

OPERATOR'S

INSTRUCTION MANUAL

For the Operation and Care of...



Est. 1842

CASE



Model

"D" Series

TRACTORS

Eighth Edition

J. I. CASE CO.

RACINE - WISCONSIN - U. S. A.

TO PURCHASERS OF NEW CASE TRACTORS



Congratulations on your purchase of a CASE tractor and welcome to the ever-increasing number of satisfied CASE owners.

The dependability and economical performance of your new CASE tractor will prove that you were wise in making this choice.

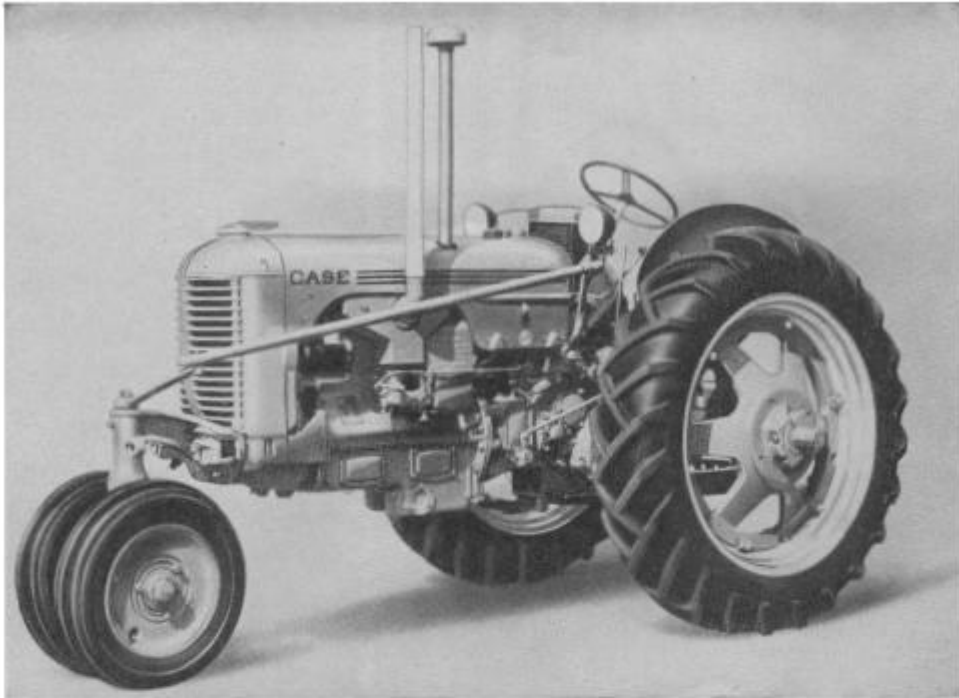
The organization back of your tractor has been building quality farm equipment for more than a century. Your CASE tractor was built in one of the largest and best equipped plants in the world. In this factory quality materials, precision machinery, high grade workmanship, thorough inspection, and complete testing equipment are combined to give you the best in performance and economical operation.

The care which you give your tractor will have a great deal to do with the service and satisfaction you get from it. By observing the precautions and suggestions in this manual, your CASE tractor will serve you well for many years. Make this manual your guide. Should you need information not covered here, or should your tractor require special servicing, contact your CASE dealer. He has trained men who are kept informed on the best methods of servicing CASE farm machines in the field or in his shop.

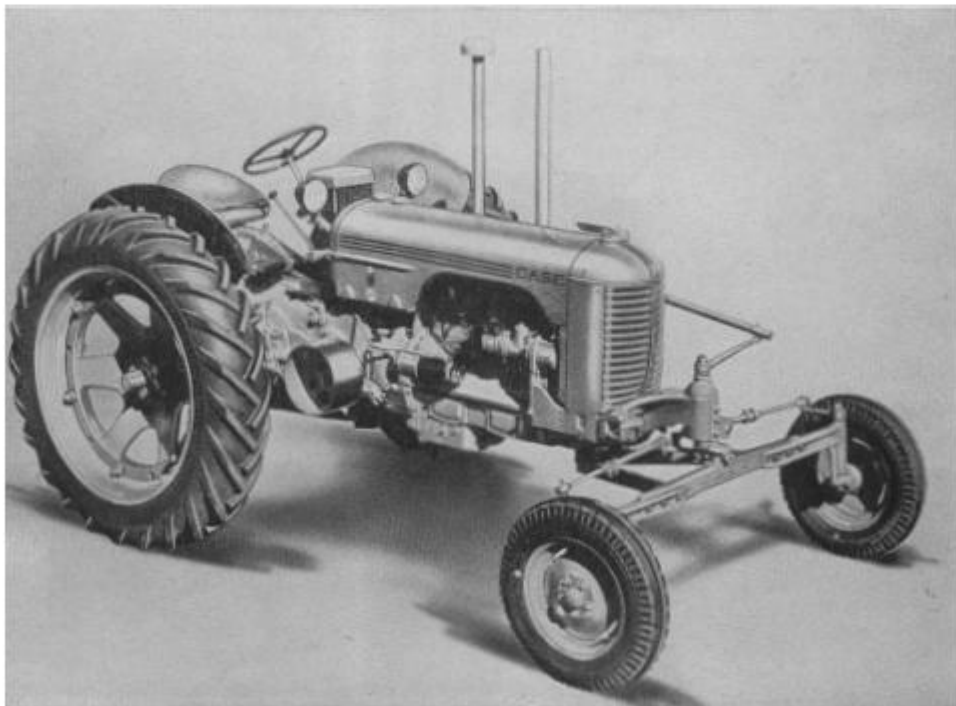
When it becomes necessary, after long use, to replace certain parts on your tractor, be sure to use only genuine CASE parts, insuring proper fit and continued good service. These may be obtained from your CASE dealer. It is always helpful to provide him with the MODEL of your tractor in addition to a description and part number if available of the parts required.

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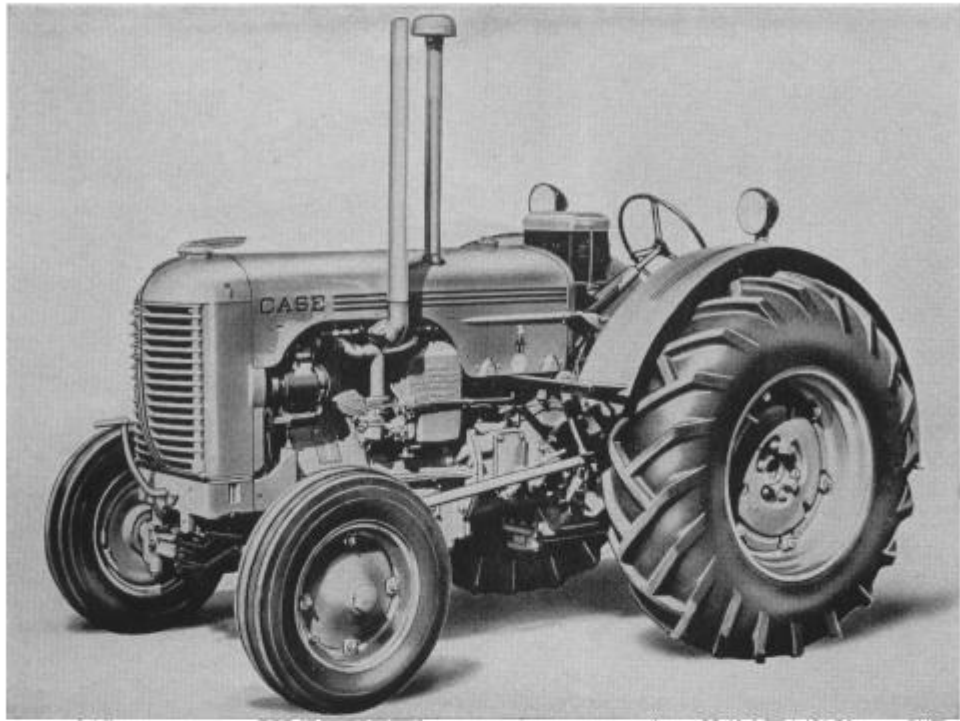
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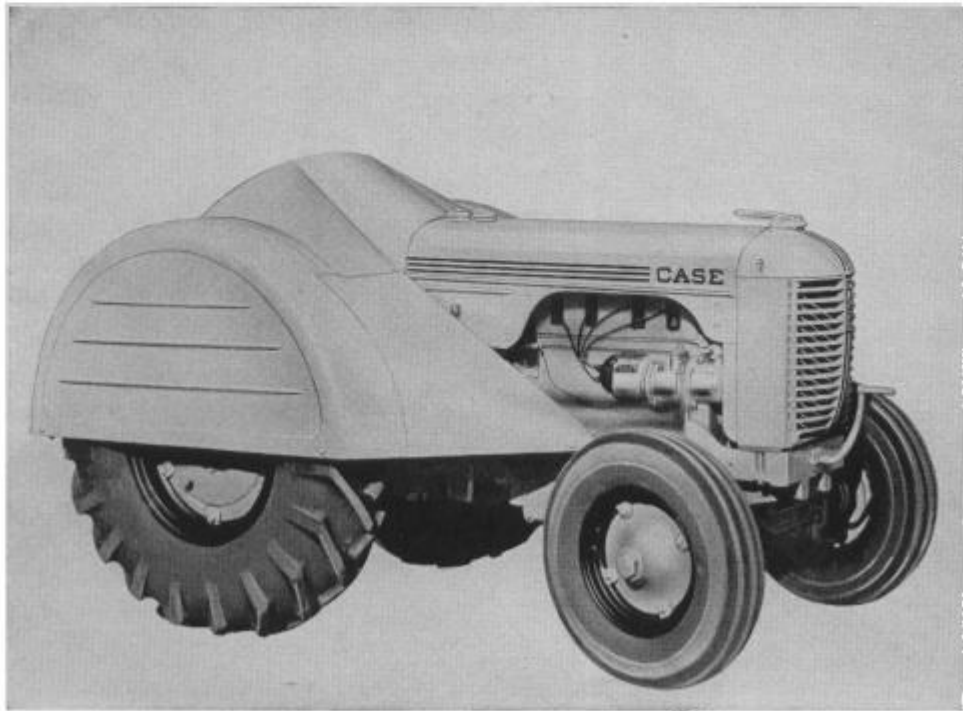
Model "DC" General Purpose Tractor



**Model "DC" General Purpose Tractor
(With Adjustable Front Axle)**



Model "D" Tractor



Model "DO" Orchard—Grove Tractor



PREPARING A NEW TRACTOR FOR USE

Your tractor has been put in operating condition by the dealer from whom purchased. Regardless, it is well to check the entire tractor to insure that everything is in order. Also follow instructions contained in this manual.

SPECIFICATIONS

MODEL "D" SERIES TRACTOR

Engine

Cylinders	4
Bore	$.37\frac{7}{8}$ inches
Stroke	$.5\frac{1}{2}$ inches
Cylinder	Wet Sleeves
Valve-in-Head	
No Load Speed	1375 RPM
Full Load Speed	1200 RPM
Firing Order	1-3-4-2
Valve Clearance018 inches when cold
Spark Plug	AC Type No. 85 or equivalent Thread 18 MM—Gap .030" Shank length $\frac{1}{2}$ "
Carburetor	$1\frac{1}{4}$ " SAE Flange
Magneto	Case Type 4-JMA
Air Cleaner	Case Oil Bath Type
Governor	Case Fly Ball Type

Belt Pulley

Diameter:.....	$12\frac{1}{4}$ "	Face:.....	$7\frac{1}{4}$ "
No Load Speed:.....			936 RPM
Full Load Speed:.....			818 RPM
Belt Speed:.....			2620 ft. per min.
Ratio Engine Speed to Belt Pulley Speed:.....			1.466 to 1

Power Take-Off

Located on Center Line of Tractor

Normal Speed:.....	540 RPM
Spline:.....	$1\frac{3}{8}$ " ASAE Standard
Guard:.....	FEI Standard

Approximate Capacities

	U. S.	Imperial
Engine Crankcase	1 $\frac{3}{4}$	1 $\frac{1}{2}$ Gals.
Cooling System	6 $\frac{3}{4}$	5 $\frac{1}{2}$ Gals.
Single Fuel Tank	19	16 Gals.
Double Fuel Tank (Large)	17	14 Gals.
(Small)	2	1 $\frac{3}{8}$ Gals.
Transmission and Differential	10 $\frac{1}{2}$	8 $\frac{1}{2}$ Gals.

Speeds

Calculated at Engine Speed of 1200 RPM

Rear Tire Size . . .	"D"		"DC"		"DO"	"D" 42"
	12-26	13-26	11-38	12-38	13-26	Steel Wheels
Approx. Speeds						
1st	2.10	2.19	2.10	2.17	2.19	1.95
2nd	3.63	3.78	3.63	3.75	3.78	3.36
3rd	5.09	5.20	5.02	5.18	5.20	4.64
4th	10.11	10.51	10.10	10.40	10.51	9.36
Reverse	2.86	2.98	2.87	2.97	2.98	2.65

Note: Speed will vary with weight of wheel, traction, size tire and load.

Recommended Tire Pressures

Front Tires	28 lbs. per square inch
Rear Tires	12 lbs. per square inch

Note: When plowing increase pressure in furrow wheel tire 4 lbs.

Shipping Weight

Model "D"	12-26 Tires	4433 lbs.
Model "DO" (Orchard-Grove)	13-26 Tires	4602 lbs.
Model "DC3" (General Purpose)	11-38 Tires	4766 lbs.
Model "DC4"	11-38 Tires	4471 lbs.
Model "DC3" (General Purpose with Adjustable Front Axle)	11-38 Tires	4622 lbs.
Model "DCS" (Cane Tractor)	11-38 Tires	6360 lbs.

PREPARING A NEW TRACTOR FOR USE

IMPORTANT: Your Tractor has been put in operating condition by the dealer from whom purchased. Regardless, it is well to check the entire tractor to insure that everything is in order.

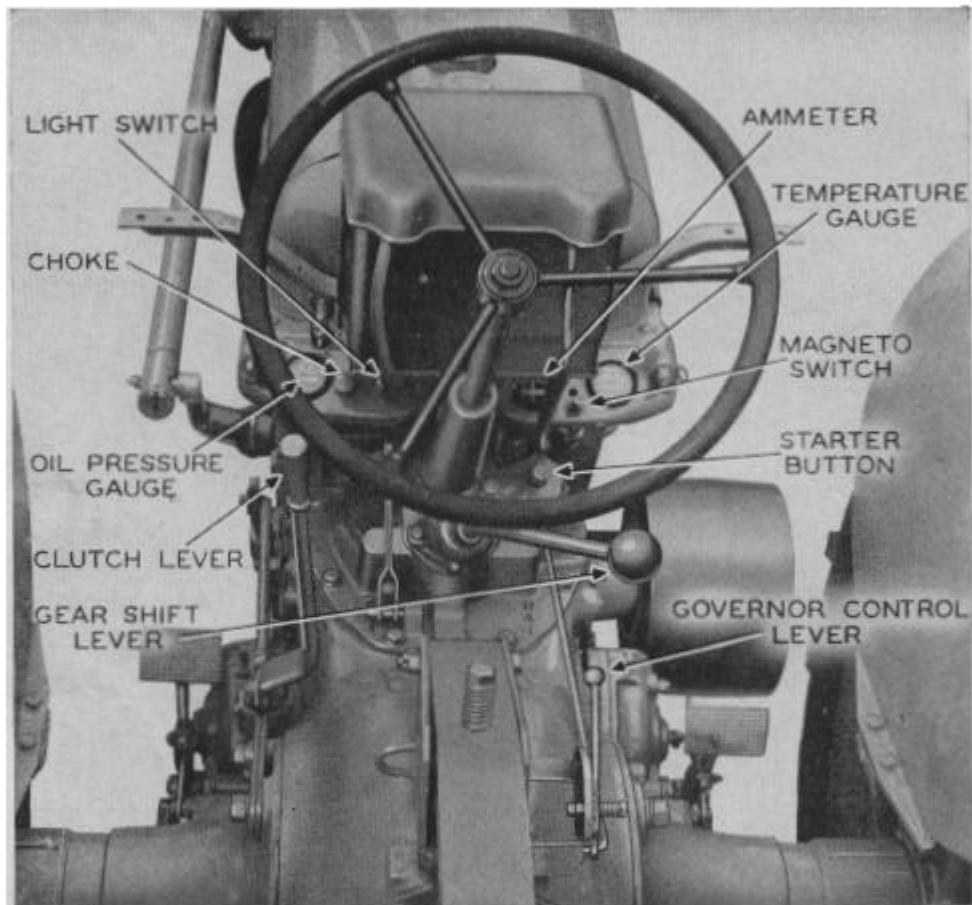


Figure 1. Operating Controls

STARTING THE ENGINE

Before starting the engine, check the crankcase and air cleaner oil level. Check the radiator for water or antifreeze during cold weather.

Set the governor control lever at about mid-position on the quadrant. To increase the governed engine speed, push forward on the lever and to decrease the speed pull the lever rearward.

Pull out choke button to full choke position until engine starts and then push in to about half choke position until engine warms up.

Place the gear shift lever in the neutral position.

Push in magneto switch for starting engine.

Start the engine by pressing down on the starter button until engine fires. When hand cranking, pull the crank upward with one-quarter turns, so the operator's hand will be in a position to avoid being struck by crank should the engine backfire.

Immediately after starting the engine, check the oil pressure gauge to see that it is registering pressure.

Set the governor control so that engine runs about half normal speed and adjust the carburetor needle valve until engine runs free.

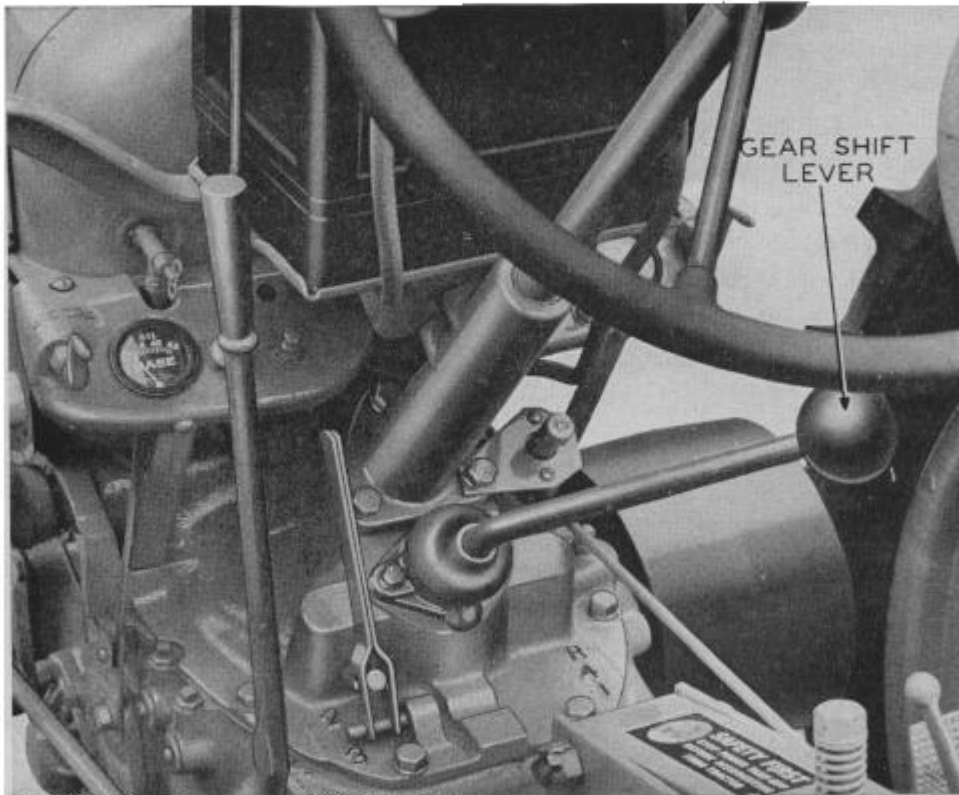


Figure 2. Gear Shift

Running in a New Engine

A new tractor should never be loaded to full capacity. For the first 50 hours it should be run at half load or less before it is put on full load. (Do not confuse half load with half speed, this means approximately half the normal load with full, open throttle.)

Stopping Engine

When gasoline is used for fuel, the engine is stopped by reducing the speed and pulling out the magneto switch.

When operating on low cost fuel, turn off the fuel from the main tank and turn on the gasoline a few minutes before stopping. This will allow the low cost fuel in the lines and carburetor bowl to be replaced by gasoline. Starting on low cost fuel is difficult, if not impossible, after the engine has cooled off.

FOR YOUR SAFETY

1. Never get on or off the tractor while it is in motion.
2. *When the power take-off is used, be sure the standard safety ADAPTER GUARD and POWER TAKE-OFF SHIELDS are in place. If the power take-off driven machine is received without a telescoping shield, do not operate tractor or machine until a shield is obtained from dealer.*
3. When cranking an engine, pull the handle upward, so the operator's hand will be in a position to avoid being struck by the crank, should the engine backfire.
4. Always engage clutch gradually when starting any tractor so the engine will pick up the load slowly. This is particularly necessary when the tractor is going up hill, climbing out of ditches or when hitched to some heavy or difficult load. Never hitch a tractor to a stump or other object by means of a long chain or rope with slack so that when the tractor moves forward it will jerk into the load.
5. When working on hillsides, any tractor may tip over sideways, especially when the wheel on the lower side strikes a hollow, hole or ditch.
6. When going up a hill or climbing out of a ditch or gully, any tractor is liable to raise its front wheels off the ground if the full power is suddenly applied, by quickly engaging the clutch. To avoid possibility of danger under these conditions the operator should keep his hand on the clutch lever, engaging the power of the engine slowly and being prepared to disengage the clutch promptly should the front wheels raise off the ground. The same precautions must be taken if the tractor becomes mired down in a soft bog, a mud hole or ditch.
7. Any vehicle is liable to tip over when making a short turn at high speed. Such short turns should be made only at slow traveling speed with reduced throttle.
8. Read Instruction Manual carefully.

A CAREFUL OPERATOR IS THE BEST INSURANCE AGAINST AN ACCIDENT.—*National Safety Council.*

TO START TRACTOR

With the engine running, pull back on *clutch lever* until it stops rotation of belt pulley and then move *gear shift lever* to the position for speed desired. Push the *clutch lever* forward gradually until it snaps into full engagement but do not push lever after the clutch is fully engaged. *The gear shift lever should be in neutral position when starting engine or when running idle in order to prevent accidents in case clutch accidentally engaged.*

Occasionally the gears will stop with the teeth ends opposite each other, thereby preventing easy shifting. Should this occur, partly engage the clutch to rotate the gears slowly; then the teeth can be meshed readily. This condition occurs more often when the tractor is new.

Any speed may be selected but the tractor must be stopped before gears can be shifted. The position of *gear shift lever* for different speeds is marked on *shifting lever bracket*.

The road speeds at normal engine speed of 1200 RPM are listed on page 7.

NOTE: Never shift gears while engine clutch is engaged or while tractor is in motion.



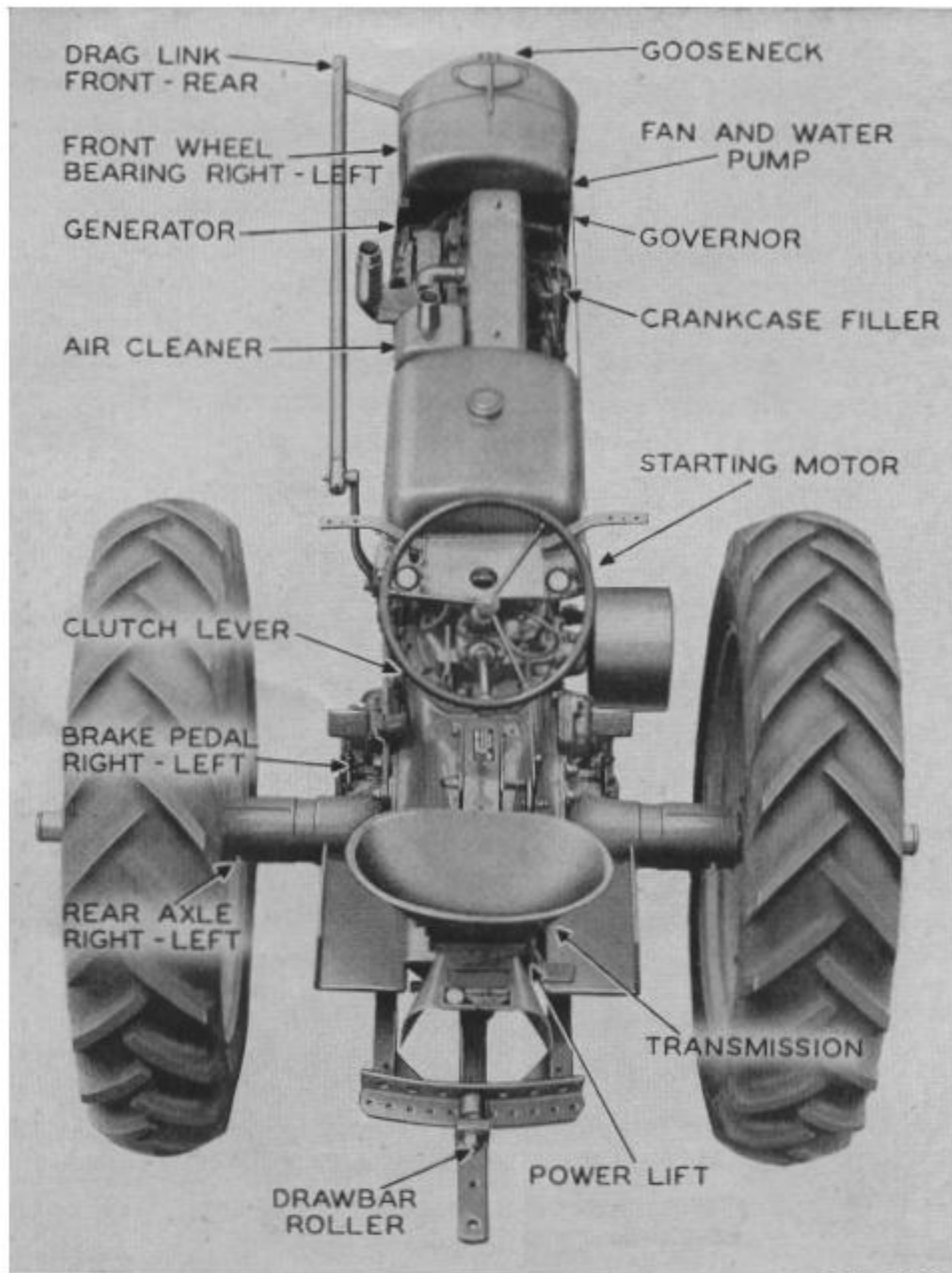


Figure 3. Lubrication Diagram—Model "DC"

LUBRICATION

Engine Oil Recommendations

Capacity—1¼ U. S. Gallons—1½ Imperial Gallons

SAE 30 for summer or temperatures above 90° F.

SAE 20 for spring and fall or temperatures between 90° F. and 32° F.

SAE 10 for winter or temperatures between 32° F. and - 10° F.

SAE 10-W for temperatures below + 10° F.

Do not use heavier oils than are recommended above, nor oils that are poorly refined. Such oils cause gumming of valves and pistons and their use may result in loss of compression and possible mechanical damage, such as scored cylinders or burned out bearings.

Only the best grade of well refined oil of the proper body should be used in your CASE Model "D" Series tractor. The best assurance of getting this quality oil is to purchase it from a reliable oil dealer in your home community, or from a reputable oil company.

GENERAL LUBRICATION

Your tractor is equipped with pressure fittings wherever automatic lubrication cannot be provided. These fittings are few but important, so do not neglect to lubricate these points regularly. A good grade of semi-fluid pressure gun lubricant should be used in the grease gun in warm weather. In cold weather a lighter grade of lubricant is desirable, to insure that the lubricant will reach the bearing surfaces. Wipe the pressure fittings clean before using the grease gun.

First Group

Attention Daily Every 10 Hours of Operation

Rear Axle Bearings	
Gooseneck	2 fittings. (DC only.)
Drag Link	2 fittings.
Front Axle Pivot Pin	D and DO only.
King Pins	4 fittings. (D and DO only.)
Tie Rod	2 fittings. (D and DO only.)
Independent Brake Pedals	
Clutch Lever	
Power Lift Bail	When power lift is in use.
Drawbar	
Fan & Water Pump—	1 Fitting

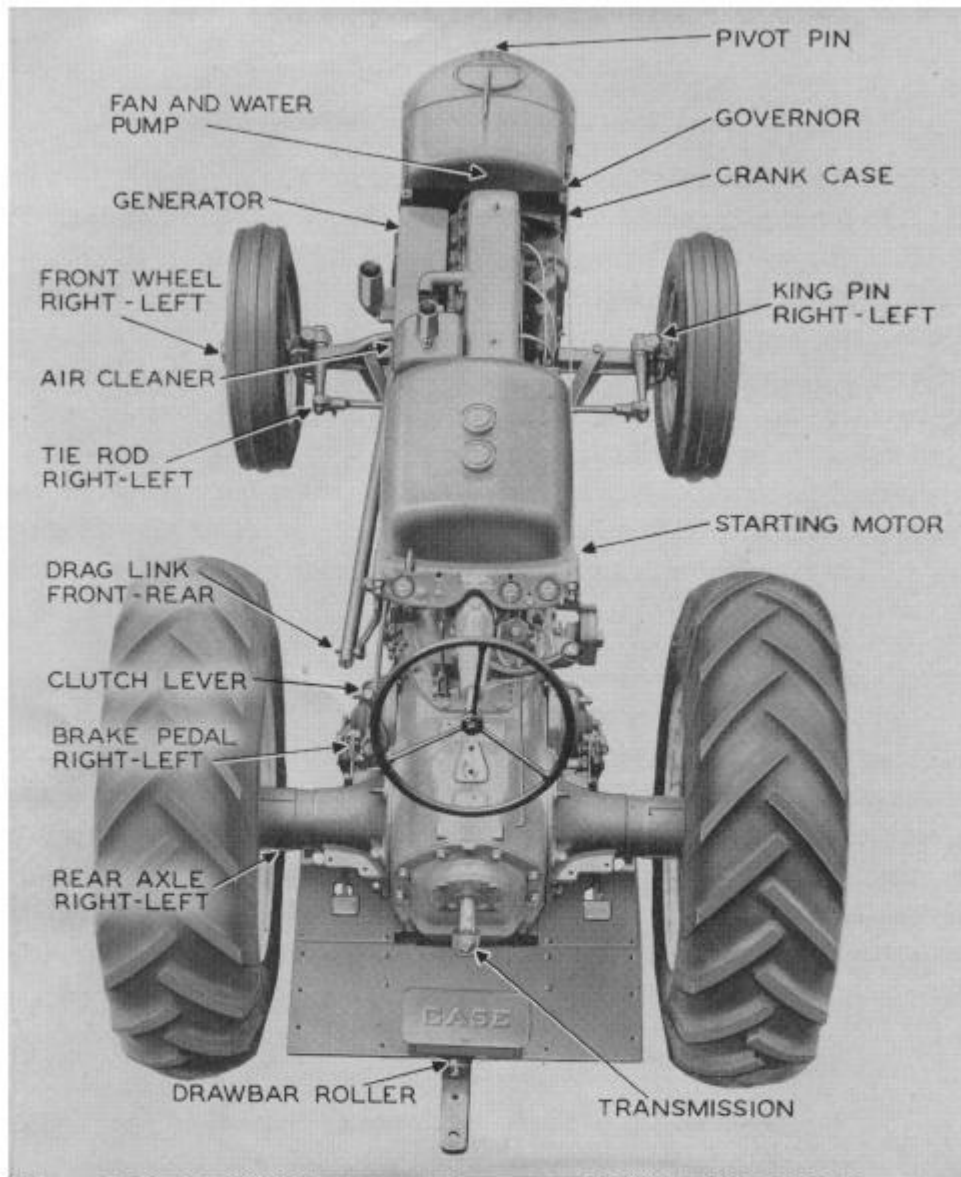


Figure 4. Lubrication Diagram—Models "D" and "DO"

Engine Filling

Keep the engine crankcase filled to the proper level with $1\frac{3}{4}$ gallons of good engine oil.

After engine starts, check the oil pressure gauge for normal oil pressure—30 to 35 pounds.

Air Cleaner

The air cleaner oil reservoir should be removed every 10 hours of operation, or oftener under dusty conditions, cleaned and filled to the level marked on the reservoir with an oil having a viscosity of SAE No. 10.

Power Lift Linkage

DC3 only. Apply a few drops of oil to each end of the link connecting with the power lift bail. This should be done every 10 hours when the power lift is in use.

Second Group

Attention Every 60 Hours of Operation

Governor
Fan Bearing

Third Group

Attention Every 200 Hours of Operation

Generator—Clean around the oilers before opening; add a few drops of oil to each of the oil cups—one on the front flange and one on the rear end cover.

Starting Motor—Clean the end of the motor before swinging the small cover on the oil hole to one side—then add a few drops of oil to the oiler.

Fourth Group

Attention Every 250 Hours of Operation

Oil Pump Screen—Remove and clean the screen. Also remove any sludge or dirt in the oil pan.

Transmission—The transmission should be kept filled to the height of the level plug.

Front Wheel Bearings

These bearings are packed with grease at the factory and, under normal conditions, will require no attention for the first 250 hours of operation. The wheel bearings should then be removed, cleaned thoroughly and repacked with a good grade of fibre grease. This should be repeated every 250 hours thereafter.

Clutch Housing

Oil from the crankcase is constantly circulating through the clutch housing and a small amount of oil is retained in the clutch housing when the engine is stopped. The clutch housing drain plug should be removed and the clutch housing drained at the same time that the crankcase oil is changed. Make sure that the plug is put back and screwed up tight after draining.

Magneto

The Case magneto is equipped with sealed ball bearings and oil impregnated bushings which require no lubrication except at time of general overhaul.

ENGINE LUBRICATING AND OILING SYSTEM

A pressure feed lubricating system built into this engine assures positive lubrication to all working parts. A gear type oil pump equipped with non-adjustable relief valve circulates oil in the engine block to all main, connecting rod, camshaft bearings, clutch pilot bearing and clutch throwout bearing, valve rocker arms and governor. All other parts operate in an oil spray from connecting rod bearings. Valve lifters are flood lubricated.

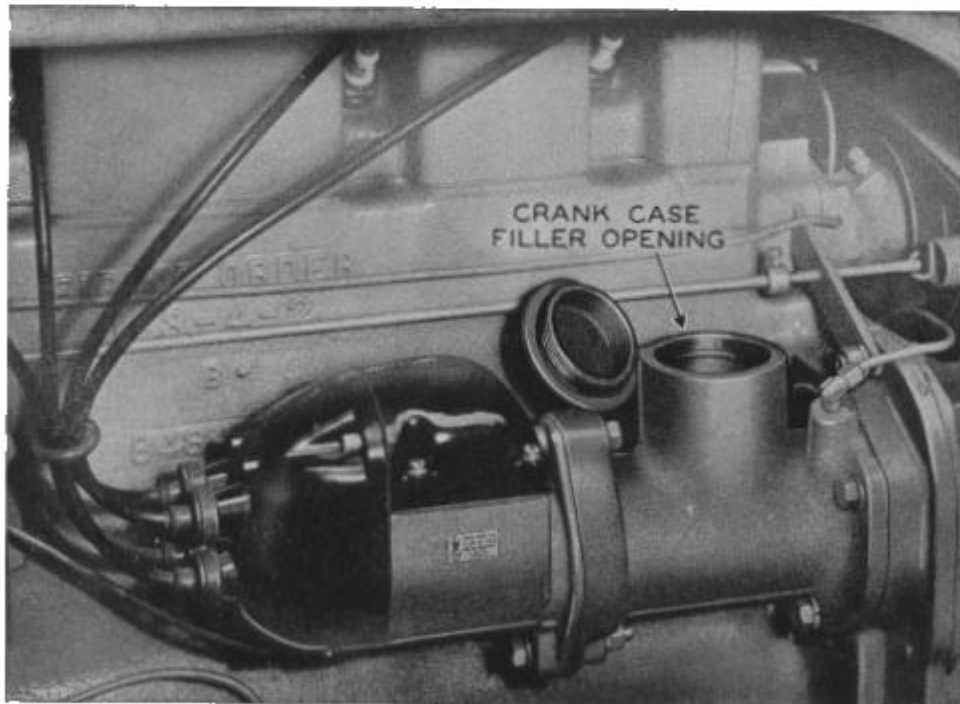


Figure 5. Crankcase Filling

CRANKCASE OIL.

Before starting a new tractor, make sure that the oil pan contains oil up to the proper level. Inspect the oil level by removing the level plugs on the right side of the engine; the oil level should be between the two plugs when the engine is not running.

In cold weather it is important that a light grade oil be used, so that it will flow freely through the screen of the oil pump and permit easy cranking when starting. A simple method of checking this is to remove lower plug and see if the oil flows freely.

CONDENSATION IN CRANKCASE

Condensation within the engine crankcase is much greater during cold weather, and if a sufficient amount of water is allowed to collect it may freeze and cause breakage of parts or prevent proper lubrication for bearings.

To avoid any danger from this cause, it is advisable to loosen the oil pan plug daily, after the tractor has been standing a couple of hours, and see if it contains any water. It is not necessary to remove the drain plug, simply back it out until one or two threads are holding and if the crankcase contains water it will drain out.

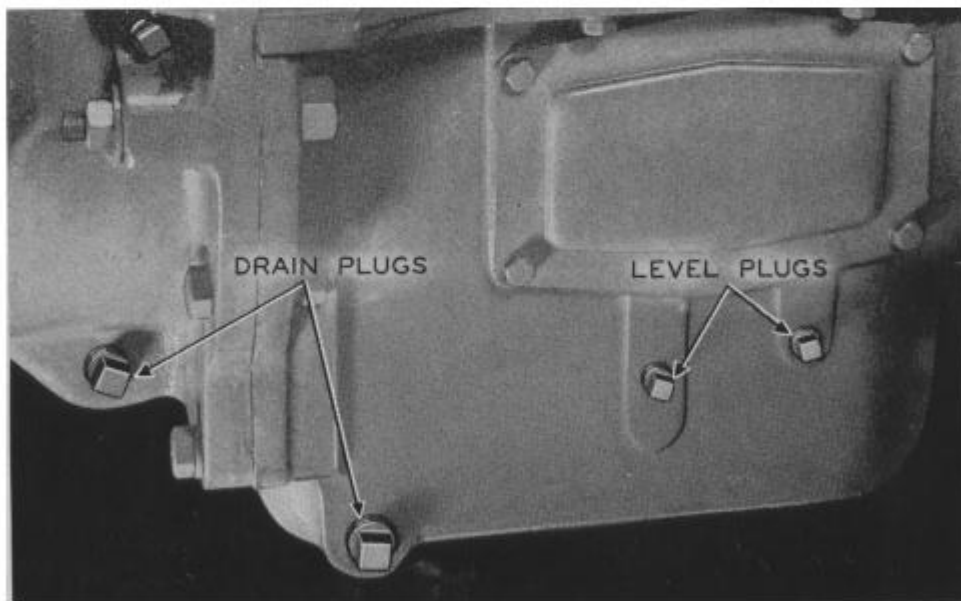


Figure 6. Oil Level and Drain Plugs

WHEN GASOLINE IS USED FOR FUEL

Add new oil through filler opening on the governor housing to bring to level of upper level plug. After 120 hours of operation remove the crankcase

drain plug when the engine is hot, and drain all oil out of the crankcase. Then fill the crankcase with 1 $\frac{3}{4}$ U. S. gallons of new oil through the filler opening in the governor housing.

Although the oil level should be maintained to the level of the *top level plug*, no difficulty will be experienced if the engine is operated with the level slightly below this top level. Under no circumstances should it be operated if the oil level is below the lower plug.

WHEN LOW COST FUEL IS USED

After every 10 hours of operation remove lower level plug and allow oil to drain to this level. Add new oil through filler opening on the governor housing to bring to level of *upper level plug*. After 90 hours of operation remove the crankcase *drain plug* when the engine is hot, and drain all oil out of crankcase. Then fill the crankcase with 1 $\frac{3}{4}$ U. S. gallons of new oil to the *upper level plug* through the filler opening in the governor housing.

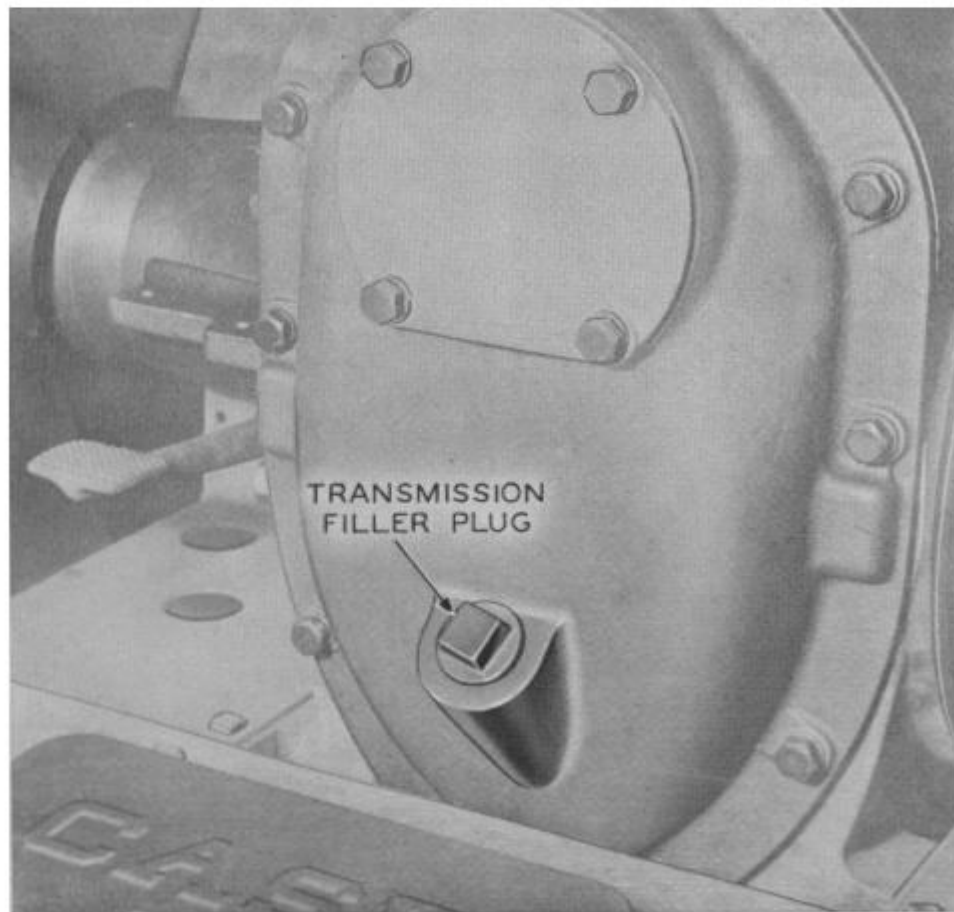


Figure 7. Transmission Filler Plug

TRANSMISSION

Capacity—Approx. 10½ U. S., 8½ Imperial Gallons

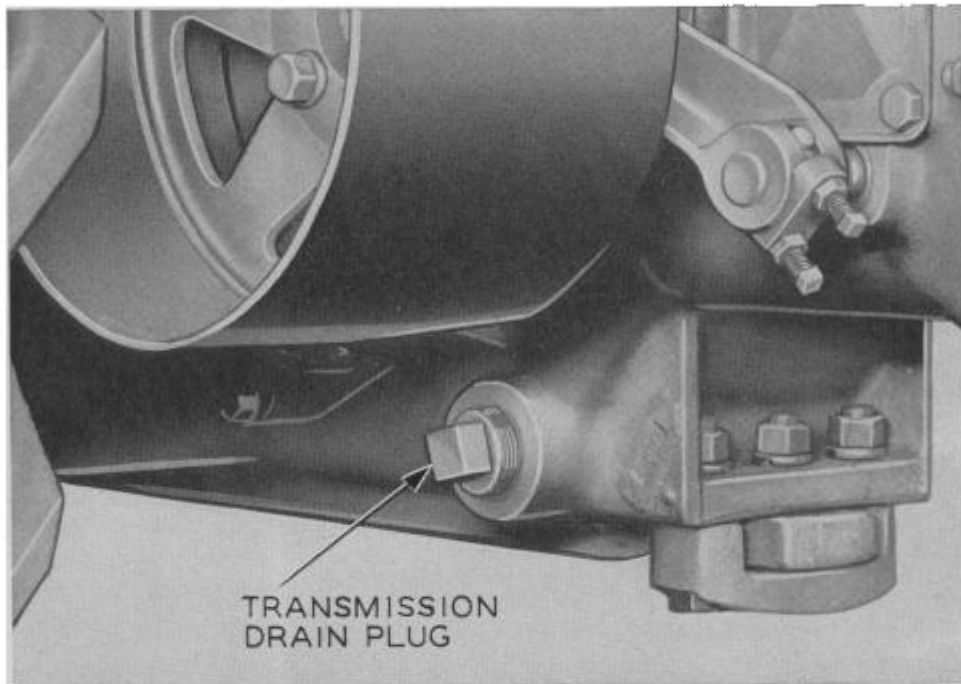


Figure 8. Transmission Drain Plug

OIL RECOMMENDATIONS

The transmission should be drained, flushed and refilled once a year or every 2,000 hours of operation. For both winter and summer operation use a good grade of SAE 90 transmission oil.

POWER LIFT (When Tractor Is So Equipped)

On power lift equipped tractors it is necessary to have the power lift housing filled with oil to height of filler plug; use same grade of oil as used in transmission case.

COOLING SYSTEM

Cooling solution is circulated by means of an impeller type pump through the radiator, engine block and engine head. The pump is driven by a "V" belt from the crankshaft. The heat of engine is controlled by regulating the air draft through the radiator, which in turn effects the temperature of the cooling solution. On the Model "D" Series tractors, this is accomplished by the radiator shutter; therefore, before starting, close the shutters until the lower connections are quite warm to the touch.

The water temperature should always be 180° to 200° F. or just below the boiling point. Low cost fuel, if used, can then be turned on and the shutters opened just enough to keep engine at this temperature.

The capacity of the cooling system is 6¾ U. S., 5½ Imperial gallons.

CAUTION: Never pour cold water into a hot engine in which the water has been allowed to become very low. To do so may result in cracking the cylinder block or cylinder head. If warm water is poured into a cold engine that has been drained, add the water slowly. Too rapid pouring may result in breakage.

CLEANING THE COOLING SYSTEM

At least once a year, particularly in the spring after draining the anti-freeze, the cooling system should be given a treatment with washing soda solution to remove any sludge and sediment that is accumulated. The easiest way is to drain the system and put back 3½ gallons of fresh water. Then bring to a boil an equal amount of water and add all the common washing soda that will dissolve. While this is still hot, add it to the cooling system. Run the engine as usual for 24 hours then drain, flush thoroughly, and refill with clean water.

Keep radiator hose clamps tight. Remove any weeds or dirt from the core of the radiator to prevent overheating.

THE COMPLETE OBSERVANCE of one simple rule would prevent many thousand serious injuries each year. THAT RULE IS: NEVER ATTEMPT TO CLEAN, OIL, OR ADJUST A MACHINE WHILE IN MOTION.

—National Safety Council.

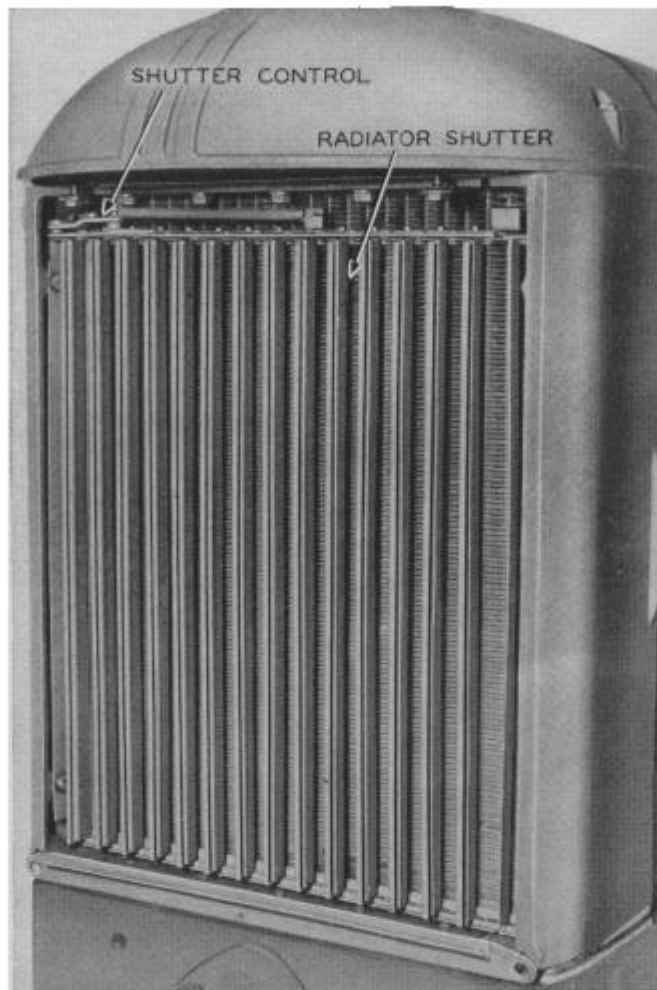


Figure 9. Radiator Shutter

RADIATOR SHUTTER

Model "D" Series tractors are equipped with radiator shutters and screen. The shutter control is operated from operator's seat by a crank on the right hand side of instrument panel. The correct water temperature recommended for satisfactory operation is about 180° to 200° F. or just below the boiling point.

TO OPEN SHUTTERS, TURN CRANK ON RIGHT HAND SIDE OF INSTRUMENT PANEL TO "LEFT."

TO CLOSE SHUTTERS, TURN CRANK ON RIGHT HAND SIDE OF INSTRUMENT PANEL TO "RIGHT."

CARE OF COOLING SYSTEM FOR WINTER OPERATION

When operating an engine in cold weather, always use a good grade of antifreeze in the cooling system. Any nationally advertised brand will work satisfactorily in a Case Tractor. Under no circumstances use a compound of unknown compositions, as this might prove harmful to the cooling system.

No solution of calcium chloride, sodium chloride or magnesium chloride should be used. The electrolytic and corrosive action is very damaging to metal parts. Likewise, no substances such as lubricating oil, kerosene, honey or sugar solutions, sodium silicate or glucose should be used. Extra fire hazard, destruction of the radiator hoses and gumming action on the interior surfaces of the cooling system may result from the use of such solutions.

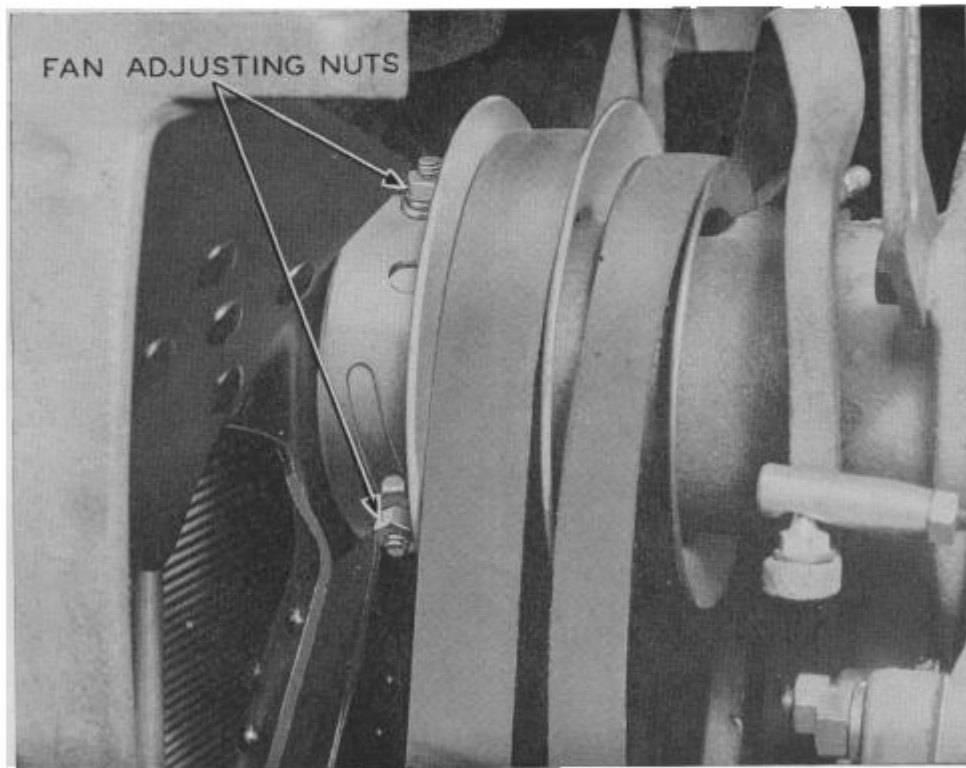


Figure 10. Fan Belt Adjustment

FAN BELT ADJUSTMENT

Remove all *spark plug wires* to avoid the possibility of the engine starting while working on the fan and water pump assembly.

Loosen three lock nuts on the fan hub. To tighten, turn the front half of the pulley in the direction in which the blades turn. The tension should be just enough to take up any looseness or slack in the belt. Having the fan belt too tight causes rapid belt wear, excessive load on the bearings and does not aid cooling. A properly adjusted belt can easily be depressed **an inch** without effort. After adjusting the belt, tighten lock nuts.

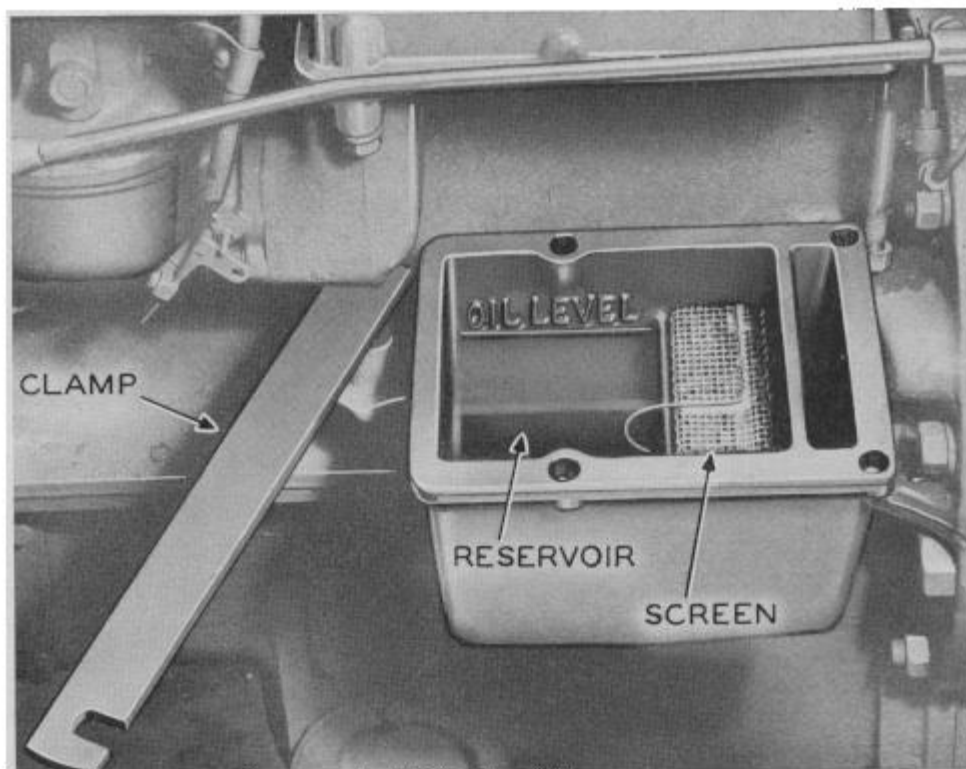


Figure 11. Air Cleaner

AIR CLEANER

The air cleaner when properly serviced and instructions followed prevents dirt and abrasive material from entering the engine. Proper servicing should be maintained at all times because dirt or dust taken into the engine with the intake air is extremely harmful. This may cause excessive wear on pistons and cylinders, sticking of valves, wear on valve stem guides and may cause the valves to become sluggish or hold open so that they will leak or burn.

To remove the reservoir for cleaning, loosen hand nut and swing clamp to one side.

DISCARD THE OLD OIL FROM RESERVOIR AND CLEAN OUT ALL FOREIGN MATTER.

In very dusty conditions, use a long screw driver to dislodge dirt from bottom and sides of in-take passage.

THE AIR CLEANER OIL RESERVOIR SHOULD BE REMOVED DAILY, CLEANED AND FILLED TO THE LEVEL MARK ON RESERVOIR WITH AN SAE 10 OIL. HOWEVER, IF THE ENGINE IS OPERATED WHEN THE WEATHER IS QUITE COOL, IT MIGHT BE NECESSARY TO THIN OUT THE SAE 10 OIL WITH A SLIGHT AMOUNT OF KEROSENE.

THE DAILY INSPECTION AND CLEANING OF AIR CLEANER IS IMPERATIVE WHEN OPERATING UNDER NORMAL CONDITIONS. HOWEVER, IN EXTREMELY DUSTY CONDITIONS, MORE FREQUENT SERVICING MAY BE FOUND NECESSARY. It must always be remembered that a small portion of the oil used in the cleaner will disappear. The amount used will be affected by the consistency of oil, as well as the engine heat and horsepower developed.

CARE OF CONNECTIONS

Gasket between air cleaner and carburetor must be properly installed and kept tight at all times, otherwise excessive engine wear will result if there are any leaks between the air cleaner and carburetor.

MOST FARM ACCIDENTS, like industrial, home, and highway accidents, are caused by the failure of some individual to observe simple and fundamental safe rules or precaution. For this reason farm accidents, just as other types of accidents, can be prevented by recognizing the cause of accidents and doing something about it before the accident occurs.

—National Safety Council.

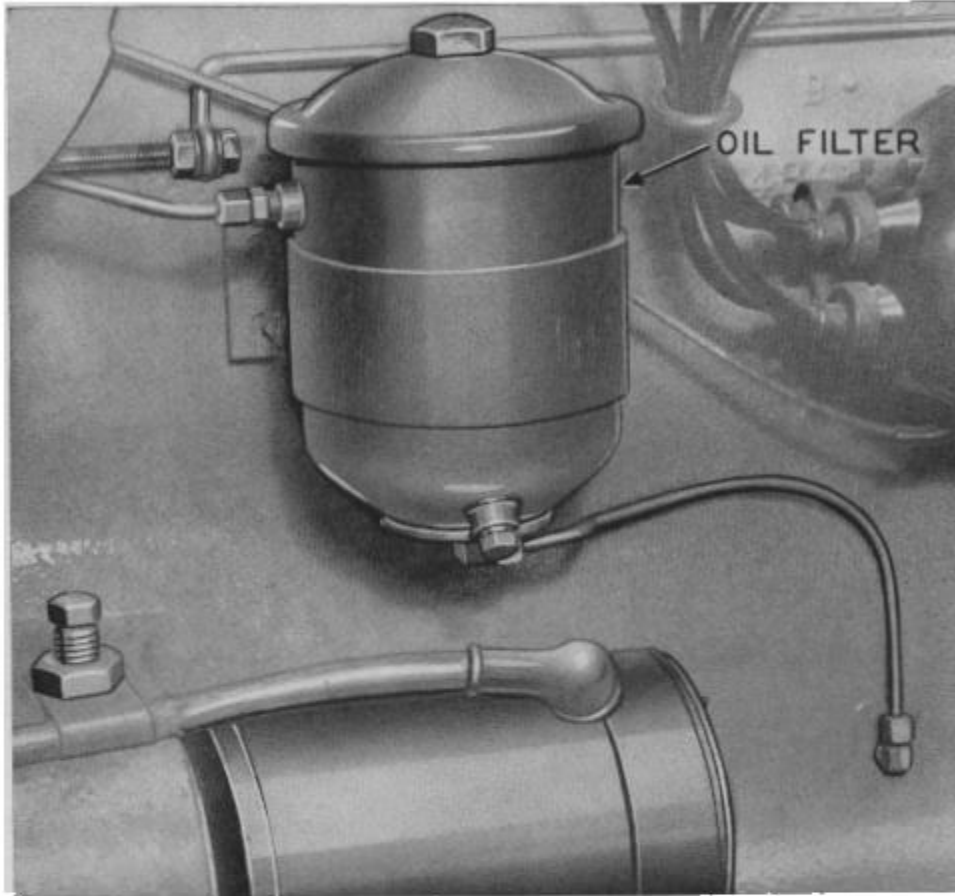


Figure 12. Oil Filter

OIL FILTER

The purpose of an oil filter on an engine is to separate and remove dirt and other foreign substances from the oil to prevent these materials from being circulated to the engine. Therefore, it is important that if your engine is equipped with a filter, that the element be replaced every time the oil in crankcase is changed, which is approximately every 120 hours of operation.

To replace filter, it is only necessary to remove top cover after which element can be lifted out. Before replacing element, also clean out all old oil and foreign matter from inside of filter body.

THE USE OF DIFFERENT FUELS

Case Tractors and Engines have long been recognized for their ability to operate efficiently and economically on low cost fuels or gasoline.

The Model "D" Series Engine when equipped with the proper manifold, will operate very satisfactory on low cost fuels as well as gasoline.

The best assurance of getting a quality fuel, of whatever grade desired, is to purchase your fuel from a reliable fuel dealer in your home community or from a reputable oil firm. The best fuel will give trouble if it contains an appreciable percentage of dirt or foreign ingredients.

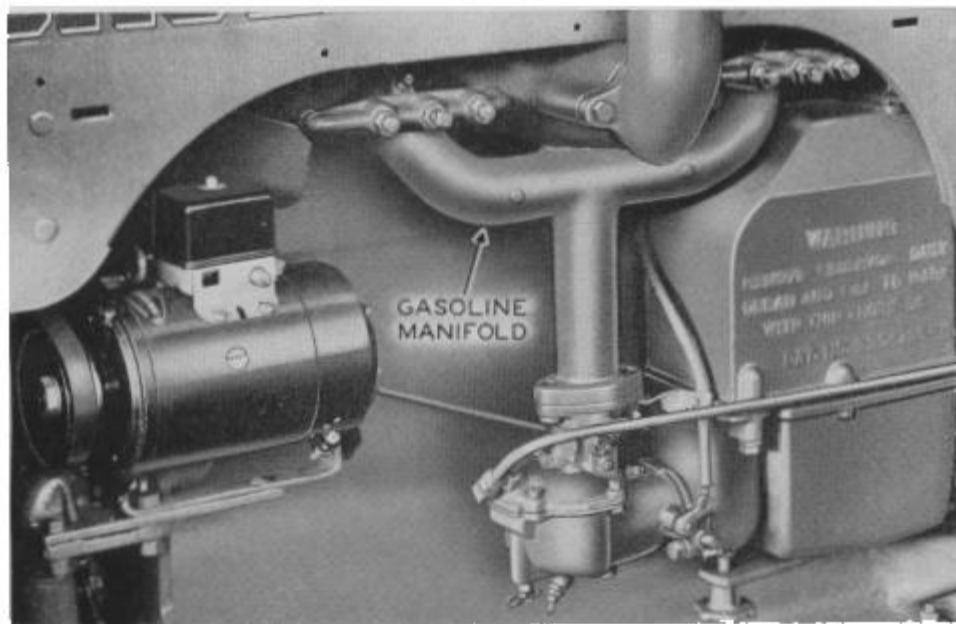


Figure 13. Gasoline Manifold

GASOLINE MANIFOLD

When gasoline is to be used exclusively, greater efficiency will be obtained by using the gasoline manifold.

When the gasoline manifold is used and it is desired to operate the engine warmer to handle the gasoline used, especially with a light load or in cold weather, additional heat needed should be controlled by the adjustment of the shutter.

FUEL SYSTEM (Gasoline Manifold Equipped)

The fuel system on this tractor is of the gravity flow type.

Capacity of the single fuel tank is 19 U. S., 16 Imperial gallons.

When the tractor is new, add a pint of light oil to each five gallons of fuel. The engine is designed to operate on gasoline having a minimum rating of 65 octane. To obtain maximum performance, a high grade of fuel should be used.

The air vent in the fuel tank cap should be kept open at all times to assure the proper flow of fuel.

CAUTION: Never fill the fuel tank when the engine is running or when near an open flame; do not smoke or use an oil lantern when working around inflammable fuels.

LOW COST FUEL MANIFOLD

When using low cost fuel, it is necessary to use gasoline for starting. The damper crank should then be set in "HOT" position and manifold shield in place.

Low cost fuel manifolds are equipped with heat control damper. The regulation of this damper controls the amount of exhaust gases which pass around the in-take manifold. In extremely warm weather, better results may be obtained if shield over manifold is removed.

When gasoline is used for operating Case tractors, equipped with low cost fuel manifolds, better results may be obtained without the use of the manifold shields.

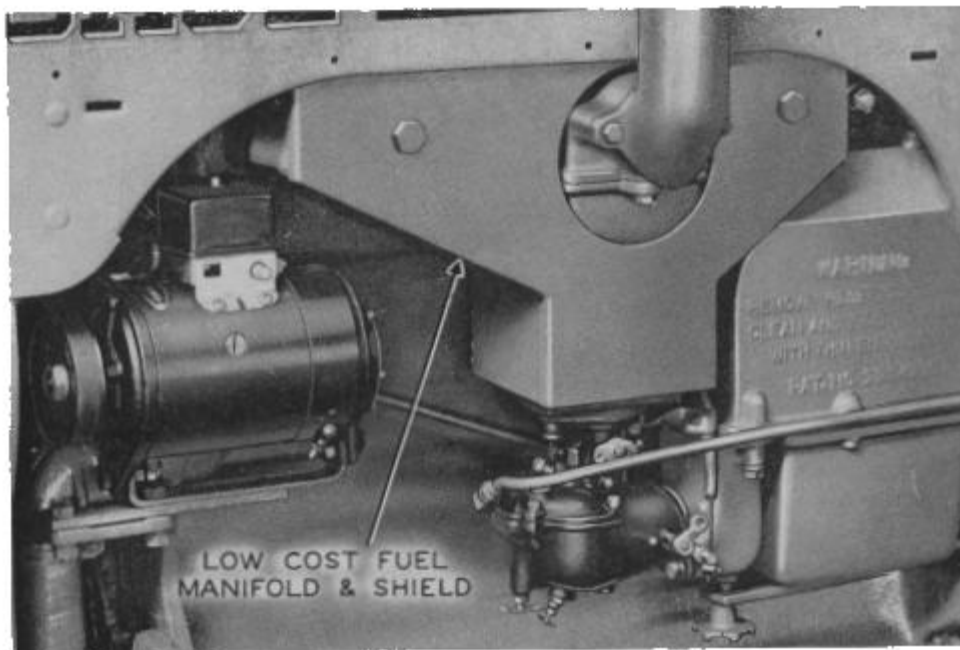


Figure 14. Low Cost Manifold

FUEL SYSTEM (Low Cost Fuel Manifold Equipped)

This engine is equipped with a gravity flow type fuel system.

Capacity of the main fuel tank is 17 U. S., or 14 $\frac{1}{4}$ Imperial gallons, and of the small fuel tank, 2 U. S., or 1 $\frac{3}{4}$ Imperial gallons.

STARTING ENGINE

Before starting engine equipped with low cost fuel manifold, put low cost fuel in the main tank and gasoline in the small tank. Shut off valve under the tank when filling.

The air vent in fuel tank cap should be kept open at all times to assure the proper flow of fuel. Also check air vent in cap on small tank.

STOPPING ENGINE

In stopping engine when operated with low cost fuel, turn off the low cost fuel and drain carburetor, or turn to gasoline a few minutes before stopping so that the carburetor will contain only gasoline.

Open drain valve at bottom of the carburetor and turn on the gasoline. Allow enough gasoline to run through to clean out the fuel line and carburetor bowl and then close drain cock.

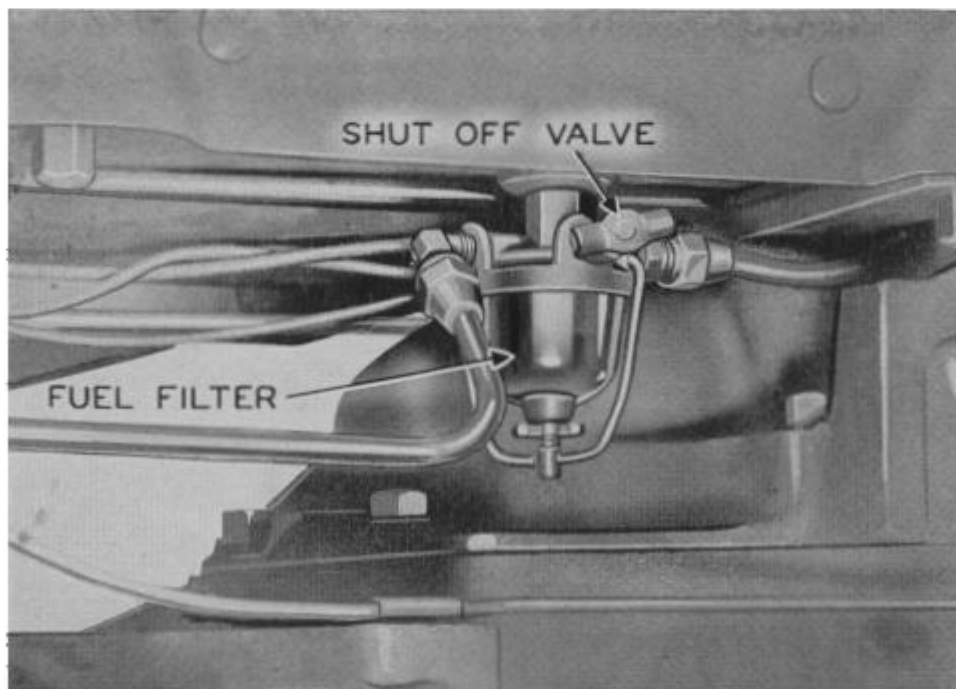


Figure 15. Fuel Filter

FUEL FILTER

The *filter* under the fuel tank should be inspected and cleaned daily. Shut off the fuel supply valve and unscrew the glass *sediment bowl*. Clean out any foreign matter adhering to the *filter screen* by shaking it in clean gasoline. Clean the *bowl* and reassemble. In cold weather, watch for water or ice that may collect in the bowl.

Keeping the fuel clean will prevent trouble due to clogging of the filter. Water in the fuel is especially troublesome because it may not be completely removed by the filter. Occasionally open the drain valve in the bottom of the carburetor bowl so that any water and foreign material will drain out.

A Careful Operator

IS THE BEST INSURANCE

AGAINST AN ACCIDENT

— *National Safety Council.*

SUGGESTIONS FOR CHECKING DIFFICULTIES

Listed herewith under their respective headings are some of the possible causes of engines not functioning properly. If you are having any difficulty with your engine, it may be well to check this list, to help you make the necessary adjustments to your engine so that it will function in a satisfactory manner.

Engine Hard to Start

- Spark plugs
- Defective wires
- Wires connected to wrong plugs
- Defective magneto
- Gasoline flow obstructed
- Vent in fuel tank clogged
- Water in fuel supply
- Improper gas mixture
- Valves not seating properly
- Valve tappets improperly adjusted
- Intake manifold leaking
- Improper timing.

Engine Misfiring

- Spark plug dirty
- Wrong gap in spark plug
- Defective wiring
- Cylinder head gasket leaking
- Manifold gasket leaking
- Valves warped
- Valves or tappets stuck
- Valves improperly adjusted.

Engine Overheating

- Lack of water
- Radiator clogged
- Water hose clogged
- Slipping fan belt
- Leaky valves
- Improper gas mixture
- Carburetor choke valve partially closed
- Spark retarded too far
- Improper valve timing
- Lack of oil
- Using too heavy an oil
- Improper air circulation around engine
- Oil diluted.

Lack of Power

Valve seats worn	}	Fuel may contain too great a percentage of lead
Valves sluggish or sticking		
Piston rings weak		
Piston ring stuck		
Improper gas mixture		
Improper timing		
Exhaust stopped up		
Oil diluted		
Air cleaner choked with dust		
Air vent holes in fuel tank caps clogged		

Engine Knocks

- Carbon in cylinders
- Loose connecting rod bearings
- Loose main bearings
- Loose piston pins
- Worn pistons and cylinders
- Magneto timed too early
- Loose cam follower
- Overheated engine
- Tight pistons
- Loose flywheel
- Lack of oil or water.

Excessive Smoke from Exhaust

Carburetor needle valve open too far	}	Black Smoke
Carburetor float sticking		
Leaking piston rings	}	Blue Smoke
Lubricating oil too thin		
Too much oil in crankcase		

Explosion in Exhaust Pipe

- Ignition too late
- Weak spark
- Exhaust valve holding open
- Exhaust valve warped.

NOTE: When minor adjustments will not overcome your difficulties, then consult your Case dealer who has experienced personnel as well as the necessary equipment to keep your tractor operating satisfactorily.

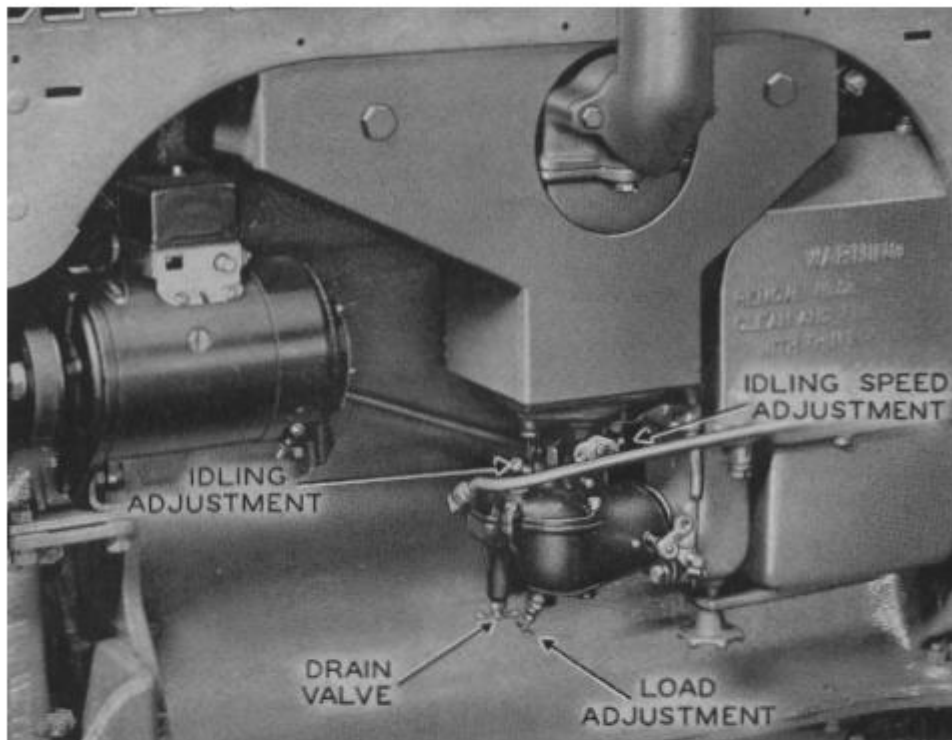


Figure 16. Carburetor

CARBURETOR

The carburetor used on the Case Model "D" Series tractor is extremely simple to adjust, and once properly adjusted, will seldom require attention. Only three adjustments are provided.

The *Idling Speed Adjustment* determines the minimum speed of the engine when throttled down and under no load.

The *Idling Adjustment* controls the mixture supplied when idling.

The *Load Adjustment* primarily controls the mixture supplied at the higher speeds and on heavier loads.

Idling Adjustment

The adjustments for idle speed and for idle mixture can best be made together and preferably on a warm engine. The throttle lever should be all the way rearward or in the closed position, before making the adjustments. The idling speed adjustment should be set so the engine will idle fast enough to prevent stalling. Then turn the idling adjustment screw in or out until the engine runs smoothly.

A good starting point for this adjustment is one full turn from the idling needle valve seat because the correct setting is usually between $\frac{3}{4}$ and $1\frac{1}{4}$ turns open.

Load Adjustment

This adjustment should be made when the engine is warm and working under load, because it exerts the greatest influence under these conditions. Turning the adjustment inward provides a leaner mixture, while turning it outward produces a richer mixture.

Turn the adjustment inward until the engine starts to miss or power falls off. Then turn outward until proper operation is secured—about $\frac{1}{8}$ of a turn is usually sufficient. This setting will assure maximum fuel economy with very nearly maximum power.

If the engine will not run with the original setting, make an approximate setting as follows: Turn the main jet adjustment inward until the needle just seats. Use great care not to force the point against the seat as this may ruin the seat. Next turn the adjustment outward two full turns. This setting is sufficiently close so that the engine can be operated until final adjustment is made.

Loss of power and spitting through the carburetor indicates the mixture is too lean. This is especially evident, when the engine is accelerated by pulling lightly on the throttle rod. An overly rich mixture is indicated by sluggish action of the engine and by the appearance of black smoke at the exhaust. The final setting should be as lean as possible and still have satisfactory engine operation and power.

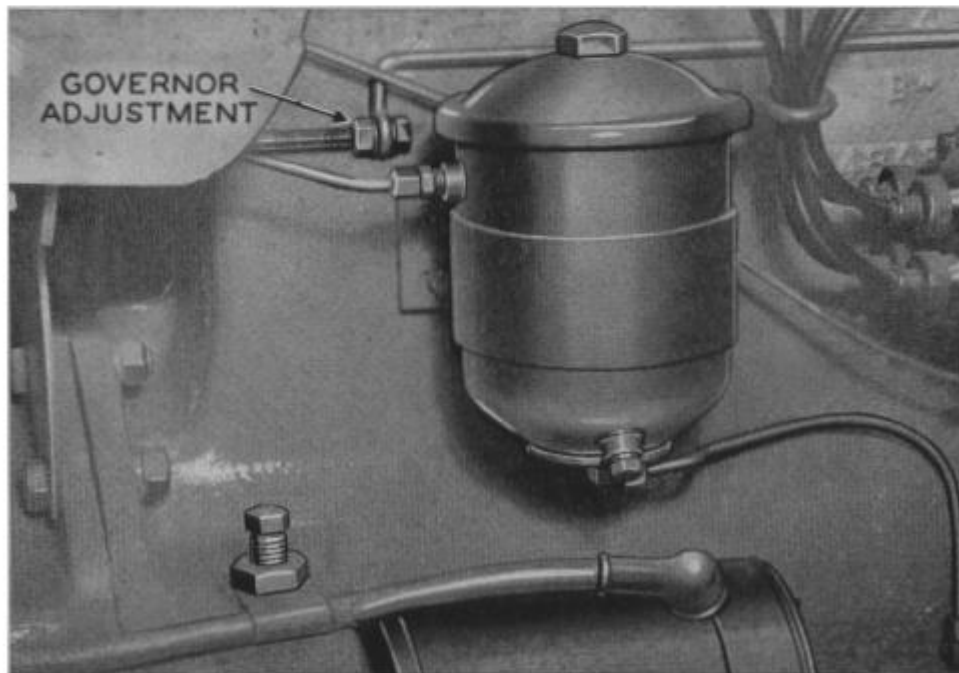


Figure 17. Governor Adjustment

GOVERNOR

Tractor has been adjusted at the factory to provide a no-load engine speed of approximately 1375 RPM, which gives a no-load pulley shaft speed of 936 RPM. Full load engine speed is 1200 RPM. This gives a belt pulley shaft speed of 818 RPM, corresponding to a belt speed of 2620 feet per minute.

To determine engine speed, multiply belt pulley speed by 1.47. (As an example) :

Belt Pulley	Ratio	Engine Speed
936	1.47	1375

If inspection discloses that the engine speed must be changed to bring it to the recommended speed, adjustment can be made by lengthening or shortening the *rod* connecting the throttle lever with the *governor spring*. Shortening the control rod increases the engine speed, while lengthening decreases the speed.

This adjustment should be made at point near oil filter.

MAGNETO

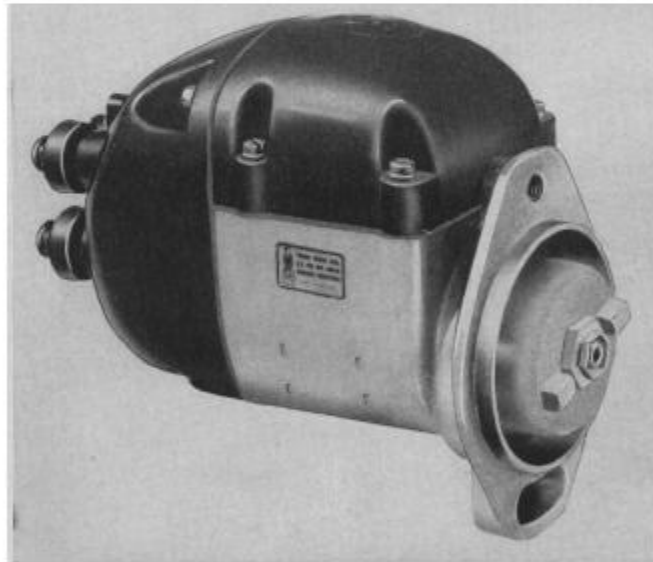


Figure 18. Case 4JMA Magneto

IGNITION

The Case 4JMA Magneto—located on the right side of the engine—is a very precisely built, self-contained unit which should not be taken apart in the field. Many magnetos are ruined because they are tampered with by inexperienced operators, under dirty, dusty conditions or at places where proper service tools are not available.

Should your magneto require attention other than that described herein, take it to one of the authorized Service Stations listed in our Magneto Service Station directory.

NOTE: No Warranty Service Work will be approved should it be done on a Case Magneto by anyone other than an authorized Case Magneto Service Station or Case Magneto Depot Station as they have all the necessary tools and equipment to do this work in a satisfactory manner and are familiar with handling Magneto Warranty Service.

REMOVING THE MAGNETO FROM THE ENGINE

Disconnect all wires from the magneto to spark plugs. Disconnect the grounding wire. Take out the two cap screws attaching the flange of the magneto to the magneto drive. The magneto can then be lifted off.

INSTALLING AND TIMING MAGNETO

When the magneto is installed on the tractor, it must be retimed. Follow this procedure:

1. Remove all spark plug wires as well as No. 1 spark plug. The spark plugs in No. 2, 3, and 4 cylinders remain in place.

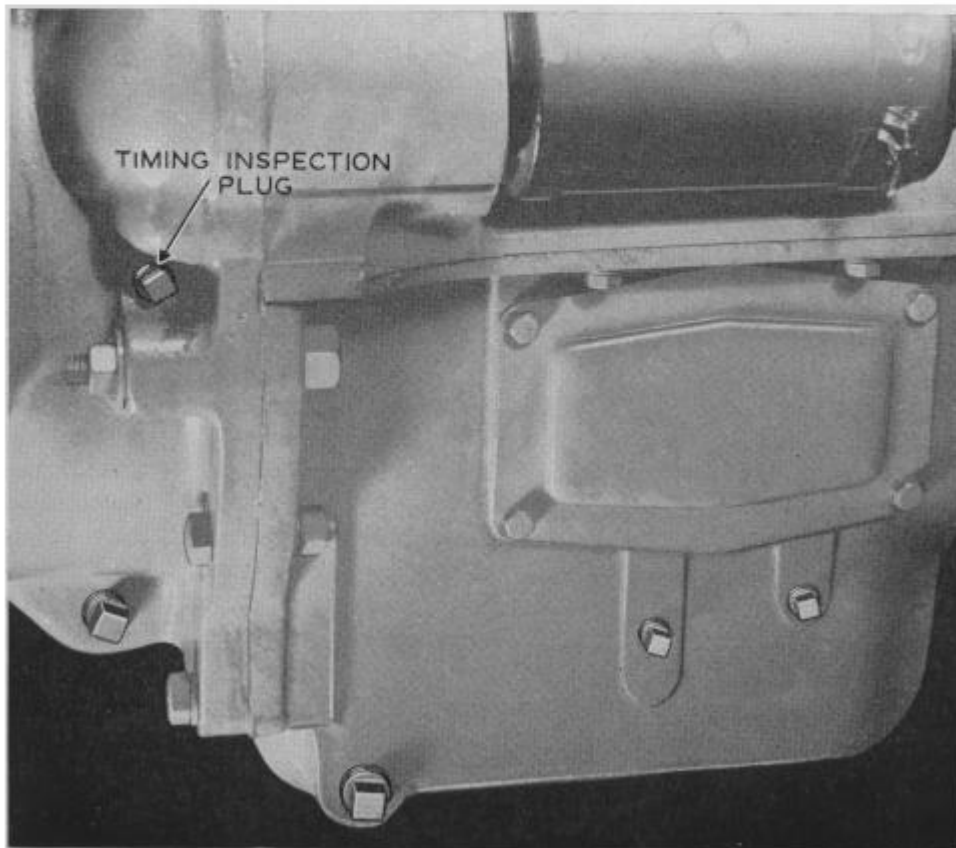


Figure 19. Timing Inspection Plug

2. **Make** sure the gear shift lever is in neutral position.
3. **Remove** the plug from the timing inspection hole on the right side of the clutch housing.
4. The compression stroke may be determined by removing No. 1 spark plug and holding the thumb over the spark plug opening, while the engine is cranked slowly until an outward pressure is felt. This is when piston is coming up on the firing stroke.
5. The proper position of the fly wheel for timing the magneto is when the letter "D" appears in the center of the inspection hole. To locate "D," turn the belt pulley clockwise with the clutch engaged, until the "D" centers in the inspection hole.

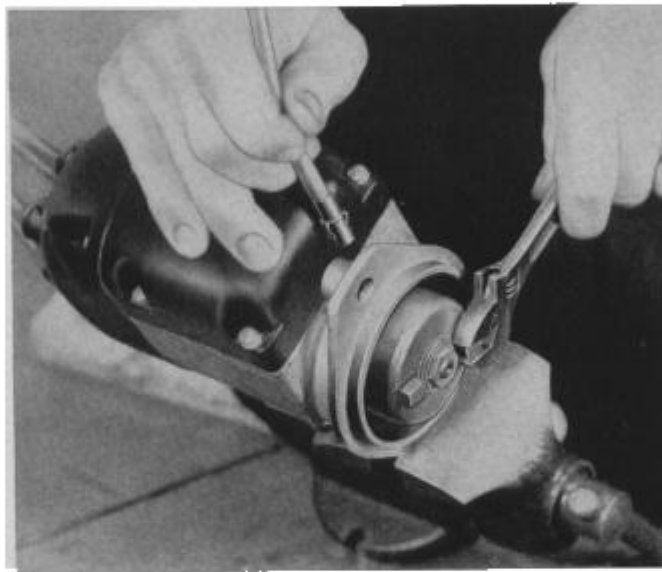


Figure 20. Locating No. 1 Firing Position in Magneto

6. Support the magneto in an upright position, as shown in Figure 21. Connect one of the spark plug wires to No. 1 terminal on the magneto cap. The terminal is marked 1 and is the upper-right hand terminal. Hold the free end of the spark plug wire about $\frac{1}{8}$ inch from the frame of the magneto. Turn the impulse with the wrench one click at a time, Figure 20, until a spark jumps between the wire and the frame. Use care to hold the wrench and magneto firmly so impulse will not move beyond the point where it trips and the spark occurs. The position at which the spark occurs indicates the approximate setting of the magneto for firing position of No. 1 cylinder. The position of magneto driving slots when the piston is at top dead center is 25 degrees (or two teeth) beyond the horizontal center line in direction of rotation as shown in Figure 22.
7. Without disturbing the settings of the engine or magneto as established above, install the magneto on the engine. Install the cap screws holding the magneto to the housing in this position.

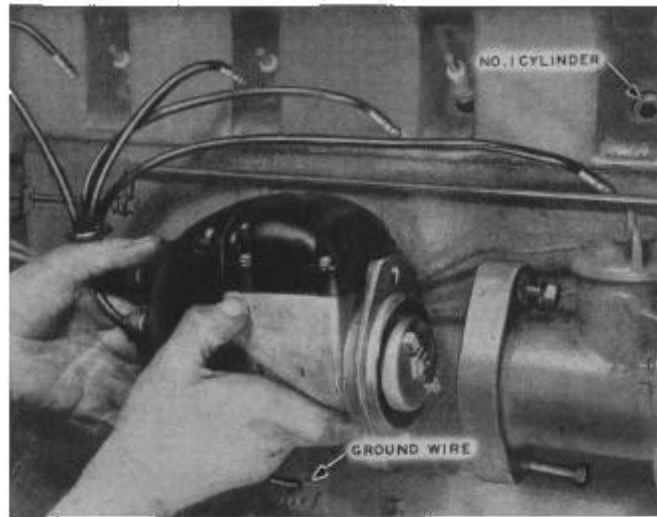


Figure 21. Magneto in Proper Position for Installing on Engine

8. Connect the grounding wire and install the spark plug wires. Connect the No. 1 terminal as marked on the distributor cap with the No. 1 spark plug, the No. 2 terminal with No. 2 spark plug, etc.

The final setting for maximum economy will be when the impulse trips at the time the D on the flywheel is visible in the center of the inspection hole in clutch housing. This can be adjusted by rotating the magneto on the governor bracket.

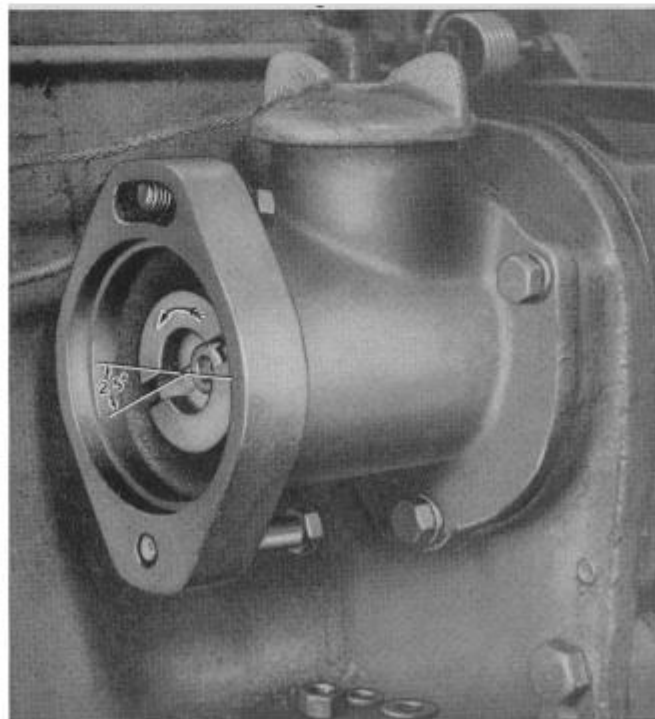


Figure 22. View of Coupling in Governor Bracket

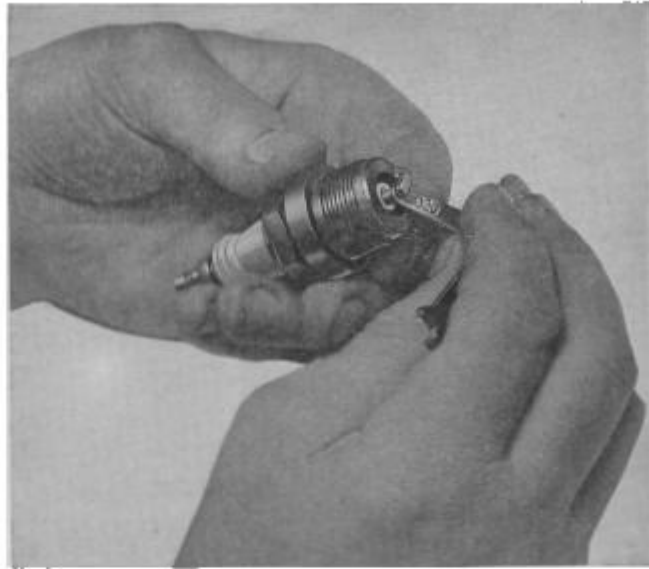


Figure 23. Spark Plugs

SPARK PLUGS

The spark plugs used in this tractor are of the 18 mm. thread size, AC Spark Plug No. 85 or equivalent. Shank length should be $\frac{1}{2}$ inch. A gap of .030 inch should be maintained between the electrodes. If the gap between the electrodes is too great due to improper setting or burning, the spark may jump elsewhere in the circuit, resulting in misfiring. Therefore, it is very important that the gap be maintained properly.

If one cylinder is missing, the cause may be either failure of the ignition or low compression. To locate the cause, crank the engine slowly and notice the compression on that cylinder. Sometimes a valve sticks open, which always causes the cylinder to lose compression.

If the compression is satisfactory, replace the spark plug with a new one, or one from a live cylinder. If the cylinder then fires, the trouble was due to a defective spark plug.

If further difficulty is experienced, examine all wires leading to the plugs and see that they are in good condition. When removing or installing spark plugs, use the special socket wrench furnished with the tools, rather than pliers, open end wrench, or an adjustable wrench, to prevent damage to the porcelain. A cracked porcelain will necessitate replacement of the plug.

THERE ARE ONLY FOUR THINGS THAT CAN HAPPEN TO SPARK PLUGS

They are:

1. Normal wearing out
2. Dirty
3. Worn gap
4. Broken insulator.

STARTING MOTOR

The starting motor is held in position by means of a heavy set screw and lock nut. This screw must be tight to prevent rocking of the starter motor in the housing.

The terminal post on the starter to which the cable from the starter switch is attached is copper. Care must be exercised in tightening the nut because the post can easily be broken off if too much pressure is applied to the wrench.

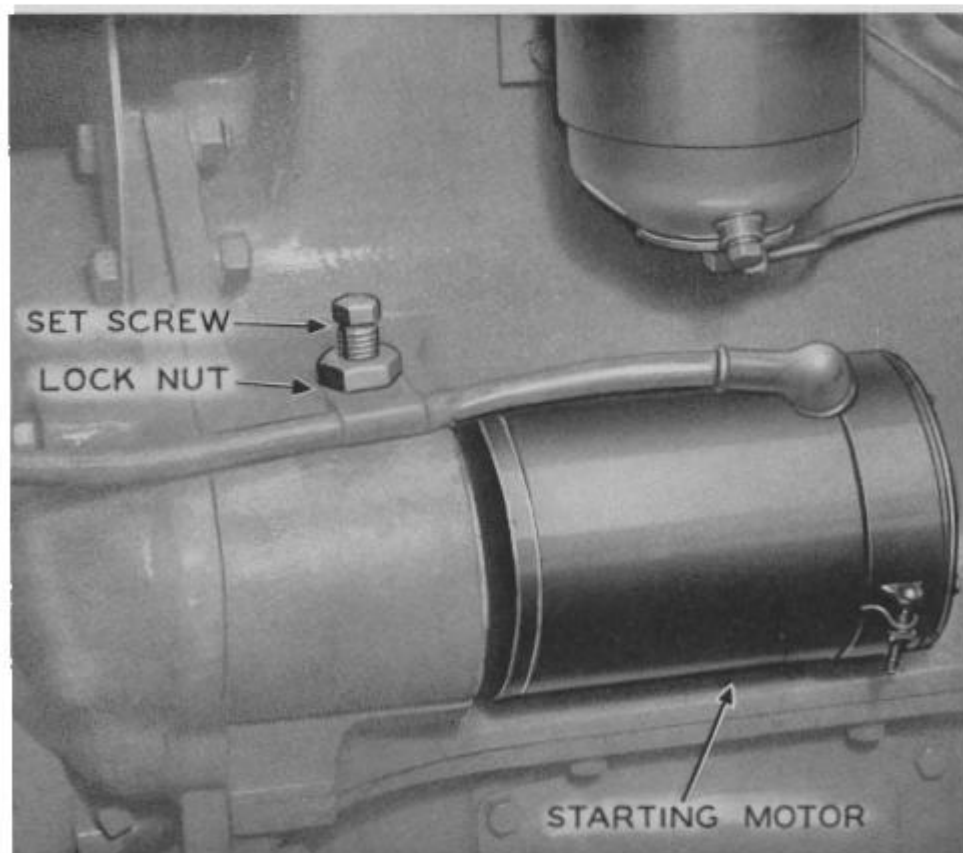


Figure 24. Starting Motor

GENERATOR

The generator is belt driven, of the adjustable third brush type, with charging rate controlled by a "two-rate" regulator. As adjusted at the factory, the generator charges approximately 11-14 amperes when the battery is only partly charged, but when the battery approaches full charge the two-rate regulator automatically reduces the charging rate to approximately 3 amperes, which is sufficiently low to prevent over-charging.

Charging rate is adjusted by shifting the position of the "third" brush, which is reached by removing the cover band on the rear end of the generator; the movable third brush is on top, somewhat toward the engine. Moving the third brush in the same direction as the rotation of the generator armature increases the charging rate.

NOTE: No service work should be done on a starting motor or generator by anyone other than their authorized service stations as they have all of the necessary tools and equipment to do this work in a satisfactory manner and are familiar with handling these products.

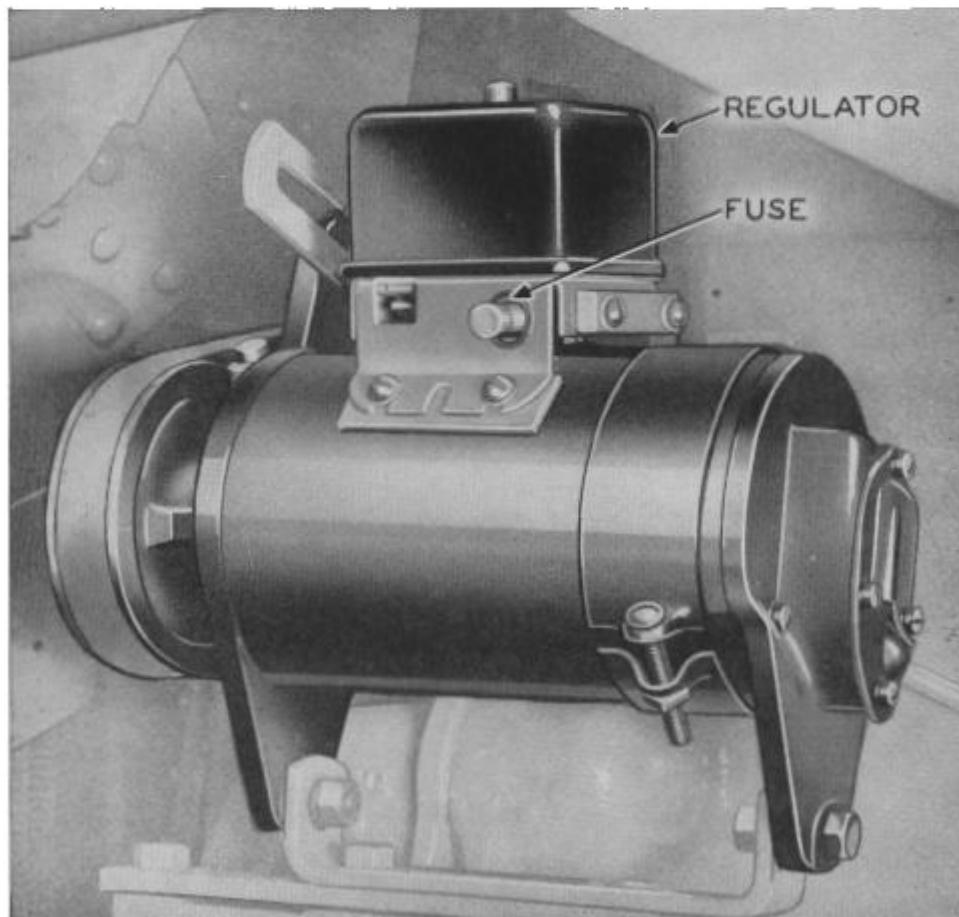


Figure 25. Generator

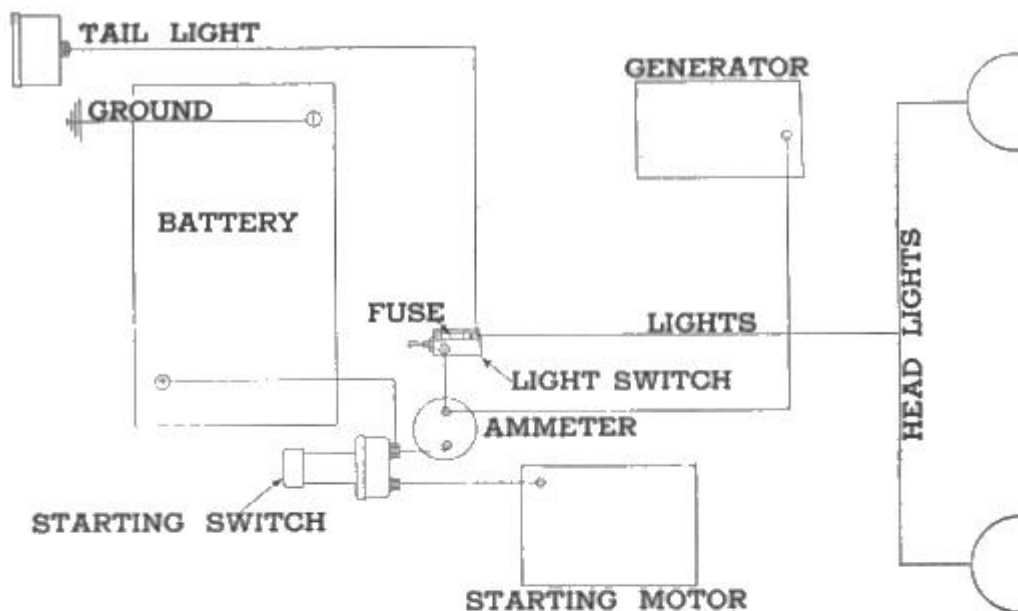


Figure 26. Wiring Diagram of Electrical System

The electrical units used on the Model "D" Series tractor are connected in the manner shown above. In the event any of these units are removed be sure they are replaced in the manner shown.

STORAGE BATTERY

When working around the battery remember that all its exposed metal parts are "Alive" and that no metal tool or wire should be laid across the terminals as a spark or short-circuit will result.

Sparks and lighted matches or exposed flames should be avoided near the battery due to the danger of exploding the gas in the battery.

Low electrolyte temperature reduces the battery capacity as though numbed by cold. In cold weather if the battery is kept warm its capacity will be greatly increased (do not allow temperature to exceed 110° F.). Regular maintenance is essential.

Take and record Hydrometer Readings of each cell—do this occasionally.

If readings are below 1.240 the battery is not receiving sufficient charge. The electrical system should be adjusted to increase the charge rate. (In zero weather there is danger of freezing if readings are below 1.175; at—35° F.)

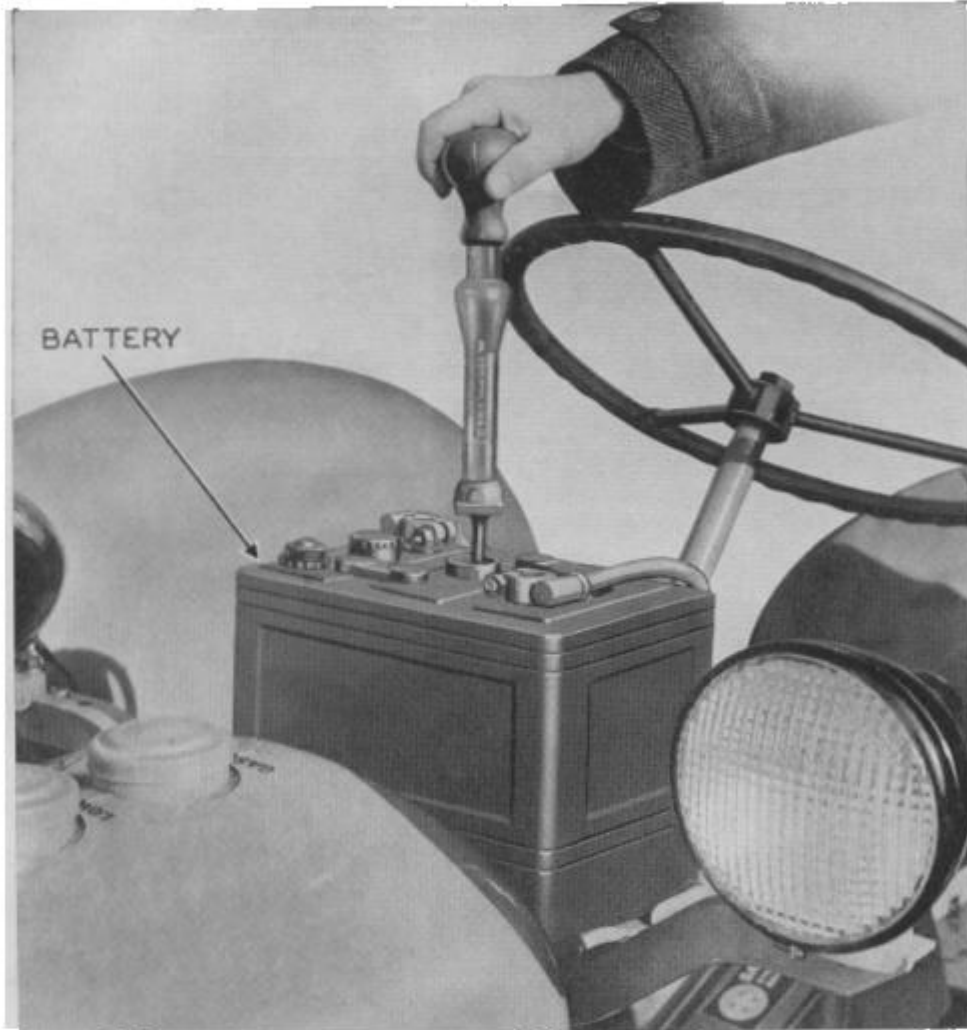


Figure 27. Servicing Storage Battery

ADDING WATER

If water is added in freezing temperature and battery is not charged to mix water and electrolyte, water will remain on top and freeze. In freezing weather, never add water unless tractor is to be immediately operated. Sufficiently charge battery to thoroughly mix water with electrolyte by gassing of battery on charge before the water can freeze. If this is not done the ice may break the rubber container.

REPLACE VENT PLUGS

Always keep vent plugs in place and tight except when filling and taking gravity readings. Be certain that holes in vent plugs are clean and free of dirt to prevent gas pressure in cells breaking sealing or container.

KEEP BATTERY CLEAN AND DRY

If wet or dirty wash with baking soda solution or ammonia, then with clear water. Be sure vent plugs are tight before washing.

KEEP CABLE TERMINALS TIGHT AND CLEAN

If terminals are corroded, disconnect and clean, wash as in above. Apply a thin coat of vaseline (or light cup grease) to terminal and battery posts before re-applying terminal.

Be sure that ground connection where it attaches to frame is also kept clean.

IDLE BATTERIES

An idle battery requires a charge every month or two, or at sufficient intervals to keep the gravity above 1.240.

OIL PUMP

The oil pump is a gear-driven type operating through spiral gears from the camshaft. It circulates oil through passages in the engine block to all main, connecting rod and camshaft bearings as well as valve rocker arms and governor. Valve lifters are flood lubricated. All other engine parts operate in an oil spray from the connecting rod bearings. The same pump provides pressure lubrication to the clutch shaft pilot bearing and the clutch throw-out collar.

The only regular servicing required is to remove and clean thoroughly the oil pump screen every 250 hours of operation. This procedure is described on page 44.

A non-adjustable pressure relief valve is located in the side of the pump body. The valve by-passes the oil when oil passages are plugged or the oil too heavy. These conditions will be indicated on the oil pressure gauge. This valve is set to register 30 to 35 pounds on the oil pressure gauge when the oil and bearings are in good condition. The pressure will gradually become less as the engine is used.

The oil pressure necessary to properly lubricate the engine will fail if these conditions exist:

1. Dirty oil pump screen.
2. Condensation of water in crankcase and freezing around the screen when operating in cold weather.
3. Lack of oil—check oil level.
4. Oil too thin—check lubrication for recommended grade of oil.
5. Loose engine bearings—usually occurring after long service.
6. Broken oil pump parts.

OIL PUMP AND SCREEN

Every 250 hours of operation remove the oil pump screen and clean thoroughly. This procedure will protect the finely finished bearing surfaces built into your engine, by insuring that the oil delivered to the bearings is not restricted in its flow through the screen.

To take out screen drain the oil and remove the three cap screws; this will allow withdrawal of the screen and cap as a unit. Be careful to avoid damage to gasket under the cap or to the screen.

Rinse the screen in a pail of gasoline to remove all dirt, water or other foreign matter. A dirty screen will not allow oil to flow to the pump intake and the oil gauge will not show pressure; burnt out bearings will surely result.

While the screen is removed, inspect the interior of the crankcase and clean out any sludge or dirt that may have collected.

Replace screen and tighten securely. After refilling with oil inspect during the first hour or so of operation to insure that no oil leaks are present.

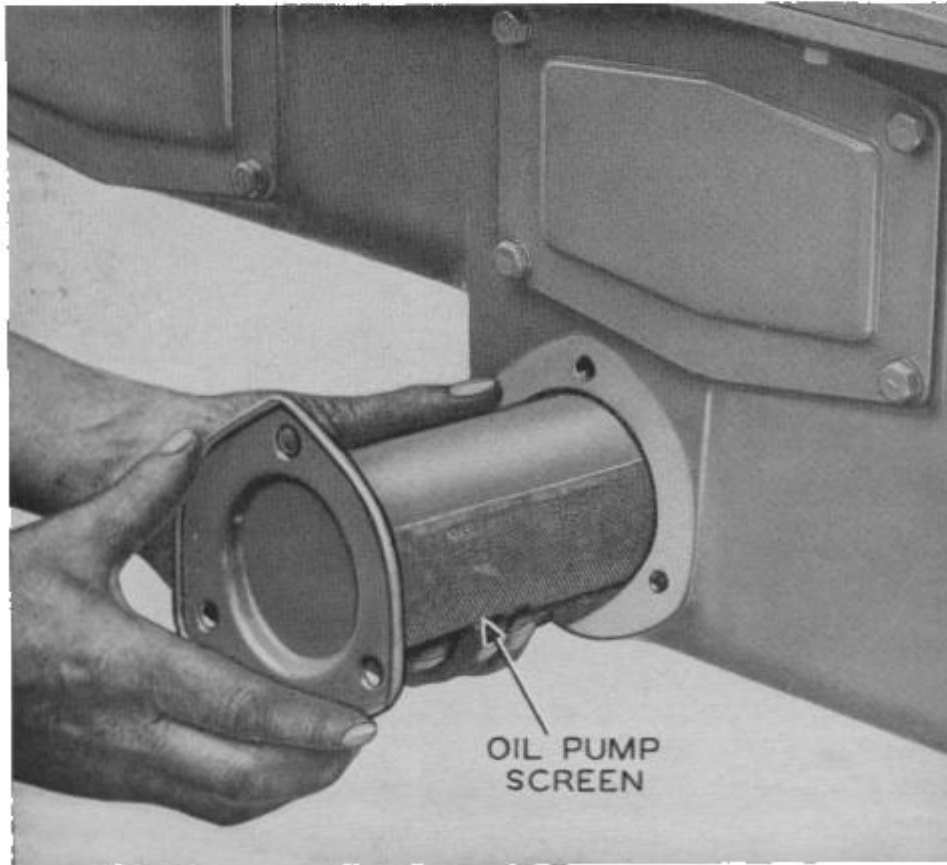


Figure 28. Removing Oil Pump Screen

VALVES AND ROCKER ARMS

A number of engine troubles can be traced to the operation and adjustment of the valves. Hard starting, engine missing, engine overheating, lack of power and explosions in the exhaust pipe are a few of these difficulties.

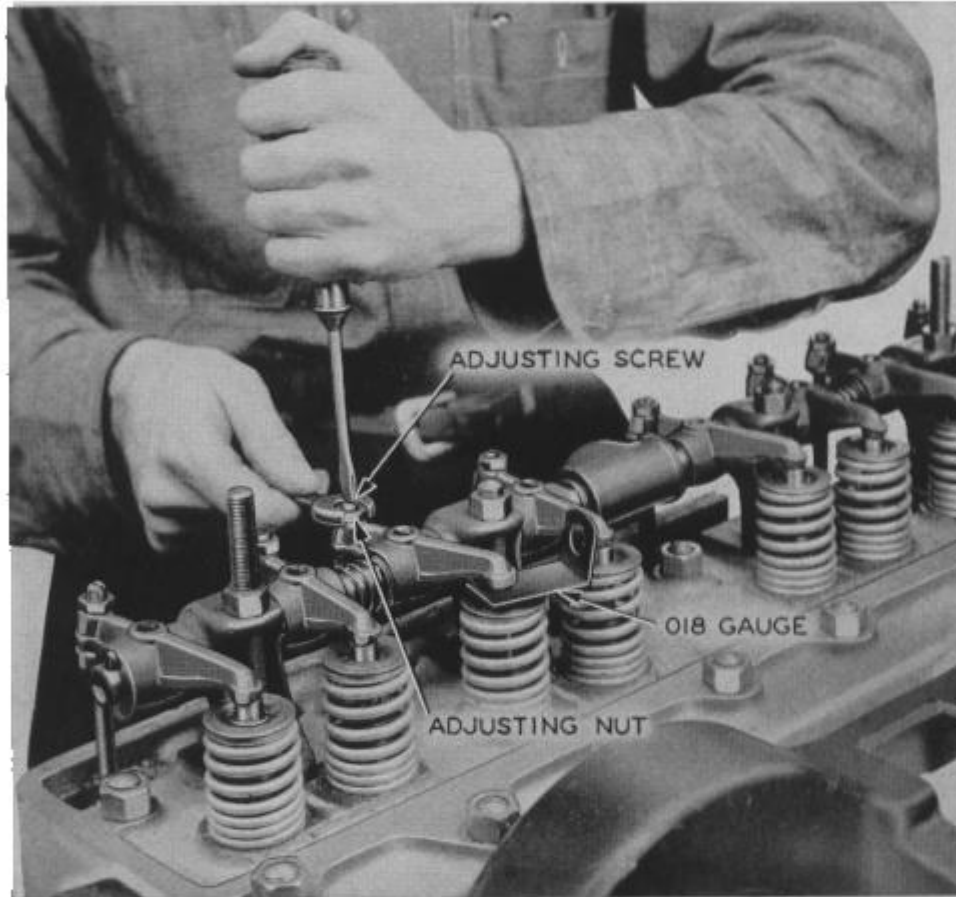


Figure 29. Adjusting Valve Clearance

ADJUSTING VALVE CLEARANCE

The engine hood and the valve cover must be removed and all spark plugs taken out in order to adjust valve clearance.

Clearance between rocker arms and ends of valve stems should be kept properly adjusted. The clearance should be .018 inch when the valve is fully closed and the engine cold.

Be sure that lock nut is securely tightened when adjustment has been made.

To simplify this adjustment, a gauge .018 inch thick is furnished with each tractor. This gauge is located on one of the long studs which passes through the rocker arm shaft bracket.

VALVES AND VALVE SEATS

One of the chief sources of lack of power is lack of compression in one or more cylinders. An engine with poor compression is inefficient and should not be kept in service.

The engine can easily be tested for compression leaks. Before making the test, the engine should be run until it is warmed up to working temperature and the valves and other parts properly oiled. Do not try to test compression on a cold engine, as this is misleading. When a warm engine is hand cranked, there should be marked resistance as each piston is on compression stroke. If compression is poor, it is probably because of compression leaks past the valves, or if the engine has been operated for several months, there may be compression leaks past the piston rings which will require replacement of rings or pistons.

If the compression is poor, remove the valve cover and use kerosene on the valve stems and rocker arms to remove any gummy oil accumulation; then oil with light oil. Many times this care will cause valves to seat tight.

If the engine has good power leave the valves alone. It is time enough to recondition valve seats when they are known to be the cause of lack of power.

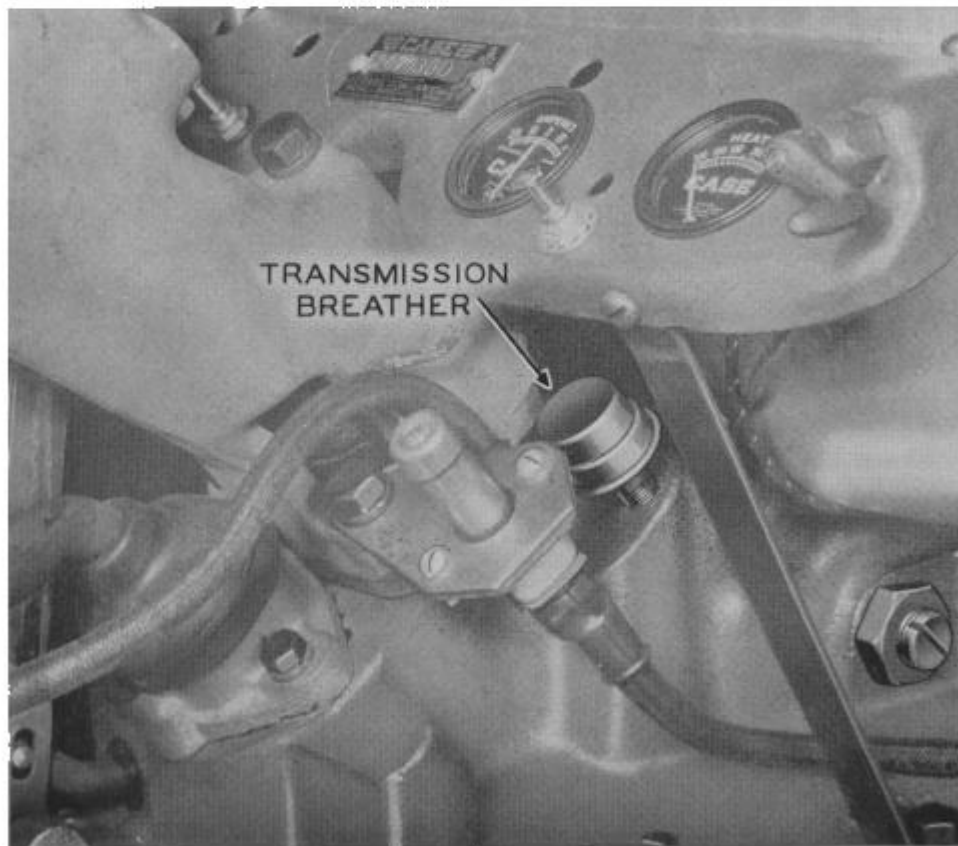


Figure 30. Transmission Breather

TRANSMISSION BREATHER

The *transmission breather* located on transmission case top cover should be removed and cleaned in gasoline or fuel oil every 100 hours. Put a few drops of engine oil in breather before putting same back in place.

Under extremely dusty conditions, this breather should be checked and cleaned oftener, if necessary.

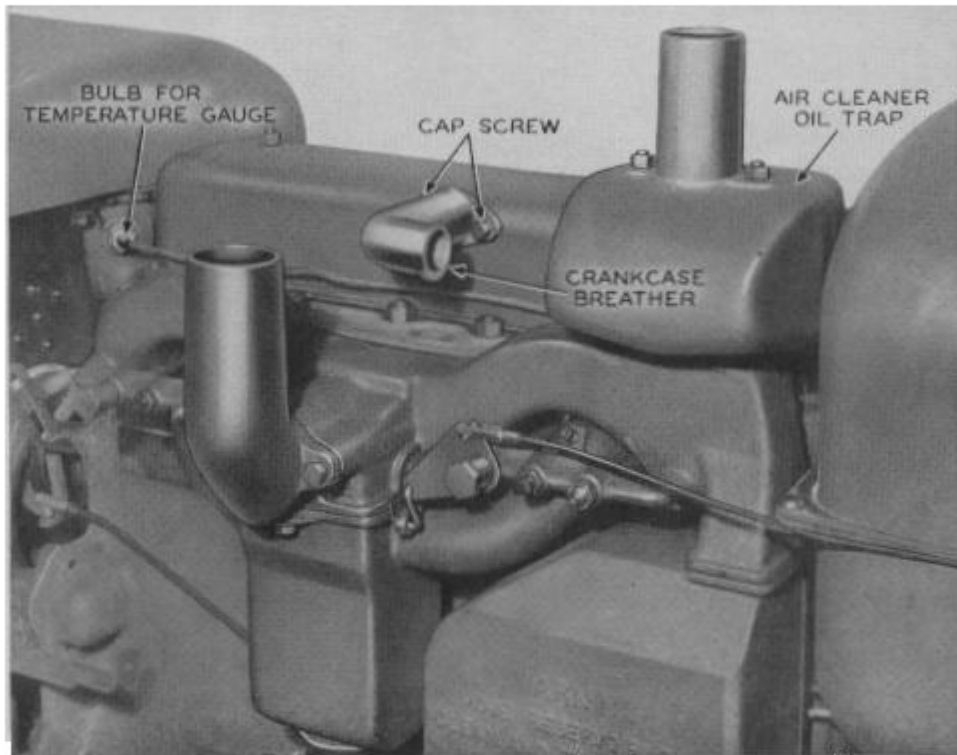


Figure 31. Crankcase Breather and Air Cleaner Oil Trap

CRANKCASE BREATHER, SCREEN TYPE

The *crankcase breather* is located on outside of valve cover as shown in Figure 31. It is recommended that when operating engine in dusty conditions an examination be made about every 100 hours to see that all screens are clean and that breather is operating freely. Under extremely dusty conditions, this should be checked oftener.

To clean screens, remove the two cap screws holding the breather elbow. Wash entire elbow assembly in gasoline or fuel oil until all dirt and sediment is removed.

AIR CLEANER OIL TRAP

The *air cleaner oil trap* is located over the air cleaner in the air in-take pipe and is attached to the exhaust manifold as shown in Figure 30. The oil trap prevents oil from being thrown out of air cleaner if engine should backfire.

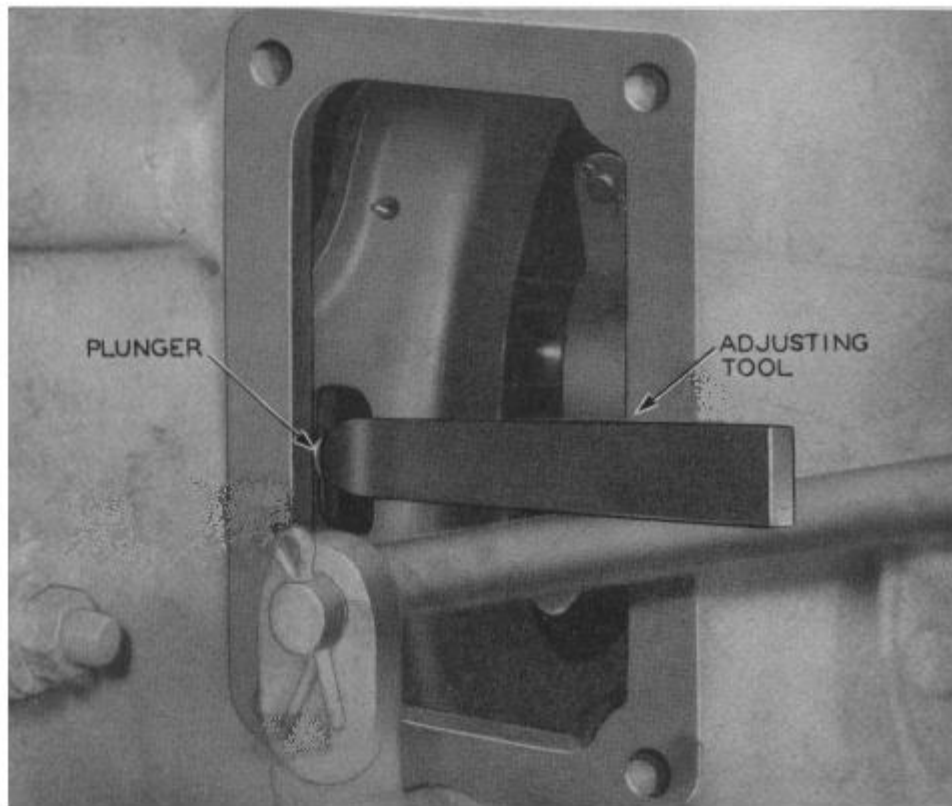


Figure 32. Adjusting Clutch

CLUTCH

The clutch on your tractor will need adjusting occasionally to compensate for normal wear of the facings. A new clutch particularly may need adjusting perhaps several times until a smooth friction surface is obtained. Need of adjustment is indicated by clutch slippage—on full load the engine may speed up, or a heavy load on either drawbar or belt may not be picked up promptly on engaging the clutch, also the clutch can be engaged without an appreciable “snap” of the lever. As soon as there is any indication of clutch slippage, adjustment should be made immediately to prevent damaging the facings, necessitating an expensive service operation to install new facings.

Clutch adjustment can be made readily by following these steps:

1. Remove spark plug wires from all spark plugs to avoid the possibility of the engine starting while working on the clutch.
2. Remove the rectangular inspection plate on the left hand side of flywheel housing.
3. Release the clutch and with the transmission in neutral, note how readily the belt pulley can be turned by hand. Be sure the pulley brake is not in contact with the belt pulley when this is done. Rotate flywheel until spring loaded plunger is in line with inspection plate opening.
4. Depress the spring-loaded plunger with your clutch adjusting tool or a long-handle screwdriver, and turn the collar rearward. This collar is mounted in the pressure plate with a right hand screw thread, therefore it is turned counterclockwise (looking forward) to bring the pressure plate closer to the friction disc. In other words, the near edge of the collar is moved downward, as you look into the clutch housing through the left side opening.
5. Turn the collar until a noticeable drag is felt as the belt pulley is rotated by hand, indicating that the clutch facings are dragging slightly. Then turn the collar forward (clockwise, or upward) until this drag entirely disappears, and allow the plunger to drop into the next notch.
6. Reinstall the clutch housing inspection cover (see that the gasket is in good condition) and replace the spark plug wires on plugs.

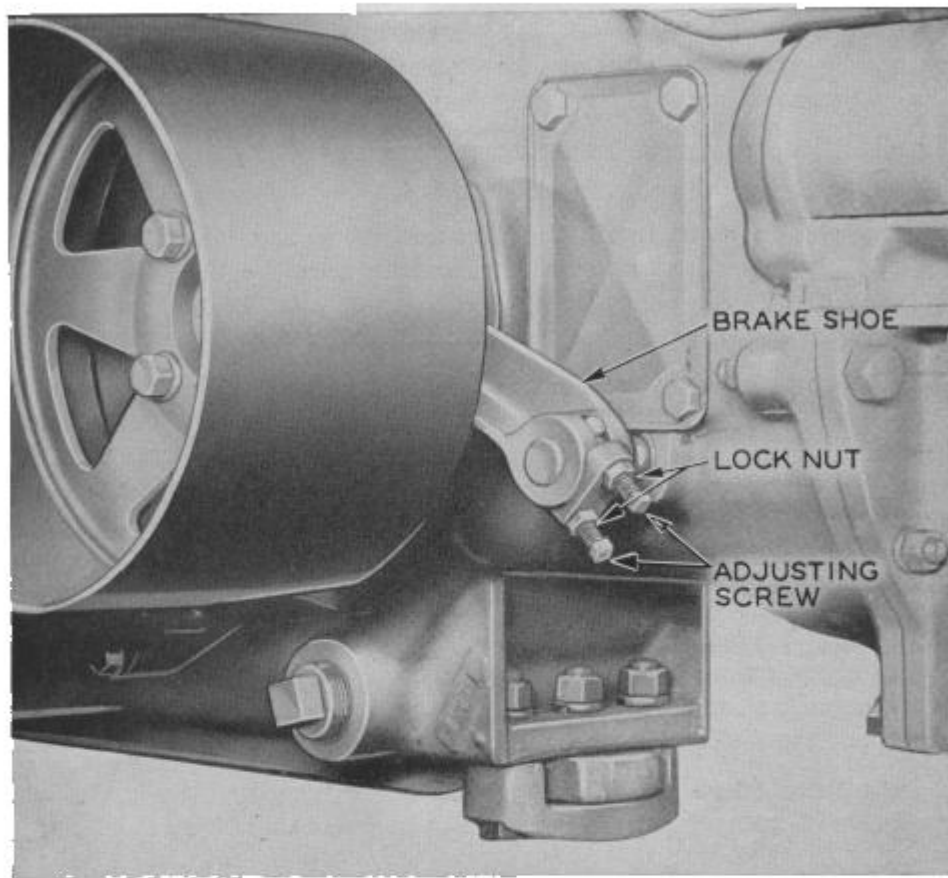


Figure 33. Pulley Brake Adjustment

PULLEY BRAKE

After the clutch has been adjusted, inspect the *pulley brake* to insure that it contacts the *belt pulley hub* when the clutch lever is pulled all the way back. At the same time the brake should be adjusted so that it will not interfere with proper release of the clutch. Adjustment of the pulley brake is very simple:

1. Loosen lock nuts on adjusting screws.
2. Loosen lower screw and tighten upper screw to apply brake earlier during rearward movement of the clutch hand lever.
3. Loosen upper screw and tighten lower screw to apply brake later and to insure brake is released when clutch is engaged.
4. When adjustment is complete and both screws are tightened, lock the adjustment with the lock nuts.

The belt pulley is $12\frac{1}{4}$ " diameter and has $7\frac{1}{4}$ " face so that a 7" drive belt can be used.

ASSISTING BRAKES

The assisting brakes on this tractor are mounted on the differential shaft. With proper care and reasonable usage, they will give very satisfactory service.

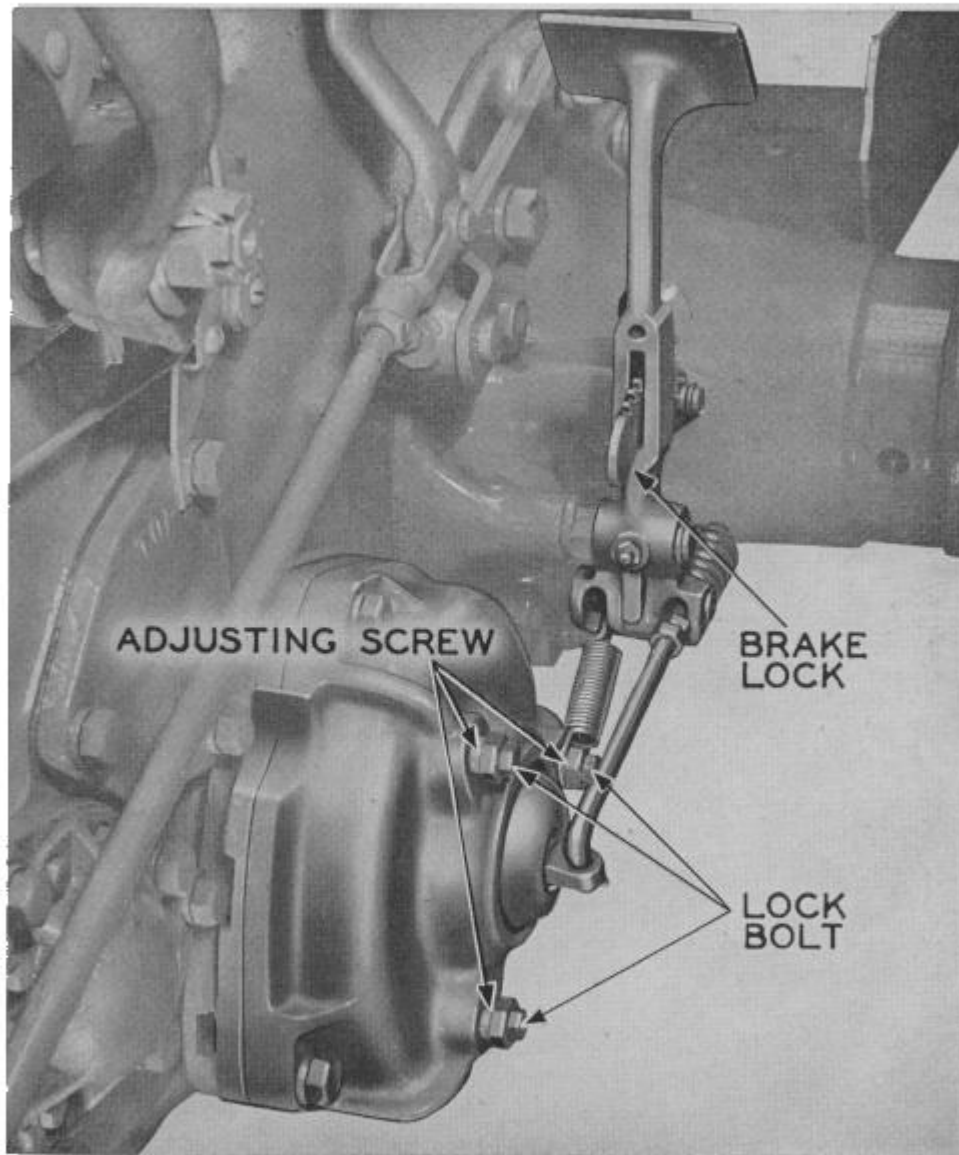


Figure 34. Assisting Brakes

ADJUSTING THE ASSISTING BRAKES

After considerable service, brakes may require adjustment to compensate for lining wear. To adjust, jack up rear wheels and proceed as follows:

On the outside of the brake housing there are three adjusting screws with lock bolts. To adjust the brakes, loosen the lock bolts and turn the adjusting screws clockwise until a light drag is noticeable when the wheel is revolved. Loosen the adjusting screw about one quarter turn, counter-clockwise, to permit operating clearance. This must be done alternately on each adjusting screw. All three must be adjusted evenly to permit uniform braking action without "locking" and excessive wear.

Tighten the lock bolts securely to hold the adjustment.

When the above adjustment has been completed, check the pedal clearance. Pedal clearance should be maintained from 1" to 1½", measured at the tip end of the brake pedal.

If the pedal clearance is less than one inch, adjust the brake pedal control rod accordingly.

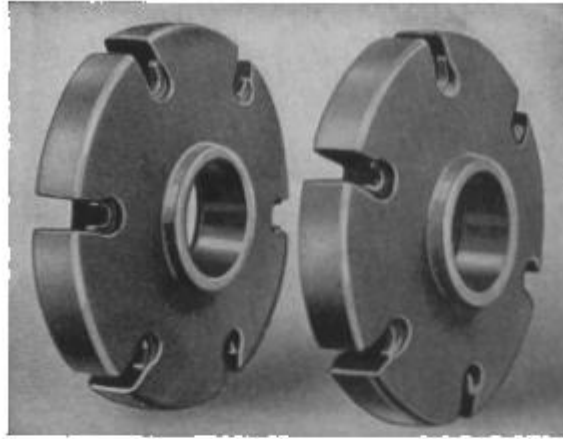
Allow the same brake pedal clearance on both the right and left hand brake so as to insure a balanced action on both brakes. With normal use, these brakes will give smooth and effective service for a long time.

If at any time it is found necessary to replace the facings, consult your nearest Case dealer who has the proper equipment to do this type of work in a satisfactory manner.



Figure 35. Assisting Brake Ratchet Handles

NOTE: Ratchet handle shown in Figure 35 is used to lock assisting brakes on the Models "D," "DO" and "DV" tractors.



SET OF WHEEL WEIGHTS ("D" and "DO" TRACTORS)
Weight of each, 150 lbs.

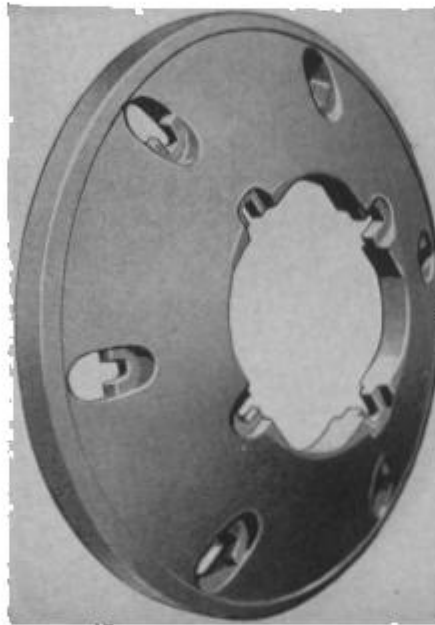


Figure 36. Wheel Weights ("DC" Tractor)
(Weight, 150 lbs.)

WHEEL WEIGHTS

Under some conditions a certain amount of slippage will be experienced when using a rubber tired tractor to pull heavy loads. Case Models "D" and "DO" tractors have been designed with sufficient weight to handle all average loads under usual farm conditions. Under exceptional conditions which produce excessive slippage, weight can be added in two ways.

CAST IRON WEIGHTS

The first method is to attach cast iron weights to the wheels.

Cast iron wheel weights are preferred by many operators to using water in tires, chiefly due to the greater ease of installation and removal.

WATER WEIGHT

The second method is to add weight by adding water or solution as required.

Either method is satisfactory. Whichever one is used, it is desirable to have the weight in the wheels only when heavy work is being done. Operating this tractor with unnecessary weight merely consumes more fuel and throws a greater load on the gears, shafts and bearings.

Water will work satisfactorily if certain precautions are taken. Whenever freezing weather is to be experienced it is necessary either to drain the tires of their water or to use an antifreeze solution to prevent ice damaging the tires. The tractor should not be operated with ice inside the tires, as the sharp corners of the ice will cut the inner tube.

If there is no danger of freezing fill tires with water direct from a hose connected to a pressure water system. Secure an adapter which will permit connecting hose directly to the tire valve.

For information on calcium chloride antifreeze solution most frequently used in tires, tractor operator should be instructed to consult dealer for amount necessary for the different size tires.

NOTE: 3½ lbs. of calcium chloride per gallon of water will protect tires to 40° below zero.

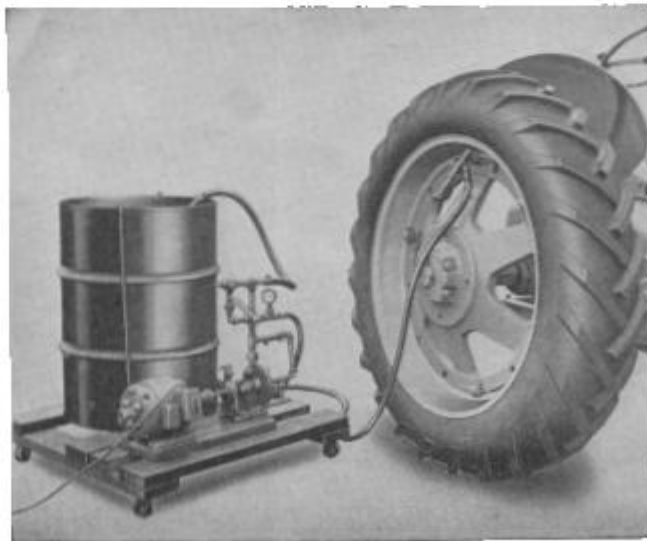


Figure 37. Filling or Removing Liquid—Power Pump Method

METHOD OF FILLING OR REMOVING LIQUID BY POWER PUMP METHOD

A very efficient method of filling or removing liquid from tires can also be accomplished by the use of a power pump similar to what is shown in Figure 37.

To use pump, proceed as follows:

1. Attach hose to tube valve.
2. Remove valve core housing or valve core with patented valve core and housing ejector.
3. Start motor with lower handle to left and pump out all the air and solution in the tube until a vacuum is created, as shown by gauge.
4. Fill tube to desired pressure by reversing lower lever to left, pressure is indicated on gauge, then replace core housing or core.

Figure 37 shows a tire being filled that is mounted; however, this pump will work equally as well when tire is not mounted on wheel.

When calcium chloride solution has been employed, it may be desirable to save the solution for re-use.



Figure 38. Checking Tire Pressure

CARE OF TIRES

1. Maintain the correct inflation pressure.
2. Keep valve caps on all valve stems.
3. Repair any cuts or breaks in the casing promptly to prevent damage from water, dirt, or weakened fabric.

The valve caps perform an important function in maintaining proper inflation pressures. They serve two main purposes:

1. Sealing the valve stem against entrance of dirt.
2. Preventing leakage of air past the valve.

RECOMMENDED TIRE PRESSURES

Front Tires 28 lbs. per square inch

Rear Tires 12 lbs. per square inch

Air pressure should not be allowed to drop below these pressures.

Note: When plowing increase pressure in furrow wheel tire 4 lbs.

STATIC ELECTRICITY

When operating a rubber tire equipped tractor, a light chain should be fastened to the drawbar or other suitable metal part on the tractor, sufficiently long for the other end to touch the ground. By the use of such a chain all danger of static electricity will be overcome. If tractor is operated without some proper ground there is danger of fire being started from the static discharge.

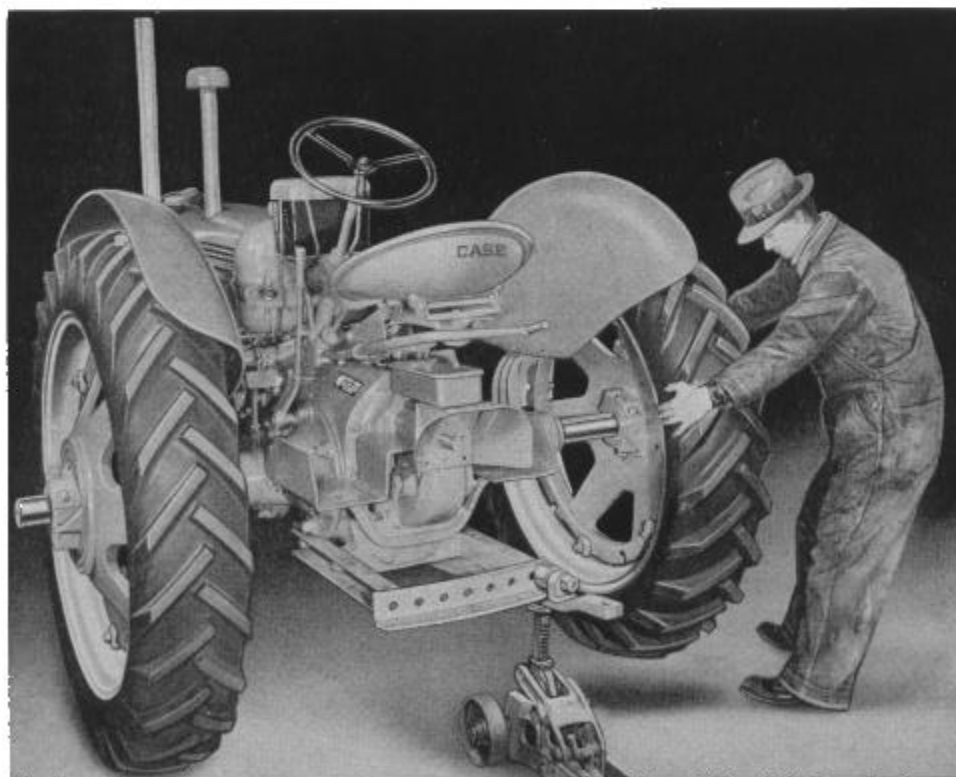


Figure 39. Rear Wheel Spacing

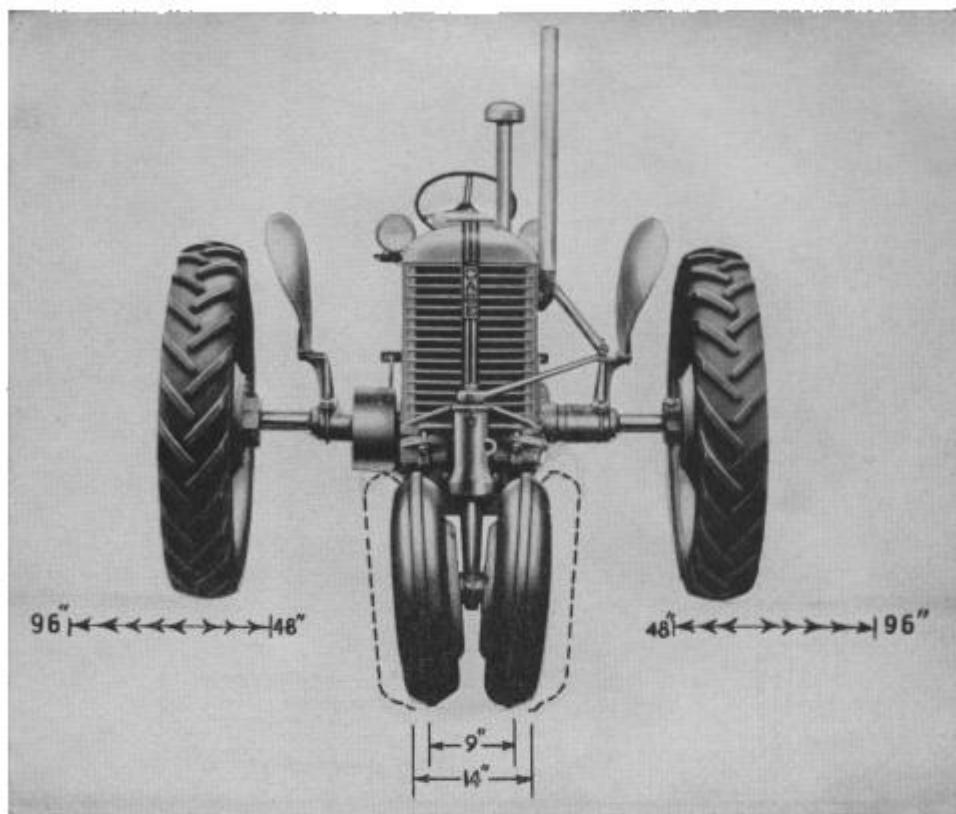


Figure 40. Wheel Spacing

WHEEL SPACING

The rear wheels of the "DC" tractor can be set in any spacing from 48" to 96". This variation is secured by sliding the rear wheel on the axle and by reversing the wheels.

Front wheels can be spaced at 9" for regular row crop work and 14" for lister row crop work.

Block tractor securely to avoid any possibility of slipping off the jack while the wheel is removed.

Loosen hub bolts and cap on axle shaft, and move rear wheels to desired spacing. Tighten the hubs evenly and securely.

The hub bolts should be checked for tightness every few days while the tractor is new, or after changing the setting of the wheels. Keep hub bolts tight at all times.

FOR YOUR SAFETY

When operating a pneumatic tire equipped tractor in the narrow tread spacing, with the tractor going at a high rate of speed, or with one wheel in the furrow when plowing, apply brakes with caution or the tractor may turn over. Front wheels can be spaced at 9" for regular row crop work and 14" for lister row crop work.

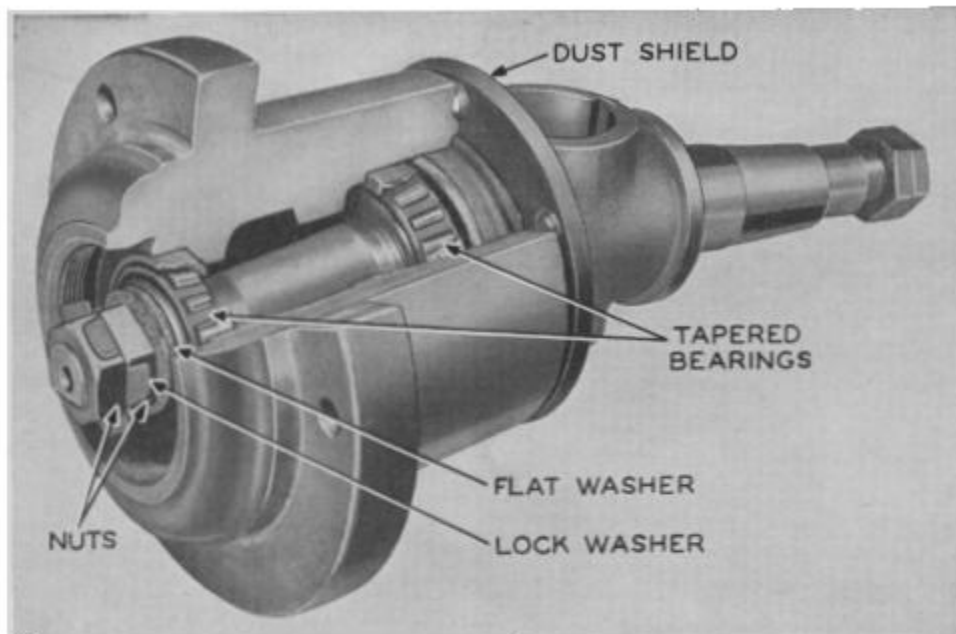


Figure 41. Model "DC" Front Wheel Adjustment
(Similar on "D" and "DO" Tractors)

FRONT WHEEL BEARING ADJUSTMENT

To adjust the front wheel bearings, raise and block up the front end of the tractor so that all weight is off the front wheels. Before removing the hub cap, clean all the dirt and grit from around the cap. Remove the hub cap and straighten the lock washer located between the lock nut and the bearing adjusting nut. Remove the lock nut and lock washer.

Draw the adjusting nut up against the flat washer and the outer bearing until the pressure of the nut causes a noticeable binding of the bearings when the wheel is rotated. Back off the adjusting nut one-sixth of a turn to permit the bearings to run freely.

When the correct adjustment is obtained, replace the lock washer and lock nut. Draw the lock nut up tight against the lock washer and bend one washer lip over the adjusting nut and one lip over the lock nut.

Pack the bearings with a good grade of soft fibre grease, making sure the grease is worked around the rollers, and replace the hub cap.

Under average conditions, a good grade of fibre grease should be added every 250 hours (monthly) if the tractor is being used for field work.

POWER TAKE-OFF

Model "D" Series tractors, when equipped with PTO have an ASAE Standard $1\frac{3}{8}$ " power take-off spline. The power take-off shaft is put into operation by meshing the power take-off gear with a pinion on the clutch shaft. This is accomplished by pushing the power take-off shifter toward the instrument panel with the clutch disengaged. The power take-off is stopped and started by means of the main tractor clutch. At the normal

full load engine speed of 1200 RPM the power take-off shaft speed is 540 RPM.

The power take-off shaft is disengaged by pulling the power take-off shifter rearward. Whenever the power take-off is not being used, disengage this shifter.

POWER TAKE-OFF SHIELD AND GUARDS

Power take-off equipped tractors have a standard power take-off adapter guard which shields the tractor end of the power take-off shaft. This guard provides a standardized attaching point for the shields furnished with each driven machine, whether made by Case or by some other company. Whenever a power take-off driven machine is in operation these guards and shields must be in place to prevent injury to the operator. When the power take-off is not in use the small tube-like guard around the power take-off spline should be in place to prevent clothing being caught in the spline, which is revolving when the motor lift is used. The standard adapter guard on the rear transmission cover should never be removed at any time.



Figure 42. Power Take-off Shield and Guards

POWER TAKE-OFF SHIELD AND GUARDS MUST ALWAYS BE IN PLACE WHENEVER POWER TAKE-OFF IS IN USE.

The length of the power take-off shaft should be determined by trial. Turn the tractor slowly holding the shaft outside the tube, watching to see where the end of shaft comes when turning as short as possible. If the shaft hits the universal fork, it must be cut off enough to clear about one

inch. Likewise, the tube must clear the hub of the universal joint at the opposite end by at least one inch. With the shaft and tube the proper length for turning, check them carefully in the straight ahead position to see that the shaft extends into the tube sufficiently to provide a satisfactory driving connection.

If the lengths of the shaft and slip tube are not correct for the hitch being used, the shaft may come out of the tube and before the tractor could be stopped considerable damage might be done to the machine, and possibly serious injury to the operator.

On assembling the telescoping drive shaft insure that the universal joint forks on the square shaft are in the same plane as the forks on the square tube. In other words the two forks closest together should be assembled in the same plane, and the two outer forks likewise in the same plane, at 90° to the first. If this is not done excessive vibration of the driven machinery will result.

When doing power take-off work, always lock the swinging drawbar to prevent its movement, as such movement may cause serious damage to the drive mechanism. The drawbar can be locked by dropping two pins or bolts through holes in the guide angle, one on each side of the drawbar.

For power take-off driven machinery other than Case, make a close study of the manual furnished with the power take-off driven machine. Very often shafts and tubes that are too long are furnished. In such cases it is necessary to cut both the shaft and the tube to the correct length.

BELT WORK

On setting the tractor for belt jobs care should be used that the pulleys are properly aligned; should the belt tend to run off on the inside, excessive belt edge wear will result, while run-off toward the opposite side may cut through the tire casing.

The belt pulley is crowned, and with proper alignment a belt in reasonably good condition will run true.

For most belt jobs the tractor will remain in position by merely locking the foot parking brake.

The belt pulley is 12¼" diameter and has a 7¼" face so that a 7" drive belt can be used. The engine at its normal loaded speed of 1200 RPM will give a pulley speed of 818 RPM. Corresponding belt speed is 2620 feet per minute.

For proper lubrication the tractor should be set level while doing belt work.



Figure 43. Seat Adjustment

SEAT

The seat can be adjusted fore and aft on the mounting channel to obtain the most comfortable position for the operator. Your dealer has no doubt pointed out the tip-up feature which permits standing on the platform when desired, with an optional semi-sitting position if preferred. Action of the rebound can be controlled by adjustment of the bolt on top of the bushing. Also, if the operator prefers a somewhat higher seating position, washers may be inserted under the main seat spring.

If the tractor is to remain idle for an extended period, the seat cover should be removed and stored under cover, away from water, light and heat. For short idle periods tip the seat to the rearward position to insure positive drainage for any water that may collect.

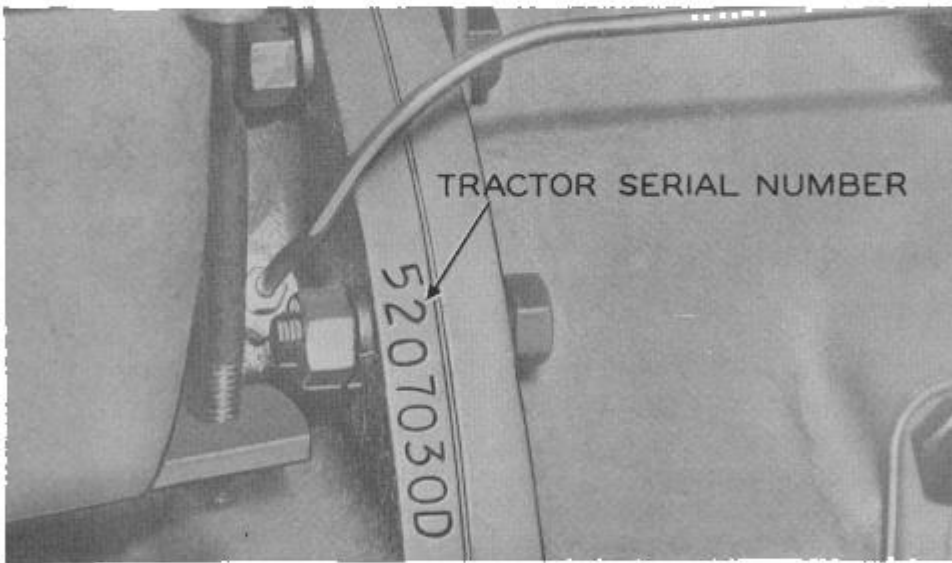
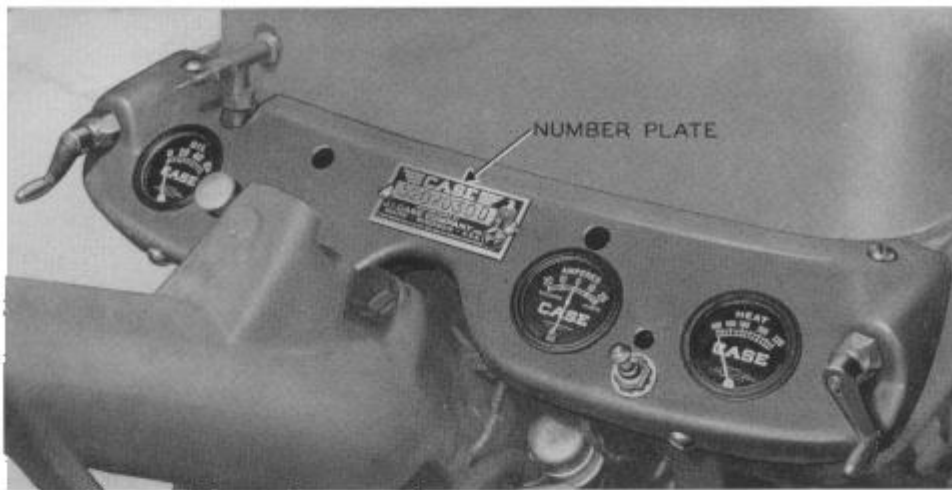


Figure 44. Serial Number

SERIAL NUMBER

When ordering parts through your local Case dealer, always give the serial number of your tractor. This number is found on the name plate located on the instrument panel, and is also stamped on the left rear side of the engine block near the air cleaner. Figure 44 shows the two locations on tractor where number can be found.

STORING THE TRACTOR

At times when tractors are laid up for the winter months, and to avoid difficulty in starting later on, the following precautions should be observed:

Fuel System

All fuel should be drained from the tanks, carburetor bowl, fuel filter, and lines. Many fuels if left standing for considerable periods form gum and varnish which soon clogs the fuel passages.

Cooling System

Drain water from the cooling system, and flush out to remove any sediment or loosened scale that may be collected. This is a good time to clean out the cooling system with soda solution. Leave the drain plug open, and loosen the radiator filler cap to release pressure on the gasket.

Lubricating System

Drain oil from the crankcase while the engine is warm. Remove and clean oil screen, and while the screen is removed, clean out any sediment present in the oil pan. Remove spark plugs, and pour into each cylinder about a quarter pint of clean engine oil of a viscosity equivalent to SAE 10 or 20. Turn the crankshaft over a dozen revolutions or so to allow this oil to thoroughly cover the cylinder walls, and to work in around the rings. (If a good grade of anti-rust oil, such as No-Ox-Id, is available, use it instead to give greater protection against rusting; however a good grade of engine oil will serve very well in most cases.)

Tires

Store the tractor in a dry place, and place blocks under the axle and front end to take the weight off the tires and prevent the tires touching the ground. Protect the tires from light and heat. It is not necessary to reduce the air pressure, but before putting the tractor back in service the pressure should be brought up to the specified figure.

Battery

Protect the battery from freezing.

Cleaning

To protect the finish the exterior of the tractor should be cleaned to remove any dirt or grease. Soap and water will remove most of the dirt and grease; use kerosene and a brush if necessary. This is a good time to touch up any spots from which the paint is missing, or better yet, paint the entire tractor. Flambeau Red paint can be purchased from your Case dealer at a reasonable price.

Inspect the tractor and order any parts which may need replacing. Any extensive service work can best be handled by your Case dealer during the winter months; you will receive better service then than during the rush season later.

All Case products are sold subject to the following Warranty.

WARRANTY

The J. I. Case Company, hereinafter called "Company," warrants each Case machine (except belting, canvasses, magnetos, carburetors and other attachments, devices or equipment not made by it and which may be warranted by the respective makers but are not warranted by the Company):

1. To be well made of good material and to be durable with good care.

(a) If any part made by the Company shall fail from defect in material during the first season's use, and, within ten days after such failure, written notice is given to the Dealer from or through whom said part was purchased, it will be replaced free upon presentation at the factory, subject to the option of the Company to repair the same.

(b) No claim shall be allowed for breakage of hardened moldboards, shares, landsides, cultivator shovels, plow disks, harrow disks or spring tooth harrow teeth, excepting upon manifest defect in material or labor, and in no case after they have been heated outside the Company's factory.

2. If properly set up, adjusted, and operated by competent persons, to be capable under ordinary conditions of doing the work for which it is designed.

(a) If upon operation by the purchaser in the manner aforesaid for two days any Case machine shall fail to fulfill such warranty, written notice thereof shall be given at once to the dealer from or through whom the same was purchased. If the dealer does not remedy the defect within two days after notification, then immediate written notice of the defect particularly describing the same, specifying the time of discovery thereof and the time of notification to the dealer shall be given by registered letter to J. I. Case Company at its branch house having jurisdiction over such dealer's territory, after which notice reasonable time shall be given to the Company to either send a competent person to remedy the defect or suggest by letter the remedy of the defect, if it be of such a nature. If the machine is found by the Company to be defective in material or workmanship, then the Company will see to it that the defect is remedied, otherwise, purchaser agrees to pay the expenses incurred by the Company with reference thereto and in any event purchaser agrees to render necessary and friendly assistance without compensation.

(b) If, after such notice and opportunity to remedy the difficulty, the Company fails to make the machine fulfill the warranty, the part that fails shall be returned immediately by the purchaser, free of charge, to the place from whence it was received and the Company notified thereof at its Branch House aforesaid, whereupon the Company shall have the option to furnish another machine or part in place of the one so returned which shall fulfill the warranty, or to cause to be returned the money and notes or proportionate part thereof received for such machine or part and no further claim shall be made.

(c) Failure to give notice, or the use of the machine after the two (2) day limit aforesaid without giving such notice, or failure to return such machine or part as aforesaid shall be conclusive evidence of due fulfillment of the warranty.

3. There is no express, implied or statutory warranty by the Company of any nature whatsoever other than or different from the conditional warranty aforesaid.

4. Any order under this warranty is divisible as to each machine and attachment ordered and the failure of any machine or attachment to fill the warranty shall not affect the liability of the purchaser for any other machine or attachment.

5. The Company's liability for any breach of this warranty is limited to the return of cash and/or notes actually received by it on account of the purchase price of said machine or part.

6. The placing upon any Case machine or implement of any part, attachment or equipment not manufactured or sold by J. I. Case Company or authorized by it, shall operate to void and waive any warranty whatsoever by J. I. Case Company.

CASE



Modern Farm Machines

TRACTORS

- Farm Tractors
- General Purpose Tractors
- Cane Field Tractors
- Industrial Tractors
- Engine Units

GENERAL PURPOSE

TRACTOR IMPLEMENTS

- Runner Planters
- Buster Planters
- Listers
- Cultivators
- Listed Crop Cultivators
- Power Mowers
- Middle Busters
- Mounted Plows
- Beet Pullers

THRESHERS

- Grain Threshers
- Rye Threshers
- Pea and Bean Threshers
- Clover and Alfalfa Threshers
- Peanut Threshers

COMBINES

- Grain Combines
- Bean Combines
- Hillside Combines
- Windrowers
- Pick-up Attachments

PLOWS

- Tractor Moldboard Plows
- Two Way Plows
- Tractor Disk Plows
- One Way Disk Plows
- Turnover Plows

HARROWS

- Tractor Disk Harrows
- Offset Disk Harrows
- Wide Cut Disk Harrows
- Brushland Disk Harrows
- Spike Tooth Harrows
- Spring Tooth Harrows

HARROWS—Cont.

- Roller Packers
- Orchard Disk Harrows
- Horse Disk Harrows

PLANTERS AND LISTERS

- Corn Planters
- Cotton and Corn Planters
- Corn Listers
- Cotton and Corn Listers

DRILLS

- Seedmeter Grain Drills
- Fertilizer Grain Drills

CULTIVATORS

- Listed Crop Cultivators
- Field Tillers
- Rotary Hoes

HAY MACHINERY

- Mowers
- Sulky Rakes
- Side Delivery Rakes
- Hay Loaders
- Hay Balers
- Pick-up Hay Balers

BINDERS

- Power Corn Binders

BEEF AND BEAN MACHINERY

- Beet and Bean Planters
- Beet and Bean Cultivators
- Bean Cutters
- Beet Pullers

OTHER MACHINES

- Corn Pickers
- Corn Picker-Shellers
- Hammer Feed Mills
- Forage Blowers
- Manure Spreaders
- Farm Trucks and Trailers
- Elevators

Established 1842 **J. I. CASE CO.** Incorporated

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