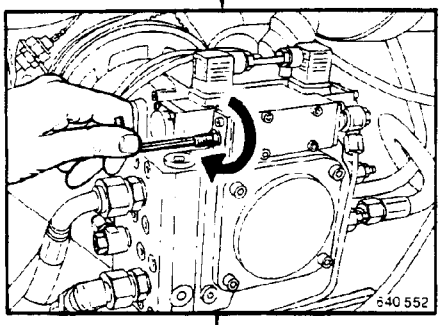
Make sure that the Loop ring is fitted correctly.

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4.32 Flushing schematic travel system

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Check Setting of High-Pressure Relief Valves

– Screw in pressure compensation set screw as far as it will go

Caution: Pressure test max. 3 sec.

– Repeat pressure test

Nominal Value: 450 bar

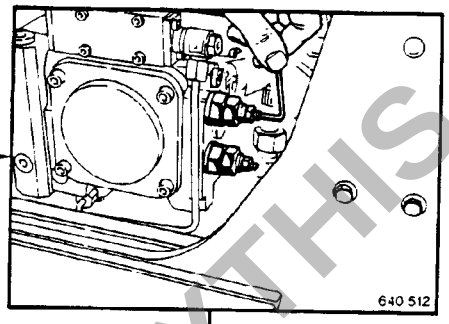
High-pressure OK?

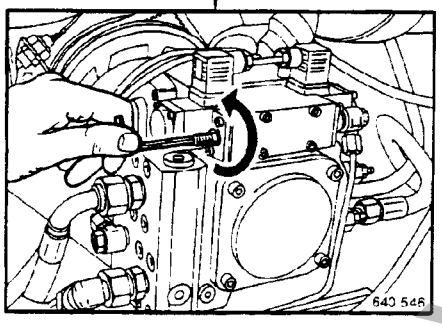
no

yes

Check and Adjust High-Pressure Relief Valves

– Check high-pressure relief valves





Adjust Pressure Compensation

– Unscrew set screws until nominal value is reached, exchange pressure compensation valve if necessary

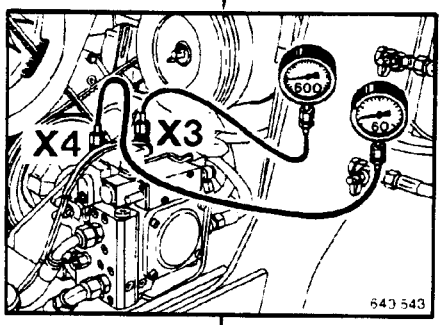
Nominal Value: 400 bar

High-pressure valves OK?

no

Clean valves and exchange and adjust if necessary

yes



Check Control Chamber Pressure

– Adjust pressure compensation (400 bar)
– Connect test connection to X3 and X4
– Connect 60-bar pressure gauge
– Run engine at max. speed
– Switch on vibration and read off pressure gauge

Nominal Value: Approx. charge pressure

Chamber pressure OK?

no

yes

Exchange/ repair vibration pump

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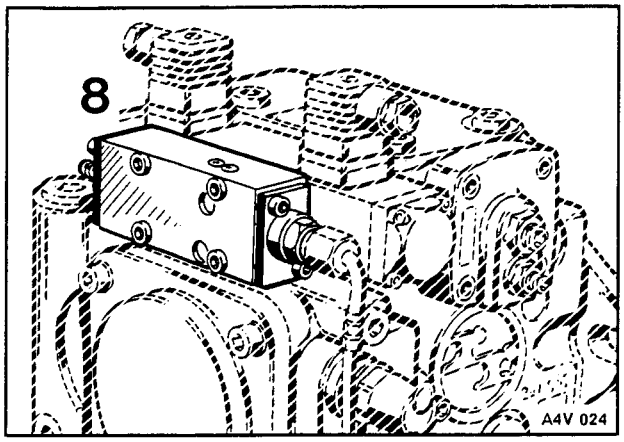


Fig. 1

5.16 Sealing/Changing the Pressure Cut-Off Valve 8

Caution

After changing the pressure cut-off valve, the setting must be checked and corrected after installing the vibration pump.

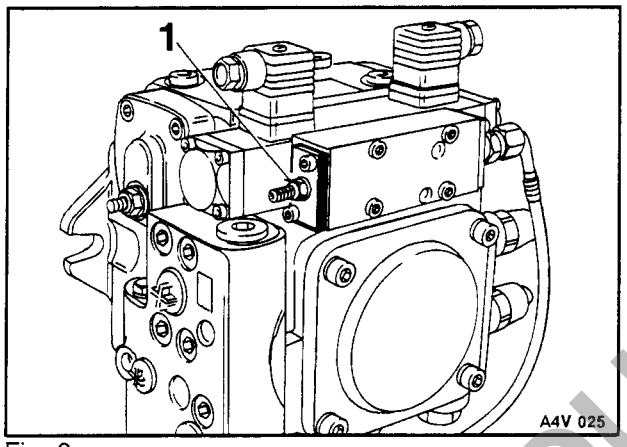


Fig. 2

1. Change the seallock collar nut 1 (Fig. 2) as described under "Changing the Seallock Collar Nut".

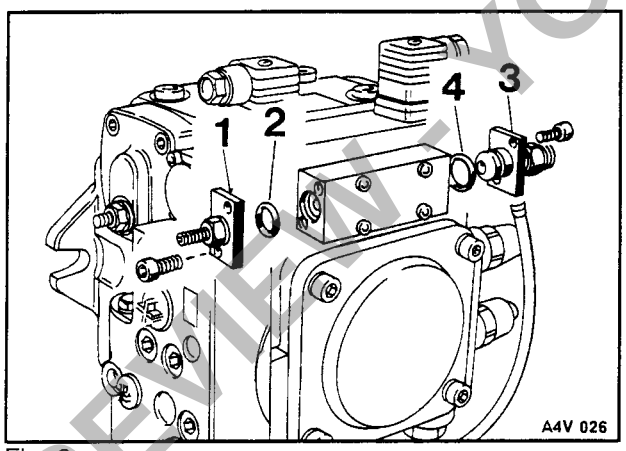


Fig. 3

2. Unscrew the cover 1 (Fig. 3) and the housing (3).

3. Install new O-rings (2) and (4) with some grease and assemble the parts in reverse order.

Note

Make sure that the O-rings are fitted correctly.

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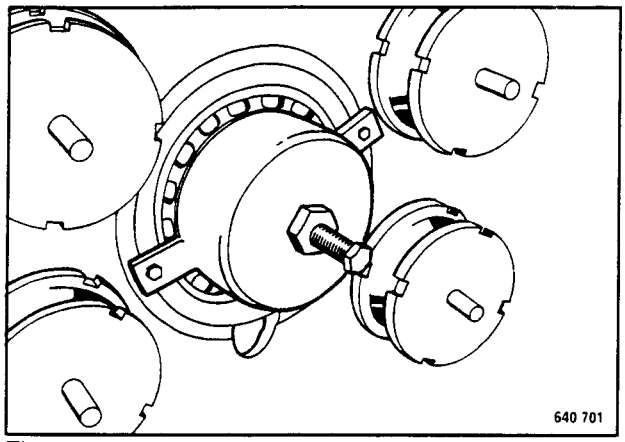


Fig. 5

6. Pull the bearing cover off the bearing housing by using the appropriate extracting device (Fig. 5)

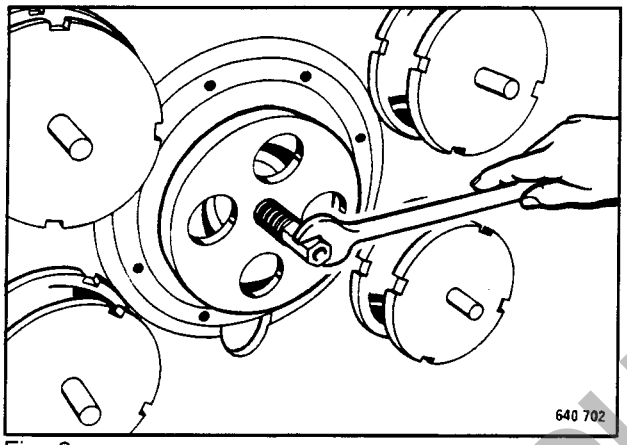


Fig. 6

Note for Installation:
Assemble the bearing cover until it bottoms by using the appropriate assembling device (Fig. 6).

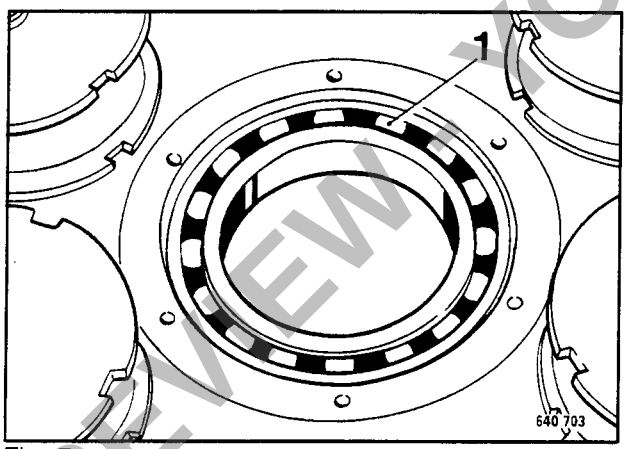


Fig. 7

7. Force the grooved ball bearing (Fig. 7/1) out of the bearing cover.

Note for Installation:
Force the grooved ball bearing in until it bottoms and fill it with grease.

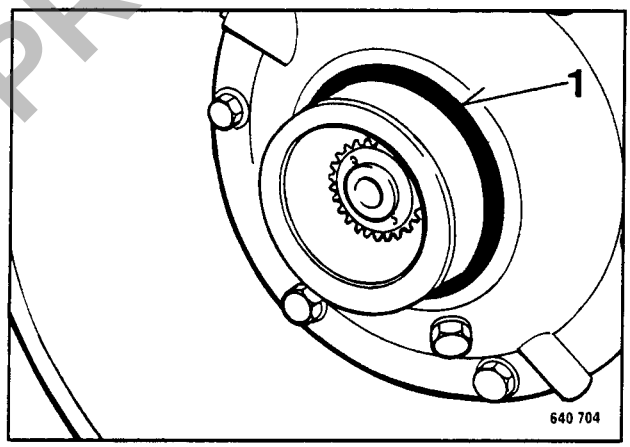


Fig. 8

8. Take the V-ring (Fig. 8/1) off the bearing housing.

Note for Installation:
Push the new V-ring on with the sealing lip pointing outwards.

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1 Vibration/travel pump
2 Hose 16S
3 Connecting union 16S
4 Vibration motor
5 Filter compl.
6 Double ended union 1" - 25S
7 Hose 20S/25S
8 Connecting union 20S
9 Reducing fitting 16/20S
10 Angular fitting 16S

Caution

The closed circuit must always be flushed after exchanging a component. Remaining particles in the circuit will otherwise lead again to component failures within a short period of time.

With excessive oil contamination (abrassion)

1. Open all remaining components and clean them.
2. Exchange the high pressure hoses.
3. Flush also the travel circuit.

Caution

Catch draining hydraulic oil and dispose of in a way harmless to the environment!

Before the flushing process

1. Exchange the hydraulic oil filter.
2. Clean the hydraulic tank.
3. Filter the hydraulic oil.

Note

Use the filtering unit to filter the hydraulic oil. Pump the tank content through a 6µ filter into the oil bag or a suitable container. Use the filtering unit also for filling.

Caution

Change the oil if the contamination is very high, if the oil is discoloured,
if the oil change interval is nearly reached.

Filter installation for the rear vibration circuit (refer to Fig. 1)

1. Filter outlet "OUT" to the pump. Filter inlet "IN" to the hose coming from the rear vibration motor.

Note

The flushing filter must be installed in the low pressure side between motor and pump. This means that the pump has to be operated in high frequency mode.

Flushing the hoses

1. Take the vibration motor out of the circuit, therefore connect the high pressure hoses together.

Flushing the entire system

1. Reconnect the vibration motor and pull it out of its coupling.

Bleeding

1. The hydraulic circuit has to be bled after disconnecting or connecting hydraulic hoses in the closed circuit.

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6.06 Repairing the steering / charge pump

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8.01 General notes for trouble shooting

8.02 Important electric symbols and designations

8.03 Overall view of instrument panel

8.04 Description of current supply

8.05 Description of fuses

8.06 Description of starting

8.07 Description of charge and start control

8.08 Description of brake

8.09 Description of brake control

8.10 Description of vibration system

8.11 Description of water sprinkler system

8.12 Description of relay board

8.13 Description of monitoring module

8.14 Description of engine oil control

8.15 Testing the monitoring module

8.16 Testing the relay board

8.17 Testing the relay board for the hydraulic oil filters

8.18 Testing the relay board for the water sprinkler system

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B08 Proximity switch for travel lever in "0"-position
B35 Proximity switch for automatic vibration
H02 Control light for crab walk
H07 Warning buzzer
K03 Relay for crab walk
M01 Starter motor
M02 Motor for water pump
S01 "Emergency Stop" switch
S04 Brake switch
S05 Water sprinkler switch
S06 Seat contact switch
S07 Seat contact switch
S08 Vibration switch, manual/automatic
Y04 Brake solenoid valve
Y05 Brake solenoid valve
Y11 Solenoid valve for control chamber

The relay board (K01) has the following duties:

- To allow starting only when the travel lever is set to "neutral" (switch B08 closed).
- to switch the vibration automatically on and off, in dependence on the position of the switches (S01 and S02) (if automatic vibration was selected with switch (S08)).
- To control the parking/emergency brake functions.
- To provide + 12V voltage for the water sprinkler system (when switch (S05) is closed).
- To provide + 12V voltage for the monitoring module (A15), the warning buzzer (H07) and the crab walk relay (K3), when the ignition switch (S00) is turned to position "I".
- To provide ground for the monitoring module (A15).

Current supply and ground connection

The relay board works as a connecting unit and supplies + 12V voltage for the following functions:

- Monitoring module (A15), output terminal #20 (K01)
- Warning buzzer (H07), output terminal #21 (K01)
- Crab walk relay (K3), output terminal #22 (K01)

It provides ground for:

- Monitoring module (A15) via output terminal #3 (K01)

Relays - functions

Relay K1

- Relay K1 is fitted with contacts K1a and K1b. Both contacts are closed when the diesel engine is stopped.

Relay K2

- Relay K2 is fitted with contacts K2a, K2b and K2c. When the travel lever is in "neutral"-position contacts K2a and K2b will close, whereas contact K2c will open.

Relay K3

- The contact of relay K3 closes when the engine is stopped resp. when the generator does not generate any current.

Relay K4

- The contact of relay K4 closes when the travel lever is moved out of "neutral"-position. This relay controls the automatic vibration mode.

Relay K5

- The contact of relay K5 closes, when both contacts (K2a and K6a) close.

Relay K6

- Relay K6 is fitted with contacts K6a and K6b. These contacts close when the brake switches are closed.

Relay K7

- Starter relay for the diesel engine starter motor.

Relay K8

- Switches the water sprinkler system on/off.

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