FORD TRACTOR

with

Ferguson System

INSTRUCTION BOOK

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FERGUSON-SHERMAN

MANUFACTURING CORPORATION

DEARBORN, MICHIGAN

INSTRUCTION BOOK

FORD TRACTOR

with

FERGUSON SYSTEM

The Ford tractor with Ferguson system is a fine precision built machine designed for efficient performance, economy and ease of operation. Although it is unusually rugged and capable of hard service, it should not be abused or neglected. The safety features of the tractor are among its greatest advantages. However, machinery accidents occur far too frequently on the farm solely because of operator carelessness. The operator is warned to minimize the possibility for accidents by observing a few simple precautions:

Do not attempt to pull from the top link connection.

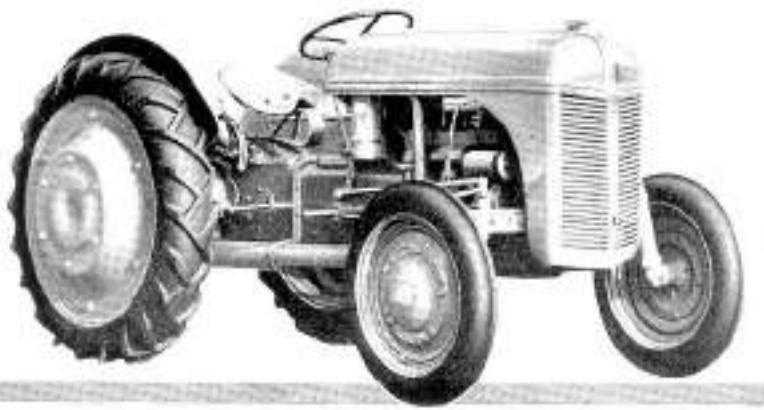
Use an adequate shield to protect the power take-off universal joints.

Drive slowly in difficult going.

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

Keep a new tractor on light work for fifty hours.

Do not carry anything on the implement.



In order that the tractor shall give the long and efficient service of which it is capable, certain attention is necessary. This section of the book gives the necessary instructions for this work. In fact, all guarantees expressed or implied are contingent upon these instructions having been carried out.

LUBRICATION

ENGINE CRANKCASE

Working Hours

Examine the dip stick and keep oil up to the high level every ... 10

Change oil in a new engine after the first 30 hours. Thereafter, change the *oil and the oil filter cartridge* whenever the oil begins to show dark on the dip stick, except that in no case shall this be done less frequently than every ... 200

Use S.A.E. 30 for summer.

S.A.E. 20 for winter use not under 40° F.

S.A.E. 10 for use below 40° F. to 10° F.

S.A.E. 10 plus 1 pint of kerosene from 10° F. to sub-zero.

Crankcase Capacity 6 quarts.

TRANSMISSION, HYDRAULIC MECHANISM AND DIFFERENTIAL

Examine transmission dip stick and keep oil up to high level every ... 60

Change oil in a new tractor after the first 200 hours, thereafter every ... 600

Use mild E.P. S.A.E. 90 hydraulic tractor oil at all temperatures above freezing.

Use mild E.P. S.A.E. 90 (3½ gallons) and paraffin base 10W motor oil (1½ gallons) for sub-freezing temperatures.

Capacity—5 gallons.

Caution—Drain oil from all three drain plugs.

Working Hours

BELT PULLEY

Examine and refill if necessary every 60

Fill to high level plug with mild E.P. tractor oil S.A.E. 90.

FRONT WHEEL HUB BEARINGS

Use grease gun until grease oozes out of bearings every 20

TRACTOR KING PINS, ball and socket joints on each end of each drag link in the steering mechanism, leveling lever gear box and leveling lever thread, use grease gun every 10

REAR GENERATOR BEARING

Use engine oil every 300

Caution. Do not lubricate ball and socket joints or the pins of the linkage.

AIR CLEANER

In normal conditions clean and renew oil in bowl every 10

In dusty service every 5

Use engine oil for servicing.

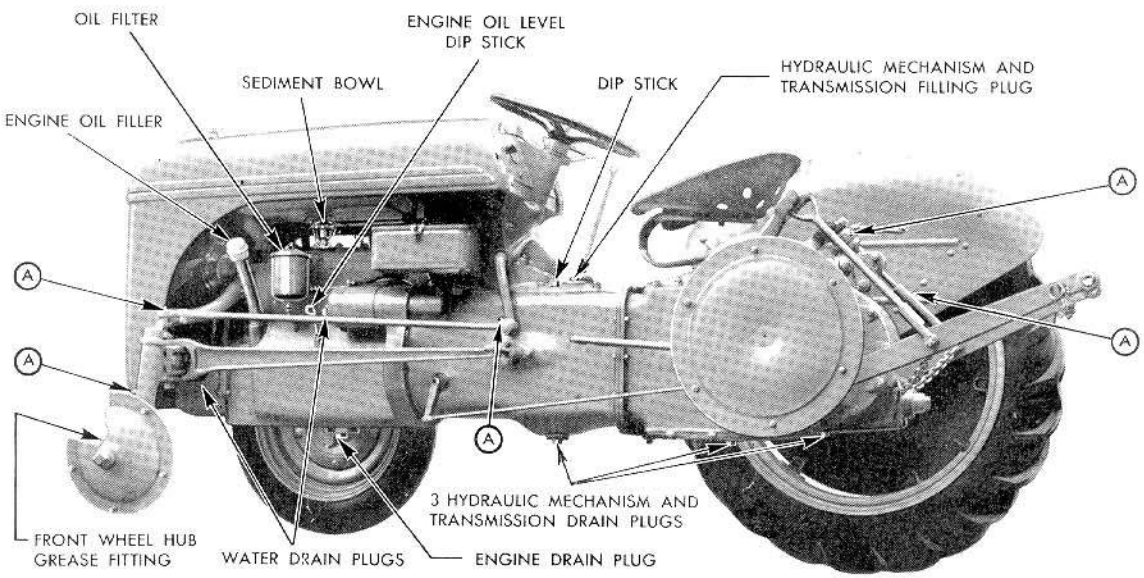
S.A.E. 30 for summer.

S.A.E. 20 for winter down to 40° F.

S.A.E. 10 for 40° F. to 10° F.

S.A.E. 10 plus kerosene from 10° F. to sub-zero.

Inspect and clean if necessary the screen at the air inlet to the air cleaner every 10



TIRES AND THEIR CARE

Working Hours

The inflation pressure does not have much effect on the traction efficiency of a tire, but *under inflation* materially shortens the life of a tire. Maintain the following pressure at all times.

Front 26 lbs. pressure Rear 12 lbs. pressure

Check tire pressure every 60

If water is used for weight in the tires use calcium chloride for anti-freeze as follows: 1½ pounds per gallon of water for protection to zero degrees F. and in proportion for other temperatures. Warning: Never use this mixture in engine cooling system.

COOLING SYSTEM

Use clean soft water only. Drain both the radiator and cylinder block at night in freezing weather or use an antifreeze in accordance with the manufacturer's recommendations. Check radiator every 10

BATTERY AND ELECTRICAL SYSTEM

Examine and refill the battery with distilled water every 30

An air valve prevents over-filling the battery. Do not depress air valve when filling.

Keep connections tight, and battery clean at all times. If tractor is to be idle for 30 days or more, maintain the charge in the battery by removing to a battery service station or running tractor motor occasionally.

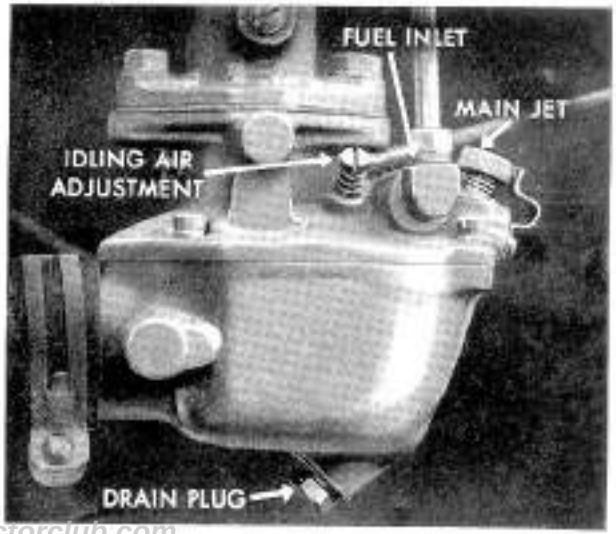
CARBURETOR AND FUEL LINE

Remove drain plug from bottom of carburetor, and allow to drain, every 60

To find the approximate correct adjustment of the main jet, screw the needle gently down on its seat, and unscrew one turn. Maximum economy can be obtained by adjusting the carburetor to suit conditions under which the tractor is working. It is not advisable to use too lean a mixture, as it tends to overheat the motor.

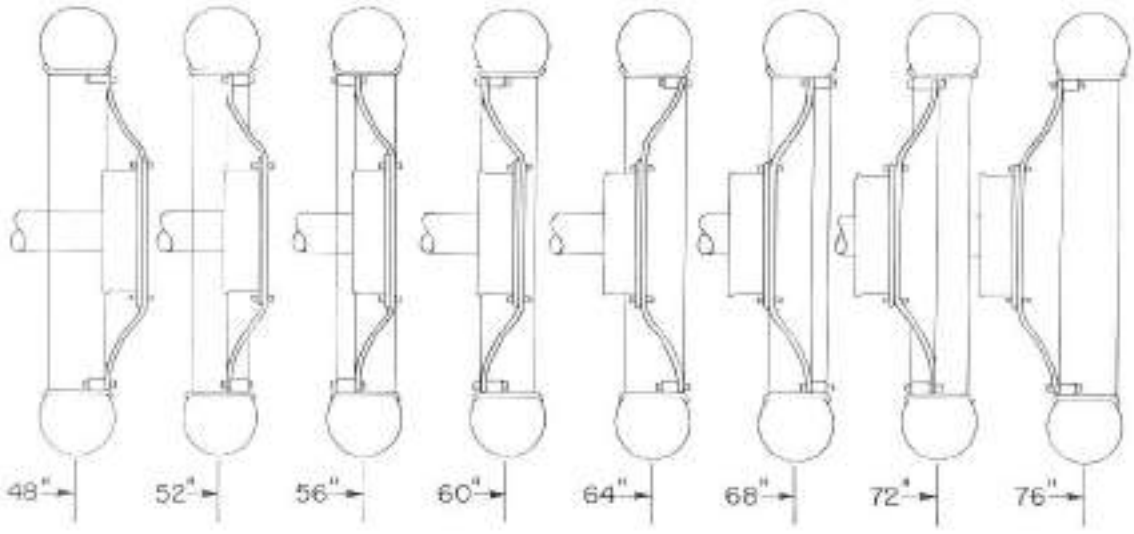
The air adjustment jet should be turned in and out until the motor runs smoothly when idling.

Clean sediment bulb when sediment collects there.



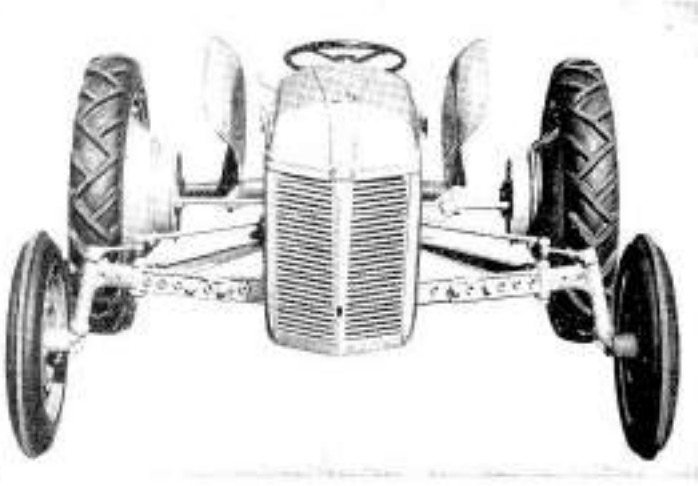
CHANGING THE GAUGE OF THE TRACTOR

The gauge of the rear wheels of the tractor is adjustable by means of assembling the disc and rim in different positions, as shown in drawing below.



Treads of 48, 52, 64, 68 inches are made without changing rear wheels to opposite side of tractor. Treads of 56, 60, 72, 76 inches are made with rear wheels changed to opposite side of tractor, to keep treads running the proper direction. Note: Arrow on sidewall of tire must always point in direction of travel.

The front axle is made in 3 parts and the gauge is adjustable in front from 48" to 72" by assembling the three parts of the axle to the proper length. The additional width from 72" to 76" is obtained by reversing the front wheels.



Caution: Loosen the bolt through the radius rod yoke first, then spread axle as desired. No change in the steering connection is necessary. Always assemble the axle with one hole between the bolts holding the halves together, never in adjacent holes.

THE LINKAGE

All connections on the linkage must be kept clean and allowed to move freely. Do not lubricate the ball and socket joints or the pins. Lubricate only the leveling lever gear box and leveling lever thread as indicated in the Maintenance Section.

THE ADJUSTABLE DRAWBAR

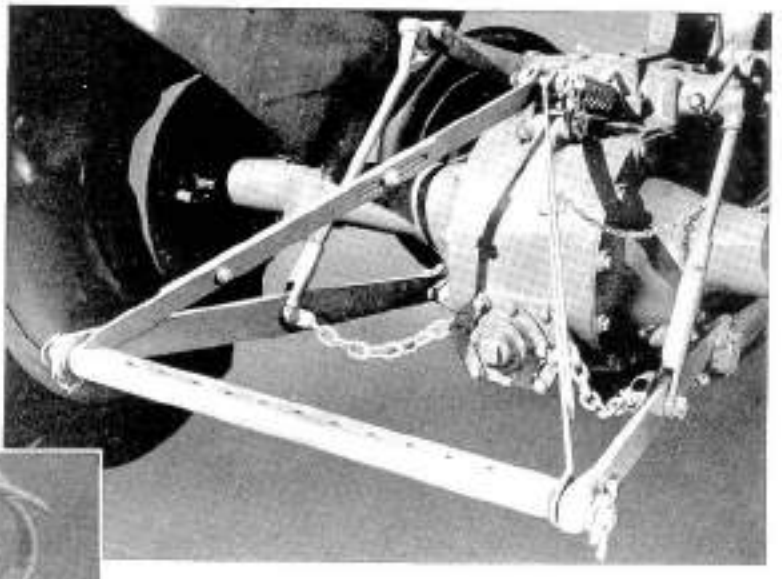


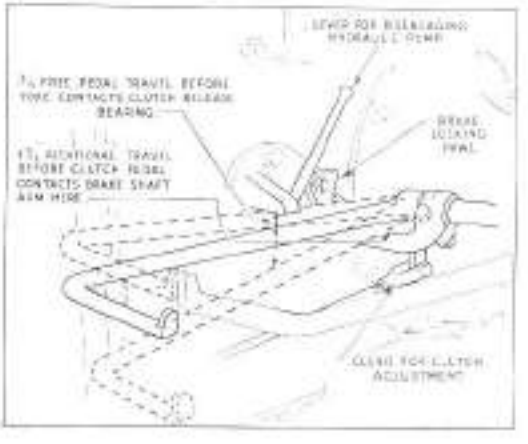
Illustration below shows Safety Wedge on Quadrant.

The drawbar is attached as shown. The standard setting is 17½" from the drawbar to the ground but it may be easily adjusted up or down to suit different pull type implements.

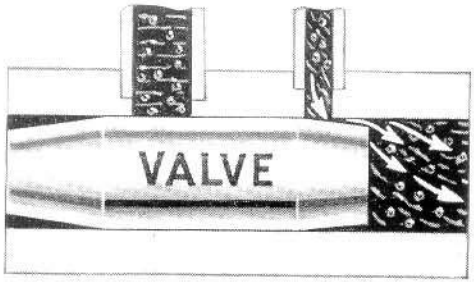
Caution: Be sure the hydraulic control lever is locked down with the stop as shown, and the pump thrown out of gear when the power take-off is not used.

THE BRAKES

The brake and clutch pedals should be adjusted as shown: $\frac{3}{16}$" of free pedal travel as shown. $1\frac{9}{16}$" in addition for disengaging the clutch. Bring the brake pickup arm into contact with the pedal at the proper position as shown.



THE HYDRAULIC MECHANISM



The hydraulic mechanism, which automatically controls the implements, is built into the tractor and operates while submerged in a bath of oil. It requires no special attention.

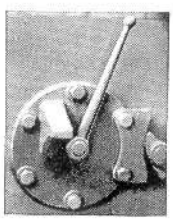
The cut (left) shows the valve in actual size, which controls the implement. The maximum movement is less than 1". This is typical of the simplicity of design which is carried out in the Ferguson hydraulic system.

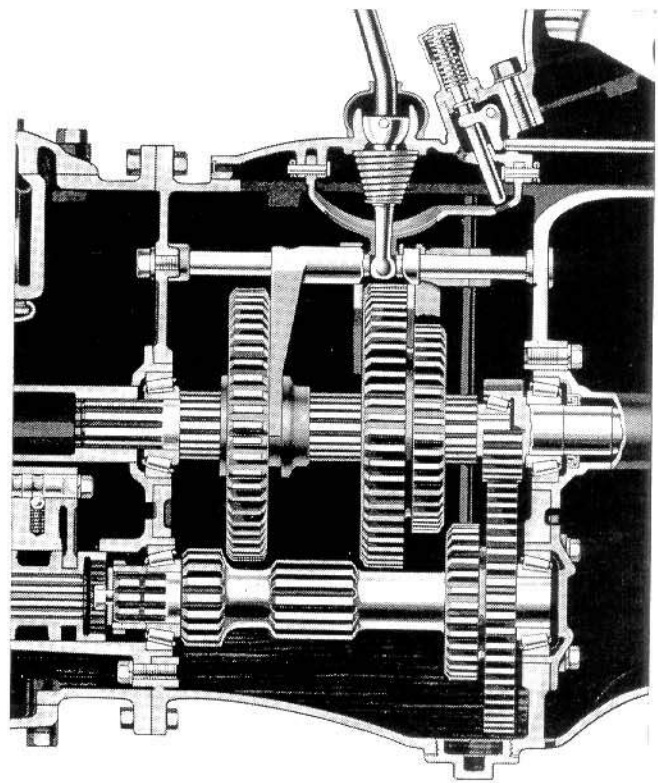
TRANSMISSION

The transmission has three speeds forward and one reverse with ratios and speeds given

Low	2.51 M.P.H. at 1400, Ratio	73.3–1
2nd	3.23 M.P.H. at 1400, Ratio	57.0–1
3rd	7.48 M.P.H. at 1400, Ratio	24.7–1
Rev.	2.69 M.P.H. at 1400, Ratio	68.4–1

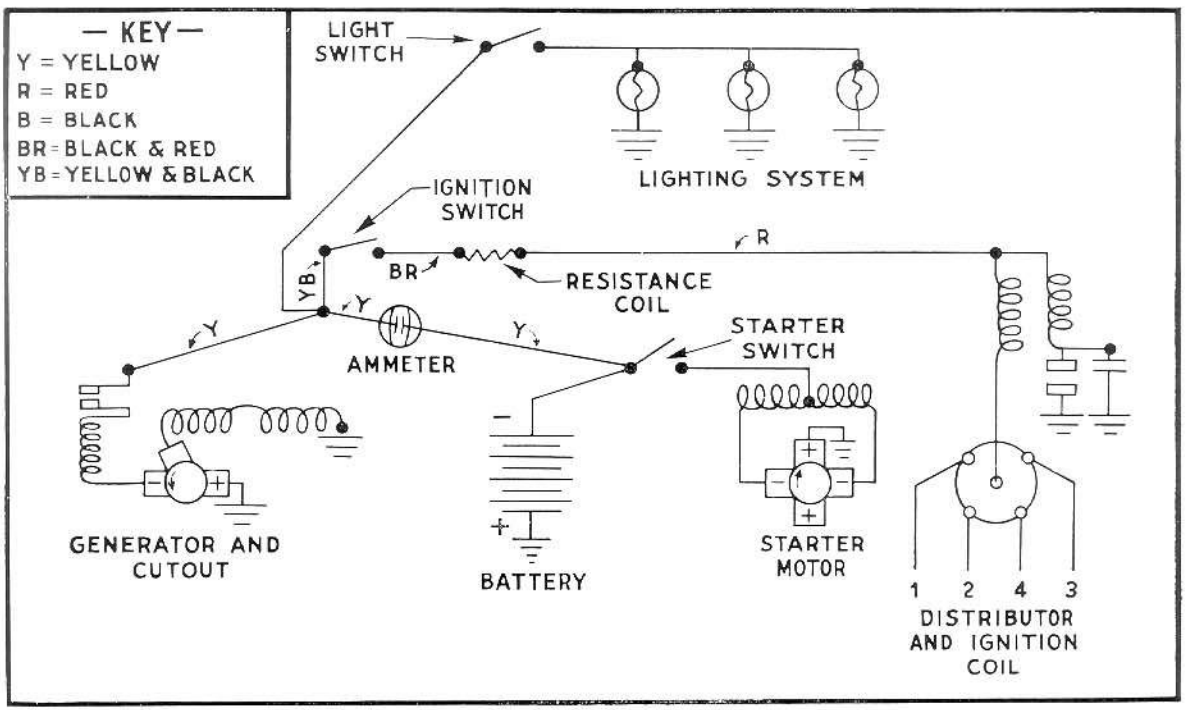
All bearings are tapered roller, anti-friction type except the reverse idler gear. The pump for the hydraulic mechanism is mounted on the power take-off shaft, and the two as a unit are thrown in and out of gear by the lever on the left side transmission inspection case —the down and back position of the lever being the engaged position. The up and forward position is the disengaged position. The power take-off shaft runs at 4/11 of the engine speed. 1400 R.P.M. of the motor gives a power take-off speed of 509 R.P.M.





THE ELECTRICAL SYSTEM

The energy for starting, lighting, and ignition is supplied by a 6-volt battery and generator, shown below with connections. The charging rate of the generator is adjustable by 3rd brush rotation the maximum rate being 11 amps. The correct spark-plug gap is .024" to .029". The correct plug is Champion, 14mm H-10. The breaker points in the distributor should be adjusted to .015 and inspected occasionally.



THE FUEL SYSTEM (Gasoline Only)

Fuel is supplied by gravity from a tank under the cowl to the carburetor. Only one tank is provided. By means of a two-way valve, fuel can be drawn from the tank at the bottom or from an opening in a short standpipe. Thus a portion of the fuel (1 gallon) can be held in reserve for emergencies. Turn check valve above sediment bowl counter clockwise for main supply and clockwise for reserve supply. The tank holds a total of ten gallons.

The carburetor has two adjustments the idling air adjustment and the main jet. The quantity of fuel passing through the main jet is limited by a fixed jet so that the adjustment functions only through a range sufficiently broad to provide

for operation in different conditions; thus the adjustment cannot be thrown completely off. The approximately correct adjustment for the main jet is open one full turn from the closed position. Further refinements of the adjustments are determined by observing the operation of the motor. The proper fuel for the tractor is gasoline with a minimum octane number of 70.

When it is desirable to disassemble the carburetor, always remove it from the manifold first; remove the main jet adjusting screw, then disassemble in the normal manner. Never attempt to blow out a carburetor by connecting an air line to the fuel inlet — always disassemble and blow out the parts individually.

Do not permit any air leaks to occur between the air cleaner and carburetor.

When tractor is to be idle for 30 days or more, drain the entire fuel system including the gasoline tank. Fuel should be removed through bottom of carburetor, with sediment bulb valve on "reserve." Gasoline, when stored, forms a gum or wax which has a tendency to clog up the small pores and openings in the carburetor. For the same reason, do not use gasoline which has been stored for more than 60 days.

THE GOVERNOR

The governor is lubricated from the timing gear case. The governor functions through the entire speed range from 350 to 2,000 rpm. All settings can be made from the tractor seat by moving the hand throttle. The connections between the governor and carburetor should be kept free and clean so that it can operate smoothly.

THE COOLING SYSTEM

The cooling system, consisting of a tubular radiator, fan, pump, and connections, needs no special attention. The standard push fan is the better under all conditions except where it is desirable to direct the heat rearward for operator comfort in cold weather. A suction fan is available as an accessory. The centrifugal type water pump has prelubricated bearings and needs no lubrication or other atten-

tion. The fan belt should be maintained at the proper tension at all times, the method of adjustment is by rotating the generator, after the bolt through the generator mounting bracket has been loosened. The tension of the belt is proper when it can be depressed about one inch by the hand midway between the generator and fan belt pulleys.

The air passages through the radiator should be cleaned of trash occasionally if necessary by blowing out with an air hose.

The capacity of the cooling system is 14 quarts. A thermostat is provided to facilitate warming up. The use of a good rust inhibitor is recommended where water with corrosive properties is used.

MOTOR AND LUBRICATION

The motor is lubricated by pressure feed to the main, connecting rod and camshaft bearings and by splash to other parts. The gear type oil pump housing is cast integral with the front main bearing cap and is driven from the crankshaft gear of the timing gear set. The oil pressure relief and regulating valve lifts at 30 pounds pressure, which will show a gauge pressure from 15 to 30 lbs. on the instrument panel, depending on the temperatures of the oil and speed of the motor.

Refer to the section on specifications for details on the construction of the motor.

Keep the tractor clean and free of an accumulation of dirt, grease, etc., by an occasional cleaning.

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All references to liquid measurements in this book are expressed in U.S. units. One U.S. gallon is approximately 4/5 of one British Imperial gallon.

ENGINE Four cylinder L head. Bore 3.187 x 3.75. Piston displacement 119.7 cu. in. Compression ratio 6 to 1.

HORSEPOWER Maximum belt hp 23.87. Rated belt hp (85% of maximum) 20.29.

DRAWBAR 2-14" plow capacity with Ferguson hydraulically operated implements. Maximum drawbar without Ferguson hydraulic system of control 16.90 hp. Rated drawbar hp (75% of maximum) 12.68.

GOVERNOR Variable speed, mechanically operated, centrifugal type. Governor regulation from 800 to 2200 rpm.

LUBRICATION By gear pump supplying direct pressure oiling to crankshaft, camshaft and connecting rod bearings, also to timing gears. Crankcase oil capacity 6 quarts.

OIL FILTER Replaceable cartridge type of large capacity.

IGNITION Direct-driven distributor in unit with coil in waterproof housing. Fully automatic spark advance.

GENERATOR 6-volt type with third brush control.

STARTER 6-volt conventional type automobile starter. Safety starter switch mechanically interlocked with gear shift lever.

BATTERY 6-volt 85 ampere-hour capacity 13 high plates.

COOLING Pump circulation of water through tube and fin type of radiator. Fan 4-blade 16" driven by belt. Pump is packless type with prelubricated bearings. Cooling system capacity 14 U.S. quarts.

FUEL SUPPLY Welded steel tank carried in engine hood, capacity 9 gallons plus 1 gallon reserve. Fuel filter is standard equipment.

CARBURETOR Up draft, plain tube type of sturdy, dustproof construction.

AIR CLEANER Oil bath type with dust receptacle easily removable for cleaning.

MUFFLER Reverse-flow type. Fitted as standard equipment to carry exhaust to the rear of the tractor.

CLUTCH Single dry plate 9" effective diameter. Clutch plate pressure increased by centrifugal force as engine speed is increased.

TRANSMISSION Sliding gear—3 speeds forward and one reverse. All shafts mounted on tapered roller bearings.

FINAL DRIVE Spiral bevel gear drive with straddle-mounted pinion 6.66 to 1 ratio. Four pinion differential mounted on tapered roller bearings. Drive axle of the semi-floating type with integral axle shafts and wheel hubs, also mounted on tapered roller bearings.

TRANSMISSION SPEEDS

	Final Gear Reduction	Speeds At 1400 R.P.M.
Low	73.2 to 1	2.54 mph
Intermediate (plowing)	47 to 1	3.95 mph
High	11.6 to 1	7.48 mph
Reverse	68.4 to 1	2.69 mph

NOTE: At top governed speed, the tractor can be operated at 3.91 mph in low gear, 5.10 mph in intermediate, and 11.75 mph in high.

STEERING Bevel pinion and twin bevel sectors controlling both front wheels independently. Tread of front axle adjustable without disturbing any steering connections. Rubber covered steel steering wheel 18" diameter.

POWER TAKE-OFF Shaft extends from rear of axle housing. Has standard spline end for fitting to drives of power driven equipment. 509 rpm of engine speed of 1400 rpm.

BRAKES 14"x2" internal expanding, two-shoes, fully energizing type. One simple accessible adjustment on each brake. Brakes operate independently on each rear wheel controlled by separate pedals to facilitate short turning.

WHEELS Front Steel disc fitted with 4x19 single rib pneumatic tires on drop center rim, tire pressure 26 lbs. Rear Steel disc fitted with 8x32 traction tread pneumatic tires on drop center rim, tire pressure 12 lbs.

HYDRAULIC IMPLEMENT CONTROL—Consists of 4 cylinder pump supplying oil under suitable pressure to ram cylinder. Valve has manual and automatic control. Control lever convenient to the operator's right hand gives him instant control of the implement.

DRAWBAR Adjustable type. Included as standard equipment.

DIMENSIONS of Tractor Wheelbase—70".

Normal Tread—Front and rear 48".

Front Tread Adjustable, by means of extending axle ends and reversing front wheel discs, to 76" in 4" steps.

Rear Tread—Adjustable, by means of reversible wheel disc and reversible tire rims, to 76" in 4" steps.

Over-all length Front tire fin to end of lower link 115".

Over-all width—64".

Over-all height—52".

Ground clearance—13" under center, 21" under axles.

Turning circle 16 ft. diameter with use of brakes.

Shipping Weight—approximately 2140 lbs.

EXTRA EQUIPMENT AT ADDITIONAL COST

Belt Pulley. Carried by self contained drive unit quickly attachable to rear of tractor. Pulley diameter 9", width 6.5". Speed—1352 rpm, belt speed 3190 ft. per minute at 2000 rpm engine speed. Pulley gear ratio to power take-off shaft 1.86. Rotates in either direction.

Lighting system. Includes 2 headlamps, tail lamp with license plate bracket, switch and all necessary wiring.

The Ford Motor Company, whose policy is one of continuous improvement, reserves the right to change specifications, design, or prices, without incurring obligation.

WARRANTY

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The Ford Motor Company warrants all such parts of new Ford tractors, EXCEPT TIRES, for a period of ninety (90) days from the date of original delivery to the purchaser of each new Ford tractor, as shall, under normal use and service, appear to it to have been defective in workmanship or material. This warranty shall be limited to shipment to the purchaser without charge, except for transportation, of the part or parts intended to replace those acknowledged by the Ford Motor Company to be defective. The Ford Motor Company cannot, however, and does not accept any responsibility in connection with any of its tractors when they have been altered outside of its own factories or branch plants. If the purchaser shall use or allow to be used in the tractor, parts not made or supplied by the Ford Motor Company, then this warranty shall become void. The Ford Motor Company does not undertake responsibility to any purchaser of its products for any undertaking, representation or warranty made by anyone selling its products beyond those herein expressed.

The Ford Motor Company reserves the right to make changes in design and changes or improvements upon its product without imposing any obligation upon itself to install the same upon its products theretofore manufactured.

FORD MOTOR COMPANY