3.3 Flushing the travel circuit

Cleaning the hydraulic oil tank

Environment

Catch all hydraulic oil and dispose of environmentally!

1. Pump the hydraulic oil with the filling and filtering unit out of the hydraulic oil tank into a clean vessel or into the oil bag.
2. Disconnect all hoses (Fig. 1) from the tank cover.
3. Unscrew the fastening screws from the cover and take the cover off.
4. Clean the inside of the hydraulic oil tank thoroughly, reinstall cover and hoses.

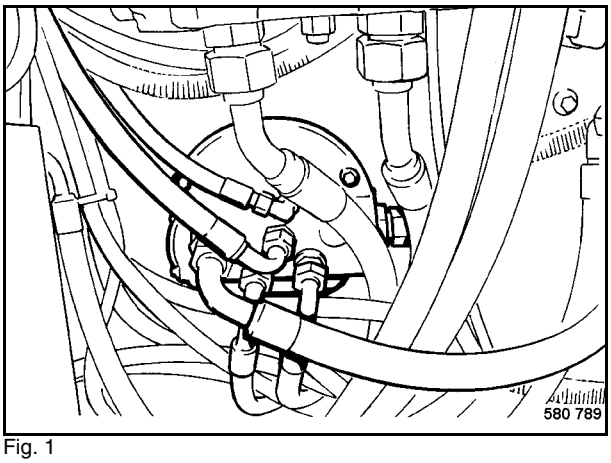


Fig. 1

Filter installation for flushing the travel system

Caution

Before installing the flushing filter check all hoses and fittings of the flushing kit for cleanliness, clean if necessary.

1. Disconnect the high pressure hose (Fig. 2) from the travel pump.

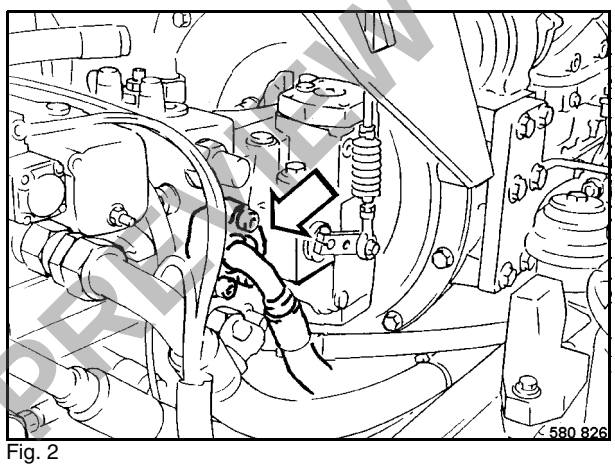


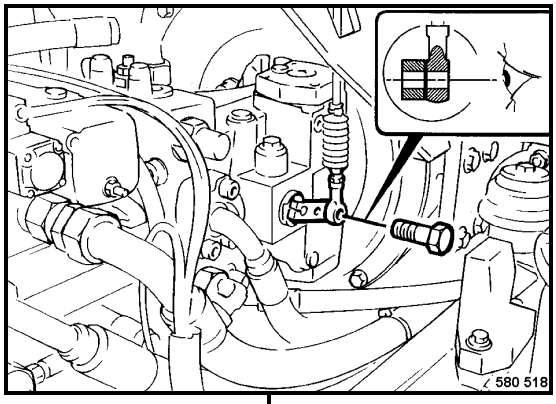
Fig. 2

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4.2 Trouble shooting diagram

The machine drives with the travel lever in „NEUTRAL“

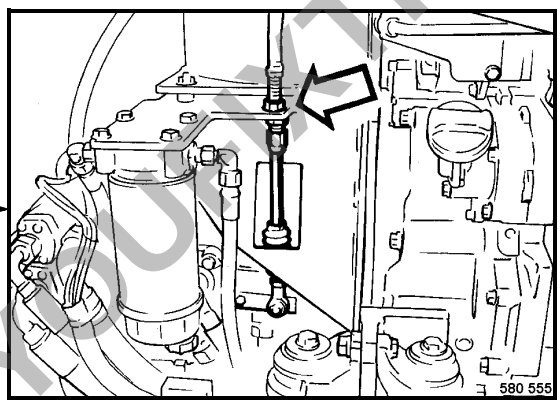


Check the neutral position

- Set the travel lever to „neutral“
- Detach the travel cable from the pump
- Check whether bores in ball joint and control lever are in line

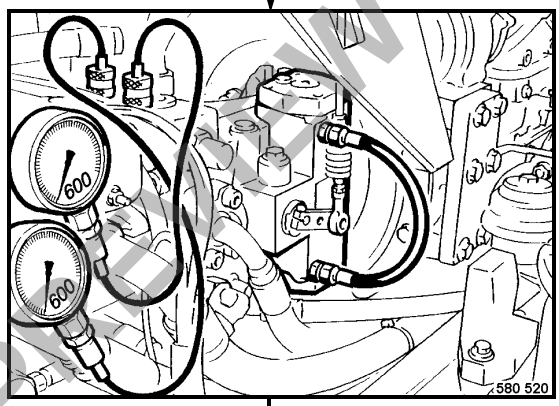
Bores are in line?

no



Adjust the travel cable

yes



Check the mechanical neutral position

- Connect both control chambers with a hose
- Connect 600 bar pressure gauges to the high pressure test ports
- Pull the plug off the brake solenoid valve
- Block drum and wheels with suitable chocks
- Run the diesel engine with max. speed
- Read the pressure gauges

Nominal value:
Equal pressure (charge pressure) on both pressure gauges

Neutral position OK?

no

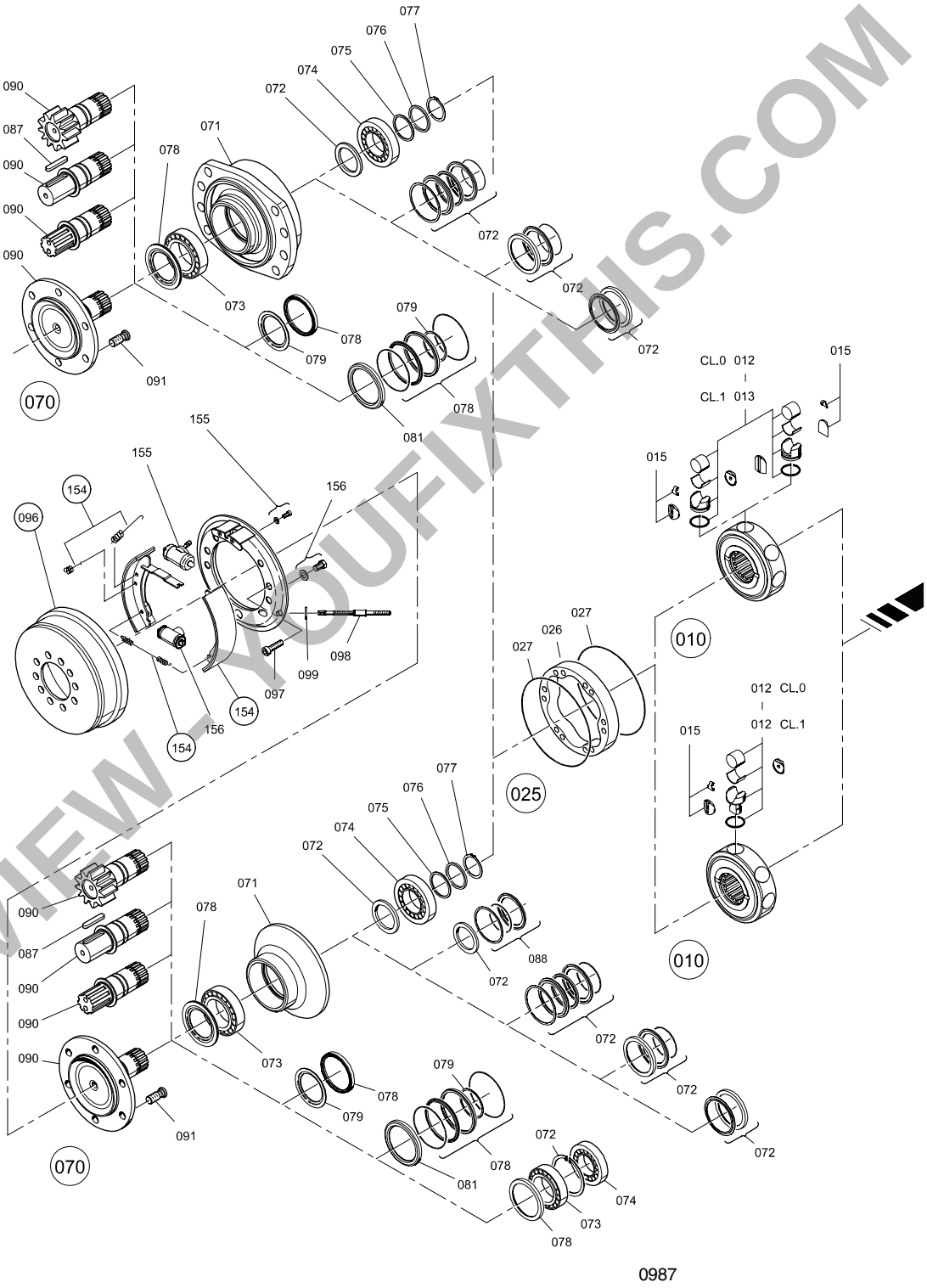
yes

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Motoren mit konstantem Hubvolumen MS, MSE 02-05-08-11-18.

Single displacement motors MS, MSE 02-05-08-11-18.



0987

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2.9 Adjusting the high pressure relief valves in the vibration system

Special Tools:

Hydraulic test case

⚠ Caution

Measurements should be performed at operating temperature of the hydraulic oil (approx. 50 °C).

1. Drive the machine with drum onto a soft base (rubber tires), apply the parking brake and block the wheels additionally with chocks (Fig. 1).

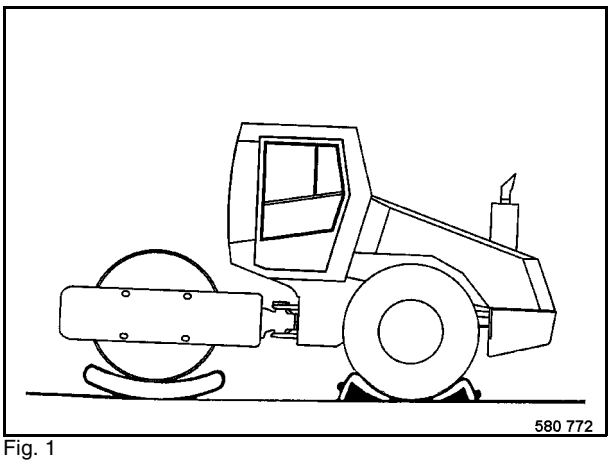


Fig. 1

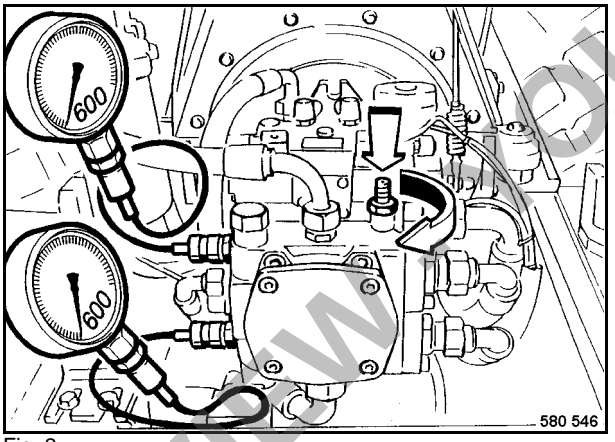


Fig. 2

2. Connect 600 bar pressure gauges to the high pressure test ports MA and MB (Fig. 2).
3. Turn the adjustment screw of the pressure override valve completely in to block the valve.
4. Start the engine and shift the throttle lever to max. engine speed position.

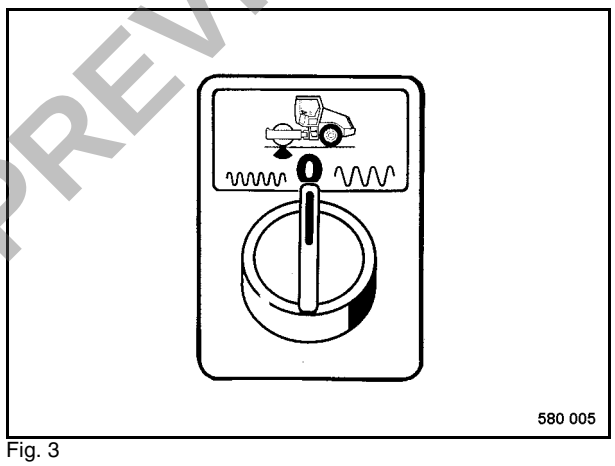


Fig. 3

5. Switch the vibration on with high or low frequency (Fig. 3) and read the pressure gauges.

Nominal value:

Starting pressure 385 bar

Evaluation of test:

If the nominal value is only reached in one frequency, clean the valve, replace or adjust it.

If the nominal value is not reached with both frequencies, check the vibration pump and replace it if necessary.

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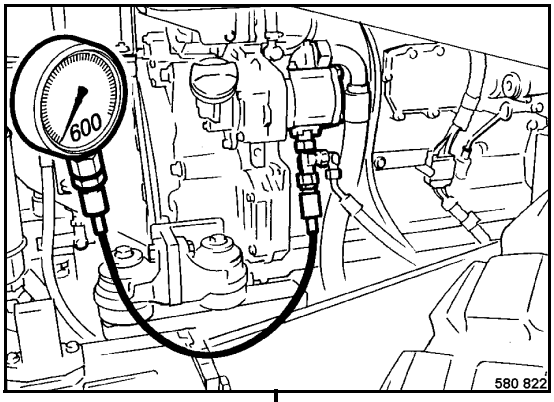
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No steering / steering sticky / end stops not reached

Note: The steering pump serves also as charge pump



Check the steering pressure

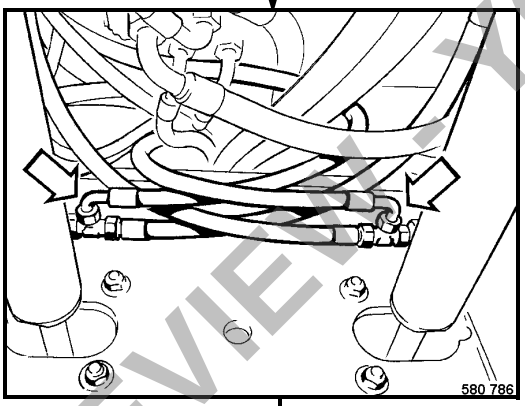
- Connect a 600 bar pressure gauge to the steering pressure test port
- Pull the plug off the starter solenoid and crank the engine with the starter
- Turn the steering against an end stop and read the pressure gauge

Nominal value:
approx. 200 bar (battery fully charged)

Steering pressure OK?

yes → Check the moveability of articulated joint and steering cylinders

no



Check the steering cylinder

- Close the hydraulic hoses at the ports „R“ and „L“ on both steering cylinders with suitable plugs
- Repeat the pressure test

Steering pressure OK?

yes → Replace the steering cylinders

no

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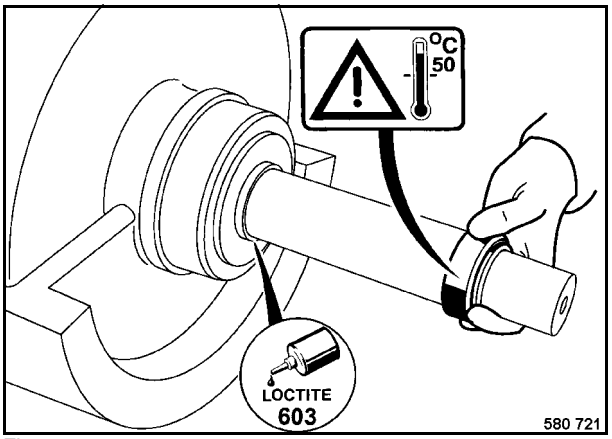


Fig. 53

⚠ Danger

Danger of burning!

Wear protective gloves.

10. Heat the inner ring up to approx. 50 °C and slide it completely onto the short shaft with the chamfer pointing to the outside (Fig. 53).

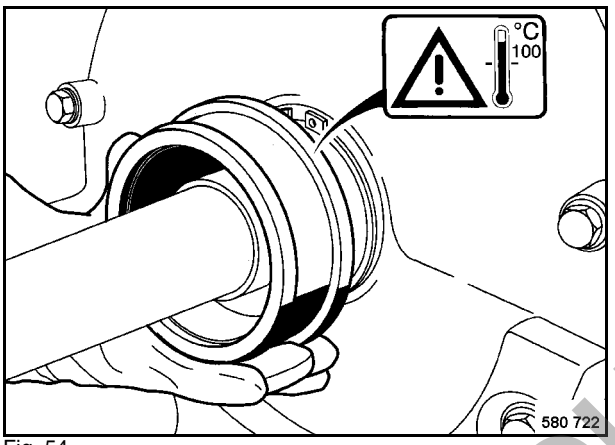


Fig. 54

⚠ Danger

Danger of burning!

Wear protective gloves.

11. Heat the inner bearing race up to approx. 100 °C and slide it completely onto the cover with the bigger outer diameter facing forward (Fig. 54).

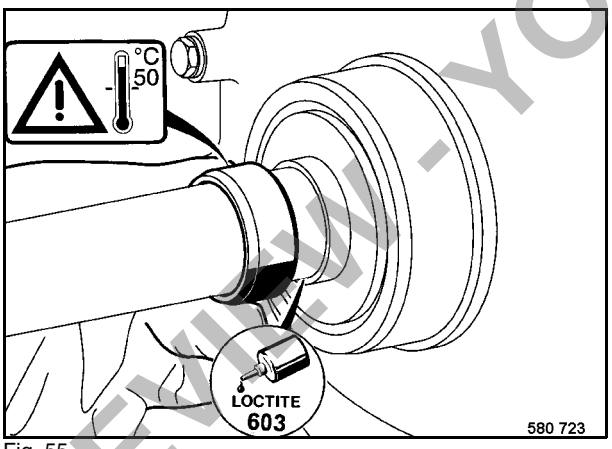


Fig. 55

⚠ Danger

Danger of burning!

Wear protective gloves.

12. Heat the inner ring up to approx. 50 °C and slide it completely onto the long shaft with the chamfer pointing to the outside (Fig. 55).

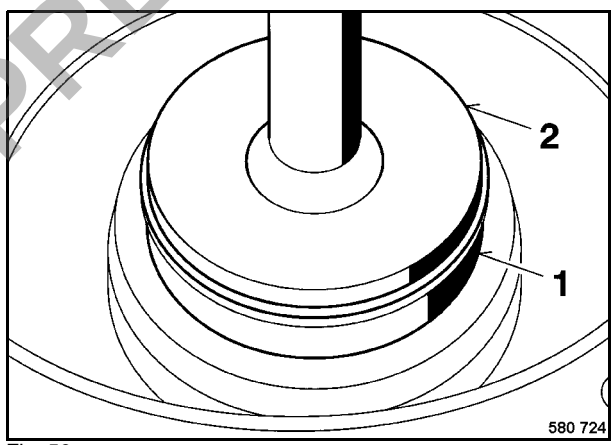


Fig. 56

13. Press the cylinder roller bearing 1 (Fig. 56) with the pressing plate (2) into the flanged housing until it bottoms.

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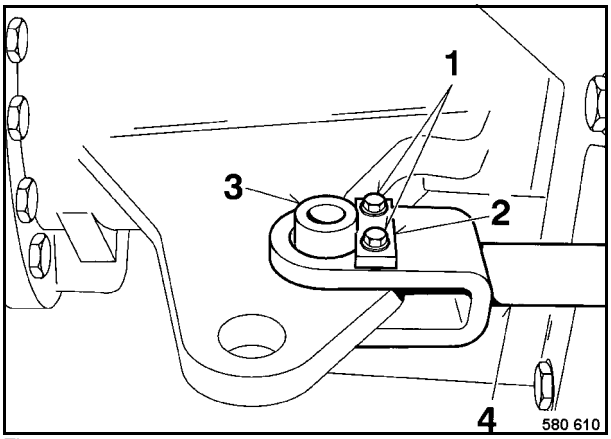


Fig. 4

4. Unscrew the screws 1 (Fig. 4) and take the brakket (2) out.
5. Knock the bearing pin (3) out.
6. Retract the steering cylinder (4).

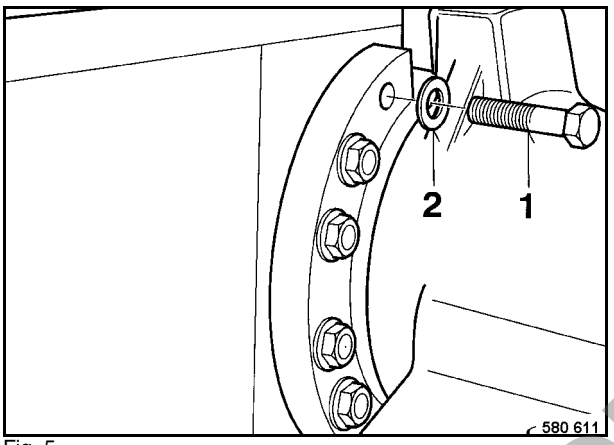


Fig. 5

⚠ Danger

Danger of accident!

7. Support the oscillating articulated joint safety in the middle with a jack or something similar.
8. Unscrew the screws 1 (Fig. 5) and take them off with the washers (2).

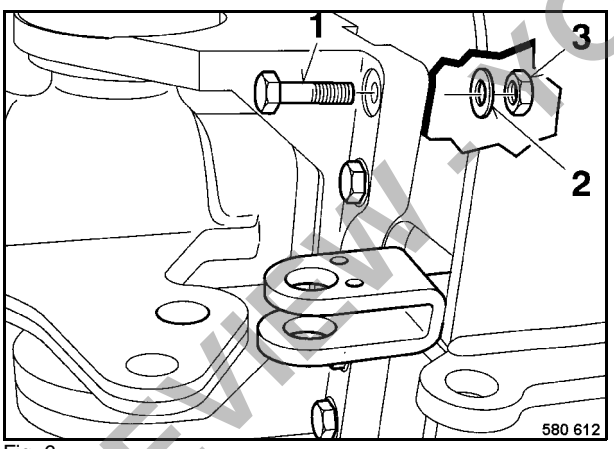


Fig. 6

9. Unscrew the nuts 3 (Fig. 6) and take the lock washers (2) off.
10. Pull the screws (1) out.
11. Lift the front frame slightly up and lower the oscillating articulated joint to the ground.
12. Pull the oscillating articulated joint out.

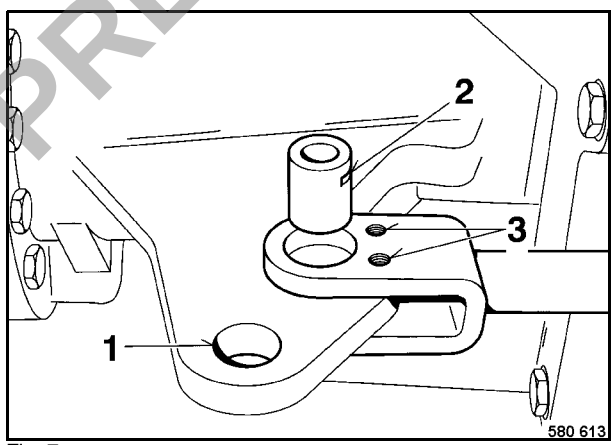


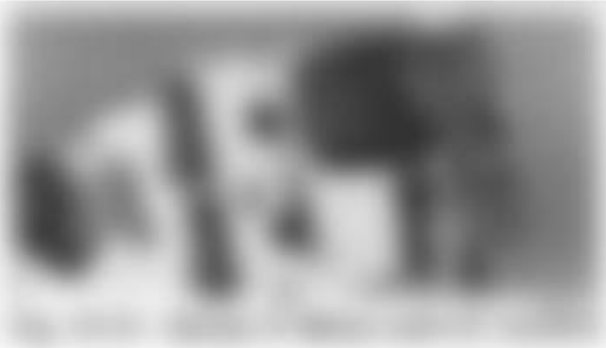
Fig. 7

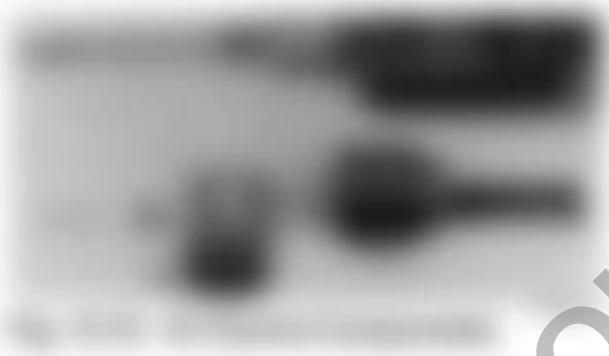
13. Install the oscillating articulated joint with the bore 1 (Fig. 7) for the articulation lock on the left hand side.
14. Insert the steering cylinder pins so that the groove (2) is parallel with the tapped bores (3).

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Functional Description (Continued)





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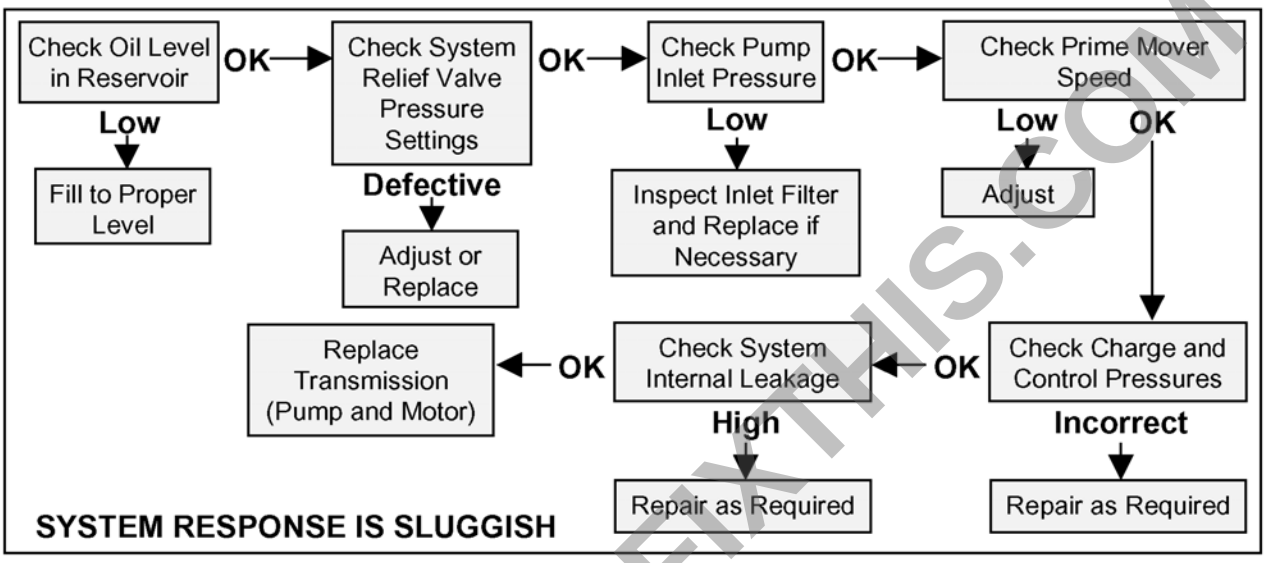
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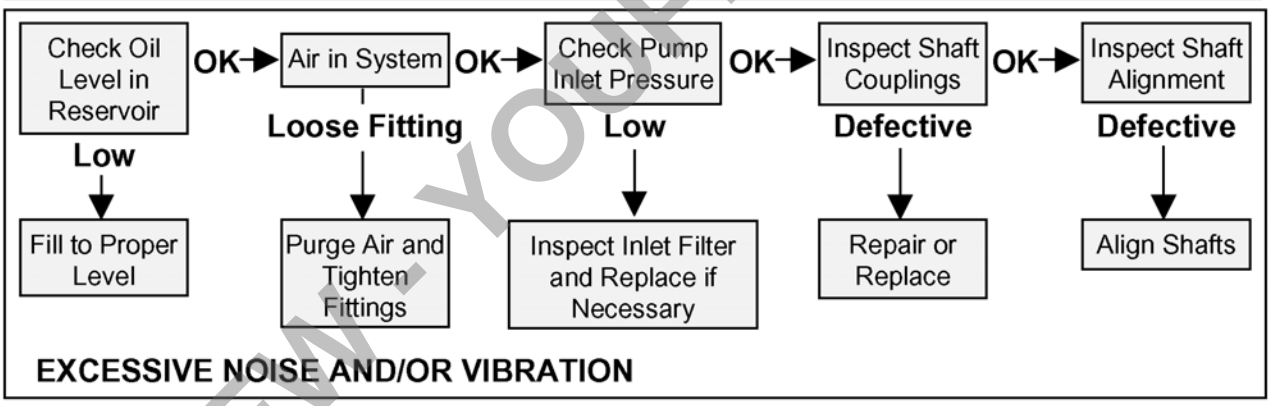


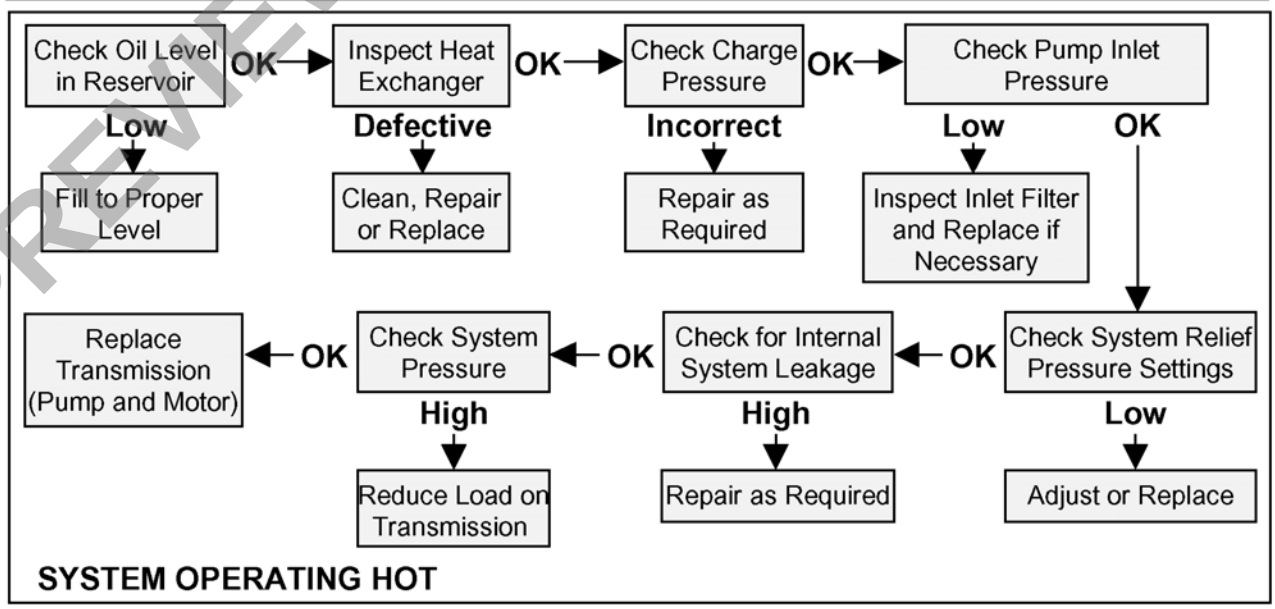
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Troubleshooting

Fault-Logic Diagrams • Closed Circuit







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Minor Repair and Replacement - Variable Motor (Continued)

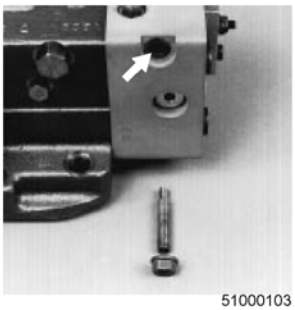


Fig. 50-69 - Remove HC Control Bleed Valve



Fig. 50-70 - Install HC Control Bleed Valve



Fig. 50-71 - Install HC Control Bleed Valve Seal Nut



Fig. 50-72 - Remove Servo Pressure Ball Shuttle Valve



Fig. 50-73 - Install Servo Pressure Shuttle Ball Valve

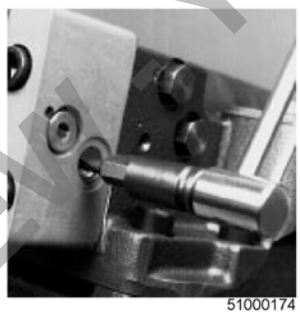


Fig. 50-74 - Torque Servo Pressure Shuttle Ball Seat



Fig. 50-75 - Install Control Pressure Shuttle Spool



Fig. 50-76 - Torque Shuttle Spool Plugs

Two Connection Hydraulic Proportional Control for "Dual Path" Vehicles (Type HC)

Bleed Valve

Loosen the seal lock nut on the bleed valve with a 10 mm hex wrench, and remove the valve with a 4 mm internal hex wrench.

Install the bleed valve and torque to 3 Nm (27 in•lbsf).

Install the seal lock nut and torque to 19 Nm (14 ft•lbsf).

Servo Pressure Shuttle Valve

Remove the servo pressure shuttle plug with an 11/16" hex wrench. Remove the shuttle ball seat with a 5 mm internal hex wrench and remove the ball.

Install the servo pressure shuttle ball.

Install the shuttle ball seat and torque to 11 Nm (8 ft•lbsf). Install the shuttle passage plug and torque to 37 Nm (27 ft•lbsf).

Control Pressure Shuttle Valve

Remove the shuttle spool plugs with a 1/4" internal hex wrench. Remove the control pressure shuttle spool.

Install the control pressure shuttle spool.

Install the shuttle spool plugs and torque to 20 Nm (15 ft•lbsf).

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Kontrolle der statische Haltebremse.

Bei fahrbaren Maschinen den Test auf ebenem Grund durchführen.

Bremssteuerdruck: mini 12 bar
Maxi 30 bar.

- Sich vergewissern, daß der Bremsversorgungsdruck gleich Null ist,
- Die Bremse über die höchstgelegene Schraube (112) entlüften,
- Den Motor mit Maximaldruck beaufschlagen,

- Die Motorwelle darf sich nicht drehen, da andernfalls die Bremse ausgetauscht werden muß :

Mehrscheibenbremsen nicht einfahren.

Checking the parking brake efficiency.

For a rolling machine, make the test on a horizontal ground.

Pilot brake pressure : minimum 12 bar [174 PSI]
Maximum 30 bar [435 PSI]

Make sure that the brake supply pressure is zero,

- *Purge the brake using the screw (112) located at the highest level,*
- *Supply the motor up to the setting pressure.*

- *The motor shaft must not turn, otherwise it is necessary to replace the brake :*

Do not run multidisc brakes in.

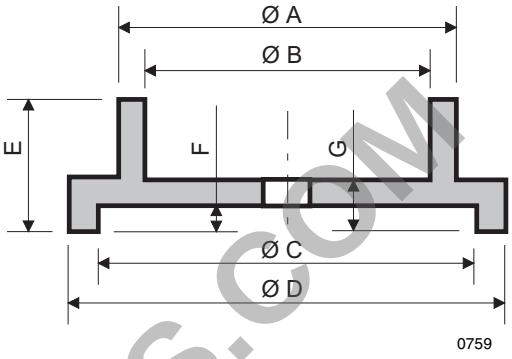
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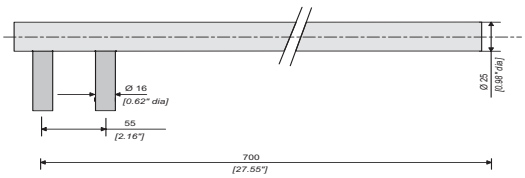
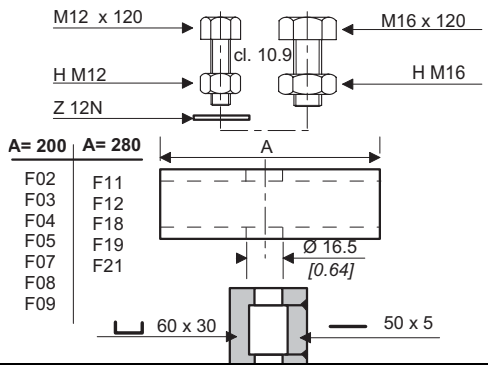
Spezialwerkzeuge	***Special tools***

- Montagewerkzeug zum Anheben der Schutzkappe oder zum Komprimieren der Tellerfeder.

- *Mandrel for reassembling the brake cover or to compress the spring washer.*

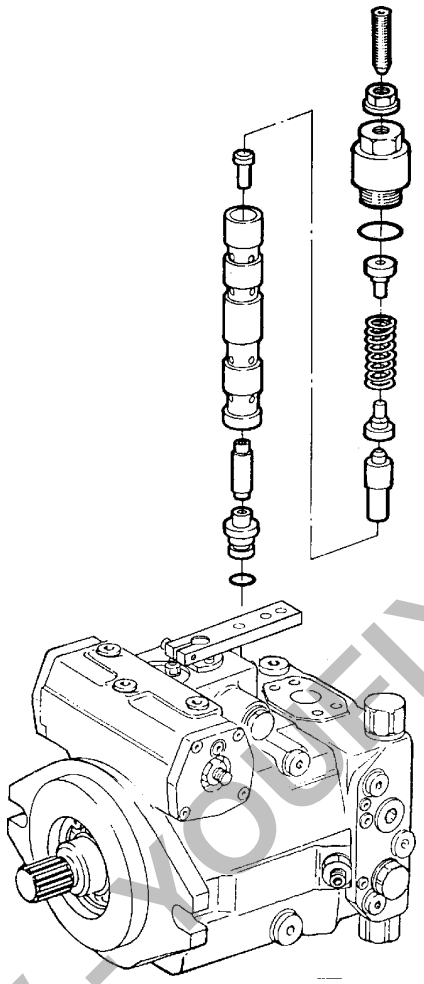


		Ø A		Ø B		Ø C		Ø D		E		F		G	
		mm	*[inch]*	mm	*[inch]*	mm	*[inch]*	mm	*[inch]*	mm	*[inch]*	mm	*[inch]*	mm	*[inch]*
F02	M12	110	*[4.3]*	100	*[4.0]*	125	*[4.9]*	135	*[5.3]*	50	*[1.96]*	10	*[0.39]*	20	*[0.78]*
F03															
F04		125	*[4.92]*	115	*[4.52]*	151	*[5.94]*	159	*[6.25]*						
F05															
F07															
F08	M16	125	*[4.92]*	115	*[4.52]*	151	*[5.94]*	159	*[6.25]*	50	*[1.96]*	10	*[0.39]*	20	*[0.78]*
F09															
F11		190	*[7.48]*	180	*[7.08]*	205	*[8.07]*	215	*[8.46]*	50	*[1.96]*	10	*[0.39]*	20	*[0.78]*
F12															
F18										70	*[2.75]*			30	*[1.18]*
F19															
F21															

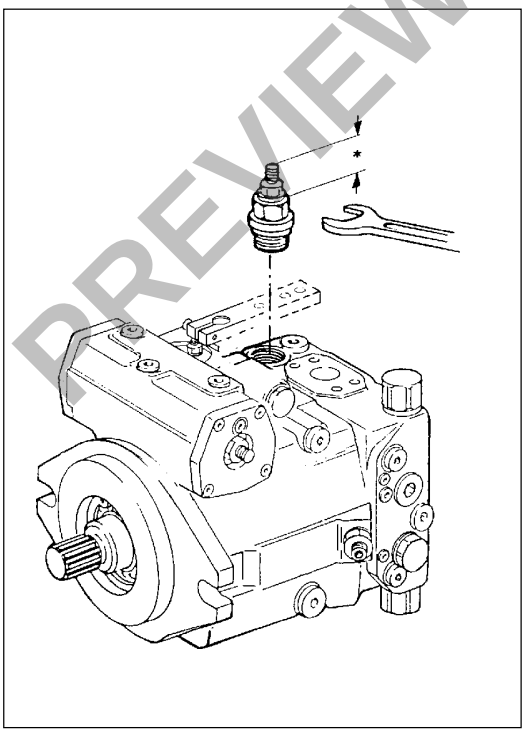
• Rohr zum Festsetzen des Motors		*Tube to immobilize the motor*	
• Werkzeuge zur mechanischen Bremslösung.		*Tools for mechanical brake release*	

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33 Wechsel der Dichtmutter.
Einstellmaß festhalten (*).

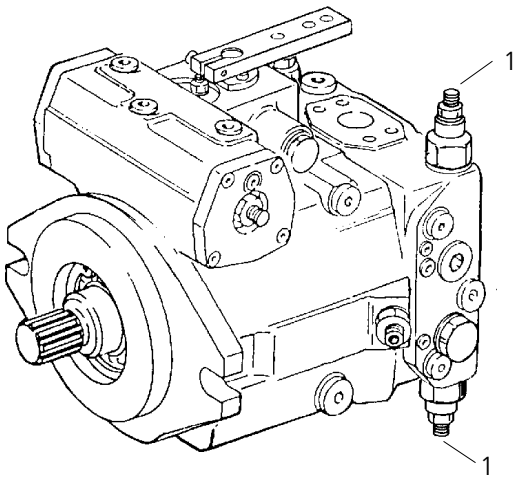
Change of the sealing nut.
Note setting measure (*).

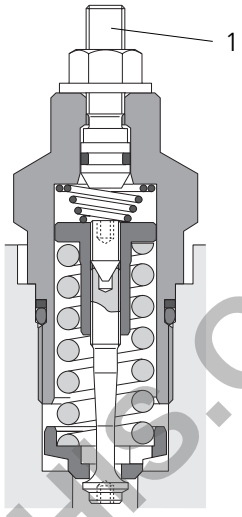
Achtung!
Nach Einbau "Ventileinstellung" überprüfen.

Attention!
After assembly check "valve setting".

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Fahrzeuge mit rein-hydrostatischem Fahrantrieb bzw. mit hydrostatischem Fahrantrieb und Schalt-**getriebe ohne Leerlaufstellung (Freilauf).**

Hydrostatischer Antrieb / Bypaß-Schaltung

In diesem Fall wird der Fahrantrieb auf freien Umlauf geschaltet. Zu diesem Zweck haben die in der Verstellpumpe integrierten Hochdruck-begrenzungsventile eine sogenannte Bypaß-Funktion. D.h. durch Drehen der entsprechenden Schraube (Pos.1) wird der Ventil-Einsatz so entspannt, daß ein freier Öl-Umlauf möglich ist.

⚠ Bypass:Pos.1 einschrauben bis eben mit Mutter. Mutter wieder anziehen.

Schleppgeschwindigkeit
Die maximale Schleppgeschwindigkeit sollte 2 km/h nicht überschreiten.

- Höhere zulässige Schleppgeschwindigkeiten sind abhängig von der Hydromotordrehzahl bzw. dem eingelegten Gang.

Abschleppdistanz
Die Schleppentfernung sollte 1 km nicht überschreiten.

- Bei fehlender Einspeisung entleert sich der Hydraulik-Kreislauf.
  Zu beachten ist die Wärmeentwicklung im Hydromotor-Triebwerk.

Abschleppvorgang beendet
Nach beendetem Abschleppvorgang Pos.1 zurück-drehen. Der ursprüngliche Einstellwert der Hochdruck-ventile liegt somit wieder vor.

⚠ Ventilfunktion: Pos.1 zurückschrauben bis Anschlag. Mutter anziehen.

Vehicle with hydrostatic transmission and gear shift without idling setting position (free wheeling).

Hydrostatic transmission / Bypass-switching

In this case the travel transmission is switched on to free wheeling.For this purpose the variable displace-ment pump has incorporated high pressure relief valves with bypass function.
The screw (item 1) is unscrewed to such an extent, that the valve cartridge is released and free oil circulation is possible.

⚠ Bypass: Screw in item1 up to planeness with nut. Screw up nut again.

Towing speed
The max. towing speed of 2 km/h should not be exceeded.

- Higher admissible towing speeds depend on the avaiable hydr. motor speed and engaged gear shift.

Towing distance
The towing distance should not exceed 1 km.

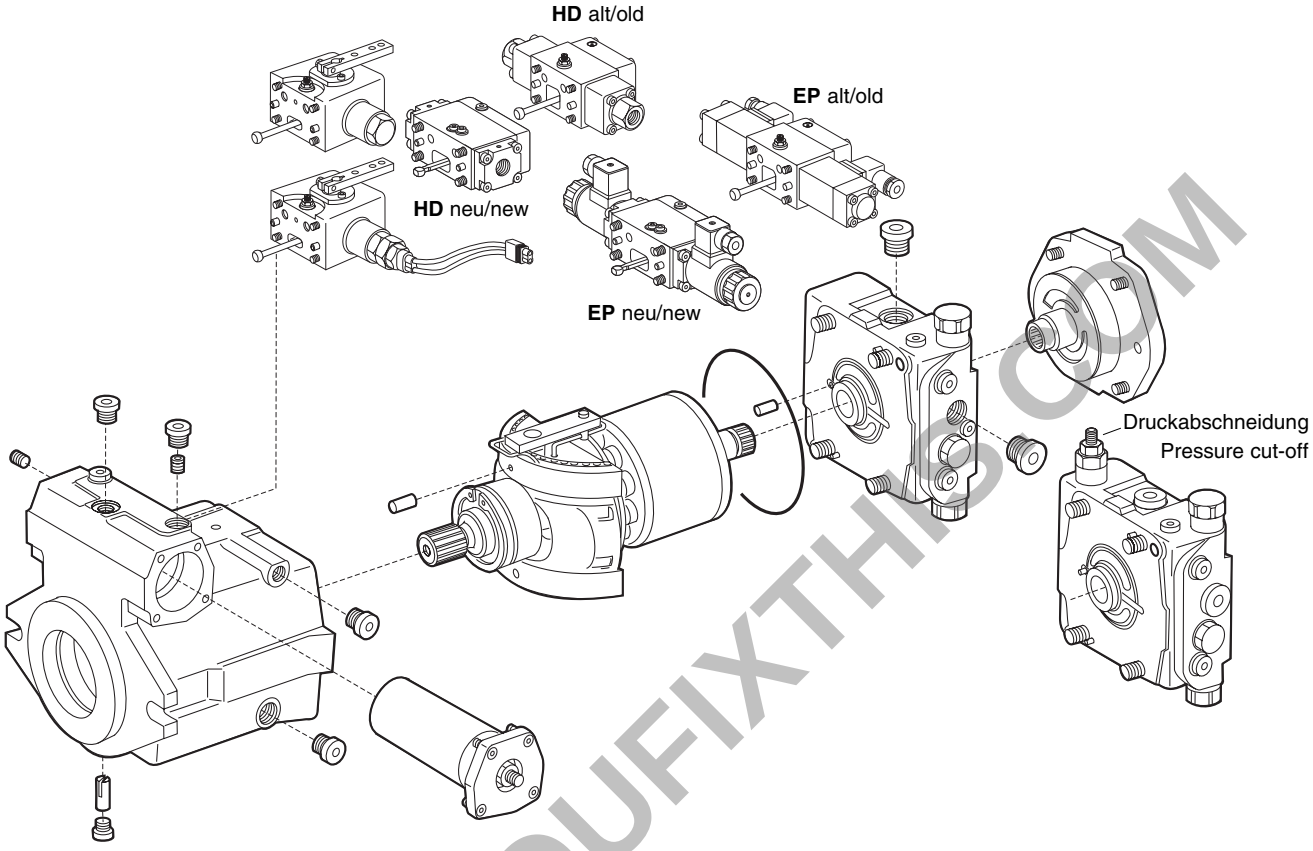
- If there is a lack of oil boosting, the hydraulic circuit will get empty.
  Take care of the heat development in the hydr. motor-rotary group.

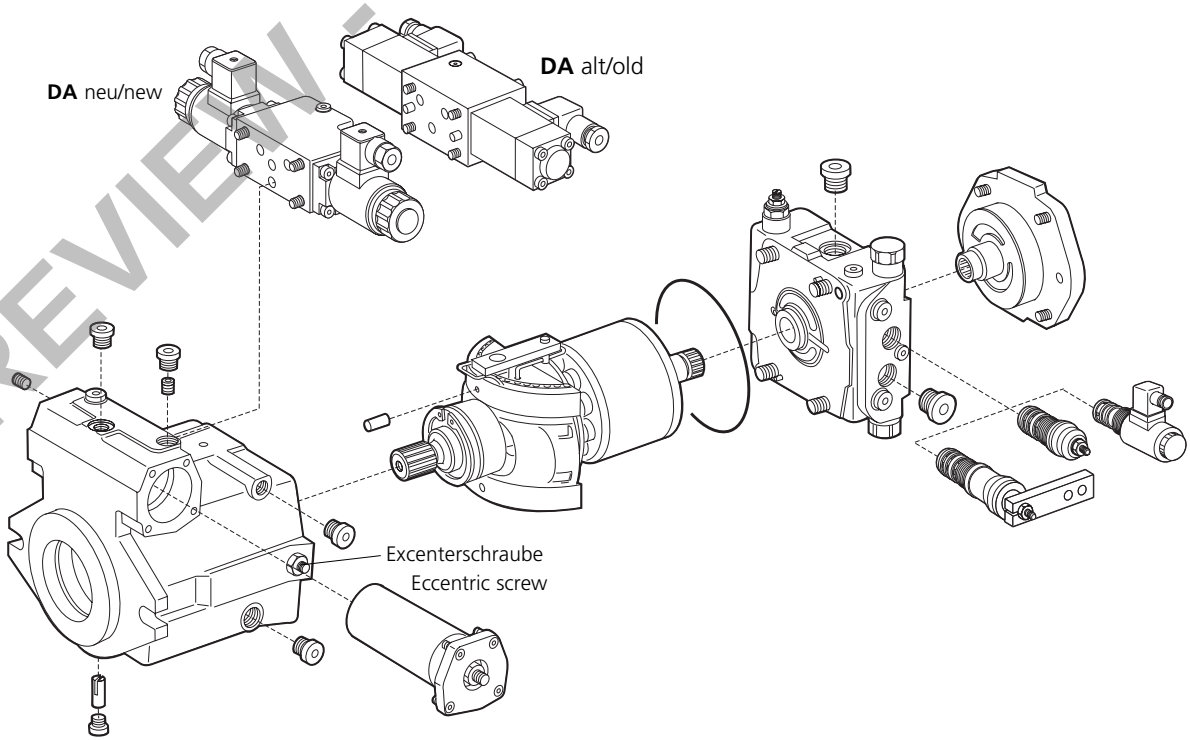
Towing operation terminated
After termination of the towing operation turn item 1 back. The original pressure value setting of the high pressure relief valves will be avaiable again.

⚠ Valve function: Screw back item 1 up to stop. Screw up the nut.

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