



ML 48

ALL-WHEEL-STEER LOADER

SERVICE MANUAL

PART #918136

Revision A - 05/05



Mustang Manufacturing Company, Inc.

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2 Specifications

2.1 Frame

Sturdy steel sheet frame, rubber-mounted engine

2.2 Engine

Engine	
Product	Deutz diesel engine
Model	F4M 2011
Type	In-line
No. of cylinders	4
Displacement	190 in. ³ (3109 cm ³)
Bore and stroke	3.7 x 4.4" (94 x 112 mm)
Compression ratio	19:1
Output (as per ISO 9249)	44 kW/59 DIN hp at 2400 rpm
Max. torque	144 lb.-ft. (195 Nm) at 1700 rpm
Specific minimum fuel consumption	298 g/hph (222 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 0.012" (0.3 mm) Exhaust valve 0.020" (0.5 mm)

3.3 Maintenance schedule Model ML48 (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 hours (weekly)	1st Inspection ¹ at 100 hours	"B" every 500 service hours ² 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 ^{3, 4} 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)				●		●
• Gearbox oil in 25 mph (40 km/h) gearbox (option)				●		●
• Hydraulic oil ⁹						●
• Hydraulic oil filter insert				●		●
• 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)		●			●	●
• 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 pre-tension. Tighten or replace if necessary ⁸		●	●	●	●	●
Check the fuel/water separator. Drain water if necessary			●	●	●	●

Sealing the bleeder valve



Fig. 36: Bleeder valve

- ✎ Remove the cover
- ✎ Clean the bleeder valve
- ✎ Mount a new O-ring
- ✎ Mount the cover
- ➔ Tightening torque: **6.3 lb.-ft. (8.5 Nm)**

Intake/exhaust manifold



Fig. 37: Intake manifold seals

- ✎ Mount new gaskets
- ✎ Mount the intake/exhaust manifold

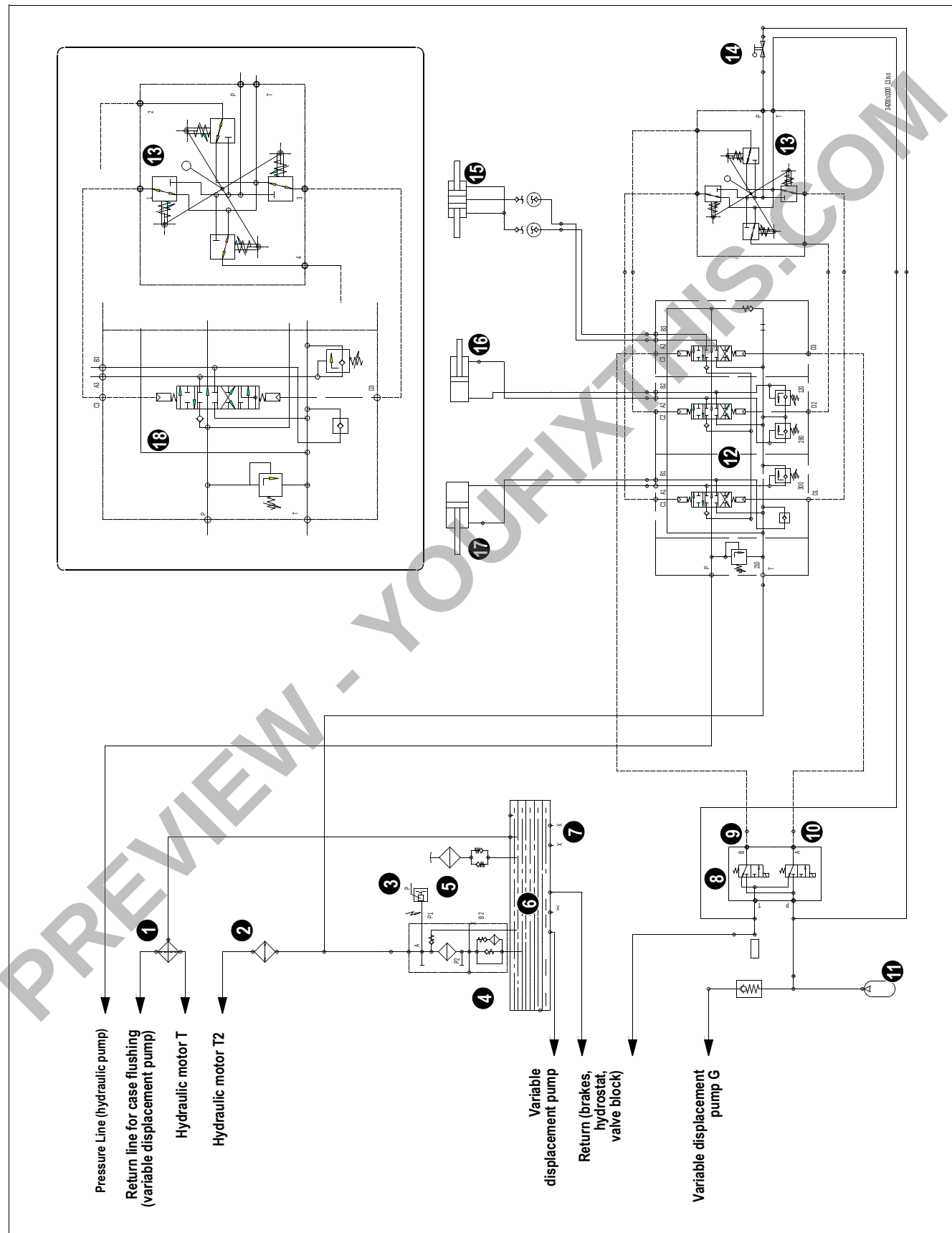
Tightening torque

- ➔ Intake manifold: **15.5 lb.-ft. (21 Nm)**
- ➔ Exhaust manifold: **40.5 lb.-ft. (55 Nm)**

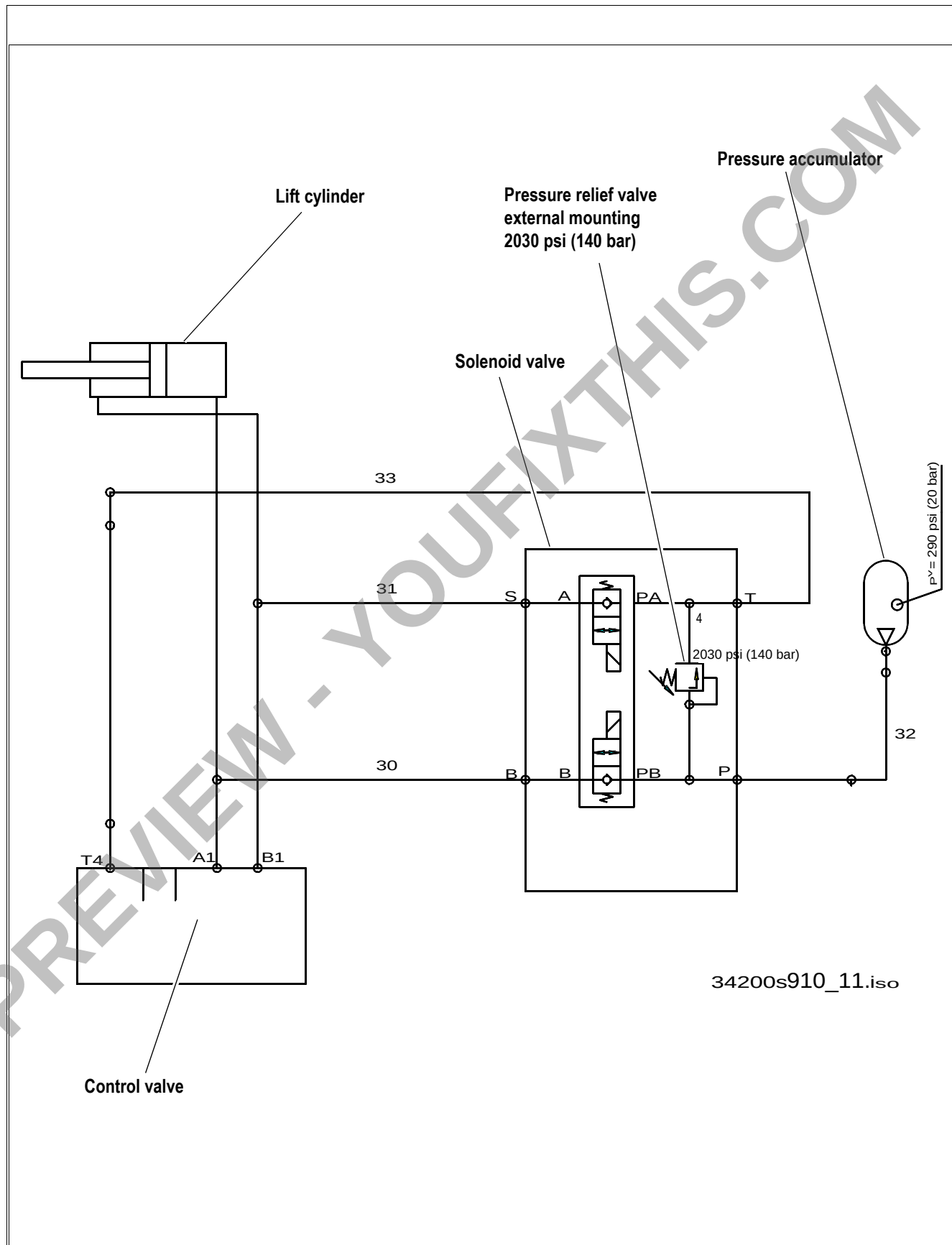
4.8 Engine trouble

Problem	Possible causes
Engine does not start or is not easy to start	Parking brake not applied
	Steering-column control lever 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

9.15 Work hydraulics diagram



9.8 Load stabilizer: circuit diagram



TORQUE SPECIFICATIONS

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

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	9	19	14	25	20
3/8-16	20	15	30	23	45	35
3/8-24	23	17	35	25	50	35
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
1-12	270	210	710	530	1000	740
METRIC COARSE 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

*All torque values are in lb.-ft. except those marked with an * which are in lbs.

For metric torque value (N-m) multiply ft-lbs value by 1.355 or the lb.-in. value by 0.113.

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Checking hydraulic pressure lines

Specific safety instructions



WARNING!

Caution when checking hydraulic lines, especially when searching for leaks. Hydraulic oil escaping under high pressure can penetrate the skin and cause serious injuries.

Risk of personal injury!

☞ *Always consult a doctor immediately, even if the wound seems insignificant – otherwise serious infections could set in!*

☞ *Always follow these instructions:*

- Tighten leaking threaded fittings and hose connections only when the system is not under pressure; i.e., release the pressure before working on pressurized lines!
- Never weld or solder faulty or leaking pressure lines and connections. Replace damaged parts with new ones!
- Never search for leaks with your bare hands – wear protective gloves!
- Use paper or wood to check for minor leaks. Never use an unprotected light or open flame!
- Have damaged flexible lines replaced by authorized dealers only!

- Leaks and damaged pressure lines must be repaired immediately or replaced by an authorized dealer.

This not only increases the operating safety of your machine but also helps to protect the environment

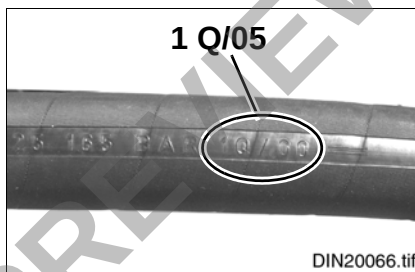
- Replace hydraulic hoses every six years from the date of manufacture, even if they do not appear to be damaged

In this respect, we recommend that you follow all the relevant safety regulations for hydraulic lines, as well as the safety regulations regarding accident prevention and occupational health and safety.

The date of manufacture (month or quarter and year) is indicated on the flexible line.

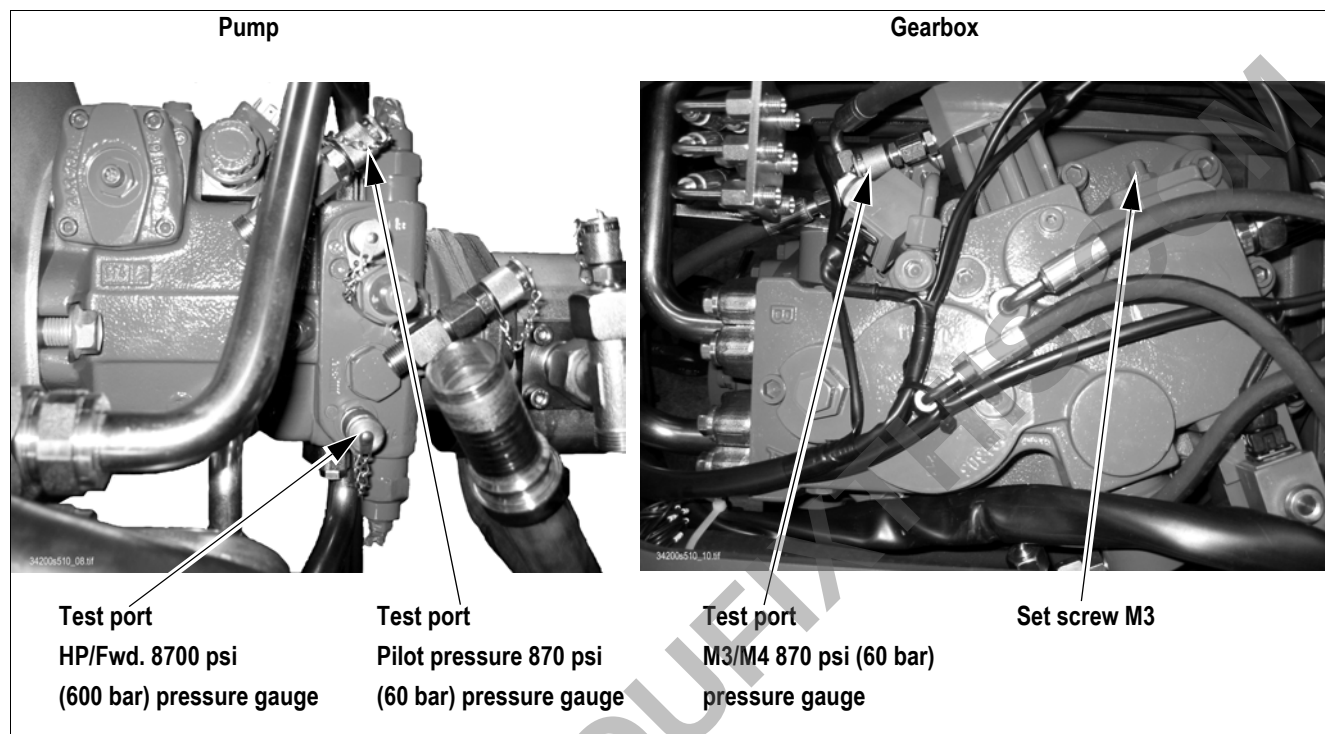
Example:

The indication “1 Q/05” means manufactured in the 1st quarter of 2005.



5.14 ECO speed settings

Control initiation M3: settings



Measurement:

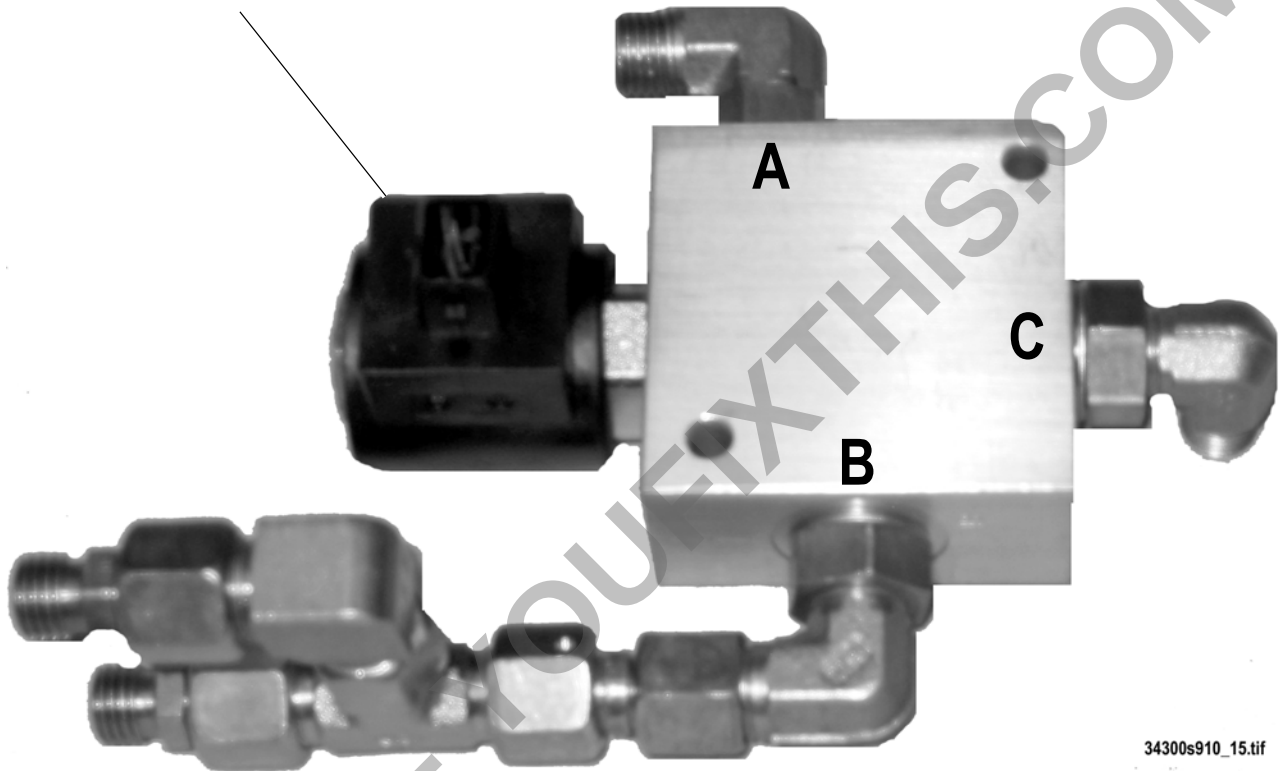
- ☞ Turn on 2nd speed (steering in straight ahead position)
- ☞ Slowly increase diesel speeds until the pressure gauge of test port M3 rises to about 145 – 435 psi (10 – 30 bar).
 - Speeds must be 1500 ± 100 rpm
 - Pump pilot pressure must be 116 – 145 psi (8 – 10 bar)
- If speeds are too low when reaching the M3 pressure
 - ☞ Screw in the set screw
- If speeds are too high when reaching the M3 pressure
 - ☞ Unscrew the set screw

9.10 Hose burst valve with load stabilizer: connections

Solenoid valve 3/2 (Y 12)

☞ Is energized as soon as load stabilizer is turned on

➡ Lift cylinder hose burst valve is opened



A – pressure line

B – goes on to hose burst valve

C – tank line

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