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Service Manual

Crawler Dozers

PR 712 - 752



LIEBHERR

Service Manual

Property of Liebherr-Werk Telfs GmbH

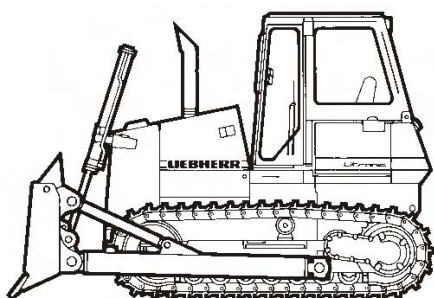
Crawler Dozers

SERIES

2
Litronic

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Issue 01/2004



Book No.: -----

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Test. No.	Test	Space No.	During test	After adjustment / repair	Remarks	
	Diesel engine running					
8.	Alternator	8	⊗ overv. ○ o.k. ⊗ underv.	⊗ overv. ○ o.k. ⊗ underv.	Diesel engine approx. 1500 RPM / test for 10 sec.	
9.	RPM sensor Diesel engine	A	⊗ low ○ o.k. ⊗ high	⊗ low ○ o.k. ⊗ high	must be green from n_{min} up to n_{max}	
10.	RPM Diesel engine	A	min: max: - RPM	min: max: - RPM	min: 800 ⁺⁵⁰ RPM max: 1900 ⁺⁶⁰ RPM	
11.	Potentiometer nominal RPM	3	○ max. RPM □ good ○ min. + RPM □ defect	○ max. RPM □ good ○ min. + RPM □ defect	should be green at $n_{max} - 30^{+20}$ RPM and $n_{min} + 30^{+20}$ RPM / □ = indication at part. range	
12.	Overspeeding protection / D-engine	A	Function available: yes □ no □	Function available: yes □ no □	press button → RPM drop at engine → working hydraulic - HD = max.	
13.	Brake release	14	⊗ Light at panel: ⊗ on □ off	⊗ Light at panel: ⊗ on □ off	must be functioning for all remaining tests	
	Tracks running				machine must be raised off the ground	
14.	RPM sensor travel gear	13	⊗ ○ ⊗ □ right ⊗ ○ ⊗ □ left	⊗ ○ ⊗ □ right ⊗ ○ ⊗ □ left	□ = no Indication/ must be „ok“ for further tests	
	Disconnect servo lines from pump-connection X to travel motor - see instructions					
15.1.	basic adjustment left track	14	forward 2 forward 3 reverse 2 reverse 3	forward 2 forward 3 reverse 2 reverse 3	Pump regulating range forward Pump end of regulation forward Pump regulating range reverse Pump end of regulation reverse	
16.1	Straight run compare track right to track left	14	□ "Test" □ "Adjust" forward 1 □ yes □ no forward 2 forward 3 reverse 1 □ yes □ no reverse 2 reverse 3	□ "Adjust" forward 1 □ yes □ no forward 2 forward 3 reverse 1 □ yes □ no reverse 2 reverse 3	note position of rotary switch travel begin forward - tracks starts to turn Pump regulating range forward Pump end of regulation forward travel begin reverse - tracks starts to turn Pump regulating range reverse Pump end of regulation reverse	
	Servo lines from pump-connection X connected to one travel motor on each side - see instruction					
15.2	Basic adjustment left track	14	forward 4 reverse 4	forward 4 reverse 4	left motor regulating range forward control test	
16.2	Straight run right track	14	forward 4 reverse 4	forward 4 reverse 4	right motor regulating range forward control test	
	Servo lines from pump-connection X connected to all travel motors - see instruction					
15.3	basic adjustment left track	14	forward 4 forward 5 reverse 4 reverse 5	forward 4 forward 5 reverse 4 reverse 5	left motor regulating range forward left motor - mech. end stop - Q_{min} control test - values are resulting from previous adjustments	
16.3	Straight run compare track right to track left	14	forward 4 forward 5 reverse 4 reverse 5	forward 4 forward 5 reverse 4 reverse 5	right motor regulating range forward right motor - mech. end stop - Q_{min} control test - values are resulting from previous adjustments	
	Special tests - travel operation				throttle lever must be at "max. RPM" position	
17.	current supply	2	(440 ^{±20}) mA max. in normal speed range max. in reduced speed range max. in reduced speed range (1180 ^{±80}) mA		initial current jump 2-ranges 1350 ⁺⁷⁰ mA 3-ranges 1350 ⁺⁷⁰ mA (Switch pos. III) 950 ⁺⁵⁰ mA 1170 ⁺⁵⁰ mA (Switch pos. II) -- 870 ⁺⁵⁰ mA (Switch pos. I)	
	17.1 Diesel engine not running				reduced value when steering left (normal speed)	
	17.2 Diesel engine running	2	(440 ^{±20}) mA (500 ⁺¹⁰⁰) mA		initial current jump minimum current at maximum load (RPM drop)	
18.	Straight run compare right to track left	14 + 2	mA mA mA mA mA mA mA mA	mA mA mA mA mA mA mA mA	forward with approx. 550 mA reverse with approx. 550 mA forward with approx. 950 mA reverse with approx. 950 mA	

If installed:

C. Pedal-tests with tester CET 03/08 (see Service Manual section 10.6/chapter "fine adjustment") - Diesel engine not running

T.No.	Test	During test	After adjustment / repair	Remarks
1.	Inch/brake pedal	adjustments according to guidelines ☐ yes ☐ no	adjustments according to guidelines ☐ yes ☐ no	observe display - "Inchpedal ext" etc. LED "Voltage" must be always green

Remarks:

.....
.....
.....
.....

Adjustment guidelines - quick reference and explanations

Complete the test procedure according to the checklist, even for a partial check. Use pressure gauges appropriate for the test ranges. To test the track speed / straight run, raise the machine off the ground and support it properly, so that the chains can turn freely without danger.

Make sure to observe all **safety guidelines** see group 1.2.01!

Use only the correct tools(test instruments). The Diesel engine RPMs must be as noted. Perform all required maintenance work before adjustment.

In case of questions, make sure to use the detailed instructions: for **the adjustment of the travel hydraulic, see section 6.5.00**, for the adjustment of the working hydraulic, see section **7.5.10** ,for the use of the **test box** CET 08/03, see section **10.4.00**. and for the use of the **pedal control tester**, see section **10.6.00**.

When putting the machine into service, proceed according to the guidelines given in the Operation and Maintenance Manual. Check all indicators and gauges to ensure they are functioning correctly.

Defects must be repaired immediately or as soon as possible, depending on the type of problem.

A. Tests with standard test instruments

All pressure tests must be performed at 1000 RPM (without an engine load), unless noted otherwise.

1. Visual tests and maintenance

Insufficient maintenance and mechanical component defects often point to the cause of the problem. Check oil levels, filters, coolant level, mechanical components and their mounting, cables and wiring harnesses, etc. Repair any detected defects immediately or as soon as possible, depending on the type of problem.

2. Standby pressure - fan drive

The pressure determines the minimum RPM for the fan drive motors. Incorrect adjustments can cause failure of the hydraulic motors.

Check / adjust with the machine cold. For instructions, refer to group 6.5.

When the operating temperature is reached in one of the systems - hydraulic system, Diesel engine coolant circuit or charge air system - the fan drive is automatically changed over from stand by function to working function.

3. Operating temperature

If the operating temperature is reached only for a short time, cover the cooler (air flow) partially for the test / adjustment. With the oil at operating temperature, before performing additional tests, actuate all hydraulic functions and monitor the temperature constantly. For additional information about bringing the hydraulic system to operating temperature, see group 6.5 or 7.5

4. Pressure limitation - fan drive

The pressure determines the required working (minimum) RPM of the fan drive motors. For details, see group 6.5.

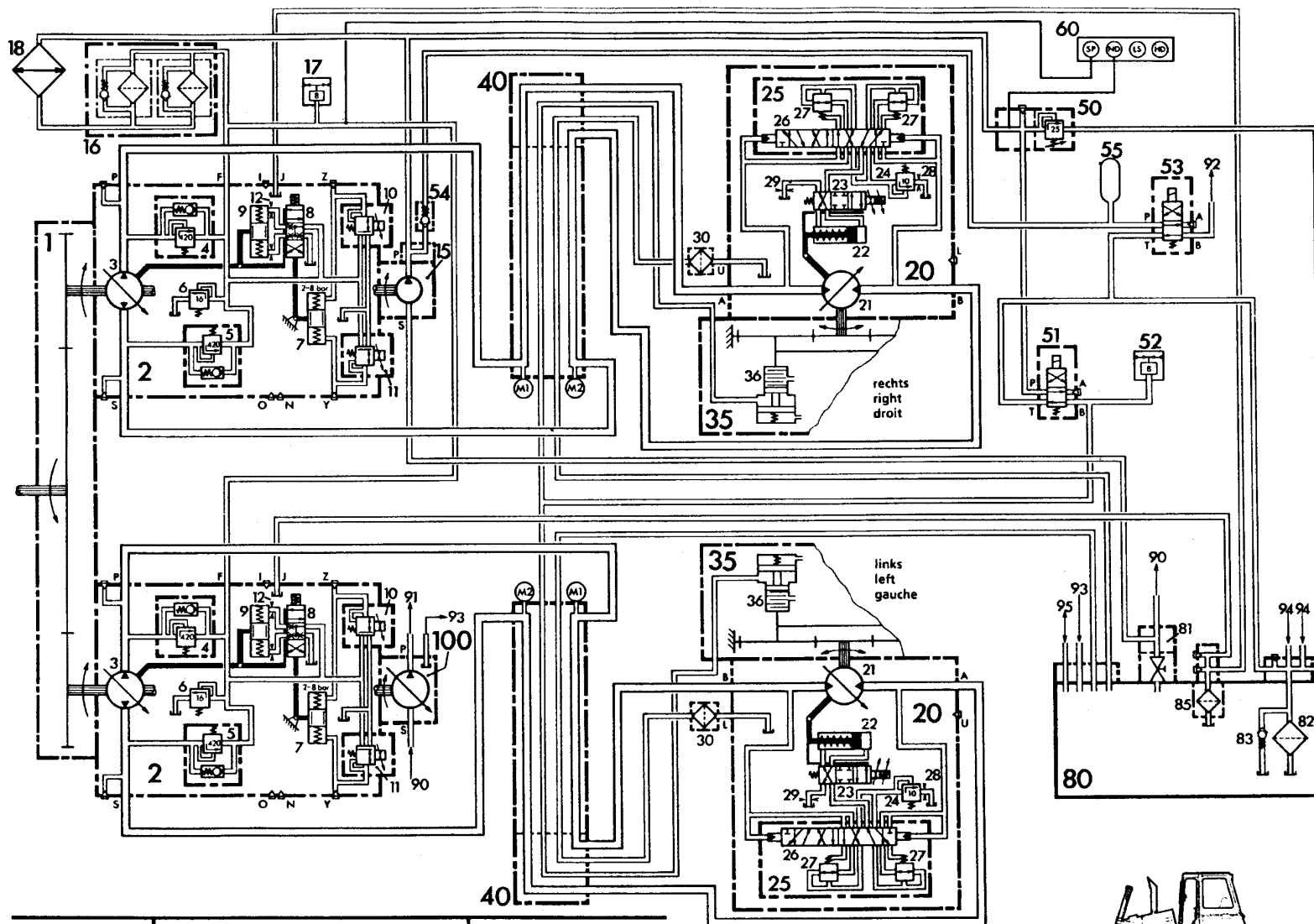
5. Cold start valve (travel hydraulic)

Needs to be checked only for troubleshooting. With the oil at operating temperature, only a minimum amount of leak oil should emerge from the valve, otherwise, check the adjustment, see group 6.5, p. 3.

6. Servo pressure (working hydraulic)

Not adjustable - is a result of SP pressure. In case of problems, for example "Quick drop", see Adjustment - working hydraulic, group 7.5.10.

LIEBHERR	Benennung Description Dénomination	Typ/ab Type/from Type/ a partir de
	Quick Reference	
	Adjustment Checklist	
Datum Edition Date		PR 752 F/N xxx-2002→5599
01 03		Blatt Page Feuille 3.5.50.02



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Datum: Edition Date

02 94

Benennung Description Dénomination

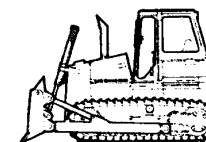
Fahrhydraulik
Travel Hydraulic
Hydraulique de translation

Typ/ab Type/from Type/a part/de

PR 732 - L / M - 2003

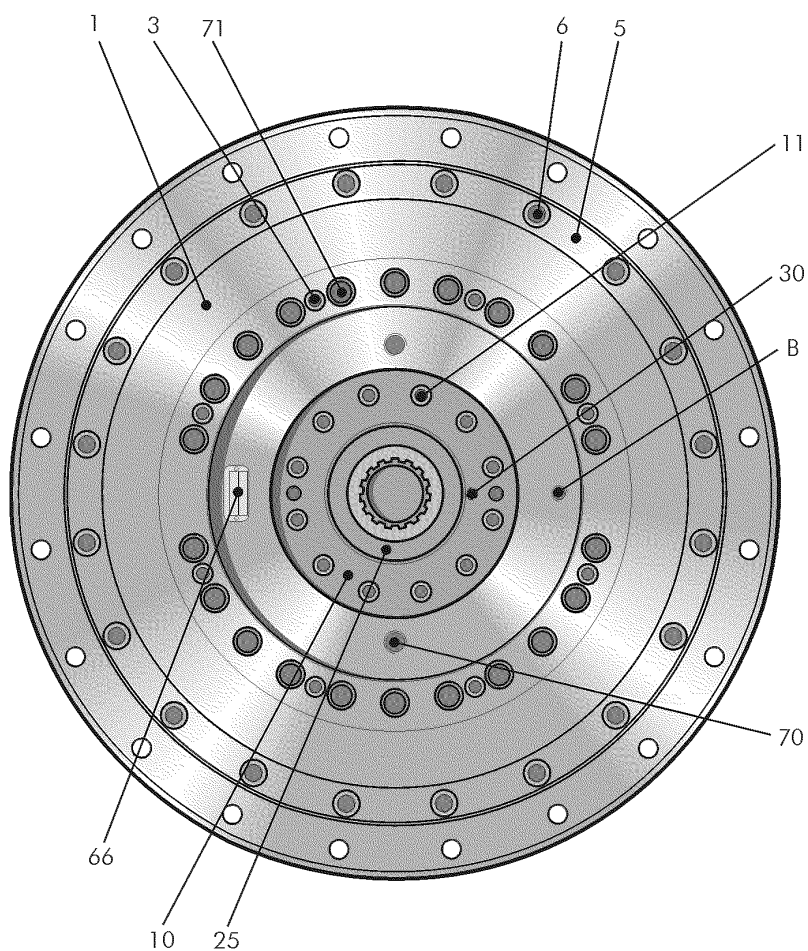
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6.3.30.00

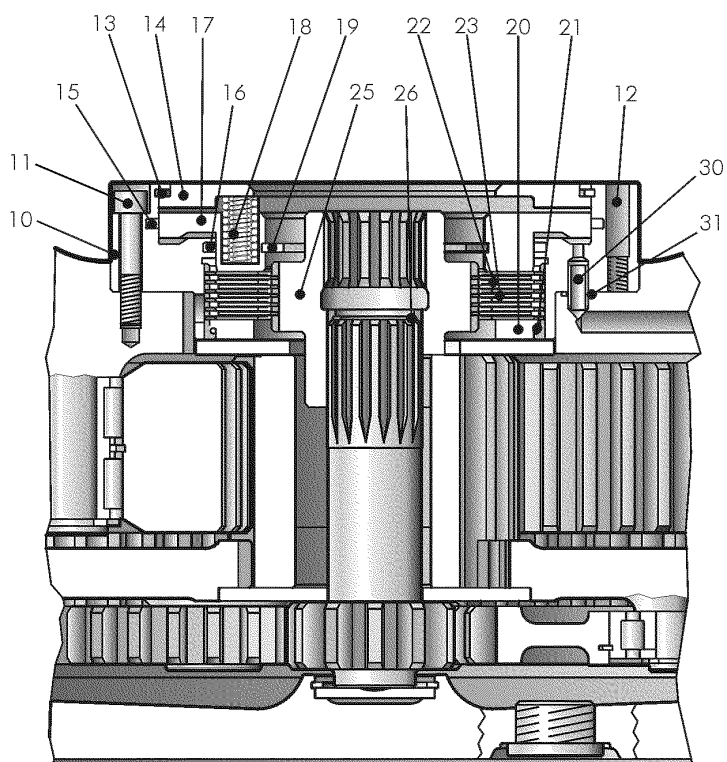


Ansicht
View
Vue

A



Im Schnitt versetzt gezeichnet
Repositioned - Sectional view
Coupe decalée



LIEBHERR

Datum Edition Date

01 00

Benennung Description Dénomination

Fahrgetriebe
Travel gear

Mécanisme de translation

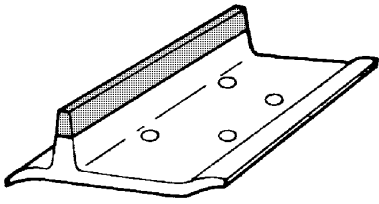
Type "P"

Typ/ab Type/from Type/a partir de
PR 712(B) F/N xxx-0430→3083
PR 722(B) F/N xxx-0597→3170
PR 732(B) F/N xxx-2200→3135
PR 742(B) F/N xxx-2087→3088

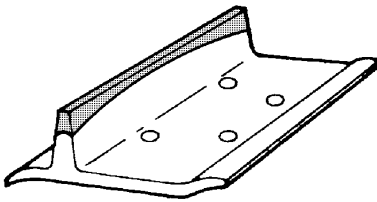
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11.3.14.02

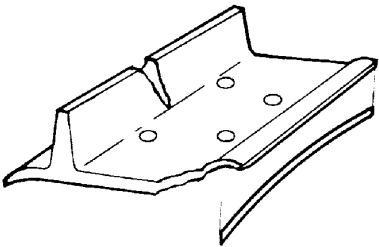
3.1 Typical wear patterns



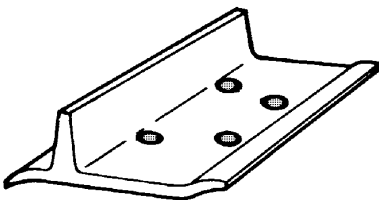
Normal wear, mainly visible on the grouser, but also on pad surface. Normal wear is accelerated by spinning the tracks, working in rock and constantly changing direction.



Excessive corner wear can usually be found on single grouser pads which are too wide for the particular application and ground condition. Excessive turning may be another reason.



Bent, cracked or broken track pads are caused by excessive loads. This results from excessive wear of track pads or the use of track pads which are too wide for the specific job condition. This type of wear also destroys the track chain. If further reduction of the track pad width is not possible, extreme service track pads should be installed.



Bore holes worn out, caused by loose or improperly torqued track pad bolts.

Could also be caused by incorrectly selected track pads, which are too wide, grousers are too high and in turn cause high resistance when turning.

4. Sprockets

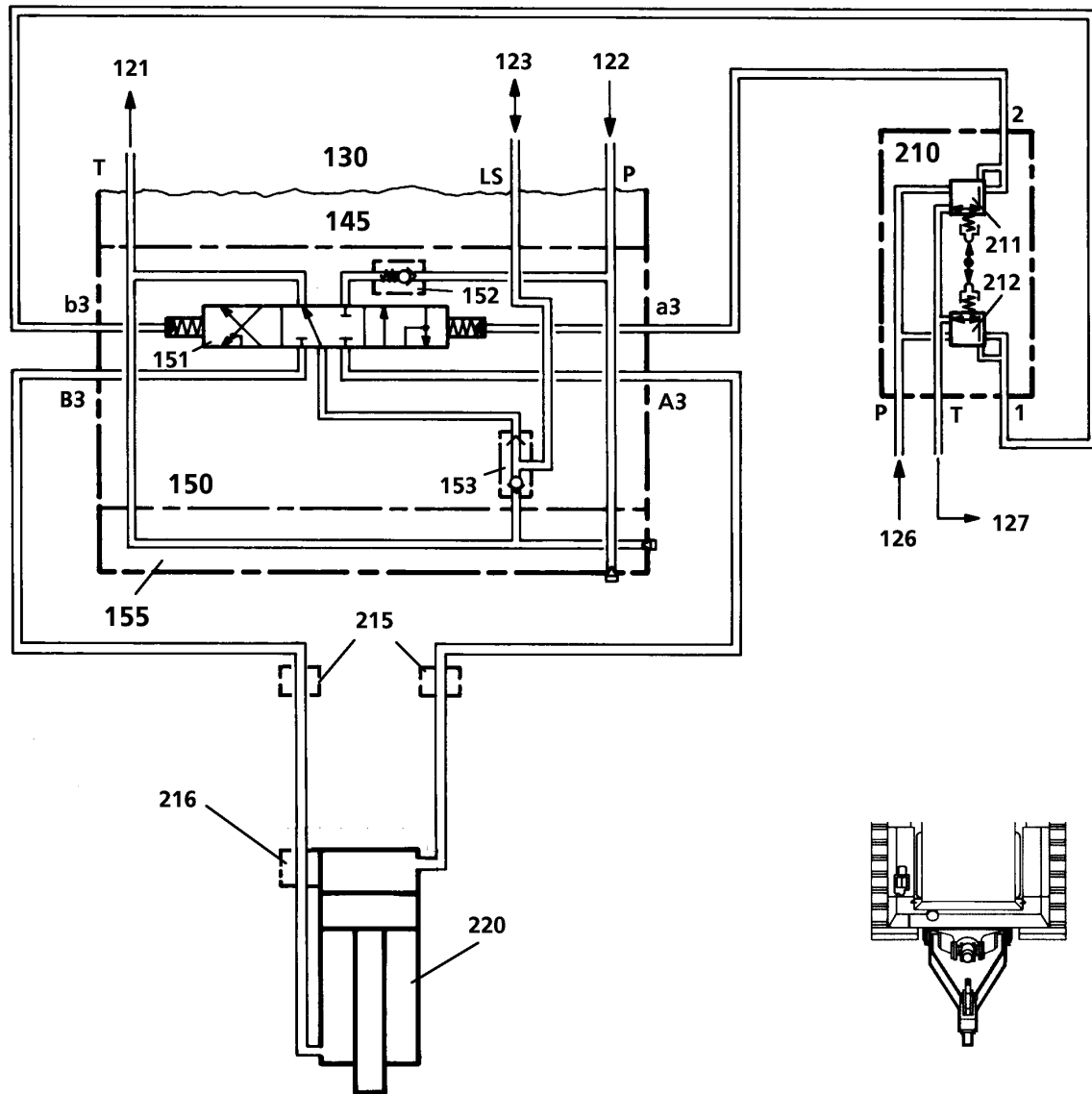
The wear on the sprocket (sprocket segment) teeth is due to the contact with the track chain as well as the material. This means, of course, that as the track chain bushings and pins wear, the sprocket teeth wear as well.

Since the complete tooth is subject to wear, the sprocket has no clear reference point from which to take a wear measurement. The amount of sprocket tooth wear can therefore only be determined by comparing the shape of the worn tooth to the shape of a new tooth. For this comparison, a large number of templates would be needed. In a practical evaluation, the wear pattern, which starts at the root of the tooth is used as a visual reference point. The evaluation should be made on several teeth.



If the end of the wear pattern is still within the side of the tooth, the sprocket (sprocket segments) are still usable.

Hydraulic schematic / Single shank ripper
 (Expanded from schematic - WH - page 7.3.10.00/7.3.40.00)



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Datum Edition Date

09 91

Benennung Description Dénomination

**Working Attachment
Single Shank Ripper**

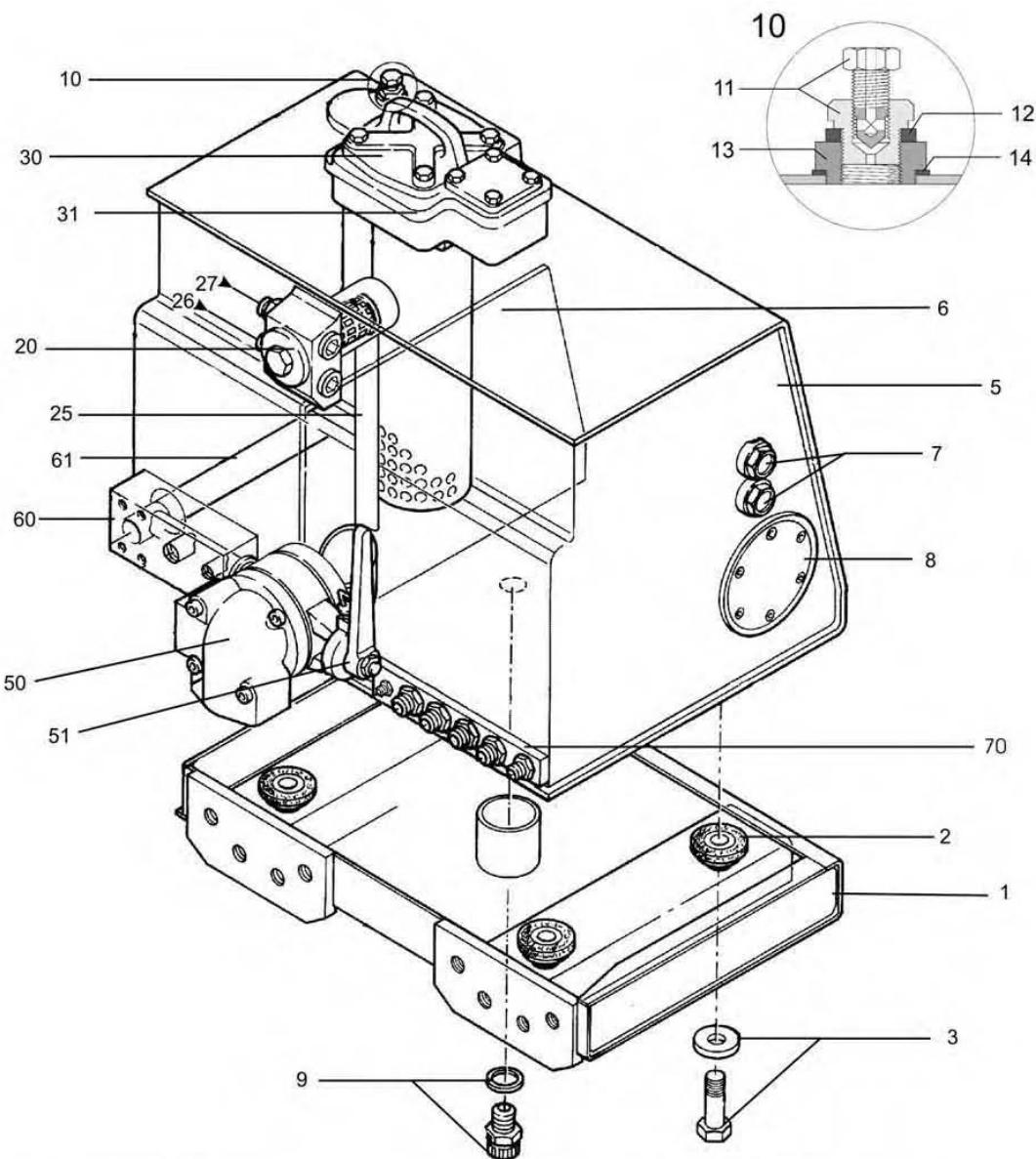
Typ/ab Type/from Type/a partir de

PR 732 L/M-2003

PR 742 - 2001

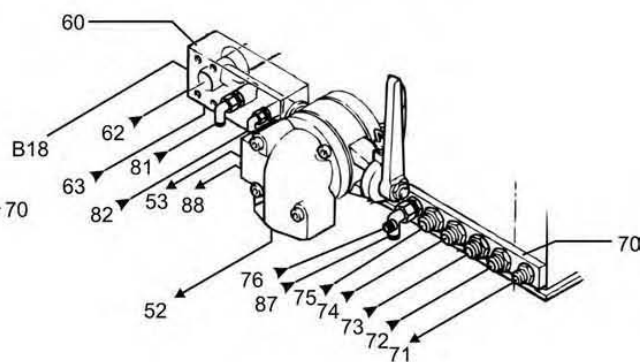
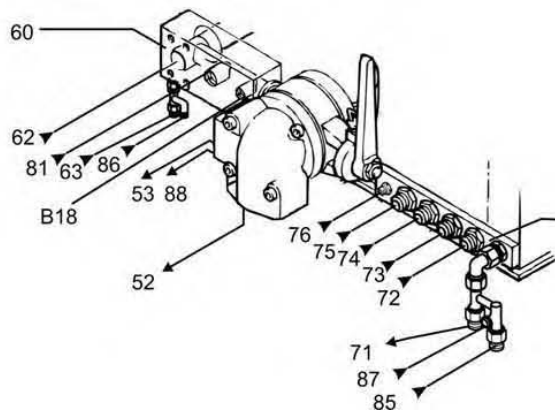
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14.2.10.00/2



Anschlüsse bei PR 732B
Connections at PR 732B
des raccords à PR 732B

Anschlüsse bei PR 742B
Connections at PR 742B
des raccords à PR 742B



LIEBHERR

Datum Edition Date

01 02

Benennung Description Dénomination

Hydraulic tank

Typ/ab Type/from Type/ a partir de

PR 732B F/N xxx-2501→
PR 742(B) F/N xxx-2001→

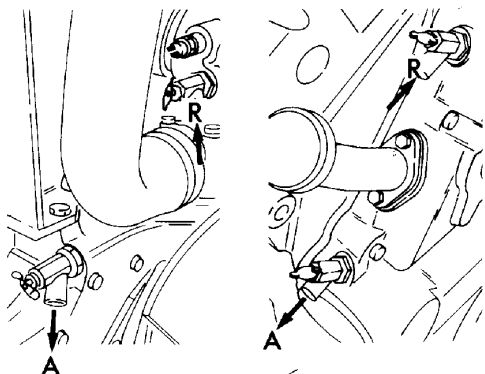
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16.1.30.02

2.2. Heater

LH-Inline-engine

LH-V-engine

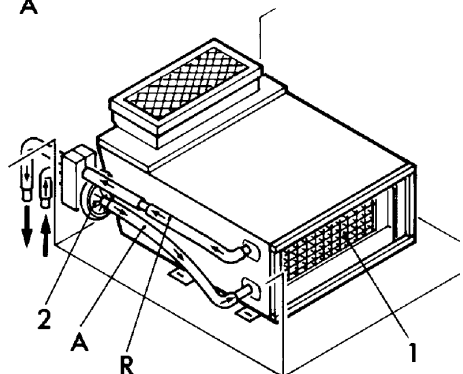


Part of the hot coolant runs from the engine coolant circuit from the lower shut off valve, in the component carrier of the Diesel engine over the supply line to the heat exchanger (1).

If the regulating valve (2) is open, warm water runs through the heat exchanger and the air created by the blower is heated.

The coolant flows via return line "R" to the upper shut off valve in the timing case to the coolant circuit of the Diesel engine.

The regulator valve 2, which is adjusted by the lever via a cable, determines the amount of coolant which flows over the heat exchanger 1 and therefore also the heat output.



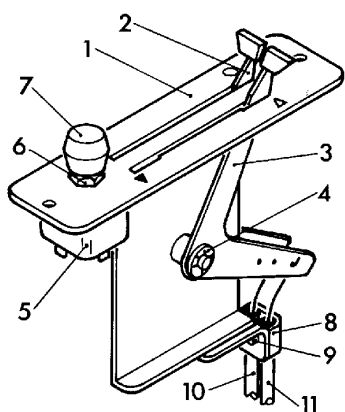
3. Repair

3.1. Control unit

Operator's seat - remove mounting screws, remove seat, remove cover to the control unit.

Loosen screw 9, release cables. For repairs, pull plug from blower switch 5 on the control unit, remove mounting screws and remove unit.

To replace cables, tilt cab and secure. Remove heater cover, release cables on regulating valve and on air flap. Replace cables, make sure they are not kinked. Reinstall all parts in reverse order.



- 1 Control, complete
- 2 Lever - Heater
- 3 Lever - Fresh air / circulating air
- 4 Washer
- 5 Blower switch, complete
- 6 Nut
- 7 Knob
- 8 Clamp
- 9 Screw
- 10 Cable - Heater
- 11 Cable - Fresh air / circulating air

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