721
721T

Wheel Loader



GEHL®

Form No.
50940188
Revison A
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Supersedes
0390030193

Service Manual

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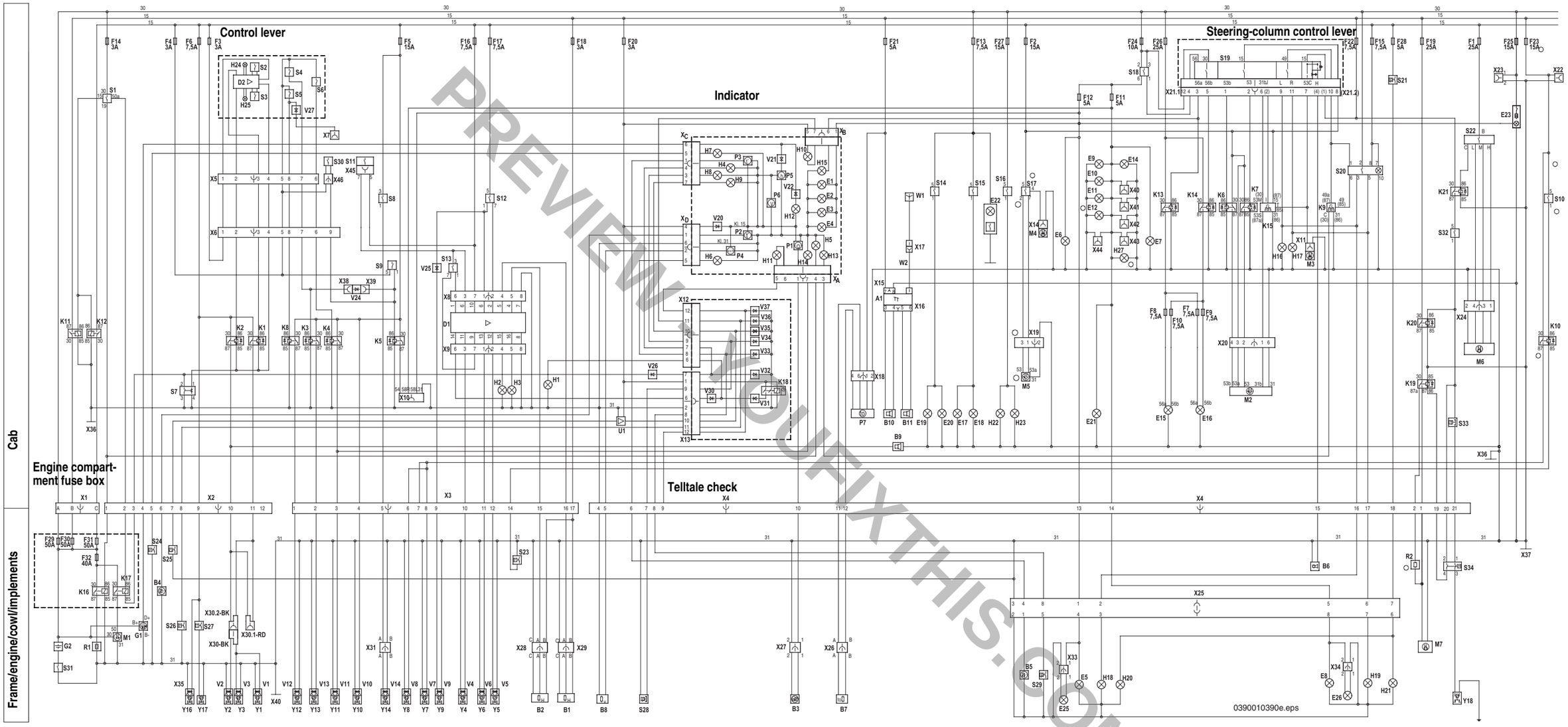
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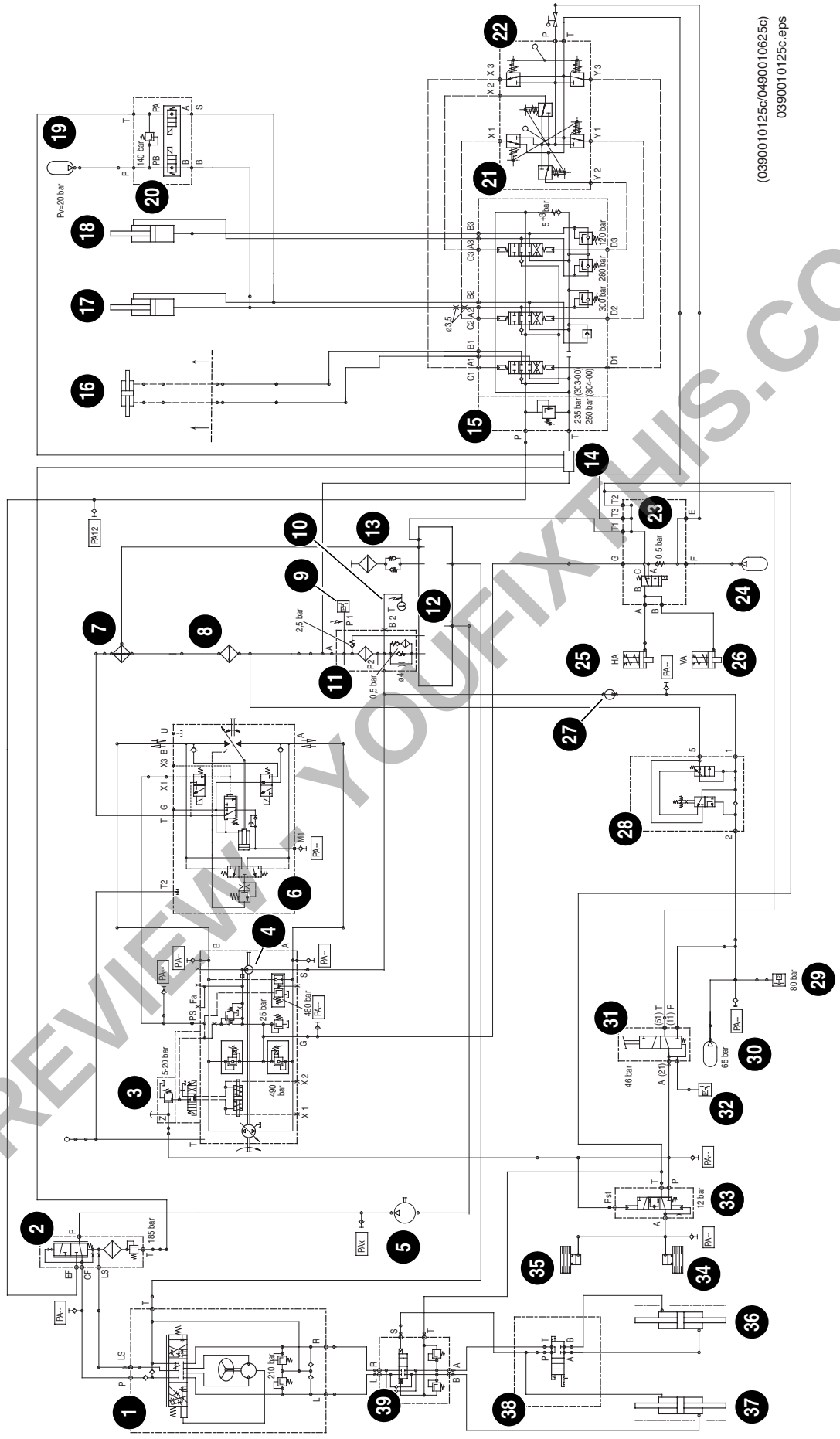
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Electrical diagram (standard equipment) model 303-00/304-00/303-10

valid as from serial no.: 303 00 0001
serial no.: 304 00 0001
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0 39 001 03 90e – (10/01)

36.7 Hydraulics diagram model 303-00/304-00

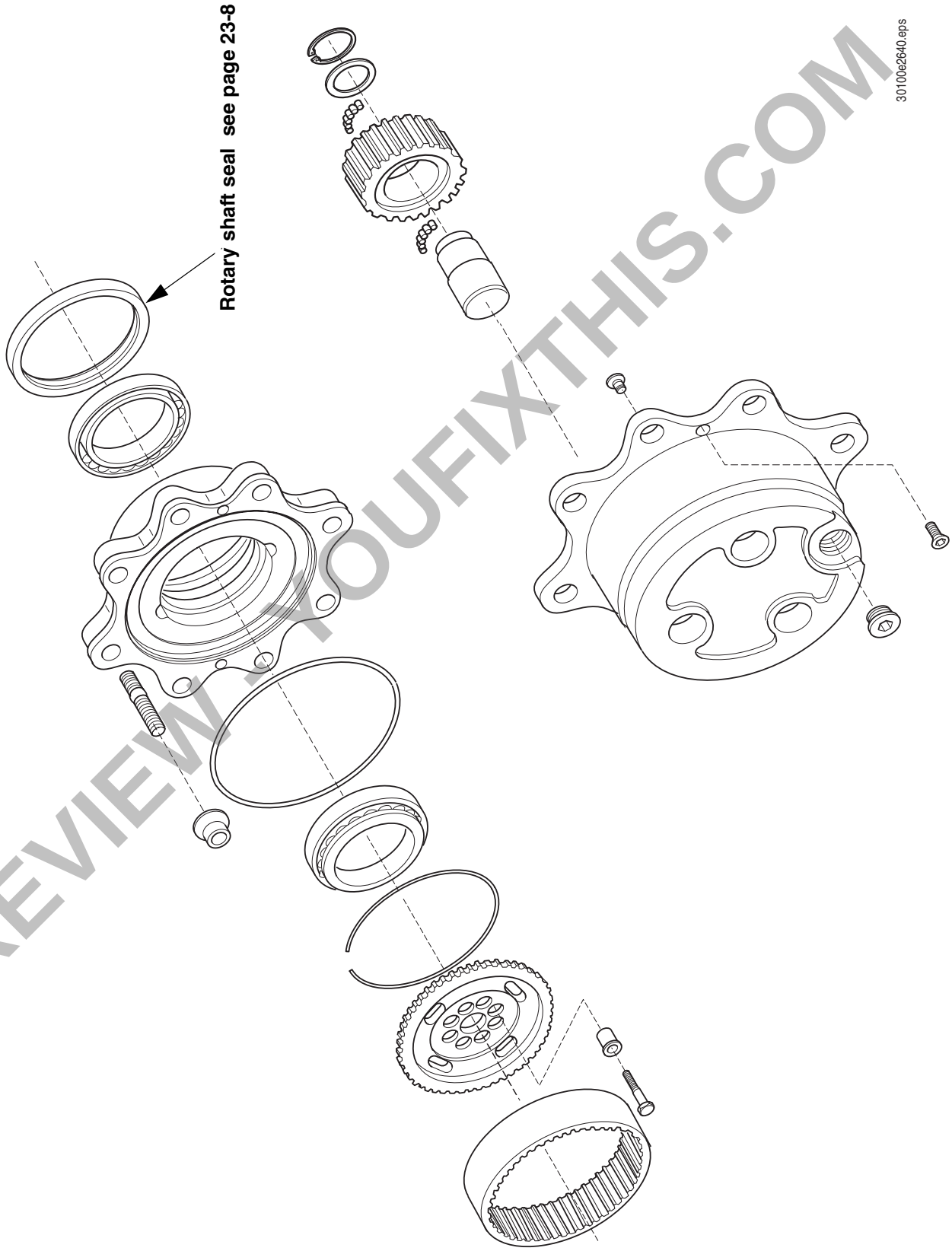


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23.3 Overview

23.3.1 Planetary drive



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01.5.1 Special torque tensions

The torque tensions apply to lightly lubricated threads.

Description	Thread size	Torque	
		Nm	kgf m
Cylinder head			
Cylinder-head bolts	1/2 UNF		
Screws and nuts, oil sump:			
- Aluminium bracket	M12	40	4.1
- Bearings made of cast iron and sintered steel	M12	75	7.6
Cap nuts, compound plastic cylinder-head covers	M12	20	2.1
Cap nuts, aluminium cylinder-head covers	M12	30	3.0
Screws, intake manifold to cylinder head	M10	44	4.5
Nuts and screws, exhaust manifold on cylinder head	M10	44	4.5
Screws, engine eyehook	M10	44	4.5
Pistons and connecting rods			
Connecting rod nuts	1/2 UNF	125	12.7
Connecting rod bolts	1/2 UNF	152	15.8
Banjo bolts, piston cooling nozzles	3/8 UNF	27	2.7
Crankshaft			
Screws, main bearings	5/8 UNF	265	27.0
Screws, crankshaft pulley	7/16 UNF	115	11.8
Screws, visco damper on crankshaft pulley	M12	75	7.6
Hexagon socket screws, visco damper on crankshaft pulley	M8	35	3.6
Hexagon socket screws, compound damper on crankshaft pulley	M8	35	3.6
Screws, rear oil seal housing on cylinder block	M8	22	2.2
Screws, bridge piece on cylinder block	M6	16	1.6
Screws, rear oil seal housing on bridge piece	M6	13	1.3
Torx-head screw, rear oil seal housing on bridge piece	M8	18	1.9
Screw, idler gear, balancer unit	M12	93	9.5
Nut, drive pinion of balance weights	1/2 UNF	82	8.4
Screws, rear cover, balancer unit housing	M10	54	5.5
Screws, oil transfer plate (balancer unit)	M10	30	3.1
Screws, oil pump on balancer unit housing	M8	27	2.8
Screws, balancer unit on cylinder block	M10	54	5.5
Timing case and drive assembly			
Screws, timing case on cylinder block	M8	22	2.2
Screws, timing case on cylinder block	M10	44	4.5
Screws, idler gear hub	M10	44	4.5
Screws, camshaft gear	M12	95	9.5
Screws, timing case cover on timing case	M8	22	2.2
Nuts, timing case cover on timing case	M8	22	2.2
Cylinder block			
Screws, fitted instead of piston cooling nozzle	3/8 UNF	27	2.7

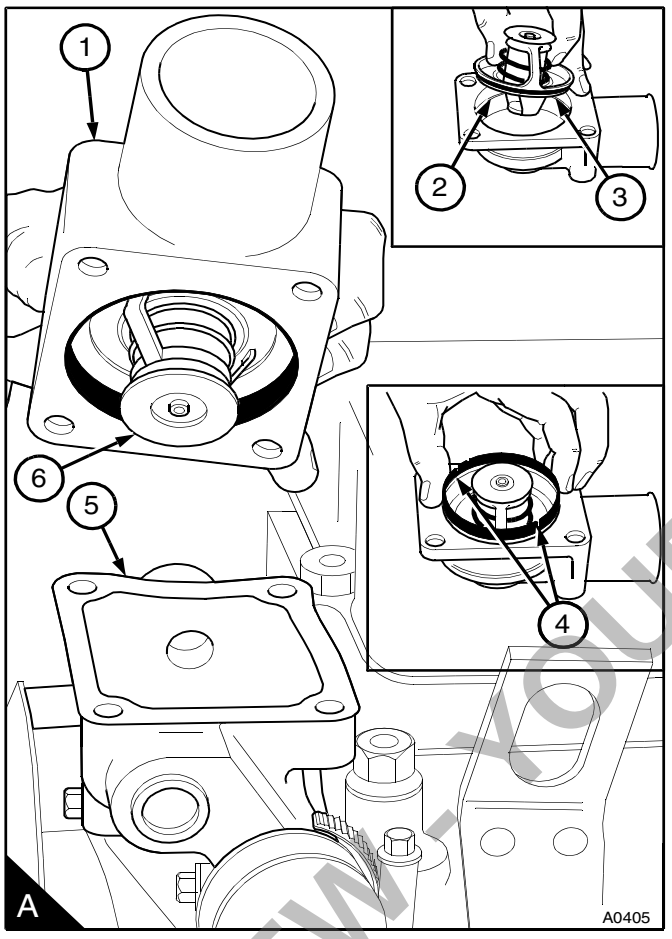
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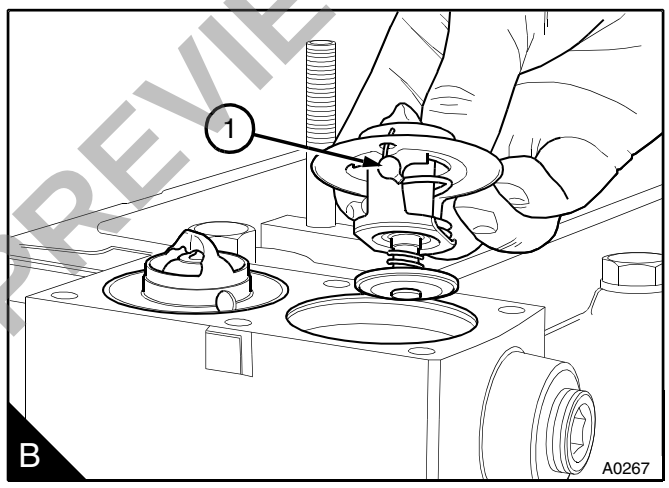
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01.8 Thermostat

The engines are equipped with a separate thermostat (A).

A thermostat is identified with its rated temperature stamped in the by-pass valve (A6) of the thermostat.





01.8.1 Removal and installation and checking

Removal

1 Drain the cooling system until the coolant level is below the thermostat position and remove the upper coolant hose from the coolant outlet connection.

2 Unscrew the four screws and raise the thermostat housing (A1) from the lower section of the housing. Discard the seal (A5).

3 Press clips (A4) inwards and remove the plastic ring from the thermostat housing.

4 Remove the thermostat with O-ring (A3) from the thermostat housing. Discard the O-ring.

Installation

1 Clean the thermostat housing and make sure there is no dirt in groove (A2) for the clips and on the mount for the O-ring.

2 Make sure the sealing surfaces of the thermostat housing and lower section of the housing are clean, and also that breather stud (A1) in the thermostat is free to move.

3 Insert a new O-ring, and place the new thermostat in its correct position in the housing.

4 Press the clips inwards and slide the plastic ring into the thermostat housing until the clips lock into the groove.

5 Provide a new seal. Fit the seal in dry condition. Screw in and tighten the screws.

6 Connect the upper coolant hose and fill up the cooling system.

Checking

1 Hang the thermostat in a suitable container filled with coolant.

2 Heat the coolant gradually. Use a thermometer to check the temperature at which the valve starts to open and at which temperature it is fully open. Refer to Specifications and Dimensions for the correct temperatures.

Caution!

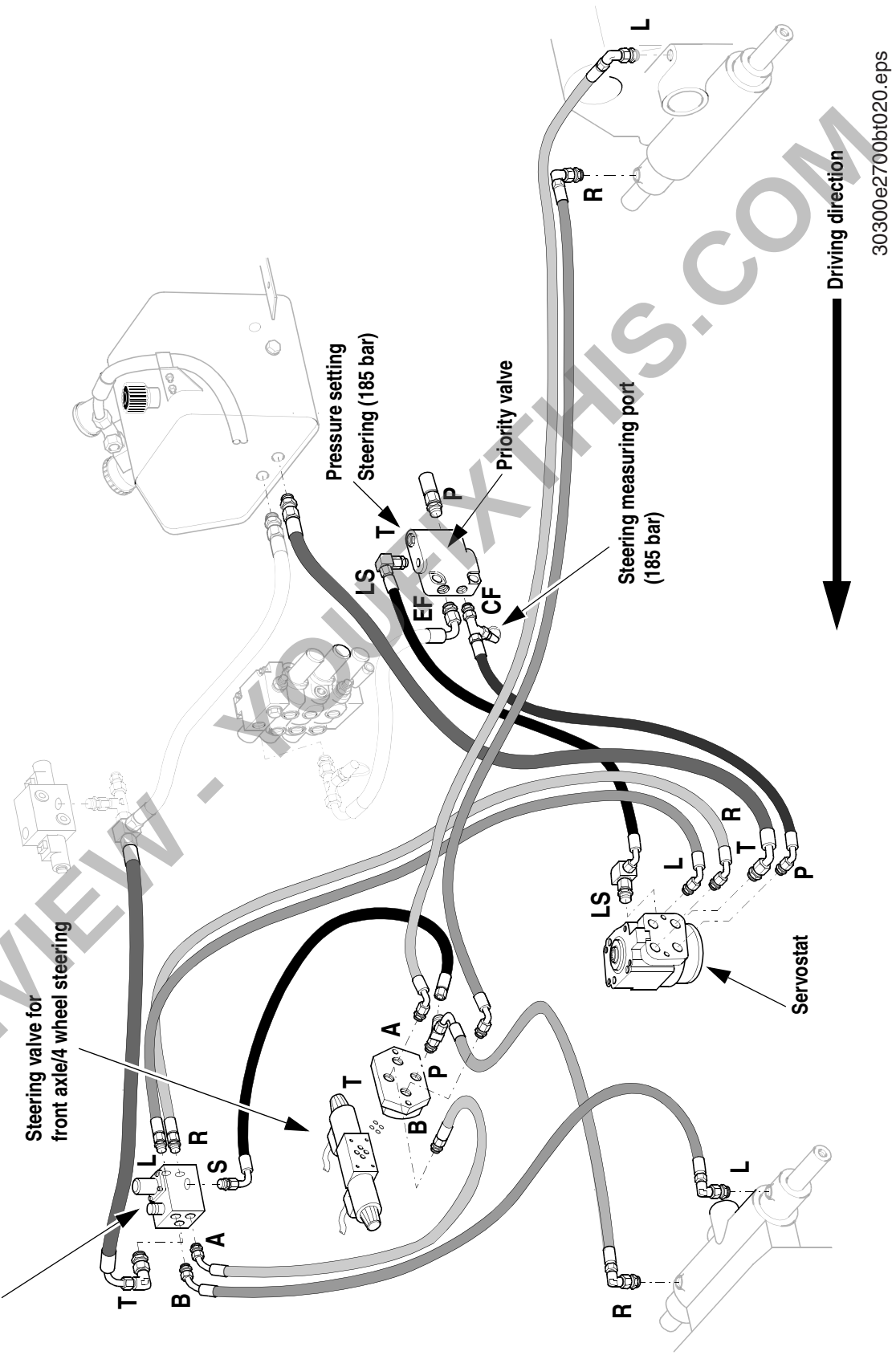
Replace the thermostat if it does not operate correctly. Do not try to adjust the settings.
Make sure the thermostat is positioned correctly!

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27 Steering

27.1 Overview – steering circuit



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22.4.19 Jerky shifting forward/reverse

Proceed as follows:

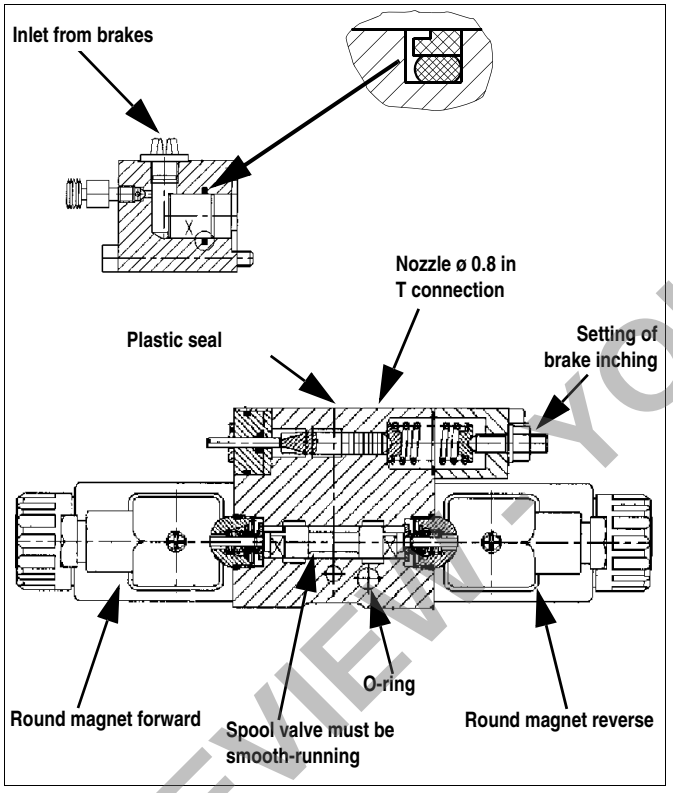
- Check drive direction switch
- Check spool in the directional valve for smooth running
- Check current supply of solenoid valves on hydraulic motor
- Check control initiation of hydraulic motor as per setting instructions – see *Control initiation on hydraulic motor* page 22-8

Stay in neutral shortly when shifting with the drive direction switch.

22.4.20 Long shift delay forward/reverse

Proceed as follows:

- Check spool in the directional valve for smooth running
- Check throttle in the directional valve for contamination



Important!

Replace both seals and the O-ring when disassembling the directional valve.

22.4.21 Excessive droop of diesel engine

Proceed as follows:

- Check diesel engine (air filter, fuel system)
- Check secondary valves

Important!

It is possible that the secondary valves have a lower setting than the pressure cut-off: constant pressure, however, reduced output with activated pressure cut-off

Important!

Pressure and output remain constant when the secondary valves respond. The secondary valves therefore cause the diesel engine droop
– see *High pressure* page 22-9

- Check engine droop as per setting instructions
  – see *Pump power* page 22-7

Heavy deposits/dirt in the filter indicates a mechanical damage of the skin pads

Important!

If damaged, the gearbox is tight and thus droops the diesel engine

22.4.22 Varying starting speed

Proceed as follows:

- Check zero position setting
- Check control pressure on X1 and X2 on servo piston

Important!

Check control pressure at the same revs

- Check solenoid valve (directional valve) piston for smooth running
- Check zero position setting of spring pile for uniformity

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01.3 Specifications

Engine	621 (Model 303-00)	721/721 Telescopic (Model 304-00/303-10)
Product	Perkins diesel engine	
Model	1004-42	1004-42
Engine number	On engine block above the starter	
Design	Four-stroke in-line engine	
Number of cylinders	4	
Aspiration system	Naturally aspirated engine	
Displacement	4233 cm³	
Bore and stroke	103 x 127 mm	
Compression ratio	18.5:1	
Output (as per ISO 9249)	57 kW at 2200 rpm	61 kW at 2400 rpm
Rated engine torque	247 Nm at 2200 rpm	242 Nm at 2400 rpm
Max. torque	280 Nm at 1400 rpm	293 Nm at 1400 rpm
Specific minimum fuel consumption	230 g/kWh	
Fuel injection system	Direct fuel injection	
Injection nozzles code letters:	Two-phase injection KW	
Works-adjusted opening pressure:	290 bar (29.4 MPa)	
Firing order	1-3-4-2	
1st cylinder	On water pump	
Starting aid	Flame heater system (preheating time 10 – 15 seconds)	
Max. inclined position (engine still supplied with oil)	Max. lateral inclination left/right:±35° Up/downhill gradient max.: ±35/° **Observe tilting limit of the vehicle!**	
Valve tip clearance (each for cold or warm engine)	Intake valve 0.20 mm Exhaust valve 0.45 mm	

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00.3 Maintenance plan 621/721 (model 303-00/304-00)

Work description

For service and maintenance work on the implement, please refer to the operation and maintenance manual of the implement manufacturer as well.

	Maintenance plan/service hours						
	Service work every 10 service hours (daily)	Delivery inspection	"A" every 50 service hours weekly	1st inspection[1] at 100 hours	"B" every 300 service hours, monthly	"C" every 600 service hours [2] 2nd inspection	"D" every 1200 service hours yearly
Oil and filter changes ( ):							
Carry out the following oil and filter changes (check oil levels after test run):							
• Engine oil				●		●	●
• Engine oil filter				●		●	●
• Fuel filter (prefilter and main filter)				●		●	●
• Clean screen filter of fuel feed pump. Replace if necessary				●		●	●
• Air filter insert [3, 4], replace safety cartridge after every 3rd change of air filter insert							●
• Gearbox oil in front and rear axle differentials and in rear axle gearbox				●			●
• Gearbox oil in front and rear axle planetary drives, left and right side				●			●
• Hydraulic oil[5]							●
• Hydraulic oil filter insert [3]				●			●
• Breather – hydraulic oil tank							●
Inspection work ( ):							
Check the following material. Refill if necessary:							
• Engine oil	●	●	●		●		
• Engine coolant [6] (also check antifreeze in autumn/winter and at temperatures below 4 °C)	●	●	●	●	●	●	●
• Hydraulic oil	●	●	●	●	●	●	
• Gearbox oil in front and rear axle differentials and in rear axle gearbox		●			●	●	
• Gearbox oil in front and rear axle planetary drives, left and right side		●			●	●	
Check cooler for engine and hydraulic oil for contamination. Clean if necessary[7]	●		●	●	●	●	●
Clean dust valve on air filter housing [3]	●	●	●	●	●	●	●
Check condition and pretension. Retighten or replace if necessary		●	●	●	●	●	●
Check glow plugs. Replace if necessary						●	●
Check valve tip clearance (engine timing). Set if necessary				●			●
Check electrolyte level and charge condition						●	●
Heating: Clean dust filter and replace every 1200 service hours if necessary						●	●

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Section 00

Maintenance

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