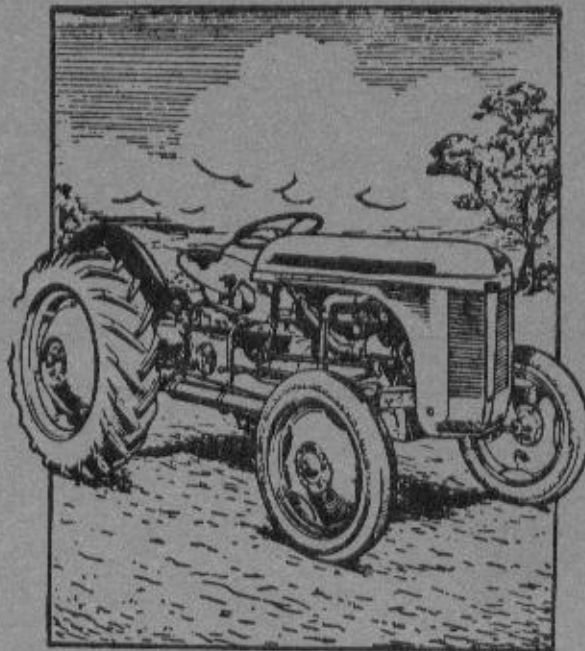


Ferguson

Publication No.
819 096 M1

CARBURETTOR ENGINE REFERENCE BOOK



TYPES

TE-A20
TE-D20
(Normal Width)

TE-C20
TE-E20
(Narrow Width)

WARNING

Keep a new tractor on light work for fifty hours.

Do not attempt to turn sharply using one brake when travelling at high speed.

Drive slowly in difficult going.

Do not carry anything on the implement.

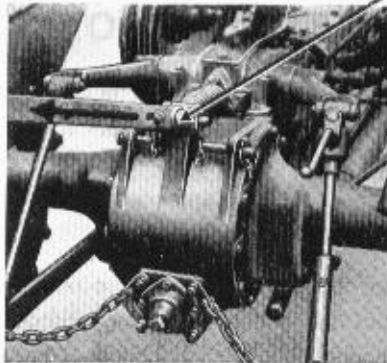
Keep all nuts and bolts tight. This precaution is a general practice with all good operators, who have found that it prolongs the life of the tractor by keeping all parts in perfect alignment.

Use an adequate shield to protect the power take-off universal joints.

Do not use the drawbar without the drawbar stays.

Allow ten seconds to elapse before re-engaging starter if previous attempt at starting has failed.

IT IS HIGHLY DANGEROUS TO PULL ANYTHING FROM THE TOP LINK CONNECTION.



YOU HAVE BEEN WARNED

WARNING AGAINST OVERLOADING

The third gear should not be used with any implement which operates underneath the ground such as a plough, cultivator, etc.

The hydraulic system is designed to operate perfectly in first or second gear but it will not operate perfectly in third gear.

The third gear is too fast for normal implement work. Implements such as ploughs and cultivators, which operate **underneath** the ground, and which are liable to catch on obstructions, are not designed to stand stresses above $3\frac{1}{2}$ m.p.h. (5.6 k.p.h.). It is a fallacy to think that operating in third gear will save the tractor and save fuel for normal work. This gear for normal work would cause overloading, and overloading is disastrous to the life of a tractor.

The third gear is meant to be used for **light work only** and for implements which operate **above the ground**, such as a light roller.

A SIMPLE TEST OF OVERLOADING

With the tractor in motion set the throttle lever about half way open. Then quickly flick the throttle fully open. If the tractor speeds up rapidly the engine is not overloaded—if slowly, the engine is overloaded. These remarks apply to **any** tractor. The overloading should be remedied at once to avoid serious damage.

When operating up a steep hill the above test might indicate overloading. This is not harmful as it is compensated for when coming downhill.

It is **continuous** overloading that must be avoided.

OPERATIONAL SECTION

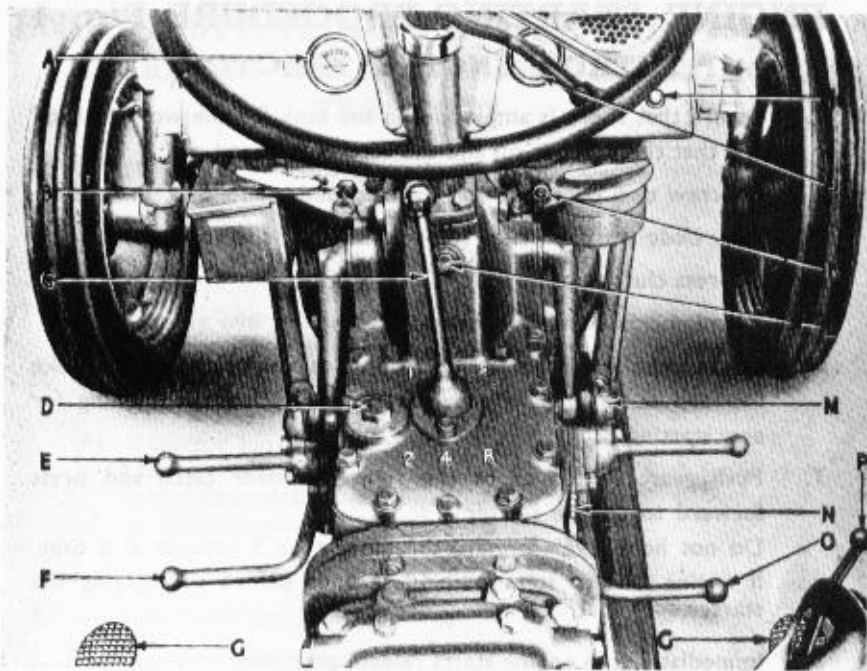


Fig. 1

KEY TO ANNOTATION

- | | |
|--|--|
| A —OIL PRESSURE GAUGE | K —CHOKE CONTROL |
| B —IGNITION SWITCH | L —STEERING GEARBOX OIL FILLER AND LEVEL PLUG |
| C —GEAR LEVER | M —STEERING DRAG LINK BALL JOINT |
| D —TRANSMISSION OIL FILLER PLUG | N —BRAKE RATCHET |
| E —FOOTREST | O —COMBINED BRAKE PEDAL |
| F —CLUTCH PEDAL | P —HYDRAULIC SYSTEM CONTROL LEVER |
| G —INDEPENDENT BRAKE PEDALS | |
| H —THROTTLE LEVER | |
| J —TEMPERATURE GAUGE (V.O. and L.O. Tractors only) | |

ENGINE STARTING PROCEDURE Fig. 1

PETROL ENGINE TRACTOR

1. Ensure that there is ample fuel in the tank for the work in hand and that the brake is on and the ratchet engaged.
2. Unscrew two way valve as explained under Fuel System Page 15.
3. Fully close throttle lever (Move anti-clockwise to close).
4. Depress clutch pedal.
5. Turn ignition switch clockwise.
6. Pull out choke control. This action closes the carburettor choke flap and automatically provides sufficient throttle opening for easy starting.
7. Push gear lever over to the right, lift over catch and press forward to engage starter.
Do not hold lever forward for more than 5 seconds at a time.
If engine fails to start wait 10 seconds before re-engaging the starter.
8. Immediately the engine starts release gear lever.
9. Warm up engine at a fast idling speed.
10. Release choke control as soon as is practicable ; release clutch pedal.
11. Before starting work check the engine oil pressure. Correct pressure is 40—60 lb. per sq. in. (2·8—4·2 kg. per sq. cm.).

USE OF CHOKE

It should only be necessary to use the choke when the engine is cold. Over-choking causes neat fuel to be drawn into the cylinders, washing away lubricating oil from the cylinder walls, resulting in unnecessary wear ; it may also be the cause of the engine failing to start. In the latter case the choke should be pushed back in and the throttle fully opened before re-engaging the starter.

To stop engine turn ignition switch anti-clockwise.

ENGINE STARTING PROCEDURE. Fig. 1. VAPORISING OIL AND LAMP OIL ENGINE TRACTORS

1. Ensure that there is ample fuel in both tanks for the work in hand and that the brake is on and the ratchet engaged.
2. When cold, start the engine on petrol. Ensure the fuel system is fully primed with petrol by :—
 - (a) turning over to petrol 2 minutes **before finishing work**. This saves fuel and will clear the system of vaporising/lamp oil for easy re-starting.
 - or**
 - (b) if tractor has been stopped on vaporising/lamp oil, set fuel tap to PETROL. Drain about half-cup of fuel from the carburettor drain tap. The fuel drained off can be returned to vaporising/lamp oil tank.
3. Fully close throttle lever (move anti-clockwise to close).
4. Depress clutch pedal.
5. Turn ignition switch clockwise.
6. Pull out choke control. This action closes the carburettor choke flap and automatically provides sufficient throttle opening for easy starting.
7. Push gear lever over to the right, lift over catch and press forward to engage starter.
If engine fails to start wait 10 seconds before re-engaging the starter.
8. Immediately the engine starts release gear lever.
9. Warm up engine at a fast idling speed.
10. Release choke control as soon as is practicable; release clutch pedal.
11. Before starting work check the engine oil pressure. Correct pressure is 40—60 lb. per sq. in. (2.8—4.2 kg. per sq. cm.)
12. When thermometer on dashboard indicates GREEN i.e. over 75°C turn to vaporising lamp oil. Do NOT warm engine on vaporising oil, using choke to prevent stalling. This will cause oil dilution and rapid engine wear.

To stop engine turn ignition switch anti-clockwise.

Operational Section

USE OF FUEL

Although petrol or vaporising lamp oil may be used efficiently, best results for economy and engine life will be obtained as follows :—

1. For continuous operation use vaporising lamp oil only.
2. On very light work, involving numerous engine stops, use petrol only. For best results when operating on petrol only, remove induction manifold shield (which is retained by two bolts only). Never operate without shield when using vaporising lamp oil.

HANDLING NOTES

The following notes have been compiled to assist you to obtain maximum service from your tractor by avoiding inadvertent damage.

CLUTCH OPERATION

Use the clutch only when selecting the gear ratio to be used or to engage or disengage P.T.O. drive. If the load on the engine is too great for the gear in use, always stop and select a lower gear. Never slip the clutch in order to increase engine speed. Never attempt to change gear when the tractor is in motion. Avoid resting the left foot on the clutch pedal as this may cause the clutch to slip.

POWER TAKE-OFF SHAFT

The shaft projects from the centre of the rear axle and is enclosed by a removable cap. The operating lever for the P.T.O. clutch is mounted in the left-hand inspection cover of the centre axle housing, as shown in Fig. 2. Movement of the lever towards the rear engages the drive. Engine clutch must be depressed to engage or disengage P.T.O. drive. Do not run with the drive constantly engaged when the Power Take-Off or Hydraulic Mechanism is not being used.

HYDRAULIC LIFT

As the hydraulic pump is driven by the P.T.O. shaft, the latter must be engaged before the hydraulic system can operate. The hydraulic control lever is situated at the driver's right-hand, as shown in Fig. 1. Rearward movement of this lever raises the hydraulic linkage, forward movement releases the hydraulic pressure, allowing the implement to fall. When an implement is in work the depth at which it operates is governed by the distance that the control lever is moved forward, and an adjustable stop, fitted to the control lever quadrant, ensures that the lever is moved to the same position each time the implement enters work.

The pump has external delivery points for use with implements which incorporate remote pressure operated hydraulic systems, such as the Ferguson High Lift Loader. Before removing plugs (see Fig. 2) to connect up implement, make sure the pump is disengaged (see Power Take-Off Shaft).

Handling Notes

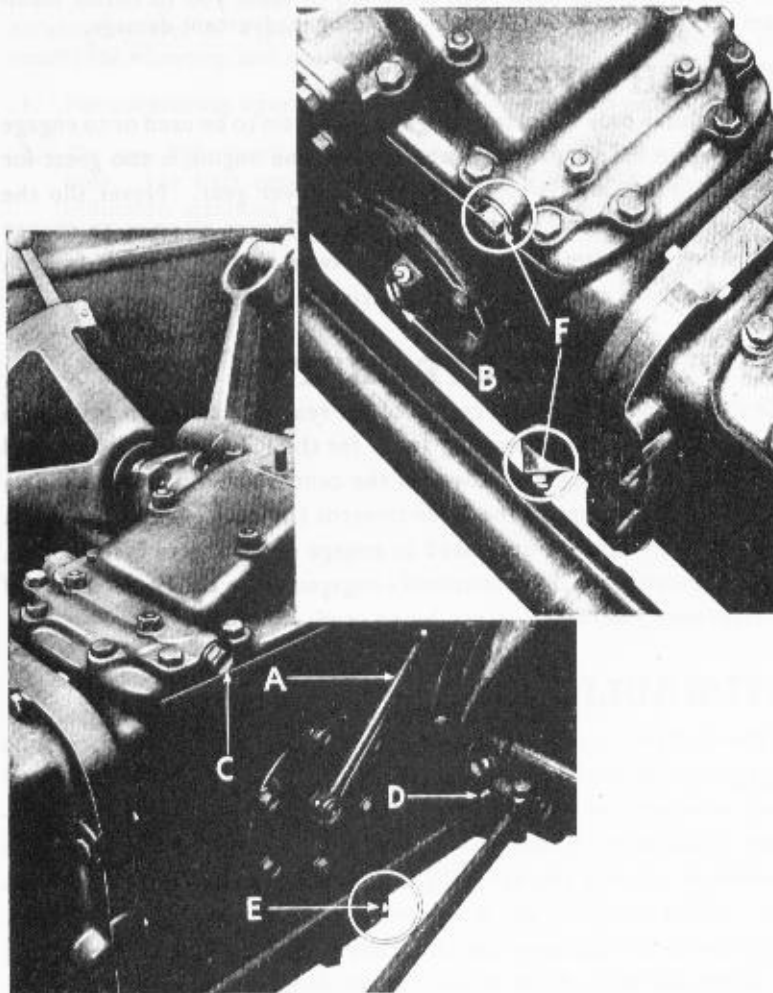


Fig. 2

KEY TO ANNOTATION

- A. OPERATING LEVER—P.T.O. CLUTCH
- B. DIPSTICK—TRANSMISSION OIL
- C. HYDRAULIC SYSTEM RELIEF VALVE
- D. GREASE NIPPLE—INDEPENDENT BRAKE SHAFT
- E & F. HYDRAULIC PUMP DELIVERY POINTS (See page 38).

HYDRAULIC PRESSURE RELIEF VALVE

Avoid using the tractor hydraulic system in any way which causes the pressure relief valve, which is internal, to discharge continually. Although this will not actually damage the system it may cause a slight reduction in the maximum operating pressure.

Where, on later tractors, the Relief Valve is fitted in the lift cover it is constructed so that, when it opens, all the working parts are lubricated and submerged in the discharged oil, it is therefore desirable for the Relief Valve to be discharged at regular intervals. This can best be effected by an occasional short attempt to raise a load on the lower links greater than the system is capable of lifting.

The maximum recommended load for normal work on all later tractors is 1000 lbs. (453.6 kg.)—on tractors produced before the end of 1948 750 lbs (340 kg.)—at the point of implement attachment on the lower links, and this figure should not otherwise be exceeded.

WARNING.—Adjustment and inspection of the Relief Valve must be strictly entrusted to an authorised service engineer, unskilled attention to this assembly may result in serious damage to the Hydraulic System.

SAFETY DEVICE

A safety device has been incorporated in the design of the hydraulic system to protect the implement if a hidden obstruction is struck. In this event, the sudden impact has the immediate effect of relieving the effective weight of the implement from the tractor rear wheels, which thereby lose traction, and the tractor stops with rear wheels spinning, without damage to the implement. The tractor can be reversed and the implement raised, then the tractor moved forward before lowering the implement at a point beyond the obstruction.

LINKAGE

TOP LINK CONNECTION

Do not in any circumstances attempt to pull or tow directly from the top link connection or to alter the setting of the main control spring located behind the driver's seat.

On earlier tractors the length of the upper link for normal operation should be the minimum provided, i.e. 25" (63.5 cms.) from ball centre to ball centre, but it may be necessary on occasion to lengthen this slightly when certain implements are operating in difficult conditions. It is essential that this assembly is perfectly rigid and that the three bolts securing the two halves are dead tight.

On later tractors adjustment of the upper link assembly is obtained by locating the centre bolt in different pairs of holes in the two members, by this means the length can be raised between 24½" (622 mm.) and 26½" (672 mm.). The shortest adjustment should only be used with certain implements, and in such cases a precise recommendation will be made.

Handling Notes

LOWER LINKS

Remember when coupling implements to the lower links, always fit the left side first and use the levelling lever to assist in fitting the right side. The check chains prevent the implement from swinging sideways into the rear wheels. It is particularly important that these chains are not twisted and that the chain anchors are assembled correctly with the chain attached **above** the centre as shown in Fig. 3.

The right-hand lift rod is marked by a circular groove, which, when level with the top of the fork into which it threads, indicates that both lower links are level.

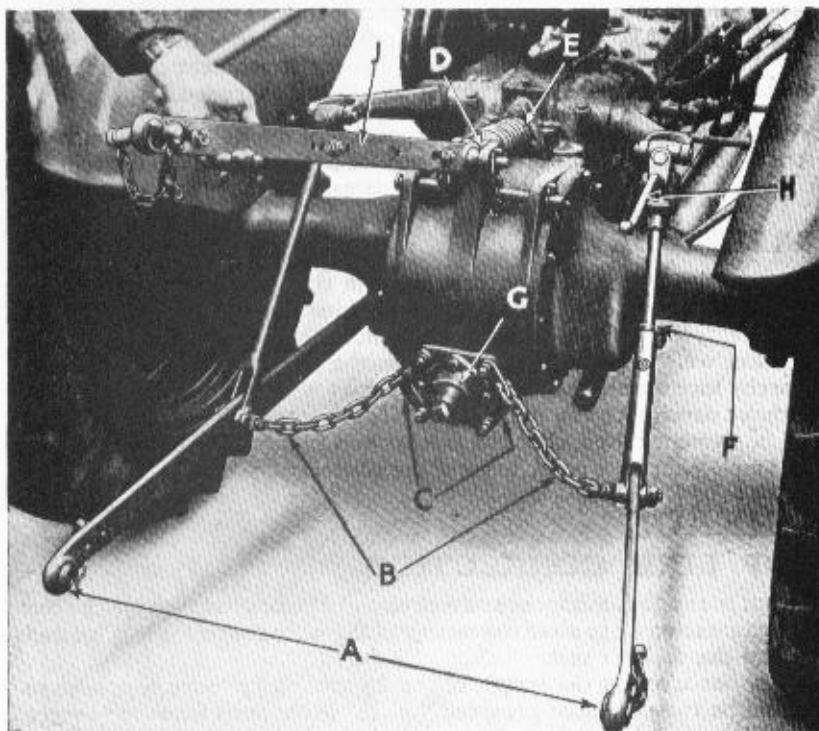


Fig. 3.

KEY TO ANNOTATION

- | | |
|------------------------|--------------------|
| A. LOWER LINKS | E. CONTROL SPRING |
| B. CHECK CHAINS | F. CIRCULAR GROOVE |
| C. CHAIN ANCHORS | G. P.T.O. CAP |
| D. TOP LINK CONNECTION | H. LEVELLING LEVER |
| J. UPPER LINK ASSEMBLY | |

ADJUSTABLE DRAWBAR. Figs. 4 & 5.

The normal setting is 18" (457mm.) between drawbar and ground when the lower links are horizontal and the notches in the stays are in line. The height range is between 10" (254mm.) and 23" (584mm.) above ground.

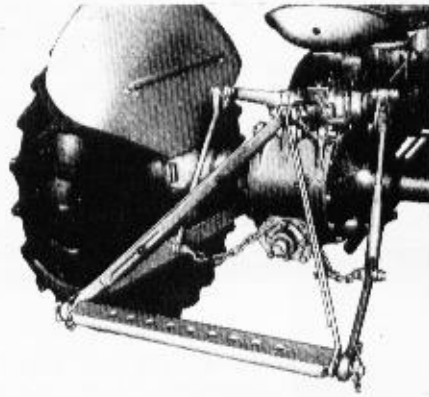


Fig. 4

When the drawbar is fitted, ensure that the hydraulic control lever is locked in the fully forward position by means of the Safety Stop as shown in Fig. 5, and that the pump gear is disengaged when the Hydraulic Mechanism or Power Take-off is not being used.

By raising the drawbar i.e. shortening the stays, traction is increased with trailed machinery. Lowering the drawbar will tend to keep the front end of tractor down at expense of some loss of traction. The height adjustment is particularly useful when working with trailers with high turntables, e.g. four wheel horse wagon conversions. By raising the drawbar, strain on the turntable is reduced and the line of draft is improved.



Fig 5.

When the drawbar is in continuous use, the working parts of the hydraulic system may become stiff through lack of use. To avoid this, disconnect the drawbar each day and by operating the hydraulic control lever, raise and lower the linkage several times.

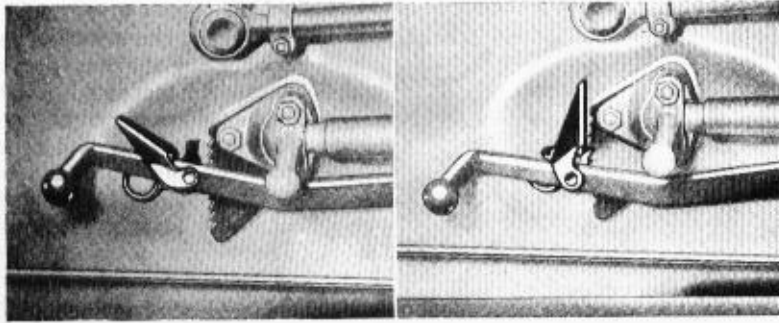
USE OF BRAKES. Fig. 1

The combined brake pedal operates the brakes on both rear wheels. Earlier tractors are fitted with a ratchet for parking and later tractors have a brake parking latch.

When the parking latch lever is set forward the brake pedal is locked down in the position established by the next pressure of the operator's foot and cannot be released until the lever is moved to the rear. Moving the lever forward does not in itself lock the pedal; it ensures however, that when next the brakes are applied, they remain 'on'. The independent brake pedals, which are for assisting reduction of the

Handling Notes

turning circle and operate the brake on the appropriate wheel only, should never be applied when travelling at high speed, as this can cause excessive stress.



Always keep brakes in a good state of adjustment, see page 21. Unbalanced or slackly adjusted brakes can be dangerous, and, if binding, will cause rapid lining wear and excessive fuel consumption.

REFERENCE SECTION

It is recommended that any adjustment not detailed should be made by mechanics of your Ferguson Distributor/Dealer.

ENGINE LUBRICATION

Engine lubrication is supplied at a pressure of 40—60 lb. per sq. inch. (2.8—4.2 kg. per sq. cm.) to the crankshaft, connecting rod and camshaft bearings and also to the timing chain and governor. A pressure feed is also supplied to the overhead valve mechanism. The reading shown on the gauge on the instrument panel may appear high when the engine is cold or is running at speed, on the other hand, a comparatively low reading when the engine is running at a low speed need cause no concern.

OIL FILTER

A replaceable cartridge-type filter (see Fig. 7) mounted on the left-hand side of the crankcase, prevents any dirt and foreign matter in the lubricating oil from reaching working and bearing surfaces.

Access to the filter cartridge can be gained by removal of the long securing bolt and withdrawal of the body to the rear, as shown. After servicing the cartridge, the joint washer between filter body and head should be examined, and replaced if there seems to be any possibility of an imperfect joint. To avoid damage to this washer, do not over-tighten the long securing bolt. On re-assembly, refill the cartridge housing one third full with clean engine oil.

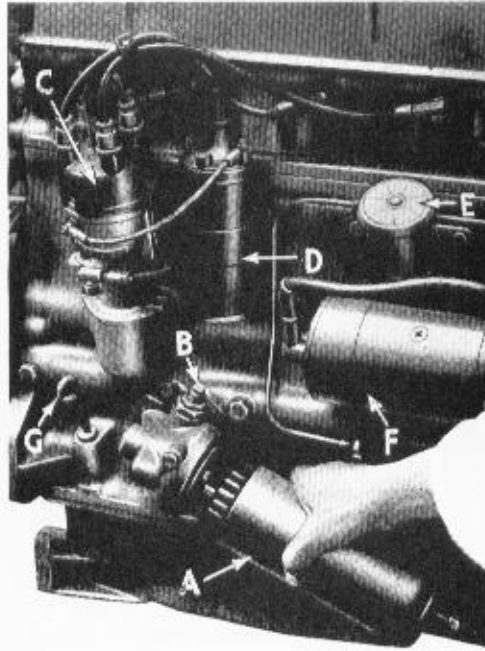


Fig. 7

KEY TO ANNOTATION

- | | |
|------------------------------|----------------------|
| A. OIL FILTER | D. COIL |
| B. OIL PRESSURE RELIEF VALVE | E. ENGINE OIL FILLER |
| C. DISTRIBUTOR | F. STARTER MOTOR |
| G—ENGINE OIL DIPSTICK | |

Reference Section

GOVERNOR

The governor is enclosed in the timing case, and lubricated under pressure by the engine lubrication system.

It functions throughout the speed-range 400 to 2000 r.p.m. under load, and all settings are obtained by the hand-throttle mounted on the steering column.

AIR CLEANER. Fig. 8

The engine life will be materially affected by the cleanliness of air admitted to the carburettor.

The instructions under the Maintenance Section referring to cleaning the air inlet screen (see inset) and changing the oil in the bowl of the air cleaner must be regularly carried out.

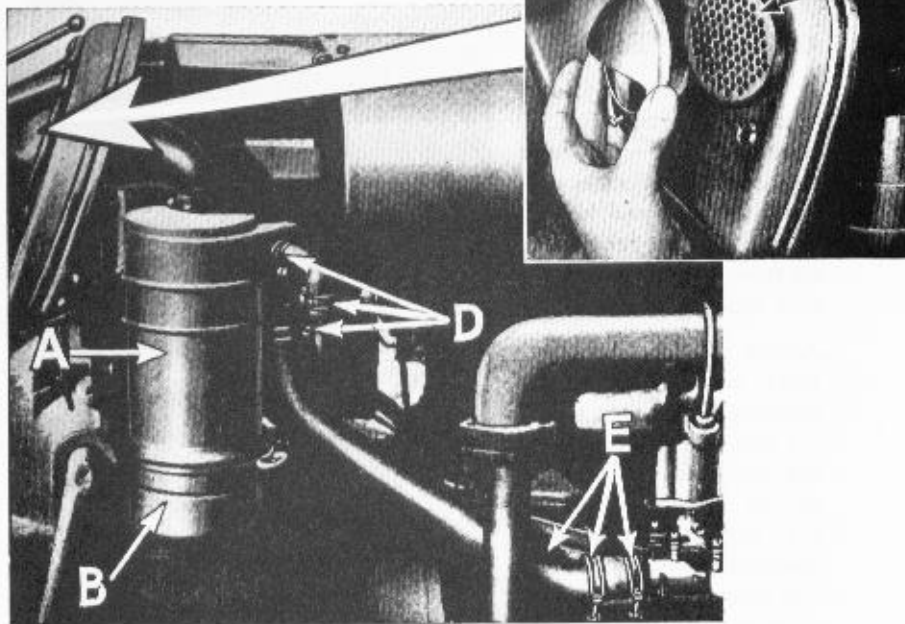


Fig. 8

KEY TO ANNOTATION

- | | |
|---------------------|------------------------------|
| A. AIR CLEANER | C. AIR INLET SCREEN |
| B. AIR CLEANER BOWL | D. & E. AIR HOSE CONNECTIONS |

The air cleaner arrangement shown in Fig. 8 is fitted to later tractors, early tractors have an air inlet which is integral with the top of the main air cleaner. The instructions given under the Maintenance Section apply equally to this type of air cleaner.

Ensure that no air is admitted at the rubber hoses and unions connecting the pipes to the air cleaner, carburettor and crankcase at points D and E.

FUEL SYSTEM

PETROL ENGINE TRACTOR

The fuel tank capacity is 8 gallons (3.5 litres) of which one gallon (4.5 litres) is held in reserve by a two-way valve, Fig. 9. When screwed in the valve is closed. When unscrewed two turns the main fuel supply is open. For reserve, fully unscrew.

Incorporated in the fuel system is a gauze filter and sediment bowl, easily dismantled for cleaning by unscrewing the knurled nut beneath the glass bowl. Remove and clean bowl and gauze whenever sediment or water collects.

FUEL SYSTEM V.O./L.O. ENGINE TRACTOR

The fuel tank is divided into two compartments, the small rear one,



Fig. 9.

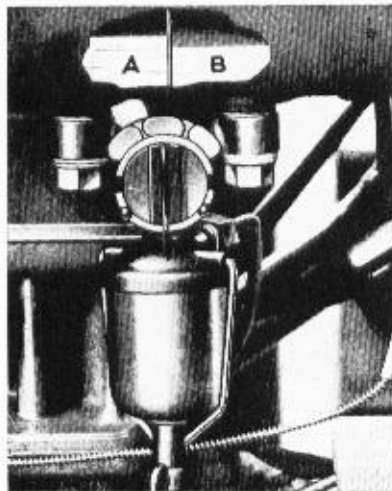


Fig. 10

B, for petrol—serving both for cold starting and reserve—the other, A, for vaporising lamp oil.

Capacities :

Vaporising Lamp Oil—

7 galls. (31.5 litres).

Petrol — 1 gallon (4.5 litres).

Selection is made by a three-way tap which connects the two compartments to the fuel system, Fig. 10. the illustration shows the tap in the OFF position.

Incorporated in the fuel system is a gauze filter and sediment bowl, easily dismantled for cleaning by unscrewing the wing nut beneath the glass bowl. Remove and clean bowl and gauze whenever sediment or water collects.

Reference Section

CARBURETTOR

A special dustproof carburettor is fitted, designed to give maximum power and economy under varying loads.

A slow running and fully-variable main jet is provided to obtain settings for a very wide range of operations.

Carburettor Adjustments

Adjustments should only be made when the engine has reached normal working temperature.

See Specification page for correct carburettor settings for your tractor.

It is recommended that the carburettor bowl is flushed out at intervals of 60 working hours by unscrewing valve C to drain off a small quantity of fuel. This prevents any possibility of jets becoming blocked.

Do not permit an air leak to occur in the pipe or rubber hoses connecting the carburettor to the air cleaner, See Fig. 8.

COOLING SYSTEM. Fig. 11

The cooling system incorporates a tubular radiator with pressure type filler cap, thermostat, fan, pump and connections. Later tractors are also fitted with a cylinder head water distribution tube.

The bearings of the centrifugal type water pump should be lubricated with grease at the regular intervals recommended in the Maintenance Section. Sufficient grease should be injected at the nipple to force a small amount of the old grease out through the drilling in the bearing housing. A bellows type thermostat regulates the water temperature and assures rapid warming of the engine. In extremely cold weather, engine starting and operating is assisted by temporarily

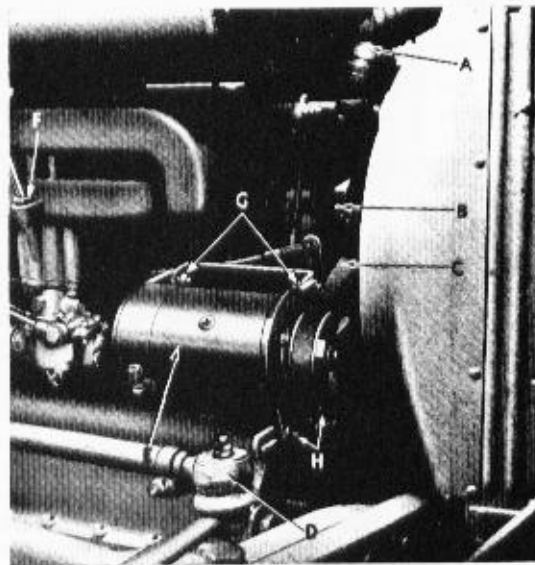


Fig. 11

KEY TO ANNOTATION

- | | |
|----------------------------------|------------------------------|
| A. THERMOSTAT HOUSING | E. DYNAMO |
| B. WATER PUMP GREASE NIPPLE | F. BREATHER PIPE CONNECTION |
| C. FAN BELT | G. & H. DYNAMO HOUSING BOLTS |
| D. STEERING DRAG LINK BALL JOINT | |

Reference Section

blanking off the lower half of the radiator grille. In extremely hot climates engine overheating can be averted by temporarily removing the hood grilles.

Drain taps are fitted to the right-hand side of the cylinder block water jacket, the radiator bottom tank and beneath the water pump body (see 'Specification'). All three taps must be opened and the radiator filler cap removed to ensure complete drainage of the system. When refilling always use rain water, if available.

The use of glycol type anti-freeze solution is recommended, three pints being the necessary amount to be mixed with the cooling water to give protection against 16°F (-9°C.) of frost.

Warning. If anti-freeze solution is not used during frosty weather, the cooling system should be drained immediately after work to prevent damage due to freezing. If the radiator filler cap is removed when the engine is hot, it should be loosened gradually and carefully to allow pressure to escape.

FAN AND DYNAMO BELT TENSION

The cooling fan and dynamo are belt driven and it is most important that the tension of this belt should be correct. Excessive tautness of the belt can put undue stress on water pump and dynamo bearings, while loss of friction due to a loose belt will adversely affect engine cooling and battery charging and, furthermore, will quickly ruin the belt. Remember that a new belt will 'bed in' and require readjusting after $\frac{1}{2}$ —1 hours service.

Belt tension is correct if, when it is depressed by hand midway between the fan pulley and the dynamo, the deflection is about $\frac{3}{4}$ " (19 mm.) To tighten the belt slacken dynamo securing bolts and swing dynamo outwards. See Fig. 11. Retighten bolts securely.

ELECTRICAL EQUIPMENT

Figs. 7, 12 and 13

COIL IGNITION SYSTEM

Comprising high tension coil and direct driven distributor with fully automatic advance and retard mechanism. The distributor unit and coil are mounted just above the oil filter and require little attention, except keeping the casings clean and free from oil and electrical connections tight. At intervals remove distributor cover, pull off rotor arm from spindle and lubricate exposed screw head with 3 drops thin oil (see Maintenance Section). Do NOT remove screw, which is drilled to allow the oil to pass into the cam bearing.

Reference Section

DYNAMO

The dynamo is supported on a bracket mounted on the right-hand side of the engine crankcase, its charging rate being automatically controlled by a combined cut-out and voltage-control regulator. Through this regulator, the output of the dynamo is inversely proportional to the state of charge of the battery.

The commutator-end of the dynamo armature shaft runs in a plain bronze bearing which should be periodically lubricated, either by filling the end of the bearing boss at the rear of the dynamo with engine oil through the hole provided, as shown in Fig. 12, taking care to ensure the hole is not clogged with dirt before filling; or by unscrewing the lubricator cap, lifting out the felt wick and spring and half-filling the cap with grease. To avoid an initial period of dry running before this grease has had time to seep through the felt pad, a small coating of grease may be applied to the exposed shaft before replacement of the cap.

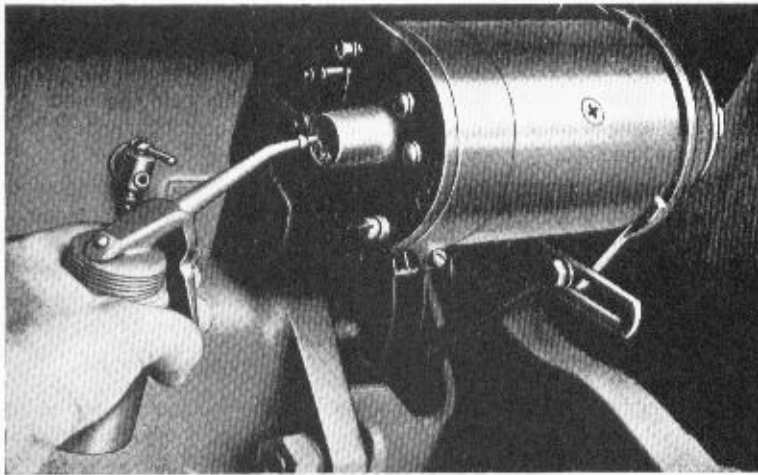


Fig. 12.

The ball bearing supporting the drive-end of the armature shaft is pre-packed with grease and needs no attention.

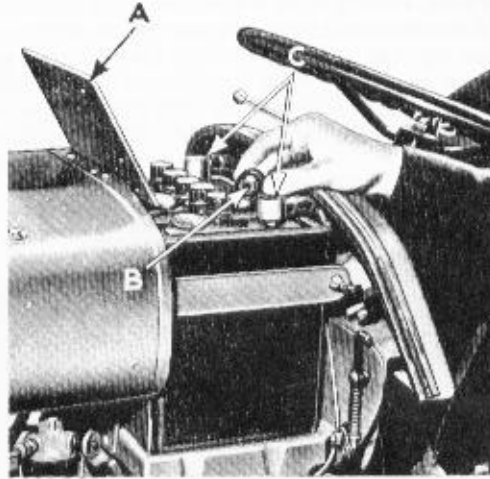


Fig. 13

KEY TO ANNOTATION

- A. BATTERY COVER B. VENT PLUG
C. TERMINALS

BATTERY

The battery is conveniently located and should be regularly inspected and all traces of dirt and moisture removed from its top surface. Terminal posts should be greased with petroleum jelly to prevent corrosion. The electrolyte should be maintained level with the tops of the separators, and no higher, using distilled water only. A pronounced difference in level in any particular cell should be reported to your Distributor; Dealer. To top up electrolyte level in cells, uncover battery and screw out vent plugs to allow liquid to be poured in. See Fig. 13.

STARTER

The electrical starter switch is operated by the gear lever, so preventing accidents by starting engine when in gear. Both starter motor bearings are pre-packed with grease and need no attention.

Reference Section

TRANSMISSION AND REAR AXLE ASSEMBLY

A common filler hole, serving both the transmission and rear axle assemblies, is situated on the transmission cover plate adjacent to the gear change lever (see Fig. 14). This oil is also circulated through the hydraulic system, and its correct level is indicated on a dipstick located in the right-hand inspection cover of the rear axle centre housing, (see Fig. 14). On supplying oil to this assembly, sufficient time should elapse

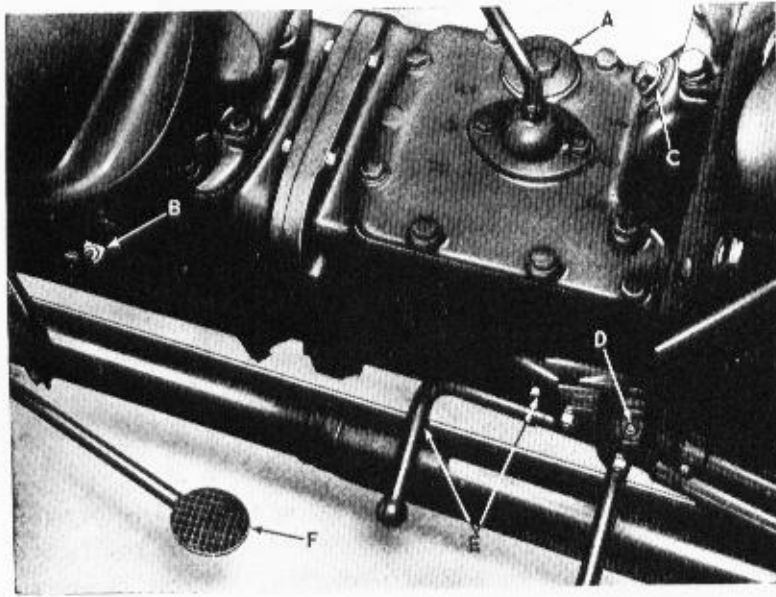


Fig. 14

KEY TO ANNOTATION

- | | |
|---|---|
| A. TRANSMISSION OIL FILLER PLUG | D. STEERING DRAG LINK BALL JOINT |
| B. TRANSMISSION OIL DIPSTICK | E. COMBINED BRAKE PEDAL AND PARKING RATCHET |
| C. STEERING GEARBOX OIL FILLER AND LEVEL PLUG | F. INDEPENDENT BRAKE PEDAL (R.H.) |

before the dipstick reading is taken, in order that a common level is attained in both gearbox and centre housing. **It is most important that only scrupulously clean oil of the correct grade is used.** Three drain plugs are fitted : two in the rear axle housing and one in the gear-box section.

Reference Section

All three plugs must be removed for complete drainage.

Grease nipples are provided on later tractors, See Fig. 15, for lubricating rear axle hub bearings ; no more than three shots of the grease gun should be applied every 720 working hours otherwise grease may penetrate into the brake drums.

Owner-service to the transmission and rear axle should be confined strictly to the schedule recommended in Maintenance Section.

CLUTCH

The clutch requires no attention between tractor overhaul periods, other than occasional pedal adjustment, which should be carried out by an authorised service mechanic.

FRONT AXLE AND STEERING MECHANISM

The oil in the steering gearbox should be maintained at the level of the plug, illustrated in Fig. 14. The ball joints at the ends of the steering drag links, illustrated in Figs. 11 and 14, should be regularly lubricated, the amount of grease supplied through the nipples should be restricted to that recommended in Maintenance Section, otherwise there is a danger of damage to the rubber boots. The front axle outer sections are fitted with nipples for lubrication of swivel pins, while the hub bearings are grease packed. Once a year the hubs and bearings should be removed, washed in paraffin and the bearings and seal repacked, and hub cavity one third filled with **clean** grease. When refitting the hub tighten the castellated nut, loosening by one segment before fitting split pin. Failure to observe this recommendation may result in excessive bearing wear. In case of difficulty consult your Distributor/Dealer.

Approximately twice yearly an oil can should be introduced through the starting handle hole below the radiator, and a few drops of oil deposited at the bottom of the front axle centre pivot pin.

HYDRAULIC SYSTEM AND LINKAGE

All adjustments should be carried out by authorised mechanics ; the only necessary owner-service is recommended in the Maintenance Section. The location of filling and draining points for the hydraulic oil are described on page 20. It is most important that no lubricant is applied to any of the linkage pivots or joints except the levelling gearbox and screw thread on the right-hand lift rod, which should receive a regular supply of grease through the lubricating nipples.

ADJUSTABLE DRAWBAR

In order that implements of other than Ferguson design may be used, an adjustable drawbar is supplied, see page 11.

BRAKE ADJUSTMENTS. Fig. 15

In order to make running adjustments to the brakes, first jack the rear wheels clear of the ground. Make sure that all shafts and pins work freely and that when brakes are 'off' the brake pedals are against their stops.

Reference Section

Slacken off the centraliser nut B, and expand the shoes fully in the drum by means of the adjuster A, until the wheel is locked. Tighten the centraliser B, and slacken adjuster A, until the shoes are just free in the drum. Six to eight clicks 'off' is the recommended adjustment.

To test the brakes for even balance engage second gear, and driving at slow speed, apply the master brake firmly. Any tendency to veer off course should be counteracted by slackening off the adjusting screw on the side that veering takes place.

Important Notice. The brakes CANNOT be adjusted by altering the length of the operating rods. The brake shoes themselves must be adjusted in the brake drums.

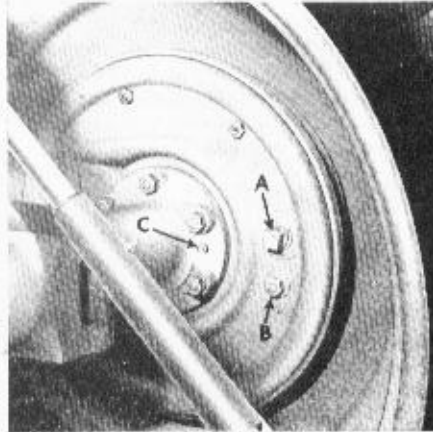


Fig. 15

KEY TO ANNOTATION

- A. ADJUSTER B. CENTRALISER NUT
C. GREASE NIPPLE—HUB BEARING

TRACK WIDTHS. Figs. 16 and 17

In order that the tractor can be used efficiently for row-crop work, the tracks of both front and rear wheels are adjustable in 4" (102 mm.) steps. On normal width tractors the rear wheels have a range of settings between 48 and 76 inches (1219 and 1930 mm.). The front wheels between 48 and 80 inches (1219 and 2032 mm.). The corresponding range on narrow width tractors:—Rear wheels 42 to 66 inches (1066 to 1676 mm.) front wheels 44 to 60 inches (1117 to 1524 mm.).

REAR WHEELS

The rear wheel track is adjustable by assembling the disc and rim in different positions as shown in Figs. 16 and 17. At the same time interchanging the wheels may be necessary in order to maintain maximum traction.

Normal Width Tractors TE-A20, TE-D20, TE-H20. When changing settings 48, 52, 64 or 68 inches (1219, 1320, 1625 or 1727 mm.) to or from settings 56, 60, 72 or 76 inches (1422, 1524, 1828 or 1930 mm.) interchange wheels.

Narrow Width Tractors TE-C20, TE-E20, TE-J20. When changing settings 42, 54 or 58 inches (1066, 1371 or 1473 mm.) to or from settings 46, 50, 62 or 66 inches (1168, 1270, 1574 or 1676 mm.) interchange wheels.

Reference Section

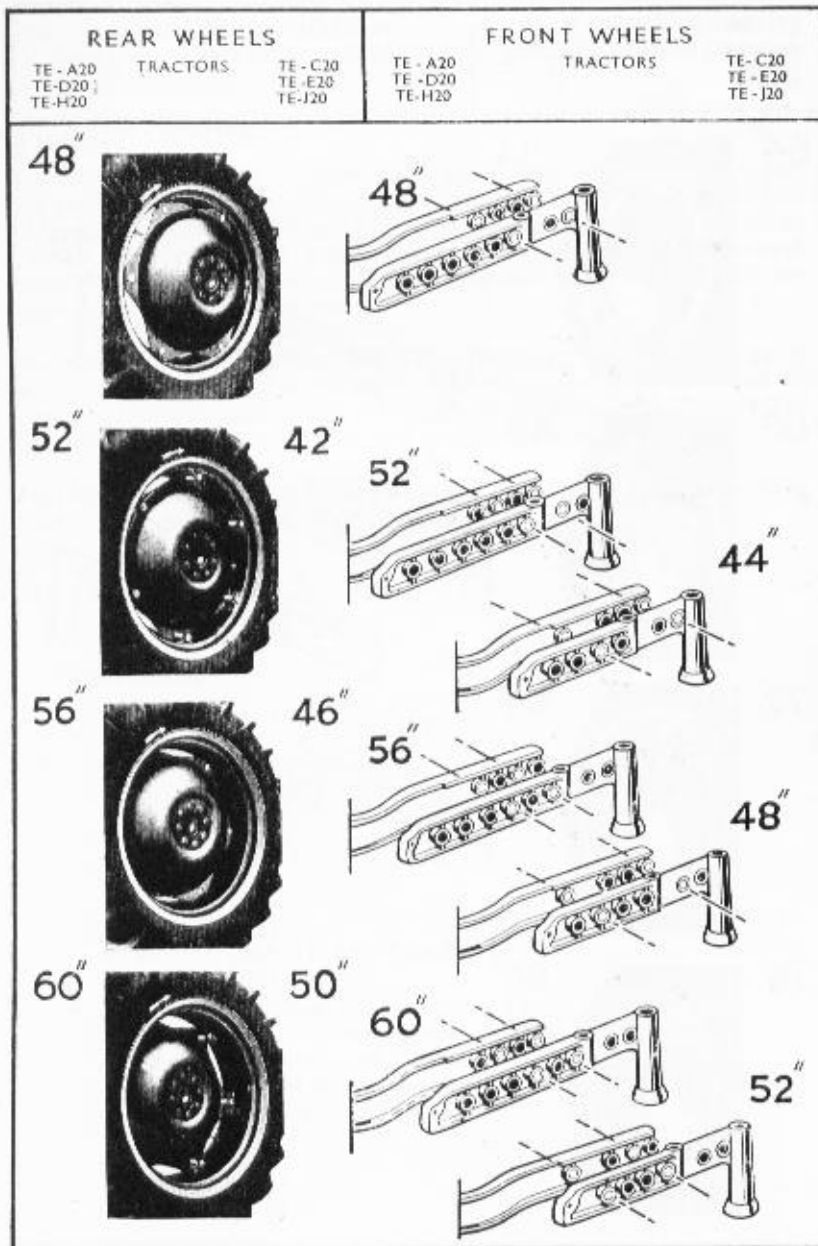


Fig. 16

Reference Section

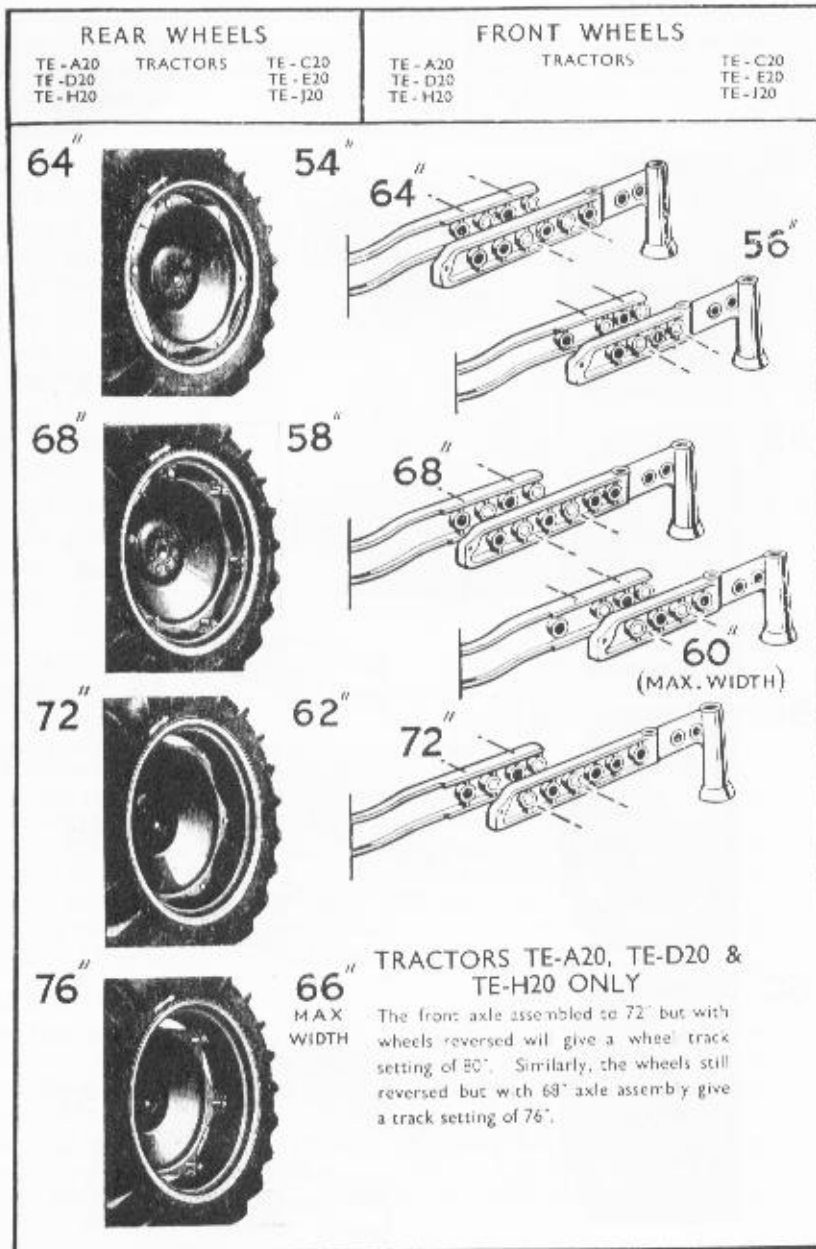


Fig. 17

Reference Section

That the wheels are on the correct side can be confirmed by checking that the arrow on the side wall of the tyre is pointing in the direction of forward rotation.

FRONT WHEELS

The front axle is made in three parts which may be assembled to give the track width desired. To alter the setting, loosen the vertical bolt through the radius rod yoke, remove bolts securing axle, and spread as desired. No change in steering connections is necessary. Always assemble axle with at least one hole between bolts holding axle together—never in adjacent holes.

Normal Width Tractors TE-A20, TE-D20, TE-H20. Range of setting is 48 to 80 inches (1219 to 2032 mm.) Settings of 76 and 80 inches (1930 and 2032 mm.) are obtained by 68 and 72 inches (1727 and 1828 mm.) axle assemblies but with wheels reversed.

Narrow Width Tractors TE-C20, TE-E20, TE-J20. Range of setting is 44 to 60 inches (1117 to 1524 mm.)

MAINTENANCE SECTION

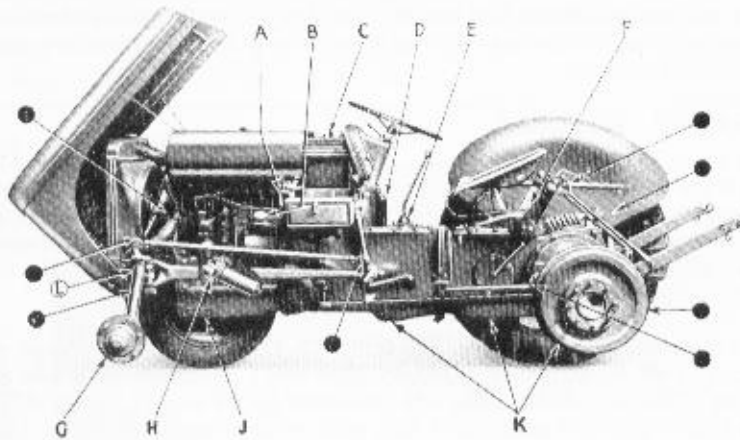


Fig. 18

KEY TO ANNOTATION

- | | |
|---|---|
| <p>A. FUEL TAP B. ENGINE OIL FILLER C. BATTERY D. STEERING BOX FILLER AND LEVEL PLUG E. HYDRAULIC MECHANISM AND TRANSMISSION FILLER PLUG K. HYDRAULIC MECHANISM AND TRANSMISSION DRAIN PLUGS L. FRONT AXLE CENTRE PIVOT PIN</p> | <p>F. HYDRAULIC MECHANISM AND TRANSMISSION OIL DIPSTICK LOCATED IN RIGHT-HAND INSPECTION PLATE G. HUB BEARING (GREASE PACKED) H. ENGINE OIL FILTER J. ENGINE DRAIN PLUG ● GREASE NIPPLES, LUBRICATE AS INSTRUCTED</p> |
|---|---|

IMPORTANT

DO NOT LUBRICATE :—

Clutch connections.
 Brake lever pins.

Linkage ball joint or pins.
 Throttle connections.

OIL SPECIFICATIONS (Petrol Engine Tractor)

| AIR TEMPERATURE | ENGINE | | | | TRANSMISSION | |
|-----------------|--------------------------|-----------------------------|------------------------------|-----------------------------|------------------------------------|------------------------------------|
| | Over 70°F (Over 21°C) | 40° to 70°F (4° to 21°C) | 10° to 40°F (-12° to 4°C) | Under 10°F (Under -12°C) | Over 40°F (Over 4°C) | Under 40°F (Under 4°C) |
| S.A.E. | 40 | 30 | 20 | 10 | 50 Engine Oil or 90 Gear Oil | 40 Engine Oil or 80 Gear Oil |

OIL SPECIFICATIONS (V.O./L.O. Engine Tractor)

| AIR TEMPERATURE | ENGINE | | | | TRANSMISSION | |
|-----------------|--------------------------|-------------------------|------------------------------|-----------------------------|------------------------------------|------------------------------------|
| | Over 70°F (Over 21°C) | Over 40°F (Over 4°C) | 10° to 40°F (-12° to 4°C) | Under 10°F (Under -12°C) | Over 40°F (Over 4°C) | Under 40°F (Under 4°C) |
| S.A.E. | 50 | 40 | 30 | 20 | 50 Engine Oil or 90 Gear Oil | 40 Engine Oil or 80 Gear Oil |

PERIODIC ATTENTION EVERY 10 WORKING HOURS

Engine :

Check oil level to top mark on dipstick located in front of oil filter on left-hand side of engine. Fill, if necessary, at point B Fig. 18.

Clean and refill air cleaner bowl with engine oil.

Note : In very dusty conditions twice daily.

Inspect inlet screen to air cleaner. Remove and wash if necessary. Check water level in radiator.

Pulley Attachment :

Check belt pulley oil level when in service ; refill, if necessary, to plug level with transmission oil.

Front Axle :

Grease front axle swivel pins and steering connections.

Linkage :

Grease levelling lever gearbox and thread.

Brakes :

Grease independent brake shaft bearings (fitted on later tractors only).

Electrical :

Examine, and top-up battery with distilled water as necessary.

Tyres :

Check pressures.

CHANGE ENGINE OIL IN NEW TRACTOR AFTER FIRST THIRTY HOURS.

EVERY 60 WORKING HOURS

Engine (Petrol Engine Tractor only).

Grease water pump bearing.

Engine (V.O.L.O. Engine Tractors only).

Change engine oil. Wash and scrub oil filter cartridge in petrol or V.O. Cleaned at 60-hour intervals, life of cartridge can be extended to 240 hours (see page 13). If cartridge is not washed according to these instructions, change after first 60 hours, and then at every second oil change (i.e. every 120 hours).

Grease water pump bearings.

Transmission :

Check oil level to top mark on dipstick located in right-hand inspection cover. Fill if necessary at point E Fig. 18.

This point supplies transmission, hydraulic, and rear axle : allow time for oil to reach dipstick.

Fuel System :

Drain carburettor to clear sediment. Remove and clean fuel sediment bowl and gauze.

Maintenance Section

EVERY 120 WORKING HOURS

Engine (Petrol Engine Tractor only).

Change engine oil. Wash and scrub oil filter cartridge in petrol. Cleaned at 120-hour periods, life of cartridge can be extended to 480 hours (see page 13).

If cartridge is not washed according to these instructions, change after first 120 hours, and then at every second change of oil (i.e. every 240 hours).

Check fan belt tension.

Engine (V.O./L.O. Engine Tractors only).

Change oil filter cartridge after 120 hours and then at every second change of oil (i.e. every 120 hours) if recommended cleaning at 60-hour stage has not been carried out.

Check fan belt tension.

Transmission :

Change transmission oil in new tractor after first 120 hours, again at 720 hours and then every 720 hours thereafter, or at least once a year.

Note : Drain oil from all three plugs (K Fig. 18).

Front Axle :

Lubricate front axle centre pivot pin after the first 120 hours and every 480 hours thereafter (see page 21).

Electrical :

Lubricate dynamo commutator end bearing (See page 18).

Remove distributor cap and rotor, and lubricate spindle with three drops of thin oil. Grease battery terminals with petroleum jelly to prevent corrosion.

EVERY 720 WORKING HOURS

Transmission :

Change oil.

Steering :

Check oil level in steering gearbox and refill, if necessary, with transmission oil to plug level.

Rear Axle :

Grease axle hub bearings (three shots of grease gun only).

(Where grease nipple is fitted).

EACH YEAR

Front Axle :

Wash front hub bearings and re-pack with grease. (See page 21).

For correct lubricant specifications see pages 29 & 31 — British Isles, or pages 30 & 32 — Overseas.

RECOMMENDED LUBRICANTS—BRITISH ISLES—Petrol Engine Tractor

| Assembly | Season | S.P. | Duckham's | Wakefield | Mobil | Shell | Esso | Vigzol |
|---------------------------------|--------------------|--|--|--|-----------------------------|--|------------------------------------|----------------|
| ENGINE AIR CLEANER | Summer | Energol Tractor 30 or Energol SAE 30 | Duckham's Commadcol 30 or Duckham's NOL "THIRTY" | Agricastrol Medium or Castrol XL | Mobiland 630 Tractor Oil | Shell Tractor Oil 30 or Shell X-100, 30 | Esolube 30 | Vigzol Y30 |
| | Winter | Energol Tractor 20 or Energol SAE 20W | Duckham's Commadcol 20 or Duckham's NOL "TWENTY" | Agricastrol Light or Castrolite | Mobiland 620 Tractor Oil | Shell Tractor Oil 20 or Shell X-100, 20/20W | Esolube 20 | Vigzol Y20 |
| TRANSMISSION | | | | | | | | |
| STEERING GEARBOX | Throughout Year | Energol Tractor Oil 40 or Energol SAE 40 | Duckham's Commadcol 50 or Duckham's NOL "FIFTY" | Agricastrol Heavy or Castrol XXL | Mobiland 650 Tractor Oil | Shell Tractor Oil 40 Shell X-100, 40 | Esolube 50 | Vigzol Y50 |
| P.T.O. PULLEY | | | | | | | | |
| GREASE GUN AND FRONT HUBS | Throughout Year | Energol Grease G3 | Duckham's L.B.10 | Agricastrol Grease Heavy or Castrol Heavy | Mobilgrease M.P. | Shell Retinax A. | Esso Multi- purpose Grease H | R.B. Grease |

In addition to the Recommended Lubricants which are approved —

NOTE—On no account must extreme pressure (E.P.) lubricants be used in the hydraulic system and transmission assembly.

RECOMMENDED LUBRICANTS—OVERSEAS—Petrol Engine Tractor

| Assembly | Air Temperature Degrees F. | Degrees C. | S.P. | Duckham's | Wakefield | Mobil | Shell | Esso | Vizol |
|--|-------------------------------|------------|---------------------------------|---|---|--------------------------------------|------------------------|---|------------------|
| ENGINE AIR CLEANER | Over 70 | Over 21 | Energol Motor Oil SAE 40 | Duckham's Commandol 40 or Duckham's NOL "Forty" | Agricastrol Heavy or Castrol X XL | Mobiloil AF | Shell X-100, 40 | Essolube 40 | Y 40 |
| | 40 to 70 | 4 to 21 | Energol Motor Oil SAE 30 | Duckham's Commandol 30 or Duckham's NOL "Thirty" | Agricastrol Medium or Castrol XL | Mobiloil A | Shell X-100, 30 | Essolube 30 | Y 30 |
| | 10 to 40 | -12 to 4 | Energol Motor Oil SAE 20W | Duckham's Commandol 20 or Duckham's NOL "Twenty" | Agricastrol Light or Castrolite | Mobiloil Arctic | Shell X-100, 20 20W | Essolube 20 | Y 20 |
| | Under 10 | Under -12 | Energol Motor Oil SAE 10W | Duckham's Commandol 10 or Duckham's NOL "Ten" | Agricastrol Z or Castrol Z | Mobiloil 10W | Shell X-100, 10W | Essolube 10 | Y 10 |
| TRANS- MISSION STEERING GEARBOX | Over 40 | Over 4 | Energol Motor Oil SAE 50 | Duckham's Commandol 50 or Duckham's NOL "Fifty" | Agricastrol Heavy or Castrol X XL | Mobiloil BB or Mobilube C70 | Shell Dentax 90 | Essolube 50 or Esso Gear Oil 90 | Y 50 |
| | Under 40 | Under 4 | Energol Motor Oil SAE 40 | Duckham's Commandol 40 or Duckham's NOL "Forty" | Agricastrol Medium or Castrol XL | Mobiloil AF | Shell Dentax 80 | Essolube 40 or Esso Motor Oil 40 | Y 40 |
| P.T.O. PULLEY | | | | | | | | | |
| GREASE GUN AND FRONT HUBS | All Temperatures | | Energol Grease C3 | Duckham's L.B.10 | Castrolase Heavy | Mobil- grease M.P. | Shell Retinax A | Esso Multi- purpose Grease H | Medium Grease |

In addition to the Recommended Lubricants which are specified and use in production, the following Vizol Lubricants are approved —

NOTE.—On no account must extreme pressure (E.P.) lubricants be used in the hydraulic system and transmission assembly.

RECOMMENDED LUBRICANTS—BRITISH ISLES—V.O. and L.O. Engine Tractors

| Assembly | Season | Mobil | Shell | Esso | B.P. | Duckham's | Waterfield | Vigzol |
|---------------------------|-----------------|--------------------------|---|----------------------------------|--|--|--|--------------------|
| ENGINE AIR CLEANER | Summer | Mobiland 640 Tractor Oil | Shell Tractor Oil 40 or Shell X-100, 40 | Tractorlube (VAP) or Essolube 40 | Energol Tractor 40 or Energol SAE 40 | Duckham's Commadcol 40 or Duckham's NOL "FORTY" | Agricastrol Heavy or Castrol X XL | Vigzol Y40 |
| | Winter | Mobiland 630 Tractor Oil | Shell Tractor Oil 30 or Shell X-100, 30 | Tractorlube (VAP) or Essolube 30 | Energol Tractor 30 or Energol SAE 30 | Duckham's Commadcol 30 or Duckham's NOL "THIRTY" | Agricastrol Medium or Castrol XL | Vigzol Y30 |
| TRANSMISSION | | | | | | | | |
| STEERING GEARBOX | Throughout Year | Mobiland 650 Tractor Oil | Shell Tractor Oil 40 | Esolube 50 | Energol Tractor Oil 40 or Energol SAE 40 | Duckham's Commadcol 50 or Duckham's NOL "FIFTY" | Agricastrol Heavy or Castrol X XL | Vigzol Y50 |
| P.T.O. PULLEY | | | | | | | | |
| GREASE GUN AND FRONT HUBS | Throughout Year | Mobilgrease M.P. | Shell Retinax A | Esso Multi-purpose Grease H | Energol Grease C3 | Duckham's L.B.10 | Agricastrol Grease Heavy or Castrolase Heavy | Vigzol R.B. Grease |

In addition to the Recommended Lubricants which we specify and use in production, the following Vigzol Lubricants are approved —

NOTE.—On no account must extreme pressure (E.P.) lubricants be used in the hydraulic system or transmission assembly.

Maintenance Section

RECOMMENDED LUBRICANTS—OVERSEAS—V.O. & L.O. Engine Tractors

| Assembly | Air Temperature | | B.P. | Duckham's | Wakefield | Mobil | Shell | Esso | Vigzol |
|--|------------------|------------|---------------------------|--|----------------------------------|-----------------------------|--------------------|---------------------|---------------|
| | Degrees F. | Degrees C. | | | | | | | |
| ENGINE | Over 70 | Over 21 | Energol Motor Oil SAE 50 | Duckham's Commadcol 50 or Duckham's NOL "Fifty" | Agricastrol Heavy or Castrol XXL | Mobiloil BB | Shell X-100, 50 | Essolube 50 | Y 50 |
| | Over 40 | Over 4 | | | | | | | |
| AIR CLEANER | 10 to 40 | -12 to 4 | Energol Motor Oil SAE 30 | Duckham's Commadcol 30 or Duckham's NOL "Thirty" | Agricastrol Medium or Castrol XL | Mobiloil A | Shell X-100, 30 | Essolube 30 | Y 30 |
| | Under 10 | Under -12 | Energol Motor Oil SAE 20W | Duckham's Commadcol 20 or Duckham's NOL "Twenty" | Agricastrol Light or Castrolite | Mobiloil Arctic | Shell X-100 20 20W | Essolube 20 | Y 20 |
| TRANS-MISSION STEERING GEARBOX P.T.O. PULLEY | Over 40 | Over 4 | Energol Motor Oil SAE 50 | Duckham's Commadcol 50 or Duckham's NOL "Fifty" | Agricastrol Heavy or Castrol XXL | Mobiloil BB or Mobilube C90 | Shell Dentax 90 | Essolube 50 | Y 50 |
| | Under 40 | Under 4 | Energol Motor Oil SAE 40 | Duckham's Commadcol 40 or Duckham's NOL "Forty" | Agricastrol Medium or Castrol XL | Mobiloil AF | Shell Dentax 80 | Essolube 40 | Y 40 |
| GREASE GUN AND FRONT HUBS | All Temperatures | | Energol Grease C3 | Duckham's L.B.10 | Castrolase Heavy | Mobil-grease H.P. | Shell Retinax A | Esso Bearing Grease | Medium Grease |

In addition to the Recommended Lubricants which we specify and use in production, the following Vigzol Lubricants are approved:—

NOTE.—(a) On no account must extreme pressure (E.P.) lubricants be used in the hydraulic system or transmission assembly.

(b) LAMP OIL TRACTORS ONLY: In certain territories where very low grade fuels only are available, the use of additive engine oil is strongly recommended. Consult your Distributor/Dealer.

SPECIFICATION

PETROL ENGINE TRACTOR ONLY

| | | |
|----------------------------|---|------------------------------|
| Engine | Petrol Type. | |
| No. of Cylinders | 4. | |
| Stroke | 92 mm. | |
| Firing Order | 1, 3, 4, 2. | |
| Bore | 80 mm. | 85 mm. |
| Piston Displacement | 1879 c.c. (112.9 cu. in.) | 2088 c.c. (127.4 cu. in.) |
| Compression Ratio | 5.77 : 1 | 6 : 1 |
| Belt H.P. | 23.9 | 28.2 |
| Cylinder Liners | Wet sleeve type. | |
| Valves | Overhead high lift, pushrod operated. Exhaust opens 40° before B.D.C., closes T.D.C. Inlet opens T.D.C., closes 40° after B.D.C. | |
| Valve Clearance | Inlet 0.010" (0.25 mm.), exhaust 0.012" (0.30 mm.) cold. | |
| Carburettor | Up-draught, plain tube type of dust-proof construction. | |

Carburettor Adjustments

| | <i>Turns open</i> | |
|---|-------------------|-----------------|
| | <i>Main Jet</i> | <i>S.R. Jet</i> |
| Zenith 24T2 | | |
| Standard Type Main Jet (with Cross Bar type screw) | 2½ | 1 |
| Min./Max. Type (with 3/16" dia. round knob) ... | 2½ | 1 |
| Fully Variable Type (with 3/4" dia. round knob with peg, hole or rivet head in face) ... | 1 | 1 |
| Zenith 28G | 1½ | 1-1½ |

These are normal settings which, however, may require correction to suit fuel variations and conditions in overseas territories. Another quarter turn 'out' will provide a richer mixture for heavy work, and a quarter turn 'in' a weak mixture which must only be used for very light work. The use of a setting weaker than recommended is a false economy as it will result in burnt exhaust valves.

| | |
|-----------------------|--|
| Sparking Plugs | Champion L.10 (14 mm.) Gap Setting .030"—.032" (.76—81 mm.) |
| Fill-up Data | |
| Fuel Tank | 8 Imperial gallons (36 litres), including 1 Imperial gallon (4.5 litres) reserve. |
| Cooling System | 15 pints (8.5 litres). |

Specification

VAPORISING OIL ENGINE TRACTOR ONLY

| | |
|----------------------------|---|
| Engine | Vaporising Oil type. |
| No. of Cylinders | 4. |
| Bore | 85 mm. |
| Stroke | 92 mm. |
| Piston Displacement | 2088 c.c. (127.4 cu. ins.) |
| Firing Order | 1, 3, 4, 2. |
| Compression Ratio | 4.8 : 1 or 5.1 : 1 (Petrol/Vaporising Oil Conversion 4.8 : 1) |
| Belt H.P. | 4.8 : 1 Compression Ratio : 23.9 5.1 : 1 Compression Ratio : 25.4 |
| Cylinder Liners | Wet sleeve type. |
| Valves | Overhead high lift, pushrod operated. Exhaust opens 40° before B.D.C., closes T.D.C. Inlet opens T.D.C., closes 40° after B.D.C. |
| Valve Clearance | Inlet 0.010" (0.25 mm.), exhaust 0.012" (0.30 mm.) cold. |
| Carburettor | Up-draught, plain tube type of dust-proof construction. |

Carburettor Adjustments

| | | <i>Turns open</i> | |
|---|--|-------------------|-----------------|
| | | <i>Main Jet</i> | <i>S.R. Jet</i> |
| Zenith 24T2 | | | |
| Standard Type Main Jet (with Cross Bar type screw) | | 2½ | 1 |
| Min./Max. Type (with ⅜" dia. round knob)... | | 2½ | 1 |
| Fully Variable Type (with ½" dia. round knob with peg, hole or rivet head in face) ... | | 1 | 1 |
| Zenith 28G | | 1½ | 1-1½ |

These are normal settings which, however, may require correction to suit fuel variations and conditions in overseas territories. Another quarter turn 'out' will provide a richer mixture for heavy work, and a quarter turn 'in' a weak mixture which must only be used for very light work. The use of a setting weaker than recommended is a false economy as it will result in burnt exhaust valves.

Specification

**Sparking Plugs
Vaporising Oil
Engine**

Champion N.7 (14 mm.)
Gap Setting .030" — .035" (0.76—0.89 mm.)
Semi off-set points.

**Petrol/Vaporising
Oil Conversion**

Champion L.8 (14 mm.)
Gap Setting .032" (.81 mm.)

**Fill-up Data
Vaporising Oil Engine
Fuel Tank**

Vaporising Oil—7 Imperial gallons (31.5 litres).

Petrol—1 Imperial gallon (4.5 litres).

Cooling System

15 pints (8.5 litres).

Petrol/Vaporising Oil Conversion

Fuel Tank

Vaporising Oil 8 Imperial gallons (36 litres),
including 1 Imperial gallon (4.5 litres)
reserve.

Petrol $\frac{3}{4}$ gallon (3.4 litres).

Cooling System

15 pints (8.5 litres).

Specification

LAMP OIL ENGINE TRACTOR ONLY

| | |
|----------------------------|--|
| Engine | Lamp Oil type. |
| No. of Cylinders | 4. |
| Bore | 85 mm. |
| Stroke | 92 mm. |
| Piston Displacement | 2088 c.c. (127.4 cu. ins.) |
| Firing Order | 1, 3, 4, 2. |
| Compression Ratio | 4.5 : 1. |
| Belt H.P. | 22.9. |
| Cylinder Liners | Wet Sleeve type. |
| Valves | Overhead high lift, pushrod operated. Exhaust opens 40° before B.D.C., closes T.D.C. Inlet opens T.D.C., closes 40° after B.D.C. |
| Valve Clearance | Inlet 0.010" (0.25 mm.), exhaust 0.012" (0.30 mm.) cold. |
| Carburettor | Up-draught, plain tube type of dust-proof construction. |

Carburettor Adjustments

| | <i>Turns open</i> | |
|---|-------------------|-----------------|
| | <i>Main Jet</i> | <i>S.R. Jet</i> |
| Zenith 24T2 | | |
| Standard Type Main Jet (with Cross Bar type screw) | 2½ | 1 |
| Min./Max. Type (with ⅜" dia. round knob) ... | 2½ | 1 |
| Fully Variable Type (with ¾" dia. round knob with peg, hole or rivet head in face) ... | 1 | 1 |
| Zenith 28G | 1¾ | 1-1½ |

These are normal settings which, however, may require correction to suit fuel variations and conditions in overseas territories. Another quarter turn 'out' will provide a richer mixture for heavy work, and a quarter turn 'in' a weak mixture which must only be used for very light work. The use of a setting weaker than recommended is a false economy as it will result in burnt exhaust valves.

| | |
|-----------------------|---|
| Sparking Plugs | Champion type N.7 (14 mm.) Gap Setting .030"-.035" (0.76-0.89 mm.) Semi off-set points. |
|-----------------------|---|

| | |
|---------------------|--|
| Fill-up Data | |
| Fuel Tank | Lamp Oil—7 Imperial gallons (31.5 litres). Petrol—1 Imperial gallon (4.5 litres). |

| | |
|-----------------------|------------------------|
| Cooling System | 17 pints (9.6 litres). |
|-----------------------|------------------------|

**PETROL, VAPORISING OIL
AND LAMP OIL ENGINE TRACTORS**

| | |
|--------------------|--|
| Governor | Variable speed, mechanically operated centrifugal type, enclosed. Governor regulation up to 2000 r.p.m. |
| Lubrication | Pressure 40—60 lb./sq. in. (2.8—4.2 kg. sq. cm.) |
| Oil Filter | Replaceable cartridge-type of large capacity. Full Flow. External. |
| Battery | 6v. 75 amp. hour capacity at 10 hour discharge rate or 12 v. 38 amp. hour capacity at 10 hour discharge rate. Specific gravity fully charged 1.28—1.30 at 60°F (16°C). |
| Dynamo | 6v. or 12v. shunt wound, two brush type, with voltage control regulator. |
| Starter | Automobile type. Safety starter switch operated by gear lever. |
| Distributor | Anti-clockwise rotation, gap at contact breaker points 0.015" (0.38 mm.) |
| Air Cleaner | Oil-bath type, with dust receptacle removable for cleaning. Supplying carburetter and crankcase breather. |
| Cooling | Circulation assisted by centrifugal-type pump through fin and tube type radiator and on later tractors cylinder head water distribution tube. Pressure relief at 4 lb. per sq. in. (0.28 kg./sq. cm.). Thermostat. Drain taps fitted at R.H. side of cylinder block water jacket, and radiator bottom tank only on earlier tractors. Additional Drain Tap beneath Water Pump Body on later tractors. |
| Clutch | Single dry plate 9" (229 mm.) diameter. |

Specification

Gearbox Constant mesh gears; four forward speeds, one reverse. Reduction between engine and countershaft 2.75 : 1.

Final Drive Spiral bevel gears with straddle mounted pinion 6.66 : 1 ratio.

Overall Reduction

| Selected Ratio | Speeds | | | |
|------------------|-------------|----------|--------------|------------|
| | 1500 R.P.M. | | 2000 R.P.M. | |
| First, 78.5 : 1 | 2.5 m.p.h. | 4 k.p.h. | 3.375 m.p.h. | 5.4 k.p.h. |
| Second, 57 : 1 | 3.5 | 5.6 | 4.625 | 7.5 |
| Third, 41.3 : 1 | 4.75 | 7.7 | 6.375 | 10.3 |
| Fourth, 19.8 : 1 | 9.75 | 15.7 | 13.25 | 21.2 |
| Reverse, 68 : 1 | 3 | 4.8 | 3.875 | 6.2 |

Power Take-Off Spline $1\frac{1}{8}$ " (28.6 mm.) dia. Reduction between engine and P.T.O. shaft 2.75 : 1.

| Engine Speed | Power Take-off Speed |
|--------------|----------------------|
| 400 r.p.m. | 145 r.p.m. |
| 1500 r.p.m. | 545 r.p.m. |
| 2000 r.p.m. | 727 r.p.m. |

Brakes Girling 14" × 2" internal expanding, two shoe, either kidney cam or floating cam. Individual adjustment. Operated together or independently.

Steering Wheels Two bevel gear segments and pinion.
Front : Steel disc with 4 × 19 pneumatic tyre on drop centre rim. Tyre pressure 26 lbs. (1.8 kg.). Toe-in $0\frac{1}{8}$ " (3.2 mm.)
Rear : Steel disc with 10 × 28 traction tread pneumatic tyre on drop centre rim. Tyre pressure 12 lbs. (0.8 kg.).

Hydraulic Control Four cylinder pump, mounted in centre housing, supplies oil under pressure to ram cylinder or to external pressure take-off points—as follows :—

- 2— $\frac{1}{2}$ " × 20 N.F. in pump base only,
- or
- 2— $\frac{1}{2}$ " × 20 N.F. in pump base with
- 2— $\frac{3}{8}$ " × 18 N.P.T.F. with socket type sealing screws in gallery in the hydraulic lift cover.
- or

Specification

| | |
|---|---|
| | 2— $\frac{1}{2}$ " \times 20 N.F. in pump base with |
| | 1—R.H. take-off point in lift cover. $\frac{1}{2}$ " B.S.P.—with flanged type hexagon nut and sealing washer. Relief valve positioned in L.H. oil gallery in lift cover. |
| Safety Relief Valve | Fitted in pump on earlier tractors. Fitted in L.H. oil gallery on later tractors. Relief valve set at 2000 lb./sq. in. (140.6 kg./sq. cm.) or 1500 lb./sq. in. (105.5 kg./sq. cm.) on early tractors. |
| Overall Length | 115" (2921 mm.). |
| Overall Height | 52" (1320 mm.). |
| Ground Clearance | Under centre 13" (330 mm.), under axle 21" (533 mm.). |
| Wheelbase | 70" (1778 mm.). |
| Drawbar Height | 10"—23" (254—584 mm.). Normal setting 18" (457 mm.) above ground. TE-A20, TE-D20 & TE-C20, TE-E20 & TE-H20. TE-J20 |
| Min. Overall Width | 64" (1625 mm.) 54" (1371 mm.). |
| Normal Track : Front | 48" (1219 mm.) 44" (1117 mm.) |
| Rear | 52" (1320 mm.) 42" (1066 mm.) |
| Track Adjmt. : Front | 48"—80" 44"—60" (1219mm.—2032mm.) (1117mm.—1524mm.) |
| Rear | 48"—76" 42"—66" (1219mm.—1879mm.) (1066mm.—1676mm.) |
| Turning Circle Dia. | |
| Using Brakes | 17' 6" (5334 mm.) 18' (5486 mm.) |
| Without Brakes | 19' 3" (5867 mm.) 20' (6096 mm.) |
| | TE-A20 TE-D20 & TE-H20 with track widths 48" rear and front. |
| | TE-C20 TE-E20 & TE-J20 with track widths 42" rear, 44" front. |
| Weight Dry (approx.) (without fuel, oil or water) | |
| Early Tractors. | 2376 lbs. (1078 kg.) 2327 lbs. (1055 kg.) |
| Later Tractors. | 2446 lbs. (1110 kg.) 2397 lbs. (1087 kg.) |
| Fill-up Data | Engine Sump, 12 pints (6.8 litres). Air Cleaner Bowl, $\frac{3}{4}$ pint (0.43 litres). Transmission, 5 Imp. galls. (22.8 litres). Steering Gearbox, 5 pints (2.9 litres). P.T.O. Pulley, $\frac{1}{2}$ pint (0.28 litres). |

ACCESSORIES SECTION

BELT PULLEY ATTACHMENT. Figs. 19 & 20

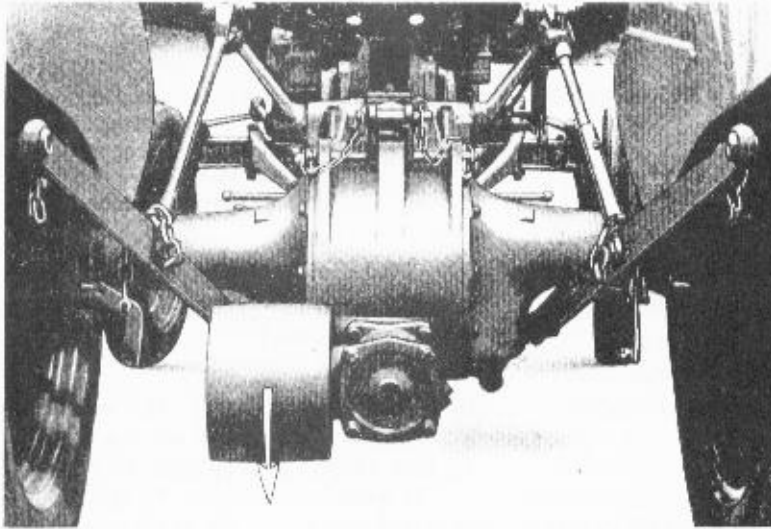


Fig. 19

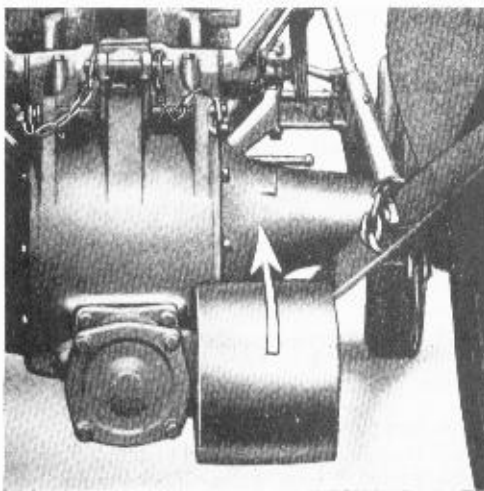


Fig. 20

The Belt Pulley attachment adapts the tractor to driving wood-saws, threshing machines and balers, grinding and rolling mills, hammer mills and other machinery.

Mounted on the rear of the tractor and driven by the P.T.O. the drive is engaged or disengaged by the lever on the left side of the transmission housing (see Fig. 2). Alternative direction of rotation is obtained by attachment to right or left of rear axle centre (Figs. 19 and 20).

Accessories Section

Fitting : Remove P.T.O. shaft cap and four nuts securing check chain anchors. Enter pulley attachment on to P.T.O. shaft and secure attachment by the four nuts previously removed.

Detachment : Reversal of fitting procedure but ensure that check chains are not twisted, and anchors are fitted so that chain attachment point is **above** centre. See Fig. 3.

Specification :

Pulley diameter 9" (228.6mm.)

Pulley width 6½" (165 mm.)

Pulley speed at 2000 engine r.p.m.
1356 r.p.m.

Belt speed at 2000 engine r.p.m.
3190 ft. per min.

Gear ratio to power take-off
shaft 1.86 : 1.

Weight (dry) 41½ lbs. (18.8 kg.)

Oil capacity, approx. ½ pint
(0.28 litres.)

TRACTOR JACK. Fig. 21

The tractor jack, by utilising the hydraulic system, makes the simple task of wheel width adjustment even easier. It is made in two parts, front and rear. The rear part locates under the rear axle and engages the lower links, as shown in Fig. 21 ; the front locates under the engine and radiator support.

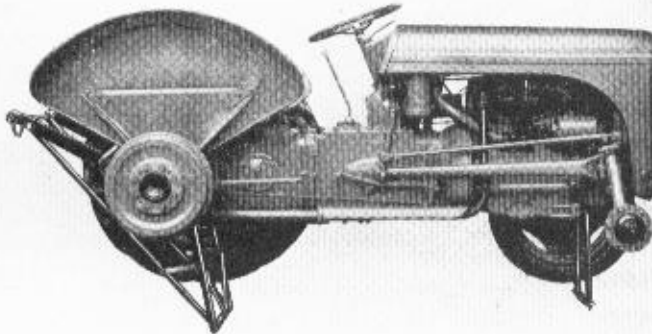


Fig. 21

To lift the tractor simply place the jack in position as instructed, start the engine, and move the hydraulic control lever to LIFT. When fully raised, switch off the engine.

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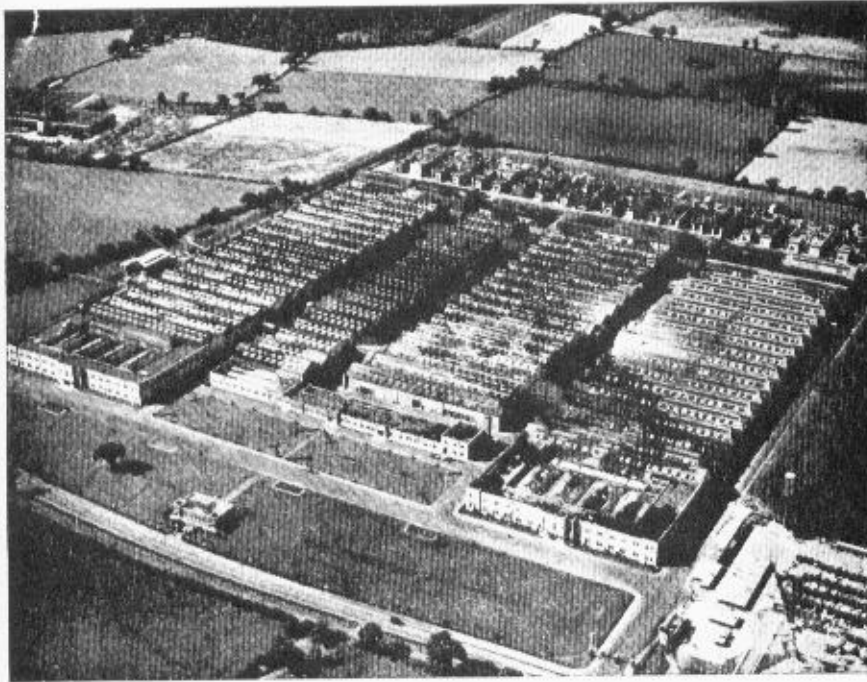
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DEVOTED EXCLUSIVELY TO THE
MANUFACTURE OF FERGUSON TRACTORS