



**Massey Harris
Massey Ferguson
Service Manual
MF52A & MF54A
Backhoes**

Service Manual

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MH-S-MF52ABKH+



CAUTION: See "Safety Precautions" preceeding Loader Section, before attempting any repairs.

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connection to dipperstick cylinder ... if extendable dipper (i.e.: "Digmor") connection to be made in external line to "extension" cylinder.

NOTE: Cylinder to be disconnected from line and hand pump connected to line leading back to controlling circuit relief ... see Figs. 1 and 2.

b. With the controlling spool in neutral, pressurize the port. Record the opening pressure of the relief. When the relief opens, the pressure gauge reading will begin to decrease.

OR

c. Remove circuit relief from valve "working" section (see Figs. 1 and 2) ... then install relief in test fitting 0072 (formerly MFN 50-CSB) and connect hand pump (with pressure gauge) to test fitting using item No. 13 (fitting No. D1) from ND-112 test kit, see Fig. 7. Use hand pump to pressurize circuit relief and record opening pressure indicated on gauge.

CONCLUSION: The pressure setting of these reliefs should be 2800-2925 psi, if used in boom, or dipperstick ... and 2175-2300 psi if used in extendable dipperstick working section. These reliefs may be disassembled, adjusted and reassembled per the procedures for "Adjustable Type 32042 Relief Valve" (under sub-heading "Adjusting Circuit Reliefs").

ADJUSTING CIRCUIT RELIEFS

The adjustable category of circuit relief valves may be identified by the design of the cartridge, or by a series of numbers stamped on the head of the valve. Identification of relief valve category by design characteristics may be made by removing the valve from its port and observing the large crossholes through the cartridge (nearest the "cap" end). If a large spring is visible, the valve may be adjusted.

The circuit reliefs installed in control valve "working" sections and in rotary cylinder MF Part No. 729 829 M91 (for MF 54A) are Adjustable "type 32042" ... the circuit reliefs installed in rotary cylinder MF Part No. 708 714 M92 (for MF 52A) are also adjustable type. Check service bulletins and parts book for *current* application.

ADJUSTABLE "TYPE 32042" RELIEF CARTRIDGE

If the numbering series stamped on the head of the valve is "32042" the valve may be identified as adjustable. (Information: Two letters may also appear



Fig. 9 — Circuit Relief at Right Side of Vane — MF 54A Rotary Cylinder

1. Line to Right Side of Vane (Left Swing)
2. Circuit Relief (Left Swing)

after the identifying number of the valve. The last letter designates the flow rate capacity of the valve. If the letter "A" is the last suffix letter, the valve has a 3 gpm rating; if the last letter is "B", the valve has a 15 gpm rating, and if the last letter is "C", the valve has a 6 gpm rating. In some cases, a letter then a number will appear after the identifying number of the valve — the last number denotes gpm rating. Stamped under the identifying number of the valve will be its pressure setting.) Use only the recommended relief valve, see Figs. 8, 9 and 10.

1. Thoroughly clean the relief valve cartridge with a suitable solvent and blow dry with compressed air.

2. Disassemble this relief valve as follows ... see Fig. 11.

IMPORTANT: Carefully note the sequence of parts (and their relationship to the "hex" end

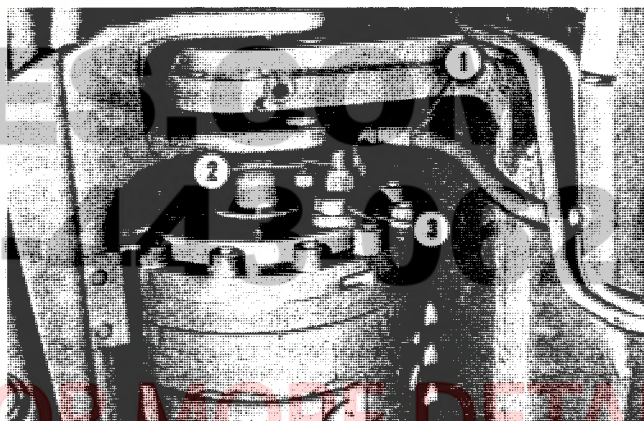


Fig. 10 — Circuit Relief at Left Side of Vane — MF 54A Rotary Cylinder

1. Drain Line
2. Line to Left Side of Vane (Right Swing)
3. Circuit Relief (Right Swing)

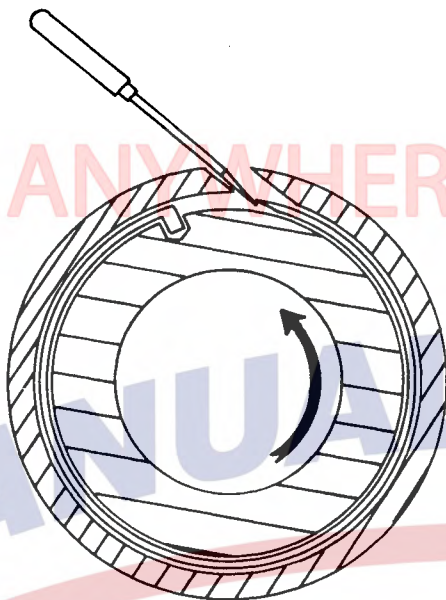


Fig. 68 — Removing Wire Retainer Ring



CAUTION: If wire retainer groove in bearing (or barrel) is distorted, it may be necessary to use hydraulic pressure supplied by a hand pump to force bearing from cylinder. Use extreme care to make sure that no one can be injured should air be trapped in cylinder . . . **DO NOT** use air pressure to remove bearing from barrel.

- g. Slide piston (with seals) and rod assembly from barrel.
- h. Remove piston nut (if used) then slide piston from rod . . . remove all piston seals.
- i. Slide bearing assembly from rod . . . remove all seals from bearing, see Fig. 69.
- 3. Thoroughly clean all metal parts, air dry and inspect cylinder as follows:
 - a. Inspect inner side of barrel assembly for pits

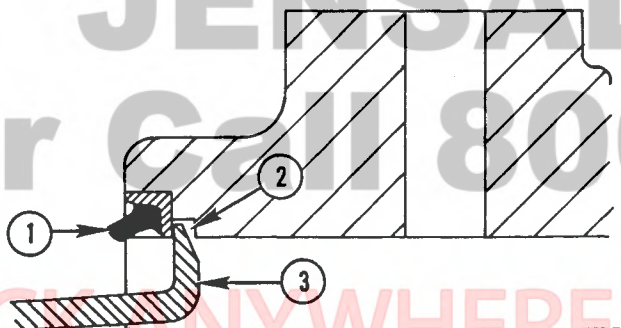


Fig. 69 — Removing Metallic Shell Wiper Seal

- 1. Wiper Seal
- 2. "Extractor Groove" in Bearing
- 3. "Hooked-End" of Extractor Tool

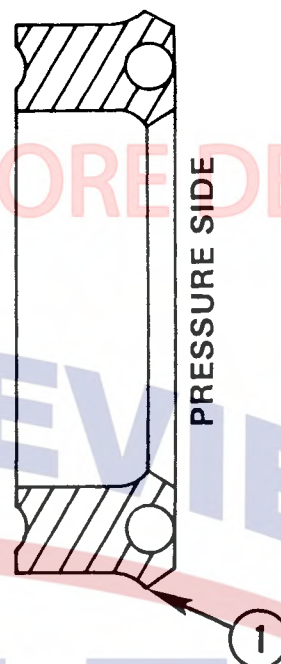


Fig. 70 — Lip Side of Typical Rod Seal
(To be Directed Toward Pressure in Cylinder)

- 1. Seal Lip

and scratches, and cylinder ports for burred threads and obstructions. Remove any burrs or obstructions found. If pits or scratches are sufficient to damage seals (or allow oil to leak past seals) it may be necessary to replace cylinder.

- b. Inspect head-end of barrel assembly for cracks, or distortion.
- c. Inspect piston and bearing for nicks and scratches.
- d. Inspect rod assembly for alignment, cracks and scratches (that may damage bearing seals).
- e. Inspect rod cross-head for damage or excessive wear and remove all paint from rod assembly.
- 4. Install new seals into piston and bearing as follows:

NOTE: If necessary, seals that are not split type or spiroil should be preheated to 200° F. for 5-10 minutes in clean oil. This will allow seal to be stretched **SLIGHTLY** for easier installation. Seals should be allowed to cool to room temperature (or may be chilled by applying ice) before installation of piston, or bearing to barrel. If seals are stretched too much, they may not return to normal shape . . . this will require use of a suitable ring compressor to prevent cutting seal during assembly into barrel.

- a. Install rod seal, see Fig. 70, into I.D. of bearing with lip of seal away from dust seal . . . install dust seal (wiper) into bearing with lip side of seal out-

TESTING & TROUBLE SHOOTING (Backhoe Hydraulics)

FIG. 25: Main pressure relief is to be checked at the loader control valve. To check maximum system pressure, connect a 5000 P.S.I. gauge in one of the loader cylinder ports. Actuate the loader control lever on the valve section connected to the gauge and take reading. Repeat test several times to ensure accuracy. System pressures should be checked against the specifications of the unit being checked.



FIG. 25:

FIG. 26: Pump volume tests are carried out by connecting a suitable flow meter in series between the pump outlet and the control valve. Make sure the flow meter is capable of withstanding a backpressure created when operating the system. Check to ensure flow meter's load valve is opened and then operate the system until it has reached operating temperature. Operate the engine at specified R.P.M. for the unit being checked. Check volume at zero pressure and at pressure detailed in the specifications. When using a flow meter in series do NOT completely close the flow meter's safety relief valve as this can damage the pump or the meter's safety relief valve.

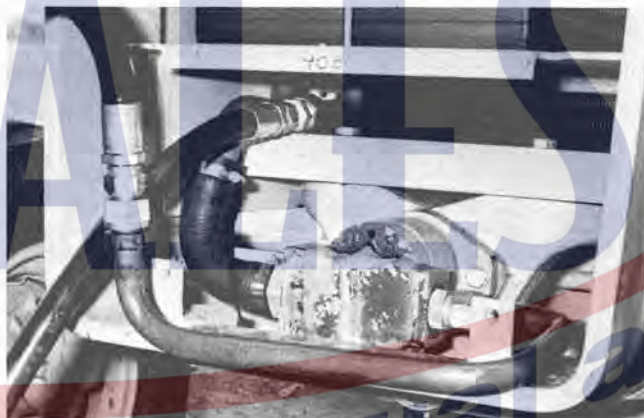


FIG. 26:

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FIG. 76: To assemble the Bottom Plate evenly, use three pieces of standard threaded rod, 1/2" x 7" with three spacers as shown in Fig. 76. Draw the Bottom Plate down one thread at a time.

When the Bottom Plate is snug against the Barrel, insert the capscrews. Use washers under the bolts inserted in the threaded holes in the bottom plate. The two shorter bolts go in the holes on either side of the eye for the Cylinder Mounting Bolt. Ensure bolt passing through the cylinder mounting bolt is tightened. Oil all bolts prior to installation and torque to 170 ft. lbs.

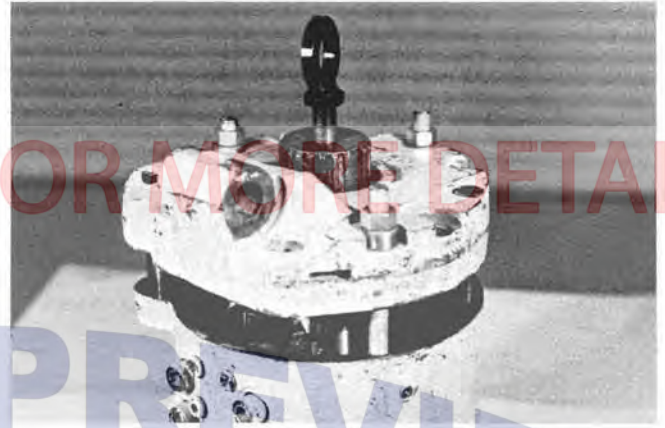


FIG. 76:

FIG. 77: Install Cylinder Relief Valves. Install Ball Check and Stop Tube.



FIG. 77:

FIG. 78: Plug all open holes. Unit is now ready for installation on machine. Installation is the Reverse procedure to removal of the rotary swing cylinder.



FIG. 78