January 18, 1947

Exhibit "C"

Operating Instructions

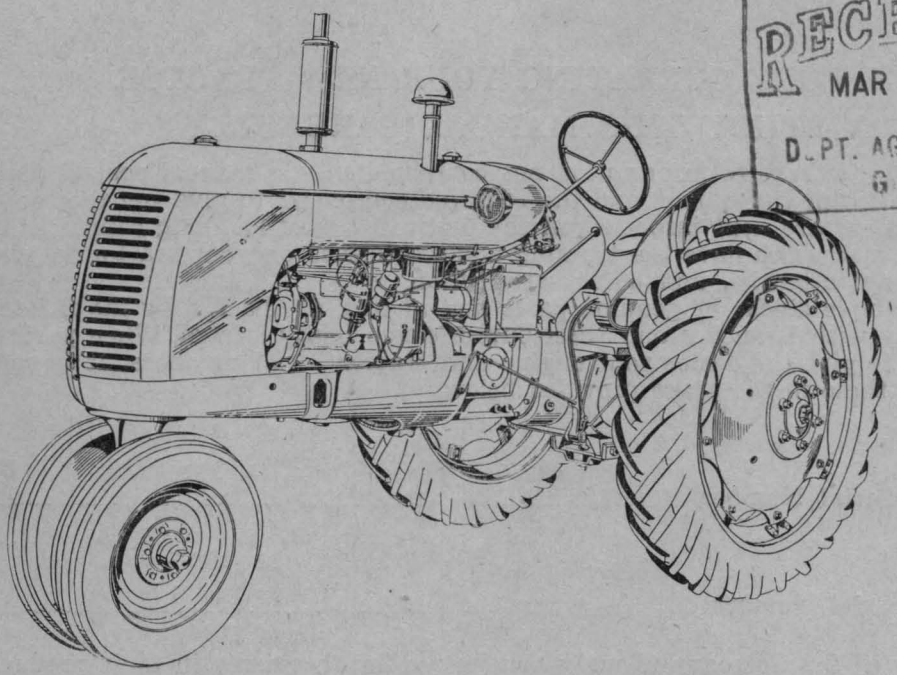
COCKSHUTT PLOW COMPANY, Limited

for

Secretary

COCKSHUTT "30" TRACTOR

Standard and Row Crop



COCKSHUTT

PLOW COMPANY LIMITED

TRURO · MONTREAL
SMITHS FALLS

BRANTFORD
CANADA

WINNIPEG · REGINA · SASKATOON
CALGARY · EDMONTON

2,780-2-47-H.

Printed in Canada

FOREWORD

Your tractor has become your partner and will amply return the investment you have placed in it. Years of thought and experience and close contact with farmers have resulted in the many refinements and features built into the tractor. It has been carefully manufactured under close supervision and careful inspection and if it is given the care and service outlined in this manual, years of trouble-free operation will result.

BEFORE OPERATING YOUR NEW TRACTOR STUDY THIS MANUAL CAREFULLY

If you feel that you require information not contained in this manual consult your dealer who has the trained personnel and the required equipment to give you the service you require. All dealers are kept informed on the best methods of handling your tractor problems and their mechanics have the training and experience on your tractor to give your problems personal attention and quick satisfaction.
Dealers carry ample stocks of genuine parts and in turn are backed by the full facilities of the Company with Branches and Distributors conveniently located. When parts are required be sure to give the dealer your engine and tractor serial numbers. It is suggested that you write these in the space provided below.

Tractor Serial Number .....

Engine Serial Number .....

It is the policy of the Company to make continuous improvements in their products, and the Company has the right to make these changes at any time without incurring obligation to add them to any tractor already sold.

ACCIDENTS CAN BE PREVENTED WITH YOUR HELP

RULES FOR SAFE TRACTOR OPERATION

(Prepared by the Farm Safety Committee of the Farm Equipment Institute and approved by the National Safety Council, Incorporated.)

1. Be sure the gear shift lever is in neutral before starting the engine.
2. Always engage the clutch gently, especially when going up a hill or pulling out of a ditch.
3. When driving on highways, or to and from fields, be sure that both wheels are braked simultaneously when making an emergency stop.
4. Always ride on seat or stand on platform of tractor. Never ride on drawbar of tractor or drawn implement.
5. When tractor is hitched to a stump or heavy load, always hitch to drawbar and never take up the slack of chain with a jerk.
6. Be extra careful when working on hillsides. Watch out for holes or ditches into which a wheel may drop and cause tractor to overturn.
7. Always keep tractor in gear when going down steep hills or grades.
8. Always drive tractor at speeds slow enough to insure safety, especially over rough ground or near ditches.
9. Reduce speed before making a turn or applying brakes. The hazard of overturning the tractor increases four times when speed is doubled.
10. Always stop power take-off before dismounting from tractor.
11. Never dismount from tractor when it is in motion. Wait until it stops.
12. Never permit persons other than the driver to ride on tractor when it is in operation.
13. Never stand between tractor and drawn implement when hitching. Use an iron hook to handle drawbar.
14. Do not put on or remove belt from belt pulley while the pulley is in motion.
15. Should motor overheat, be careful when refilling radiator.
16. Never refuel tractor while motor is running or extremely hot.
17. When tractor is attached to a power implement be sure that all power line shielding is in place.

INDEX TO GENERAL OPERATIONS

INDEX TO ILLUSTRATIONS

SPECIFICATIONS

TRACTOR SERIAL NUMBER — Stamped on left side of main frame or on left side of cylinder block.

ENGINE NUMBER — Stamped on left side of cylinder block.

Number of cylinders — 4; Bore and stroke — 3-7/16" x 4⅛"; Displacement — 153 cubic inches.
Spark plugs — Champion J 5.
Main and connecting rod bearings — Steel backed, babbitt lined Precision Type.

ENGINE

Cylinder sleeves — Removeable, Alloy Type.
Engine lubrication — Pressure.
Ignition — Battery through high tension coil and distributor.
Engine speed — 1650 R.P.M. (maximum) under full load; 1810 R.P.M. no load.
Power take-off 1⅜" diameter — 6 spline shaft. — Speed 530 R.P.M. with engine speed at 1500 R.P.M.

CLUTCH AND BELT PULLEY

Clutch — single plate, dry disc (spring loaded)	9"
Pulley speed (Engine speed at 1500 R.P.M.)	1227 r.p.m.
Belt speed (with 8¼" pulley) (Engine speed at 1500 R.P.M.)	2650 f.p.m.
Pulley diameter	8¼"
Pulley face	6½"

TRANSMISSION (Standard)

4-speed forward; sliding gear type.
(Based on 10-38 pneumatic tires; Engine speed — 1500 r.p.m.)

Speed miles per hour	1st	2.5
	2nd	3.6
	3rd	5.
	4th (At maximum no load engine speed 1810 R.P.M.)	12.
	Reverse	3.2

ADDITIONAL SPEEDS USING CREEPER UNIT:

Speed miles per hour	1st	1.5
	2nd	2.2
	3rd	3.
	4th	5.9
	Reverse	1.9

DIFFERENTIAL — Spiral bevel.

FINAL DRIVE — One piece forged steel bull gears splined to alloy steel main axle.

WHEELS AND TREAD —

Front Wheels (pneumatic tires)	5.50 -16
Rear Wheels (pneumatic tires)	10.00 -38
Tread — front Standard Model	53⅜" and 56⅝"
Row Crop Model	7¾" and 11"
Rear Wheels (Both Models)	56", 60", 64", 68", 72", 76", 80" and 84"
Wheel Base — Standard Model	81¾"
Row Crop Model	84¾"
Minimum turning radius (56" rear wheel thread)	
Standard Model — (without applying brakes	12'
(applying brakes	11' 2"
Row Crop Model — (without applying brakes	8' 4"
(applying brakes	7' 6"

CAPACITIES	IMPERIAL	U.S.
Steering gear	2½ pints	3 pints
Engine crankcase	4½ quarts	5½ quarts
Pulley housing	1¾ gallons	2 gallons
Transmission and differential	4¼ gallons	5 gallons
Cooling system	3 gallons	3½ gallons
Fuel tank	12½ gallons	15 gallons
Oil cup in air cleaner	1⅜ pints	1⅝ pints
Live power take-off	8½ imperial pints	1-2/5 gallons

GENERAL DIMENSIONS (Approximate)

Length overall — (with pneumatic tires)
- Standard Model ..... 124"
- Row Crop Model ..... 127"

Width overall — (minimum tread) ..... 75"
Height overall — (to top of steering wheel) ..... 69"
Drawbar — (Vertical adjustments above ground) ..... 10¼", 13", 16¼", 19¾"
(Lateral adjustments, on each side of central position) ..... 11½"

CARE AND OPERATION

Before starting a new tractor — READ YOUR INSTRUCTION BOOK

1. Lubricate the entire tractor, referring to the "Lubrication Chart" on pages 10 and 11 and check oil levels as specified on page 9.
2. Check tire inflation referring to instructions on tires, page 30.
3. Check cooling system referring to instructions on pages 13 and 19.
4. Use correct oil — ADD ONE PINT OF ENGINE OIL FOR EVERY FIVE GALLONS OF FUEL DURING THE FIRST 100 HOURS.
5. For a new engine, use SAE 20 above 32° F., for the first season of operation.
6. CAUTION — For the first 40 hours, work tractor to about one half capacity. Use only first and second gear to avoid overloading the engine.
7. Long life is built in the modern engine and it can best give you the service you desire by reading and following the instruction as outlined in this book.
8. Always allow an engine which has been under load to idle for a few minutes before stopping, as this allows the circulating water to cool the cylinders, valves, etc. Watch the oil level carefully, and change as recommended on page 12.
9. Service the oil filter and the air cleaner as instructed on pages 17 and 18.
10. For maximum economy use the highest transmission speed, and the lowest engine speed, which will maintain the desired speed of travel, without overloading excessively.

CLUTCH

The engine drive is taken through a spring loaded dry disc single plate clutch and is designed so that it requires a minimum of attention.

CARE AND ADJUSTMENT OF CLUTCH

It is very important that free clutch pedal travel be maintained at from 1" to 1⅛". After a new tractor has run for a short while this travel should be checked and adjustment can easily be made by means of the clevis at the front end of the clutch rod. During normal tractor service the driver must watch to see that the free travel be maintained as if it is less than this the clutch is apt to slip and be badly damaged, and if more than 1⅛" the clutch may not release completely when depressed, making shifting difficult.

During the operation the driver should refrain from keeping his foot on the clutch pedal to prevent slipping while in use.

LUBRICATION CHART

PLATES No. C-9-46 and D-9-46, Pages 10 and 11

KEY TO LUBRICATION CHART

NOTE: The symbols shown by the reference numbers on the illustrations indicate the intervals of lubrication.

Specifications of lubricants referred to are given on pages 12 and 13.

□ DAILY OR EVERY 10 HOURS OF OPERATION

1. Dipstick ..... — If oil level is at, or below, the low mark on the dipstick, add new oil until oil level is up to the full mark.

2. Air Cleaner ..... — Clean and refill oil cup to oil level bead with same new oil as used in the engine crankcase. Capacity 1⅜ Imperial pints. Refer to page 18 for additional information.

4. Axle Pivot Post, Standard Model only ....— 1
5. Radius Rod Anchor, Standard Model .....— 1
6. Axle King Pins, Standard Model only ....— 2
7. Tie Rod Ends, Standard Model only .....— 4
8. Axle Pivot Post, Row Crop Model only....— 1
9. Steering Rod Universals .....— 2
10. Steering Wheel Shaft Support .....— 1
11. Clutch Throw-out Shaft .....— 2
12. Rear Axle Ends .....— 2

Use standard Alemite grease and put 2 or 3 shots from the grease gun into each Alemite fitting.

◆ WEEKLY OR EVERY 60 HOURS OF OPERATION

13. Filler Cap ..... — Wash in gasoline, dip in engine oil, shake off excess. Clean oftener if dust is present.

14. Crankcase Pan Oil Drain Plug .. — Drain all oil from crankcase pan. Refill with new oil to full mark on dipstick. Capacity — 4½ Imperial quarts. Refer to specifications of lubricant page 12, Type of Oil.

15. Distributor ..... — Few drops of engine oil in oil cup.

16. Generator ..... — Few drops of engine oil in oil cups.

▣ EVERY 120 HOURS OF OPERATION

17. Oil Filter Element ..... — Replace oil filter element as per instructions given on page 19.

★ **PERIODICALLY** — Check at test plug once a month, replace lubricant every 1000 hours of use.

18. Steering Gear Housing — Filler plug on top cover. Use SAE 140. Capacity 2½ Imperial pints.
3. Front Wheel Bearings.

TRANSMISSION AND DIFFERENTIAL

19. Oil Filler Plug .....
20. Oil Level Plug .....
21. Oil Drain Plugs (2) ..... — Use approved lubricant SAE 90. Check lubricant once a month and bring level up to level plug (20). Refer to page 33 for further instructions. Capacity — 4¼ Imperial gallons.

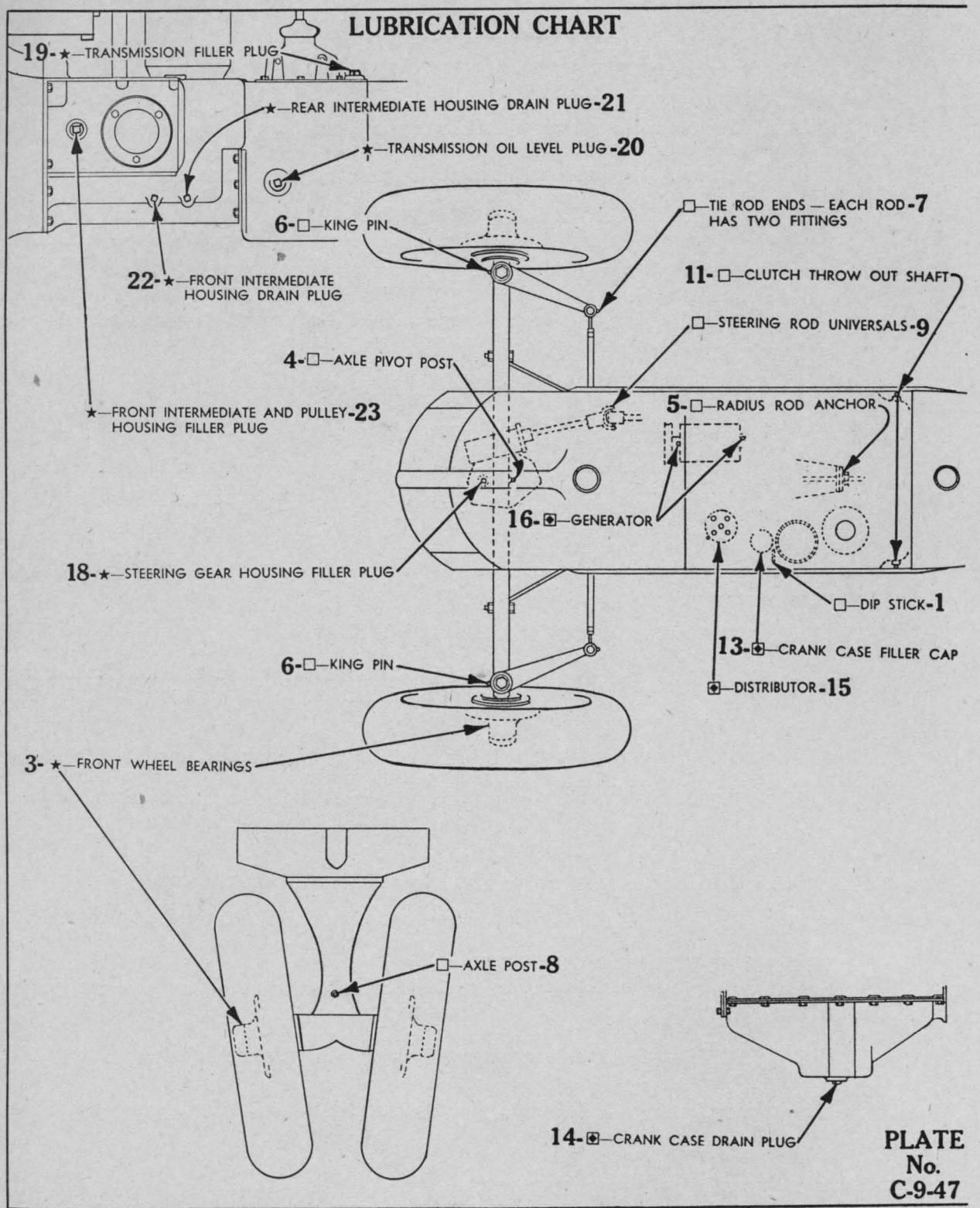
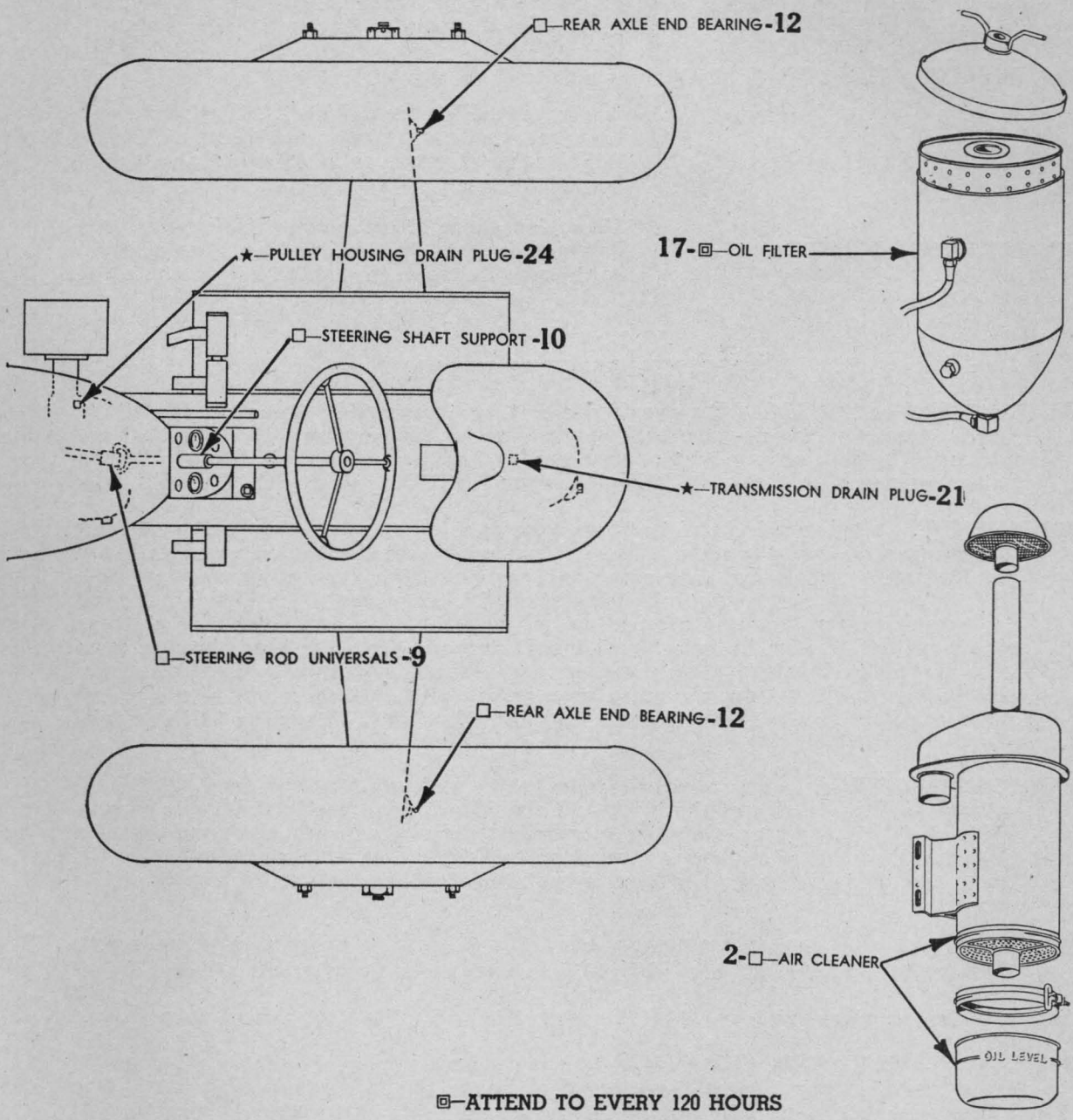


PLATE No. C-9-47

LUBRICATION CHART



KEY— ⊡—ATTEND TO EVERY 120 HOURS
□—ATTTEND TO DAILY OR EVERY 10 HOURS
⊕—ATTEND TO WEEKLY OR EVERY 60 HOURS
★—ATTEND TO PERIODICALLY

PLATE No. D-9-47

FRONT INTERMEDIATE AND PULLEY HOUSING

22. Front Intermediate Housing Drain Plug
23. Oil Filler Plug
24. Oil Drain Plug

Use approved lubricant SAE 90. Check lubricant level once a month and bring level up to oil filler plug (22). Capacity — 1¾ Imperial gallons.

LIVE POWER TAKE-OFF (Extra)

25. Oil Filler Plug
26. Oil Drain Plug

Use approved lubricant SAE 90. Check level once a month whether in use or not. Change oil every 1000 hours of power take-off use. Capacity 8½ Imperial pints.

MISCELLANEOUS PARTS

Use a few drops of engine oil occasionally on the linkages or control rod connections such as clutch rod, brake linkages, throttle linkages, etc.

ENGINE LUBRICATION

ENGINE OILING SYSTEM — Functioning as it does to provide lubrication for all the moving parts of the engine which operates under different conditions of heat and pressure, it is necessary that a good grade of engine oil be used. It is also important that the oil be kept CLEAN and in a CLOSED CLEAN CONTAINER.

DESCRIPTION — Pressure is furnished by a gear type pump which draws the oil from the crankcase through a screen. From the pump it goes through passages drilled in the block to the main and connecting rod bearings. The connecting rods are rifle drilled for satisfactory wrist pin lubrication. Oil is metered to the rocker arm shaft for satisfactory rocker arm lubrication and to the rocker arm valve contact faces. The camshaft is oiled by splash and by oil draining from the head through cored passages in the block. The governor, governor shaft, and timing gears are liberally bathed in oil to prevent undue wear and to wash off accumulated sludge and moisture. Part of the oil is by-passed through the filter. (See page 17 for servicing.

PRESSURE CONTROL — A pressure relief valve is located at the front of the oil gallery on the left side of the block and should not require attention. It is dangerous to tighten up a pressure valve to correct a drop in pressure, as normally such a drop is caused by some bearing being worn. The oil pressure as indicated on the gauge should be from 20 to 25 pounds at full throttle and 8 to 10 pounds at idle speed.

TYPE OF OIL — Above 32° F., SAE 30 should be used, from — 10° F. to 32° F. use SAE 20W, and below 10° F., use SAE 10W. Always use top quality oil.

CAUTION: For a new engine use SAE 20 above 32° F. for the first season of operation.

WHEN TO CHANGE AND ADD OIL — It is a good practice to change the oil every 60 hours and if running in cold weather the change should be made more often. The oil capacity is 4½ Imperial quarts. Always look at the oil pressure gauge immediately after starting the engine. The oil level should be checked at least once a day and if at, or below, the low mark on the dipstick, some should be added.

QUALITY OF OIL — The best insurance of good quality is to buy from a reputable manufacturer. Oils should be free from foreign substances such as soaps, resins, acids, etc., and should not corrode the engine surfaces. The newer, so-called heavy-duty oils are satisfactory but if an engine has been run on other types of oils do not add heavy-duty oil without thoroughly flushing the crankcase by an approved motor flush system. Even after this is done, the new heavy-duty oil should be changed at 10 hours, then at 25, and then at 60.

BREATHER CAP — This cap acts as a filter to clean the air which surges into and out of an engine when it is operating. To remove dust and dirt from the air drawn in on the inward surge, the screen must be kept clean and covered with oil. It should be inspected and if dirt is present, the cap should be washed in gasoline, then dipped in engine oil, excess oil shaken off, and the cap put in place again.

CHASSIS LUBRICATION

At least once a year, or every 1000 hours, drain transmission compartments by removing the three plugs, 21 and 22, on the lubrication chart. Preferably the draining should be done while the tractor is warm.

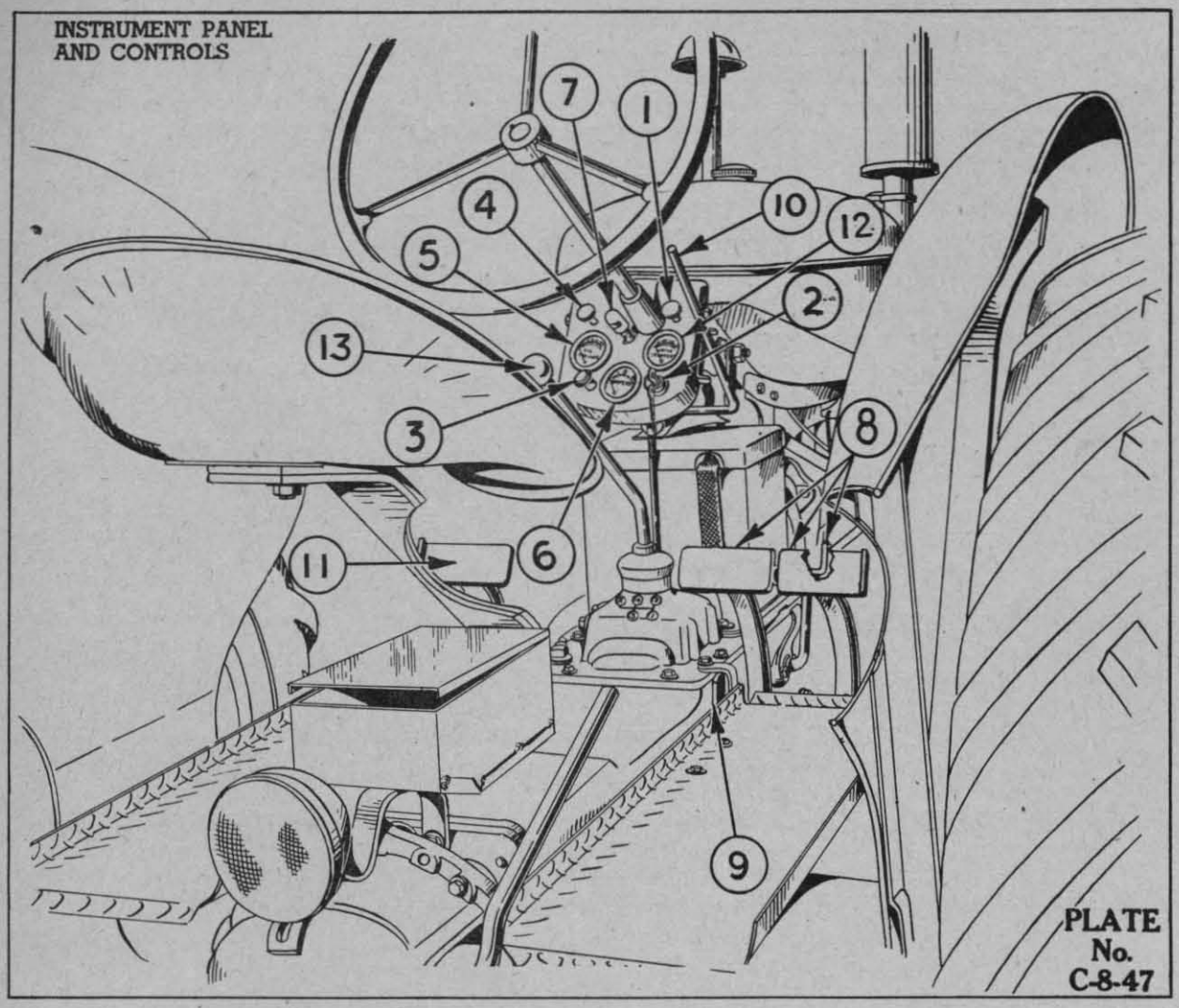
The transmission will require 4¼ Imperial gallons (5 U.S. gallons) to fill and the pulley housing 1¾ Imperial gallons (2 U.S. gallons). After filling the transmission do not use the creeper with the shift in the low speed (lever towards the rear) until the tractor has been operated for about one hour or so, as this chamber is filled from the transmission by splash.

If the tractor is operated at very low temperature the pulley housing and transmission lubricant may be thinned with one half gallon of kerosene, but before using in warm weather this thinned mixture MUST be drained and replaced by new oil.

QUALITY OF LUBRICANT — Use a good grade of mineral oil made by a reputable manufacturer as the best assurance of trouble-free service. SAE 90 transmission lubricant can be used both winter and summer.

FRONT WHEEL BEARINGS — To provide satisfactory lubrication to the front wheel bearings remove wheels, clean and repack with wheel bearing grease periodically.

PRESSURE GUN LUBRICATION — Use a good quality grease, not one that will thin out under load and moderate temperatures. Keep the grease and the gun clean — clean each fitting before use and force enough lubricant into fitting to insure a fresh supply to the wearing surfaces.



INSTRUMENT PANEL AND CONTROLS

PLATE No. C-8-46

CHOKE LEVER — as indicated by arrow (1)
This control near the upper right cover of the instrument panel is held in the open position by spring pressure and should be used only when starting. The spring loaded feature prevents undue choking and unnecessary engine wear and excessive fuel consumption.

IGNITION SWITCH — as indicated by arrow (2)
Duplicate keys are provided and should be removed to prevent loss, theft or tampering with the tractor by unauthorized persons. Turn to right when ready to start the engine — to the left or upright position when it is desired to stop the engine.

LIGHT SWITCH and GENERATOR CONTROL SWITCH — as indicated by arrow (3)
This is combined into one and has three positions: (a) full in-low rate charge; (b) half out-high rate charge; (c) full out-lights on and generator full charge. (See further instructions under Wiring Diagam on page 22.

STARTER SWITCH — as indicated by arrow (4)
This is pushed when one desires to start the engine. CAUTION — ALWAYS have gear shift in neutral position when starting.

OIL GAUGE — as indicated by arrow (5)

This shows the pressure in the oil lines leading from the pump to the engine bearings and should be watched every time the engine is started. Pressure should be between 20 to 25 pounds. If not between these pressures check the oil level, and if below the "low" mark, check for leaks in the oil lines to the filter and gauge. If there are none, a qualified mechanic should be consulted and the engine should not be run until corrected.

AMMETER — as indicated by arrow (6)

With the light switch half out (first notch past full-in) the ammeter should show from 10 to 15 amperes charge.

INSTRUMENT PANEL LIGHT — as indicated by arrow (7)

The switch on the panel light will turn the light on only when the ignition switch is turned to allow operation without the headlights being on and also to prevent being left on when the tractor is not in operation.

BRAKE PEDALS AND INTERLOCKING PIN — as indicated by arrow (8)

The brake pedals should be used to stop the tractor, hold the tractor in a stationary position, and to assist in making sharp turns as outlined below:

(1) To stop the tractor, the pedals should be locked together so both brakes will operate simultaneously.

(2) To hold the tractor in a stationary position, lock the pedals together, depress and lock them in the depressed position using the brake pedal lock.

(3) To assist in making a sharp turn, the pedals must be operated individually, depressing the pedal on the side toward which the turn is to be made.

CAUTION — Always lock pedals together by means of the sliding pin, when travelling on the road in fourth speed.

BRAKE PEDAL LOCK — as indicated by arrow (9)

This is shoved down while one's foot is being removed from the brake pedals to lock the pedals down and thus prevent the tractor from moving.

ENGINE SPEED CONTROL LEVER — as indicated by arrow (10)

Through the governor this lever, when adjusted to the desired speed, keeps the engine speed uniform under varying load conditions.

CLUTCH PEDAL — as indicated by arrow (11)

When depressed all the way this pedal disengages the transmission from the engine. CAUTION — Do NOT operate tractor with foot resting on clutch pedal.

HEAT INDICATOR — As indicated by arrow (12). This instrument indicates the temperature of the liquid in the cooling system.

CAUTION — Do not operate the tractor with the cooling liquid boiling. Operation of the tractor at this temperature will result in damage to the engine.

GEAR SHIFT LEVER — As indicated by arrow (13). This is of an automotive type.

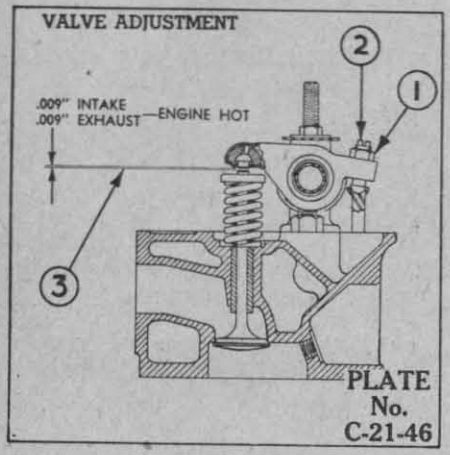
ENGINE

CONSTRUCTION — The engine is a heavy duty, 4 cylinder, valve in head, wet sleeve motor with a pressure oiling system as described in detail on page 12.

A water pump is used with a full flow by-pass thermostat to insure constant motor temperature which is so important in securing long life from the wearing parts. All working parts are protected by the large capacity oil filter used, the heavy duty air cleaner, and the careful sealing of the main bearings at the front and rear of the crankshaft.

The high quality variable speed governor provides constant engine speed control. The main connecting rod bearings are of high precision, interchangeable, steel-backed babbit design.

SERVICE — It is strongly recommended that, should any work have to be done on the motor, it be taken to your dealer. Your dealer has the proper facilities and the trained personnel to give your tractor the efficient attention that it deserves.



VALVE TAPPET ADJUSTMENT

PLATE No. C-21-46

Every 400 hours or once a year, it is recommended that a competent mechanic check the tappet clearance. A clearance of .009" is necessary between end of rocker arms and valve stems when valves are closed and the engine is warm.

(1) Before checking valve clearance, make sure ignition switch is off. This eliminates danger of accidently starting the engine.

(2) Remove valve cover.

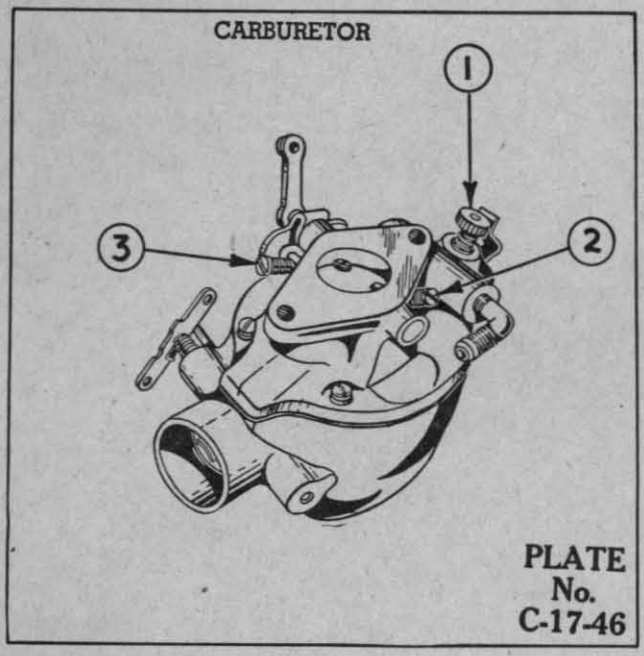
(3) Crank the engine slowly, watching No. 4 cylinder valves. When the exhaust valve is just closed and the intake valve is just starting to open, No. 1 cylinder is at top dead centre on the compression stroke — and both valves are closed.

(4) Loosen the lock nut as indicated by arrow (1) and adjust screw as indicated by arrow (2) in rocker arm so that a .009" feeler gauge as indicated by arrow (3) slips snugly between end of rocker arm and the valve stem.

(5) Tighten lock nut and recheck clearance. Check both intake and exhaust valves on cylinder.

(6) Crank engine ½ revolution at a time and check clearance of each cylinder's valves and adjust as instructed above. Do this on each set of cylinder valves in succession according to the firing order of the engine, which is 1, 3, 4, 2, as shown on Plate No. C-20-46 on page 26.

(7) Replace valve cover. Check to make sure the valve cover gasket makes an oil-tight seal with the cylinder head. Replace the gasket, if necessary, with a new one.



CARBURETOR

PLATE No. C-17-46

Functioning as it does to provide an efficient fuel mixture over wide ranges of load and speed, and having to take in fuel which may have impurities in it, it is only reasonable that a little attention should be paid to the carburetor.

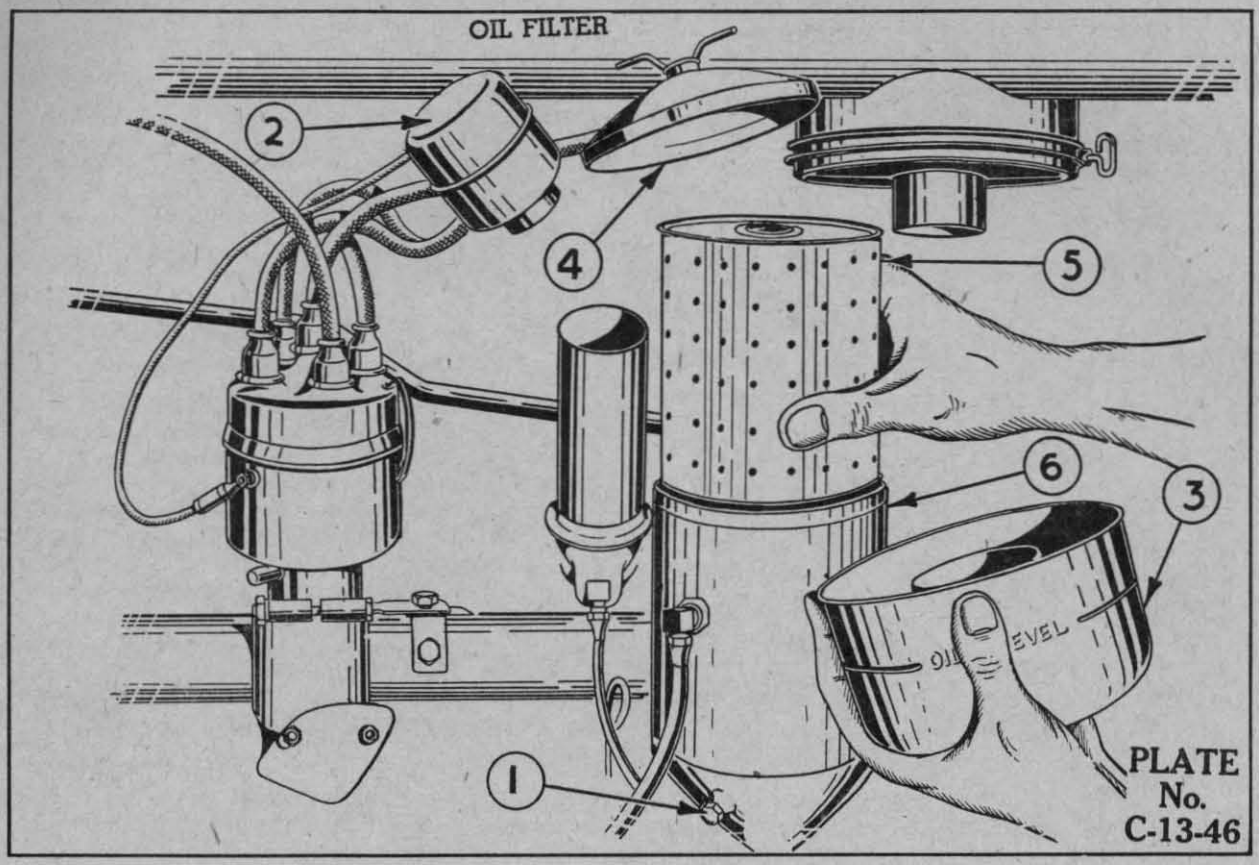
(1) **ADJUSTMENT**—High Speed Jet as indicated by arrow (1). This adjustment is provided to take care of different fuels and operating conditions and while a new engine requires a slightly richer mixture, the operator will soon find that the tractor performs best with the screw from 1 to 1⅜ turns open. This adjustment can best be performed with the tractor at normal working temperature and under load, and after a few trials the correct position will be found. Nothing is to be gained by operating with too lean a mixture as power is lost and the engine will run warmer.

(2) Idle Adjustment as indicated by arrow (3). The throttle adjusting screw should first be set to give a slight increase in idle speed then turn the idle adjusting screw as indicated by arrow (2) in or out to give a smooth idle. Then re-adjust the throttle adjusting screw to give the correct idle speed.

(3) Float Level — With throttle body and bowl cover assembly inverted, the distance from the gasket surface to nearest edge of float is 9/32". To adjust bend levers midway between float valve and floats.

CLEANING OF CARBURETOR — Every 100 to 200 hours, depending upon operating conditions, remove the drain plug, allow some gasoline to run out and then replace.

If the carburetor is thought to be dirty remove the carburetor, dissemble it by removing the four screws holding the body halves together and wash carefully in gasoline. If it is necessary to remove the jets do so very carefully, as even the slightest damage to the jets will throw out the calibration of the carburetor. These jets should be blown out with air, DO NOT use a wire. Reassemble carefully, being sure that all gaskets are in place, screws tight and the air tube to the cleaner carefully installed and checked for air leaks.



OIL FILTER

PLATE No. C-13-46

Clean oil in an engine insures that the bearings will be properly lubricated thus keeping them cool and giving them a long life. However, all engines form sludge while in operation and minute particles of dirt also accumulate in the crankcase; as a result, acids, gums, varnish, and other by-products are present.

To remove these harmful substances a high capacity filter is used which under normal conditions will remove the dirt, etc., for around 120 hours of operation; after this time the dirt, etc., starts to plug the cartridge and soon it will be inoperative.

Every 100 hours, as outlined above, change the element as follows:

(1) STOP ENGINE —

(2) Drain filter by removing drain plug at bottom of oil filter as indicated by arrow (1).

(3) Remove oil filter cap as indicated by arrow (2).

(4) Remove air cleaner cup as indicated by arrow (3).

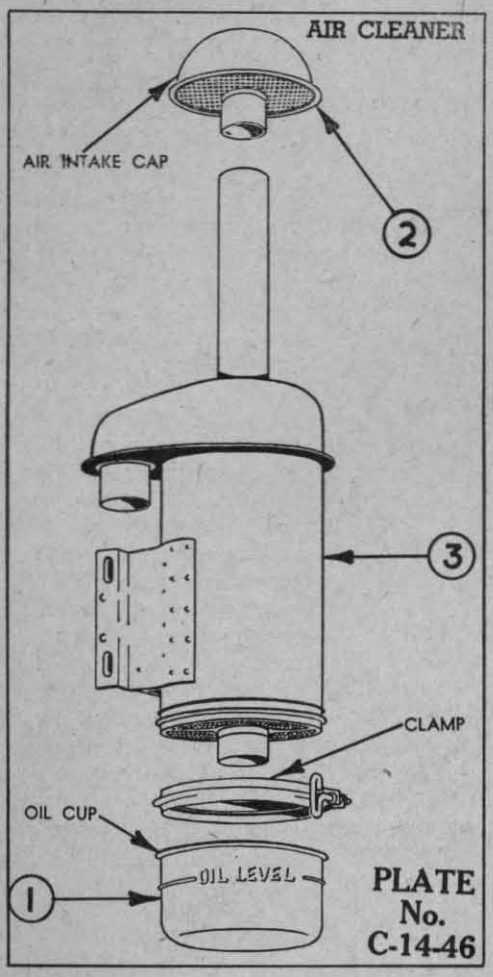
(5) Wipe dirt off of oil filter cap, unscrew clamping tee screw and remove filter top as indicated by arrow (4).

(6) Remove and discard old element as indicated by arrow (5); use a clean rag and wipe out any sludge remaining in bottom of shell as indicated by arrow number (6); inspect new element and replace as indicated by arrow number (5).

(7) Start engine and check filter for oil leaks, letting the engine run for a few minutes to allow filter to fill with oil.

(8) Check oil level and add sufficient to replace the amount which was fed into filter.

(9) IMPORTANT — Do not use cheap or substitute oil filter elements as they may be inferior in quality, and poorly packed and contain foreign substances. Always carry extra elements on hand.



AIR CLEANER

PLATE No. C-14-46

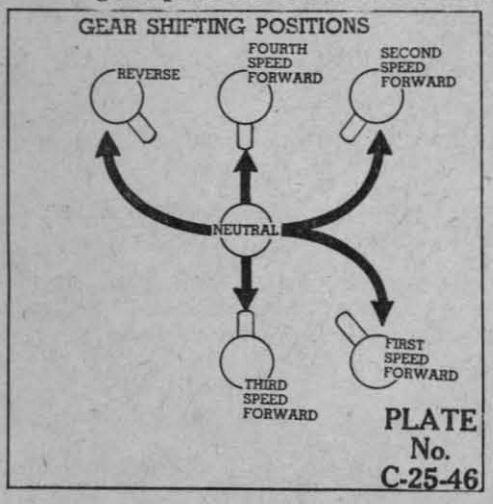
Clean air for combustion is assured by a three-stage oil-type air cleaner. A heavy screen in the air intake cap prevents large particles from entering the air cleaner. The air then passes to the oil cup where it goes through a bath of oil. As the air rises to the outlet to the intake manifold it passes through a series of oil-bathed screens and the fine dust is removed. As the oil from the screens works back down, it carries the dirt with it and the dirt settles in the oil cup. The oil cup must be cleaned and refilled regularly with new oil.

OIL CUP SERVICE — Remove, clean, and refill the oil cup every day, as indicated by arrow (1), or after every 10 hours of operation (more frequently when operating under dusty conditions).

CAUTION — Do not remove the oil cup while engine is operating. Refill the oil cup to oil level bead with the same grade of oil used in the engine crankcase. The capacity of the oil cup is 1⅜ Imperial pints.

AIR INTAKE CAP AND SCREEN — This screen, as indicated by arrow (2), should be kept clean and free from all chaff, oil, dust or paint, as clogged holes in the screen will reduce the power of the engine by restricting the flow of air.

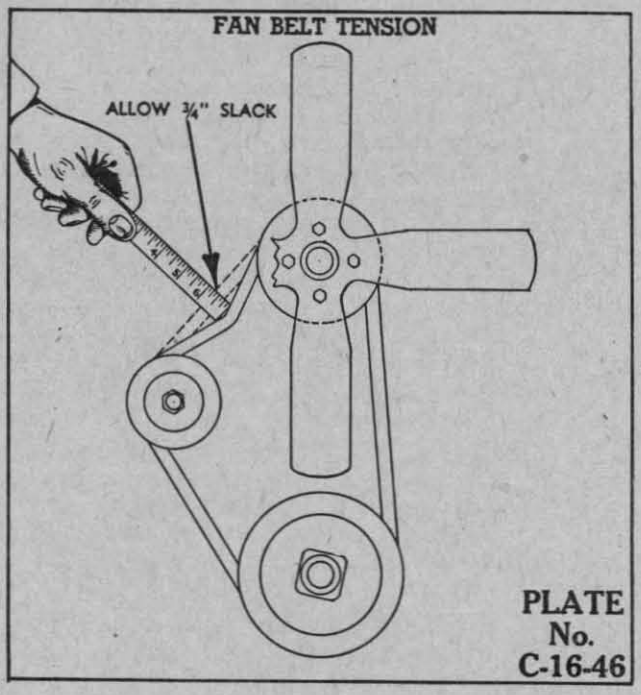
GENERAL PRECAUTIONS — If the tractor is operating under severe dust or chaff conditions, remove the whole cleaner as indicated by arrow (3) every 75 hours and wash in kerosene, being careful to clean out the air intake pipe thoroughly. It is good practice to check the connections every day of operation to see if there are any leaks, as a 1/16" hole will ruin an engine in a short time. Replacing deteriorated or damaged rubber connections is very important. Be careful to align the pipe carefully on assembly, tighten bolts thoroughly and re-check for leaks.



GEAR SHIFT LEVER

PLATE No. C-25-46

This is of an automotive type, and has four speeds forward, one reverse. Be sure the clutch is disengaged before making a gear shift.



COOLING AND OVERHEATING

PLATE No. C-16-46

COOLING DESCRIPTION: The heat given off from the engine is carried away by the radiator, assisted by the high capacity pump and fan. At the block outlet is a special thermostat which, until the engine reaches operating temperature, returns the liquid to the block through the large by-pass. The cylinder walls are cooled by thermosyphon, thus preventing local hot and cold spots which might cause distortion, and an uneven wall wear. The capacity of the cooling system is (3) Imperial gallons, (3½) U.S. gallons.

CARE — Try to use rain water when filling to prevent the addition of lime and other impurities. Fill within (1) inch of the top. DO NOT ADD WATER TO AN ENGINE THAT IS OVERHEATED OR IS PARTLY EMPTY. Wait until it cools.

OVERHEATING — As the different units of the cooling system have been carefully designed and thoroughly tested, should overheating occur, check the following:

(1) Check water level in radiator, the oil pressure gauge, oil level in crankcase.

(2) Check the fan belt for slippage; it should not exceed ¾ of an inch as shown on above plate and indicated by the arrow.

(3) Check the ignition timing as per instruction on page 28.

(4) Open the throttle fully, remove the radiator cap and see if coolant is circulating.

(5) Examine the radiator hose for deterioration and replace if rubber is loose in the inside.

(6) The radiator core protective screen may be plugged. Blow out with an air line or water hose from the back.

(7) The radiator or block may plug with foreign matter: To clear; drain out system, then fill with solution of 1¾ pounds of ordinary washing soda to 3 Imperial gallons of water, then run engine until hot, with radiator cap off. Stop the engine, drain solution, refill with clear water.

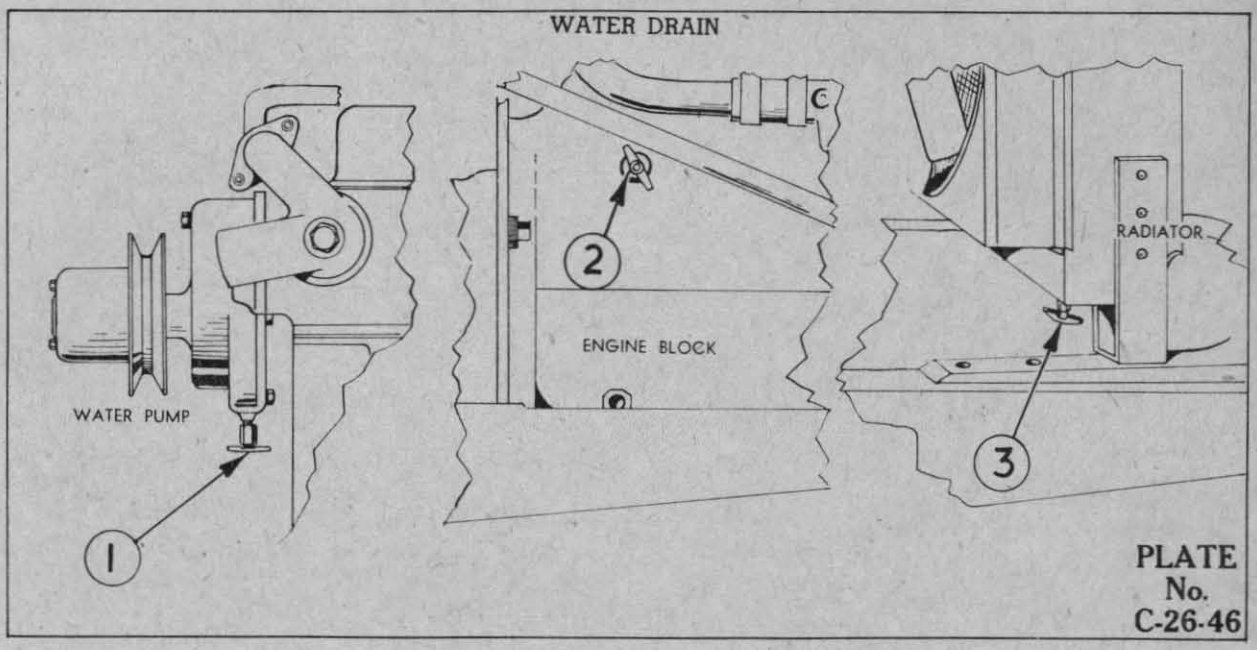


PLATE No. C-26-46

DRAINING SYSTEM

PLATE No. C-26-46

The tractor should be level before starting to drain. There are 3 drain cocks. One cock is under the water pump as indicated by arrow (1). One is under the right side of the radiator as indicated by arrow (3). One is on the right rear of the engine block as indicated by arrow (2). If the water does not flow freely from any of the cocks they should be removed and cleaned, then start the flow with a small wire.

CROSS SECTION VIEW

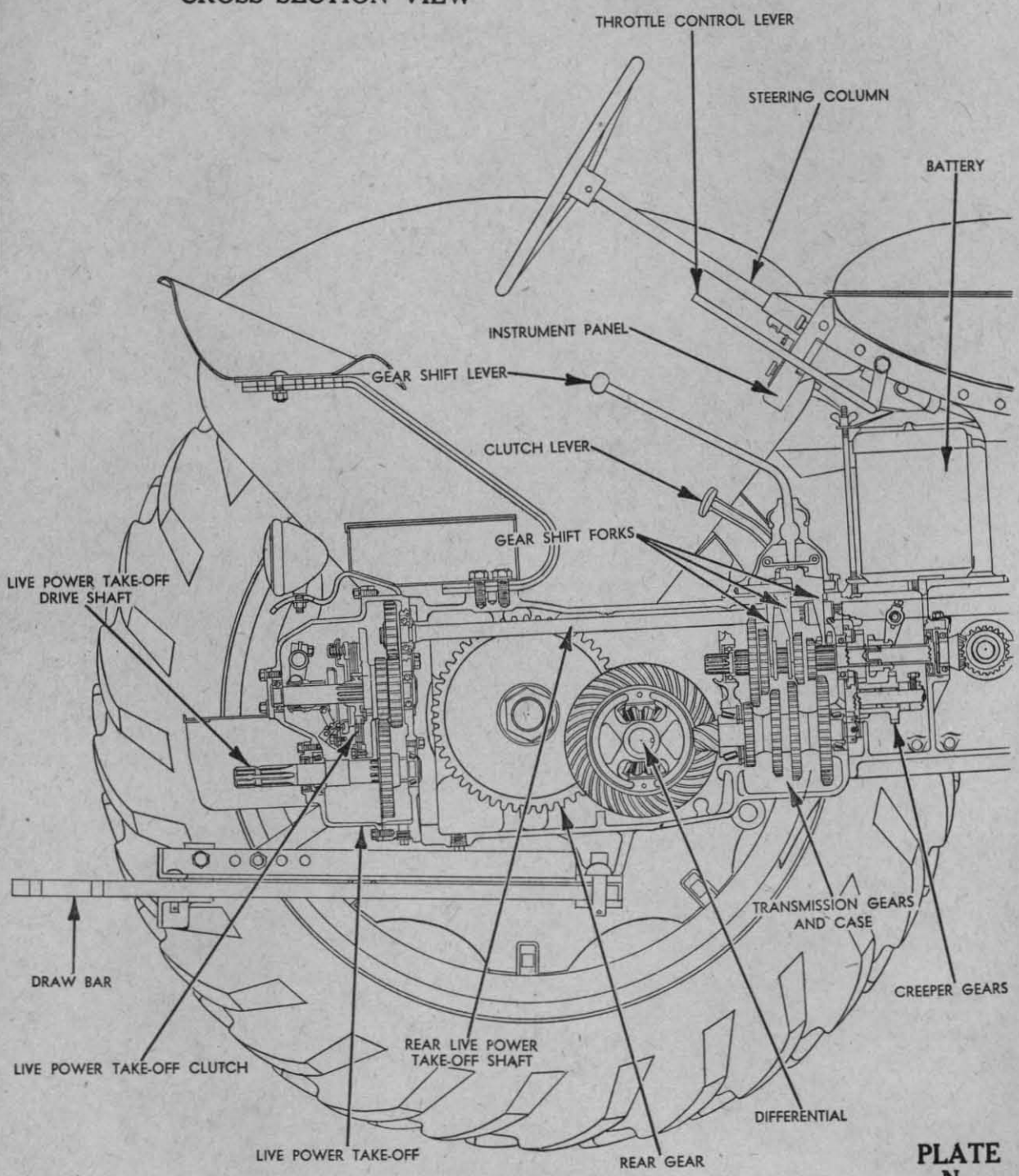


PLATE No. C-27-46

CROSS SECTION VIEW

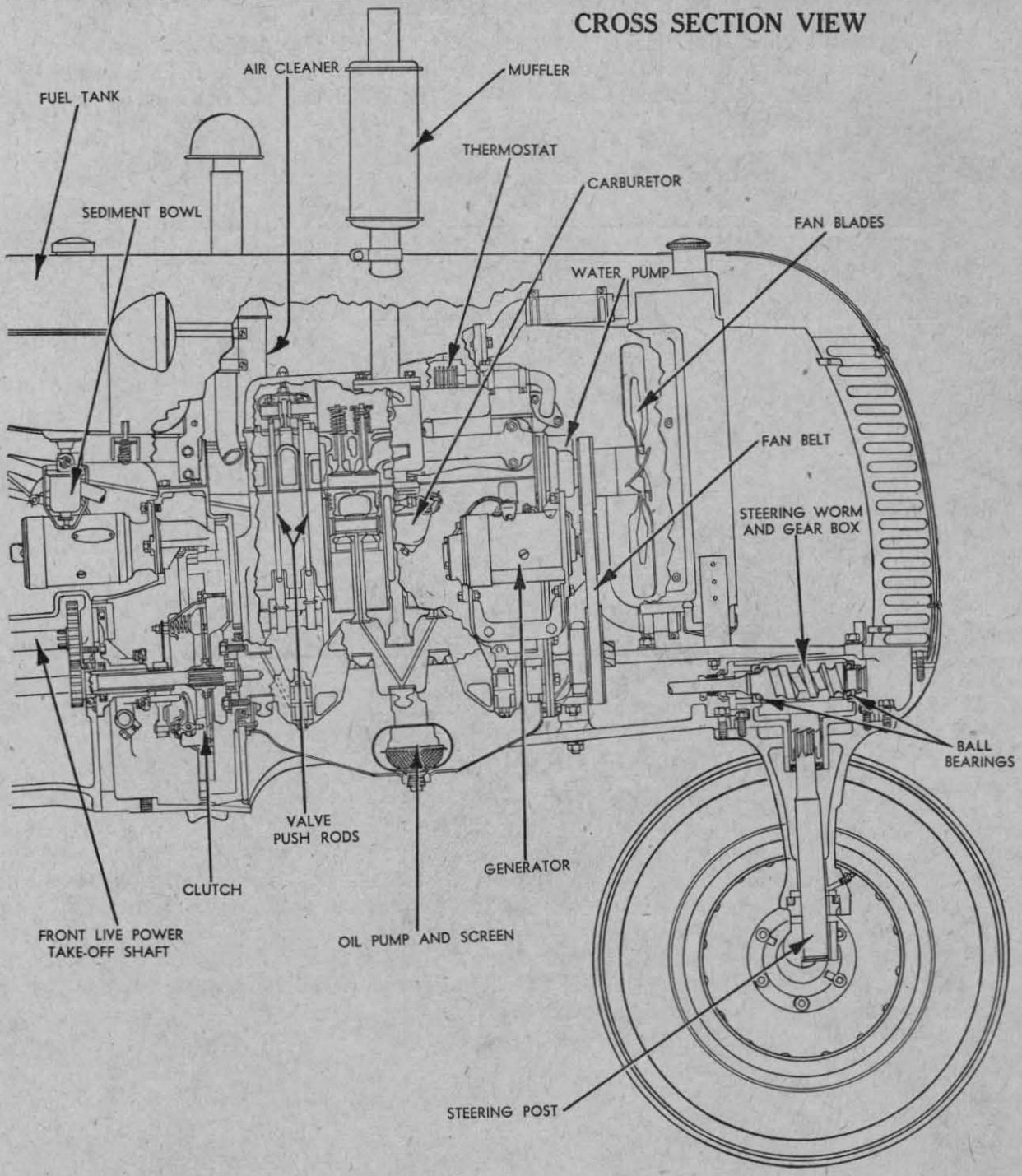


PLATE No. D-27-46

COLD WEATHER OPERATION

If run in cold weather be sure to drain the water after each operation or use a good anti-freeze solution. Ethylene Glycol or Distilled Glycerine are to be recommended as Denatured Alcohol boils at just over 170° F. The following table is a guide for the amount to be added.

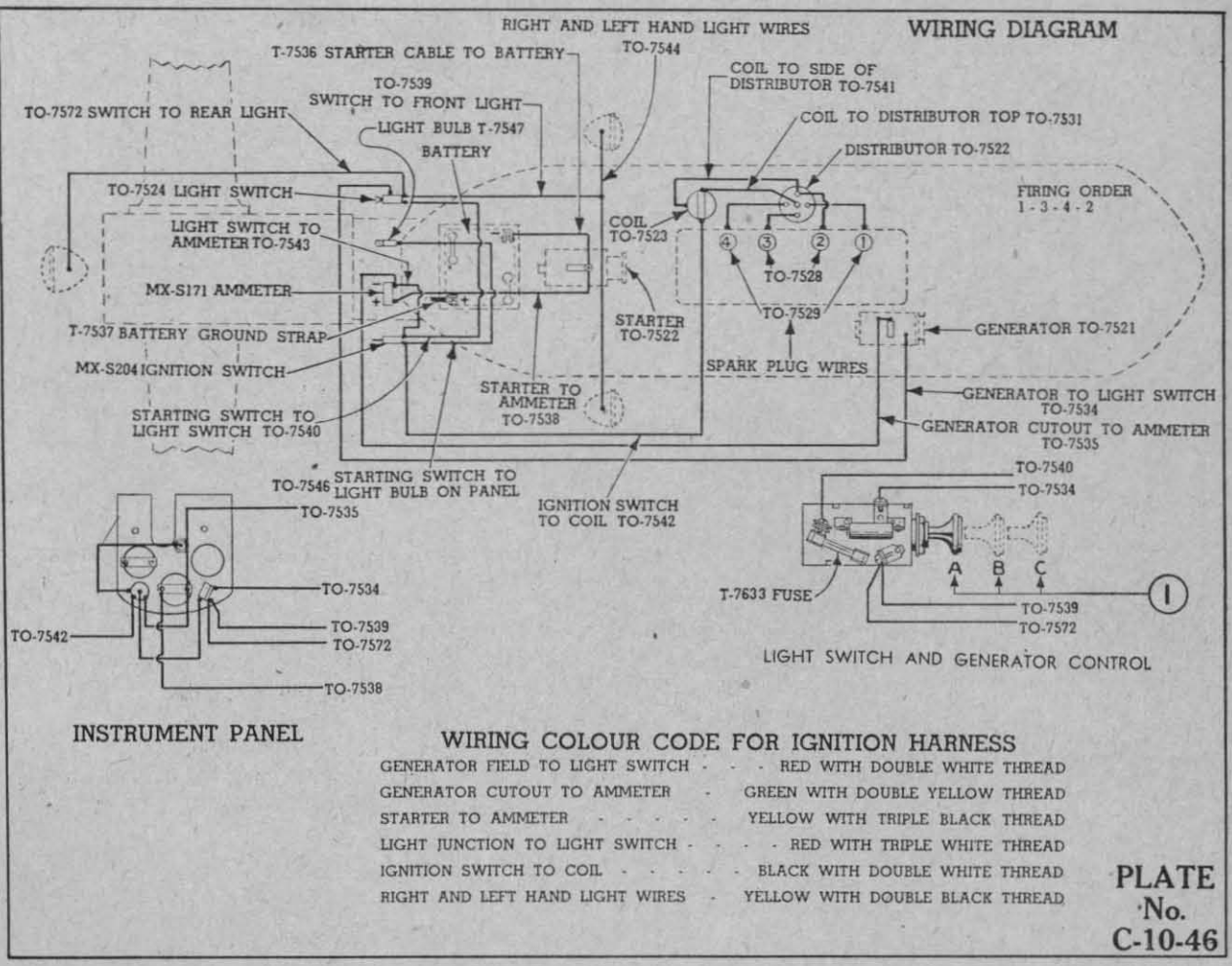
NOTE: The water pump has a lifetime packing and should require no attention.

Freezing Point Fahrenheit	Imperial Pints of Anti-freeze Required		
	Ethylene Glycol	Distilled Glycerine	Denatured Alcohol
10°	7½	11	9¼
0°	9¼	12¾	11
—10°	11	13¾	12¾
—20°	12¾	14½	14½
—30°	14½		18¼
—40°	16¼		20¼
—50°	17½		22
—60°	18½		23½
—70°	19¼		—

CAUTION — Use only one type of anti-freeze solution. Do not mix solutions, as it will be difficult to determine the exact amount of protection you have.

NEVER USE ANY OF THESE AS AN ANTI-FREEZE SOLUTION — Honey, Salt, Kerosene, Fuel Oil, Glucose or Sugar, Calcium Chloride, or any Alkaline Solution.

THERMOSTAT — The tractor is factory equiped with a 180° F. Thermostat. If Ethylene Glycol is not procurable as an anti-freeze, as recommended in the preceding paragraph, then you should replace the 180° F. thermostat with a 155° F. thermostat. (This can be purchased at your dealers) if alcohol is used. If water is used, remove the thermostat, plug the by pass, and cover the radiator, otherwise you will damage the radiator by freezing.



WIRING COLOUR CODE FOR IGNITION HARNESS

GENERATOR FIELD TO LIGHT SWITCH	RED WITH DOUBLE WHITE THREAD
GENERATOR CUTOUT TO AMMETER	GREEN WITH DOUBLE YELLOW THREAD
STARTER TO AMMETER	YELLOW WITH TRIPLE BLACK THREAD
LIGHT JUNCTION TO LIGHT SWITCH	RED WITH TRIPLE WHITE THREAD
IGNITION SWITCH TO COIL	BLACK WITH DOUBLE WHITE THREAD
RIGHT AND LEFT HAND LIGHT WIRES	YELLOW WITH DOUBLE BLACK THREAD

PLATE No. C-10-46

ELECTRICAL SYSTEM

PLATE No. C-10-46

GENERAL DESCRIPTION — The electrical system of your Tractor may be compared to the water works of a city. The generator is the pumping station; the battery; the water tank which stores the electricity; the wires, the mains which carry the current; and the light, starter, and ignition system, the units which use the current or water.

Controls are provided to adjust the flow of current just as valves are required in the main. A switch is required for the lights, the starter, and the ignition system, and in combination with the light switch there is an extra position to control the current flow from the generator to the battery to prevent overcharging the battery just as controls are used at the water works to keep the water tank from overflowing. In order to keep the current flowing correctly there must be good connections to prevent obstructing the current and there must be no leaks, such as worn insulation or corroded battery terminals.

To provide ignition of the combustible mixture in the cylinders the voltage or pressure of the current coming from the generator is not high enough so it is necessary to step it up by means of a coil. From the coil it goes to one cylinder at a time through the distributor.

DETAILED DESCRIPTION — The operator should examine the wiring diagram, Plate No. C-10-46, to understand the electrical system thoroughly.

GENERATOR — The generator provided is of the dust-proof third brush type, and in normal conditions requires little attention except the addition of 4 or 5 drops of S.A.E. 20 or 30 engine oil every 60 hours to the oiler at the front and at the rear bearings. When oiling the generator it is a good idea to also check the wiring for loose connections and worn insulation. In most cases the third brush need not be adjusted to control the rate of charge as this can be conveniently done by means of the combination light switch and generator control. If the generator gives trouble, it is suggested that your local dealer be contacted and he will give the generator the proper service to restore it to its original condition.

COMBINATION LIGHT SWITCH AND GENERATOR CONTROL — As described on page 22, this switch has three positions: (a) Full In- Low Rate Charge; (b) Half Out- High Rate Charge; (c) Full Out-Lights on the Generator Full Charge, as indicated by arrow (1). The tractor operator is of necessity responsible for the correct use of the switch. Remember that overcharging will damage the battery.

STARTER — The starting motor which provides the power to crank the engine through a conventional bendix drive requires little attention, except to see that the cables on the switch are clean and tight, and that the insulation on the wires is not corroded or damaged. It is a good idea to occasionally check the three cap screws holding the starter to the flywheel cover to see that they are tight. No oiling is required on the unit as bushings with lifetime lubrication are provided.

BATTERY — The battery which stores the electrical energy, just as the water tank stores water for a city, does so in a chemical form. A regular routine should be established for attending the battery as there is no better way to insure that it will give you long trouble-free service.

To service the battery, take off the battery cover after removing the wing nut and the battery hold-down clamp.

Once a week or oftener inspect the water level and bring it three-eighths of an inch above the plates by adding distilled or clean soft water. Adding more than this may mean that when the battery is warm the water may overflow through the vents, causing corrosion. At the same time the specific gravity should be checked and if below 1225, the tractor should be operated with the light switch in the "High Charge" position a greater portion of the time, and if up to full charge, 1270 to 1285, the "Low Charge" rate should be used a greater portion of the time.

In cold weather batteries may freeze if not kept properly charged. A partly charged battery will freeze at 20° F. above zero while a fully charged battery will stand 45° to 50° F. below zero.

The battery should also be kept at a higher rate during cold weather as the demands from the starter are greater.

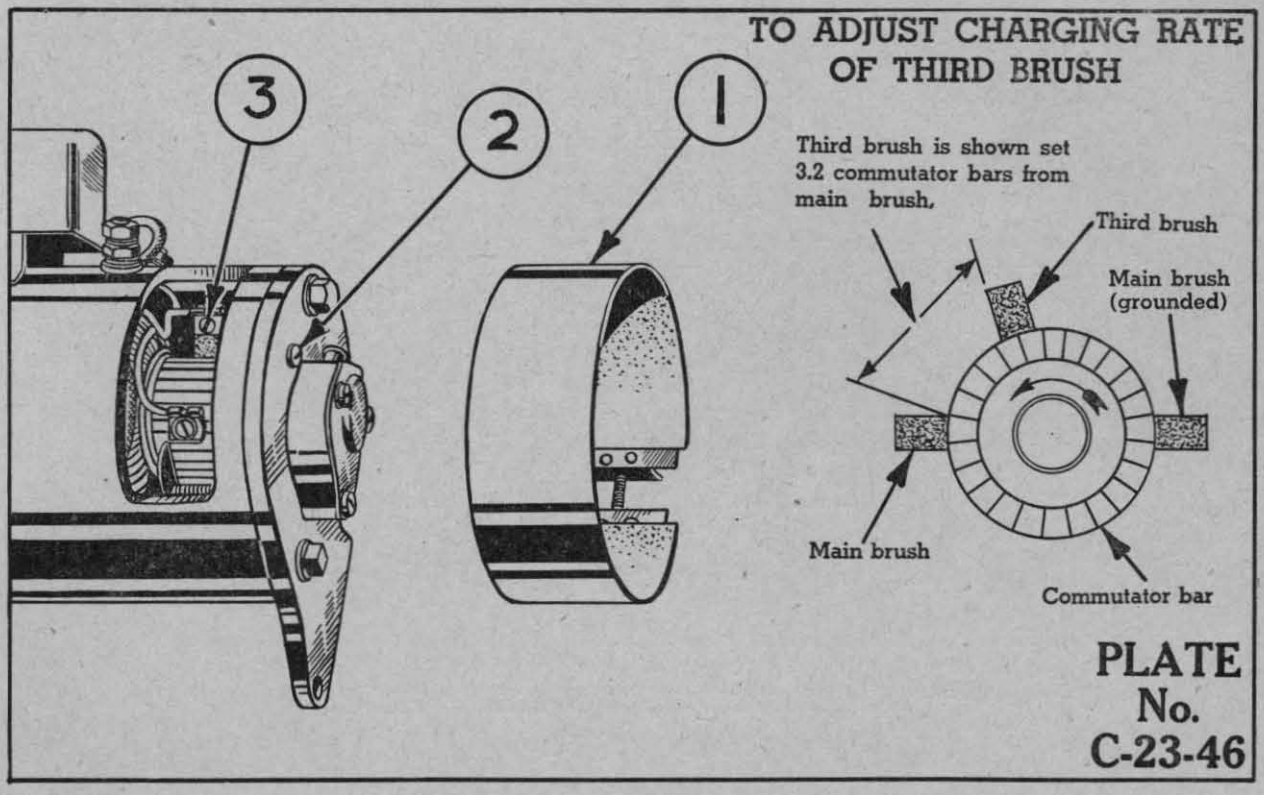
If the tractor is not being used during cold weather the battery should be removed and left at your dealer's for proper attention and care.

CORRODED TERMINALS — During the weekly inspection outlined above, examine the terminals for corrosion, and if present, wash off with hot water which may also be used for cleaning the top of the battery. Be sure to use sufficient water to wash all the corrosion down through the box and to the ground, as corrosion, even when washed away from the terminals, is still active and can damage the box badly. Two to three times a year remove the terminals, wash them as outlined above, then brighten them up with wire wool, apply a light coat of vaseline and reassemble, being sure to tighten the terminals carefully.

CAUTION — During the weekly inspection, check the terminals for tightness and the cables for corrosion and wear.

IGNITION COIL — The ignition coil serves to step up the low battery voltage to the high voltage necessary to jump the spark plug gaps.

Due to their construction, ignition coils do not require any service other than to keep all connections and terminals clean and tight.



TO ADJUST CHARGE RATE OF THIRD BRUSH

PLATE No. C-23-46

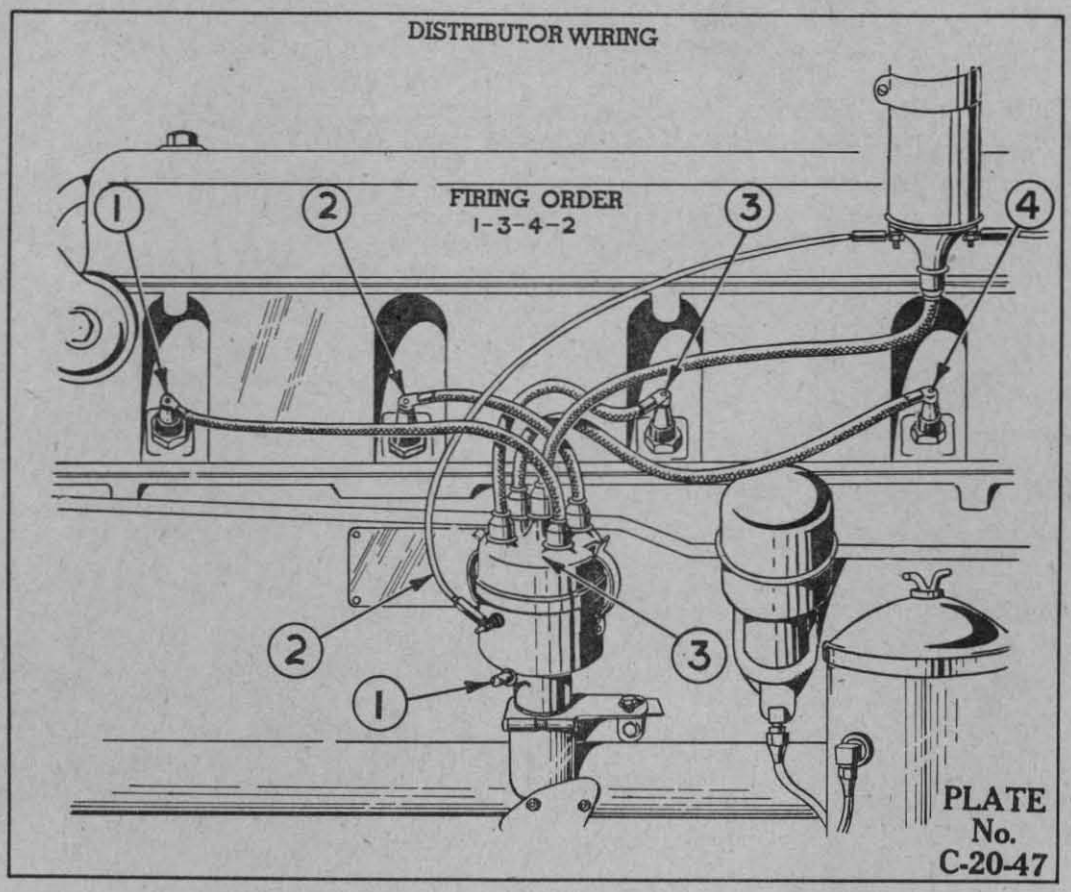
(1) Remove cover band as indicated by arrow (1). Loosen round head screw on commutator and bearing casting until lock washer tension is released. As indicated by arrow (2). DO NOT TRY TO REMOVE THIS SCREW.

(2) Change the charging rate by moving the third brush as indicated by arrow (3). (This brush is the one mounted on a moveable carrier, whereas the other main brushes are mounted directly on the end bearing casting.) To increase move brush in direction of rotation of the armature, to decrease move brush in the opposite direction.

(3) The maximum rate for the six-volt generator is 9 to 11 amperes when "Hot" and 13 to 16 amperes when "Cold" with switch in the high charge position and no electrical load. DO NOT SET BEYOND THESE LIMITS.

(4) When the above adjustments are completed, be sure to tighten the round head screw as indicated by arrow (2) which locks the third brush carrier in place.

(5) Reassemble the cover band as indicated by arrow (1) making sure the joint is not over any opening.



DISTRIBUTOR AND FIRING ORDER

PLATE No. C-20-46

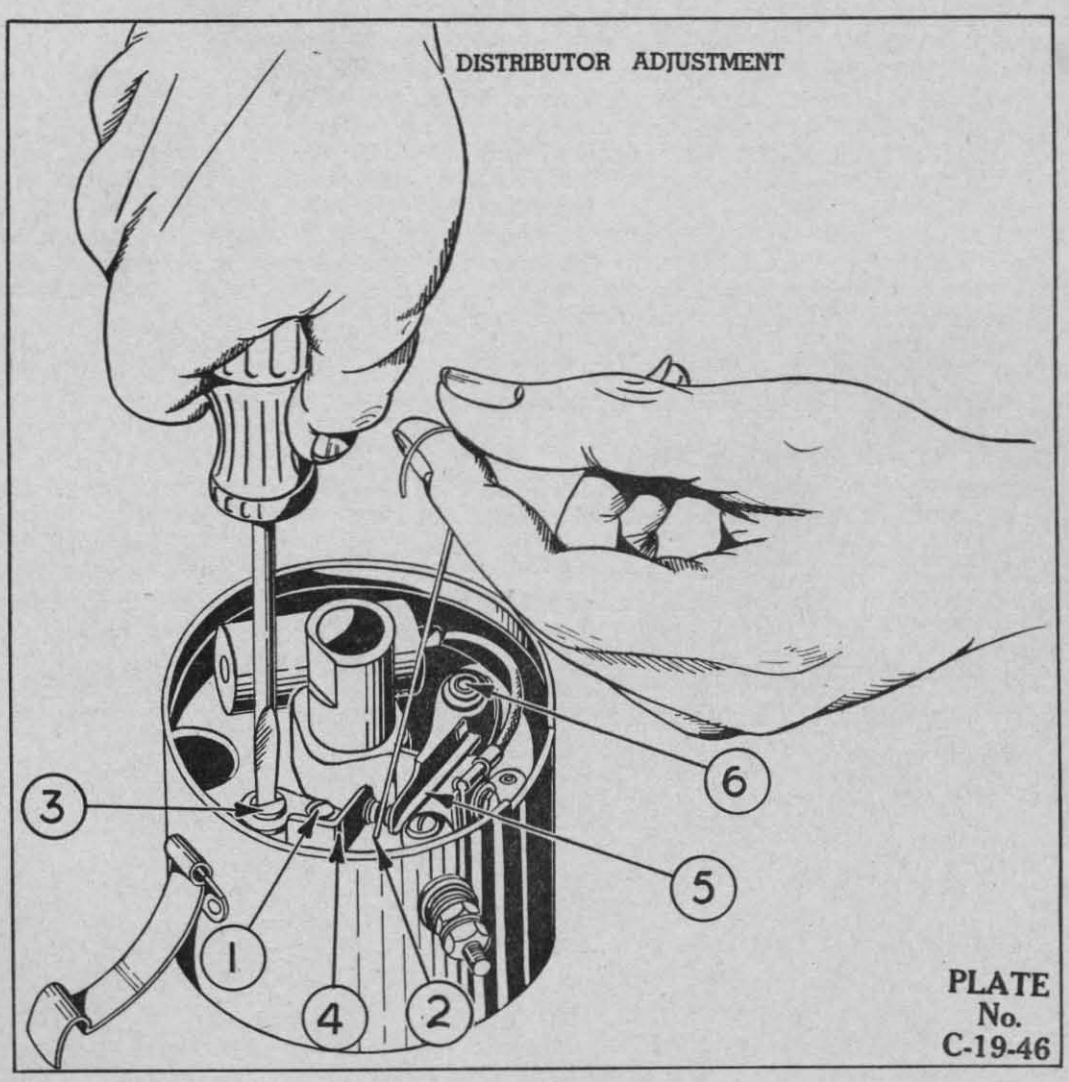
DESCRIPTION AND FUNCTION — The purpose of a distributor is to provide current to the primary winding of the ignition coil at the proper time and also to distribute the high tension voltage to the proper spark plug.

The breaker contacts of the distributor are connected in the coil primary circuit so that the rotation of a cam opens the coil circuit at the proper instant to generate a spark. The distributor cap and rotor are arranged so that the high tension voltage is connected to the correct spark plug for firing each cylinder.

The distributor provided is of the dust proof type, with a centrifugal type spark advance, and requires little attention except to add a few drops of oil every sixty hours to the oil cup as indicated by arrow (1) on the side. At the same time, the low tension wire as indicated by arrow (2) should be checked for tightness at the terminals and for wear of the insulation. The high tension leads should also be checked to see that they are firmly in their places on the distributor cap as indicated by arrow (3) and on the plugs and in the coil.

250 HOUR INSPECTION — After every 250 hours of operation, or twice a year, the cap should be removed and examined for cracks or corroded high tension terminals. If cracked the cap should be replaced and if the terminals are corroded they should be cleaned with refined "CARBON TETRACHLORIDE." DO NOT FILE THEM.

At the same time the rotor should be checked and if cracks are present it should be replaced.



BREAKER POINTS

PLATE No. 6-19-46

When inspecting the rotor and cap the breaker points should also be examined and if greyish in colour or only slightly pitted, and have a gap of between .018 to .022 they need not be replaced. If the gap is not between .018 and .022 loosen the lock screw as indicated by arrow (1) and using accurate feeler gauges as indicated by arrow (2) set points within the above limits by turning adjusting screw as indicated by arrow number (3) and recheck after tightening the lock screw. If the points are badly pitted they should be replaced, as refaced or filed contacts do not have the necessary shape and finish for satisfactory performance. If new points are not in alignment when installed bend the stationary bracket as indicated by arrow (4) to secure proper alignment. "DO NOT BEND THE BREAKER ARM" as indicated by arrow (5).

Be sure that distributor points are clean and dry.

If dirty they should be cleaned with refined Carbon Tetrachloride.

250 HOUR LUBRICATION — Add one drop only of light engine oil to the breaker arm hinge pin as indicated by arrow (6). Add 3 to 5 drops of light engine oil to the felt in the top of the breaker cam and to the governor weight pivots and slots. A slight wipe of grease should be applied to each lobe of the breaker cam.

TIMING OF DISTRIBUTOR — If the distributor has been removed from the engine it is wise to retime it in relation to the crankshaft. To do this, make up two wires with small clips on one end, the other ends being connected to the terminals of dash lamp bulb. Fasten one clip to the terminal on the side of the distributor and the other clip to the screw on the advance arm. Then remove the plug in the right front of the rear engine mount and crank the engine slowly until the marks I.G.N. are just passing the hole. When the marks are in the centre of the hole the light should go on and the rotor point should be adjacent to the outlet on the cap leading to No. 1 cylinder. If this is not so, loosen the clamp screw on the advance arm and turn the distributor until the correct timing is secured. After the setting is done be sure to tighten the screw and recheck by again turning the crank slowly and replace the plug in the engine mount when through.

SPARK PLUG CABLES — If the spark plug cables are removed note the position of the cables on the distributor as illustrated on plate No. C-20-46, on page 26.

SPARK PLUGS — Champion J5 Spark Plugs are used and every 200 to 300 hours they should be removed for cleaning and checking. A gap of .025 should be maintained and when making this adjustment always bend the outer electrode.

CLEANING SPARK PLUGS — Never scrape or clean the insulation with anything that will scratch the porcelain. Sand blasting is much better and can be done at most service stations.

HEAD LIGHTS — Keep connections clean and tight and the nuts on the clamps supporting the lights tight to prevent excessive vibration.

STEERING GEAR

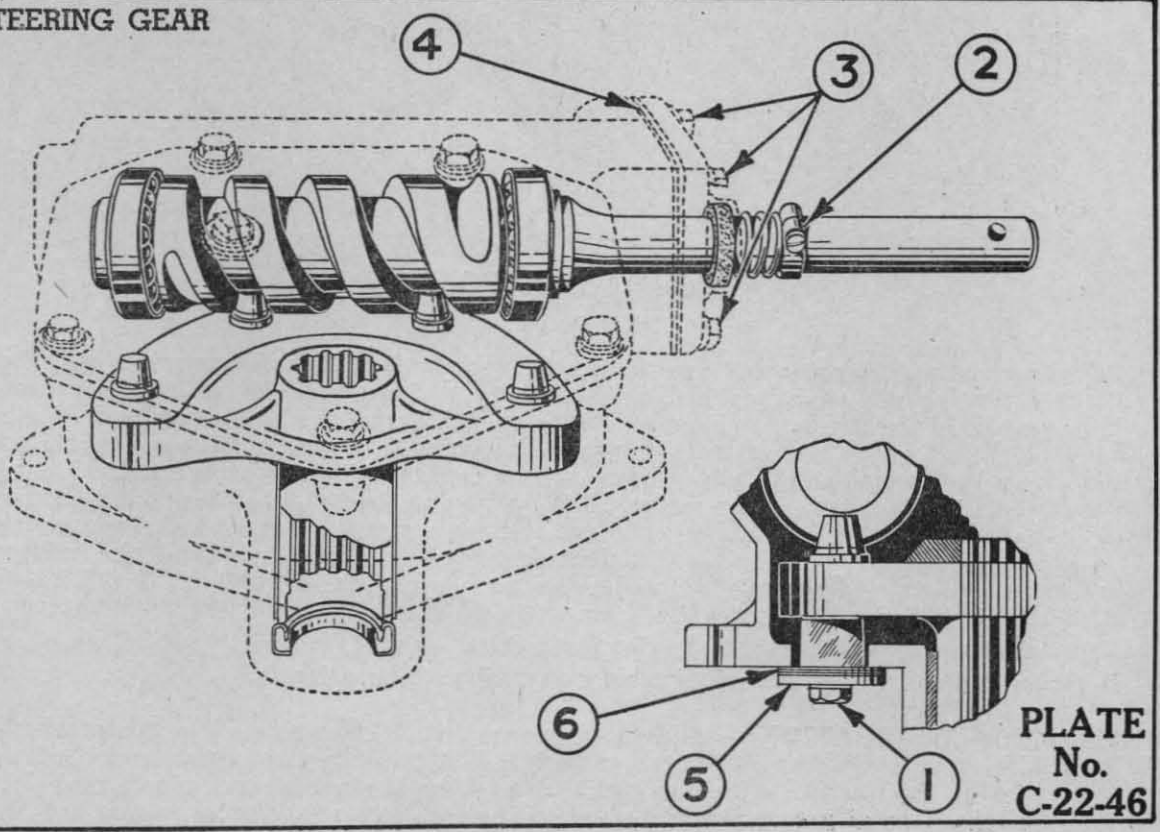


PLATE No. C-22-46

STEERING GEAR ADJUSTMENT

PLATE No. C-22-46, on Page 30

There are two adjustments on this steering gear. Both are shim adjustment.

(1) To adjust the ball thrust bearing on the cam to a barely perceptible drag loosen the two cap screws as indicated by arrow number (1), holding the adjusting pad in order to free the studs in the cam groove. Release the clamp as indicated by arrow number (2) of the oil seat unit. Unscrew the four cap screws as indicated by arrow number (3) and move out cover to permit removal of shims. (Shims are of .002", .003", and 010" thickness. Clip and remove a thin shim as indicated by arrow (4) or more as required. Tighten all four cap screws. Test adjustment and if necessary remove or add shims until adjustment is correct. Replace cover and reset clamp of oil seat unit and tighten.

(2) To adjust backlash of tapered studs in cam groove so that a very slight drag is felt when gear is turned from extreme left position or extreme right position, or vise versa. Remove adjusting pad as indicated by arrow number (5) to permit removal of shims. (Shims are of .003", .007", and .010" thickness.) Remove one thin shim as indicated by arrow number (6) or as required. Reassemble pad and shims and tighten. Test adjustment and if necessary repeat operation by removing or adding shims until adjustment is correct.

STEERING MECHANISM AND FRONT WHEELS

STANDARD WIDE AXLE TRACTOR — Carefully designed for easy steering, the main units are made of tough steel forgings accurately machined to secure good alignment. The latest type of easy action tie-rod is used to connect the highly efficient steering gear to the front wheels.

CARE — To maintain easy steering and to prolong life grease all fittings and service the steering gear as described on page 9. Adding new grease is an excellent means of repelling dirt and other foreign matter.

WHEEL ALIGNMENT OF STANDARD WIDE AXLE TRACTOR — To check alignment, first check wheel bearing adjustment as described below then jack the front end up so that the wheels are free to turn, measure the distance between the insides of the tires at hub height, in front of the axle, turn each wheel exactly one-half turn and measure between the same points behind the axle. The measurement taken in front of the axle should be $\frac{3}{8}$ less, and if not, loosen the tie rods, turn each one the same amount and re-measure. Turning the wheels one half turn as described above eliminates any errors due to weave in the wheel disc.

FRONT WHEEL BEARING ADJUSTMENT — Frequently one should jack up each front wheel, try moving the wheel from side to side and if even the slightest movement is present between the wheel and hub remove the hub cap and pull the cotter pin. Then tighten the adjusting nut while at the same time turning the wheel by hand until slight binding is felt. The nut should then be backed off until the cotter pin will go in either the horizontal or vertical hole in the spindle. If it happens that the binding is noticed just when the cotter pin is in line with one castellation it is better to back the nut off until the next castellation is in line with the other cotter pin hole to prevent the bearing from being too tight. Be sure to use a new cotter pin if any cracking is present. BE CAREFUL to keep dirt or other foreign matter out of the grease or hub cap, which may now be assembled. Occasionally one should go over the nuts on the hubs, radius rod end and steering arms to see if they are tight.

PNEUMATIC TIRES

MOUNTING OF TIRES ON RIMS — After rear tires are mounted on the rims they should be inflated to 30 pounds pressure in order to force the tire beads firmly into the rims. The rim and tire are tapered, so this pressure is necessary in order to force the beads firmly into place.

The tire should be inflated to 30 pounds pressure every time the tire bead is pushed away for or from the rim seat at any point. Then the pressure should be dropped to the recommended pressure as given in the following paragraph, "INFLATION."

This practice should be followed, as otherwise the tire will slip on the rim and shear off the valve stem.

INFLATION — Inflation to the proper air pressure is the most important factor in the satisfactory performance and maintenance of tractor tires. For the front tires, 5.50 x 16, the proper air pressure is 28 pounds, and for the rear tires, 10.00 x 38, it is 12 pounds, except when plowing, when the pressure in the rear furrow tire should be increased by 4 pounds, giving 16 pounds pressure.

Both under inflation and over inflation are harmful. Under inflation will damage the cord body of the tire. It will cause a series of diagonal breaks in the cord fabric in the sidewall area. This usually occurs on the inner side wall of the furrow wheel tire. Under inflation will result in repeated buckling of the sidewall and constant buckling will break the cord fabric.

Inflation should always be high enough, especially in the furrow wheel, so that the tire will not buckle. The buckling can be seen, especially on hard pulls, by the driver or someone walking along the side of the tractor. If the tire buckles or wrinkles the air pressure should be increased to the point where the sidewalls remain smooth while the tractor is pulling on the tire. Under inflation may also allow the tire to slip on the rim, which in turn will tear off the valve stem of the tube. Over inflation should also be avoided. It causes loss of traction, which results in excessive slippage, causing tires to wear more rapidly.

METHODS OF INFLATION — Inflation with a hand pump is not difficult when only a few pounds are needed to inflate to the recommended pressure.

Spark plug tire pumps which will inflate the tire in from 5 to 6 minutes can be purchased from your dealer.

AIR PRESSURE SHOULD BE CHECKED FREQUENTLY — Air pressure should be checked every week, and should not be allowed to drop below the recommended pressure. A special low pressure gauge, with one pound graduations (such as a Schrader No. 9350) is necessary in order to get accurate inflation. Gauges should be checked occasionally at a tire service station, as they get out of order and a correction in the reading might have to be made. Always use caps on the valves as this prevents loss of air. It is not advisable to reduce air pressure in order to increase traction as damage to tire is likely to result.

CARE OF TIRES — To insure the maximum of hours of service, watch the tread lugs — if they wear too fast, immediately add more weight.

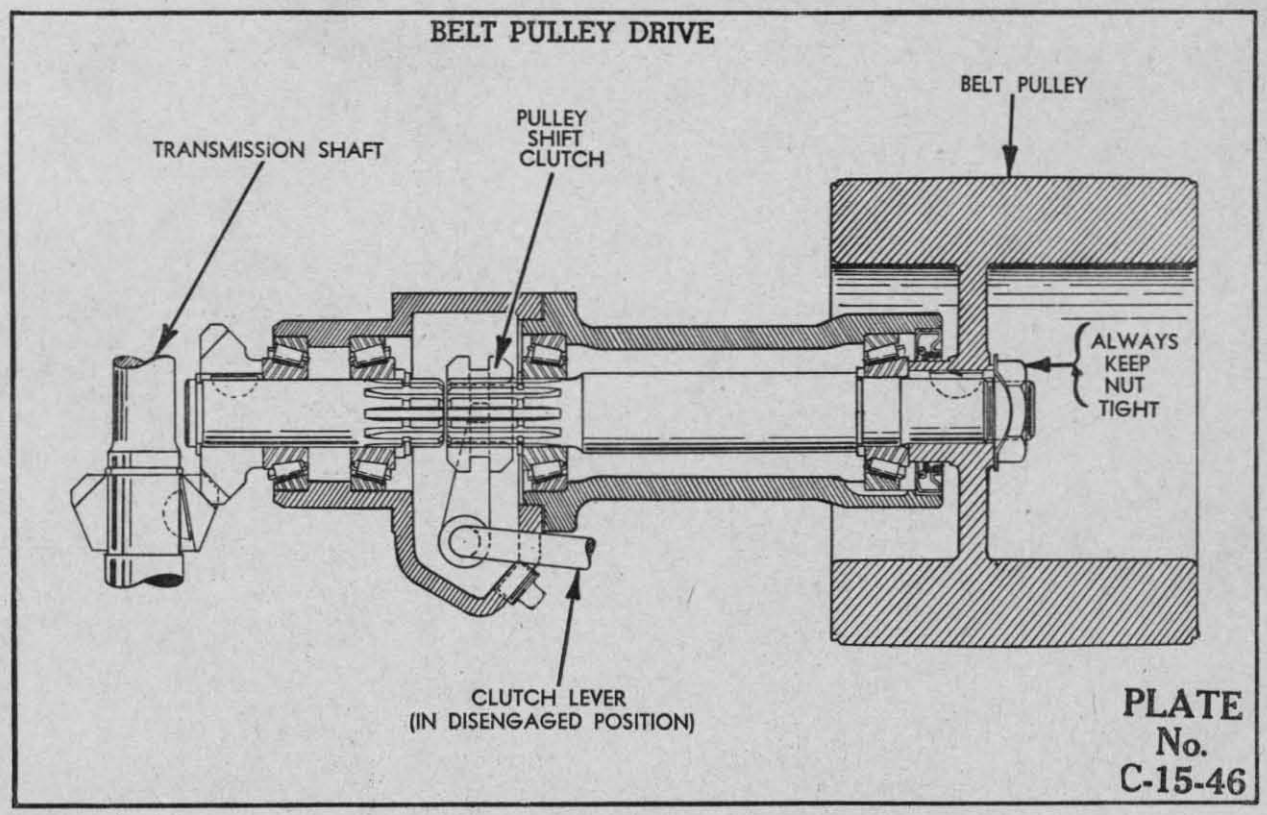
To cut down the slippage, check for high air pressure. Keep tires free from oil or grease, and avoid driving over sharp obstacles, such as stones, etc., which might cut the tires. All cuts should be repaired immediately.

TIRE PROTECTION DURING STORAGE — When not in use your tractor should be stored so that the tires are protected from the light. Before storing, the tires should be thoroughly cleaned with water.

If it is to be stored for a long period, jack it up so that the load is off the tires. If it is not jacked up, tires should be checked at regular intervals for proper inflation.

AIR PRESSURE ON TRACTORS TO BE SHIPPED — When a tractor is transported by rail or truck, all 4 ply front tires should be inflated to 30 pounds; all 6 ply front tires to 36 pounds; all rear tires to 30 pounds. This makes possible rigid blocking and prevents bouncing.

IMPORTANT — After the tractor is unloaded, and before the tractor is operated, be careful to deflate the tires to the correct pressures, as given in a preceding paragraph.



BELT PULLEY SHIFT

PLATE No. C-15-46

CARE OF BELT PULLEY — It is suggested that when considerable field work is to be done, that the belt pulley and shifting case be removed as a unit to prolong the life of the Rockwood pulley. First drive the tractor up on an incline or jack up the right side or pulley side of the tractor. This will prevent the oil running out when the pulley and shafting case is removed and will then make it unnecessary to drain the oil to remove the unit. To remove the unit, remove the cap screws that hold it to the tractor frame and pull it out, being careful to keep it free of dirt and foreign matter. Wire the shims to the unit to prevent loss, store in a clean place. Install the special cover plate, which is supplied with four cap screws. If the tractor is left out in the weather with the pulley on, the pulley should be covered with a shield to prevent damage by the elements to which it is exposed.

To engage or disengage the pulley drive, with the engine running, depress the main clutch pedal and shift it in or out as desired. When starting up a heavy separator or other machines release the clutch gradually to prevent undue belt slippage and troublesome starting. **CAUTION:** To avoid static electricity when doing belt work, ground the tractor with a short chain.

BELT PULLEY SHIFT — Before throwing the belt clutch in or out of gear, let the tractor idle and then fully depress clutch pedal. This is necessary, so that the pulley spline shaft will not be damaged when changing gears.

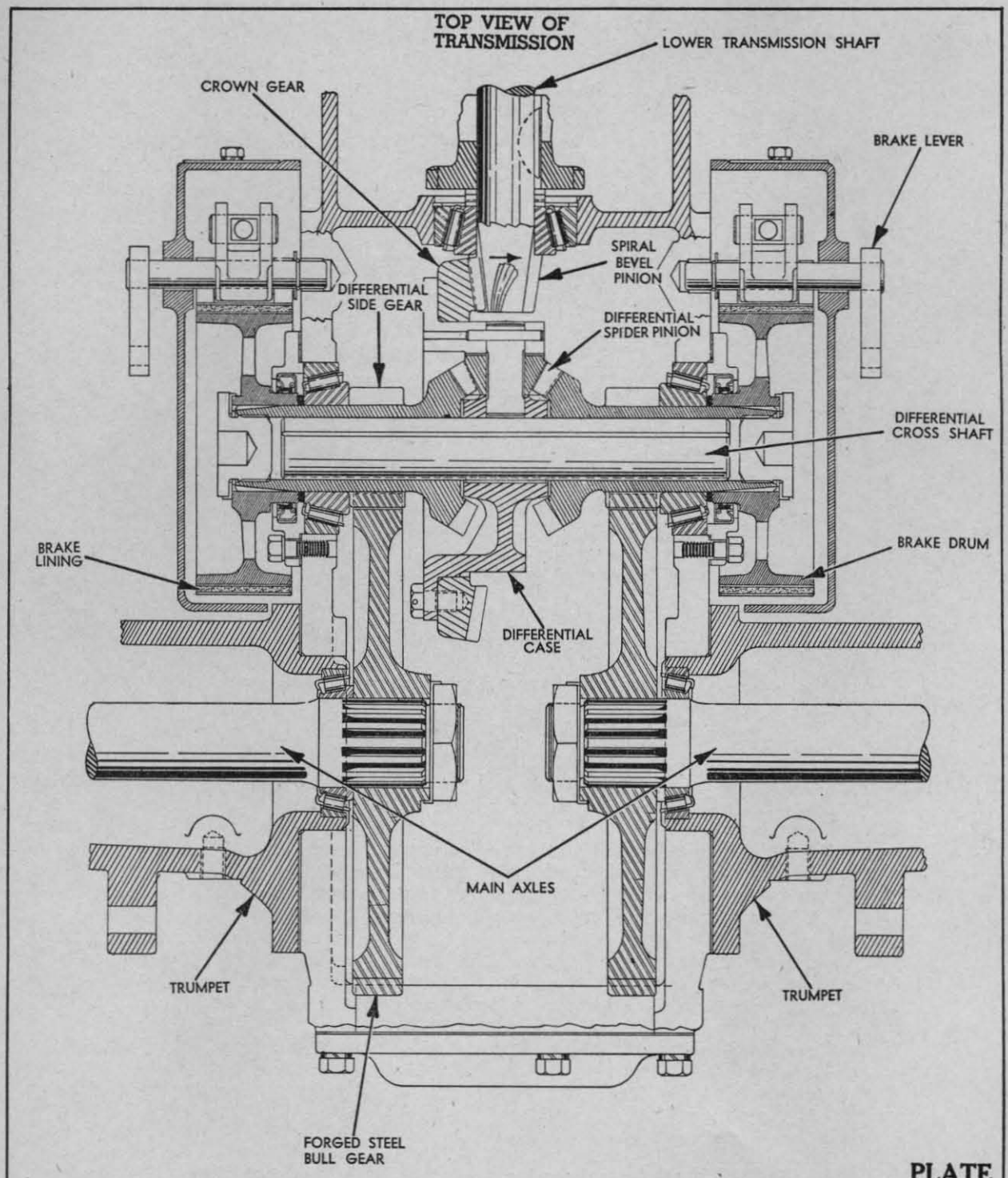


PLATE No. C-12-46

TRANSMISSION

PLATE No. C-12-46

CONSTRUCTION — A sliding gear type transmission is used giving four forward speeds and one reverse. An additional "CREEPER GEAR" can be installed as an extra in the intermediate gear case, giving a total of 8 speeds forward and two reverse. The latest types of alloys are used in the heat-treated gears and shafts.

SHIFTING — Conveniently located at the base of the shift lever is a guide which shows the desired speeds. Shifting should be done with no clashing and the clutch should be released slowly so as to prevent jerking the tractor and throwing an unnecessary strain on the whole transmission and tractor. To shift from, or to, the "CREEPER" SPEEDS, leave the main lever in neutral and shift the creeper control, as you would an ordinary shift lever, to the desired position. (See paragraph, "Creeper Gear Shift."

LUBRICATION — Four and one-quarter Imperial gallons of S.A.E. 90 transmission oil are required to bring the oil level up to oil level plug which is located on the left side of the case. See Plate No. C-9-46, item 20, on page 10.

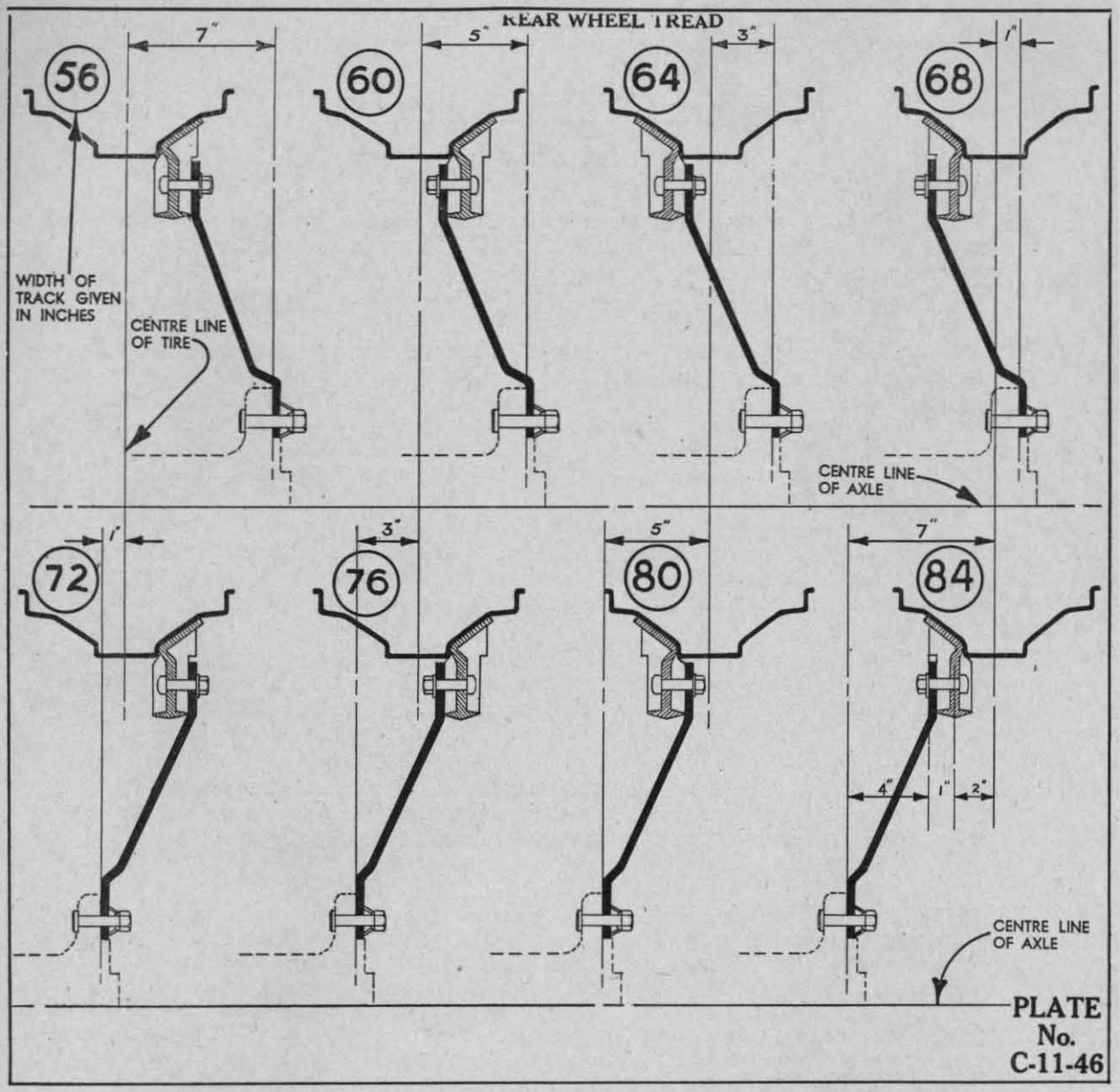
BRAKES — Each rear wheel is controlled by a separate pedal acting through linkages to external bands which contract on drums fastened to the bull pinions. With this construction each wheel may be braked independently for short turns or together for even action.

BRAKE OIL SEALS — To prevent oil seeping out past the brake drum threads a special rubber ring is used between the drum and bearing. If this special seal is removed it should be replaced with a little vaseline on the surface of the seal for easy application and long life.

ADJUSTMENT — The pedals should have a free movement of one inch to prevent brake drag and if more play develops, they should be adjusted. This is easily done by removing the floor boards and tightening the long hexagon nut with a pair of pliers. Be certain to have equal brake tension on both wheels. This can easily be checked by jacking up both rear wheels, starting the engine and depressing the pedals the same amount with the wheels running in 4th gear. Both wheels should slow down at the same time and also tend to reduce the speed of the engine. **DO NOT** adjust for band wear by shortening the brake rods.

CAUTION — Always lock the pedals together when going over 6 miles per hour.

CREEPER GEAR SHIFT — IMPORTANT — Do not change from standard gear to creeper gear or from creeper gear to standard gear while tractor is in motion. STOP the tractor and fully depress clutch pedal and then change from standard to creeper gear.



REAR TREAD ADJUSTMENT

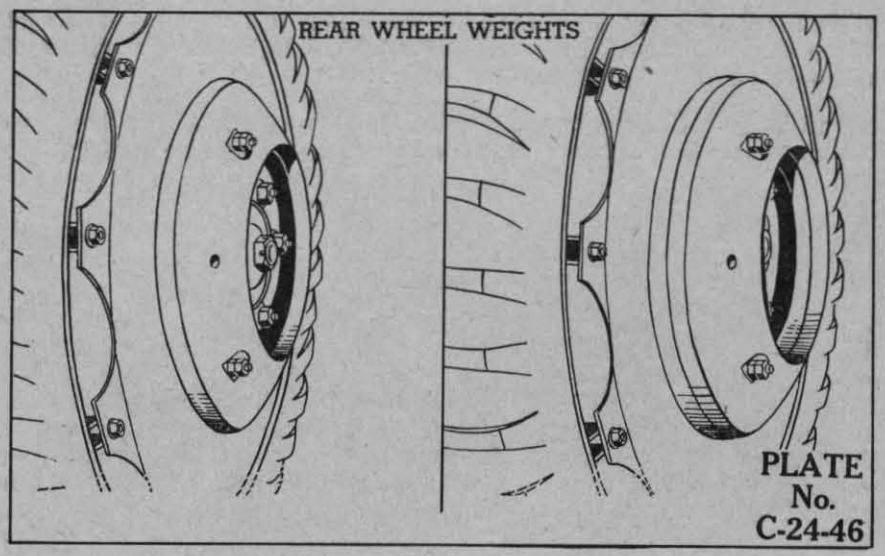
PLATE No. C-11-46

By means of a special disc and rim the rear track can be adjusted from 56 to 84 inches in 4-inch steps to accommodate the different widths of row crops and the varying demands of farmers. Splined axles with their troublesome clamping arrangements are avoided, and by following the illustrations and the following example, the desired tread can be easily secured.

The right rear wheel is shown in section as it appears when adjusted to the different widths of tread. The figures in circles show the tread width provided in the adjacent view, and on examining the different views it will be noticed that by using a rim with a special offset clamp and the special dished disc wheel the different adjustments are

easily secured. Bearing in mind that more efficient traction is secured when tires are run in the direction specified on them, the tires from the opposite wheel should be used when tread with widths 64, 68, 80 and 84 are used.

EXAMPLE — To use a tread width of 80 inches when the tread has been set for 56 inches, jack up the rear wheels carefully and block the front wheels to prevent shifting, remove the rim bolts, and the bolts holding the disc to the hub. Then shift the tires to the opposite side of the tractor, re-install the discs on the hub with the dished side out, then mount the rims to the discs with the clamp inside the disc. TIGHTEN ALL BOLTS AND NUTS SECURELY.



REAR WHEEL WEIGHTS

PLATE No. C-24-46

REAR WHEELS — The drawbar pull of a tractor can be increased by adding weight to the driving wheels. This may be accomplished by adding cast iron weights to the wheels, or by the use of liquid in the tire tube or both if necessary, depending on the type of soil.

LIQUID WEIGHT — Tractor tires may be filled with a liquid to an extent recommended by the tire manufacturer concerned. Consult your dealer for recommended percentage of liquid to be used in your tractor tires. For temperatures above 30° F. use clean water as a liquid. When operating in temperatures below freezing (32° F.) a solution of calcium chloride is recommended. A solution of approximately 23 pounds of flaked calcium chloride to 10 Imperial gallons (12 U.S. gallons) of clean water is recommended when operating under freezing temperatures. The specific gravity of 1.225 gives a freezing point of — 25° F. for the solution. To prevent heating when mixing always add the chloride to the water slowly — NOT the water to the chloride. Allow solution to cool before using.

NOTE: Your dealer is equipped to put a liquid solution in the tires.

DRAW BAR PULL — Your tractor will develop more draw bar pull in pounds if the tires are filled with a calcium chloride solution. Less slippage and less tire scruffing and longer tire life will be secured by filling the tires with calcium chloride.

CAST WEIGHT — The drawbar pull of a tractor can be increased by adding cast iron wheel weights. They are available from your dealer in sets of two, one for each rear wheel. Each weighs approximately 140 pounds. For added traction, one or two sets of weights may be installed, as shown in Plate No. C-24-46, Page 37.

CAUTION: OVERLOADING — Do not load the tires beyond their rated capacity. In adding weights consideration must be given to the load capacity of the tire.

TIRE PROTECTION DURING STORAGE — When not in use your tractor should be stored so that the tires are protected from the light. However, before storing, the tires should be thoroughly cleaned with water.

If it is to be stored for a long period, jack it up so that the load is off the tires. If it is not jacked up, tires should be checked at regular intervals for proper inflation.

HITCH

ADJUSTMENT — In all cases the hitch should be adjusted so that the centre line of pull of the tractor will fall in line with, or at least near, the centre line of draft of the hitch on the implement. Incorrect hitching will result in difficult steering and unsatisfactory work of the implement and causes unnecessary strain on the tractor, and implement, being sufficient in some cases to cause permanent damage. Make full use of the range adjustment provided by the holes in the braces to the tractor axles and by the sideways adjustment provided by the holes braces to the tractor axles and by the sideways adjustment of the drawbar in the drawbar frame.

STORING AND HOUSING YOUR TRACTOR

When your tractor is not to be used for a period of time, it should be stored in a dry and protected place. Leaving equipment exposed to the weather, for even short periods, materially shortens its life as useful equipment.

The following procedure is recommended for storing your tractor, and the lubrication precautions should be repeated every 6 months thereafter.

(1) Wash or clean and completely lubricate the tractor, referring to the "Lubrication Chart."

(2) Drain and flush the cooling system thoroughly, making sure all three drain cocks are opened.

(3) Remove the battery. Clean it off with hot water and leave it at your dealers for proper attention and care while not in use.

(4) Let the engine cool off then remove the spark plugs and pour one tablespoonful of S.A.E. 50 lubrication oil into each cylinder. Now turn engine over, 2 or 3 revolutions, to evenly distribute the oil over the cylinder walls. Then replace spark plugs.

(5) Remove valve housing cover and remove any rust found. Then flush valves, push rods, and rocker arms, with S.A.E. 50 lubricating oil. Replace valve housing cover.

(6) Remove oil filter element and, after cleaning the filter, replace with a new element.

(7) Plug the ends of the breather pipe and exhaust pipe.

(8) Drain fuel tank and carburetor, and then clean out fuel strainer glass bowl.

NOTE: Gum formed in fuel tank lines and carburetor while in storage may be dissolved with "Acetone" or a 50-50 mixture of alcohol and benzol.

STARTING ENGINES THAT HAVE BEEN IN STORAGE

(1) Remove valve housing cover and flush valves and valve operating mechanism with a mixture of one-half gasoline and one-half light lubricating oil.

(2) Remove spark plugs and pour two tablespoonfuls of the same mixture into each cylinder.

(3) Crank engine rapidly until excess oil has been blown out of spark plug holes. This will also loosen tight piston rings and wash gummy oil from valves and pistons.

(4) Drain crankcase, flush out with kerosene and fill with lubricating oil as specified in "Lubrication Chart."

(5) Check oil filter to see if the new element is installed.

(6) Remove plugs from breather pipe and exhaust pipe.

(7) After cleaning and setting gaps install the spark plugs.

(8) Close all THREE drain cocks in the cooling system and fill with clean water.

(9) Fill fuel tank.

(10) Clean air cleaner and refill the oil cup.

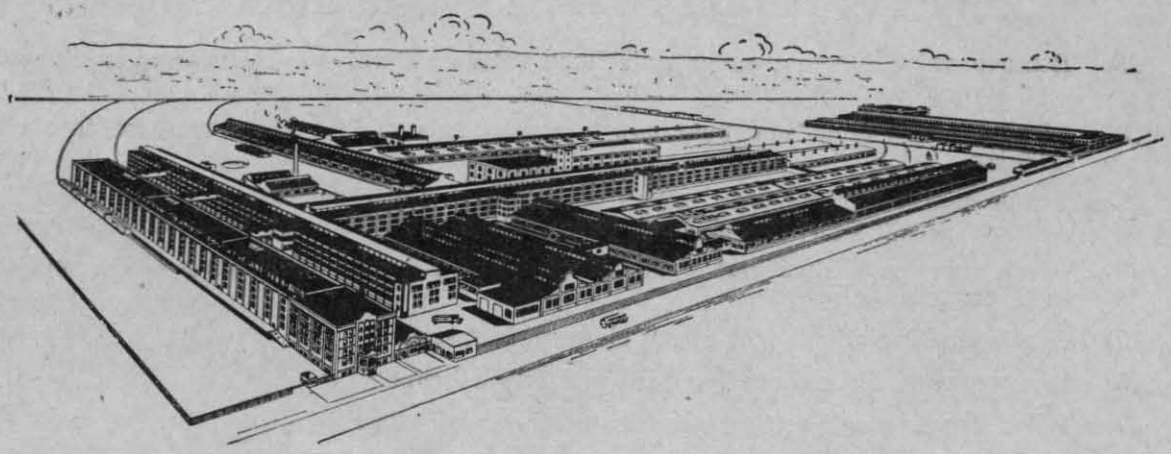
(11) Install a fully charged battery, making sure connections are cleaned, lightly greased and tight.

(12) Start the engine and let it operate slowly; check for sticking valves. If any, pour a little kerosene on valve stem.

(13) Replace valve housing cover.

CAUTION — Do not accelerate engine rapidly or operate at a high speed immediately after starting it.

Always insist on genuine Cockshutt repair parts: For better fit and greater durability.



BRANTFORD CANADA

COCKSHUTT FARM EQUIPMENT