



Operator's Manual

FORM NO. 432 116

ISSUED MAY, 1963

550 TRACTOR

550 TRACTOR





OLIVER CORPORATION

CHARLES CITY, IOWA

WHEEL TRACTOR

Tractor Model _____ Serial Number _____ Engine Number _____

Dealer's Name & Address _____

Owner's Name & Address _____

150 HOUR SERVICE POLICY CHECK

COOLING SYSTEM

- ☐ Check Coolant Level In Radiator
- ☐ Check For Anti-Freeze Protection _____ °
- ☐ Thoroughly Check For Leaks
- ☐ Check Fan Belt Tension

FUEL SYSTEM

- ☐ Check And Clean Sediment Bowl (Gasoline)
- ☐ Check Air Intake Connections
- ☐ Check Air Cleaner
- ☐ Check Carburetor Adjustments (Gasoline)
- ☐ Check Fuel Stop (Diesel)
- ☐ Check Nozzle Opening Pressures (Diesel)
- ☐ Check Timing (Diesel)

ELECTRICAL SYSTEM

- ☐ Check Battery Specific Gravity
And Electrolyte Level
- ☐ Check Operation Of All Switches And Lights
- ☐ Check Operation Of Generator And Starter Motor
- ☐ Check Operation Of Preheater (Diesel)

IGNITION SYSTEM

- ☐ Check Spark Plug Gap
- ☐ Check Distributor Point Gap And Timing

ENGINE

- ☐ Check Oil Pressure At Operating Temperature
- ☐ Check Idle Speed
- ☐ Check High No Load Speed
- ☐ Torque Cylinder Head Cap Screws And
Adjust Valve Tappet Clearance

LUBRICATION

- ☐ Check All Oil Levels
 - ☐ Air Cleaner
 - ☐ Crankcase
 - ☐ Hydraulic System
 - ☐ Transmission
- ☐ Belt Pulley
- ☐ Manual Steering Gear
- ☐ Power Steering Pump
Reservoir
- ☐ Lubricate All Grease Fittings
- ☐ Lubricate Distributor And Starting Motor

GENERAL

- ☐ Check Tire Inflation Pressures
- ☐ Check PTO Control Lever Safety Latch Adjustment
- ☐ Check Seat Adjustment For Free Movement
- ☐ Check And Tighten All Accessible Screws,
Nuts And Cap Screws
- ☐ Check All Gauges
- ☐ Check Front Wheel Bearing Grease And
Adjust Bearings
- ☐ Check Front Wheel Toe In

OPERATION

- ☐ Check Engine Clutch Operation
- ☐ Check Belt Pulley And PTO Operation
- ☐ Test Hydraulic System Operation
- ☐ Test Steering
- ☐ Test Brakes
- ☐ The Thoroughness Of The Owner's Care And
Operation Has Been Observed And Any Failures
To Comply With Operating Instructions Have
Been Discussed With Him

Dealer's Signature

Owner's Signature

Date

Dealer Copy

IX



BE CAREFUL

1. KEEP ALL SHIELDS IN PLACE.
2. STOP MACHINE TO ADJUST AND OIL.
3. WHEN MECHANISM BECOMES CLOGGED, DISCONNECT POWER BEFORE CLEANING.
4. KEEP HANDS, FEET AND CLOTHING AWAY FROM POWER DRIVEN PARTS.
5. KEEP OFF IMPLEMENT UNLESS SEAT OR PLATFORM IS PROVIDED. KEEP OTHERS OFF.



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SAFETY RULES

1. REMEMBER A CAREFUL OPERATOR ALWAYS IS THE BEST INSURANCE AGAINST AN ACCIDENT.
2. NEVER REFUEL TRACTOR WHEN ENGINE IS HOT OR RUNNING. DO NOT SMOKE WHEN REFUELING.
3. BE SURE ALL TRACTOR DRIVES ARE IN NEUTRAL BEFORE STARTING ENGINE.
4. ENGAGE THE CLUTCH GENTLY, ESPECIALLY WHEN GOING UP HILL OR PULLING OUT OF A DITCH.
5. BE SURE THAT BOTH WHEELS ARE BRAKED SIMULTANEOUSLY WHEN MAKING AN EMERGENCY STOP.
6. NEVER RIDE ON THE DRAWBAR OF THE TRACTOR OR DRAWN IMPLEMENT. ALWAYS RIDE ON SEAT OR STAND ON PLATFORM OF TRACTOR.
7. DO NOT PERMIT OTHER PERSONS TO RIDE ON THE DRAWBAR.
8. NEVER LEAVE A RUNNING ENGINE UNATTENDED.
9. KEEP THE TRACTOR IN GEAR WHEN GOING DOWN STEEP HILLS OR GRADES.
10. REDUCE SPEEDS BEFORE TURNING OR USING ONE WHEEL BRAKE.
11. DRIVE THE TRACTOR AT SPEEDS SLOW ENOUGH TO INSURE SAFETY, ESPECIALLY OVER ROUGH GROUND OR NEAR DITCHES.
12. STOP THE POWER TAKE-OFF BEFORE DISMOUNTING FROM THE TRACTOR.
13. NEVER DISMOUNT FROM THE TRACTOR WHILE IT IS IN MOTION. WAIT UNTIL IT STOPS.
14. NEVER STAND BETWEEN THE TRACTOR AND THE DRAWN IMPLEMENT WHEN HITCHING, WITHOUT HAVING TRANSMISSION IN NEUTRAL AND BRAKES LOCKED.
15. DO NOT PUT ON OR REMOVE THE BELT WHILE THE PULLEY IS IN MOTION.
16. BE CAREFUL WHEN REMOVING FILLER CAP WHEN RADIATOR IS HOT. REFILL ONLY WITH ENGINE STOPPED OR SLOWLY IDLING. DO NOT FILL RADIATOR WHEN ENGINE IS OVERHEATED.
17. BE SURE ALL POWER LINE SHIELDING IS IN PLACE WHEN OPERATING A POWER IMPLEMENT.
18. NEVER OVERFILL THE DIESEL AIR CLEANER OIL CUP.
19. CHECK POSITION OF HYDRAULIC CONTROL LEVER BEFORE STARTING ENGINE.
20. NEVER ENGAGE THE CLUTCH UNLESS IT IS POSSIBLE TO DISENGAGE IT IMMEDIATELY.
21. KEEP A FIRST AID KIT AND FIRE EXTINGUISHER ON TRACTOR IN CASE OF EMERGENCY.
22. NEVER DRIVE A TRACTOR TOO CLOSE TO THE EDGE OF A DITCH OR GULLY.
23. NEVER WEAR LOOSE CLOTHING OR MITTENS -- THEY MAY CATCH IN MOVING PARTS.
24. NEVER OPERATE THE ENGINE IN A CLOSED GARAGE OR SHED.
25. KEEP HANDS AWAY FROM ALL MOVING PARTS.
26. NEVER ATTEMPT TO MAKE ADJUSTMENTS WHILE THE TRACTOR IS IN MOTION. DO NOT OIL OR GREASE TRACTOR WITH ENGINE RUNNING.
27. NEVER USE A PITCH FORK NEAR A MOVING BELT.
28. DO NOT PERMIT CHILDREN TO PLAY NEAR MACHINE WHILE IT IS IN OPERATION.
29. SEE THAT THE TRACTOR IS PROPERLY GROUNDED WHEN DOING BELT WORK.
30. WHEN HITCHING A LOAD TO THE TRACTOR, ALWAYS HITCH TO THE DRAWBAR IN THE LOWEST POSITION POSSIBLE.
31. TAKE UP THE SLACK IN A CHAIN OR CABLE GRADUALLY.
32. BACK OUT OF DEEP GULLIES OR DITCHES TO PREVENT OVERTURNING TRACTOR.
33. NEVER OPERATE A TRACTOR ON A ROAD OR HIGHWAY AT NIGHT WITHOUT A WARNING LAMP, USE A RED WARNING FLAG IN DAYTIME.
34. BE EXTRA CAREFUL WHEN WORKING ON HILLSIDES OR ROUGH GROUND. WATCH OUT FOR HOLES OR DITCHES INTO WHICH A WHEEL MAY DROP AND CAUSE TRACTOR TO OVERTURN.

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550—LEADER IN ITS FIELD

We of the OLIVER CORPORATION are proud to introduce you to the 550 tractor. Your 550 will give the unfaltering service required to make you a proud and satisfied owner.

The 550's exceptional adaptability allows it to meet every one of your varied work requirements. With its six forward and two reverse gears, it has a speed for every job. Designed to operate a large variety of equipment under all types of working conditions, the 550 is truly the leader in its field.

Follow the service and maintenance procedures outlined in this manual, and your 550 will do a quick, efficient job today and in years to come.



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SECTION I

TRACTOR

GENERAL

The adjustable front tread, adjustable rear wheels and the ability to turn in a short radius enable your tractor to meet a variety of agricultural and industrial applications. The tractor is especially adaptable for work on rough or hilly terrain because of its stable four wheel tread and low center of gravity. Conveniently located operating controls and individual, self-energized double disc brakes contribute to easy and safe operation of the tractor. A four cylinder, valve-in-head gasoline or Diesel engine mounted on a rugged one piece front frame provides the power which is transmitted from the engine through a heavy duty, single plate, dry disc clutch to the helical gears in the constant mesh transmission. The transmission offers a selection of six forward and two reverse speeds to meet varying load and operating conditions. A constant running shaft from the engine drives the power take-off and the vane-type hydraulic pump whenever the tractor engine is in operation. The constant running pump provides prompt, rapid action to hydraulically-operated mounted or drawn equipment.

SERIAL NUMBERS

Tractors and tractor engines are assigned serial numbers so that accurate records of improvements through changes in material and design may be recorded. Tractors are also assigned specification numbers which are used to identify the equipment with which the tractors were equipped at the time they were manufactured. Always present these numbers to your dealer when requesting information or purchasing repairs.

The tractor serial and specification numbers are stamped on a metal plate attached to the left side of the tractor center frame. (See Figure 1-1.) The last two numbers of the serial number designate the transmission combination



Figure 1-1 Tractor Name Plate

with which the tractor is equipped. These numbers are used to calculate the tractor travel speeds listed in the specifications in this section.

The engine serial number is located on the right side of the engine crankcase. The number is stamped along the outer edge of the timing gear cover mounting flange directly below the generator. (See Figure 1-2.)

Record the tractor serial and specification numbers in the spaces in Figure 1-1 just as they appear on the metal plate attached to the tractor. Record the engine serial number on line provided below. These numbers will provide a quick and accurate reference when in need of parts and service.

Engine Serial Number _____

550 TRACTOR

BREAKING IN A NEW TRACTOR

The following charts outline new engine break-in procedures after which normal recommended service periods may be followed.

GASOLINE

Time	Fuel	Crankcase Oil	Load	Engine Speed
0-2 hours	90 octane	Factory installed break-in oil	No Load	1400 rpm or above
2-20 hours	90 octane	Recommended Grade MS Classification	3/4 to full - Avoid overload	1400 rpm or above

DIESEL

Time	Fuel	Crankcase Oil	Load	Engine Speed
0-20 hours	1-D	Factory Installed break-in oil	Full load. Avoid loads that lug speed down below 1600 rpm	Full throttle
20-80 hours	1-D	Recommended Grade DS Classification	Full load. Avoid loads that lug speed down below 1600 rpm	Full throttle

Avoid prolonged periods of light loads, idling or low speed operation for the first 100 hours.

The oil filter on the hydraulic system must be changed after the first 50 hours of tractor operation. Refer to Section X for the proper procedure for changing this filter.

After the first 150 hours of operation, have the tractor checked by your dealer. This inspection will assure you that the tractor is properly adjusted for continued economical operation.

CHECKING THE TRACTOR

Your tractor was thoroughly checked at the factory and by your dealer before it was delivered to you, but we suggest that you check the following in order to become immediately familiar with the machine. Check the oil level in the engine crankcase, transmission, hydraulic system and air cleaner oil cup. Check the tires for proper inflation as outlined under Specifications and check the radiator to see that it is filled with coolant.

STARTING CRANK

A starting crank and starting crank jaw may be obtained from your dealer. Installation consists of replacing the fan drive pulley retaining screw with the starting crank jaw. If a crank is not available, insert a 1-1/8 inch socket and extension wrench through the radiator grille to turn the engine over for purposes other than starting.

SERVICE PERIODS

Service periods, based on normal operating conditions, are outlined throughout this manual. Decrease these periods to one-half the recommended time intervals if the tractor is being operated under extreme weather or dust conditions.

WARNING

DO NOT ATTEMPT TO START THE TRACTOR ENGINE WITH A WRENCH AS SEVERE INJURY TO YOUR HAND AND ARM WILL RESULT.

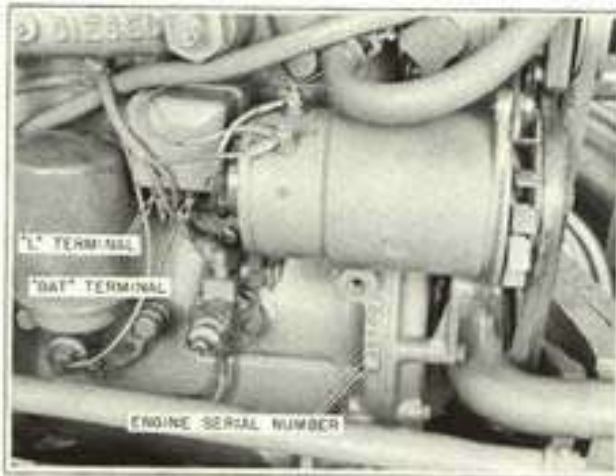


Figure 1-2 Engine Serial Number

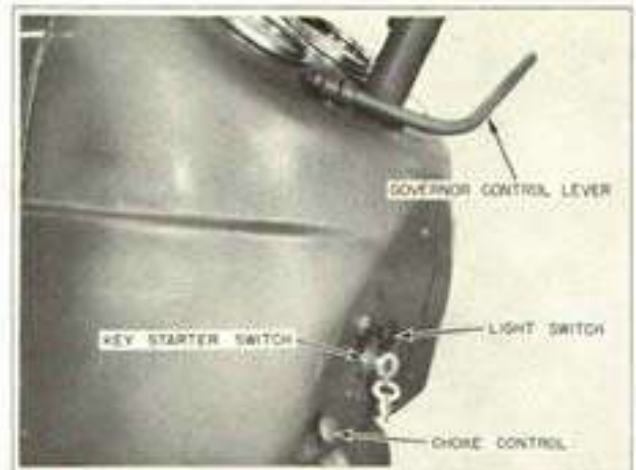


Figure 1-3 Gasoline Engine Controls

CONTROLS

LIGHT SWITCH

The light switch is a two position switch; pull out for *ON* and push in for *OFF*. The light switch controls all the floodlights and instrument cluster background lights. (See Figures 1-3 and 1-4.) The rear flood lamp is provided with a separate switch on the lamp housing. This lamp may be switched from a flood lamp to a red taillight by turning the switch.

GASOLINE CHOKE CONTROL

It is necessary to choke the engine to enrich the fuel-air mixture entering the engine cylinders when starting a cold gasoline engine. Pull the choke control outward, as required, to start the gasoline engine in cold weather. (See Figure 1-3.)

DIESEL AIR PREHEATER

Combustion in the Diesel engine is dependent upon high temperatures and pressures. For cold weather starting, it is necessary to preheat the intake air to obtain the required temperatures for initial combustion. Depress the

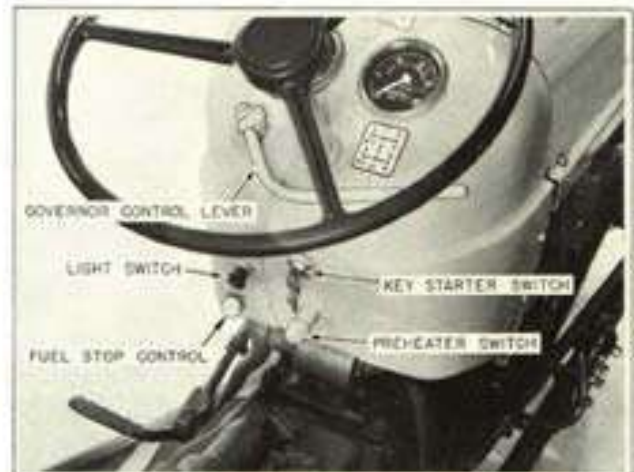


Figure 1-4 Diesel Engine Controls

air preheater switch on the instrument panel as outlined in the Engine Starting Procedure discussions when it becomes necessary to preheat the intake air to start the engine. (See Figure 1-4.)

KEY STARTER SWITCH

The key starter switch is provided as a safety feature to prevent bodily injury or possible damage to the tractor from its use by unauthorized personnel. (See Figures 1-3 and 1-4.) The *ACC* position supplies current to the gauges, indicator lights and oil pressure warning buzzer.

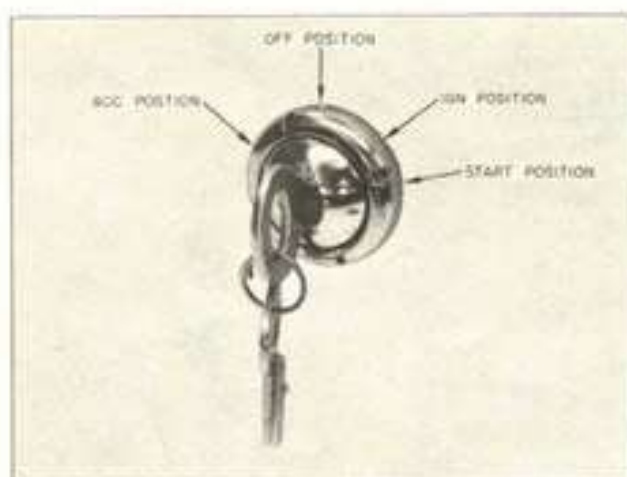


Figure 1-5 Key Starter Switch

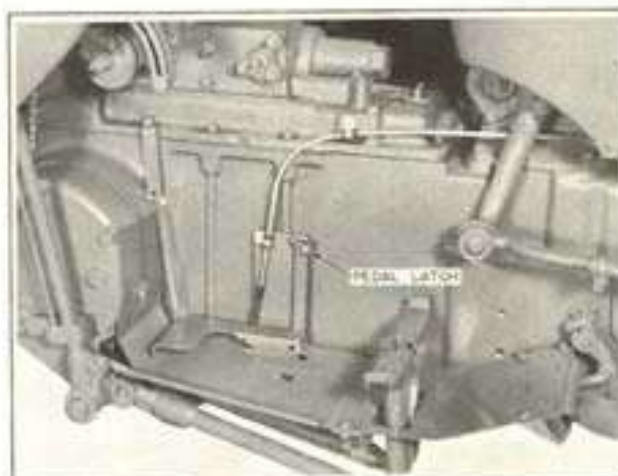


Figure 1-6 Accelerator Pedal

(See Figure 1-5.) Turning the key clockwise to the *IGN* position completes the circuits to the gauges, indicator lights, oil pressure buzzer and gasoline engine ignition system. Continuing to turn the key to the spring-loaded *START* position engages the starting motor.

To adjust the tension loosen the lock nut and turn the adjustment nut clockwise or counterclockwise until a more desirable adjustment is obtained; then tighten the lock nut.

DIESEL FUEL STOP

The fuel stop control is used to stop the Diesel engine. (See Figure 1-4.) Pulling the fuel stop control outward shuts off the flow of fuel in the injection pump.

FOOT ACCELERATOR

A foot accelerator may be installed on your tractor to provide greater governor control flexibility under varying load and speed conditions. The governor controls are designed so that the hand control lever and foot accelerator may be used individually.

GOVERNOR CONTROL HAND LEVER

The speed of the tractor engine is changed by moving the governor control hand lever. (See Figures 1-3 and 1-4.) When the hand lever is in its uppermost position, the engine runs at idle speed. As the lever is moved downward, the engine speed is increased.

The governor control hand lever is held in position by spring-loaded friction discs under the battery tray support. (See Figure 1-7.) Readjust the tension on the friction discs if the hand lever will not stay in a set position or if the force required to move the lever is greater than desired.

The position of the governor control hand lever determines the maximum governor setting for the foot accelerator. To obtain maximum variation of engine speed when using the accelerator pedal, place the hand lever at the bottom of the governor control quadrant. To reduce the engine speed variation, position the hand lever at a higher point on the quadrant. When it is desired to use the hand lever independently, push the accelerator pedal down against the tractor platform and lock it in place with the accelerator pedal latch. (See Figure 1-6.)

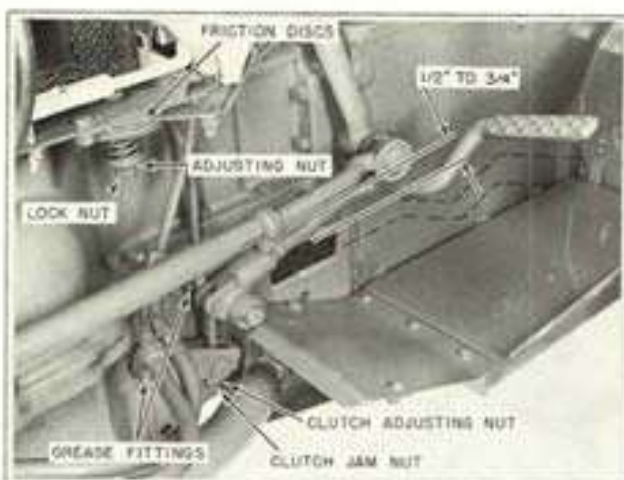


Figure 1-7 Clutch Pedal And Governor Control Friction Discs



Figure 1-8 Simultaneous Braking

CLUTCH PEDAL

The clutch pedal provides a means for disengaging the engine from the transmission. (See Figure 1-7.) Always depress the clutch pedal to shift the transmission gears and be sure to release the clutch pedal slowly.

STARTER SAFETY SWITCH

As a safety feature, a switch located under the instrument panel allows the starting motor to be actuated only when the clutch pedal is depressed. The switch is actuated by a rod fastened to the hub of the clutch pedal.

BRAKE PEDALS

Dual brake pedals, located on the right side of the center main frame, actuate the individual disc-type brakes. The right and left brake pedals may be used individually to aid in turning at slow speeds; however, for high speed

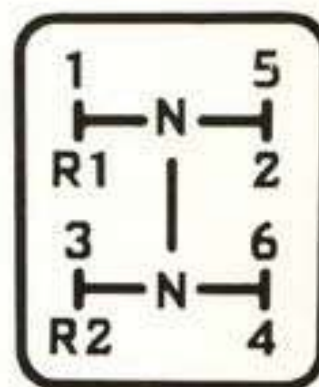


Figure 1-9 Gear Shift Diagram

operation, it is imperative that equal and simultaneous braking be used to avoid the possibility of overturning the tractor. (See Figure 1-8.)

GEAR SHIFT LEVER

The gear shift lever is used to shift the transmission into the various travel speeds and neutral positions. (See Figure 1-12.) A diagram plate illustrating these positions is attached to the instrument panel. (See Figure 1-9.) Do not attempt to shift the transmission while the tractor is in motion.



Figure 1-10 Instruments

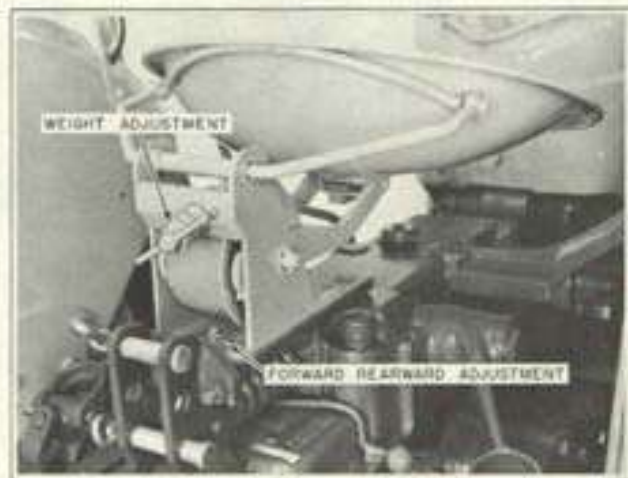


Figure 1-11 Seat Adjustments

INSTRUMENTS

OIL PRESSURE INDICATORS

The red *OIL* light (See Figure 1-10,) and a buzzer provide a signal whenever the key starter switch is in the *ACC* or *IGN* position and the engine oil pressure falls below satisfactory operating pressure. It is permissible for the light and buzzer to operate when the engine is idling, but never operate the tractor if the light and buzzer continue to operate after the engine speed has been increased.

GENERATOR INDICATOR LIGHT

The red *AMP* light provides a signal whenever the key starter switch is in the *ACC* or *IGN* position and the generator is not charging. (See Figure 1-10.) The light may flicker on and off while the engine is idling; however prolonged usage of the tractor when the light remains illuminated after the engine speed has been increased will run down the battery or batteries.

WATER TEMPERATURE GAUGE

The water temperature gauge indicates engine operating temperatures in *COLD-WORK-HOT* temperature ranges. (See Figure 1-10.) Always maintain the operating temperature within the limits of the green *WORK* range.

FUEL GAUGE

The electrical fuel gauge indicates the amount of fuel in the fuel tank, *E* for empty and *F* for full. (See Figure 1-10.) The gauge operates only when the key starter switch is in the *ACC* or *IGN* position. Turn the switch to the *ACC* position to check the fuel level when filling the fuel tank.

TACHOURMETER

The tachourmeter indicates the engine speed in rpm (revolutions per minute) and provides a service record by recording the number of hours of engine operation. (See Figure 1-10.) The tachourmeter is calibrated to register one engine hour per hour when the engine is running at an average speed of 1540 rpm. If the engine is operated for long periods at speeds above or below 1540 rpm, it will take a shorter or longer time to register one hour.

Lubricate the tachourmeter flexible shaft core yearly or every 1000 hours of operation. Loosen the ferrule nut at the drive end of the flexible shaft to remove the core. Grease the entire length of the core with No. 1 grade multi-purpose lithium or calcium base grease. Reinstall the core and pack the end of the flexible shaft with grease. Connect the flexible shaft to the tachourmeter drive and tighten the ferrule nut.

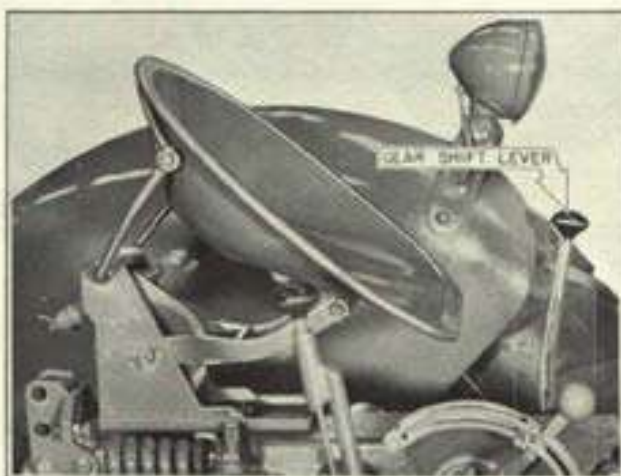


Figure 1-12 Seat Raised For Standing Position



Figure 1-13 Tool Box

TRACTOR SEAT

To adjust the seat forward or rearward, loosen the hex nut at the rear of the seat bracket assembly. (See Figure 1-11.) Move the seat along the slot in the seat base plate to the desired position and tighten the nut.

To adjust the seat spring tension for variations in operators' weights, turn the seat adjusting handle in a clockwise or counterclockwise direction to increase or decrease the tension respectively. (See Figure 1-11.)

Grasp the front edge of the seat, lift and push back simultaneously to raise the seat when it is desired to operate the tractor in a standing position. The seat will remain in the raised position. (See Figure 1-12.) Grasp the front edge of the seat, lift and pull forward simultaneously to lower the seat.

TOOL BOX

The tool box is conveniently located directly under the left platform. To open the tool box, lift the rear of the cover in an arc toward the front of the tractor. (See Figure 1-13.)

FILLING RADIATOR AND FUEL TANK

The fuel tank filler opening is located in the center of the hood and the radiator filler opening is located in the center of the radiator shell. (See Figure 1-14.)



Figure 1-14 Radiator And Fuel Tank Filler Openings

ENGINE STARTING PROCEDURE

Be sure the radiator is filled with coolant and the crankcase oil level is within the **WORKING RANGE** on the bayonet gauge before attempting to start the engine. Depress the clutch pedal, place the gear shift lever in a neutral position and disengage the PTO clutch. AS A SAFETY FEATURE, THE STARTING MOTOR CANNOT BE ACTUATED UNLESS THE ENGINE CLUTCH PEDAL IS DEPRESSED.

CAUTION

DO NOT USE LIQUID ETHER TO START THE ENGINE, AS SEVERE DAMAGE WILL RESULT.

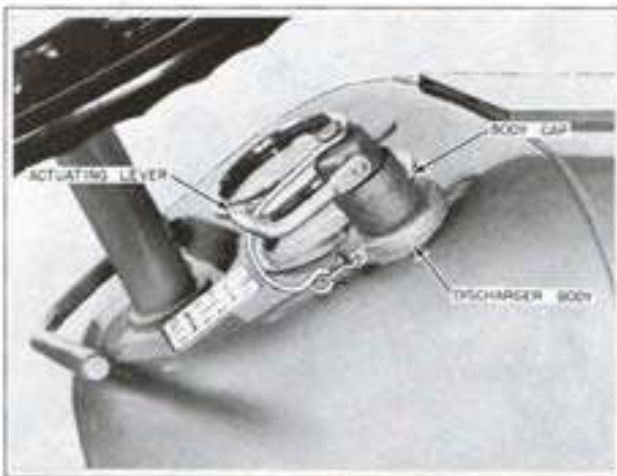


Figure 1-15 Chevron Starting Aid In Discharged Position

To prevent starting motor damage, never reattempt to start the engine until both the engine and the starting motor come to a complete stop, and be sure to allow two minutes for the starting motor to cool if the engine does not start within 30 seconds.

GASOLINE ENGINE

Move the governor control hand lever to the half-throttle position. In cold weather, pull out the choke control; practice and experience will teach you the exact amount of choking required. Turn the key starter switch to the extreme right to engage the starting motor. When the engine starts, release the switch key and check the oil pressure indicators. Adjust the choke control so that the engine runs smoothly, reset the governor control lever to the 1/4-throttle position and slowly release the clutch pedal. Allow the engine to warm up; then push in the choke control.

DIESEL ENGINE

Place the governor control hand lever in the full throttle position and push in the fuel stop control. Turn the key starter switch to the extreme right and hold it in this position until the engine starts and fires several times or until it has definitely been determined that the engine will not start. If the starting motor is disengaged at the same moment the engine fires, the engine may start

running backward as outlined under Tractor Engine Operation. When the engine starts, release the switch key, check the oil pressure indicators, slowly release the clutch pedal and place the governor control lever in the 3/4-throttle position.

To start the engine in temperatures ranging from 50 to 32 degrees Fahrenheit, energize the air preheater for 30 to 35 seconds; in freezing temperatures, operate the preheater for 45 to 50 seconds. Engage the starting motor as soon as the preheater switch is released. If the engine fails to start within 5 to 10 seconds, preheat the engine for an additional 30 to 35 seconds. Reattempt to start the engine. Continue this cycle until the engine starts. The preheater may be actuated to keep the engine running or to smooth out initial operation if necessary.

For quick starting at extremely low temperatures, your dealer can supply you with a Chevron Starting Aid. (See Figure 1-15.) The Chevron aid uses pressurized cartridges to inject an ether mixture into the air intake of the engine.

To operate the aid, remove the cap and install a cartridge, part number 164 999-A, neck down, in the discharger body. Install and tighten the cap. Preheat the engine for 10 seconds. Engage the starting motor; then discharge the cartridge by moving the actuating lever up and over (through a 180 degree arc) against the wire ball. Leave the discharged cartridge in the aid to prevent dirt and dust from entering the mechanism.

The cartridges discharge completely in 10 to 15 seconds. If the engine fails to show any signs of starting during the discharge period, remove the cap with caution as the body screen or manifold spray nozzle may be plugged thus preventing passage of the ether mixture to the intake manifold. If the engine has failed to start due to improper function of the unit, correct the fault, remove the first cartridge, and insert and discharge a second cartridge.

WARNING

DO NOT SMOKE WHEN REMOVING THE CAP AS ETHER MAY BE PRESENT IN THE CHAMBER.

Under normal conditions, the unit should be disassembled and cleaned every fall. Change the rubber neck washer in the discharger body at least three times a season. If three or more starts are required daily, service the unit more frequently.

TRACTOR ENGINE OPERATION

Allow the engine to warm up before placing it under load, and always maintain the engine operating temperature within the limits of the green **WORK** range on the temperature gauge. (Do not turn the switch key to the **OFF** position on Diesel tractors as the gauges will then be inoperative.) Prolonged idling or placing a cold engine under load results in poor combustion, poor engine lubrication, corrosion, acid formation, crankcase dilution and reduced power.

Never attempt to pull loads that are beyond the engine's power. Abnormal stresses are imposed on the engine when under heavy loads at speeds below 1200 revolutions per minute. Select a transmission gear which will not overload or lug the engine for extended periods when performing drawbar operations; however, for the best fuel economy, select the highest transmission speed which will satisfactorily pull the required load and regulate the engine speed to obtain the desired ground travel rate.

CAUTION

**DO NOT OPERATE THE ENGINE UNDER
HEAVY LOADS AT SPEEDS BELOW 1200
REVOLUTIONS PER MINUTE.**

Disengaging the engine clutch on a Diesel tractor that is about to stall under a heavy load may cause the engine to start running backward. If this occurs, air will be drawn into the engine through the exhaust manifold and the exhaust will be expelled through the intake manifold and air cleaner assembly. After a Diesel engine has run backward, it is necessary to remove and clean the air cleaner and replace the oil in the air cleaner cup.

STOPPING THE ENGINE

Tractor engines that have become overheated as a result of heavy work must be cooled before stopping. Reduce the temperature to normal by running the engine at moderate speed for a few minutes to circulate the liquid in the cooling system. Warped valves and valve seats are a common result of stopping a hot engine.

Operate the gasoline engine at about 1000 rpm for a few minutes to clear the cylinders of excess fuel before stopping the engine. Place the governor control lever in its uppermost position and, when the engine returns to idle speed, turn the key starter to the **OFF** position.

To stop the Diesel engine, place the governor control lever in its uppermost position and pull out the fuel stop control. If the engine does not stop when this control is pulled out, it may be stopped by stalling. To stall the engine, apply the brakes, place the gear shift lever in the 6th gear position and slowly engage the engine clutch. Check and repair the fuel stop.

SEASONAL PREPARATION

Seasonal preparation should be carried out every spring and fall to prepare the tractor for the temperature conditions to be encountered during the coming seasons.

1. Drain and flush the cooling system. Install new radiator hoses in the fall before filling the system with a permanent type anti-freeze solution of sufficient strength to withstand the lowest temperature anticipated.
2. Clean and regap the spark plugs. Set the spark gap at .025 inch. Check the distributor and adjust the point opening to .022 inch. Set the ignition timing as outlined in Section IV.
3. Check all electrical wiring. Check and recharge the battery or batteries.
4. Adjust the valve clearance as outlined in Section II.
5. Drain, flush and refill the tractor fuel tank. Remove, clean and install the fuel strainer assembly. Adjust the carburetor and governor as outlined in Section III.
6. Remove, wash, clean and repack the front wheel hubs with a No. 1 grade multi-purpose lithium or calcium base grease.
7. Drain, flush and refill the transmission and differential once each year. Lubricate the entire tractor as outlined in the Lubrication Chart.
8. Drain and refill the engine crankcase. If the tractor has been operated through the winter months, remove and clean the oil pan before refilling. Always install a new gasket when installing the oil pan.

INTRODUCTION

The Oliver 550 tractor which you have purchased is capable of providing many years of reliable service. This tractor is the result of over one hundred years experience in the farm equipment industry and more than half a century of active participation in the design, service and manufacture of tractors. The vast amount of engineering knowledge and technical skill gained from the past have been combined to build a tractor that incorporates durability, simplicity, economy, power and long life.

This Operator's Manual is presented to furnish you with the necessary information for operating and maintaining your tractor. Its primary purpose is to assist you, the operator, in lubricating and adjusting the tractor for daily and seasonal operation. You are urged to thoroughly study its contents in order to derive the greatest benefit from the many desirable features built into your new 550 tractor. We especially wish to call your attention to the many safety slogans. Although the tractor is designed with the safety of the operator in mind, the possibility of an accident cannot be completely eliminated until you understand and practice all safety precautions.

For additional information consult your Oliver Dealer. His ample supply of genuine Oliver repair parts, modern equipment, trained service personnel, factory designed tools and complete servicing information enable him to perform his duties efficiently and economically.

Timely service saves costly repairs and valuable time lost because of breakdowns. For these reasons, we recommend that you have your tractor checked twice each year by your Oliver Dealer. These periodic inspections will help to ensure trouble-free and economical operation throughout the entire life of your Oliver 550 tractor.

Whenever it becomes necessary to make *repairs or replacements* on your tractor, be sure to insist on **Genuine Oliver Parts**. These parts are designed specifically for your tractor under controlled specifications to give the satisfaction and long lasting service to which you are entitled. *Your Oliver Dealer can supply you with the parts you require.*

The Oliver Corporation reserves the right to change the specifications of, or improve any of its machines or attachments for same, at any time without notice, and without assumption of responsibility in regard to equipment previously sold.

OLIVER Corporation
Charles City, Iowa

9. Check and stop all oil, fuel and coolant leaks.
10. If tractor is equipped with a hydraulic system, drain and refill with recommended oil.

COLD WEATHER OPERATION

There are a few precautions that must be taken to keep the tractor in the proper operating condition during cold weather. The following list will serve as a guide in maintaining high tractor efficiency.

1. Keep the battery or batteries fully charged. Batteries in a fully charged condition will not freeze under the normal winter temperatures encountered in the temperate zone.
2. Warm up the engine as quickly as possible after starting. If necessary, the radiator may be covered.
3. Periodically loosen or remove the crankcase oil pan drain plug to determine if any water or ice has accumulated. If either is present, run the engine until the oil is warm. Drain the crankcase and refill with seasonal grade engine oil. Change the engine oil as outlined in Section II for winter operation.
4. Fill the fuel tank each evening after stopping the tractor. This will force out the air and prevent the collection of water through condensation. Frequently empty and clean the fuel strainer assembly. On Diesel tractors, drain the water trap under the fuel tank before filling with Diesel fuel.
5. Lubricate the tractor at the end of each day's operation.
6. Clean the mud and snow accumulations from the tractor and store the tractor in a warm shed if possible when it is not in use.
7. Check the cooling system anti-freeze periodically.
8. If liquid weight is used in the tires, be sure sufficient anti-freeze has been added to protect the solution against freezing.

PREPARATION FOR STORAGE GASOLINE TRACTORS

1. Drain and flush the transmission. Refill with premium quality SAE 5W-20 or 10W-30 engine oil and 102 082-A Oil Additive. Operate the tractor for a short time after filling the transmission to circulate the oil through the gears.
2. Drain the crankcase. Install a new filtering element. Remove, clean and reinstall the oil pan. Fill the crankcase with a preservative oil or with an engine oil to which an inhibitor has been added.
3. Remove the air cleaner-to-carburetor hose. Start the engine and inject preservative oil into the carburetor air intake with a manually operated sprayer or squirt can while the engine is operating at idle speed. Stop the engine by increasing the quantity of oil sprayed into the air intake and reinstall the hose.
4. Drain and flush the cooling system. Check the condition of the radiator hoses. Replace all hoses that are soft or leaky. Fill the system with soft water to which 1/2 pint of soluble oil or other commercial rust inhibitor has been added. If the tractor is to be stored through the winter, fill the system with an anti-freeze solution. Always keep the cooling system filled during storage to prevent the excessive formation of rust.
5. Remove the cylinder head cover, and pour 1/2 pint of preservative oil over the rocker arm and valve mechanism. Reinstall the cylinder head cover.
6. Remove the spark plugs from the engine. Pour 1/8 pint of preservative oil into each combustion chamber. Turn the engine a few revolutions with the starting motor to distribute the oil over the pistons and cylinder walls. Coat the spark plug threads with oil before reinstalling the plugs.
7. Drain the fuel from the fuel tank, fuel strainer assembly, fuel lines and carburetor.
8. Remove the distributor cap, and apply a small amount of petroleum jelly to the polished surface of the breaker cam. Where dampness in storage is expected, removal of the distributor is recommended.

9. Cover the air cleaner intake pipe, exhaust outlet, crankcase breather opening and the opening left by the removal of the distributor. Wax type masking tape is a suitable material for covering these openings to prevent the entrance of dirt and moisture.
10. Remove, clean, refill and reinstall the air cleaner cup.
11. Remove, wash, clean and repack the front wheel hubs.
12. Relieve the tension on the fan belt.
13. Lubricate the entire tractor as outlined in the Lubrication Chart.
14. Clean the tractor to remove all dirt and grease. Remove rust spots and paint all areas where paint is missing.
15. Remove and clean the battery. Charge the battery and store it in a cool, dry place. Check and recharge the battery every four or five weeks.
16. Block or wire the clutch pedal down so that the clutch facings will not stick to the flywheel or clutch pressure plate.
17. Wipe all oil and calcium chloride from the exterior of the tires.
18. Place the tractor on blocks so that the tires are free of the floor and deflate them several pounds below normal. Tires containing fluid need only the weight of the tractor removed, allowing them to support their own weight on the floor.
19. Tractors stored outside should be covered with a large tarpaulin.

CAUTION

NEVER ALLOW THE TRACTOR TO STAND IDLE FOR OVER THIRTY DAYS UNLESS IT IS PREPARED FOR STORAGE.

DIESEL TRACTORS

Diesel tractors may be prepared for storage in nearly the same manner outlined for gasoline tractors. The fuel sys-

tem, however, is much more subject to damage and must be given special attention.

To protect the fuel system, valves and cylinder walls, flushing oil must be used instead of Diesel fuel. Pour one or two gallons of flushing oil into the fuel tank and run the engine until the exhaust smoke turns to a blue-white color. Continue running the engine for an additional ten minutes. Then proceed to prepare the tractor for storage as outlined for gasoline tractors with the exception of those steps pertaining to the fuel and ignition systems.

If a commercial flushing oil is not available, a mixture of one part water-white kerosene to one part SAE 10W engine oil may be used as a fuel.

Once each month while the tractor is in storage, remove all covers that were installed, install the batteries and turn the engine slowly to make sure the pistons are free in the cylinders. Start the engine and allow it to run for approximately ten minutes, using the flushing oil as a fuel. Stop the engine, install the covers, and remove and recharge the batteries.

PREPARATION FOR OPERATION AFTER STORAGE

The following recommendations will aid in obtaining maximum efficiency from the tractor after it has been in storage.

1. Lubricate the entire tractor as outlined in the Lubrication Chart.
2. Inflate the tires to the recommended pressure, and remove the tractor from the blocks.

3. Remove the block or wire from the clutch pedal and remove all covers that were installed.
4. Fill the cooling system with the proper seasonal coolant. Examine the cooling system and repair all leaks. Adjust the fan belt.
5. Remove, clean and adjust the spark plugs. Pour 1/8 pint of light engine oil into each combustion chamber.
6. Remove the cylinder head cover, and pour 1/2 pint of very light oil over the rocker arm and valve assembly. Clean the crankcase breather tube opening.
7. Turn the engine slowly by hand to ensure that all working parts are free to move.
8. Adjust the valve clearance as outlined in Section II and install the cylinder head cover, breather and spark plugs.
9. Install the distributor and adjust the point gap to .022 inch.
10. Check and install the battery or batteries. Check the electrical wiring. Clean and tighten all connections and replace all damaged wires.
11. Remove, clean and reinstall the fuel strainer assembly. Remove all flushing oil from the fuel tank and refill with clean Diesel fuel. Check the fuel lines for leaks.
12. Drain the preservative oil from the crankcase, and refill with new seasonal grade engine oil.
13. If the tractor is equipped with a hydraulic system, check its oil level with the dip stick on the hydraulic housing.
14. Start the engine and run it at idle speed. Do not increase the engine speed until you are sure it is operating correctly.
15. Adjust the carburetor as outlined in Section III.
16. Check and adjust the ignition timing as outlined in Section IV.
17. Adjust the brakes, if necessary.

SPECIFICATIONS

DIMENSIONS

Wheelbase	72-7/8"
Crop or Ground Clearance	
Front Axle	20"
Rear Axle	20-5/8"
Rear Frame	14-5/16"
Overall Height	73-7/16"
Overall Width, Regular Tread	66-3/4"
Overall Length	119-7/8"
Swinging Drawbar Adjustment	
Horizontal	21-1/2"
Vertical	12-5/8 to 15-3/4"
Three-Point Hitch Drawbar Adjustment	
Horizontal	17"
Vertical	11-1/2 to 22-1/2"
Approximate Basic Shipping Weight	
Gasoline	3070 lb.
Diesel	3170 lb.
Turning Radius - 52 Inch Tread	
Free Turn	10'
Braked Turn	9'

WHEEL TREAD ADJUSTMENT

Front	
Agricultural	52 to 72"
Industrial	52"
Rear	
Regular Axle	48 to 76"
Long Axle (Special)	48 to 88"

CAPACITIES

Cooling System	3-1/2 gal.
Fuel Tank	13 gal.
Crankcase	4 qt.
Transmission	5 gal.
Air Cleaner Oil Cup	
Gasoline	1 pt.
Diesel	1 qt.
Front Wheel Bearings	3/8 lb.
Steering Gear Housing	1-1/2 lb.
Hydraulic System	9 qt.
Hydraulic System With External Valve, Hoses And One Cylinder For Drawn Implements	11 qt.
Belt Pulley	1 pt.
Power Steering	1-1/8 qt.

OPERATOR'S MANUAL

IGNITION AND ELECTRICAL SYSTEM

BATTERY

Size	
Gasoline	SAE 3KM
Diesel	SAE 1H
Capacity	
Gasoline	One 12-volt 70 ampere hours
Diesel	Two 6-volt 115 ampere hours

SPARK PLUGS

Size	18 mm (7/8" hex)
Electrode Gap	.025 in.

DISTRIBUTOR

Point Gap	.022 in.
Rotation Viewed From Rotor End	Clockwise
Lubrication	SAE 10W and 20W engine oil

FUSE

Floodlights	20 ampere
Instrument Lights	3 ampere

LIGHTS

Head And Rear Flood

Type	Sealed Beam
Size	35 Watts
Capacity	12 - 16 volt

Tail Lamp

Type	Bulb
Size	15 cp.
Capacity	12 - 16 volt

Indicator And Instrument

Type	Bulb
Size	2 cp.
Capacity	12 - 16 volt

BELT PULLEY

Diameter	9"
Width of Face	8-1/2"
Speed at 2000 Engine RPM	1319 rpm
Speed in Feet per Minute at 2000 Engine RPM	3108

ENGINE LUBRICATION

Above +32° F.	SAE 20, 20W or 10W-30
+32° to +10° F.	SAE 10W or 5W-20
Below +10° F.	SAE 5W or 5W-20

HYDRAULIC SYSTEM

Operation	Constant running
Control	Draft and/or position
Hydraulic Fluid	SAE 10W engine oil and 102 082-A Oil Additive below 32° F. SAE 30 engine oil and 102 082-A Oil Additive above 32° F.

Internal Cylinder for Three-Point Hitch

Length of Piston Stroke	4-7/8 in.
Lifting Time at 2000 RPM	2.0 sec.
Capacity Measured	

At Cross Shaft	3000 foot pounds torque
Inside Diameter of Cylinder	3-1/8 in.

External Cylinder for Drawn Implements

Length of Piston Stroke	8 in.
Time for Piston to Extend at 2000 Engine RPM	3.0 sec.

Recommended Maximum Cylinder Lifting Capacity	5000 lb.
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Inside Diameter of Cylinder	3 in.
Oil Filter Change Period	Twice yearly
Filter Number	100 476-AS

Breather Element Change Period	Once yearly
Element Number	104 792-A

Relief Valve Setting	1700 lb. per sq. in.
Pump Capacity at 2000 Engine RPM	5-1/4 gal. per min.

550 TRACTOR

POWER TAKE-OFF

	<u>540 RPM</u>	<u>1000 RPM</u>
Operation	Independently controlled	Independently controlled
Shaft		
Diameter	1-3/8 in. (1-1/8 in. optional)	1-3/8 in.
Number of Splines	6	21
Rotation	Clockwise	Clockwise
Speed at 1600 Engine RPM	545 RPM	
Speed at 2000 Engine RPM		1000 RPM
Height From Ground	17-3/4 in.	17-3/4 in.
Clutch		
Type	Multiple dry disc	Multiple dry disc
Size (Diameter)	5 in.	5 in.

TRANSMISSION LUBRICATION

Above 0° F.	Premium Quality SAE 10W-30 Engine Oil and 102 082-A Additive
Below 0° F.	Premium Quality SAE 5W-20 Engine Oil and 102 082-A Additive
Transmission Breather Change Period	Once Yearly
Element Number	1E-1130

ENGINE

	<u>Gasoline</u>	<u>Diesel</u>
Number of Cylinders	4	4
Firing Order	1-2-4-3	1-2-4-3
Bore	3-5/8"	3-5/8"
Stroke	3-3/4"	3-3/4"
Piston Displacement	155 cu. in.	155 cu. in.
Engine Speed in RPM		
Idle	375	650
Governed	2000	2000
High No-Load	2200	2200
Compression Ratio	7.75:1	
Engine Operating Temperature	155 to 212° F.	155 to 212° F.
Oil Change Period	90 hours	60 hours
Valve Clearance (Cold)		
Intake	.009 to .011"	.009 to .011"
Exhaust	.015 to .017"	.019 to .021"
Timing Mark		
Static Timing	0° TDC	4° BTDC
Total Advance	28° BTDC	
Fuel Filter Change Period		
Primary (Part No. 104 952-AS)		500 hours
Final (Part No. 609 689-AS)		1000 hours
Oil Filter Change Period	Every 4th oil change	Every 4th oil change
Filter Number	100 126-ASA	100 126-ASA
Nozzle Opening Pressure		1750 psi

OPERATOR'S MANUAL

HORSEPOWER

	<u>Gasoline</u>	<u>Diesel</u>
Nebraska Test Number	697	698
PTO Horsepower	41.39	39.21
Drawbar Horsepower	35.45	35.36

POWER STEERING

Operating Pressure	550-650 pounds per square inch
Pump	Direct driven from generator
Hydraulic Fluid	SAE 10W engine oil and 102 082-A Oil Additive or Automatic Transmission Fluid Type "A"

CALCIUM CHLORIDE AND WATER SOLUTIONS - 75% FILL

Tire Size	PROTECTION FOR MINUS 20° F.			PROTECTION FOR MINUS 40° F.		
	Pounds of Calcium Chloride	Gallons of Water	Total Weight in Pounds	Pounds of Calcium Chloride	Gallons of Water	Total Weight in Pounds
5.50-16	9.5	4.75	49.0	15.75	4.5	53.25
6.00-16	9.5	4.75	49.0	15.75	4.5	53.25
6.50-16	12.0	6.00	62.0	19.25	5.75	67.00
7.50-16	15.5	7.75	80.0	25.50	7.25	86.00
7.60-15	15.5	7.75	80.0	25.50	7.25	86.00
11.2/10-28	44.0	22.00	228.0	72.00	20.5	244.00
12.4/11-28	62.0	31.00	322.0	102.00	29.25	346.00
13.6/12-26	68.0	34.00	350.0	111.00	31.75	376.00
14.9/13-24	101.0	32.30	374.0	133.00	31.8	398.00
13.00-24	71.0	35.75	370.0	117.00	33.5	397.00
14.9/13-26	77.0	38.50	398.0	126.00	36.25	428.00

FUEL SPECIFICATIONS

GASOLINE ENGINES

Gasoline	90 Octane ASTM Research Method Minimum — Except in high altitude areas where lower octane gasolines are normally provided and work satisfactorily.
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550 TRACTOR

FUEL SPECIFICATIONS (Continued) DIESEL ENGINES

Diesel Fuel

Fuels meeting the ASTM requirements for No. 1-D Diesel fuel are normally recommended; however, the No. 2-D fuel outlined below may be used during warm weather for 3/4 to full load engine operation if proper engine operating temperatures are maintained.

	ASTM Spec. For No. 1-D	ASTM Spec. For No. 2-D
Flash Point	100° F. Minimum	125° F. Minimum
Pour Point	See note a	See note a
Percent of Water and Sediment by Volume	Trace	.10 Maximum
Percent of Ash by Weight	.01 Maximum	.02 Maximum
Percent of Carbon Residue on 10% Residuum	.15 Maximum	.35 Maximum
Percent of Sulphur by Weight b	.50 Maximum	1.0 Maximum
Distillation Temperature - 90% Point	---Minimum	540° F. Minimum c
	550° F. Maximum	675° F. Maximum
Viscosity at 100° F., Kinematic Centistokes	1.4 Minimum	2.0 Minimum c
	2.5 Maximum	5.8 Maximum
Copper Strip Corrosion, Maximum	No. 3-Dark Tarnish	No. 3-Dark Tarnish
Minimum Cetane Rating	40 d	40 d

- a For cold weather operation, always specify a fuel with a pour point 10° F. below the ambient temperature in which the engine is to operate.
- b A high sulphur content requires an engine lubricating oil with high detergent characteristics to prevent carbon build-up in the nozzles and combustion chambers and to neutralize the acid condition created by the high sulphur content. For these reasons, the engine lubricating oil recommendations outlined in this manual are very important.
- c If pour point less than 0° F. is specified, the minimum viscosity shall be 1.8 centistokes and the minimum 90 percent point shall be waived.
- d Fuels with higher cetane ratings may be required for operation in low atmospheric temperatures or at high altitudes. A minimum cetane rating of 50 to 60 is recommended for use in Oliver tractors operating in temperatures below +40° F.

TIRE INFLATION PRESSURE AND MAXIMUM LOAD

Tire Size	Ply	FRONT TIRES						
		20 lb.	24 lb.	28 lb.	32 lb.	36 lb.	40 lb.	44 lb.
5.50-16	4	655	725	795	860			
6.00-16	4	750	835	915				
6.00-16	6				990	1065	1130	1200
6.50-16	6	860	915	1000	1080			
7.50-16	6	1110	1235	1345	1455			
7.60-16	6	1255	1395	1520	1650	1765		

OPERATOR'S MANUAL

TIRE INFLATION PRESSURE AND MAXIMUM LOAD (Continued)

Tire Size	Ply	REAR TIRES				
		12 lb.	14 lb.	16 lb.	18 lb.	20 lb.
11.2/10-28	4	1575	1720	1860		
12.4/11-28	4	1890	2070			
13.6/12-26	4		2350	2540	2730	
13.6/12-28	4		2430			
13.00-24	6		3120	3380	3640	3870
14.9/13-24	6		2700	2920	3130	
14.9/13-26	6		2790	3010	3230	

Approximate weight distribution of the tractor is Front tires - 1/3 total weight
Rear tires - 2/3 total weight

TRANSMISSION SPEED IN MILES PER HOUR FOR C-19, C-83 AND C-84 GEAR COMBINATIONS

Tire Size	Engine RPM	GEAR POSITION						First Reverse	Second Reverse
		First	Second	Third	Fourth	Fifth	Sixth		
11.2/10-28 And	800	.74	.98	1.53	2.03	2.78	5.74	.77	1.59
13.6/12-26 LP	1000	.92	1.23	1.91	2.54	3.48	7.18	.96	1.99
LR 21.97"	1200	1.11	1.48	2.29	3.05	4.17	8.61	1.16	2.39
	1400	1.29	1.72	2.67	3.56	4.87	10.05	1.35	2.78
	1600	1.48	1.97	3.05	4.06	5.56	11.49	1.54	3.18
	1800	1.66	2.21	3.43	4.57	6.26	12.92	1.73	3.58
	2000	1.85	2.46	3.81	5.08	6.96	14.36	1.93	3.98
12.4/11-28 And	800	.77	1.02	1.58	2.11	2.88	5.95	.80	1.65
13.6/12-26	1000	.96	1.28	1.98	2.63	3.60	7.44	1.00	2.06
LR 22.76"	1200	1.15	1.53	2.37	3.16	4.33	8.93	1.20	2.47
	1400	1.34	1.79	2.77	3.69	5.05	10.42	1.40	2.88
	1600	1.53	2.04	3.16	4.21	5.77	11.91	1.60	3.30
	1800	1.72	2.30	3.56	4.74	6.49	13.39	1.80	3.71
	2000	1.92	2.55	3.95	5.27	7.21	14.88	2.00	4.12

To obtain travel speeds for alternate tires, multiply the above 10-28 and 12-26 LP travel speeds by factor below.

Size	Factor
14.9/13-24	1.011
14.9/13-26 And 13.00-24	1.050

550 TRACTOR

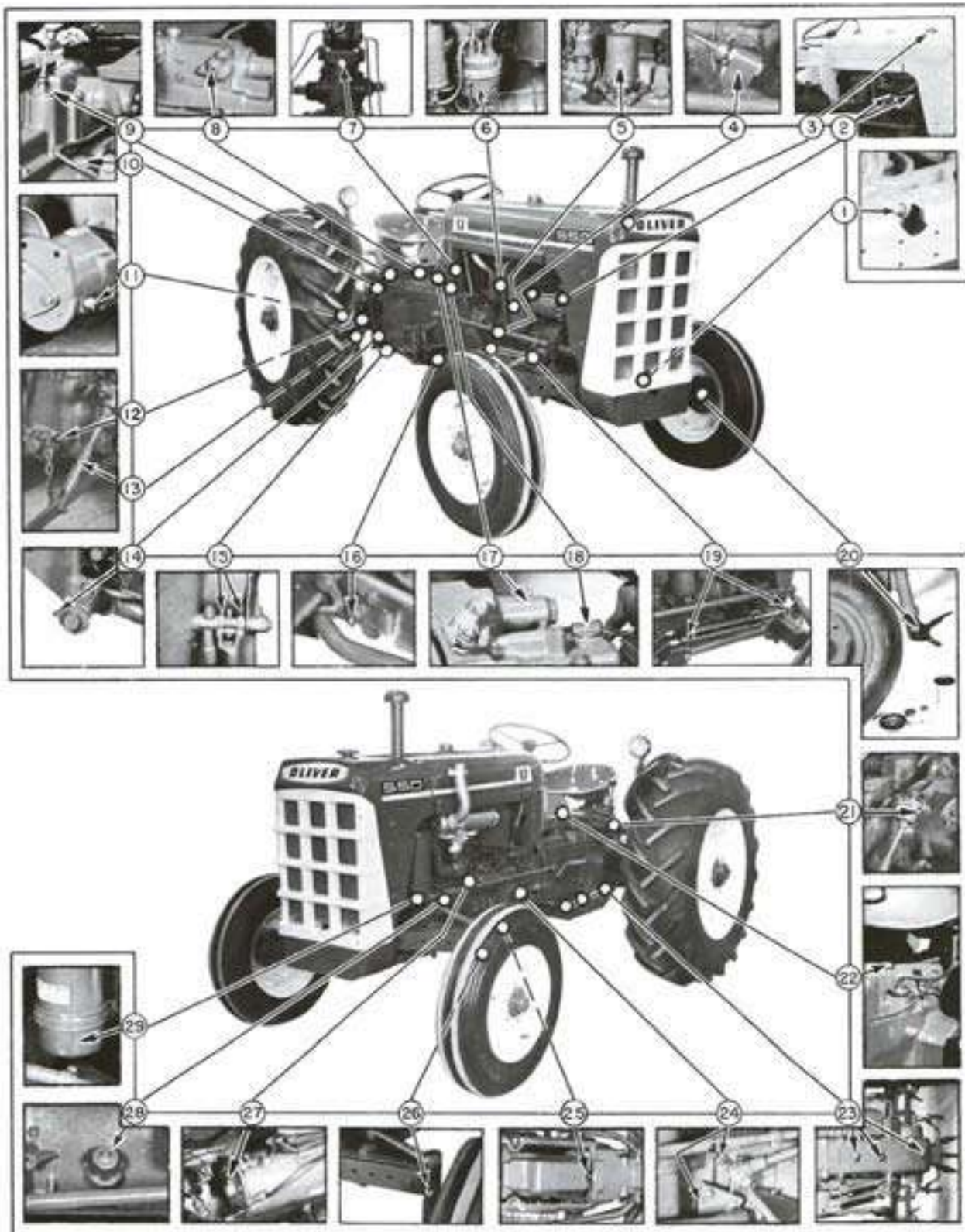


Figure 1-16 Lubrication Diagram

OPERATOR'S MANUAL

550 LUBRICATION CHART

10 HOURS	60 HOURS	250 HOURS	PERIODIC	DESCRIPTION	LUBRICANT	LUB. POINTS
	1			Front Axle Pivot	Pressure Gun Grease	1
	2			Generator Oil Cups - 3 or 4 drops	Seasonal Grade Engine Oil	2
3				Power Steering Reservoir - Maintain oil level at <i>FULL</i> mark when unit is warm	SAE 10W Engine Oil and 102 082-A Oil Additive or Automatic Transmission Fluid Type "A"	1
			4	Tachometer Drive Cable - Once a year grease entire length of cable core and repack end of drive gear shaft in housing	No. 1 Grade Multi-Purpose Lithium or Calcium Base Grease	1
			5	Oil Filter - Replace every fourth oil change. Add one extra quart of oil - See Item 25	New Element Number 100 126-ASA	1
			6	Distributor - Gasoline - Lubricate every 500 hours Cam Wick - 3 to 4 drops Shaft Reservoir - Refill Breaker Arm Post - 1 to 2 drops	SAE 10W Engine Oil SAE 20W Engine Oil SAE 10W Engine Oil	1 1 1
			7	Steering Gear Filler - Test Plug - Check yearly - Maintain grease level	No. 1 Grade Multi-Purpose Lithium or Calcium Base Grease	1
			8	Hydraulic Drain Plug - Drain and refill twice yearly - See Item 9	SAE 30 Engine Oil and 102 082-A Oil Additive Above 32° F. SAE 10W Engine Oil And 102 082-A Oil Additive Below 32° F.	1
9				Hydraulic Bayonet Gauge And Filler Cap - Keep oil level between <i>ADD</i> and <i>FULL</i> marks	Same As Item 8	1
			10	Transmission Breather - Replace yearly	New Element Number 1E-1130	1
	11		11	Belt Pulley Filler Test Plug - Check weekly and keep oil level with bottom of plug - Drain and refill yearly	Same As Item 18	1
		12		Transmission Test Plug - Keep oil level with plug - See Item 18	Same As Item 18	1
	13			Adjusting Link	Pressure Gun Grease	1
14				PTO Control Lever - Every 10 hours of PTO operation	Pressure Gun Grease	1
15				Brake Pedal Pivots	Pressure Gun Grease	2
16				PTO Clutch Release Bearing - One stroke of grease every 10 hours of PTO operation	Pressure Gun Grease	1
			17	Hydraulic Oil Filter - Replace twice yearly or every month if extremely dusty	New Element Number 100 476-AS	1
			18	Transmission Filler Cap - See Item 12	SAE 5W-20 Year Around If Temperatures Fall Below 0° F., otherwise use SAE 10W-30, Mix 1 Quart Of 102 082-A Oil Additive With Each 4 Gallons Of Oil.	1
19				Power Steering Cylinder Sockets	Pressure Gun Grease	4
			20	Front Wheel Hub - Clean and repack yearly or every 1000 hours	No. 1 Grade Multi-Purpose Lithium or Calcium Base Grease	2
	21			Leveling Gear	Pressure Gun Grease	1
			22	Hydraulic Breather - Replace yearly	New Element Number 104 793-A	1
			23	Transmission Drain Plugs - Drain, flush and refill yearly - See Item 18	Same As Item 18	3
24				Clutch Shaft And Release Bearing - One Stroke of grease daily	Pressure Gun Grease	2
	25			Crankcase Drain Plug - Drain and refill Summer: Gasoline-90 hours; Diesel-60 hours Winter: Gasoline-60 hours; Diesel-40 hours See Item 28	SAE 20, 20W or 10W-30 Above 32° F. SAE 10W or 5W-20 Above 10 to 32° F. SAE 5W or 5W-20 Below 10° F.	1
26				Steering Knuckle Pivot	Pressure Gun Grease	2
		27		Diesel Starting Motor - 5 or 6 drops of oil	Same As Item 25	1
28				Crankcase Filler And Bayonet Gauge - Keep oil within <i>WORKING RANGE</i> - See Item 25	Same As Item 25	1
29				Air Cleaner Cup - Clean and refill when 1/4 inch of sediment collects	Same As Item 25	1

DEALER'S INSTRUCTIONS

DELIVERY CERTIFICATE

Remember, satisfactory performance from this tractor is important to both you and your customer. To a large extent, complete satisfaction depends on the service you give the tractor before delivery plus the care and operating instruction you give the owner. There is no better road to complete customer satisfaction than by following through on all items listed on the following sheet — before and after delivery. You expect this kind of service on the items you buy and your customers expect it from you.

Before delivering the tractor, perform all pre-delivery services and make all necessary checks to ensure maximum efficiency and peak performance of the tractor.

When delivery is made, go through the entire Operator's Manual with the customer pointing out instructions for proper care, servicing and operation of the tractor. Emphasize the use of proper fuel, lubricating oil and greases as recommended. **MAKE CERTAIN THAT YOUR CUSTOMER HAS A THOROUGH KNOWLEDGE OF THE CARE AND OPERATION OF THE TRACTOR.**

Assure your customer that you have proper service tools and special tools and can perform quality service on his tractor.

At the time of delivery, make all the checks indicated on the delivery certificate. As many as possible of the checks should be made in the presence of the new owner, using the Operator's Manual as a guide, explaining to him the importance of each point. Checks requiring special tools or equipment should be made before the tractor leaves your shop.

An original and two carbon copies of the delivery certificate should be prepared. Place a check mark beside each item as it is completed and/or explained. After all checks have been completed and the original with two carbon copies filled out, signed and dated, tear out the original and first copy. Forward the original copy to your branch office, keep one copy in your files and leave the customer's copy with him.

SERVICE POLICY

After approximately 150 hours of tractor operation, contact the owner and perform a free inspection of the new tractor. Complete all checks listed under the 150 Hour Service Policy Check and make all adjustments as found necessary. After all checks have been completed and the original with two carbon copies of the Service Policy filled out, signed and dated, tear out the original and first copy. Forward the original copy to your branch office, keep one copy in your files and leave the customer's copy with him. Any grease or oil used at the time of the 150 hour inspection will be paid for by the customer.

CUSTOMER'S INSTRUCTIONS

Before your dealer completes the delivery of the tractor to you, the customer, he will complete the Delivery Service check shown on the following page.

After approximately 150 hours of tractor operation, contact your dealer who will perform a free inspection and service, checking all items listed on the 150 Hour Service Policy Check. Any grease or oil required at the time of this inspection will be paid for by you, the customer.

You may be assured that your dealer has both the necessary tools and know-how to perform every service that you may require on your new tractor.

IMPERIAL AND METRIC MEASURE

All fluid quantities and dimensions listed in the foregoing specifications are given in U.S. measure. In countries where Imperial or metric measure is used, it will be necessary to convert from U.S. measure to the desired measure through the use of conversion factors. Below are some of the most common factors used.

One U.S. qt. = .946 liters = .83 Imperial qt.
 One U.S. gal. = 3.78 liters = .83 Imperial gal.
 One lb. = .45 kilogram
 One inch = 25.40 millimeters
 One ft. = .30 meters

To convert U.S. measure to Imperial or metric measure, multiply the U.S. quantity by the conversion factor. Examples of these calculations are outlined below.

Six U.S. qt. x .946 liters = 5.68 liters
 Six U.S. qt. x .83 Imperial qt. = 4.98 Imperial qt.
 Six lb. x .45 kilogram = 2.7 kilograms
 Six in. x 25.40 millimeters = 152.4 millimeters
 Six ft. x .30 meters = 1.80 meters

LUBRICATION

The lubrication points and frequency requirements listed in the preceding Lubrication Chart are based on normal op-

erating conditions. Under adverse conditions, it will be necessary to lubricate the tractor more frequently. Refer to the discussion under Service Periods.

Use quality oils and greases furnished by a reliable manufacturer, and be sure to use the proper oil or grease for the particular type of lubrication required. Always use our 102 082-A Oil Additive as outlined under Oil Additive. Keep these lubricants in clean, covered containers, and see that funnels, measures and similar handling equipment are clean before using them. Clean all fittings, plug openings, oil cups and other points of lubrication before servicing. Inspect plugs and other detachable fittings to ensure that they are clean before reinstalling them on the tractor.

OIL ADDITIVE

To provide satisfactory lubrication, it is necessary to mix 102 082-A Oil Additive with the engine oil that is used in the hydraulic system, transmission, final drive, belt pulley and power steering unit. This additive is an extreme pressure additive and is supplied only by your dealer. Mix the oil additive and the engine oil in a ratio of one part additive to 16 parts oil or one quart additive to four gallons oil.

STOP THE POWER TAKE-OFF BEFORE DISMOUNTING FROM THE TRACTOR



SECTION II

ENGINE

ENGINE LUBRICATION

The type of lubrication system in your tractor engine is called a *metering lubrication system* or a *low pressure spurt system*. Oil is supplied to the crankshaft main bearings by a vane-type oil pump. The oil is metered in time spurts from the main bearings into oil galleries and passages in the crankcase that deliver it to all points requiring lubrication.

The oil level should be checked daily and replenished, if necessary, to maintain the oil level within the limits of the *WORKING RANGE* on the bayonet gauge. (See Figure 2-1.) Always check the oil level before starting the engine if possible. If the engine has been in operation, be sure to allow sufficient time for the oil to drain back into the oil pan before checking the oil level. The most satisfactory engine lubrication will be obtained when using premium quality oils of the proper grade and classification as outlined in the following discussion.



Figure 2-1 Checking Crankcase Oil Level

ENGINE LUBRICATING OIL SELECTION

Determine both the recommended SAE (Society of Automotive Engineers) grade and the API (American Petroleum Institute) classification to select the proper lubricating oil for your engine. The API classifications of ML, MM and MS designate oils intended for use in spark ignition engines, and classifications of DG, DM and DS designate oils intended for use in Diesel engines. One of these classifications is printed on the retail oil containers supplied by most oil companies. Some oils which have been refined to be suitable for more than one type of service are so designated with more than one classification.

An oil classified for service ML (light duty service) or MM (moderate duty service) is not recommended for use in your tractor engine due to the varied service conditions under which a tractor operates. The MS (severe duty service) oil is the only oil recommended for use in spark ignition engines that is considered satisfactory for use in gasoline engine. Oils with Diesel classifications may also be used but they are not usually required.

The DS (severe duty service) oil is the only oil normally recommended for use in Diesel engines; however, DM (moderate duty service) oil may be used in extremely cold weather if 5W or 5W-20 oil is not available in the DS classification. If this substitution is made, the oil should be changed more frequently than normally recommended. DG (general duty service) oil is not recommended for use in diesel engines.



Figure 2-2 Servicing Oil Filter

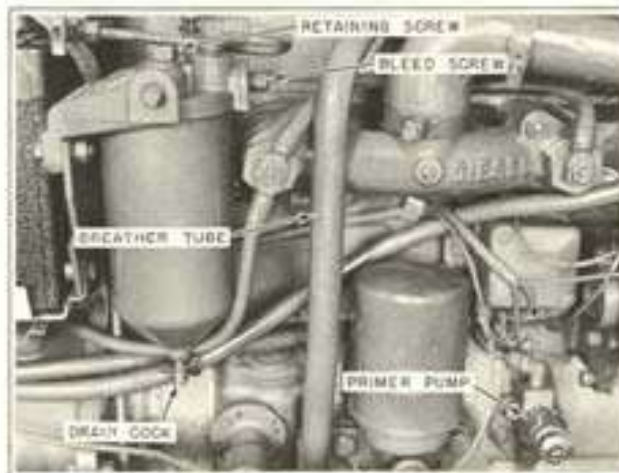


Figure 2-3 Crankcase Breather

Use the chart below as a quick reference for recommended engine lubricating oils.

ENGINE LUBRICATING OIL

Air Temperature	SAE Grade	API Classification	
		Gasoline	Diesel
Above +32° F.	20-20W or 10W-30	MS	DS
+32 to +10° F.	10W or 5W-20	MS	DS
Below +10° F.	5W or 5W-20	MS	*DS

*If 5W or 5W-20 is not available in the DS Classification, DM may be used if the oil is changed more frequently than normally recommended.

NOTE: An oil one grade lighter than outlined in the chart above is recommended for use in new or newly overhauled engines during the first season if temperatures normally range above plus 32 degrees Fahrenheit.

OIL CHANGE PERIODS

Quality lubricating oils contain additives which gradually become depleted as the oil is used; therefore, it is important to change the oil as recommended in the following chart to obtain maximum engine efficiency. DRAIN THE OIL WHEN THE ENGINE IS WARM SO THAT IT WILL FLOW FREELY.

Operating Condition	Gasoline	Diesel
Normal Operation	90 hours	60 hours
Winter Operation With Complete Warm-Up	60 hours	40 hours
Intermittent Winter Operation or Under Very Dusty Conditions	45 hours	30 hours

OIL FILTER SERVICING

The oil filter element and gasket, part number 100 126-ASA, should be replaced every fourth oil change. Clean the area around the filter before servicing; then turn the element counterclockwise, and remove and discard the old element and gasket. (See Figure 2-2.) Lubricate the gasket on the new element with heavy oil or grease and thread the element into the filter base. NEVER TIGHTEN THE FILTER ELEMENT MORE THAN ONE-HALF TURN AFTER THE GASKET FIRST CONTACTS THE FILTER BASE. Install one additional quart of oil in the engine crankcase. Start the engine and check for oil leaks.

CRANKCASE BREATHER

The breather attached to the valve cover equalizes the pressure inside and outside the engine crankcase. (See Figure 2-3.) Check the opening in the lower end of the breather tube periodically and remove any obstruction which may exist. Failure to keep the breather open may result in oil being forced past the oil seals and gaskets.

CHANGE ENGINE OIL AND FILTER REGULARLY

VALVE CLEARANCE ADJUSTMENT

The engine valve clearances will require occasional adjustment to ensure proper engine performance. Adjust the valve clearances so that the gaps between the rocker arm contact buttons and the valve stem tips are in agreement with the dimensions set forth in the following chart. These clearances are for gap measurements made when the engine is cold or at room temperature. Adjusting the valve clearances while the engine is hot or running is not recommended.

	<u>Intake</u>	<u>Exhaust</u>
Gasoline Engine	.009 to .011 inch	.015 to .017 inch
Diesel Engine	.009 to .011 inch	.019 to .021 inch

The valve at the front of the engine is an exhaust valve. The next two are intake valves and the following pair are exhaust valves. This arrangement continues in alternate pairs so that the last valve at the rear of the engine is another exhaust valve.

To adjust the valve clearances, remove the hood, fuel tank, and breather tube and cylinder head cover; then proceed as follows:

1. Slowly turn the engine clockwise (as viewed from the front of the tractor) with a starting crank or 1-1/8-inch socket and extension until the intake valve (second from front) for the number one cylinder is fully closed. Continue to turn the engine an additional 145 degrees or from 1/4 to 1/2 turn. Both valves are completely closed at this point and their clearances may be adjusted.
2. Loosen the lock nut on the rocker arm adjusting screw, and insert a feeler gauge of the correct thickness between the valve stem tip and the rocker arm contact button. (See Figure 2-4.) Turn the adjusting screw as required until the feeler gauge will just slide in and out of the gap. Tighten the lock nut and recheck the adjustment.
3. Position the valves and adjust the valve clearances for the remaining cylinders in the same manner outlined for the number one cylinder. After all the valves have been adjusted, reinstall the breather tube and cylinder head cover using a new gasket; then reinstall the fuel tank and hood.

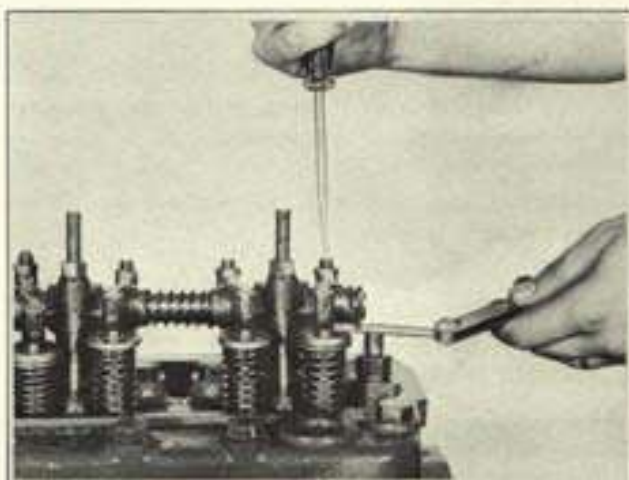


Figure 2-4 Valve Clearance Adjustment

ENGINE TROUBLE SHOOTING ENGINE FAILS TO START

1. Clutch pedal not depressed — Depress the clutch pedal to actuate the safety switch.
2. Fuel stop control stuck in the out position (Diesel) — Check and repair the fuel stop.
3. Fuel tank empty or fuel shutoff valve closed — Check the fuel level, and be sure the valve is open before attempting to start the engine.
4. Engine flooded by overchoke (gasoline) — Push in the choke control and crank the engine for about 15 seconds with the governor control lever in the full throttle position.
5. Fuel lines plugged — Remove and clean the fuel lines.
6. Gasoline in carburetor but not in cylinders (gasoline) — Drain and refill the carburetor several times. If this does not clear the obstruction, have the carburetor checked by your serviceman.
7. Fuel with too high a viscosity being used (Diesel) — Fuel with a high viscosity thickens in cold weather. Use a lower viscosity fuel.
8. Fuel with too low a cetane rating being used (Diesel) — Do not use a fuel with a cetane rating less than 40.

9. Air in fuel lines (Diesel) — Bleed the fuel system as outlined in Section III.
10. Fuel filter clogged (Diesel) — Replace the filter element as outlined in Section III.
11. Battery cables loose or broken — Check the cables, and replace if necessary.
12. Cranking speed too slow — The battery or batteries must be in good condition to start the engine, especially in cold weather.
13. Spark plug wires damp, dirty or oil soaked (gasoline) — Wipe all dirt, oil and moisture from the wires. Replace the ignition wires where necessary.
14. Faulty ignition (gasoline) — Check the ignition system by removing a spark plug wire and holding it 1/4 inch from the cylinder head. A blue spark should jump the gap when the engine is cranked. Have the coil, points and condenser checked if the spark is weak. Check for loose and broken connections if there is no spark.
15. Dirty, pitted or burned distributor points (gasoline) — Replace with new points if pitted or burned; file clean and readjust if dirty. Never use emery paper to clean distributor points.
16. Cracked distributor cover (gasoline) — Replace with a new cover.
17. Distributor rotor broken, worn or grounded (gasoline) — Check, and replace where necessary.
18. Faulty ignition switch (gasoline) — Check for loose, broken or burned contacts.
19. Spark plugs dirty (gasoline) — Remove and clean the spark plugs as outlined in Section IV. Check and reset the spark gap. Replace all plugs that have cracked or damaged insulators.
20. Starting motor defective — Have your serviceman check the starting motor.
21. Compression too low — Have the engine checked by your serviceman.

ENGINE FAILS TO DEVELOP FULL POWER

1. Ground speed too fast — Shift the transmission into a lower gear to avoid overloading the engine.
2. Vent in fuel tank cover obstructed — Wash the cap in a cleaning solvent.
3. Clogged fuel strainer or filter — Clean the strainer or replace the filter element as outlined in Section III.
4. Carburetor improperly adjusted (gasoline) — Adjust the carburetor as outlined in Section III.
5. Governor improperly adjusted (gasoline) — Adjust the governor as outlined in Section III. (Diesel) — Consult your serviceman.
6. Improper fuel — Check the fuel specifications in Section I, and make sure the proper fuel is being used.
7. Fuel viscosity too low (Diesel) — Fuel with too low a viscosity causes the injection pump to slip. Use a fuel with a higher viscosity.
8. Exhaust muffler clogged — Replace the muffler.
9. Spark plugs dirty (gasoline) — Clean the plugs and readjust the spark gap as outlined in Section IV.
10. Weak coil, faulty condenser or poorly insulated ignition wires (gasoline) — Check the ignition system, and repair where necessary.
11. Ignition out of time (gasoline) — Adjust the ignition timing as outlined in Section IV. (Diesel) — Consult your serviceman.
12. Air cleaner dirty — Wash the air cleaner in cleaning solvent and change the oil in the cup.
13. Air stack cap or precleaner screener dirty — Wash the air stack cap or precleaner sleeve and screener in a cleaning solvent. Wipe the precleaner body with a cloth.
14. Oil in air cleaner cup too heavy — Change the oil to the same grade as that used in the engine crankcase.

15. Engine running too cold — Check the thermostat, and cover the radiator if necessary.
16. Engine running too hot — Check the thermostat and cooling system.
17. Valves improperly adjusted — Adjust the valve clearances as outlined in this section.
18. Clutch slipping — Adjust the clutch as outlined in Section VI. Have the clutch overhauled by your serviceman if the condition persists.

ENGINE OVERHEATING

1. Cooling system liquid too low — Fill the cooling system to 1-1/2 inches above the radiator core.
2. Fan belt loose or badly worn — Check and adjust the fan belt. Replace the belt if it is cracked or frayed.
3. Clogged or collapsed radiator hose — Replace the hose.
4. Oil level in crankcase too low — Check and add oil if necessary.
5. Engine oil too heavy — Use seasonal grade engine oil.
6. Tractor overloaded — Use lower transmission speed.
7. Brakes dragging — Adjust the brakes as outlined in Section VII.
8. Defective thermostat — Have the thermostat removed and checked. *Do not operate the engine without a thermostat.*
9. Improper fuel — Use fuels that meet the specifications in Section I.
10. Carburetor improperly adjusted (gasoline) — Adjust the carburetor as outlined in Section III.
11. Clogged muffler — Replace the muffler.
12. Incorrect ignition timing (gasoline) — Adjust the ignition timing as outlined in Section IV. (Diesel) — Consult your serviceman.
13. Improper spark plugs (gasoline) — Use spark plugs of the correct heat range.
14. Defective temperature gauge — Have the gauge checked.
15. Defective water pump — Have the water pump checked by your serviceman.

EXCESSIVE FUEL CONSUMPTION

1. Choke valve closed (gasoline) — Do not have the choke control pulled out any farther than is necessary.
2. Air intake clogged or air cleaner plugged — Clean the airstack cap or precleaner screener. Remove and wash the air cleaner in a cleaning solvent, and change the oil in the cup.
3. Fuel lines leaking — Check all fuel lines and stop all leaks.
4. Carburetor improperly adjusted (gasoline) — Adjust the carburetor as outlined in Section III.
5. Carburetor float sticking (gasoline) — Have your serviceman check the carburetor.
6. Incorrect ignition timing (gasoline) — Adjust the ignition timing as outlined in Section IV. (Diesel) — Consult your serviceman.
7. Improper grade and quality of fuel being used — Use fuels that meet the specifications in Section I.
8. Engine overloaded — Use engine on rated loads only for the best fuel economy.

EXCESSIVE OIL CONSUMPTION

1. Improper grade of oil being used — Use only seasonal grade engine oil.
2. Crankcase oil diluted — Drain crankcase oil and re-fill with seasonal grade engine oil.
3. Engine temperature too high — Check the engine for overheating.
4. Gaskets leaking — Replace all leaking gaskets.
5. Oil pan drain plug loose — Tighten the oil pan drain plug.
6. Oil pressure too high — Have your serviceman check the oil pressure relief valve.

ENGINE MISFIRES

1. Dirty, cracked or grounded spark plugs (gasoline) — Check and regap the spark plugs as outlined in Section IV. Replace plugs where necessary.
2. Distributor cap cracked (gasoline) — Replace the distributor cap.
3. Grounded spark plug wires (gasoline) — Check wires for breaks in the insulation.
4. Weak ignition coil or condenser (gasoline) — Have your serviceman check the coil and condenser.
5. Carburetor improperly adjusted (gasoline) — Adjust the carburetor as outlined in Section III.
6. Water in fuel — Drain the fuel tank, and refill with clean fuel.
7. Burned or sticking valves — Have your serviceman grind and reseal the valves, and check for proper valve stem lubrication. Use a premium quality oil.
8. Carburetor dirty (gasoline) — Have your serviceman clean and adjust the carburetor.
9. Intake manifold leaking (gasoline) — Check and tighten all nuts and cap screws.
10. Injection nozzles dirty or out of adjustment (Diesel) — Consult your serviceman.
5. Irregular spark (gasoline) — Check the distributor points as outlined in Section IV, and have the coil and condenser checked.
6. Clutch slipping — Adjust the clutch as outlined in Section VI. Have the clutch overhauled by your serviceman if the condition persists.
7. Governor action slow — Have the governor removed, cleaned and repaired by your serviceman.
8. Engine surges or smokes (Diesel) — Increase engine speed; consult your serviceman if the condition persists.

ENGINE BACKFIRES

1. Dirty or broken spark plugs (gasoline) — Remove, clean and adjust the spark plugs. Replace damaged plugs with new spark plugs.
2. Wires improperly installed in distributor cap (gasoline) — Check the firing order of the engine with the wiring diagram in Section IV, and install the wires in the distributor cap accordingly.
3. Distributor points burned, pitted or dirty (gasoline) — Replace burned or pitted distributor points. Clean dirty points, and adjust the point opening to .022 inch.
4. Fuel mixture too lean (gasoline) — Adjust the carburetor as outlined in Section III.
5. Incorrect ignition timing (gasoline) — Time the ignition as outlined in Section IV.
6. Distributor advance weights sticking (gasoline) — Have your serviceman check the distributor.

IRREGULAR ENGINE SPEED

1. Governor improperly adjusted (gasoline) — Adjust the governor as outlined in Section III. (Diesel) — Consult your serviceman.
2. Carburetor improperly adjusted (gasoline) — Adjust the carburetor as outlined in Section III.
3. Throttle shaft linkage from governor to carburetor damaged (gasoline) — Repair or replace the throttle shaft linkage.
4. Improper spark plug gap (gasoline) — Remove, clean and regap the spark plugs as outlined in Section IV.

POOR ACCELERATION

1. Improper fuel — Use only those fuels that meet the specifications in Section I.
2. Incorrect ignition timing (gasoline) — Adjust the timing as outlined in Section IV. (Diesel) — Consult your serviceman.
3. Improper carburetor adjustment (gasoline) — Adjust the carburetor as outlined in Section III.

SECTION III

FUEL SYSTEM

GENERAL

The fuel system on gasoline tractors consists of a tank, strainer, line and connections, carburetor, governor, air cleaner, and intake and exhaust manifolds. The purpose of this system is to provide storage, mix the fuel with the required amount of clean air, deliver the fuel-air mixture to the engine cylinders and carry the exhaust gases from the engine.

The fuel system on Diesel tractors differs from that on gasoline tractors because it utilizes the principle of solid injection and compression ignition instead of carburetion and spark ignition. The differing functions of the Diesel system are to inject the correct amount of fuel into the engine cylinders at the proper time and rate, begin and end the injection process sharply, and atomize and distribute the fuel charge throughout the combustion chambers.

AIR CLEANER

Your tractor is equipped with an air stack cap or pre-cleaner screener and an oil bath type air cleaner. Chaff, leaves and insects are removed from the incoming air by the air stack cap or pre-cleaner screener. (See Figures 3-1 and 3-2.) Smaller particles of dirt are removed by the oil in the cup attached to the base of the air cleaner and a filtering element in the air cleaner body. (See Figure 3-3.)



Figure 3-1 Air Stack Cap

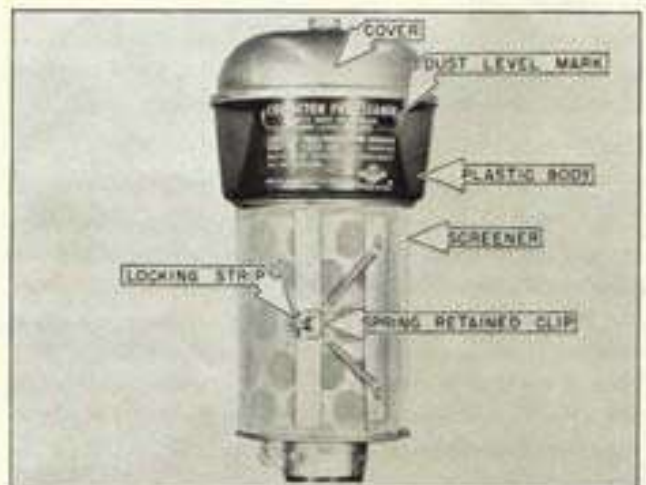


Figure 3-2 Air Pre-cleaner Screener

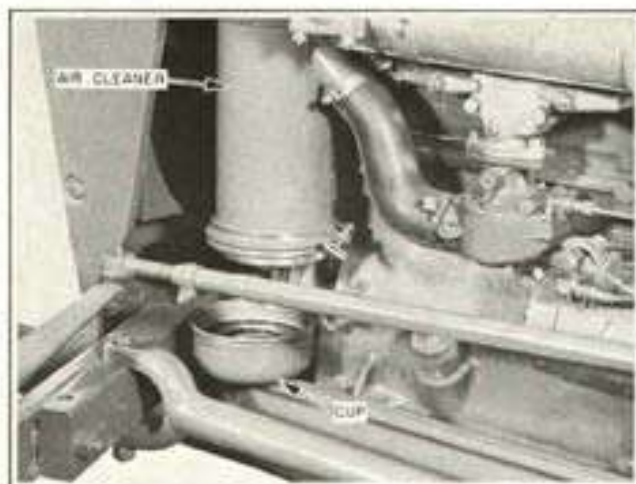


Figure 3-3 Air Cleaner Oil Cup Removed

AIR CLEANER SERVICING

Check the oil in the air cleaner oil cup daily under normal operating conditions and twice daily under extremely dusty or dirty operating conditions. (See Figure 3-3.) Discard the oil in the cup whenever it becomes thick with foreign material or whenever 1/4 inch of dirt has accumulated in the bottom of the cup. Wash the cup in a cleaning solvent and be sure that all caked dirt is removed from the bottom of the cup. Examine the filtering element and center tube in the air cleaner body. If either is dirty, remove the air cleaner from the tractor and rinse it in the cleaning solvent. Allow the air cleaner to drain dry; then reinstall it on the engine. Refill the inner and outer sections of the oil cup to the *Oil Level* mark with new seasonal grade engine oil. **DO NOT OVER-FILL.** Replace the oil cup.

CAUTION

TOO MUCH OIL IN THE DIESEL AIR CLEANER OIL CUP PROVIDES AN UN-CONTROLLED SUPPLY OF FUEL THUS CAUSING A RUNAWAY ENGINE.

AIR STACK CAP AND PRECLEANER SCREENER SERVICING

Gasoline tractors are equipped with an air stack cap and Diesel tractors with a precleaner screener. The precleaner screener may be obtained as optional equipment for gasoline tractors. Keep the air stack cap or precleaner screener in place at all times to prevent large particles of foreign material from entering the air cleaner and keep it clean to prevent a loss of power which will result if the intake flow of air is restricted.

Pull the air stack cap upward and remove it from the intake tube yearly or whenever inspection indicates an accumulation of foreign material. Wash the cap thoroughly in a cleaning solvent. Allow the cap to dry and reinstall it on the air intake pipe. (See Figure 3-1.)

Release the precleaner screener spring retaining clip from the locking strip and remove the screen whenever inspection reveals that the screen requires cleaning. (See Figure 3-2.) Clean thoroughly, using a cleaning solvent if necessary; then reinstall. Remove and clean the pre-cleaner cover and plastic body assembly whenever the dust reaches the dust level mark. (See Figure 3-2.) Shake or wipe the dust from the plastic body. Then reinstall the assembly.

FUELS

Your tractor engine is designed to burn fuels that satisfactorily meet the minimum requirements listed in Section I under Specifications. Always use high grade fuels purchased from a reputable dealer, and be sure that the fuel used in your tractor is kept clean and free of dust, dirt, water and other foreign material. Always fill the tractor fuel tank at night to guard against water accumulation resulting from condensation in the tank.

NOTE

AVOID OVERFILLING THE FUEL TANK AS EXCESS FUEL MAY CONTACT AND DAMAGE THE BATTERY OR BATTERIES AND THE INSULATION ON ELECTRICAL WIRING.

Always wait 24 hours before removing fuel from storage tanks that have been refilled. Dirt and water deposits on the bottom of the tank are stirred up and held in suspension by the fuel when the tanks are filled. If fuel is drawn from a storage tank before these deposits have had time to settle, foreign material will be placed in the tractor fuel tank.



Figure 3-4 Gasoline Fuel Strainer Assembly

GASOLINE FUEL SYSTEM FUEL STRAINER ASSEMBLY

Gasoline tractors are equipped with a screen-type fuel strainer assembly. (See Figure 3-4.) The fuel strainer glass bowl and screen should be removed and cleaned periodically to prevent an excessive accumulation of dirt and other foreign material. To service the strainer, close the fuel shutoff needle valve, loosen the nut at the base of the glass bowl and swing the bail from under the bowl. Remove the bowl with a twisting motion to avoid damaging the gasket. Remove the gasket and screen, and rinse the screen and bowl in a cleaning solvent. Reassemble the strainer, using a new gasket if necessary; then turn on the fuel.

CARBURETOR

Gasoline engines may be equipped with either a Marvel-Schebler or a Zenith updraft carburetor. These carburetors provide three adjustments; an idle mixture adjustment, an idle speed adjustment and a high speed load adjustment. (See Figure 3-5.) Always warm up the engine before making carburetor adjustments, and be sure to adjust the idle mixture before making the idle speed and high speed load adjustments.

IDLE MIXTURE ADJUSTMENT

The idle mixture adjustment varies the ratio of the fuel-air mixture entering the engine cylinders so that a smooth



Figure 3-5 Carburetor Adjustments

engine idle may be obtained. Check the carburetor, air cleaner and intake manifold for air leaks, and inspect the ignition system to be sure that it is not the cause of improper engine operation before making this adjustment.

To adjust the idle mixture, place the governor control lever in the idle speed position and slowly turn the needle valve adjusting screw in, enriching the fuel-air mixture, until the engine begins to lose speed; then turn the screw out until the engine again begins to slow down. (See Figure 3-5.) Use $1/8$ turns when making this adjustment, and allow sufficient time between each change for the engine to adjust itself to the new setting. Increase the engine speed occasionally to about 1000 rpm to clear the combustion chambers of excess fuel. Continue adjusting the needle valve until the maximum smooth idle is determined. The adjustment is approximately correct when the needle valve is $1-3/4$ turns open on tractors equipped with a Marvel-Schebler carburetor and $3/4$ turn open on tractors equipped with a Zenith carburetor.

IDLE SPEED ADJUSTMENT

ALWAYS MAKE THE IDLE MIXTURE ADJUSTMENT BEFORE ADJUSTING THE IDLE SPEED. To adjust the idle speed, place the governor control lever in the idle speed position and check the engine speed registered on the tachometer. Turn the idle speed adjusting screw as required to obtain an idle speed of 350 to 400 rpm. (See Figure 3-5.)



OLIVER CORPORATION

CHARLES CITY, IOWA

WHEEL TRACTOR

Tractor Model _____ Serial Number _____ Engine Number _____

Dealer's Name & Address _____

Owner's Name & Address _____

DELIVERY SERVICE

THE CHECKS BELOW HAVE BEEN MADE AND THE NEW OWNER INSTRUCTED IN THE PROPER CARE, SAFE OPERATION AND CORRECT ADJUSTMENT OF THE ITEMS LISTED.

The Owner Has Been Properly Informed On The Recommended Weight Or Grade And Quality Of Engine Oil And Fuel.

- | | |
|--|---|
| <input type="checkbox"/> Engine Oil Level | <input type="checkbox"/> Hydraulic System Checked And Operating Properly |
| <input type="checkbox"/> Air Cleaner Oil Level | <input type="checkbox"/> Battery Properly Filled With Electrolyte And Registration Completed |
| <input type="checkbox"/> Transmission Oil Level | <input type="checkbox"/> Function Of All Controls Outlined To Owner |
| <input type="checkbox"/> Belt Pulley Oil Level | <input type="checkbox"/> Starting And Stopping Tractor Outlined To Owner |
| <input type="checkbox"/> Hydraulic System Oil Level | <input type="checkbox"/> Safety Of Operation - Selection Of Proper Speeds, PTO, And Hitching To Drawbar |
| <input type="checkbox"/> Proper Coolant And Level In Radiator | <input type="checkbox"/> Outline Proper Fuel Handling And Filling Fuel Tank |
| <input type="checkbox"/> All Grease Fittings Serviced | <input type="checkbox"/> Owner Has Driven Tractor |
| <input type="checkbox"/> All Gauges Working Properly | <input type="checkbox"/> Special Equipment Has Been Mounted As Listed Below: |
| <input type="checkbox"/> Proper Tire Pressure | _____ |
| <input type="checkbox"/> The Importance Of Maintaining Proper Tire Pressure To Tire Life Has Been Pointed Out To The Owner | _____ |
| <input type="checkbox"/> Governor Checked - Idle And High No Load Speeds | _____ |

I have spent _____ hours and _____ minutes reviewing the entire Operator's Manual with the owner and he has a thorough knowledge of the care, adjustments and safe operation of this tractor.

Dealer's Signature

The above tractor has been received by me in accordance with the foregoing and I have a thorough knowledge of its care, adjustment and operation. I am assured that the foregoing checks have been physically made by the dealer or his representative and accept delivery of this tractor. I have read and accept the warranty on the reverse side hereof.

Owner's Signature

Date

Dealer Copy

III



Figure 3-6 Governor Linkage Adjustment

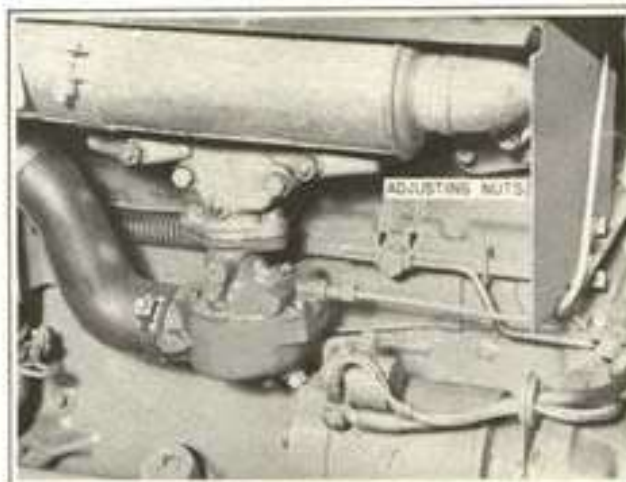


Figure 3-7 Governor High Speed Adjustment

HIGH SPEED LOAD ADJUSTMENT

The high speed load adjustment is provided to compensate for variations in fuel quality, atmospheric conditions and loads. To make the adjustment, place the engine under load (stationary operation) at full throttle and slowly turn the needle valve in, leaning the fuel-air mixture, until the engine begins to lose power; then slowly turn the needle valve out until full power is regained. (See Figure 3-5.) Repeat this procedure until a definite setting has been established. The adjustment is approximately correct when the needle valve is 2 turns open on tractors equipped with a Marvel-Schebler carburetor and 1-5/8 turns open on tractors equipped with a Zenith carburetor. Operate the tractor under a drawbar load after each individual setting if it is impossible to operate the tractor under a stationary load.

WARNING

DO NOT ATTEMPT TO MAKE THE CARBURETOR LOAD ADJUSTMENT WHILE THE TRACTOR IS IN MOTION.

GASOLINE ENGINE GOVERNOR

The governor on gasoline engines has been designed to maintain constant engine speeds under varying load conditions. The governor is provided with three adjustments, a linkage adjustment, a high no-load speed adjustment and a bumper screw adjustment.

GOVERNOR LINKAGE ADJUSTMENT

The governor linkage adjustment is provided to allow the governor to act over the complete range of engine speeds. The linkage will not normally require adjustment unless the carburetor has been removed or unless the linkage has been altered or damaged.

To adjust the linkage, remove the air cleaner and move the governor control lever to the full throttle position. Loosen the rod end locking nut on the governor-to-carburetor rod. Remove the rod from the governor operating lever and turn it in or out of the rod end until it is 1/16 inch forward of the top hole in the operating lever. (See Figure 3-6.) Reinstall the rod in the top hole of the operating lever and tighten the rod end locking nut; then adjust the engine idle mixture and idle speed.

GOVERNOR HIGH NO-LOAD SPEED ADJUSTMENT

The governor high no-load speed adjustment is provided to adjust the high no-load speed of the engine. To make this adjustment, move the governor control lever to its uppermost position, loosen the bumper screw lock nut and turn the bumper screw outward until it releases the governor operating lever. (See Figure 3-8.) Start the engine, move the governor control lever to the full throttle position and check the engine speed on the tachometer. The high no-load speed of the engine should be from 2175 to 2225 rpm. If adjustment is necessary, turn the



Figure 3-8 Governor Bumper Screw Adjustment

two adjusting nuts on the governor rear control rod to move the adjusting sleeve forward to decrease or rearward to increase the high no-load speed of the engine. (See Figure 3-7.) Lock the adjusting sleeve in place when the correct high no-load speed has been obtained; then adjust the bumper screw.

GOVERNOR BUMPER SCREW ADJUSTMENT

There may be a tendency for the engine to surge due to overtravel of the governor operating lever after the high no-load speed adjustment has been completed. To eliminate this surging, stop the engine and loosen the bumper screw lock nut. (See Figure 3-8.) Turn the bumper screw in a little at a time, starting the engine to check its performance after each setting. Do not turn the screw in any farther than is absolutely necessary as it may tend to increase the engine idle speed. Tighten the lock nut when the engine no longer surges at high speed.

DIESEL FUEL SYSTEM FUEL STORAGE

Diesel fuel should be stored in a new tank or one which has never been used for any other type fuel. If Diesel fuel is stored in an old gasoline tank, it will often pick up tank scale, fine dirt, moisture and gum which have settled out of the gasoline while in storage. Use overhead or underground storage tanks equipped with a hose and nozzle.

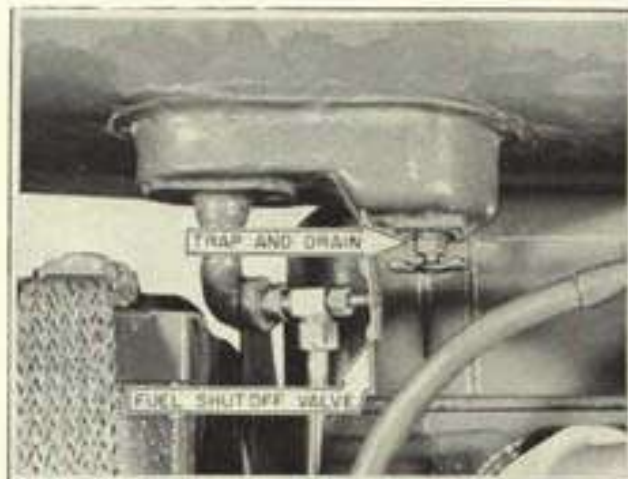


Figure 3-9 Diesel Water Trap And Fuel Shutoff Valve

Overhead tanks should also be equipped with a water trap which should be drained frequently, and underground tanks should be pumped out periodically to remove water accumulations. In addition, the tractor fuel tank should be filled at night to guard against the accumulation of water from condensation. DO NOT USE CANS AND FUNNELS FOR TRANSFERRING FUEL TO THE TRACTOR FUEL TANK AS THEY CANNOT BE KEPT CLEAN.

WATER TRAP AND FUEL SHUTOFF

The Diesel fuel tank water trap is equipped with a drain cock for the periodic removal of dirt and water accumulations. (See Figure 3-9.) Drain the water trap each work day evening before filling the fuel tank.

The fuel shutoff valve provides a means for stopping the flow of fuel to the Diesel engine. (See Figure 3-9.) Close the fuel shutoff valve when servicing the Diesel fuel system.

DIESEL ENGINE GOVERNOR

The Diesel engine governor, which is an integral part of the fuel injection pump, is provided with two adjustments; an idle speed adjustment and a high no-load speed adjustment. Start the engine and allow it to warm up to operating temperature before attempting to make either of these adjustments.

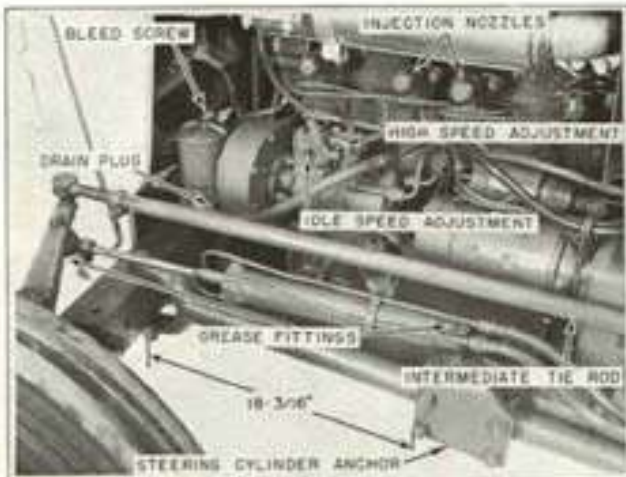


Figure 3-10 Left Side Of Diesel Engine

IDLE SPEED ADJUSTMENT

To adjust the engine idle speed, place the governor control lever in the idle speed position and check the engine speed on the tachourmeter. The engine should idle at 625 to 675 rpm. If adjustment is necessary, loosen the lock nut on the idle adjusting screw and turn the screw to increase or decrease the idle speed as required. (See Figure 3-10.) Continue this adjusting procedure until the recommended idle speed is registered on the tachourmeter; then tighten the lock nut.

HIGH NO-LOAD SPEED ADJUSTMENT

To adjust the high no-load speed of the engine, place the governor control lever in the full throttle position and check the engine speed on the tachourmeter. The high no-load speed of the engine should be from 2175 to 2225 rpm. If adjustment is necessary, loosen the lock nut on the high no-load speed adjusting screw and turn the screw to increase or decrease the high no-load speed as required. (See Figure 3-10.) Continue this adjusting procedure until the correct high no-load speed is registered on the tachourmeter; then tighten the lock nut.

DIESEL FUEL FILTERS

Diesel engines are equipped with two fuel filters. Change the filters more frequently than specified in the following discussions if dirt or moisture is present in the fuel or if the tractor is being operated under extremely dusty or dirty conditions. DO NOT USE SUBSTITUTE FUEL FILTER ELEMENTS. USE ONLY DEALER APPROVED PARTS.

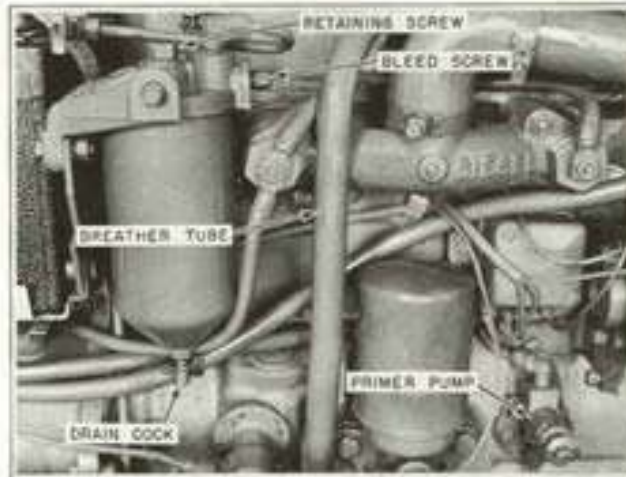


Figure 3-11 Right Side Of Diesel Engine

SERVICING PRIMARY FUEL FILTER

Drain and bleed the primary fuel filter weekly. Replace the element and gasket, part number 104 952-AS, every 500 hours of tractor operation. To replace the element, turn off the fuel at the fuel tank and clean the area around the filter. Open the filter drain and loosen the body retaining screw to drain the filter. (See Figure 3-11.) Remove the body and element after the filter has been drained. Discard the old element and gasket and wash the filter body in clean Diesel fuel. Install the new filtering element in the filter body and position the new gasket in its recess in the filter head. Place the filter body in position and secure it to the filter head with the retaining screw. Close the drain and turn on the fuel. Bleed the low pressure side of the fuel system as outlined under Fuel System Bleeding.

SERVICING FINAL FUEL FILTER

Drain and bleed the final fuel filter each time the element is replaced in the primary filter. Replace the final fuel filter element and gaskets, part number 609 689-AS, every 1000 hours of tractor operation. (See Figure 3-10.) To replace the element, turn off the fuel at the fuel tank and clean the area around the filter. Drain the fuel from the filter; then remove the element and cover by turning them in a counterclockwise direction. Discard the old element and upper and lower gaskets. Install the new element (open end down) and gaskets. Place the cover assembly over the element and tighten hand tight. Tighten the drain plug and turn on the fuel. Bleed the low pressure side of the fuel system as outlined under Fuel System Bleeding.

PRIMER PUMP

A piston-type primer pump is provided for bleeding the low pressure side of the fuel system. (See Figure 3-11.) To operate the pump, loosen the plunger clamp nut, swing the clamp downward and move the plunger in and out. Be sure to reinstall the clamp on the end of the plunger after using the pump.

FUEL SYSTEM BLEEDING

The Diesel fuel system is divided into two parts, the low pressure side which is from the fuel tank to the injection pump and the high pressure side which is from the injection pump through the injection nozzles. (See Figure 3-12.) The reason for bleeding the fuel system is to remove air from the fuel lines. Air will compress and expand and thus prevent the transmission of sufficient pressure to force the fuel through the lines. Air will be drawn into the system whenever the fuel tank is empty, the fuel filters are serviced or the fuel lines are disconnected,

To bleed the low pressure side of the system, first remove the bleed plug in the primary filter and allow gravity to force fuel from the bleed plug opening. (See Figure 3-11.) Reinstall the bleed plug when clean air-free fuel flows from the opening. Loosen the bleed screw in the final filter and operate the primer pump until clean air-free fuel flows out around the bleed screw. (See Figures 3-10 and 3-11.) Tighten the bleed screw and operate the primer pump an additional 20 strokes to remove trapped

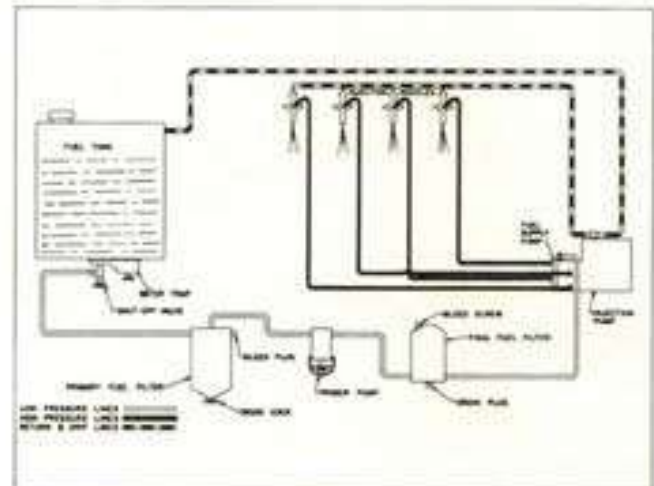


Figure 3-12 Fuel System Schematic Diagram

air from the remainder of the low pressure side of the fuel system.

Attempt to start the engine after bleeding the low pressure side of the fuel system. If the engine fails to start or runs unevenly, air is probably trapped in the high pressure side. To bleed the high pressure side of the system, loosen the fuel supply lines at the injection nozzles. (See Figure 3-10.) Do not loosen the smaller drip line fittings. Push in the fuel stop control and place the governor control lever in the full throttle position. Turn the engine with the starting motor until clean air-free fuel flows out around the loosened fittings. Tighten the fittings and start the engine.



**KEEP FUELS AND LUBRICANTS
AWAY FROM OTHER INFLAMMABLES**



NEVER OPERATE THE ENGINE IN A CLOSED SHED OR GARAGE

SECTION IV

IGNITION AND ELECTRICAL SYSTEMS

GENERAL

The ignition system on gasoline engines consists primarily of a battery, coil, distributor and spark plugs. (See Figure 4-1.) These parts are required to ignite the fuel-air mix-

ture in the combustion chambers. Diesel engines, which utilize the principle of compression ignition, do not require an electrical ignition system.

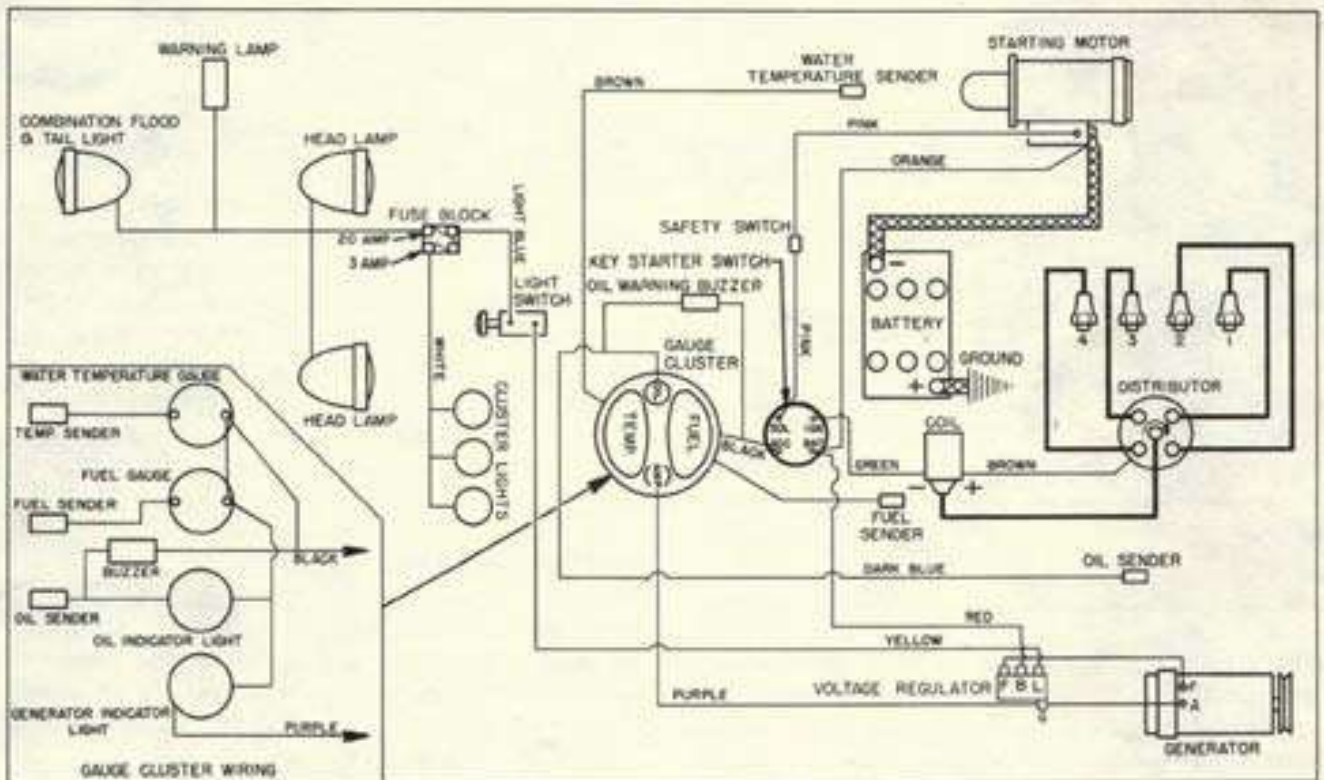


Figure 4-1 Gasoline Tractor Schematic Wiring Diagram

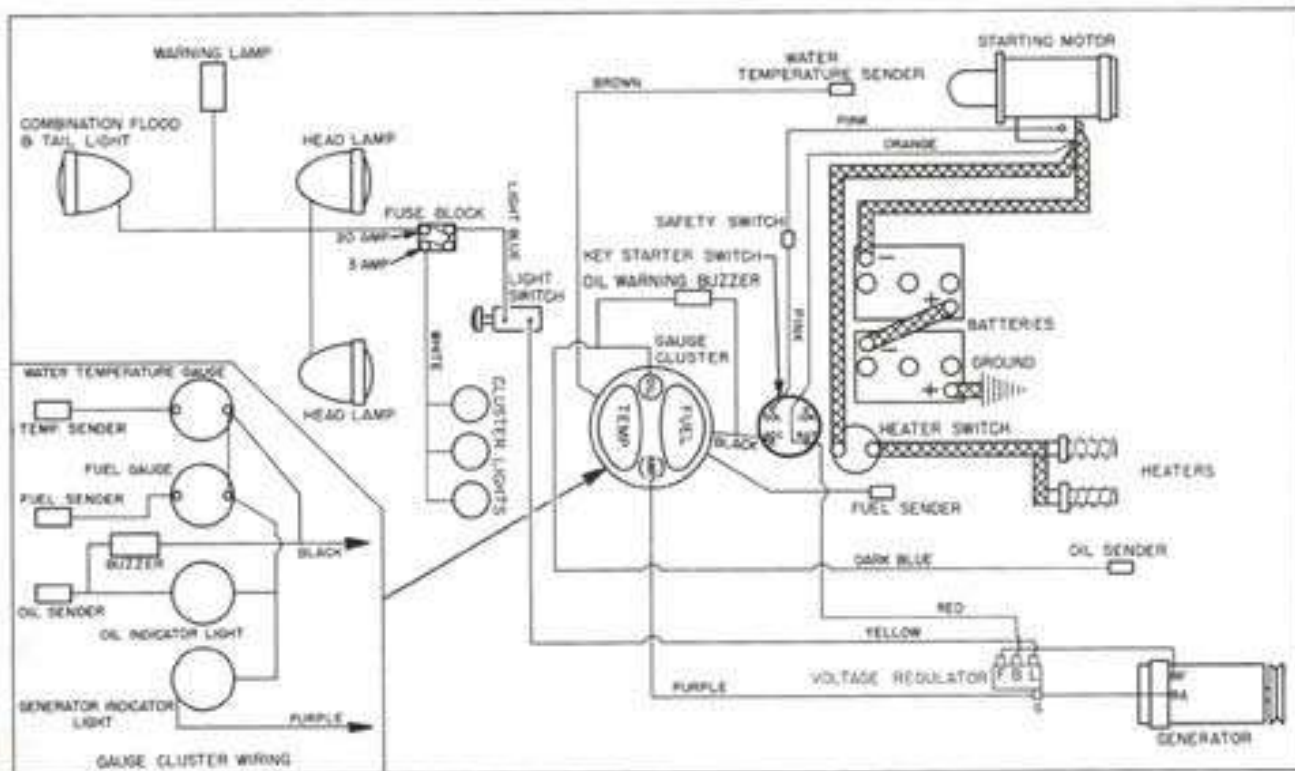


Figure 4-2 Diesel Tractor Schematic Wiring Diagram

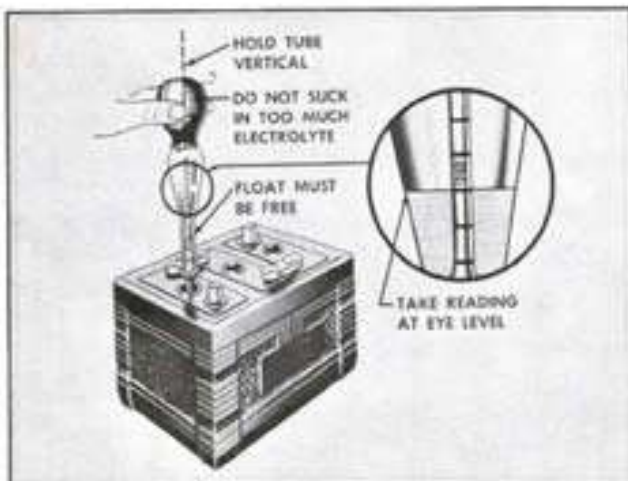


Figure 4-3 Testing Battery Electrolyte With Hydrometer

The primary components of the electrical system used on both gasoline and Diesel tractors are the battery or batteries, lights, gauges, starting motor, generator and current-voltage regulator. (See Figures 4-1 and 4-2.)

BATTERY REGISTRATION CERTIFICATE

A battery registration certificate is furnished with your tractor by the battery manufacturer. Your dealer will fill out this certificate, explain the warranty on the battery and present the certificate to you upon delivery of your tractor. He will also inform you of the location of your nearest authorized battery service station so that you will know whom to contact should the battery require servicing. In the event of premature failure, present the certificate to the battery serviceman when requesting an adjustment.

BATTERY SERVICING

Check the level of the liquid in the battery cells weekly or every 60 hours of tractor operation, and check the specific gravity of the battery electrolyte with a hydrometer every 30 days. (See Figure 4-3.) To check the liquid level or the specific gravity, loosen the wing nuts on the

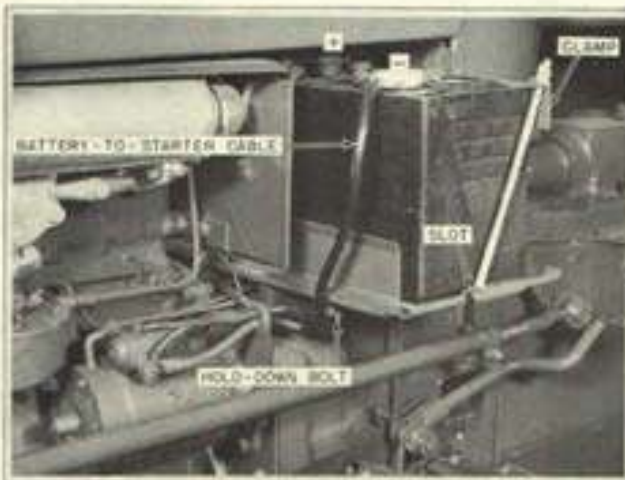


Figure 4-4 Battery Removal

two battery tray hold-down bolts and slide the bolt heads from the slots in the battery tray. (See Figure 4-4.) Slide the battery and tray assembly to the left on gasoline tractors and to the right or left to service the right and left hand batteries respectively on Diesel tractors.

Maintain the liquid level in the battery cells $1/4$ to $3/8$ inch above the battery plates, or at the level of the indicators where provided. Add clean water whenever necessary. Use a syringe to avoid overfilling. It may be necessary to charge the battery if water is added in freezing temperatures. Battery acid with a specific gravity of 1.165 will freeze at zero degrees Fahrenheit.

The electrolyte in the battery cells should not be checked with a hydrometer immediately after water has been added as an incorrect reading will be obtained. Operate the tractor for at least two hours before attempting to take a reading. A battery should be recharged whenever a reading below 1.250 is obtained. Use the table below for interpreting the specific gravity readings.

1.265-1.290	Fully Charged
1.235-1.260	Three-Fourths Charged
1.205-1.230	One-Half Charged
1.170-1.200	One-Fourth Charged
1.140-1.165	Barely Operative
1.110-1.135	Completely Discharged

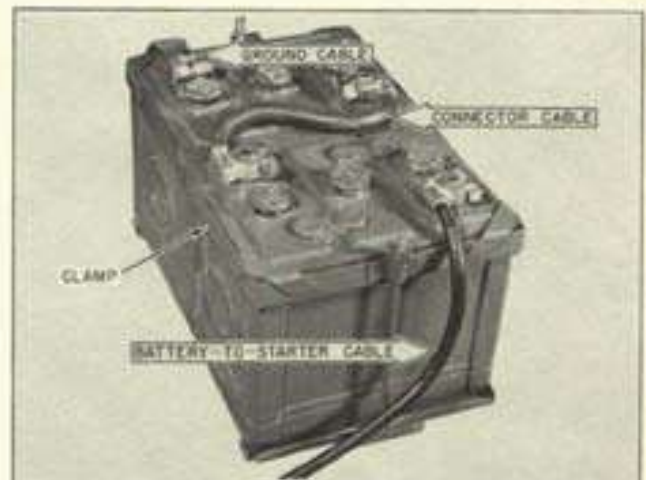


Figure 4-5 Batteries Connected For Diesel Installation

BATTERY REPLACEMENT

To remove the battery or batteries, loosen the wing nuts on the two battery tray hold-down bolts and slide the bolt heads from the slots in the battery tray. (See Figure 4-4.) Slide the battery tray to the right and remove the ground cable from its battery terminal; then slide the battery tray to the left and remove the battery-to-starter cable from its battery terminal. Use a puller to remove corroded clamps. NEVER PRY ON THE CLAMPS WITH A SCREW DRIVER AND NEVER STRIKE THE TERMINALS WITH A HAMMER. Slide the battery tray and battery or batteries from the tractor. On Diesel tractors, disconnect the connector cable from the defective battery; remove the connector cable if both batteries are to be replaced. Remove the battery clamp and remove the old battery or batteries.

Check the battery cables for broken strands or defective installation and replace if necessary. Clean corroded cable clamps with a wire brush. Insert the new battery or batteries, and install the battery clamp. On Diesel tractors, fasten the connector cable to the negative terminal of the right-hand battery and to the positive terminal of the left-hand battery. (See Figure 4-5.) Coat the terminals and clamps with petroleum jelly to retard corrosion. Slide the tray and the battery or batteries back into position. Connect the battery-to-starter cable to the negative battery terminal. Slide the tray to the right and

NEVER USE AN OPEN FLAME NEAR A BATTERY



Figure 4-6 Checking Spark Plug Gap

connect the ground cable to the positive terminal. ALWAYS CONNECT THE GROUND CABLE LAST TO PREVENT ACCIDENTAL SHORT CIRCUITS CAUSED BY TOOLS STRIKING METAL OBJECTS. Do not allow the cables to bind on the terminals as this will impose a strain on the battery or batteries. Coat the terminals and clamps with petroleum jelly. Reinstall the battery tray hold-down bolts and tighten the wing nuts.

SPARK PLUGS

Remove the spark plugs monthly or every 250 hours of tractor operation with a 7/8-inch spark plug wrench. Clean the plugs with a fine steel wire brush or a sand blast cleaner, and check them for eroded or burned electrodes and cracked or broken insulators. Discard all plugs having these defects. Reface the electrodes of the serviceable plugs with a flat point file. Check the new or reconditioned plugs for the proper spark gap of .025 inch with a round wire feeler gauge and adjust if necessary. (See Figure 4-6.) Clean the threads of the reconditioned plugs with a wire brush. Oil the spark plug threads and install the plugs using new gaskets. Tighten the plugs hand tight; then tighten an additional 1/2 to 3/4 turn with a spark plug wrench. Tighten an additional 1/4 turn only if the old gaskets are used. If a torque wrench is available, torque the plugs to 34 foot pounds.



Figure 4-7 Gasoline Engine Coil And Distributor

The following chart consists of a list of the recommended spark plugs for your engine.

	Heavy Duty Service	Normal Duty Service	Light Duty Service
Manufacturer			
A. C.	83-S Com.	C-85 Com.	87-S Com.
Auto-Lite	BT-4	BT-8	BT-8
Champion	D-14	D-16	D-16

COIL

The coil requires no periodic servicing, but it may be necessary to replace it during the life of the tractor. (See Figure 4-7.) When installing a new coil, connect the green wire of the wiring harness to the negative terminal and the brown wire to the positive terminal. (See Figure 4-1.) The coil terminals are marked with a plus and minus sign.

DISTRIBUTOR

The function of the distributor is to open and close the primary circuit so that a high voltage can be induced in the secondary circuit, deliver a high tension spark to the individual spark plugs in the cylinders at the correct instant, and automatically advance and retard the ignition timing according to the speed of the engine. (See Figures 4-1 and 4-7.)

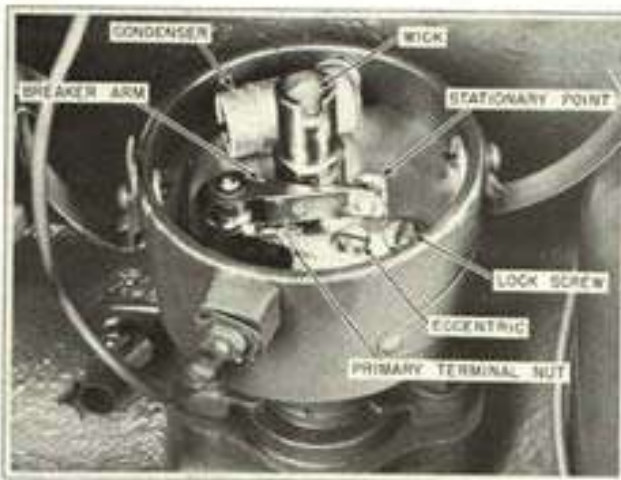


Figure 4-8 Distributor With Cap Removed



Figure 4-9 Adjusting Distributor Points

DISTRIBUTOR INSPECTION

Remove the distributor cap and clean it inside and out with a dry lint-free cloth every 500 hours of tractor operation. Inspect the cap and rotor for chips and cracks, and replace if defective. Remove the housing cover and check the breaker points to see if they are burned, pitted or dirty. (See Figure 4-8.) Dirty points may be cleaned with a point file, but burned or pitted points must be replaced. Chronic difficulty with burned or pitted points can usually be corrected by replacing a faulty coil or condenser.

POINT REMOVAL AND INSTALLATION

To remove the points, remove the distributor cap, rotor and housing cover. Loosen the nut on the primary terminal inside the distributor housing so that the slotted breaker arm spring and breaker arm may be removed. (See Figure 4-8.) Remove the stationary point lock screw and lift the stationary point from the housing. Reverse this procedure to install new points, adjusting the point gap as outlined in the following discussion before replacing the distributor housing cover, rotor and cap.

POINT ADJUSTMENT

Rotate the engine until the breaker cam follower on the breaker arm is resting on the top of one of the breaker cam lobes. Loosen the stationary point lock screw and turn the eccentric to adjust the point gap to .022 inch. (See Figures 4-8 and 4-9.) Tighten the lock screw and recheck the gap.

DISTRIBUTOR LUBRICATION

Lubricate the distributor every 500 hours to coincide with the periodic distributor inspection. Remove the pipe plug from the base of the distributor housing and fill the reservoir with SAE 20W engine oil. (See Figure 4-7.) Oil the breaker cam felt wick with three to four drops of SAE 10W engine oil. Lubricate the breaker arm post with one to two drops of SAE 10W engine oil and apply a light coat of petroleum jelly to the breaker cam. (See Figure 4-8.) AVOID EXCESSIVE LUBRICATION ON THE BREAKER CAM. If too much lubricant is used, it may come in contact with the distributor point contact surfaces causing them to fail prematurely or preventing them from making electrical contact to complete the primary circuit.



SAFETY IS YOUR CHEAPEST INSURANCE



BE CAREFUL

1. KEEP ALL SHIELDS IN PLACE.
2. STOP MACHINE TO ADJUST AND OIL.
3. WHEN MECHANISM BECOMES CLOGGED, DISCONNECT POWER BEFORE CLEANING.
4. KEEP HANDS, FEET AND CLOTHING AWAY FROM POWER DRIVEN PARTS.
5. KEEP OFF IMPLEMENT UNLESS SEAT OR PLATFORM IS PROVIDED. KEEP OTHERS OFF.



Figure 4-10 Timing The Ignition

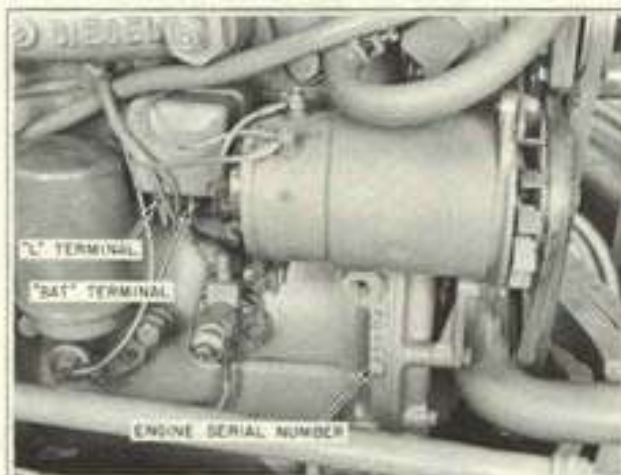


Figure 4-12 Generator And Regulator



Figure 4-11 Diesel Starting Motor Lubrication

TIMING THE IGNITION

Check the serviceability of the distributor points and be sure the points are properly adjusted before timing the ignition. To time the ignition, remove the timing hole cover from the flywheel housing and install a timing light as recommended by its manufacturer. Start the engine and run it at high no-load speed (2200 rpm). Hold the timing light close to the engine flywheel. The 28 degree mark on the flywheel timing strip should line up with the pointer in the timing hole. (See Figure 4-10.) If the recommended mark does not align, loosen the distributor clamp cap screws and rotate the distributor until the mark is correctly aligned. Clamp the distributor in position, turn off the engine and remove the timing light. Reinstall the timing hole cover.

STARTING MOTOR

The starting motor on gasoline engines is equipped with a Bendix drive that automatically engages and disengages the starting motor drive pinion with the ring gear on the flywheel. The starting motor on Diesel engines is equipped with a solenoid switch which gives positive engagement and disengagement of the drive pinion with the flywheel ring gear. This positive engagement enables the operator to keep the drive pinion engaged until the engine has started and continues to run, thus reducing the possibility of the engine running backward.

The diesel engine starting motor is equipped with screw type oiler to provide lubrication for the commutator end bearing. Lubricate this bearing with five or six drops of seasonal grade engine oil monthly or every 250 hours of tractor operation. (See Figure 4-11.) The gasoline engine starting motor is sealed at the factory and requires no periodic lubrication.

GENERATOR

The generator is equipped with sealed bearings which require no periodic lubrication attention.

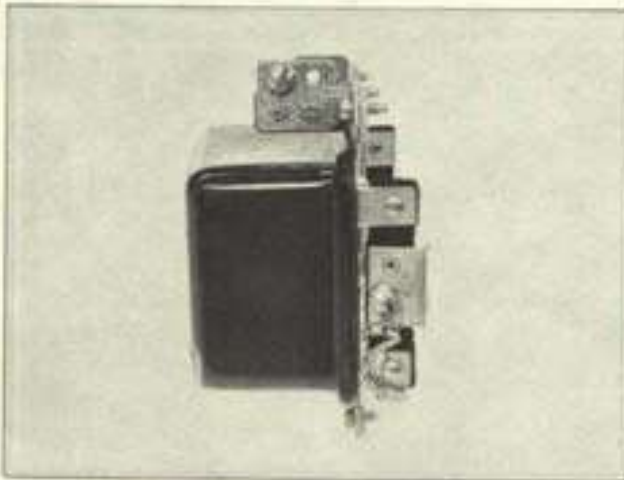


Figure 4-13 Voltage Regulator

The battery or batteries may slowly become discharged when the tractor is used intermittently for short periods. Discharging occurs because the generator is not operated long enough at its normal charging rate to completely replace the current required for starting purposes. If this condition is encountered, it is permissible to increase the generator charging rate by adjusting the voltage regulator as outlined in the following discussion.

VOLTAGE REGULATOR ADJUSTMENT

The battery or batteries may slowly become discharged when the tractor is used intermittently for short periods. To prevent this occurrence on tractors equipped with manual steering, remove the slotted machine screw from the *SUMMER* position in the bridge circuit on the voltage regulator and place it in the *WINTER* position. (See Figure 4-13.) The voltage regulator is located directly in front of the engine oil filter. On power steering tractors, disconnect the red wire attached to the *BAT* terminal on the voltage regulator and connect it to the *L* terminal along with the yellow wire originally attached to this terminal. (See Figure 4-12.)

Be sure to reverse the above adjusting procedure to obtain the normal generator charging rate and thus avoid overcharging the battery or batteries when the tractor is again to be used for long hours of operation.

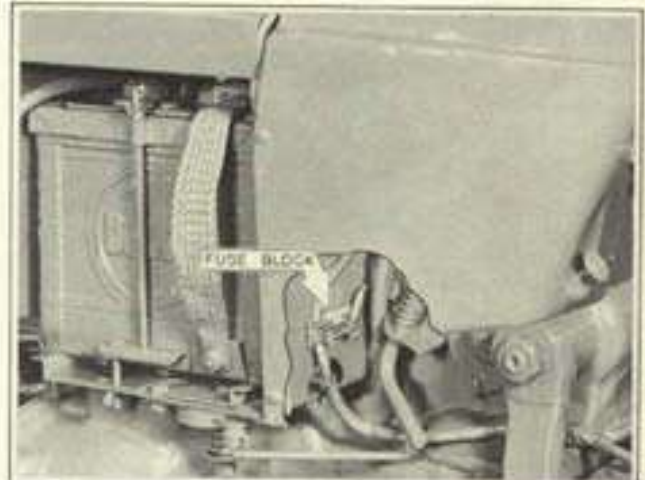


Figure 4-14 Fuse Block

LIGHTS AND FUSES

The head lamps are equipped with one piece, sealed beam lighting units. The rear combination lamp is equipped with a sealed beam lighting unit and a small, single contact, bayonet-type bulb. (See Figure 4-15.) You may select a rear floodlight or red taillight by turning the switch on the combination lamp.

If the lights fail to operate, inspect the fuses in the fuse block under the rear panel. (See Figure 4-14.) If a fuse is burned out, check the electrical wiring for a short circuit before installing a new fuse. The upper 3 amp fuse protects the instrument light circuit and the lower 20 amp fuse protects the floodlight circuit. If only one light fails to operate, check the bulb or sealed beam unit for a burned out element.

To replace a sealed beam unit, remove the screw from the bottom of the lamp molding. Remove the molding and sealed beam unit from the lamp body. (See Figure 4-15.) To remove the sealed beam unit from either front lamp, loosen the screws fastening the two wires to the base of the sealed unit. Loosen the screws and remove the red wire and the taillight bulb and socket assembly to remove the sealed floodlight unit. Reverse this procedure to install the new sealed unit. Be sure to locate the tongue on the lighting unit in the groove in the lamp body.



Figure 4-15 Servicing Combination Lamp



Figure 4-17 Warning Lamp Socket



Figure 4-16 Warning Lamp

pull it from the socket. (See Figure 4-15.) Reverse this procedure to install the new bulb.

WARNING LAMP

The warning lamp is available as optional equipment to provide additional safety for the operator when traveling on roads or highways at night. The lamp is equipped with an amber front lens and a red rear lens. (See Figure 4-16.) The lamp is equipped with a 22-foot electrical cable so that it can be removed from its bracket on the tractor fender and placed in a similar bracket on mounted or drawn implements.

An electrical socket for the warning lamp connector has been installed on the left rear axle carrier mounting flange on all tractors equipped with electric lights. (See Figure 4-17.) This socket may be used for other auxiliary equipment of the same voltage when desired. Current is available at this outlet whenever the tractor lights are illuminated.

To replace the taillight bulb, first remove the combination lamp sealed beam unit from the lamp body as outlined above. Do not disconnect the wires. Push the bulb into its socket, turn it counterclockwise about 1/8 turn and



**NEVER OPERATE THE TRACTOR ON A ROAD
OR HIGHWAY AT NIGHT WITHOUT
A WARNING LAMP**

SECTION V

COOLING SYSTEM

GENERAL

The cooling system is equipped with a pressure radiator, a four-pound pressure radiator cap and a bypass thermostat.

CAUTION

LOOSEN RADIATOR CAP 1/4 TURN AND RELEASE PRESSURE BEFORE REMOVING CAP TO PREVENT ACCIDENTAL SCALDING.

Maintain the temperature of the cooling system within the limits of the green *Work* range on the temperature gauge. Overcooling is as harmful as overheating.

The thermostat in the cooling system at the forward end of the engine head bypasses the cooling liquid through the engine water jacket until it approaches operating temperature. Then the thermostat opens, sealing off the bypass and allows the coolant to circulate through the radiator. (See Figure 5-1.) Do not operate the engine without a thermostat. Removing it will allow the coolant to circulate through the bypass and water jacket only and overheating will occur.

COOLING SYSTEM SERVICING

Check the level of the liquid in the radiator daily and maintain it 1-1/2 inches above the radiator core.

Soft water should always be used in the cooling system except when the water is replaced with a suitable anti-freeze. One-half pint of water soluble oil or other commercial rust inhibitor should be added to the water in the system to prevent the formation of rust. If the cooling system is filled with a permanent type anti-freeze solution, it is not

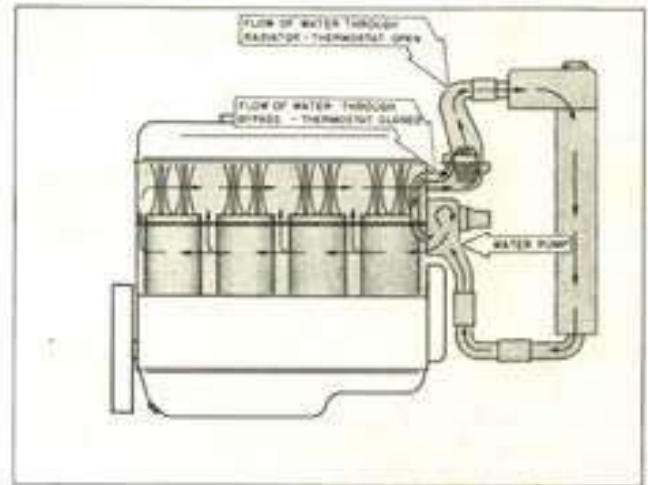


Figure 5-1 Cooling System Schematic Diagram

necessary to add a rust inhibitor because anti-freeze purchased from a reliable dealer and made by a reputable company contains a rust preventive.

The cooling system should be drained and flushed with clean soft water twice a year. Spring and fall are the ideal times for this draining and flushing operation. Install new radiator hoses in the fall when the system is flushed prior to the installation of a permanent type anti-freeze.

Recommended anti-freeze solutions for your tractor are those solutions that contain ethylene glycol in one of its forms. Prestone is an example of a permanent type anti-freeze, which is suitable for winter operation in your tractor cooling system. The use of alcohol is not recommended as a winter coolant because the high operating temperature of your tractor engine will cause it to vaporize out of the system.



Figure 5-2 Radiator Drain



Figure 5-4 Radiator Screen

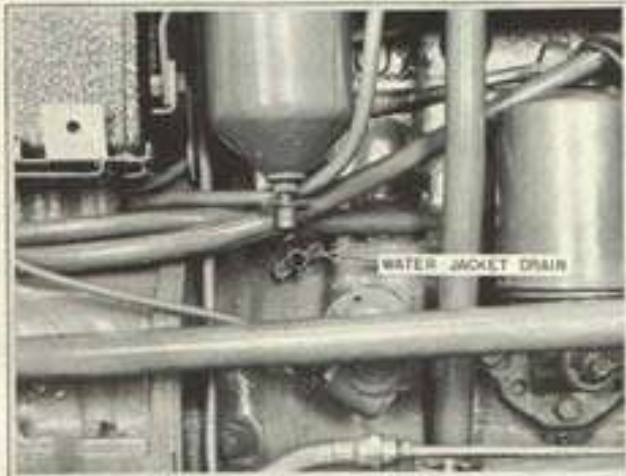


Figure 5-3 Water Jacket Drain

Open both drains when draining the cooling system. To open the drains, turn them in a counterclockwise direction. One drain is in the lower left-hand corner on the rear of the radiator and the other is in the engine crankcase on the right-hand side of the tractor. (See Figures 5-2 and 5-3.)

RADIATOR SCREEN

A radiator screen has been provided to reduce the possibility of the radiator fins becoming clogged with chaff, leaves, insects or foreign material. (See Figure 5-4.) When inspection reveals that the screen

requires cleaning, the radiator grille can be quickly removed, permitting easy access to the screen. To remove the grille, remove the four retaining screws from the front of the grille and pull the grille straight outward to provide access to the radiator screen.

FAN BELT ADJUSTMENT

FAN BELT ADJUSTMENT SHOULD BE CHECKED AFTER THE FIRST 10 HOURS OF TRACTOR OPERATION AND RE-ADJUSTED AS REQUIRED.

To adjust the tension of the fan and generator belt, loosen the generator mounting bolts and the generator belt tension strap bolt. Pull the generator against the belt until there is 1/2 inch slack in the belt. (See Figure 5-5.) Tighten the generator mounting bolts and the belt tension strap bolt.

Keep the fan belt adjusted properly. Check the tension of a new belt daily for the first ten days of operation and adjust as necessary. A loose fan belt will slip and squeal. If this condition occurs, adjust the belt immediately.



Figure 5-5 Fan Belt Adjustment

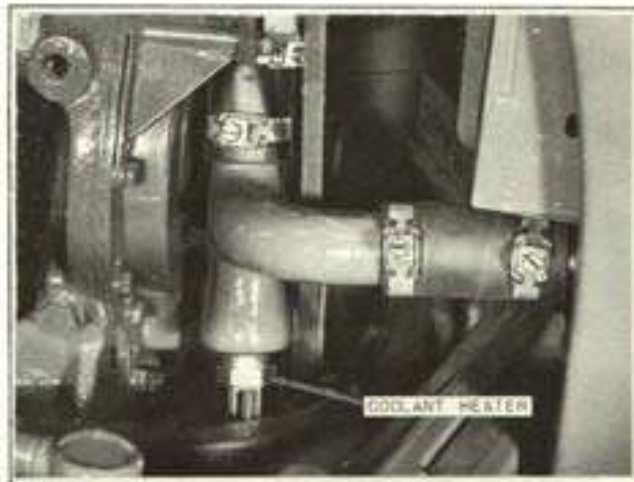


Figure 5-6 Coolant Heater

Too tight a fan belt will fail prematurely.

When replacing the fan belt, precautions must be taken so that the fan belt is not stretched. If the fan belt is stretched, adjustment of the belt tension by repositioning the generator may not be adequate. To replace the fan belt, proceed as follows:

1. Loosen the generator mounting bolts and belt tension strap bolt. Push the generator in toward the engine. (See Figure 5-5.)
2. Disconnect the crankcase breather tube from the front generator mounting cap screw to provide clearance for the fan belt to pass beneath the breather tube bracket.
3. Remove the old belt from the generator pulley, water pump pulley and fan drive pulley.
4. Install the new fan belt on the generator and water pump pulleys. Then install it on the crankshaft fan drive pulley. Installing the belt in this manner will greatly aid in its installation. If this sequence is not followed, damage to the belt may result during installation.

5. Secure the crankcase breather tube to the front generator support. Adjust the fan belt tension. Tighten the generator mounting bolts and belt tension strap cap screws.

COOLANT HEATER

There is available from your dealer an electrical coolant heater kit that may be installed as an integral part of an engine water inlet elbow. It is a 1000 watt immersion type heater and is equipped with a standard electrical three prong connector. It can be connected to any regular 110 volt current outlet. (See Figure 5-6.)

In cold weather, approximately two hours of operation should be sufficient to warm the coolant in the engine. However, in extremely cold weather it may be necessary to leave it connected for longer periods of time. This will mean a great saving on your batteries when starting your tractor in cold weather.

DO NOT OPERATE TRACTOR WITH COOLING SYSTEM DRAINED



NEVER DRIVE TOO CLOSE TO THE EDGE OF A DITCH OR GULLY

SECTION VI

CLUTCH

GENERAL

The 550 tractor is equipped with a single plate, dry disc, spring loaded engine clutch which is 10 inches in diameter.

The clutch has been designed to provide one-half to three-fourths inch of clutch pedal free travel. Free travel is the distance the pedal can be pressed downward from its engaged position to the point where resistance is encountered and the engine clutch begins to disengage. As the clutch facings wear, the clutch pedal free travel will decrease. When the free travel has decreased to approximately 1/8 inch, the clutch pedal linkage should be readjusted.



Figure 6-1 Clutch Pedal Adjustment

CLUTCH ADJUSTMENT

To adjust the clutch pedal free travel, loosen the jam nut on the clutch lever connecting link and turn the clutch lever adjusting nut to increase or decrease the free travel distance as the need may be. The pedal free travel is measured one-half inch down from the pedal stop on the center frame cover. (See Figure 6-1.)

LUBRICATION

Lubricate the clutch release shaft and lever assembly, and clutch release bearing with one shot of pressure gun grease daily or every ten hours of tractor operation at the two grease fittings provided. (See Figure 6-1.) Do not overlubricate the release bearing. Excessive lubrication will allow grease to get on the clutch plate and damage it.

**NEVER ENGAGE THE CLUTCH UNLESS IT IS POSSIBLE TO
DISENGAGE IT IMMEDIATELY IF NECESSARY**



BE SURE GEAR SHIFT IS IN NEUTRAL BEFORE STARTING ENGINE

SECTION VII

TRANSMISSION, DIFFERENTIAL, BRAKES AND FINAL DRIVE

GENERAL

The helical gear constant mesh transmission is designed to provide six forward and two reverse speeds. This six speed transmission allows a maximum road speed of approximately 15 miles per hour.

The transmission, differential and parts of the final drive are enclosed within the rear main frame of the tractor. These parts are adjusted at the factory and do not require any further adjustments by the operator between major tractor overhauls.

Individual, self-energizing, double disc, steering brakes are mounted on the sides of the rear main frame. These brakes control the rear wheels indirectly by exerting their braking action on the differential bull pinions. The entire brake assemblies are covered to prevent oil, dirt, water and other foreign material from contacting and damaging the linings on the brake discs.

LUBRICATION

The transmission, differential and final drive assemblies are lubricated by the oil contained in the rear main frame. The power take-off shafts, gears and bearings inside the rear frame are also lubricated with the same oil.

The transmission, differential and final drive must be kept properly lubricated to withstand the stresses imposed upon them. For this reason, check the lubricating oil level at least once a month or every 250



Figure 7-1 Transmission And Final Drive Test Plug

hours of tractor operation. The test plug for checking the oil is in the rear main frame just to the right of the power take-off shaft. (See Figure 7-1.) Remove the test plug, and if the oil is more than one inch below the hole, add a sufficient quantity of lubricant to raise the oil to the level of test plug hole. (See Figure 7-2.) Use 102 082-A Transmission Oil Additive and premium quality SAE 10W-30 engine oil all year around except where temperatures are normally below zero degrees Fahrenheit, then use 102 082-A Transmission Oil Additive and premium quality SAE 5W-20 engine oil all year around. Mix the oil and additive in a ratio of 16 parts oil to one part additive or four gallons oil to one quart additive. Common mixtures are as follows:

<u>102 082-A Oil Additive</u>	<u>10W-30 or 5W-20 Oil</u>
2-1/2 pints	5 gallons
1 cup	1 gallon
1/4 cup	1 quart
1/8 cup	1 pint



OLIVER CORPORATION

CHARLES CITY, IOWA

WHEEL TRACTOR

Tractor Model _____	Serial Number _____	Engine Number _____
Dealer's Name & Address _____		
Owner's Name & Address _____		

DELIVERY SERVICE

THE CHECKS BELOW HAVE BEEN MADE AND THE NEW OWNER INSTRUCTED IN THE PROPER CARE, SAFE OPERATION AND CORRECT ADJUSTMENT OF THE ITEMS LISTED.

The Owner Has Been Properly Informed On The Recommended Weight Or Grade And Quality Of Engine Oil And Fuel.

- | | |
|--|---|
| <input type="checkbox"/> Engine Oil Level | <input type="checkbox"/> Hydraulic System Checked And Operating Properly |
| <input type="checkbox"/> Air Cleaner Oil Level | <input type="checkbox"/> Battery Properly Filled With Electrolyte And Registration Completed |
| <input type="checkbox"/> Transmission Oil Level | <input type="checkbox"/> Function Of All Controls Outlined To Owner |
| <input type="checkbox"/> Belt Pulley Oil Level | <input type="checkbox"/> Starting And Stopping Tractor Outlined To Owner |
| <input type="checkbox"/> Hydraulic System Oil Level | <input type="checkbox"/> Safety Of Operation - Selection Of Proper Speeds, PTO, And Hitching To Drawbar |
| <input type="checkbox"/> Proper Coolant And Level In Radiator | <input type="checkbox"/> Outline Proper Fuel Handling And Filling Fuel Tank |
| <input type="checkbox"/> All Grease Fittings Serviced | <input type="checkbox"/> Owner Has Driven Tractor |
| <input type="checkbox"/> All Gauges Working Properly | <input type="checkbox"/> Special Equipment Has Been Mounted As Listed Below: |
| <input type="checkbox"/> Proper Tire Pressure | _____ |
| <input type="checkbox"/> The Importance Of Maintaining Proper Tire Pressure To Tire Life Has Been Pointed Out To The Owner | _____ |
| <input type="checkbox"/> Governor Checked - Idle And High No Load Speeds | _____ |

I have spent _____ hours and _____ minutes reviewing the entire Operator's Manual with the owner and he has a thorough knowledge of the care, adjustments and safe operation of this tractor.

Dealer's Signature

The above tractor has been received by me in accordance with the foregoing and I have a thorough knowledge of its care, adjustment and operation. I am assured that the foregoing checks have been physically made by the dealer or his representative and accept delivery of this tractor. I have read and accept the warranty on the reverse side hereof.

Owner's Signature

Date

Branch Copy

V



Figure 7-2 Transmission Filler Cap

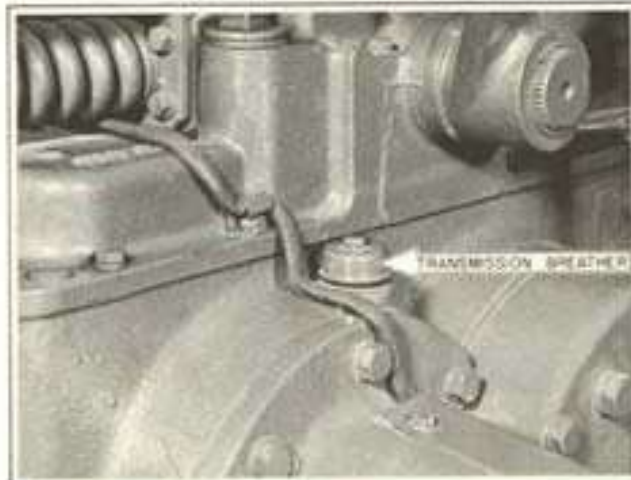


Figure 7-4 Transmission Breather

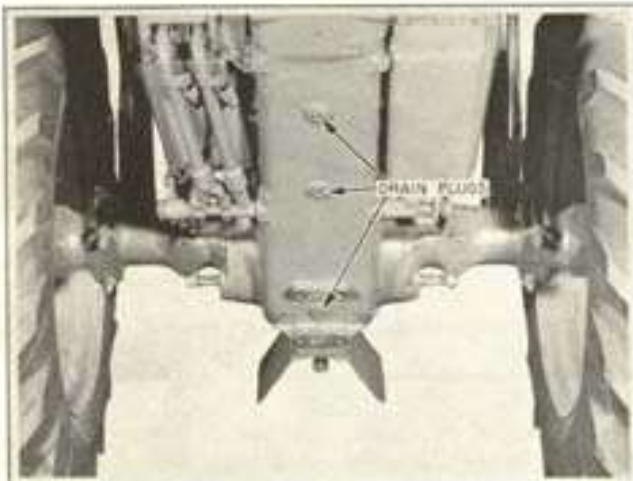


Figure 7-3 Transmission And Final Drive Drain Plugs

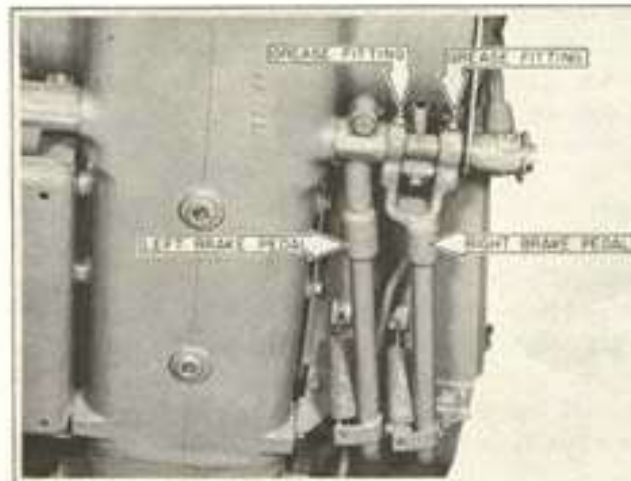


Figure 7-5 Brake Pedal Lubrication

Drain the transmission and final drive compartments once a year by removing the three plugs from the bottom of the rear main frame. (See Figure 7-3.) Remove all metallic particles from the magnetic transmission drain plugs. Install the plugs and flush the transmission, differential and final drive. To do this, pour four gallons of kerosene into the transmission and operate the tractor in all speeds without load for five minutes before draining the flushing solvent. Reinstall the drain plugs, and refill the transmission and final drive compartments with five gallons of premium quality SAE 5W-20 or 10W-30 engine oil and two and one-half pints of 102 082-A Transmission Oil Additive.

A micronic breather to relieve any pressure that may develop inside the transmission and final drive compartment is located on top of the right hand rear axle mounting boss. Under normal conditions, the filtering element, partnumber 1E-1130, in this breather should be replaced yearly. (See Figure 7-4.)

Lubricate the right brake pedal daily or every 10 hours of tractor operation with pressure gun grease at the fittings on the back of the pedal pivot boss. (See Figure 7-5.)

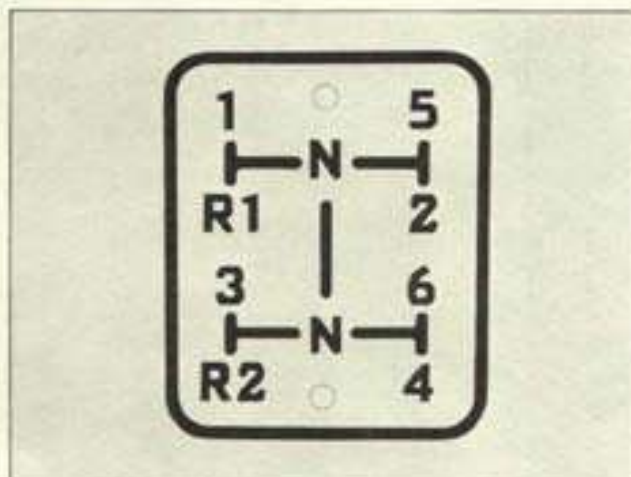


Figure 7-6 Gear Shift Diagram Plate

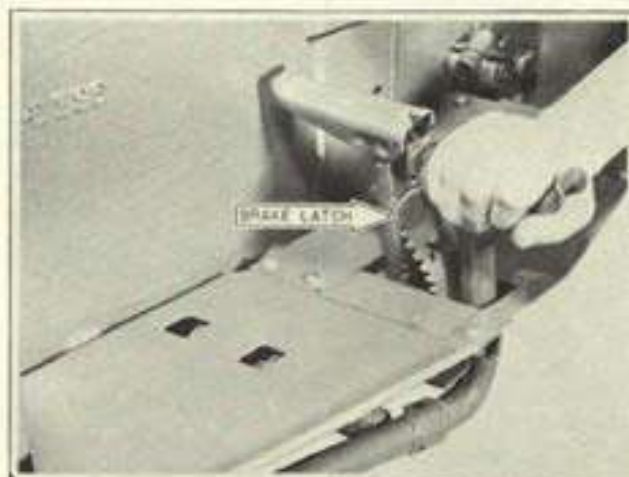


Figure 7-7 Checking Brake Pedal Adjustment

GEAR SHIFT

The gear shift lever has two neutral positions as shown on the diagram plate. (See Figure 7-6.) Two springs inside the gear shift lever socket return the lever to the neutral position when it is released from any of the travel speeds. When the lever is in either the front or rear neutral position, there is free side movement of the lever. Some resistance is felt on the lever when shifting from one neutral area to the other because this movement shifts one of the gears in the transmission. Do not attempt to shift the transmission gears while the tractor is in motion.

BRAKE PEDAL ADJUSTMENT

The brakes are properly adjusted when the third or fourth notch from the bottom of the lock latch will engage the platform when the pedal is depressed by hand. (See Figure 7-7.)

To adjust the brakes, loosen the lock nut on the actuating rod end and turn the adjusting cap screw clockwise to tighten the brakes. If the pedal requires additional free travel, turn the adjusting nut counter-clockwise. (See Figure 7-8.) Tighten the lock nut against the rod end to complete the brake adjustment.

During the operation of the tractor, the brakes will sometimes stick or lock. This is usually caused by dust deposits on the brake linings and may be corrected by removing the brake housing cover and wiping

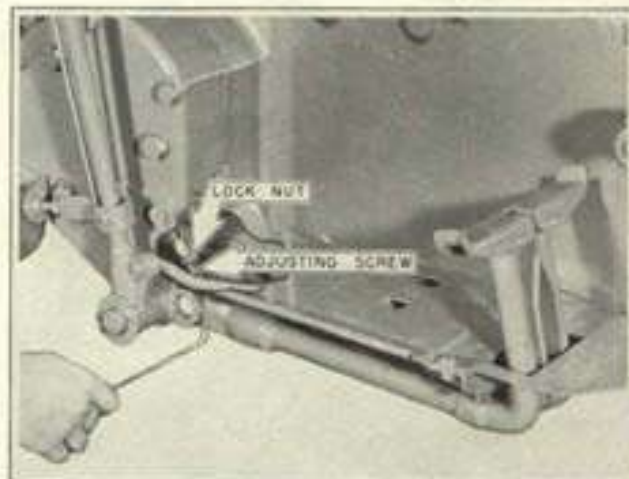


Figure 7-8 Adjusting Disc Brakes

the dust from the braking surfaces. If this does not correct the difficulty, consult your dealer.

Three 5/8 inch cap screws positioned around the center of the brake housing act as retaining and locating bolts for the brake assemblies. Excessive tightening of these cap screws will distort the brake pressure plate and cause the brakes to bind and drag often resulting in heating or a locked brake. This condition is often mistaken for an overtightened brake pedal adjustment. Do not tighten the screws beyond 35 to 37 foot pounds torque.



REDUCE SPEED BEFORE TURNING OR USING ONE WHEEL BRAKE

SECTION VIII

STEERING GEAR AND LINKAGE

STEERING GEAR LUBRICATION

The steering gear requires very little lubrication attention; however, the level of the lubricant should be checked yearly or every 1000 hours of tractor operation. To check the lubricant level, loosen the battery tray hold-down bolts and slide the battery tray to the left. The lubricant level should be maintained at the lower edge of the filler-test plug hole. (See Figure 8-1.) If the level of the lubricant becomes low, refill to the proper level with No. 1 grade multi-purpose lithium or calcium base grease.



Figure 8-1 Steering Gear Filler-Test Plug

POWER STEERING LUBRICATION

The following lubrication attention is required on tractors equipped with power steering in addition to the steering gear lubrication outlined in the preceding discussion.

Check the oil level in the power steering pump reservoir daily or every 10 hours of tractor operation. Remove the reservoir cap and check the oil level on the bayonet gauge attached to the cap. (See Figure 8-2.) Always check the oil level when the oil is warm from operation. Replenish the oil level, if necessary, with SAE 10W engine oil and 102 082-A Oil Additive mixed in a ratio of 16 parts oil to one part additive or Automatic Transmission Fluid Type "A".

Lubricate the power steering cylinder sockets with pressure gun grease daily or every 10 hours of tractor operation. (See Figure 8-3.)



Figure 8-2 Checking Pump Reservoir Oil Level

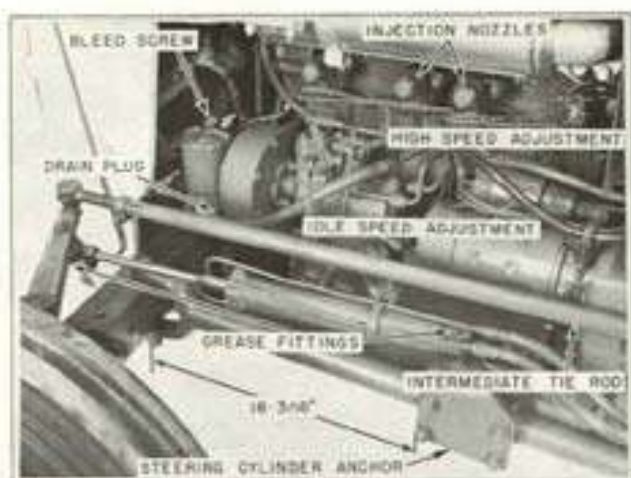


Figure 8-3 Steering Cylinder Grease Fittings

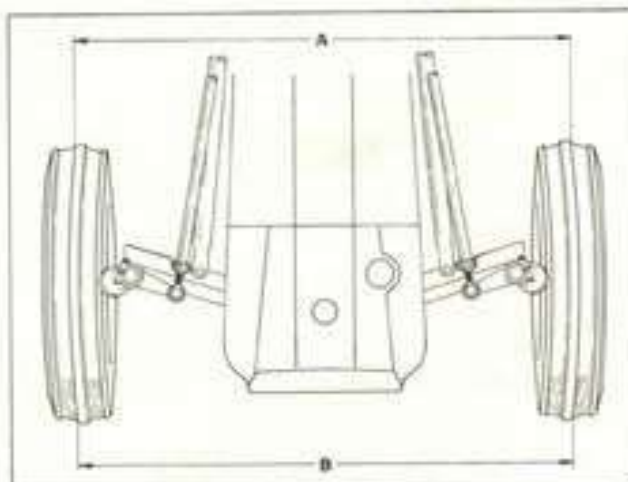


Figure 8-5 Toe-In Adjustment



Figure 8-4 Power Steering Pump Belt Adjustment

POWER STEERING PUMP BELT ADJUSTMENT

Check the tension on the power steering pump belt periodically. To adjust the tension on the belt, loosen the pump mounting bracket cap screws and move the pump up until there is 1/2 inch slack in the belt. (See Figure 8-4.)

STEERING CYLINDER ANCHOR ADJUSTMENT

The steering cylinder anchors are located 18-3/16 inches behind the center of the holes in the stay rod yokes on fixed tread front axle and adjustable front axle tractors for tread widths ranging from 52 to 68 inches. (See Figure 8-3.) It is necessary to relocate the anchors to 17-11/16 inches behind the above referenced point for 72 inch tread settings to utilize full turning ability of the tractor. Always square up the U-bolts and be sure to tilt the left anchor outward 15 degrees whenever the anchors are repositioned; then torque the anchor nuts to 65-72 foot pounds. The left anchor must be tilted to provide clearance between the steering cylinder grease fitting and the starting motor during axle oscillation.

TOE-IN ADJUSTMENT

Check the toe-in after changing the front tread setting. To check the toe-in turn the wheels straight ahead and inflate the tires to the recommended pressure. Measure between the outside edges of the center tire rib at the front (B) and the rear (A) at hub height. (See Figure 8-5.) Rotate the wheels one half turn and repeat the measurements. Determine the averages of the front and rear readings separately. The average distance at the front of the tires should be 3/16 inch less than at the rear. If adjustment is necessary, loosen the tie rod clamp cap screws at both ends of the intermediate tie rods. (See Figure 8-3.) Rotate the intermediate tie rods to adjust the toe-in. Adjust both tie rods equally. When the toe-in is correct, the left tie rod should be approximately 2-9/32 inches longer than the right one. Tighten the clamp cap screws and recheck the toe-in.

SECTION IX

FRONT AND REAR WHEEL EQUIPMENT

FRONT TREAD ADJUSTMENT

Your tractor may be equipped with either a one piece non-adjustable or a three piece adjustable front axle. The one piece front axle has a fixed tread width of 52 inches. The wheel tread on the adjustable front axle may be quickly and easily adjusted from 52 to 72 inches in four-inch increments.

To change the adjustable front axle wheel tread adjustment, raise the front of the tractor off the ground, remove the cap screws which hold the axle members together and move the outer axle members and wheels to the desired tread width. Reinstall the axle locking cap screws, being sure to leave at least one open hole between them. (See Figure 9-1.) If the newly adjusted tread width is 60 inches wide or more, the front axle stay rods must be relocated in their outer mounting positions. (See Figure 9-1.) In addition, the steering cylinder anchors must be relocated on the front axle stay rods as outlined in the Steering Cylinder Anchor Adjustment discussion in Section VIII on tractors equipped with power steering if the tread width is increased to 72 inches. Be sure to check the front wheel toe-in adjustment as outlined in the Toe-In Adjustment discussion in Section VIII whenever the axle adjustment is changed.

In addition to the tread widths outlined above, increased tread widths may be obtained by reversing the wheel discs on the wheel hubs. This practice is not recommended as steering effort is increased and the front wheel outer bearings may easily be overloaded when the wheel discs are reversed.

REAR WHEEL TREAD ADJUSTMENT

The rear wheel tread adjustments, which range from 48 to 76 inches in four-inch increments, are obtained by changing the rims on the pressed steel wheel discs and reversing the wheel disc on the hubs. The hubs should be left flush with the end of the axle. (See Figure 9-2.) The 64, 68,

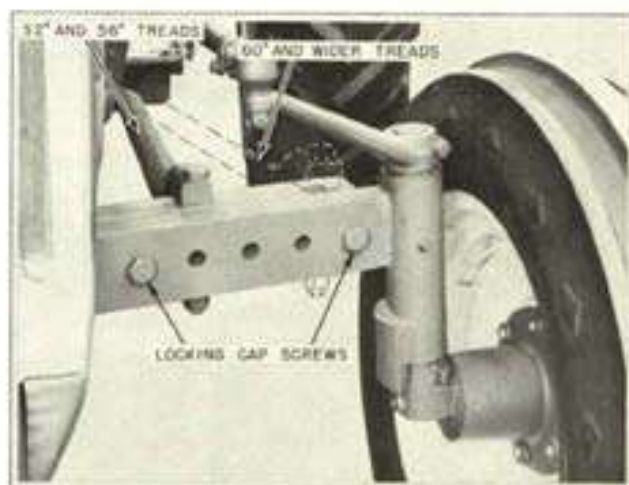


Figure 9-1 Adjustable Axle Adjustment

72, and 76-inch settings are the reverse of the 60, 56, 52 and 48-inch settings respectively and are obtained by mounting the wheels on the opposite side of the tractor. Rear wheel tread settings from 48 to 88 inches are possible if extra long rear axles are used.

CAUTION

KEEP REAR HUB U-BOLTS TORQUED TO 150 FOOT POUNDS.

Wheel settings of 55-3/8 and 67-1/8 inches are possible with one piece stamped steel wheel and rim assemblies by mounting them on the opposite side of the tractor.

NOTE

THE WARRANTY ON THE REAR AXLES AND CARRIERS WILL BE VOID IF WEIGHT IS APPLIED TO THE REAR OF THE TRACTOR IN EXCESS OF 1400 POUNDS WHEN THE TRACTOR IS EQUIPPED WITH THE EXTRA LONG AXLES AND THE WHEELS SET AT THE MAXIMUM TREAD.

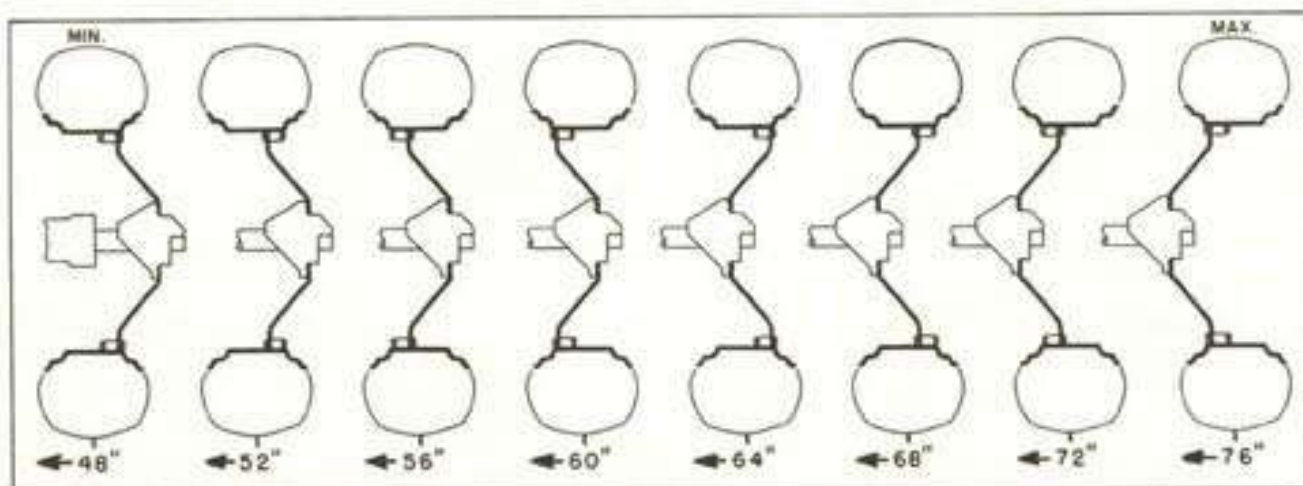


Figure 9-2 Rear Tread Adjustments



Figure 9-3 Powerjuster Rear Wheels

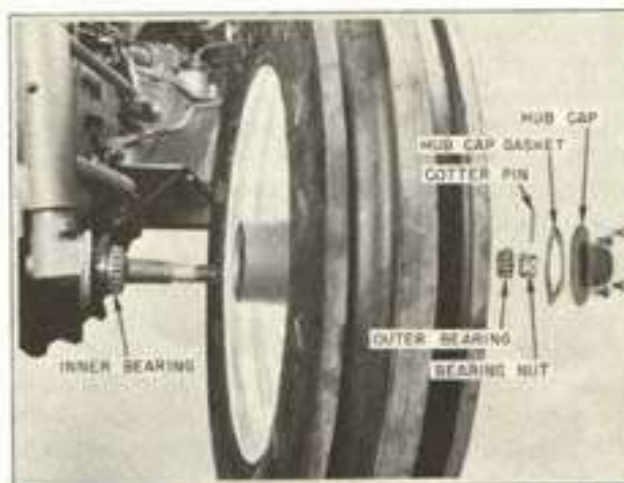


Figure 9-4 Packing Front Wheel Bearings

POWERJUSTER REAR WHEELS

To adjust the Powerjuster Rear Wheels through a range of 20 or 24 inches depending whether the tractor is equipped with 11 or 12 inch rims, follow the steps below:

1. Loosen the stop screw and move the stop body to the desired adjustment hole setting or if the maximum or minimum wheel setting is desired, remove the stop body from the rim rail. (See Figure 9-3.)
2. Loosen the two lock nuts on the jack screws nearest the top of the wheel until there is about 1/16-inch gap between the top jack screw and the rim rail.
3. Start the tractor and place it in low gear to increase the tread width of the left wheel, or in reverse to increase the tread width of the right wheel, and let the clutch out slowly until the wheel turns to the stop body. To decrease the wheel tread, reverse the above direction of rotation of the wheels.
4. Retighten the two jack screw nuts equally to be sure that the wheel is centered within the rim. A torque of 150 to 200 foot pounds should be applied to each nut.
5. Place the other stop body up to the closest position to the jack screw.

After four hours of operation, recheck the jack screws as they must be kept tight at all times.

To increase the wheel tread to 76 inches, the wheel disc must be positioned so that it is facing outward. Then repeat the above steps. To decrease the tread width, reverse the above direction of rotation of the wheels.

FRONT END LUBRICATION

The front axle pivot and steering knuckle pivots are provided with grease fittings. Lubricate the knuckle pivots daily and the axle pivot weekly with pressure gun grease.

The front wheel hubs are lubricated with approximately 3/8 pound of multi-purpose No. 1 lithium or calcium base grease. Once each year or every 1000 hours of tractor operation, whichever occurs first, repack the wheels as follows:

1. Clean all dirt from the wheel hub.
2. Remove the hub cap mounting cap screws and remove the hub and gasket. (See Figure 9-4.)
3. Remove the bearing nut cotter pin and bearing nut.
4. Remove the wheel and outer bearing from the spindle as a unit. If the outer bearing cone sticks to the spindle, tap the wheel hub to loosen the cone. As the wheel is removed, prevent the outer bearing from falling to the floor or ground and support the wheel to prevent damaging the grease seal when the inner bearing slides off the inner bearing cone.
5. Wash all parts in a cleaning solvent to remove all hardened or dirty grease.



6. Thoroughly inspect the bearings for chips or nicks and replace all damaged or worn parts.
7. Apply a liberal coating of grease on the bearings and assemble the wheel, packing the hub with approximately 3/8 pound of multi-purpose No. 1 grade lithium or calcium base grease. (See Figure 9-4.)
8. Adjust the bearings as outlined under Wheel Bearing Adjustment.

FRONT WHEEL BEARING ADJUSTMENT

End play in the front wheel bearings can be detected by raising the wheel off the ground and checking for movement between the wheel hub and spindle flange by alternately pushing and pulling on the wheel. If the bearings appear to have excessive end play, it is advisable to remove the wheel and check the bearings for wear and repack the wheels before proceeding with the adjustment.

To adjust the wheel bearings, tighten the bearing nut while rotating the wheel until a preload is felt on the bearings. Loosen the bearing nut until the preload is removed. Continue to alternately tighten and loosen the nut until you have definitely established the point where the bearings are properly seated and the torque required to tighten the nut is definitely increased. When this point has been determined, tighten the nut to the next position in which the cotter pin can be inserted through the bearing nut and the hole in the spindle. This will be a maximum of 1/12 turn because there are two holes drilled through the spindle. Install the cotter pin. Bend one end tightly against the nut and the other end against the spindle to prevent them from striking the hub cap. Reinstall gasket and hub cap.

REDUCE SPEED WHEN TURNING

OR USING ONE WHEEL BRAKE



ALWAYS PROPERLY GROUND TRACTOR

WHEN DOING BELT WORK

SECTION X

EQUIPMENT

GENERAL

The 550 tractor may be equipped with a hydraulic system and a three-point hitch. In addition, a belt pulley, a 540 or 1000 revolution per minute power take-off, an external hydraulic control valve and cylinder, a precleaner screener, a warning light, two types of drawbars, a seat pad, three-point hitch stabilizer bars, wheel weights and oversize tires may be added as optional equipment. A discussion covering the installation, operation and maintenance of some of this equipment is outlined under the following headings. For a more complete list of optional equipment, we suggest that you contact your dealer.

POWER TAKE-OFF

The power take-off is designed to transmit rotary motion to stationary implements, drawn or mounted implements and the belt pulley. A constant running drive pinion shaft, which also supplies the power for the hydraulic pump, is driven directly from the engine flywheel. The power take-off is controlled independently of tractor operation through the use of a separate power take-off clutch of the multiple disc overcenter type. A clutch control lever located on the right-hand side of the tractor about the center of the rear main frame controls the operation of the power take-off clutch. In order to set the power take-off in motion, press down on the control lever knob to release the safety lock latch and move the lever slowly and steadily toward the rear of the tractor until the clutch is felt to snap into engagement. To disengage the power take-off push the clutch lever forward until the clutch snaps out of engagement and is locked in position by the safety lock latch. (See Figure 10-1.)

The 550 tractor may be equipped with a 540 or 1000 rpm (revolutions per minute) power take-off assembly.

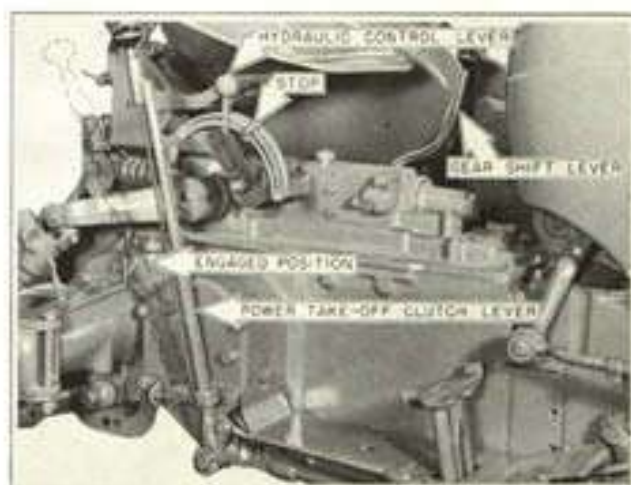


Figure 10-1 Power Take-Off Clutch Lever

The 540 rpm power take-off is designed to operate within the ASAE and SAE standard of 530 to 550 rpm at an engine speed of 1600 rpm. The 1000 rpm power take-off is designed to operate within the ASAE and SAE standard of 975 to 1025 rpm at an engine speed of 2000 rpm. With the governor hand control, regulate the engine to the proper power take-off speed as marked on the tachometer to obtain efficient implement operation.

A field conversion package is available to convert the basic power take-off on the tractor from 540 to 1000 rpm or 1000 to 540 rpm. When the field conversion power take-off is used, the engine is to be run at the basic power take-off engine speed to operate the field conversion power take-off within the ASAE and SAE standard.

CAUTION

NEVER OPERATE AN IMPLEMENT WITH THE WRONG SPEED POWER TAKE-OFF AS DAMAGE TO THE IMPLEMENT WILL OCCUR.



BE CAREFUL

1. KEEP ALL SHIELDS IN PLACE.
2. STOP MACHINE TO ADJUST AND OIL.
3. WHEN MECHANISM BECOMES CLOGGED, DISCONNECT POWER BEFORE CLEANING.
4. KEEP HANDS, FEET AND CLOTHING AWAY FROM POWER DRIVEN PARTS.
5. KEEP OFF IMPLEMENT UNLESS SEAT OR PLATFORM IS PROVIDED. KEEP OTHERS OFF.

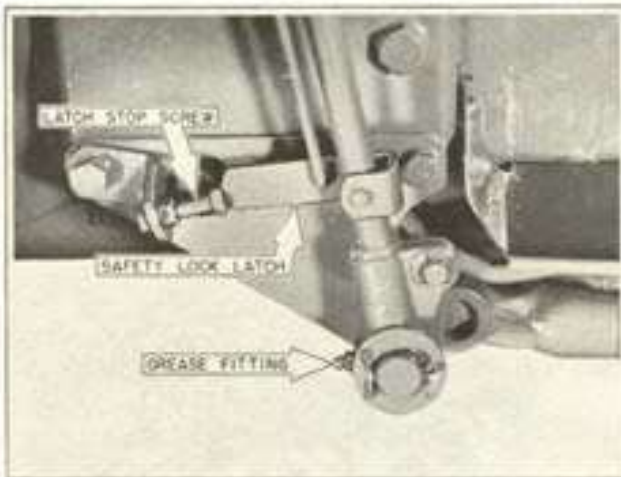


Figure 10-2 Power Take-Off Clutch Lever Adjustment And Lubrication



Figure 10-4 Installing Power Take-Off Auxiliary Shield



Figure 10-3 Installing Power Take-Off Shaft

The power take-off is equipped with a 1-3/8 inch diameter splined shaft. For the 540 rpm power take-off a 1-1/8 inch diameter or an extra long 1-3/8 inch diameter shaft may be purchased from your dealer as optional equipment for special applications.

To prevent the operator from unintentionally engaging the power take-off, the control lever is locked in the disengaged position when it is pulled back. This lock consists of a lever latch stop screw that should be adjusted so that the clutch lever does not have excessive movement when it is locked in the disengaged position. (See Figure 10-2.)

To remove the shaft, remove the retaining nut and bolt and pull shaft from the tractor. (See Figure 10-3.) Tractors equipped with a power take-off are provided with two safety shields; a power take-off master shield and a power take-off auxiliary shield. (See Figures 10-3 and 10-4.) The master shield is designed to cover the power take-off shaft on the tractor and provides a means for attaching additional shields between the tractor and power take-off driven implements. The auxiliary shield is designed to protect the end of the power take-off drive shaft and splines when the power take-off shaft has been removed. These two shields are for your protection and one or the other should be installed at all times.

Where the power take-off shaft or master shield interferes with the movement and operation of rear mounted implements, the shaft and shield may be removed and the auxiliary shield installed. To install this shield, remove the master shield and power take-off shaft. Insert the long bolt into the end of the drive shaft and secure the auxiliary shield in position. (See Figure 10-4.)

When operating drawn type power take-off driven implements designed to ASAE and SAE standards, the drawbar height should be adjusted so that it is 13 to 17 inches above the ground line and the implement should be attached through the end hole at the rear of the drawbar.



Figure 10-5 Power Take-Off Hand Hole Cover

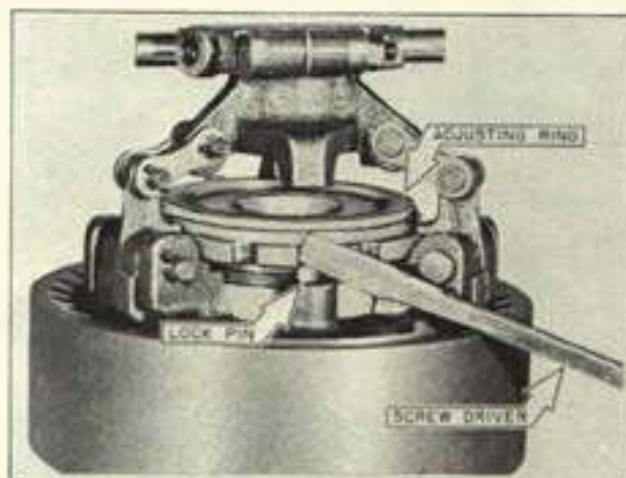


Figure 10-6 Adjusting Power Take-Off Clutch

POWER TAKE-OFF CLUTCH ADJUSTMENT

During the life of the power take-off, it will be necessary to periodically adjust the power take-off clutch so that it will drive the driven machine without slipping. Adjust the clutch frequently during initial power take-off operations to maintain the proper adjustment outlined below while the new clutch is being broken-in.

To adjust the clutch, stop the engine and release the power take-off clutch by pushing the clutch control lever forward. (See Figure 10-1.) Remove the metal hand hole cover from under the tractor center frame. (See Figure 10-5.) Reach through the hand hole and rotate the power take-off clutch assembly until the adjusting ring lock pin is on the bottom side of the assembly. (See Figure 10-6.) With a screw driver, depress the lock pin and rotate the adjusting ring to the next notch. Turn the adjusting ring clockwise to increase or counterclockwise to decrease the clutch engagement pressure. A force of about 40 pounds pull just below the lever knob should be required to engage the clutch. Reinstall the hand hole cover when the proper adjustment is obtained.

LUBRICATION

The power take-off shafts, gears and bearings within the rear main frame are lubricated with transmission oil. Lubrication service on this section of the power take-off is therefore automatically provided for when the transmission, differential and final drive are lubricated.

A power take-off clutch release bearing is located just ahead of the power take-off clutch in the center frame. This bearing operates only when the power take-off clutch is engaged and therefore requires only one stroke of pressure gun grease daily when the power take-off is in operation. The grease fitting for the power take-off clutch release bearing is located on the right-hand side of the center frame. (See Figure 10-7.) Do not overgrease because the excess lubricant may come in contact with the clutch facings, causing them to slip or chatter. When lubricating the release bearing, also lubricate the hub of the power take-off clutch lever with pressure gun grease. (See Figure 10-2.)

POWER TAKE-OFF TRANSFER

The transfer installed on the power take-off shield contains a list of five precautions that you should follow before and after connecting the tractor power take-off to a driven machine. (See Figure 10-8.) If these five suggestions are followed, the power take-off will give you satisfactory service throughout the entire life of the tractor. The five suggestions are discussed individually below.

1. **Drawbar Hitch Point Must Be Locked In Line With The Power Take-Off Shaft** - The power train from the tractor to a driven implement is not in correct alignment unless the drawbar hitch point is locked directly behind and in line with the power take-off output shaft.

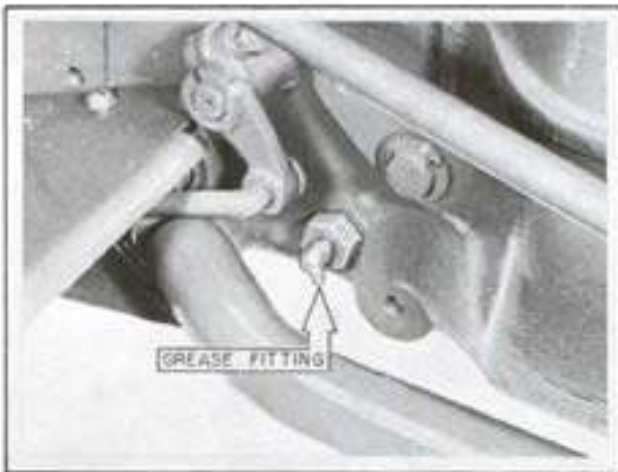


Figure 10-7 Power Take-Off Clutch Release Bearing Lubrication

IMPORTANT

UNLESS THESE INSTRUCTIONS ARE FOLLOWED POWER TAKE-OFF SHAFT OR UNIVERSAL JOINT BREAKAGE MAY RESULT.

- 1-DRAWBAR HITCH POINT MUST BE LOCKED IN LINE WITH POWER TAKE-OFF SHAFT.
- 2-ARRANGE FRONT BEARING SUPPORT SO THAT POWER LINE WILL OPERATE IN AS STRAIGHT A LINE AS POSSIBLE.
- 3-AVOID MAKING SHARP TURNS WHILE POWER TAKE-OFF IS OPERATING.
- 4-MAKE CERTAIN UNIVERSAL JOINTS ARE CORRECTLY SYNCHRONIZED.
- 5-ENGAGE CLUTCH SLOWLY BUT FIRMLY TO REDUCE HIGH STARTING LOAD.
(SEE OPERATORS MANUAL)

Figure 10-8 Power Take-Off Transfer

2. **Arrange Front Bearing Support So That Power Line Will Operate in As Straight A Line As Possible** - On some drawn implements, such as the combine or corn picker, a series of at least three universal joints are used between the driving shaft on the tractor and the driven shaft on the implement. The second yoke of the middle universal joint is supported by an adjustable pivot arm. Extend or contract this pivot arm so that as straight a line as possible through the joints is obtained for normal field operation.
3. **Avoid Making Sharp Turns While The Power Take-Off Is Operating** - Avoid making sharp turns while the power take-off is in operation because it is possible to lock universal joints or cause rough operation when the turn is greater than 25 degrees. When making sharp turns, the driven machine should be cleared and the power take-off disengaged until the implement is directly behind the tractor and the power train is again aligned.
4. **Make Certain Universal Joints Are Properly Synchronized** - Synchronizing means to maintain the joints properly positioned on the shafts so that nearly constant speed is delivered to the driven shaft on the implement where more than

one universal joint is used. Where two universal joints are used, they should be positioned on the shaft so that the universal joint yokes on the intermediate shaft are in the same plane.

Where it is possible to assemble the shafts in more than one position, contact your dealer for proper assembly information.

5. **Engage Clutch Slowly But Firmly To Reduce High Starting Load** - Rapid engagement of the power take-off clutch is the greatest single factor involved in breakage of the power take-off shafts and universal joints.

In addition to the above precautions, always make absolutely certain that the telescoping shaft on the implement is free of all foreign material and slides easily. Also install the proper length drawbar to be used with the type power take-off in use, and be careful not to bottom or exceed the contracted limits of the slip joint.

WARNING

KEEP POWER TAKE-OFF SHIELDS IN PLACE AT ALL TIMES.

NEVER WEAR LOOSE CLOTHING NEAR PTO

BELT PULLEY

A belt pulley assembly which is driven and controlled by the power take-off is available as a sales extra on tractors which are equipped with a 540 rpm power take-off. It may be mounted over the four studs on the rear of the tractor after removing the power take-off shield, shaft and the three-point hitch sway chains. The pulley assembly may be installed in one of three positions as shown in Figure 10-10. However whenever possible as a safety precaution, the pulley assembly should be installed so that the pulley is toward the left side of the tractor. (See Figure 10-10.) This will allow the movement of the belt and the rotation of the pulleys to throw any material dropped on the belt away from the operator.

Operate the pulley at an engine speed of 2000 revolutions per minute. This will permit the pulley to travel within the ASAE and SAE standard at 3108 feet per minute.

Lubricate the belt pulley mechanism with 102 082-A Transmission Oil Additive and premium quality SAE 10W-30 engine oil all year around except where temperatures are normally below zero degrees Fahrenheit, then use 102 082-A Transmission Oil Additive and premium quality SAE 5W-20 engine oil all year around. Keep the oil level even with the bottom of the filler test plug. (See Figure 10-10.) When adding lubricant, mix the oil and additive in a ratio of 16 parts oil to one part additive. Drain and refill the pulley housing yearly with one pint of premium quality SAE 5W-20 or 10W-30 and one-eighth cup of 102 082-A Transmission Oil Additive.

TIRES AND TUBES

Proper inflation will help ensure the maximum service life from each tire on your tractor. Underinflation should be avoided at all times because it will allow the tire to flex and buckle under strain. This will cause a series of diagonal cracks in the cord fabric or tire side wall. Underinflation may also cause the tire to slip in the rim which will tear the valve stem from the tube. Overinflation will cause the tire to wear rapidly as a result of slippage from lack of traction.

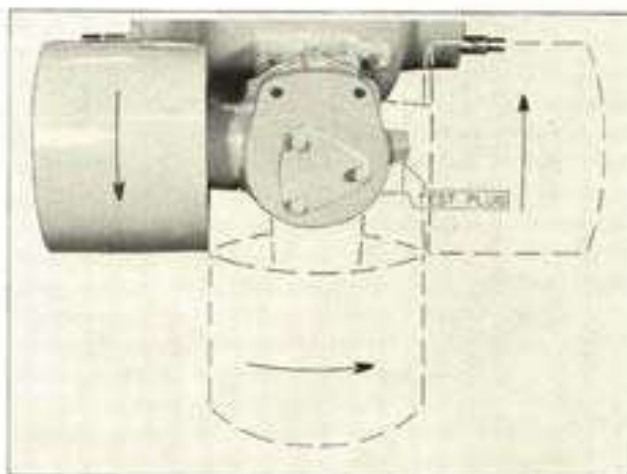


Figure 10-10 Belt Pulley Installed

When special or heavy equipment is mounted on the tractor wheel or frame weights installed, the tire inflation pressure should be increased. Always check the Specifications in Section I for the proper tire pressure when placing additional loads on the tractor. The last figure in each horizontal column is the maximum load that should be placed on a tire of the given size. Weight added to the front or rear should be calculated only for the tires carrying the load. Front tires carry about 1/3 and rear tires about 2/3 of the total tractor weight.

NOTE

WHEN PLOWING, INCREASE THE PRESSURE IN THE FURROW TIRE FOUR POUNDS ABOVE NORMAL.

Always keep the tires clean and out of the direct rays of the sun when the tractor is not in use. Oil, fuel, grease, calcium chloride and certain spraying solutions deteriorate rubber and must be cleaned from the outside of the tires. If necessary, the tires may be washed with soap and water.

NOTE

CHECK TIRES REGULARLY AND MAINTAIN THE CORRECT PRESSURE. USE A GOOD QUALITY GAUGE. A SPECIAL GAUGE IS REQUIRED WHEN TIRES CONTAIN LIQUID; WASH GAUGE AFTER USING.

WHEEL WEIGHTS

Rear wheel slippage may be reduced by adding cast iron wheel weights. When adding these weights, it is important that the tractor weight is not increased beyond the load the tires will safely support. Compare the weight of the tractor on the tires with the table in Section I to make certain that the addition of wheel weights will not exceed the maximum load the tire should carry. The addition of one pair of rear wheel weights increases rear end weight 220 pounds.

Front wheel weights are also available for use on tractors where additional weight is required to stabilize the front end of the tractor and to aid steering. If extremely heavy loads are encountered or applied to the rear of the tractor it may be necessary to add front wheel weights to keep the front of the tractor on the ground. The addition of one pair of front wheel weights increases front end weight 103 pounds.

Perhaps the most economical and efficient method of preventing tire slippage and improving stability is the addition of liquid to the tires. In climates where freezing temperatures are not encountered in any season of the year, water may be added to the tires to increase the weight on the tractor. In cold climates, a solution of calcium chloride and water should be added to the tires to prevent freezing and add weight. See your dealer or tire supplier when liquid weight is desired in the tires or follow the instructions as outlined in the following paragraphs. To mix a solution of calcium chloride and water, refer to the Specifications in Section I to determine the exact amount of the ingredients required to fill each of the tires approximately 75 percent full. Then fill a drum with the correct amount of water and add the required quantity of calcium chloride.

WARNING

WHEN CALCIUM CHLORIDE AND WATER ARE MIXED, A VIOLENT CHEMICAL REACTION OCCURS WHICH CAUSES HIGH TEMPERATURES. ADD THE CALCIUM CHLORIDE TO THE WATER AND STIR - DO NOT ADD THE WATER TO THE CALCIUM CHLORIDE, BE SURE TO LET THE LIQUID COOL BEFORE ATTEMPTING TO FILL THE TIRES.



Figure 10-11 Front Frame Weights

After the calcium chloride and water solution has cooled, proceed to fill the tires with the liquid. To do this, obtain an adapter and a length of ordinary garden hose from your local hardware dealer. The adapter should have an air escape valve built into it to allow the air in the tire to escape as the liquid runs in.

To install the calcium chloride and water solution, raise and block the tire off the ground, and rotate the wheel until the valve stem is in the uppermost position. Remove the valve core and connect the garden hose to the valve stem by means of the adapter. With the use of a tank above the level of the valve or a pump, force the liquid into the tire until it begins to overflow through the relief valve of the adapter. At this point the tire is approximately 75 per cent full. Install the valve core and inflate the tire to the required air pressure.

Check the tires with a gauge designed to be used on tires containing an anti-freeze solution. Wash the gauge thoroughly after the tires are checked to remove all traces of calcium chloride. A conventional tire pressure gauge will be severely damaged if it is allowed to come in contact with calcium chloride.

FRONT FRAME WEIGHTS

To maintain satisfactory stability, when heavy rear mounted implements are installed, front frame weights may be purchased as optional equipment. The addition of one basic weight increases the front end weight 125 pounds. Each additional

weight increases the front end weight 120 pounds. Installation is limited to one basic weight and three additional weights to prevent excessive strain on the front frame and to prevent cutting off the air intake to the radiator. (See Figure 10-11.)

HYDRAULIC SYSTEM GENERAL

Your tractor may be equipped with a hydraulic system and three-point hitch to raise, lower and control the working depth of rear mounted implements or to operate drawn implements by means of an external valve and cylinder. Always operate the engine above 1000 rpm for proper operation of the hydraulic unit.

The hydraulic unit is installed as an integral part of the tractor on the rear main frame directly over the transmission and final drive assembly. It consists of a positive displacement multiple vane-type pump, a control valve and a single acting cylinder. The pump is connected through gears to the power take-off drive pinion shaft so that it is circulating oil through the full-flow filter whenever the tractor engine is running. When the control valve is actuated to lift an implement, the filtered oil is directed to the cylinder; at all other times it flows directly back to the reservoir under the unit. When desired, the tractor may be equipped with an externally mounted valve assembly to operate and control implements requiring a remote cylinder such as drawn equipment or front end loaders.

Your hydraulic system is equipped with a servo valve to control the hydraulic cylinder and three-point hitch. It is this valve that automatically corrects the implement position when it moves due to minute oil leakage within the system. With an implement attached to the three-point hitch and with the hitch in the raised or transport position, the implement will settle slightly. As soon as it settles the valve will open and raise the implement back to the preselected setting. This cycling action is normal and is an indication that the unit is operating satisfactorily.

Where the tractor is equipped with an external cylinder, either the internal valve used to control the three-point hitch or the external valve used to control drawn implements and external cylinders may be operated at will without making any special adjustments.

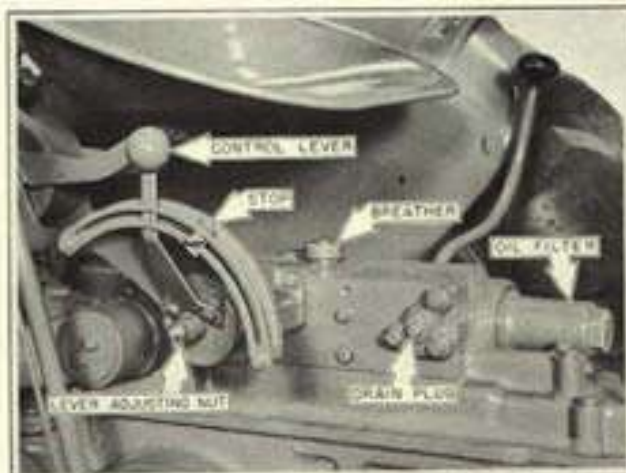


Figure 10-12 Hydraulic Control Lever, Breather, Drain Plug And Filter

Tighten the hydraulic housing mounting cap screws after a few hours of operation. The gasket tends to take a set during the first few hours and the cap screws loosen causing oil leaks.

CONTROLS

HYDRAULIC CONTROL LEVER

The integral hydraulic system and three-point hitch combination is controlled by a convenient hand lever located in a quadrant to the right of the operator's seat. (See Figure 10-12.) This lever governs the height to which an implement may be raised or the depth to which it may be lowered. Moving the lever up and toward the rear of the quadrant raises the implement. Pushing the lever forward and down lowers the implement. When the desired operating depth or position of the implement has been determined, an adjustable stop can be set at a corresponding point on the quadrant so that if the hydraulic lever is moved, it may be returned to the same point and when it contacts the stop on the quadrant the implement will return to the corresponding depth or position.

The hydraulic control lever is held in position by a spring loaded friction disc. When the lever will not stay in a set position or the force to operate it is too great, the lever may be adjusted by tightening or loosening the elastic stop nut that holds it onto the unit. (See Figure 10-12.)

CAUTION

ALWAYS TRAVEL AT SLOW SPEEDS WHEN TRANSPORTING IMPLEMENTS IN RAISED POSITION OVER ROUGH GROUND.

OPERATION AND ADJUSTMENT

After starting the tractor, lower the implement and run the engine for one minute to allow adequate time for the pump to expel any air that may be in the system. If air is present in the hydraulic system, the pump will not be properly lubricated when placed under load and pump failure will result.

AUTOMATIC POSITION AND DRAFT CONTROL

The 550 tractor hydraulic system provides automatic position and draft control during its operation. The system normally operates in position control regardless of the type of implement being used until a force reaction is exerted on the upper link. This reaction overrides the position control and automatically provides draft control to raise the implement. The combination of draft and position control limits the depth variation of the implement resulting in more uniform working depth making the unit adaptable to a wide variety of implements and soil variations.

When a draft sensitive implement such as a plow is attached to the lower links and is lowered to working depth by pushing the hand lever toward the lower end of the control quadrant, the implement will lower into the ground until the draft reaction from the implement equals the setting of the control valve. Then if greater depth is desired it is necessary to push the hand lever farther toward the lower end of the control quadrant.

If the implement hits harder ground, the increased draft pressure will cause the upper hitch link to compress the draft control spring and move the external linkage forward causing the inside linkage to actuate the valve and raise the implement, de-

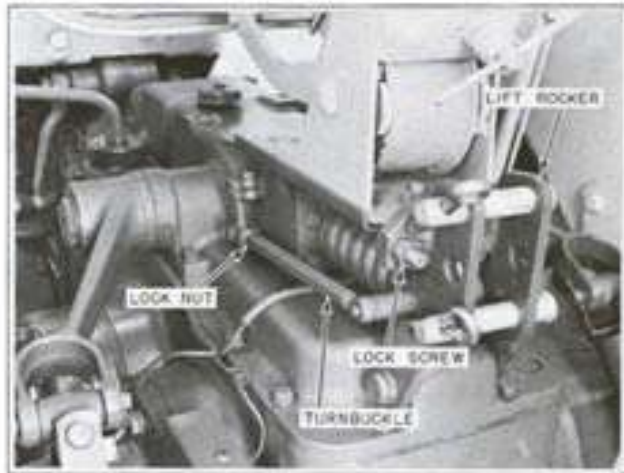


Figure 10-13 Draft Control External Linkage

creasing the draft. (See Figure 10-13.) As the ground becomes softer the draft will decrease and the control linkage will react in the opposite direction allowing the implement to lower again. The small amount of movement up or down is regulated by the automatic position control linkage within the unit.

With the usage of a variety of implements which are adaptable to your 550 tractor, it may be desirable to regulate the sensitivity of the automatic draft control by changing the position of the upper link in the lift rocker. (See Figure 10-13.) The upper hole makes the automatic draft control most sensitive to increased draft and the lower hole makes it least sensitive to increased draft. When using a three bottom plow do not use the lower hole in the lift rocker as extreme pressure is imposed on the hydraulic unit during the lift cycle.

POSITION CONTROL

Where position control only is desired such as with implements that require a fixed drawbar, it is possible to lock out the draft control. This is done by turning the two screws in the lift rocker out and against the seat bracket and by locking the screws in this position with the jam nuts. (See Figure 10-13.) With the draft control locked out, the position control tends to keep the lower links at the selected level set by the hand control lever.

HYDRAULIC CONTROL ADJUSTMENT

1. Remove any attached implement from the three-point hitch.
2. Operate the engine at 1000 rpm or above.
3. With the control lever in the extreme up position, it should be possible to raise by hand the outer end of the lower links through approximately 1-1/2 inches of free play before the internal cylinder strikes its stop.
4. To decrease the free play of the lift arms, loosen the nut on the external link. Turn the turnbuckle in a counterclockwise direction. (See Figure 10-13.) This will lengthen the outer linkage and raise the lower links. To increase the free play, reverse this procedure. Tighten the lock nut.
5. After making the adjustment, lower the control lever to the bottom of the quadrant to let the lower links down. Then again raise the control lever and check the free play.

EXTERNAL VALVE

An external valve is available, as a sales extra, to provide for controlling external cylinders mounted on drawn or front mounted implements. This valve is installed on the right-hand side of the hydraulic housing directly in front of the hydraulic control quadrant. (See Figure 10-14.) The valve assembly may be quickly and easily installed by removing the oil passage cover and the two pipe plugs and cap screw directly to the rear of the cover. (See Figure 10-12.) Install the pipe elbows in the bottom of the valve, the six "O" rings in the back of the valve and secure the valve to the hydraulic housing



Figure 10-14. External Valve Installed

with three cap screws and lever pivot screw with lock washers. (See Figure 10-14.) Connect one end of the hoses to the elbows in the valve. The other end of the hoses should be connected to the quick disconnect coupling and in turn to the double acting cylinder. The hose from the front port and pipe elbow should lead to the rod end of the cylinder and the hose from the rear port to the base end of the cylinder.

If the valve is to be used to operate a single acting cylinder, the hose from the rear port should be connected to the cylinder. Remove the pipe plug from the side of the external valve and connect a short hose or tube from the front port and to the side of the valve. (See Figure 10-14.)

Be sure to clean the external valve mounting boss on the reservoir of all paint and other foreign material before installing the valve. If this surface is not smooth and flat, the valve will be distorted when the cap screws are tightened. In addition the valve mounting cap screws must be tightened to a torque of 12-15 foot pounds. If tightened more than this, the valve body distorts and the valve spool sticks.

When the cylinder or cylinders have been connected, loosen the hose connected to the front port of the valve and pull the hand lever back. With the tractor engine operating at idle speed, hold the lever in this position until oil free of air escapes from around the threaded hose end. Tighten the hose. Loosen the rear hose and repeat this operation by pushing the hand lever forward. This will bleed the air from the system. After bleeding, check the oil level in the hydraulic housing.

The external valve can be operated irrespective of the position of the hydraulic control lever and internal cylinder. However they cannot be operated together satisfactorily. To operate the external valve and cylinder, push the hand lever forward to lower an implement or retract the cylinder and back to raise an implement or extend a double acting cylinder.

Pushing the lever forward directs the pumped oil out the front port and pulling it back directs it out the rear port. Therefore, if a single acting cylinder is connected to the rear port, it will extend and raise an implement when the hand lever is pulled back.

WARNING

USE CAUTION WHEN DISCONNECTING HOSES UNDER PRESSURE AS PRESSURIZED OIL MAY PENETRATE YOUR SKIN AND CAUSE BLOOD POISONING.

HYDRAULIC SERVICING

It is very important that all parts of the hydraulic system are kept as clean as possible to eliminate the possibility of dirt or other foreign material entering the system. Cleanliness cannot be over-



Figure 10-15 Checking Hydraulic Oil Level

emphasized to anyone operating or servicing the system. Any dirt or grit that enters the system will cause excessive wear of the pump, cylinder, and valve, which will result in oil leaks and loss of pressure.

NOTE

CHECK THE OIL LEVEL IN THE HYDRAULIC SYSTEM DAILY.

The oil dip stick filler cap is located on the right-hand rear corner of the hydraulic housing. (See Figure 10-15.) To check the oil level, remove the dip stick and wipe it off with a clean cloth. Replace the dip stick over the "O" ring and again remove it to give you the reading. Check the oil level daily and maintain it between the *ADD* and *FULL* marks on the dip stick. One pint of oil is required to raise the oil level from the *ADD* mark to the *FULL* mark on the dip stick. If the tractor is operated with the oil in the reservoir below the *ADD* mark, overheating may occur because the oil also acts as a coolant. If the reservoir is too full, the oil may splash into the breather and eventually work dirt from the breather into the reservoir.

NEVER RIDE ON TRACTOR DRAWBAR

Drain the hydraulic system every spring and fall. To drain the system, lower the three-point hitch by pushing the hydraulic control lever down so there will be no trapped oil in the internal hydraulic cylinder. Remove the pipe plug from the hydraulic passage cover in front of the operator's seat and install in its place a 1/4 inch standard pipe nipple. (See Figure 10-12.) Start the engine and let it run at an idle speed until the oil has been pumped from the hydraulic system. To catch the oil as it is being pumped from the system, hold a container of at least three gallon capacity below the 1/4 inch pipe nipple which has just been installed on the hydraulic passage cover or install a hose on the pipe to carry oil from the pipe to a container on the ground. Stop the engine immediately when the oil ceases to flow from the system and reinstall the pipe plug.

CAUTION

NEVER OPERATE THE TRACTOR ENGINE WHEN THE HYDRAULIC SYSTEM IS DRAINED.

Remove the dip stick filler cap and fill the hydraulic system reservoir with 9 quarts of premium quality engine oil. (See Figure 10-15.) Use SAE 10W engine oil for temperatures below 32° F. and SAE 30 for temperatures above 32° F. Mix 102 082-A Oil Additive with the proper oil in a ratio of 16 parts oil to one part additive.

To drain the hydraulic system when it is equipped with an external valve and cylinder, remove the hoses from the couplings. Start the tractor and actuate the external valve in either the up or down position until all the oil has drained from the system. Drain the oil from the external cylinder by working the piston rod back and forth in the cylinder by hand. Reconnect the hoses and fill the unit with 11 quarts of oil. Loosen the hose connected to the front port of the valve and pull the hand lever back. With the tractor engine operating at idle speed, hold the lever in this position until oil free of air escapes from around the threaded hose end. Tighten the hose. Loosen the rear hose and repeat this operation by pushing the hand lever forward. This will bleed the air from the system. After bleeding, check the oil level in the hydraulic housing.

BREATHER

A micronic breather, to relieve the pressure that develops as the hydraulic system operates, is located on top of the hydraulic housing. Under normal conditions, the filtering element, part number 104 792-A, in this breather should be replaced yearly or more often under extremely dusty conditions. (See Figure 10-12.)

OIL FILTER

The hydraulic system is provided with a full-flow oil filter located in a housing on the front of the hydraulic housing. (See Figure 10-12.) **REPLACE THIS ELEMENT AFTER THE FIRST 50 HOURS OF TRACTOR OPERATION.** After the initial change, the element should be replaced twice each year under normal conditions. In extremely dusty conditions change this element once a month. An oil filter element and "O" ring oil seal package, part number 100 476-A5, must be used when replacing the element. To install a new filter element, proceed as follows:

1. Clean all dirt and other foreign material away from the filter body.
2. Unscrew the filter body from the hydraulic housing.
3. Remove oil filter element.
4. Thoroughly clean all the parts in a cleaning solution.
5. Install the new "O" ring oil seal on the filter body and coat with grease.
6. Install the element retainer on one end of the new filter.
7. Install retainer spring in filter body. Then place body and spring over element.
8. Carefully install the filter body and filter on housing and tighten it in place.

DO NOT PERMIT CHILDREN TO PLAY NEAR MACHINE WHILE IT IS IN OPERATION



OLIVER CORPORATION

CHARLES CITY, IOWA

WHEEL TRACTOR

Tractor Model _____	Serial Number _____	Engine Number _____
Dealer's Name & Address _____		
Owner's Name & Address _____		

DELIVERY SERVICE

THE CHECKS BELOW HAVE BEEN MADE AND THE NEW OWNER INSTRUCTED IN THE PROPER CARE, SAFE OPERATION AND CORRECT ADJUSTMENT OF THE ITEMS LISTED.

The Owner Has Been Properly Informed On The Recommended Weight Or Grade And Quality Of Engine Oil And Fuel.

- | | |
|--|---|
| <input type="checkbox"/> Engine Oil Level | <input type="checkbox"/> Hydraulic System Checked And Operating Properly |
| <input type="checkbox"/> Air Cleaner Oil Level | <input type="checkbox"/> Battery Properly Filled With Electrolyte And Registration Completed |
| <input type="checkbox"/> Transmission Oil Level | <input type="checkbox"/> Function Of All Controls Outlined To Owner |
| <input type="checkbox"/> Belt Pulley Oil Level | <input type="checkbox"/> Starting And Stopping Tractor Outlined To Owner |
| <input type="checkbox"/> Hydraulic System Oil Level | <input type="checkbox"/> Safety Of Operation - Selection Of Proper Speeds, PTO, And Hitching To Drawbar |
| <input type="checkbox"/> Proper Coolant And Level In Radiator | <input type="checkbox"/> Outline Proper Fuel Handling And Filling Fuel Tank |
| <input type="checkbox"/> All Grease Fittings Serviced | <input type="checkbox"/> Owner Has Driven Tractor |
| <input type="checkbox"/> All Gauges Working Properly | <input type="checkbox"/> Special Equipment Has Been Mounted As Listed Below: |
| <input type="checkbox"/> Proper Tire Pressure | _____ |
| <input type="checkbox"/> The Importance Of Maintaining Proper Tire Pressure To Tire Life Has Been Pointed Out To The Owner | _____ |
| <input type="checkbox"/> Governor Checked - Idle And High No Load Speeds | _____ |

I have spent _____ hours and _____ minutes reviewing the entire Operator's Manual with the owner and he has a thorough knowledge of the care, adjustments and safe operation of this tractor.

Dealer's Signature

The above tractor has been received by me in accordance with the foregoing and I have a thorough knowledge of its care, adjustment and operation. I am assured that the foregoing checks have been physically made by the dealer or his representative and accept delivery of this tractor. I have read and accept the warranty on the reverse side hereof.

Owner's Signature

Date

Owner Copy

VII

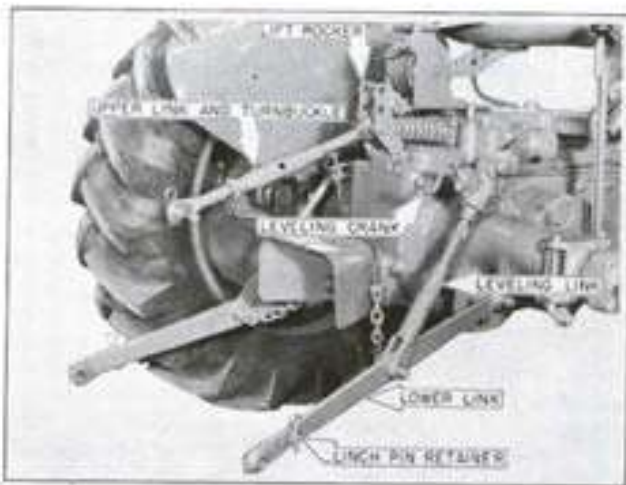


Figure 10-16 Three-Point Hitch

THREE-POINT HITCH

GENERAL

The three-point hitch, which is used in conjunction with the hydraulic system, provides the operator with a rapid and convenient means for raising, lowering and adjusting rear mounted implements. (See Figure 10-16.)

The two lower links are connected by an external linkage through a cross shaft to an internal linkage and a single acting cylinder. The single acting cylinder holds the two lower links up; it never holds them down. For this reason, the links are free to move upward, but they are held rigid with the rear frame by the cylinder when downward force is applied. This action allows the hitch and attached implements to ride freely over obstacles, but when a downward force is applied, the increased weight is transferred to the rear axles and wheels decreasing wheel slippage when tough spots in the soil are encountered.

The hitch capacity is 3000 foot pounds torque measured at the hydraulic unit cross shaft.

CAUTION

ALWAYS TRAVEL AT SLOW SPEEDS WHEN TRANSPORTING IMPLEMENTS IN RAISED POSITION OVER ROUGH GROUND.

RAISING AND LOWERING THE IMPLEMENT

The rear mounted implement is raised by the hitch when the hydraulic control lever is moved up and toward the rear of the control quadrant. To lower the implement, the lever must be pushed forward and down until the implement reaches the desired depth. The lifting action of the hydraulic system is positive, however, the downward movement is accomplished through the weight of the implement. When the oil is released from the hydraulic cylinder, the weight of the implement causes the hitch to lower.

ATTACHING IMPLEMENTS

To attach a rear mounted implement to the three-point hitch, back the tractor so that the lower links are near the ends of the implement lift bar. Raise or lower the hitch, as required, so that the ball joint in the outer end of the left-hand lower link is the same height above the ground as the implement lift bar. Dismount from the tractor and slip the ball joint over the end of the implement lift bar and insert the lynch pin to hold the link in place. Attach the right hand lower link to the opposite end of the implement lift bar by using the leveling crank to obtain the required height and rocking the tractor to obtain the horizontal alignment. Slip the ball joint over the lift bar and install the lynch pin. Connect the upper link screw assembly in the turnbuckle to the top hitch point on the implement with the upper link pin and lynch pin to complete the installation of the implement on the three-point hitch.

To remove the lynch pins, squeeze the two ends together with one hand to free the locking offset from the lynch pin hole and pull the pin from the hitch with the other hand. (See Figure 10-17.)

To provide a convenient means for carrying lynch pins when not in use, small clips have been welded to the lower links. (See Figure 10-18.)

ADJUSTMENTS

LEVELING ADJUSTMENT

The leveling crank of the right lifting link assembly is used to either level or tilt the implement sideways. (See Figure 10-16.) Turning the crank in a clockwise direction shortens the lifting link assem-

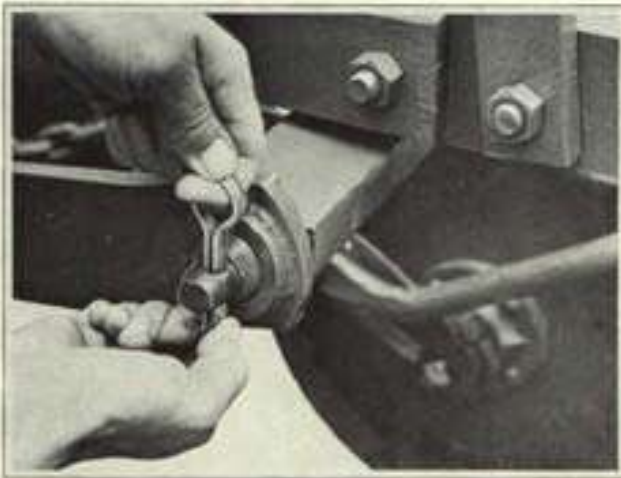


Figure 10-17 Removing Linch Pin

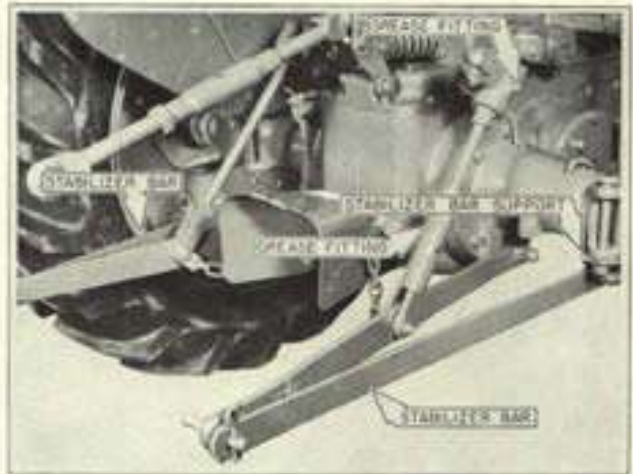


Figure 10-18 Stabilizer Bars And Grease Fittings

bly and raises the right side of the implement. Turning the crank counterclockwise lengthens the assembly and lowers the right side of the implement. This adjustment is within easy reach of the operator on the tractor seat, and the plow or other rear mounted implements may be leveled or tilted while the tractor is in motion. The right lifting link shaft is provided with a leveling adjustment of approximately four inches.

NOTE

USE CAUTION WHEN LENGTHENING THE RIGHT LIFTING LINK ASSEMBLY WITH THE LEVELING CRANK IF A HEAVY REAR MOUNTED IMPLEMENT IS ATTACHED. EXCESSIVE LENGTHENING OF THE RIGHT LIFTING LINK ASSEMBLY WILL REDUCE THE THREAD ENGAGEMENT BETWEEN THE LIFTING LINK END AND LIFTING LINK SHAFT WHICH MAY RESULT IN STRIPPED THREADS AND DAMAGED PARTS.

TURNBUCKLE DEPTH ADJUSTMENT

The upper link assembly is provided with a turnbuckle for moving the upper hitch point of the implement either forward or backward. (See Figure 10-16.) Its application with a soil working implement, such as a rear mounted plow, is to set the initial working

depth by increasing or decreasing the depth of soil penetration through shortening or lengthening the turnbuckle attachment. The turnbuckle attachment can be extended or contracted approximately seven inches. This provides sufficient adjustment for the majority of rear mounted implements.

LUBRICATION

The three-point hitch is provided with two grease fittings. One fitting is located on the leveling gear housing and the other is on the right lifting link end. (See Figure 10-18.) These fittings should be lubricated every 60 hours of three-point hitch operation with pressure gun grease.

THREE-POINT HITCH ATTACHMENTS

STABILIZER BAR

On the three-point hitch applications where excessive side draft is encountered or where a rigid hitch is desired, stabilizer bars may be installed. These bars will provide a firmer attachment and maintain the implement directly behind the tractor. The stabilizer bars, which are optional equipment, are installed with one end attached to a support under each rear axle carrier. The other end of the bars should be installed on the implement. (See Figure 10-18.)

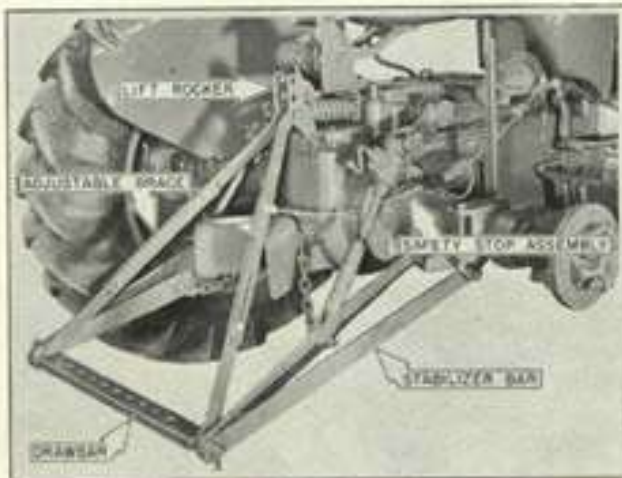


Figure 10-19 Three-Point Hitch Drawbar And Safety Stop

THREE-POINT HITCH DRAWBAR

When it is desired to pull drawn implements, a special pull-type drawbar is available as optional equipment and may be easily and quickly installed. (See Figure 10-19.) This drawbar is provided with nine holes which allow a total horizontal adjustment of seventeen inches. The drawbar braces can be regulated to permit a drawbar vertical adjustment of eleven inches. As a reminder not to use the hydraulic system to prevent damage to the drawbar, a safety stop assembly has been provided and is attached to the right-hand drawbar brace with a chain. The other end of the chain is equipped with a clip which should be positioned over the adjustable stop on the quadrant to lock the hydraulic control lever down to prevent it from being moved. The safety stop assembly should be used and the hydraulic control lever locked down without fail whenever the three-point hitch drawbar braces are installed (See Figure 10-19.)

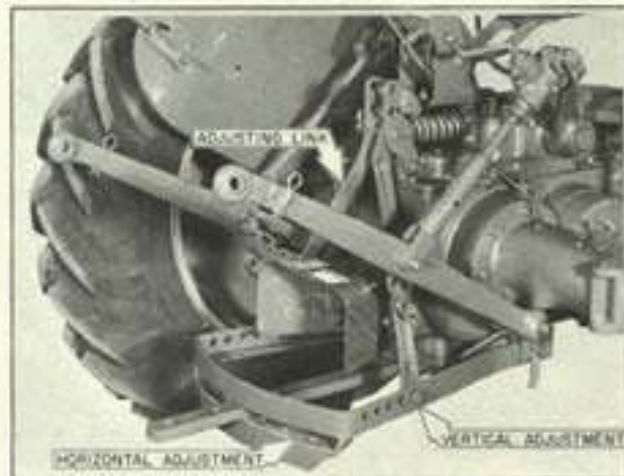


Figure 10-20 Swinging Drawbar

SWINGING DRAWBAR

The swinging drawbar, which is optional equipment for field installation, is provided to facilitate hitching implements in the correct line of draft and for power take-off operation. (See Figure 10-20.) Various length drawbars are also available for use with the different speed and type power take-off units with which your tractor may be equipped.

To operate drawn type power take-off driven implements within SAE and ASAE standards, use the proper length drawbar and attach the implement to the tractor through the end hole. Lock the drawbar directly behind and in line with the power take-off output shaft. Adjust the drawbar height so that the top of the drawbar is 13 to 17 inches above the ground line and not less than 6 nor more than 12 inches below the centerline of the 1000 rpm power take-off shaft or not less than 6 nor more than 15 inches below the 540 rpm power take-off shaft. Regulate the engine speed as outlined in the Power Take-off discussion in this section.

**NEVER STAND BETWEEN THE TRACTOR AND THE DRAWN IMPLEMENT
WHEN HITCHING**

NOTES

NOTES

S A F E T Y



F I R S T



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