Form No.
918123
Revision A

680
Wheel Loader

Beginning Serial Number: 343010001



SERVICE MANUAL

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GEHL®

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2 Specifications

2. 1 Frame

Sturdy steel sheet frame, rubber-mounted engine.

2. 2 Engine

Engine	
Product	Deutz turbo-charged diesel engine
Model	BF4M 2011
Design	In-line
No. of cylinders	4
Displacement	190 in.³ (3109 cm³)
Bore and stroke	4 x 5” (94 x 112 mm)
Compression ratio	17.5:1
Output (as per ISO 9249)	75 hp (56 kW)/76 DIN hp at 2300 rpm
Max. torque	199 lb.-ft. (270 Nm) at 1600 rpm
Specific minimum fuel consumption	282 g/hph (210 g/kWh)
Fuel injection system	Direct fuel injection
Firing order	1-3-4-2
Starting aid	Glow plug
Max. inclined position (engine no longer supplied with oil):	Max. lateral left/right inclination: 30/57% Max. uphill/downhill inclination: 30/57% **Follow tilting limit of the machine.**
Oil pressure	44 – 65 psi (3.0 – 4.5 bar) at 2300 rpm
Valve clearance (engine at cold temperature)	Intake valve 0.01” (0.3 mm) Exhaust valve 0.02” (0.5 mm)

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2. 16 Hardware torques

General torques

Cap screw dimensions	Torques in lb.-ft. (Nm)[1]		
	Grade 6.5 (8.8)	Grade 8.0 (10.9)	Grade 9.5 (12.9)
M4	2 (3)	3 (4)	4 (5)
M5	4 (5.5)	6 (8)	7 (10)
M6	7 (10)	10 (14)	12 (16)
M8	17 (23)	25 (34)	30 (40)
M10	34 (46)	49 (67)	58 (79)
M12	58 (79)	85 (115)	100 (135)
M14	92 (125)	136 (185)	162 (220)
M16	144 (195)	214 (290)	251 (340)
M18	207 (280)	295 (400)	347 (470)
M20	291 (395)	413 (560)	487 (660)
M22	398 (540)	561 (760)	656 (890)
M24	502 (680)	715 (970)	848 (1150)
M27	738 (1000)	1069 (1450)	1254 (1700)
M30	996 (1350)	1438 (1950)	1696 (2300)

1. These values are valid for cap screws with untreated, non-lubricated surfaces

Specific torques

Description	Torque
Wheel nut	295 ±15 lb.-ft. (400 ±20 Nm)
Tie-rod end (steering cylinder)	148 lb.-ft. (200 Nm)
Piston rod (steering cylinder/tie rod)	184 lb.-ft. (250 Nm)

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Maintenance schedule Model 680 (overview)

Work description

For service and maintenance work on the attachment, also refer to the operation and maintenance manual of the attachment manufacturer.

	Maintenance schedule/service hours					
	Regular maintenance (daily)	Delivery inspection	"A" every 50 hours (weekly)	1st Inspection[1] at 100 hours	"B" every 500 hours[2] 2nd Inspection	"C" every 1500 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				●	●	●
• Air filter[3, 4] replace safety cartridge every third time the air filter 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				●		●
• Gearbox oil in 25 mph (40 km/h) gearbox (option)				●		●
• Hydraulic oil[5]						●
• Hydraulic oil filter				●		●
• Breather filter – hydraulic oil tank[4]						●
Inspection work ( ):						
Check the following material. Refill if necessary:						
• Engine oil	●	●	●			
• 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		●			●	●
• Brake fluid[6]	●	●	●	●	●	●
Check cooler for engine and hydraulic oil for contamination. Clean if necessary[7]			●	●	●	●
When using biodegradable oil: Drain the condensation water in the hydraulic oil tank[5]					●	●
Clean dust valve on air filter housing[3]	●	●	●	●	●	●
V-belt: Check condition and pretension. Tighten or replace if necessary[8]		●	●	●	●	●
Check the fuel/water separator. Drain water if necessary			●	●	●	●
Clean filter insert on fuel pump, replace if necessary			●	●	●	●

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Replacing the fuel filter

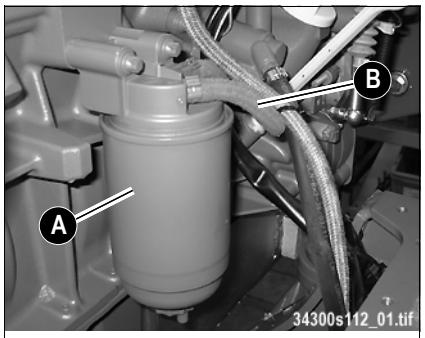


Fig. 16: Fuel filter position

WARNING!

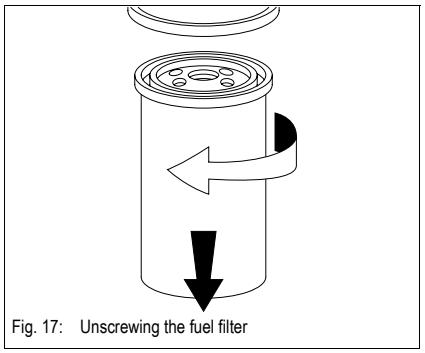
If the fuel, as it drains, comes into contact with hot engine parts or the exhaust system, there is an increased:

Risk of burns.

☞ *Never change the fuel filter if the engine is hot.*

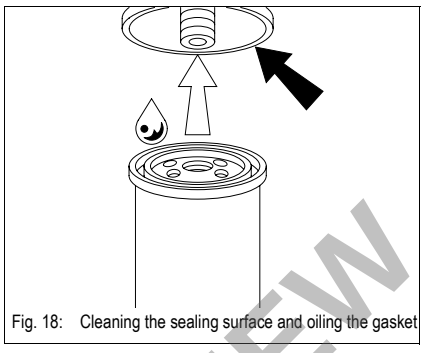
Environment!

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

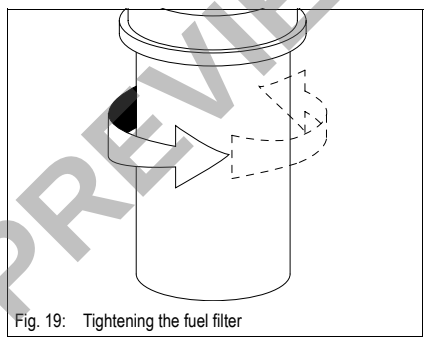

Fig. 17: Unscrewing the fuel filter

☞ *Change fuel filter 16/**A** as follows:*

- Pinch off fuel feed line 16/**B** with a suitable tool.
- Thoroughly clean the outside surfaces of fuel filter 16/**A**.
- Loosen and unscrew fuel filter cartridge using a commercially available tool.
- Collect the fuel as it drains.


Fig. 18: Cleaning the sealing surface and oiling the gasket

- Clean the sealing surface of the filter carrier if it is not working.
- Lightly oil the rubber gasket of the new filter cartridge or apply a thin coat of clean diesel fuel to it.
- Screw on the cartridge by hand until the gasket makes contact.


Fig. 19: Tightening the fuel filter

- Tighten the fuel filter cartridge by turning it another half revolution.
- Remove the tool that has been used to pinch off the fuel feed line 16/**B**.
- Make a test run.
- Check for tightness.
- Dispose of the old fuel filter cartridge in a manner consistent with environmental laws.

NOTE:

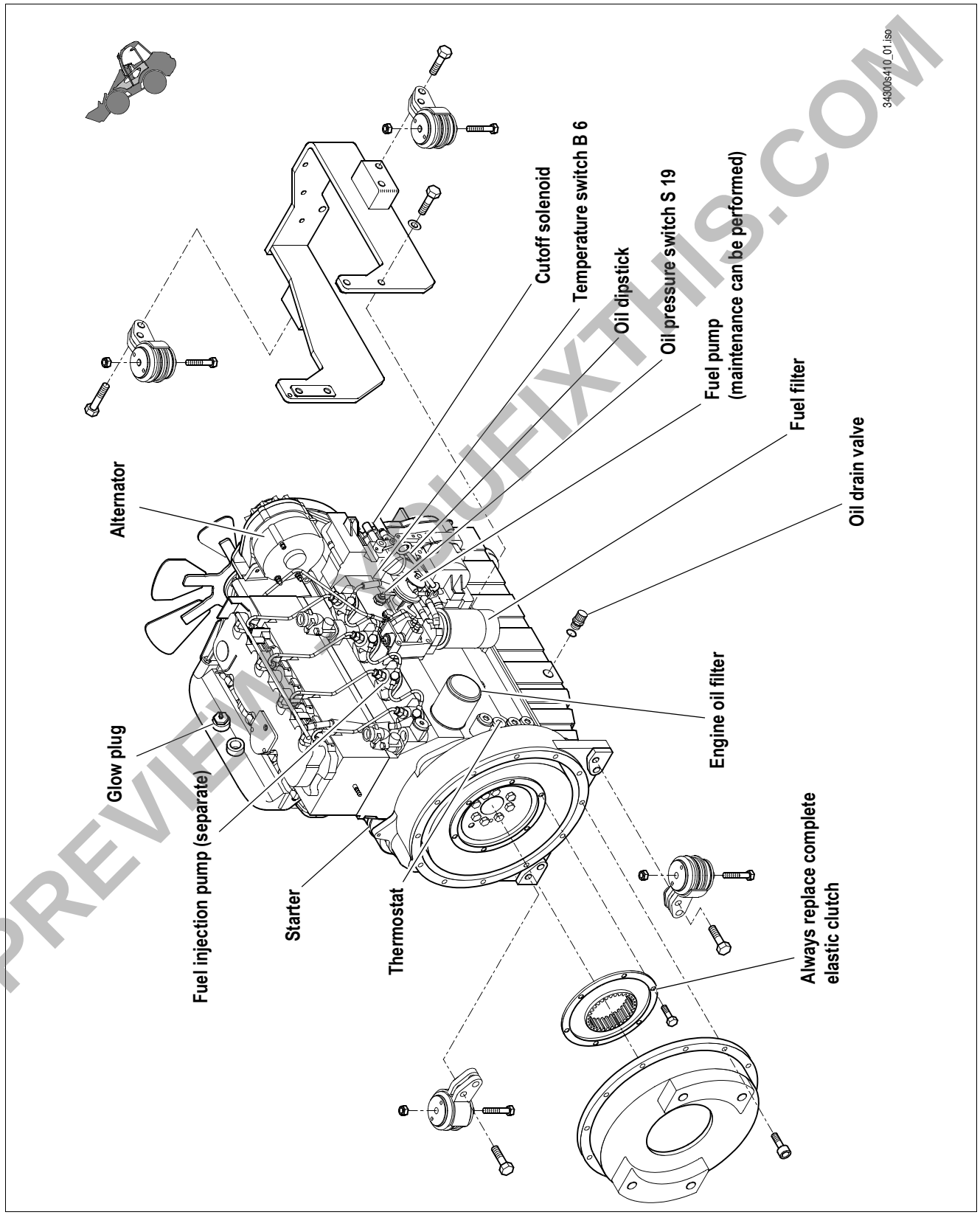
The fuel system bleeds itself automatically.

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4 Engine

4. 1 Engine BF4M 2011: overview



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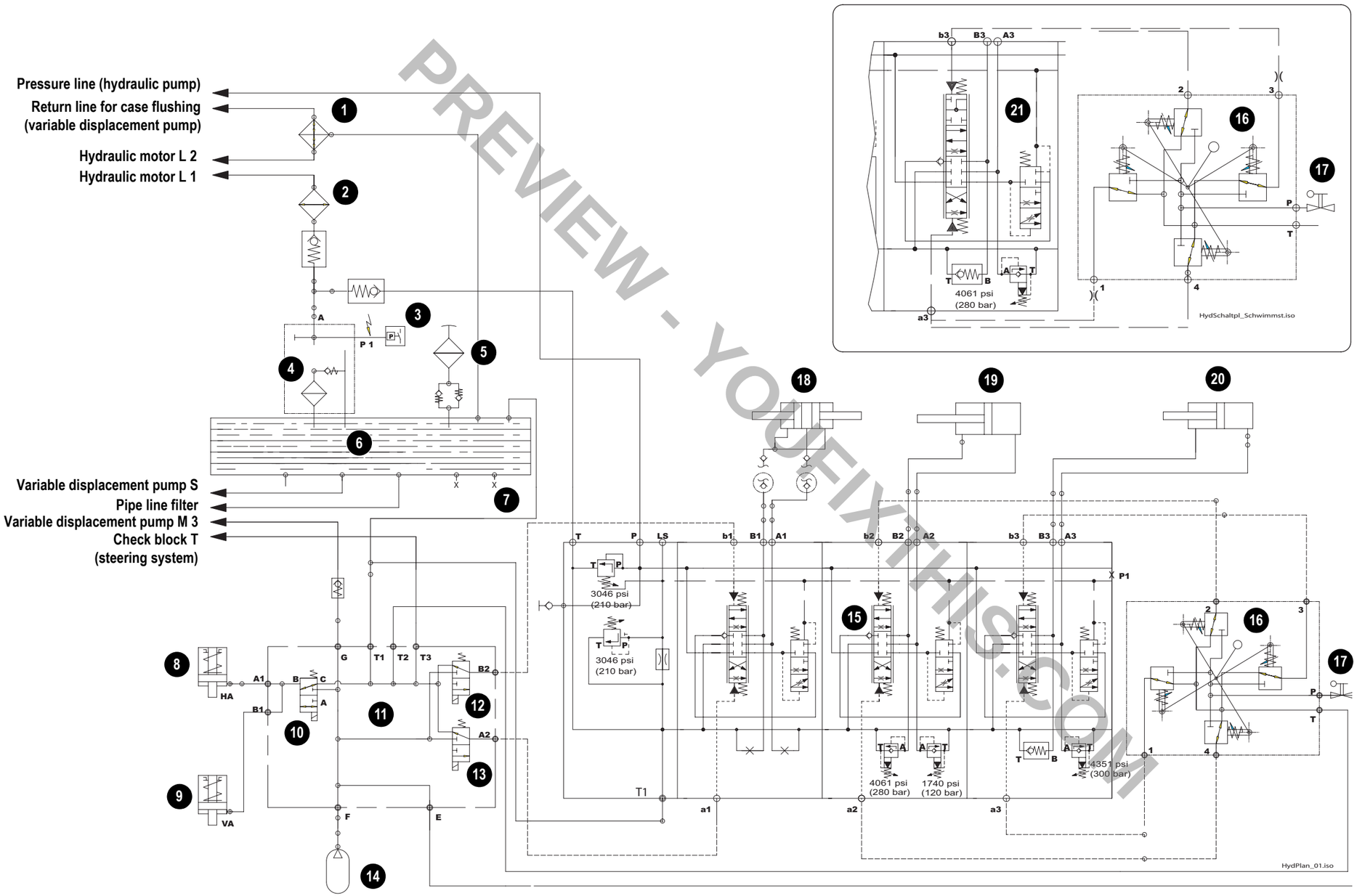
4. 8 Engine trouble

Problem	Possible causes
Engine does not start or is not easy to start	Parking brake not applied
	Steering-column control lever **28** not in neutral
	Engine starting temperature is 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 clearance
	Fuel injector defective
Engine starts, but does not run smoothly	Fuel quality does not comply with specifications
	Wrong valve 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 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 is too low
	Engine inclination too high
	Wrong SAE grade of engine lubrication oil
Engine oil consumption too high	Oil level is too high
	Engine inclination is too high

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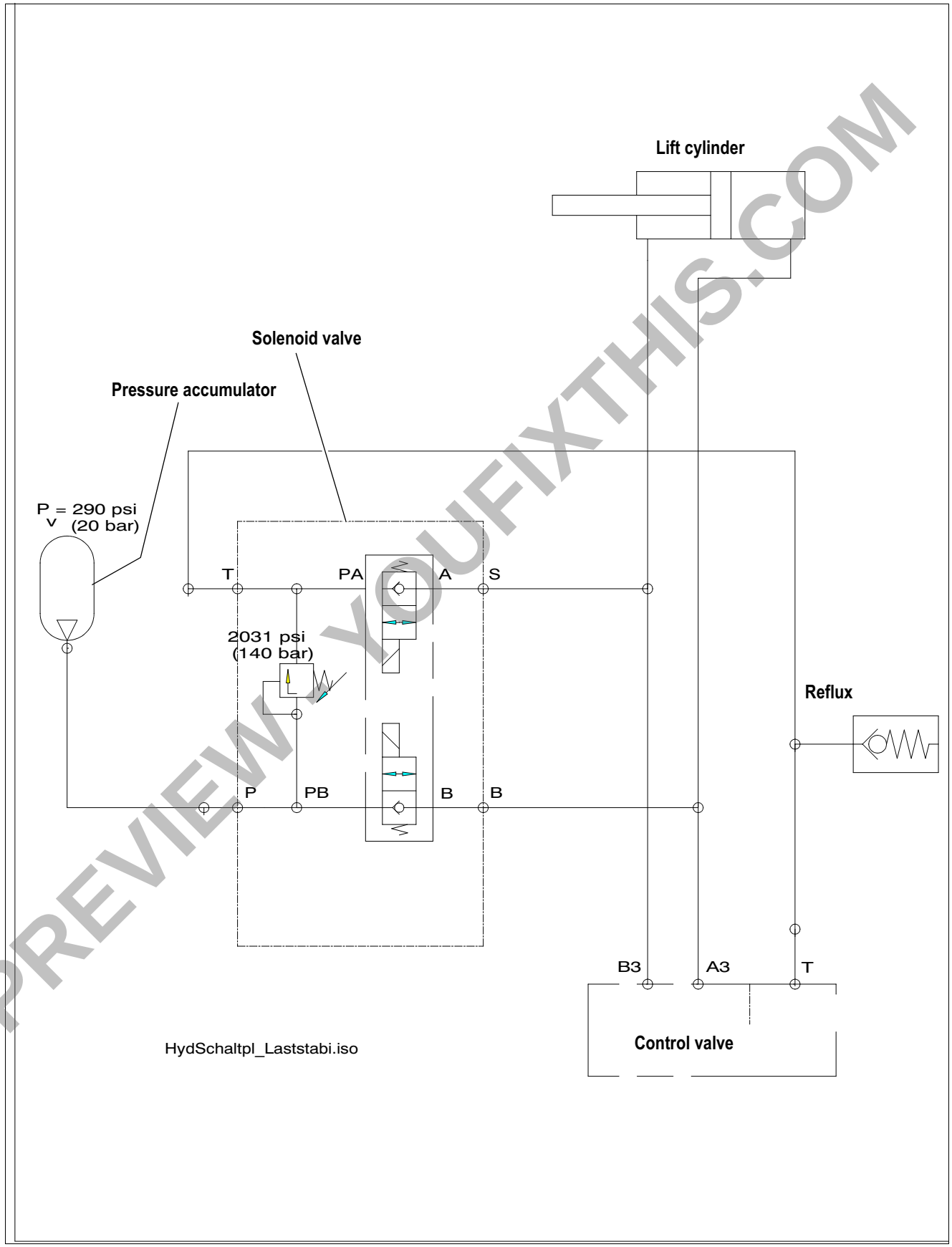
9. 20 Work hydraulics diagram



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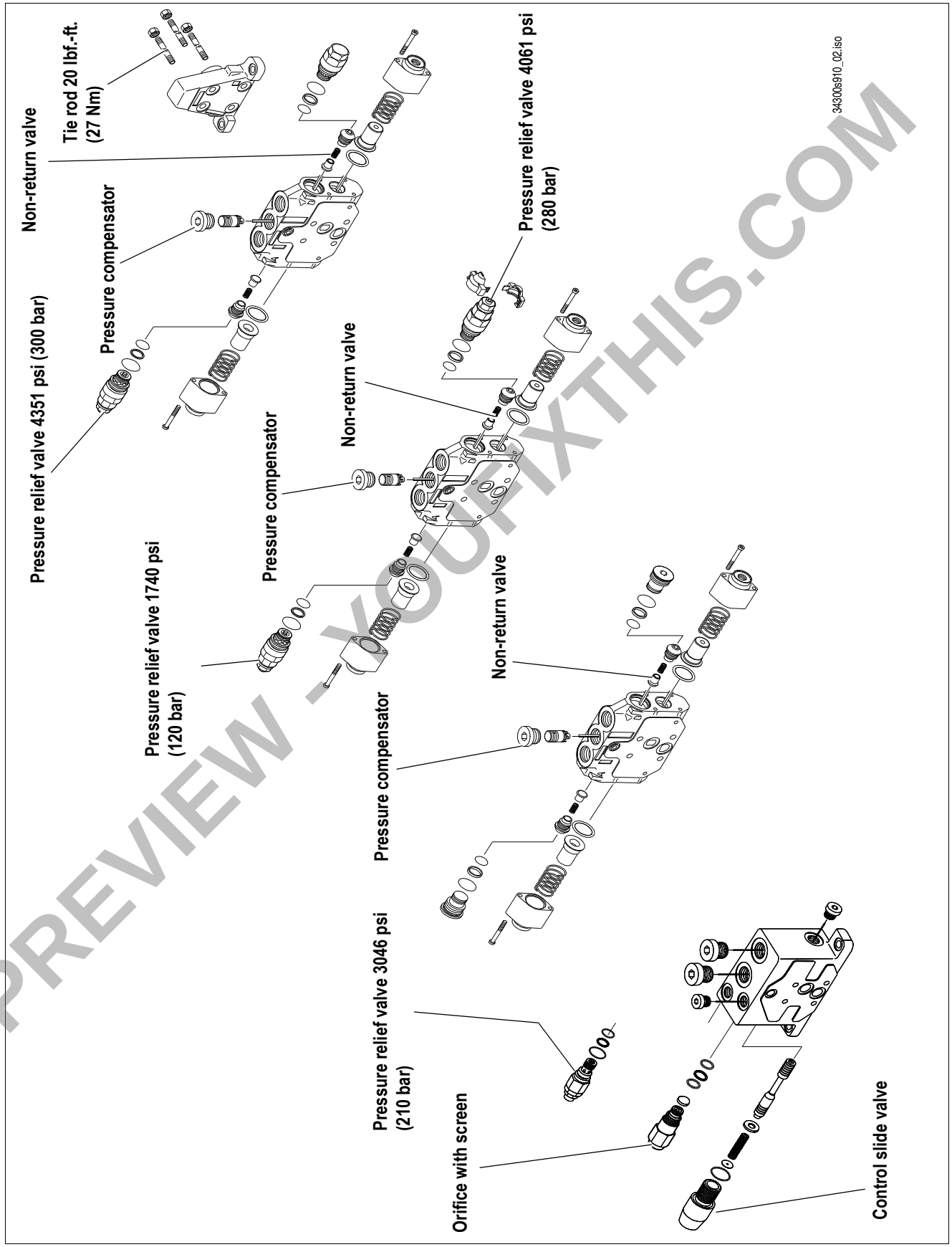
9. 9 Load stabilizer: circuit diagram



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9. 3 Control valve: design



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Error table

Legend:
0 = short blinking sign
– = long blinking sign

System error					
GPI error no.	**Signal from**	**Error type**	**LED Error code**	**DIA 1 error no.**	**Cause**
1	Sensor voltage	4	- o o o	01	Sensor voltage not in valid range
2 – 16	Not used				
Sensor error					
GPI error no.	**Signal from**	**Error type**	**LED error code**	**DIA 1 error no.**	**Cause**
1	Default pacylindereter check sum	3	- - - -	17	Pacylindereter not assigned
2	Inching/brake pedal pacylin-dereter check sum			18	Included in sensor 1
3	Inching/brake pedal sensor	7 5 6	- - o o	19	Setup not performed, value too small, value too high
4	Rev transmitter	6	o o - o	20	No rev signal while starting the machine
5	Proportional valve current	1 2	- o - o	21	Short circuit, open wiring
6	Forward-reverse control	4	o - - o	22	Forward and reverse short-circuited
7	Rev transmitter	6	- - - o	23	Rev signal interrupted
8	Hydraulic motor current	1 2	o o o -	24	Short circuit, open wiring
9	Crawler gear pacylinderater check sum			25	Included in sensor 1
10	Crawler gear potentiometer	5 6	- o o -	26	Value too small, value too high
11	Engine rev transmitter	6	o o - -	27	Engine speed interrupted
12 – 32	Not used				
-	Wrong kernel	-	o - o -		Kernel software < 2.5
-	Wrong hardware	-	- - o -		Hardware is not S1X-11 G2 AMP

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