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MANUAL PREVIEW

Massey Harris
Massey Ferguson
Service Manual

44 Diesel

Row Crop & Standard

S/N 1001 & Up

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MH-S-44 DSL

Service Manual

Form No. 694 070 M94

Operating Instructions
and Service Manual for
MASSEY-HARRIS 44
DIESEL TRACTORS
ROW CROP AND STANDARD
SERIAL NUMBERS 1001 AND UP



or Call 800-443-0625

MASSEY-HARRIS DIVISION

MASSEY-HARRIS-FERGUSON INC.

Racine, Wisconsin

MASSEY-HARRIS
MODEL 44 AND 55

A new era in the history of Massey-Harris dawned in 1946.

Prior to this year, Massey-Harris equipped its tractors with Chrysler, Continental, and Hercules engines. With the introduction of the "44", Massey-Harris installed its own engine.

This was a four cylinder, 260 CID, with a 3-7/8 inch bore and 5-1/2 stroke. Engine speed was rated at 1,350 RPM. Nebraska tests rated drawbar horsepower at 31.2 and power take-off at 47 HP. The fuel economy was noted at 10.1 gallons per horsepower hour. These tests were on a 1947 Model "44". The tractor weighed about 4200 lbs.

The "44" diesel standard model delivered a fuel economy of 14.1 horsepower hours per gallon of fuel. A variation of the "44" was a "44" Special. This increased engine horsepower to 277 CID by increasing the bore from 3-7/8 inches to 4 inches. The "44" was also available with a Continental six cylinder engine, but most were sold with M-H engines.

In the period from 1946 to 1955 more than 95,000 Massey-Harris "44" tractors were manufactured at the Racine, Wisc. plant. It was to be one of Massey-Harris's most popular tractors. More than 20,000 were build in 1951, the peak year of production.

There was a British version of the "44" manufactured in Manchester, England, and later in Scotland. These tractors were identified by a prefix of "7", thus were called M-H 744. The diesel model of the British "744" was equipped with a Perkins engine. This was to become one of the most popular tractor diesels in Europe.

This writer was a member of an American team working in Iran under the Shah's program of Land reform in the 1950's. One contract was let for 200 agricultural tractors. Massey-Harris was the successful bidder, and soon our rural cooperatives had the "744" Massey-Harris at work in the fields of Iran.

The M-H "55", introduced also in 1946, was a larger size tractor with a 382 CID engine with a drawbar horsepower of 41.1 and PTO rating of 68 HP. This tractor weighed about 7,300 lbs. and was the biggest tractor in the Massey-Harris line when it was introduced. It was offered only in the standard or wheatland model; that is a wide front axle.

The engine was rated at 1,350 RPM and had a 4-1/2 by 6 inch bore and stroke. This large tractor was equipped with 14 x 34 rear and 7.50 x 18 front tires. There was a "Western" model of the "55" that came with 18 x 26 rear tires and a hand clutch.

During the period of 1946 to 1956 there were about 21,000 tractors of this model manufactured. The list price of the gasoline model was about \$3,850, the diesel sold for about \$1,000 more.

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5. Disengage clutch and push in primer No. 24, Plate No. 6. NOTE: Push in primer vigorously as the faster the primer is pushed in the better the fuel will be atomized and more readily burned by the flame heater and at the same time engage starter No. 23, Plate No. 6. CAUTION: Never operate starter longer than 20 seconds continuously without allowing a couple of minutes cooling period between intervals.

6. After engine has started, push in flame heater ignitor switch No. 22, Plate No. 6, and lock primer by turning it to the right.

7. If the weather is quite cold, hold clutch disengaged a minute or two until engine is running smoothly, then slowly let clutch out as the grease is very stiff in cold weather.

7. Close shut-off valve at rear of primary filter. NOTE: This valve supplies fuel for the primer only, and should be used for cold weather starting, No. 12, Plate No. 7.

8. Turn switch key No. 6, Plate No. 6, to left and remove.

9. Be sure oil pressure gauge is registering 45 to 55 pounds at normal operating speed.

10. Close radiator shutters by turning control handle to the right. When engine temperature indicator reads 185° open the shutters. In cold weather it may be necessary to partly close the shutters to maintain a 180° to 190° operating temperature.

11. Do not operate this tractor under full load until engine temperature has reached about 185 degrees.

NOTE: Do not run your engine with a continual low water temperature. The engine may be ruined just as quickly by running with a too cold water temperature, as it can with a too high water temperature. The thermostat should keep the water at its correct temperature automatically, although in cold weather it may be necessary to keep the indicator shutters partially closed. Replace the thermostat with the same rated thermostat. In the 44 Diesel tractor, a 185 to 190 degree thermostat is used.

TO MOVE TRACTOR, PROCEED AS FOLLOWS:

1. With engine running, place throttle control lever in idling position and disengage clutch by pressing clutch foot pedal forward as far as it will go.



PLATE NO. 9 - RIGHT SIDE OF ENGINE

1. Fuel Line.
2. Flame Heater.
3. Drain Plug.
4. Heater Plug.
5. Heater Coil.
6. Energy Cell Plug.

2. Move shifting lever in position for desired speed. Numbers on the top of the transmission case show the position of the shifting lever for various speeds. If the gears do not shift into mesh, engage clutch just enough to move the gears and then shift again. Do not clash or try to force gears into mesh.

3. Set throttle lever to run at half speed.

4. Gradually engage the clutch until the slack is taken up between the tractor and the load, then let the clutch back in as far as it will come, and pull throttle lever wide open.

5. When starting light load, either on draw-bar or belt, open throttle about half open and engage clutch. Then bring load to full speed by opening throttle. This will add life to the clutch facing.

WARNING: DO NOT USE THE CLUTCH PEDAL AS A FOOT REST. USE IT ONLY TO START AND STOP THE TRACTOR AND WHEN SHIFTING GEARS.

relieves all strains which might lead to failure. Proper bearing dimensions have been carefully worked out based on long and severe service experience so that a minimum of trouble will develop. These crankshafts are both statically as well as dynamically balanced within 1/2 inch ounce which largely minimizes vibration.

The crankcase is sealed at both ends of the crankshaft from dust -- at the front end by a spring-backed, leather seal back of a felt washer and, at the rear, by a specially designed Neoprene Seal.

BEARINGS - The 3 large replaceable precision type main bearings, steel backed semi-micro, tin-base babbitt lined, are doweled and securely held in place by rugged caps with 1/2" diameter heat-treated alloy steel cap screws all positively locked.

For checking bearing clearance, use 1/2 inch feeler gauge, .0025" thick, approximately the length of the bearing.

Place the feeler gauge between the bearing and crankshaft, parallel with the shaft, and tighten the cap screws on the bearing cap.



PLATE NO. 15 - FEELER GAUGE IN BEARING

A very light drag should be noticed when turning the shaft.

Bearing Size:	LENGTH	DIAMETER
FRONT	1-17/32	2-7/8
CENTER	2-3/8	2-7/8
REAR	2-1/16	2-7/8

Desired clearance .002 to .003".

End clearance .006 to .010".

CAMSHAFT is a one-piece highly alloyed iron casting especially heat-treated with integral distributor shaft gear and runs on 3 large well lubricated bearings cast in the block, using no separate bushings.

Bearing Size:	LENGTH	DIAMETER	BEARING CLEARANCE
FRONT	1-7/16	2	.0035 to .004
CENTER	1-1/16	1-3/4	.0035 to .004
REAR	1-1/8	1-11/16	.0035 to .004

End clearance is from .006 to .010"

CONNECTING RODS are drop-forgings of heavy duty, "I" section design having an ample margin of safety under full load with carefully engineered caps. The hole for the piston pin is diamond bored to insure proper fit and carefully gauged for alignment.

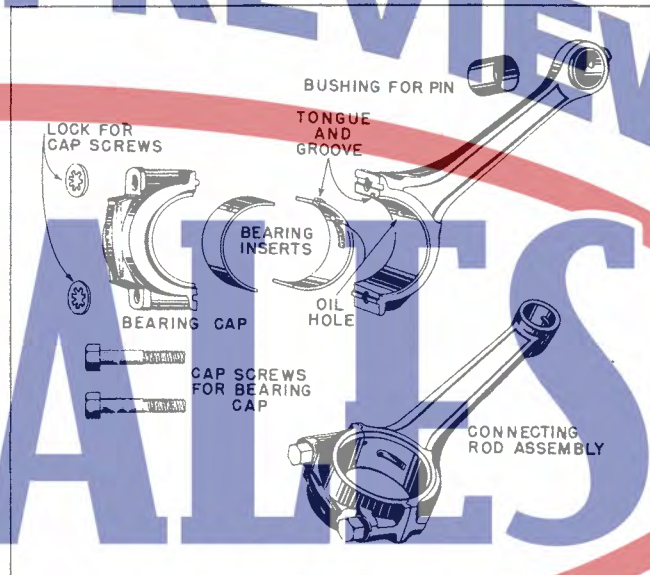


PLATE NO. 16 - CONNECTING ROD ASSEMBLY

CONNECTING ROD BEARINGS are of the replaceable precision ready-to-run type "steel-backed Semi-Micro, tin-base babbitt lined", doweled and securely held in place by rugged caps with 1/2" diameter heat-treated alloy steel bolts.

Bearing Size:	LENGTH	DIAMETER
	1-11/16"	2-1/2"
	CLEARANCE .002 to .0035"	

SIDE CLEARANCE .006 to .010".

PISTON PIN BUSHING in the top end of the connecting rod is of "Phosphor Bronze" and are held to proper dimensions within very close limits. The finished hole size is 1.2504 to 1.2502 inches.

The piston pin diameter is 1.2500 to 1.2498 inches.

The desired pin fit in bushing .0004".

The desired pin fit in piston, light push fit.

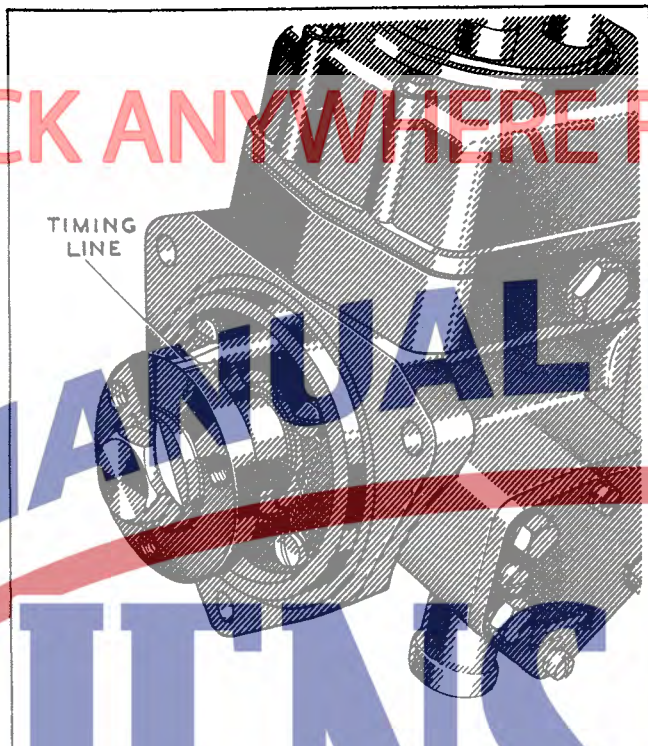


PLATE NO. 24 - PSA PUMP

PRIMING OF FUEL LINES AND PUMP:

To prime the fuel lines and the pump prior to starting, fill the fuel oil filter (Secondary) with oil by removing plug at No. 22, Plate No. 23. Replace the plug and loosen connections at spray nozzle holders. With the stop control lever pushed in, turn the engine over until air has escaped and fuel is being discharged at the fittings. Tighten fittings. Note: Throttle must be set in maximum fuel delivery position.

PSB FUEL INJECTION PUMP:

The American Bosch type PSB fuel injection pump is also a single plunger multi-outlet unit of improved design. Its replaceable hydraulic head contains a single delivery valve and a single plunger which, in addition to being reciprocated by a multi-lobe cam, is rotated continuously to serve as its own fuel distributor. Control of fuel delivery is affected by axial movement of a slideable sleeve fitted to the plunger. The sleeve is actuated by a rocker shaft which is linked to the variable speed governor of the mechanical centrifugal type. This is a separate assembly attached to the rear of the pump housing and is driven directly off the end of the pump camshaft without gearing. A positive displacement gear type fuel supply pump is mounted on the side of the housing and driven by gearing off the pump camshaft.

LUBRICATION:

The PSB pump is also designed to receive pressure lubrication directly from the engine.



PLATE NO. 25 - PSA PUMP

ASSEMBLY AND TIMING OF INJECTION PSB PUMP TO ENGINE:

In timing the pump to the engine, the crankshaft of the engine should be turned until the marking on the flywheel reads 22° before top dead center (22° B.T.D.C.). See Plate No. 22.

Remove the timing window on left side of pump as shown at Nos. 4 and 3, Plate No. 26, by removing the two screws. This is also the fuel shut-off control.

IMPORTANT: When the above window is removed the fuel shut-off arm is in the running position. To avoid fuel being injected into the cylinder or danger of the engine starting during timing procedure the shut-off arm must be secured back to the shut-off position. This can be easily done with a light piece of wire to bracket for shut-off cable.

NOTE: The above only applies when checking the pump timing and the system is full of fuel.

Then with the timing window cover removed from the side of the pump housing, the pump camshaft should be turned until the port closing "PC" line mark on the window aligns with the line mark machined in the apex of one of the teeth on the plunger drive gear, which is visible through the opening (see Nos. 3 and 4 in inset, Plate No. 26). In this position plunger port closing occurs for No. 1 outlet of the pump.

For accurate positioning of the port closing, it is important to sight along the inscribed "PC" line mark. Note: A position is also provided, at the front of the pump housing to facilitate timing. When viewed through the opening in the timing gear case of the engine