

GROVE

SERVICE MANUAL

This Manual has been prepared for and is considered part of -

3339F & YB4409-2

Crane Model Number

Crane Serial Number

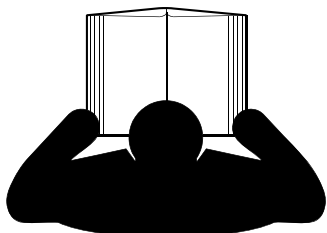
This Manual is Divided into the following Sections:

SECTION 1	INTRODUCTION
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SECTION 3	ELECTRIC SYSTEM
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SECTION 5	PREVENTATIVE MAINTENANCE
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NOTICE

The crane serial number is the only method your distributor or the factory has of providing you with correct parts and service information.

The crane serial number is identified on the builder's decal attached to the operator's cab. **Always furnish crane serial number** when ordering parts or communicating service problems with your distributor or the factory.



WARNING

To prevent death or serious injury:

- Avoid unsafe operation and maintenance.
- This crane must be operated and maintained by trained and experienced personnel. Manitowoc is not responsible for qualifying these personnel.
- Do not operate or work on this crane without first reading and understanding Operator's Manual and Rating Plate supplied with crane.
- Store Operator's Manual in holder provided on crane.
- Attach laminated Capacity Charts supplied with crane to chain in operator's cab.
- If Operator's Manual or Capacity Charts are missing from cab, contact your distributor for new ones.

Adjustable Straight**Table 1-5****Adjustable Straight Thread O-ring**

ADJUSTABLE STEEL STR. THREAD O-RING FITTINGS	
SAE SIZE	(F.F.F.T.)
2	1.0 ± 0.25
3	1.0 ± 0.25
4	1.5 ± 0.25
5	1.0 ± 0.25
6	1.5 ± 0.25
8	1.5 ± 0.25
10	1.5 ± 0.25
12	1.5 ± 0.25
14	1.5 ± 0.25
16	1.5 ± 0.25
20	2.0 ± 0.25
24	2.0 ± 0.25
32	2.0 ± 0.25

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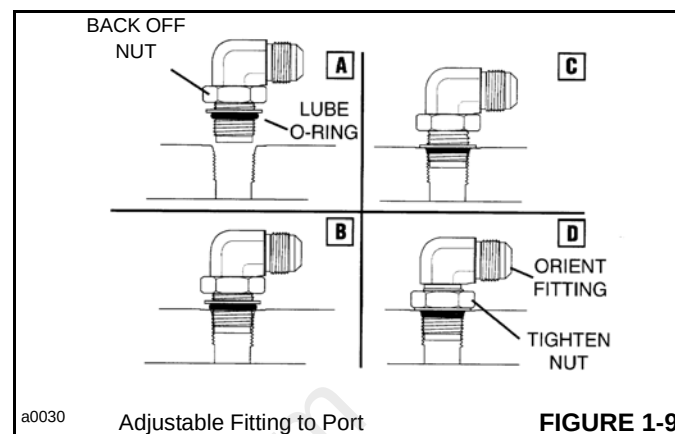
Thread O-ring Fitting - Fitting to Port (Table 1-5)

1. Inspect both mating parts for burrs, nicks, scratches, or foreign particles.
2. Lubricate O-ring with a light coat of clean oil (Figure 1-9A).
3. Back off locknut as far as possible (Figure 1-9A).
4. Screw fitting into port by hand until the backup washer contacts face of port and is pushed all the way towards the locknut (Figure 1-9B).
5. To orientate the fitting, unscrew the fitting the required amount, but not more than one full turn (Figure 1-9C).
6. Hold the fitting in the desired position and tighten the nut (Figure 1-9D) following the F.F.F.T. method, See F.F.F.T. METHOD (Flats from Finger Tight) starting with step 4.

Nonadjustable Straight Thread O-ring Fitting - Fitting to Port (Table 1-6)

1. Make sure both threads and sealing surfaces are free of burrs, nicks, scratches or any foreign particles.
2. Lubricate O-ring with clean oil (Figure 1-10).
3. Turn fitting until finger tight.

4. Using the assembly torque method, tighten to given torque for size from Table 1-6.



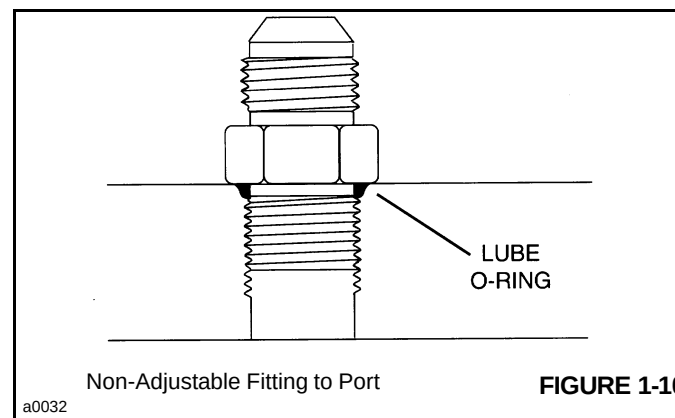
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Adjustable Fitting to Port

FIGURE 1-9**Table 1-6**

NON-ADJUSTABLE STEEL STR. THREAD O-RING FITTINGS		
SAE SIZE	TORQUE	
	(lb in)	(lb ft)
2	90 ± 5	7.5 ± 0.5
3	170 ± 10	14 ± 1.0
4	220 ± 15	18 ± 1.0
5	260 ± 15	22 ± 1.0
6	320 ± 20	27 ± 2.0
8	570 ± 25	48 ± 2.0
10	1060 ± 50	90 ± 5.0
12	1300 ± 50	110 ± 5.0
14	1750 ± 75	145 ± 6.0
16	1920 ± 25	160 ± 6.0
20	2700 ± 150	225 ± 12.0
24	3000 ± 150	250 ± 12.0
32	3900 ± 200	325 ± 15.0

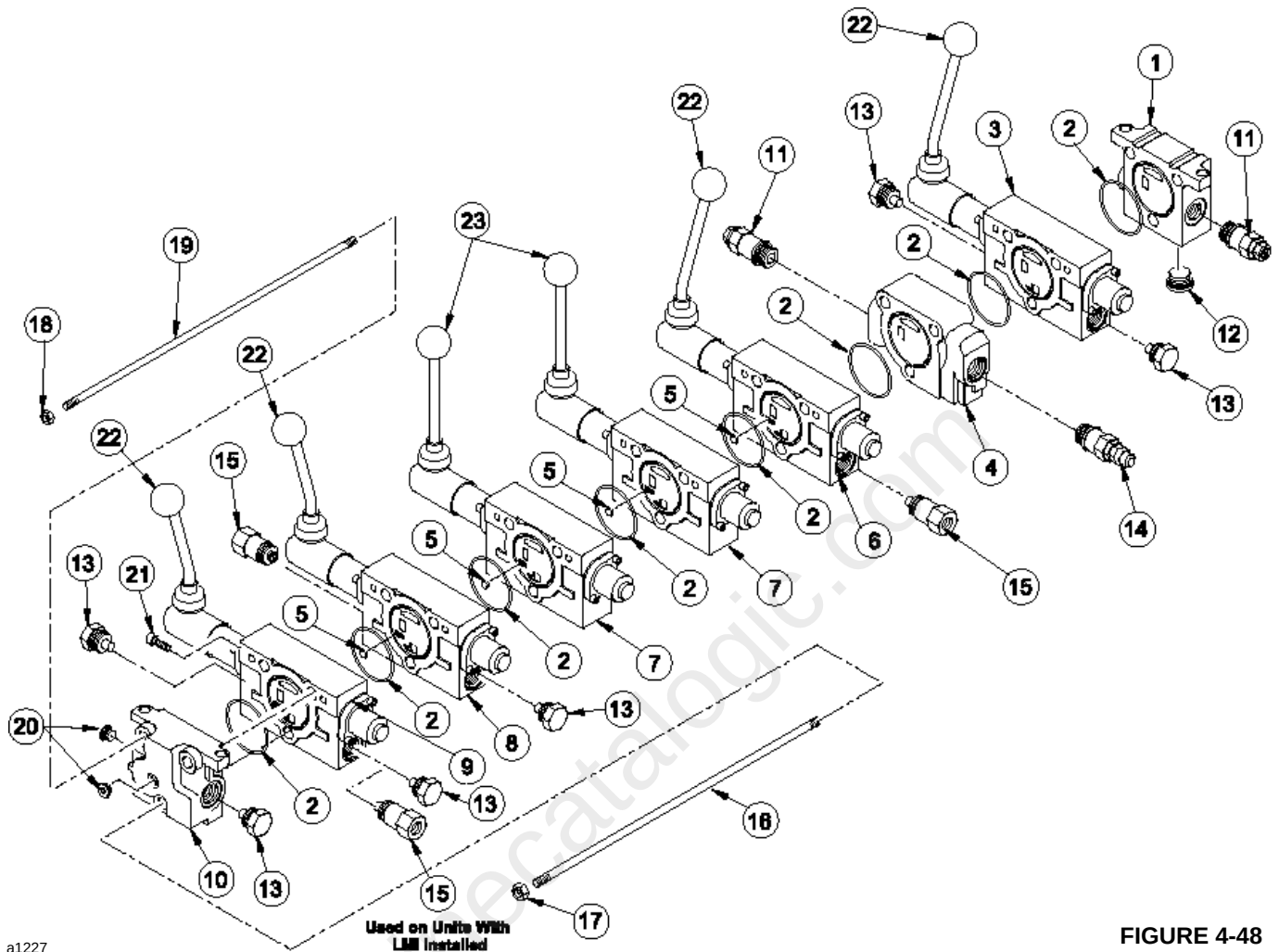
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Non-Adjustable Fitting to Port

FIGURE 1-10



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FIGURE 4-48

Item	Description	Item	Description
1	Inlet Valve Section	13	Shut-Off Plug (6)
2	O-ring (8)	14	Load Sensing Relief Valve
3	Working Valve Section (Swing)	15	Anti-Void Assembly (2 Std - 3 w/ LMI)
4	Mid-Inlet Valve Section	16	Tie Rod
5	Load Sense Shuttle Disc (4 Std - 6 w/ LMI)	17	Nut (2)
6	Working Valve Section (Telescope)	18	Nut (4)
7	Working Valve Section (Outrigger)	19	Tie Rod (2)
8	Working Valve Section (Hoist)	20	Plug (2)
9	Working Valve Section (Lift)	21	Hex Socket Capscrew (12)
10	Outlet Valve Section	22	Handle Assembly (4)
11	Main and Port Relief Valves	23	Handle Assembly (2)
12	Plug		

SECTION 7

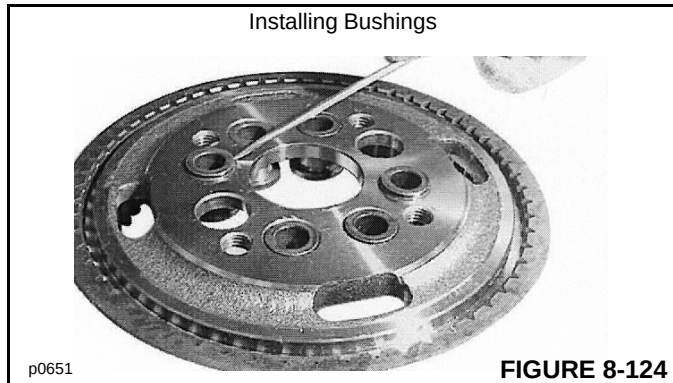
TRANSMISSION AND TORQUE CONVERTER

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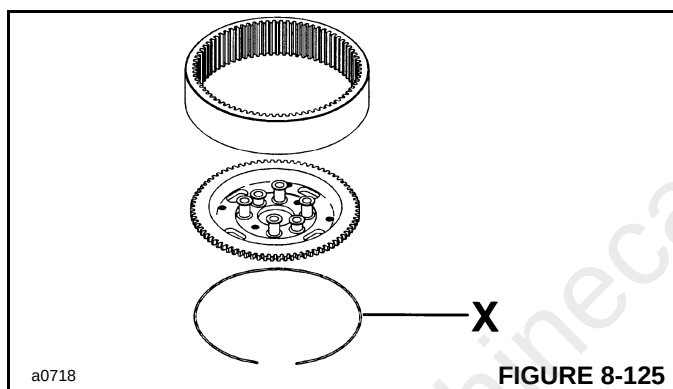
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7. Place the wheel carrier on a workbench and install the bushings (Figure 8-124) level to the carrier surface using SPECIAL TOOL (Figure 8-29).

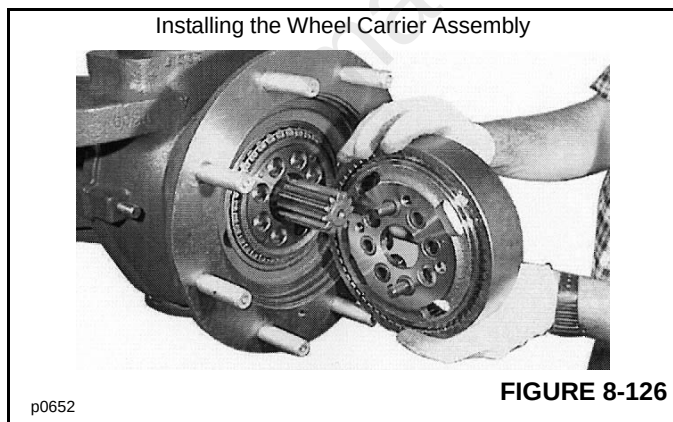
At least two bushings (diametrically opposed) should be set slightly higher than the carrier surface to be used as dowel pins.



8. Pre-assemble the wheel carrier, epicyclic ring gear with the special lock ring (X) shown in Figure 8-125.

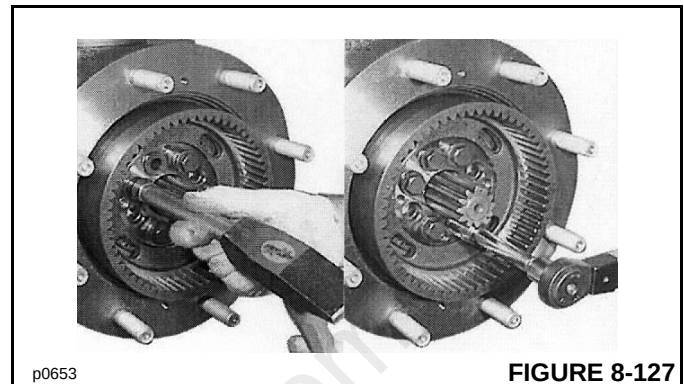


9. Install the wheel carrier assembly on the wheel hub using the two projecting bushings as dowel pins.



10. Drive the dowel bushings flush using SPECIAL TOOL (Figure 8-29) and a hammer (Figure 8-127).

Install the wheel carrier mounting screws and tighten to a torque of 88 lb.-ft. (120 Nm).

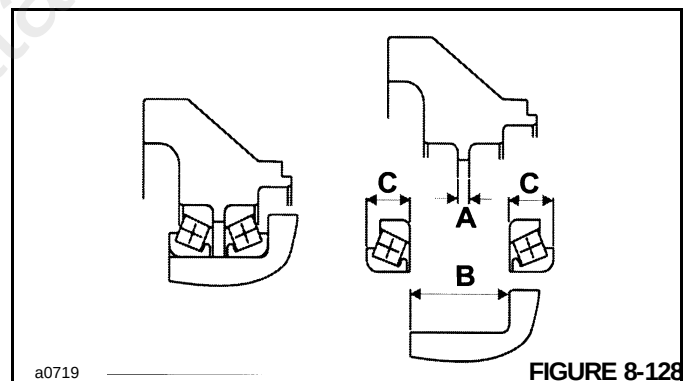


11. The installation of the wheel carrier does not require any pre-loading or backlash adjustments. Although, when installing new components check the dimensions shown in Figure 8-128.

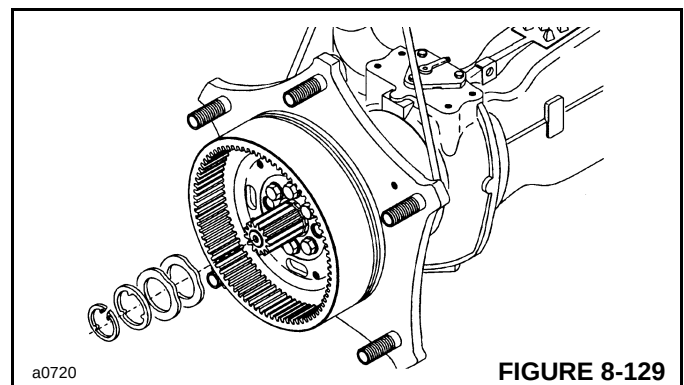
A = 0.232 - 0.234 inches (5.900 - 5.950 mm)

B = 2.056 - 2.058 inches (52.229 - 52.279 mm)

C = 0.908 - 0.912 inches (23.070 - 23.172 mm)



12. Install the rings and shim onto the axle shaft and lock with the retaining ring (Figure 8-129).



TROUBLESHOOTING

Service Brakes

PROBLEM	POSSIBLE CAUSE	REMEDY
Warning light on instrument panel illuminates	1. Loss of brake pressure.	1. Any cause under NO BRAKES.
No brakes	1. Faulty brake modulating valve.	1. Repair or replace.
	2. Faulty priority flow control valve.	2. Replace.
	3. Loss of fluid from broken line, loose fitting of hose.	3. Check all circuit lines, hoses and fittings. Tighten or replace.
	4. Leakage past both brake pistons.	4. Perform leakage test.
	5. Faulty pump section.	5. Replace pump.
	6. Faulty accumulator charging valve.	6. Replace valve.
Bad brakes (pedal fully applied, crane gradually stops)	1. Severe wear in service brake discs.	1. Replace brake discs. See Axles/Drive Shafts/Wheels and Tires
	2. Leakage past one brake piston.	2. Perform leakage test on. Repair or replace. See Axles/Drive Shafts/Wheels and Tires
Soft brake pedal	1. Air in system.	1. Bleed brake system.
	2. High pressure leaks - external.	2. Apply full brake pressure, inspect for leakage in lines, hoses and fittings.
Charging valve actuates every time foot pedal is pressed	1. Accumulator needle valve closed.	1. Open needle valve.
	2. Loss of nitrogen in accumulator.	2. Charge accumulator.
	3. Insufficient hydraulic pressure in accumulator.	3. Faulty accumulator charging valve. Replace.

Parking Brake

PROBLEM	POSSIBLE CAUSE	REMEDY
Parking brake will not release	1. Faulty solenoid valve.	1. Replace solenoid valve.
	2. Loss of fluid from broken line, loose fitting or hose.	2. Check all circuit lines, hoses and fittings. Tighten or replace.
	3. Faulty priority flow control valve.	3. Replace.
	4. Faulty parking brake switch.	4. Replace switch.
	5. Loose electrical connections.	5. Check and tighten.
	6. Faulty pump section.	6. Replace pump.
Brake will not hold	1. Improperly adjusted parking brake.	1. Adjust brake lining clearance.
	2. Severely worn brake linings.	2. Replace brake linings.
	3. Faulty parking brake assembly.	3. Repair or replace.

9. Install a new seal (4), O-ring (12) into the bearing carrier (11). Install bearing (5) into the bearing carrier (Figure 11-41). Grease the O-ring on the bearing carrier (Figure 11-42) and install the bearing carrier into the drum. It must be installed with the O-ring nearest the motor end.

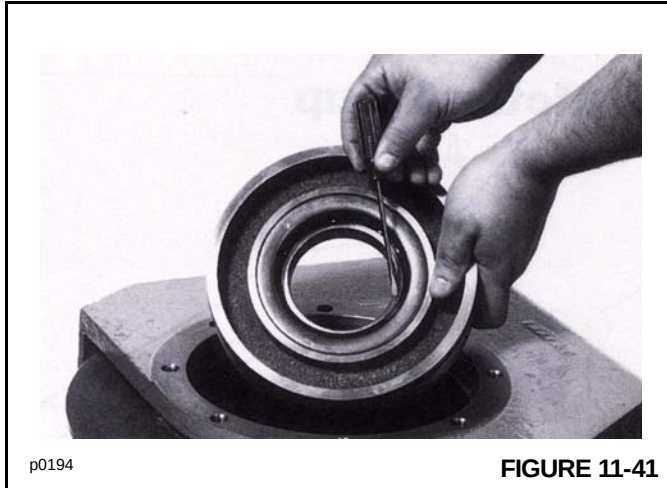


FIGURE 11-41



FIGURE 11-42

10. Place the brake section into the winch bracket (Figure 11-43). Make sure that the pilot of the brake section aligns with the bore in the bearing carrier and that the bolts for the motor are aligned properly. Install the mounting capscrews and tighten to a torque of 100 to 110 lb-ft (130 to 143 Nm). Also, make sure that the level and vent plugs (Figure 11-43) in the cover are properly oriented.

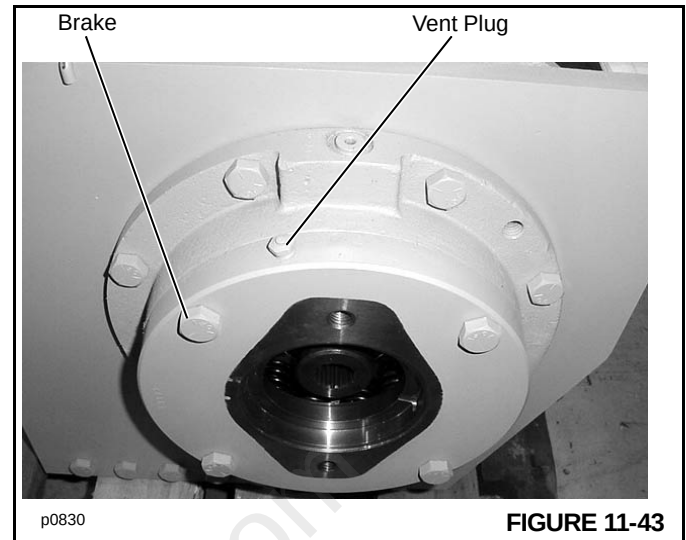


FIGURE 11-43

11. Install a new O-ring (17, Figure 11-33) on the face of the motor and install the motor/brake valve assembly and connect the hoses.
12. Fill both the gearbox and the brake section with the proper amount and type of lubricant. See table in Section 5.

Motor Group

1. Tag the hoses for proper installation and remove them from the motor and brake valve.

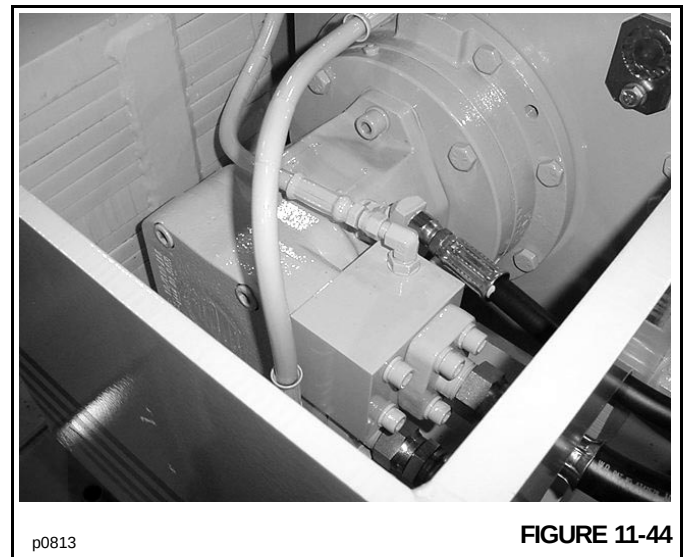


FIGURE 11-44

2. Remove the brake valve from the motor. See Figure 11-44.
3. Remove the cartridge from the brake valve and inspect the metering hole (Figure 11-45) to make sure it is not obstructed. Also, check the O-rings to ensure that they are not cut or flattened. Replace if necessary.

Full Version Available

Grove 3339F + YB4409-2 Rough Terrain Crane Service Manual

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