	MODEL Valid from series	PR 721 103		
General data	Service weight (t) less rear ripper	10.1/10.3/11		
	Length with blade (mm)	4440		
	Blade width (mm)	3000		
	Overall height (mm)	2800		
	Overall track length (mm)	3360		
	Wheelbase (mm)	2400		
	Track gauge (mm)	1780		
	Drawbar pull (t)	12.0		
Daimler-Benz engine	Type	OM 352		
	Power output (bhp) (kW)	90 / 66		
	Rated speed (rpm)	2200		
	Oil capacity (liters)	18		
	Viscosity number, above + 5° C	SAE 30		
	Viscosity number, from − 10° to + 20° C	SAE 20W/20		
	Viscosity number, from − 20° to 0° C	SAE 10W		
	Oil change intervals (hr.)	10-100-100		
	Firing order	1-5-3-6-2-4		
	Valve clearance (cold) exhaust/inlet (mm)	0.30 / 0.20		
	Compression pressure, min. (bar)	20		
	Start of delivery, crankshaft degrees BTDC	18 ± 0.5		
	Nozzle injection pressure, new (bar)	175 + 8		
	Fuel consumption (ltr/hr.)	11.2 - 18		
	Oil consumption (in % of fuel consumption)	approx. 1%		
	Fuel tank capacity (liters)	260		
	Maximum inclination (in any direction)	45°		
Travel hydraulics	Hydraulic pump	Gü.BPV 50 S		
	Max. capacity (ltr/min)	2 x 160		
	Max. operating pressure (bar)	400 - 420		
	Cooling pump (ltr/min)	74		
	Auxiliary pump (ltr/min)	24		
	Hydraulic reservoir capacity (liters)	120		
	Hydraulic circuit (add liters)	20		
	Hydraulic oil change intervals (hr.)	3000		
	Oil change interval/pump drive trans.(hr)	500		
	Pump drive transmission capacity (ltr)	1.5/SAE 20		
	Hydraulic oil filter change interval (hr)	100-400-500		
	Filter change/multiple pump unit (hr)	100-400-500		
	Pressure filter change/travel hydr. (hr)	100/200-200		
	Servo motor, left/right	Gü.BMV-105TP		
Power hydraulics	Vane-type pump	Si C50 + E8		
	Capacity (liters)	150		
	Max. operating pressure (bar)	140		
	Control valve block	AG 7572 NW20		
	Lift ram (cyl. dia./rod dia./stroke)	85/50/810		
	Tilt ram (cyl. dia./rod dia./stroke)	150/60/120		
	Servo control unit	676 345 23 08		
	Hydraulic control circuit supply unit	41-141-040		

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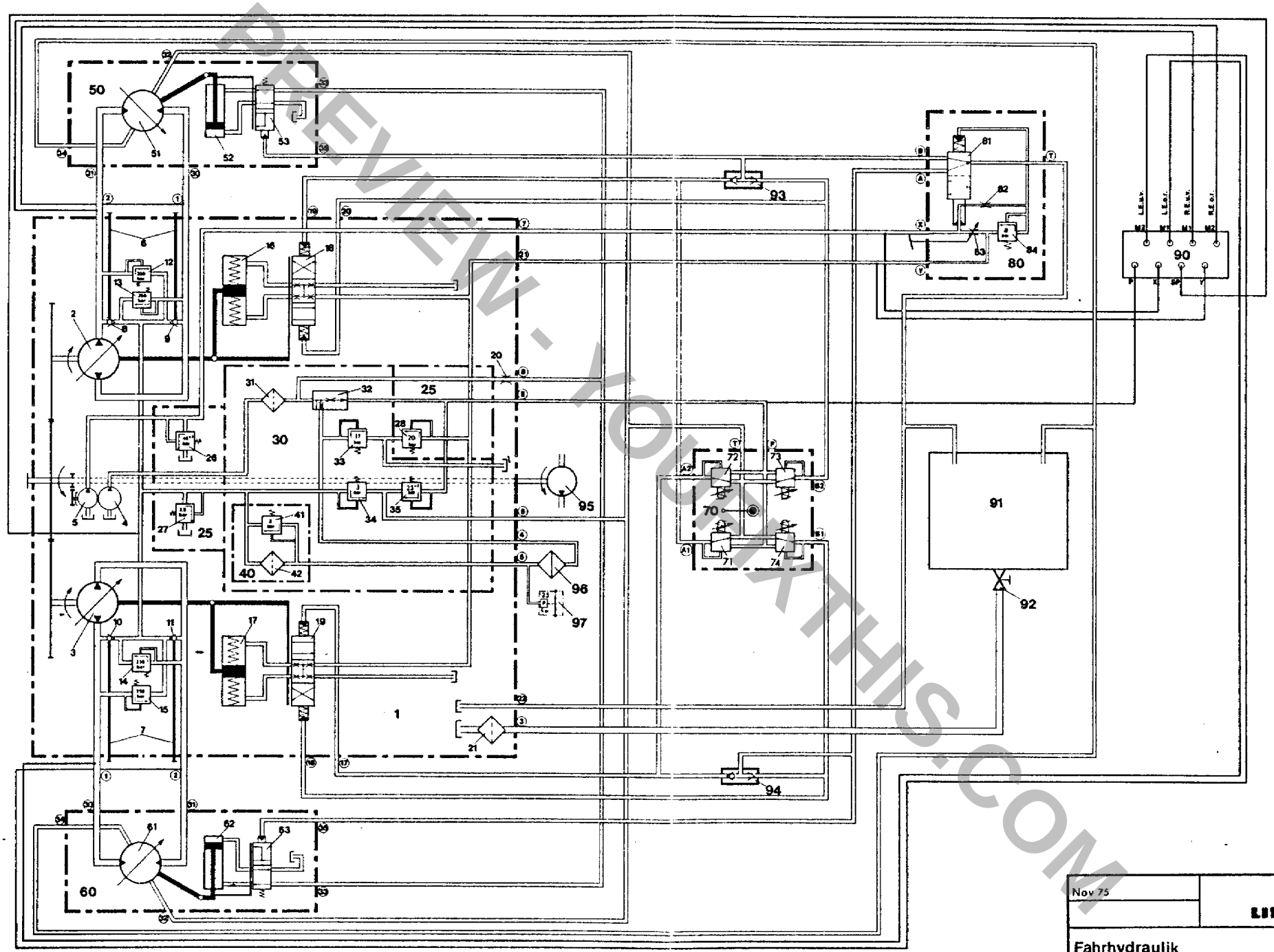
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Maintenance Chart PR 721

	hours handover	at 100	every 500	+ every 2000	+ every 3000	as required	Job Description	check	clean	renew	adjust	setting data capacities	interval
Engine OM 352	●	●	●				Engine oil level	●					daily
	●	●	●				Retighten cyl.hd.bolts (at norm.op.temp.)					10-11 kpm	
	●	●	●				Engine oil change (drain oil when warm)			●		18 ltr	100
	●	●	●				Oil filter (full flow filter)		●				100
	●	●	●				By-pass filter and O-ring			●			100
	●	●	●				Valve clearance, cold (inlet/exhaust)	●			●	0.20/0.30	200
	●	●	●				V-belt tension	●					weekly
	●	●	●				Pipes and hoses (leaks and tightness)	●					weekly
	●	●	●				Dust collector tank		●				daily
	●			●			Tightening torque of bolts and nuts	●					2000
	●	●	●				Engine mounting bolts	●					weekly
	●	●	●				Thrust screws of nozzle holders (tighten)	●				7 kpm	200
	●	●	●				Injection pump control linkage	●					200
	●	●	●				Coolant level	●					daily
	●	●	●				Dirt in radiator grille	●	●				daily
		●	●				Fuel prefilter on injection pump		●				200
			●				Fan V-belt (if necessary)			●			500
			●				Fuel filter elements			●			500
			●				Starter motor carbon brushes		●				500
			●				Drain condensate and sediment from fuel tank						500
			●				Ring gear on flywheel (grease)						500
						●	Dry air filter and safety element		●	●			
						●	Injection nozzles	●			●	175 +8	
			●			●	Cooling system pressure release valve	●					500
Hydraulic system	●	●	●				Oil level in hydraulic reservoir	●					daily
	●	●	●				Oil level in pump drive transmission	●					weekly
	●	●	●				Bar magnet (daily during first 300 hr)		●				weekly
	●	●	●				Hoses and connections for leaks	●					weekly
	●	●	●				Function of servo control	●					weekly
	●	●	●				Function and leaks in system	●					weekly
		●	●				Filters of travel drive hydr. pumps (2)			●			500
	●	●	●				Cooler grille		●				daily
		●	●				Paper element in filter (power hydraulics)			●			500
			●				Drain condensate and sediment		●				500
					●		Hydraulic oil, tank (fill through filter)			●		140 ltr	
						●	Pressures in travel hydraulics				●		
						●	Pressures in power hydraulics				●		
		●	●				Oil in pump drive transmission			●		1.5/SAE90	500
		●	●				Pressure filter of travel hydraulics			●			200
Electrical system	●	●	●				Function of system	●					weekly
	●	●	●				Battery	●					weekly
	●	●	●				Function of instrumentation and controls	●					weekly
	●	●	●				Cable connections at battery	●	●				weekly

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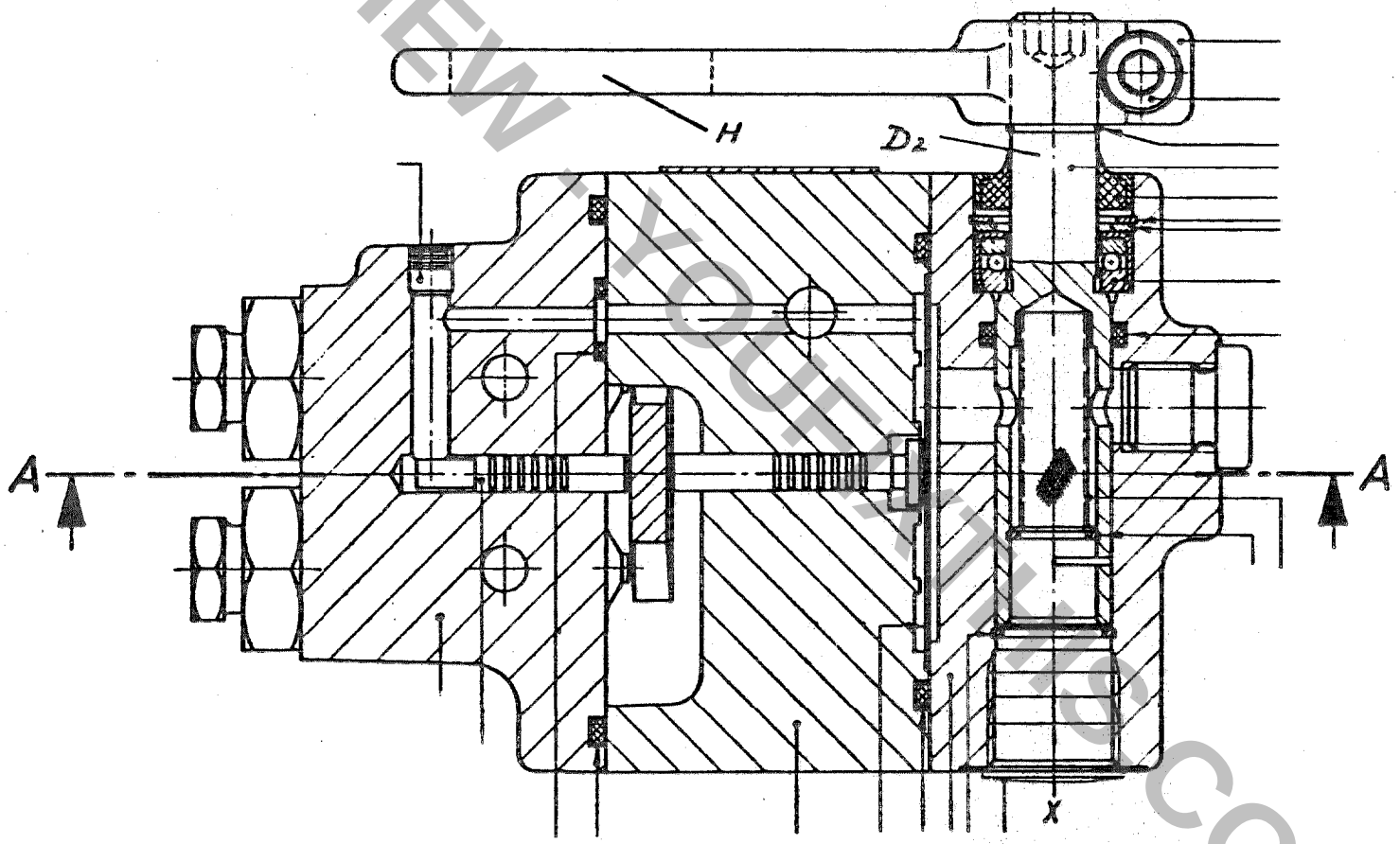
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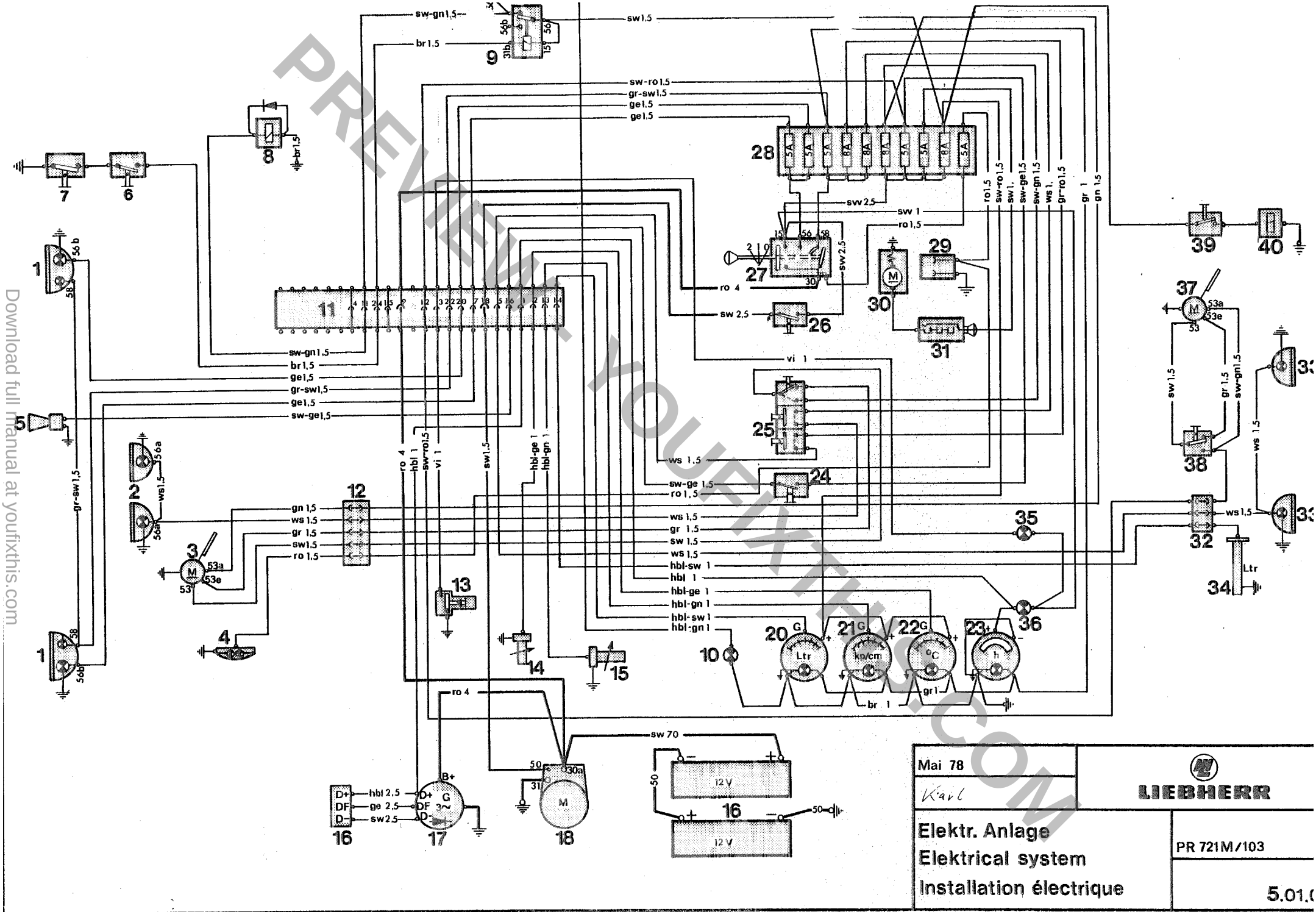
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Figure 5



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	5.01.(

The preload values P_V shown in the table are based on 90 % utilization of the bolt yield point σ 0,2.
Tightening torques M_A have been calculated from P_V.

To avoid accidentally exceeding the 90 % yield point limit, deduct from the values quoted half of the tolerance margin of the preload gauge or torque wrench being used.

Surface treatment: bolts and nuts without additional treatment, not lubricated, μ_{tot} = 0.14

Shank bolts with standard metric thread to DIN 13, Sheet 12 standard

Standard thread	Strength rating 8.8				Tightening torque when using lock washers	
	Preload force P_V kp	P_V N (Newton)	Tightening torque M_A kpm	M_A Nm	M_A kpm	M_A Nm
M 5 x 0,8	568	5 566	0,5	5,0	0,6	6,0
M 6 x 1	801	7 852	0,9	8,8	1,0	10
M 8 x 1,25	1 470	14 412	2,2	21,6	2,6	25
M 10 x 1,5	2 340	22 949	4,4	43,2	5,2	51
M 12 x 1,75	3 412	33 463	7,6	75,0	9,1	90
M 14 x 2	4 686	45 953	12,2	119,7	14,6	143
M 16 x 2	6 450	63 257	18,7	183,9	22	220
M 18 x 2,5	7 838	76 865	25,8	253,4	30	304
M 20 x 2,5	10 079	98 840	36,6	359,3	43	431
M 22 x 2,5	12 601	123 570	49,5	485,9	59	583
M 24 x 3	14 514	142 329	63,3	620,4	75	744
M 27 x 3	19 116	187 463	94,0	921,9	112	1 106
M 30 x 3,5	23 229	227 797	127,4	1 249,5	152	1 499
M 33 x 3,5	28 967	284 069	172,8	1 694,6	207	2 033
M 36 x 4	33 984	333 268	222,0	2 177,2	266	2 612
M 39 x 4	40 858	400 678	287,9	2 823,4	345	3 388
M 42 x 4,5	46 779	458 742	359,0	3 520,9	430	4 225
M 45 x 4,5	54 788	537 290	448,2	4 395,2	537	5 274
M 48 x 5	61 613	604 219	541,6	5 311,9	649	6 374
M 52 x 5	73 947	725 176	697,3	6 838,4	836	8 206
M 56 x 5,5	85 271	836 226	869,0	8 522,7	1 042	10 227
M 60 x 5,5	99 681	977 541	1 077,8	10 570,3	1 293	12 684
M 64 x 6	112 764	1 105 839	1 297,3	12 722,7	1 556	15 267

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PLANIERRAUPE

1 Technische Daten
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4 Arbeitshydraulik
5 Elektrische Anlage
6 Fahrantrieb
7 Fahrwerk
8 Laufrollenrahmen
9 Arbeitsausrüstung
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List of sub-groups

1.01.01	Technical data PR 721	PR 721M/103
1.01.02	Technical data PR 721	PR 721M/155
1.02.01	Technical data PR 731	PR 731 /101
1.03.01	Technical data PR 741	PR 741 /106
1.20.01	Maintenance chart PR 721	PR 721M/103
1.21.01	Maintenance chart PR 731	PR 731 /101
1.22.01	Maintenance chart PR 741	PR 741 /106

Supplements

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3.3 Pressure limiting valve 27 (3.5 bar max., opening pressure of flushing circuit).

Connect pressure gauge, measuring range 0 - 6 bar, to measuring point "SP". Disconnect line at connection II so that residual flow can drain freely from the volume distributor.
Seal line at connection 6 and start the engine. The reading on the pressure gauge must be at least 3.5 bar.

3.4 Pressure limiting valve 33 (11 bar, cold start valve).
Disconnect line at connection 4 and connect pressure gauge, measuring range 0 - 40 bar, in its place. Run engine briefly an check response pressure of 11 bar valve.

Note: There is no feed when the pressure limiting valve responds. The main pump must, therefore, be in the "0" position.

3.5 Pressure limiting valve 28 (20 bar, servo motors of main pumps).
Connect pressure gauge, 0 - 40 bar, to measuring point Y and start engine. The reading on the pressure gauge must be 20 bar.

3.6 Pressure limiting valve 35 (23 bar, transmitter unit).
Connect pressure gauge, 0 - 40 bar, to measuring point "P" and start engine. With the transmitter unit in the "0" position a pressure of at least 23 bar must be available.

3.7 Pressure limiting valve 26 (45 bar max., opening pressure of auxiliary pump).
Connect pressure gauge, 0 - 60 bar, to measuring point "X". Start engine and turn restrictor shaft on load limiting valve (restrictor 83 is closed). The reading on the pressure gauge must be 45 bar.

4. Delivery rates

4.1 Testing delivery rate on high pressure pumps
Unscrew pressure lines at connections 1 and 2 and connect flow rate tester to the pump between connections 1 and 2 (note flow direction).
Fit pressure gauge, 0 - 40 bar, in appropriate control line between the transmitter unit and the pump's slave cylinder. Start engine and operate transmitter unit for the appropriate side of the pump.
Determine flow rate at full engine speed and check associated control pressure at the same time (see table and description on page 3.69).

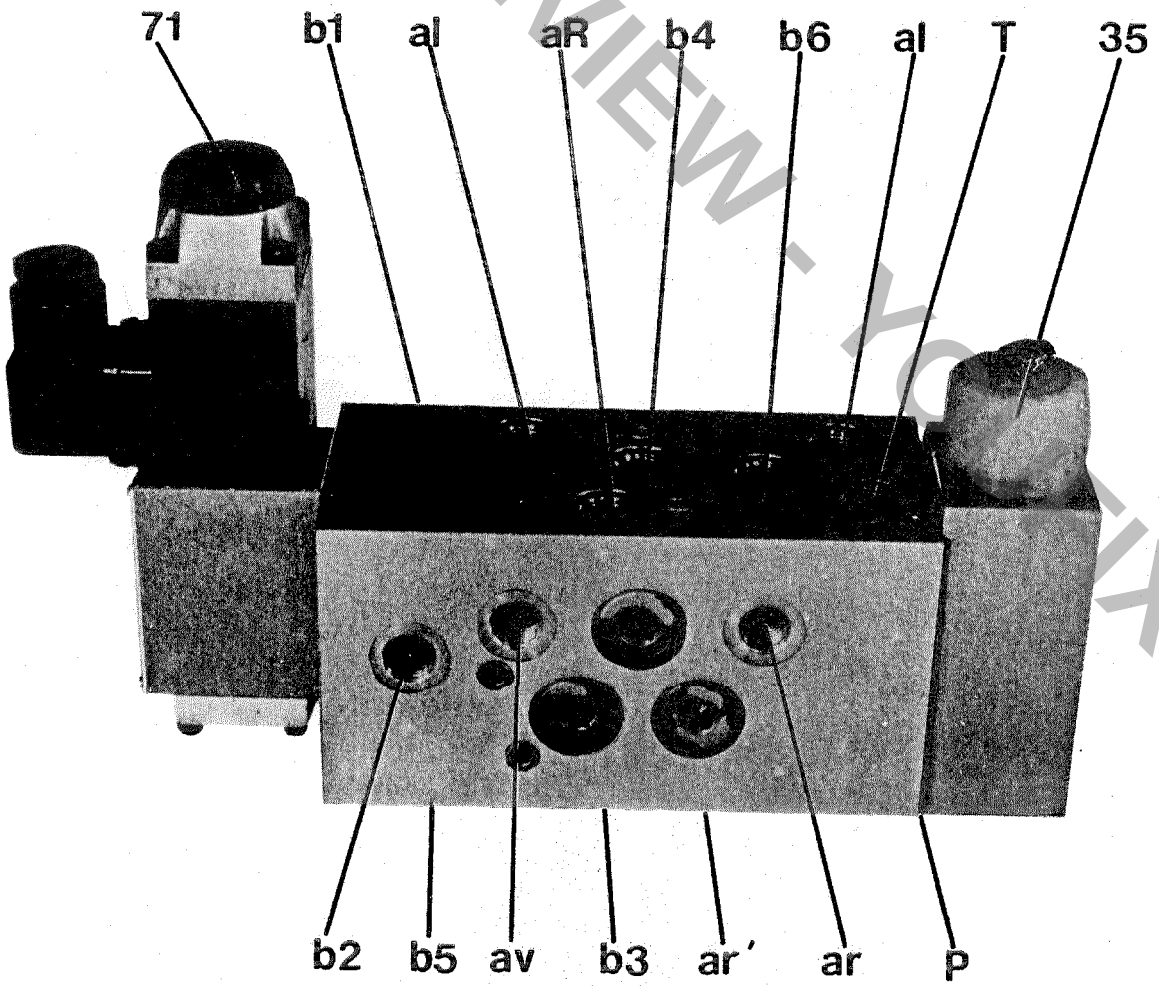
4.2 Testing delivery rate of feed/cooling pump (4, large gear-type pump).
The residual flow of the feed pump can be measured with the flow rate tester between connections 4 and 5. However, it is essential that the delivery flow passes through the tester without being under pressure as the supply would otherwise be impaired. The minimum flow rate must be 30 - 35 l/min on the PR 731 and 40 - 45 l/min on the PR 741 at max. operating speed.

Note: The backpressure in the flow rate tester must not exceed 9 bar or the pressure limiting valve 33 will otherwise open. If necessary, the flow rate can also be checked with a graduated vessel at connection 4. The pump must be in the "0" position as there is no feed.

4.3 Delivery rate of auxiliary pump (5, small gear-type pump).
Unscrew line at connection "Y" on load limiting valve and check flow rate with a graduated vessel. If necessary, restrict flow rate to max. 40 bar with the adjustable restrictor 83. The flow rate must be min. 8 l/min on the PR 731 and min. 11 l/min on the PR 741.

4.4 Checking constant flow from volume distributor for transmitter unit at at connection II
Unscrew pressure line at connection "P" on transmitter unit and check flow

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35 Pressure limiting valve (servo pressure)

71 Solenoid valve

Direction of travel

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2.4 Reverse movement, bulldozer pulling to left (right-hand track running too fast)

Tighten left-hand spring cluster "A" of right-hand pump still further (increase pick-up pressure).
Tighten screw plug 7 and unscrew limit stop pin 6 by the same amount, so that the initial setting is maintained.

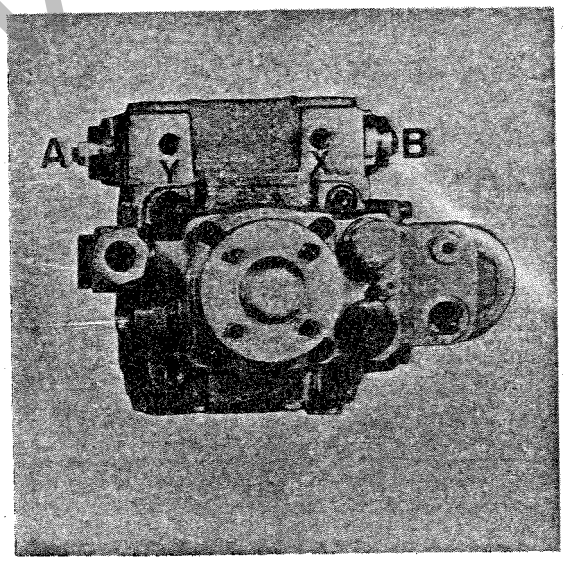
3. Adjusting the limit stop for max. pump pitch angle; see Figs. 2 and 3.

If the machine does not move reliably in a straight line above 4 km/h (2.5 mile/h) - control pressure above 7-8 bars - the max. pump pitch angle can be corrected using the corresponding limit stop screws 6, side A/B.
However, if one of the tracks is running too fast or too slowly in both directions, the correction should be made at the corresponding traction motor.

3.1 Bulldozer pulls to the right when moving forwards, but runs straight in reverse

Pump limit stop for "forwards" is not working, i.e. the pitch angle of the right-hand pump (right-hand limit stop "B") is too small.
Increase the pitch angle of the right hand pump by unscrewing the right-hand limit stop (pump discharge volume is increased).

Fig. 2



3.2 Bulldozer pulls to left when moving forwards, but runs straight in reverse

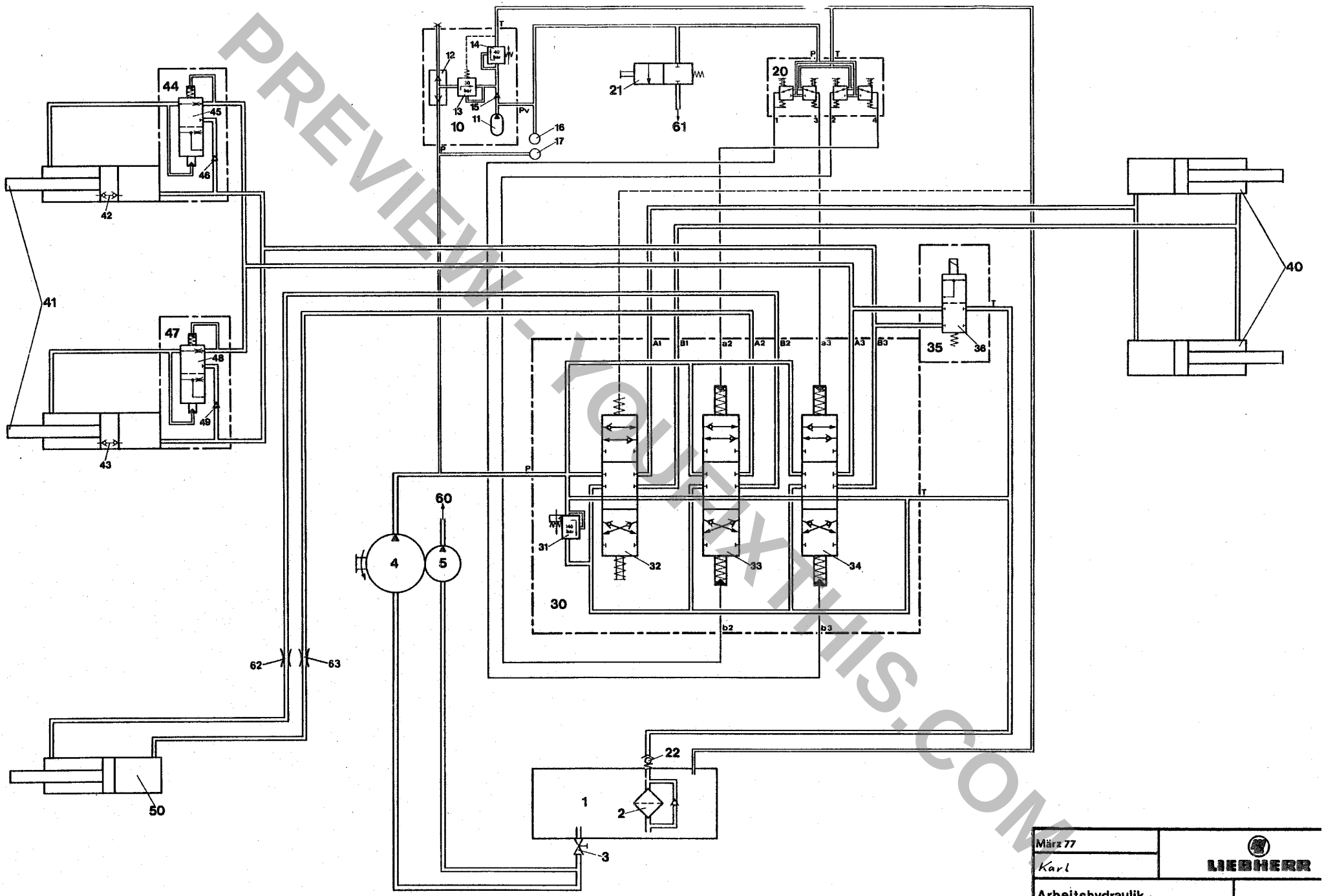
Pump limit stop for "forwards" is not working, i.e. the pitch angle of the right-hand pump (right-hand limit stop "B") is too large.
Reduce the pitch angle of the right-hand pump by screwing in the right-hand limit stop (pump discharge volume is reduced).

3.3 Bulldozer pulls to right in reverse, but runs forwards straight

Pump limit stop for "reverse" is not working, i.e. the pitch angle of the right-hand pump (left-hand limit stop "A") is too small.
Increase the pitch angle of the right-hand pump by unscrewing the left-hand limit stop (pump discharge volume is increased).

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Pos	Description	Pos	Description	Pos	Description
1	Headlight unit	21	Oil pressure gauge	41	Brake light switch
2	Working lamps	22	Thermometer	42	Telltale lamp
3	Front windshield wiper motor	23	Operating hours counter	43	Switch
4	Roof light	24	Horn button	44	Solenoid valve
5	Horn	25	Press button switch		
6	Micro-switch/towing gear	26	Start switch		
7	Rocker switch/towing gear	27	Switchbox		
8	Solenoid valve/towing gear	28	Fuse box		
9	Relay/towing gear	29	Socket		
10	Telltale lamp/towing gear	30	Heater blower		
11	Plug	31	Pull switch		
12	Plug	32	Plug		
13	Oil pressure switch/feed pressure	33	Working lamps		
14	Temperature sensor	34	Fuel level signal		
15	Oil pressure switch/engine oil	35	Telltale lamp/feed pressure		
16	Governor	36	Charge telltale		
17	Generator (dynamo)	37	Rear windscreen wiper motor		
18	Starter	38	Switch		
19	Battery	39	Micro-switch (control lever)		
20	Fuel gauge	40	Solenoid valve (valve plate)		

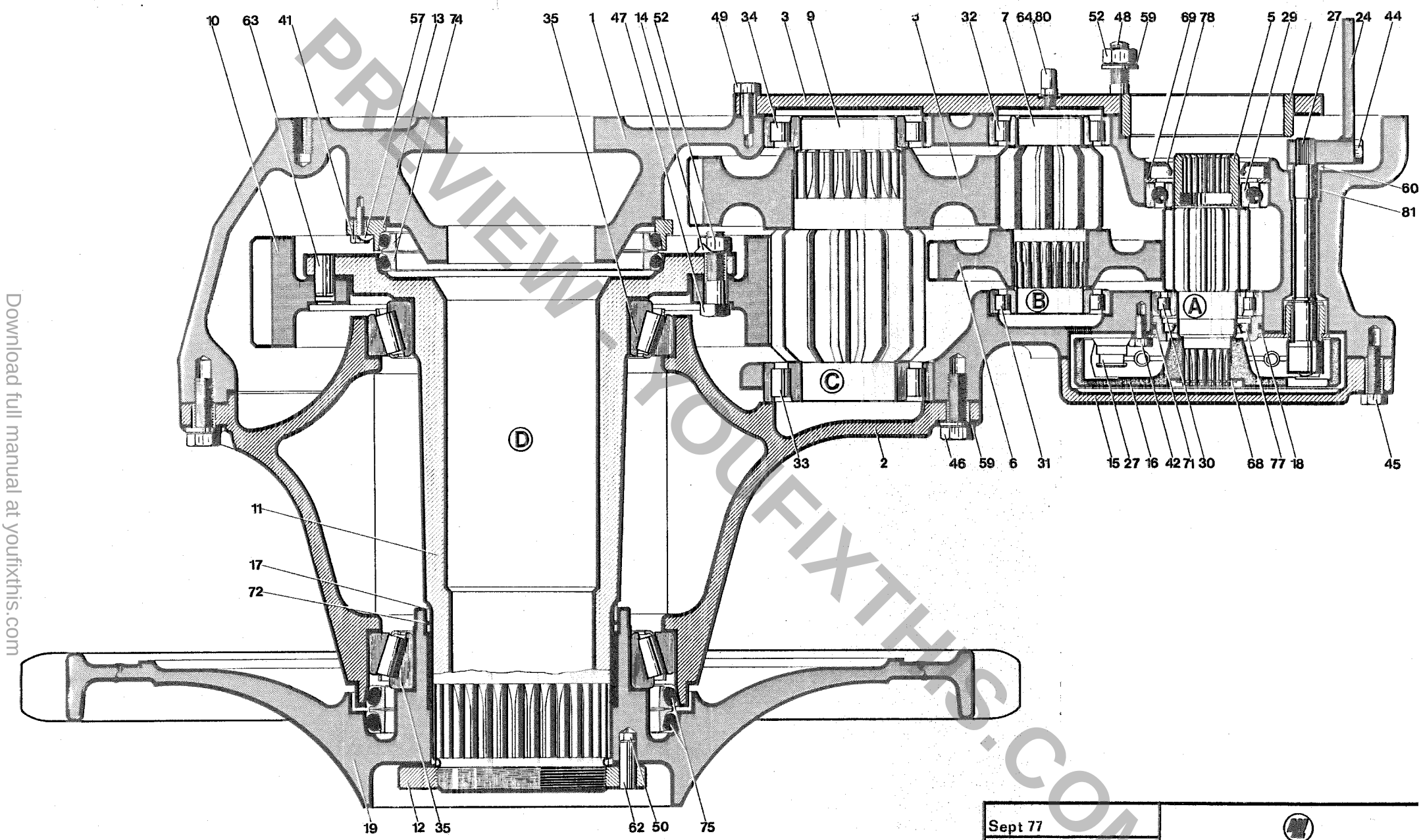
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Pos	Description	Pos	Description	Pos	Description
1	Headlight unit				
5	Horn				
6	Micro-switch/towing gear				
8	Solenoid valve/towing gear				
11	Plug				
13	Oil pressure switch/feed pressure				
14	Temperature sensor/cooling water				
15	Oil pressure switch/engine oil				
16	Governor				
17	Generator (dynamo)				
18	Starter				
19	Battery				
28	Fuse box				
32	Plug				
33	Working lamps				
34	Fuel level signal				
38	Switch				

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1. Disassembly of front idler guide - see Fig. on page 7.11.02-05

Remove complete front idler unit - see Group 7.4.

1.1 Remove screws 2.36 and take off wiper on left 2.5 and right 2.6 - see page 7.11.02/03.
Remove screws 2.33 and take off front idler yoke 2.1 complete with plunger 2.20 - see page 7.11.02/03.

1.2 Remove screws 2.32 and take off shims 2.13.

1.3 Remove screws 2.34 and take off plate 2.4.
Take wearing strip 2.22, rubber spring 2.27 and disc 2.10 out of bearing on left 2.2 and right 2.3.

1.4 Remove screws 2.40, or nuts 2.43, and drive axle retainer 2.29 downward out of bearing 2.2/2.3.

1.5 Pull bearing 2.2 and 2.3 and jaw 2.21 off the axle 1.2.

1.6 Remove lifetime seal 2.28 from bearing 2.2/2.3.

2. Assembly of front idler guide - see Fig. on page 7.11.02-05

2.1 Fit two halves of lifetime seal in bearing 2.2 and 2.3 - see page 7.03.01.

2.2 Push jaw 2.21 together with right and left-hand bearings, 2.3 and 2.2, onto axle 1.2.

2.3 Press jaw 2.21 against the front idler. Push axle retainers 2.29 into bearings 2.2 and 2.3 and axle 1.2. Lock in position with screw 2.40 or nut 2.43.

2.4 Fit shims 2.13 and secure jaw 2.21 to right and left-hand bearings with screws 2.32.

2.5 Fit shims 2.12 and secure plate 2.4, bearing 2.2/2.3, jaw 2.21, strip 2.11 with screws 2.34.

2.6 Secure front idler guide 2.1 to bearings 2.2/2.3 with screws 2.33.
Mount wiper on left 2.5 and right 2.6 to the front idler yoke 2.1 and bearings 2.2/2.3 with screws 2.36.

2.7 Insert discs 2.10, rubber springs 2.27 and wearing strip in bearings 2.2/2.3.
Install complete front idler unit in the lower roller frame - see Group 7.04. Fit and tighten down clamping screws 2.37.

3. Disassembly of front idler - see Fig. on page 7.11.04-05

Removal of front idler guide - see paragraphs 1.1/1.4 and 1.5.

3.1 Remove screws 1.8 and pull complete bushing holder 1.3 off the axle 1.2.
Take the two halves of the lifetime seal 2.28 and O-ring 1.6 off the bushing holder.

3.2 Pull out bearing bush 1.3a and drive out pin 1.3b.

3.3 Take axle 1.2 out of front idler and remove O-ring 1.7.

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Berco/Intertrac Lower Roller

Pos	Description	Pos	Description	Pos	Description
1	Lower roller, 1-flange				
2	Lower roller, 2-flange				
3	Inner end flange				
4	Outer end flange				
5	Axle				
6	Bushing holder				
6a	Bushing				
6b	Split taper pin				
7	O-ring				
8	O-ring				
9	Slide ring seal				
10	Lockwasher				
11	Hex. head screw				
12	Retaining ring				
13	Screw plug				
14	Key				
15	O-ring				

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1. Removal of complete pusher frame 8/9 - see page 9.05.02

1.1 Disconnect hose line between main frame and blade and at tilt ram 13.

1.2 Raise blade with lift rams. Remove screws 19 and drive out pin 14 on the compression strut 10.

1.3 Lower and support the blade.
Detach bolted joint between lift rams and blade.

1.4 Remove screws 19 and drive out pin 14 at traction strut 11 and tilt ram 13.

1.5 Remove screws 19 and drive out pin 15.
Lower pusher frame at front and take blade off the bulldozer.

1.6 Remove screws 26 and take bearing shell 24 and shims 25 off the ball pin.
Lower complete pusher frame 8/9 at the rear.

2. Installation of complete pusher frame 8/9 - see page 9.05.02

2.1 Fit pusher frame 8/9 onto ball pin on lower roller frame and support it.
Secure shims 25 and bearing shell 24 to pusher frame 8/9 with screws 26.
Check freedom of movement of pusher frame at ball pin and adjust play if necessary - see 3.1.

2.2 Lift and support pusher frame 8/9 at the front. Fit complete blade on the pusher frame 8/9 and engage compression struts 10, traction strut 11 and tilt ram 13 in the straps provided.
Drive in pin 15 and secure with plate 5 and screws 19.

2.3 Drive in pins between lift rams and the blade.

2.4 Line up the blade centrally with the pusher frame, drive in pins 14 at the compression struts 10 and secure with screws 19.
Check central alignment of complete pusher frame 8/9 and play of ball joint and readjust if necessary - see 3.2 and 3.3.

2.5 Drive in pin 14 at traction strut 11 and tilt ram 13 and secure with screws 19.
Check reference dimension of traction strut 11 and play of ball joints and adjust if necessary - see 3.4 and 3.2.

2.6 Reconnect hose line to tilt ram 13 and main frame.

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