

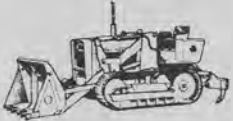
Operator's Manual



MF 135 TRACTOR

MF

Massey Ferguson



Massey Ferguson

TO OUR CUSTOMER:

Congratulations on your selection of a Massey-Ferguson Product. We believe you have exercised excellent judgment in the purchase of your Massey-Ferguson machine. We are most appreciative of your patronage.

Your Dealer has performed every pre-delivery service on your new machine. This machine is covered by a Registration and Inspection Certificate which is printed on the inside back cover.

He will be happy to acquaint you with the operating and maintenance instructions given in this manual, and to instruct you in the proper and varied applications of this machine. Call on him at any time when you have a question, or need equipment related to the use of your machine.

We recommend that you carefully read this entire manual before operating the unit. Also, time spent in becoming fully acquainted with its performance features, adjustments and maintenance schedules will be repaid in a long and satisfactory life of the product.

This piece of equipment is covered by warranty. The warranty agreement is printed in the back of this manual.

Massey-Ferguson reserves the right to make changes or add improvements to its products at any time without incurring any obligation to make such changes to products manufactured previously. Massey-Ferguson, or its dealers, accept no responsibility for variations which may be evident in the actual specifications of its products and the statements and descriptions contained in this publication.

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SAFETY PRECAUTIONS



The safety of the operator is one of the main concerns in designing and developing a new Tractor. Designers build in as many safety features as possible. However, every year many accidents occur which could have been avoided by a few seconds of thought and a more careful approach to handling farm machinery and implements. You, the operator, can avoid many accidents by observing the following precautions. Study these precautions and insist those working with you and for you follow them.

- * Never attempt starting the engine while standing alongside the tractor. Start the engine only while sitting in the operator's seat.
- * Do *not* bypass the starter safety switch with "home made" wiring. Consult the MF dealer if the starter safety switch should malfunction.
- * Never operate the Tractor engine in a closed building.
- * When operating a gasoline tractor in conjunction with an implement that could discharge trash toward the tractor, install a metal sediment bowl in place of the original heat resistant glass bowl.
- * If the Tractor is equipped with a Saf-T-Frame USE THE SEAT BELT.
- * Safety Shields are for your protection — keep them in place.
- * Be particular about loose clothing which can catch easily in moving parts.
- * Only you, the operator, should be permitted on the Tractor when it is in operation. Never allow anyone to ride on drawbar, hitch or fender.
- * Keep a firm grip on the steering wheel at all times with thumbs clear of spokes when operating the Tractor.
- * Always remain seated when the Tractor is moving over rough ground.
- * Reduce speed of the Tractor on curves, rough ground and hillsides so there is no chance of overturning.
- * Make sure the brakes apply evenly when coupled together.
- * Always keep the Tractor in gear to provide engine braking when going down steep hills or grades. With Multi-Power Transmission, shift to "High" range to provide engine braking.
- * Never leave the Tractor engine running while working on the Tractor or while drawn equipment is being adjusted, unless specifically recommended.
- * Place the gearshift lever and dual range lever in "Neutral" when the Tractor is stopped. Apply the parking brake before leaving the Tractor platform.
- * Do not leave an implement in the raised position when not in use. Lower the implement to the ground.
- * Always mount and dismount the Tractor from the side. Never to the rear.
- * Never refuel the Tractor when the engine is running. Do not smoke while filling the fuel tank or servicing the fuel system.
- * Add coolant to the radiator only when the engine is stopped or idling slowly. Turn the radiator cap slowly to relieve pressure when removing the cap.

- * Do not hitch towed loads to any point except standard equipment drawbar or cross drawbar with stay link kit.
- * Before making adjustments in the electrical system, disconnect the battery cables. This prevents sparks which create a dangerous fire hazard.
- * Be sure all hydraulic connections are tight. Before disconnecting lines and hoses to the Tractor hydraulic system, be sure to relieve all pressures. Escaping hydraulic oil under pressure can cause injury.
- * Never use makeshift jacks when adjusting thread width settings.
- * Only light Category II equipment should be used on tractors having Category I linkage. Heavy Category II equipment may impair Tractor stability.
- * When preparing calcium chloride solution for liquid tire ballast, never pour water on calcium chloride. A chlorine gas is generated which can be explosive. This can be avoided by slowly adding the calcium chloride flakes to the water and stirring until dissolved.
- * Always use the headlamps and work lamps for night work.
- * Use safety lights and SMV Emblem when equipment is being driven on the road or highway. (Check with local authorities for possible legal limitations.)
- * As a safety precaution, it is recommended that a fire extinguisher be carried on the Tractor at all times.
- * Remember — "SAFETY" is only a word until it is put into practice.



Look for this symbol to point out important safety precautions. It means — ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED.

IMPORTANT DIESEL FUEL PRECAUTIONS

THE FUEL INJECTION EQUIPMENT IS DESIGNED FOR EFFICIENCY, DURABILITY AND LONG LIFE. HOWEVER, IT CAN BE SERIOUSLY DAMAGED BY WATER, SEDIMENT OR INCORRECT FUEL. THE EXTENT OF TROUBLE-FREE OPERATION AND THE ACTUAL LIFE OF THE COMPONENTS WILL DEPEND ON THE CARE GIVEN THE SYSTEM.

READ THE INFORMATION LISTED ON THIS PAGE THOROUGHLY AND ADOPT THE RECOMMENDED PRACTICES. ADHERENCE TO THESE PRACTICES WILL ASSURE ECONOMICAL, TROUBLE-FREE OPERATION AND SATISFACTION WITH YOUR DIESEL TRACTOR.

1. Select a REPUTABLE SUPPLIER and buy only CLEAN diesel fuel which meets the REQUIRED SPECIFICATIONS.
2. Keep fuel clean by adhering to the following practices:
 - a. Store fuel in tanks equipped with a WATER TRAP. DRAIN TRAPS REGULARLY. Do not store diesel fuel in galvanized tanks.
 - b. If it is necessary to store the fuel in drums, make sure they are free of WATER, GASOLINE AND SEDIMENT. Keep drums under cover, away from direct sunlight and rain. Keep plugs in place and tight.
 - c. Once in place, avoid moving the tank or drum.
 - d. Do not use the last few gallons of fuel from the storage tank, as it is likely to contain water and sediment.
 - e. Handle the fuel as little as possible. AVOID USING CANS AND FUNNELS TO TRANSFER FUEL, AS THEY ARE DIFFICULT TO KEEP CLEAN.
3. Fill Tractor fuel tank at the end of each day's operation to prevent condensation.
4. Inspect the agglomerator bowl DAILY, before starting the engine. Drain and clean bowl, if water or sediment is present.

IMPORTANT: IF THE AGGLOMERATOR BOWL REQUIRES FREQUENT DRAINING, ADOPT BETTER METHODS OF STORING AND TRANSFERRING THE FUEL. WATER OR SEDIMENT WILL DAMAGE THE HIGHLY PRECISION INJECTION PUMP AND INJECTORS.

5. Replace the primary fuel filter and secondary filter at the recommended hourly intervals. DIRTY FUEL FILTERS WILL REDUCE POWER. Make sure to CAREFULLY CLEAN the outside of the filter before removing. USE ONLY GENUINE MF FILTER ELEMENTS.

6. If the injection pump, injectors, or the fuel system should require adjustment or servicing, CALL YOUR MASSEY-FERGUSON DEALER. He has the special training and tools required to do the job properly.

INTRODUCTION

The information in this Manual describes the operation, maintenance and servicing of your new Tractor to help you keep "on-the-go". The money you have invested in your Tractor will be better spent if you take the time to READ this Manual and get to KNOW it. Every piece of machinery feels better, works better and becomes more efficient when you are familiar with it.

DO NOT neglect the maintenance that is recommended.

A machine which is properly maintained pays a bigger dividend than one which is neglected. The maintenance and servicing described in this Manual can all be done with tools ordinarily available.

Massey-Ferguson has engineered and tested these Tractors under all kinds of conditions to produce a superior machine. They have kept it as simple as possible, so you can do many small jobs. This Manual will help you, the operator, get the most out of your MF Tractor.

The reference to left-hand and right-hand used throughout the Manual refers to the position when seated in the operator's seat, facing forward.

TRACTOR IDENTIFICATION

For prompt, efficient service when ordering parts or requesting repairs at your local MF Dealer, record the complete Serial Numbers in spaces provided.

TRACTOR

The Tractor Serial Number is recorded on a plate attached to the instrument panel.

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Fig. A - Tractor Serial Number

Engine

The Engine Serial Number is stamped on the left side of the engine block.

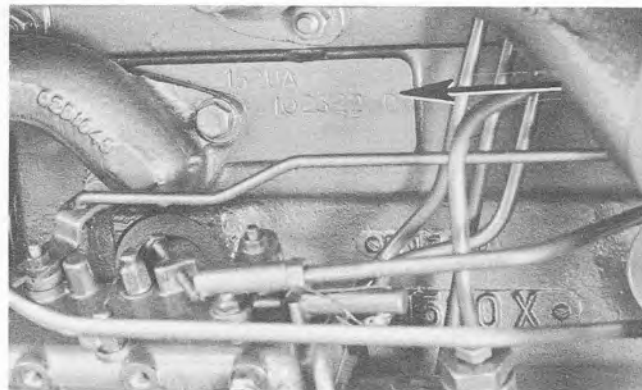


Fig. B - Engine Serial Number

Transmission

The Transmission Serial Number is stamped on top of the transmission housing on the right-hand side of the Tractor.

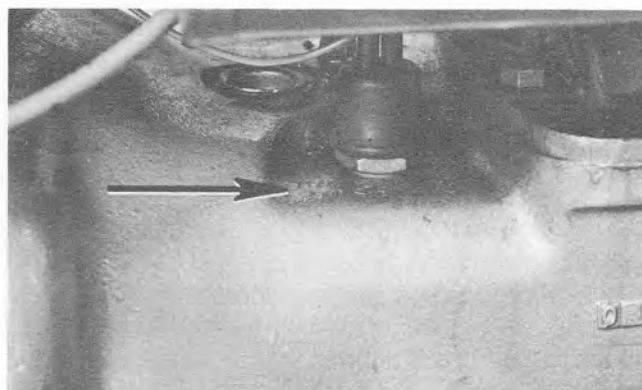


Fig. C - Transmission Serial Number

Rear Axle Assembly

The Rear Axle Assembly Serial Number is stamped on top of the left-hand side of the axle assembly.

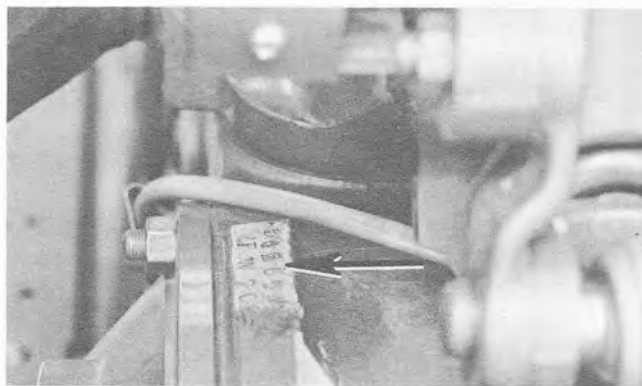


Fig. D - Rear Axle Serial Number

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CONTROLS AND INSTRUMENTS

The controls and instruments of your MF 135 Tractor have been located for maximum operator comfort and convenience. The controls and instruments vary slightly, according to the model of Tractor and how it is equipped. These differences will be indicated throughout the Manual.

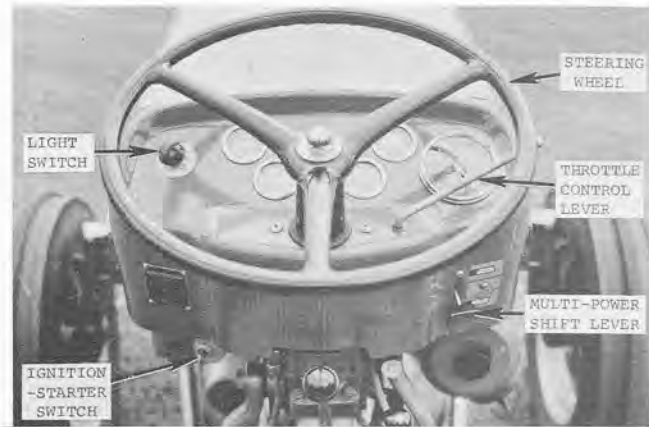


Fig. 1 - Controls

CONTROLS

Before operating your Tractor, study this section of the Operator's Manual, and become thoroughly acquainted with the Tractor controls and their particular functions. The controls vary according to how the Tractor is equipped, and these differences will be indicated throughout the Manual.

Steering Wheel and Column

(See Fig. 1)

The height and angle of the steering wheel and column is positioned for maximum comfort to the operator when operating from the sitting position.

Throttle Control Lever (See Fig. 1)

Move the throttle control lever down to increase engine speed and up to decrease engine speed.

Ignition Starter Switch (See Fig. 1)

Diesel Models

On diesel models, the switch is a starter

switch only. When the switch is turned to the right, the starter is engaged. After the engine has started, release starter switch and it will automatically return to the "off" position. When the key is removed from the switch, it is automatically locked.

Gasoline Models

On gasoline models, the switch is a combination ignition-starter switch. The switch has three positions: "Off", "Ignition" and "Start". Rotating the switch to the right to the "ignition" position activates the Tractor ignition system; further rotation of the switch to the right engages the starter. After the engine has started, release the switch and it will automatically return to the "ignition" position. To stop the Tractor engine, rotate the switch to the "off" position.

Fuel Shut-Off Control (Diesel Model) (See Fig. 2)

The fuel shut-off control knob controls the starting and stopping of the diesel engine. Pushing the control "In" permits fuel to flow to the injectors. Pulling the knob

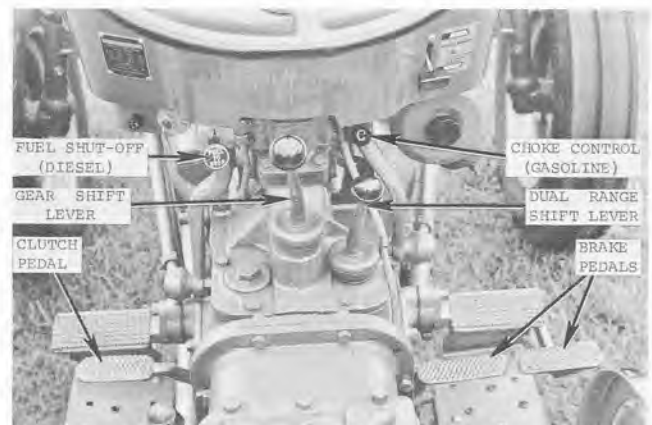


Fig. 2 - Controls

toward the operator cuts off the fuel supply to the injectors, stopping the engine.

Choke Control (Gasoline Model) (See Fig. 2)

Pull the choke control knob toward the operator to choke the engine. To start a cold engine, pull the choke control knob out. As the engine warms up and begins to run smoothly, push the choke control knob in.

NOTE: It is usually not necessary to use the choke to start a warm engine.

Cigarette Lighter (Accessory)

Depress the lighter and it will automatically heat and snap out, ready for use. Avoid holding lighter in by hand while it is heating.

Light Switch (See Fig. 1)

The headlamps, instrument panel and work-warning lamps, are operated by a rotary switch. The switch has the following positions when rotated to the right from the "off" position: (1) "Bright" and work-warning light (panel lamps off); (2) "Bright", work-warning light and panel lamps; (3) "Dim", work-warning light and panel lamps.

The work-warning light is on in any of the three switch positions. A switch in this light allows you to select a red tail light or a white work light.

Gear Shift Lever (See Fig. 2)

The 12-speed Multi-Power transmission has the shift pattern indicated on the center housing. The 8-speed transmission shift pattern is indicated on the shift knob, with a Speed Range Chart located on the right Tractor fender.

Dual Range Shift Lever (See Fig. 2)

The dual range shift lever has the fol-

lowing positions: (1) "Low", (2) "Neutral" and (3) "High".

The dual range shift lever must be in the "Neutral" position to complete the circuit to engage the starting motor. The dual range shift lever provides two speeds in each gear selected by the use of the gear shift lever.

Multi-Power Shift Lever (6 Speed)

The Multi-Power Shift Lever, if so equipped, is in easy reach of the operator. The Multi-Power Shift Lever provides the operator with a range of twelve forward and four reverse speeds.

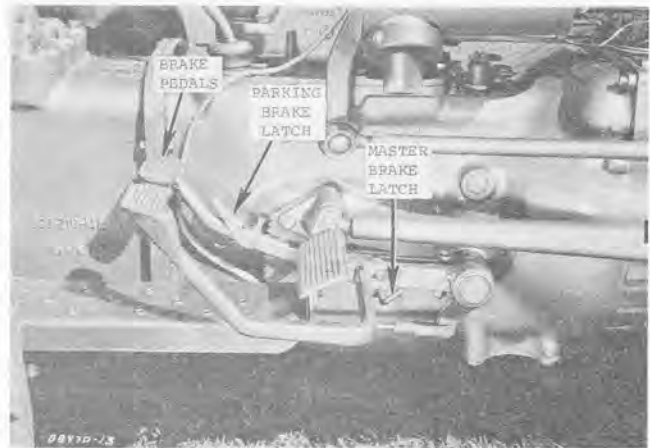


Fig. 3 - Brake Controls

Individual Brake Pedals (See Fig. 3)

Foot pressure, on either the left or right brake pedal, brakes the corresponding rear wheel. This is helpful when making short turns or when operating on steep slopes.

Master Brake Latch (See Fig. 3)

An interlocking latch locks the individual brake pedals together, providing a master brake pedal for highway use.

Parking Brake Latch (See Fig. 3)

The parking brake latch is used for locking the brakes when parking. The latch can

be easily engaged by tripping the latch forward by hand or foot and depressing the brake pedal. To release the parking brake, move the latch to the rear and depress the brake pedal.

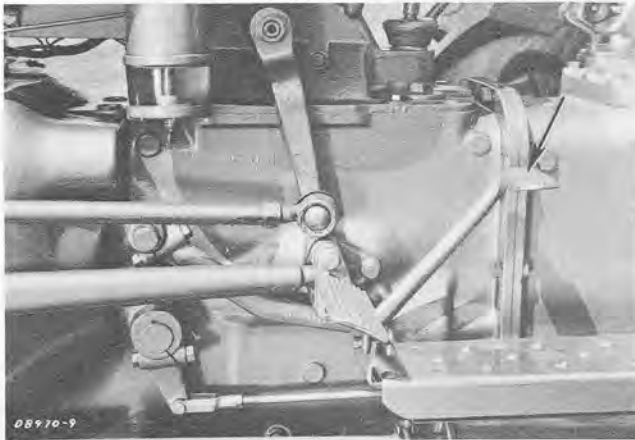


Fig. 4 - Clutch Pedal

Clutch Pedal (See Fig. 4)

Dual Stage Clutch

A Tractor equipped with "Live" PTO has a dual clutch as standard equipment and a single pedal operates both clutch stages. Movement of the pedal through the first stage disengages the primary clutch, which will stop the Tractor's forward or reverse motion. Movement through the second stage disengages the secondary clutch, which controls the hydraulic pump and PTO shaft.

Single Stage Clutch

A Tractor equipped with "Independent" PTO uses a single disc clutch. Fully depressing the clutch pedal stops only the forward or reverse motion of the Tractor, providing a constant running hydraulic system.

On MF 135 Special Tractors, a single disc clutch only, is used. Full depression of the clutch pedal stops the Tractor movement, also stopping the hydraulic pump and PTO shaft.

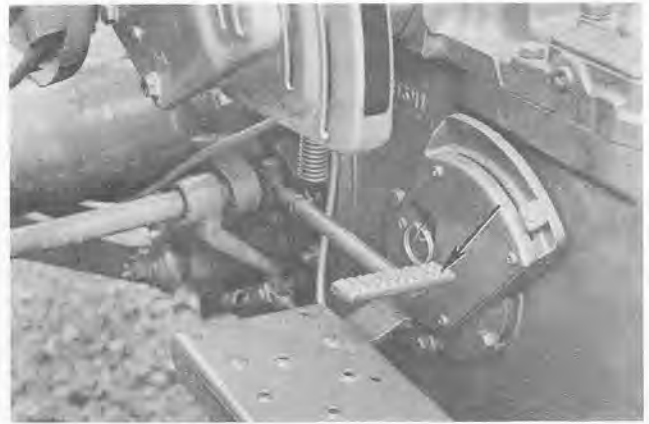


Fig. 5 - Differential Lock Pedal

Differential Lock Pedal (Option) (See Fig. 5)

To engage the differential lock, depress the differential lock pedal. To disengage the differential lock turn the front wheels to the right or apply the right brake. Differential lock is especially advantageous where traction is poor. By depressing the differential lock pedal, the rear axles are locked together so both rear wheels pull simultaneously, providing increased traction.

IMPORTANT: For best results, engage differential lock before excessive slippage occurs. **DO NOT ENGAGE DIFFERENTIAL LOCK WITH WHEEL SPINNING EXCESSIVELY.** If this condition occurs, depress clutch pedal and then, engage differential lock.

Power Take-Off Shift Lever (See Figs. 6 and 7)

The Power Take-Off Shift Lever will vary according to the model of the Tractor and how equipped. The following lists the Tractor models and PTO options.

MF 135 Deluxe Tractor

The MF 135 Deluxe Tractor can be equipped with either "Live" or "Independent" Power Take-Off.

MF 135 Orchard Special Tractor

The MF 135 Orchard Tractor is equipped with "Live" Power Take-Off only.

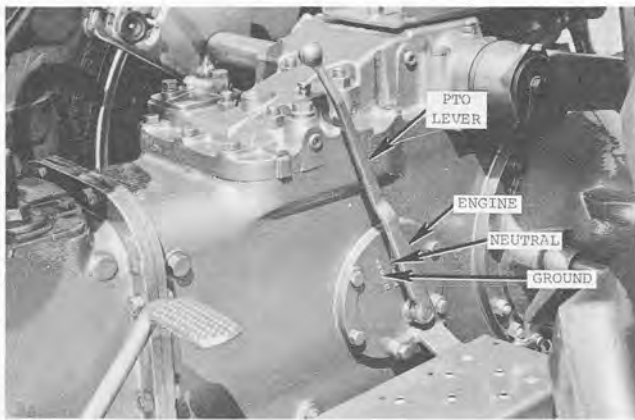


Fig. 6 - "Live" PTO Shift Lever



Fig. 8 - Hydraulic Quadrant - Without Pressure Control

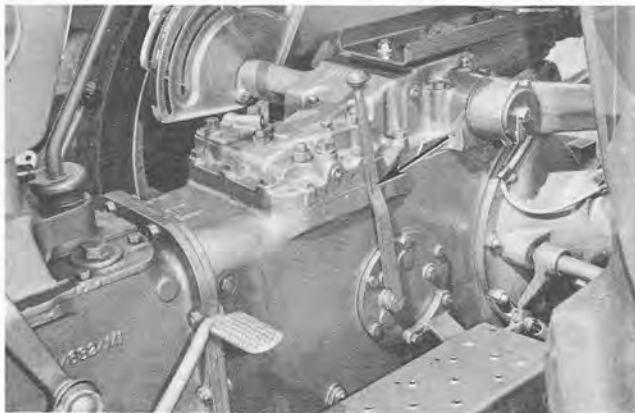


Fig. 7 - "Independent" PTO Shift Lever

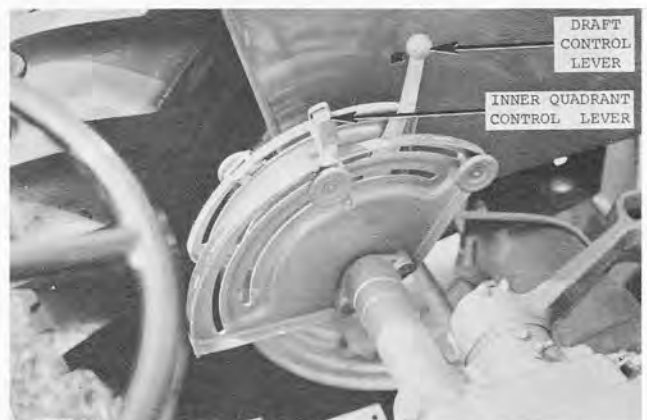


Fig. 9 - Hydraulic Quadrant - With Pressure Control

MF 135 Special Tractor

The MF 135 Special Tractor is equipped with Transmission Drive Power Take-Off only.

MF 135 Vineyard Tractor

The MF 135 Vineyard Tractor is equipped with "Independent" Power Take-Off only.

Hydraulic Quadrant (See Figs. 8 and 9)

The MF 135 Tractor may be equipped with a hydraulic quadrant with, or without, a Pressure Control Range on the inner quadrant.

The hydraulic quadrant has two control levers and they are referred to as the Draft Control Lever and Inner Quadrant Lever.

Draft Control Lever

The Draft Control Lever is used when working with soil-engaging implements and is used to lower and raise the implements.

Inner Quadrant Lever

The inner quadrant lever performs a different function in each of the ranges indicated on the inner quadrant. The ranges are as follows:

Position Control: When operating in the Position Control range, the operator can select and maintain a positive position of the Tractor lower links, regardless of draft load.

Pressure Control (Optional): When operating in the pressure Control range, the

operator can select an amount of weight to be transferred to the Tractor rear wheels when using pull-type implements.

Constant Pumping Range: Moving the inner quadrant lever to the constant pumping range provides a constant volume of oil from the Advanced Ferguson System pump for operation of certain (accessory) auxiliary control valves.

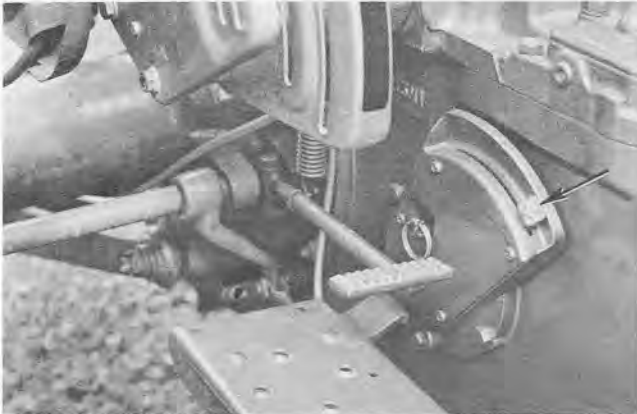


Fig. 10 - Response Control Lever

Response Control Lever (See Fig. 10)

The response control lever is used in conjunction with the Draft Control Lever for controlling the rate at which the Draft Control system responds to draft loads. It also governs the lowering rate of implements in Draft Control and Position Control ranges.

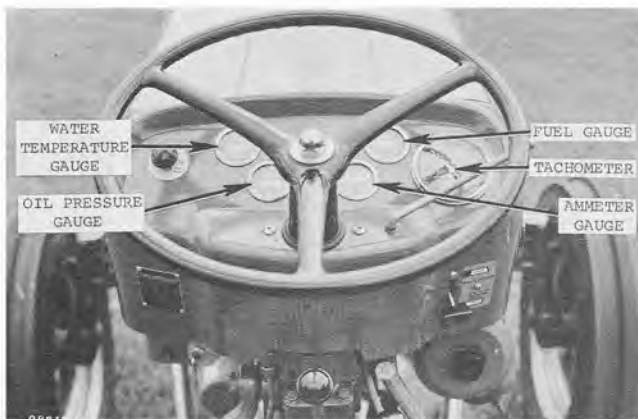


Fig. 11 - Instruments

INSTRUMENTS (See Figs. 11 and 12)

The instrument panel on the MF 135 Deluxe, Vineyard and Orchard Tractors have a tachometer, oil pressure gauge, fuel gauge, water temperature gauge and ammeter gauge, and is lighted by electro-luminescence lighting. The instrument panel on the MF 135 Special Tractor has a water temperature gauge and oil pressure gauge and is not lighted. The function of the gauges are as follows:

Tachometer (See Fig. 11)

The tachometer indicates engine rpm, standard PTO and belt pulley speeds. Window shows accumulated engine hours at an average of 1875 engine rpm.

Water Temperature Gauge (See Figs. 11 and 12)

The water temperature gauge indicates the engine water temperature. Normal engine temperature is when the indicator is registering in the white portion of the dial. If the indicator registers in the red portion of the dial, the engine is overheating. If the engine overheats, determine the cause and correct it before continuing to operate the Tractor.

Ammeter (See Fig. 11)

The ammeter indicates the rates of bat-



Fig. 12 - Instruments (Special Tractor)

tery charge or discharge. The indicator should always register in the (+) side of the dial except with the engine idling, or with a fully charged battery. The indicator will not show a charge in these cases.

Oil Pressure Gauge (See Figs. 11 and 12)

The oil pressure gauge indicates the oil pressure of the engine lubrication system. The gauge indicator should always register in the white area of the dial after the engine is started and warmed up. If the indicator registers in the red area of the dial, a low pressure is indicated. DO NOT OPERATE THE ENGINE WHEN A LOW OIL PRESSURE

IS INDICATED. THIS COULD CAUSE SERIOUS DAMAGE TO THE ENGINE.

Fuel Gauge (See Fig. 11)

The fuel gauge indicates the amount of fuel in the tank.

IMPORTANT: Fill the fuel tank before it becomes empty! If a diesel system is allowed to run out of fuel, it will become necessary to "air-bleed" the fuel system after filling the fuel tank. (See "Servicing" section for "Air-Bleeding" the fuel system.)

OPERATION

Your MF 135 Tractor was designed and engineered for dependable performance during a long service life. Follow the suggestions in this section of the Operator's Manual to help you obtain all the performance that was designed and built into your Tractor. As you become familiar with the operation of your new Tractor, you will find it a flexible and reliable machine, designed and built with the comfort and convenience of you, the operator, in mind. Good operating techniques, coupled with regular maintenance, will ensure maximum Tractor life, economical operation and excellent performance.



Fig. 13 - Crankcase Oil - Check and Fill Points

PRE-STARTING INSPECTION

Before starting the engine for the first time each day, the following checks should be performed:

Crankcase Oil Level (See Fig. 13)

Check oil level in the engine crankcase and correct, if necessary. (Refer to "Lubrication and Maintenance" section for type of oil to use.)

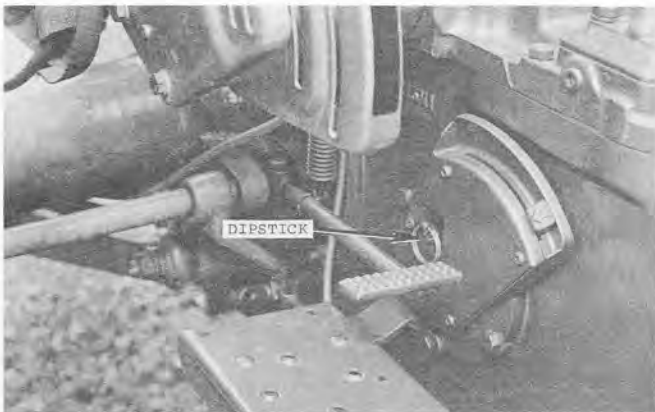


Fig. 14 - Transmission and Hydraulic Oil Check Point

Transmission and Hydraulic Oil Level (See Fig. 14)

Check oil level in the transmission and hydraulic system and correct, if necessary (one check point for both transmission and hydraulic system). Use only Massey-Ferguson M-1129A Hydraulic Oil.



Fig. 15 - Hood Service Door

Radiator Coolant Level (See Fig. 15)

Check the radiator coolant level and correct, if necessary. If operating in freezing temperatures, add anti-freeze. Proper level is one inch above the radiator core.

Fuel Level (See Fig. 15)

Check the fuel level and fill if necessary. The fuel tank capacity for the MF 135 Tractor is 10.2 U.S. - 8.3 Imp. gals. (Refer to "Fuels and Fuel care" section for diesel fuel specifications.)



Use Caution when Removing Pressure Cap from Radiator.

IMPORTANT: On diesel models, fill the fuel tank before it becomes empty. If a diesel system is allowed to run out of fuel, it will become necessary to "air-bleed" the fuel system after filling the fuel tank. (See "Servicing" section on "Air-Bleeding" the fuel system.)



Don't Smoke When Refueling or Inspecting Gasoline Tank.

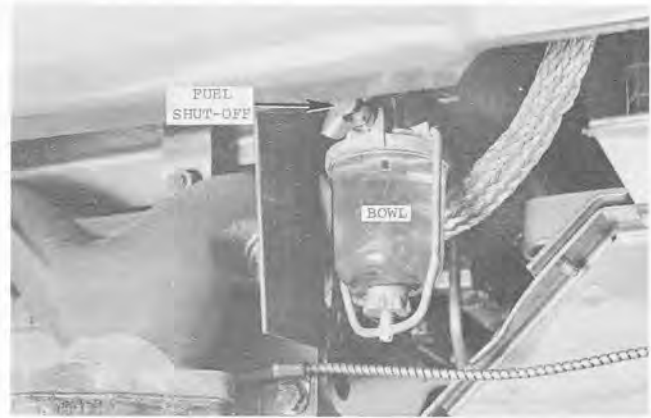


Fig. 16 - Fuel Sediment Bowl - Gasoline

Fuel System (See Figs. 16 and 17)

Gasoline Models

Check the fuel sediment bowl and clean, if necessary. Be sure fuel shut-off valve is open.

Diesel Models

Check the agglomerator on the fuel filter. If water is present, drain agglomerator.

Battery (See Fig. 15)

Access to the battery is easily gained through the hood service door. Raise the

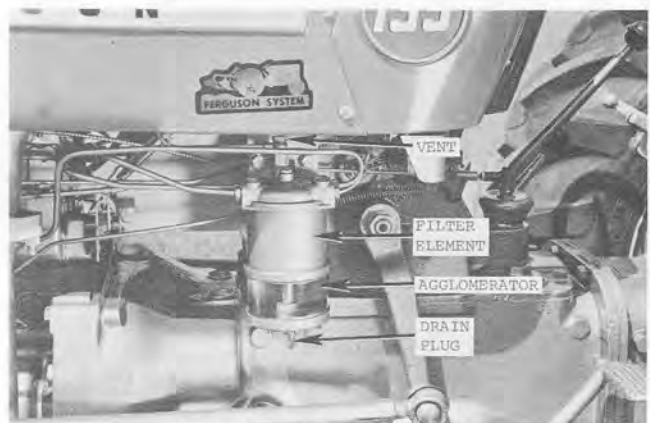


Fig. 17 - Fuel Filter - Diesel



Keep Flames Away from Battery Filler Cap Openings.

door and check the electrolyte level. Fill to the bottom of the filler tubes.

Lubrication

Lubricate the Tractor as specified in the 10-Hour Lubrication Schedule. Use the specified type of lubricants.

Grille Service Panel (See Fig. 18)

Removing the grille service panel gives access to remove dirt and chaff from the radiator fins. To remove the grille service



Fig. 18 - Grille Service Door

panel, loosen the knurled knob at the top of the panel, tilt top of panel out and lift it up.

STARTING THE ENGINE

Warm Weather Starting

Gas Models

Perform Pre-Starting inspection as outlined.

1. Firmly lock the parking brake.
2. Place the Gearshift Lever and Dual Range Lever in "Neutral" and depress the clutch pedal. (If equipped, Multi-Power lever should be in "High" position.)
3. Advance the hand throttle $1/4$ to $1/2$ open.
4. Pull choke control outward the full distance. (If Tractor engine is warm, engine may be started without choking.)
5. Turn the ignition-starter switch to the "ignition" position. Continue to turn the switch to the "start" position. After the en-



Always Set Brakes Before Dismounting, when Stopping on a Hill or Grade.

gine has started, release the switch, it will automatically return to the "ignition" position. (Do not crank engine with starter for more than 30 seconds at a time, as this will overheat the starter. Wait a few minutes for starter to cool before attempting to start the engine again.)



CAUTION: NEVER operate your gasoline Tractor in a closed building. Carbon monoxide (exhaust fumes) is a **KILLER -- PRACTICE SAFETY.**

6. After engine has started, push choke control knob in.

7. Release clutch pedal. Advance the throttle to a fast idle and allow the engine to warm up before placing the Tractor under load.

8. With the engine running, observe all instruments, especially the oil pressure gauge and water temperature gauge. If a low pressure or an abnormal water temperature is indicated, stop the engine and correct the trouble.



Always Open Doors before Starting Tractor Engine.

Diesel Models

Perform pre-starting inspection.

1. Firmly lock the parking brake.

2. Place the Gearshift Lever and Dual Range Lever in "Neutral" and depress the clutch pedal. (If equipped, Multi-Power Lever should be in "High" position.)

3. Advance the hand throttle 1/4 to 1/2 open.

4. Push in the fuel shut-off control knob.

5. Turn the starter switch to the right, engaging the starter. After the engine has started, release switch; it will automatically return to the "Off" position. (Do not crank engine with starter for more than 30 seconds at a time; as this will overheat the starter. Wait a few minutes for starter to cool before attempting to start engine again.)



CAUTION: NEVER operate your diesel Tractor in a building without good cross ventilation. Diesel fumes are very pungent and irritating to the eyes and respiratory system. **PRACTICE SAFETY.**

6. Release clutch pedal. Advance throttle to a fast idle and allow the engine to warm up before placing the Tractor under load.

7. With the engine running, observe all instruments, especially the oil pressure gauge and water temperature gauge. If a low pressure or an abnormal water temperature is observed on the instruments, stop the engine and correct the trouble before re-starting the Tractor engine.

COLD WEATHER STARTING (Gas and Diesel)

Greater satisfaction will be obtained if these cold weather starting recommendations are followed:

1. Use fuel which conforms to cold weather operation specifications. (Diesel Model -- Refer to "Diesel Fuel Specifications Chart".)

2. Use crankcase oil of the correct viscosity for cold weather operation. (Refer to "Lubricants and Lubrication" section.)

3. Be sure battery is fully charged so maximum cranking speed can be obtained.

4. Diesel only. In extremely cold weather, heat created by compression in the diesel engine may not be sufficient to ignite the injected fuel. For this reason, a starting fluid adaptor is available as an accessory for the diesel engine.

- a. Advance the throttle to the 1/4 to 1/2 open position.
- b. Remove the cap from the starting fluid adaptor and position the aerosol can in the adaptor.
- c. Push the fuel shut-off knob in and engage starter.
- d. Push up on starting fluid can to inject starting fluid into the engine air intake system. Use starting fluid sparingly and cautiously, injecting it into the adaptor in shots while the engine is being cranked.
- e. After engine has started, replace screw-on cap on the adaptor, being sure the rubber gasket is in place. Failure to replace the cap on the adaptor will permit unfiltered air to enter the engine air intake system.



CAUTION: Use starting fluid sparingly and cautiously. Don't smoke while using starting fluid. Keep it out of the reach of children.



Extreme care should be exercised to reinstall starting fluid can lid to ensure against leakage. This is particularly important when starting fluid is carried in an enclosure, such as Tractor cab. **PRACTICE SAFETY.**

5. Be sure the ignition system components are in good working order for the gasoline engine and use choke to assist cold weather starting.

Engine Block Heater Kit (Accessory)

An easily installed 500-watt engine block heater kit can be installed in the side of the engine block. When plugged into a 110-120 A.C. electrical outlet, it will heat the engine coolant, making the engine easier to start in freezing temperatures.

Observing the Instruments

Form a habit of observing the instruments, especially during the warm-up period. Frequently observe the instruments while operating the Tractor. The instruments are conveniently located and can be observed at a glance. If the instruments indicate an operational malfunction in their systems, immediately stop the Tractor engine. Determine and correct the malfunction before continuing the operation of the Tractor.

Tractor Warm-Up Period

Allow the Tractor engine to warm up sufficiently before placing it under load. Oil will then circulate freely, preventing undue wear on moving parts. Do not "race" a cold engine during the warm-up period. This contributes to poor fuel economy and engine wear. Running the cold engine at an idle rpm during the warm-up period causes crankcase dilution. Allow the engine to warm-up by running at 1000 to 1200 engine rpm.

OPERATING THE TRACTOR

Break-In Procedure

This Tractor has been designed and developed to furnish many hours of trouble-



Never Allow Anyone, Particularly Youngsters, to Ride Anywhere on the Tractor Except in the Tractor Seat.

free operation. However, an important factor in obtaining trouble-free operation is proper "brake-in" procedures. Follow these suggestions to properly "break-in" this Tractor.

1. During the first 50 hours of operation, run the Tractor under medium load at normal operating temperature. Avoid "lugging" or "over-loading" the engine, but do not operate the Tractor on continuous light loads or at an excessively low engine rpm.

NOTE: The engine should not be operated continuously under full load or at maximum rpm during the "break-in".

2. When encountering heavy load operation, such as plowing, during the "break-in" period, avoid "over-loading" or "lugging" the Tractor. Should this type of operation be encountered, shift one gear lower than would normally be used. However, during the "break-in" period, vary the load by shifting up to the normal gear range for short periods. This will temporarily place the engine under normal load conditions.

3. Periodically check to ensure that an adequate supply of oil is maintained in the engine crankcase. Engine oil consumption is not uncommon until the engine is proper-

ly "broken-in". The SAE Grade must correspond to the recommendations in the lubrication specifications and capacities chart.

4. Change the engine oil and filter element after the first 50 hours of operation and fill the engine crankcase with a reputable brand of engine oil. Refer to the "Lubrication Specifications and Capacities".

5. Check the fan belt tension after the first 10 hours of operation and tighten to the proper tension if required. (See "Servicing" Section for specifications.)

6. During break-in period, check all bolts, nuts, capscrews and metal screws for tightness. If any are found to be loose, tighten them securely. This will assure that all parts and assemblies are held in alignment.

Selecting Ground Speeds

This Tractor may be equipped with either a standard transmission or a Multi-Power Transmission. The standard transmission provides 6 forward and 2 reverse speeds. The Multi-Power Transmission provides 12 forward and 4 reverse speeds. The gears, coupled with various engine rpms, allow the operator to balance load and speed for maximum economy and performance.



"Hot Rodding" Invites Tragedy.

Important factors in selecting the correct gear are:

1. Proper operating speed of the implement.
2. Field conditions and terrain.

3. Tractor performance and operator safety.

NOTE: Racing the engine under light load contributes to poor fuel economy. Excessive "lugging" of the engine accelerates engine wear, as well as causing the engine to overheat.

GROUND SPEED CHART - 12-SPEED MULTI-POWER TRANSMISSION						
Dual Range	Gear	M-P Range	12.4-28 Tires		14.9-24 Tires	
			1500 RPM	2000 RPM	1500 RPM	2000 RPM
L O W	1	L	1.03	1.38	.98	1.31
		H	1.35	1.80	1.28	1.71
	2	L	1.55	2.07	1.48	1.97
		H	2.03	2.70	1.93	2.56
	3	L	2.85	3.79	2.70	3.60
		H	3.72	4.96	3.53	4.70
W	R	L	1.41	1.88	1.34	1.79
		H	1.84	2.45	1.75	2.33
H I G H	1	L	4.13	5.51	3.92	5.24
		H	5.39	7.20	5.12	6.85
	2	L	6.20	8.28	5.90	7.85
		H	8.10	10.81	7.77	10.09
	3	L	11.38	15.17	10.80	14.40
		H	14.86	19.82	14.15	19.49
H	R	L	5.63	7.51	5.35	7.14
		H	7.35	9.81	6.97	9.31

GROUND SPEED CHART -- 8-SPEED TRANSMISSION					
	Gear	12.4-28 Tires		14.9-24 Tires	
		1500 RPM	2000 RPM	1500 RPM	2000 RPM
L O W	1	.99	1.32	.98	1.30
	2	1.48	1.97	1.46	1.95
	3	2.03	2.71	2.00	2.67
	4	2.73	3.64	2.68	3.58
	Rev.	1.41	1.88	1.34	1.79
H I G H	5	3.96	5.29	3.90	5.20
	6	5.95	7.94	5.85	7.81
	7	8.12	10.82	7.99	10.66
	8	10.90	14.52	10.72	14.30
	Rev.	5.63	7.51	5.35	7.14

Shifting Gears

To ensure long transmission life, use care when shifting gears. Follow these suggestions when shifting:

1. With the engine running at low rpm and the Tractor not moving, depress the clutch pedal.
2. Move the gearshift lever into the desired gear and the dual range shift lever into the desired range.
3. If the gears refuse to engage, release the clutch pedal slightly and repeat step 2.
4. After the selected gears have been properly engaged, release the clutch pedal, increasing the throttle setting until the desired speed is reached.
5. When shifting from one gear to another, make the shift at a low engine rpm. Shift gears carefully. Clashing gears causes unnecessary transmission wear and possible damage.
6. After shifting gears, **DO NOT RIDE THE CLUTCH** as this causes undue wear and overheating of the clutch release bearing, clutch disc and pressure plate.

Stopping the Tractor

1. Reduce engine rpm and apply even foot pressure on both brake pedals.
2. Depress the clutch pedal and move the gearshift lever and dual range lever to "Neutral" position.
3. Firmly lock the master parking brake.
4. Turn off ignition switch or pull the fuel shut-off control knob out to shut off the engine.



CAUTION: DO NOT attempt individual wheel braking while traveling at high speed. Always lock the master parking brake before dismounting from the Tractor. PRACTICE SAFETY.

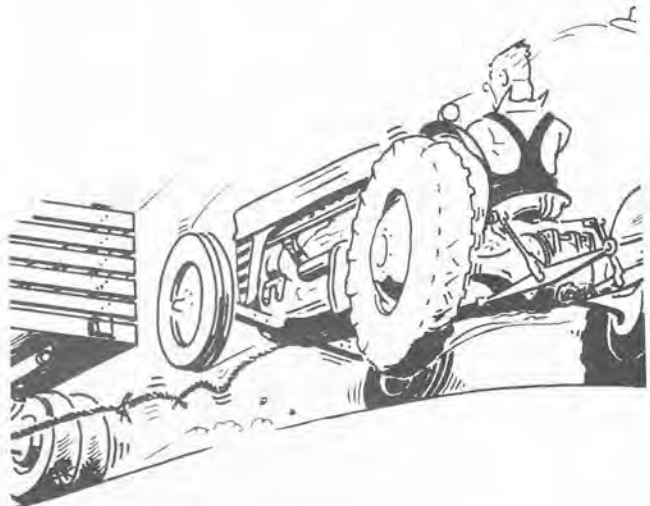
Towing the Tractor

Use extreme care when towing the Tractor. Make sure the towing device is securely attached to the Tractor as well as the towing vehicle. Place the gearshift lever and dual range lever in "Neutral." When towing the Tractor on the highway, equip Tractor with the proper warning devices.



CAUTION: DO NOT tow your Tractor with a chain or cable. Use a sturdy, rigid and suitable drawbar. PRACTICE SAFETY.

NOTE: Tractors equipped with Multi-Power Transmission cannot be started by pushing or towing.



Careless Towing Methods are Very Dangerous.

Multi-Power Transmission

The Multi-Power Transmission provides twelve forward and four reverse speeds. This wide range of speeds provides greater efficiency in all operations.

Multi-Power provides a "shift-on-the-go" feature. Move the Multi-Power Lever to "Low" for greater pulling power to pull through tough spots and heavy crops. Move the Multi-Power Lever to "High" to increase ground speed. No need to disengage the clutch when shifting Multi-Power ranges.

Operating Characteristics of Multi-Power Transmission

1. When starting the Tractor, the Multi-Power Lever should be in "High" position, due to lubrication of various components of the transmission.

2. The Multi-Power Lever may be shifted without disengaging the clutch, allowing you to "shift-on-the-go". When shifting the Multi-Power Lever, always move the lever all the way up or down.

3. Disengage the clutch only when shifting the gearshift lever or dual range lever.

4. The Tractor should be operated in "High" range of Multi-Power. This allows you to shift to "Low" Multi-Power without disengaging the clutch when increased power is needed.

5. When descending a hill, shift the Multi-Power Lever to "High" for engine braking.

6. A Tractor equipped with Multi-Power Transmission cannot be started by pushing or towing.

7. If there is difficulty in shifting the standard gears, move the Multi-Power Lever to "Low".

8. Parking procedure:

- a. Shut off Tractor engine.
- b. SECURELY SET THE MASTER PARKING BRAKE.

NOTE: Multi-Power Transmission does not permit engine compression to be used for braking Tractor parked in gear.

Test for Overload

With the Tractor moving under load, set the throttle lever half-way open. Quickly advance throttle lever to the "full open" position. The engine should begin to gain rpm and build up to its maximum rpm. If the engine fails to gain rpm, it is overloaded and you should shift to a lower gear. Intermittent overload in hilly terrain operation is not harmful.

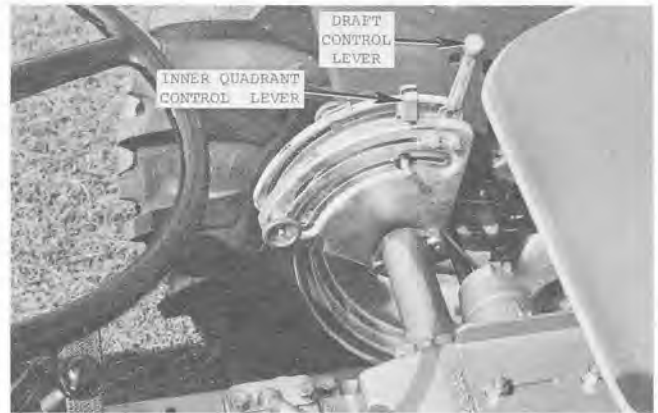


Fig. 19 - Hydraulic Quadrant - Without Pressure Control

HYDRAULIC SYSTEM (See Figs. 19 and 20)

The MF 135 Tractors are equipped with the world famous Advanced Ferguson Hydraulic System and 3-Point Hitch, which is, in brief, a combination of mechanical linkage and hydraulic mechanisms for controlling the operation of implements.

The Advanced Ferguson Hydraulic System and 3-Point Hitch, with Draft Control, Position Control, Pressure Control (optional) and Response Control, is an easy implement attachment system, capable of handling Category I, 3-point hitch implements. This system is also equipped with a constant pumping position, allowing the operation of remote hydraulic cylinders and Auxiliary Hydraulic Control Valves (Accessory).

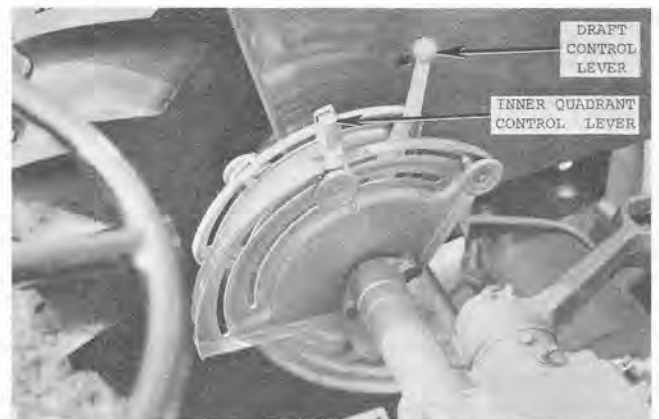


Fig. 20 - Hydraulic Quadrant - With Pressure Control

When to Use Draft Control

Draft Control is used when the 3-point hitch implement is of the soil-engaging type and when the implement is required to maintain a uniform working depth and follow the contour of the ground. When using a Draft Controlled implement, such as a plow, subsoiler, etc., the draft system automatically maintains a furrow at implement working depth and transfers weight of the Tractor rear wheels to provide traction, regardless of field undulations. When working in a field that possesses various soil textures, uniform depth can be maintained by minor adjustments to the Draft Control Lever.



Fig. 21 - Using Draft Control

Using the Draft Control Lever (See Fig. 21)

The Draft Control Lever is used to raise, lower and regulate the operating depth of draft tools. When using the Draft Control Lever, place the inner quadrant lever in the transport position of the Position Control range.

To lower a Draft Controlled implement from the transport position to the ground, move the Draft Control Lever down. If the implement is running too shallow, continue to move the Draft Control Lever down until the desired depth is obtained. If the implement is running too deep, move the Draft Control Lever up until the desired depth has been obtained. The adjustable locator may be set in line with the Draft Control Lever

to be used as a reference. This will allow the operator to lower the implement to the same selected working depth.

To raise a Draft Controlled implement to the transport position, move the Draft Control Lever up until the transport position is reached.

When to Use Response Control

Response Control is used in direct conjunction with Draft Control. The Response Control governs the rate at which 3-point hitch implements are lowered to the ground from the transport position, and governs the rate the Draft Control System responds to various draft loads. Response Control can also be used with Position Control to regulate the implement lowering rate.

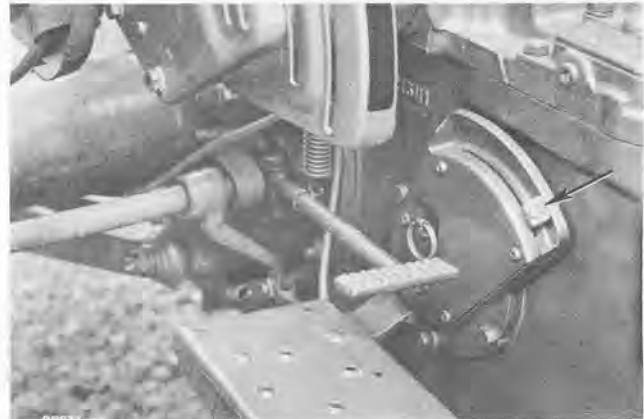


Fig. 22 - Using Response Control

Using Response Control (See Fig. 22)

Certain implements are very active in the soil and cause rapid changes to the draft load due to aggressive implement penetration. These rapid changes can be smoothed out by moving the Response Control toward the "slow" position. If the implement tends to "float" in the soil (as indicated by progressively shallower implement depth), the Draft response may be too slow. This can be corrected by moving the Response Control toward the "fast" position until the Draft Control System responds correctly.

Inner Quadrant Control Lever (See Figs. 19 and 20)

The Inner Quadrant has three ranges: (1) Position Control, (2) Constant Pumping and (3) Pressure Control (optional). One Inner Quadrant Lever performs a different function in each of the three ranges. The operation of the Inner Quadrant Lever in each of the three ranges is as follows:

When to Use Position Control

The Position Control range is used for operating 3-point hitch mounted tools that are not Draft Controlled, such as soil scoops, post hole diggers and cranes. Implements of this type may be held at a fixed height, depth or intermediate position, regardless of Draft loads, thus establishing an infinite number of lower link positions which correspond to the inner quadrant lever.



Fig. 23 - Using Position Control

Using Position Control (See Fig. 23)

When operating in the Position Control Range, place the Draft Control Lever in the fully raised position.

Shift the inner quadrant lever to the Position Control Range, and establish a transport stop by moving the stop for the Pressure Control Range to the upper end of the slot. This will provide the correct setting of the inner quadrant lever for transport when operating in Position Control. The inner quadrant lever may be used to raise, lower and

operate 3-point hitch implements that are not Draft Controlled.

Moving the inner quadrant lever toward "transport" position will raise the implement. Moving the inner quadrant lever toward "down" position will lower the implement. Locating the inner quadrant lever at intermediate positions within the Position Control range will locate the lower links at corresponding intermediate positions. The quadrant has an adjustable stop that allows the operator to return the inner quadrant lever from transport to the same desired operating position.

When to Use Pressure Control (Optional)

A Universal Pressure Control Hitch (Accessory) is required to use Pressure Control.

Pressure Control is used with pull-type implements to provide tractive weight as required. The portion of implement weight that is transferred to the drive wheels by use of Pressure Control results in a near proportionate transfer of weight from the front of the Tractor and the implement. When using Pressure Control and Draft Control, front end weights are normally required to maintain Tractor front end stability.

The amount of implement weight to be transferred to the Tractor rear wheels is determined by the position of the inner quadrant lever in the Pressure Control range. Movement of the inner quadrant lever will increase or decrease the hydraulic pressure in the system. For a given setting, the Pressure Control System will maintain the desired amount of weight transferred to the Tractor rear wheels by maintaining a constant pressure, even as the Tractor and implement crosses uneven field conditions.

Using Pressure Control (Optional) (See Fig. 24)

Move the inner quadrant lever to the low pressure area of the Pressure Control range. Move the Draft Control Lever to the fully raised position. Pull-type implements,

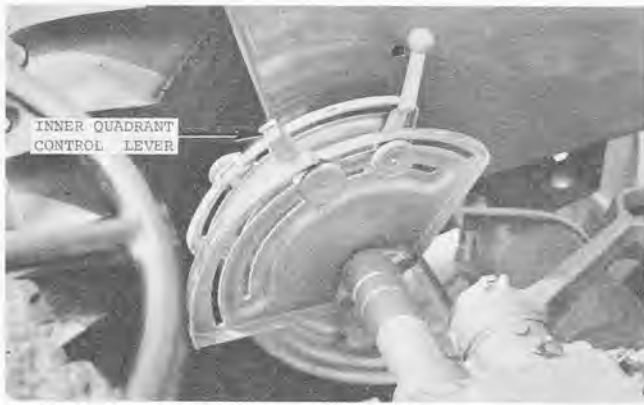


Fig. 24 - Using Pressure Control

as well as 3-point hitch implements having gauge wheels, may be operated in the Pressure Control range; their operation procedures are as follows:

Using Pressure Control with Pull-Type Implements Only

For ground engaging pull-type implements, the implement working depth (as well as raising the implement to the transport position), is controlled by a remote control cylinder coupled to the auxiliary hydraulic system. With the auxiliary hydraulic system, lower the implement to the desired working depth. At this time, the inner quadrant lever should be in the lower pressure area of the pressure range. As the Tractor is driven forward, move the inner quadrant lever upward on the quadrant until adequate traction can be maintained on the rear wheels.

IMPORTANT: Transferring an excessive amount of implement weight to the Tractor will not only impair steering traction but could result in poor implement performance. Too little weight transfer will result in wheel slippage and excessive fuel consumption.

After adequate traction has been obtained, the adjustable stop should be set above the inner quadrant lever. This will prevent the inner quadrant lever from being moved accidentally above the desired setting, which would exert unnecessary weight

transfer. If traction decreases due to a soft spot in the field, the stop can be by-passed to increase weight transfer, as needed. After pulling through the soft spot, the inner quadrant lever can be returned to its original setting.

When making turns at the end of the field with the implement and Tractor, Pressure Control should be reduced as the implement is lifted out of the ground by the auxiliary hydraulic system, activating the implement ground wheels. When operating in high pressure area of the pressure range with implements that are not ordinarily lifted out of the ground, Pressure Control should be reduced while turning.

Constant Pumping Range (See Fig. 25)

When the inner quadrant lever is in the constant pumping range, the Advanced Ferguson System Pump supplies 4.8 U.S. - 4 Imp. gpm of hydraulic oil to the hydraulic lift cover. An Auxiliary Hydraulic Control Valve (Accessory) can be operated from this oil supply.

AUXILIARY HYDRAULIC SYSTEM

An important feature of the Advanced Ferguson Hydraulic System is the Auxiliary Hydraulics. This system utilizes the hydraulic oil supply, 4.8 gpm at 2000 engine



Fig. 25 - Using Constant Pumping

rpm, from the Advanced Ferguson Hydraulic System pump. A single-acting remote cylinder may be operated with the Draft Control Lever, with the Inner Quadrant Control lever in the constant pumping position without an Auxiliary Control Valve (Accessory). To operate one or two double-acting remote cylinders an Auxiliary Control Valve (Accessory) must be mounted.

For a complete coverage of the Auxiliary Hydraulic System, refer to the Operator's Manual of the Auxiliary Hydraulic System, that accompanies the Tractor.

Lock-Out and Variable Drop Cartridge (Accessory)

When operating remote cylinders to raise or lower implements, the rate of cylinder retract (implement lowering) may be adjusted to suit the operating conditions. Implements may be lowered from transport slow or fast, depending upon the adjustment of the knurled knob located on top of the control valve body.

To adjust the rate of cylinder retract, turn the control knob "out" to "slow down" the retract speed. Turn the control knob "in" to "speed up" the retract speed.

To hydraulically lock an implement in transport, turn the knurled knob "out" all the way. To relieve this hydraulic lock, turn the knob "in".



Fig. 26 - Attaching Left Lower Link to Implement

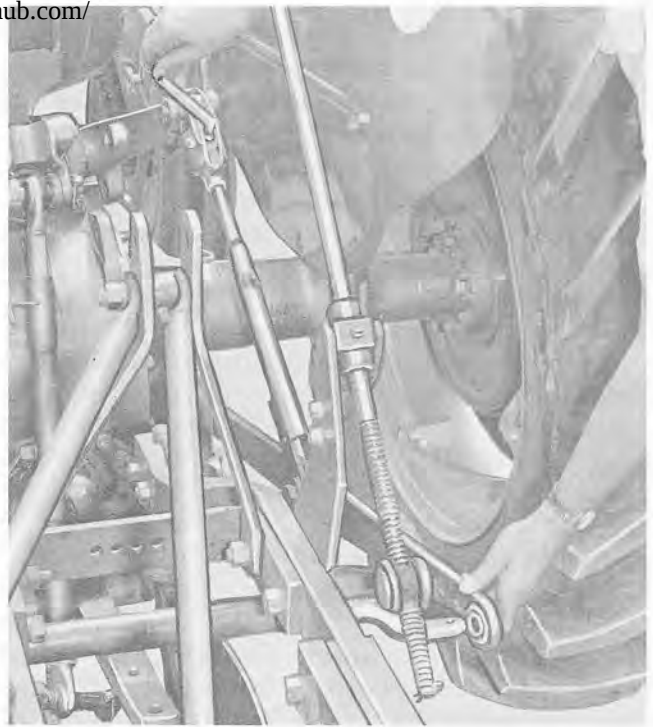


Fig. 27 - Attaching Right Lower Link to Implement

ATTACHING AND DETACHING IMPLEMENTS (See Figs. 26, 27 and 28)

Attaching 3-Point Hitch Implements

The Advanced Ferguson Hydraulic System and 3-point hitch combines your Tractor and implement into a closely coupled unit, providing complete implement control at your fingertips.

Attaching and detaching Category I, 3-point hitch implements is easy and fast. Attach and detach implements, as follows:



Fig. 28 - Attaching Top Link

1. Back the Tractor to the implement, aligning the ends of the lower links with the implement hitch pins.

2. With the inner quadrant lever in the Position Control Range, position the lower links so they are aligned with the implement cross-shaft.

3. Firmly set the Tractor parking brake and dismount the Tractor.

4. Attach the left lower link to the left implement hitch pin. Secure lower link to hitch pin with linch pin. (See Fig. 26.)

5. Attach the right lower link to the right implement hitch pin. Use the leveling crank if necessary to lower or raise the right lower link. Secure the lower link to hitch pin with linch pin. (See Fig. 27)

6. Attach the end of the top link to the implement "A"-frame and secure attaching pin with linch pin. Attach the remaining end of the top link to the Tractor control beam. (See Fig. 28.)

Detaching 3-Point Hitch Implements

1. Select a level area to detach the implement; this will be beneficial when reattaching the implement.

2. Lower the implement to the ground. If needed, turn the leveling crank to level the implement with the ground.

3. Detach the top link from the Tractor then firmly set the parking brake.

4. Dismount the Tractor from the right side and detach the right lower link from the implement hitch pin. Detach the left lower link from the implement hitch pin and secure the linch pins in their clips.

ATTACHING AND DETACHING PULL-TYPE PRESSURE CONTROL IMPLEMENTS

Pull-type, Pressure Control implements may be attached and detached from the Tractor easily and fast.

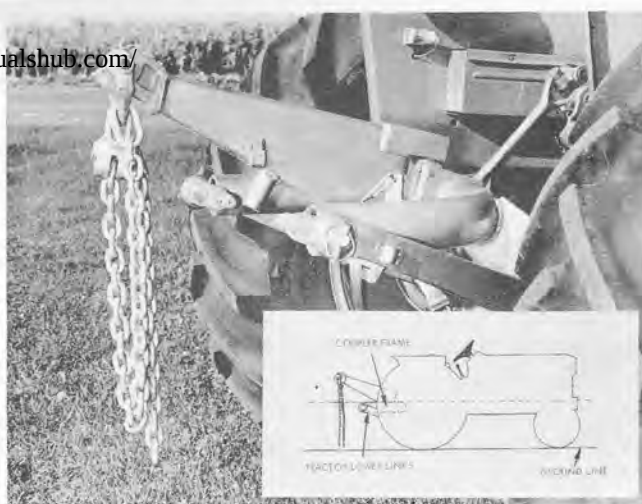


Fig. 29 - Coupler Frame Position



Fig. 30 - Installing Coupler Chain to Implement

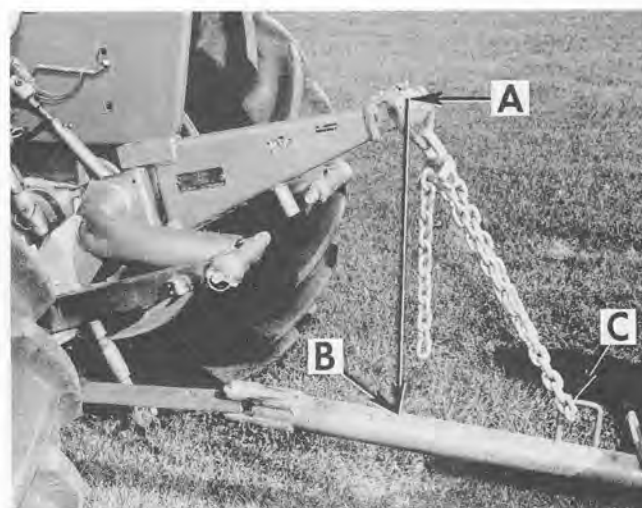


Fig. 31 - Angle of Coupler Chain



Fig. 32 - Chain Spreaders

Universal Pressure Control Hitch (Accessory) (See Figs. 29, 30, 31, 32 and 33)

A. Attaching

1. With the hitch assembly installed on the Tractor, start the Tractor engine and place the inner quadrant lever in Position Control. Position the lift arms until the coupler frame is parallel with the Tractor, being sure that the left and right lift rods are adjusted level.

2. Hitch the implement tongue to the Tractor's swinging drawbar.

NOTE: Be sure the implement tongue is sturdy enough to withstand the weight transfer. With the implement and hitch attached, put



Fig. 33 - Coupler Boom in Locked Position

the inner quadrant lever in Pressure Control and move it from "low" pressure to "high pressure. If in this test application, the implement tongue appears to flex to the extent that a permanent bend or break will occur, reinforce the tongue.

3. With the coupler frame parallel with the Tractor, insert the chain through the loop and pull the chain up snug and fasten it into the chain claw. (See Fig. 29 Inset.)

IMPORTANT: The position of the chain loop on the implement tongue should be arrived at by the following method.

- a. Attach tongue to the Tractor.
- b. Extend coupler boom to the operating position:
- c. Measure from point (A) to point (B).
- d. Point (B) to point (C) should not exceed more than .7 of the distance between point (A) and (B).
- e. The following chart indicates what the distance from (B) and (C) should be after measuring the (A) to (B) distance for your particular application.

A to B is 15"	....	B to C is 10.5"
A to B is 16"	....	B to C is 11.2"
A to B is 17"	....	B to C is 11.9"
A to B is 18"	....	B to C is 12.6"
A to B is 19"	....	B to C is 13.3"
A to B is 20"	....	B to C is 14.0"
A to B is 21"	....	B to C is 14.7"
A to B is 22"	....	B to C is 15.4"
A to B is 23"	....	B to C is 16.1"
A to B is 24"	....	B to C is 16.8"
A to B is 25"	....	B to C is 17.5"
A to B is 26"	....	B to C is 18.2"
A to B is 27"	....	B to C is 18.9"
A to B is 28"	....	B to C is 19.6"
A to B is 29"	....	B to C is 20.3"
A to B is 30"	....	B to C is 21.0"

4. Move the inner lever to the low pressure area of the Pressure Control Range.

Connect the remote cylinder hose, or hoses, to the hose coupler on the Tractor.

5. For PTO driven implements, chain spreaders are used to spread the chain providing ample operating clearance for the PTO shaft. These chain spreaders can be made from two 1/2" sturdy pipes 10" long, with 13" long solid rods. Drill holes in the ends of the rods for hair pin clips to be inserted. Insert the pipes between the chain, and position rods through chain and pipe and fasten with a flatwasher and hair pin clip on each end.

6. Move the inner quadrant lever to the Pressure Control section of the quadrant.

7. To transfer weight to the Tractor's rear wheels, move the inner quadrant lever up in the Pressure Control quadrant range. To remove the weight from the Tractor's rear wheels, move the inner quadrant lever down in the Pressure Control quadrant range. Do not apply more weight on the Tractor's rear wheels than is needed for good traction.

NOTE: When turning, it may be necessary to reduce Pressure Control (move lever toward lower end of quadrant.)

B. Detaching

NOTE: Relieve pressure to cylinder.

1. Detach the remote cylinder hose, or hoses, from the hose couplers by giving them a quick pull. Replace the protective caps on the ends of the hose couplers.

2. Fully release Pressure Control and release chain from chain claw, pull it through chain loop and reattach to chain claw.

3. Lock coupler boom to coupler frame.

4. Disconnect the implement's tongue from Tractor's drawbar and drive Tractor away.

SWINGING DRAWBAR (See Fig. 34)

The MF 135 Tractor is equipped with a universal swinging drawbar. The drawbar

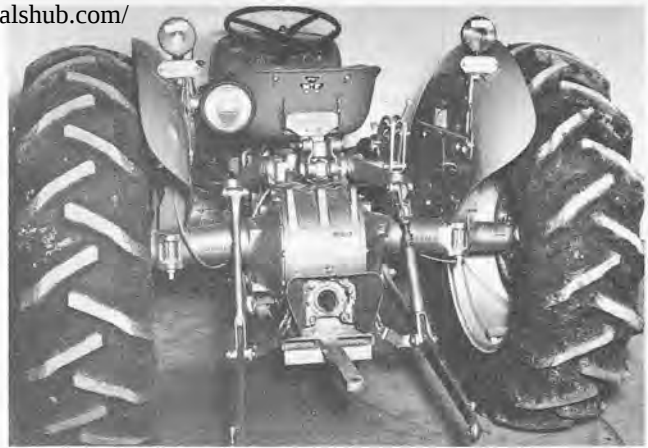


Fig. 34 - Swinging Drawbar

may be allowed to swing laterally or can be held in a fixed position. This position provides 14-3/8" distance from the drawbar attaching hole to the end of the PTO shaft.



CAUTION: NEVER pull from the upper link connection. Always pull from the drawbar or 3-point system only. **PRACTICE SAFETY.**



Never Pull from Upper Link Connection.

ADJUSTABLE TOP LINK (See Fig. 35)

The MF 135 Tractor is equipped with an adjustable top link. The standard top link length can be adjusted by releasing the lock-

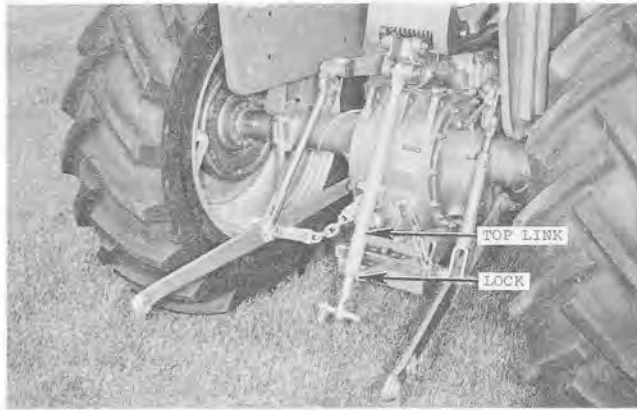


Fig. 35 - Adjustable Top Link

ing device and rotating the center barrel until the desired length is reached.

The following chart lists the standard length and range of adjustment for the top link. The distance is measured from center-to-center of each attaching pin hole.

Tractor	Standard Length	Range of Adjustment
MF 135	27"	24" to 30"
IMPORTANT: Refer to Operator's Manual of the implement for the correct top link length.		

POWER TAKE-OFF (See Fig. 36)

A power take-off shaft provides engine power directly to PTO operated implements,

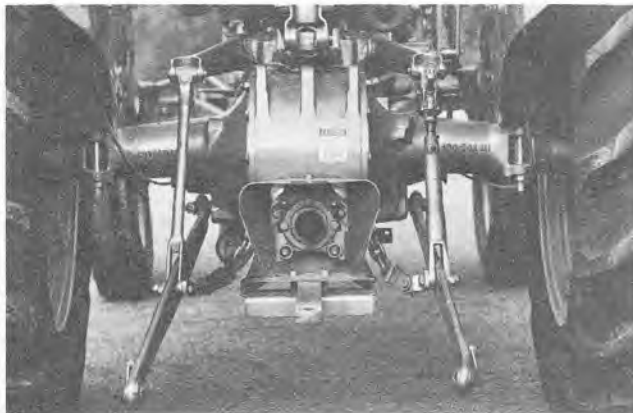


Fig. 36 - PTO Shaft - 540 RPM

or can be equipped with a belt-pulley assembly (Accessory) to belt-driven equipment.

The splined PTO shaft diameter is 1-3/8" (ASAE std.). The annular groove in the shaft allows fast connection of push-button PTO couplers.

NOTE: A screw-on type cover protects the shaft when it is not in use.

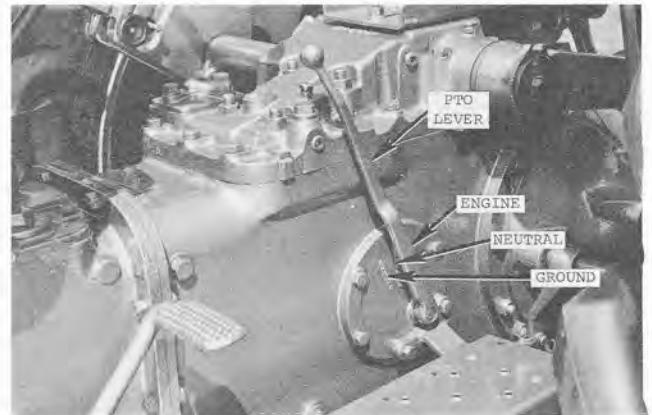


Fig. 37 - "Live" Power Take-Off Shift Lever

"Live" Power Take-Off (See Fig. 37)

On Tractors equipped with "Live" PTO, the operator may select two PTO speeds: (1) Proportional engine speed PTO or, (2) Proportional ground speed PTO. Selection of these two speeds is done with the PTO shift lever.

Engine Speed PTO

Your MF 135 Tractor is fitted with a dual clutch, which allows the PTO shaft to operate independent of Tractor forward motion. When operating in engine PTO, the primary clutch may be disengaged, stopping Tractor forward motion; the PTO shaft will continue to rotate. Fully depressing the clutch pedal through the second stage will stop PTO shaft operation as well as the hydraulic pump. When the engine is operated at 1700 rpm, the PTO shaft operates at 540 rpm. This conforms to the ASAE standard PTO speed recommendation.

Ground Speed PTO

When operating in ground speed PTO, the PTO shaft operates in proportion to ground speed. This produces one revolution of the PTO shaft for approximately each twenty inches of forward travel of the Tractor, regardless of engaged transmission gear or speed. This feature is very desirable when operating implements which require operating speeds proportional to the Tractor forward speed (i.e.: PTO driven side delivery rake, etc.)

IMPORTANT: When backing the Tractor, the PTO shift lever must be shifted from "Ground Speed PTO" to the "Neutral" position. Failure to do so may result in damage to the implement, as the implement drive mechanism will be reversed.

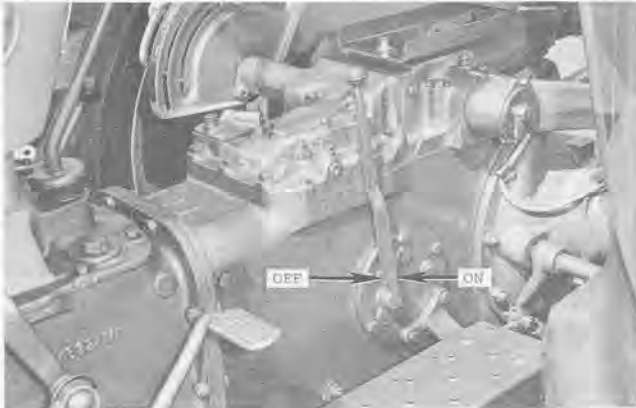


Fig. 38 - "Independent" Power Take-Off Shift Lever

"Independent" Power Take-Off (See Fig. 38)

On Tractors equipped with "Independent" PTO, operation of the PTO shaft is completely independent of the transmission drive clutch. Fully depressing the clutch pedal does not stop the PTO shaft, only the ground travel of the Tractor.

"Independent" PTO clutch control is engaged and disengaged by a hand lever. There are two positions provided for the lever, "ON" and "OFF". A PTO brake is engaged in the "OFF" position to prevent the PTO shaft from "creeping" due to oil drag in the clutch. The PTO clutch may be feathered by slowly moving the "Independent" PTO shaft

lever to the full "ON" position. The gradual build-up of oil pressure to the clutch pack, by slow movement of the PTO shift lever, provides smoother engagement. When the engine is operated at 1700 rpm, the PTO shaft operates at 540 rpm. This conforms to the ASAE standard PTO speed recommendation.

IMPORTANT: Operate the "Independent" PTO with the shift lever in fully "ON" detent position. To ensure positive engagement of the Power Take-Off Clutch, the engine must be operated at speeds above 750 rpm. Do not modulate or attempt to start a dead load.

Transmission Driven Power Take-Off

On Tractors equipped with Transmission Driven Power Take-Off, the operator may select only proportional engine speed PTO. When the engine is operated at 1500 rpm the PTO shaft operates at 540 rpm.

The Tractor is equipped with a single stage clutch. When the clutch pedal is depressed, the forward motion of the Tractor, hydraulic pump and rotation of the PTO shaft is stopped.



CAUTION: NEVER operate PTO driven implements without proper safety shields installed on Tractor and implement. **PRACTICE SAFETY.**



Never Operate PTO without Shields.

OPERATING ADJUSTMENT

WHEELS AND TIRES

Front Wheel Tread Widths (See Figs. 39 and 40)

The MF 135 Standard Clearance, Vineyard, and Special Tractors have a swept-back front axle that is adjustable in 4" increments. An exclusive feature of this front axle is that, when adjusting the front axle width, the radius rods follow the axle extension assemblies. This gives maximum stability at each of the desired widths. The front wheel toe-in will remain the same after adjusting the axle to the desired setting. The MF 135 Orchard Special Tractor has a non-adjustable front axle.



Fig. 39 - Front Wheels - Narrow

The front wheel tread width is measured from center-to-center of the tire.

The front axle widths for the individual Tractors are as follows:

Deluxe Tractor	 48" to 72" in 4" increments
Vineyard Tractor	 41.7" to 53.7" in 4" increments
Special Tractor	 48" to 72" in 4" increments
Orchard Special Tractor	... 48" Fixed

An additional eight inches of front wheel tread width can be obtained at any desired

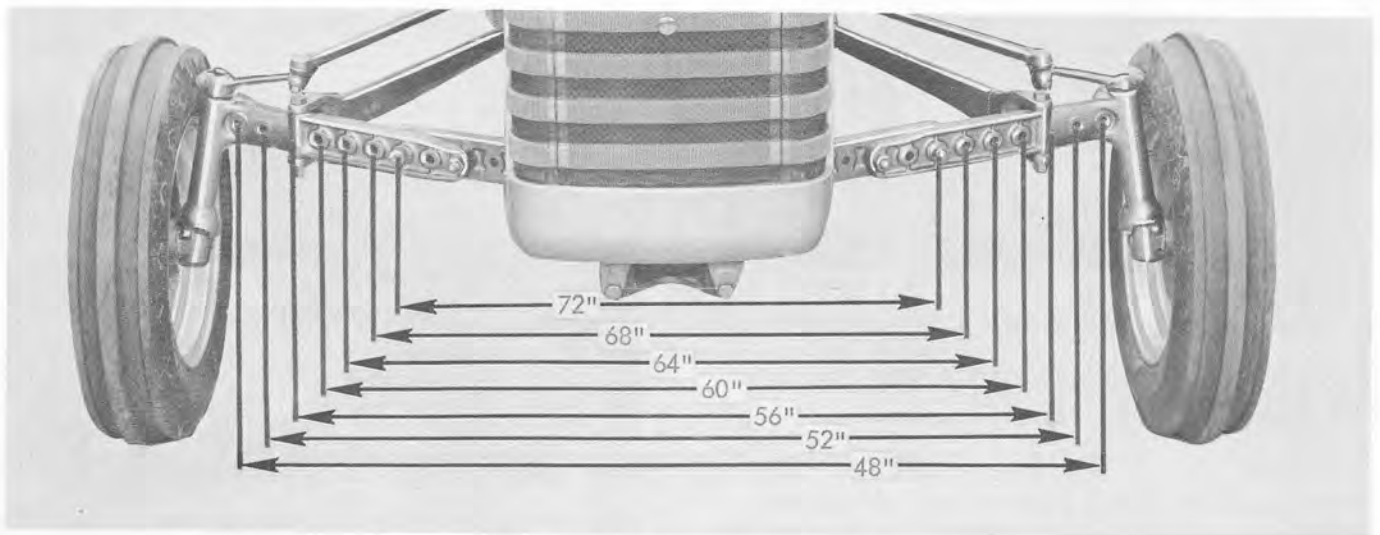


Fig. 40 - Front Wheel Tread Width Adjustment

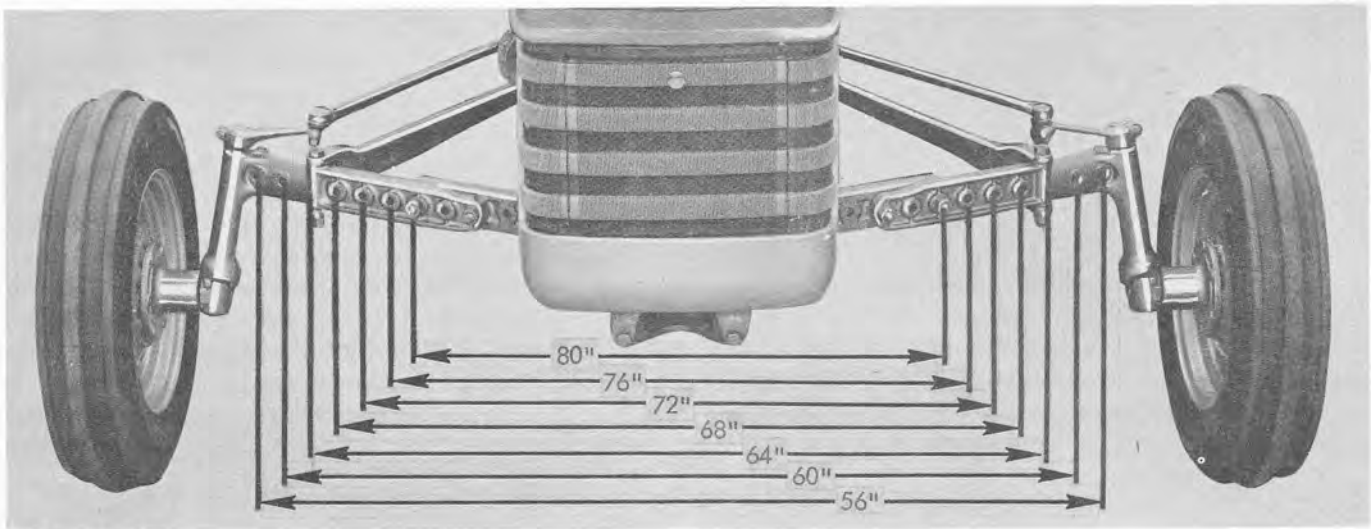


Fig. 41 - Front Wheels Reversed

front axle setting by reversing the front wheel discs on the wheel hubs. (See Fig. 41.)

IMPORTANT: When the front wheel discs are reversed, the front wheel bearings are subjected to a greater load.

Adjust the front wheel tread width as follows: (See Fig. 40).

1. With a suitable jack, raise the front of the Tractor off the ground.
2. Remove the two bolts that secure each front axle extension assembly to the main axle.
3. Position the axle extension assemblies to obtain the desired tread width. Reinstall the axle extension securing bolts and tighten the nuts securely.

Rear Wheel Tread Widths (See Fig. 42)

Power Adjusted Variable Tread Rear Wheels (See Fig. 43)

The MF 135 Tractor can be equipped with power-adjusted variable tread rear wheels. This type of rear wheel provides an



Fig. 42 - Rear Wheel Tread Width



Fig. 43 - Rear Wheel - PAVT

easily adjusted rear tread width, in 4-inch graduations.

Rear wheel tread widths (52" to 72") are measured from center-to-center of tires in 4-inch increments.

To adjust PAVT rear wheel tread width:

1. Remove the clamp "stops", from each master rail by removing the studs from the "stops". Reposition a "stop" on each master rail at the desired tread width setting. (See Fig. 43.)

2. Loosen the ramp clamp nuts about 3 turns each. (See Fig. 43.)

3. Drive the Tractor forward or rearward applying the brake opposite the rear wheel that is being adjusted, until the ramp clamp contacts the stop on each master rail.

4. Install the remaining ramp clamp stop on one master rail and tighten the ramp clamp nuts evenly to 220 ft.-lbs. torque. (See Fig. 43.)

IMPORTANT: To insure proper wheel alignment, the clamp nuts should be tightened gradually in at least three stages (50, 100 and 220 ft.-lbs.) using a criss-cross pattern until they are fully tightened.

5. Following the foregoing procedure, adjust the remaining rear wheel.

NOTE: On extreme rear wheel tread width setting, the ends of the rails will provide the limiting stop.

CARE OF TIRES

To reduce amount of wear, and prolong life of tires, it is important correct pressures be maintained by regular checks.

When Tractor is going to be out of use for a prolonged period, or is being stored, block up both sides of axles to take weight of Tractor off tires.

If oil, gasoline or similar products are spilled on a tire, clean this area of tire immediately. Never park or stop Tractor with tires standing in a moist oil patch.

Whenever possible, park Tractor where tires will be shaded from direct rays of sun. This is particularly important if Tractor is parked for prolonged periods, or is being stored.

If mounting tubeless tires make sure flange and bead area of tire and rim are free of dirt, rust or old rubber. Rim must be smooth and clean and any rusted areas should be repainted with a rust inhibiting type paint.

TIRE PRESSURES

Tractor is shipped with tires overinflated. Pressures must be checked and adjusted before operating in field. **SHOULD BE CHECKED WEEKLY.** See Chart for recommended tire pressure.

RECOMMENDED TIRE PRESSURES	
Tire Size	Pressure
Front	
5.50-16 — 4 Ply	36 lbs.
6.00-16 — 4 Ply	32 lbs.
6.50-16 — 4 Ply	32 lbs.
7.50-10 — 6 Ply	40 lbs.
9.00-10 — 4 Ply	16 lbs.
9.5L-10 — 4 Ply	24 lbs.
Rear	
12.4-24 — 4 Ply	16 lbs.
12.4-28 — 4 Ply	16 lbs.
13.6-28 — 4 Ply	14 lbs.
14.9-24 — 4 Ply	12 lbs.
18.4-16.1 — 6 Ply	16 lbs.
21.5L-16.1 — 6 Ply	12 lbs.
16.9-24 — 6 Ply	18 lbs.



Fig. 44 - Rear Wheel - Manual Adjust

Manual Adjust Rear Wheels (See Fig. 44)

Your MF 135 Tractor may be equipped with manually adjusted rear wheels. Various rear tread widths can be obtained by switching wheels from one side to the other or by repositioning the discs in the rims.

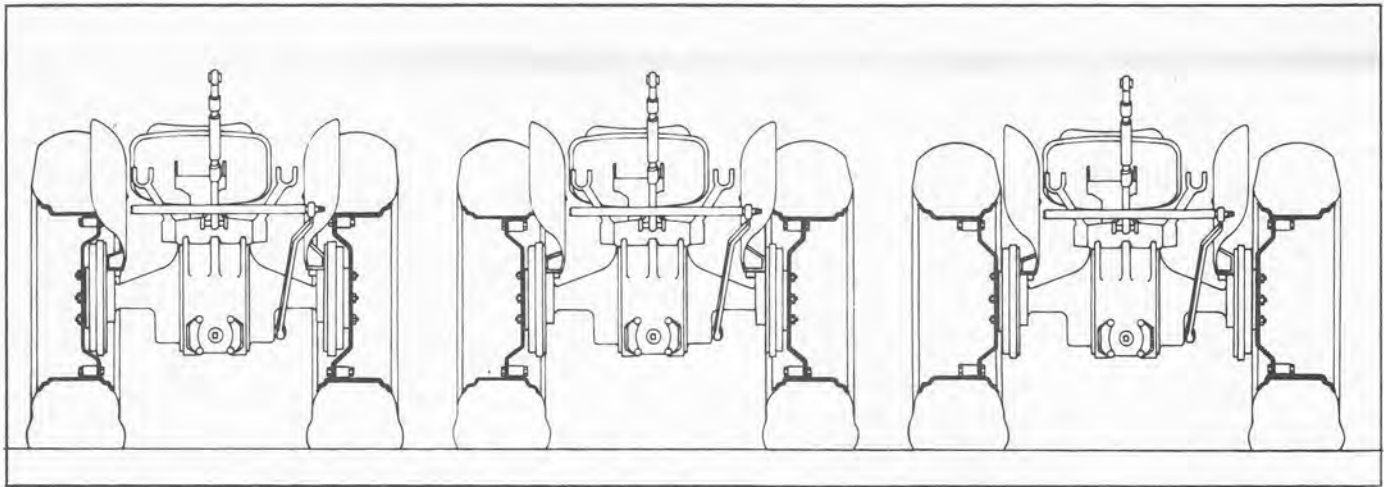


Fig. 45 - Rear Wheel Disc Positions

To reposition discs in the rims, remove the wheel assemblies from the rear hubs. Loosen the bolts securing the discs to the rims. Position disc in rims to obtain desired rear tread widths. Keep in mind that rear wheel tire tread is directional. Install bolts that secure discs to rims and tighten to 90-100 ft.-lbs. Reinstall wheel assemblies on rear hubs and tighten wheel nuts. (See Figs. 44 and 45.)

Rear wheel tread widths are measured from center-to-center of tires, and widths are as follows for various tire sizes.

12.4-28 Tires — 48" to 76" in 4" increments

13.6-28 Tires — 48" to 76" in 4" increments

14.9-24 Tires — 52" to 72" in 4" increments

12.4-24 Tires (Vineyard — 40" to 48" in 4" increments

18.4-16A Tires — 58-3/16" (Fixed) (Orchard Tractor)

that will raise and support the Tractor. Always block the Tractor for added protection. **PRACTICE SAFETY.**



Fig. 46 - Foam Float Seat

SEAT

The MF 135 Tractor may be equipped with the Foam Float, Float-O-Matic, or Pan Seat.

Foam Float Seat (See Figs. 46 and 47)

The Foam Float Seat offers a deep foam cushion and an adjustable back rest. The back rest may be adjusted up or down by loosening the two wing nuts and positioning the back rest at the desired location. The seat is also adjustable fore-and-aft by re-



CAUTION: NEVER use make-shift jacks when lifting the Tractor. Use a proper jack

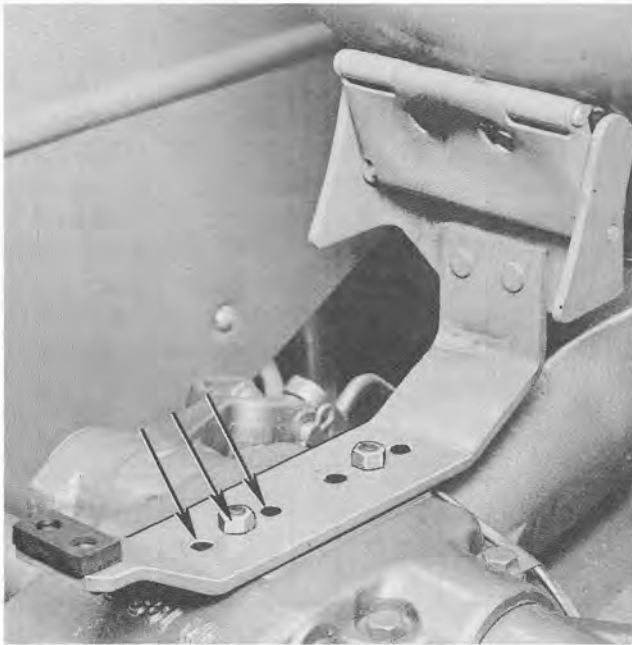


Fig. 47 - Foam Float Seat Adjustment

positioning the seat bracket in one of three provided holes. The seat may be tilted back, allowing the operator ample room to stand.

Float-O-Matic Seat (See Figs. 48 and 49)

The Float-O-Matic Seat offers maximum operator comfort. The coil torsion spring efficiently dampens out roughness when operating over rough terrain. The knob at the rear of the seat allows the operator to select a desired position, regardless of operator weight. This contributes to better visibility and handling ease. The seat may be

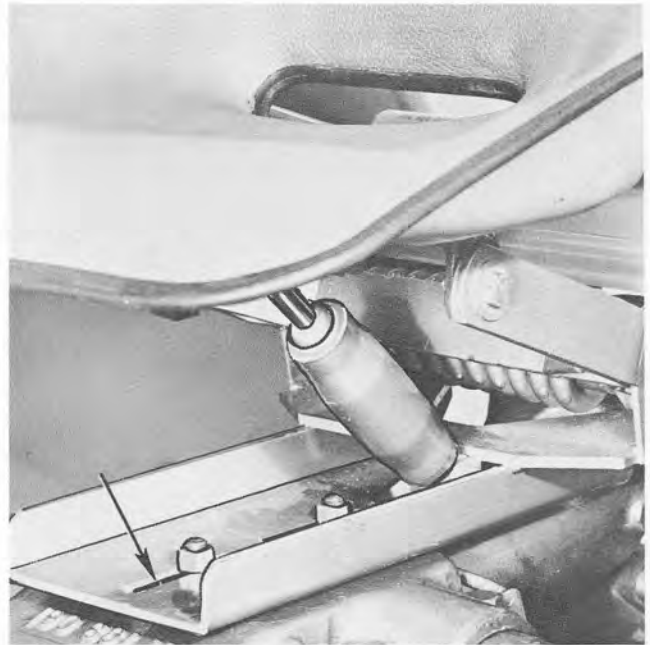


Fig. 49 - Float-O-Matic Seat Adjustment

moved rearward, allowing the operator ample room to stand. The seat is also adjustable fore-and-aft by loosening the securing studs and sliding the seat bracket to the desired position.

Pan-Type Seat (See Figs. 50 and 51)

The contoured Pan-Type Seat may be adjusted fore-and-aft by repositioning the seat bracket in one of the three provided holes. The seat may be tilted back, allowing the operator ample room to stand.



Fig. 48 - Float-O-Matic Seat



Fig. 50 - Pan-Type Seat

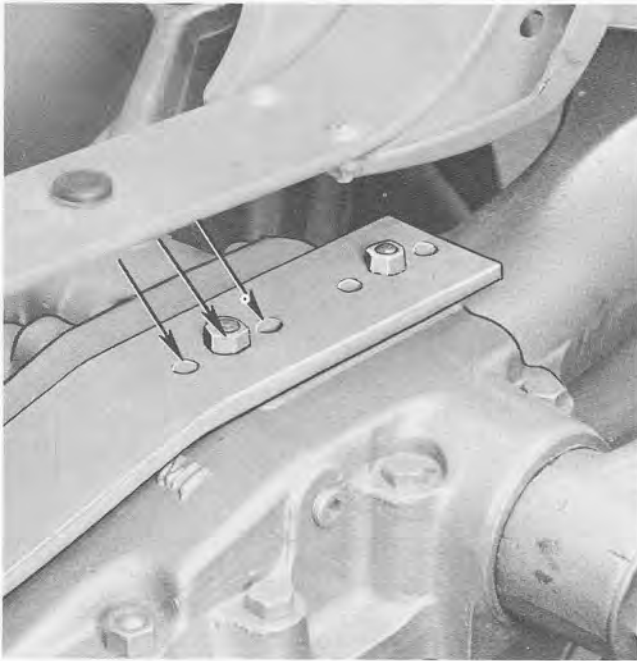


Fig. 51 - Pan-Type Seat Adjustment

LIQUID-FILLING THE TIRES

For additional weight or ballast, the front and rear tires may be filled with cal-

cium chloride solution. It is more desirable to use calcium chloride solution than plain water, as the freezing point of the solution is lower and the density (weight) is greater. The solution described in the table contains 3.5 lbs. of calcium chloride per gallon of water. The freezing point for this ratio is 30° F. below zero. Although the total weight figures in the table describe a tire 100% full, it is possible to partially fill the tires by using lesser amounts.

Size of Tire	Pounds Calcium Chloride	Gallons of Water	Total Weight in Tire
Front Tires			
5.50-16	19.8	5.6	67
6.00-16	20.7	5.9	70
6.50-16	26.6	7.6	90
7.50-10	19.2	5.5	65
Rear Tires			
12.4-28	134.0	38.2	452
14.9-24	180.0	51.4	645
13.6-28	172.0	49.1	582
18.4-16A	164.0	46.9	554

FUELS AND FUEL CARE

This section of the Manual deals with the fuel and fuel care.

LIMITING REQUIREMENTS FOR DIESEL FUEL OILS ASTM Designation: D975-66T												
Grade of Diesel Fuel Oil	Flash Point, deg. Fahr. Min.	Pour Point, deg. Fahr. Max.	Water and Sediment, percent by volume Max.	Carbon Residue on 10 percent Residue, percent Max.	Ash, percent by weight Max.	90% Distillation Temperatures deg. Fahr.		Viscosity at 100° F. Kinematic, Centistokes (or Saybolt Universal sec.)		Sulfur, percent by Weight Max.	Copper Strip Corrosion Max.	Cetane Number Min.
						Min.	Max.	Min.	Max.			
No. 1-D Winter Operation	100 or legal	...	Trace	0.15	0.01	...	550	1.4	2.5 (34.4)	0.50	No. 3	40
No. 2-D Summer Operation	125 or legal	...	0.10	0.35	0.02	540	640	2.0 (32.6)	4.3 (40.1)	0.7	No. 3	40
For cold weather operation the pour point should be specified 10 F. below the ambient temperature at which the engine is to be operated. Low-atmospheric temperatures as well as engine operation at high altitudes may require use of fuels with higher cetane ratings.												

FUELS

Gasoline Engine

The gasoline engine in the MF 135 Tractor is designed to operate efficiently on a reputable brand of regular grade gasoline (93 octane minimum). Continued use of poor quality fuel can cause engine overheating, "pinging", excessive engine wear and poor fuel economy.

Diesel Engine

Diesel fuels are classified as either a No. 1 (No. 1D) or No. 2 (No. 2D) fuel. The grade No. 2 fuel, which is heavier and will produce more work per gallon, is recommended for service when the air temperature is 32° F., or above. The grade No. 1 fuel, which is lighter, is recommended for service when the air temperature is below 32° F. See chart for diesel fuel requirements.

Fuel Care

Fuel system components are seriously affected by water and sediment. For proper

engine performance, clean fuel must enter the injection pump. Use the following information as a guide for successful fuel handling.

- Do not confuse FURNACE FUEL with DIESEL FUEL. USE FUEL WHICH MEETS THE SPECIFICATIONS IN THIS MANUAL.
- Purchase your fuel from a REPUTABLE SUPPLIER. BUY CLEAN FUEL and KEEP IT CLEAN.
- Store fuel in tanks manufactured especially for fuel storage. Use a tank equipped with a WATER TRAP OR FILTER. Drain the water trap or change filter regularly. Do not store diesel fuel in a galvanized tank.
- Place fuel tank in a shaded area, away from buildings.
- Once fuel tank is in place, avoid moving it.
- Avoid using the last few gallons of fuel from the storage tank. This fuel may contain water or sediment that is accumulated in the tank.
- Handle fuel as little as possible. Avoid using cans to transfer fuel to the Tractor.

LUBRICANTS AND LUBRICATION

This section of the Operator's Manual deals with lubricants and lubrication procedures for your MF 135 Tractor. Regular lubrication is essential to ensure trouble-free performance throughout the life of your Tractor. Make it a habit to lubricate your Tractor properly at the recommended intervals, using the recommended lubricants.

GENERAL INFORMATION

Many of the bearings are pre-packed with grease and sealed at the factory. These do not require lubrication at regular intervals. Other bearings that do require lubrication are equipped with grease fittings for application of a pressure-type grease gun.

Keep all containers of lubricants as clean as possible, especially around the cap.

Wipe the tip of the pressure gun and the grease fitting with a clean cloth before attaching the gun. This will prevent dirt and grit being forced into a bearing which will cause excessive wear and shorten its life. Wipe the gun and the fitting again after the gun has been removed.

Be sure to insert sufficient lubricant into a bearing. This can be observed by the new lubricant forcing the old lubricant from the bearing. (Except where recommended otherwise.)

Wipe off all excess grease with a clean cloth, after lubricating a bearing. Excess grease around a bearing collects dirt and grit.

STORING LUBRICANTS

The proper storing of lubricants cannot be over-emphasized. Store lubricants in clean, sealed containers and properly label containers as to their correct contents. Tractor life can be maintained only if clean

lubricants are used. Your Tractor is equipped with safeguards, such as oil filters and oil seals, which are designed to keep abrasive materials from entering the lubricating system. Clean lubricants will help these safeguards to do their job properly.

LUBRICATION SYMBOLS

	.....	10 Hours
	.....	50 Hours
	.....	100 Hours
	.....	200 Hours
	.....	500 Hours
	.....	750 Hours

LUBRICANTS

When lubricating the Tractor, use a general purpose lithium base grease.

Lubricants should also carry one of the following N. L. G. I. numbers, depending upon the ambient temperature in the area where the Tractor is operating.

N. L. G. I. No. 0 ... for ambient temperatures consistently below 45° F.

N. L. G. I. No. 1 ... for ambient temperatures between 45° F and 80° F.

N. L. G. I. No. 2 ... for ambient temperatures consistently above 80° F.

For filling the various oil reservoirs on the Tractor, refer to the following charts:

LUBRICANTS AND CAPACITIES

Transmission, Differential and Hydraulic System		
Capacity 8 U. S. - 6.7 Imp. gals. Use extreme pressure oil; M-1129A, available only through your Massey-Ferguson Dealer. This is the only type of oil recommended for use in this system.		
Power Steering Reservoir		
Capacity 1 U. S. - .8 Imp. qt. Use extreme pressure oil M-1129A available only through your Massey-Ferguson Dealer.		
Crankcase Oil		
Lubricating oils are designated by SAE number and API abbreviation. The SAE number indicates the thickness or viscosity of the oil. The ambient temperature of the area governs the SAE number of the oil to be used. The API number indicates the type of service to which the oil is suited.		
Capacities: (Gasoline Engine)		
Without Filter Change	 6 U. S. - 5 Imp. qts.	
With Filter Change	 6.5 U. S. - 5.4 Imp. qts.	
Capacities: (Diesel Engine)		
Without Filter Change	 6 U. S. - 5 Imp. qts.	
With Filter Change	 6.5 U. S. - 5.4 Imp. qts.	
Use Massey-Ferguson Spec. M-1109 motor oil in the appropriate SAE viscosity (10W, 20W or 30) or Massey-Ferguson Spec. M-1132 multi-viscosity (10W/30) motor oil. An equivalent MIL-L-2104B qualified product is also satisfactory.		
Operating Conditions Based on Ambient Air Temperature		
Above 90° F.	Recommended Viscosity Grade Single Viscosity SAE 30	Multi-Viscosity SAE 10W-30, or 20W-40
32° to 90° F.	SAE 20W	SAE 10W-30
0° to 32° F.	SAE 10W*	SAE 10W-30, or 5W-20*
Below 0°	-----	SAE 5W-20*
* THE USE OF SAE 5W-20 OR SAE 10W MOTOR OILS MAY CAUSE INCREASED OIL CONSUMPTION. WHEN THESE OILS ARE USED, CHECK OIL LEVEL MORE OFTEN. Whenever the engine is operated under continuous heavy load conditions, where cold starting is no problem (i.e.: Use of block heaters or warm buildings) the use of a heavier grade motor oil is recommended.		

Crankcase Oil (Continued)

Use Massey-Ferguson M-1109 heavy-duty motor oil, or similarly qualified oils marketed by other reputable suppliers, meeting the requirements for API Service Classification "SD/CC" or better for gasoline engines and "CC" or better for diesel engines.

THESE MOTOR OILS ARE HEAVY-DUTY DETERGENT-TYPE OILS WHICH ARE COMPOUNDED WITH SPECIAL ADDITIVES TO ASSURE SATISFACTORY ENGINE OPERATION. NON-DETERGENT OR STRAIGHT MINERAL TYPE MOTOR OILS MUST NOT BE USED.

Recommended Change Period

Under the normal severe operating conditions typical for this type of machine, the engine crankcase lubricant should be changed after every 100 hours of operation. Change oil filter with every other oil change.

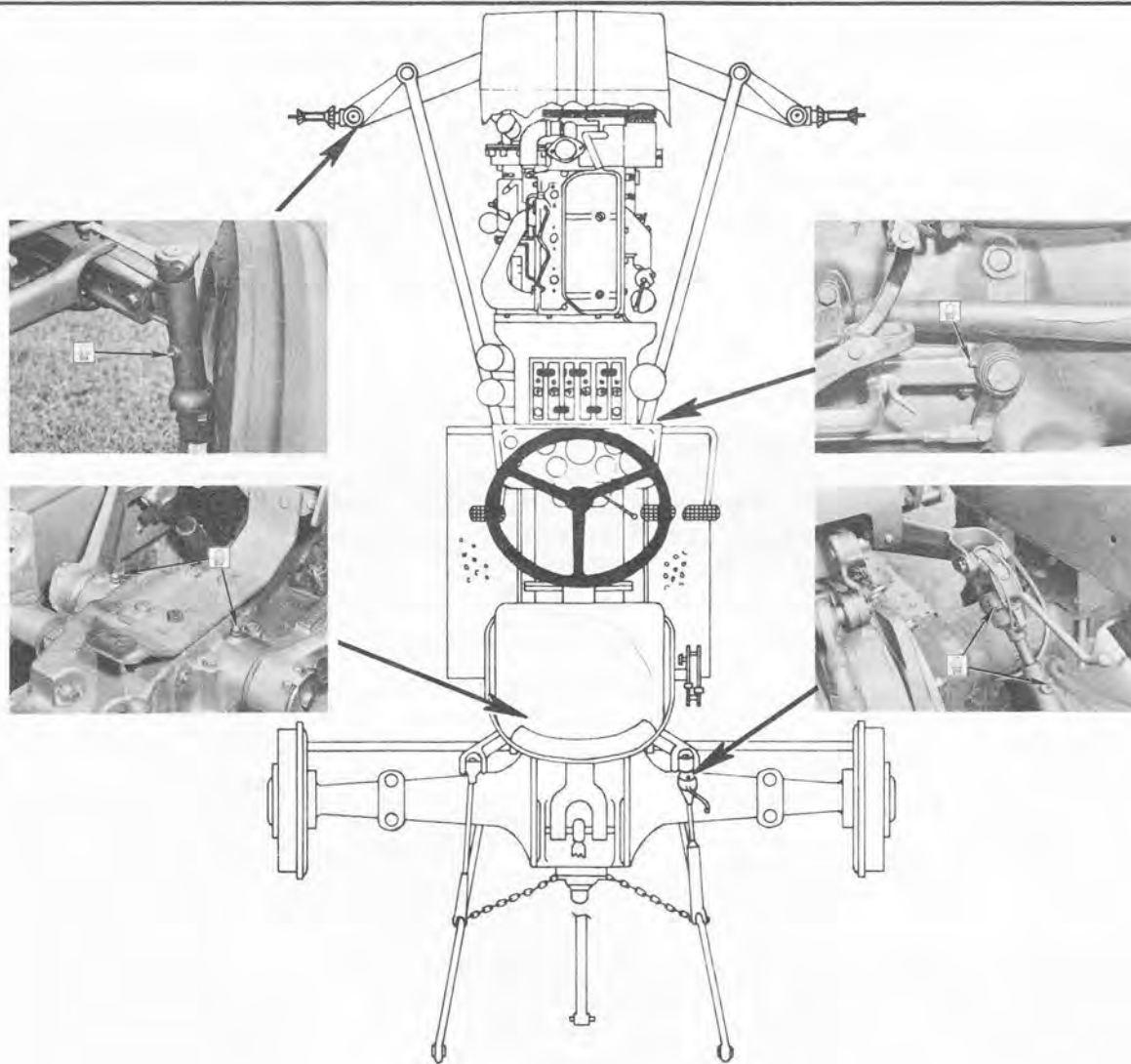


Fig. 52 - 10-Hour Lubrication Chart

MAINTENANCE AND SERVICING

This section of the Manual is a guide to help you make minor adjustments and repairs which may be necessary from time to time. When a major overhaul or an adjustment other than the ones described in this section, is necessary, call your authorized Massey-Ferguson Dealer. His full value service program, with trained personnel and special equipment, means true economy and lasting satisfaction to you.

MAINTENANCE

△ 10 Each 10-Hour or Daily Maintenance △ 10		
Component	Maintenance Required	Specifications & Procedures
General	Lubricate all items requiring daily lubrication.	Use a general purpose lithium base grease. See page 32.
Engine Crankcase	Check oil level and fill as necessary.	Refer to Lubrication Specification and Capacities Chart. See page 33.
Transmission, Differential and Hydraulic System	Check oil level and fill as necessary. (All have one common reservoir and check point.)	Use Massey-Ferguson M-1129-A Hydraulic Oil only. See page 33.
Radiator	Check coolant level and fill as necessary. Clean dirt, chaff, etc., from fins. Coolant should be 1 inch above radiator core.	Add equal parts of ethylene glycol base permanent anti-freeze and water. See page 47.
Fuel Tank	Check and fill as necessary. Keep fuel tanks full when not operating to eliminate condensation.	Refer to "Fuel and Fuel Care" Section. See page 31.
Fuel Filter (Diesel)	Check agglomerator for water and drain as necessary.	Refer to "Servicing" Section if agglomerator has been drained for "air bleeding" the system. See page 39.
Fuel Sediment Bowl (Gasoline)	Check for water and sediment and clean as necessary.	Refer to "Servicing" Section for procedure. See page 40.

Component	Maintenance Required	Specifications & Procedures
At 2 and 10 Hours of Operating when New and Following Any Front Wheel Installation		
Front Wheel Hub Nuts	Check the loading of front hub nuts.	Tighten to 155-170 ft.-lbs. torque.
Daily for First 14 Days Operation-Maintenance		
Power Steering	Check reservoir oil level, and fill as necessary.	Refer to "Servicing" Section for procedures. See page 52.
50 Each 50 Hours or Break-In Maintenance 50		
Engine Crankcase Oil and Filter (First 50 Hours Only)	Drain "break-in" oil and change filter. Refill with new oil of recommended type.	Refer to "Lubricant and Lubrication" Section for type of oil. See page 33.
Transmission, Differential and Hydraulic System (First 50 Hours Only)	Drain "break-in" oil and re-fill with new oil.	Use only Massey-Ferguson M-1129-A Hydraulic Oil. See Pages 33 and 53.
Battery	Check level of electrolyte and fill as necessary. Electrolyte level should be maintained to the bottom of each of the filler tubes.	Refer to "Servicing" Section. See page 45.
Power Steering	Check reservoir and refill as necessary.	Refer to "Servicing" Section and remove air from system. Refer to "Lubricant and Lubrication" Section for type of oil. See pages 33 and 52.
Cylinder Head Nuts and Valve Tappet Clearance (First 50 hours only)	Torque Cylinder Head Nuts to 55-60 ft.-lbs. torque and adj. valve tappet clearance to: Intake .012 Clearance (hot) Exhaust .015 Clearance (hot)	Refer to "Servicing" Section for tightening sequence. See page 53.

Component	Maintenance Required	Specifications & Procedures
100 Each 100 Hour Maintenance 100		
Engine Crankcase Oil	Drain oil and refill with new oil.	Refer to "Lubricants and Lubrication" Section for type of oil. See page 33.
Clutch Travel	Check free travel and adjust as necessary.	Refer to "Servicing" Section for procedures. See page 49.
Distributor (Gasoline)	Check points, adjust timing and lubricate.	Refer to "Servicing" Section for procedures. See page 41.
Spark Plugs (Gas-)	Remove, clean and regap and replace as necessary. (Replace every 300 hours.)	Refer to "Servicing" Section. See page 41.
200 Each 200 Hour Maintenance 200		
Hydraulic Rockshaft	Lubricate fitting with 1 to 3 shots of grease. (Do not over grease.)	Use lithium base general purpose grease. See page 32.
Alternator Fan Belt	Check tightness and adjust as necessary.	Refer to "Servicing" Section. See page 46.
Brakes	Check adjustment and correct as necessary.	Refer to "Servicing" Section. See page 50.
Engine Oil Filter	Replace oil filter.	See page 33.
Air Filter	Remove, clean and reinstall or replace.	Refer to "Servicing" Section for procedures. See page 42.
500 Each 500 Hours Maintenance 500		
Valve Tappet Clearance	Adjust valve tappet clearance to: Intake .012 Clearance (hot) Exhaust .015 Clearance (hot)	Refer to "Servicing" Section. See page 53.
Fuel Filter (Diesel)	Replace filter element. (Air-Bleed" the fuel system.)	Refer to "Servicing" Section for procedures. See page 38.

Component	Maintenance Required	Specifications & Procedures
750 Each 750 Hours (or Annually) Maintenance 750		
General	Inspect the complete Tractor for worn, damaged or broken parts.	Various.
Power Steering	Drain reservoir and refill with new oil.	Refer to "Lubricants and Lubrication" Section for type of oil. See pages 33 & 52.
Transmission, Differential and Hydraulic System	Drain and refill with new oil.	Use Massey-Ferguson M-1129-A Oil only. See Page 33 and 53.
Carburetor (Gasoline)	Drain fuel and sediment from bowl, clean and adjust as necessary.	Refer to "Servicing" section. See page 40.
Front Wheel Bearings	Remove, clean and repack.	Refer to "Servicing" Section. See page 51.
Cooling System	Drain, clean and refill. Check hoses and clamps for leaks and condition.	Refer to "Servicing" Section. See page 47.
Front Wheel Alignment	Check and adjust front wheel toe-in to 0 to 1/4".	Refer to "Servicing" Section. See page 50.

SERVICING

Diesel Fuel System

Cleaning Fuel System

Fuel Filter (See Fig. 53)

Fuel entering the fuel filter passes through the filter element into the transparent agglomerator bowl. Solid impurities are filtered out of the fuel and entrapped within the filter element.

 Inspect the agglomerator daily. If water is present, loosen the drain cock on the bottom of the agglomerator and drain. Tighten the drain cock; "air-bleed" the fuel system.

[500] Replace the fuel filter element every 500 hours of operation OR when fuel flow becomes restricted.

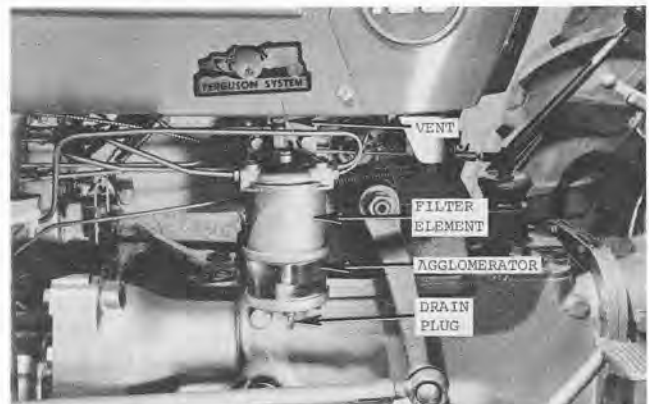


Fig. 53 - Fuel Filter Diesel

Replacing the Fuel Filter Element

Before changing the fuel filter element, THOROUGHLY clean off the outside of the filter case. Use a genuine Massey-Ferguson fuel filter element for best results. To replace the fuel filter element:

1. Drain the fuel from the filter by loosening the drain cock in the filter base.
2. Unscrew the center bolt and remove the agglomerator.
3. Remove and discard the old element; clean the agglomerator with a lint-free rag.
4. Reassemble with new filter element and new gaskets.
5. "Air-bleed" the fuel system.

"NOTE: Filter element replacement may become necessary more often in some climatic conditions, especially in cold weather areas."

"Air-Bleeding" the Fuel System

In order for your Tractor's engine to function properly and efficiently, it is necessary that the fuel system be kept CLEAN and FREE FROM AIR. It will be necessary to "air-bleed" the fuel system, if: (1) the fuel tank has been permitted to run dry, (2) the Tractor has not been used for a considerable period of time, (3) the fuel filter is drained or (4) any vent plug in the system is opened.

TO BLEED THE SYSTEM, proceed as follows: (See Figs. 53, 54, and 55).

1. Loosen the air-vent plug on the fuel filter. (Fig. 53)
2. Pump the manual lever on the primary fuel pump (Fig. 54) until air-free fuel comes out the air-vent plug. Tighten the vent plug securely. (Fig. 53)

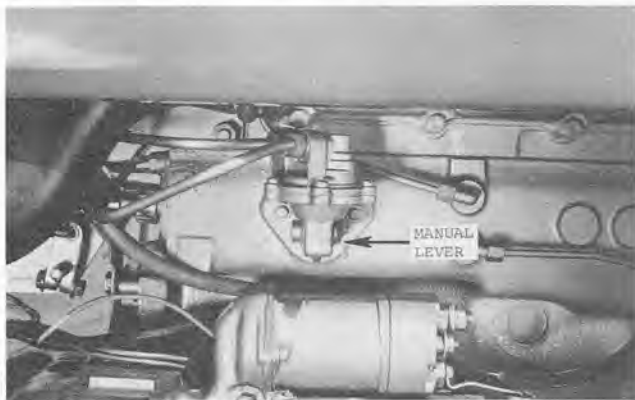


Fig. 54 - Primary Fuel Pump

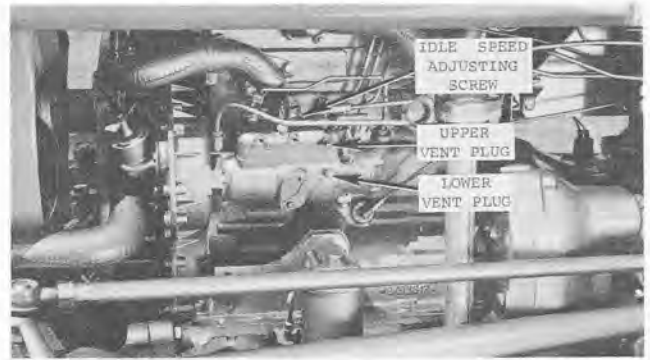


Fig. 55 - Injection Pump

3. Loosen the lower vent plug on the injection pump body and operate the primary pump manual lever until air-free fuel flows out this port. Tighten the vent plug. (See Fig. 55.)

4. Loosen the upper vent plug on the injection pump body and operate the primary pump manual lever until air-free fuel flows out this port. Tighten the vent plug. (See Fig. 55.)

5. Operate the primary pump manual lever an additional 10 times to ensure that there is fuel in the bleed-back lines to the filter.

6. Loosen a pressure line at the injection connection. Turn the engine over with the starter motor until air-free fuel is present at the connections. Tighten the injector connection.

NOTE: For this operation, the fuel shut-off control knob must be pushed in.

7. Turn the engine over with the starting motor until the engine starts.

NOTE: Do not operate the starter motor continuously for more than 30 seconds without allowing a few minutes for cooling.

Idle Speed Adjustment (See Fig. 55)

The only adjustment that can be made on the injection pump is the idle speed adjustment. This can be done by turning the idle speed stop screw in or out until an idle speed of 725 to 775 rpm is obtained. It is important that the engine idles at this speed.



Fig. 56 - Fuel Sediment Bowl

Gasoline Fuel System

Cleaning Fuel Sediment Bowl (See Fig. 56)

 The bowl should be checked daily for water and sediment.

If water or sediment has accumulated in the bowl, close the fuel shut-off valve, remove the bowl and empty the water sediment. Clean the inside of the bowl. Reinstall.

Carburetor (See Fig. 57)

Idling Air Adjustment

Turn out the idling adjustment screw approximately 1-3/4 to 2-1/4 turns from the closed position, or until the engine idles smoothly when operating at normal temperature.

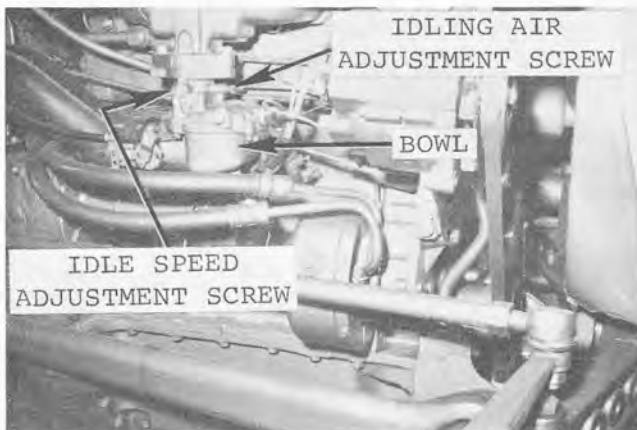


Fig. 57 - Carburetor - Gasoline

Idling Speed Adjustment

Turn the screw in to increase or out to decrease idling speed. The gasoline engine idle speed is 750 ± 25 .

Drain Carburetor Bowl (Gasoline Models) (See Fig. 58)

500 The carburetor bowl should be drained after every 500 hours of operation to allow any water or sediment to escape.

Close the fuel shut-off valve at the fuel tank. Remove the drain plug from the bottom of the carburetor bowl, allowing fuel and sediment to drain from the carburetor. After the carburetor has drained, replace and tighten the drain plug securely; open the fuel shut-off valve.

Ignition System (Gasoline Engine)

The following items in the ignition system should be checked periodically, as follows:

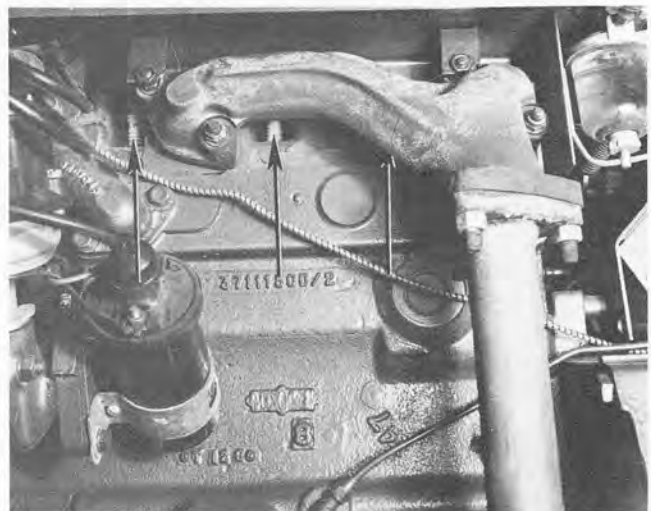


Fig. 58 - Spark Plugs

Spark Plugs (See Fig. 58)

① Remove the spark plugs every 100 hours for inspection, cleaning and re-setting.

To service spark plugs on gasoline model Tractors:

- a. Remove heat shield.
- b. Clean debris from around the spark plugs.
- c. Remove spark plugs with 3/8" drive 13/16" plug socket.

Check the plug electrodes for wear, and the porcelain for cracks. If the porcelain is cracked, a new plug must be installed. The electrodes should be cleaned, preferably by sandblasting and the gap reset to 0.025 inch.

NOTE: When resetting this gap NEVER bend the center electrode. Always bend the ground or side electrode, to adjust the gap.

When plugs are installed, a serviceable gasket should be used and the gasket seat

checked to ensure it is clean. The gasket is required to dissipate heat from the plug to help ensure longer life and greater efficiency. Tighten plugs to 32-38 ft.-lbs. torque. Spark plugs should be replaced every 300 operating hours for maximum performance and fuel economy. Install Champion N12Y or Massey-Ferguson spark plugs.

The N12Y is a long reach plug which is installed in all AG3.152 engines from Serial No. 15061A and up. When replacing plugs, replace with the same type.

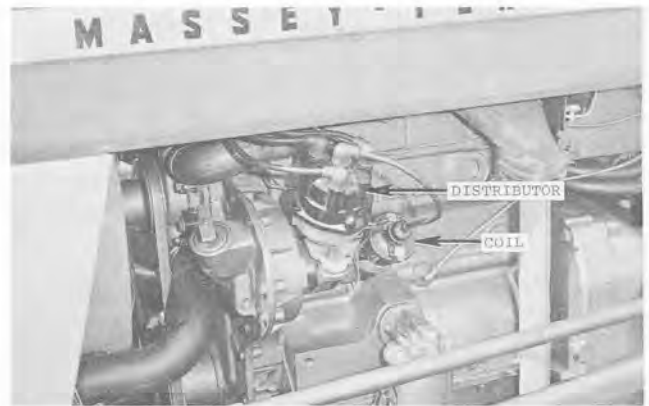


Fig. 60 - Ignition System - Gasoline

Distributor (See Fig. 60)

① It is impossible to obtain economical and satisfactory engine performance if the

distributor is not in good working condition. The distributor should be checked every 100 hours of operation and serviced as follows:

Check the high tension wiring. Frayed or corroded wire tips, loose, dirty or greasy connections and terminals will build up a resistance to proper current flow, therefore, causing poor performance.

Breaker Points

100 The breaker points are a critical part of the ignition system. Check the points for signs of wear, pitting and burning.

Points with an overall gray color and a slight roughness or pitting may be dressed with a clean, fine-cut contact file. There is no necessity to remove all roughness, or dress the points smooth. Just remove any scale and dirt.

NOTE: Do not use emery cloth to clean the points, as particles can become embedded and cause arching and rapid burning of the points.

Burned or badly pitted points should be replaced with a new set of points.

NOTE: New sets of points and condenser are available through your MF Dealer.

Check and reset the breaker points. The procedure is the same for old or new points.

Turn the engine over until the high point of the cam is contacting the segment of the breaker point arm with the points open the full amount.

Loosen screw, adjust the gap to 0.021 inch, and tighten screw making sure points are aligned and making full contact.

Ignition Timing

100 It is recommended that the ignition system be timed with a timing light by your authorized MF Dealer. This provides an accurate method of checking the distributor automatic advance mechanism.

The gasoline engine is timed at 26° before top dead center with the engine running at 2250 rpm (no load).

Air Filter (See Fig. 61)

The air filter is of the dry-element type. It is essential that the filter be kept clean and free from any type of restriction. Tangential air flow through the air filter, swirls the air so that the coarse particles of foreign material are spun off and collected in a reservoir and are then expelled through an unloader valve attached to the bottom of the air filter assembly.

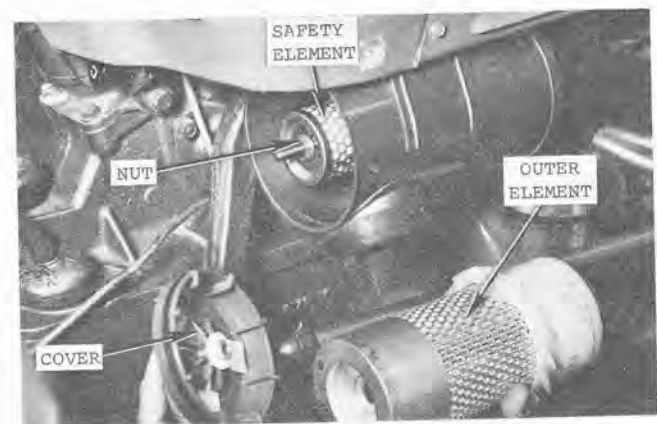


Fig. 61 - Dual Air Cleaner

The outer elements should be replaced yearly, or after three washings, whichever comes first. Replace inner element yearly.

Important Air Cleaner Precautions

1. Do not loosen or remove the air cleaner element with the engine running. **NEVER OPERATE THE ENGINE WITHOUT THE FILTER ELEMENT INSTALLED IN THE AIR CLEANER.**

2. The element is of the dry-type. Do not oil element. Also, never wash element in gasoline, fuel oil or solvents.

3. With the element in place, make sure the knurled knob is fully tightened "finger tight".

4. Unnecessary and improper cleaning of the element may contribute to introducing dust into the engine.

5. If the filter element has been washed, it must be completely dry before it is reused.

6. Check all air intake hoses for tightness. Replace hoses which are cracked or appear questionable.

7. Avoid imitation parts. Use only genuine Massey-Ferguson replacement filter elements.

To clean the element, proceed as follows:

1. Turn the knurled knob counterclockwise and remove the holding bracket. Then withdraw the filter element.

2. Use a clean damp cloth and carefully wipe the inside of the housing and the element retaining bracket to remove any dust or foreign matter present. Make sure rubber unloading valve is completely open and clean.

3. Determine if air cleaner element is still serviceable and may be cleaned and reused. **MAKE SURE THE ELEMENT IS IN GOOD PHYSICAL CONDITION BEFORE CONSIDERING CLEANING IT.** If rubber seal on end of element is damaged, or if metal canister is dented or damaged, the element must be replaced regardless of how old it is or how many times it has been cleaned.

4. Clean the outer element. Use compressed air to back-flow element. This preliminary cleaning will remove the loose dust, making washing easier.

Prepare solution (MF 1900 726 M1) according to directions on the carton.

Soak element in solution for 4 hours, retaining a temperature of 120° to 150° F, for most effective cleaning.

Agitate element, then rinse both inside and outside surfaces of element with clean water from a hose. Continue until drain water is clear.

Inspect element for pin holes, pleat damage or ruptures that may have occurred because of careless handling.

NOTE: To avoid any operating delay while the dirty element is being washed and dried, it is recommended that a spare element be kept on hand as an immediate replacement part.

5. After cleaning, place a light bulb inside the element and carefully check the element for ruptures or other damage. For best results, do this in a darkened area. Inspection of the element on the outside will then disclose any small holes or major ruptures. **ANY HOLE IN THE FILTER ELEMENT; EVEN THE SMALLEST; WILL ALLOW DUST TO PASS INTO THE ENGINE AND CAUSE INCREASED ENGINE WEAR.**

6. Carefully install filter element into air cleaner, then install the holding bracket and tighten the knurled knob clockwise by hand until it is tight. As a double check, attempt to rotate the element by hand. If the element can be rotated, it is improperly installed or the knurled knob is not tight enough.

Replacing Inner Filter Element

To replace the inner filter element, follow the procedures for removing the outer filter element, then remove the nut holding the inner element and carefully remove the element.

Use a damp cloth and carefully wipe clean the housing and bracket to remove any dust or foreign matter present. Install new filter element and tighten nut until filter element cannot be rotated by hand. Install a clean, or new, outer filter element.

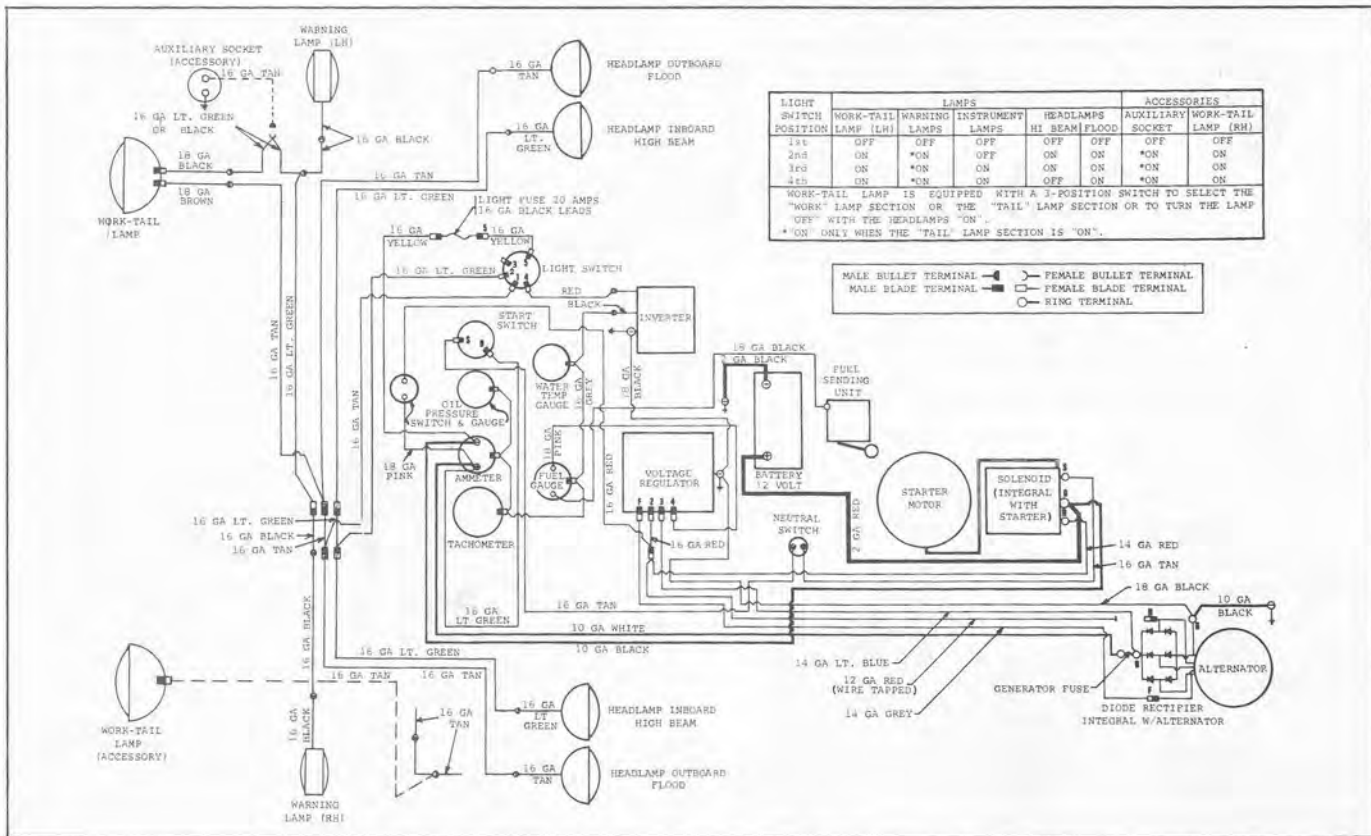


Fig. 62 - Electrical System - Diesel

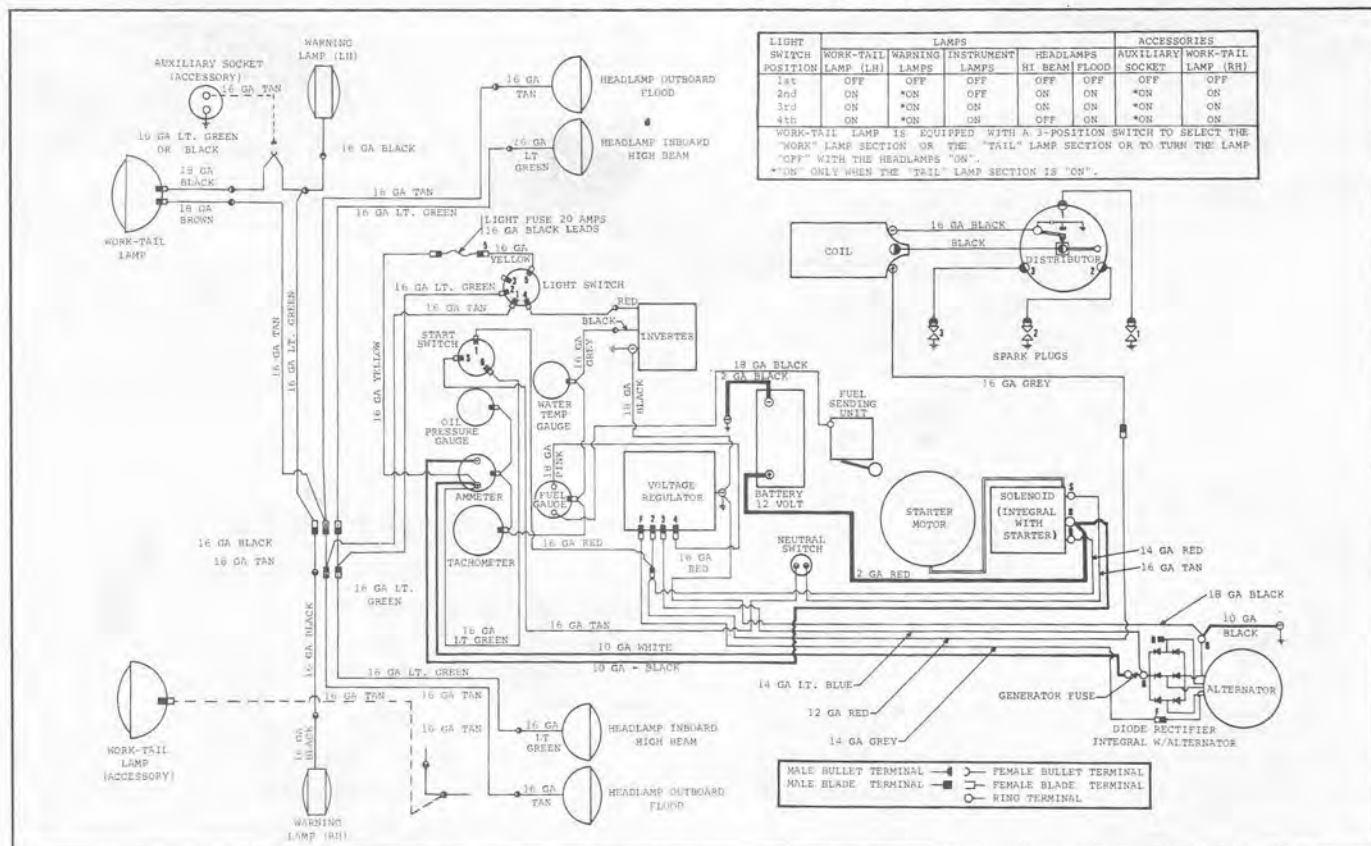


Fig. 63 - Electrical System - Gasoline

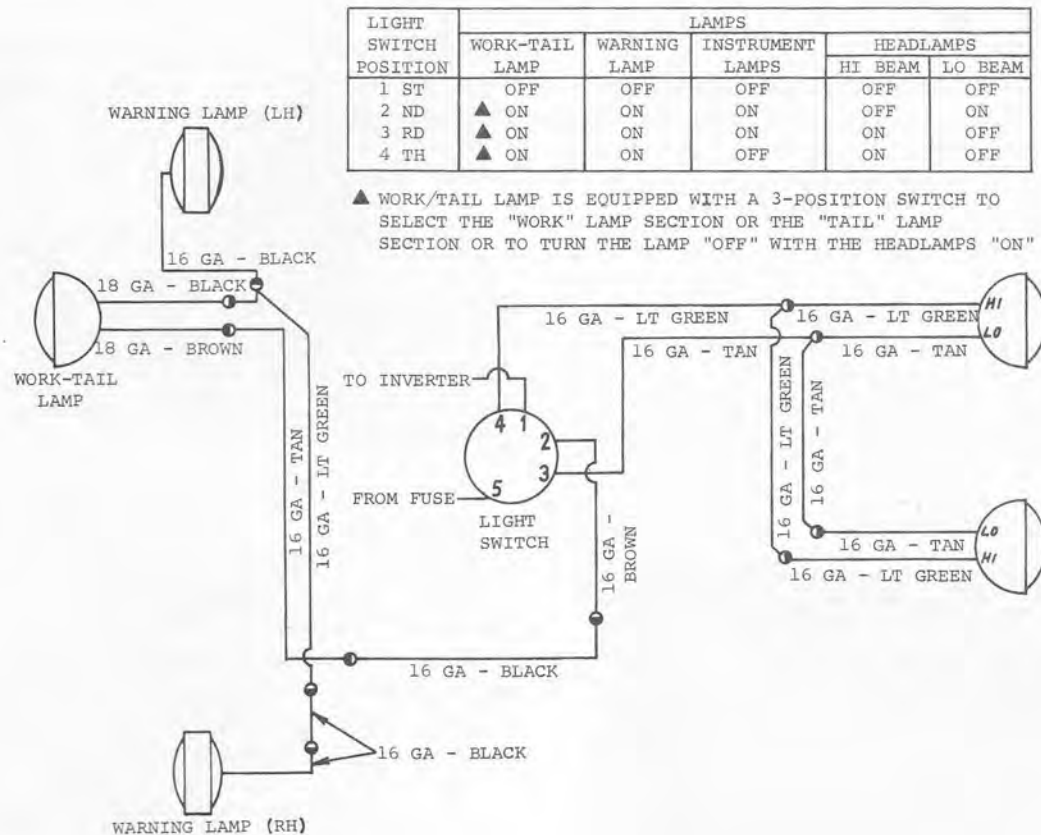


Fig. 64 - Electrical Connection - Front Mounted Headlamps

Electrical System (See Figs. 62, 63 and 64)

DO NOT attempt to repair or adjust the voltage regulator, starter or alternator assemblies as these assemblies are best serviced by trained personnel with adequate service equipment.



Fig. 65 - Battery

Battery (See Fig. 65)

Easy access to the battery is gained through the service door. Clean and inspect the cables, terminals and battery surface. Clean off corrosion and apply grease to prevent corrosion. Keep electrolyte level to the bottom of the filler tubes. Add distilled water only. Do not over-tighten the battery carrier.

Checking Electrolyte

50 Every 50 hours of operation the specific gravity of the electrolyte in the battery should be checked with an accurate hydrometer. The specific gravity of the electrolyte in a fully charged battery is 1.260 to 1.300. If the specific gravity is below 1.255, it indicates that the battery charge is low and the battery should be recharged.

NOTE: The specific gravity should be checked before water is added to battery.

Checking Water Level

50 The level of the electrolyte should be checked periodically, and distilled water added to bring it up to correct level. Do not overfill as the electrolyte will spill onto top of battery through the vent plugs during operation.

The level of electrolyte should be maintained to the bottom of the filler tubes.

NOTE: Always use distilled water or rain water in the battery.

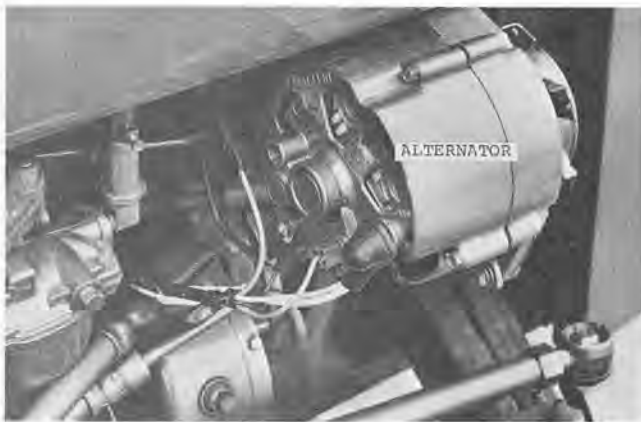


Fig. 66 - Alternator

Alternator (See Fig. 66)

The alternator on the MF 135 Tractor is the latest advancement in providing electrical power to supply the demands of electrically-operated assemblies found on the Tractor. The following precautions must be observed to ensure maximum life and performance of the alternator.

1. When installing a battery, always make absolutely sure the ground polarity of the battery and the ground polarity of the alternator are the same. If a battery of the wrong polarity is connected into the charging system, or if the battery is reversed when installing it, the battery is directly shorted through the diodes. Consequently, the diodes and wiring are endangered by high current flow. Burned wiring harness and burned "open" diodes probably will result.

2. When connecting a booster or "slave" battery, make certain to connect the negative battery terminals together and the positive battery terminals together. Failure to observe this precaution will result in the same damage as just described previously.

3. When connecting a charger to the battery, connect the charger positive lead to the battery positive terminal and the charger negative lead to battery negative terminal. Failure to follow this procedure will result in the same damage as described in the first precaution.

4. Never operate the alternator on open circuit. With no battery or electric load in the circuit (open circuit), the alternator can build up high voltages which could be extremely dangerous to anyone who might accidentally touch the alternator battery terminal. Before making tests or "on-the-Tractor" checks, make sure that all connections in the circuit are tight and secure.

5. Do not short across or ground any of the terminals on the alternator or regulator. Any artificial circuit set up by purposely grounding or shorting any of the alternator or regulator terminals can cause serious electrical malfunctions that might endanger components of the electrical system.

6. Do not attempt to polarize the alternator. Alternator polarizing is not necessary, since the voltage developed within the alternator is of both polarities and the diode rectifier automatically controls the direction of current flow. It is of vital importance, as discussed in the first precautions, that the battery ground and the alternator ground be of the same polarity for diode protection.

Fan Belt (See Fig. 67)

200 Adjust the fan belt tension so as to maintain 1/2 to 3/4" deflection between the widest span area.

**SMV Emblem and Bracket —
See Page 54**

**Safety Flashing Amber Light
(See Fig. 68)**

The use of a flashing light is acceptable in most areas. However, some areas may

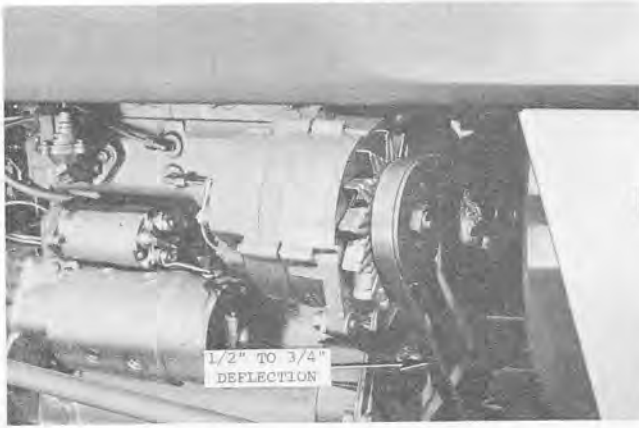


Fig. 67 - Fan Belt Adjustment

prohibit their use. Local laws should be checked for possible legal limitations.

Where it is necessary or desirable not to use the warning light, the wire can simply be disconnected and the ends of the wires insulated by taping, etc., or the flasher unit can be removed. The flasher unit is located inside of the combination work-tail light.

Where it is necessary, or desirable not to use the flashing warning light, but to use the warning lights as a steady burning light, the flasher unit may be shorted across by securely wrapping the flasher prongs with several wraps of copper wire, or by soldering a wire onto both prongs and plugging the flasher unit back into the clip. The two wires in the flasher plug-in clip could have the insulation removed in a small area, the wires twisted or soldered together and then insulated by taping, etc., or a jumper clip could be cut out of copper or aluminum and plugged in place on the flasher unit.

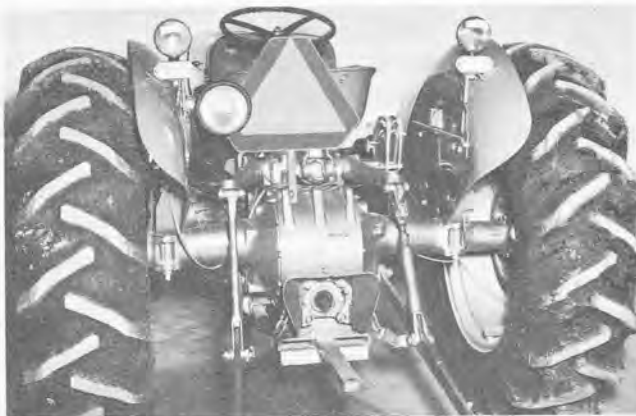


Fig. 68 - Safety Flashing Amber Lights

Cooling System

The cooling system on the MF 135 Tractor consists of a radiator, pressure-type radiator cap, fan, thermostat and water pump. The cooling system capacity is 10.5 U.S. - 8.4 Imp. quarts. The cooling system in both the gas and diesel engines incorporates a thermostat by-pass port, which allows a more rapid and even engine warm-up. This type of system circulates a metered amount of the coolant through the water pump back into the engine block before the thermostat opens.

Care of the Cooling System

 It is important that dirt, chaff, etc., be kept cleaned from the radiator fins. To simplify cleaning the radiator fins, the Tractor grille is easily removed to gain access to the radiator. To remove grille, loosen the knurled knob at the top of the grille, tilt top of grille out and lift it up. (See Fig. 69.)

The radiator is completely sealed at the edges so that all air must pass through the grille. The air holes in the grille are smaller than those in the radiator. If any foreign material passes through the grille, it should pass through the cooling fins in the radiator, preventing the fins from becoming plugged. This also helps to keep the fins of the radiator cleaned and prevents once circulated air from recirculating through the radiator.



Fig. 69 - Grille Service Panel



Fig. 70 - Cooling System

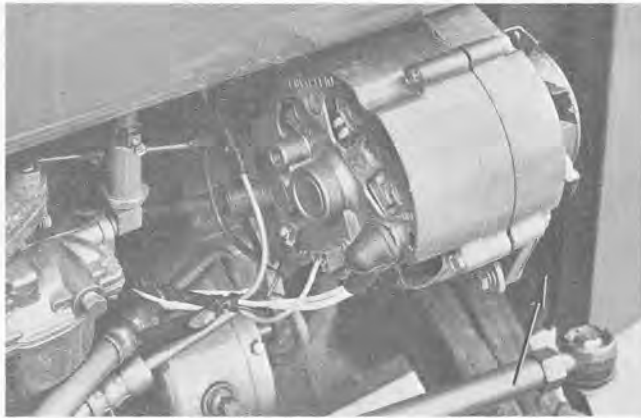


Fig. 71 - Radiator Drain Cock

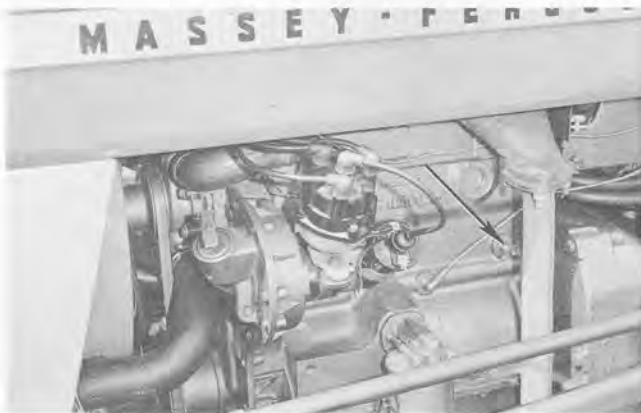


Fig. 72 - Engine Drain Cock

Draining the Cooling System (See Figs. 70, 71 and 72)

To drain the cooling system, remove the radiator cap, open the drain cock in the bottom of the radiator and loosen the engine drain cock.

Thermostat

A defective thermostat will cause slow warm-up and incorrect operating temperatures, resulting in excessive condensation and crankcase dilution. This leads to excessive wear on engine parts. Operating the engine with the thermostat removed will do likewise.

The thermostat is located in the cast iron body between the cylinder head and the upper body between the cylinder head and the upper radiator hose on both the gasoline and diesel engines. If the thermostat requires replacement, always use a new gasket between the head and the cast iron body. Inspect radiator hoses and hose clamps; replace hoses and tighten clamps, as necessary.

Checking Radiator (See Fig. 70)

 The engine has a pressure cooling system. To maintain this pressure, the filler cap must be fitted tightly on the neck of the radiator.



CAUTION: NEVER remove radiator cap when engine is **HOT** without letting pressure escape, by turning cap to the first notch, and waiting a few minutes. Coolant can spurt out with the sudden release of pressure and cause serious injury by scalding. **PRACTICE SAFETY.**

The level of anti-freeze solution, or water, in the system should be checked daily. The level of coolant should be 1 inch above the radiator core.

When anti-freeze solution is used in the system, fill the radiator with equal parts of

anti-freeze and water. If only water is used, it should be noted that the effectiveness of anti-freeze solution will be reduced.

Before checking the level of coolant, clear away any dirt around radiator cap.

Cleaning the System

750 Over a period of time, mineral deposits can form on the inside walls of the engine block. These can eventually build up and prevent adequate cooling, and cause overheating of the system, when engine is operating.

The system should be drained occasionally and cleaned by flushing with water in the reverse direction to the normal flow, or by using a good grade of cooling system cleaner.



Fig. 73 - Clutch Adjustment

Clutch Adjustment (See Fig. 73)

100 The normal clutch pedal free travel necessary for efficient operation is 3/4 of an inch. This is measured between the clutch pedal arm and the bottom of the radius rod clamp.

To adjust free travel:

1. Insert a rod through the hole in the clutch pedal shaft, loosen the clamp bolt. (See Fig. 74.)



Fig. 74 - Clutch Adjustment

2. With the rod, rotate the shaft clockwise until you feel the clutch finger contact the release bearing (noticeable resistance).

3. Move the clutch pedal on the shaft until the 3/4 inch setting is obtained. Tighten the clutch pedal clamp bolt securely.

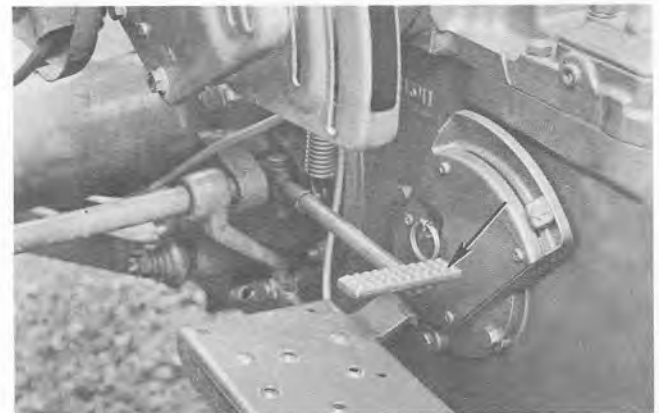


Fig. 75 - Differential Lock

Differential Lock (Optional) (See Fig. 75)

A mechanically actuated differential lock is a factory-installed option on the MF 135 Tractor. The differential lock needs very little attention. However, it is important that the locking mechanism is adjusted for full engagement. To quickly check the adjustment, depress the differential lock pedal

as to fully engage the locking mechanism. At this time, there should be a clearance between the differential lock pedal and the Tractor step-plate of $\frac{1}{4}$ of an inch. If this adjustment is not correct, proceed as follows:

1. Loosen the clamp bolt securing the pedal assembly to the differential lock shaft.
2. With the differential lock mechanism fully engaged, position the pedal until there is $\frac{1}{4}$ of an inch clearance between the pedal and the step plate.
3. Tighten clamp bolt securely.

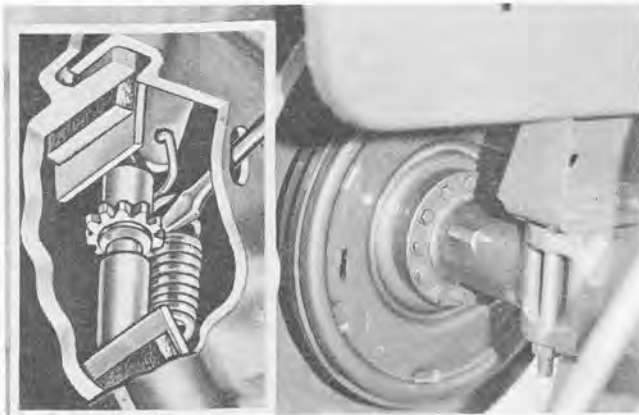


Fig. 76 - Brake Adjustment

Brake Adjustment (See Fig. 76)

200 To adjust the brakes, raise both rear wheels off the ground. Remove the adjusting hole covers. With a suitable screwdriver, tighten the adjusting screws until they are tight and the wheels cannot be rotated. Back off the adjusting screws until there is no longer a drag on the drums. Check drag after each click.

NOTE: If the brakes are malfunctioning due to very damp climatic conditions, it may be necessary to "burnish-in" the linings before adjustment. With the rear wheels raised, run the Tractor in high range-first gear. Lock one brake and partially apply the other brake until the brake drum is too hot to

touch. Repeat the operation on the opposite brake. Allow drums to cool, then adjust. Use extreme care when carrying out this operation.

Check the master brake setting (both brake pedals locked together). Apply the master brake while driving the Tractor on level ground. The Tractor should come to a stop in a straight line. If Tractor pulls to one side, the brake linkage requires adjustment. Lengthen or shorten linkage so Tractor stops in a straight line. (See Figs. 77 and 78.)

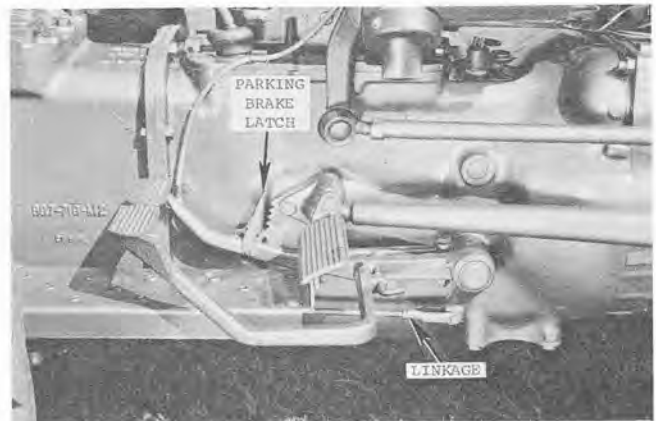


Fig. 77 - Brake Linkage Adjustment - Right Wheel



Fig. 78 - Brake Linkage Adjustment - Left Wheel

Front Wheel Alignment (See Fig. 79)

750 Periodically check the front wheels for correct toe-in. The correct front wheel toe-in is 0" to $\frac{1}{4}$ ". Measure between the

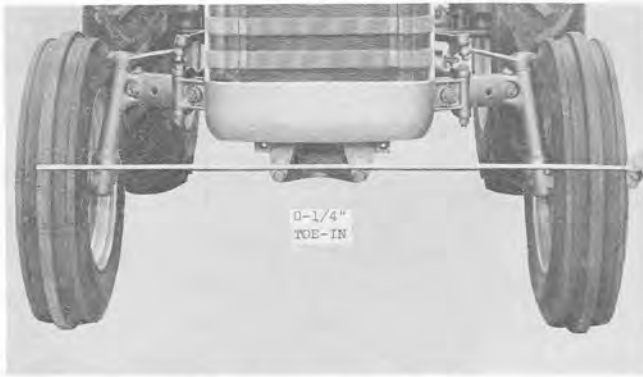


Fig. 79 - Front Wheel Alignment

tire rib centers at hub height at both front and rear of wheels. The front measurement should be from 0" to 1/4" less than the rear measurement for correct toe-in.

To adjust toe-in, loosen the nut on each end of the drag link center tub. Shorten or lengthen drag link as required by rotating center tube. Retighten the nuts securely. Keep both drag links approximately the same length. (See Fig. 80.)

NOTE: To obtain correct toe-in, be sure the front wheel bearings are properly adjusted.

Repacking Front Wheel Bearings



It is advisable to remove the front wheels from the hubs, especially if they are



Fig. 80 - Adjusting Drag Links

liquid-filled or weighted, before attempting to service the front wheel bearings.

1. Remove the hubs from the spindles and thoroughly clean the bearings in a suitable cleaning solvent -- not gasoline.

2. Remove old grease from inside the hub.

3. Repack the bearings with a lithium base bearing grease. Reinstall the bearings in the hub.

4. Apply a generous amount of grease around the outside of the inner bearing. Apply a sufficient amount of grease to fill the space between the inner bearing and the dust seal.

5. Install a serviceable dust seal in the front hubs, and install hubs on spindles. Avoid damaging the dust seals.

6. Install washer and adjusting nut on spindle. Torque adjusting nut to 30-40 ft.-lbs. while rotating hub.

7. Position nut lock on nut with one pair of slots in line with the cotter pin hole in spindle.

8. Back off the adjusting nut 1-1/2 slots. (Cotter pin hole will be covered.)

9. Remove nut lock from adjusting nut and reposition it so the cotter pin can be inserted.

DO NOT MOVE ADJUSTING NUT. Insert cotter pin.

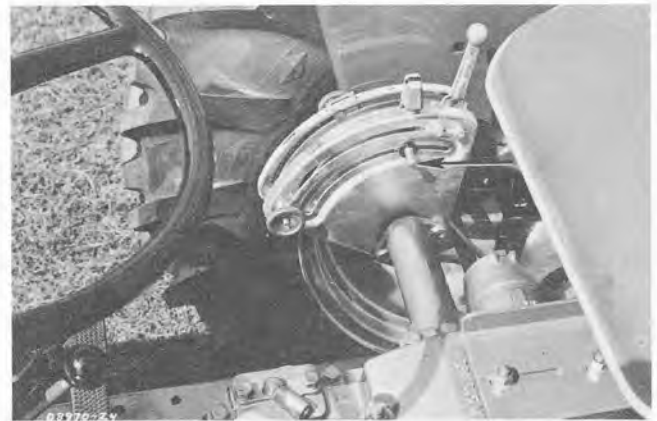


Fig. 81 - Hydraulic Quadrant Adjustment

Hydraulic Control Quadrant (See Fig. 81)

The hydraulic control levers are held in position by spring-loaded friction washers, which, after considerable usage, may become worn and allow the levers to "creep" from their desired setting. To compensate for wear, tighten the machine screw on each lever, which secures the friction washer until the desired tension is obtained.

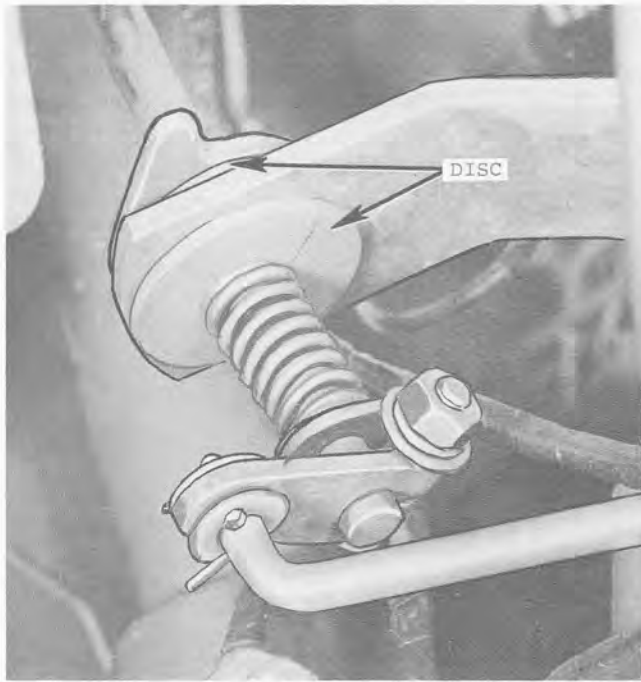


Fig. 82 - Throttle Control Lever Adjustment
(Diesel Model)

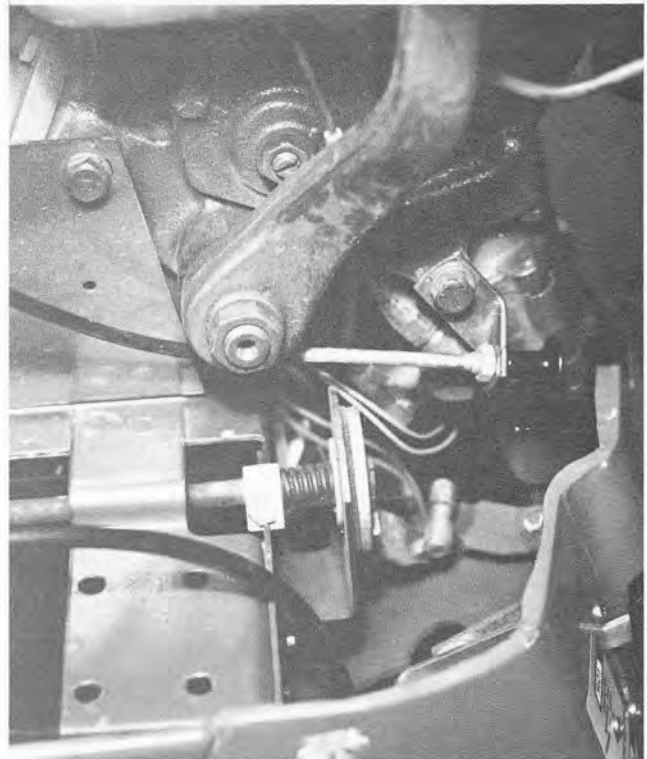


Fig. 82A - Throttle Control Lever - (Gas Model)

Rear Wheels (See Fig. 83)

100

The torque of the rear wheel hub nuts should be checked after the first 2 and 10 hours of field operation, when the Tractor is new, and following any rear wheel installation. This ensures that the hub bolts and wheels are properly seated.

Throttle Control Lever (Diesel Model) (See Fig. 82)

The throttle control lever is fitted with a spring-loaded friction disc, which holds the throttle lever at the desired setting. After considerable usage, the disc may become worn, allowing the throttle control lever to "creep". To compensate for wear, loosen the clamp nut beneath the instrument panel and slide the clamp along on the throttle shaft, compressing the tension spring, until the desired lever tension is obtained. Securely tighten clamp nut.



Fig. 83 - Rear Wheel Hub Nuts

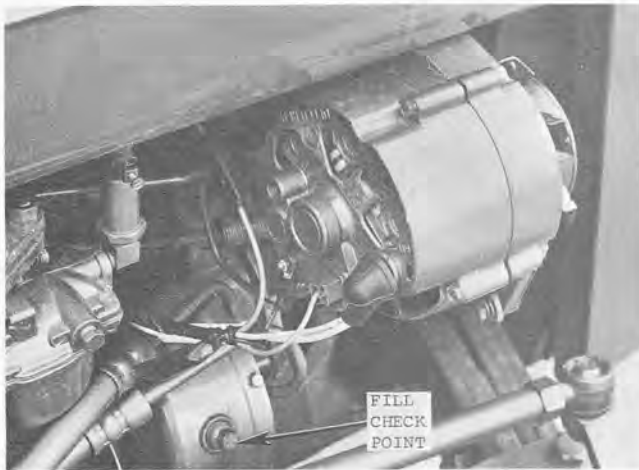


Fig. 84 - Power Steering

Power Steering (See Fig. 84)

750 Drain and refill the reservoir with hydraulic oil, M-1129-A, available through your local Massey-Ferguson Dealer. To make sure all air is out of the system and the reservoir is full, follow the following procedures.

- 50** 1. Start Tractor engine and warm up to operating temperature.
2. Turn the steering wheel to the right and then left at least three times, without blowing the relief valve from turning too far.
3. Turn the wheels back to straight forward and fill the reservoir with engine running.
4. Repeat steps 2 and 3 at least three times to assure that all air is purged from the system.

10 Check the reservoir daily when Tractor is new to assure the reservoir is not low.

Engine Cylinder Head (See Fig. 85)

50 After the first 50 hours of operation, the cylinder head nuts must be retightened to 55-60 ft.-lbs. torque (with engine at operating temperature).

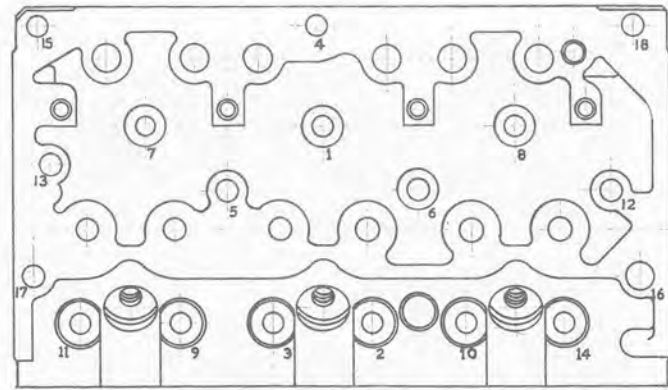


Fig. 85 - Cylinder Head Tightening Sequence

Valve Tappets

500 Valve tappet clearance must be checked, and adjusted after retightening the cylinder head, and at each 500-hour interval thereafter. Set clearance as follows:

Intake - .012 (Hot)
Exhaust - 0.15 (Hot)

Engine Crankcase Oil (See Fig 86)

100 Drain the oil completely by removing the drain plug in bottom of crankcase. Refill to the "full" mark on the dipstick with oil of the correct seasonal viscosity and A.P.I. classification. See lubrication chart for crankcase capacity and grade of oil.

Remove the oil filter element. Discard

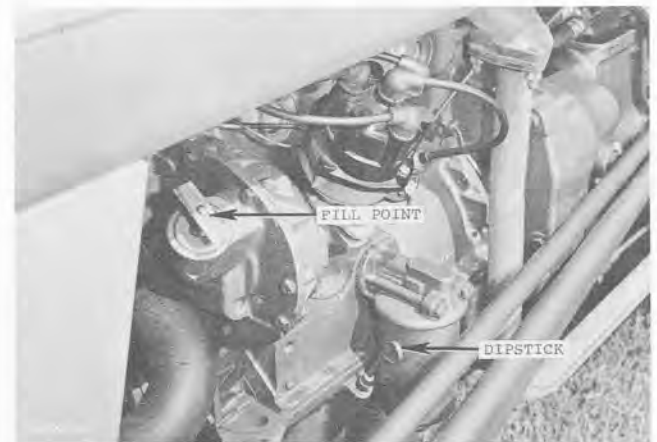


Fig. 86 - Crankcase Fill Point

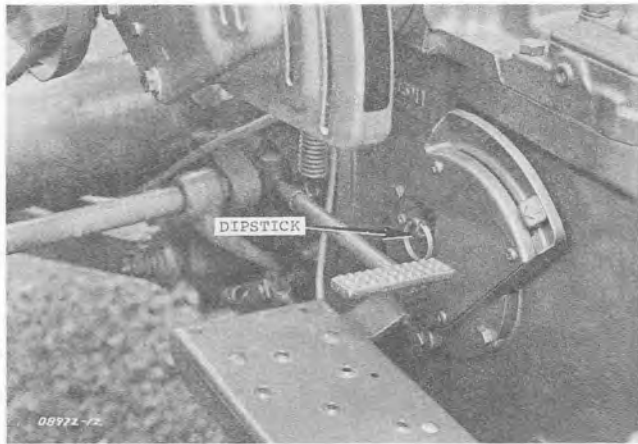


Fig. 87 - Hydraulic Oil Check Point

and replace with new element, after thoroughly cleaning the cover.

SMV Emblem and Bracket (Fig. 89)

The use of the SMV Emblem is acceptable in most areas for vehicles traveling on roadways, under 25 miles per hour. Local laws should be checked for possible legal limitations.

The mounting bracket and hardware are standard equipment. The SMV Emblem (Accessory) can be ordered through your local Massey-Ferguson Dealer -- Part No. 513 260 M1.

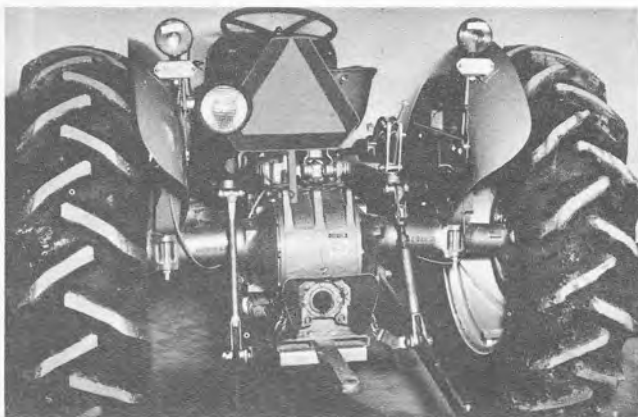


Fig. 89 - SMV Bracket and Emblem

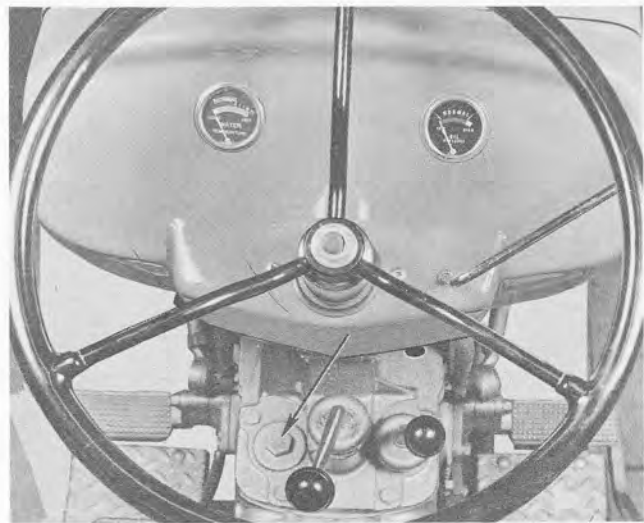


Fig. 88 - Hydraulic Oil Fill Point

Transmission, Differential and Hydraulic System (See Fig. 87 and 88)

50 **750** Drain the hydraulic oil completely by removing the drain plug and refill to "full" mark on the dipstick. Add oil through filler hole on top of the transmission housing. See Lubrication Chart for correct capacity and use Massey-Ferguson M-1129-A hydraulic oil only.

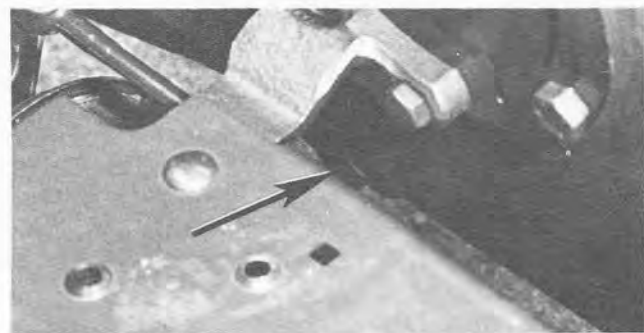
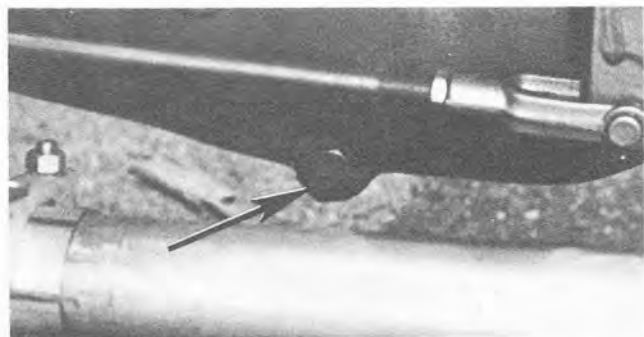


Fig. 90 - Transmission Drain Plugs

TRACTOR STORAGE

When your Tractor is to be idle for an extended period of time, it should be properly prepared for storage.

Following are helpful suggestions for storing your MF Tractor:

1. Select a dry, protected place where the Tractor is not exposed to weather or livestock.
(Remove water ballast from tires, if calcium chloride was not used when filling with ballast.)
2. Thoroughly clean the Tractor and touch-up painted surfaces with genuine MF paint, available at your authorized MF Dealer in quarts, gallons and handy spray packs.
3. Lubricate all grease fittings with the proper type of pressure gun grease (see "Lubrication" section).
4. Drain engine crankcase and refill with a good quality engine oil possessing a rust inhibiting additive. Replace oil filter element.
5. Drain transmission and hydraulic system. Refill transmission and hydraulic system with eight gallons of special oil (see "Lubrication" section), available only through your authorized MF Dealer.
6. With the hydraulic control levers, raise the hydraulic lift linkage to the transport position. The internal hydraulic cylinder will then be full of oil, thus preventing corrosion in the cylinder.
7. Remove the air filter element and clean. Refer to "Servicing the Air Filter."
8. Check power steering reservoir oil level and fill, if necessary.
9. Clean and repack front wheel bearings (see "Lubrication" section).
10. Start engine and bring to normal operating temperature.
11. Drain and flush cooling system. Fill with anti-freeze, using a suitable rust inhibitor.
12. Jack up Tractor and place it on sturdy blocks to remove weight from tires.
13. Inspect Tractor for worn or broken parts and replace, as necessary. Always use genuine MF parts.
14. Gas Models Only:
 - a. Remove spark plugs and regap to 0.025". Before installing spark plugs, pour two tablespoons of SAE 30 motor oil in each spark plug hole. Crank engine over a few times, then re-install spark plugs.
 - b. Remove fuel tank sediment bowl and filter screen. Drain all fuel from tank and carburetor bowl by removing drain plug in bottom of carburetor. Replace drain plug, filter screen and sediment bowl.
15. Diesel Models Only:
 - a. Drain the agglomerator bowl on the fuel filter.
 - b. Fill fuel tank with clean diesel fuel, adding a reputable brand of rust inhibiting oil. See oil manufacturer's directions for mixing instructions.
 - c. "Air-bleed" the fuel system (see "Servicing" section).
 - d. Start engine and allow it to run until blue smoke appears out exhaust pipe, then shut off engine.
16. Remove battery and inspect its condition. Store battery in a cool place, keeping it fully charged.

REMOVING TRACTOR FROM STORAGE

1. Install fully charged battery. This is a negative ground electrical system.

2. Fill fuel tank with clean, high quality fuel.

3. Check oil level in engine crankcase and transmission.

4. Remove coverings from exhaust pipe and air filter inlet.

5. Check tightness of all nuts, bolts and screws; tighten as necessary.

6. Lubricate all grease fittings with the proper type and quality of pressure gun grease (See "Lubrication" section).

7. On diesel models, "air-bleed" the fuel system (see "Servicing" section).

8. Start Tractor and allow it to run for 10 to 15 minutes. Observe all instruments, paying particular attention to the ammeter, oil pressure gauge and temperature gauge.

9. Drive Tractor without load, at slow speeds, noting the instruments and general operation.

TROUBLE-SHOOTING

TROUBLE-SHOOTING DIESEL TRACTOR

Engine Cranking Failure

1. Dual range shift lever not in "neutral" position.
2. Loose, grounded, shorted or broken wiring. Check connections on all switches.
3. Discharged or weak battery.
4. Inoperative starting motor.

Engine Cranks but Fails to Start-Fuel System

1. Lack of fuel in the tank. Fill tank and "air-bleed" the system.
2. Excessive air in the fuel system. "Air-bleed" the entire fuel system.
3. Fuel shut-off control rod in the "off" position.
4. Fuel filters "clogged". Replace filter and "air-bleed" the system.
5. Faulty injector assembly. Have your MF Dealer test and service or replace the assembly.
6. Injection pump failure. Have your MF Dealer check the pump.
7. Injection timing incorrect. Have your MF Dealer correctly time the pump.

Engine Cranks but Fails to Start — Air System

1. Air cleaner inlet tube restricted.
2. Plugged or "clogged" air cleaner.

Engine Operation Rough

1. Injection pump incorrectly timed.
2. Faulty injectors.
3. Faulty injection pump.

Excessive Engine Exhaust Smoke

1. Faulty injectors.
2. Incorrect injection pump timing.
3. Clogged air cleaner.
4. Improper valve adjustment.
5. Burned, worn or sticking valves.
6. Excessive operation at low engine speeds.

Injection Pump Maximum Speed Incorrect

1. Throttle linkage damaged. Replace and adjust linkage.
2. Faulty injection pump governor. Have your MF Dealer check the pump.

Loss of Power

1. Plugged fuel filter.
2. Worn rings, pistons or sleeves, burned or sticking valves.
3. Faulty injection pump governor linkage.
4. Faulty throttle or governor linkage.
5. Blown head gasket.
6. Brakes dragging.
7. Improper valve adjustment.

8. Clogged air cleaner.
9. Fuel shut-off rod linkage incorrect.
10. Faulty pump timing.

Excessive Fuel Consumption

1. Faulty injectors.
2. Pump timing incorrect.
3. Fuel pressure line leakage.
4. Burned, worn or sticking valves.
5. Worn pistons, rings or sleeves.
6. Improper valve adjustment, worn or bent push rods.
7. Engine overheating.
8. Clutch slippage.
9. Brakes dragging.
10. Excessive exhaust back-pressure.
11. Faulty cooling system thermostat.
12. Clogged air cleaner or air pipe.

Erratic Misfire

1. Faulty injectors.
2. Weak or broken valve springs.
3. Sticky valves.
4. Excessive air in system.
5. Plugged fuel filter.
6. Water in fuel.

Injection Pump Idle Speed Incorrect

1. Idle speed stop screw adjusted incorrectly. Reset stop screw 725 to 775 rpm.

2. Improper pump timing. Have your MF Dealer time your injection pump.

Engine Will Not Stop

1. Fuel shut-off rod linkage incorrect. Readjust linkage.

2. Improper pump functioning. Have your MF Dealer check.

Engine Knock

1. Faulty injectors.
2. Timing advanced. Have your MF Dealer correctly time the injection pump.

TROUBLE-SHOOTING GASOLINE TRACTOR

Engine Cranking Failure

1. Dual range shift lever not in "neutral" position.
2. Loose, grounded, shorted or broken wiring. Check connections on all switches, solenoid, starting motor and battery.
3. Discharged battery.
4. Inoperative starting motor.

Engine Cranks but Will Not Start — Ignition Spark Failure

1. Loose, grounded, shorted or broken ignition wiring. Check connections on ignition switch, ammeter, coil, distributor and spark plugs.

2. Mechanical failure of spark plugs -- cracked or broken porcelain, incorrect gap setting, electrodes fouled.

3. Distributor failure. Inspect cap for cracks, carbon traces and condition of wire terminals. Wipe clean of dirt and moisture. Inspect rotor, breaker points, condenser and wiring connections.

4. Faulty coil. Remove high tension wire from center of distributor and hold end of wire about 1/4" from suitable ground. With ignition switch "on", crank engine and note if coil produces spark. It should produce a strong blue spark, not a weak yellow one. If no spark occurs, check all primary wiring before condemning coil.

Engine Cranks but Will Not Start — Carburetion Failure

1. Choke not pulled out when engine is cold.
2. Throttle closed.
3. Fuel shut-off valve not open.
4. Fuel tank empty.
5. Clogged vent in fuel cap.
6. Clogged fuel filter or screens.
7. Restricted fuel line.
8. Restricted carburetor passages.
9. Water deposited in carburetor. In cold temperatures, water freezing would prevent gasoline flow.
10. Air cleaner inlet tube restricted.
11. Clogged air cleaner.
12. Throttle and/or governor linkage inoperative or incorrectly adjusted.
13. Air leak in fuel line.
14. Cracked or broken intake manifold.
15. Valves sticking.

Engine Cranks Slowly

1. Weak battery.
2. Crankcase oil too heavy for temperature.
3. Defective starter or connections.

Excessive Fuel Consumption

1. Fuel leak.
2. Fouled air cleaner.
3. Timing off.
4. Automatic spark advance not working properly.
5. Distributor points need replacing.
6. Spark plugs need servicing or replacing.
7. Faulty wiring.
8. Improper valve timing.
9. Burned, worn or sticking valves.
10. Worn pistons, rings or sleeves.
11. Improper valve adjustment, worn or bent push rods.
12. Engine overheating.
13. Clutch slipping.
14. Brakes dragging.
15. Excessive exhaust back pressure.

Excessive Oil Consumption

1. Oil leak.
2. Plugged breather pipe.
3. Worn valve guides.
4. Worn, broken or ill-fitted rings.
5. Worn, scored or out-of-round cylinders or pistons.
6. Worn ring grooves.
7. Inverted rings.
8. Stuck piston rings.

9. Worn neoprene oil guard gaskets on the intake valves.

Loss of Power

1. Dirty carburetor.
2. Faulty ignition.
3. Worn rings, pistons, or sleeves; burned or sticking valves.
4. Faulty governor operation.
5. Faulty throttle, governor or choke linkage.
6. Crack in intake manifold or leaky gasket.
7. Blown head gasket.
8. Brakes dragging.
9. Improper valve adjustment, worn or bent push rods.
10. Excessive exhaust back-pressure.
11. Clogged air cleaner.

Erratic Misfire

1. Dirty carburetor.
2. Weak or broken valve springs.
3. Sticking valves.
4. Faulty ignition.

Pre-Ignition

1. Poor grade of fuel.
2. Ignition timing too far advanced.
3. Engine overheating.
4. Heavy carbon deposits in the combustion chamber.
5. Spark plugs of improper heat range.
6. Insufficient tappet clearance.
7. Burned or worn valves.
8. Improper distributor advance.

Continuous Misfire

1. Stuck or burned valves.
2. Blown head gasket.
3. Faulty ignition.
4. Improper timing.

Engine Overheating

1. Thermostat stuck closed.
2. Water leakage -- too low water level.
3. Fan belt slipping.
4. Clogged radiator core.
5. Carburetor mixture too lean.
6. Improper ignition timing.
7. Fouled cooling system.
8. Improper valve timing.

ACCESSORIES

Especially designed accessories are available for your MF 135 Tractor from your authorized Massey-Ferguson Dealer. These accessories will adapt your Tractor to your special operating requirements as well as increasing its efficiency, comfort and safety.

- 677 061 - Leveling Box (Left Side)
- 677 118 - Spacer - Rear Axle Extension (6" B.C.) (to 88" Tread)
- 677 160 - PTO Pulley Drive Kit
- 677 191 - Swinging Drawbar - Special Tractor (5/8" Studs)
- 677 197 - Adjustable Top Link
- 677 218 - Front Wheel Weights (16" Wheels) (Inner) (Use w/677 315)
- 677 240 - Linkage Drawbar (Cat. I)
- 677 242 - Drawbar Stay Links (Cat. I)
- 677 265 - Auxiliary Hydraulic Valve (2 Spool)
- 677 272 - Hitch Pin, Chain & Retainer Assembly
- 677 277 - Cigarette Lighter (12 Volt)
- 677 289 - Linkage Stabilizer (Right Side)
- 677 290 - Linkage Stabilizer (Left Side)
- 677 315 - Front Wheel Weights - 16" Wheels (Outer) (Use w/677 218)
- 677 333 - 2" x 8" Remote Hydraulic Cylinder (Double-Acting)
- 677 334 - 2-1/2" x 8" Remote Hydraulic Cylinder (Double-Acting)
- 677 335 - 2" x 8" Remote Hydraulic Cylinder (Single-Acting)
- 677 336 - Hydraulic Hose Set (2 Hoses 105" & 114") (Double-Acting Cylinders)
- 677 337 - Hydraulic Hose Set (2 Hoses 129" & 138") (Double-Acting Cylinders)
- 677 338 - Hydraulic Hose (105") (Single-Acting Cylinder)
- 677 339 - Hydraulic Hose (129") (Single-Acting Cylinder)
- 677 347 - Belt Pulley - 10-1/4" Dia. (Use w/677 160)
- 677 361 - Tool Box (For Dished-Type Fenders)
- 677 401 - Front End Weight
- 677 404 - Leveling Box (Left Side) (Use on Models w/10-1/2" Lift Arm Center Dim.)
- 677 407 - Frame - Front Weight (Use w/677 401)
- 677 408 - Swinging Drawbar (Special) (For 3/4" Studs)
- 677 412 - Lockout Cartridge (Use w/677 421 Valve)
- 677 419 - Hose & Coupler Kit (Single) (Use w/677 421 & 677 464)
- 677 420 - Hose & Coupler Kit (Double) (Use w/677 421 & 677 464)
- 677 421 - Auxiliary Control Valve - External Hydraulic Cylinder (2 Spool)
- 677 423 - Roller Type Swinging Drawbar (For 3/4" Studs)
- 677 438 - PTO Guard Assembly
- 677 439 - PTO Extension & Guard (Short)
- 677 444 - Hose Extension - 36"
- 677 446 - Hose Extension - 96"
- 677 447 - Spring Suspension Seat
- 677 452 - Dual Rear Wheel Spacers (6" Bolt Circle)
- 677 453 - Pulley Drive Adaptor (Use w/677 369) (1/2" Attach. Bolts)
- 677 464 - Single Spool Auxiliary Valve - Complete
- 677 466 - Vertical Exhaust
- 677 468 - Vertical Pre-Cleaner
- 677 484 - Tail Lamp & License Plate Bracket
- 677 493 - Lamp - Implement Warning
- 677 565 - Lock Valve

- 677 579 - Adjustable Linkage Stabilizers (Vineyard Tractor)
- 677 584 - Pre-Cleaner Kit (Vertical)
- 677 608 - Lock Valve
- 680 337 - Drawbar Hammer Strap (Use w/677 423)
- 1374 026 - Pressure Control Coupler (Chain Type) Hitch
- 1538 101 - SAFETY FRAME (See your MF Dealer)

SPECIFICATIONS

ENGINE:

Gasoline:

Model	Perkins - AG3.152
No. of Cylinders	3
Bore	3.6 inches
Piston Stroke	5 inches
Total Displacement	152.7 cu. ins.
Compression Ratio	7.5 to 1
Firing Order	1-2-3
Lubrication (at 2000 rpm)	Pressure fed at 40-55 psi
Valve Clearance:	
Hot -	Intake 0.012 inch
Exhaust	0.015 inch
Idle Speed	750 $\pm$ 25 rpm
Maximum Speed (no load)	2225-2275 rpm
Governor	Variable speed centrifugal, fly weight

Diesel:

Model	Perkins - AD3.152
No. of Cylinders	3
Bore	3.6 inches
Piston Stroke	5 inches
Total Displacement	152.7 cu. ins.
Compression Ratio	18.5 to 1
Firing Order	1-2-3
Lubrication (at 2000 rpm)	Pressure fed at 40-55 psi
Valve Clearance:	
Hot - Intake & Exhaust	0.010"
Cold - Intake & Exhaust	0.012"
Idle Speed	725-775 rpm
Maximum Speed (no load)	2135-2185 rpm
Governor	Built-in injection pump

FUEL SYSTEM:

Gasoline:

Type	Gravity flow
Carburetor	Up draft dustproof type

Diesel:

Type	Pressure-fed
Primary Fuel Pump	Diaphragm type
Fuel Filter	One filter, full flow, w/replaceable element

Injection Pump	CAV distributor type
Fuel Injectors	CAV multi-hole type
Injection Timing	24° B. T. D. C.

COOLING SYSTEM:

Type	Circulated by a centrifugal pump, with a by-pass system. Flow thermostatically controlled through the radiator
Pressure Cap	7 psi

POWER TRAIN:

Clutch	
Tractors with "Live" PTO Type	Dual dry-disc
Primary Clutch	Coil spring-loaded, 11" dia.
Secondary Clutch	Belleville spring-loaded, 9" dia.
Tractors with "Independent" PTO or Transmission PTO	
Type	Single dry-disc - 11" dia.
Six-Speed Transmission	Constant mesh, helical primary reduction gears with spur-type speed change gears. Transmission operated in conjunction with planetary reduction gear assembly which provides six forward speeds and two reverse speeds.
Multi-Power Transmission	Constant mesh, helical primary reduction gears with spur-type speed change gears. Transmission operates in conjunction with planetary reduction gear assembly and 2-stage compounding in combination with sliding gear and planetary compounding gear, providing twelve forward speeds and four reverse speeds.
Eight-Speed Transmission	Consists of a four-speed forward and one-speed reverse "sliding" gear set, compounded by a dual-range planetary reduction gear set. The dual-range planetary, connected to the transmission main shaft, provides eight speeds forward and two reverse.

POWER TAKE-OFF:

Shaft	Splined, 1-3/8" dia. ASAE std.
Control:	
"Live" PTO	3-position shift lever (Engine) (Neutral) (Ground)
"Independent" PTO	2-position shift lever ("On") ("Off")
Transmission PTO	2-position shift lever (Neutral) (Engine)
Shaft Speed:	
"Live" PTO - Engine	540 rpm at 1700 engine rpm
Ground	1 revolution per approx. 20" of forward travel
"Independent" PTO - "On"	540 rpm at 1700 engine rpm
Transmission PTO - Engine	540 rpm at 1500 engine rpm

ELECTRICAL SYSTEM:

Gasoline:

Battery:	
Make	Massey-Ferguson - negative ground

Volts	12
Amp/Hour Rate	60
Alternator:	
Make	Delco-Remy
Voltage	12
Charging Rate	25 amp.
Regulator:	
Make	Delco-Remy
Distributor:	
Make	Delco-Remy
Recommended Timing - Max.	
Engine Speed - 2250 rpm	27° B. T. D. C.
Contact Point Gap	Set at .021 inch
Starter Motor:	
Make	Delco-Remy
Spark Plugs:	
Make (std. factory equip.)	Champion N12Y
Size	14mm
Gap	0.025 inch

Diesel:

Battery:	
Make	Massey-Ferguson - negative ground
Volts	12
Amp/Hour Rate - "Independent" PTO Models	95
"Live" PTO Models	60
Generator:	
Make	Delco-Remy
Voltage	12
Charging Rate	25 amp.
Regulator:	
Make	Delco-Remy
Starter Motor:	
Make	Delco-Remy

BRAKES:

Type	Mechanical, double expanding shoe, self-energizing
Shoe Dimension	14 inch diameter, 2 inches wide, 118 square inch area
Pedal Free Travel	3/4 inch

HYDRAULIC SYSTEM:

Lift Pump	Constant running, scotch yoke, piston-type
Maximum Pressure	2800 psi
Delivery	4.8 gpm at 2000 engine rpm and 1500 psi
Control	Oscillating control valve on inlet side of pump

CAPACITIES:

Fuel Tank	10.2 U.S. - 8.3 Imp. gals.
-----------------	----------------------------

Cooling System	10.5 U.S. - 8.7 Imp qts.
Crankcase - w/o Filter Change	6 U.S. - 5 Imp. qts.
Crankcase - w/Filter Change	6.5 U.S. - 5.4 Imp. qts.
Transmission, Differential and Hydraulic System	8 U.S. - 6.7 Imp. gals.
Power Steering Reservoir	1 U.S. - .8 Imp. qts.

TIRE SIZE:

Rear	12.4/11-28, 4-Ply Rating, R1
	13.6/12-28, 4-Ply Rating, R1
	*14.9/13-24, 4-Ply Rating, R1
	18.4/15-16A, 6-Ply Rating, R1, R3

*Required Fender Code 640 805
in place of Fender Code 640 878
whenever Tire Code 640 887 is
specified.

Front	5.50-16, 4-Ply Rating, F2
	6.00-16, 4-Ply Rating, F2
	6.50-16, 4-Ply Rating, F2
	7.50-10, 6-Ply Rating, F3

DIMENSIONS:

Wheel Base	72-3/8 inches
Minimum Width:	
Deluxe, Special, Orchard Tractors	68-7/16 inches
Vineyard Tractor	51-7/8 inches
Ground Clearance - Minimum - 14.9/13-24 Tires	12-5/8 inches
Ground Clearance - Front Axle	20-1/2 inches
Turning Radius - w/Brakes	9 feet

Warranty

All NEW Massey-Ferguson agricultural machines and equipment (hereafter called products) are sold by the dealer upon the following warranty and agreement given by the dealer, WHICH IS IN LIEU OF AND EXCLUDES ALL OTHER WARRANTIES AND CONDITIONS EXPRESSED OR IMPLIED, INCLUDING THE WARRANTIES AND CONDITIONS OF MERCHANTABILITY AND FITNESS FOR PURPOSE, and any other obligation on the part of the dealer or Massey-Ferguson. The dealer neither assumes nor authorizes any person to assume for it any other liability in connection with the sale of such products. The obligation of the dealer or Massey-Ferguson, under this warranty, is limited to replacing parts, at no charge to the Buyer, which prove defective with normal and proper use of the product for the purpose intended.

This warranty applies only to a new, unused Massey-Ferguson product, there being no warranty of any nature in respect to used products or new products that have been modified or altered, repaired, neglected, or used in any way which, in the opinion of the dealer or Massey-Ferguson, adversely affects its performance.

All such new, unused Massey-Ferguson products are warranted to be free from defects in material or workmanship, which may cause failure, for a period of twelve months from date of delivery to Buyer or 1500 hours of use, whichever occurs first.

It is the responsibility of the Buyer, at his expense, to transport the machine or equipment to the dealer's service shop or, alternatively, to reimburse the dealer for any travel or transportation expense involved in fulfilling this warranty. When requested by the dealer, part or parts shall be returned for inspection, transportation prepaid, to a place designated by the dealer. IN NO EVENT SHALL THE BUYER BE ENTITLED TO RECOVER FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING, BUT NOT LIMITED TO, LOSS OF CROPS, INCONVENIENCE, RENTAL OF REPLACEMENT EQUIPMENT, LOSS OF PROFITS, OR OTHER COMMERCIAL LOSS.

DEALER REPLACEMENT PARTS WARRANTY

Massey-Ferguson repair or replacement parts, supplied by the dealer, will be warranted for ninety days from date of replacement or the balance of the unexpired warranty period of the base machine, whichever period shall be longer. The exchange of a new part for the defective part shall constitute compliance with this warranty.

MASSEY-FERGUSON ORIGINAL EQUIPMENT BATTERY WARRANTY

Notwithstanding any other provisions hereof the original equipment batteries are warranted for full replacement for the first three months and on a pro-rated replacement cost of the remaining 21 months.

RUBBER TIRE WARRANTY

Rubber tires are warranted directly by the respective tire manufacturer only and not by the dealer or Massey-Ferguson.

NEW TRACTOR REGISTRATION AND INSPECTION CERTIFICATE

MASSEY-FERGUSON

R.S.O. Kansas City R.S.O. CODE 53 DEALER CODE 14753 DATE 7-31-74
 DEALER MT-Rated Store ADDRESS 1400 Cherry Street, Des Moines
 TRACTOR MODEL 1352 SERIAL No. 9D1858166 ENGINE No. 1520A 27021A
 MACHINE CODE _____ TRANSMISSION No. CB22348 REAR AXLE No. CB13699

Follow Manufacturer's Instructions when performing inspection

REGISTRATION AND INSPECTION CERTIFICATE MUST BE PROCESSED IMMEDIATELY AFTER SALE FOR PROPER COVERAGE UNDER WARRANTY

Inspect the following and adjust if necessary

ENGINE

- | | |
|---|---|
| ☐ Radiator filled with solution | ☐ Service air cleaner |
| ☐ Cooling system connections | ☐ Air cleaner connections |
| ☐ Fan belt tension | ☐ Fuel line connections |
| ☐ Engine Oil | ☐ Activate Battery |
| ☐ All oil drain plugs | ☐ Carburetor adjustment |
| ☐ Temperature gauge reading | ☐ Engine RPM (idle) |
| ☐ Oil pressure | ☐ Engine RPM (full throttle) |
| ☐ Electrical connections | ☐ Governor performance |
| ☐ Ignition timing Gas and L.P.G. | |
| ☐ Alternator charging rate | |

CHASSIS

- | | |
|---|--|
| ☐ Tire Inflation | ☐ Trans., Diff. and Planetary oil level |
| ☐ Clutch pedal-free travel | ☐ Wheel rim and hub bolts (rear) |
| ☐ P. T. O. Shift Lever | ☐ Brake adjustment |
| ☐ Steering Gear | ☐ Drive test |
| ☐ Front wheel hub bolts | ☐ Is operator's manual with tractor |
| ☐ Hydraulic System Performance | ☐ Lubricate all fittings |
| ☐ Torque all chassis bolts | |

INSPECTION PERFORMED BY:

Signature

Alan Palmer

Explained the following to the owner

- | | |
|---|--|
| ☐ Lubrication and filter service | ☐ Power take off operation |
| ☐ Air cleaner service | ☐ Wheel tread adjustment |
| ☐ Instruments and controls | ☐ Draining of engine and radiator |
| ☐ Drawbar installation | ☐ Breaking in the new tractor |
| ☐ Tire and battery care | ☐ Operator's manual |
| ☐ Diesel Fuel system | ☐ Storage |

Purchaser's Name _____ ADDRESS _____

COUNTY _____ DELIVERY DATE _____

UNIT BOUGHT BY: Farmer _____, Non-Farmer _____

DEALER'S SIGNATURE _____ (Write in service to be used for)

Owner hereby acknowledges receipt from the Dealer of the OPERATOR'S MANUAL and of the WARRANTY AND AGREEMENT relative to the above machine and that prior to the sale such warranty was explained to and understood by Owner and that Owner agrees to the provisions hereof.

Owner's Signature _____

Important

In order for Dealer to qualify for warranty this certificate must be completed and mailed.

This copy for C.W.P.

Tag # 1449



**FARM
MACHINERY**

**When it comes to service . . . see your
Massey-Ferguson dealer for all your service needs.
He has the facilities and the training to provide
the kind of service that will keep your
MF equipment on the job.**