ME1503, ME1903, ME2203

COMPACT EXCAVATORS

SERVICE MANUAL

Revision A - 04/05

PART #918174

Mustang Manufacturing Company, Inc.

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1. DIMENSIONS

Dimensions

	ME1503 Yanmar 3TNE68ENSR	***ME1503*** Yanmar 3TNE74ENSR2	***ME1503*** Yanmar 3TNV76-SNS
Starting with Serial No.	**AB00440**	**AC00304**	**AE00001**
Dimensions (H x W x L)	7' 9-3/4" x 3' 3" x 8' 10-3/8" (2380 x 990 x 2700 mm)	7' 9-3/4" x 3' 3" x 8' 10-3/8" (2380 x 990 x 2700 mm)	7' 9-3/4" x 3' 3" x 8' 10-3/8" (2380 x 990 x 2700 mm)
Axle Distance	48-1/4" x 63-1/4" (1223 x 1605 mm)	48-1/4" x 63-1/4" (1223 x 1605 mm)	48-1/4" x 63-1/4" (1223 x 1605 mm)
Transport Length	12' 6" (3810 mm)	12' 6" (3810 mm)	12' 6" (3810 mm)
Boom Swing Angle (Left/Right)	80°/45°	80°/45°	80°/45°
Minimum Front Boom Swing Radius	5' 1-1/4" (1555 mm)	5' 1-1/4" (1555 mm)	5' 1-1/4" (1555 mm)
Tilt Angle Uppercarriage	N/A	N/A	N/A
Maximum Ground Clearance	7.9" (200 mm)	7.9" (200 mm)	7.9" (200 mm)
Undercarriage Width	3' 3" x 4' 3-1/4" (990—1300 mm)	3' 3" x 4' 3-1/4" (990—1300 mm)	3' 3" x 4' 3-1/4" (990—1300 mm)
Track Width (Standard)	9" (230 mm)	9" (230 mm)	9" (230 mm)
Maximum Dump Height (Standard)	8' 4-1/4" (2545 mm)	8' 4-1/4" (2545 mm)	8' 4-1/4" (2545 mm)
Maximum Dump Height with Optional Long Dipper Arm	8' 9" (2665 mm)	8' 9" (2665 mm)	8' 9" (2665 mm)
Maximum Dig Height (Standard)	11' 6" (3500 mm)	11' 6" (3500 mm)	11' 6" (3500 mm)
Maximum Dig Height with Optional Long Dipper Arm	11' 10-1/2" (3620 mm)	11' 10-1/2" (3620 mm)	11' 10-1/2" (3620 mm)
Maximum Dig Radius (Standard)	12' 4-1/2" (3770 mm)	12' 4-1/2" (3770 mm)	12' 4-1/2" (3770 mm)
Maximum Vertical Dig Depth (Standard)	4' 10-3/4" (1490 mm)	4' 10-3/4" (1490 mm)	4' 10-3/4" (1490 mm)
Maximum Dig Depth (Standard)	7' 2" (2185 mm)	7' 2" (2185 mm)	7' 2" (2185 mm)
Minimum Tail Swing Radius	3' 9-3/4" (1160 mm)	3' 9-3/4" (1160 mm)	3' 9-3/4" (1160 mm)
Dozer Blade Dimensions (W x H) (Standard)	3' 3" x 10" (990 x 260 mm)	3' 3" x 10" (990 x 260 mm)	3' 3" x 10" (990 x 260 mm)
Dozer Blade Maximum Lift ... Ground (Above/Below)	10"/9" (260 mm/230 mm)	10"/9" (260 mm/230 mm)	10"/9" (260 mm/230 mm)
Track Rollers/Guide Rollers (Number Per Side)	3 pcs.	3 pcs.	3 pcs.
Operation Weight with Cab	3759 lbs. (1705 kg)	3759 lbs. (1705 kg)	3759 lbs. (1705 kg)
Operation Weight with Canopy	3583 lbs. (1625 kg)	3583 lbs. (1625 kg)	3583 lbs. (1625 kg)
Ground Pressure (Standard)	3.8 psi (0.27 kg/cm²)	3.8 psi (0.27 kg/cm²)	3.8 psi (0.27 kg/cm²)
Gradability	30°/58%	30°/58%	30°/58%
Noise Level (LWA)	93 dB (A)	93 dB (A)	93 dB (A)
Noise Level (LPA)	77 dB (A)	77 dB (A)	77 dB (A)
Travel Speed (Drive)	1.7—3.5 mph (2,8—5,6 km/h)	1.7—3.5 mph (2,8—5,6 km/h)	1.7—3.5 mph (2,8—5,6 km/h)
Tear-Out Force Per Bucket Tooth	252 psi (1735 kPa)	252 psi (1735 kPa)	252 psi (1735 kPa)
Maximum Dipper Arm Tear-Out Force (Standard)	150 psi (1038 kPa)	150 psi (1038 kPa)	150 psi (1038 kPa)
Uppercarriage Slew (Swivel) Speed	10 rpm	10 rpm	10 rpm

Explanation:

O = Optional

N = Not Available/Not Applicable

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1. MAINTENANCE SCHEDULE Mustang ME1503—2203

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)	Annually
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	
Alternator, Starter					O	
Fuel Tank					X	
Water Pump					O	
Fuel Filter		O	<>			<>
Cooling System and Hoses				O		
Electrical Connections				O		
Glow Plug System				O		
Coolant Thermostat				O		
Battery Fluid		O				

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

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3. HYDRAULIC SYSTEM

Pressure Test

> 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 Technical Data chapter).
- The pressure drop (delta P between maximum and minimum diesel engine speed) is tested at unloaded condition.

3.1 Pressure Test of Variable Displacement Pump P1

Functions: boom, bucket, driving right

3.1.1 Check Setting 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.

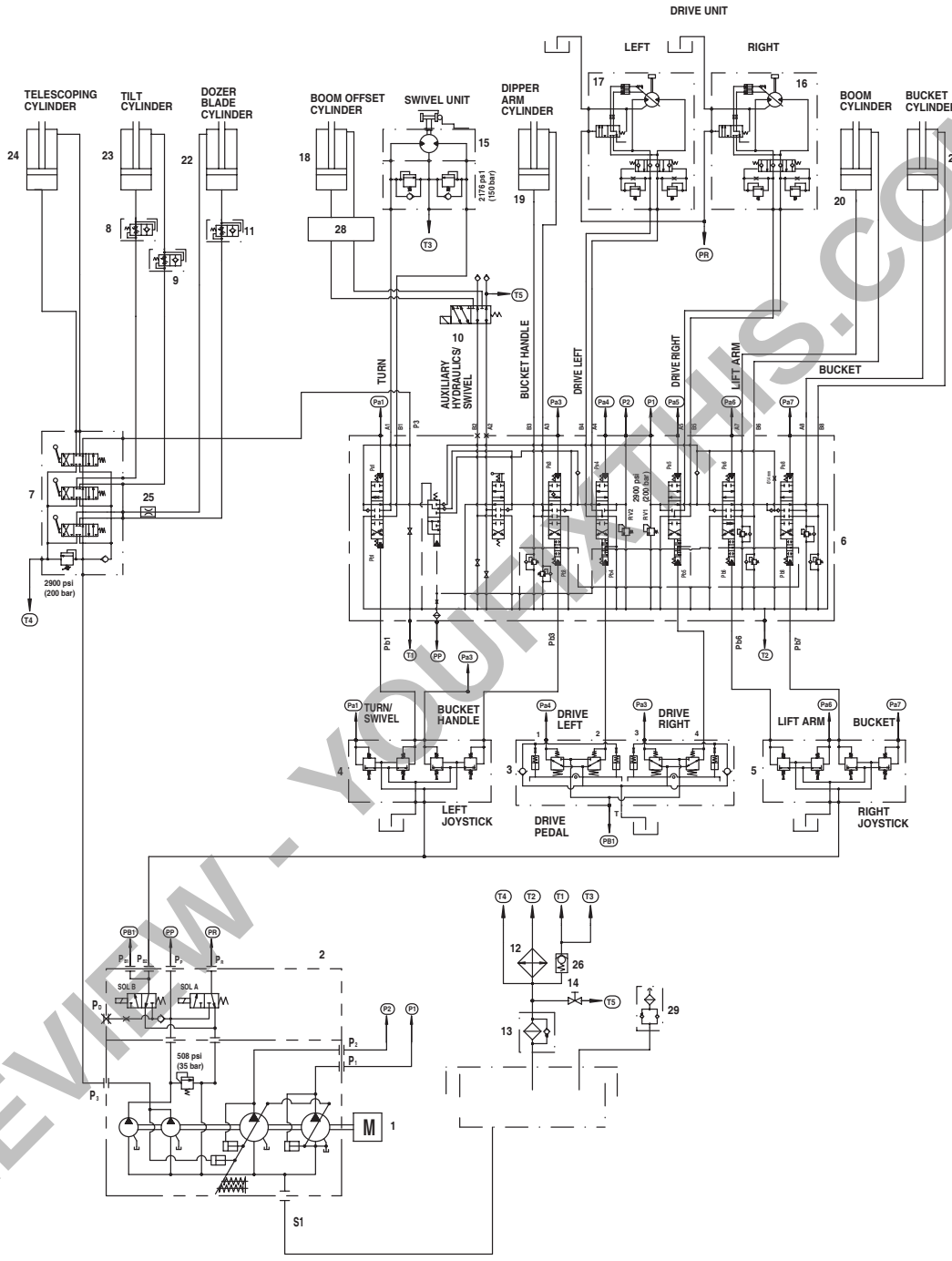
3.1.2 Check Pressure Drop:

a) Move boom cylinder at bottom side to stop at maximum diesel engine speed (item b).
b) Reduce diesel engine speed quickly from maximum to minimum speed—check and record the pressure.
c) 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.
d) Check the setting and pressure drop of function boom rod side, bucket bottom side/rod side, driving right forward/reverse.
e) If any settings deviate from factory settings, set the correct pressure at the primary pressure limiting valve (PPLV 1) at the main valve block and repeat items 3.2.1 and 3.2.2, a—c.
f) An excessive pressure drop might indicate leakage (example: defective O-ring in secondary valve, etc.).

3.2 Pressure Test of Variable Displacement Pump 2

Functions: dipper arm, driving left, auxiliary hydraulics

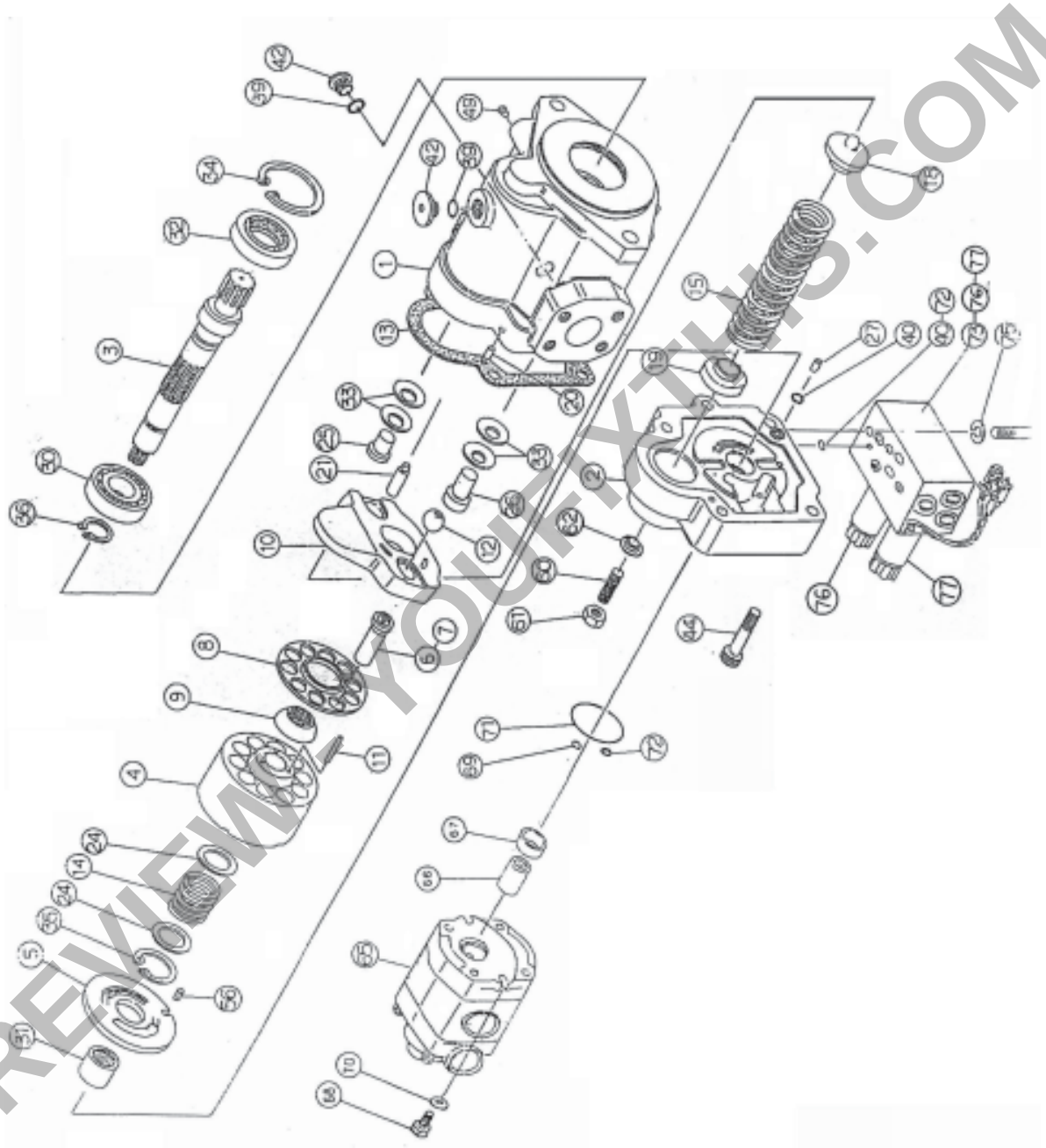
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Exploded View—Double Axial and Gear Pump ME1503/1903/2203



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Electrical Diagram Legend (Starting with Serial No. AC01876)

Name	Description
AB1	Stop Soleniod
B2	Horn
B3	Fuel Level Sensor
F1	Lights Arm, Cab
F2	12V/30 Cab
F3	Rotating Beacon
F4	Plug Socket
F5	Res
F6	Windshield Wiper
F7	12V/15 Cab
F8	Light Switch
F9	High Speed Valve
F10	Valves
F11	Heating Fan, Horn
FG	Main Fuse
G1	Alternator
H3	Arm Light
H12	Preheat Light
H13	Load Control Light
H14	Engine Temperature Light
H15	Engine Oil Pressure Light
H16	Air Filter Restriction Light
H17	Hydraulic Oil Filter Restriction Light
H18	Overload Warning Light
H19	Interior Cab Lighting
H20	Cab Roof Light, Front
H21	Cab Roof Light, Rear
H22	Rotating Beacon
K2	Glow Plug Relay (10 second)
K4	Start Relay
K5	Engine Stop Timer Soleniod
K6	Engine Stop Soleniod
M1	Heater Fan
M5	Starter Motor
M6	Windshield Wiper
M7	Windshield Washer

Name	Description
R1	Preheating
S2	Water Temperature Switch
S4	Air Filter Restriction Switch
S5	Engine Oil Pressure Switch
S6	3rd Hydraulic Circuit Button
S7	Boom Swing/Extend Hydraulics Button
S8	3rd Hydraulic Circuit Button
S10.1	Right Safety Switch
S10.2	Left Safety Switch
S11	High Gear Switch
S12	Overload Warning System Pressure Switch
S14	Hydraulic Oil Filter Restriction Switch
S15	Windshield Washer System
S16	Heater Fan Switch
S17	High Gear Switch
S18	Roof Light Switch
S19	Front/Side Light Switch
S20	Ignition Switch
S21	Rotating Beacon Switch
S22	Overload Warning System Switch
S23	Roof Light Switch
X0	Cigarette Lighter
X1	Main Connector, Engine Wiring Harness
X2	Main Connector, Engine Wiring Harness
X4	Engine Relay
X5	Alternator Load Control
X6	Alternator Main (Positive)
X9	Starter Main (Positive)
X10	Starter Soleniod
X17	Main Connector, Arm Rest Wiring Harness
X18	Ground
X19	Plug Socket
X26	Horn Button Connector
X27	Anti-Theft Device Connector
X28	Cab Connector
X29	Instrument Panel Connector
Y2	Boom Swing/Extend Hydraulic Valve
Y3	3rd Hydraulic Circuit
Y4	3rd Hydraulic Circuit
Y5	Safety Valve
Y6	High Speed Valve

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TORQUE SPECIFICATIONS

Note: *Use these torque values when tightening **MUSTANG** 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. (13 mm)
M14X1.5	26 (35)	33 (45)	26 (35)	26 (35)	0.6 in. (15 mm)
M16X1.5	33 (45)	41 (55)	30 (40)	37 (50)	0.6 in. (15 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. (25 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. (43 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. (10 mm)
G1/4A	26 (35)	26 (35)	22 (30)	26 (35)	0.5 in. (13 mm)
G3/8A	33 (45)	52 (70)	33 (45)	37 (50)	0.7 in. (18 mm)
G1/2A	48 (65)	66 (90)	41 (55)	48 (65)	0.8 in. (20 mm)
G3/4A	66 (90)	133 (180)	74 (100)	103 (140)	1.0 in. (25 mm)
G1A	111 (150)	229 (310)	118 (160)	140 (190)	1.3 in. (33 mm)
G1 1/4A	177 (240)	332 (450)	155 (210)	266 (360)	1.7 in. (43 mm)
G1 1/2A	214 (290)	398 (540)	192 (260)	398 (540)	1.9 in. (48 mm)

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PLV = Pressure Limiting Valve PRV = Pressure Reducing Valve

(1) Note: Pressure settings correspond with the serial no. of your excavator. Always compare with the pressure setting in the Technical Data chapter.
(2) Note: Setting correct only without secondary pressure limiting valves.
(3) Function Swivel: See Technical Data and Maintenance chapters.
(4) See Technical Data chapter, Different Settings.

ME1503
Mustang

Serial No:	**AC 01264**
Work hrs/Date	50 Std /
Checked by	

PRESSURE CHECK
Mustang Excavators

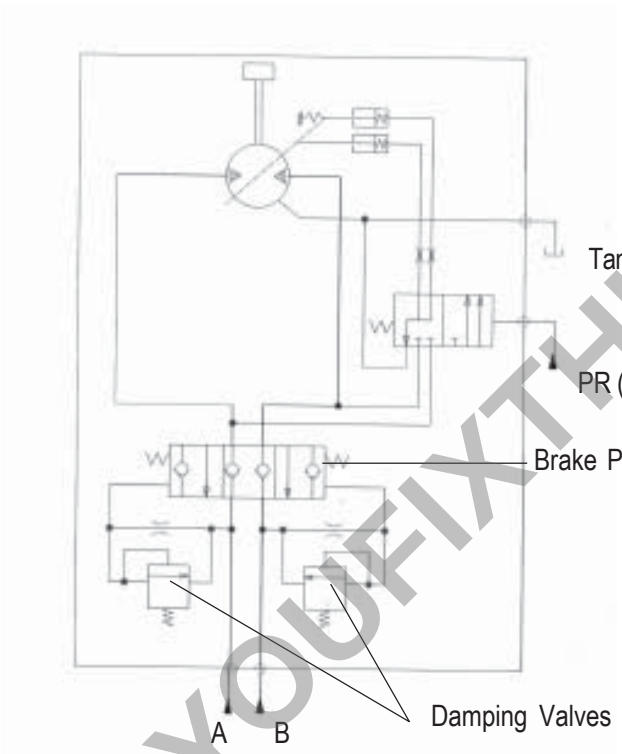
Function	Motion	Symbol	Press. limit. valve	Measuring point	Settings (1)	Checked	OK?
PUMP 2							x
Auxiliary Hydraulics/ Boom Offset	A		Primary Pressure Limiting Valve **PPLV 2** (Main Valve Block)	Measuring Point **MP 2** (Main Valve Block)	Setting (2):	2901 ±44 psi (200 ±3 bar)	>	
					Fall:	N/A	>	
	B				Setting (2):	2901 ±44 psi (200 ±3 bar)	>	
					Fall:	N/A	>	
PUMP 3								x
Dozer Blade Cylinder Telescopic Cylinder	UP/OUT		Primary Pressure Limiting Valve **PPLV 3** (Dozer Blade Valve)	Measuring Point **MP 3** (Main Valve Block)	Setting	2901 ±44 psi (200 ±3 bar)	>	
					Fall	290 psi (20 bar)	>	
	DOWN/IN				Setting	2901 ±44 psi (200 ±3 bar)	>	
					Fall	290 psi (20 bar)	>	
Swivel Motor	LEFT		Secondary Pressure Limiting Valve **SPLV 4** (Swivel Motor)	/ (Swivel Motor) (3)	Setting (4):	1813 +334/-0 psi (125 +23/-0 bar)	>	
					Fall	N/A	>	
	RIGHT				Setting (4):	1813 +334/-0 psi (125 +23/-0 bar)	>	
					Fall	N/A	>	
PILOT SYSTEM								x
Joystick	All		Pressure Reducing Valve **PRV 5** (Pilot Oil Supply Unit)	Measuring Point **MP 4** Pilot Oil Supply Unit	Setting	435 ±29 psi (30 ±2 bar)		
					Fall	N/A		

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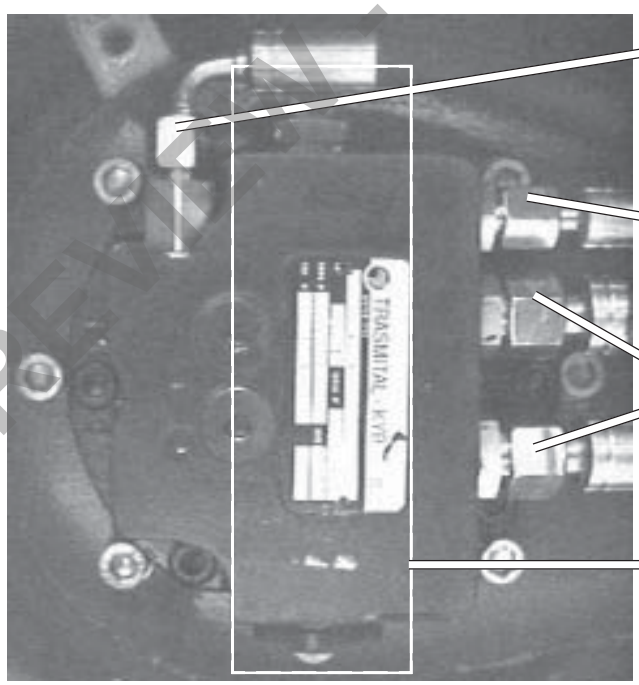
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8. DRIVE UNIT

Type: ME1503: MAG 12-V
ME1903—2203: MAG 16-V



Driving Motor Port Assignment



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