ME5002
ME6002
ME6502

COMPACT EXCAVATOR

SERVICE MANUAL

Revision A - 09/05

PART #918172

Mustang Manufacturing Company, Inc.

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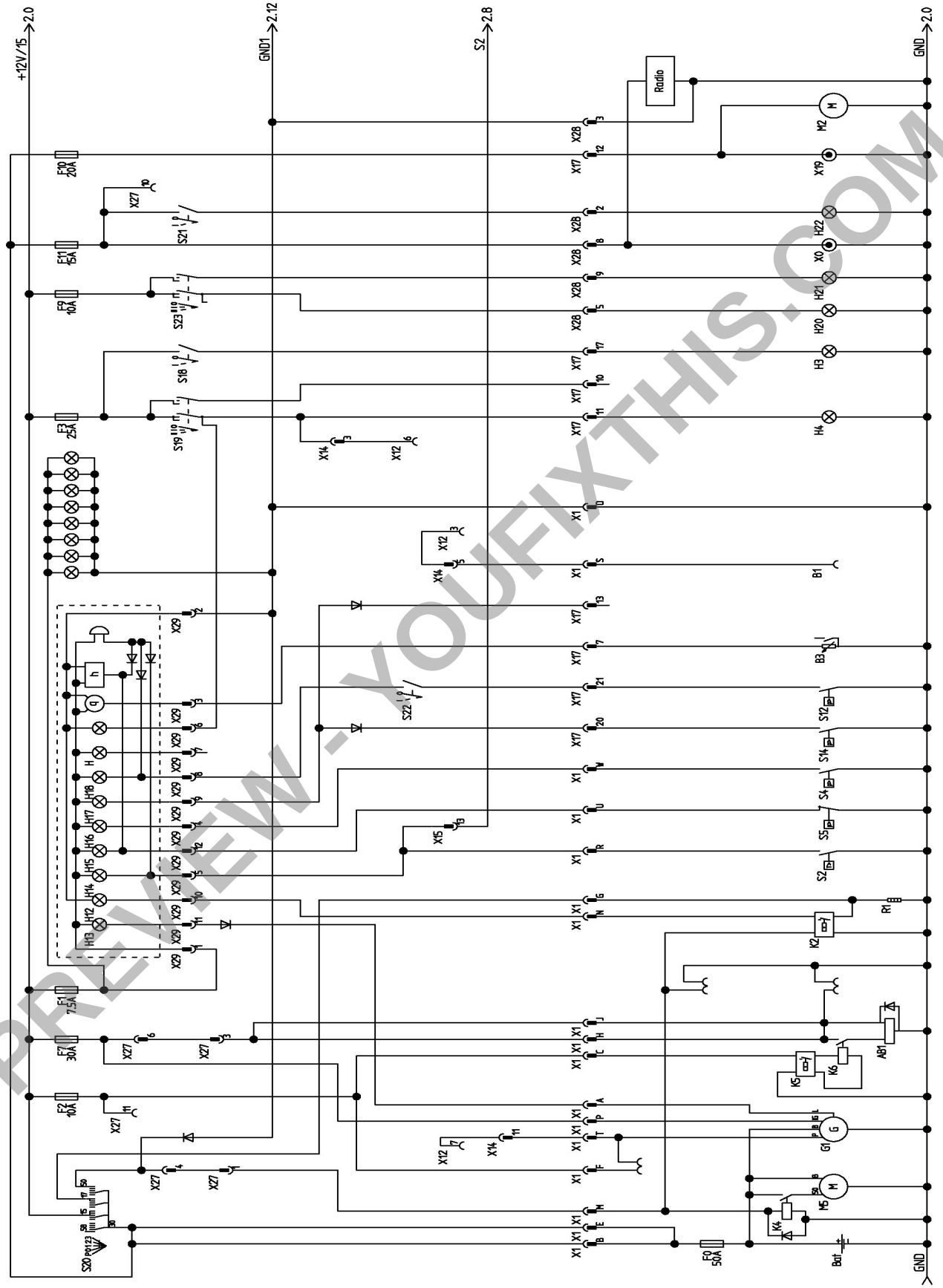
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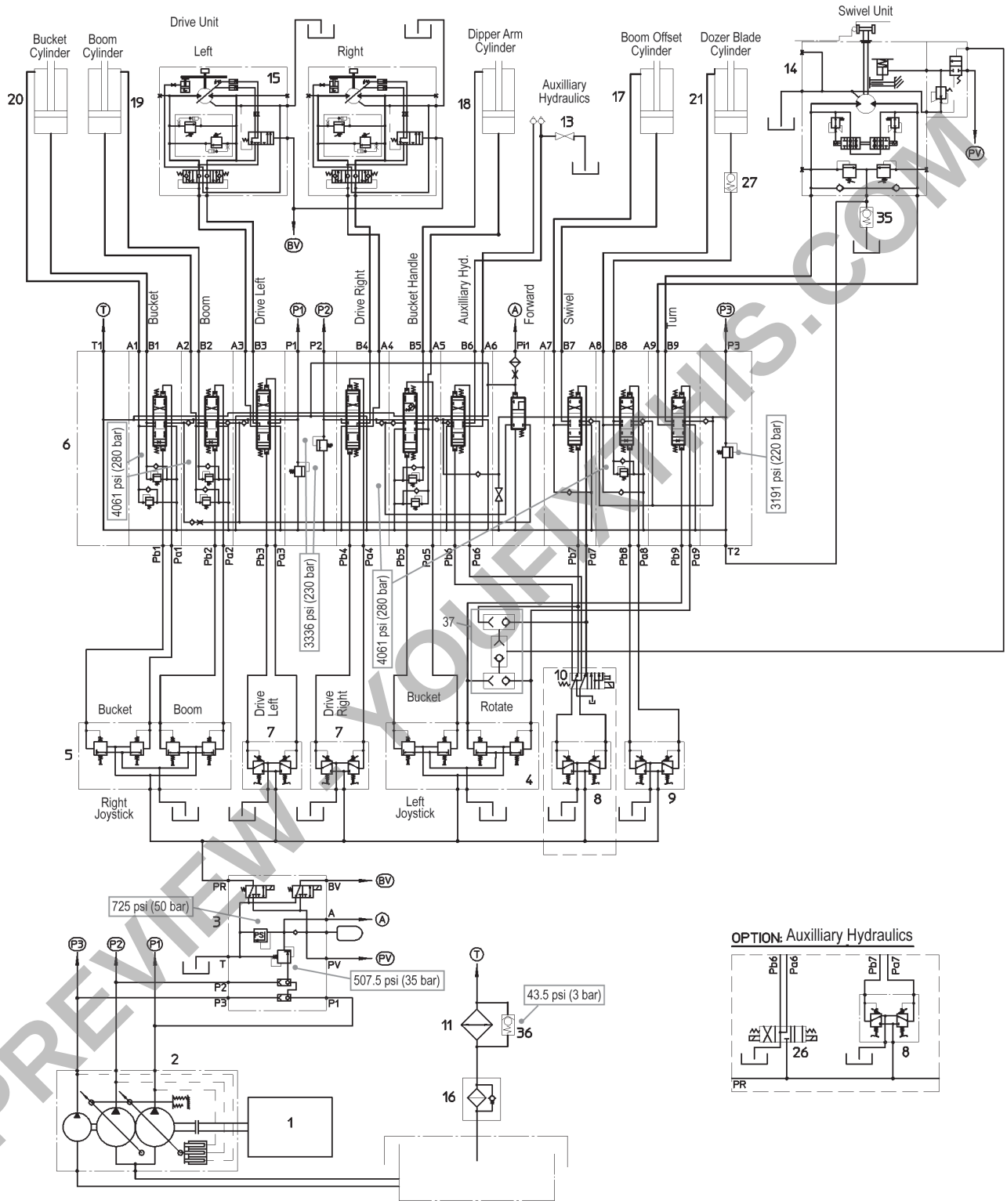
Electrical wiring 5002 (Serial No.: AB00473 and higher)



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Model **5002**

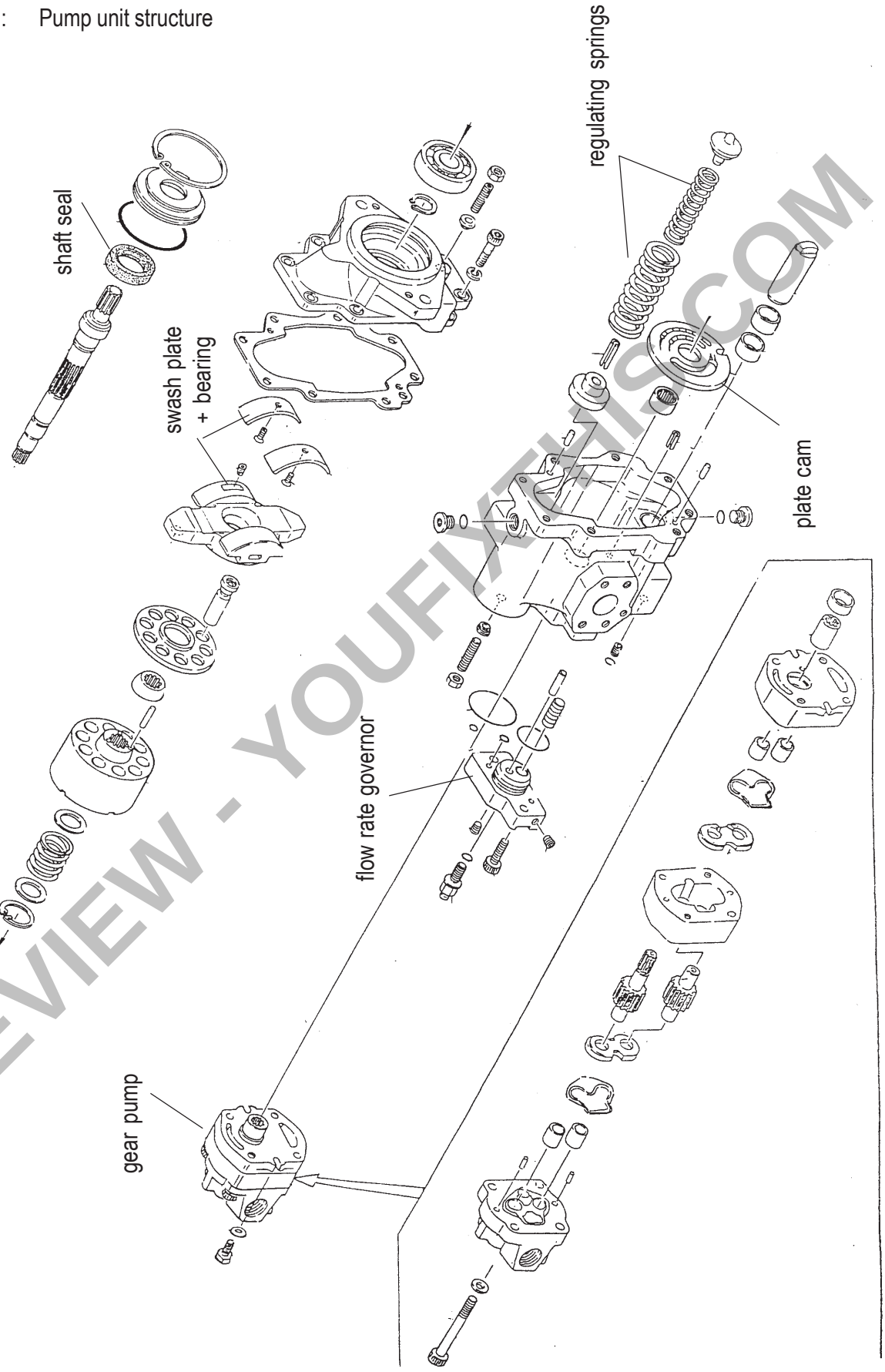


P1 – 3336 psi (230 bar), 13.9 gpm (52.8 L/min)
P2 – 3336 psi (230 bar), 13.9 gpm (52.8 L/min)
P3 – 3191 psi (220 bar), 7.9 gpm (29.8 L/min)
n = 2100min-1

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Fig.: Pump unit structure



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TORQUE SPECIFICATIONS

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

Hydraulic fittings with various seals (light application). All torque values are in lb.-ft. (Nm) unless marked otherwise.

Thread	Straight pipe fitting with thread and screwed plug (GE)			Non-return valve with elastic seal	Identification aid outside Ø
	Sealing washer	Elastic seal	O-ring		
M10X1.0	7 (9)	13 (18)	11 (15)	13 (18)	0.4 in. (10 mm)
M12X1.5	15 (20)	18 (25)	18 (25)	18 (25)	0.5 in. (12 mm)
M14X1.5	26 (35)	33 (45)	26 (35)	26 (35)	0.6 in. (14 mm)
M16X1.5	33 (45)	41 (55)	30 (40)	37 (50)	0.6 in. (16 mm)
M18X1.5	41 (55)	52 (70)	33 (45)	52 (70)	0.7 in. (18 mm)
M22X1.5	48 (65)	92 (125)	44 (60)	92 (125)	0.9 in. (22 mm)
M27X2.0	66 (90)	133 (180)	74 (100)	107 (145)	1.0 in. (27 mm)
M33X2.0	111 (150)	229 (310)	118 (160)	155 (210)	1.3 in. (33 mm)
M42X2.0	177 (240)	332 (450)	155 (210)	266 (360)	1.7 in. (42 mm)
M48X2.0	214 (290)	398 (540)	192 (260)	398 (540)	1.9 in. (48 mm)
G1/8A	7 (9)	13 (18)	11 (15)	13 (18)	0.4 in. (9.73 mm)
G1/4A	26 (35)	26 (35)	22 (30)	26 (35)	0.5 in. (13.16 mm)
G3/8A	33 (45)	52 (70)	33 (45)	37 (50)	0.7 in. (16.66 mm)
G1/2A	48 (65)	66 (90)	41 (55)	48 (65)	0.8 in. (20.96 mm)
G3/4A	66 (90)	133 (180)	74 (100)	103 (140)	1.0 in. (26.44 mm)
G1A	111 (150)	229 (310)	118 (160)	140 (190)	1.3 in. (33.25 mm)
G1 1/4A	177 (240)	332 (450)	155 (210)	266 (360)	1.7 in. (41.91 mm)
G1 1/2A	214 (290)	398 (540)	192 (260)	398 (540)	1.9 in. (47.80 mm)

Hydraulic fittings with various seals (heavy application). All torque values are in lb.-ft. (Nm) unless marked otherwise.

Thread	Straight pipe fitting with thread and screwed plug (GE)			Non-return valve with elastic seal	Identification aid outside Ø
	Sealing washer	Elastic seal	O-ring		
M12X1.5	15 (20)	26 (35)	26 (35)	26 (35)	0.5 in. (12 mm)
M14X1.5	26 (35)	41 (55)	33 (45)	33 (45)	0.6 in. (14 mm)
M16X1.5	33 (45)	52 (70)	41 (55)	41 (55)	0.6 in. (16 mm)
M18X1.5	41 (55)	66 (90)	52 (70)	52 (70)	0.7 in. (18 mm)
M20X1.5	41 (55)	92 (125)	59 (80)	74 (100)	0.8 in. (20 mm)
M22X1.5	48 (65)	100 (135)	74 (100)	92 (125)	0.9 in. (22 mm)
M27X2.0	66 (90)	133 (180)	125 (170)	100 (135)	1.0 in. (27 mm)
M33X2.0	111 (150)	229 (310)	229 (310)	155 (210)	1.3 in. (33 mm)
M42X2.0	177 (240)	332 (450)	243 (330)	266 (360)	1.7 in. (42 mm)
M48X2.0	214 (290)	398 (540)	310 (420)	398 (540)	1.9 in. (48 mm)
G1/8A	26 (35)	41 (55)	33 (45)	33 (45)	0.5 in. (13.16 mm)
G1/4A	33 (45)	59 (80)	44 (60)	44 (60)	0.7 in. (16.66 mm)
G3/8A	48 (65)	85 (115)	55 (75)	74 (100)	0.8 in. (20.96 mm)
G1/2A	66 (90)	133 (180)	125 (170)	107 (145)	1.0 in. (26.44 mm)
G3/4A	111 (150)	229 (310)	229 (310)	192 (260)	1.3 in. (33.25 mm)
G1A	177 (240)	332 (450)	243 (330)	266 (360)	1.7 in. (41.91 mm)
G1 1/4A	214 (290)	398 (540)	310 (420)	398 (540)	1.9 in. (47.80 mm)

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4. HYDRAULIC SYSTEM

General instructions:
- Always bleed the hydraulic system before performing maintenance and repair work.
- For hydraulic settings, please refer to the Technical Data chapter.
- Before each pressure test the device must be at operating temperature—hydraulic oil temperature at least 122°F (50°C).
- Primary pressure limiting valves (PPLV) must be adjusted at maximum engine speed. (Refer to the Technical Data chapter).
- The pressure drop [(Δ [delta] P) between maximum (full throttle) and minimum (idle) diesel engine speed)] is tested at unloaded condition.

> PRESSURE TEST

4.2 Gear Pump P1 Pressure Test

Functions: **boom, bucket, driving left**

4.2.1 Check **setting of PPLV 1**:

a) Connect pressure gauge to **measuring port MP 1.**
b) With the engine at maximum speed, move **boom cylinder** at bottom side to stop.
c) Check and record the pressure.

4.2.2 Check **pressure of drop**:

d) Move boom cylinder at bottom side to stop at maximum diesel engine speed (item b).
e) **Reduce** diesel engine speed **quickly from maximum to minimum speed -** check and record the **pressure.**
f) Calculate the pressure drop: maximum speed pressure minus the minimum speed pressure. The pressure drop should not exceed more than 10% of the setting. (Approximate value—only applicable to primary pressure limiting valves.) An excessive pressure drop could indicate leakage.
f) Check the setting and pressure drop of function boom rod side, bucket bottom side/rod side. driving left forward / reverse as described in items 4.2.1 and 4.2.2.
g) If any values deviate from factory settings, set the correct pressure at the primary pressure limiting valve (PPLV 1) at the main valve block and repeat items a - f.
h) An excessive pressure drop might indicate leakage (Example: defective O-ring in secondary valve, etc.)

4.3 Pressure Test of Gear Pump 2

Functions: **dipper stick, driving right, auxiliary hydraulics**

4.3.1 Check **setting of PPLV 2**:

i) Connect pressure gauge to **measuring port MP 2.**
j) With the engine at maximum speed, move the **dipper arm** at bottom side to stop.
k) Check and record the pressure and pressure drop.

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5. DIESEL ENGINE

	Excavator Model	5002	6002	6502

SPECIFICATION:

1	Diesel engine model	Yanmar **4TNE88-ENSW**	Yanmar **4TNE98-NSR**	
2	Starting with Serial No.:	**0000989/98**	**0000771/98**	**0000708/98**
3	Type	Vertical, 4-cycle water-cooled diesel engine		
4	Intake system	Natural aspiration		
5	Combustion system	Direct injection system		
6	Glow system	Preheater, time relay controlled		
7	Direction of rotation	Counterclockwise (viewed from flywheel)		
8	Governor	Mechanical centrifugal governor		
9	Lubrication system	Forced lubrication with trochoid pump		
10	Starting system	Electrical		
11	Cooling system	Water-cooled / Intake fan		

DATA:

12	Max. revolution speed (full throttle) - no load (rpm)	**2500** +50 / -50	**2300** +50 / -50
14	Rated speed (rpm)	**2400** +25 / -25	**2100** +25 / -25
15	Min. revolution speed (idle) - no load (rpm)	**1100** +50 / -50	**1100** +50 / -50
16	Displacement (Bore x Stroke)	134 cu. in. (2189 cc) (88x90)	202 cu. in. (3319 cc) (98x110)
17	Output (at rated speed, 14)	38 hp (28.4 Kw)	58.7 hp (43.8 Kw)
18	Max. engine output	48.3 hp (36 Kw)	96 hp (51.5 K)
19	No. of cylinders	4	
20	Valve clearance (IN=OUT)	0.0006 - 0.001" (0.15 - 0.25 mm)	
21	Compression ratio	18.0	
22	Fuel injection timing	14° +/-1°	11° +/-1°
23	Fuel injection pressure	3191 - 3336 psi (220 - 230 bar)	
24	Compression pressure	508 +/- 14.5 psi (35 +/-1 bar) at 250 rpm	
25	Engine oil pressure (rev. speed level)	43.5 - 48 psi (3.0 - 4.0 bar)	
26	Pressure switch engine oil pump	5.8 - 8.7 psi (0.4 - 0.6 bar)	
27	Thermostat opening temperature	157° - 162.5° F (69.5° - 72.5° C)	160° - 185° F (71° - 85° C)
29	Thermo switch On / Out	224.6° - 235.4° F (107° - 113° C) / Above 212° F (100° C)	
30	Firing order	1-3-4-2	
31	Alternator power (Standard)	40A / 12V	
32	Battery	12V / 88Ah	
33	V-Belt measurings	0.5 x 39.3" (12.5 x 1000 mm)	0.5 x 42.9" (13 x 1090 mm)

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1. MAINTENANCE SCHEDULE Gehl **5002 - 6002**

Servicing activity component	every 10 h (daily)	every 50 h (weekly)	every 250 h (6 months)	every 500 h (12 months)	every 1000 h (18 months)	annual
Diesel engine						
Oil level	O					
Fuel level	O					
Leakage	O					
Visual check	O					
Air filter	O/X			<>		<>
Seating of mounting bolts		O				
Coolant	O					
Engine speed regulation			O			
Exhaust system			O			
Engine oil	O	<>(1)	<>			<>
Oil filter		<>(1)	<>			<>
V-belt: condition and tension		O				
Cooler fins		X				
Valve clearance		O			O	
Generator, starter					O	
Fuel tank					X	
Water pump					O	
Fuel filter		O	<>			<>
Cooling system and hoses				O		
Electrical connections				O		
Pre-heat glow system				O		
Coolant thermostat				O		
Battery fluid		O				

O - Check
X - Clean
<> - Change/Replace
<> (1) - Change/Replace the first time

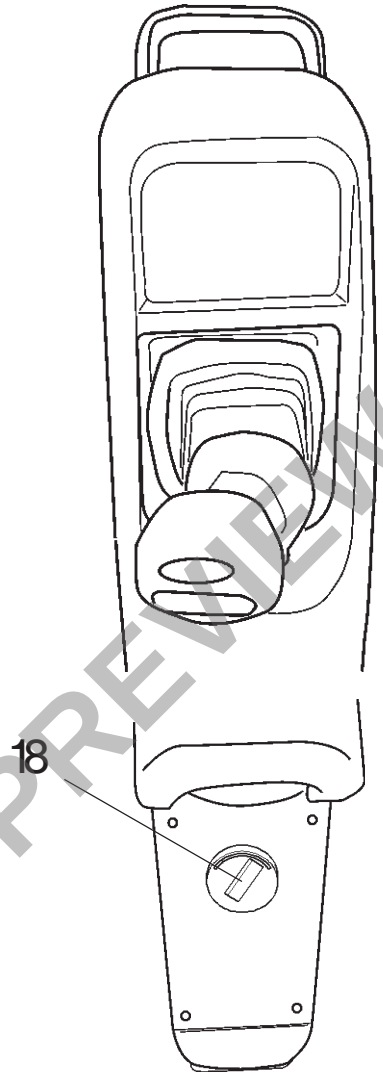
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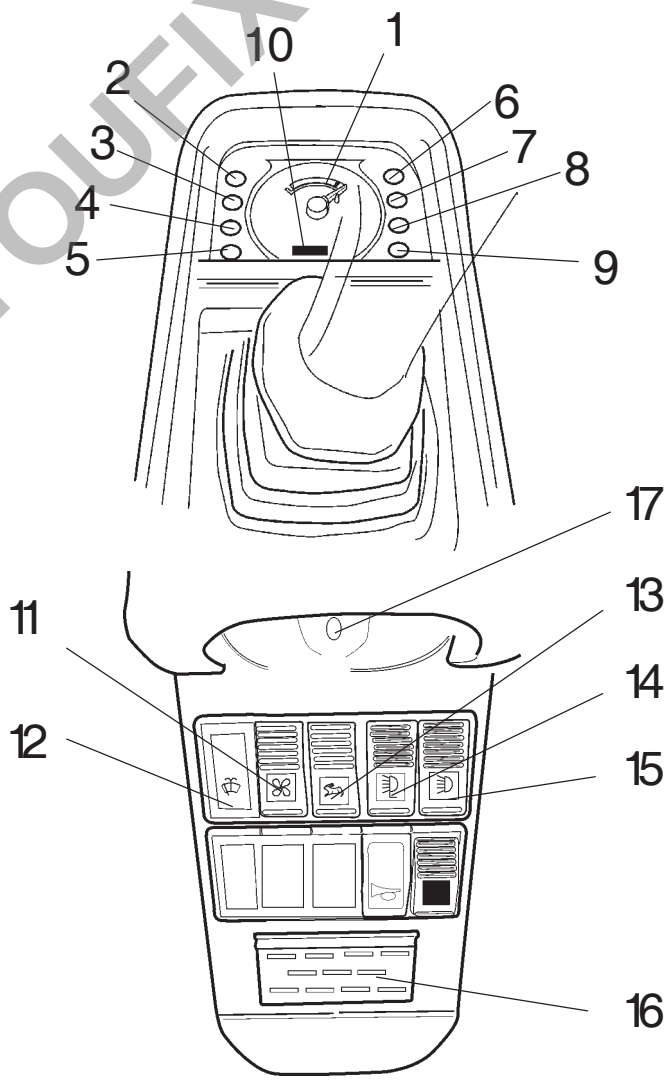
Pict.: **Component designation joystick consoles**

1 Fuel gauge
2 Charge indicator
3 Oil pressure
4 Coolant temperature warning signal
5 Clogged air filter
6 Glow plug indicator
7 Clogged hydraulic filter (optional)
8 Overload warning indicator
9 Light indicator (lights on/off)
10 Operating hours counter
11 Heater switch
12 Windshield wiper/ washer switch
13 Overdrive
14 Switch for work lights
15 Switch for chassis lights
16 Fuse box
17 Ignition key
18 Cold/ warm adjustment

Left joystick console



Right joystick console



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Electrical system component positions E6
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Electrical connections E21
Fuse box E27

F Operating Elements

Machine overview F2
Component description F3
Cab equipment and controls F4
Lifting the excavator F10

Abbreviations:

AP	...	Adjustment point
MP	...	Measuring point
PPLV	...	Primary - pressure limiting valve
SPLV	...	Secondary - pressure limiting valve
TT	...	Tightening torque
Pb1	...	Port code of the hydraulic diagram

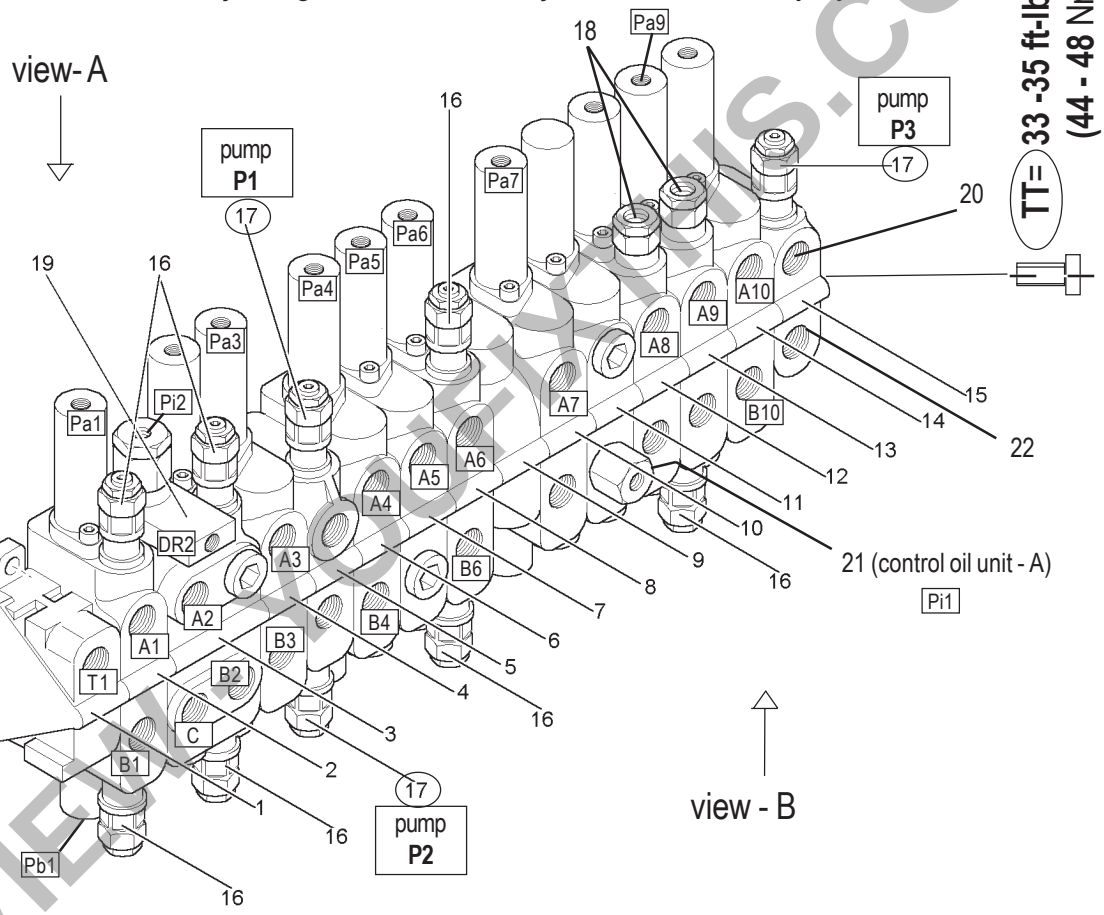
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Model **6002 :**

Type: 5108300

Features:
- regeneration function of dipper stick
- summation function lifting of boom
- leakage-free shut-off spool valve for boom down
- function drive counterbalancing
- adjusting screw oil flow adjustment of auxiliary hydraulics



1	stank 1 output section	12	boom offset section
2	bucket section	13	dozer blade section
3	boom 1 section	14	swivelling section
4	right driving section	15	input section P3
5	input section P1,P2	16	secondary pressure limiting valve
6	left driving section	17	primary pressure limiting valve (AP)
7	boom 2 section	18	suction valves
8	dipper arm section	19	leakage-free shut-off valve
9	oil flow adjustment section (AH)	20	tank 2
10	auxiliary hydraulics section (AH)	21	port drive counter-balancing system
11	drive counter-balancing section	22	port P3

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