ML 28
ALL-WHEEL-STEER LOADER

SERVICE MANUAL

PART #918133

Revision A - 04/05

Mustang Manufacturing Company, Inc.

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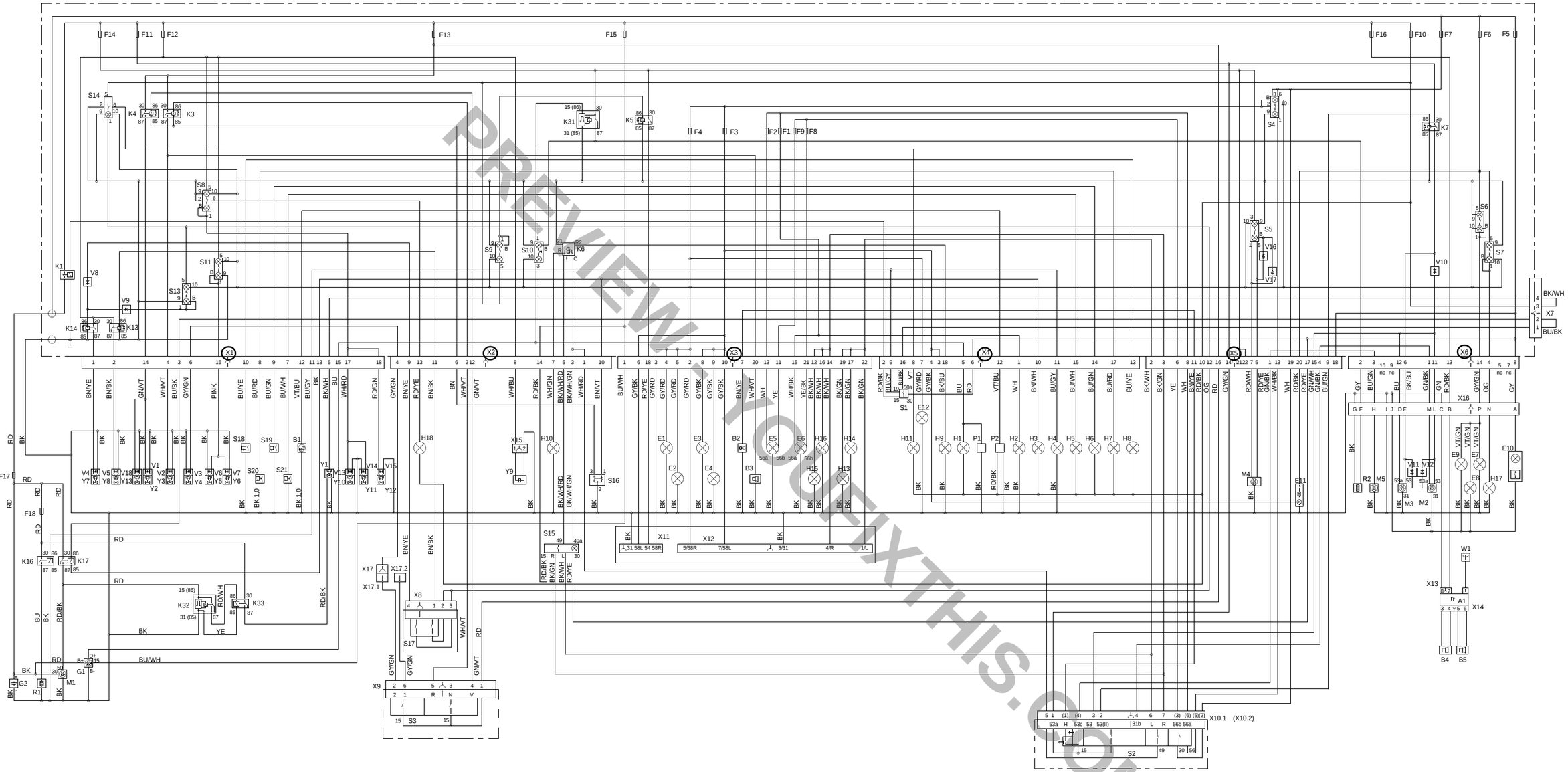
V-belt 00-18

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Board

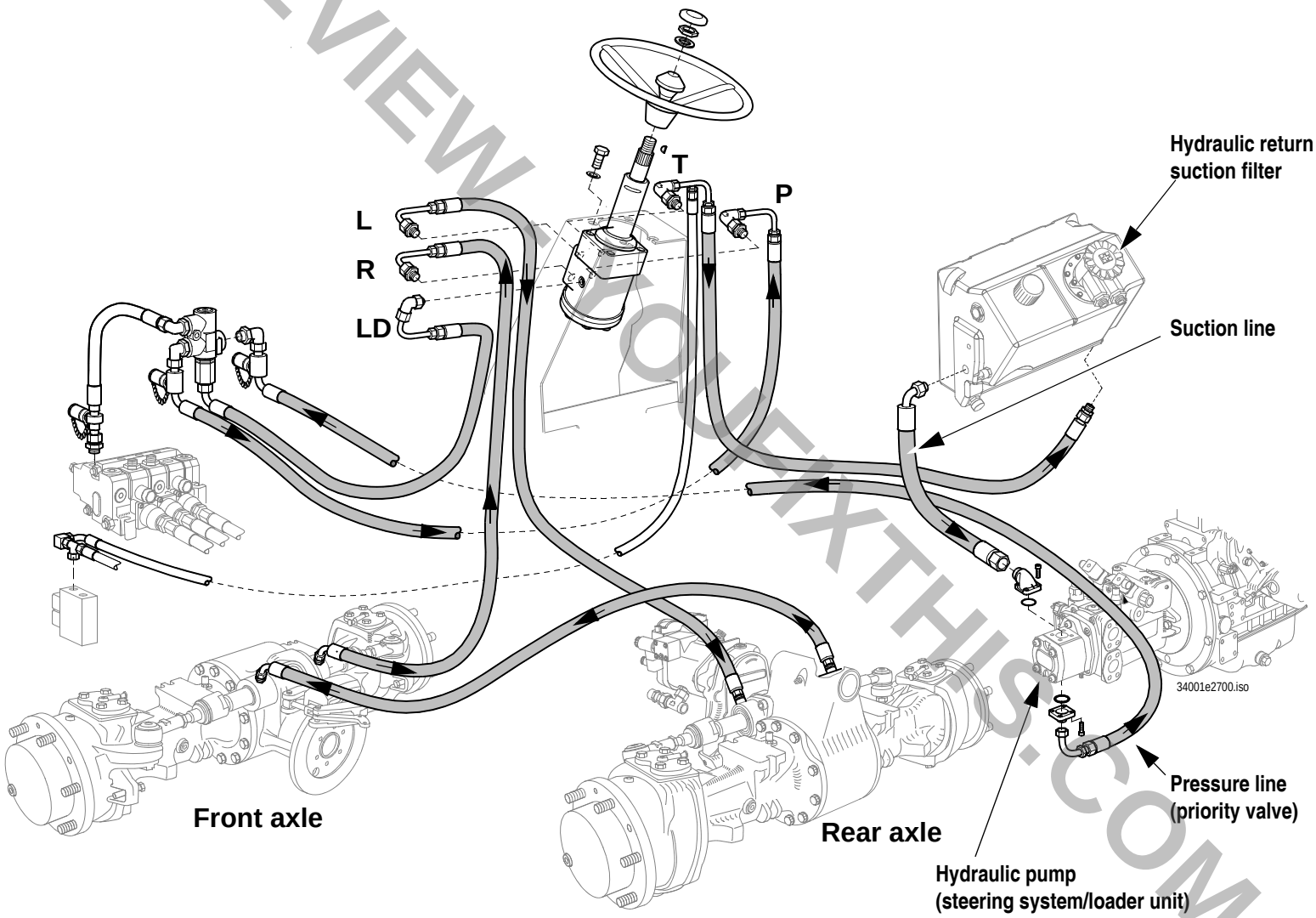
Wiring harness



33.18 Wiring diagram 0110010090

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27.3 Hydraulic circuit: Steered to the left

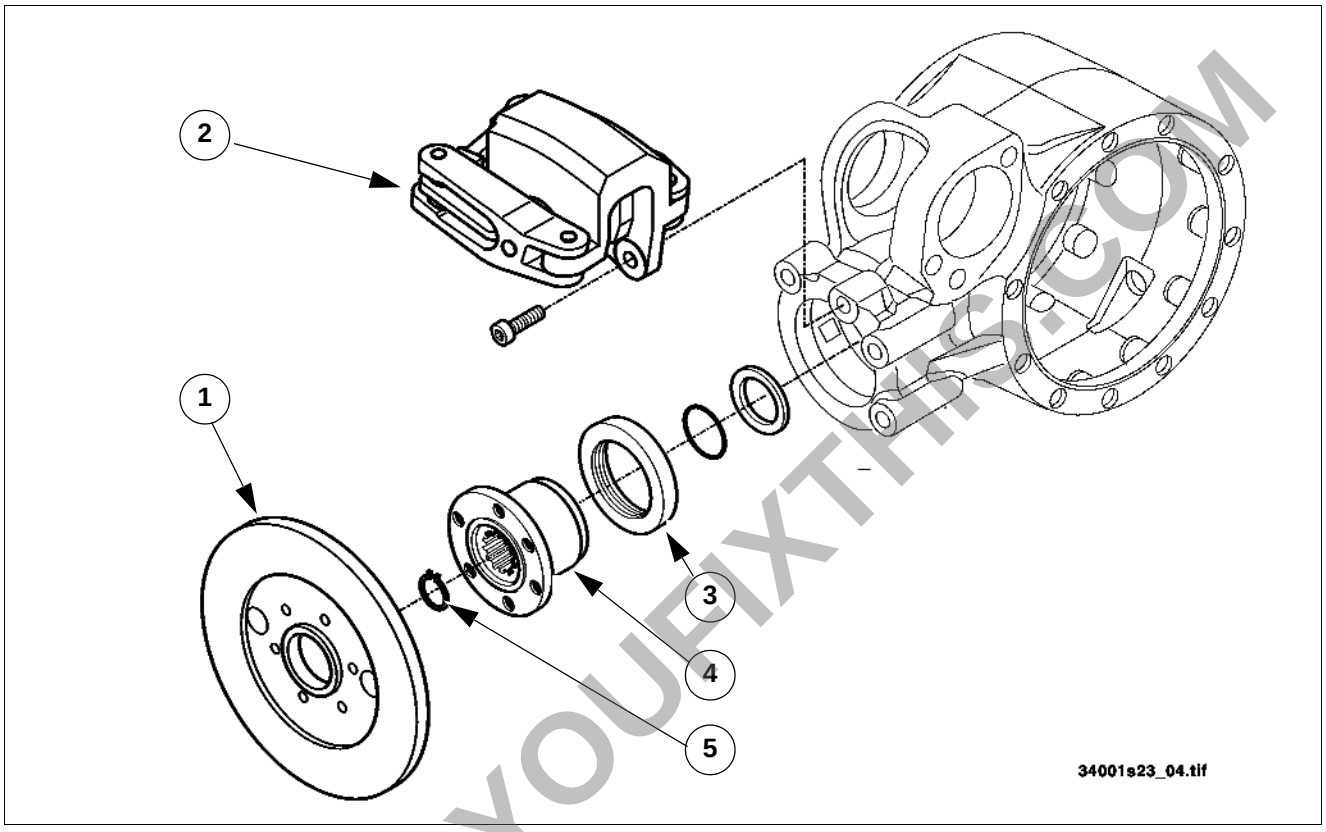


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23.5 Sealing work

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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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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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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00.7 Cleaning the fuel filter

Environment!

Use a container to collect the fuel as it drains and dispose of it in a manner consistent with environmental laws!

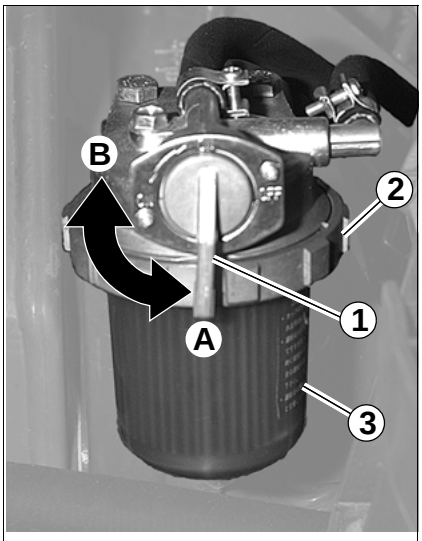


Fig. 1: Fuel filter

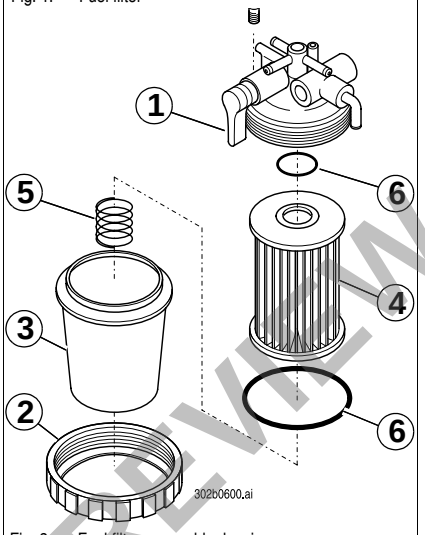


Fig. 2: Fuel filter: assembly drawing

Removing the fuel filter

☞ *Close fuel cock **1**. To do this:*
*Turn the cock from **A** to **B***

☞ *Unscrew union nut **2**.*
***Caution!** The filter housing is filled with fuel*

☞ *Remove filter housing **3***

☞ *Clean filter housing **3** and filter element **4** with diesel fuel*

Mounting the fuel filter

☞ *Mount all elements in the reverse order (fig. **2**)*

IMPORTANT!

To bleed the fuel system more quickly:
Fill filter housing **3** with fuel before mounting it.

☞ *Tighten union nut **2** by hand*

☞ *Open fuel cock **1**. To do this:*
*Turn the cock from **B** to **A***

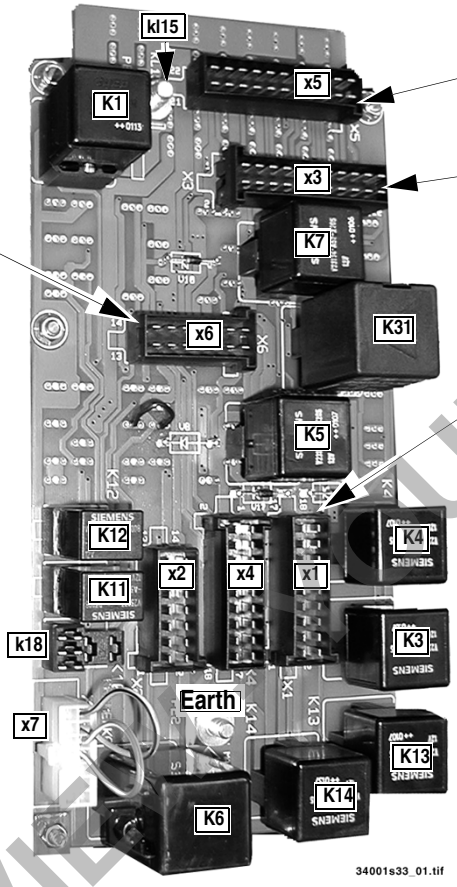
☞ *Bleed the fuel system – see Bleeding the fuel system on page 00-11*

☞ *Make a test run – and check for tightness!*

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33.10 Overview: Board



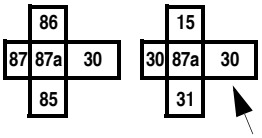
x5/x2/x4
wiring harness 207412

x3 plug (white)
wiring harness/engine – frame
207413

x6 wiring harness/
roof 209336

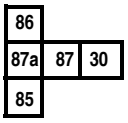
x1 plug (white)
wiring harness/engine – frame
207413

Assignment: plug base
k3, k4, k5, k7, k13, k14, k31



Only k31

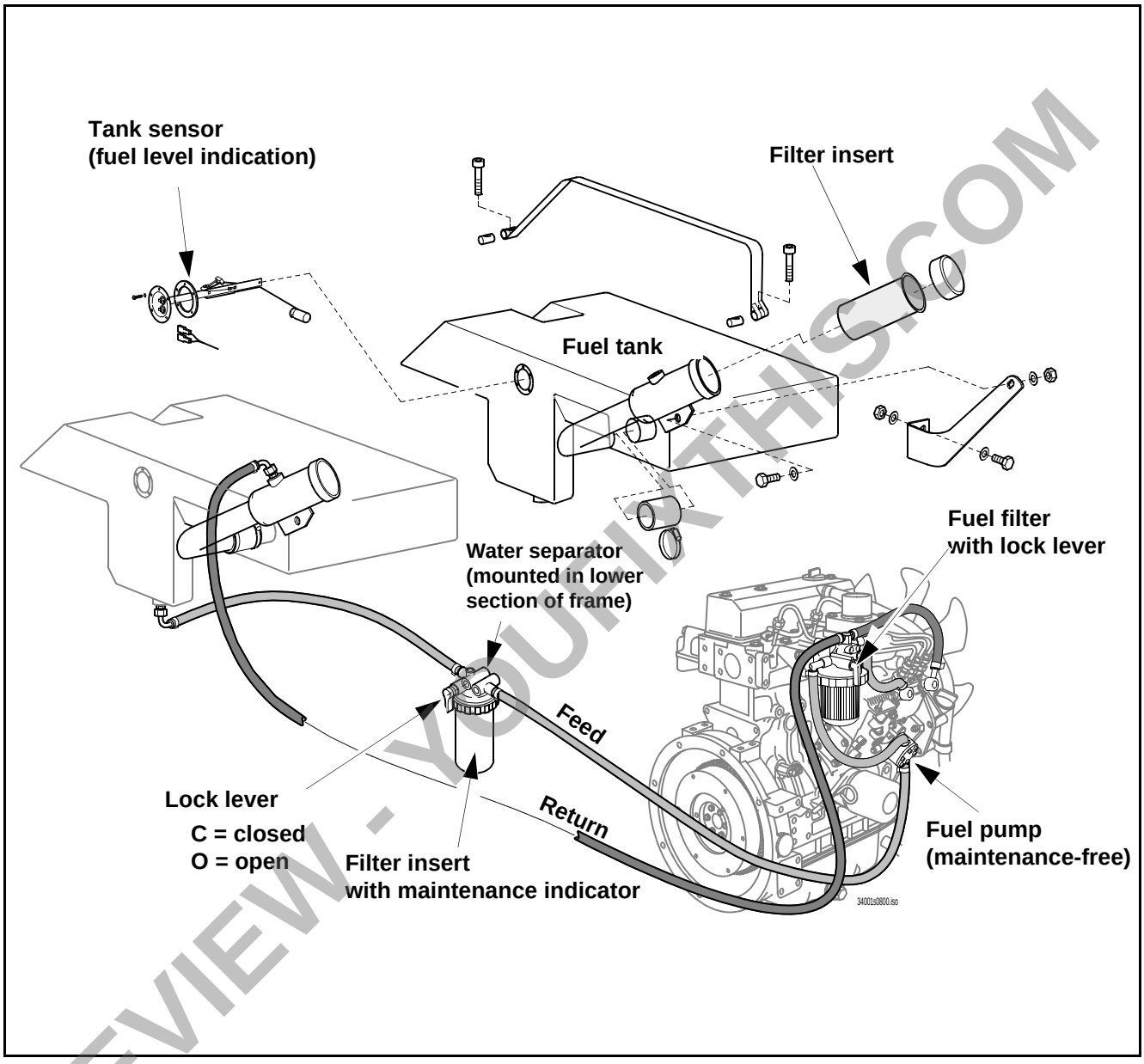
Assignment: plug base
k11, k12



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01.8 Fuel system: overview



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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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22.7.2 Test report model

Model:	Prod. no. variable displacement pump	Prod. no. variable displacement motor	Serial no.

Test conditions:	Rated oil temperature: 122° – 140° F (50° – 60° C) Rated driving direction: forward

See page:	Test features:	Notes:	Rated value: (rpm)	Nominal value: (rpm)	✔
	Min. idling speed		1025 – 1075		
	Max. idling speed		2565 – 2615		
22-9	Boost pressure	Max. engine speeds	435 – 508 psi (30 – 35 bar)		
22-10	Pilot pressure	Max. engine speeds	406 – 464 psi (28 – 32 bar)		
22-11	Starting speeds	2nd range	1200 – 1300		
22-15	High pressure	2nd speed range braked max. engine speeds	5366 – 5511 psi (370 – 380 bar)		
22-12	Hydraulic resist-ance curve	2nd speed range braked at 2000 rpm	Over 4061 psi (280 bar)		
22-14	Engine droop	1st speed range braked max. engine speeds	2250 – 2350		
22-17	Control piston pressure	2nd speed range after braking	3481 psi (240 bar)		
	Wheel speed	Max. engine speeds 19 sec over 100 m	18 km/h = 140 – 150		

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