Massey Harris
Massey Ferguson

Service Manual

MF202 & MF204

Ag & Industrial

Service Manual

JENSALES®

MH-S-MF202,204

Type:	Continental Z134
Fuel:	gasoline
Aspiration:	natural
Displacement:	134 ci [2.2 L]
Power:	35 hp [26.1 kW]
Cooling:	liquid
Chassis:	*4x2 2WD*
Brakes:	*drum*

1958: 301172
1959: 303158
1960: 305108
1961: 306169
1962: 306779
1963: 307923
1964: 309222
1965: 310067
1966: 311084
1967: 9A1001

Ford/ Massey Gray (M.F. Light Gray)	M1022	CML-0002
Massey Ferguson Charcoal Gray	M1056	CML-0038
Massey Ferguson Silver Gray		CML-2006
Massey Ferguson Industrial Yellow		CML-3045
Light Gray	M1011	CML-0008
Ferguson Gray	30419	Stock #476
Flint Gray	M1026	CML-0030
Flint Gray Metallic	M1025	Stock #449
French Silver Mist Gray	M1071	CML-2000
Green Metallic (Ferguson)		CML-6524
Red	M1041	Stock #467
Red 1956- 1971	M1017	CML-5051
Straw Yellow	M1020	CML-3052
Dark Safety Yellow		CML-3019
Industrial Yellow	M1023	CML-3002
Construction Yellow	M1055	CML-3003
Apache Yellow		Stock #468
Bright Industrial Yellow		CML-3028
Metallic Brown		CML-8004

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MF 202-204 SERVICE MANUAL
1448 800 M1

PART 4—MANUAL AND POWER STEERING GEAR HOUSING—MF AND TO 35 TRACTORS

INDEX

DESCRIPTION

The 35 Tractor uses a screw and recirculating ball-nut type steering gear with two pinion shafts which control the steering linkage. The nut is supported on the groove steering shaft by recirculating ball bearings which moves the nut vertically when the shaft is turned. Teeth are cut in the upper side of the nut and is engaged in the left pinion shaft gear, which in turn is engaged with the right pinion shaft gear. See Fig. 1.

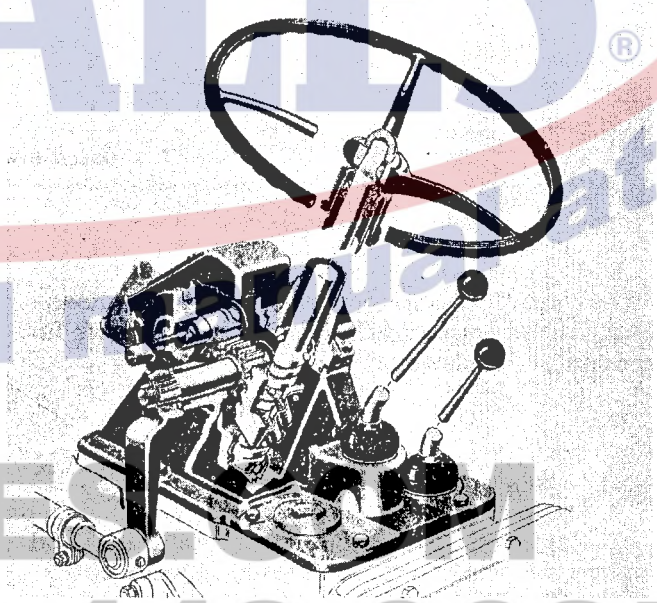

Fig. 1 – 35 Manual Steering Gear Assembly

REMOVING MANUAL STEERING HOUSING

The steering gear housing and instrument panel can be removed as an assembly by the following procedures:

1. Tip the hood assembly forward and drain the cooling system.

2. Disconnect heat sending unit, wires and starter motor cable.

3. Disconnect tractormeter cable, choke rod and oil gauge line. (On Diesel models, disconnect tractormeter cable, fuel shut-off rod and throttle control rod.)

4. Remove air cleaner hose, shut off fuel and remove fuel line.

5. Remove mounting bolts at rear of fuel tank and block-up between tank and rocker arm cover.

6. Remove battery and disconnect drag links from steering arms.

7. Remove bolt securing housing to transmission case also bolt at rear of engine block and lift steering housing assembly from tractor.

Fig. 15 – Installing Power Rack Guide
1. Power Rack Guide 2. Shims

tained at the rim of steering wheel. Tighten adjusting screw locknut.

4. Install the power rack guide cover and shims and tighten the allen-head retaining screws. Adjust the pre-load on this cover by the use of shims until an additional 1/8 to 1/4 pounds pull is added to the previous reading at the rim of the steering wheel. Shims are available for this adjustment in .003, .005 and .010" thick. See Fig. 15. After all adjustments are made, the total pull to turn the wheel through a 3-inch arc at the center range should be 2-1/8 to 2-3/4 pounds.

5. Connect all lines and fill power steering reservoir with type "A" automatic transmission fluid 1/4" above filter. Start tractor and operate the steering in each direction to bleed all air out of the system, then recheck oil level in reservoir.

TROUBLE-SHOOTING

Problem - Loss of power assistance

Possible Cause	Correction
a. Insufficient fluid in reservoir.	Fill reservoir 1/4" above filter.
b. Low pump pressure.	Check pump relief valve set pressure 1100 psi.
c. Faulty control valve, plungers and springs.	Check plunger and springs. Install new, if damaged or worn.
d. Damaged or restricted hose or tubing.	Check and replace, if necessary.
e. Oil by-passing piston in cylinder.	If the steering gear housing fills up and the pump reservoir lowers, oil may be passing by piston in cylinder. Check and replace worn parts.
f. Steering linkage binding.	Remove steering drag links and check by moving steering mechanism by hand. Should turn easily with front of tractor raised.

Problem - Erratic power steering

Possible Cause	Correction
a. Sticking or binding control valve spool.	Remove control valve assembly; clean all parts in solvent and lubricate with type "A" automatic oil. If this does not correct, replace with a new valve only and spool assembly.
b. Improperly tightened thrust nut, No. 1, Fig. 12, at top of control valve.	Torque nut 20-30 ft.-lbs., then back off 1/4 turn and stake.

PART 5—POWER STEERING PUMPS—MF 35, 50 AND 65 TRACTORS

INDEX

DESCRIPTION

The power steering pump is constant running, gear type and is driven by the camshaft gear train. The pump delivers a volume of oil to the system with a regulated pressure of 1100 to 1200 psi, except on the MF 65 Diesel with the direct injection engine, tractor Serial No. 685 996 and up, which has a regulated pressure of 1500 psi. A relief valve is located in the pump to maintain this pressure.

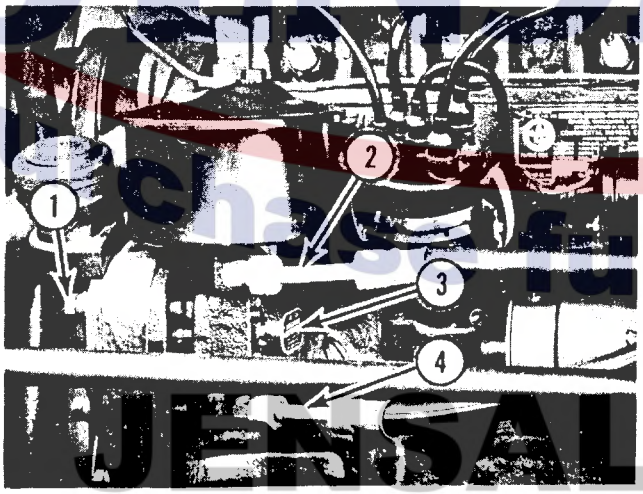

Fig. 1 – Barnes Power Steering Pump
1. Mounting Bolt 2. Return Line 3. Name Plate 4. Pressure Line

SERVICING PUMP (Gas Tractors)

The power steering pumps listed in this section are used on MF and TO 35, 40 and 50 Tractors, also MF 65 Tractors. The early model 35, 40, 50 and 65 Gas Tractors use the Barnes pump, which can be identified by a tag on the housing; see Fig. 1. This pump can be replaced for service by a Cessna pump which is also used on late model gas tractors. See Fig. 2 for identification of this pump.

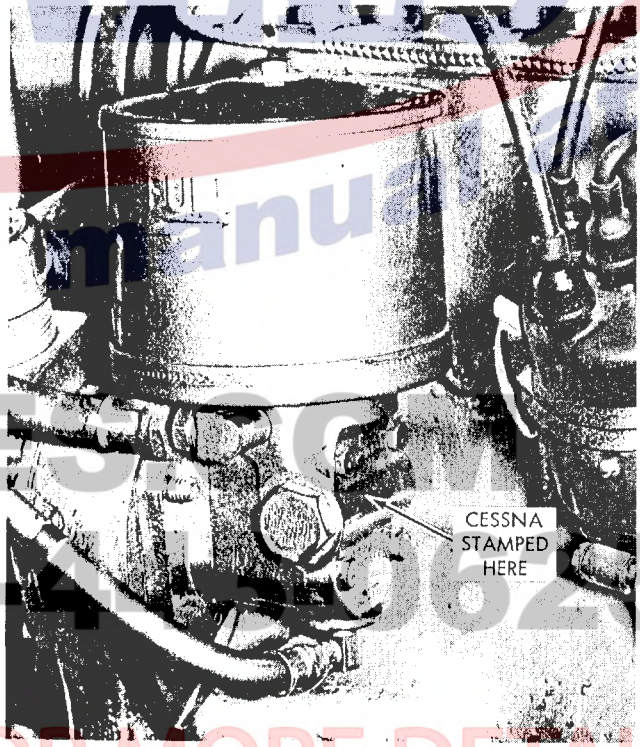

Fig. 2 – Cessna Power Steering Pump

NOTE: The pump drive gear used on the 35, 40 and 50 gasoline model tractors is different from that used on the 65 gasoline tractors.

PART 3—FRONT AXLE AND STEERING— MF 2135 TRACTORS

INDEX

This Part of the Manual contains the recommended procedures that should be followed while servicing the steering system on the MF 2135 and MF 2135 Turf Tractors.

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GROUP 1 - SECTION B - PART 4

LUBRICATION SYSTEM SERVICING

INDEX

The Z-134 Engine uses a full pressure lubrication system in which oil from the crankcase is pumped, under pressure, to all of the bearing surfaces in the engine.

The essential parts of this system are the crankcase and oil supply, oil pump, screened oil intake, drilled oil passages, oil filter, relief valve in the oil pump, pressure gauge and oil level indicator.

In operation, oil is pressure fed to the main bearings, crank pins, camshaft and rocker shaft. By using a timed hole in the crankshaft, oil is spurt fed to the timing gears, cylinders and pistons. The tappets, wrist pins and governor are splash fed. Refer to Figure Nos. 1 & 2.

The capacity of the oil crankcase is 6 U.S. quarts when the filter is changed. If the filter is not changed the capacity is 5 U.S. quarts.

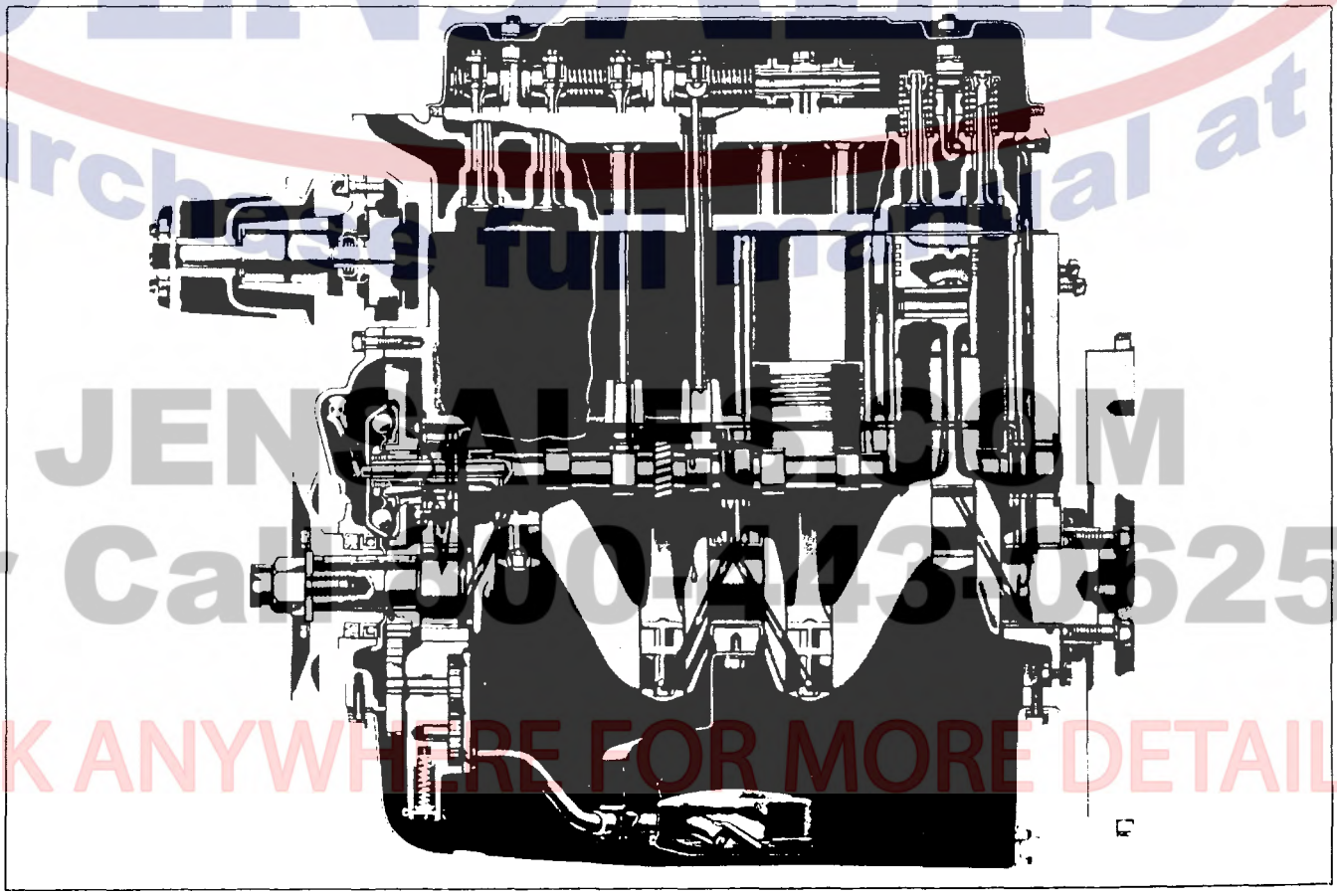

Fig. 1 – Engine Oiling System (Side View)

GROUP 1 SECTION B PART 5

COOLING SYSTEM SERVICING

INDEX

The cooling system for the Z-134 engine consists of a pressure type radiator and cap, fan, water pump, thermostat, hoses and the circulation passages. Radiator capacity is 10 U.S. quarts.

The coolant in the system is drawn into the pump through the lower radiator hose and is circulated around the wet sleeves, through the passage-ways, into the head as shown in Fig. 1. The coolant then circulates through the engine head and passes out through the outlet elbow, through the hose and thermostat and into the top of the radiator where it moves downward and is cooled. When the engine is cold and the thermostat is closed, the coolant cannot move through the upper hose and into the radiator. Therefore, a passage has been drilled from the head through the block and into the water pump housing. Before the thermostat opens, the warm water from the head returns through this passage to the pump and is pumped into the block. This recirculation gives a uniform warm-up without hot or cold spots. When the block is uniformly warm, the thermostat opens and allows sufficient flow through the radiator to give the necessary cooling.

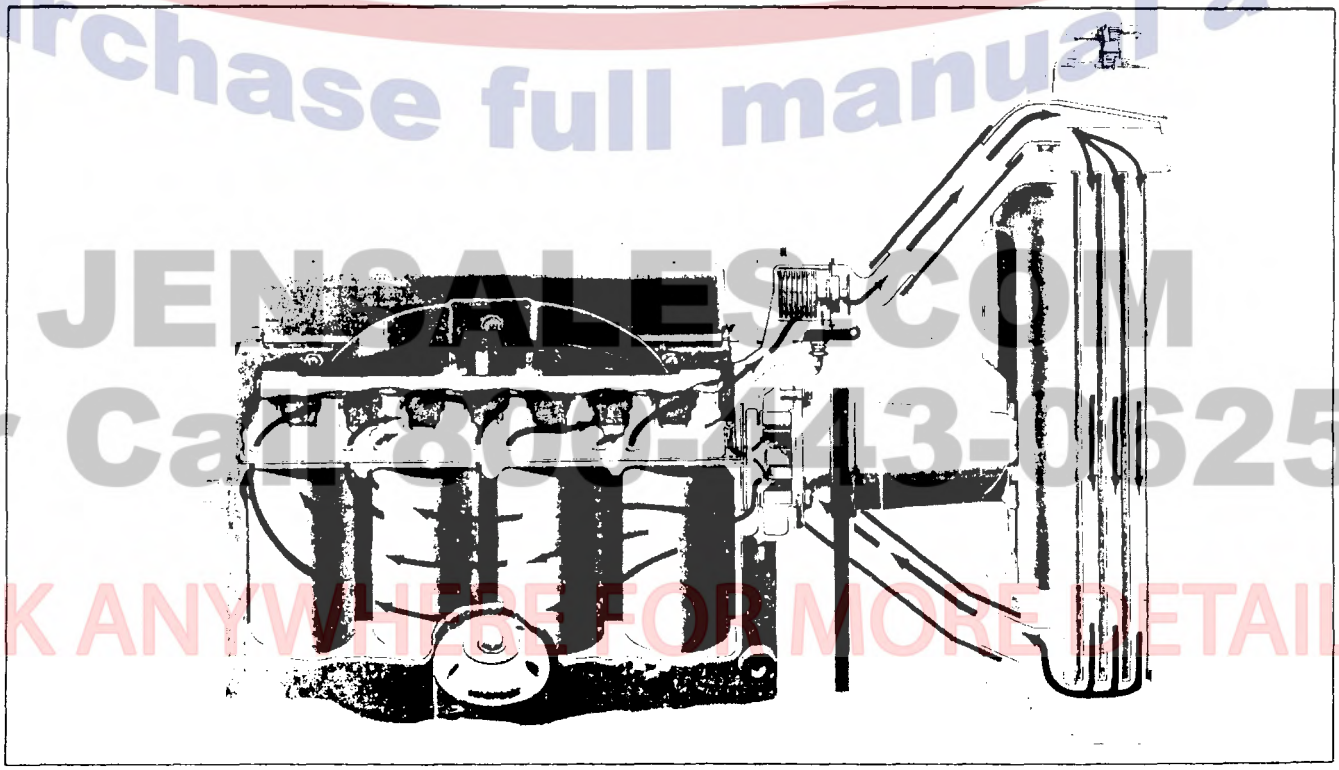

Fig. 1 – Engine Cooling System

CLUTCHES—INDUSTRIAL TRACTORS

INDEX

This Part contains service information pertaining to disassembly, inspection and reassembly of the clutches installed on the Massey-Ferguson Industrial Tractors. (Torque Converter repair information is contained in the Part which covers the Instant Reverse Transmission.)

Clutch removal, installation and adjustment procedures may be found by referring to the appropriate Section of this Manual pertaining to the Tractor using the particular clutch assembly.

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INSTANT REVERSE TRANSMISSION AND TORQUE CONVERTER FOR INDUSTRIAL TRACTORS

INDEX

INTRODUCTION

This Section covers the overhaul procedures for the Instant Reverse Transmission and Torque Converter. Procedures for testing, adjusting and trouble-shooting, as well as removal and re-installation of the transmission and torque converter, will be found in each particular section of this Manual that covers equipment utilizing the Instant Reverse Transmission.

DESCRIPTION

The Instant Reverse Transmission consists of a torque converter, a pair of hydraulically actuated multiple disc clutches, and a two-speed sliding spur gear-type transmission, with a rear-mounted two-speed planetary reduction assembly.

TORQUE CONVERTER

The Torque Converter consists of three major components: (1) a turbine assembly, (2) an impeller or pump assembly, and (3) a stator and sprag (or one-way clutch assembly).

DISASSEMBLY

1. Place the torque converter, hub down, on a clean work bench. Stabilize the converter by placing the hub through a hole in the bench, or use an improvised wooden craddle.

2. Remove the cover to impeller mounting bolts. See Fig. 3.

NOTE: Check to make sure that the ring gear and front cover is marked, where the ring gear is bolted to the front cover, before disassembling units.

3. Remove the front cover.

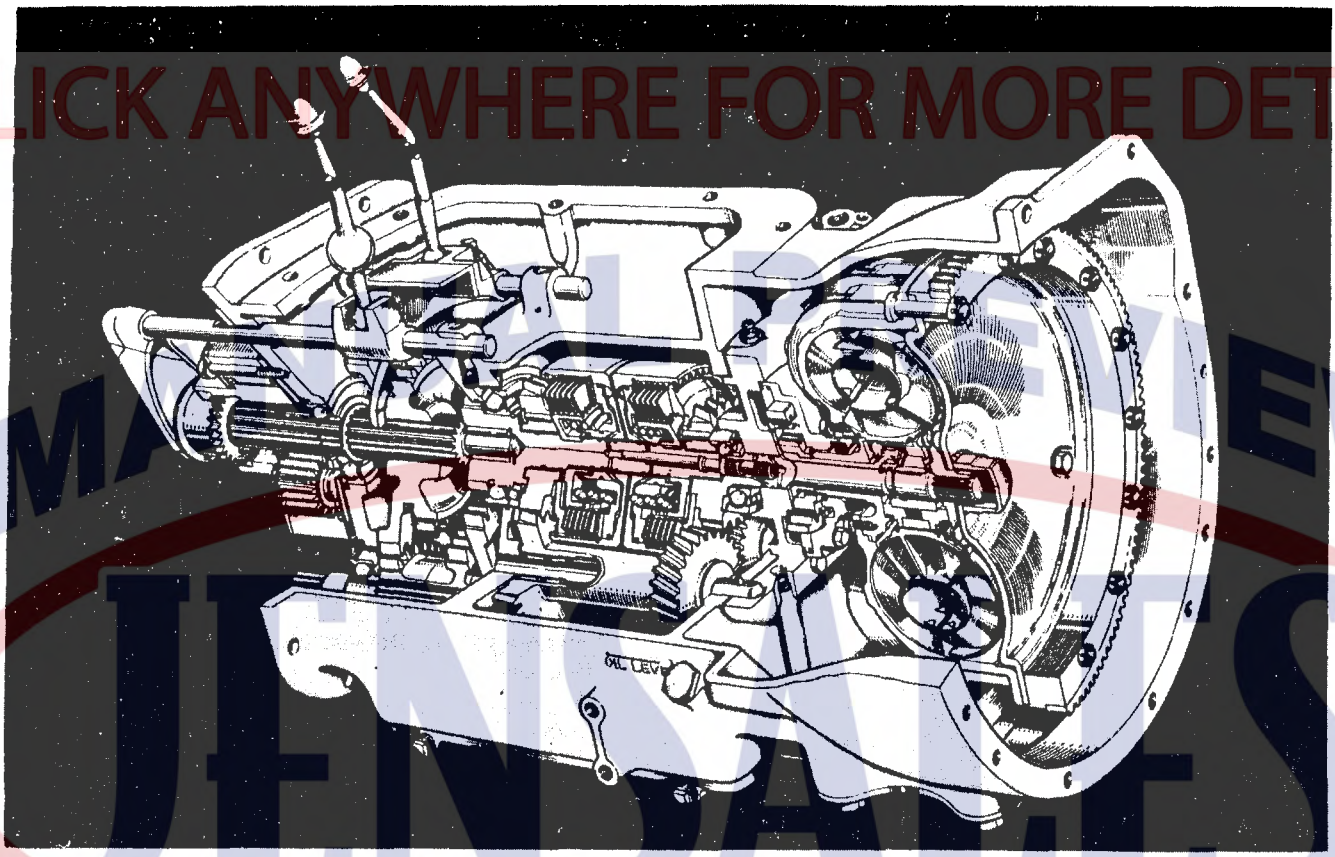

Fig. 1 – Instant Reverse Transmission

4. Remove and discard the cover "O"-Ring seal. See Fig. 4.

5. Remove the turbine thrust washer. See Fig. 5.

6. Grasp the turbine by its hub and lift it out of the impeller. See Fig. 6.

7. Drain any remaining oil from the turbine assembly.

8. Lift the stator and sprag assembly out of the impeller.

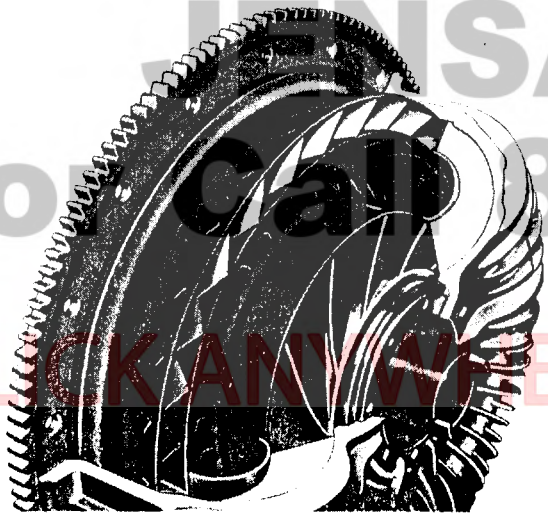

Fig. 2 – Torque Converter

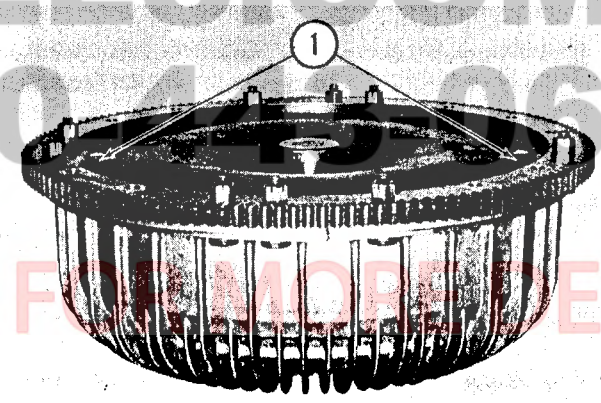

Fig. 3 – Torque Converter
1. Drain Capscrews

SERVICING THE MANUAL SHUTTLE SINGLE CLUTCH TRANSMISSION

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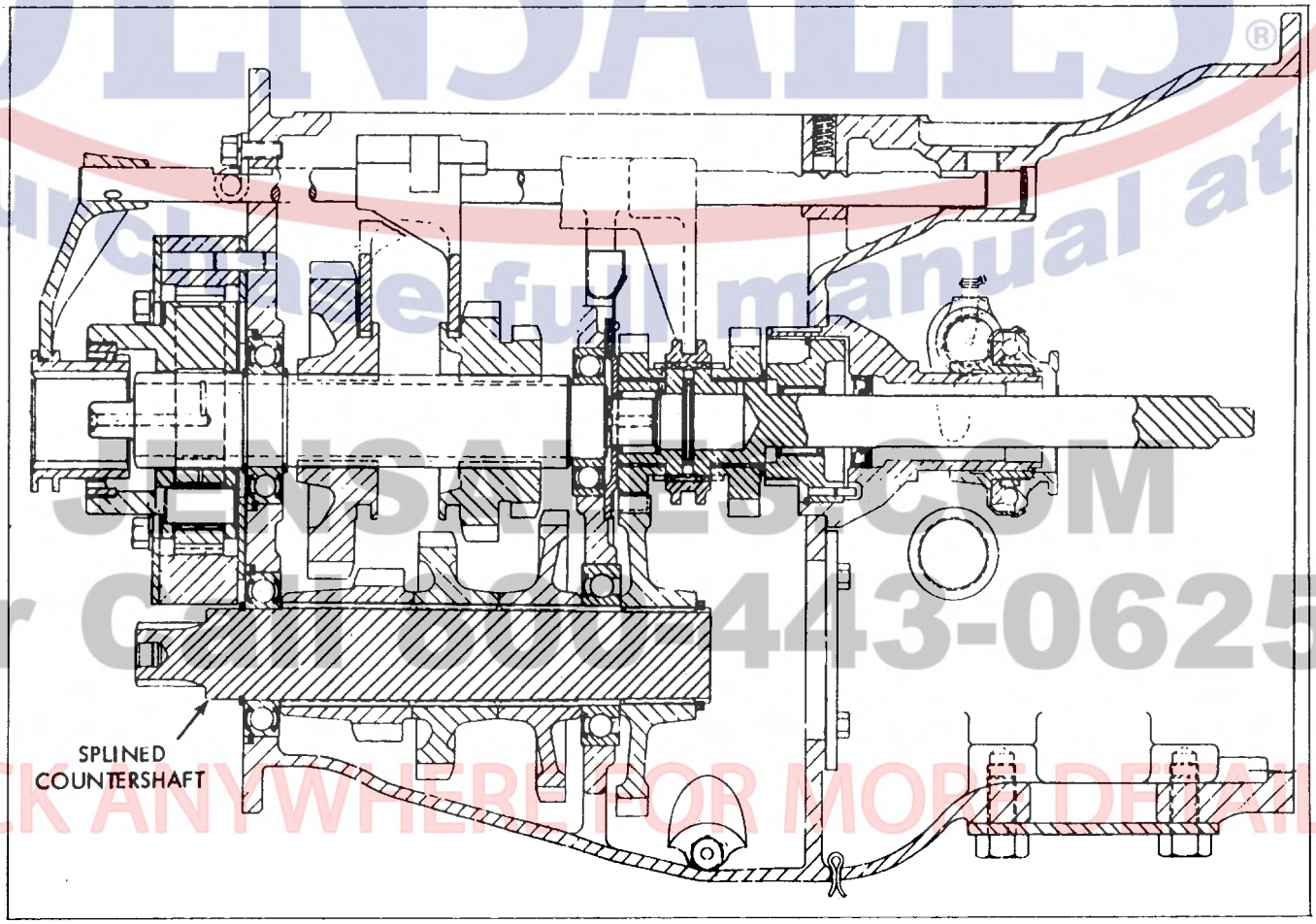

Fig. 1 – Sectional View of Transmission Having Splined-Type Countershaft

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SERVICING THE MANUAL SHUTTLE DUAL CLUTCH TRANSMISSION

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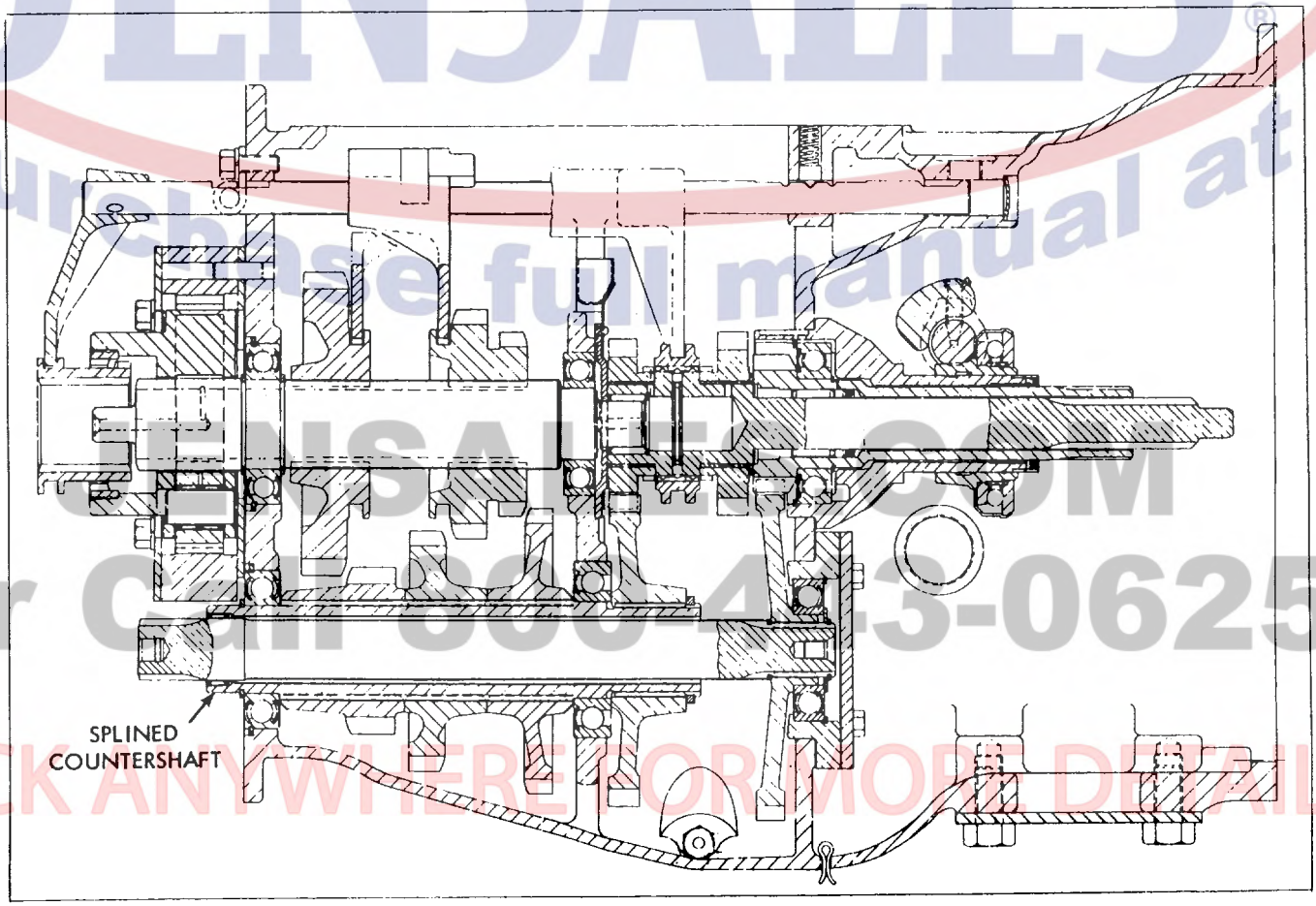

Fig. 1 – Sectional View of Transmission Having Splined-Type Countershaft

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STANDARD 6-SPEED TRANSMISSION
(Single Clutch)

INDEX

This Section contains the overhaul procedures for the standard 6-speed transmission (single clutch). Although some components will vary slightly, (depending upon the unit in which the transmission is installed) the overhaul procedures will remain the same. *Refer to the Tractor Parts Book to ensure that the correct parts are ordered.*

For instructions pertaining to removal and re-installation from the tractor using this transmission, refer to the appropriate tractor "write-up".

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STANDARD 6-SPEED TRANSMISSION
(Dual Clutch)

INDEX

This Section contains the recommended overhaul procedures for the standard 6-speed transmission (dual clutch), removed from the tractor and placed on a stand. Although some components will vary slightly, (depending upon the unit in which the transmission is installed i. e. gasoline or diesel engine) the basic overhaul procedures will remain the same. *Refer to the Tractor Parts Book to ensure that the correct parts are ordered.*

For instructions pertaining to removal and re-installation from the tractor using this transmission, refer to the appropriate tractor "write-up".

DRIVE AXLE ASSEMBLY

NON-PLANETARY TYPE

CONTENTS

INTERNAL HYDRAULIC SYSTEM—INDUSTRIAL TRACTORS

INDEX

INTRODUCTION

This Part pertains to servicing the Internal Hydraulic System on all Industrial Tractors so equipped, except the following models:

MF 202 Prior to Serial #310 243
MF 203 Prior to Serial #659 002 089
MF 204 Prior to Serial #344 355
MF 205 Prior to Serial #659 101 226
MF 302 Prior to Serial #119 700 705
MF 304 Prior to Serial #119 750 647

For servicing the Hydraulic System on the previously mentioned models, refer to Group III, Section A, Part 4.

Tractors after the serial nos. listed above will have the Response Control located on the right side of the center housing as shown in Fig. 1.

The lift links can be raised into transport position with either the Draft Control Lever or the Position Control Lever.

To operate the Hydraulic system in Position Control, the Draft Control Lever must be all the way to the rear of the quadrant. The lower links can then be positioned by the Position Control Lever. When the Position Control Lever is moved toward the rear of the quadrant, the lower links will raise. When moved toward the forward side of the quadrant, the lower links will lower in proportion to the position of the lever. This lever is used for attaching and operating equipment that is not draft controlled.

To operate the system in Draft Control, the Position Control Lever must be placed in transport position (to the rear of the quadrant against the stop). The Draft Control Lever, which is on the outer quadrant, is provided with an adjustable locater. This

PART 4—INTERNAL HYDRAULIC SYSTEM— MF 135, 150 AND 165 TRACTORS

INDEX

DESCRIPTION AND OPERATION

The Hydraulic System described in this part is similar to the one used on the MF 35, 50 and 65 Tractors. It has Draft Control through the top link and Master Control Spring, also Position Control regulated by the operator.

One difference in the two systems is that the MF 35, 50 and 65 Tractors have a slow response control which restricts the dropping of the implement by regulating the amount of travel of the control valve to an exhaust position. On this system, the rate of lowering an implement is controlled by a dash pot, which retards the control valve toward the exhaust position. This enables the tractor to be operated in slow response over an uneven terrain and still maintain an even depth of the implement. The control valve is spring-loaded toward the intake side, rather than toward the exhaust, as is the earlier system. The hydraulic system can be raised into transport position or lowered position with either the draft control lever or the position control lever. Fig. 1 shows a view of the lift cover assembly, standpipe and the hydraulic pump assembly positioned as they would appear in the tractor — also shows identification of Controls.

To operate the hydraulic system in position control, the draft control lever must be all the way to the rear of the quadrant. The lower links can then be positioned by the position control lever. When the position control lever is moved toward the rear of the quadrant, the lower links will raise. When moved toward the forward side of the quadrant, the lower links with lower in proportion to the position of the lever. This lever is used for attaching implements and for operating implements that are not draft controlled.

To operate the system in draft control, the position control lever must be placed in transport position (to the rear of the quadrant against stop). The draft control lever, which is on the outer quadrant, is provided with an adjustable locater which allows the operator to lower the implement to the same depth each time. When operating in draft control, the implement is raised to transport and lowered with the draft control lever.

HYDRAULIC LIFT COVER

The hydraulic lift cover is mounted on top

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