MASSEY-FERGUSON

MF 65

DIESEL TRACTOR

RUTHZIL TRATOR COMERCIAL DE PEÇAS LTDA 11 97083-6812 ROLANDO CITRANGULO



Owner's Manual

Massey-Ferguson Inc.
[E] JIT, MICHIGAN



Take Your Time

IS TIME SO IMPORTANT THAT YOU'LL FORGET TO SHUT OFF AN IMPLEMENT WHEN IT HAS TO BE OILED OR ADJUSTED? FARM ACCIDENTS ARE CAUSED BY CARELESSNESS AND LACK OF THOUGHT. NEXT TIME YOU'RE TEMPTED TO HURRY, THINK OF US. WE ALL FEEL THAT ACCIDENTS WON'T HAPPEN TO US, BUT THEY DO, NO MATTER HOW MUCH WE WISH THEY DIDN'T.

FARM EQUIPMENT MANUFACTURERS PLAN SAFETY AND EFFICIENCY INTO THE MACHINERY YOU OPERATE. THEIR PLANNING, YES, EVEN OUR OWN PERSONAL PLANS, WON'T MEAN A THING IF YOU ACT CARELESSLY. THE MACHINE YOU ARE OPERATING IS ONLY AS SAFE AS THE MAN WHO OPERATES IT. NO MATTER WHAT WE SAY OR DO THE BEST SAFETY DEVICE IS YOU, REMEMBER, TAKE TIME TO BE SAFE.

GREEN CROSS FOR SAFETY

NATIONAL SAFETY COUNCIL

We are pleased to add your name

to our list of owners of this new Massey-Ferguson machine. We hope that it will give you the utmost satisfaction in your field work.

This machine is one of a full line of farm and industrial machinery manufactured by Massey-Ferguson, including the great tractor line with the exclusive Hydraulic system and the world-famous Massey-Ferguson line of self-propelled combines.

The world-wide preference for Massey-Ferguson products is the result of internationally recognized leadership in engineering, plus precision of manufacture, in every one of our 22 factories in Canada, United States, Great Britain, France, Germany and Australia.

We are proud of the wonderful reputation earned by the products of these factories for efficiency and dependability.

Your dealer who serves you is one of over 10,000 business men in the great M-F dealer organization who are pledged to uphold the Massey-Ferguson tradition of service to customers.



Massey-Ferguson Inc.

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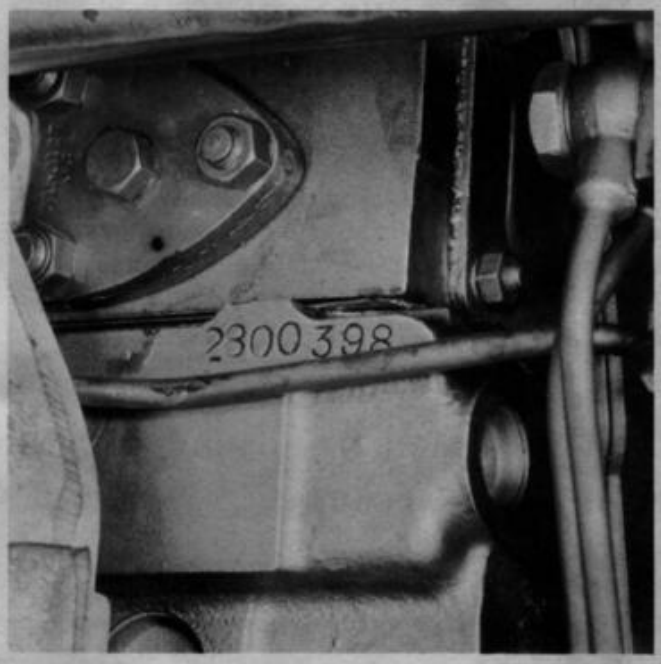
TRACTOR IDENTIFICATION



Tractor Serial Number Plate



Engine Serial Number

Each tractor is identified by a tractor serial number and engine serial number.

It is important that you refer to these serial numbers when ordering parts, attachments or requesting service. This practice will insure prompt service and eliminate confusion.

We suggest that you write these numbers in the spaces provided and also record them in your personal records.

684734
TRACTOR SERIAL NUMBER

2817174
ENGINE SERIAL NUMBER

Periodic Maintenance

Proper maintenance, including periodic inspection and regular lubrication with the correct lubricant is essential to long life and trouble-free operation of your new M.F. Tractor. This section of your manual is devoted entirely to maintenance and should be referred to as a quick reference when minor servicing is performed.

LUBRICATION

Care should be taken when handling all lubricating oils. Open containers collect dirt which may damage the lubricated parts. Always wipe off a grease fitting before lubrication to prevent the entrance of dirt.

The points listed below should be lubricated periodically. The number in the boxes beside each point indicate the hours of operation after which these points should be serviced. The parts and time intervals are marked in the illustrations for your convenience.

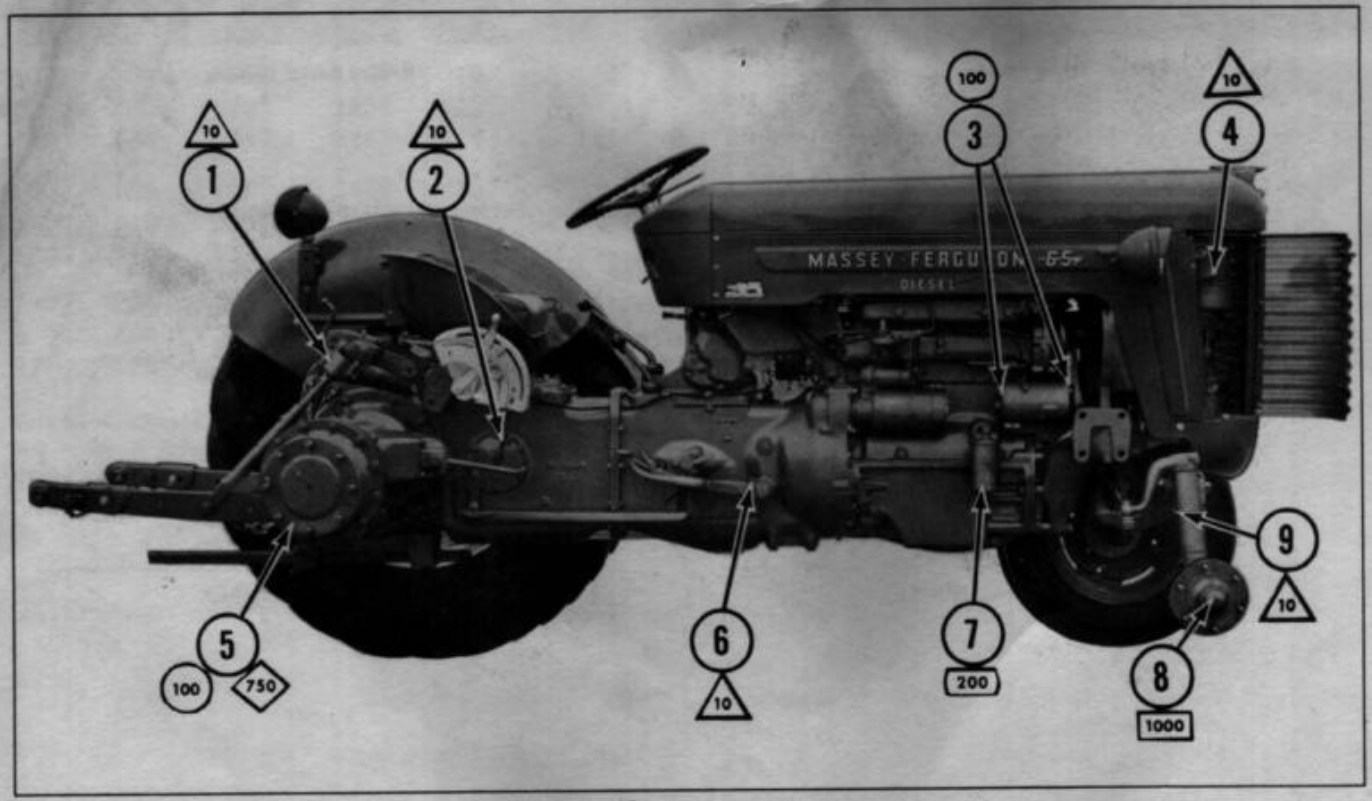
Legend

- 10 — Hours daily
- 100 — Hours semi-monthly
- 200 — Hours monthly
- 750 — Spring and Fall
- 1000 — Yearly

10 DAILY 10 HOURS

PRESSURE-TYPE GREASE FITTINGS

Lubrication Point	No. of Fittings
Leveling Box	1
Lift Rod Leveling Fork	1
Front Axle Spindles (Four Wheel Models)	1 each side
Front Axle Pivot Pins (Four Wheel Models)	2
Tricycle Single Front Support Assembly	2
Upper Pedestal (Power Steering)	3
Brake Pedal Assembly	1
Clutch Pedal Pivot Shaft	1



Lubrication Chart

1. Lift leveling box
2. Transmission Hydraulic System and Differential Dipstick
3. Generator
4. Air Cleaner Bowl
5. Rear Axle Planetary
6. Brake Pedal Assembly
7. Oil Filter Element
8. Front Wheel Bearings
9. Front Axle Spindles

CRANKCASE DIPSTICK

Check and maintain oil level at full mark.

TRANSMISSION, HYDRAULIC SYSTEM AND DIFFERENTIAL DIPSTICK

Check and maintain oil level with arrow.

AIR CLEANER BOWL (DAILY 10 HOURS)

Clean and refill to level indicated in bowl with the same weight oil as is used in the crankcase. Under very dusty conditions, the air cleaner bowl should be cleaned and refilled as often as necessary.

(100) *SEMI-MONTHLY 100 hours*

ENGINE CRANKCASE

Drain when warm and refill to the full mark on the dipstick. Crankcase capacity 7.0 U.S. or 5.8 Imperial quarts. Use service DG engine oils in this engine.

SAE 20 or 20/20W 32° to 90°F
SAE 10W 10°F
SAE 5W or 5W/20 - 10°F
SAE 30 above 90°F

NOTE: Clean the dirt from the crankcase oil filler cap before removing the cap.

POWER STEERING RESERVOIR

Maintain the oil level to the full mark on the dipstick. Use Type "A" Automatic Transmission Fluid.

GENERATOR

Put 10 drops of light oil in each oiler.

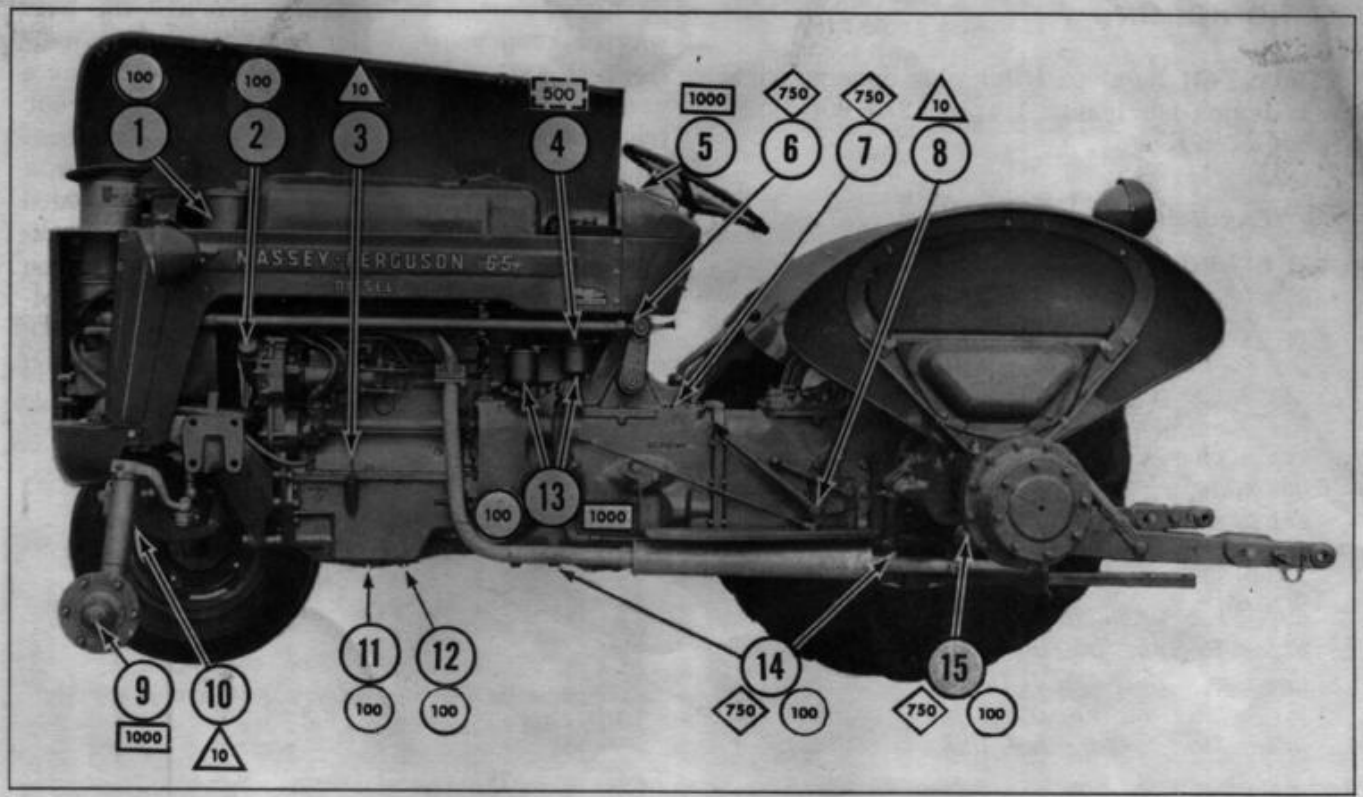
REAR AXLE PLANETARY OIL LEVEL

Check and maintain oil level to the filler plug opening with transmission lubricant. Use SAE 90(+ 50°F) SAE 80(- 50°F)

◇750◇ *SPRING and FALL 750 hours*

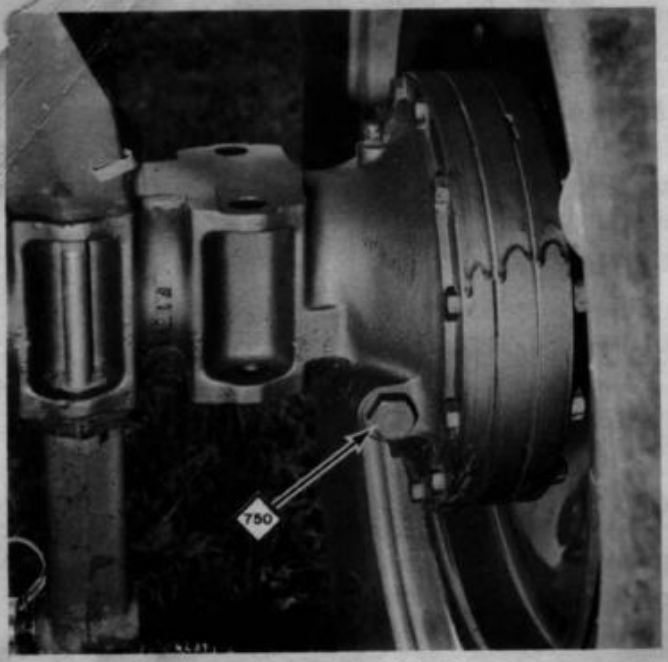
TRANSMISSION, HYDRAULIC SYSTEM AND DIFFERENTIAL.

Drain when warm through the openings provided. The Quadramatic control levers must be in the lower position to drain the ram cylinder. Clean all accumulation from the magnetic plugs and reinstall. Refill with 8 U.S. or 6 1/2 Imperial gallons of straight mineral gear oil. SAE 90 above 50°F SAE 80 below 50°F.

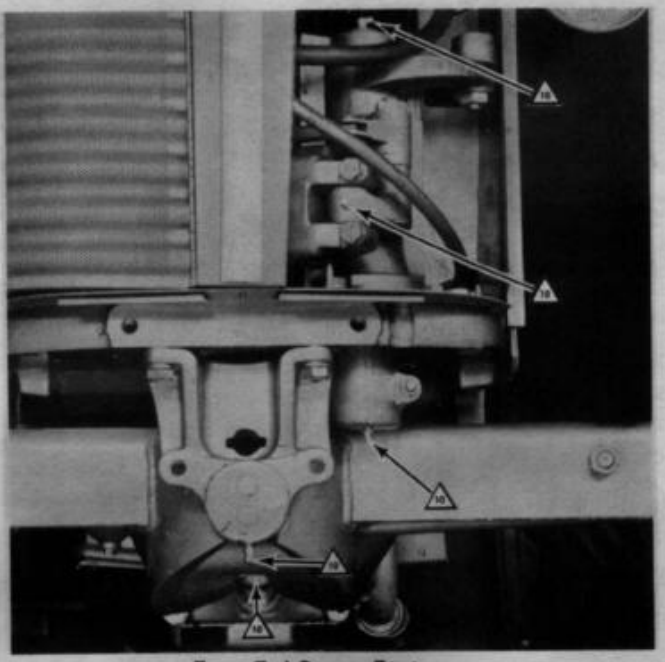


Lubrication Chart

1. Power steering Reservoir
2. Engine oil filler
3. Crankcase Dipstick
4. First Stage Fuel Filter
5. Tractormeter
6. Steering Housing Filler Plug
7. Transmission Hydraulic System and Differential Filler Plug
8. Clutch pedal Pivot Shaft
9. Front Wheel Bearings
10. Front Axle Spindles
11. Oil Sump Screen
12. Crankcase Drain Plug
13. First & second Stage Filters
14. Transmission Hydraulic System and Differential Magnetic Drain Plugs
15. Rear axle Planetary



Rear Axle Planetary Filler Plug



Front End Grease Fittings

REAR AXLE PLANETARY

Drain through the filler plug opening. Use a suction pump or a syringe. Refill to the filler plug opening.

STEERING HOUSING

Maintain oil level to filler plug opening with Transmission lubricant. 1.5 pints SAE 90(+50°F) SAE 80(-50°F).

1000 YEARLY 1000 hours

WHEEL BEARINGS

Remove wash and repack bearings with wheel bearing lubricant.

NOTE: When the bearings are properly replaced and repositioned on the hub an adequate supply of lubricant should be put in the hub to fill the cavity between the seal and the inner bearing.

CAUTION: The hub must be centered prior to engaging the seal to prevent damage to the seal. It is suggested that the wheel be removed from the hub prior to performing this operation.

TRACTORMETER

Put 2 or 3 drops of very light oil on the felt wick located at the shaft housing at the rear of the meter.

MAINTENANCE

Your tractor is rugged and durable; however, just like any other modern machine, it will give you much more satisfactory service if it is properly cared for. Experience has shown that periodic checks of certain parts are the best way to keep your tractor in "top-notch" condition. It is highly advisable that at least once a year, preferably in the early Spring before your tractor's busy season starts, you have your local Massey-Ferguson Dealer give your tractor a complete "check-up." Having him make needed repairs at that time may save you costly breakdowns later in the season. In order to aid you in your periodic maintenance checks, the following table is provided. A more complete explanation of most items listed will be found in the Servicing Section of this book.

10 Daily 10 Hours

Air Cleaner, pre-cleaner screen

Clean daily or more often under severe dust conditions.

CAUTION: Never allow dirt accumulation in the air cleaner bowl to exceed 1/2 inch depth.

Radiator

Coolant level should be 1 inch (approximately) above the core. Clean any foreign material from the radiator fins.

Fuel Tank

Fill the tank with clean fuel through a screened funnel with the engine stopped. Use No. 1-D fuel in the winter and No. 2-D fuel in the summer.

50 *Weekly 50 Hours*

Battery

Clean and inspect the surface of the battery and clean with a warm baking soda solution.

Inspect the cables and terminals clean and coat with grease to prevent corrosion.

Keep electrolyte solution level to the bottom of the tubes. Add distilled water only.

Tires

Check pressure and physical condition.

100 *SEMI-MONTHLY 100 hours*

Oil Sump Screen

After the crankcase has been drained, remove, clean and replace the oil sump screen.

Magnetic Drain Plugs

Remove the plugs from the Hydraulic System and transmission drain openings. Plug the openings with a suitable temporary plug; clean the magnetic plugs thoroughly and reinstall.

First & Second Stage Fuel Filter Drain

Remove the first stage filter drain plug and drain the filter sump. Remove the second stage filter sump and dump to drain.

Replace the drain plug and the filter sump. Air bleed the fuel system.

Clutch Pedal Free Play

Check and maintain 1/8 inch clearance between release shaft arms and transmission case.

200 *Monthly 200 Hours*

Oil Filter Element

Replace element every other oil change; an additional pint of oil is required with the installation of a new element.

Rear axle planetary retainer nuts

Tighten the 12 planetary housing retainer nuts on each axle unit.

Brake Linkage

Check and maintain 2-1/2 to 3 inches free travel on both left and right brake pedals.

500 *500 Hours*

First Stage Fuel Filter

Remove the filter element, clean the filter sump with solvent, install a new filter element and sealing rings. It may be necessary to replace the element at more frequent intervals in cold weather areas.

750 *SPRING and FALL 750 hours*

Radiator

Clean and flush the radiator and refill with coolant. The use of a rust inhibitor is desirable.

Fuel Tank

Clean and flush tank to remove rust, dirt or foreign material.

Air Cleaner

Remove the internal filter assembly, wash in solvent and reinstall.

1000 *YEARLY 1000 hours*

First & Second Stage Filters

Remove the filter elements and clean the sumps with solvent. Install new filter elements and sealing rings. Air bleed the fuel system. Do not replace the second stage filter element without changing the first stage filter element.

Operation

The performance of your new MF 65 Tractor can be perpetuated if you, the owner, observe a few basic rules and operating principles. A few reasonable precautions when you first receive your "65" will aid considerably in the over-all life of the machine. Periodic maintenance throughout the lifetime of the tractor will play an important part in the amount of trouble-free service you can expect to obtain. Also, as you become familiar with the controls in relation to situations encountered, you will determine to a large degree the flexibility of the tractor and implement. Thus the ultimate tractor life will be extended by eliminating unnecessary and uneconomical operations and procedures. Follow the suggestions in this section to help you obtain all the performance that was designed and built into your tractor.

INSTRUMENTS AND CONTROLS

STARTER AND HEATER SWITCH

The combination starter and heater switch is conveniently recessed in the lower right side of the instrument panel. The key operated switch has four positions: "Off", "Starter" only, "Heater" only and "Starter and Heater." The switch is spring loaded and returns automatically to the "Off" position when the key is released. When the key is removed the switch is locked.

FUEL SHUT-OFF

Conveniently located just below the instrument panel on the left side is a fuel shut-off control rod. Pulling the rod to the rear cuts off the supply of fuel to the injection pump.

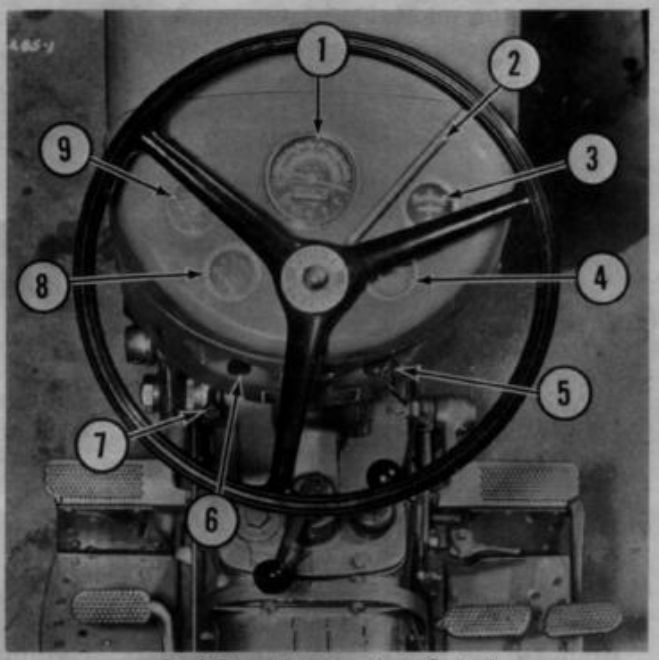
THROTTLE LEVER

Located between the steering wheel and instrument panel at the upper right of the steering column.

AMMETER

Induction type located on right side of instrument panel. The ammeter indicates the rate of battery charge or discharge and not the generator output.

The ammeter needle has to be on the "plus" (+) or right side in order to charge the battery. When operating, the needle should always take this position unless the engine is running at an idle or the electrical load is consuming in excess of the output of the generator at low engine RPM's. Continuous operation of the tractor with the battery discharging will result in the battery running down. Also, operating with the ammeter indicating an excessive charging rate will cause the battery to overheat. When either of these conditions exist, have your MF Dealer check the electrical system.



Dash Panel Instruments & Controls

1. Tractormeter
2. Throttle
3. Ammeter
4. Water temperature gauge
5. Starter and heater switch
6. Light switch
7. Fuel shut-off control
8. Fuel gauge
9. Oil pressure gauge

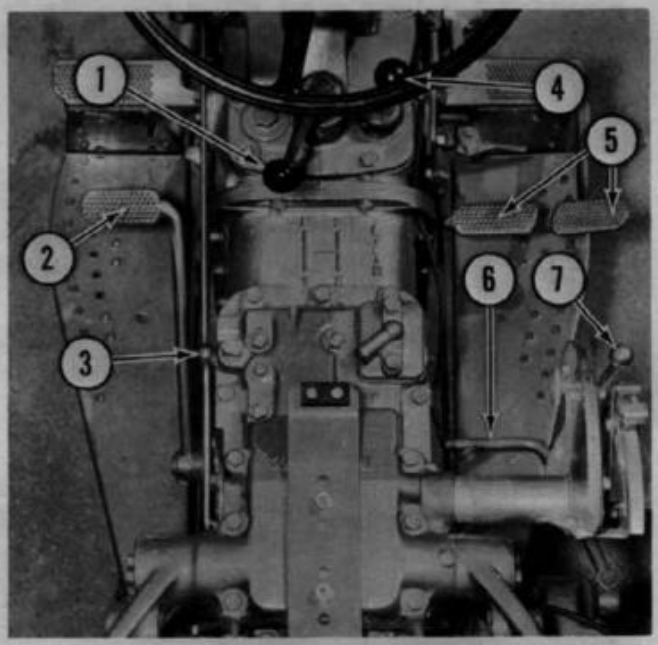
FUEL GAUGE

The fuel gauge is located on the lower left of the instrument panel. It is an electric type and indicates the amount of fuel in the tank.

OIL PRESSURE GAUGE

Located on upper left of instrument panel. The gauge indicates the amount of pressure and not the amount of oil in the system.

The oil pressure gauge should register in the "green" or "white" area right after a cold engine is started. If it does not, stop the tractor immediately and determine the cause, as serious damage will result if the engine is operated without sufficient oil pressure even for a short time.



Tractor Controls

1. Gear Shift Lever
2. Clutch Pedal
3. PTO Shift Lever
4. Dual Range Lever
5. Brake Pedals
6. Differential Lock Pedal
7. Quadramatic Control

WATER TEMPERATURE GAUGE

Located on the upper right side of instrument panel, the gauge indicates the engine coolant temperature. In normal conditions, when the engine has properly warmed up, the needle should always remain in the green or normal operating position. Note that the "hot" or red portion of the gauge is graduated and the graduations are numbered "0", "4", "7" and "10". Each graduation indicates the boiling point of water in a cooling system equipped with a pressure radiator cap which corresponds in pounds per square inch to the number of the graduation on the gauge dial. The beginning of the "hot" range, next to the normal range, is marked "0". This is the temperature at which water in the cooling system will boil if the radiator does not have a pressure type cap. The first graduation is marked "4" and this indicates the temperature at which water in the cooling system will boil if a 4 pound per square inch pressure cap is installed on the radiator.

The MF 65 tractor radiator is equipped with a 10 pounds per square inch pressure cap. The last graduation, marked "10" on the dial, indicates the boiling point of water in the MF 65 tractor cooling system.

It should be kept in mind that when the tractor is operating in conditions where the air temperature is high, particularly under heavy engine loads, the coolant temperature may approach the boiling point. Do not become alarmed if the temperature indicator needle moves into the "hot" or red range of the gauge dial. Under these conditions, this is perfectly normal and no damage, generally associated with "overheating," will result so long as the temperature indicator needle remains below the position in the "hot" range marked "10".

CAUTION: Never attempt to remove the pressure type radiator cap while the temperature indicator needle is up near the boiling point. Relieving the pressure in the cooling system by removing the cap may cause the water to boil which could result in scalding water and steam being forced out the top of the radiator. If the coolant is exceptionally hot, relieve the engine of its load and allow the engine to run at idle speed until the temperature lowers before either stopping the engine or removing the pressure type cap.

TRACTOR LIGHTS

Lights are provided as standard equipment on the MF 65 Tractor. The lighting system is composed of two head lamps, a combination work and warning lamp, instrument panel lights and switch. The headlamps will be mounted on the hood at the factory. However, the lights are designed to be used in the hood or fender mounted position.





Tractor Light Positions

The necessary brackets to install the head lamps in the fender mounted position are included in the tractor shipping kit.

The combination work and warning lamp is a clear lens sealed beam unit with a pivotally mounted red lens. The red lens is held in either of two positions by detents. In its upper position, the clear work lamp is uncovered and in the downward position, the red lens will color and direct the light horizontally to the rear.

A break-away socket is provided just below the work light.

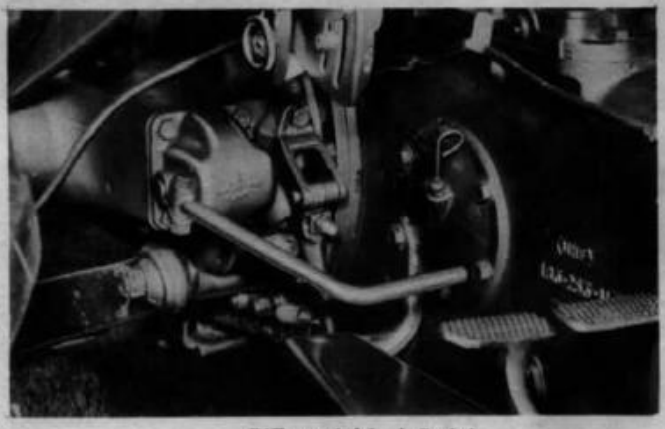
DIFFERENTIAL LOCK (OPTIONAL)

A mechanically actuated differential lock is factory installed optional equipment on all models of the MF 65 Diesel Tractor. The differential lock pedal is located just above the rear of the right step plate. To engage the differential lock, depress the pedal with the right foot.

The purpose of the differential lock is to eliminate the differential action of the differential assembly; thus, in effect, locking the two rear axle shafts together and forcing the rear wheels to rotate simultaneously and at the same speed.

In conditions where slippage of one rear wheel is encountered, the differential lock can be engaged by depressing the pedal; locking both rear wheels together, which will provide greatly increased traction and prevent needless tire wear.

IMPORTANT: Unless the notches in the locking mechanism happen to be perfectly aligned, the differential lock cannot be engaged while the tractor is motionless. For quick, and easy engagement of the differential lock, one rear wheel should be rotating at a speed greater than the other, as is the case when one rear wheel is slipping. However, the lock should not be engaged under full throttle when one wheel is spinning rapidly. The engine should be throttled down before engagement.



Differential Lock Pedal

Once the differential lock is engaged, the pedal may be released and the lock will remain engaged so long as the tractor remains under load. The differential lock is disengaged automatically by an internal spring when the load is released. The load can be released from the differential lock in many ways, among which are: (1) Stopping the tractor. (2) Momentary de-clutching. (3) Turning the tractor to the right. (4) Lightly depressing the right brake pedal.

NOTE: Always be sure the lock disengages before trying to make a pivot turn.

TRACTORMETER

Located in the center of the instrument panel. The instrument is a combination tachometer, speedometer and modified hour meter. The six scales on top of the dial indicate forward miles per hour corresponding to the gear engaged, the bottom scale indicates engine RPM and the window at the center of the dial indicates the total accumulated hours of operation at an average speed of 1,580 RPM. It should be noted, however, that engine speeds lower than 1,580 RPM will accumulate hours faster than clock hours. The normal pulley operating speed and engine PTO speeds are also shown on the dial face.

GEAR SHIFT LEVER

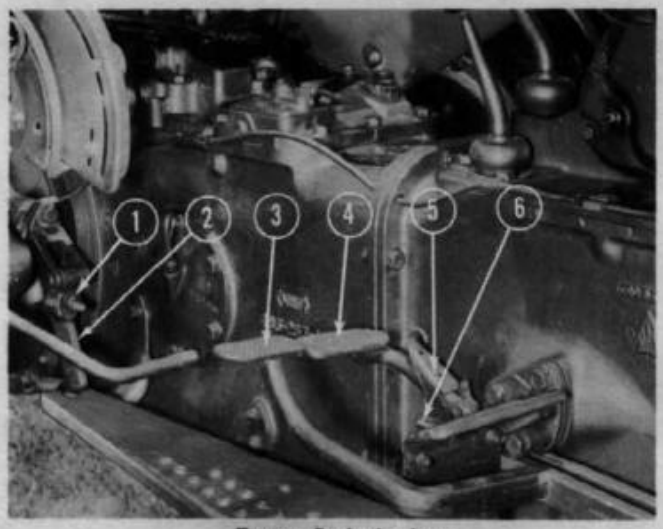
Located on the top center of the transmission housing. The three forward gears and one reverse gear are indicated by raised characters on the tractor center housing. The gear shift lever is used in conjunction with the Dual Range shift lever.

DUAL RANGE SHIFT LEVER

Located on the transmission housing to the right of the gear shift lever. The high and low ranges are indicated by a raised "H" and "L" on the tractor center housing. The raised "S" indicates the neutral or start position.

CLUTCH PEDAL

Located to the left of the transmission housing above the step plate. To disengage the clutch, depress the pedal with the left foot. Initial movement of the pedal disengages the primary clutch (tractor motivation). Additional movement disengages the secondary clutch (hydraulic pump and PTO).



Tractor Brake Linkage

1. Adjusting Nut
2. Brake Lever
3. Right Brake Pedal
4. Left Brake Pedal
5. Parking Latch
6. Interlocking latch

INDIVIDUAL BRAKE PEDALS

Located to the right of the transmission housing and adjacent to each other. Foot pressure on either the right or left pedal brakes the respective right or left wheel for turning.

MASTER BRAKE

The individual brake pedals are close enough together to enable the operator to depress them simultaneously to brake the tractor's forward travel. An interlocking latch locks the individual pedals together, thus providing a master pedal for highway use.

TOE-TRIP PARKING LATCH

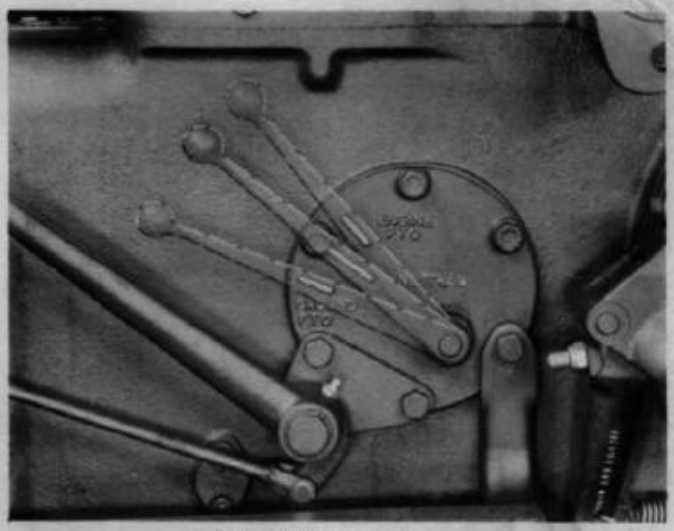
The left brake carries an over center spring type parking brake latch for convenient locking of both brakes when parking. This latch can be readily engaged by hand or foot. When set, it is released on the next application of the pedal. if the latch actuator is moved into the released position.

POWER TAKE-OFF LEVER

Located on the left side of the tractor center housing. The lever shifts to three positions: (1) proportional engine speed, (2) neutral and (3) proportional ground speed.

FUEL SHUT-OFF VALVE

The fuel shut-off valve is located in the fuel line between the fuel tank and the fuel sediment bowl just below the right rear of the fuel tank.



P.T.O. Shift Lever Positions

HOOD SERVICE PANEL

The tractor hood is hinged and held closed by two latches on the left side. Turning the latches up and forward releases the panel.

GRILL SERVICE DOOR

The right side of the tractor grill is hinged and secured in position by two thumb screws. Loosening the thumb screws allows the door to swing open which provides easy accessibility to the air cleaner bowl, radiator core, upper steering pedestal and power steering assembly.

The left side of the tractor grill is removable to provide a means of servicing the units listed, when front mounted equipment is installed on the tractor. To remove the left grill section, open the hood service panel and lift the grill section off the pins.

DOUBLE HINGE "FOAM FLOAT" SEAT

A "Foam Float" cushion seat and backrest is standard on all MF 65 Tractor models. This double hinged seat with adjustable backrest can be moved rearwardly for operation of the tractor in a standing position or thrown clear back so that it will not collect and hold water.

The seat can be adjusted forward or backward by repositioning it in one of the three sets of holes provided in the mounting bracket on top of the hydraulic lift cover.

BREAK-IN PERIOD

Your MF 65 Tractor has been carefully designed and developed to furnish you many thousands of hours of working satisfaction. The "65" has been manufactured and produced using the ultimate in modern machining methods and production techniques for economical and trouble free life under all conditions; yet, like all engines it must be broken in carefully.

1. During the first 25 hour or break-in period, run your engine under normal load at recommended governor speed and normal operating temperature. Avoid continuous light loads or low engine RPM.

2. For plowing and similar heavy load operation use next lower gear, than what would be used normally to prevent overloading or lugging the engine. However, during this period vary the load by shifting to a higher gear for short intervals to bring the engine up to full load.

3. Change crankcase oil after first 50 hours of operation.

4. Change transmission oil after first 50 hours.

STARTING THE TRACTOR

Mount the tractor. Sit in the seat and get accustomed to the controls. Place your hands on the wheel and your feet on the clutch and brake pedals. Notice the location of all instruments and controls. If necessary, the seat bracket can be adjusted forward or rearward on the tractor housing. Start the tractor engine.

CAUTION: Diesel fumes are very pungent and irritating to the eyes. Never operate your tractor engine in a closed building.

1. Open the fuel shut-off valve located in the fuel line just below the tank outlet.
2. Release the fuel shut-off control rod from the key slot to the operating position.
3. Move the throttle lever 1/2 to 3/4 open.
4. Disengage the clutch by pushing the pedal full down.
5. Place the dual range lever in the neutral position.
6. Turn the starter switch key clockwise to the "S" or start position. Release the key and close the throttle to 1/4 open position when the engine starts.

NOTE: If the engine fails to start after 10 to 15 seconds of cranking proceed with the cold starting procedure outlined below.

COLD STARTING AID INSTRUCTIONS

Cold starting aid instructions for your Diesel Tractor are listed on a plate attached to the lower instrument panel. To use this cold starting aid proceed as follows:

1. Open the fuel shut-off valve located in the fuel line just below the tank outlet.
2. Release the fuel shut-off control rod from the key slot to the operating position.
3. Move the throttle lever to the fully open position.
4. Disengage the clutch.
5. Place the dual range lever in the neutral position.
6. Turn the switch key counterclockwise to the "H" or heat position and hold it there for 15 seconds.
7. Continue turning the key counterclockwise to the "H-S" or heat-start position and hold it there until the engine starts. Release the key immediately and close the throttle to the 1/4 open position when the engine starts.

NOTE: Do not keep the starter circuit closed for more than 15 seconds at a time. To do so will place an undue strain on the battery circuit and may over-heat the starting motor.

8. If the engine fails to start after 15 seconds of cranking, return the key to the "H" or heat position for 15 seconds and then return it to the "H-S" or heat-start position.

NOTE: Should air enter the system due to unexpected emptying of the fuel tank or from other causes, the system must be "air-bled" before an attempt is made to start the engine. The "air-bleeding" procedure of the fuel system is described in the Servicing Section.

9. Do not "rev-up" or race the engine immediately after starting. Cold oil cannot circulate freely to all moving parts.

Allow the engine to reach its normal operating temperature before working the tractor. During cold weather it will be noted that the oil pressure gauge will register a higher pressure. When this condition exists the engine should be run

at an idle speed until the pressure reaches its normal position.

DRIVING THE TRACTOR

To start the tractor in motion after the engine is operating, proceed as follows:

1. Release the brakes
2. Depress clutch pedal and move the Dual Range lever to either high or low range and gear shift lever to desired gear.
3. Increase speed slightly and release the clutch pedal slowly.
4. Slowly increase throttle setting until desired speed is obtained.

CAUTION: Do not permit foot to rest on or ride the clutch pedal. "Riding the clutch" over a period of time will cause the clutch to slip.

CAUTION: Sharply braking one wheel causes wasteful tire and brake wear, and therefore, should only be done when short turns are necessary. INDIVIDUAL WHEEL BRAKING SHOULD NOT BE ATTEMPTED WHILE TRAVELING AT HIGH SPEEDS. Always lock the brake pedals together with the interlocking latch before driving at high speeds on the highway, in lanes or in the field.

SELECTING THE CORRECT GEAR

The correct working gear can be obtained by an intelligent selection by the operator. The basic factors involved in this selection are: (1) type of implement used; (2) field conditions encountered; (3) load subjected to the tractor; and (4) the ground speed to effectively perform the operation.

Always keep in mind that: (1) operating the tractor under load in a high gear, or when an excessive load is involved for the selected gear and throttle setting, overloads the engine and can result in overheating of the oil and more rapid wear. (2) Operating the tractor in a low gear with a high engine speed and a relatively light load is a waste of fuel and time.

CAUTION: When shifting, the tractor must be brought to a complete stop.

A TEST FOR OVERLOADING

With the tractor in motion, set the throttle half way open. Then quickly pull the throttle fully open. If the tractor picks up speed rapidly, the engine is not overloaded. If the engine picks up speed slowly, the tractor is overloaded and should be stopped and shifted to the next lower gear. When operating on hills, the above test might indicate overloading; however, this is not harmful as it is compensated for when coming down hill. It is continuous overloading which must be avoided.

STOPPING THE TRACTOR

When you desire to stop the tractor motion, depress the clutch pedal, at the same time reducing the engine speed. Apply pressure on both brake pedals in order to stop the tractor.

CAUTION: Be sure to lock the brake toe-trip parking latch to prevent the tractor from moving while unattended.

Move both the gear shift and dual range levers to their neutral position and pull the fuel shut-off control out and lock it in that position.

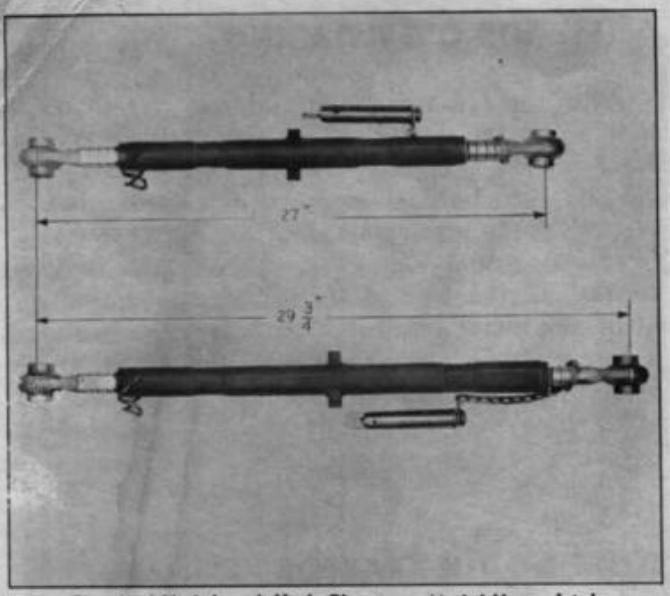
ATTACHING IMPLEMENTS

The three point implement hitch on the MF 65 consists of two lower lift arms with wrist action outer ball ends and an adjustable upper link which attaches to the tractor in a multi-holed control beam.

The wrist action ball ends are an aid when attaching heavy implements. The ball ends come with a standard 7/8" pin bore, but may be interchanged with an 1-1/8" pin size as an accessory item.

NOTE: For further information refer to "Three Point Hitch Conversion."

The purpose of the control beam is to provide basic upper link attachment points for the Standard and High Clearance models of the 65. The upper hole being the normal position on the Standard 65. The lower hole on the Hi-Clearance Models.



Standard Model and High Clearance Model Upper Links

The upper link of the 65 is of tubular turn buckle design and is provided in two lengths. The nominal length for the standard model is 27 inches and is adjustable from 24 to 30 inches. The nominal length for the high Clearance model is 29-3/4'' and is adjustable from 26-3/4'' to 32-3/4''. The nominal length is identified by the deep grooves in the ball end shanks. When the deep grooves are just exposed at both ends of the center tube, the upper link is at nominal or standard setting.

The upper link can be adjusted and locked each 1/2 turn. To make adjustment easier the ball end shanks are groove marked every 1/2 in. which correspond to 3 turns of the turn buckle.

Under normal field conditions, when a mounted implement is operated by the tractor draft control system, use the standard upper link setting.

Unusual field conditions and worn soil engaging implement parts may make minor upper link adjustments necessary.

Exceptions to the recommended setting will be covered in the Owners Manual for each particular implement.

To attach an implement:

1. Attach the upper link to the implement and insert the linch pin.

2. Back the tractor so that it is centered with the implement, having the lower links above the two implement attaching points.

3. Lower the links by pushing the hydralever down as far as necessary.

4. Dismount tractor from left side.

5. Attach left lower link by pressing forward on the link-ball lock pin and aligning the ball socket to the implement attaching pin and insert the linch pin.

6. Attach the right lower link by pushing forward on the link-ball lock pin and align the ball socket to the implement attaching pin using the leveling crank if necessary. Insert the linch pin.

7. Lengthen or shorten the upper link by turning the center tube until the link can be easily attached to the recommended hole in the control beam. Install the pin and secure it with the linch pin.

8. Return the upper link to its nominal setting by turning the center tube until the deep groove in both ball end shanks are just exposed at the end of the center tube. If a heavy implement is attached, it may be necessary to use a wrench on the squares provided to turn the center tube.

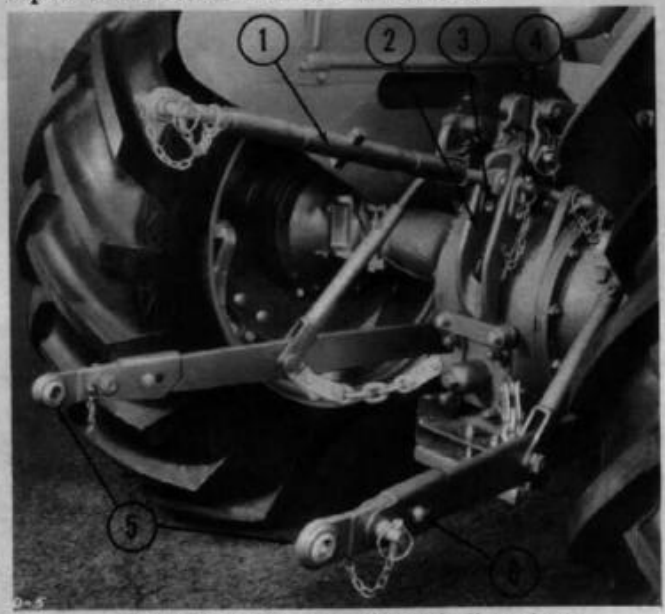
9. Raise the implement off the ground by use of the tractor hydralever. The weight of the implement on the lower links causes the link-ball extension to snap into operating position and lock.

RAISING AND TRANSPORTING IMPLEMENTS

Any lift-type implement can be raised to the transport position with the engine running by raising the Hydralever to the top of the position control range.

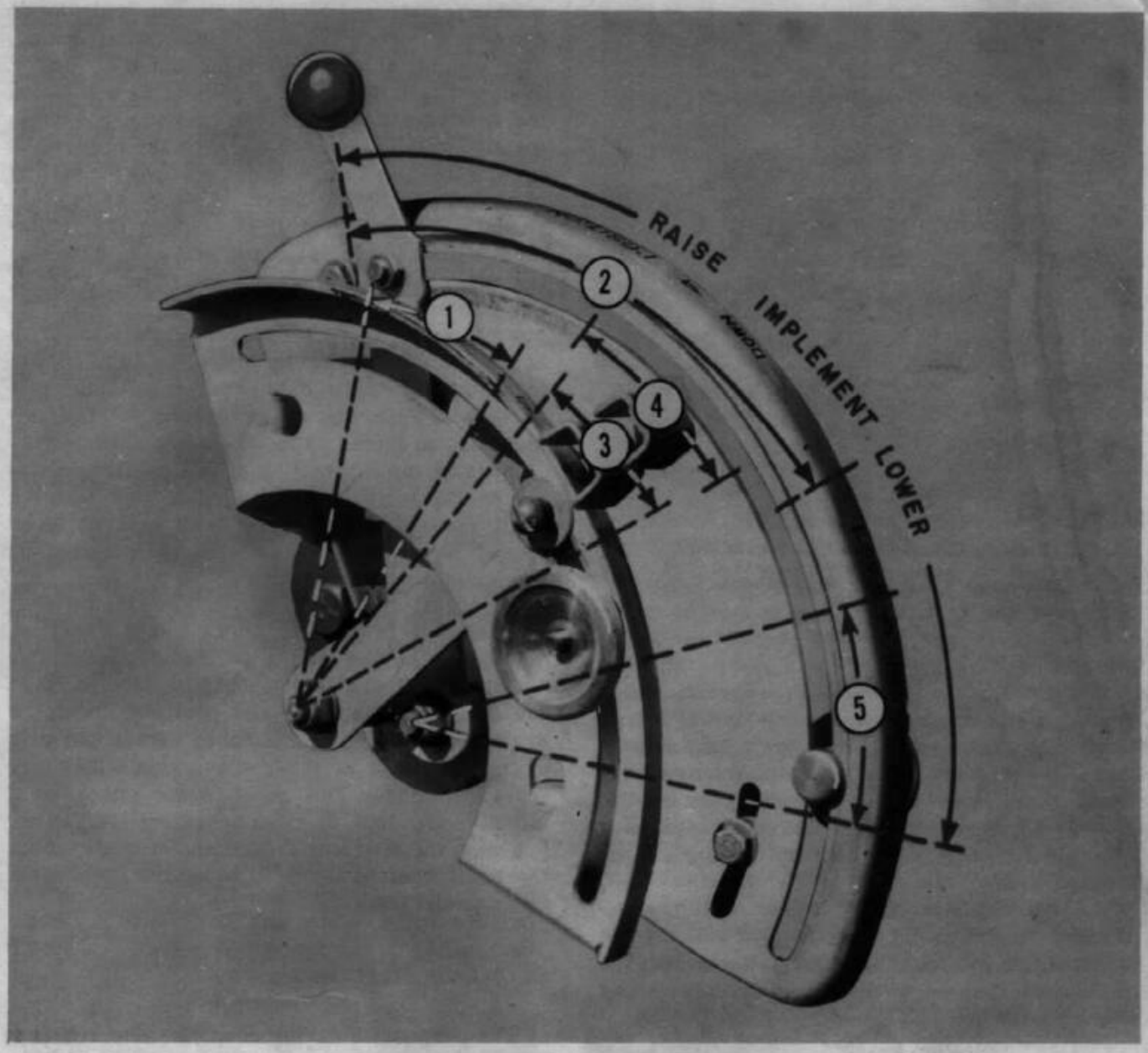
When transporting the implement, turn the leveling crank counterclockwise to remove the slack from the check chains. This will prevent side sway of the implement.

To level the implement, level the lower links by turning the hand crank on the right lift rod until the circular groove on the rod matches the top of the fork into which it threads.



Three Point Hitch and Adjustable Upper Link

1. Adjustable Upper Link
2. Control Beam
3. Hi-Clearance Model Hitch Point
4. Standard Model Hitch Point
5. Wrist Action Ball Ends
6. Lock Pin



Hydraulic Control Quadrant

1. Light Draft Range
2. Position Control Range
3. Heavy Draft Range
4. Medium to Heavy Draft Control
5. Response Control Range

OPERATING WITH SOIL-ENGAGING IMPLEMENTS

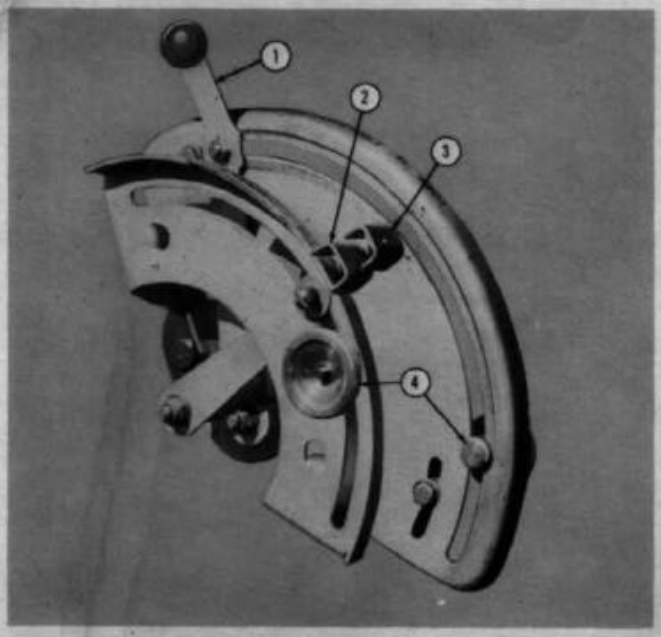
QUADRAMATIC CONTROL

The quadramatic control levers (hydraulic control) are located to the right of the tractor seat. The two levers provide for manual adjustment of the hydraulic System controls. The lever on the outer quadrant (draft control lever) is used to establish a desired working draft (or depth) of soil engaging implements. The lever on the inner quadrant (hydralever) is used basically to raise and lower mounted implements.

POSITION CONTROL

The Hydralever will position the tractors lower links in direct relationship to the movement of the lever on the quadrant either up or down. The Hydraulic System, however, does not apply downward force in its operation.

Position control permits the operator to select and automatically maintain a fixed height or depth position for an implement in relation to the tractor, independent of forces applied at the control spring, with the following exceptions: Position control is subject to draft control, and overload release, when an imple-



Hydraulic Control Quadrant Levers and Stops

1. Position Control Lever
2. Draft Adjustment Stop
3. Draft Control Lever
4. Adjustment Locking Knobs

ment working in the soil exerts a force on the master control spring which exceeds the selected draft setting.

Position control is useful when operating such earth working implements as the Multi-Purpose Blade and Soil Scoop to achieve a smooth surface. It can also be used to maintain a uniform working height on such implements as the No. 31 or 32 Rear Mounted Mowers, and is a valuable aid when connecting the tractor's lower links to an implement.

The hydra-lever must be used to lift an implement to transport position. The quadrant is provided with an adjustable stop so that the implement can be returned to its previously selected working position.

CAUTION: When lowering an implement from the transport position, the hydra-lever should be moved slowly downward through the position control range. The implement will lower at approximately the same rate at which the lever is lowered, a rapid drop may result in damage to the implement.

DRAFT CONTROL

For draft implements (in general, most agricultural tillage implements are draft implements) the draft control lever is to be used to select the desired working depth of the tool in the soil.

When a soil engaging implement is in the raised or transport position, it is lowered to working position by pushing the Hydralever downward through the position control range. The weight of the implement and the "suck" designed into the soil engaging parts will cause the implement to enter the ground. The depth the tool attains, or the distance the implement lowers into the soil is dependent upon the setting of the draft control lever. As soon as the tool reaches the selected draft setting the implement's drop is automatically stopped. If the soil texture changes causing a variation in draft, the implement will raise or lower accordingly. Moving the draft control lever slightly lower in heavier soils or slightly higher in lighter soils to maintain uniform depth compensates for this variation. Sufficient range for most field adjustments is provided within the adjustable sector.

Initially the finger grip of this small adjustable sector is to be positioned in line with the draft control lever. The draft control lever should be locked in the selected position by tightening the knurled nut.

The draft control lever should never be used to raise the implement at the end of a furrow, but should be left at the desired depth setting.

Only the Hydralever should be used to raise the implement to transport position. With the draft lever set the adjustable sector permits a small amount of lever movement either way from the finger grip position for minor field adjustments, but in most operating conditions, prevents the operator from unintentionally using the draft control lever to bring the implement to transport position.

RESPONSE SELECTION

The purpose in having response selection is to allow the operator to manually correct the sensitivity of the system to the working conditions. The conditions are varied by changing soil textures, irregularities of the soil surface, hidden obstacles in the soil and the relative speed of the tractor.

In conjunction with the draft control, the lower range of the Hydralever quadrant provides the hydraulic System with response control. In this range, movement of the Hydralever permits the operator to increase or decrease the draft response for a given implement in a given soil and speed condition.

As a general rule, a good place to start in making a response selection for a soil engaging implement is to place the hydralever at or slightly below the halfway position on the response range of the quadrant. If at any time

"bobbing or bouncing" of the implement occurs, the operator should reposition the Hydralever closer to the slow response range of the quadrant. In rough terrain, or in area where there are rapid and varied soil texture changes, or extremely stony conditions, the implement may not respond fast enough to maintain a uniform working depth.

To compensate for these conditions the Hydralever should be moved toward the fast response range until satisfactory operation is obtained.

The final response selection is dependent upon the operator's "feel" of the tractor and implement and should be adjusted until a smooth operation is obtained. The Hydralever limit stop, which is provided with a knurled nut, should be then locked at this position. The same response selection can be maintained after raising and lowering the implement, by returning the Hydralever to the limit stop.

OVERLOAD RELEASE

Compensating overload release, is a safety feature built into the hydraulic system. When a soil working implement strikes a hidden obstruction, the system will automatically go into overload release. This allows the lower links and attached implement to drop with respect to the tractor. A loss of traction occurs as the transferred weight of the implement diminsihes. The loss of traction restricts further forward travel, preventing serious damage to the tractor and implement. When this occurs you disengage the clutch, reverse the tractor, lift the implement and drive forward until you clear the obstruction, then lower the implement and resume work.

Overload release offers you protection in any draft control or position control setting, and is in no way affected by the response setting, thereby safeguarding you, your tractor, and implement at all times.

CAUTION: When you are operating your "65" you must realize that the implement attached to the tractor has been designed and built to work best at a given ground speed. For instance molboard plows are built to operate in high range, first gear. A slower or faster speed will not provide proper turning and pulverizing of the soil. Also faster speeds increase the chances of damaging the tractor or implement. While the hydraulic System provides adequate automatic protection at normal operating speeds, it should be kept in mind that the force which an implement strikes an obstruction varies directly to the square of the velocity. Therefore, it is better to utilize the increased power of your new MF 65 by pulling larger implements rather than traveling at higher speeds. High range second gear is meant to be used with implements which operate above the ground such as mowers, wagons, spike tooth harrows, etc. High range, third gear is used for road transport, hay raking and rotary hoeing.

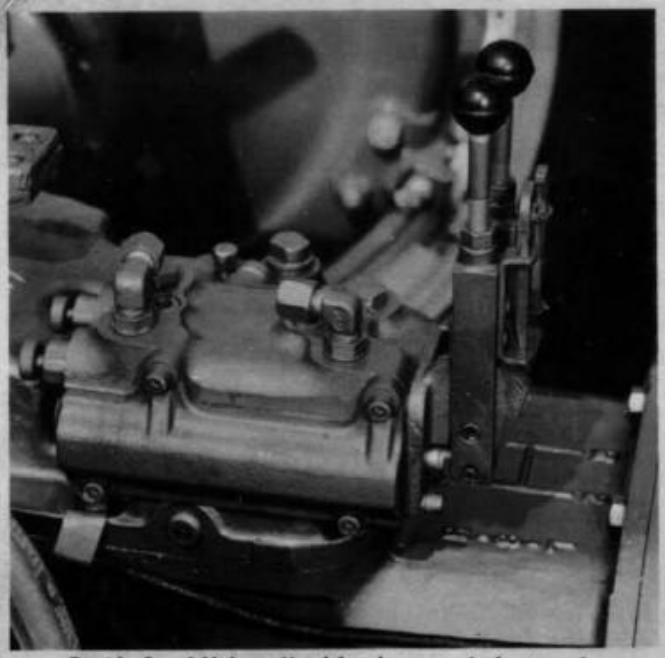
DETACHING IMPLEMENTS

1. Select level ground, level the implement with the leveling crank and lower it to the ground with the hydralever.
2. Detach the upper link from the tractor by removing the linch pin and clevis pin.
3. Detach right lower link by removing the linch pin. Adjust the leveling crank and make use of the wrist action link end, should it be necessary to relieve the strain on the link ball.
4. Detach the lower left link.

NOTE: Always return the wrist action link end extensions to the locked position and place linch pins in the link stay anchor pins.



Never drive close to ditches or gulleys



Double Spool Valve - Used for the control of external hydraulic cylinders

OPERATING EXTERNAL HYDRAULIC EQUIPMENT

Outlets are provided in the hydraulic lift cover, below the operators seat, so external hydraulic cylinders can be coupled to the oil supply and operated either separately or in combination with the hydraulic lift, the pump is connected to the master lift cylinder through an external transfer plate which may be removed and an external valve installed.

The external hydraulic control valve comes as a double spool unit with a third spool available which attaches to the right hand side of the double spool assembly. Either option provides open center control of both single and double acting cylinders.

In operating external cylinders both the hydralever and the draft control lever must be raised fully to provide constant pumping.

The left hand external control valve may be locked back in the raise detent to return the system to convenional operation. This feature makes it unnecessary to remove the valve to restore draft and position control. It is necessary, however, to lower the draft control lever at that time.

CAUTION: Always use care when handling hydraulic equipment to prevent foreign material from entering the system.

STANDARD DRAWBAR

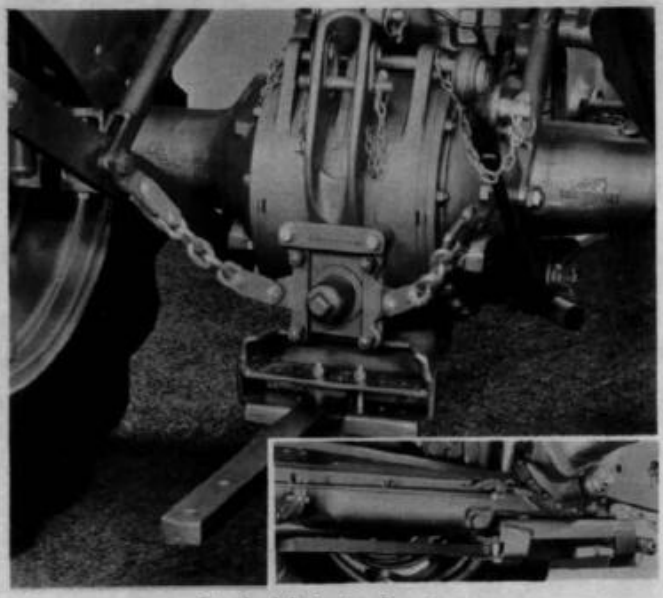
A universal swinging drawbar is standard equipment on your new MF 65 Tractor. There are two bars: a straight bar for Standard Clearance and a vertically offset bar for the High Clearance Models.

Each bar can be set into two positions. The forward position provides for a standard 14 inch distance from the drawbar hole to the PTO shaft end and in the rearward position provides the same distance to the PTO extension. When operating power take-off pull behind implements, the drawbar in its rearmost position provides for a shorter turning radius of the combined tractor and implement. Laterally the bar may be fixed with the hitch point central or in any one of three positions to either side.

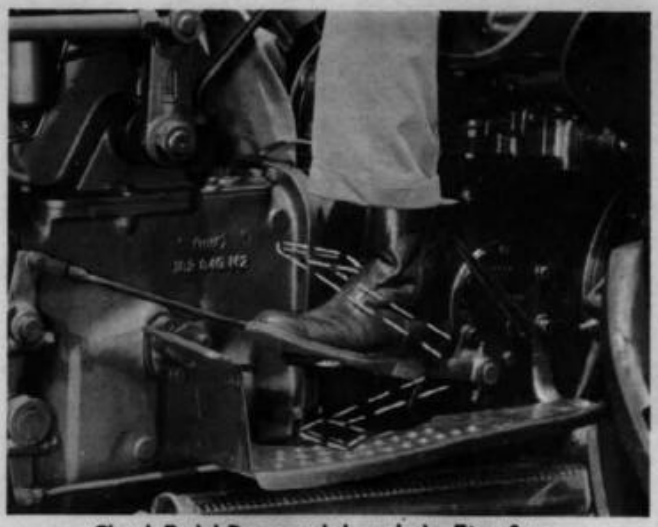
When operating close coupled implements, the drawbar for the standard tractor need not be removed. Remove the clevis pin and one positioning bolt and move the drawbar forward and to one of the outer holes in the clevis. Install the positioning bolt through the rear hole in the drawbar and install the clevis pin as shown. This will conveniently move the drawbar under the tractor and out of the way.

To attach the swinging drawbar:

1. Insert the bar into the clevis mounted to the underside of the tractor differential housing.
2. Connect the bar into the clevis by inserting the hitch pin from the bottom and secure with the hair pin.
3. Position the drawbar as desired and secure it with the positioning bolts.



Standard Swinging Drawbar



Clutch Pedal Depressed through the First Stage

POWER TAKE-OFF

The power take-off of your MF 65 Tractor transfers engine power direct to mounted or drawn implements or, if equipped with a belt pulley assembly, to belt driven equipment.

The power take-off shaft is controlled by a shift lever located on the left side of the tractor center housing.

PROPORTIONAL ENGINE SPEED

The power take-off shift lever shifted to the upper mark "Engine PTO" will cause the power take-off shaft to operate in standard or proportional engine speed which is 18/50 of tractor engine speed. When the engine is operating at 1,500 RPM, the speed of the PTO shaft is 540 RPM.

The dual clutch model features a clutch arrangement which allows the hydraulic pump and power take-off shaft to operate independently of tractor forward motion.

When mounted power take-off operated implements are used on the MF 65 Tractor, the power take-off shaft should be used "as is" with the addition of the accessory PTO safety shield. If a pull behind PTO operated implement is used, an accessory PTO extension and shield should be installed, in additon to setting of the drawbar in the rearmost position, to permit a shorter turning radius of the combined tractor and implement.

PROPORTIONAL GROUND SPEED

The power take-off shift lever shifted to the lower mark "Ground Speed PTO" will cause the power take-off shaft to operate in proportional ground speed which produces one revolution of the shaft for approximately each twenty inches of forward travel of the tractor regardless of the gear the tractor is operated in.

CAUTION: When backing the tractor, the power take-off shift lever must be shifted from "Ground Speed PTO" to neutral. Failure to do this may result in serious damage as the implement mechanism will be reversed.

WHEEL TREADS WIDTHS

Your new MF 65 tractor is so designed to make it simple and easy to adjust the tread width settings of both the front and rear wheels.

CAUTION: In order to change the front wheel tread settings, or the rear wheel tread settings beyond the 72 inches obtainable with the power adjusted wheels, it is necessary to lift the tractor wheels off the ground.

FRONT WHEEL WIDTHS

The front wheels of the Standard Clearance Model are adjustable in 4 inch increments from 48 to 72 inches by positioning the right and left axle arms on the center axle. An additional 8 inches can be obtained (giving a maximum tread width of 80 inches) by reversing the wheel discs on the wheel hubs. On the Hi-Arch, Four Wheel Model the tread widths are one inch greater than those listed, making the minimum setting 49 inches and the maximum setting 81 inches.

To adjust the tread width:

1. Place the accessory Tractor Jack in position and lift the tractor off the ground.
2. Remove the two bolts securing each front axle arm to the center axle. Loosen the tie rod set screw.
3. Move the axle arms with respect to the center axle to obtain the desired tread width.
4. Adjust the tie rod until the set screw can be turned into the proper notch of the rod with the wheels straight ahead.
5. Replace the two bolts in each axle and tighten the set screw in the tie rod.

It may be convenient for some owners to reverse the wheel discs on the wheel hubs. If the tractor is normally operated with a front wheel tread setting of 56 inches, a setting of 64 inches can be obtained by reversing the discs

on the hubs without the necessity of moving the axle arms. This applies to all the wheel settings. With the wheel discs reversed on the wheel hubs, the possible front wheel settings range from 56 to 80 inches in 4 inch increments.

CAUTION: When the wheel discs are in the 76 inch or 80 inch settings, the front wheel bearings are subjected to greater strain and load. These tread widths should be used only when absolutely necessary and never used with front mounted equipment such as loaders.

REAR WHEEL WIDTHS

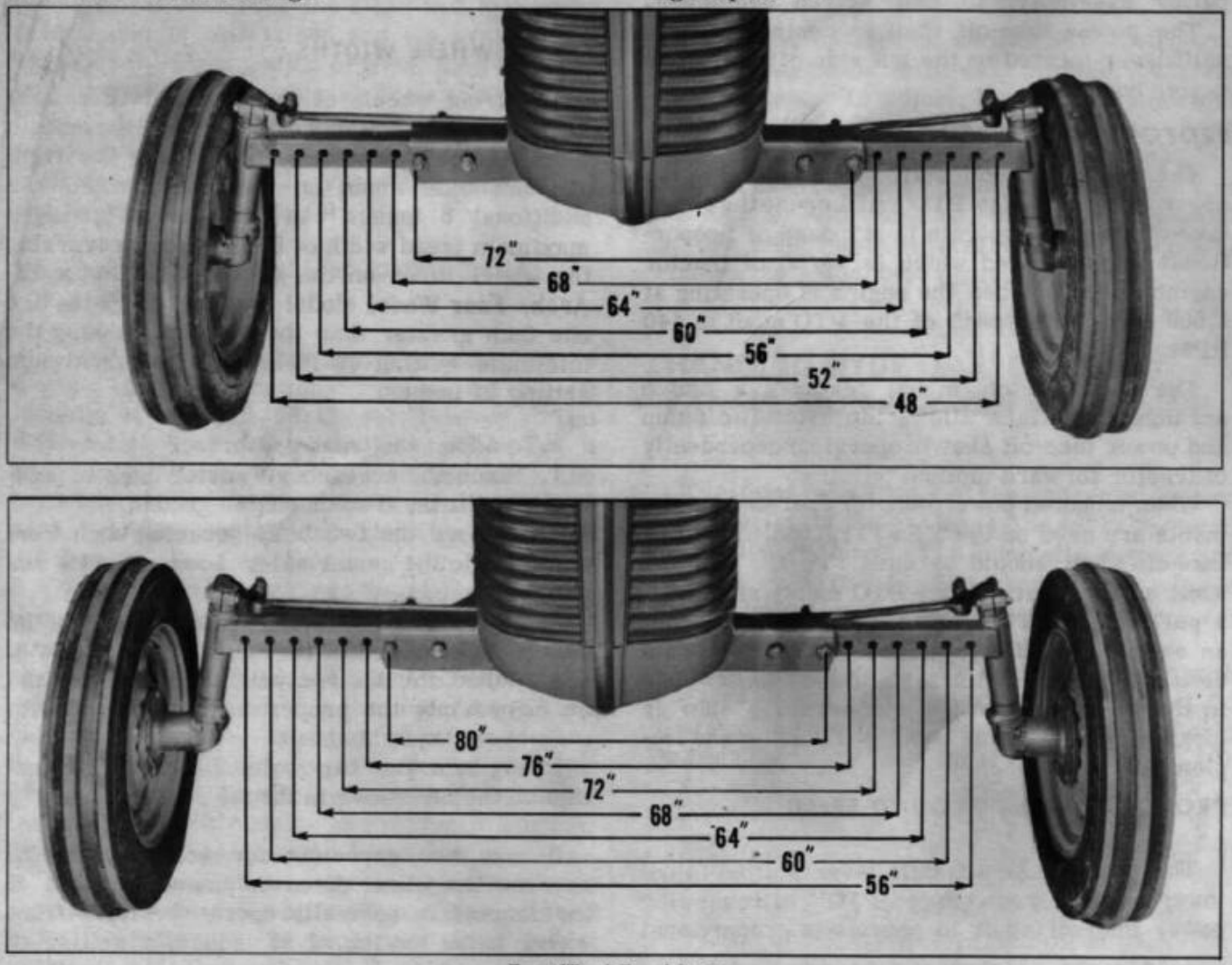
Power adjusted rear wheels are standard equipment on your MF 65 Tractor. These assemblies consist of special wheel discs and rims that provide a range of tread adjustments from 52 to 88 inches in four inch increments or a total of 12 rear wheel settings.

To adjust the tread width:

1. Remove the two rim stop screws from the rim stops which position each wheel disc to the rim and remove the stops.
2. Replace one stop on each wheel at the position desired and secure with a rim stop screw.

NOTE: On the extreme settings the ends of the rail will provide the limiting stop.

3. Loosen the four eccentric pins on the 28 inch wheel or the six eccentric pins on the 38 inch wheel.
4. Drive the tractor forward or backward to rotate the disc in relation to the rails on the rims until the wheel discs engage the stop on the rail.
5. Secure the position of the discs in relation to the rims by placing the remaining stops on each wheel on the opposite side of the rail. Secure the rail between stops with the remaining stop screw.



Front Wheel Tread Settings

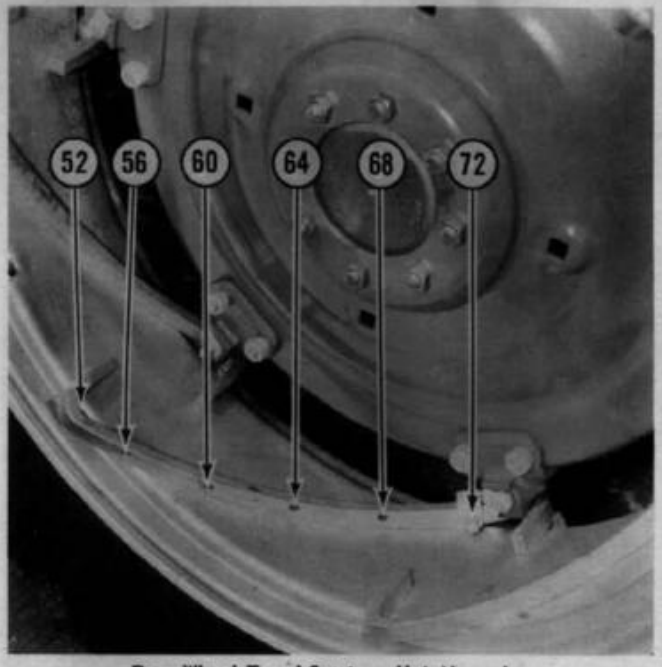


Power Adjusted Rear Wheels

1. Eccentric Pins
2. Rails
3. Rim Stops
4. Stop Hole
5. Rim Stop Screws

6. Tighten the eccentric pins on each wheel starting from the bottom until the indicators are 90 degrees to the right.

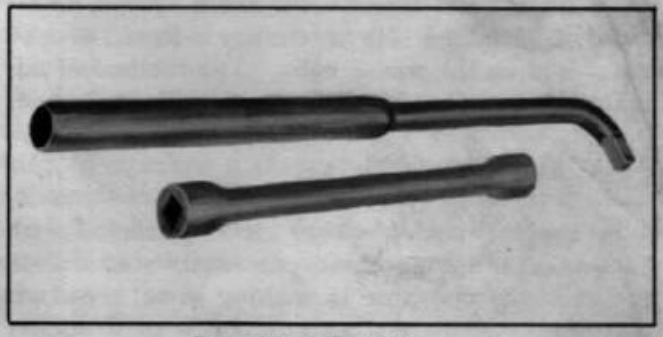
CAUTION: The tractor rear wheel and tire assembly is very heavy, particularly if loaded, and hard to move and handle. Proper care should be exercised to prevent possible accidents or injuries.



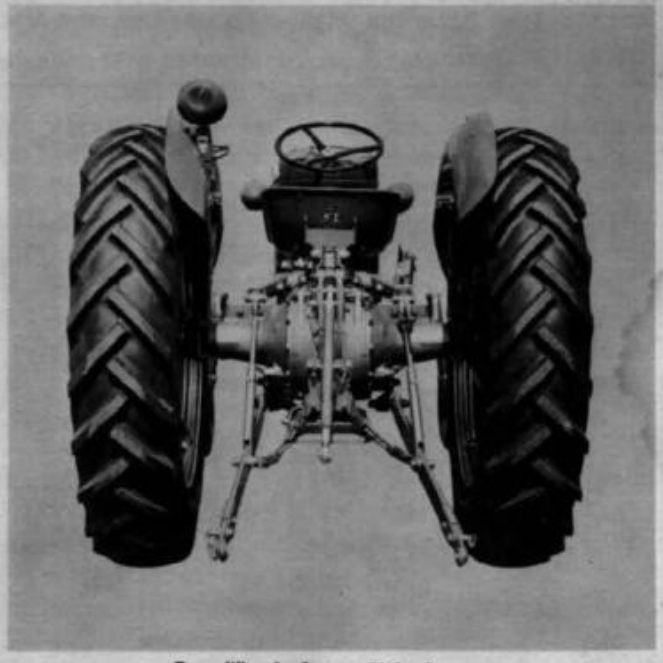
Rear Wheel Tread Settings Hub Normal



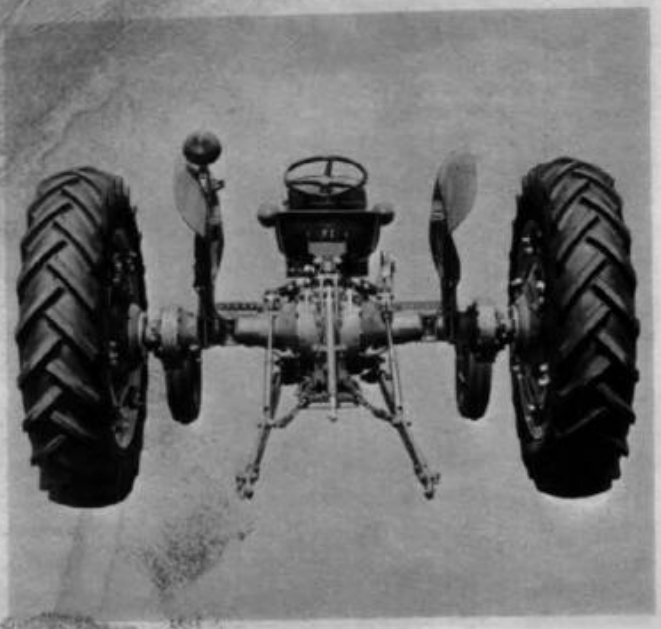
Rear Wheel Tread Settings Hub Reversed



Power Wheel Tool Kit



Rear Wheels Set at 52 Inches

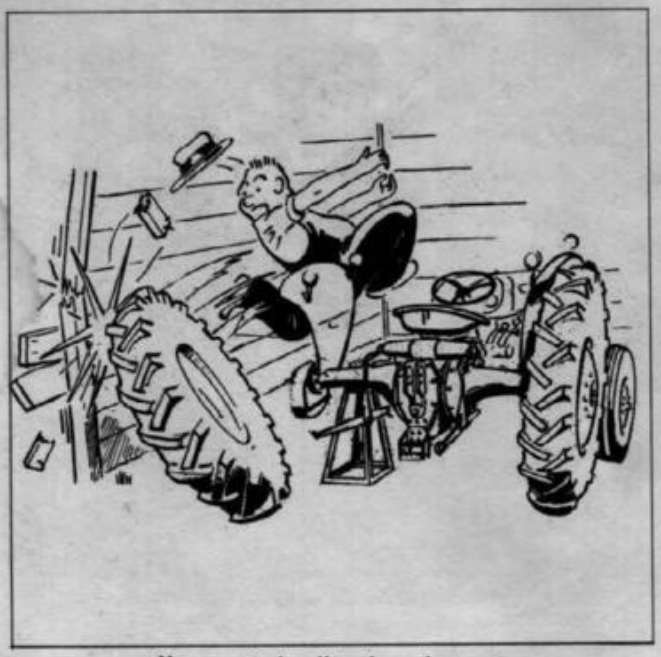


Rear Wheels Set at 88 Inches

To adjust the tread width from 72 to a maximum of 88 inches it is necessary to first reverse the discs on the wheel hubs. The method of adjustment is then identical to that listed above.

POWER WHEEL TOOL KIT

A special power wheel kit is included with each tractor equipped with power adjusted wheels to assist the operator in making wheel tread adjustments. The kit is composed of a socket type wrench and an extension handle. The socket fits both the rim stop screws and the eccentric pins.



Use care in handling large heavy tires.

TRACTOR STORAGE

If your tractor is to be idle for an extended period of time, it should be properly prepared for storage. Select a dry and protected place where it is neither exposed to the weather or livestock.

The following procedure has been outlined for the purpose of keeping your New MF Tractor in working condition.

1. Thoroughly wash and clean tractor.
2. Remove all rust spots with sandpaper and retouch with the proper color enamel.
3. Raise lift links and leave in raised position to assure the hydraulic cylinder is full of oil.
4. Remove air cleaner. Wash filter and inside of cleaner thoroughly with a solvent. Refill cup with new oil and reinstall.
5. Lubricate all pressure fittings. Drain crankcase and remove oil filter element.
6. Install new oil filter element and refill crankcase with recommended grade of oil.
7. Drain transmission, clean magnetic plugs and refill with proper grade of new oil.
8. Clean and repack front wheel bearings.
9. Check oil level in steering gear housing and power steering pump reservoir.
10. Drain the fuel tank by removing the sediment bowl and let tank drain dry. Dry the bowl and reinstall to the tank.
11. Drain the first stage filter and clean the second stage filter.
12. Add two gallons of rust proof oil, manufactured especially for diesel engines, to the fuel tank. Purchase the oil from, and use in accordance with the instructions of, a reputable manufacturer.
13. "Air bleed" the fuel system.
14. Start the tractor engine and allow it to run for 15 minutes at a fast idle to insure that rust inhibitor is in the entire fuel system.
15. Inspect the tractor for worn or damaged parts.
16. Drain the cooling system and thoroughly wash and flush it out with washing soda and water. Replace the cap and close the drain cocks when dry to keep the system clean.
17. Cover the ends of the exhaust pipe and breather pipe.
18. Remove, inspect and condition the battery as required, store in a cool place. Keep the battery in a fully charged state. Inspect every two weeks to assure charge is correct.
19. Jack up the tractor to remove the weight from all tires.

20. Remove water from tires to prevent freezing (calcium chloride solution need not be removed).

21. Cover the tractor with a tarpaulin for protection.

NOTE: A special storm cover for the tractor is available from your local Massey-Ferguson Dealer.

STARTING ENGINES OUT OF STORAGE

1. Install a fully charged battery making sure proper connections are made. The battery is negatively grounded.

2. Fill the cooling system with proper coolant.

3. Fill the fuel tank with clean, high quality fuel.

4. Check the oil level in the crankcase, transmission and air cleaner.

5. Remove the coverings from the exhaust and breather pipes.

6. Inspect and tighten all the nuts, bolts, and screws.

7. Lubricate all fittings.

8. "Air bleed" the fuel system.

9. Start the engine and allow it to operate at a fast idle for 10 to 15 minutes. Note all the instruments, particularly the oil gauge to be sure the engine is receiving proper lubrication.

10. Drive the tractor without load and at slow speeds noting the instruments and general operation.

TOWING THE TRACTOR

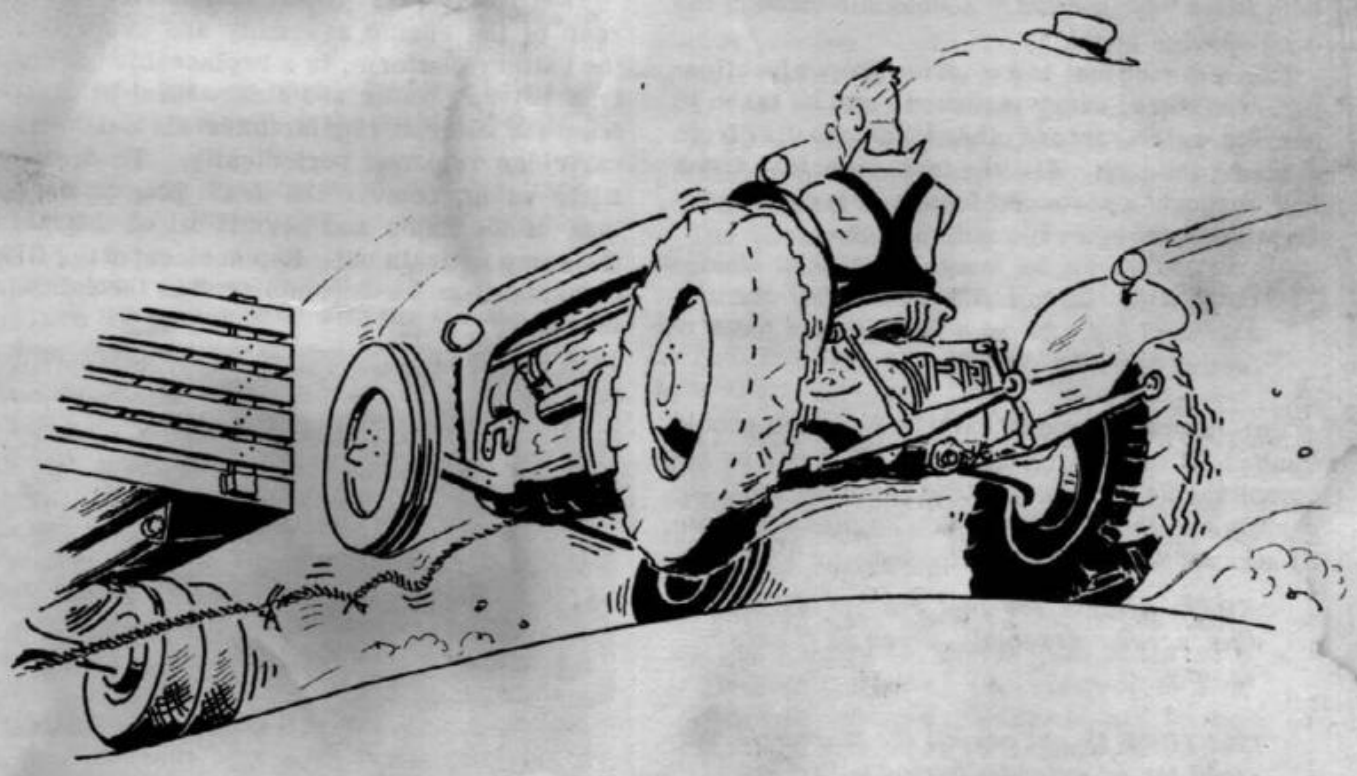
It is strongly recommended that the tractor be towed only when absolutely necessary. In order to assist the occasional operator who desires to tow his tractor safely, we offer the following suggestions:

1. Make sure the tow cable or chain is securely and properly attached to the tractor and the towing vehicle.

2. Shift the PTO lever, dual range lever, and gear shift lever into neutral.

3. Start and stop the towing vehicles slowly and smoothly.

4. Towing speed should never exceed 20 miles per hour.



Careless Towing Methods are Dangerous

Servicing

While we recommend that major overhauls, replacements and adjustments be done by the local Massey-Ferguson Dealer whenever possible, occasions may warrant the owner making minor repairs and adjustments. For that reason, the following material has been compiled to give you a working knowledge of your new Diesel Tractor.

ENGINE

The engine of your MF 65 Diesel Tractor is a four cylinder, four stroke cycle, dry sleeve, valve-in-head unit with a cylinder bore of 3.60 inches and a piston stroke of 5 inches. It has a total displacement of 203.5 cubic inches and a compression ratio of 17.4 to 1.

FUEL AND AIR SYSTEM

The importance of clean fuel of the correct grade cannot be over stressed. For best operation it is important that you use No. 1-D fuel in the cold months and No. 2-D fuel in the warmer months.

Fuel Tank

The fuel tank is located above the engine assembly and has a capacity of approximately 17. US or 14.1 Imperial gallons. The fuel tank filler cap is readily accessible through the hood service panel.

Clean diesel fuel is a must for proper functioning, therefore, every measure must be taken to prevent water, dirt and other foreign matter from entering the tank. Fill the tank with clean fresh fuel through a screened funnel. Purchase your diesel fuel from a reputable dealer.

CAUTION: Do not fill the tank if the engine is hot. Allow a few minutes for temperature to lower.

For improved operation, the fuel tank should flushed in the spring and fall. This can be accomplished by removing the sediment bowl assembly and flushing the tank with diesel fuel until all rust and water is removed.

NOTE: Inspect the fuel tank drain fittine screen assembly, clean up if necessary.

CAUTION: Do not permit the tractor to stand for an extended period with a low fuel level in the tank as condensation rust may collect. Should the tank run completely "dry" it will draw air into the system necessitating air bleeding of the system.

Fuel Sediment Bowl

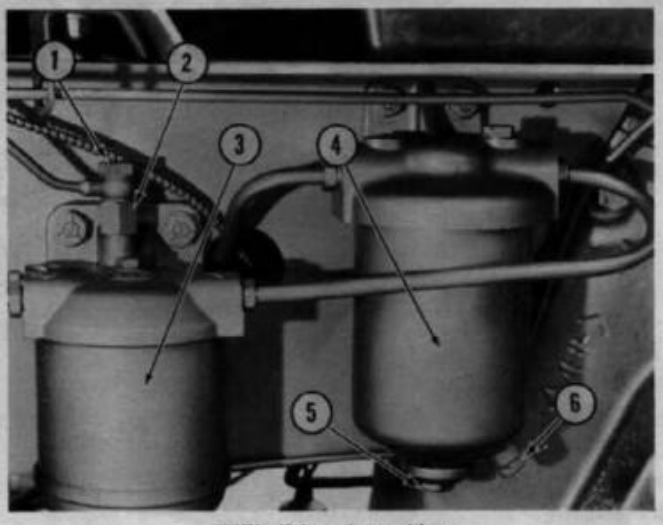
The sediment bowl should be inspected frequently. Should there be evidence of water and/or particles of foreign matter in the bowl, remove and clean.

Primary Fuel Pump

A diaphragm type primary fuel pump, located on the right side of the engine block, pumps fuel through the first and second stage fuel filters to the injection pump. Should the pump fail or not perform satisfactorily, have your Massey-Ferguson Dealer service or replace it.

First Stage Filter

The first stage filter, located to the left rear of the engine assembly and bracketed to the battery platform, is a replaceable cartridge type filter. Water and sludge must be drained from the filter at regular intervals and the filter cartridge replaced periodically. To drain the filter sump, remove the drain plug on the bottom of the sump and permit all of the fuel in the sump to drain out. Replacement of the filter cartridge can be accomplished in the following manner:



FUEL Filter Assemblies

1. Bleed Line Union
2. Filter union Nut
3. Second Stage Filter
4. First Stage Filter
5. Center bolt
6. Drain plug

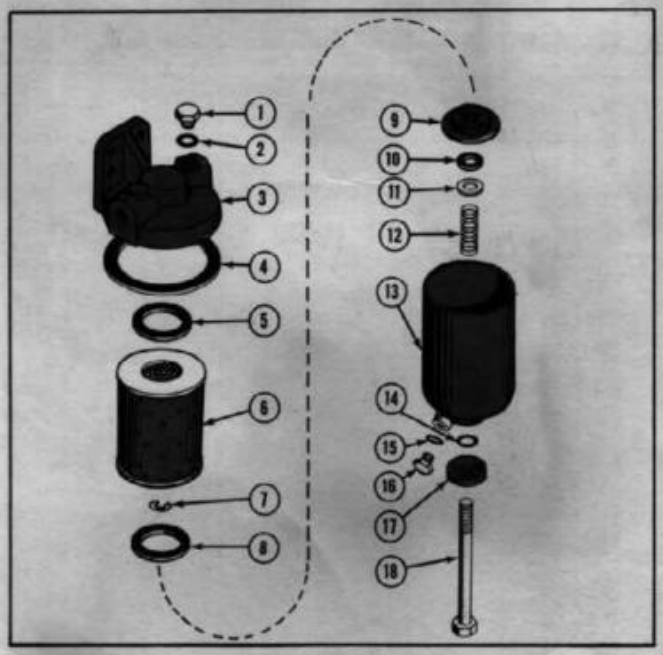


Servicing the First Stage Filter



Servicing the Second Stage Filter

1. For easier accessibility, open the hood service panel, remove the three screws from the rear, two screws and one capscrew from the front of the left hood side panel and remove the panel.
2. Drain the filter sump.
3. Remove the filter sump by turning out the center bolt.
4. Remove the filter cartridge from the sump.



1st STAGE FILTER

1. Bleed Plug
2. Bleed Plug Washer
3. Filter Head Assembly
4. Body to Head Gasket
5. Element End Gasket
6. Fuel Filter Element
7. Snap Ring
8. Element End Gasket
9. Element Lower Plate
10. Element Plate Oil Seal
11. Spring Washer
13. Element Tension Spring
13. Filter Body Assembly
14. Body Oil Seal
15. Plug Washer
16. Filter Bleed & Drain Plug
17. Oil Seal Retainer
18. Center Bolt

5. Wipe the sump clean and install a new filter cartridge and seals.
6. Secure the sump to the filter head with the center bolt.
7. Reinstall the drain plug.
8. "Air bleed" the fuel system.
9. Inspect the system for leaks.

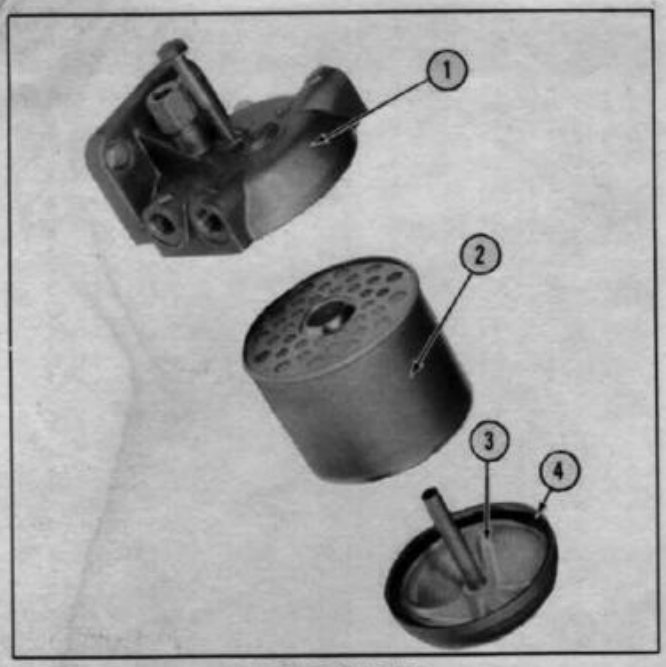
The first stage filter should be drained at not more than 100-hour intervals and the filter element replaced at not more than 500-hour intervals.

Second Stage Filter

The second stage filter, located slightly forward of the first stage filter, further filters the fuel before it reaches the injection pump. It contains a replaceable cartridge filter and is designed to collect any foreign material that may have escaped the first stage filter.

Water and sludge must be drained from the filter at regular intervals and the filter cartridge replaced periodically. Replacement of the filter cartridge can be done in the following manner:

1. Remove the left hood side panel.
2. Remove the sump and dump to drain.
3. Remove the filter cartridge from the sump.
4. Wipe the sump clean and install a new filter element.
5. Secure the sump to the filter head.
6. "Air Bleed" the fuel system.



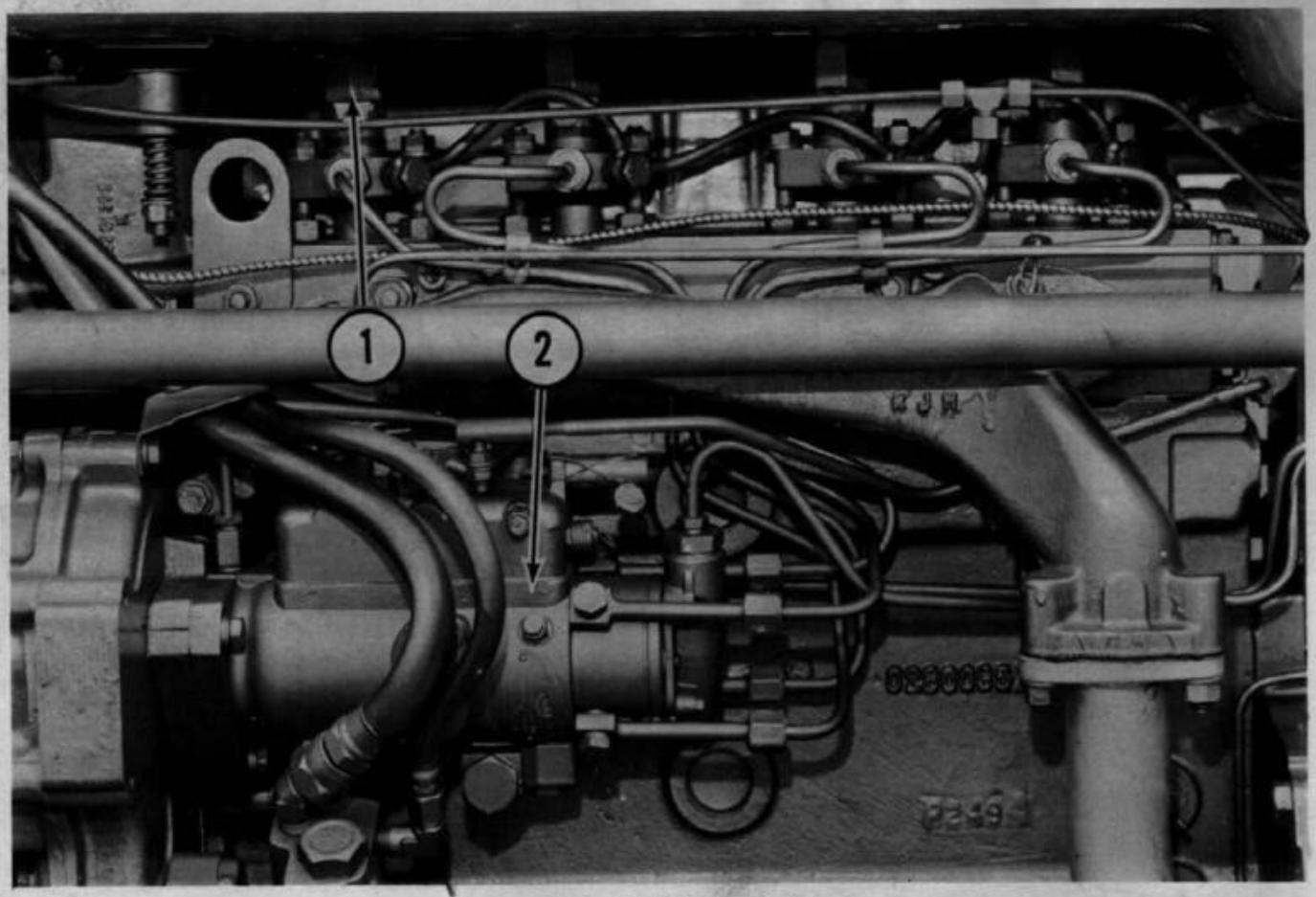
2nd STAGE FILTER

1. Filter head assembly
2. Fuel filter element
3. Lower body assembly
4. Filter gasket

The second stage filter should be drained at not more than 100-hour intervals and the filter element replaced at not more than 1000-hour intervals.

Fuel Filter Replacement

To determine whether or not the filters are functioning properly, disconnect the fuel pressure line at the injection pump side of the second stage filter and reciprocate the manual lever on the primary fuel pump. If a steady stream of fuel flows from the filter the loss of engine power can be attributed to some other fuel injection or engine malfunction. Refer to the Trouble Shooting Section of the manual for other possible causes of engine power loss.



Engine Fuel Injection System

1. Fuel Injector
2. Injection Pump

If the fuel does not flow from the filter freely, it will necessitate both first and second stage filter cartridge replacement.

If any of the fuel system filters or pressure lines are opened for any reason, it may necessitate air bleeding of the entire fuel system.

Although it is not necessary to replace the second stage filter cartridge when replacing the first stage filter, it is of utmost importance that when a second stage filter cartridge is replaced the first stage filter cartridge should also be replaced.

NOTE: For best results use only genuine Massey-Ferguson filter cartridges purchased from your local Massey-Ferguson Dealer.

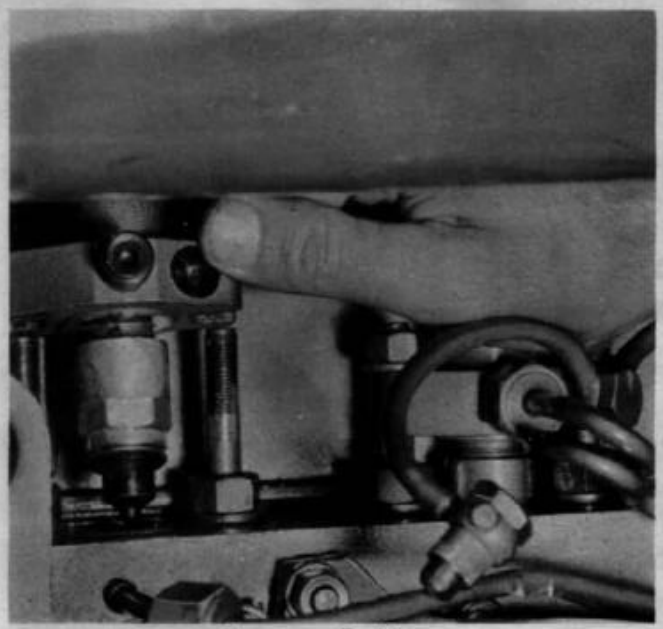
Injection Pump

Fuel is dispersed under pressure to the engine combustion chambers through the injectors in the correct timed sequence by means of injection pump.

NOTE: If your injection pump is not functioning properly, do not attempt to make repairs or adjustments. Contact your Massey-Ferguson Dealer immediately.

Injection Nozzles

The fuel injection nozzles are located on top of the cylinder head and fuel under pressure from the injection pump is directed into the cylinder in two fine sprays.



Removing a Fuel Injector

Should plugging or any other malfunction of the injector nozzle occur it should be removed, tested and repaired or replaced as necessary by your Massey-Ferguson Dealer.

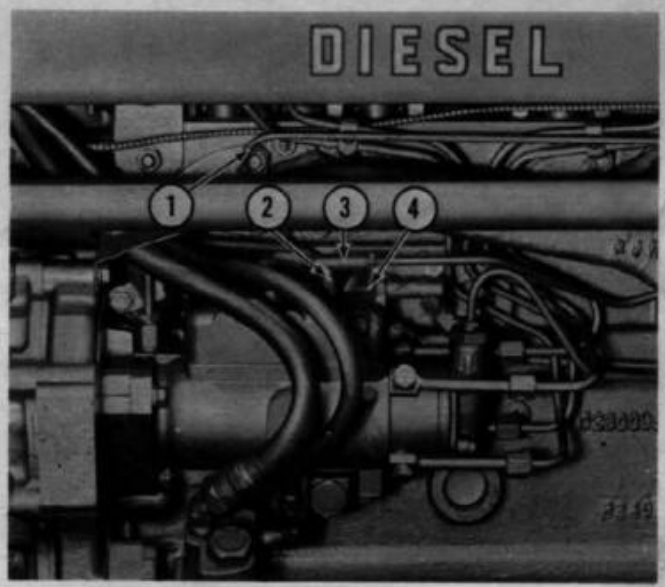
Since it is not possible for you to test the injection nozzles without special equipment, the only servicing of the nozzles that you can perform is to replace the entire injector assembly.

To remove the injectors, use a short open end wrench and work under the fuel tank, disconnect the bleed-off and main fuel lines from the injector to be removed. Remove the two retaining nuts and lift the injector from the studs.

When reinstalling the injector use a new sealing washer and tighten the retaining nuts evenly approximately 1/2 turn at a time to approximately 18 to 20 foot pounds torque. Reinstall the injector fuel lines, tighten them securely and operate the engine and check for fuel leaks. Replace the hood side panel.

Injector Pump Governor

The engine governor of your tractor is built within the injector pump and is factory preset, therefore, no internal adjustments can be made. The only adjustment that can be made on the injection pump unit is the slow or idle speed. This can be done by either lengthening or shortening the idle speed screw until an idle speed of 500-550 RPM is attained.



The Fuel Injection Pump

1. Fuel shut-off control rod
2. Idle speed stop screw
3. Throttle control rod
4. Maximum speed stop screw

CAUTION: The maximum speed stop screw length is factory preset and sealed. This seal should not be broken for any reason.

Should the maximum engine RPM rise above 2100-2150 RPM it may indicate a malfunction of the internal parts of injection pump and therefore would require the services of your Massey-Ferguson Dealer.

NOTE: Too slow an engine idle speed will cause excessive engine vibration.

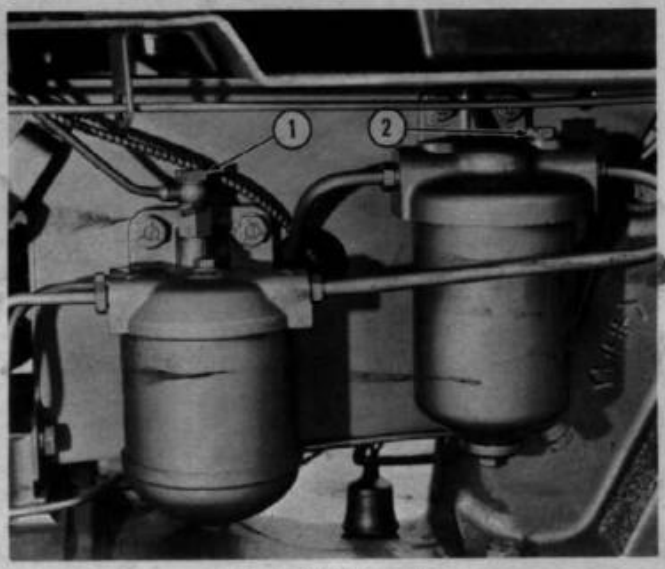
Air Bleeding The Fuel System

In order for your tractor fuel system to function properly it is important that (1) the fuel be kept clean and (2) there be no air in the system. The importance of clean fuel has been described fully in the fuel filter section of the manual. Air in the system can cause erratic action and possibly prevent starting of the engine.

If the fuel tank has been permitted to run "dry", the tractor not used for a lengthy period of time, the sediment bowl removed to be cleaned, the filters drained or any vent plug in the system opened it will necessitate air bleeding the system.

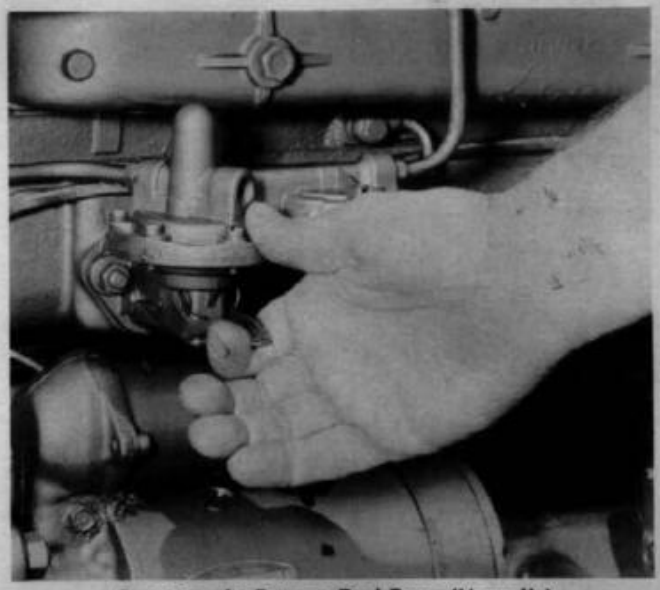
To bleed the system, proceed as follows:

1. Open the fuel shut-off valve.
2. Loosen the air vent on the first stage filter.
3. Pump manual lever on the primary fuel pump until air-free fuel comes out of the filter vent. Tighten the vent plug securely.



Fuel Filter Vent Plugs

1. Second Stage Air Vent 2. First Stage Air Vent



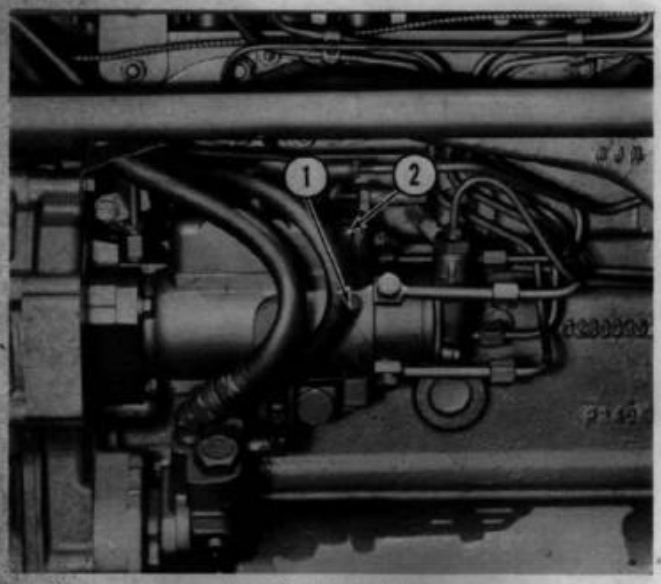
Operating the Primary Fuel Pump (Manually)

NOTE: The primary fuel pump will not work properly unless the lever is reciprocated up and down fully.

4. Loosen the vent on the second stage filter and operate the primary pump manual lever until air-free fuel comes out of the filter. Tighten the vent plug.
5. Loosen the lower vent plug on the injection pump body and operate the primary pump manual lever until air-free fuel flows out of the port. Tighten the vent plug.
6. Loosen the upper vent plug on the injection pump body and operate the primary pump manual lever until air-free fuel flows from the port. Tighten the vent plug.
7. Operate the primary pump manual lever 10 additional times to insure that there is fuel in the bleed back lines to the second stage filter.
8. Loosen two pressure lines to injector connections. Turn the engine over with the starting motor until fuel escapes from the pressure line ends. Tighten the two connections.
9. Turn the engine over with the starter until the engine starts.

If the engine fails to start immediately do not hesitate to hold the starter-switch key in the "S" or start position up to 15 seconds.

NOTE: Do not operate the starter continuously for more than 15 seconds without allowing a few minutes for cooling. Failure to do this will cause overheating and premature failure of the starting motor.



Injection Pump Vents
1. Lower Vent 2. Upper Vent

Cold Starting Aid

To assist in starting the tractor engine under cold conditions, a starting aid has been incorporated into the fuel and air system. The starting aid is located in the air inlet end of the intake manifold and when activated, causes fuel to burn in the intake manifold preheating the incoming air which raises the temperature of the air in the combustion chamber.

NOTE: While we refer to this as a "cold starting aid" some combinations of temperature and humidity may affect engine starting, making it necessary to use the starting aid when it is not really "cold".

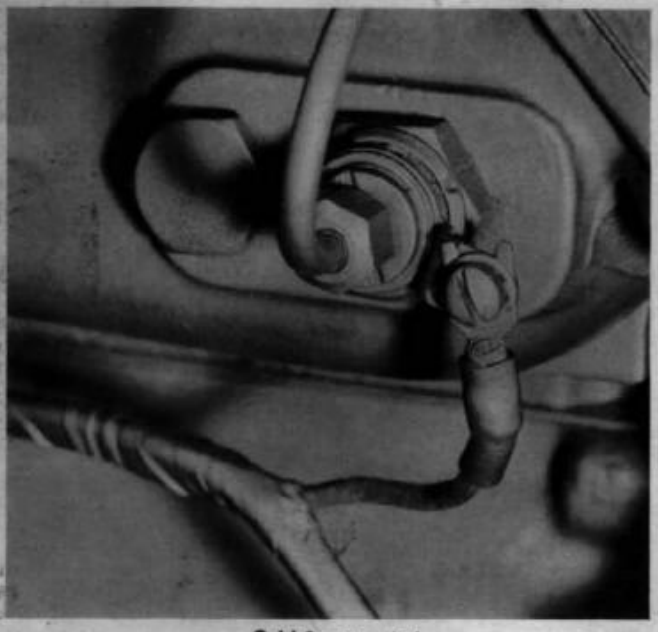
The starting aid is a self contained unit which cannot be readily repaired should some manfunction occur. If it is found that a starting aid is not performing properly, disconnect the fuel line, electrical lead wire, remove the starting aid and install a new one.

Also air bleed and prime the fuel line at the starting aid if it is removed or replaced.

Air Cleaner

The air cleaner is located ahead of the radiator and above the steering pedestal. It is essential that the air cleaner be kept clean and free from any type of restriction, as a partially plugged air cleaner will result in engine power loss and increased fuel consumption. Clean the oil cup and refill to the full mark each day, using the same weight oil as is used in the crankcase. In extreme dirty and dusty conditions, it may be necessary to follow this procedure more frequently.

NOTE: Observe that the bottom of the air cleaner bowl has been relieved to prevent interference with the steering drag link. Make sure the cup is installed with the relieved area toward the left or toward the drag link.



Cold Starting Aid



Removing Air Cleaner Bowl



Removing Air Intake Screen

Clean the intake screen above the radiator grill when dirty but never oil this screen.

NOTE: Periodically, the entire air cleaner and hoses should be thoroughly inspected for cracks and other openings which would allow unfiltered air to enter the engine.

The internal filter is cleaned by removing the air cleaner and rinsing the assembly in a suitable solvent. This procedure should be done once or twice a year. Under some operations, the filter becomes so plugged with dirt and lint that washing in a suitable solvent will not remove this clogged condition. If this occurs, the air cleaner will have to be replaced.

CAUTION: If a volatile and flammable solvent, such as gasoline or diesel fuel, is used to wash the air cleaner it should be allowed to dry thoroughly before installing. If the internal filter is saturated with solvent and the engine started the solvent will be drawn into the engine, act as fuel and may cause the engine to overspeed.

ENGINE OILING SYSTEM

The crankcase capacity is 7 U.S. or 5.8 Imp. quarts with an additional 1 U.S. pint circulating through the oil filtering system.

The engine is ventilated through a breather tube attached to the timing gear cover.



Removing Oil Sump Screen

Oil Sump Screen

An oil sump screen, attached to the under side of the engine oil pan, screens the oil before it is drawn into the oil pump.

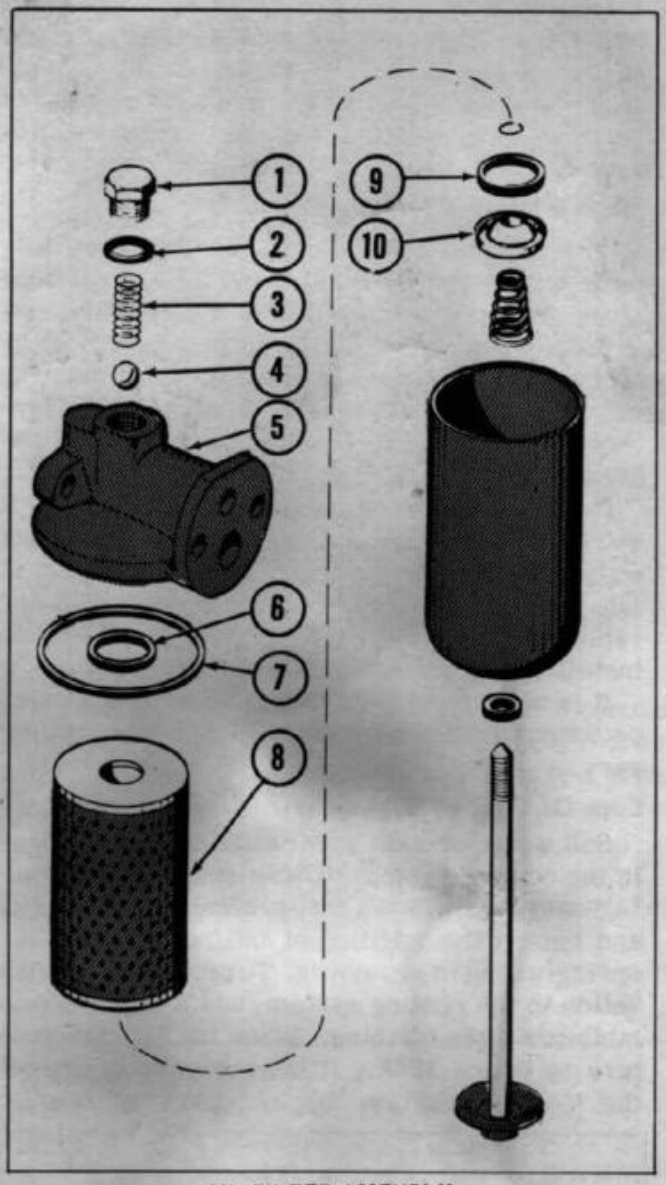
The screen should be removed from the sump and cleaned at each engine oil change.

Oil Filter

The full-flow external oil filter is located on the right side of the engine block. The oil filter element should be removed and replaced with a new one at 200 hour intervals or at every other engine oil change.



Removing Engine Oil Filter



OIL FILTER ASSEMBLY

1. Relief valve plug
2. Plug gasket
3. Relief valve spring
4. Relief valve ball
5. Filter cover assembly
6. Upper element gasket
7. Cover to body gasket
8. Oil filter element
9. Lower element gasket
10. Lower gasket

Changing Engine Oil And Filter Element

The oil in the crankcase as delivered should be drained and the crankcase refilled with proper lubricant after the first 50 hours of operation. Thereafter, the oil should be changed every 100 hours. Adverse working conditions such as severe dust or extremely cold weather may necessitate more frequent changes. Flushing the crankcase with oil or solutions, other than a good winter grade oil, is not recommended. If flushing is necessary, use 3 quarts of 10W oil and run at a fast idle for a few minutes. Drain and fill with the correct seasonal grade of engine oil.

The use of detergent type oils is recommended as a cleaner engine results, which will operate longer without service difficulties. Therefore, it is recommended that Service DG oils be used in normal operating conditions. Service DS oils, are not specifically recommended.

DG oils are detergent oils. This detergent added to the oil is basically a cleaning agent and the oil will discolor and become black in appearance in a short period of time when used in Diesel engines. This oil must become discolored or the engine is not being properly cleaned. The discoloration is formed by minute soft carbon (soot) particles and will not harm the engine in any way if the oil is changed at regular 100 hour intervals. An oil filter element that is able to remove these soft carbon particles will also remove the detergents from the oil and seriously hamper the cleaning ability of the oil.

NOTE: Always use a filter element supplied by your Massey-Ferguson Dealer.

NOTE: It is essential that the crankcase be drained when the engine is warm as much of the foreign material will be in suspension and will flow out with the oil.

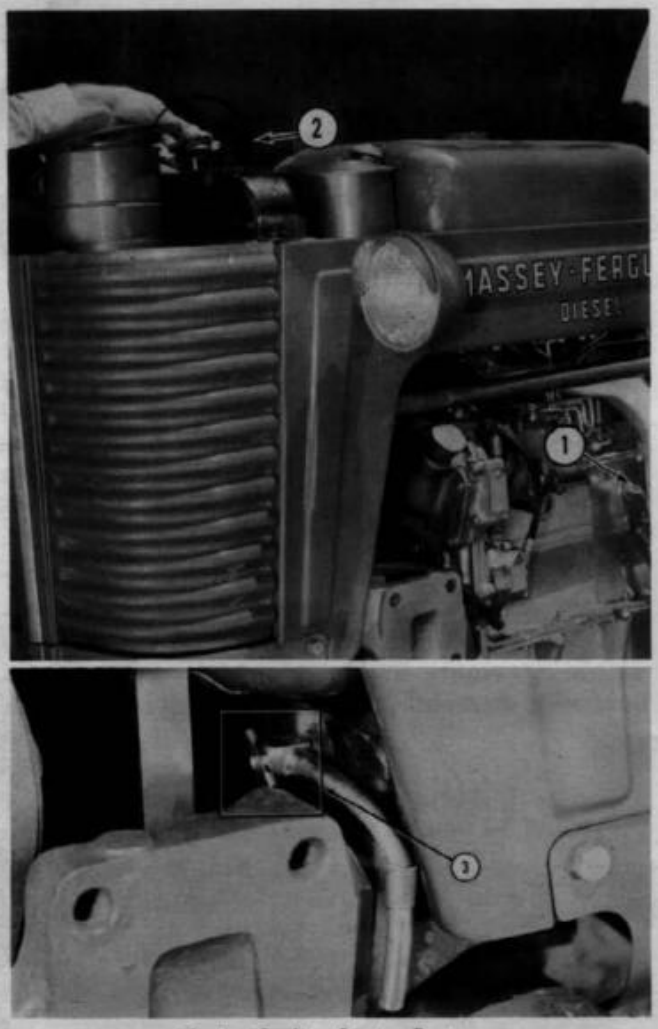
COOLING SYSTEM

The cooling system of the MF 65 Diesel engine consists of a radiator, pressure-type radiator cap, thermostat, water pump, the necessary hoses, fan and 10 quarts of coolant.

Fan And Water Pump

A four blade pull-type fan, mounted on the water pump pulley, draws air through the radiator and blows it around the engine.

If the fan belt is removed and a new one installed, the generator pivoting bolts will have to be loosened and the generator pivoted toward the engine. When assembled, the generator should be positioned and secured so that the fan belt has sufficient tension (approximately 1/2 inch deflection) to properly turn the pulleys without slippage.



Engine Cooling System Drains

1. Block drain
2. Radiator Pressure Cap
3. Radiator drain

Radiator And Pressure-Type Cap

The radiator is a copper tube and fin-type. For efficient cooling, the fins must be kept clean of all lint, dust and other foreign material. A clogged condition is sometimes only apparent by looking through the fins and can be remedied by blowing out with water or air pressure.

The radiator fins can be cleaned by opening the grill service door and removing the left grill section. The material can then be washed or blown out toward the front of the tractor.

CAUTION: Remove radiator cap slowly and carefully by turning to the first notch. This relieves the pressure, preventing injury from escaping steam and scalding water. Always remove the pressure cap and open the 2 drain cocks when draining the cooling system; otherwise, all the coolant will not drain out.

Located on top of the radiator is a pressure-type cap which permits 10 pounds per square inch of pressure to build up within the cooling system. This raises the boiling point of the coolant 27° to 33°. It is essential that the pressure cap be used and installed tightly at all times.

Thermostat And Hoses

The thermostat is located in a cast iron body between the cylinder head and the top radiator hose. It begins to open at 170°F to 174°F. and is fully open at 185°F. An inoperative thermostat, or one removed from the system, will cause improper warm-up and operating temperatures, resulting in excessive condensation and crankcase dilution.

If a new thermostat is to be installed, it should be first checked by immersing in hot water. The upper radiator hose and cast elbow will have to be removed to install the replacement part. Use a new gasket when installing the cast elbow.

It is also important that the hoses be inspected occasionally and clamps tightened when necessary.

Care Of Cooling System

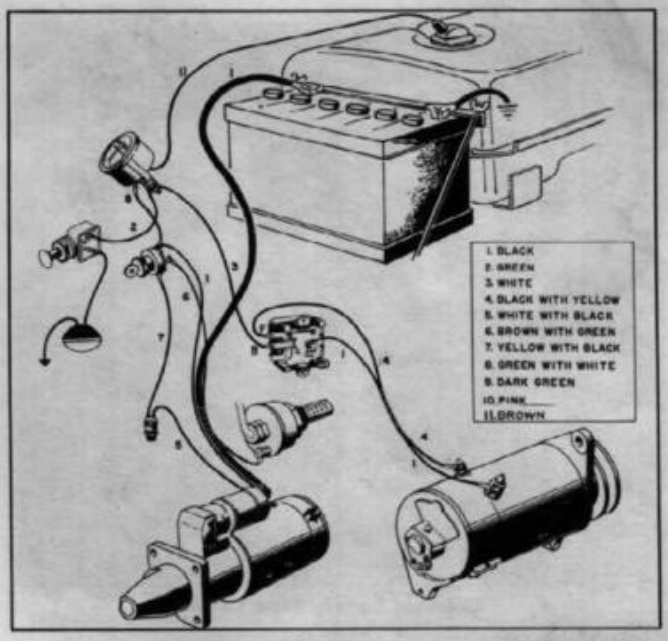
Soft water or rain water should always be used in the cooling system. Clean and flush the cooling system twice a year, preferably in the Fall and before the addition of antifreeze and in the Spring when it is removed. To prevent corrosive action in the cooling system, use a reliable rust inhibitor after flushing. When the air temperature is below 32°F., it is necessary to protect the cooling system by using an antifreeze.



Use caution when Removing Radiator Pressure Cap.



Adjusting Valve Clearance



Tractor Electrical System

VALVE ADJUSTMENT

Proper valve adjustment is essential for quiet, smooth operation and long valve life. However, it should be noted that quiet valves may mean tight valves. If this condition exists, short valve life will result due to the valves burning. The following procedure for adjusting valves is recommended:

1. Start the tractor engine and run at a fast idle until temperature is in the normal operating range.
2. Remove the tractor hood and fuel tank.
3. Thoroughly clean valve cover and cylinder head.
4. Remove valve cover and gasket.
5. Turn the engine over with the starter until No. 1 cylinder piston is up on compression and the valves are closed.
6. Loosen locknut and adjust screw in the rocker arm so that a .010 gauge slips snugly between the end of the rocker arm and the valve stem.
7. Securely tighten locknut and recheck clearance.
8. Crank the engine one half revolution at a time and recheck clearance of each cylinder valve and adjust if necessary. Do this on each set of cylinder valves in succession according to the firing order of the engine which is 1-3-4-2.

CAUTION: Tighten valve cover nuts snug only to avoid distorting cover.

9. Install the fuel tank and connect the fuel lines. Air bleed and prime the fuel system.

ELECTRICAL SYSTEM

The electrical system of your MF 65 Diesel consists of a battery, starting motor, starter solenoid, safety switch, key starter switch, starting aid, generator regulator, ammeter, fuel gauge, lights and connecting wiring.

Battery

A 12 volt 96 ampere hour battery negatively grounded provides your tractor with a twelve volt electrical system.

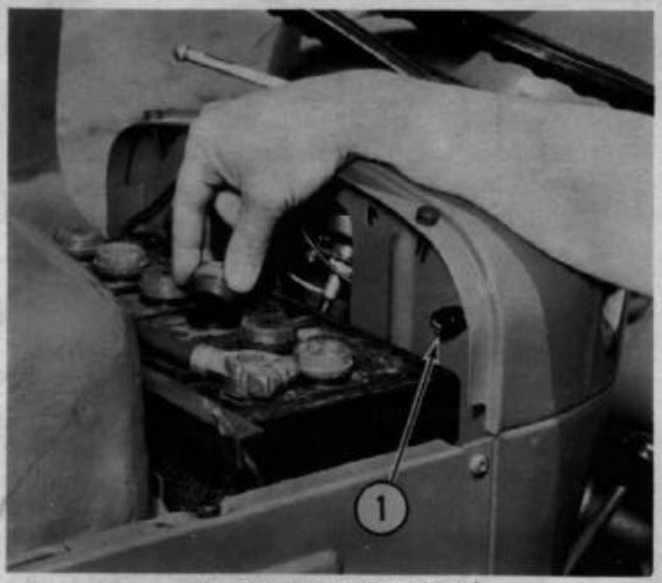
The performance obtained from your battery depends upon the amount of its charge and the condition of the engine, starting motor and wiring.

The battery should be inspected for the following:

1. Battery Surface Condition, Cable Corrosion and Frayed Cables: Clean by washing with warm baking soda solution. After connecting cable terminals to battery posts, coat with light grease to prevent corrosion.

NOTE: Care must be exercised not to get soda solution in vent holes as a neutralization of the electrolyte will result. Frayed cables should be replaced as excess resistance or shorts may develop.

2. Cracked or Broken Case
3. Soft Sealing Compound. This condition is usually caused by over-heating due to over-charging and will shorten battery life.



Checking Battery Water Level
1. Fuse

4. Battery Carrier. The wing nuts should be finger tight. Over-tightening will cause distortion when the battery becomes hot. A loose battery will vibrate which may cause breakage.

5. Battery Caps. A broken or missing cap permits dust and dirt to enter the cell, shortening battery life. A plugged cap will not allow battery gases to escape, thereby damaging separators.

CAUTION: A battery, when being charged produces and gives off very explosive hydrogen gas. It is important then, that flames or sparks be kept away from the vent openings.

6. Electrolyte Solution Level. The level should be inspected once or twice a month to make sure it is approximately 3/8 in. above the plates. When adding distilled water fill each cell, using a syringe, to the bottom of the tube.

7. Specify Gravity. The specific gravity of a battery indicates the chemical condition of the battery. However, this is only true if the level is 3/8 in. above the plates. The specific gravity of a fully charged battery will be 1.260 or greater. A period of four hours should elapse before checking specific gravity after adding water to permit the solution to become uniform. If the battery has a low specific gravity reading, the battery should be recharged.

NOTE: Except in cases of emergency, a battery should always be slow charged to obtain long battery life.

Generator

The generator of your MF65 Diesel Tractor is a 12 volt, 3 brush shunt wound unit, capable of an output of 10 to 12 amps under normal conditions.

Generator output cannot be measured by the tractor ammeter and must be set by the use of external meters.

The hinge cap oilers should be lubricated with light weight engine oil every 100 hours of operation.

Voltage Regulator

The voltage regulator is a combination current voltage regulator and cutout relay to control the direction of current and generator output according to the battery conditions and electrical load. The regulator should be serviced and adjusted only by your local Massey-Ferguson Dealer as maladjustment can mean a burned out regulator or generator.

Starting Motor

The starting motor is a 12-volt, 4-pole, 4-brush series wound motor, mounted on the engine flange on the right side of the flywheel housing.

THROTTLE LINKAGE

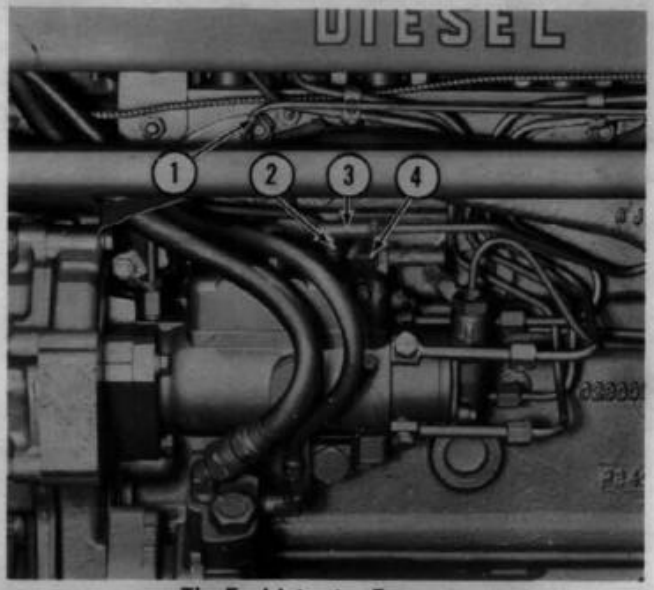
Proper engine governor action is dependent upon (1) proper functioning of the built-in governor within the injection pump and (2) properly adjusted external linkage.

The only injection pump governor adjustment that can be made, the engine idle or slow speed, is described in detail in this section of the manual.

CAUTION: The maximum engine speed is governed by the injection pump governor. The maximum speed stop screw length is factory preset and sealed. This seal should not be broken for any reason. If pump governor difficulty should develop, call your Massey-Ferguson Dealer.

Improper external linkage action may be caused by binding, interference due to misalignment or excessive dirt and paint accumulation.

Should any of the above occur, first clean the linkage thoroughly and secondly, if binding of the linkage still exists, determine the cause and replace the portion of the linkage if necessary.



The Fuel Injection Pump

1. Fuel shut-off control rod
2. Idle speed stop screw
3. Throttle control rod
4. Maximum speed stop screw

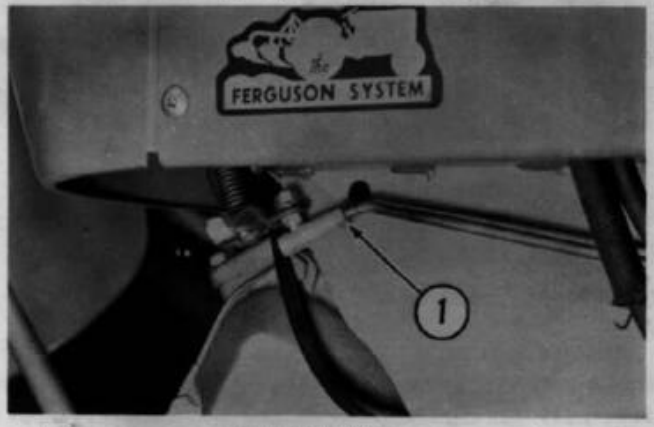
Before checking the linkage for length, check the engine idling speed as follows:

1. Start engine.

2. Adjust the idle speed adjusting screw counterclockwise to decrease and clockwise to increase the engine speed until 500-550 RPM or 180-198 RPM PTO is attained.

To adjust the throttle linkage:

1. Stop the tractor engine.
2. Loosen the throttle control lever
3. Place the throttle all the way up in the idle position so that the throttle cam is against the stop on the bracket assembly.
4. Pull the throttle control link forward to the idle speed position so that the speed control lever just touches the idle speed stop screw on the injection pump.
5. While holding the rod in this position, secure the throttle control lever clamp bolt and nut tightly.



Throttle Linkage

1. Throttle lever nut

CAUTION: After adjustment, care should be taken to avoid overthrottling as the stress may alter the adjustment and possible cause damage to the injection pump parts.

CLUTCH AND TRANSMISSION

The Dual Clutch and Dual Range Transmission is that portion of the power train which mechanically regulates and controls the energy supplied by the engine.

NOTE: The pump is constant running and operates whether or not the power take-off shaft is engaged. The pump may be stopped only when the clutch is disengaged.

DUAL CLUTCH

The Dual Clutch consists of a forward (primary) pressure plate and dry cushioned disc which is attached to the transmission input shaft, and rear (secondary) pressure plate and dry disc which is attached to the hydraulic pump and power take-off input shaft.

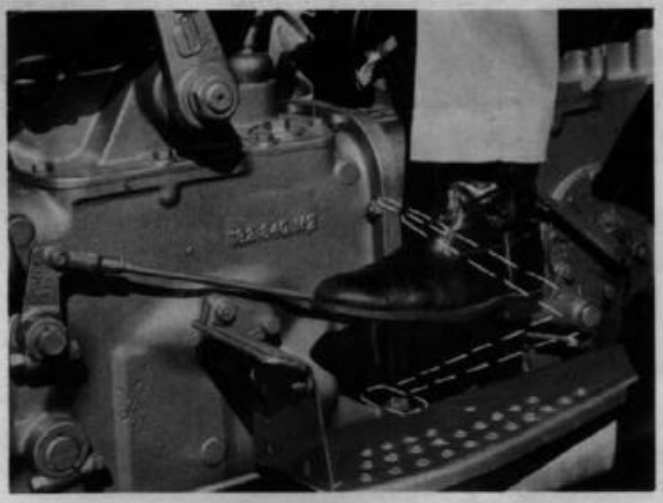
Clutch Pedal Free Play

To insure full clutch engagement, and to protect the clutch release bearing, it is important that adequate clearance exists between the clutch release fingers and the clutch release bearing. This clearance is evident externally as clutch pedal free play and is checked as follows:

1. Depress the clutch pedal with the hand until the engagement of the release bearing with the release fingers is felt.
2. The forward edge of the clutch release shaft arm should be 1/8 inch from the transmission case.

If the clutch pedal free play is not correct, adjust as follows:

1. Loosen the clamp bolt in the release shaft arm and place a rod through the hole provided in the extended end of the clutch release shaft.
2. Rotate the shaft clockwise until engagement with the release fingers is felt.
3. Move the release shaft arm in relation to the shaft until the arm is 1/8 inch from the transmission case.
4. Tighten the clamp bolt securely and recheck the clearance.



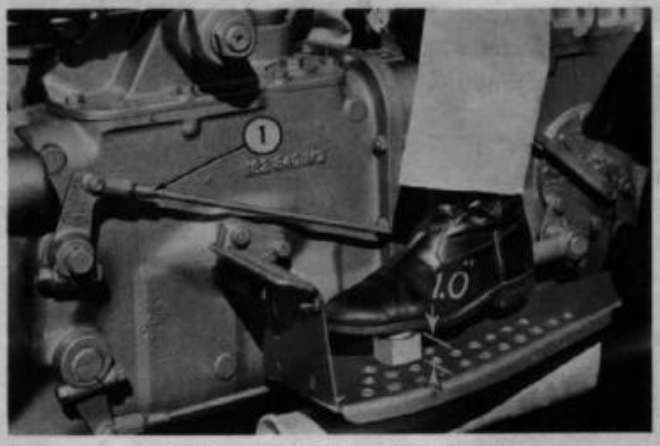
Clutch pedal Depressed through the First Stage

Clutch Linkage Adjustment

The clutch pedal down stroke must be correct to insure proper and complete clutch disengagement. To check and adjust the clutch linkage proceed as follows:

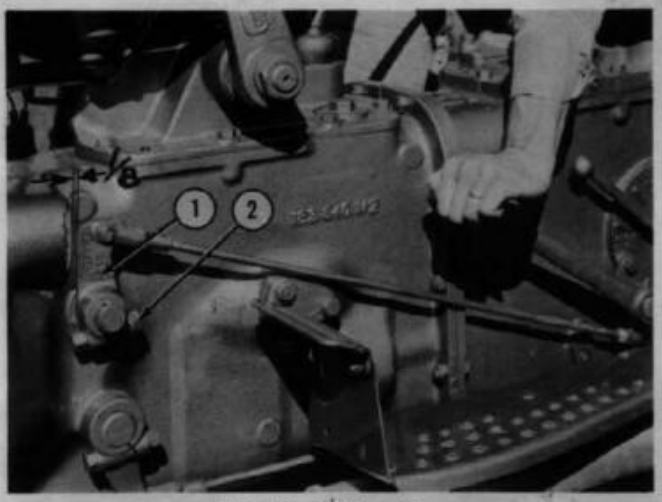
1. Remove the tractor PTO cap and shift the PTO shift lever to Engine PTO.
2. Place a one-inch block under the clutch pedal as shown.
3. Start the engine and let it run at idle speed.
4. Slowly depress the clutch pedal and note the action of the PTO shaft.
5. If the PTO shaft continues to rotate after the pedal reaches the block, remove the clutch pull rod clevis pin and shorten the rod by rotating the clevis and recheck.

NOTE: Operating at no load the PTO shaft will continue to rotate for several seconds after the clutch is disengaged, so allow sufficient time for the shaft to stop.



Clutch pedal Linkage Adjustment

1. Pull rod clevis



Clutch Pedal Free Play

1. Clutch release shaft arm
2. Clamp bolt

6. If the PTO shaft stops before the clutch pedal reaches the block, lengthen the rod slightly by turning the clevis and recheck.
7. When the correct adjustment is obtained, insert and secure the clevis pin and tighten the clevis lock nut.

Your MF 65 Tractor dual clutch linkage is designed so that it may be modified to insure a constant running hydraulic pump. That is, with the clutch pull rod clevis in the rear hole of the clutch release shaft arm, only the primary clutch can be disengaged. This prevents the operator from inadvertently declutching through both stages and thus interrupting the power flow to the hydraulic pump.

CAUTION: Do not attempt to operate power take-off driven implements with the clutch pedal linkage modified as mentioned above. Using the modified clutch pedal linkage prohibits the operator from disengaging the power take-off shaft with the clutch pedal.

DUAL RANGE TRANSMISSION

The Dual Range Transmission is a three-speed forward and one-speed reverse sliding spur gear-type compounded by a planetary reduction gear assembly located at the output end of the mainshaft. This combination produces a total of six forward and two reverse speeds.

DIFFERENTIAL, REAR AXLE & PLANETARY GEAR ASSEMBLIES

Power from the change speed transmission is transmitted to the rear wheels through the differential assembly, rear axles and a final reduction planetary gear assembly to the wheel end

of each axle housing. The brake assemblies which are assembled within the inner end of the rear axle housing offer a means of controlling rear wheel rotation both for tractor braking purposes and for turning.

DIFFERENTIAL

A special bevel ring gear and pinion, four differential pinions mounted on a spider and two side gears make up the differential.

REAR AXLE ASSEMBLY

The rear axle consists of right and left hand axles, disc brake assemblies enclosed in the inner bell housing, the axle shafts, a final reduction planetary gear set at the outer or wheel end of each axle housing, bearing retainers, bearings and oil seals.

Axle Housing

The malleable iron axle housings are attached to the tractor center section and contain the lower link studs which are the pull joints of the tractor.

Axle Shafts

The two tractor axle shafts are of the semi-floating type and modified into a "broken back bone" construction by the planetary gear reduction set and its stub shaft at the wheel end.

Rear Axle Planetary

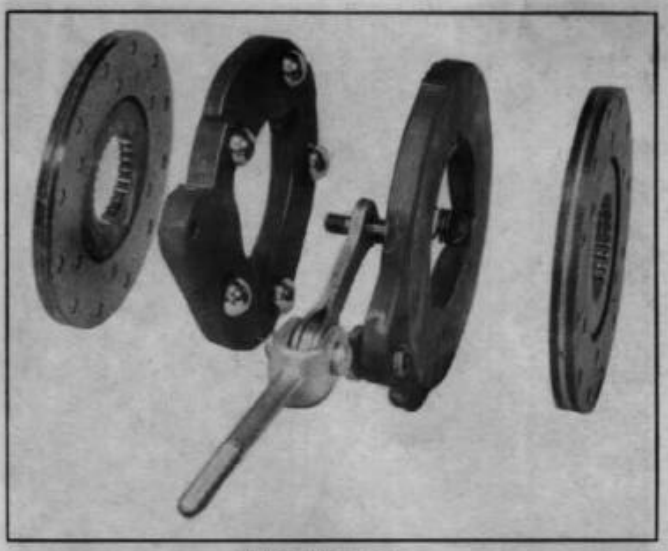
The final reduction planetary gear set consists of a ring gear, interposed between the outer end of the axle housing and the outer cover to become a part of the axle housing structure, and two planet pinions.

NOTE: The rear axle planetary retainer nuts should be tightened frequently to prevent lubricating oil leakage.

BRAKES

The MF 65 is equipped with two seven-inch diameter double disc brakes fitted internally in the inner end of the rear axle bell housing and separated from the differential housing by a cover interposed between the two.

The linings are riveted to the discs and are approximately 3/16 inch thick to provide long service life.

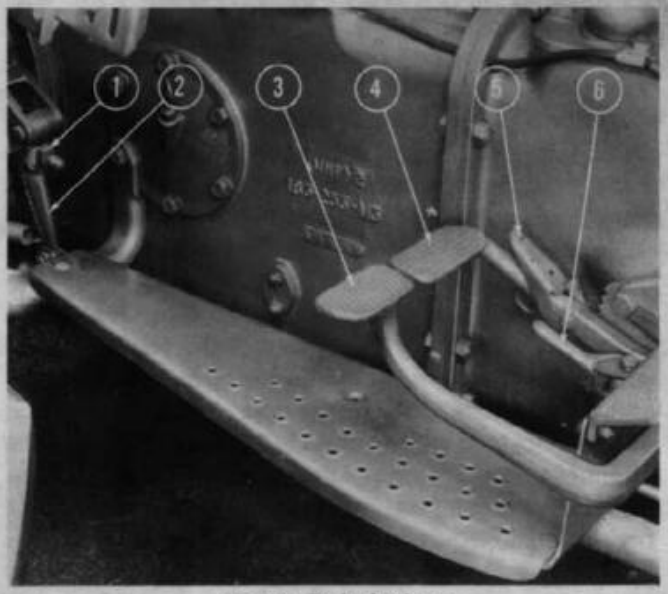


Double Disc Brakes

Each pedal is mounted on the brake cross-shaft. The individual brake rods are connected to the brake pedal and to the respective brake actuating lever. The right and left pedals brake the right and left wheel respectively or may be used simultaneously as a master brake. A spring-loaded pawl on the left pedal locks the left brake (or both brakes if the pedals are locked together) in an engaged position.

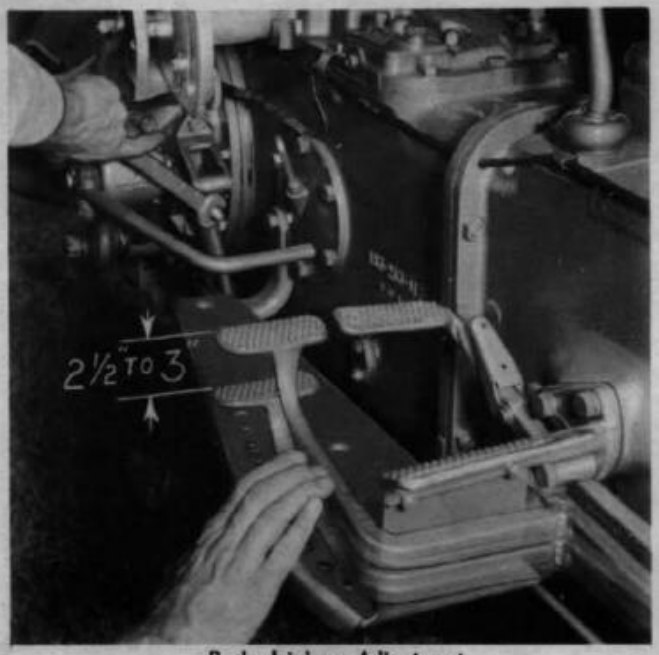
Brake Linkage Adjustment

Adjust your tractor brakes by maintaining a 2-1/2 to 3 inch free travel on both left and right pedals. This is accomplished by tightening (clockwise) the adjustment nut on each respective

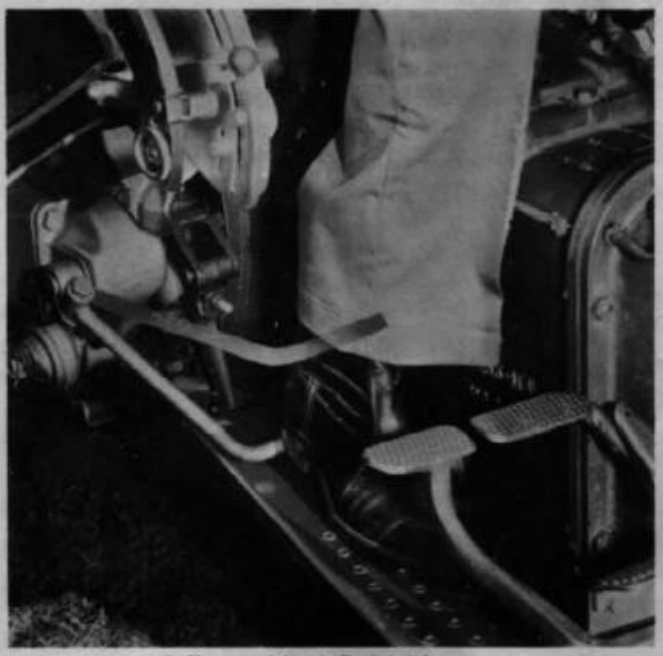


Tractor Brake Linkage

1. Adjusting nut
2. Brake Lever
3. Right Brake pedal
4. Left brake pedal
5. Parking latch
6. Interlocking latch



Brake Linkage Adjustment


Differential Lock Pedal Adjustment

brake rod at the inner end of the rear axle housing. If less than the 2-1/2 to 3 inch pedal free travel is maintained and the brakes used excessively for a period of time, they will heat and expand which may cause some "dragging". If this condition exists, then it may be necessary to loosen the adjustment nut (counterclockwise) until the correct pedal free play is maintained and the brake action is normal.

MECHANICALLY ACTUATED DIFFERENTIAL LOCK (OPTIONAL)

A mechanically actuated differential lock is factory installed optional equipment on all models of the MF 65 Diesel Tractor. The differential lock assembly is made up of a pedal, a lock cam housing which encloses the lock cam, cam shaft and return spring, a lock shaft, return spring and shift fork and the differential lock coupler.

The differential lock can be engaged by depressing the pedal with the right foot. This will cause both rear wheels to rotate together and provides greatly increased traction.

It should be noted that the differential lock can not always be engaged when the tractor is motionless. Under these conditions, the lock can be engaged only if the notches in the adaptor and the lock coupler are perfectly aligned. The same is true when the tractor is in motion in a straight ahead direction on a uniform surface since there is no differential action and the axle is rotating at the same rate as the differential.

Differential lock Pedal Adjustment

The differential lock should be fully engaged as the pedal contacts the step plate on its downward stroke. To adjust, loosen the clamp bolt slightly so that the pedal can be moved on the shaft. Pull the pedal up past its normal position, press the pedal down, making sure that the lock is fully engaged, then move the pedal on the shaft until it contacts the step plate. Tighten the clamp bolt securely.

CHANGING HYDRAULIC SYSTEM, TRANSMISSION AND DIFFERENTIAL OIL

The mineral oil used in the hydraulic system also lubricates the transmission and differential gears and bearings. Two magnetic drain plugs have to be removed when changing oil. These plugs should be thoroughly cleaned before replacing.

As delivered to you, the system is filled with oil which should be drained after the first 50 hours of operation; thereafter, the oil should be changed every 750 hours.

CAUTION: It is essential that only a straight S.A.E. mineral gear oil be used in your hydraulic system.

FRONT ENDS

The MF 65 is manufactured in Standard Clearance and High Clearance models. High Arch, Single and Twin Front Tricycle front ends are available in the High Clearance models only.

STANDARD MODEL

The front end consists of a box center section with axle extensions bolted to it with two bolts, which, if spaced in any of a series of holes, adjust the tread width. The wheel spindles are located at the end of the axle extensions. Each wheel assembly consists of a hub, a wheel, wheel bearing, and necessary grease seals.

The tie rods are made in two pieces to enable them to be adjusted when the wheel tread width is changed.

The axle should be adjusted for end play of 0.002 - 0.008 inch between the front face of the axle bracket and the rear face of the front axle support. The adjustment can be made by removing the front cover plate and adding or removing shims as needed.

Check the wheel alignment periodically for correct toe-in 0 - 1/4 inch. Measure between center tire ribs at hub height front and rear and note the difference.

To adjust toe-in, loosen the right tie rod set screw at the outer end and the clamp bolt at the inner end and turn in or out as required.

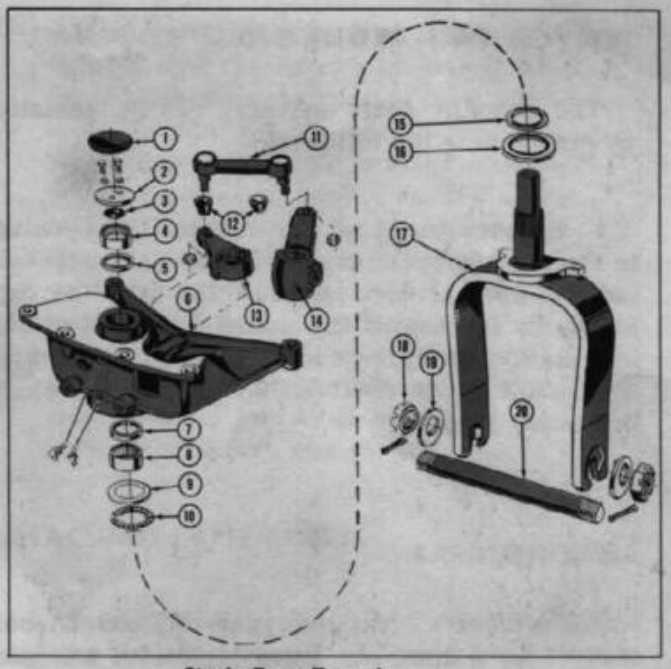
HIGH ARCH MODEL

The front end of the High Arch model differs from the Standard model only in the length of the axle extensions and spindles. The information given for the Standard Model applies to the High Arch Model also.

TRICYCLE SINGLE FRONT END

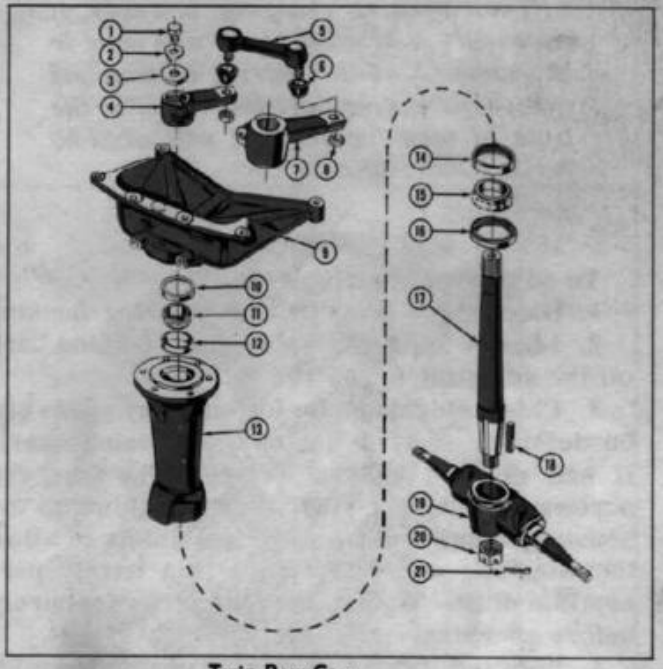
The yoke assembly can be adjusted for end play by adding or removing shims on the top of the yoke shaft. The correct end play is 0.002 - 0.008 inch.

Remove the dust cap and thrust washer and add or remove shims as necessary. Replace the washer and dust cap and tighten securely.



Single Front Tricycle

1. Dust Cap
2. Thrust Washer
3. Shim
4. Needle bearing upper
5. Oil seal
6. Front support assembly
7. Oil Seal
8. Needle bearing lower
9. Upper bearing case
10. Thrust bearing
11. Steering arm link
12. Dust seals
13. Spindle arm
14. Steering arm
15. Lower Bearing case
16. Oil seal
17. Yoke assembly
18. Nut
19. Eccentric Washer
20. Front axle shaft



Twin Row Crop

1. Bolt
2. Lip Washer
3. Washer
4. Spindle Shaft Arm
5. Steering Arm Link
6. Dust Seal
7. Steering arm
8. Nut
9. Front axle support
10. Oil Seal
11. Bearing Cone
12. Bearing Cup
13. Pedestal
14. Lower bearing cup
15. Bearing Cone Lower
16. Oil Seal
17. Front Wheel spindle shaft
18. Key
19. Spindle assembly
20. Cotter Pin

TRICYCLE TWIN FRONT END

The spindle shaft end-play can be adjusted by performing the following:

1. Remove the dust cover from the opening in the main support assembly. Straighten the tab on the special lock washer and turn the cap screw in the top of the spindle shaft in or out as required until the end play is eliminated and a slight drag is detected on the spindle shaft bearings.

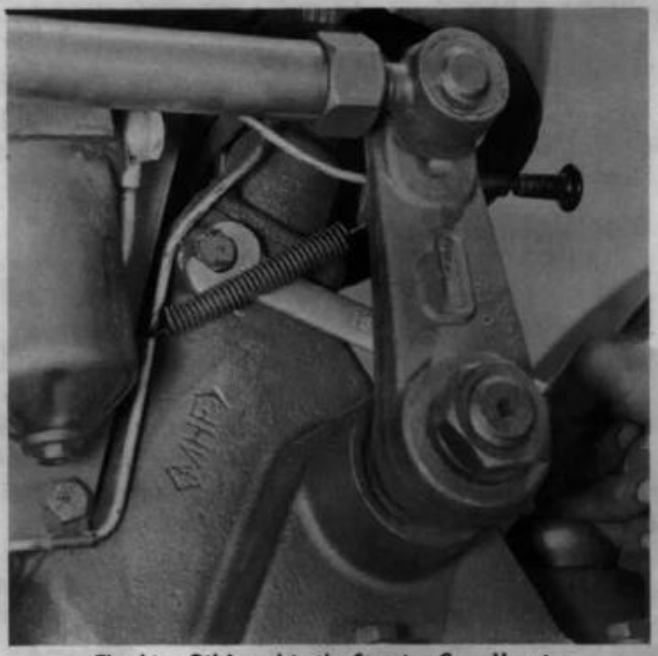
STEERING GEAR

The steering gear on your MF 65 Diesel tractor is a cam and lever type with a single Pitman arm.

NOTE: Lubricate through the pipe plug hole in the side of the gear cover. If oil is low fill the housing slowly with transmission oil until lubricant begins to run out of plug hole. Normally the oil will not require changing; however, if necessary, the gear cover will have to be removed. The steering column and camshaft bearings are lubricated at the time of manufacture and will need no further lubrication.

To adjust the steering gear:

1. Disconnect drag link at steering housing.
2. Loosen adjusting screw lock nut and back off the adjusting screw two full turns.
3. Check steering cam for end play. This can be determined by lifting on the steering wheel. If end play is present, remove the four cap screws which secure the steering column to the housing; then, remove sufficient shims to allow the steering wheel to turn with a barely perceptible drag. Tighten the four screws securely before checking.
4. With the Pitman arm in the vertical or mid-position range, tighten the side cover adjusting screw until a very slight drag is felt when slowly turning the gear through mid-position. While holding the adjusting screw, tighten the lock nut. Recheck the drag at the wheel through full travel of gear.
5. Replace the drag link and check for binding.

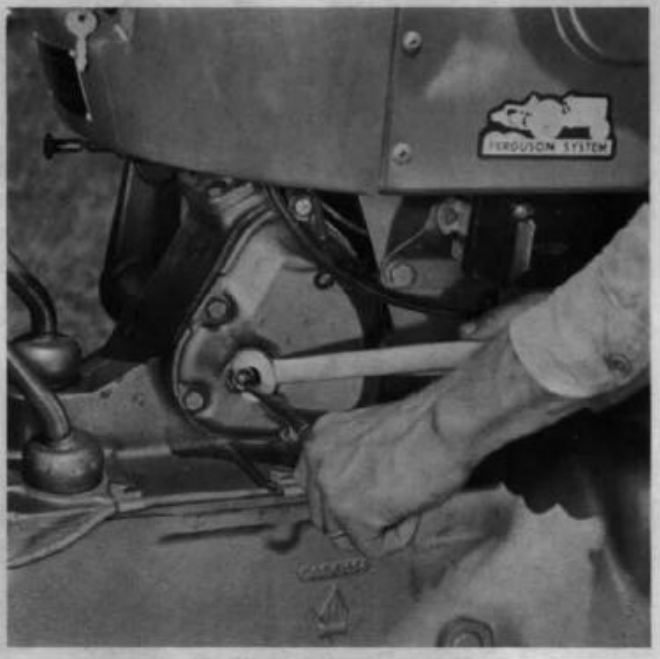


Checking Oil Level in the Steering Gear Housing

POWER STEERING

The power steering system is composed of a pump, reservoir, power cylinder, control valve and the necessary hoses and linkage.

The power cylinder and control valve mounted next to the pedestal are the external type; that is, they are not integral with the steering housing. By opening the grille service door, the adjustments on the power steering mechanism may be readily made.



Adjusting Steering Assembly Backlash

To adjust the power steering system:

1. With the engine running at 1500 RPM tighten the valve adjusting pin until it bottoms.
2. Adjust control valve linkage so that pin can be inserted freely.
3. Back off adjusting pin 7 turns and lock securely with lock nut. This provides a pin clearance of .040 in.

The hydraulic pump reservoir has a capacity of approximately 3 1/3 pints of Type "A" Automatic Transmission Fluid. Maintain the oil level in the reservoir to the full mark on the dip stick. The oil filter need not be replaced unless damaged.

TIRE INFLATION AND CARE

Correct tire inflation is the most important factor in long tire life. Both under and over inflation have detrimental effects on the casing. The tire pressures given in the specification section are recommended for your Tractor.

RECOMMENDED TIRE PRESSURE

	FRONT	
5.50-16	24 lbs. min.	28 lbs. max.
6.00-16	24 lbs. min.	28 lbs. max.
7.50-10	24 lbs. min.	28 lbs. max.
	REAR	
11-38	12 lbs. min.	14 lbs. max.
12-28	14 lbs. min.	16 lbs. max.
12-38	14 lbs. min.	16 lbs. max.
13-28	14 lbs. min.	16 lbs. max.

Without any additional weight on a wheel, the recommended pressure should be the minimum pressure as given in the above table. For each additional 100 lbs. added per wheel, add 1 lb. air pressure up to the maximum recommended pressure.

UNDER-INFLATION WILL CAUSE:

1. Damage to cord body resulting in breakage of cord fabric or side wall.
2. Difficult steering and poor braking control
3. Tire slippage on rim which may tear off valve stem.
4. Irregular or uneven tire wear.
5. Unnatural tire distortion on hard roads; wiping off tread bar rubber on highly abrasive or unyielding road surfaces.

OVER-INFLATION WILL CAUSE:

1. Excessive tread wear.
2. Loss of traction and increased slippage.
3. Increased packing of soil; rut formations.
4. Casings more susceptible to bruises and impact breaks.

TROUBLE SHOOTING

ENGINE CRANKING FAILURE

1. Planetary gear shift lever not in "S" 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

1. Fuel shut-off control rod in the "off" position.
2. Lack of fuel in the fuel tank. Fill the fuel tank and air bleed the system.
3. Fuel tank sediment bowl shut-off valve in the "off" position.
4. Fuel filters "clogged". Replace both the first and second stage filter elements and air bleed the system.
5. Injection pump failure. Have your MF Dealer replace the pump.
6. Faulty injector assembly. Have your MF Dealer test and service or replace the injector assembly.
7. Injection pump timing incorrect. Have your MF Dealer correctly time the pump.
8. Excessive air in the fuel system. Air bleed the entire fuel system.
9. Injection pump idle speed set too low. Adjust the injection pump idle speed stop screw.

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. Leaking starting aid.
3. Faulty injectors.
4. Faulty injection pump.

EXCESSIVE ENGINE EXHAUST SMOKE

1. Faulty injectors.
2. Incorrect injection pump timing.
3. Leaking starting aid.
4. Clogged air cleaner.
5. Improper valve adjustment.
6. Burned, worn or sticking valves.
7. Excessive operation at low idle speed or loads.

Cold Weather Starting

1. Starting aid fuel reservoir tank and feed lines plugged. Clean and/or replace
2. Starting aid faulty. Replace unit.
3. Starting and electrical lead broken, shorted or broken wire. Check connections and replace wire if necessary.

Injection Pump Maximum Speed Incorrect

1. Throttle linkage damaged. Replace and adjust linkage.
2. Faulty injection pump governor. Have your MF Dealer install a new pump.

LOSS OF POWER

1. Plugged fuel filter.
2. Worn rings, pistons or sleeves, burned or sticking valves.
3. Faulty injection pump governor action.
4. Faulty throttle or governor linkage.
5. Blown head gasket.
6. Brakes dragging.
7. Improper valve adjustment.
8. Connecting rod or main bearings too tight.
9. Clogged air cleaner.
10. Fuel shut-off rod linkage incorrect.
11. Faulty pump timing.

EXCESSIVE FUEL CONSUMPTION

1. Faulty injectors.
2. Pump timing incorrect.
3. Excessive fuel pressure line leakage.
4. Throttle linkage not correct.
5. Burned, worn or sticking valves.
6. Worn pistons, rings or sleeves.
7. Improper valve adjustment, worn or bent push rods.
8. Engine over-heating.
9. Clutch slippage.
10. Brakes dragging.
11. Excessive exhaust back pressure.
12. Faulty cooling system thermostat.
13. Leaking starting aid.
14. 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 filters.
6. Water in fuel.

INJECTION PUMP IDLE SPEED INCORRECT

1. Idle speed stop screw adjusted incorrectly. Reset stop screw 500 to 550 RPM.
2. Improper pump timing. Have your injection pump timed by your MF Dealer.

ENGINE WILL NOT STOP

1. Fuel shut-off rod linkage incorrect. Readjust linkage.
2. Improper pump functioning. Have your MF Dealer replace the pump.

ENGINE KNOCK

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

Accessories

The accessory items listed and illustrated in this section of the manual were designed and developed to assist in making your work easier, more profitable and more enjoyable. These accessories will help you adapt your tractor to a wide range of specialized operations. The authorized Massey-Ferguson Dealer in your community carries a complete stock of these accessories and will be pleased to serve you. Do not hesitate to call on him whenever any need or question arises regarding your equipment. Remember your Massey-Ferguson Dealer's goal is to serve you better.

VERTICAL MUFFLER KIT

In some dry conditions such as stubble fields it may be hazardous to use the rear exhaust pipe. In these and other conditions, where desired, the rear exhaust pipe may be removed and the vertical muffler kit installed.

To install the vertical muffler kit:

1. Remove the rear exhaust pipe and muffler assembly.
2. Using a new gasket install the elbow from the vertical muffler kit on the engine exhaust manifold flange as shown and tighten the nuts.
3. Install the vertical muffler and pipe and tighten the clamps.

PRESSURE TYPE GREASE GUN

The grease gun is a heavy duty lever action type with a maximum pressure of 10,000 lbs. It is spring and force-primed and pumps all pressure-gun lubricants in any weather. Finished in rust-resistant, high gloss gun metal blue. Reloads with force suction. Wipe off any excess grease after lubrication is completed.

IMPLEMENT SAFETY LAMP KIT

The implement safety lamp kit includes the lamp with a combination mounting bracket and cable reel, a 25-foot cable with break-away socket, two mounting brackets and two strips of Scotchlite reflective tape. The lamp is equipped with one amber and one red lens. When the lamp is in use the red lens must always face directly to the rear.

If the tractor and either a mounted or trailing implement are to be driven on the road or highway at any time when automobiles traveling the highway require lights, the tractor lights must



Implement Safety Lamp

be on and the implement safety lamp must be mounted on the rearmost corner of the implement on the side nearest opposite lane of traffic. The kit contains convenient brackets for this purpose. If additional brackets are desired they are available from your Massey-Ferguson Dealer.

NOTE: Whenever equipment is being driven on a public road or highway, the lighting of the equipment must conform to the state regulations governing this for the state in which the equipment is being operated.

When the safety lamp is not in use, the cable should be coiled on the reel and the assembly mounted on the tail lamp bracket as shown. The two strips of Scotchlite reflective tape should be used to define the outside extremities of the rear surface of the implement.



Trouble Lamp, Tail Lamp, and License Bracket

TAIL LAMP AND LICENSE BRACKET

For those operators who are required to license their tractors, there is available a tail lamp and bracket and a license bracket. The license bracket attached to the tail lamp bracket and the clear lens in the top of the tail lamp provides the proper illumination of the license plate.

TROUBLE LAMP

The trouble lamp is equipped with a long cord and plug which fits the break away socket located under the tail lamp. The lamp is equipped with an adjustable shield and a variety of attaching clips and brackets so that it may be properly positioned in the desired location.

TRACTOR JACK

In order to facilitate positioning of the tractor wheels a convenient tractor jack is available from your local Massey-Ferguson Dealer. This jack is in two sections, one section for the front wheels and one section for the rear wheels. The tractor jack is of tubular frame construction and is available in two sizes, one for the standard tractor and the other for the high clearance models.

To attach jack:

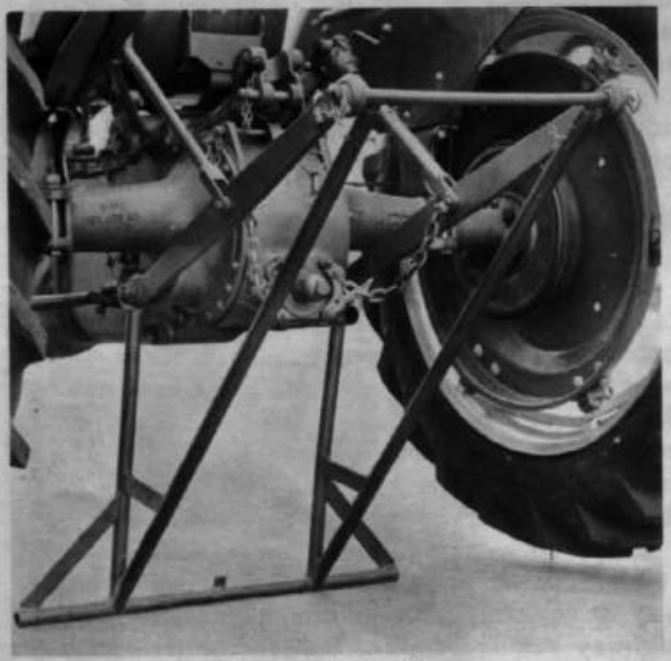
1. Lower the lower links with the hydralever.
2. Place the jack sockets under the front end of the lower links.



Tractor Jack Front View

3. Attach the tractor lower links to the pins and secure with linch pins. Be sure lower links are in level position.
4. Adjust the length of front section jack by turning the threaded pin in or out as required.

NOTE: The front section of the jack must be adjusted to the proper length and placed at an angle to the front to raise the front wheels as the rear section of the jack moves the tractor forward.



Tractor Jack Rear View

5. Place the front section of the jack under the main front support and locate the jack pin in the hole in front main support casting. The rear section of the jack may be used separately if only the rear wheels are to be raised.

To raise the tractor start engine and raise the hydralever slowly until the desired height is reached.

CAUTION: To hold the tractor in a predetermined position it is recommended that the engine be operated at idle speed during the time wheel settings are being changed or wheels removed.

EXTERNAL HYDRAULIC CONTROL VALVES

Two separate options are available: (1) A "double spool" valve and (2) A third "spool" which can be attached to the right-hand side of the double spool valve, making it a "triple" spool valve. Either option provides open center control of both single and double acting external cylinders.

OBTAINING ADDITIONAL TRACTION

Under certain conditions it is desirable to have increased weight on either the front or rear wheels or both in order to efficiently operate and control your tractor.

LIQUID FILL

For some operations, it is desirable to have additional weight to increase traction. The most practical and popular method of adding weight is to liquid-fill the tires. This procedure adds weight where it is most beneficial. A calcium chloride solution is better adapted than water because it has a lower freezing point and a higher specific gravity.

It should be pointed out, however, that unnecessary weight causes extra load resulting in higher fuel consumption.

TRACTOR FRONT WEIGHT KIT

A front weight kit consisting of a mounted frame and 60-pound hand weights is available to offset decreased steering traction created by heavy overhanging implements mounted on the tractor rear links.

To compensate for this relative reduction in front end weight, the use of the front weight kit may be desirable. The front frame is so designed and constructed as to accept 8 of the hand weights for a total of 480 additional pounds front end weight.



Tractor Front Weight Kit Installed

FRONT WHEEL WEIGHTS

When heavy overhanging implements are mounted on the rear of the tractor, the weight on the front wheels is reduced, resulting in decreased steering traction. This condition is especially noticeable when crossing headland furrows or ridges such as corn rows, etc., as the bouncing action reduces, even more, the weight on the front wheels.

To compensate for this relative reduction in front end weight, the use of front wheel weights may be desirable. These weights are installed in the concave side of the wheel discs. For the 5.50 and 6.00-16 tires, the weight is in two segments as shown in the illustration and the wheel need not be removed to install the weights.



Front Wheel Weights

CAUTION: Inspect regularly to see if wheel weights are bolted tight to the discs.

REAR WHEEL WEIGHTS

The rear wheel weight kit is composed of an adapter ring and as many disc-type weights as required to provide the desired weight. The adapter ring, which weighs approximately 50 pounds, attaches to the wheel disc with four bolts. The first weight is bolted to the adapter ring, the second weight is bolted to the first weight and so on until the desired weight is obtained. Each of the disc type weights weigh approximately 75 pounds.

There are three adapter rings available. One for use on the 38-inch wheel in either position, a second for use on the 28-inch wheel in its nominal position, and a third for use on the 28-inch wheel when the disc is reversed on the hub.

Wheel Weight Installation

The P.A.V.T rear wheel weights are installed as follows:

1. Insert the four 2-1/4 x 5/8 carriage-head bolts through the four holes provided in the wheel disc and turn the knurled rings on the bolts finger tight to hold them in position.

2. Place the adapter ring over the four bolts and secure it with the nuts provided.



Install Carriage Bolts in Disc
1. Knurled Ring

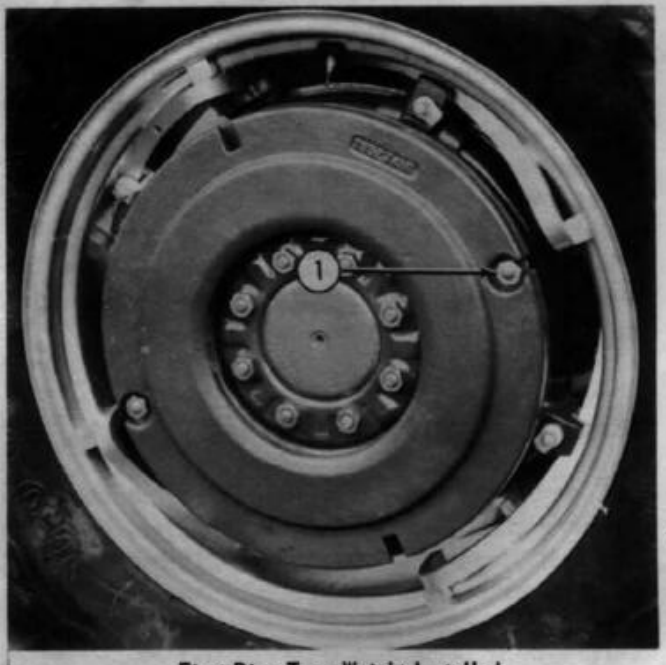


Adapter Ring Installed

3. Place the first weight in position on the adapter ring and secure it with the carriage bolts and nuts provided.

NOTE: If weights are to be mounted more than eight deep, the first eight weights must be attached with four bolts each. Any additional weights, or less than eight weights, may be secured with only two bolts if desired.

4. Install additional weights in the same manner as the first one was installed.



First Disc Type Weight Installed
1. First Weight attaching bolts



A Standard Tractor Equipped with Dual Rear Wheels



Dual Wheel Spacer Kit
1. Inner Wheel Disc
2. Extension nut
3. Spacer

DUAL REAR WHEELS

When operating in some areas where a loose textured soil is encountered, excessive rear wheel slippage may result. To help overcome this condition, a dual wheel kit for either the 12 or 13-inch tire size is available. The kit makes it possible to mount two wheel assemblies on each side of the rear axle. This will double the surface area reacting against the soil and consequently result in increased traction.

The kit consists of two ring spacers to space the wheel assemblies apart and 16 spacer nuts.

To install proceed as follows:

1. Raise the rear of the tractor with the tractor jack.
2. Remove the nuts securing the wheel disc to the hub.
3. Install the extension nuts and tighten them to 160 - 180 ft. lbs. torque.
4. Place the spacers on the extension nuts.
5. Secure the outer wheel with the eight nuts and tighten to

NOTE: In order to install the outer wheel the correct setting must be made before installation. If not, it will be impossible to mount the wheel.

When installing dual rear P.A.V.T. wheels with 12-28 or 13-28 tires on a standard clearance tractor the inner-wheel-disc-to-rim relation should be set at the 52-inch wheel tread setting and the outer wheel set at the following rim relationships and installed with the disc hubs back to back. The following table also indicates the maximum and minimum dual wheel widths.

IMPORTANT: Frequent checks of the dual wheel assembly for stones or sharp objects lodged between the tires will help prevent tire damage.

DUAL WHEEL TREAD SETTINGS

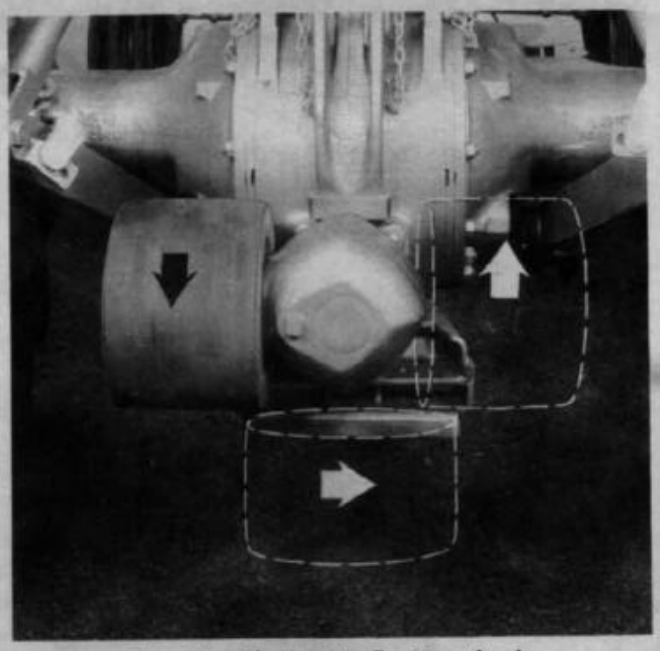
12-28	52 in.	52 in.	106 in. max.
12-28	52 in.	56 in.	102 in. min.
13-28	52 in.	52 in.	108 in. max.
13-28	52 in.	56 in.	104 in. min.

BELT PULLEYS

There are two belt pulley attachments available for use on your MF 65 Tractor. The small or "Light Duty" assembly is recommended to be used when light and short time pulley work is anticipated. If the pulley is to be used for long and continuous heavy work, the large or "Heavy Duty" assembly is recommended.

Both pulley assemblies are separate self-contained units which attach to the rear of the tractor center housing. The pulley is driven by the power take-off shaft and is controlled by the PTO shift lever.

The ratio of speeds of the pulley to the PTO shaft and engine is 1.84 to 1 and 1 to 1.51 res-



Three Possible Mounting Positions for the "Light Duty" Belt Pulley

pectively. The pulley speed at 1,990 engine RPM is 1,316 RPM resulting in a belt speed of 3,100 feet per minute (theoretical).

SMALL "LIGHT DUTY" PULLEY

To attach the small or "Light Duty" pulley assembly:

1. Remove the power take-off cap.
2. Remove the check chain anchor brackets from the rear of the tractor center housing.
3. Mount the pulley with the four cap screws in any of three positions shown. The two horizontal positions will provide the correct direction of rotation without twisting the belt.



"Heavy Duty" Belt Pulley Adapter Kit

1. Adapter Housing 2. PTO Extension 3. Retaining pin

CAUTION: 1. Do not force the pulley when mounting. If binding exists find out the cause. Forcing the pulley may cause breakage.

2. Never install the pulley in the "up" position as the top bearing will not receive proper lubrication.

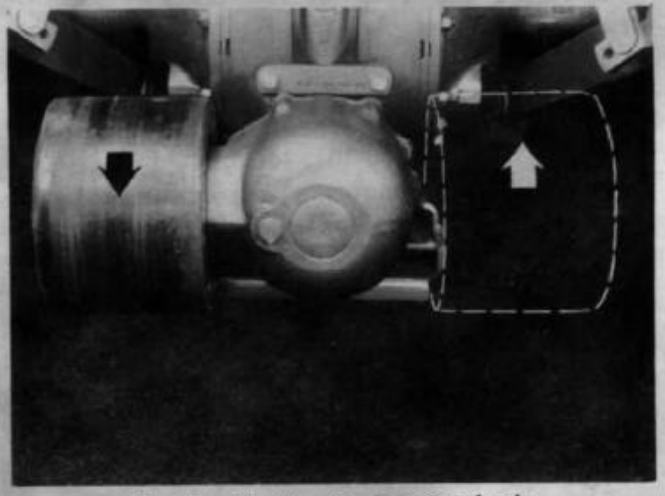
3. Lubrication – maintain oil level to filler plug opening. Use SAE #80 straight mineral oil. (Hydraulic system oil).

LARGE "HEAVY DUTY" PULLEY

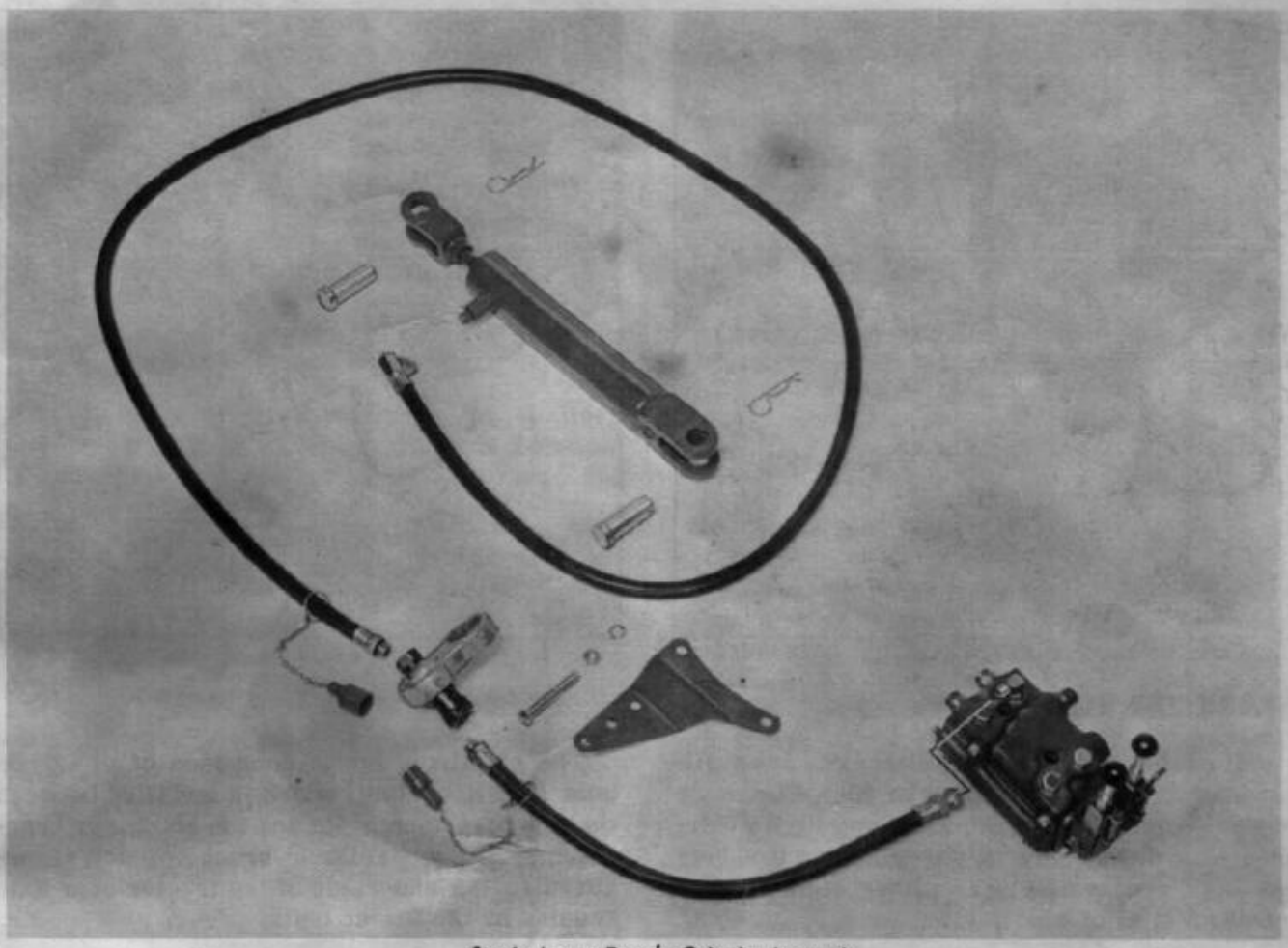
In order to attach the large belt pulley assembly to the tractor it is necessary to use the special pulley adapter kit. This kit consists of the PTO extension and the belt pulley adapter housing.

To attach the large or "Heavy Duty" belt pulley assembly:

1. Remove the power take-off cap.
2. Position the PTO extension on the tractor PTO shaft and secure it with the machine screw provided.
3. Remove the nuts from the four anchor bracket retaining studs and position the adapter housing on the studs as shown and tighten the nuts.
4. Detach the check chains from the anchor brackets.
5. Remove the pin from the adapter housing and position the belt pulley in either of the two positions shown. Install the pin in the adapter housing and install the linch pin.



Two Possible Mounting Positions for the "Heavy Duty" Belt Pulley



Single Acting Remote Cylinder Assembly.

CAUTION: 1. Do not force the pulley when mounting. If binding exists find out the cause. Forcing the pulley may cause breakage.

2. Lubrication – maintain oil level to filler plug opening. Use SAE #80 straight mineral oil. (Hydraulic system oil).

3. Be sure to replace the tractor PTO cap and reinstall the lower link check chains when the belt pulley is removed.

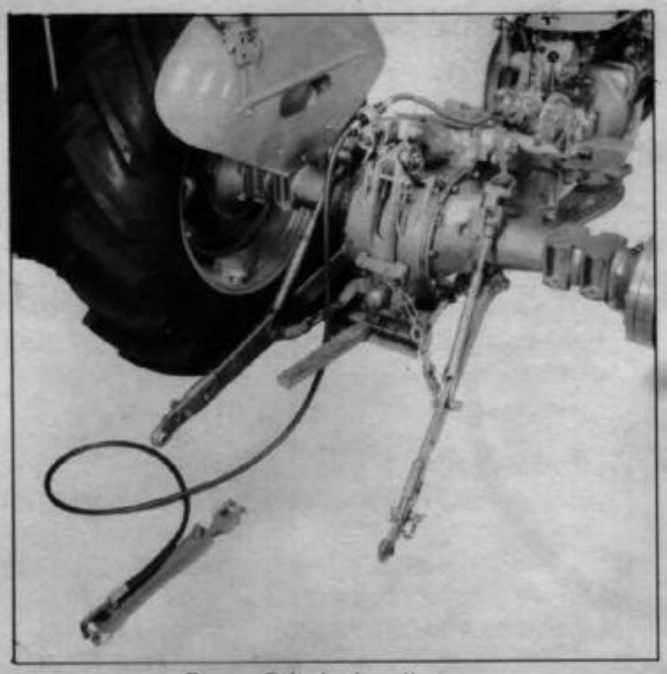
To determine the diameter of the driven pulley necessary to obtain a given RPM, refer to the right hand side of the table. Note that there is a choice of pulley sizes for any one pulley rate; however, each size is based on a specific engine RPM. In most cases the engine RPM required to operate the belt equipment will be determined to a large degree by the horsepower or load requirements of the equipment. In general, the greater the load involved, the more horsepower will be required, and consequently a higher engine RPM will be necessary.

CAUTION: To avoid static electricity when using the belt and pulley, ground the tractor by wrapping a chain around the front axle and drop one end on the ground.

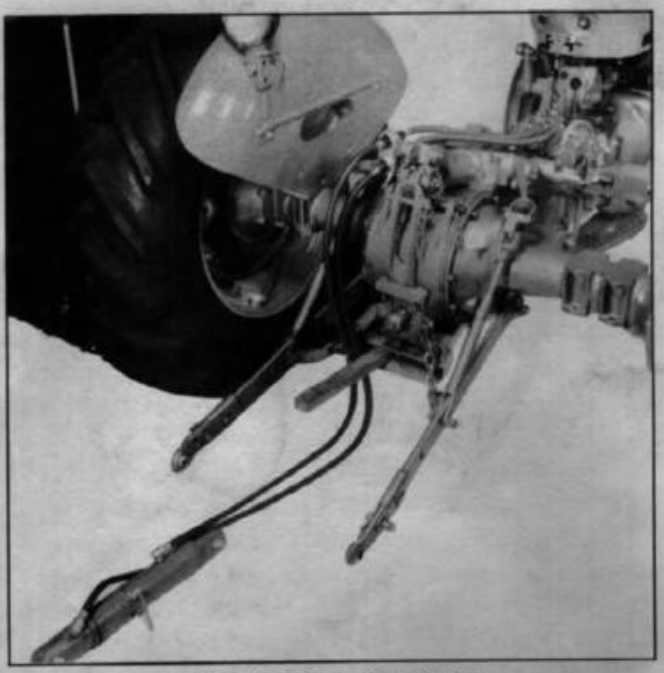
REMOTE CYLINDER KIT

There are two remote hydraulic control cylinder kits that may be installed to your tractor by using extension hoses connected directly to a single or a double spool valve. When a "Two spool valve" is used the remote cylinders may be operated separately or in conjunction with the hydraulic lift.

NOTE: Directions for the installation of the remote control cylinder will be found in the control cylinder kit.



Remote Cylinder Installation



Remote Cylinder Installation

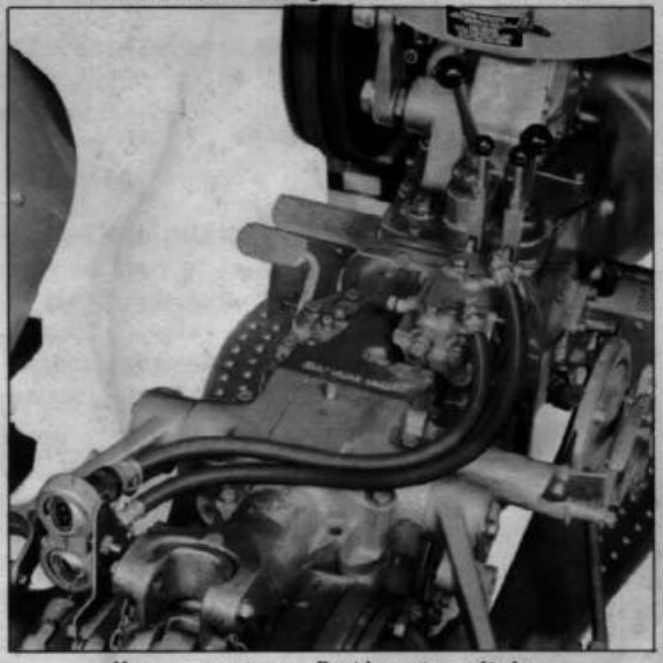
STABILIZER KITS

Adjustable lower link stabilizer kits are available for either the Standard or High Clearance Model Tractors. The Standard and High Clearance kits differ only in the mounting brackets and both are available as either right-hand or left-hand kits.

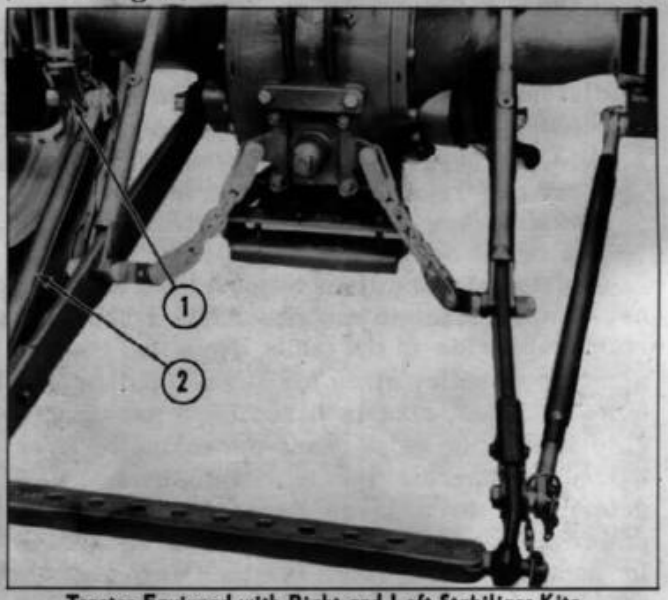
IMPORTANT: Always check your implement manual to determine whether stabilizers are recommended for use with the implement. The left and right stabilizer kits may be used individually or together as required.

The stabilizer kit is composed of an adjustable stabilizer link, which is installed between the link stay anchor pin and the stabilizer bracket pin, and a stabilizer bracket which is secured to the underside of the tractor rear axle housing by the fender bolts.

NOTE: Attach the stabilizer bracket with the pin forward of center and pointing inward as illustrated. The brackets are left and right and cannot be interchanged.

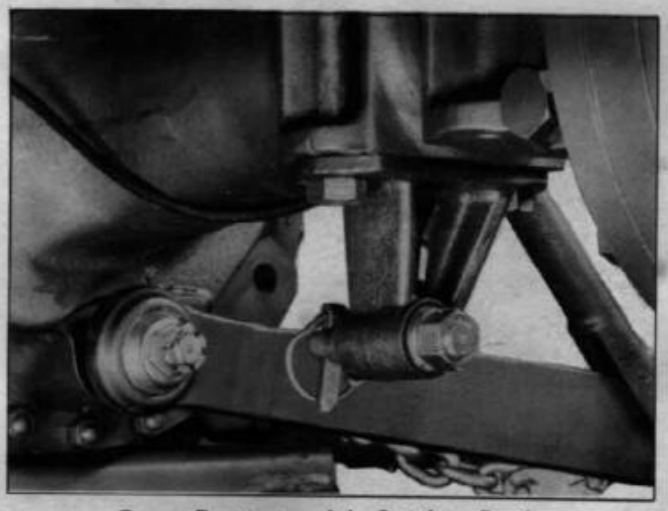


Hose connections – Double acting cylinder.



Tractor Equipped with Right and Left Stabilizer Kits

1. Stabilizer Bracket
2. Stabilizer Link



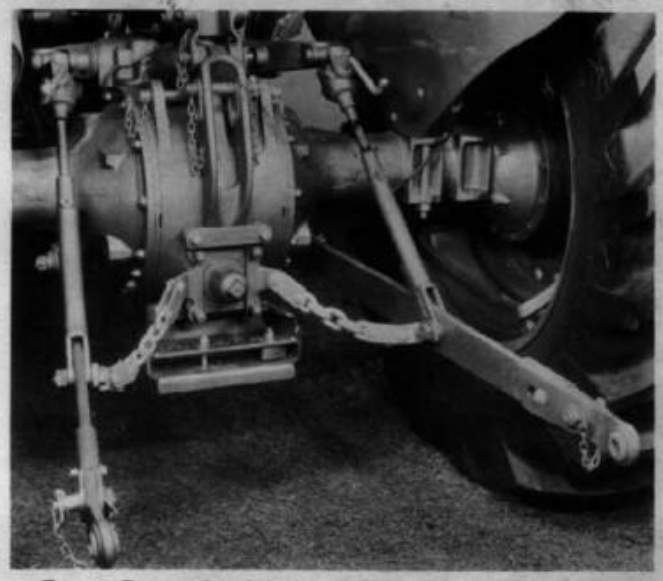
Correct Positioning of the Stabilizer Bracket

The tubular, turnbuckle style stabilizer link is adjustable from 29-1/4 to 34-1/16 inches. After the stabilizer link has been installed and secured on the attaching pins it can be conveniently lengthened or shortened by turning the center section to properly position the implement.

Lift Leveling Kit

A leveling box to replace the lift rod on the left side of the tractor is available and should be used for control of the tractor lower links when the rear tool bar is used with a mid-mounted cultivator. The two leveling boxes will permit the selection of a proper depth relationship between the front and rear gangs.

NOTE: Leveling box assemblies for hi-clearance and standard models are of different lengths, therefore, be sure proper leveling box is specified.



Tractor Equipped with Left and Right Lift Leveling Boxes

STRAIGHT DRAWBAR

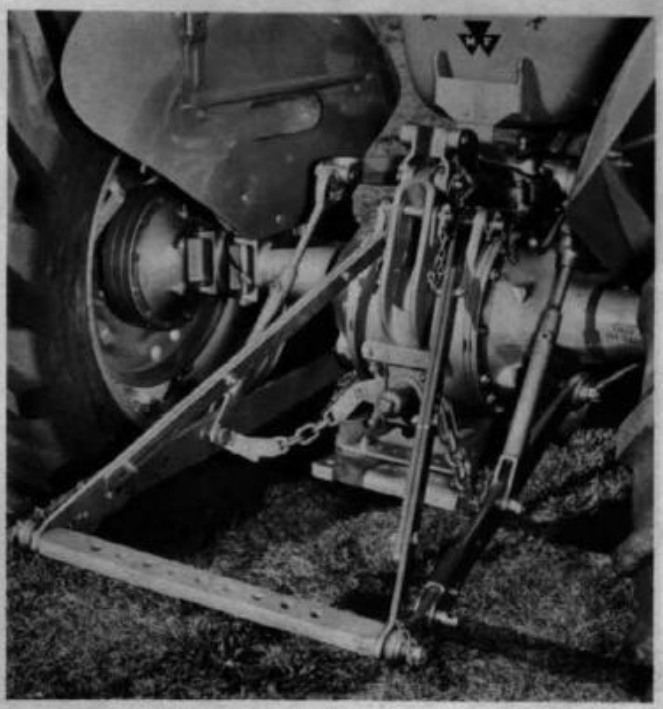
A universal, straight-type drawbar is available for use on your MF 65 Tractor. The nine holes permit a lateral adjustment and the adjustable drawbar stay links furnished make it possible to adjust the height of the draw bar to adapt to the height of the implement.

The straight drawbar is available only with the 7/8 inch diameter attaching pins and should be used only when the tractor lower links are equipped with the 7/8 inch ball ends.

CAUTION: Never pull from the upper link connections or use the straight drawbar without stay links.

To attach the drawbar:

1. Remove the hinged hitch pin at the rear of the tractor center housing.
2. Lower the lower links and level them.
3. Place the drawbar on the ground and attach the stay links to the drawbar ends. Lift and set the assembly on the tractor lower links.
4. Pin the top of the stay links to the tractor center housing by installing the hinged hitch pin. Secure the hitch pin with the linch pin.
5. Place the ends of the drawbar, one at a time, in the ball joints of the lower links and fasten with linch pins.
6. Adjust the drawbar to the desired height by loosening the bolts on the stay links and lengthening or shortening as required. The



Straight Drawbar with Stay Links

standard height is obtained when the notches on the stay links line up. Tighten bolts securely.

CAUTION: Always make sure the drawbar is adjusted low enough that sufficent weight remains on the front wheels for steering and safety.

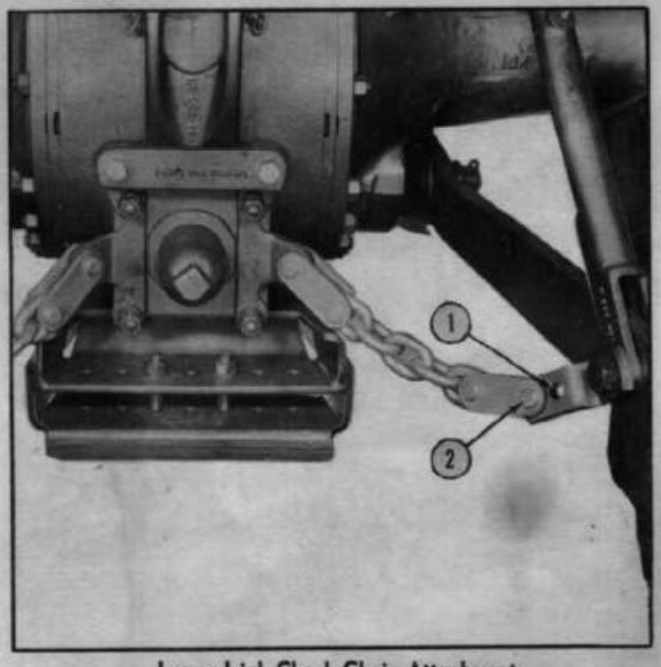
THREE POINT HITCH CONVERSION

When you receive your new MF 65 Tractor, the three-point hitch will conform to what is referred to as Category 1. The lower link ball ends will be the correct size to accept the 7/8 inch diameter implement hitch pin and the lower link check chains properly installed for attaching to an implement where the hitch pin spacing is 28-1/4 inches center to center.

To conform to Category 2 the lower link ball ends are the correct size to accept a 1-1/8 inch diameter implement hitch pin and the hitch pins are spaced 34-3/4 inches center to center. The upper link pin diameter for Category 1 is 3/4 inch and for Category 2 is 1 inch.

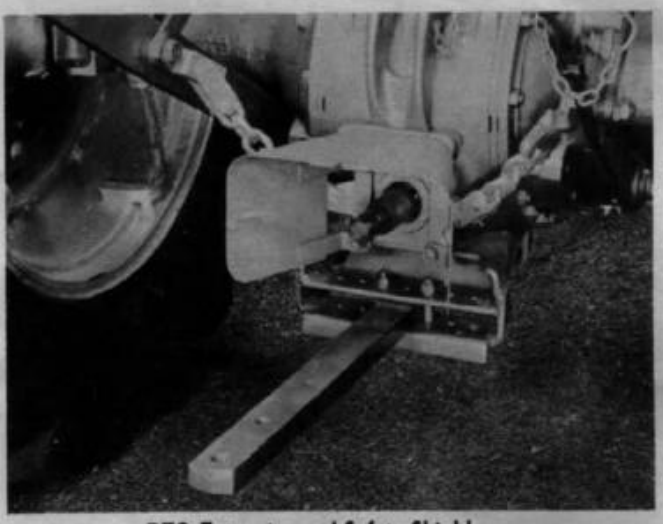
If it is desired to convert the tractor lower links to fit an implement with a Category 2 hitch, there are available link ball ends for the 1-1/8 inch diameter implement hitch pins, which are interchangeable with the original link ball ends, and may be used to convert the lower links.

If it is desired to attach an implement with a Category 2 hitch, besides installing the link ball ends, it will also be necessary to move the check chain attaching pin to the outer hole in the bracket which attaches it to the lower link, as shown.



Lower Link Check Chain Attachment

1. For "Category 1" 2. For "Category 2"



PTO Extension and Safety Shield

POWER TAKE-OFF SAFETY SHIELD

To provide adequate protection when operating mounted PTO-driven implements, a short accessory PTO shield is available. The shield attaches to the four check anchor bracket studs as shown.

The short PTO safety shield may also be used when operating pull-type PTO driven implements with the swinging drawbar in the forward position and the implement PTO shaft connected directly to the tractor PTO shaft. However, this drawbar-PTO combination is not recommended for use where short turns for the combined tractor and implement are anticipated.

CAUTION: Always keep the PTO safety shield in place when operating PTO driven equipment.

POWER TAKE-OFF EXTENSION AND SHIELD

When using your tractor with most pull-type power take-off operated equipment it is recommended that the swinging drawbar be placed in the rearmost position and the PTO extension and safety shield installed. This arrangement places the hitch point further to the rear thus providing for a shorter turning radius for the combined tractor and implement.

CAUTION: Always replace the tractor PTO cap when the PTO shaft is not in use.

Specifications

CAPACITIES:

Fuel Tank	17 U.S. or 14.15 Imp. gallons
Cooling System	10 U.S., or 8 Imp. gallons
Crankcase	7 U.S. or 5.8 Imp. quarts
	7-1/2 U.S. or 6.3 Imp. quarts with filter change
Differential, Transmission and Hydraulic System	8 U.S. or 6.6 Imp. gallons
Power Steering Reservoir	3.33 U.S., or 2.74 Imp. pints
Air Cleaner Oil Bath	1 U.S., or .83 Imp. quarts
Rear Axle Planetary	1 U.S., or .83 Imp. quarts
Steering Gear Housing	1.5 U.S., or 1.25 Imp. pints

ENGINE:

Model	4A-203
Cylinders	4
Bore	3.6 inches
Stroke	5.0 inches
Piston Displacement	203.5 inches
Compression Ratio	17.4 to 1
Firing Order	1, 3, 4, 2
Intake Valve Clearance	.010 inch (hot)
Exhaust Valve Clearance	.010 inch (hot)
Speed at Crankshaft	
Full throttle no load	2100 - 2150 RPM
Full throttle full load	2000 - 2050 RPM
Low Idle	500 - 550 RPM
PTO Low Idle	180 - 198 RPM
PTO High Idle	756 - 774 RPM

TORQUE WRENCH TENSION

Cylinder Head Nuts	55-60 ft. pounds
Connecting Rod Nuts	70 to 120 ft. pounds
Main Bearing Cap Screws	100-110 ft. pounds
Manifold Retaining Studs	14-18 ft. pounds

Governor -- Integral with injection pump.

Oil Filter -- Full flow replaceable cartridge type.

Cooling -- Circulation by centrifugal type pump with recirculating passage. Flow controlled thermostatically through tube and fin type radiator.

Cold Weather Starting Aid -- 12 volt cold starting equipment fitted into the intake manifold.

Air Cleaner Type -- Oil bath.

INJECTION PUMP

Model	CAV Type DPA
Type	Distributor
Speed	Camshaft
Timing	20° BTDC

ELECTRICAL

Battery -- 12 volt 96 ampere hour negatively grounded.

Starting Motor -- 12 volt - 4 pole.

Generator -- 12 volt 3 brush shunt-wound output 10-12 amps.

POWER TRAIN

Clutch -- Dual dry disc.

Transmission -- Constant mesh helical primary reduction gears with spur-type speed change gears. Transmission connected to planetary gear assembly providing six speeds forward two reverse.

Differential -- Pinion and planetary gear reduction unit, spiral bevel with straddle mounted pinion coupled with a planetary gear set, provides 3.143 to 1 gear reduction.

HYDRAULIC SYSTEM

Pump -- 4 cylinder, piston type scotch yoke driven, develops up to 2500 psi.

Pump Capacity -- 4.76 gallons per minute at 2000 rpm.

Lift Cylinder -- Diameter 3.0 inches.

Controls -- Oscillating type valve located on the inlet side of the pump.

POWER TAKE OFF

Shaft -- ASAE standard 1-3/8 inches diameter spline shaft, snap ring groove attaching.

Control -- 3 position shift lever. 1. Engine speed PTO. 2. Ground speed PTO. 3. Neutral.

POWER STEERING

Pump—spur gear type capacity 4 1/2 gallons per minute.
Control—spool type valve

BRAKES

Double internal expanding disc - diameter 7 inches 155 square inches braking area mechanically operated together or independently.

WHEEL BASES

Standard Model	83.99 inches
Hi-arch model	84.65 inches
Tricycle twin front	86.89 inches
Tricycle single front	87.89 inches

OVERALL LENGTH

Standard model	124.24 inches
High-arch model	128.65 inches
Tricycle twin front	131.40 inches
Tricycle single front	131.16 inches

NORMAL TREAD (FRONT)

48 inches

NORMAL TREAD (REAR)

52 inches

OVERALL WIDTH (REAR)

72.13 inches
all models except orchard model

OVERALL HEIGHT

Standard model	57.00 inches
Hi-clearance models	63.63 inches

GROUND CLEARANCE

Standard model	14.32 inches
Hi-clearance model	20.13 inches

UNDER FRONT AXLE

Standard model	20.6 inches
Hi-Clearance Model	27.1 inches

BELT PULLEY SPEEDS

Engine RPM	PTO RPM	Pulley RPM	Belt Speed (ft/min)	600	800	1000	1400	1800	2200	2600	3000	3400
1000	360	662	1547	10	7 1/2	6	4 1/2	3 1/2				
1200	432	795	1859	12	9	7 1/2	5	4	3 1/2			
1400	504	927	2165	14	10 1/2	8 1/2	6	4 1/2	4	3 1/2		
1600	576	1060	2478	16	12	9 1/2	7	5 1/2	4 1/2	3 1/2		
1700	611	1127	2632	17	13	10 1/2	7 1/2	5 1/2	4 1/2	4	3 1/2	
1800	648	1192	2788	18	13 1/2	11	8	6	5	4	3 1/2	
1900	684	1250	2920	19	14 1/2	11 1/2	8	6 1/2	5	4 1/2	4	3 1/2
2000	720	1325	3097	20	15	12	8 1/2	6 1/2	5 1/2	4 1/2	4	3 1/2
2100	756	1391	3253	21	16	12 1/2	9	7	6	5	4 1/2	4

This table is based on an average slippage loss of 3% between the drive and driven pulleys at all speeds. However, it should be noted that as the diameter of a pulley decreases the per cent of slippage will increase; thus pulleys smaller than 1 1/2 in. should not be used unless absolutely necessary.

NOTES

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