Form No.
918114
Revision A

280
All-Wheel-Steer Loader



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GEHL®

SERVICE MANUAL

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TD.5 Machine specifications

TD.5.1 Frame

Sturdy steel sheet frame, rubber-mounted engine

TD.5.2 Engine

Engine	
Product	Yanmar diesel engine
Model	4TNV 88
Type	Water-cooled 4-cycle diesel engine
No. of cylinders	4
Displacement	134 in.³ (2190 cm.³)
Bore and stroke	3.5 x 3.5" (88 x 90 mm)
Output	38 hp (28 kW) at 2400 rpm
Max. torque	97 –105 lb.-ft. (132 –143 Nm) @ 1600 rpm
Max. engine speed without load	2590 +/- 50 rpm
Idle engine speed	1050 +/- 25 rpm
Specific fuel consumption	319 g/hph (238 g/kWh)
Fuel injection system	Direct injection
Firing order	1 – 3 – 4 – 2
Starting aid	Glow plug (preheating time 10 – 15 seconds)
Max. inclined position (engine no longer supplied with oil):	25° in all directions (Machine tilting limit is 20° lateral).
Exhaust values according to	97/68/EC

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00.3 Maintenance schedule (overview)

Work description

For service and maintenance work on the attachment, please refer to the Operator's and Maintenance Manual of the attachment manufacturer as well.

	Maintenance schedule/service hours					
	Maintenance work (daily)	Delivery inspection	"A" every 50 service hours (weekly)	1st Inspection[a] at 100 hours	"B" every 500 service hours[b] 2nd Inspection	"C" every 1500 service hours (yearly)
Oil and filter changes ( ):						
Perform the following oil and filter changes (check oil levels after test run):						
• Engine oil				●	●	●
• Engine oil filter				●	●	●
• Fuel filter				●	●	●
• Air filter insert [c, d], replace safety cartridge every 3rd time the air filter insert is replaced					●	●
• 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[e]						●
• Hydraulic oil filter insert				●		●
• Breather filter – hydraulic oil tank [d]						●
Inspection work ( ):						
Check the following material. Refill if necessary:						
• Engine oil	●	●	●			
• Engine coolant [f] (also check antifreeze in autumn/winter and at temperatures below 39° F (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[g]			●	●	●	●
When using biodegradable oil: Drain the condensation water in the hydraulic oil tank [e]					●	●
Clean dust valve on air filter housing [c]	●	●	●	●	●	●
V-belt: Check condition and pretension. Tighten or replace if necessary		●	●	●	●	●
Check the fuel/water separator. Drain water if necessary			●	●	●	●
Check valve tip clearance (engine timing). Set if necessary					●	●
Battery: Check charge condition					●	●
Heating: Clean dust filter, replace every 1500 service hours if necessary[h]						●
Check and set service and parking brake pads. Replace if necessary				●	●	●
Tire check (damage, air pressure, tread depth)	●	●	●	●	●	●

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00.9.2 Changing engine oil

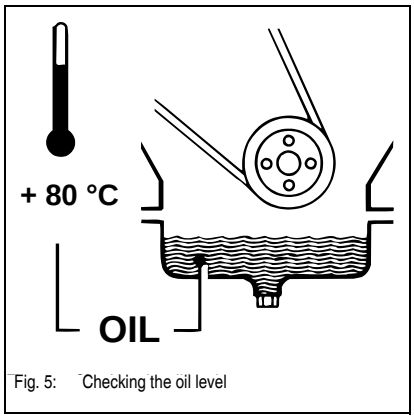


Fig. 5: Checking the oil level

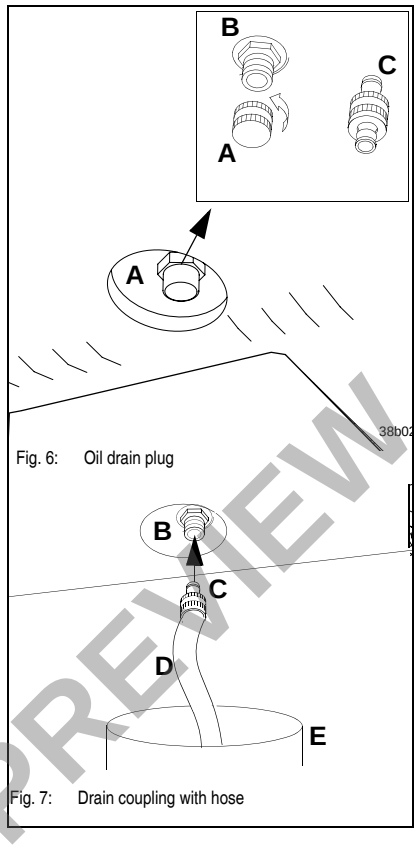


Fig. 6: Oil drain plug

Fig. 7: Drain coupling with hose

WARNING!

Caution when draining hot oil:

Risk of burns!

☞ *Wear protective gloves!*

☞ *Use suitable tools, e.g., for unscrewing the oil drain plug!*

☞ *Change the oil as follows:*

- Park the machine on level ground
- Let the engine run until it reaches service temperature (oil temperature about 176° F (80° C)
- Turn off the engine

Environment!

Use a container to collect the engine oil as it drains and dispose of it in a manner consistent with environmental laws.

- Place container **E** for collecting the oil under the engine
  ➥ minimum capacity: 13 qts. (12 L).
- Unscrew cap **A** of drain valve **B**.
- Screw drain coupling **C** onto the drain valve with a sufficiently long hose **D**
  ➥ Make sure the end of the hose is in container **E** used for collecting the oil.
- Completely drain the oil.
- Unscrew drain coupling **C**.
- Screw cap **A** onto drain valve **B**
- Add engine oil
- Start the engine and run it at low speed for a short time.
- Turn off the engine.
  ➥ Wait a moment until all the oil has run into the oil sump
- Check the oil level again.
- Fill up if necessary and check again
- Completely remove all oil spills from the engine

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01.9 Engine trouble

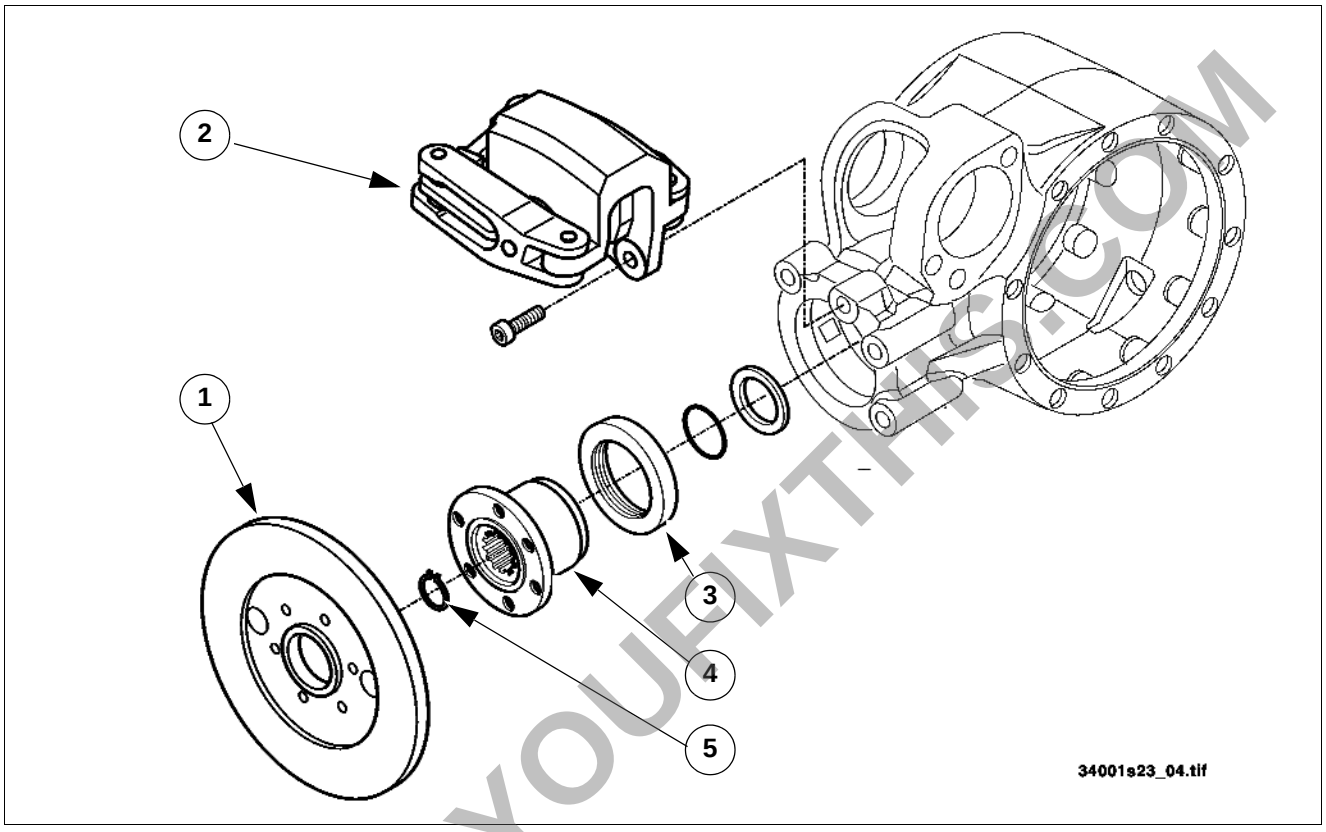
Problem	Possible causes
Engine does not start or is not easy to start	Steering-column control lever not in neutral
	Engine starting temperature too low
	Wrong SAE grade of engine lubrication oil
	Fuel quality does not comply with specifications
	Battery defective or dead
	Loose or oxidized cable connections in starter circuit
	Starter defective, or pinion does not engage
	Wrong valve tip clearance
	Fuel injector defective
Engine starts, but does not run smoothly or faultless	Fuel quality does not comply with specifications
	Wrong valve tip clearance
	Injection line leaks
	Fuel injector defective
Engine overheats. Temperature warning system responds	Oil level too low
	Oil level too high
	Air filter not working
	Air filter maintenance switch or gauge defective
	Oil cooler fins not working
	Fan defective, V-belt torn or loose
	Cooling air heats up
	Resistance in cooling system too high, flow capacity too low
	Fuel injector defective
Insufficient engine output	Oil level too high
	Fuel quality does not comply with specifications
	Air filter not working
	Air filter maintenance switch or gauge defective
	Wrong valve tip clearance
	Injection line leaks
	Fuel injector defective
Engine does not run on all cylinders	Injection line leaks
	Fuel injector defective
Insufficient or no engine oil pressure	Oil level too low
	Engine inclination too high
	Wrong SAE grade of engine lubrication oil
Engine oil consumption too high	Oil level too high
	Engine inclination too high

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23.5 Sealing work

23.5.1 Differential – front axle



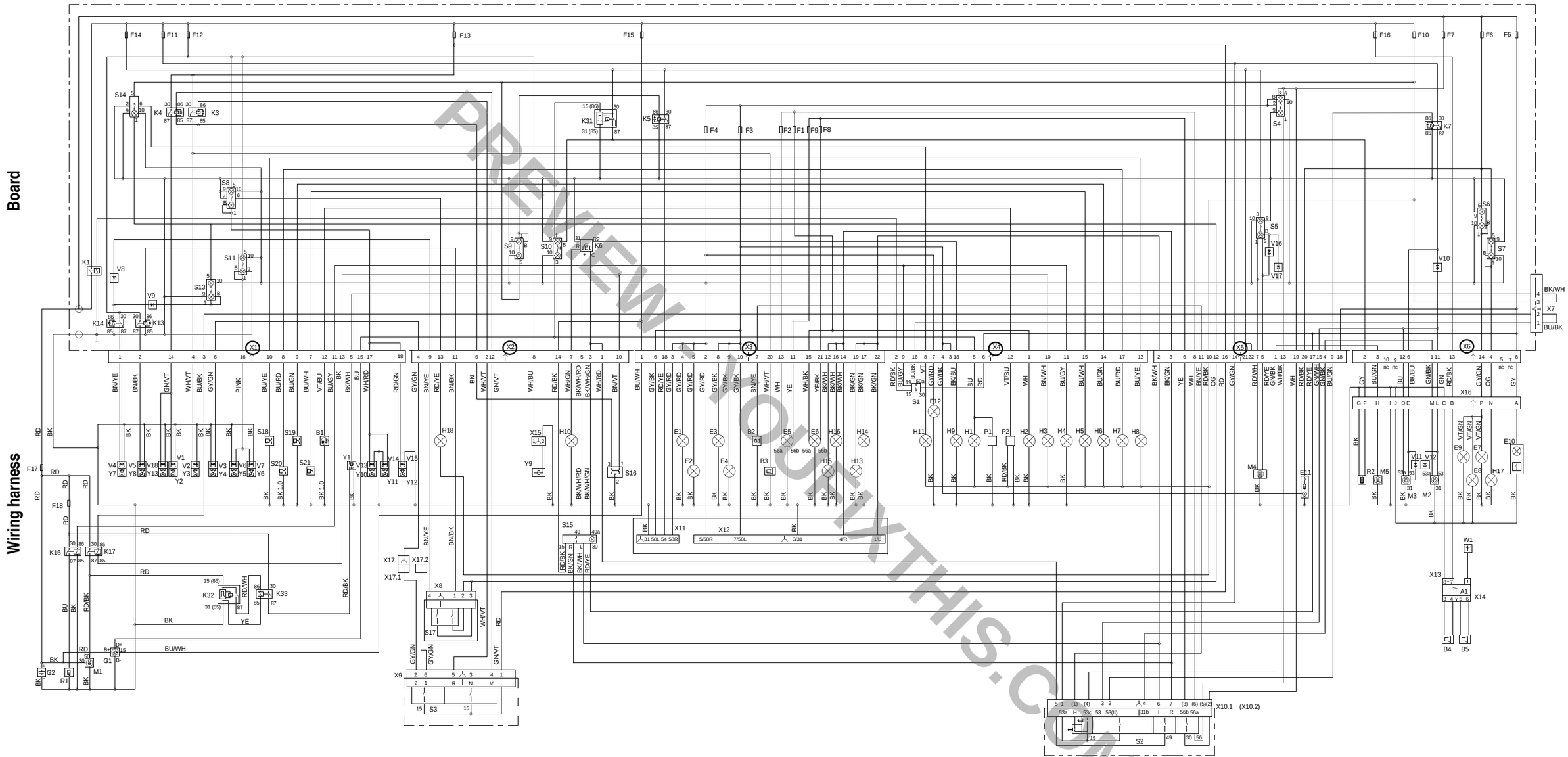
Replacing the rotary shaft seal

☞ *Proceed as follows:*

- Remove the drive shaft
- Remove brake caliper **2**
- Remove brake disc **1**
- Remove circlip **5** with appropriate tools
- Remove flange **4** from the input shaft with an extractor
- Replace rotary shaft seal **3** with a new one
- Assemble in reverse order

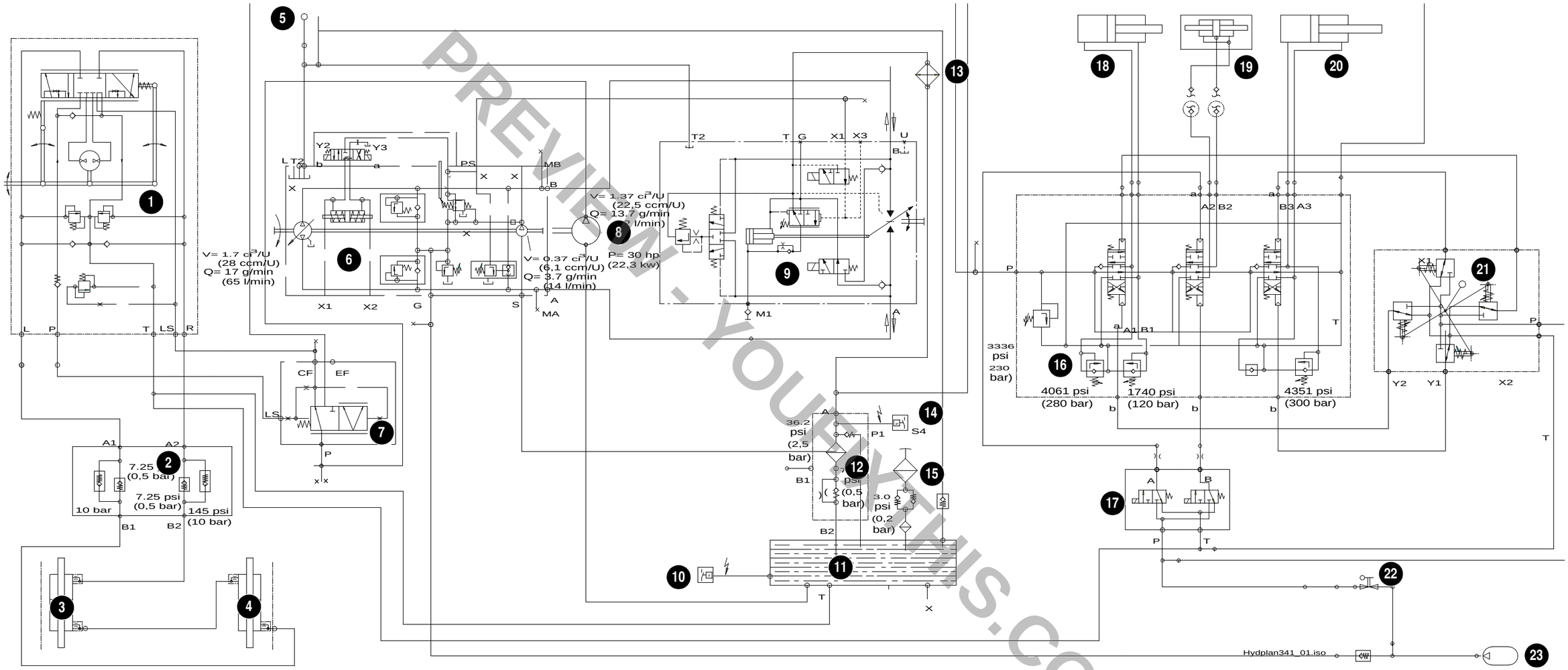
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33.18 Wiring diagram 207406



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36.15.3 Hydraulics diagram

TORQUE SPECIFICATIONS

NOTE: *Use these torque values when tightening **GEHL** hardware (excluding: locknuts and self-tapping, thread forming and sheet metal screws) unless specified otherwise.*

All torque values are in Lb-Ft except those marked with an * which are Lb-In
(For metric torque value Nm, multiply Lb-Ft value by 1.355 or Lb-In value by 0.113)

Unified National Thread	Grade 2		Grade 5		Grade 8	
	Dry	Lubed	Dry	Lubed	Dry	Lubed
8-32	19*	14*	30*	22*	41*	31*
8-36	20*	15*	31*	23*	43*	32*
10-24	27*	21*	43*	32*	60*	45*
10-32	31*	23*	49*	36*	68*	51*
1/4-20	66*	50*	9	75*	12	9
1/4-28	76*	56*	10	86*	14	10
5/16-18	11	9	17	13	25	18
5/16-24	12		19	14		20
3/8-16	20	15	30	23	45	35
3/8-24	23	17	35	25	50	
7/16-14	32	24	50	35	70	55
7/16-20	36	27	55	40	80	60
1/2-13	50	35	75	55	110	80
1/2-20	55	40	90	65	120	90
9/16-12	70	55	110	80	150	110
9/16-18	80	60	120	90	170	130
5/8-11	100	75	150	110	220	170
5/8-18	110	85	180	130	240	180
3/4-10	175	130	260	200	380	280
3/4-16	200	150	300	220	420	320
7/8-9	170	125	430	320	600	460
7/8-14	180	140	470	360	660	500
1-8	250	190	640	480	900	680
1-14	270	210	710	530	1000	740
Metric Course Thread	**Grade 8.8**		**Grade 10.9**		**Grade 12.9**	
	Dry	**Lubed**	**Dry**	**Lubed**	**Dry**	**Lubed**
M6-1	8	6	11	8	13.5	10
M8-1.25	19	14	27	20	32.5	24
M10-1.5	37.5	28	53	39	64	47
M12-1.75	65	48	91.5	67.5	111.5	82
M14-2	103.5	76.5	145.5	108	176.5	131
M16-2	158.5	117.5	223.5	165.5	271	200

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Power train

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Description: Hydraulic motor VM 45 EZ 6 22-2

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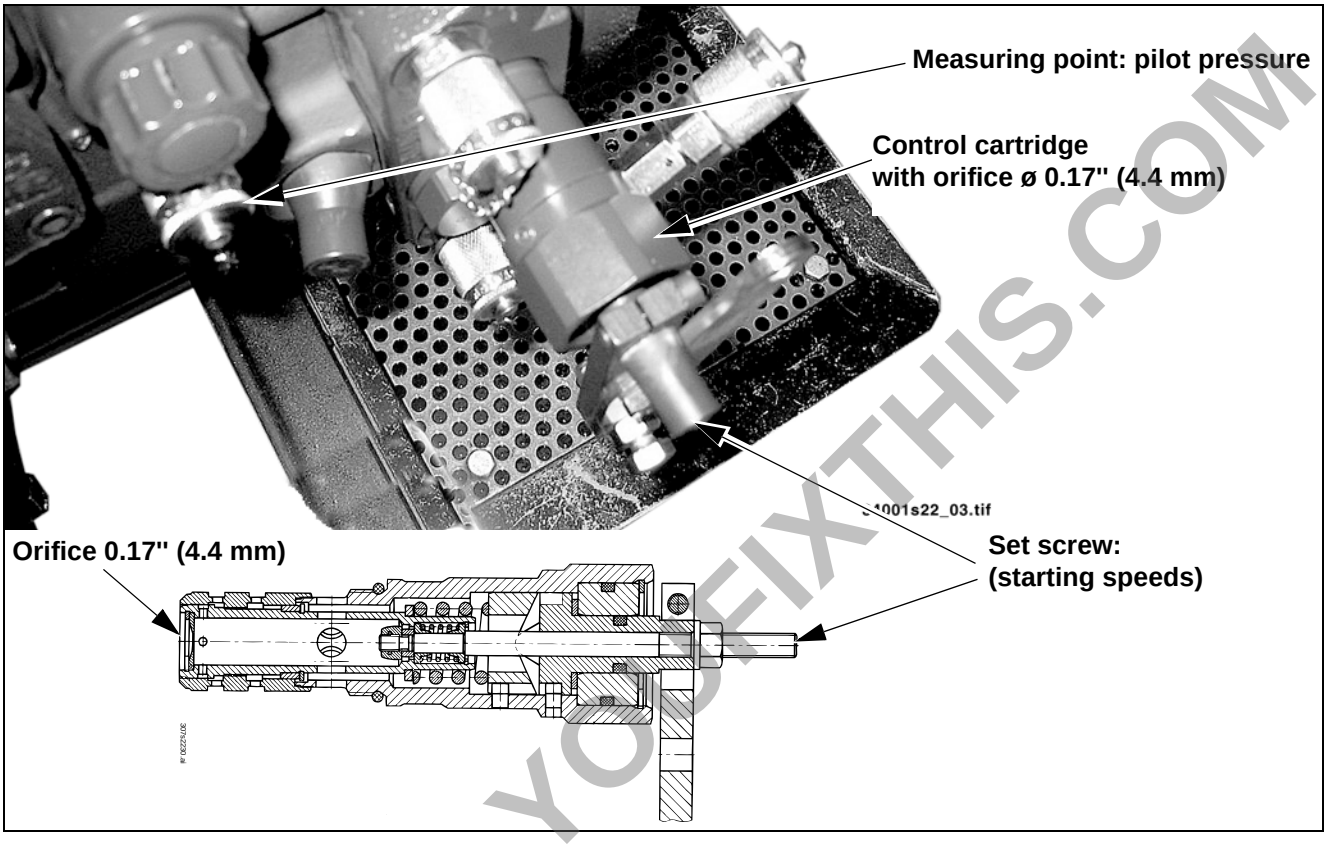
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22.7.4 Adjusting pilot pressure

Tools required:

- Pressure gauge up to 870 psi (60 bar)



☞ *Check/adjust pilot pressure as follows:*

- Move the drive lever to neutral
- Apply the parking brake
- Connect the pressure gauge 870 psi (60 bar) to the measuring point
- Start the diesel engine and set max. speeds

  ➥ Rated pilot pressure: 406 – 435 psi (28 – 30 bar)

☞ *Pilot pressure is achieved by:*

- The orifice ø 0.17" (4.4 mm) in the control cartridge
- Setting the starting speeds with the set screw

☞ *If pilot pressure is not reached in spite of existing boost pressure, check the following:*

- Control cartridge

  ➥ Sleeve easily movable
- Orifice
- Inching facility
- Pressure cut-off
- Servo cylinder

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