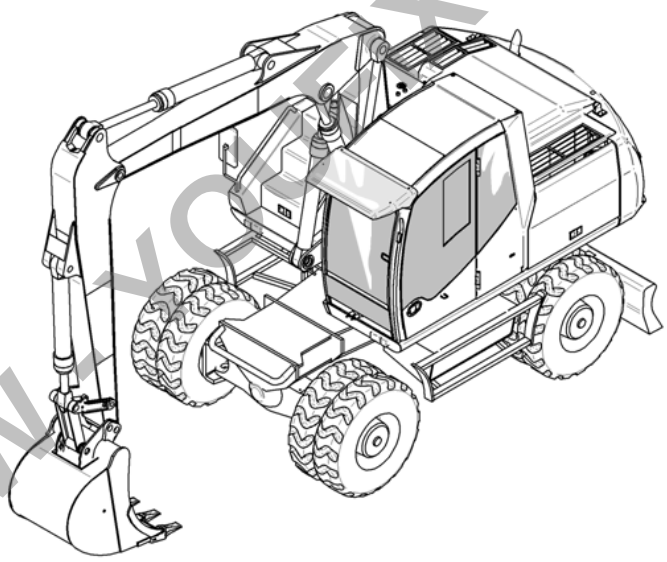
TEREX
ATLAS

Workshop Manual



ATLAS 1305 / 1505 / 1605 /1705

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Contents

1 Technical data
2 Display and controls
3 Engine
4 Vehicle engine
5 Pumps
6 Pilot Control Equipment
7 Control block
8 Main rotation connection
9 Slewing gear gears and motor
10 Pressure setting tables / setting regulations
11 Cylinders
12 Hydraulic accessories
13 Air conditioner system
14 Power shift transmission
15 Electricity
16 Axles
17 Hydraulic circuit diagrams
18 Maintenance
19 Miscellaneous

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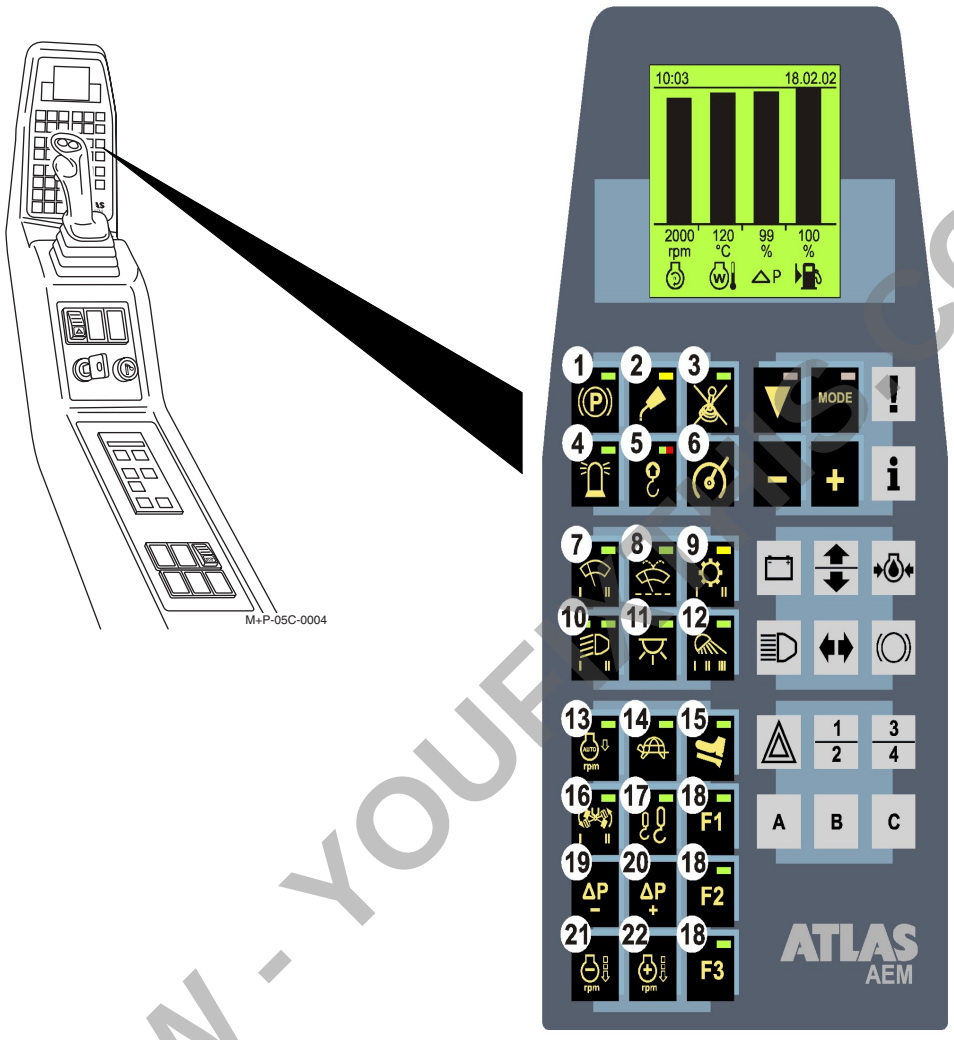
1 Technical data

Size	Unit	1305 M	1505 M	1605/1705 M
Service weight	t	13 - 14	14 - 16	15,5 - 17,5
Max. shovel capacity	l	900	1120	1120
Motor manufacturer		Deutz	Deutz	Deutz
Type		BF4M2012	BF4M2012C	BF6M2012C
Power	kW	67	80	105
	(PS)	91	109	142
Speed	min^{-1}	2000	2000	2000
Hydraulic system		AWE5	AWE5	AWE5
Max. volume	l/min	188	260	260
Max. pressure	bar	360	360	360
Slewing speed	min^{-1}	9	9	9
Slewing radius	mm	1980	2190	2190
Dimensions		***PL***	***PL***	***PL***
Axle width (A)	mm	2490	2490	2490
Wheel base (B)	mm	2500	2500	2500
Height (C)	mm	3075	3075	3075
Tyres		8x 10.00-20	8x 10.00-20	8x 10.00-20
Max. driving speed	km/h	20/Option 30	20/Option 30	20/Option 30
Creeping speed	km/h	1	1	1

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5 "DELUXE" Control and display



1 Parking brake pushbutton
2 Central lubrication pushbutton
3 Pushbutton pilot control deactivated
4 Rotating beacon light pushbutton
5 Overload warning device pushbutton
6 Cruise control pushbutton
7 Windshield wiper pushbutton
8 Intermittent wipe / windshield washer operation pushbutton
9 Transmission pushbutton
10 Light pushbutton
11 Interior lights pushbutton
12 Work-area lights pushbutton
13 Automatic idling system pushbutton
14 Inching speed pushbutton
15 Automotive driving pushbutton
16 Swing axle lock pushbutton
17 Pressure cut-in stage pushbutton
18 Operating mode pushbuttons **F1** to **F3**
19 Pushbutton to decrease pressure differential
20 Pushbutton to increase pressure differential
21 Pushbutton to decrease engine speed
22 Pushbutton to increase engine speed

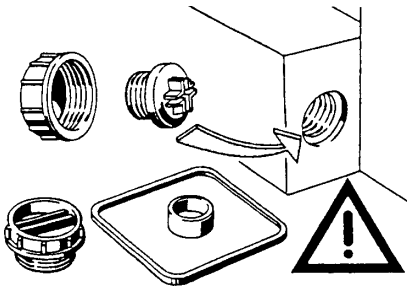
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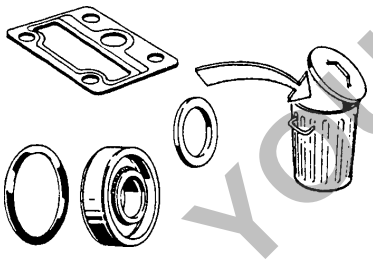
General repair instructions



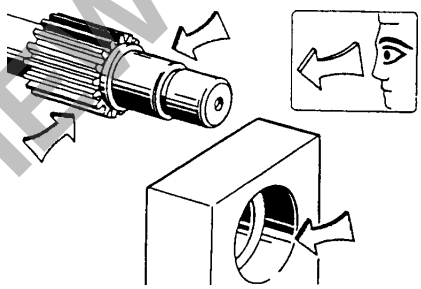
Attention!
Observe the following notices when carrying out repair work at hydraulic aggregates!



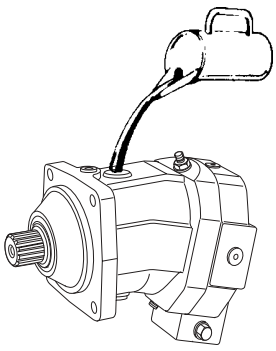
Close all ports of the hydraulic aggregates.



Replace all seals.
Use only ORIGINAL BRUENINGHAUS-HYDROMATIK spare parts.



Check all seal and sliding surfaces for wear.
Attention: rework of sealing area f. ex. with abrasive
paper can damage surface.



Fill up hydraulic aggregates with medium before start- up.

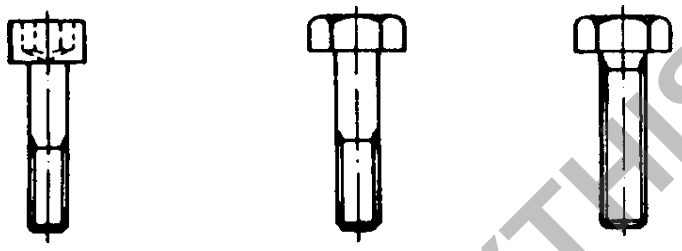
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Assembly guidelines for tightening torques

1. Bolts (to N 08.001)

The values stated are valid for bolts with metric ISO threads to DIN 13 part 13, as well as head areas to DIN 912 socked head cap screws, DIN 931 hexagon bolt or DIN 933 hexagon bolts with threads up to the head.



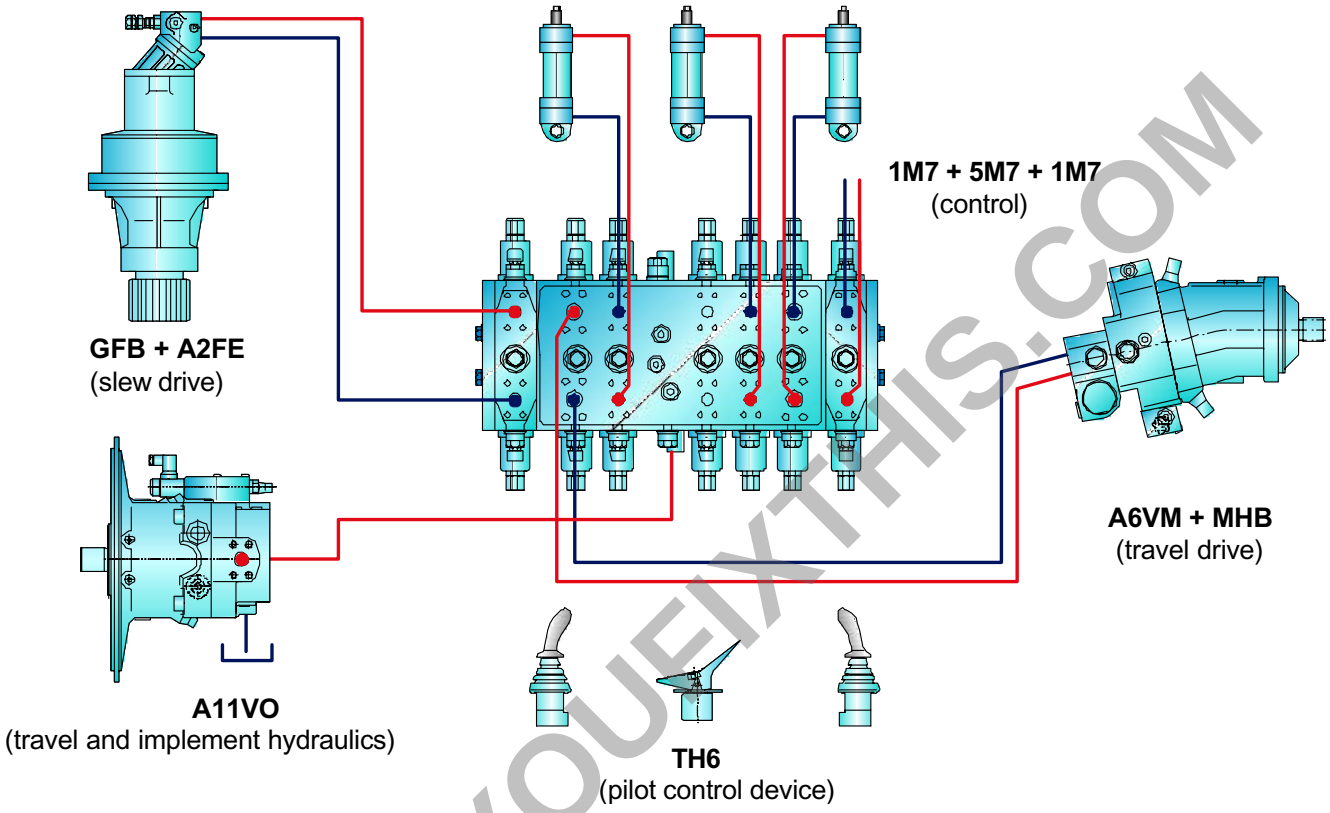
Thread	Tensile strength class		
	8.8	10.9	12.9
	Tightening torque M_A in Nm		
M3	1,1	1,6	1,9
M4	3,1	4,5	5,3
M5	6,1	8,9	10,4
M6	10,4	15,5	18
M8	25	37	43
M10	51	75	87
M12	87	130	150
M14	140	205	240
M16	215	310	370
M18	300	430	510
M20	430	620	720
M22	580	830	970
M24	740	1060	1240

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1 Loop LUVD system

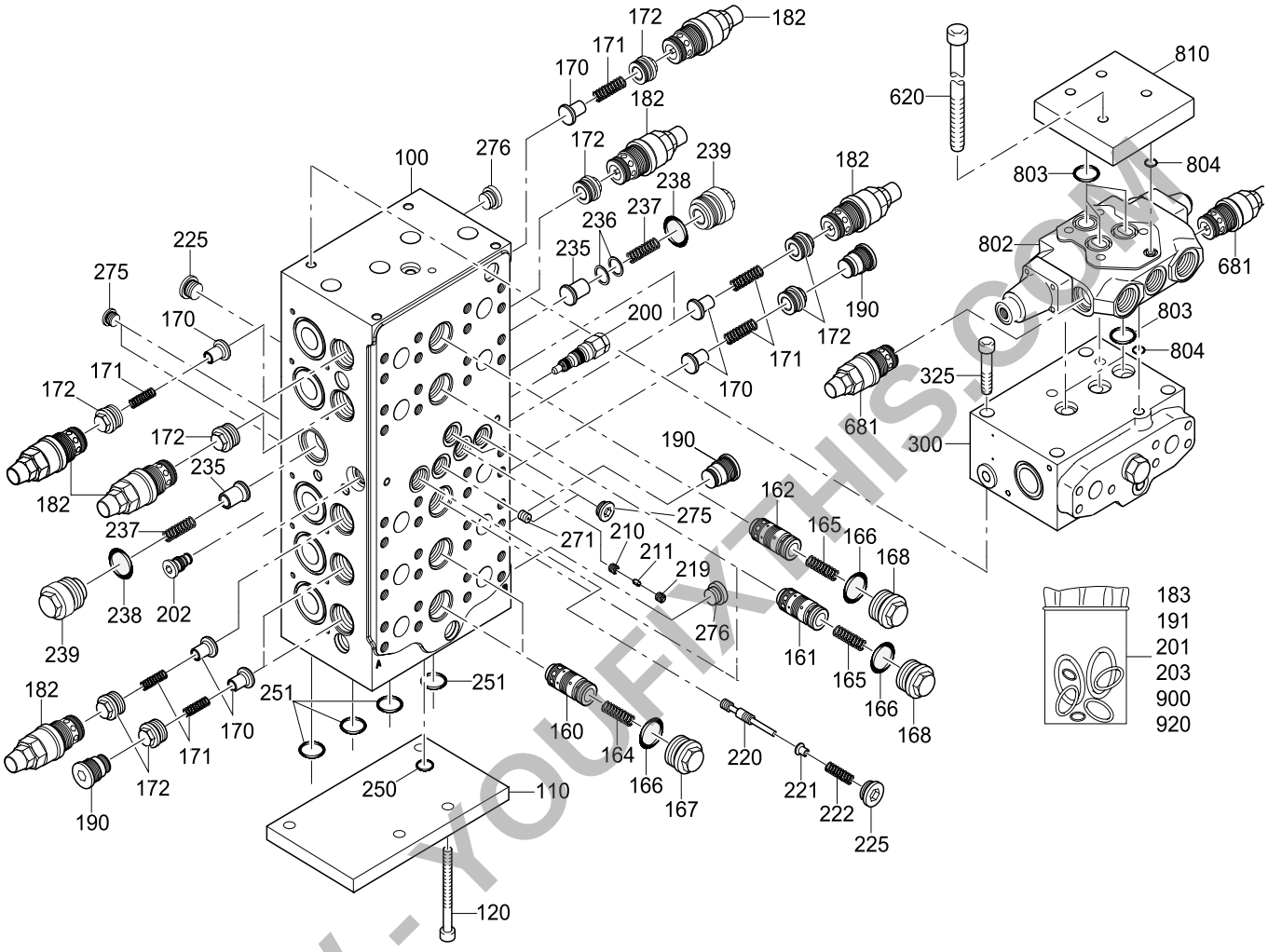
(example: 13 ton wheeled excavator)



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2.1 1305 control block, Picture 1



100 Housing
110 Plate
120 Socket head cap screw
160 Piston
161 Piston
162 Piston
164 Pressure spring
165 Pressure spring
166 O-ring
167 Screw plug
168 Screw plug
170 Cone
171 Pressure spring
172 Screw plug
182 Pressure valve
183 Sealing set for item 182
190 Screw plug
191 Sealing set for item 190
200 Pressure control valve
202 Valve
203 Sealing set for item 202
210 Valve seat
211 Throttle pin
219 Valve seat
220 Piston
221 Spring plate
222 Pressure spring
225 Screw plug
235 Cone
236 Supporting ring
237 Pressure spring
239 Screw plug
271 Nozzle
275 Screw plug
276 Screw plug
300 Housing
325 Socket head cap screw
620 Socket head cap screw
681 Pressure valve
682 Sealing set
802 Housing
810 Plate
900 Sealing set for items 238, 259 and 251
920 Sealing set for items 803 and 804

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2 System description

The sensors mounted on the engine supply the the electronics in the control unit with all relevant physical magnitudes.

The EMR activates a rotary magnet in accordance with this information through the present status of the engine and the specifications (accelerator pedal etc.), which in turn, actiavtes the control rod of the injection pump and thereby, doses the amount of fuel.
Through the position encoder of the control rod which, together with the rotary magnet, is positioned in a housing (the “Actuator”), the precise position of the control rod is reported back and corrected where necessary.

The EMR is fitted with safety facilities and measures in the hardware and software in order to ensure emergency-run functions (Limp home).

To shut off the engine, the EMR is de-energized through the ignition switch. A sufficiently strong spring in the actuator presses the control rod to the zero-position in the de-energized state. Optionally, a lifting magnet can be additionally activated for shut-off.

The EMR is initially pre-programmed in an engine-neutral manner. On the test-field, the engine is tested, set and programmed with the EMR. After this programming, the EMR is permanently assigned to the engine and contains an engine-specific data-set.

The EMR is configured through the end-of-tape programming via the ISO 9141-interface for the various application cases as well as customer wishes - e.g. in respect of a specific scope of function.

3 Basic equipment

In addition to the control unit, the following components are necessary as minimum equipment for the operation of the engine:

For the vehicle:
- Power supply (battery)
- Diagnostic interface (ISO 9141)
- Fault lamp

For the engine:
- Actuator (contains control rod-position encoder and operating magnet)
- Rotary speed-sensor (camshaft)
- Coolant temperature-transmitter (NTC)
- Cable-tree

Further components / Facilities may be required depending on the application case or desired functions.

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5 Maintenance schedule

		Daily 10 Oh	Every 50 Oh	Every 100 Oh	Every 500 Oh	Every 1000 Oh	Every 2000 Oh	Every 3000 Oh
Lubricate	Lubrication points	➡	⇨	⇨	➡			
	Slewing ring			*⇨				
Engine	Engine oil	👁	(1. 🛢)		🛢			
	Engine oil filter		(1. 🛢)		🛢			
	Coolant				👁		🛢	
	Mesh strainer fuel filter				🛢			
	Fuel filter		(1. 🛢)			🛢		
	Air cleaner					🛢		
	V-belts		(1. 👁)		👁			
	* Radiator	👁						
Hydr. system	Hydraulic fluid							🛢
	Hydraulic fluid filter element		(1. 🛢)					
	* Hydraulic fluid cooler	👁						
Transmission	Manual gearbox		(1. 👁)	👁	(1. 🛢)		🛢	
Axles	Differentials		(1. 👁)	👁	(1. 🛢)		🛢	
	Planetary gear hubs		(1. 👁)	👁	(1. 🛢)		🛢	
Travel gear	Wheel nuts	(1. 👁)		👁				
Elec. system	Batteries			👁				
Heating and air conditioning system	Medium level			👁				
	V-belt		(1. 👁)		👁			
	* Recirc.- fresh air filter			🧹				
	* Condenser	👁						

* Reduce this period in very dusty conditions
➡ Lubrication points, every 10 Oh
⇨ Lubrication points, every 50 Oh
⇨ Lubrication points, every 100 Oh
*⇨ Lubricate gear teeth with special grease, (Order No. 3620153), every 100 Oh
⇨ Lubrication points, every 500 Oh

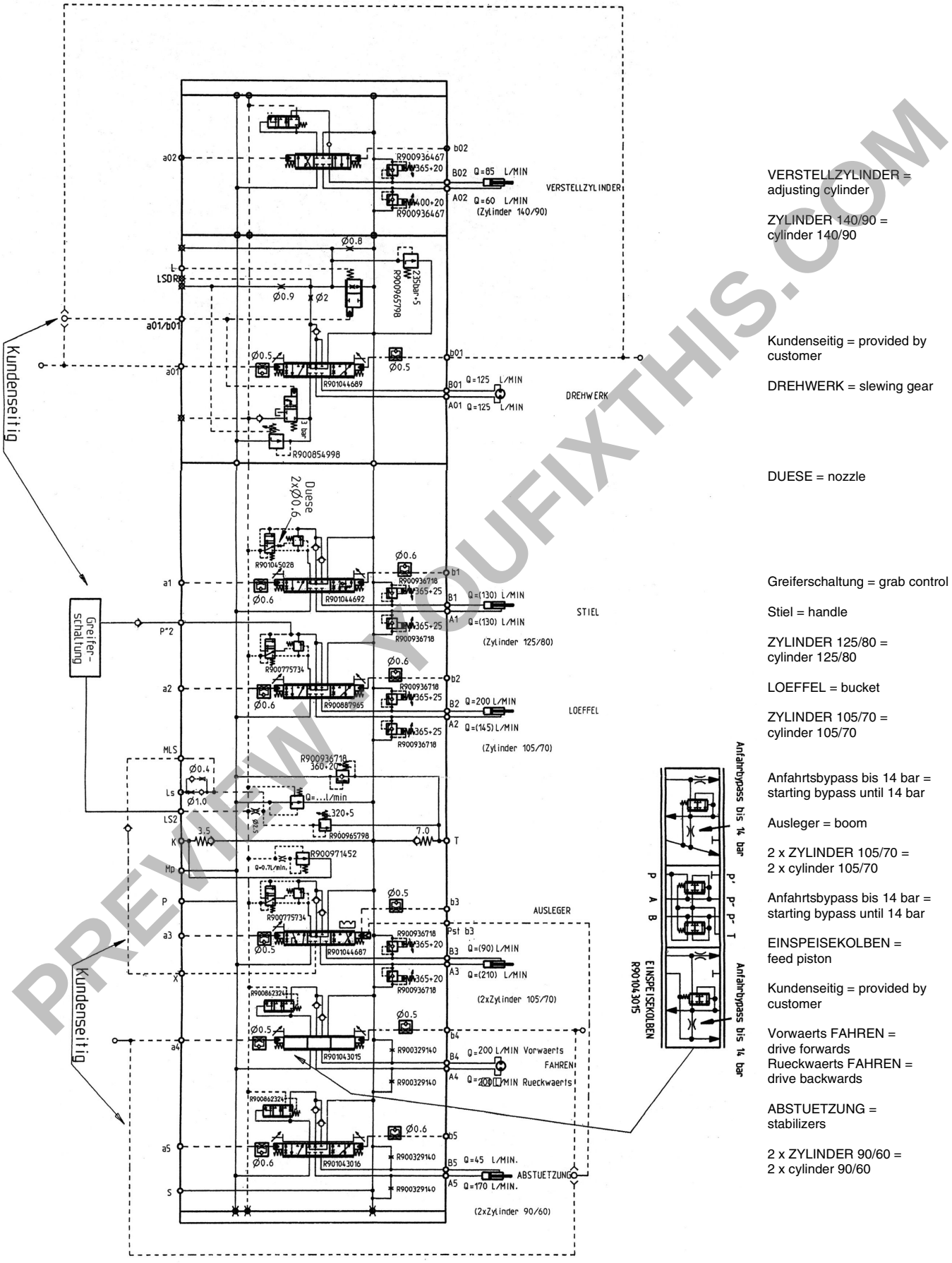
(1.) First time only
👁 Check
🧹 Clean
🛢 Renew
Drain water
Oh Operating hours

Have this maintenance work performed by ATLAS Service after 50 hours of operation and then every 500 hours of operation.

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1 Control block, detailed view



VERSTELLZYLINDER = adjusting cylinder

ZYLINDER 140/90 = cylinder 140/90

Kundenseitig = provided by customer

DREHWERK = slewing gear

DUESE = nozzle

Greiferschaltung = grab control

Stiel = handle

ZYLINDER 125/80 = cylinder 125/80

LOEFFEL = bucket

ZYLINDER 105/70 = cylinder 105/70

Anfahrtsbypass bis 14 bar = starting bypass until 14 bar

Ausleger = boom

2 x ZYLINDER 105/70 = 2 x cylinder 105/70

Anfahrtsbypass bis 14 bar = starting bypass until 14 bar

EINSPEISEKOLBEN = feed piston

Kundenseitig = provided by customer

Vorwaerts FAHREN = drive forwards
Rueckwaerts FAHREN = drive backwards

ABSTUETZUNG = stabilizers

2 x ZYLINDER 90/60 = 2 x cylinder 90/60

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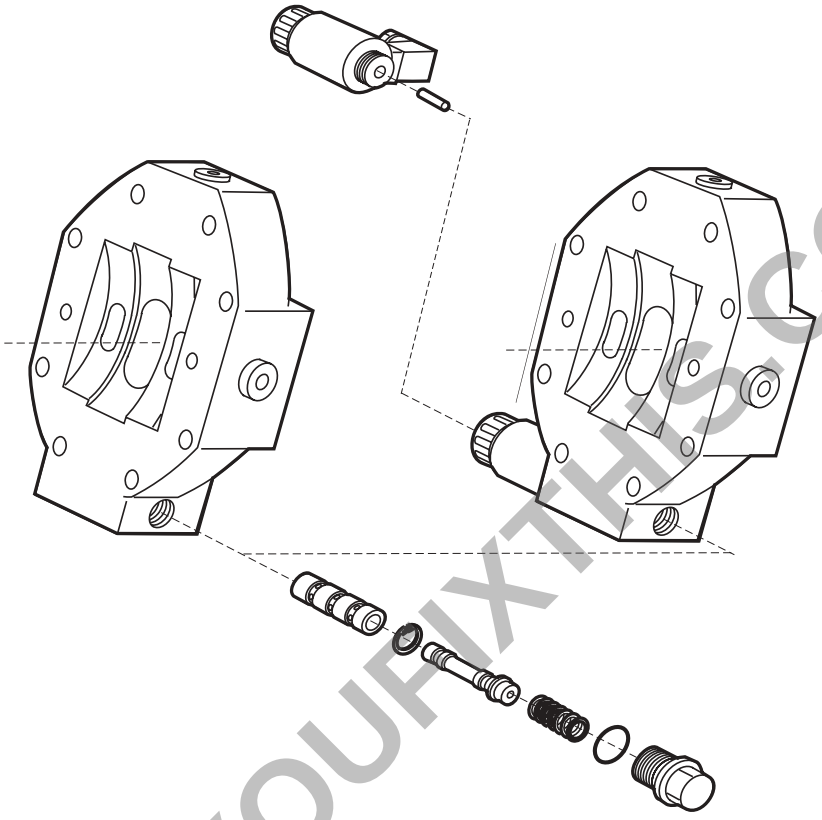
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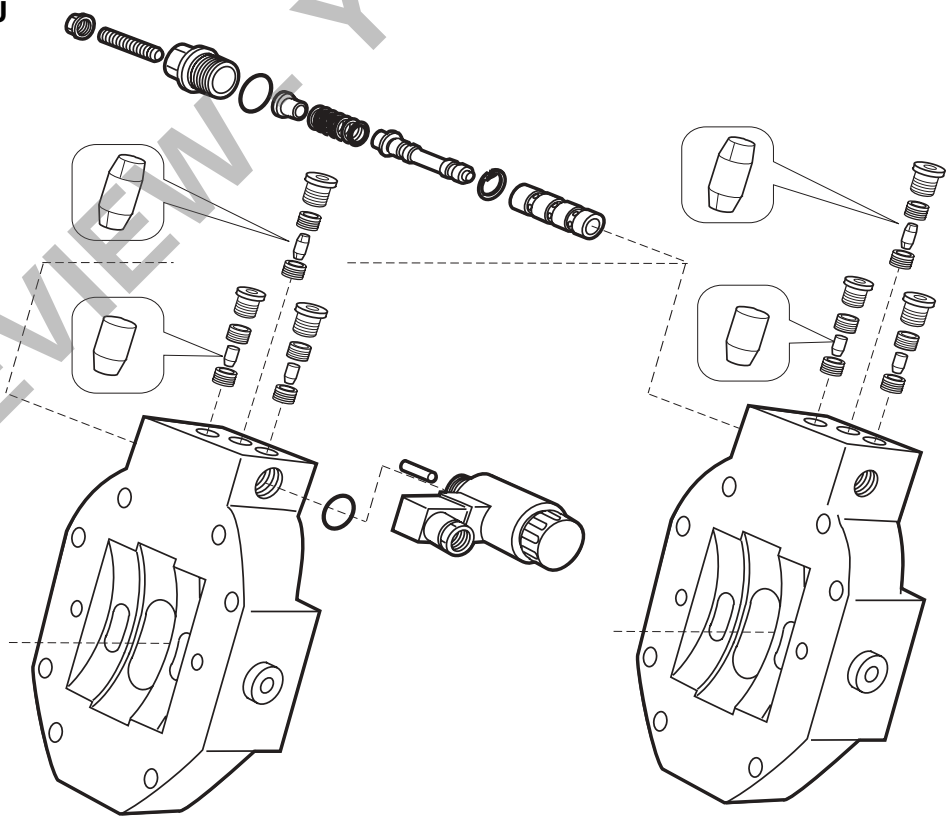
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Component groups / Control components

e.g. **HZ3 / EZ3**



HA3 / HA3U



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Chapter 5

Pumps

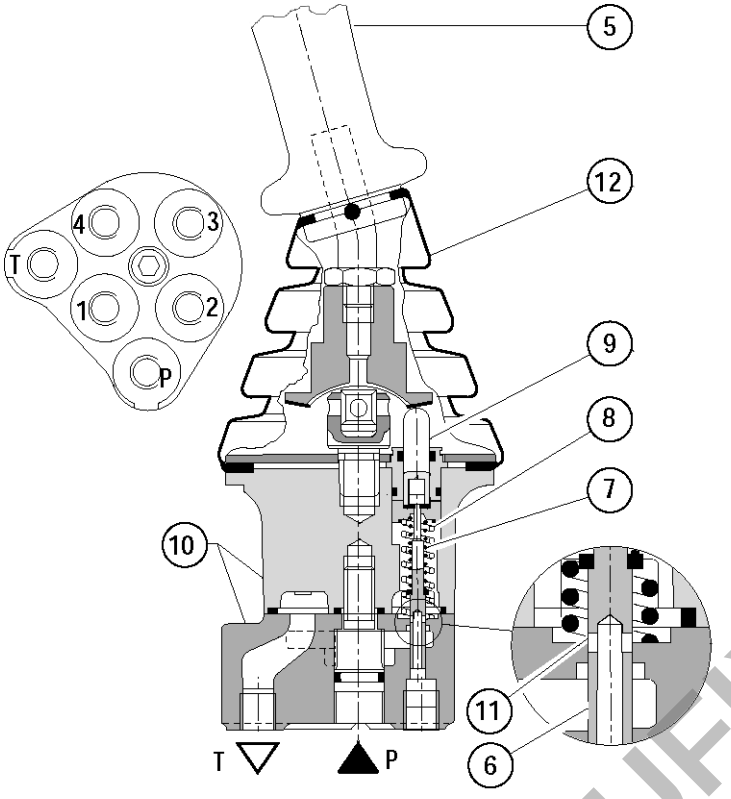
Contents

1 Instructions for the repair of a variable pump 2
2 Study view of the variable pump 33

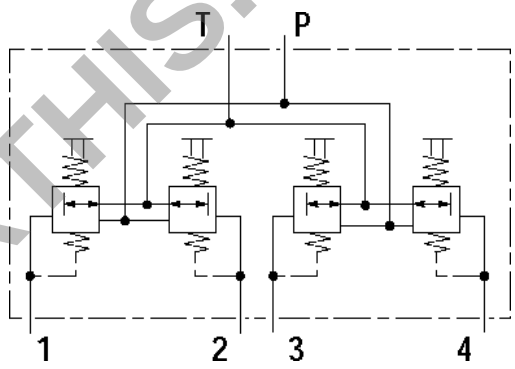
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2 Folding jib, slewing, lifting/lowering, bucket/grab



Symbol, hydraulic



Unions

P	**Supply**
T	**Tank**
1, 2, 3, 4	**Control unions**

2.1 Structure

Pilot control equipment is mainly composed of an operation lever (5), four pressure adjusting valves and a housing (10). Each pressure adjusting valve consists of a variable piston (6), a variable spring (7), a restoring spring (8) and a tappet (9).

3 Function

When the control level is not operated, it is kept in zero position by the four restoring springs (8). Control unions (1, 2, 3, 4) are linked to tank union **T** by means of the bore hole (11) . On excursion of control lever (5) the tappet (9) presses against restoring spring (8) and variable spring (7). Variable spring (7) first displaces the variable piston (6) down, closing the link between the concerned union and the tank union **T**. At the same time, bore hole (11) is used to link the concerned union to union **P**. The variable control phase starts once the variable piston (6) has found the balance between the force of the variable spring (7) and the force resulting from hydraulic pressure in the concerned union (union 1, 2, 3 or 4). The combined action of variable piston (6) and variable spring (7) has the effect that pressure in the concerned unions is proportional to the stroke of tappet (9) and thus to the position of control lever (5). Rubber collar (12) protects the mechanical components of the hydraulic pilot control equipment against pollution from the outside.

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Chapter 8

Main rotation connection

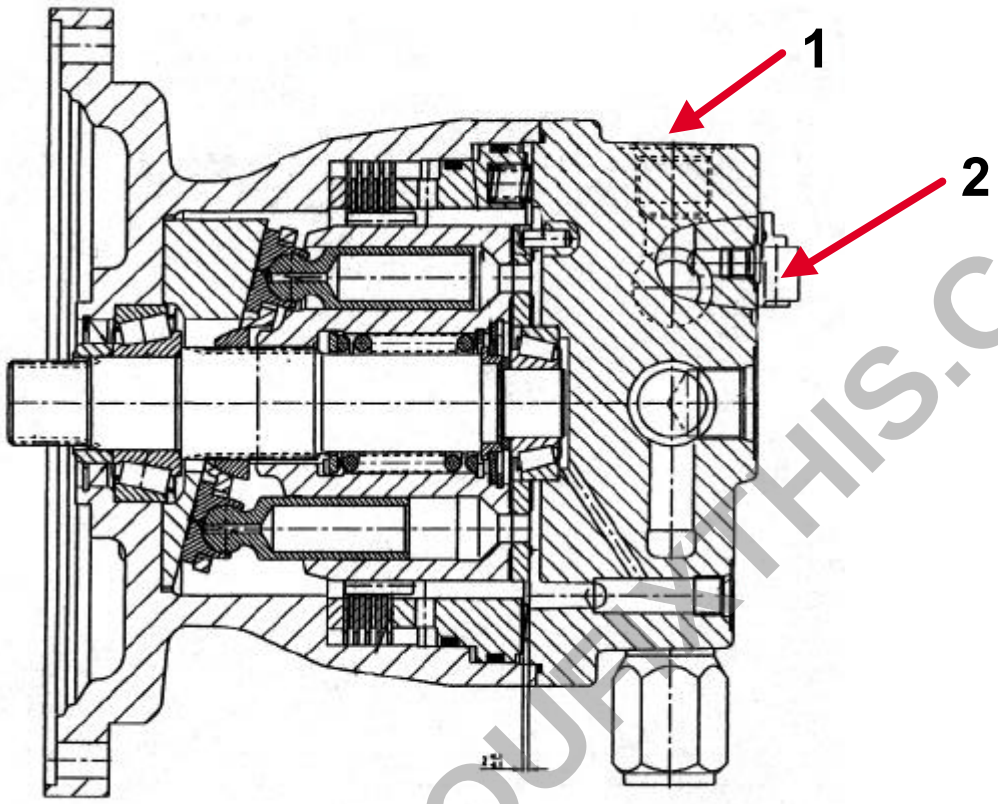
Contents

1 Rotation connection and rotary transmission lead-through 2
2 Maintenance of the rotary connection 4

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Slewing gear motors



1 - PG: external cutting-off pressure
2 - Electrical signal input to release the brake

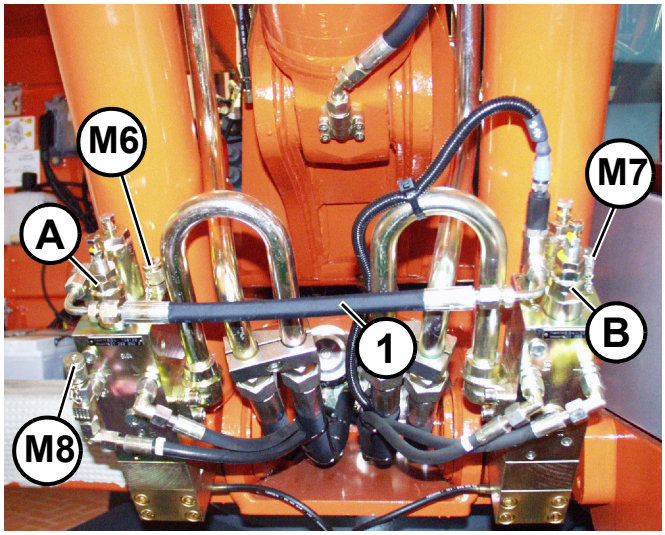
Please note concerning **cutting-off pressure**:
The constant-current characteristic indicates that the brakes are released at > 15 bar. Due to the nature of the equipment a target pressure of approx. 35 bar is recommendable. (authorised: approx. 70 bar)

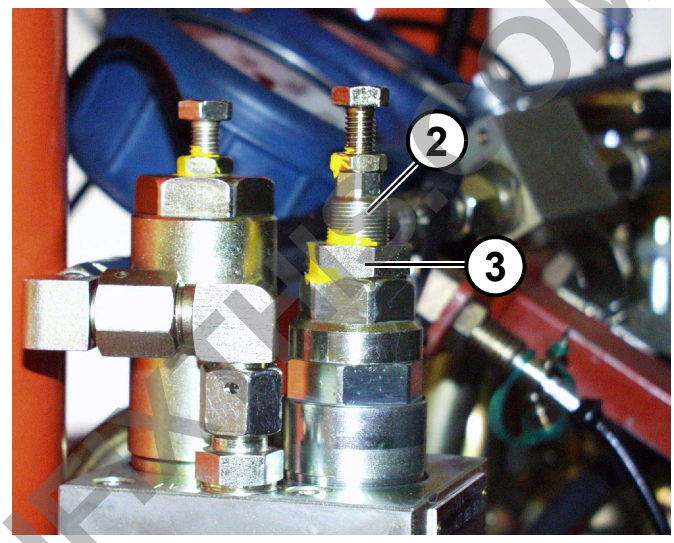
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7.11 Lifting cylinder open-circuit guard

7.11.1 Setting the switch-on of the locking piston





1. Connect the pressure gauges to the test ports (M6) and (M7) of the valves (A) and (B).
2. Connect the pressure gauge to the “lower pilot control” (M8) test port.

CAUTION

Lower the jib equipment onto the ground..

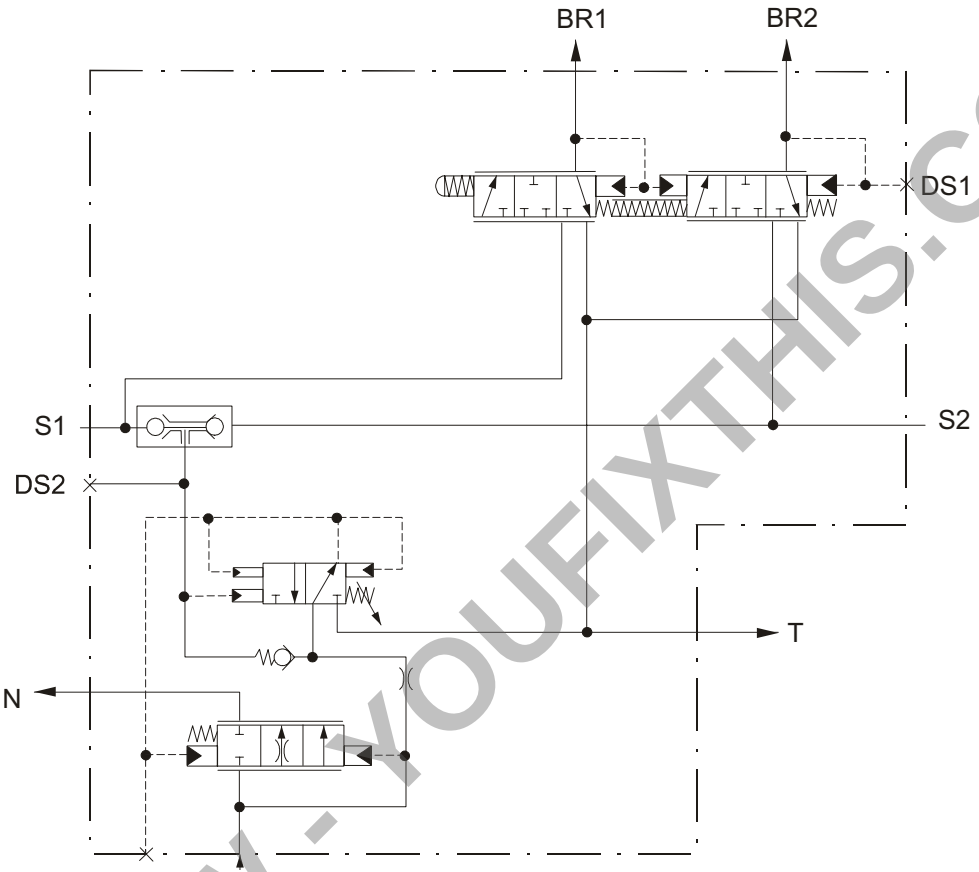
CAUTION

Make sure that the equalising line (1) has been depressurised.

3. Screw off the equalising line (1) and close the connections with welsh plugs.
4. Loosen the fastening nuts (3) on the valves (A) and (B).
5. Turn in the adjusting screws (2) on the valves (A) and (B) by one turn.
6. Start up the motor.
7. Set the motor speed at approx. 1700 min^{-1}.

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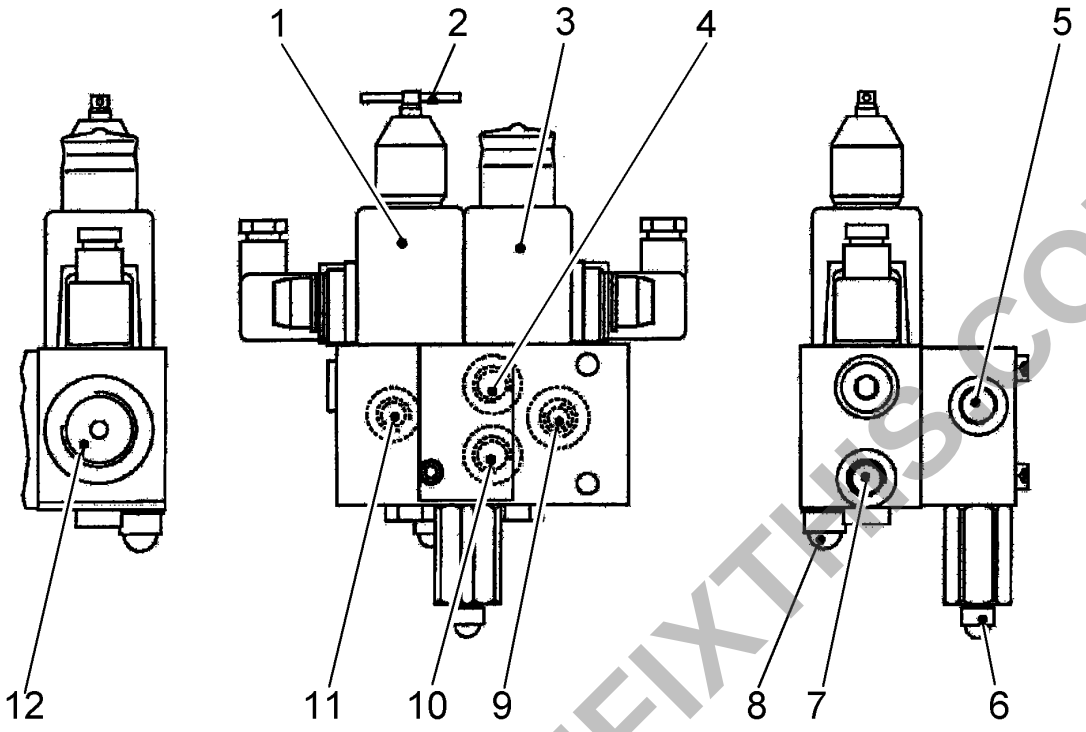


P Steering pump
N to steering unit
BR1 to the brake cylinders 1st circuit
BR2 to the brake cylinders 2nd circuit
X Measurement connection
DS1 Pressure switch brake pressure
DS2 Pressure switch function control 100 bar
S1 Pressure accumulator
S2 Pressure accumulator

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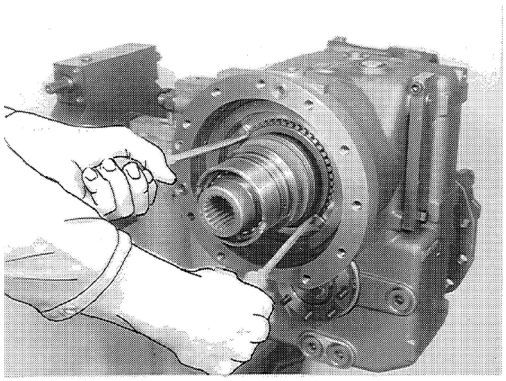
3 Valve block for Gearbox control



1 Brake switch valve
2 Emergency locking / hand brake in the event of a power failure
3 Gear shift valve
4 On-the-road supply M 16 x 1.5
5 Pump pressure supply M 16 x 1.5
6 Adjusting screw pressure control valve
7 Petrol tank supply M 16 x 1.5
8 Integral check adjusting screw
9 Pressure switch supply M 10 x 1
10 Off-the-road supply M 16 x 1.5
11 Test port 1/4"
12 Hydraulic accumulator supply M 33 x 1.5

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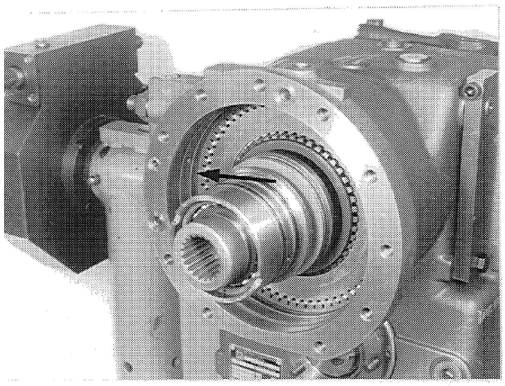
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16

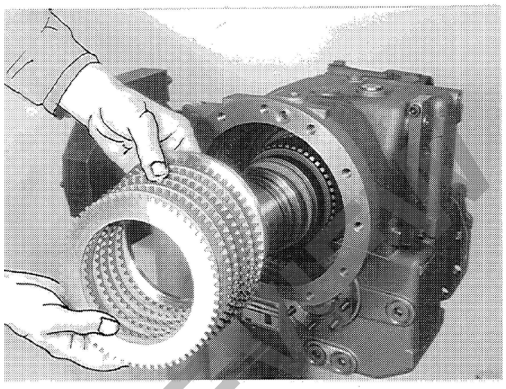
Pull the sealing disc out of the housing drill hole by means of an offset screw driver.

(S) Adjustment



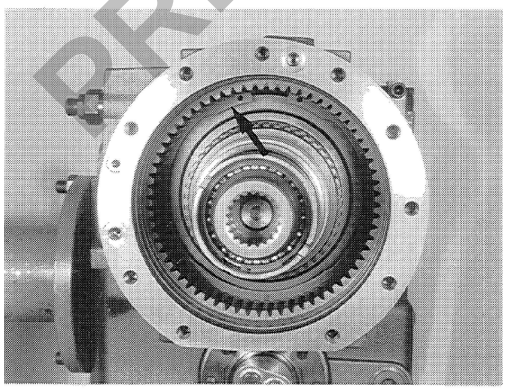
17

Remove the O-Ring (arrow).



18

Remove the set of discs and the end plate.



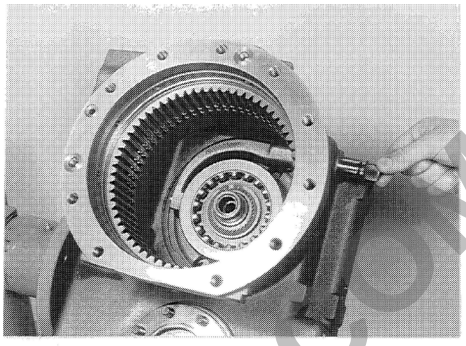
19

Deflect the circlip (arrow).

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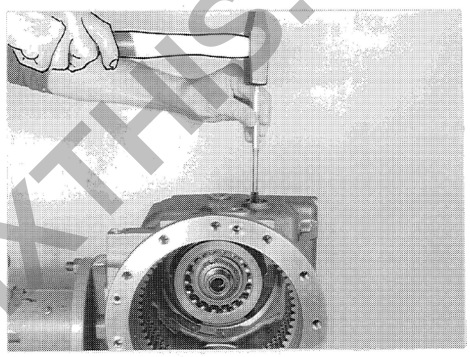
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Insert the selector shaft until it comes to rest.



147

Align the selector shaft radially and fasten by driving in the dowel pin until it is flush.

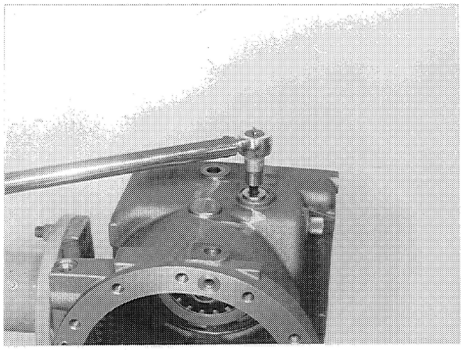


148

Install the screw plug.

Tightening torque (M22x1.5) ... M_A = 60 Nm

Please note: Install a new O-ring

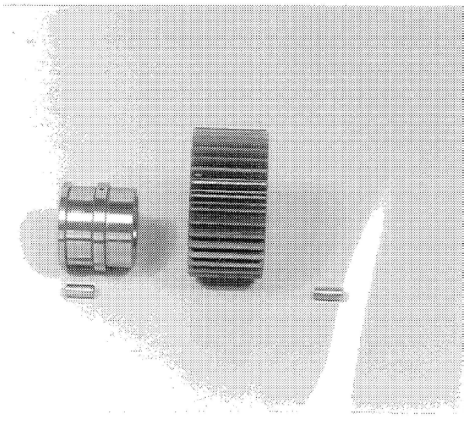


149

9.3 Completing and installing the pinion cage

Pre-assemble the planet wheel.

Please note: insert the cylindrical rollers with grease.

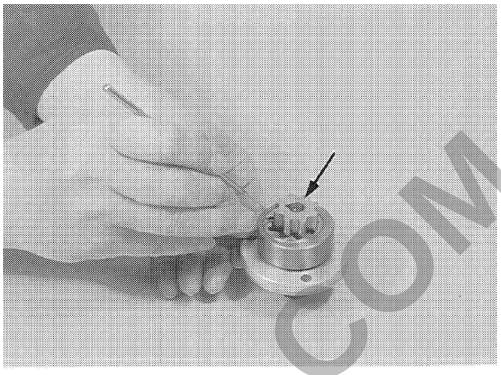


150

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Pull the inner rotor (arrow) off the pump shaft.



305

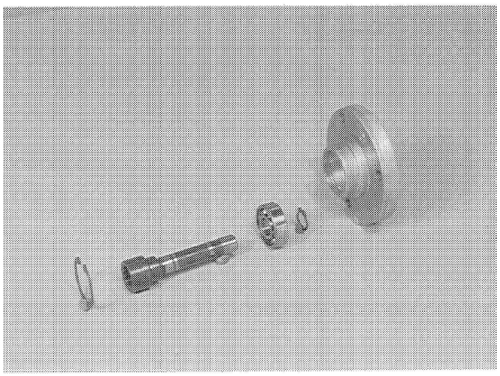
Remove the ball (see arrow for position) and pull the control casing with the outer rotor off the pump shaft.

Please note: Be careful with balls and compression springs which are released.



306

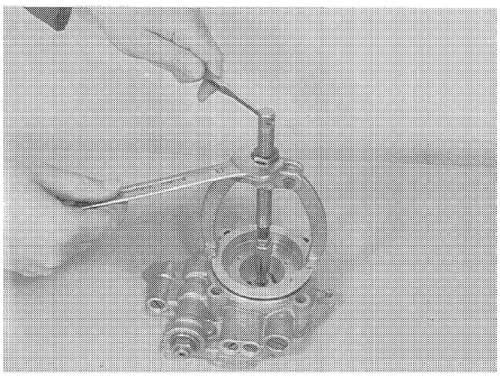
Remove the pump shaft - see illustration opposite.



307

Pull the needle bush out of the housing borehole.

(S) Inner extraction device
(S) counter support



308

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1.2.4 Wheel bearing

Two holding devices (WZ 041) are required for repairs on the wheel bearing with the axle installed. Alternatively, half of the axle (axle support from the differential on) must be completely dismantled (for the mounting structure later)
(see too illustration 10)

1.2.4.1 Changing the wheel bearings

- Completely remove the equalising cage (no. 13) (Chapter 2.3.1)
- Dismantle the sun wheel (no. 15) (Chapter 2.3.2)
- Loosen 10 hexagon screws (no. 32) and fasten a holding device WZ 041 in each of the two removal threads (M12) of the wheel hub (no. 31) with the help of an auxiliary screw M 12 x 20.
- Screw off the groove nut (no. 17).
  To do so, heat up the groove nut M 70x1.5 (no. 17), for example, with a soldering device, and remove with a special WZ 036 socket spanner
- Remove the levelling disc (no. 18) and the toothed ring support (no. 11) with the toothed ring (no. 9)
- Use a suitable pulling-off device to simultaneously remove the wheel hub (no. 22) and the outer wheel bearing from the axle joint.
- Remove the disc (no. 23) and the entire cylindrical piston cylinder of the disc brakes.
- First remove the inner discs (no. 26 / 25) and then the outer discs (no. 28).
- Remove the WZ 041 holding devices and carefully lift up the wheel hub (no. 31).
- Remove the bearing inner ring of the inner wheel bearing (no. 24), with the roll body, off the axle pivot (no. 27)
- Check the O-ring face on the axle pivot (no. 27) and the wheel hub (no. 31) and if required, replace both parts
- Press the bearing outer rings of the wheel bearings (no. 21 and no. 24) out of the wheel hub.
- Insert new bearing outer rings into the wheel hub (no. 31)
- Pull the new bearing inner ring of the bearing (no. 24) with the roll body onto the axle pivot (no. 27) and press firmly against the collar of the axle pivot. The installation temperature for the bearing inner ring (no. 21) is max. 80°.
- Check the shaft seal (no. 30) and the V-ring and if necessary, replace both parts
- Insert a new shaft seal (no. 30) with a mounting ring (WZ 588) and push a new V-ring onto the axle pivot (no. 27).
- Carefully put the wheel hub (no. 31) on and keep it in position with a WZ 041 holding device.
- Insert five straight pins (no. 20).
- Firstly push on the inner disc (no. 26) with the recess in the axle pivot (no. 27) and covering in the inner disc (no. 26), and make a mark on one of the large oil outlet holes on the wheel hub (no. 22) with a felt-tip pen.

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2.2.4.2 Adjusting the wheel bearing

- "X_1" ⇒Dimension on the axle pivot, measure and note down (theor. = 21 $^{+}$/-0.2).
- Coat the front surface of the toothed ring support with Wolfracote SSP Klüber paste.
- Tighten the groove nut (no. 17) until the bearing pre-tensioning of 45 Nm has been reached (with the sealing ring). Align the roll body and the wheel bearing; to do so, turn the wheel hub 1-2 x or hit a few blows onto the wheel hub and the toothed ring support with a soft hammer.
- "X_2" ⇒Dimension between the axle pivot and the front of the toothed ring support
  (theor. = 19 $^{+}$0.4/-1.0)
- "d" ⇒Calculate levelling disc (no. 18)
  Disc thickness: "d"= "X_1" - "X_2"
  "d_{max}"= "X_1" - "X_2"
  "d_{min}"= ("X_1" - "X_2") - 0.12 (see illustration 10)
- Loosen and remove nut (no. 17) again.
- Remove any oil, dirt, preservatives or adhesive from the thread M70 x 1.5 of the axle pivot (no. 4) and the nut (no. 17).
- Insert a levelling disc of the right thickness "d"
- Coat the front of the toothed ring support once more with Wolfracote SSP Klüber paste (do **not** coat nut no. 17).
- Coat thread M70 x 1.5 of the axle pivot (no. 27) and nut (no. 17) around the whole circumference and on the whole length with Loctite 242.
- Tighten nut (no. 17) at 1600 Nm. On using the torque amplifier (Sk 3.91-1007) at a gear transmission of 5:1, the tightening torque is 320 Nm.
- The bearing pre-tension set must be between 45 and 55 Nm.

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