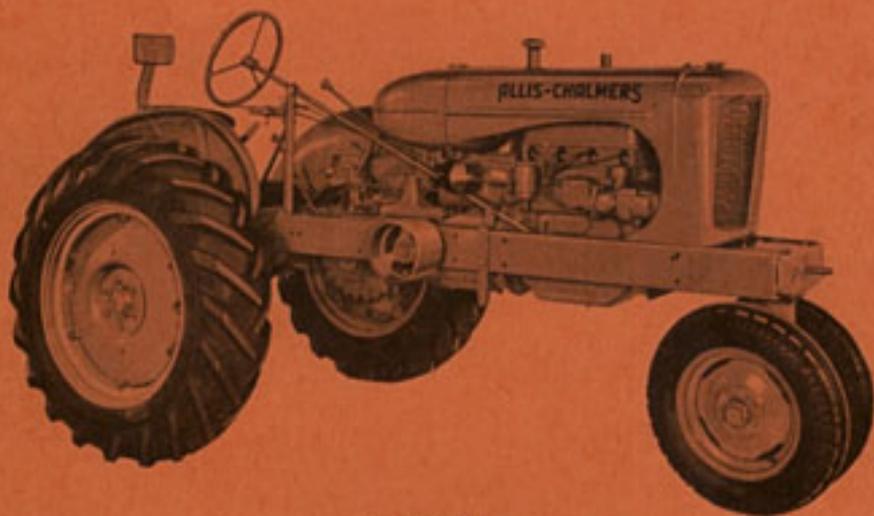


**OPERATING INSTRUCTIONS  
MAINTENANCE  
AND  
REPAIR PARTS ILLUSTRATIONS  
MODEL "WC" TRACTOR**



PROPERTY OF  
RICHARD E. HAROLD

**ALLIS-CHALMERS MFG. CO.**

TRACTOR DIVISION

**MILWAUKEE, WISCONSIN, U. S. A.**

# GENERAL SPECIFICATIONS

## Engine

Number of Cylinders	4
Bore	4"
Stroke	4"
R.P.M.	1300
Firing Order	1-2-4-3
Piston Displacement	.201 cu. in.

## Magneto

Impulse Coupling	Automatic
Lag Angle	30 degrees
Timing Advance	30 degrees
Point Gap	.020"
Spark Plug Size	.14 mm.
Spark Plug Point Gap	.030" to .040"
Spark Plug Heat Range — Gasoline	AC 45 or Equivalent
Spark Plug Heat Range — Low Octane	AC 47 or Equivalent

## Transmission—Selective Sliding Gear

First	2.50
Second	3.50
Third	4.75
Fourth	9.00
Reverse	2.00

## Clutch—Single Plate Dry Disc

Single Plate Dry Disc Diameter	10"
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## Belt Pulley

Diameter	9"
Face	6½"
R.P.M. (At Normal Engine Speed)	1170

## Brakes

Enclosed Contracting Type ..... HAND OPERATED

## Radiator

Capacity ..... 3½ gals.

## Oil Sump

Capacity ..... 6 qts.

## Transmission

Capacity ..... 4 qts.  
5 qts. with P.T.O. Installed

## Differential

Capacity ..... 6 qts.

## Final Drive Gears

Capacity (each) ..... 1 pt.

## Fuel Tank

Capacity ..... 15 gals.

## Wheel Tread

Rear ..... Adjustable, 65", 68", 73", 76"

## Tire Size

Front ..... 5.50 x 16  
Rear ..... 11 x 28

## Tire Pressure

Front ..... 28 lbs.  
Rear ..... 12 lbs.

## Battery

6 Volt — 13 Plate — 95 Ampere Hour

*The Allis-Chalmers Manufacturing Company reserves the right to make changes in the above specifications or to add improvements at any time without notice or obligation.*

### It Pays to Pay a Little More for Quality Lubricants.

It has long been recognized that the life of a tractor is largely determined by the kind of lubrication it receives. Therefore always use oil and grease of high quality, manufactured by a dependable oil company who has established a reputation for quality products and whose success depends on maintaining such quality.

In addition to using high quality oils it is also necessary to use oils of proper viscosity. Oil that is

too heavy cannot reach all points to be lubricated; therefore, it will cause undue wear and engine sluggishness. Oil that is too light will not form a protective film between moving parts. For best results and to assure lubrication between snug fitting parts refer to lubricants recommended in Lubrication Guide.

Some parts need more frequent lubrication than other parts. Lubrication intervals outlined in LUBRICATION GUIDE (pages 7 and 8) should be followed closely.

## FUELS

### For Economy and Performance Use Fuels Specified for Your Engine.

Engines for model WC tractors may be secured with either a high or low compression ratio. Each is designed to efficiently burn a particular class of fuel. For best performance use the class of fuel for which the engine was designed.

Standard compression engines are equipped to burn distillate, tractor fuel or low octane gasoline. These fuels should have the following specifications: Gravity — 38 or higher; End Point — 525° or less;

Octane Rating — 30 or more; Gasoline — 60 octane or higher. Engines equipped to burn the above fuels are designated by the letter "K" following the engine serial number located on the left rear of engine block. (Example W110650 K.)

High compression engines are equipped to burn gasoline only. For average loads use 60 octane gasoline or higher. For continued heavy loads use 70 octane gasoline or higher. These engines are designated by the letter "G" following the engine serial number. (Example W110650 G.)

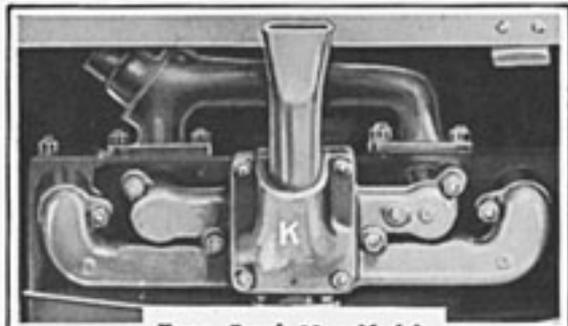
## MANIFOLDS

Allis-Chalmers tractors are supplied with one of two styles of manifolds.

The two fuel manifold is used with standard compression engines and can be used for tractor fuel or gasoline. The gasoline manifold is supplied on

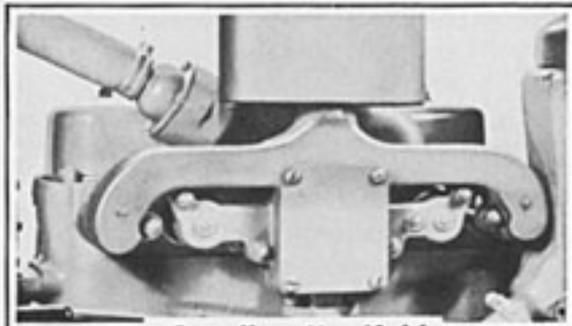
high compression engines and uses gasoline only.

When using the two fuel manifold install the cover marked "K" when burning tractor fuel or distillate. Install the cover marked "G" when using gasoline.



**Two Fuel Manifold**

FIG. 1



**Gasoline Manifold**

FIG. 2

# Lubrication Guide

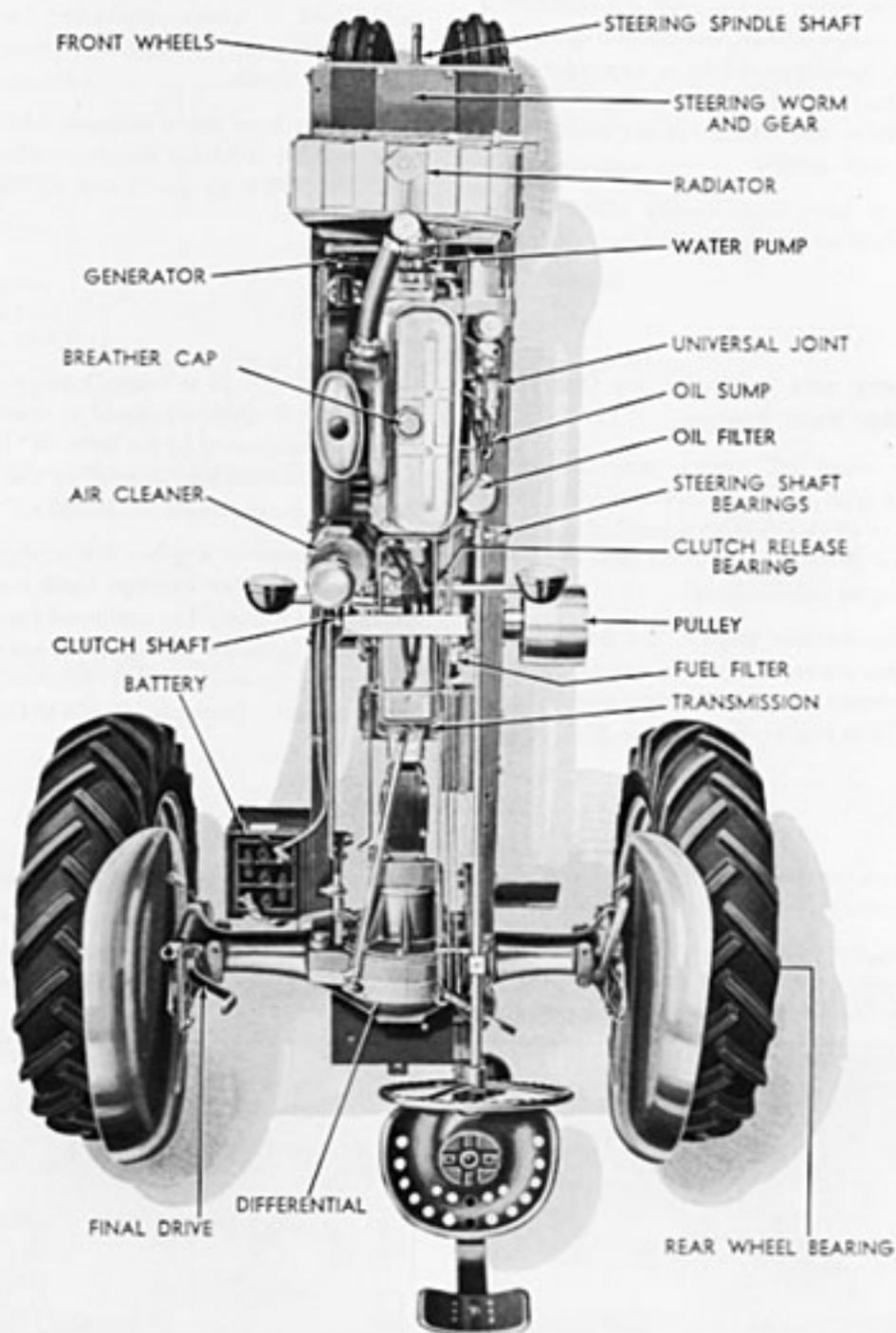


FIG. 3

# LUBRICATION GUIDE

## DAILY CHECK

**Steering Spindle Shaft:** Lubricate with chassis lubricant.

**Radiator.** Capacity 3½ gallons. Drain cocks are located at bottom of radiator and on engine block ahead of carburetor.

**Water Pump.** Lubricate with chassis lubricant or water pump grease. After engine number W105272, water pump has a sealed bearing and requires no lubrication.

**Universal Joint.** Lubricate with chassis lubricant.

**Steering Shaft Bearings.** Lubricate with chassis lubricant.

**Oil Sump.** Capacity 6 quarts. Maintain oil level to full mark on oil gauge rod. When using low octane fuel drain to level of drain cock, located on right side of oil sump, every 10 hours and refill with fresh oil.

**Breather Cap.** Wash in gasoline and dip in motor oil, throw off excess oil before replacing.

**Air Cleaner.** Clean and refill oil cup. Fill to level mark using motor oil of the same viscosity as used in oil sump.

**Fuel Filter.** Check and clean when necessary. Always install felt element with original side up.

**Clutch Shaft.** Lubricate with chassis lubricant.

**Pulley.** Lubricate with chassis lubricant (when in use).

**Clutch Release Bearing.** Lubricate approximately every 10 to 20 hours with chassis lubricant. Do not over-grease. Fitting can be reached by removing small cover at bottom of clutch housing. Lock clutch pedal forward to locate fitting so it may be reached by gun.

**Rear Wheel Bearings.** Lubricate with chassis lubricant.

## SPECIAL EQUIPMENT

**Power Lift.** Lubricate with chassis lubricant. If power lift is equipped with steel gear, SAE 90 extreme pressure lubricant must be used in differ-

ential in place of the regular lubricant recommended under "differential."

**Power Lift Pedal.** Lubricate with chassis lubricant (when in use).

**Power Take-Off.** Lubricate with chassis lubricant (when in use). Drain plug for transmission is located at bottom of power take-off housing.

**Front Wheels.** If wide front axle is used lubricate four king pin fittings with chassis lubricant.

## WEEKLY CHECK

**Oil Sump.** Drain and refill with fresh oil every 60 hours when using gasoline. When using low octane fuel drain completely and refill every 40 hours. Drain plug is located at bottom of oil sump. Keep filled to full mark on bayonet gauge.

For temperature above 90° F. use S.A.E. 40; For lowest expected temperature of 32° F. use S.A.E. 30; For lowest expected temperatures of 10° F. use S.A.E. 20W; For temperatures below 10° F. use S.A.E. 10W.

**Battery.** Electrolyte solution should be ¼ inch above separators.

**Final Drives.** Capacity one pint each. Keep filled to level plug. For temperatures above 32° F. use S.A.E. 250 gear lubricant; For temperatures below 32° F. use S.A.E. 140. Drain and refill twice a year.

## 30 DAY CHECK

**Front Wheels.** Clean and repack with No. 2 wheel bearing grease every 30 to 60 days.

**Steering Worm and Gear.** Check every 30 to 60 days. Remove cover from top of front support, maintain oil level so worm gear is one-third submerged. Use S.A.E. 140 gear lubricant.

**Generator.** Lubricate with motor oil of same viscosity as used in oil sump at prevailing temperature. Two or three drops is sufficient.

**Transmission.** Capacity 4 quarts. Keep filled to level plug. For temperatures above 32° F. use S.A.E. 140 gear lubricant, for 32° F. and

lower use S.A.E. 90. Drain plug is located on bottom of transmission. Drain and refill twice a year. When power take-off is installed on transmission add one extra quart.

**Differential.** Capacity 6 quarts. Check and keep filled to level of plug. For temperature above 32° F. use S.A.E. 140 gear lubricant, for temperatures below 32° F. use S.A.E. 90. Drain plug is located at the bottom of differential housing. Drain and refill twice a year. If power lift is being used refer to power lift instructions.

**Oil Filter.** Replace when oil begins to darken. Replacement is usually necessary after 200 hours when operating on gasoline and after 100 hours when operating on low octane fuel.

Insure your engine life by regular replacement of filter. The oil filter is a highly efficient unit for the purpose of filtering abrasive particles from the crankcase oil.

The filter element consists of a metal container packed with a special long thread filtering yarn.

**CAUTION:** Install only a new element which is machine packed, to a specific density and supplied by the Allis-Chalmers Mfg. Co. for the protection of your engine.

**NOTE:** A slight decrease in oil pressure is generally noted when a new filter element is installed, until the element is thoroughly saturated with oil.

## AIR CLEANER

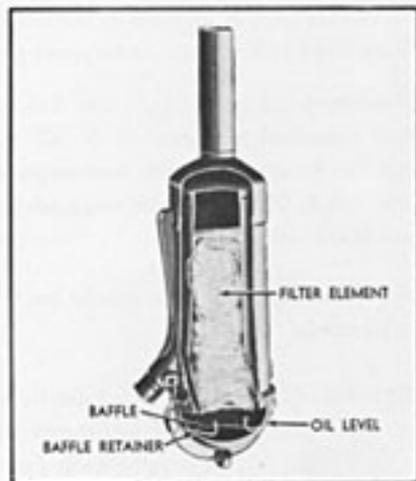


FIG. 4

A clean air cleaner adds life to your engine. Service the air cleaner as mentioned in the lubrication guide. Use the same viscosity oil as used in the engine oil sump according to the prevailing temperature. Keep the oil cup filled to the proper level at all times. Do not dilute oil or use used crankcase oil. The efficiency of cleaner depends on the proper viscosity of oil.

Under extreme dusty conditions service air cleaner twice daily. Each season remove the entire air cleaner and clean main body and element thoroughly. Keep all connections air tight.

## BREATHER

Service the breather cap daily as mentioned in lubrication guide. If breather should become clogged with dirt, pressure will be created in the crankcase, causing oil leaks.

Under extremely dusty conditions, service the breather cap twice daily.

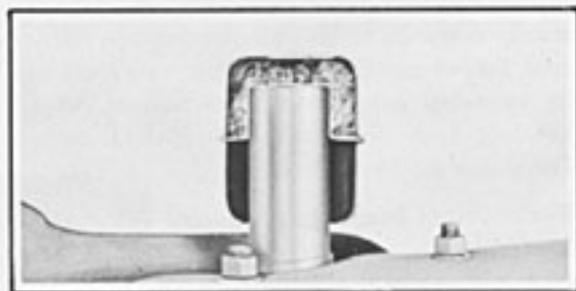


FIG. 5

## FUEL FILTER

The fuel filter is provided for the purpose of keeping dirt and water from entering the carburetor. However, the best results are obtained by using adequate fuel storage and handling facilities. If the fuel is kept free of dirt and water by use of clean containers and proper handling, the filter will have little work to perform.

To clean the filter, shut off the fuel supply. Loosen the bowl retaining nut and move bail to one side.

Remove bowl, gasket and felt element. Note which side of the element is up and be sure to reinstall with the same side up.

The element can be cleaned with ordinary soap and water, a small tooth brush facilitates washing. The element must be thoroughly dried before re-installing.

It is well to carry an extra element on hand. This will avoid delay in the drying operation.

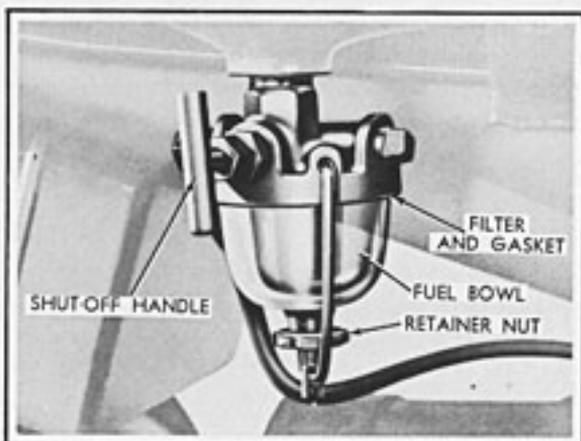


FIG. 6

## RADIATOR AND COOLING SYSTEM

NEVER pour cold water in a hot engine. Clean rain or soft water should be used in the cooling system if available. Hard or alkaline water will form a scale which will impair radiation if allowed to build up in the cooling system. The use of washing soda will help dissolve this scale. Where only hard water is available, washing soda should be used at frequent intervals, and before the accumulation of scale becomes heavy enough to scale off and stop up radiator passages.

If soda is used, mix with water thoroughly before placing in radiator. Operate engine about 2 hours. Drain and flush thoroughly with clean water.

Soluble oil is beneficial to the cooling system. It will not prevent the accumulation of lime but will retard such formation. This water soluble oil may be secured from your "Allis-Chalmers" dealer.

### DRAINING SYSTEM

**Be Sure Cooling System is Refilled Before Starting Engine.**

To drain cooling system; open the drain cock located on lower radiator outlet and the drain cock on motor block ahead of carburetor. CAUTION:

CAUTION:

In freezing weather be sure to drain both places.

Loosen radiator cap to prevent system from air locking, which will retard draining. Stay near tractor and make sure system is completely drained.

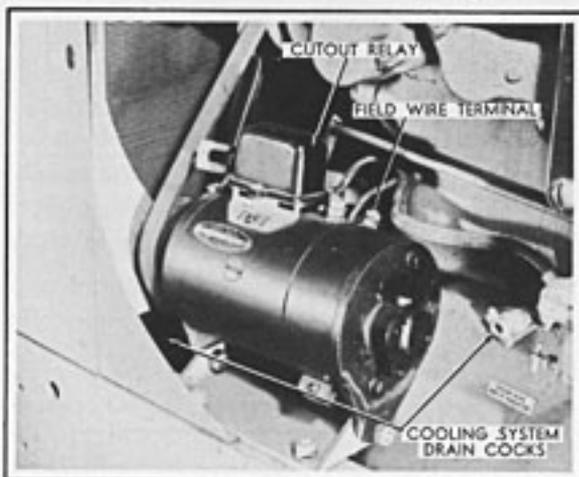


FIG. 7

### ANTI-FREEZE SOLUTION

During freezing weather it is advisable to fill the cooling system with anti-freeze solution. If low octane fuel is used, alcohol should not be used in the cooling system, because of its low boiling point. When low octane fuel is used, ethelene glycol or distilled glycerin should be used because of the higher operating temperature used for this type of fuel.

## PRESSURE RADIATOR

The pressure radiator allows the use of a higher operating temperature. The cooling solution (pure water) will not boil in the pressure radiator until a temperature of 230° F. is reached.

To remove the radiator cap, turn to the left until it stops. Push down and continue to turn to the left until the cap is released.

Do not remove the cap when the temperature is

above 212° F. as the cooling solution will break into a violent boil which may splash onto person removing cap.

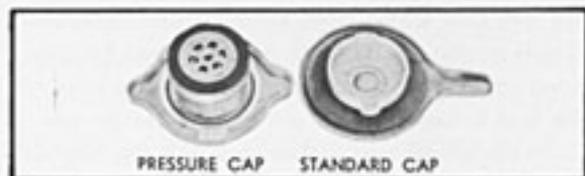


FIG. 8

## PREPARING THE TRACTOR FOR USE

1. Familiarize yourself with the tractor and its operating controls.
2. Inspect oil level in engine oil sump.
3. Inspect oil in air cleaner cup.
4. Check all points of lubrication. Refer to lubrication chart.
5. Fill cooling system with water or anti-freeze.
6. If gasoline is to be used as fuel, fill large tank with gasoline. If low octane fuel is to be used, fill large tank with tractor fuel and small tank with gasoline for starting purposes. Never fill tanks when engine is hot or running. Shut engine off and allow to cool.
7. Check air pressure in tires.

## OPERATING INSTRUMENTS

### AMMETER

The ammeter indicates the charging or discharging rate of battery. If ammeter should register with lights off, disconnect the battery cable, to prevent the discharge of battery, until the difficulty is located and corrected. Such a condition is usually caused by a worn or frayed wire making a short circuit or by cut-out relay points being stuck together.

### OIL PRESSURE

When the engine has started see that the oil pressure gauge is registering pressure. Do not operate

engine unless oil gauge registers. While operating engine look at oil pressure gauge at frequent intervals to make sure oil is being circulated by the pump. The oil pressure indicator needle should always remain near the O, R or M in the word normal, when the engine is hot and running at its normal speed, a slight decrease will be noted when engine idles.

### TEMPERATURE GAUGE

The temperature gauge is provided for a visual check on operating temperature.

On units equipped with pressure radiator, the gauge is marked in green for normal with a range of 170° F. to 220° F. On older units not equipped with pressure radiators the gauge is marked normal in green with a range of 170° F. to 200° F.

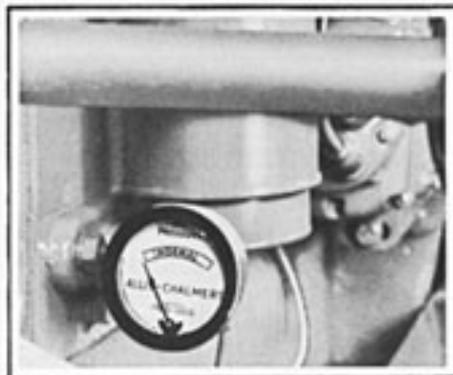


FIG. 9



FIG. 9a

## OPERATING CONTROLS

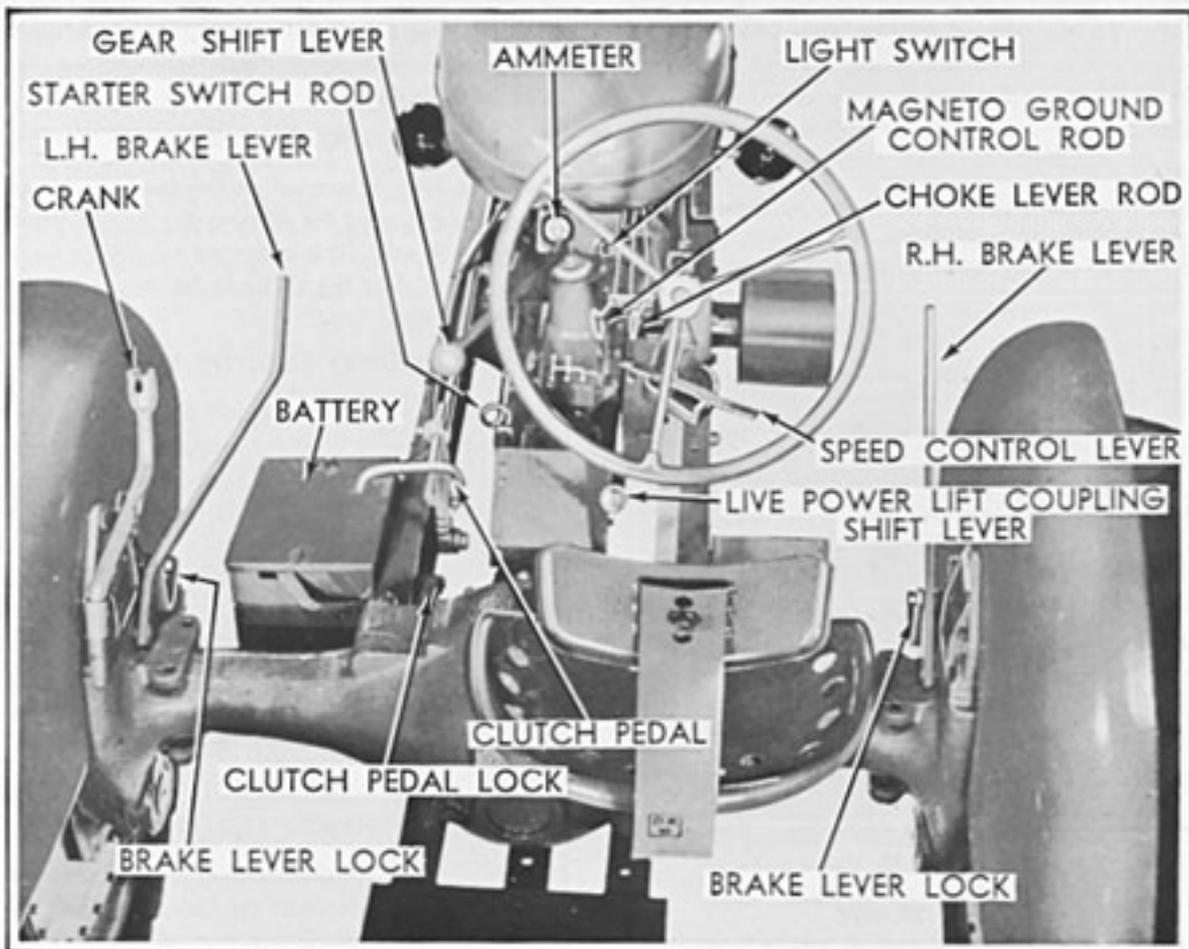


FIG. 10

### RADIATOR SHUTTER OR CURTAIN

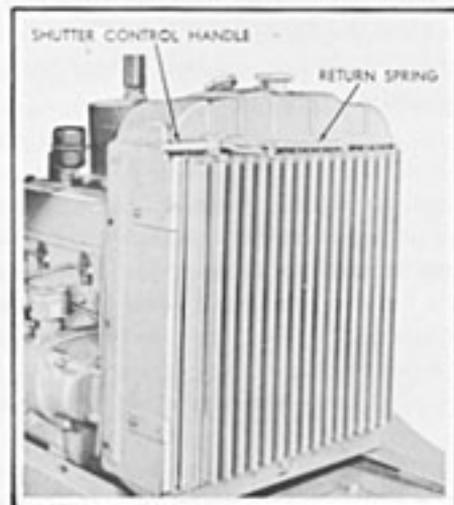


FIG. 11

The shutter is provided for controlling the operating temperature of engine. Turning the screw crank, located on right hand side of radiator, to the right opens the shutter. On units without shutter a curtain was furnished.

Always close shutter or raise curtain before starting engine.

### LIGHT SWITCH AND GENERATOR CONTROL

The generator has two charging rates. These are controlled by the light switch.

When the light switch is pushed all the way in, the lights are off and the charging rate is about 3 amperes. When the switch is pulled out to first notch the lights are on and the charging rate remains about 3 amperes. When the light switch is pulled

all the way out the lights are off and the charging rate is increased to about 10 to 13 amperes. This latter position should only be used when through some abnormal condition the battery is in partially discharged condition. In most tractor operation the trend will be to overcharge the battery.

### FUSE

The light circuit is provided with a fuse. This fuse is located on the inside of the instrument box.

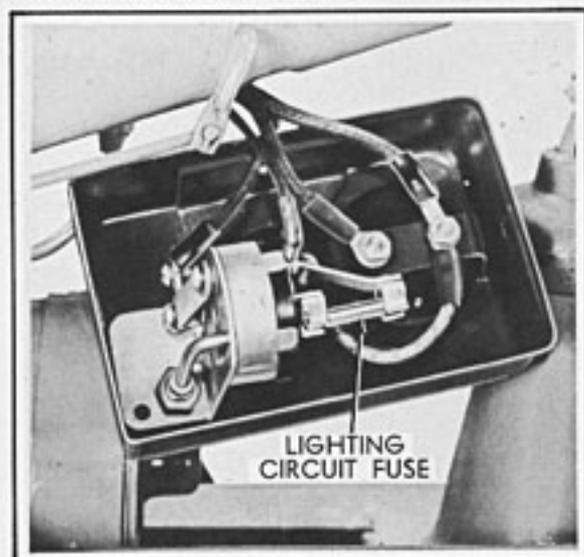


FIG. 12

### GOVERNOR

The engine R.P.M. is adjustable by throttle only. The governor is of the variable speed type and will control the desired R.P.M. within the range of low idle and 1625 R.P.M. To insure good governor action it is important to have all linkage from governor to carburetor, work freely.

### STARTER PEDAL ROD

The starter rod is located on the toe plate immediately in front of the operator and slightly to the left. Engage the starter firmly to insure good switch contact. Release immediately when engine starts.

### P.T.O. LEVER

The P.T.O. lever is attached to the lower end of the steering column post. To engage depress clutch pedal and pull up on rod.

### POWER LIFT TRIP PEDAL

The power lift trip pedal is located on the right

hand frame channel immediately back of the power lift. To operate, push pedal forward until cam is released. Release pedal quickly. The pedal must be tripped once to lower implement and once to raise the implement.

### CHOKE LEVER

The choke lever is located on the steering column support and is used for starting the engine when the engine is cold. It is operated by pulling back on the rod to close the choke in the carburetor air inlet.

### MAGNETO SHUTOFF LEVER

This lever is located on the left hand side of the choke lever and is used for stopping the engine. Pull back as far as possible and hold until the engine stops. It will move back on the "on" position when released.

### CLUTCH

The clutch is provided for engaging or disengaging the power of engine from the transmission. When using clutch depress pedal fully and allow tractor and clutch to come to a full stop before attempting to shift gears.

### LIVE POWER LIFT LEVER

This lever is used for disengaging the power to the rear wheels, in order that the power lift may be operated while tractor is standing still. Move lever forward to engage.

### BRAKES

Brake levers are located near the right and left fenders for engaging the brakes. Engage as evenly as possible. Locks are provided to hold brakes in the engaged position if required.

### STARTING THE ENGINE

Close radiator shutter. Place gear shift in neutral position. In cold weather hold clutch pedal down until engine starts to relieve starter load. If gasoline is to be used open valve under large tank. If low octane fuel is used open valve under small tank. Move throttle control forward about four notches. Pull carburetor choke rod. Push starter control lever rod. When engine has turned one complete turn, push choke rod forward. As soon as engine starts, release starter rod. If weather is cold more choking may be required.

## HAND CRANKING

Push clutch pedal down and engage pedal lock. Proceed as under "Starting Engine." Engage crank grasping handle with left hand, placing thumb on same side of crank as fingers. Crank in quarter turns only, pulling up and over. **DO NOT ATTEMPT TO "SPIN" ENGINE.** When engine starts release clutch pedal lock. Do not operate engine with pedal locked forward.



FIG. 13

## OPERATING TEMPERATURE

**Low Engine Temperatures Cause Condensation, Sludge and Corrosion. Keep Engine Hot.** Always close radiator shutter completely when engine is started and keep it closed until engine reaches operating temperature (170° F. when using gasoline, 190° F. when using low octane fuel). Then open shutter amount necessary to maintain this temperature.

If burning low octane fuels, operate engine on gasoline until temperature reaches 190° F. to 200° F. before switching to low octane fuel. This is readily done by shutting valve under small tank and opening valve under large tank. Never open valve under larger tank before shutting valve under small tank as this will mix the two fuels.

The minimum operating temperatures are 170° F. for gasoline and 190° F. for low octane fuel. Strict adherence to these recommendations will guard against excessive dilution of lubricating oil, condensation and corrosion.

## STOPPING THE ENGINE

Place throttle in idling position and allow to idle for a few moments. Pull out magneto shut-off rod on steering post and hold until engine stops. If using low octane fuel, close valve under fuel tank and allow engine to run until it stops from lack of fuel. This will avoid mixing of the two fuels in carburetor.

## STARTING TRACTOR

With the engine running, push and hold the clutch pedal forward to release clutch. Hold in this position until the clutch stops revolving. Move the gear shift lever to the desired speed position. Release the clutch pedal slowly to avoid jerking. Have throttle open far enough to avoid stalling engine.

## STOPPING TRACTOR

Push clutch pedal forward, allow tractor to stop or if necessary apply brakes. Place gear shift lever in neutral position. Release clutch pedal.

## BREAK-IN PERIOD

The tractor engine is assembled and tested and is ready for work, however for best results the unit should be used on light or medium loads for the first 10 to 20 hours of operation if possible. It should also be operated at the full RPM of engine. If necessary use a lower gear to keep from overloading engine.

In cold weather the oil should be changed after the first 20 to 30 hours of operation. However if the proper temperature is maintained at all times the lubricating interval outlined in the lubrication guide may be followed.

## OPERATING TRACTOR

Easy turns may be made by simply turning steering wheel to right or left as desired. Hand brakes are provided for making extremely short turns. Turn steering wheel in direction desired and then apply brake on side towards which the tractor is being turned. Do not attempt short turns when traveling at high speeds. When using the brakes for stopping,

apply pressure to both brakes so that the brakes are engaged evenly. This will bring the tractor to an even stop without skidding. Latches on brake levers are conveniently located for locking the brakes in the engaged position for holding tractor on an incline, or for belt work.

Operate engine at full throttle or nearly full throttle and select the desired transmission speed change gear to suit the work being done. To shift to low speed or first gear with the gear shift lever in neutral position, disengage clutch, pull gear shift lever to left forward. Second from neutral, left and down, third gear right and forward, fourth gear to right and down. To shift to reverse pull up on lever under gear shift ball and push lever to extreme right and down. Severe overloads may be thrown on engine if tractor is operated at reduced engine speeds on heavy loads.

Adjust the drawbar height to fit the implement being drawn. The drawbar should be placed as near in the centerline of draft as possible.

Rear wheel weights are available for securing extra traction on heavy loads.

#### OPERATING BELT PULLEY

Push clutch pedal down and engage pedal lock. Loosen belt pulley retaining screw and push pulley assembly into the tractor. There is an arrow stamped on tractor frame and on pulley tube. These

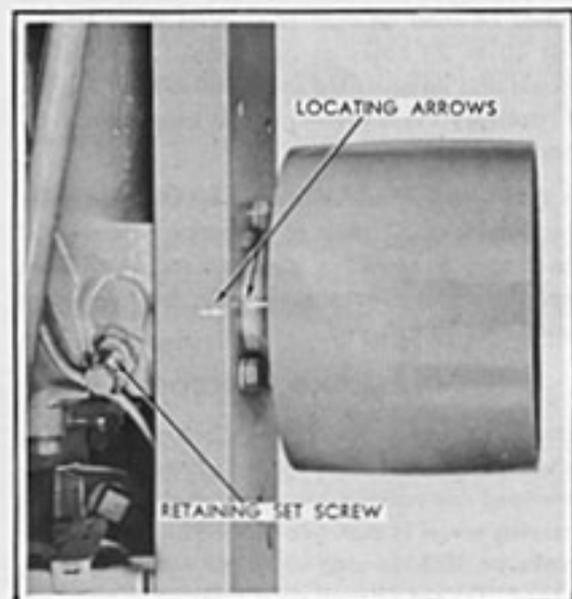


FIG. 14

arrows must be aligned to obtain proper gear mesh. Tighten lock screw and jam nut. Release clutch pedal. The clutch pedal lock may be engaged when pulley is stopped, however the engine should be stopped if any work is to be done on the driven machine.

#### OPERATING THE POWER LIFT

The live power lift coupling may be disengaged by pushing the shifter lever down. This allows the lift to be operated while tractor is stopped. To operate the power lift the transmission must be in gear and the clutch engaged. To raise or lower implement push trip pedal forward and release instantly.

On the side of the lift cam assembly is a small lever. This lever has two positions marked "cult" and "list." When in the "cult" position the attached implement will drop to the ground when the trip pedal is released. When in the "list" position the implement is lowered slowly to the ground under power. This latter position is for use of listers and bedders.

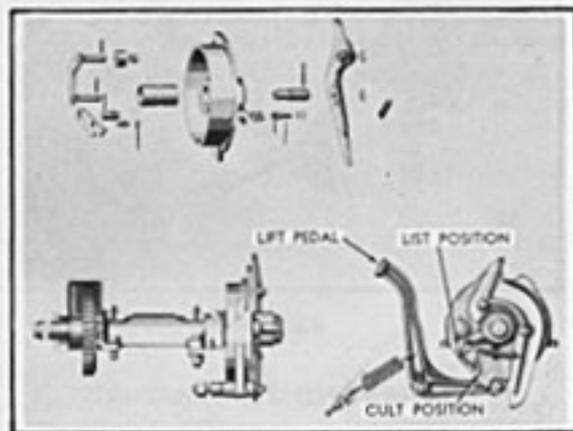


FIG. 15

#### OPERATING THE POWER TAKE-OFF

The power take-off is used to furnish power to driven machines and operates at a speed of 535 R.P.M. at 1300 R.P.M. of engine. The speed of the P.T.O. remains at 535 regardless of what gear the tractor is operated in. The P.T.O. is provided with a shift lever for engaging or disengaging. To engage the P.T.O., push the clutch pedal forward the same as for shifting gears in the transmission. Allow the clutch to stop and also if the tractor is in motion allow it to stop and pull up on the P.T.O. shift rod located near the steering rod support. If the P.T.O. is engaged, do not attempt to

shift transmission gears until driven machine stops. A brace between the P.T.O. drain plug and the tractor side frame channel is supplied with the P.T.O. Keep this brace tight, however do not over-tighten.

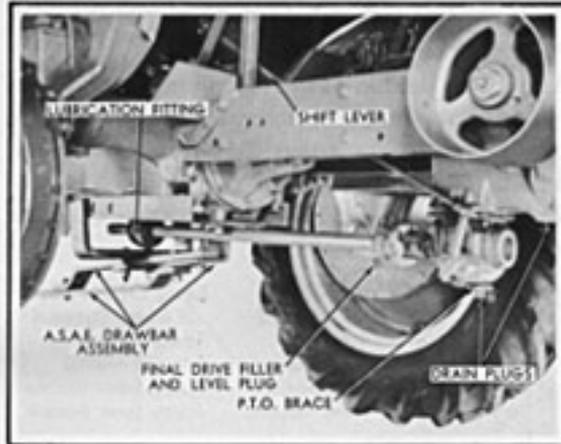


FIG. 16

## FIELD ADJUSTMENTS

### TIRE AIR PRESSURE

The proper air pressure of tires must be maintained at all times, otherwise early tire failure will result. Extra weight added to tractor changes the air pressure requirements of tires. When using mounted equipment add one extra pound pressure for each 800 lbs. of additional weight.

It has been common practice to equalize traction when plowing by decreasing the pressure in the land wheel. This causes early tire failure. The proper method is to increase the pressure of furrow wheel to 16 lbs.

### LIGHTS

The head lights are adjustable in or out and may be adjusted up or down, by loosening the retaining thumb screw and adjusting the lights to the desired position.



FIG. 17

### FRONT WHEEL SPACING

On tractors equipped with reversible front wheels, the wheels may be turned out to fit certain row conditions such as following lister ridges.

### REAR WHEEL TREAD ADJUSTMENT

The rear wheels are adjustable in width for meeting the requirements for row spacing. They are adjusted by reversing the tire and rim on wheel and turning the wheel on hub, giving four positions. Always tighten lug bolts evenly so rim and tire are mounted truly.

When used for plowing, always have the wheels in the narrowest position. When reversing tires and rims they must be reinstalled so the tread runs in the proper direction. This necessitates changing tire from one side of tractor to the other.

The proper direction of rotation is so the open end of "V" is towards the front. (When viewing track.)

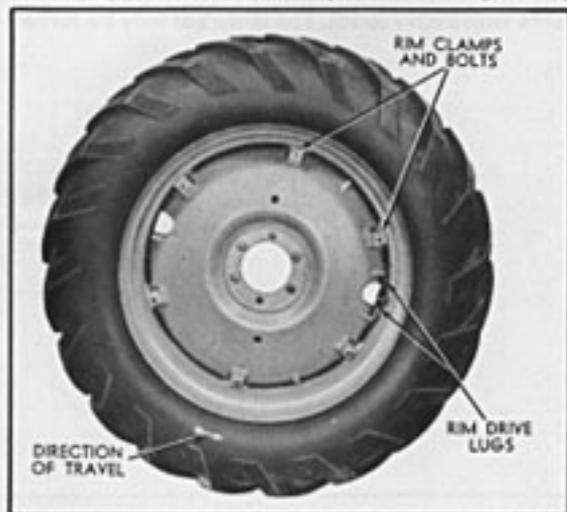


FIG. 18

Older tractors with one piece wheel and rim have only two positions. Wide and narrow.

For safety: Use blocks in addition to jack if removing wheel or tires. The following rear tire treads can be had by reversing dished wheels or rims: 65 inch, 68 inch, 73 inch, 76 inch. Below is a table showing the positions of wheels and rims to obtain the desired tread.

Tread	Wheels Turned	Long Offset Side of Rims Turned
65"	Toward tractor	Toward tractor
68"	Away from tractor	Toward tractor
73"	Toward tractor	Away from tractor
76"	Away from tractor	Away from tractor

### WHEEL WEIGHTS AND CALCIUM CHLORIDE

The tires are filled with a 15% calcium chloride solution for adding weight to the tractor. This weight is applied closer to the ground than ordinary weights which adds stability to the tractor, also it is a free wheeling weight and eliminates extra shock loading to gears.

In extreme conditions where tire slippage is excessive, cast iron weights may be used.

### DRAWBAR

The drawbar of drawn implement should be adjusted to meet the requirements of the load. The line of draft effects steering and traction. It can also cause the drawn implement to put excessive load on the tractor. The pins may be removed from the sides of the drawbar and the drawbar allowed to swing. This will allow easier steering on sharp turns with heavy loads. The drawbar may be turned

over to increase its height. Do not hitch to tractor at any point except drawbar.

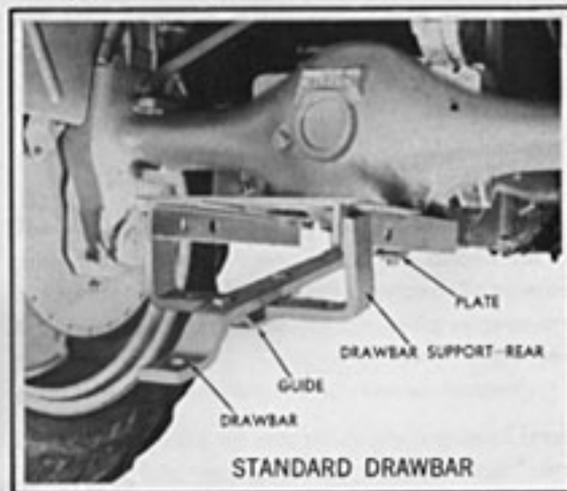


FIG. 19

### A.S.A.E. DRAWBAR

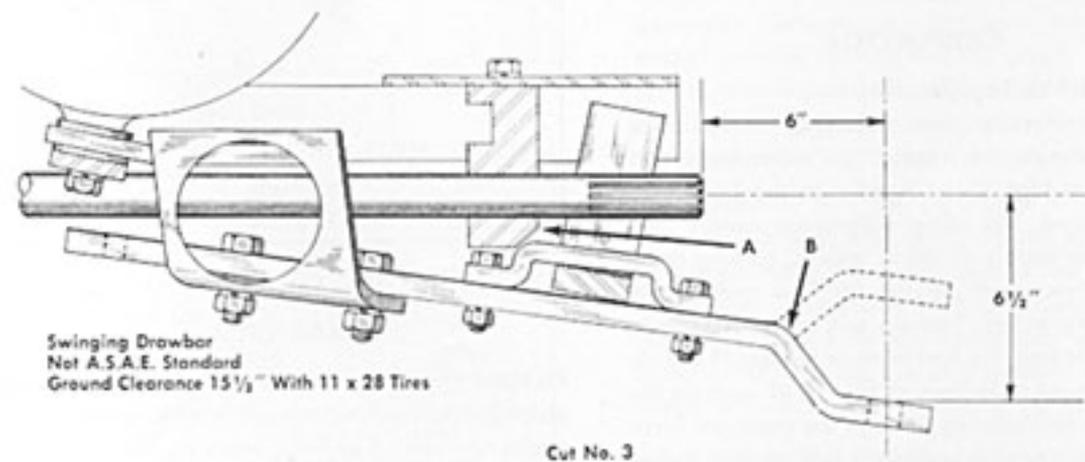
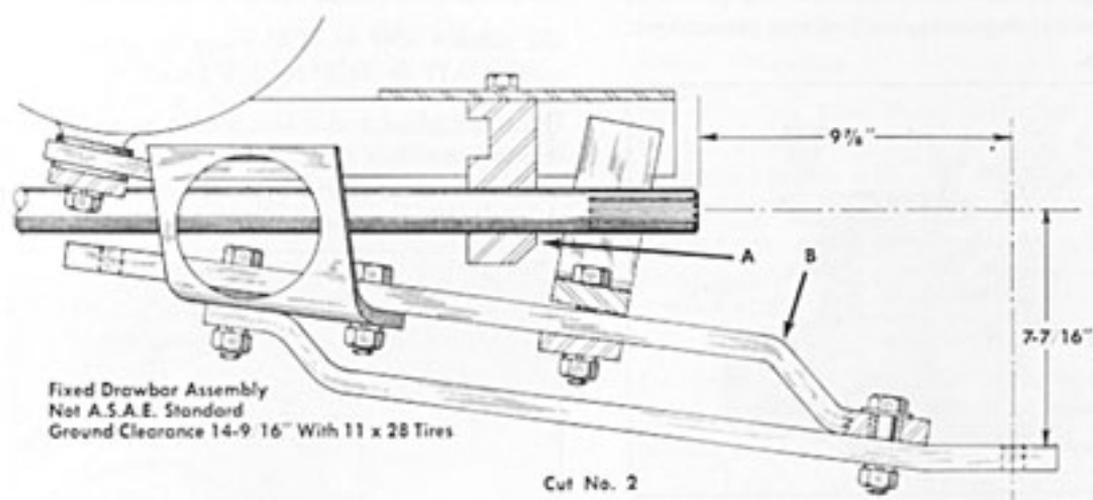
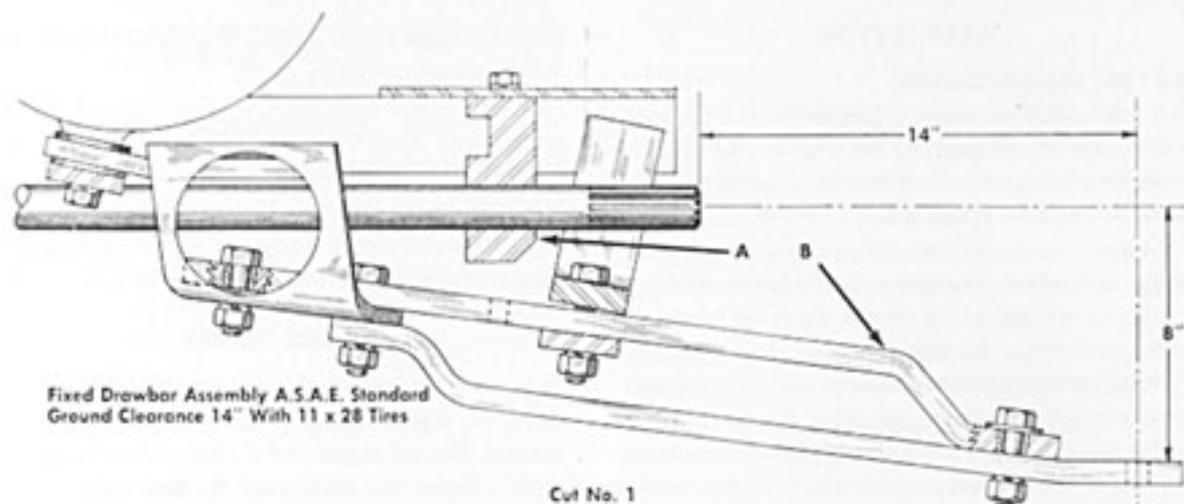
This drawbar is for use on P.T.O. operated machines. It is adjustable in length and height. The cuts show the various positions.

For use with machines built to A.S.A.E. dimensions, install as shown at cut 1.

For use with model 60 ALL-CROP harvesters built prior to models with A.S.A.E. dimensions, install as shown at cut 2.

For ordinary drawbar work other than above, install as shown at cut 3.

In all cases P.T.O. bearing housing must be chamfered or ground off  $9/16"$  x  $45^\circ$  at point marked "A."



## CARBURETOR

### No. 161 Series Zenith.

This carburetor has three adjustments, one for controlling the idling speed of the engine and two for correcting changes in fuel and atmospheric conditions. To regulate idling speed of the engine adjust the stop screw on throttle valve arm on inner side of the carburetor. For correct fuel mixture at idling speeds of engine adjust needle valve on front top of the carburetor. Turn needle in for richer mixture. Normal setting is approximately one and one-half turns out. The main jet adjusting needle located on the lower front of the carburetor body regulates the fuel mixture at working speeds. Turn this needle out for richer mixture. Normal setting is two to three turns out depending on fuel and atmospheric conditions.

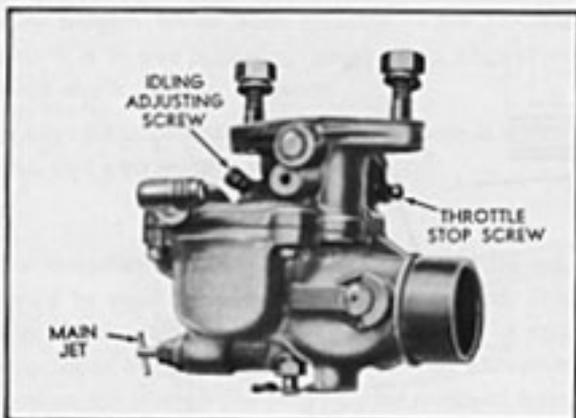


FIG. 21

## CARBURETOR

### Model 124½ Top Zenith.

This carburetor has two adjusting needles. The idling needle on the front of the upper body and the main or high speed needle on the bottom of the fuel bowl. The idling adjustment needle controls the air supply at idling speeds, turning in on the air screws shuts off the air flow making the fuel mixture richer. Turning out on screw admits more air making the fuel mixture leaner. The main jet adjustment at bottom of fuel bowl controls the amount of fuel passing through the main jet. Turning in on this needle makes the fuel mixture leaner and turning needle out makes it richer. For best results turn needle in to where motor starts to skip or miss, then open it up to where motor runs smooth.

For continuous heavy loads a slightly richer mixture will give best results.

## CARBURETOR

### Model TSX 159 Marvel

The adjustments of the Marvel carburetor are the same as the Zenith. The main jet adjusting needle is located on the front upper portion of bowl.

## SPARK PLUGS

The spark plugs should be removed every 200 hours of operation, cleaned and the points re-spaced. The point gap should be set from .030" to .040". Make this adjustment by bending the outside electrode. Never bend center electrode.

Use autolite AN7 or AC45 plugs for gasoline and autolite A11 or AC47 for low octane fuel.

The spark plugs and cables should be maintained in good condition and free of dirt and grease. In the event of ignition difficulties they should be checked before opening up magneto.

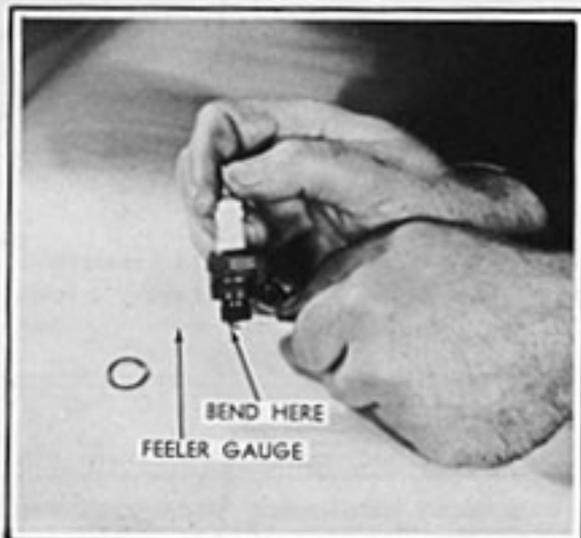


FIG. 22

## MAGNETO

**To time the magneto:** Crank engine until No. 1 piston is approaching top center on its compression stroke and mark F or firing mark appears in center of inspection opening in bottom of clutch housing.

The compression stroke of No. 1 piston can be determined by removing the spark plug and plac-

ing thumb in spark plug hole. Crank slowly until air is forced past thumb. The mark F on flywheel will be very near the inspection opening at this time. Turn until centered.

Remove the distributor compartment cover from the magneto that is retained by two screws. Turn magneto impulse coupling counter clockwise until the rotor contact lines up with the timing lug, located in upper left hand corner of distributor compartment. Couple magneto to engine. If rotor does not exactly line up with lug, turn magneto on engine until it does. The slotted hole for bolt is provided for this purpose.

Attach number one spark plug wire to upper terminal nearest cylinder block, number two to upper terminal farthest from block, number four to lower terminal farthest from block, and number three in remaining terminal. In event of difficulty in the ignition system, plugs and wires having been checked, remove the distributor compartment

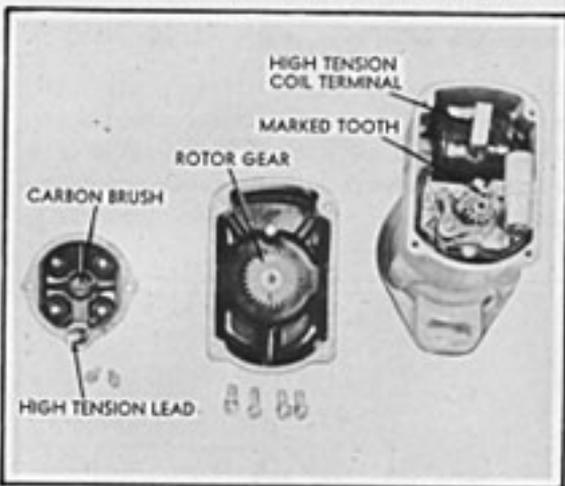


FIG. 23

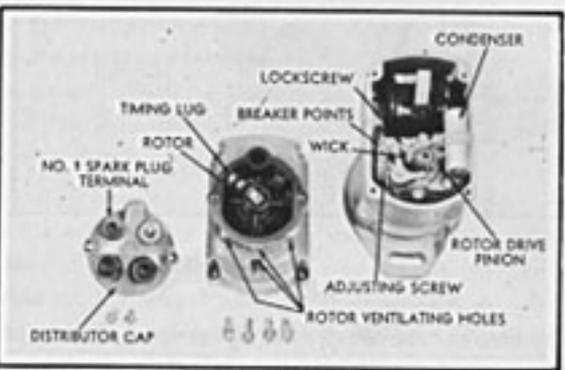


FIG. 24

cover held in place by four screws. If contact points are pitted or pyramided file smooth with a fine cut file.

If points are worn or badly pitted they should be replaced. Points should have .020" separation when breaker points rest on high side of cam. Points may be adjusted by loosening lock screws and turning adjusting screw.

Place one drop of oil on cam lubricating wick. Reassembling distributor cap to magneto involves meshing of rotor pinion with distributor gear as follows: The marked tooth of rotor drive gear (beveled tooth) must mesh with tooth marked "C" on rotor gear. If gaskets are broken they must be replaced. Make sure the vent holes are open in rotor compartment. If these holes become plugged, the magneto will not be ventilated. The magneto was permanently oiled at factory and needs no further lubrication.

For difficulties other than above mentioned, remove the magneto and take it to the nearest authorized service station for check up and repair. **CAUTION:** Failure to service spark plugs as recommended, causes a severe overload to be placed on magneto.

## GENERATOR

The generator charging rate is controlled by a resistance unit built into the light switch. This resistance unit limits the amount of current allowed to flow through the field coils of the generator.

The tractor is shipped with the field wire on the generator disconnected. This wire must be connected in order to complete the circuit. If the battery is removed and the engine must be operated without the battery in place, disconnect the field wire to prevent damage to the generator.

The generator very seldom causes any difficulty, however if it does it is usually caused by a dirty or oily commutator. To clean, remove the band over the brushes. Use grade "00" sandpaper. With the engine running hold the sandpaper against the commutator. Do not use emery paper or cloth as emery will cause short circuiting.

The cutout relay is mounted on the top of the generator and provides a switch for closing the generator circuit. If the points in the cutout fail to close the ammeter will remain at zero. Do not

operate the tractor in this condition as damage to the generator will result.

If the points fail to open when the engine is stopped, the ammeter will show "discharge." Disconnect the battery ground cable until the difficulty is located.

For best results, remove the generator and have it checked by an authorized service station.

### STARTER

The starter very seldom causes difficulty, however if it fails to turn the engine properly with a fully charged battery, check all connections making sure they are clean and tight. A very firm pressure on the starter pedal will minimize pitting of the contact points.

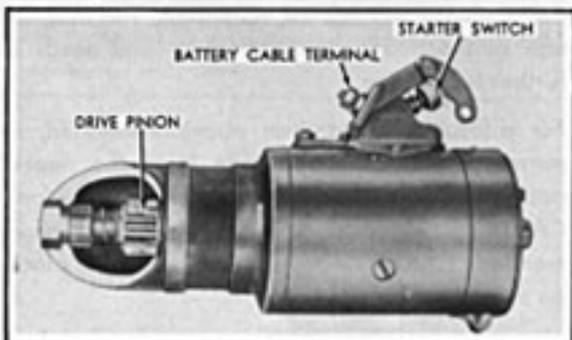


FIG. 25

### OIL SUMP

Remove the oil sump each season and clean it and the oil pump screen.

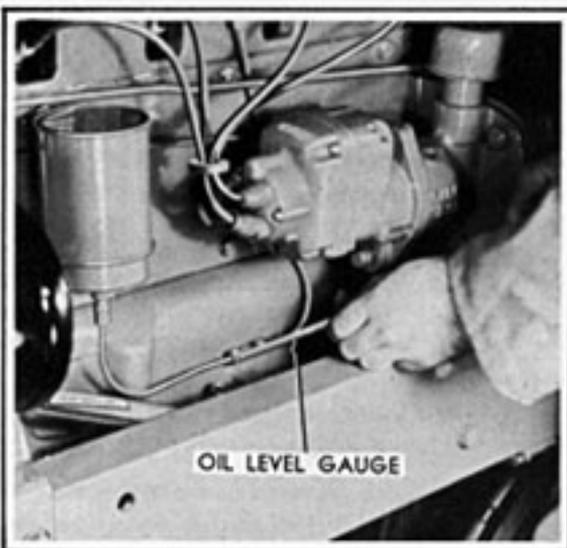


FIG. 26

### CLUTCH ADJUSTMENT

The proper clearance of  $\frac{1}{4}$ " must be maintained between the clutch release levers and the clutch release bearing.

To adjust: remove the large cover from lower side of clutch housing and turn each of the adjusting screws until  $\frac{1}{4}$ " clearance is obtained. This will allow approximately  $1\frac{1}{4}$ " of free pedal travel. Adjust each lever exactly the same and tighten locknut.

### VALVE TAPPET CLEARANCE AND VALVES

Correct clearance between valve stems and rocker arms should be maintained at all times.

To adjust clearance, turn engine with crank until valve closes and push rod is at its lowest position.

Loosen valve adjusting screw lock nut and turn screw until there is  $.010$ " clearance between valve stem and rocker arm. Tighten lock nut and recheck. The engine must be heated to its normal operating temperature when making this adjustment.

Lack of compression because of leaky valves may be caused by either insufficient clearance between rocker arms and valve stems, by the collection of carbon at the valve seats, or by carbon or a gummy substance on the valve stems preventing the closing of the valves.

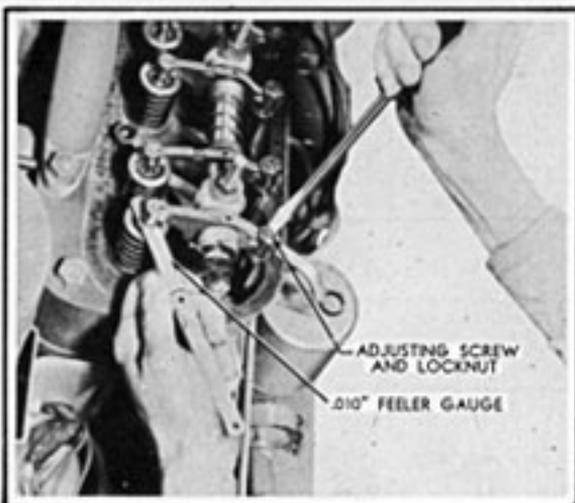


FIG. 27

### BRAKES

The brakes may be adjusted by removing the brake lever cover and turning nut to right to tighten brake.

The brakes should be adjusted as evenly as possible and so that brake latch can be engaged and still be effective. If the brake is adjusted too tight the latch cannot be engaged.

### FAN BELT ADJUSTMENT

On tractors equipped with generators, loosen the generator adjusting screw and move the generator away from cylinder block until the belt has about one inch free movement at point "A."

On tractors without generators, loosen the two sheave adjusting clamp bolts and turn front section of sheave to the left. If when the end of the diagonal slot is reached, and more adjustment is needed, two extra holes are provided and the clamp bolts can be relocated in these holes. If fan belt bottoms in either of the sheaves the belt should be replaced.

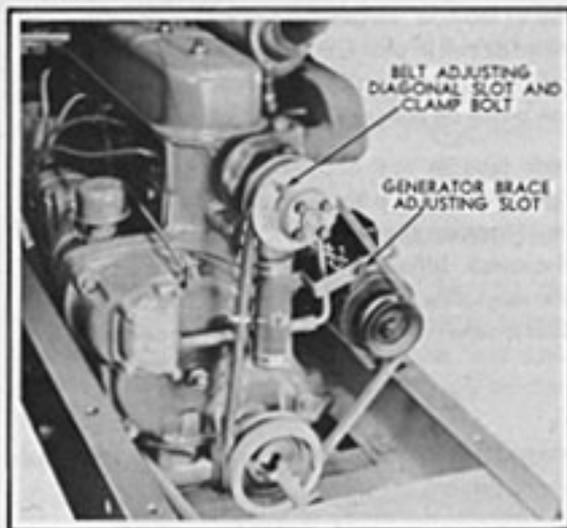


FIG. 28

### FRONT WHEEL BEARING ADJUSTMENT

The front wheels are mounted on taper roller bearings. At frequent intervals remove the weight from wheels and check for side play. If side play exists it will indicate bearings are loose and it will be necessary to adjust bearings.

To adjust bearings: Remove the hub cap and tighten the nut on end of spindle until all play is removed and bearings have a free rolling fit. The inside of the wheel hub is provided with a felt washer to protect bearings from dirt and to retain grease in the hub. This felt washer should be replaced each season, or oftener if necessary.

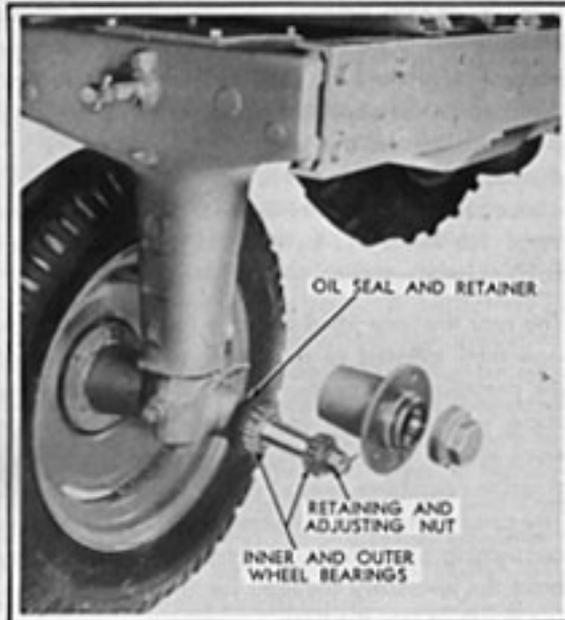


FIG. 29

### WIDE FRONT AXLE

The "tow in" of front wheels must be set  $\frac{1}{8}$ " narrower at front than back measured at hub height. To make adjustment, have tractor on level ground. Loosen tie rod clamps and slip joint until desired toe in is obtained.

### SINGLE FRONT WHEEL

To adjust the bearings of the single front wheel raise the front wheel from the ground and block tractor solidly.

Remove wheel assembly from fork. Remove shims from between bearing retainer and wheel hub. Adjust the bearings to a free rolling fit without end play or binding.

### REAR WHEEL BEARING ADJUSTMENT

Remove the weight from rear wheels at regular intervals and inspect adjustment of bearings. Correct adjustment of these bearings play an important part in the life of final drive gears and also cork oil seal. Bearings are adjusted by tightening nut on end of stub axle until all play is removed and bearings have a free rolling fit.

### HYDROMATIC TRACTOR TIRES

As water alone will freeze in cold water, Allis-Chalmers' tractor tires are filled with the proper

## SYNTHETIC TIRES AND TUBES

quantity of 15% calcium chloride solution. Calcium chloride will in no way harm the casings, tubes or valves. A mixture of 15% calcium chloride and 85% water has a specific gravity of 1.140 and may be tested by the use of an ordinary battery hydrometer. This mixture will form a slush at 10° F. above zero, but will not freeze solid at 20° F. below zero. No harm will be done to the tires at even colder temperatures.

The rear tires are filled about  $\frac{3}{4}$  full of the solution and then inflated to the standard recommended air pressure. This amount of solution will give the same weight as two cast iron wheel weights on each wheel. If more weight is needed for difficult traction conditions, wheel weights may be added. Tire companies have instructed their service stations concerning liquid ballast for tractor tires and they have the necessary facilities for mixing and injecting this fluid into the tires.

If the valve core is to be removed for any cause, it will be necessary to jack up tractor and turn the wheel, until the valve stem is on top, otherwise the solution will be lost.

Calcium chloride and water solution as supplied in tractor tires is in no sense dangerous, but because it may attack clothing or cause skin irritation in some persons, especially if it comes in contact with open cuts or sores, we urge every one to avoid coming in direct contact with it.

A remedy after having contacted this solution, is to simply wash the skin with plenty of clean water.

The front tires of the "WC" tractor are not filled with solution.

### TIRE INFLATION

The recommended inflation is 12 lbs. for the rear tires and 28 for the front tires.

When plowing, the furrow wheel has greater traction than the land wheel, do not decrease pressure to equalize, instead increase the pressure in the furrow wheel to 16 lbs.

High pressure will cause no damage to tires unless slippage is excessive. Watch the tread wear and correct tire pressure if it is excessive or uneven.

When mounted implements are used, additional pressure should be used. Use about 1 lb. additional air pressure for each 800 lbs. of weight added.

Synthetic tires are handled in the same general manner as natural rubber tires, as outlined above, but with the following exceptions. Tires must not be operated or permitted to stand with low air pressure, this will be detrimental to casing. In order to secure service equal to tires and tubes made from natural rubber, air pressure must be maintained at all times, at the recommended figure.

Do not inflate tube when removed from tire more than enough to make it fill out round. Tubes inflated beyond their elastic limit may not return to their original shape and size, also there is danger of tube tearing when not supported in casing.

When repairing tube, bevel sides of cut and slightly increase length and width. Buff tube lengthwise of grain or mold marks. Place patch on inside of tube at least  $\frac{1}{2}$ " larger than opening on each side. Knead or roll in place, fill cut with pure gum rubber and place second patch on outside, cutting it larger than patch on inside. Vulcanize at least 10 minutes.

Place tube in tire and apply a good grade of vegetable oil soap to base of tube and inside of tire. Place on rim and adjust tube and tire evenly all around. Inflate to seat tire on rim then deflate. Tire may now be filled with calcium chloride in usual manner or inflated to recommended pressure.

## ELECTRICAL EQUIPMENT

Except for minor adjustments, see your authorized service station.

### BATTERY

The starting and lighting system uses a six volt battery, designed and built to meet the requirements of the tractor.

Check the electrolyte (solution) in the battery at least once each week to see that it is at the proper level. This level should be maintained to lower edge of filler tube (which is about  $\frac{1}{4}$ " above top of separators). The battery supplied with your tractor has a lead washer type valve in the filler tube to prevent over filling. Never add anything to the solution except DISTILLED or RAIN water. Boiled water will not do. The supply of water should be kept in clean, covered vessels of glass, china, rubber, or lead.

Do not allow lighted matches or an open flame of any kind to come in proximity to battery cell covers. The need for frequent addition of water to battery, indicates the charging rate maintained is too high.

In cold weather, add water only immediately before running the engine so that the charging will mix the electrolyte and water and prevent freezing. A fully charged battery will not freeze in very cold temperatures, but if only partly charged, will freeze and be ruined at much higher temperatures. Weekly readings of each battery cell should be taken with a battery hydrometer. The readings indicate as follows: 1.280, full charge; 1.225, half charge; 1.150 discharged.

By taking frequent readings with the hydrometer, it is possible to keep generator charging rate so adjusted as to have battery fully charged, but not over charged. When taking the readings, return the electrolyte to the cell from which it was taken.

Due to the infrequent use of tractor in cold weather and the extra amount of electrical energy required by starting motor, it is usually necessary to use a higher charging rate than in summer, to keep

battery fully charged. Refer to instructions on ammeter for charging information.

Keep the battery clean by using a stiff bristle brush — not metal. If terminals are corroded or if the battery is acid soaked, wash with a soda solution (¼ lb. of soda to one quart of water). Vent plug must be kept in place when cleaning battery. After washing battery check gas escape holes in vent caps making sure they are open. If the battery is removed from tractor, disconnect the grounded positive terminal first. When re-installing be sure the ground cable is installed last and connected to the positive post. Battery box cover should be in place and tightened snugly to prevent battery from being damaged by vibration. (Be sure that wood spacer is between top of battery and cover.) Any non-insulated metal across top of battery will short and cause it to lose its charge.

In event the tractor is not to be used for some time, it is advisable to remove the battery, have it fully charged and stored in a dry basement or some similar place where the temperature is to be as low as possible, but above freezing.

### **DIAGNOSING ENGINE DIFFICULTY**

The following suggestions are listed for your assistance. You can make simple adjustments on your tractor that will improve its operation and save you the time and expense of engaging a serviceman.

Always make one adjustment at a time and if the adjustment made does not improve the condition, return to the original setting before proceeding to the next adjustment.

#### **ENGINE FAILS TO START**

- Fuel valve shut off.
- Low octane fuel in carburetor from last operation.
- Float valve sticking.
- Fuel tank empty.
- Clogged fuel filter or fuel lines.
- Dirty or clogged air cleaner.
- Leaking or loose manifold.
- Engine flooded.
- Broken wires from magneto to engine.

- Wires not in proper position.
- Switch not turned on or defective.
- Spark plugs wet, dirty, or broken.
- Magneto weak or out of time.
- Spark plug points not properly spaced.
- Magneto points pitted, dirty or improperly spaced.

#### **ENGINE OVERHEATED**

- Low water level in cooling system.
- Radiator clogged.
- Fan belt slipping.
- Collapsed radiator hose.
- Thermostat stuck.
- Tractor overloaded.
- Ignition timed late.
- Fuel mixture too lean.
- Weak spark.
- Diluted lubricating oil.

Pulling heavy load at reduced R.P.M.

Water pump impellor vanes broken.

### **GENERATOR FAILS TO CHARGE**

The cut-out relay, attached to generator case, prevents the battery from discharging through the generator when generator is idle.

If ammeter fails to show a charging rate one of the following may be the cause:

1. Loose or corroded wire connections.
2. Broken wires.
3. Faulty ammeter.
4. Oily or gummy generator brushes or commutator.

5. Worn generator brushes.

Commutator and brushes can be cleaned with grade "00" sandpaper. (Do not use emery cloth.)

### **STARTER FAILS**

The starting motor seldom causes any difficulty, but if it should, any one of the following may be the cause:

1. Exhausted battery.
2. Broken or loose wires.
3. Loose or corroded battery terminals.
4. Starter switch making poor contact.

## **STORAGE OF TRACTOR**

### **TRACTOR PROTECTION IS POCKET-BOOK PROTECTION**

If tractor is stored for any length of time, a few precautionary measures are helpful in preserving various parts, also in avoiding future difficulty.

1. Store tractor under cover. If impossible to place tractor under cover, be sure to cover air stack and exhaust pipe.
2. Drain radiator and engine block.
3. To avoid gum content collections, drain both fuel tanks and carburetor.

4. Leave radiator and fuel caps slightly loose to protect gaskets.
5. Block tractor up to remove weight from tires and to keep tires from contact with moist floor.
6. Remove battery and store as recommended under "Battery," page 22.
7. Remove spark plugs and pour a small quantity of light motor oil on piston tops. Crank engine over a few times and replace spark plugs.
8. When tractor is removed from storage it should be serviced throughout, including draining and refilling the oil sump with fresh oil.

## SAFETY SUGGESTIONS

Many hours of lost time and much suffering is caused by the failure to practice simple safety rules.

### **It is Too Late to Remember What Should Have Been Done After the Accident Has Happened.**

1. Do not fill fuel tanks when engine is hot or while using a lantern or when smoking.
2. Do not attempt to spin engine when hand cranking.
3. Do not attempt to oil or grease a machine or tractor while it is in operation.
4. Do not wear loose fitting clothing that may be blown into moving parts.
5. Keep all shields and guards in place.
6. Place gear shift lever in neutral position when starting engine.
7. Machinery should only be operated by those who are responsible and delegated to do so.
8. Only one person — the operator — should be permitted on tractor when in motion.
9. The rate of travel on hillsides or curves should be regulated so there is no danger of tipping.
10. Do not remove radiator cap when engine temperature is above 212° F.
11. Brakes should be properly adjusted.
12. Do not drive too close to the edge of a ditch or creek.
13. Never operate your tractor in a closed garage or shed.
14. When tractor is hitched to a stump or other heavy load, always hitch to drawbar, and never take up slack in chain with a jerk.
15. Always keep tractor in gear when going down steep grades.
16. Do not leave the engine running unattended when any one is adjusting or repairing a driven machine.
17. Do not attempt to operate tractor unless you are in the driver's seat.
18. Provide a first aid kit. Treat all scratches, cuts, etc. with the proper antiseptic immediately.
19. Always stop power take-off before leaving driver's seat.
20. Never stand between tractor and drawn implement when hitching. Use an iron hook to handle drawbar.
21. Do not put on or remove belt from belt pulley while pulley is in operation.
22. Do not dismount from tractor while it is in motion.

# REPAIR PARTS SECTION

## REPAIR PARTS

Order all repair parts for this machine from your local "Allis-Chalmers" dealer.

To guide you in ordering repair parts, we have

prepared the following illustrations which identify the various assemblies and the basic parts of your tractor.

### HOW TO ORDER REPAIR PARTS

When ordering repair parts for your tractor, supply the following information:

1. The tractor and engine serial numbers.

The serial number of your tractor is located on rear of rear axle housing as shown in illustration below. Give the complete number and prefix letter. Example: "WC-152304."

The engine serial number is located on left-hand side of the engine as shown below: Give complete number and all the letters. Example: "W-164003G."

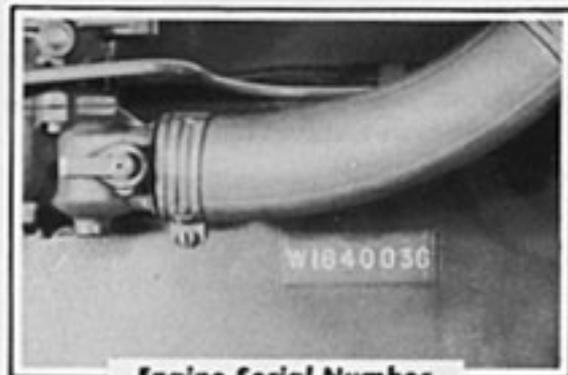
2. Mention if tractor is a standard, single front wheel, or wide front axle model.

3. State the common name of the part you wish to order, or a description of the part, and its location on the tractor.

4. Always print your name and post office address, where parts are to be shipped; also specify whether material is to be shipped by freight, express or parcel post.



**Tractor Serial Number**



**Engine Serial Number**

### IMPORTANT

Unless claim for errors is made immediately upon receipt of material it will not be considered. If damaged material is received, a full description of the damage should be made by the carrier agent on the freight bill. If this description is insisted upon, full damage can always be collected from the transportation company.

No responsibility is assumed for delay or damage to material while in transit. Our responsibility ceases upon delivery of shipment to the transportation company, from whom a receipt is received showing that shipment was in good condition when delivered to them; therefore, claims (if any) should be filed with the transportation company and not with the supplier.

**Order Repair Parts By Description. Always Give the Tractor and Engine Serial Numbers.**

The Model WC Tractor is available in Three Styles As Shown

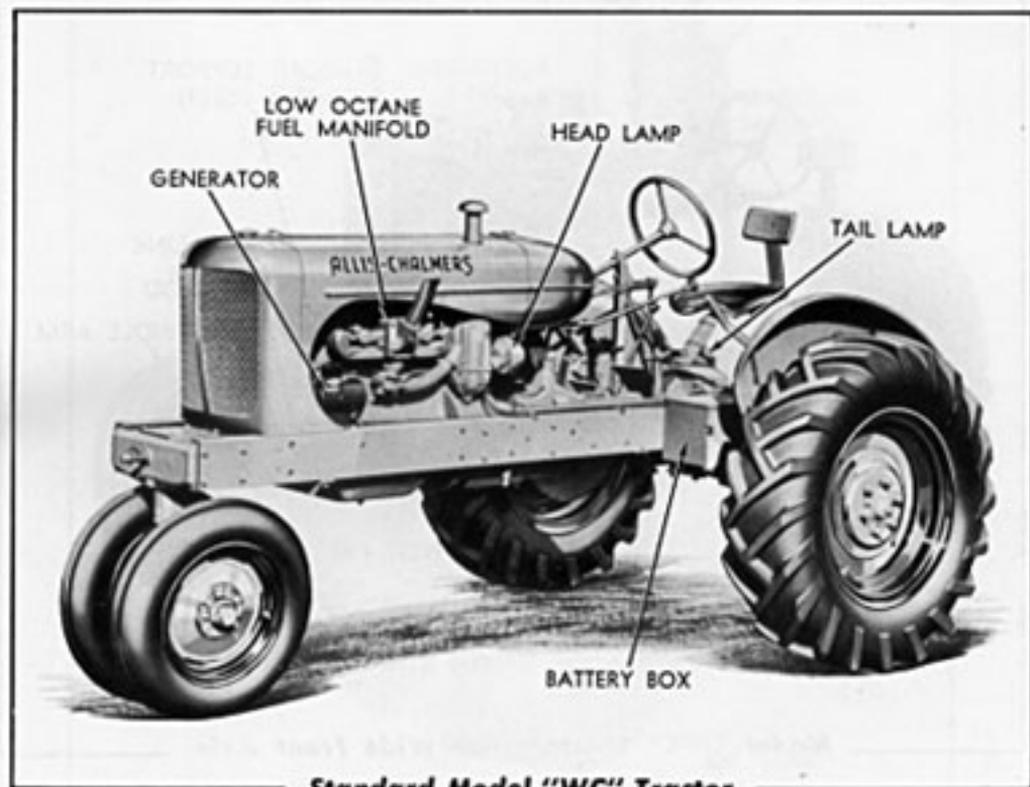


FIG. A

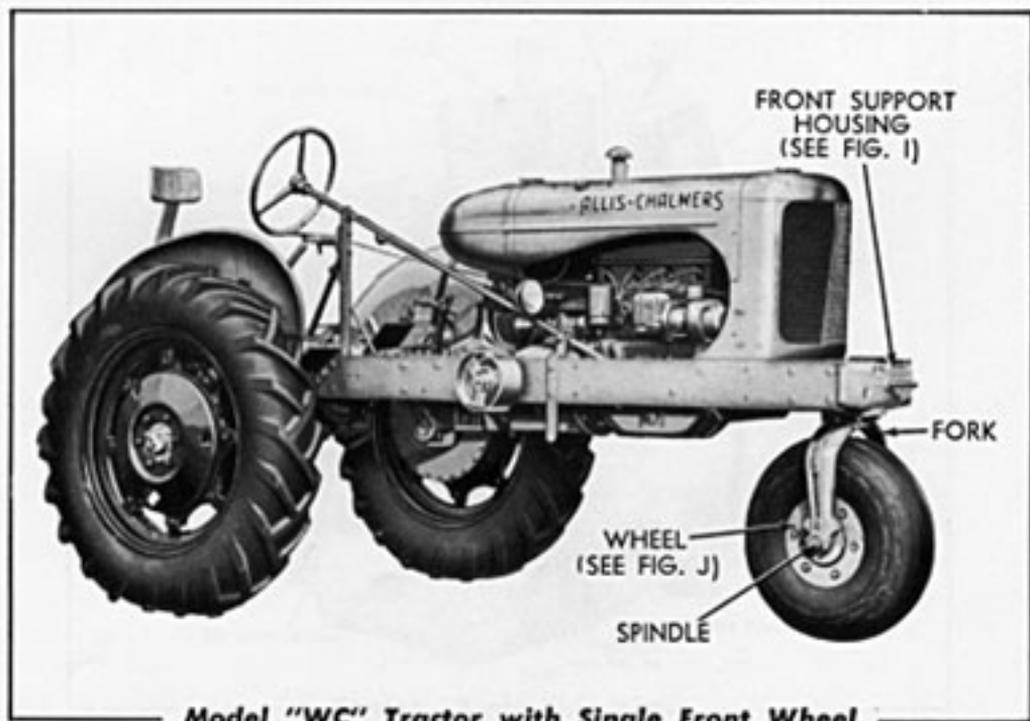
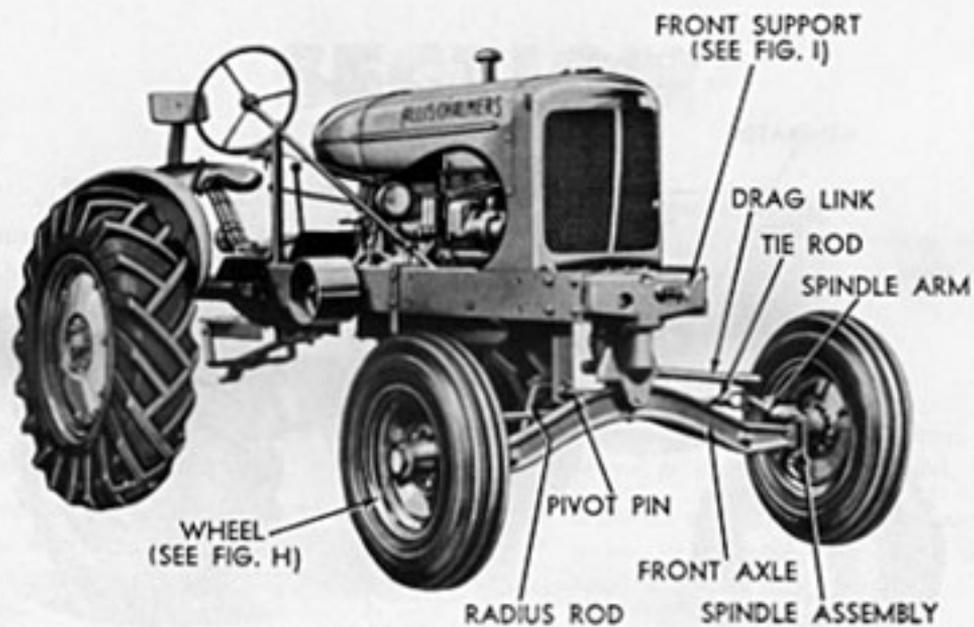


FIG. B

Order Repair Parts By Description. Always Give the Tractor and Engine Serial Numbers.



**Model "WC" Tractor with Wide Front Axle**

FIG. C

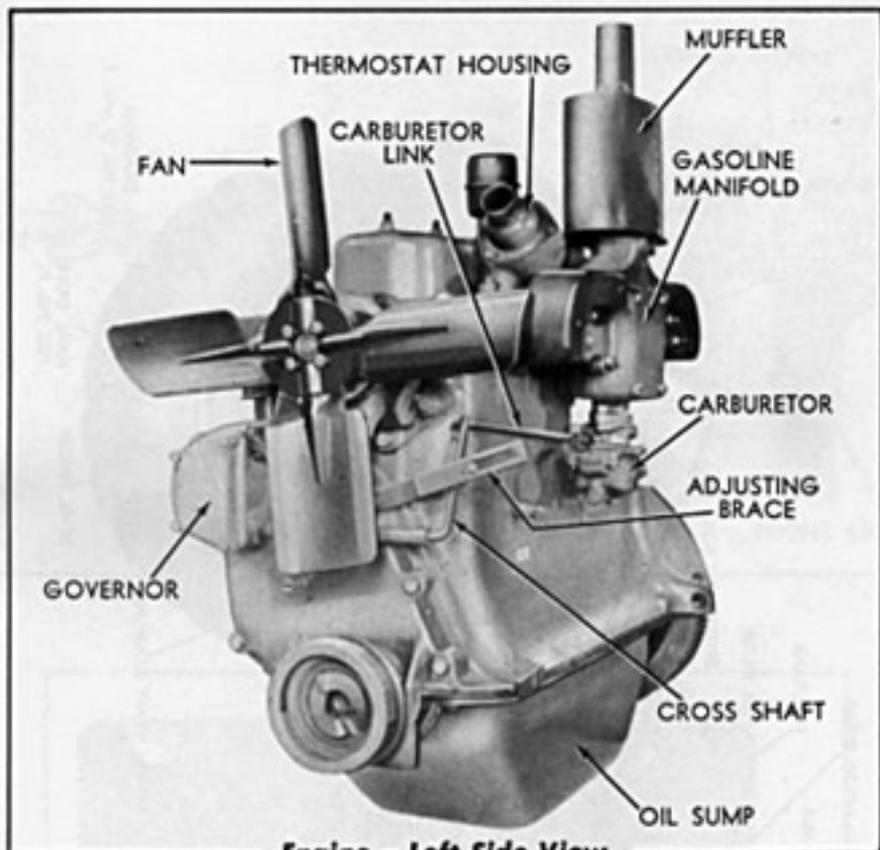


FIG. D

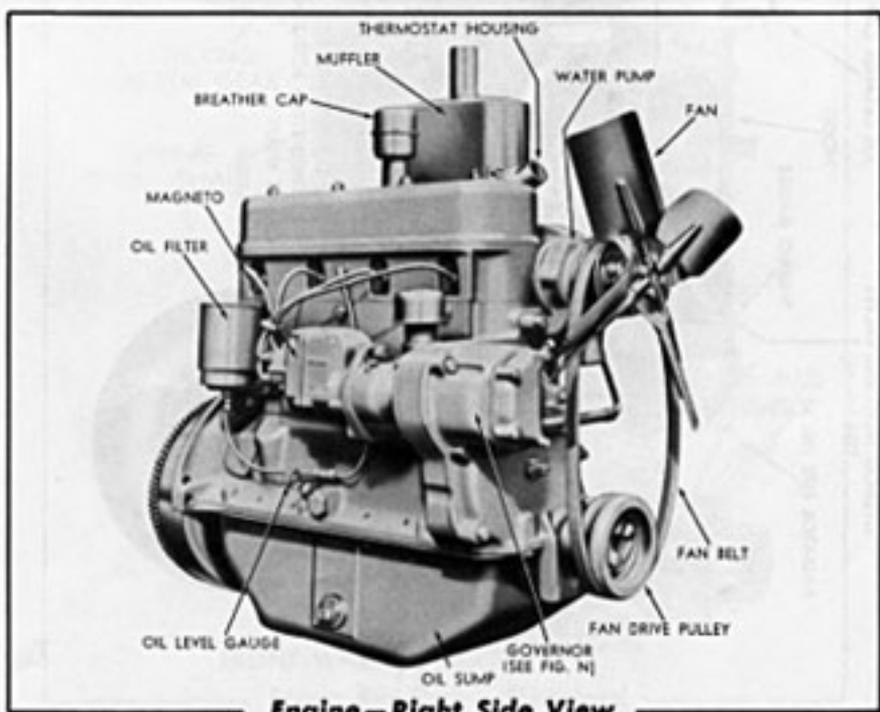
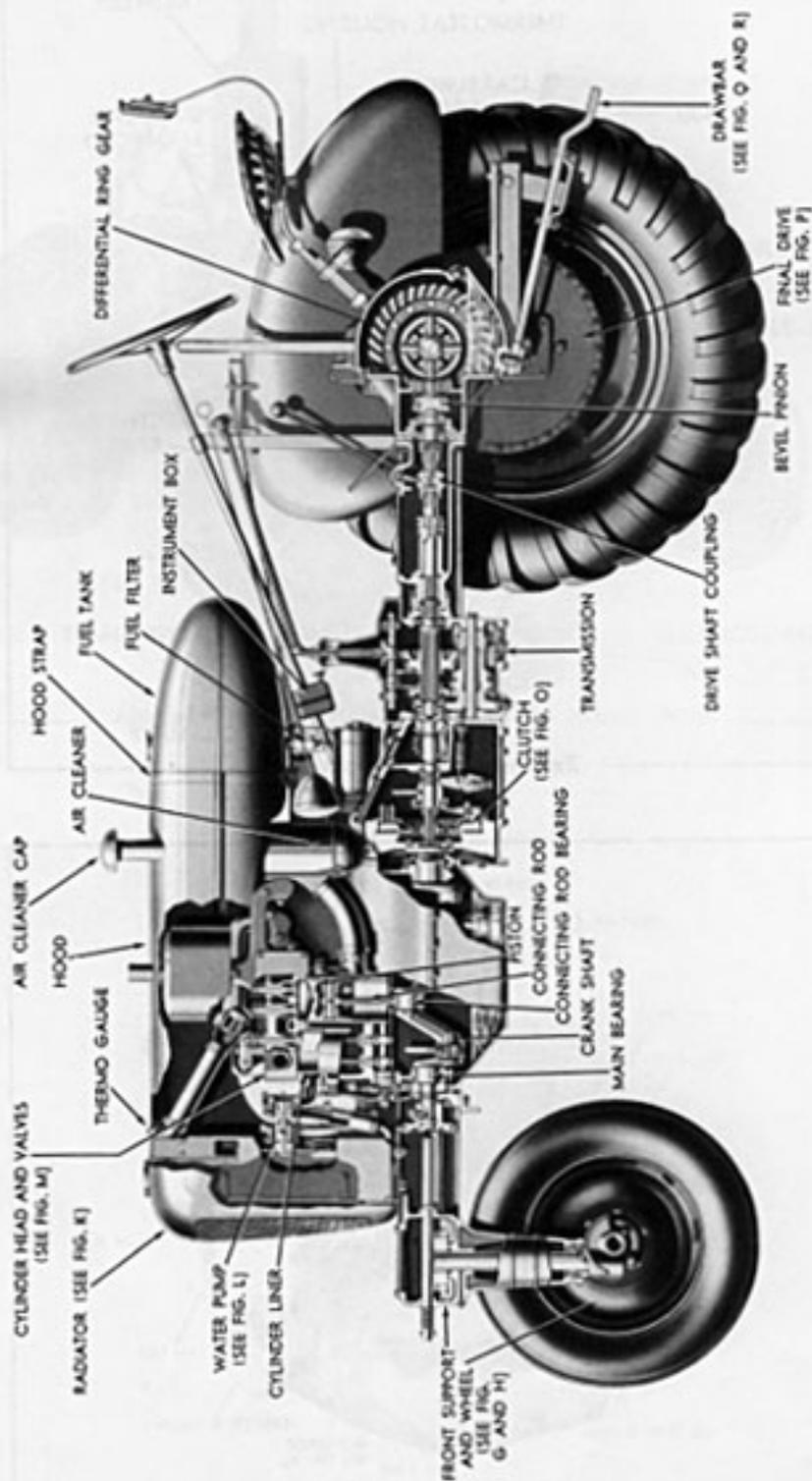


FIG. E

**Order Repair Parts By Description. Always Give the Tractor and Engine Serial Numbers.**



Model "WC" Tractor Cross Section View

FIG. F

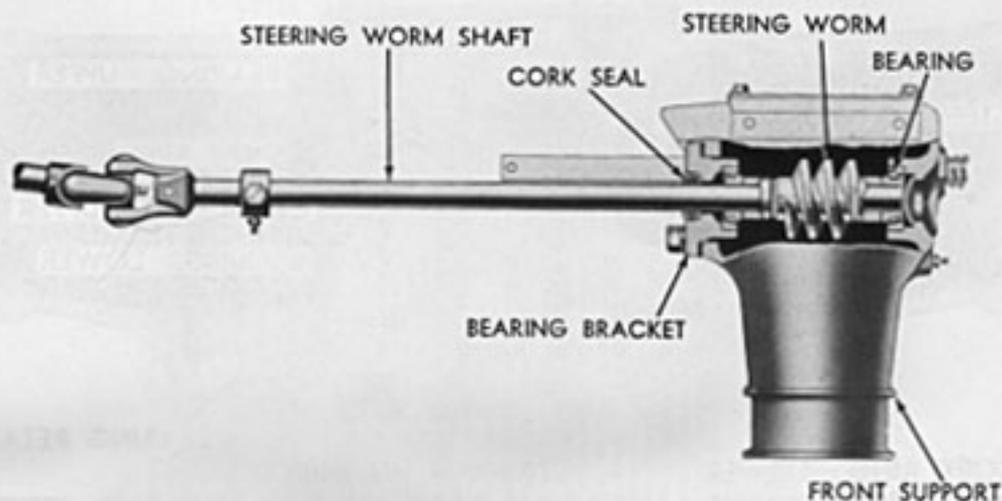


FIG. G

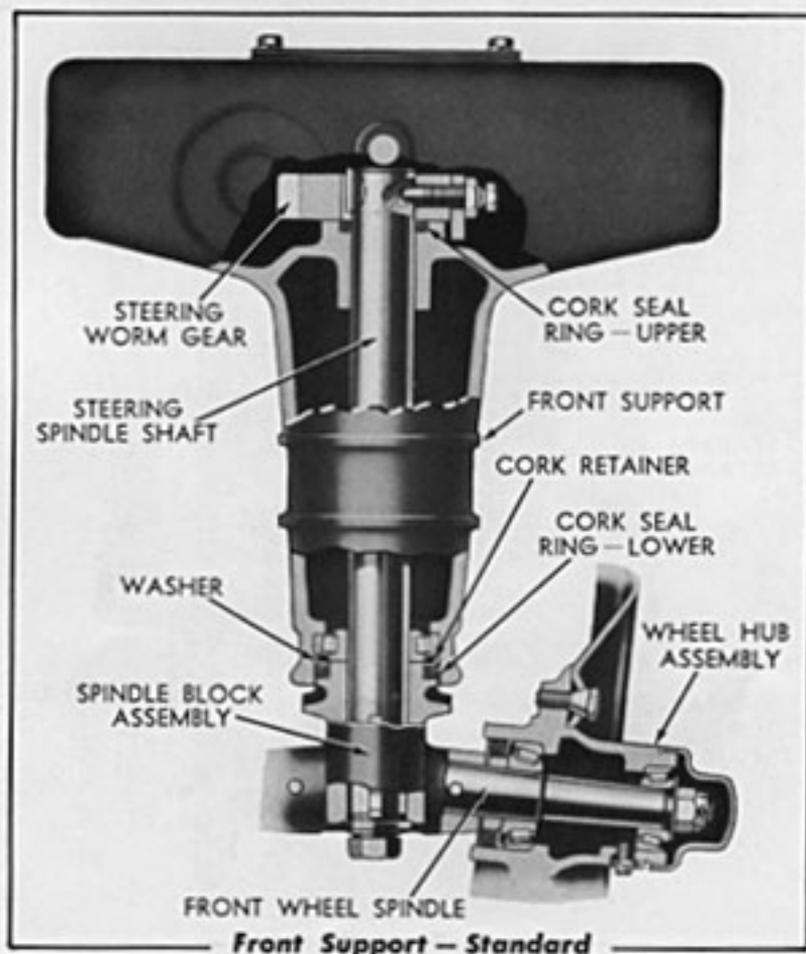


FIG. H

**Order Repair Parts By Description. Always Give the Tractor and Engine Serial Numbers.**

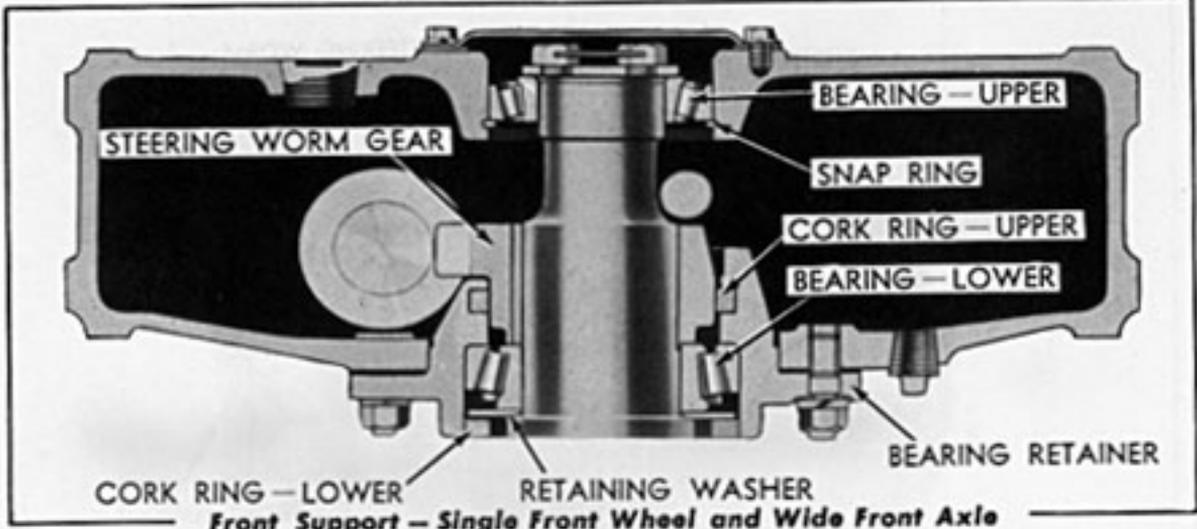


FIG. I

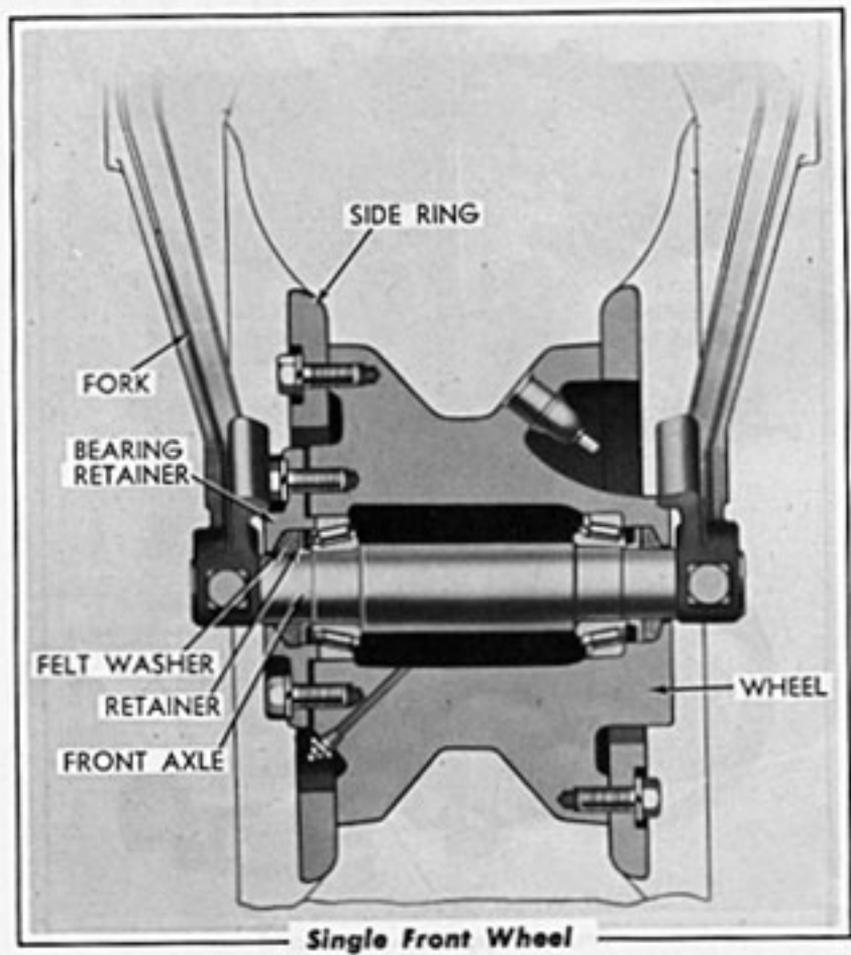


FIG. J

**Order Repair Parts By Description. Always Give the Tractor and Engine Serial Numbers.**

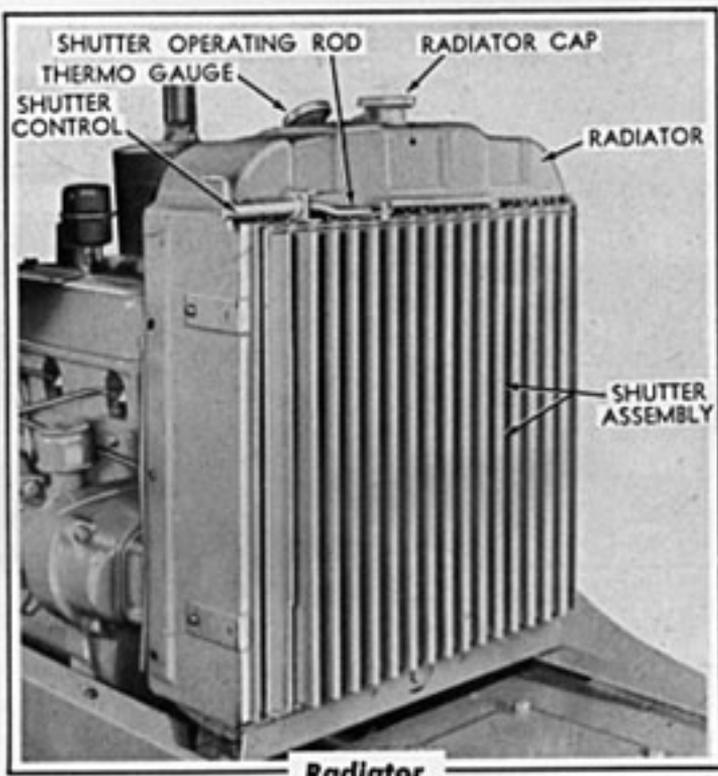


FIG. K

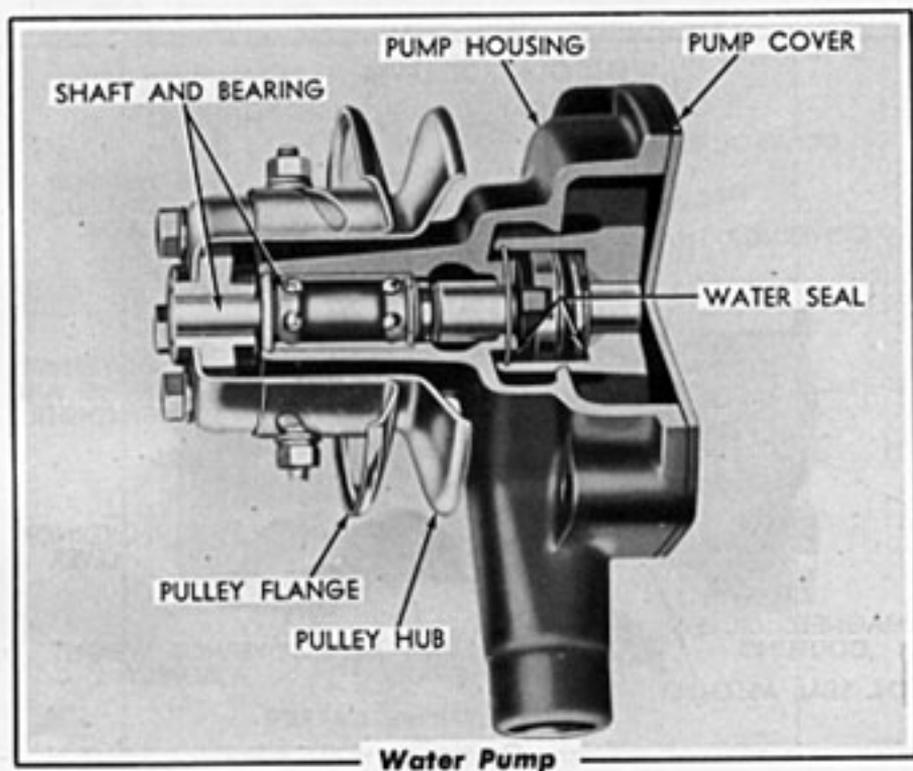
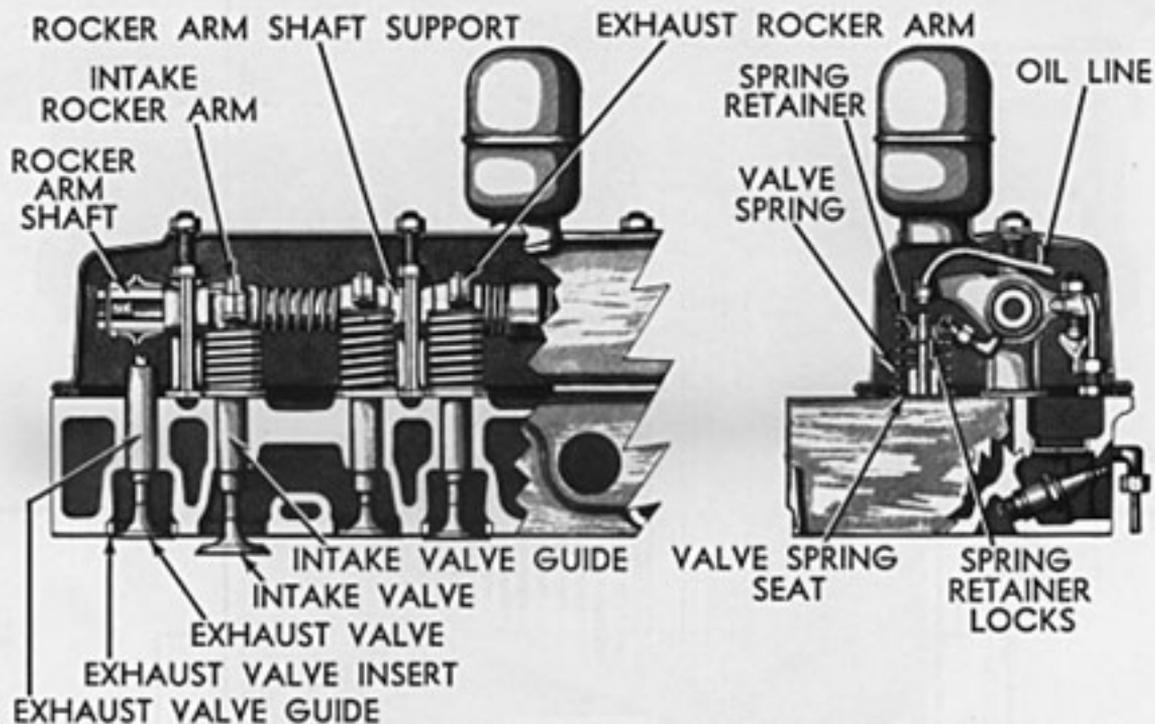


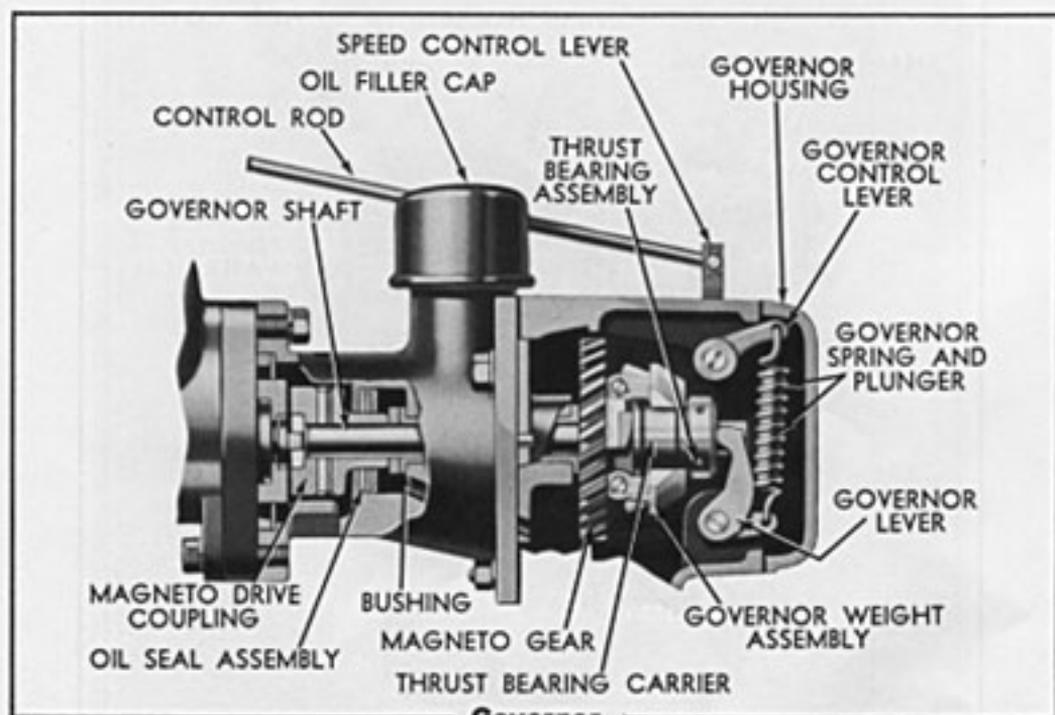
FIG. L

**Order Repair Parts By Description. Always Give the Tractor and Engine Serial Numbers.**



**Cylinder Head**

FIG. M



**Governor**

FIG. N

**Order Repair Parts By Description. Always Give the Tractor and Engine Serial Numbers.**

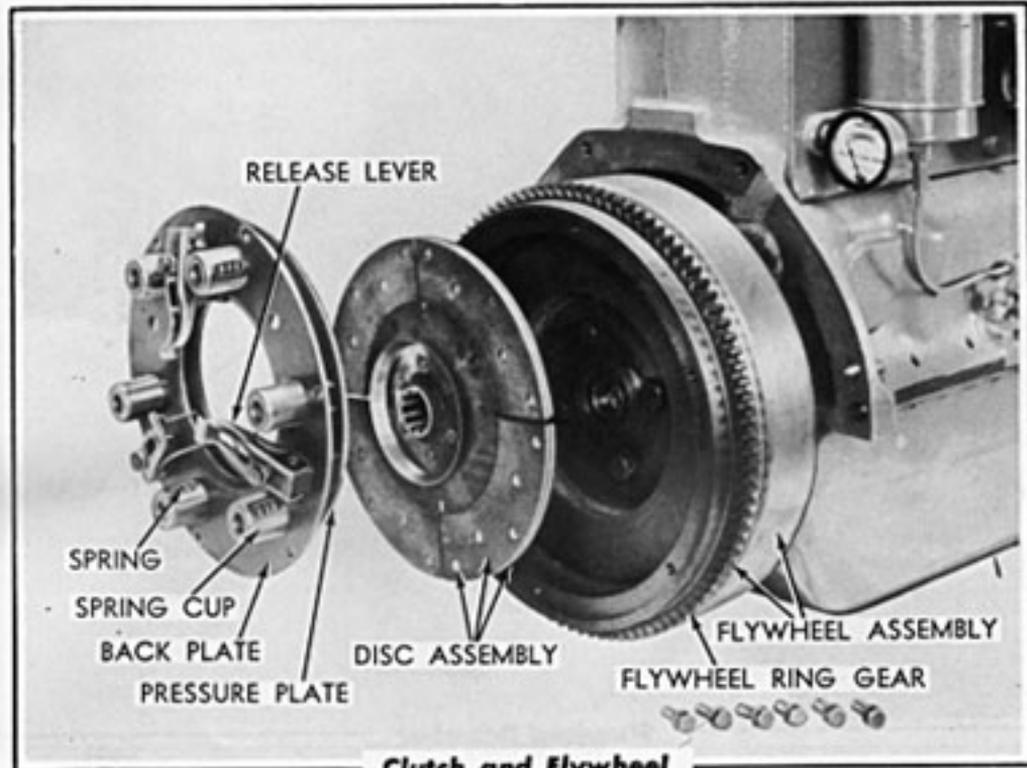


FIG. O

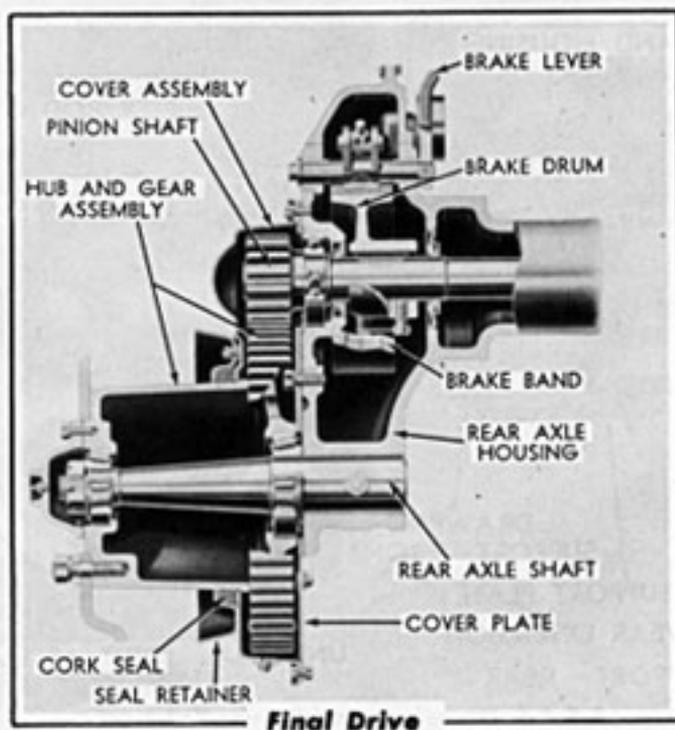
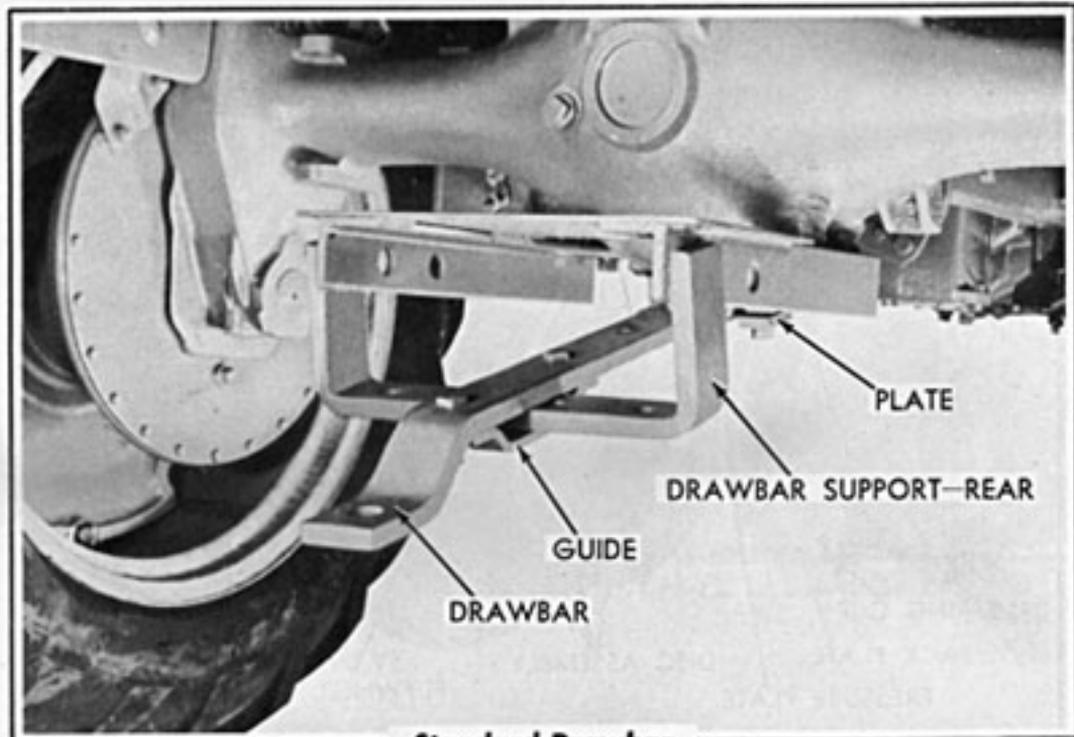


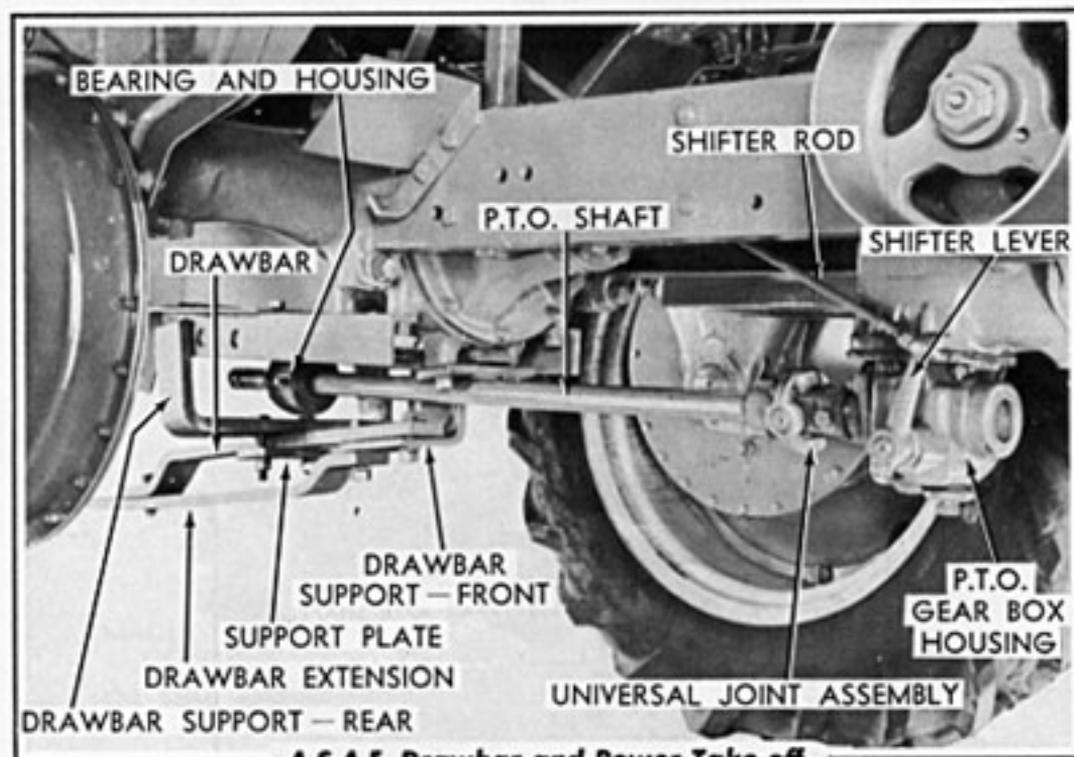
FIG. P

**Order Repair Parts By Description. Always Give the Tractor and Engine Serial Numbers.**



**Standard Drawbar**

FIG. Q



**A.S.A.E. Drawbar and Power Take-off**

FIG. R

**Order Repair Parts By Description. Always Give the Tractor and Engine Serial Numbers.**

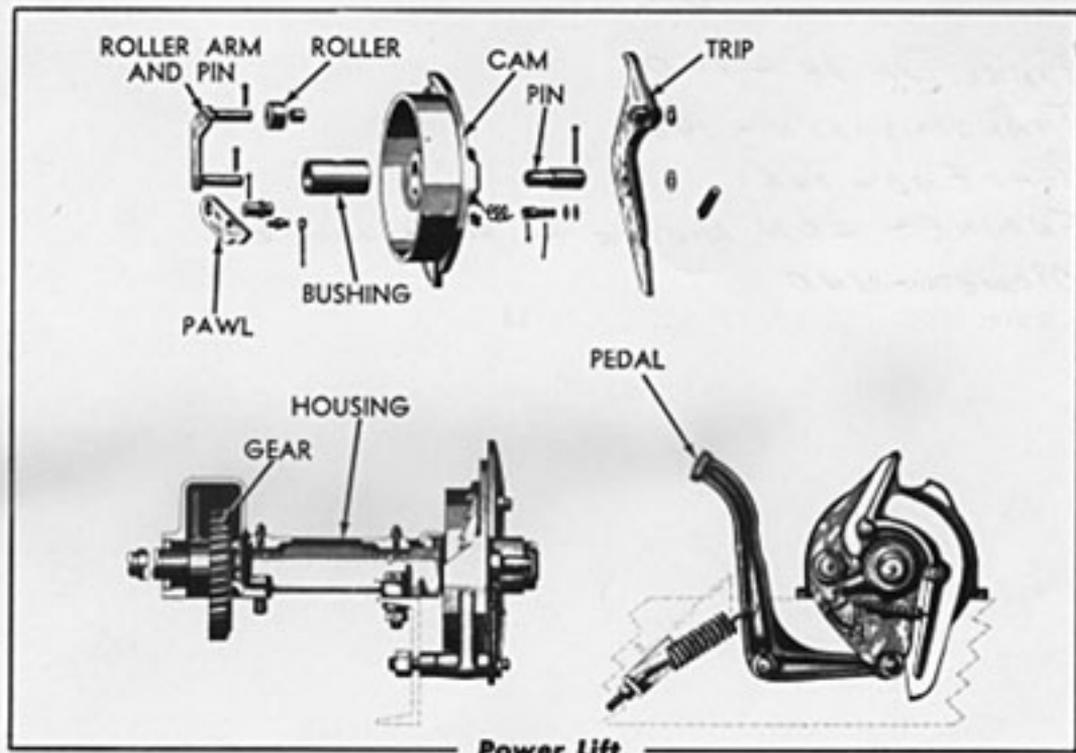


FIG. 5

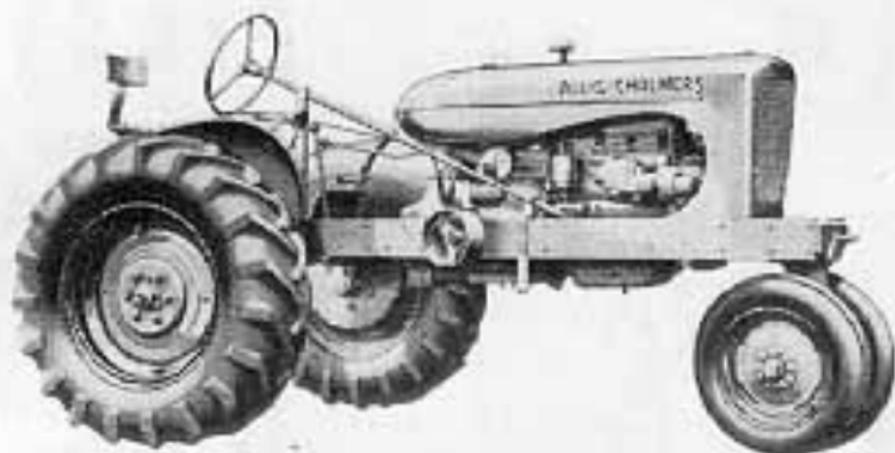
Allis-Chalmers Mfg. Co., Tractor Division,  
Milwaukee, Wis.

### Allis-Chalmers Model "WC"

Capacity: 2 plows.

Performance: (Neb. Tractor Test No. 304—  
gasoline) 29.93 H.P. max. belt; 24.16 H.P.  
max. drawbar rubber tires; 22.29 H.P.  
max. drawbar steel wheels; max. pull, rub-  
ber, 3136 lbs. at 2.05 M.P.H.; max. pull,  
steel wheels, 2941 lbs. at 2.52 M.P.H.

Performance: (Neb. Tractor Test No. 303—  
distillate) 25.45 H.P. max. belt; 20.41 H.P.  
max. drawbar rubber tires; 18.72 H.P.  
max. drawbar steel wheels; max. pull,  
rubber, 3054 lbs. at 2.12 M.P.H.; max. pull,  
steel wheels, 2599 lbs. at 2.60 M.P.H.



Motor: Own, 4 cylinders vertical, valve-  
in-head, 4x4"—1300 R. P. M. Displace-  
ment, 201 cu. in.

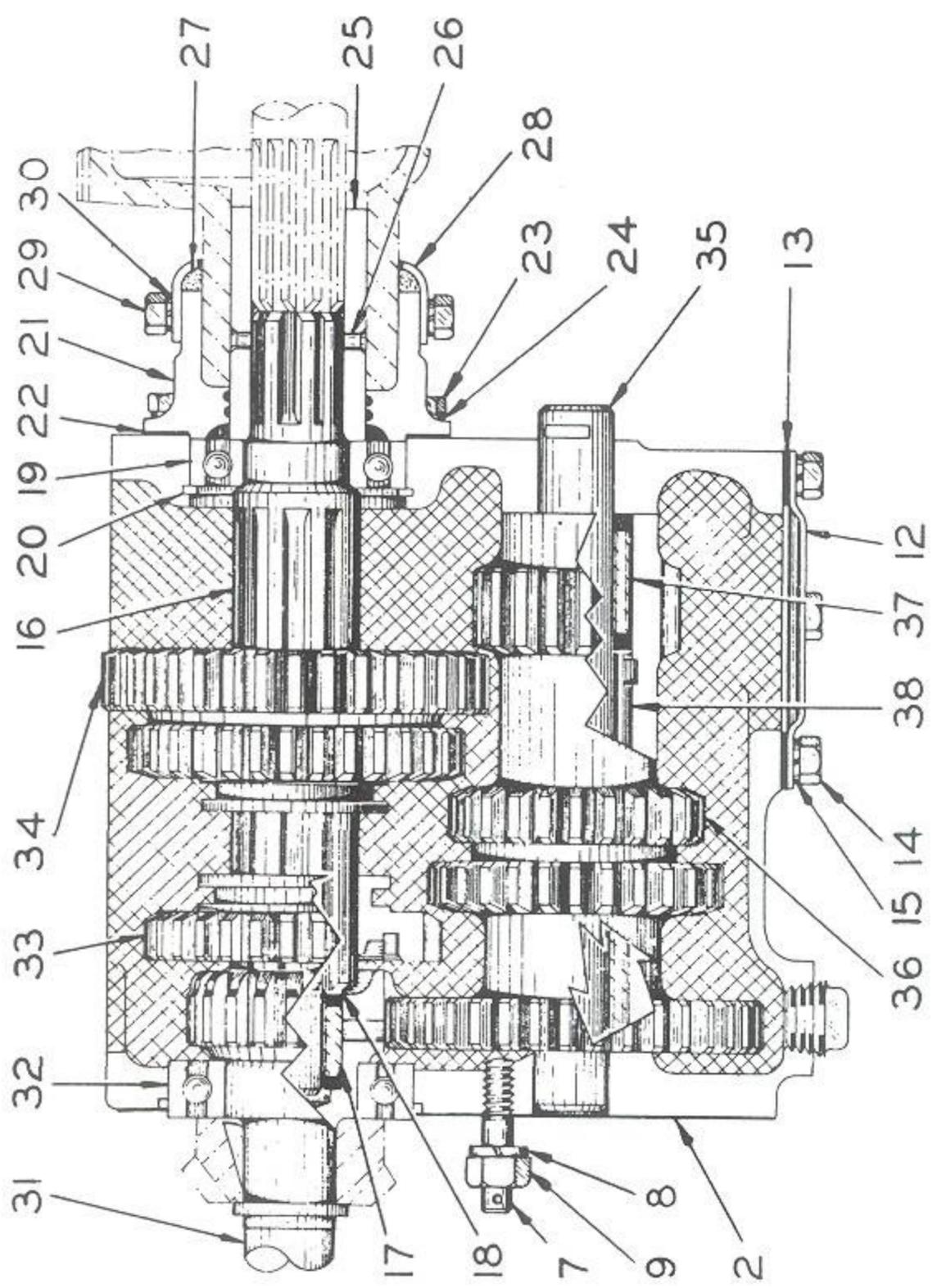
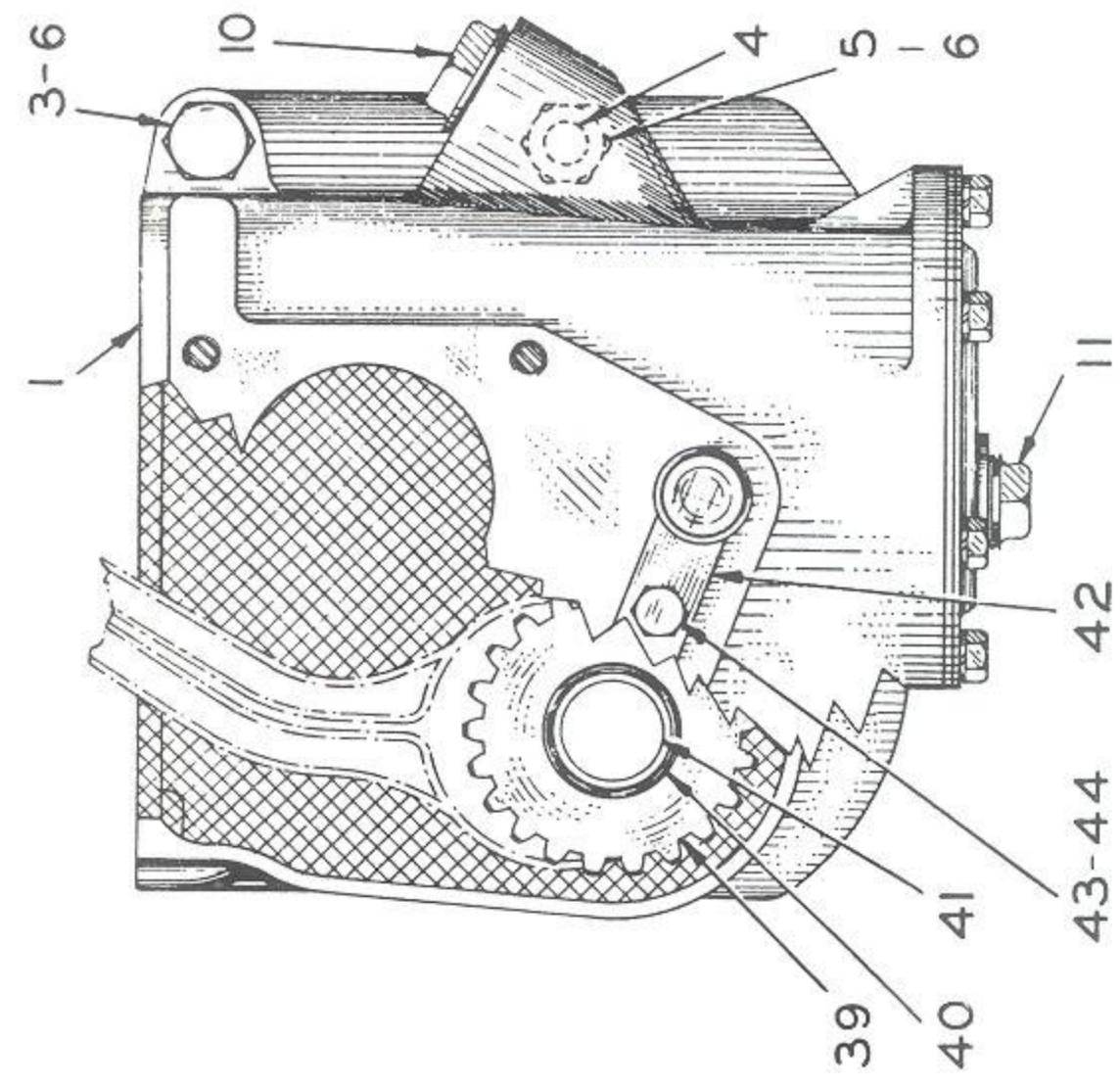
Service Data: Spark plug size, 14 mm. Pis-  
ton ring size, compression  $\frac{1}{8}$ ", oil  $\frac{3}{16}$ "—  
four rings per piston.

Speeds Forward:  $2\frac{1}{2}$ ,  $3\frac{1}{2}$ ,  $4\frac{3}{4}$  and  $9\frac{1}{4}$  to  
18 M. P. H. Reverse 2.

Net Weight: 2750 lbs. with steel wheels;  
3325 lbs. with "hydromatic" rubber tires.

Pulley:  $9 \times 6\frac{1}{2}$ "—1170 R. P. M.

Power Take-Off:  $1\frac{3}{8}$ " shaft, 534 R. P. M.  
Spline connection 22" above ground and  
 $\frac{7}{8}$ " right of center line of tractor.



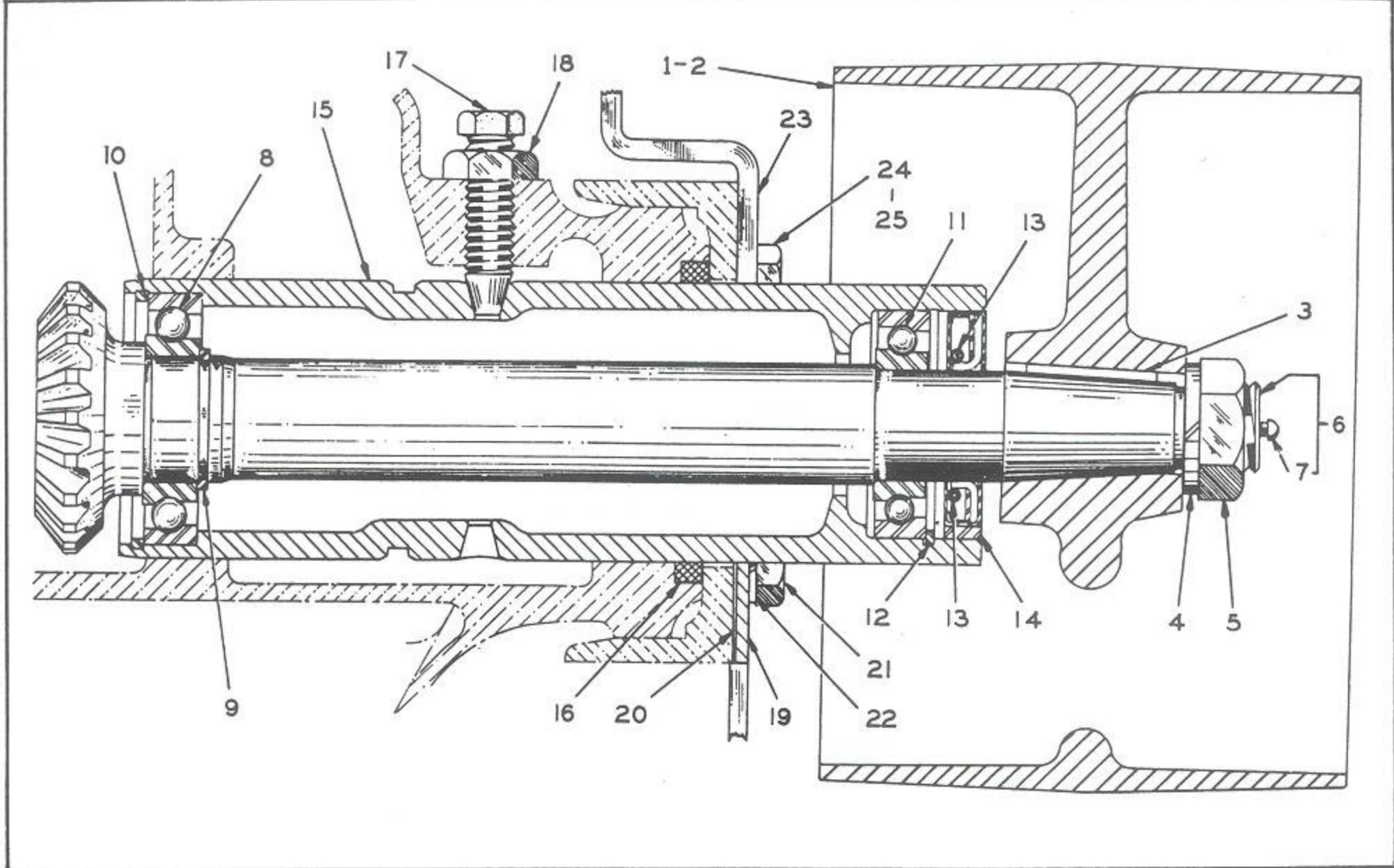
## TRANSMISSION

ITEM	PART NUMBER	MODEL & QTY.		DESCRIPTION	ASSEMBLY OR PACKAGE NO.
		WC	WF		
1	213673	1	1	Case, Transmission Note: On Tractors prior to WC-74330 and WF-1904 also furnish one each of Stud 208448 and Nut 900369	
2	U-2089	1	1	Gasket, Transmission Case to Clutch Housing	
3	903639	3	3	Capscrew, Hex-hd. 1/2"NC x 1-1/2" (Four used on Tractor prior to WC-74330 and WF-1904)	
4	208448	1	1	Stud, Transmission Case to Clutch Housing (Eff. on Tr. WC-74330 and WF-1904)	
5	900369	1	1	Nut Hex. 1/2"NC (Eff. on Tr. WC-74330 and WF-1904)	
6	904208	4	4	Lockwasher, Med. 1/2"	
7	U-2078	1	1	Stud, Locating, Transmission Case	
8	904208	1	1	Lockwasher, Med. 1/2"	
9	900369	1	1	Nut, Hex. 1/2"NC	
10	901656	1	1	Pipe Plug, 1"NPT (Oil Filler)	
11	901655	1	1	Pipe Plug, 3/4"NPT (Oil Drain)	
12	U-2797	1	1	Cover (Bottom) Transmission Case	
13	U-2077	1	1	Gasket, Bottom Cover, Transmission Case Note: w/Power Take-Off use Gasket 224672 instead	
14	903628	6	6	Capscrew, Hex-hd. 3/8"NC x 5/8"	
15	904206	6	6	Lockwasher, Med. 3/8"	
16	U-2748	1	1	Shaft, Main	
17	211537	1	1	Roller Bearing, Main Shaft	
18	U-2868	1	1	Spacer, Roller Bearing, Main Shaft	
19	210027	1	1	Ball Bearing, Main Shaft	
20	U-2760	1	1	Snap Ring, Rear Bearing, Main Shaft	
21	U-2794	1	1	Retainer, Rear Bearing Main Shaft	
22	U-2772	1	1	Gasket, Rear Bearing Retainer Main Shaft	
23	903775	4	4	Capscrew, Hex-hd. 3/8"NC x 7/8"	
24	904206	4	4	Lockwasher, Med. 3/8"	

Continued

## TRANSMISSION (Cont'd.)

ITEM	PART NUMBER	MODEL & QTY.		DESCRIPTION	ASSEMBLY OR PACKAGE NO.
		WC	WF		
25	U-2770	1	1	Sleeve, Main Shaft	
26	U-2784	1	1	Pin, Sleeve, Main Shaft	
27	U-2860	1	1	Packing, Sleeve, Main Shaft	
28	U-2861	1	1	Cap, Packing, Main Shaft Sleeve	
29	906692	2	2	Capscrew, Hex-hd. 1/4"NC x 3/8"	
30	904204	2	2	Lockwasher, Med. 1/4"	
31	-----	1	1	Gear and Shaft, Transmission Drive (See Clutch Shaft Group)	
32	-----	1	1	Ball Bearing Assy., Drive Gear (See Clutch Shaft Group)	
33	U-2791	1	1	Gear (3rd and 4th Speed) Main Shaft, 29 Teeth x 3/4" Wide	
34	U-2775	1	1	Gear (1st and 2nd Speed and Reverse) Main Shaft, 33 Teeth x 13/16" Wide and 38 Teeth x 29/32" Wide	
35	U-2776	1	1	Countershaft	
36	U-2753	1	1	Gear Cluster, Countershaft	
37	211535	2	2	Roller Bearing, Gear Cluster	
38	U-2771	1	1	Spacer, Bearing, Gear Cluster	
39	207864	1	1	Gear Assy. (w/Bushing) Reverse Idler, 20 and 24 Teeth	
40	U-2867	1	1	Bushing, Reverse Idler Gear (Disc. after Tr. WC-117600 and WF-2837)	
	213469	1	1	Bushing, Reverse Idler Gear (Eff. on Tr. WC-117691 and WF-2838)	
41	U-2796	1	1	Shaft, Reverse Idler Gear	
42	U-2764	1	1	Lock, Reverse Idler Gear Shaft and Countershaft	
43	903628	1	1	Capscrew, Hex-hd. 3/8"NC x 5/8"	
44	904206	1	1	Lockwasher, Med. 3/8"	



BELT PULLEY

ITEM	PART NUMBER	MODEL & QTY.		DESCRIPTION	ASSEMBLY OR PACKAGE NO.
		WC	WF		
1	282839	1	1	Belt Pulley Assy (See Machinery) . . . . .	282839
2	U-2671	1	1	Belt Pulley, 9"Diam. x 6-1/2" Face	
3	905857	1	1	Key, Straight, 1/4" x 1/4" x 1-3/4"	
4	910916	1	1	Lockwasher, Med. 1"	
5	906910	1	1	Jam Nut, Hex. 1"NF	
6	211829	1	1	Shaft Assy., Belt Pulley (Incl. Grease Fitting 912495)	
7	914465	1	1	Grease Fitting, 1/8"NPT (Disc. after Tr. WC-101353 & WF-2103)	
	912495	1	1	Grease Fitting, 5/16", Drive Type (Eff. on Tr. WC-101354 & WF-2104)	
8	210027	1	1	Ball Bearing (Inner) Disc. after Tr. WC-74329 and WF-1335	
	210025	1	1	Ball Bearing (Inner) Eff. on Tr. WC- 74330 and WF-1336	

ITEM	PART NUMBER	MODEL & QTY.		DESCRIPTION	ASSEMBLY OR PACKAGE NO.
		WC	WF		
9	U-2179	1	1	Snap Ring, Pulley Shaft (Used w/Bearing 210027) Disc. after Tr. WC-74329 & WF-1335	
	208710	1	1	Snap Ring, Pulley Shaft (Used w/Bearing 210025) Eff. on Tr. WC-74330 & WF-1336	
10	U-2180	1	1	Snap Ring (Inner) Pulley Tube (Used w/Bearing 210027) Disc. after Tr. WC-74329 & WF-1335	
	208709	1	1	Snap Ring (Inner) Pulley Tube (Used w/Bearing 210025) Eff. on Tr. WC-74330 & WF-1336)	
11	211532	1	1	Race Inner, Pulley Shaft Outer Bearing	} (Used prior to Tr. WC-74330 & WF-1336)
	211533	1	1	Roller Assy., (w/Outer Race) Pulley Shaft	
	210024	1	1	Ball Bearing, Pulley Shaft, Outer (Used on TR. WC-74330 and on WF-1336 and up)	
12	U-2470	1	1	Snap Ring (Outer) Pulley Tube (Used only w/Hyatt roller bearing prior to WC-74330 & WF-1336)	
13	206786	1	1	Oil Seal, Pulley Shaft (Disc. after Tr. WC-74329 & WF-1335)	
	208711	1	1	Oil Seal, Pulley Shaft (Eff. on Tr. WC-74330 & WF-1336)	
14	-----	1	1	Bushing, Oil Seal, Pulley Shaft (Disc. after Tr. WC-74329 & WF-1335) Discontinued; replace Bushing and Oil Seal with Oil Seal 208711	
15	U-2673	1	1	Tube, Belt Pulley Note: On tractors prior to WC-74330 & WF-1336 also furnish one Ball Bearing 210024	
16	U-2289	1	1	Seal, Belt Pulley Tube	
17	U-2085	1	1	Lockscrew, Pulley Tube	
18	903574	1	1	Jam Nut Hex. 5/8" NC	
19	224514	1	1	Cover, Pulley Tube Opening (Used to replace flat cover which is not available)	
20	U-3353	1	1	Gasket, Cover Pulley Tube Opening (f/Flat cover; not used w/224514)	
21	903638	3	3	Capscrew, Hex-hd. 1/2" NC x 1-1/2"	
22	904208	3	3	Lockwasher, Med. 1/2"	
23	208598	1	1	Guide, Belt	
24	903638	2	2	Capscrew, Hex-hd. 1/2" NC x 1-1/2"	
25	904208	2	2	Lockwasher, Med. 1/2"	
26	223694	1	1	Cover, Tube (Used when pulley assy. is in shipment or storage)	

## Polarizing a Generator

After a generator has been worked on and is reconnected, it should be polarized by connecting the fields momentarily to the battery before the engine is started. Polarizing the generator, on most Delco and Autolite generators, you momentarily touch a jumper wire to the "B" or "BAT" terminal of the regulator or cutout relay, and the "A" or "ARM" or "GEN" terminal of the regulator or cutout relay. This assures that the generator will have the correct polarity with respect to the battery it is to charge, regardless of whether the battery is + or - ground.

Light switch controlled resistance for a three brush generator

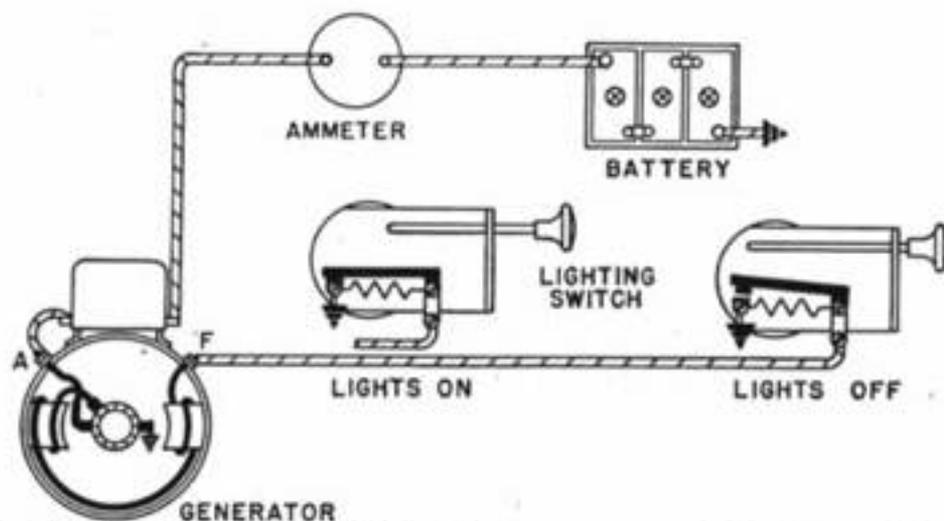


FIG. 8-3. Wiring circuit of third-brush generator with light-switch-controlled field resistance. Light circuit not shown.