John Deere 1520 Tractor

JOHN DEERE

OPERATORS MANUAL

John Deere 1520
Tractor

OMR48389 H0 English

John Deere Tractor Works
OMR48389 H0

LITHO IN U.S.A.
ENGLISH

TO THE PURCHASER

Your versatile new John Deere Tractor meets the exacting requirements of modern farming.

Operating ease and comfort, hydraulic power when and where you need it, the ability to match engine power and transmission speed to any job, outstanding economy and dependability, modern styling, and simplicity of lubrication and service are all special features of this great tractor.

We are confident this modern tractor, combined with equally advanced John Deere tools and implements, will help you to farm better, easier, and more profitably.

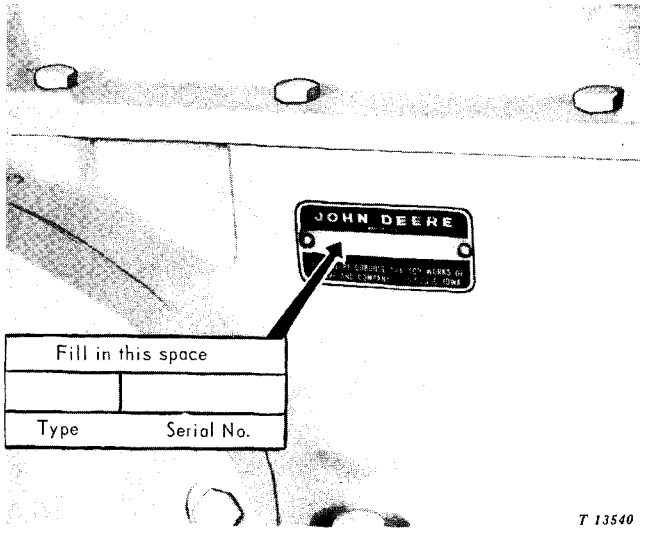
This safety alert symbol identifies important safety messages in this manual. When you see this symbol, be alert to the possibility of personal injury and carefully read the message that follows.

At the time the tractor was delivered, the John Deere dealer discussed with you its safe operation and proper care. However, before putting the tractor to work, read this manual. It contains complete instructions for operating the tractor, caring for it, and taking full advantage of its many time- and labor-saving features. After reading the manual, keep it in a convenient place for quick and easy reference if questions arise concerning operation, lubrication, or service.

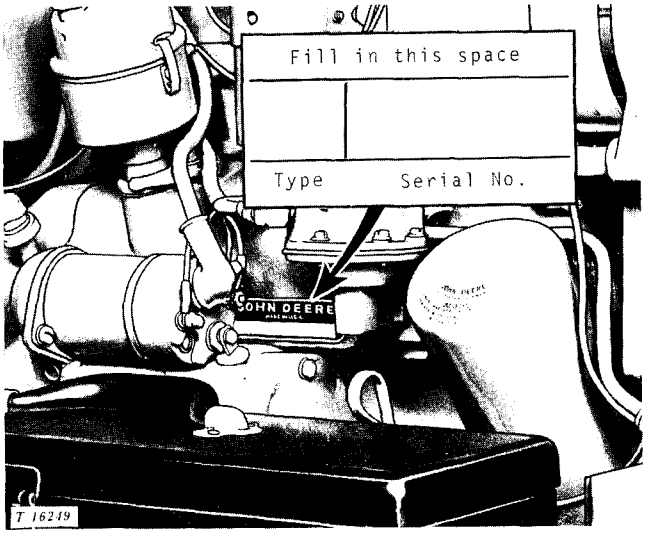
The warranty for this tractor appears on your copy of the Purchase Order which you should have received from your dealer when the equipment was purchased.

Your John Deere dealer wants to help you get the most value from your tractor. His skilled servicemen can handle every job efficiently. These men are trained in modern service methods; they have all necessary tools and equipment. If new parts are needed, only genuine John Deere parts will be installed. These parts are exact duplicates of the originals, made from the same patterns and of the same high-quality materials.

When in need of new parts, be prepared to furnish your dealer with the tractor type, complete tractor chassis serial number, engine type, and complete engine serial number. For ready reference, locate and record the above information in the spaces provided in the illustrations below.



Tractor Serial Number



Engine Serial Number

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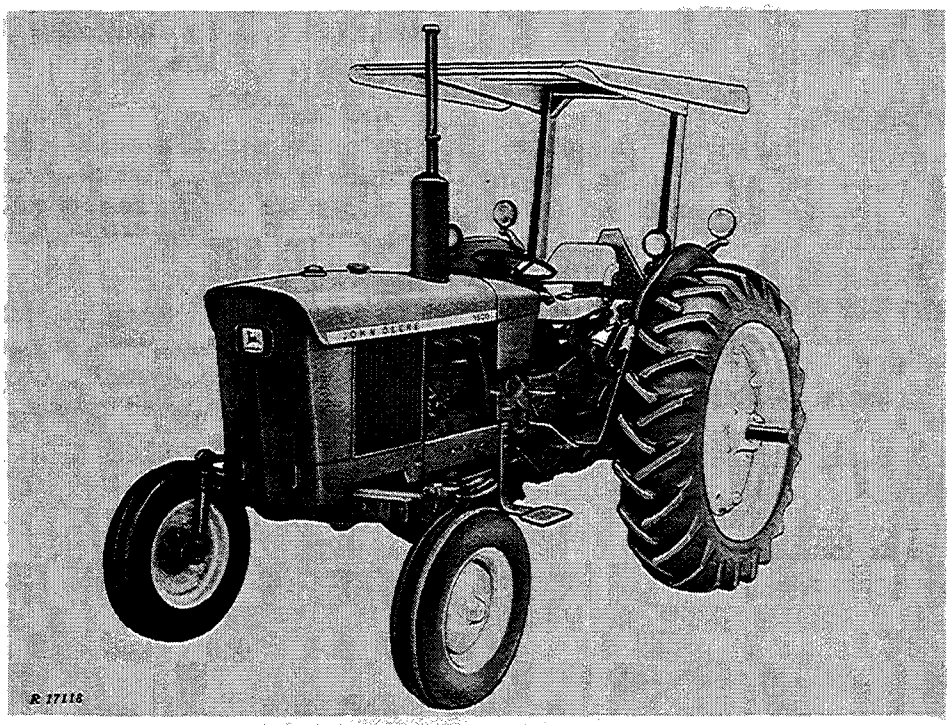


1520 HU Tractor Equipped with Roll-Gard and Canopy

SPECIFICATIONS

	Gasoline	Diesel
HORSEPOWER:*		
Observed at the PTO	47.86	46.52
ENGINE:		
Type	3 cylinder, valve-in-head	
Engine speeds:		
Slow idle	600 rpm	800 rpm
Working range	1500-2500 rpm	
Maximum transport speed	2680 rpm	2650 rpm
Bore and stroke	4.02 x 4.33 in.	
Total displacement	164 cu. in.	164 cu. in.
Compression ratio	8.0 to 1	16.3 to 1
Firing order	1-2-3	1-2-3
Intake valve clearance	0.014 in.	0.014 in.
Exhaust valve clearance	0.022 in.	0.018 in.
Distributor point gap	0.020 in.	.....
Distributor timing	28° BTDC	.....
ELECTRICAL SYSTEM:		
Voltage	12 volts	12 volts
Battery terminal grounded	Negative	Negative
Battery size	42 plate, 41 amp-hour	66 plate, 70 amp-hour

COOLING SYSTEM:
Type ..... Pressurized with centrifugal pump
Engine temperature control .... Heavy-duty thermostat

LUBRICATION SYSTEM: .. Force-feed pressurized with full-flow oil filter

CAPACITIES (U.S. Standard Measures):
Fuel tank ..... 19-1/2 gals.
Cooling system ..... 3 gals.
Crankcase (including filter) ..... 6 qts.
Transmission-hydraulic system .... 10 gals.
Belt pulley ..... 2-1/2 pts.

CLUTCH:
Single or dual stage, spring-loaded, dry disk, foot operated.

TRANSMISSION:
Type ..... Collar shift
Gear selections ..... 8 forward and 4 reverse
Shifting ..... 4 speeds each in high, low and reverse ranges. Park lock included.

Official test

POWER TAKE-OFF:
Type ..... Continuous-running, transmission-driven or independent PTO types available in 540 and/or 1000 rpm options. See page 33 for details.

DIFFERENTIAL AND FINAL DRIVES
Type ..... Planetary reduction final drives with spiral bevel gear drive differential.
Differential lock . Foot-operated mechanical lock spring-loaded out of engagement.

HYDRAULIC SYSTEM
Type .... Closed center, constant pressure
Standby pressure ..... 2250 psi

BRAKES .... Hydraulically actuated, wet-disk type.

HI-LO SHIFT
Hydraulic wet clutches, no clutching required. Shifting from high to low decreases ground speed 25.8 percent and increases pull power up to 35 percent in any of the transmission speeds.

REVERSER
Hydraulic wet clutches, no clutching required. Provides reverse speeds for gear selections 1 through 4 which are 16 percent faster than corresponding forward speeds.

FRONT WHEEL TREAD ..... See page 13

REAR WHEEL TREAD ..... See page 14

FRONT TIRES:** 9.00-10
6.00-16
7.50-16

REAR TIRES:** 18.4-16.1
12.4-24
14.9-28
12.4-36
13.6-38

***Additional tire sizes available.*

TRAVEL SPEEDS (Miles Per Hour)

NOTE: On tractors with the Hi-Lo Shift option, high range speeds are the same as listed in the chart below. Low range speeds are 25.8 percent less than those listed. If tractor is equipped with a reverser, multiply forward speeds by 1.16 to obtain true reverse speeds.

	1500 rpm		2100 rpm*		2500 rpm	
Gear	14.9-28	13.6-38	14.9-28	13.6-38	14.9-28	13.6-38
1	0.88	1.03	1.23	1.45	1.46	1.72
2	1.25	1.48	1.76	2.07	2.09	2.46
3	1.86	2.19	2.61	3.07	3.11	3.66
4	2.60	3.07	3.65	4.30	4.34	5.11
5	3.45	4.06	4.83	5.69	5.75	6.78
6	4.93	5.81	6.90	8.13	8.22	9.68
7	7.32	8.62	10.25	12.07	12.20	14.37
8	10.23	12.05	14.33	16.87	17.05	20.09
R1	1.02	1.20	1.43	1.68	1.70	2.00
R2	1.46	1.72	2.04	2.40	2.43	2.86
R3	2.16	2.55	3.03	3.57	3.61	4.25
R4	3.03	3.56	4.24	4.99	5.05	5.94

**2100 engine rpm gives the SAE rated 540 or 1000 rpm PTO speed. Some PTO-driven machines are operated at other speeds. See the machine operator's manual for detailed instructions.*

DIMENSIONS

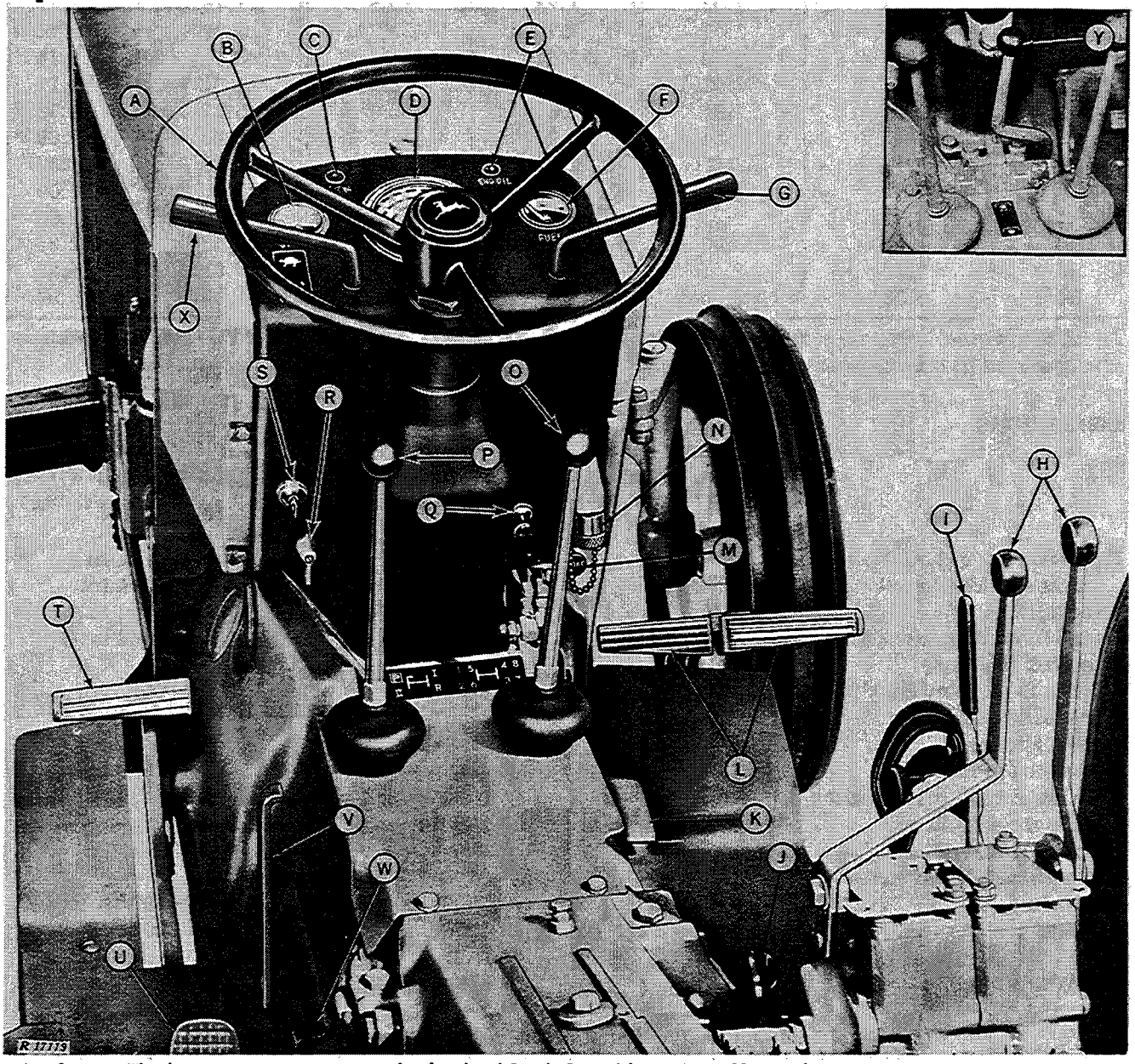
	RU Tractor with 14.9-28 rear tires, 6.00-16 front tires.	*HU Tractor with 13.6-38 rear tires, 7.50-16 front tires.*	*LU Tractor with 18.4-16.1 rear tires, 9.00-10 front tires.*
Height to top of hood	56-3/4 in.	61 in.	52-1/4 in.*
Clearance (front axle)	20-3/8 in.	23-15/16 in.	17-3/4 in.
Over-all height	82 in.	87-1/2 in.	52-1/4 in.
Over-all width, min	65-5/8 in.	67-1/4 in.	65-5/8 in.
Over-all length (with 3-point hitch)	131-1/2 in.	126 in.	126 in.
Wheelbase (maximum)			
straight axle	80-11/6 in.	80-11/16 in.	- - - - - -
sweptback axle	74-3/8 in.	- - - - -	74-3/8 in.
Turning radius (with brakes applied)			
straight axle	133 in.	128 in.	- - - - - -
sweptback axle	127 in.	- - - - -	112 in.
Shipping weight (approx.)			
gasoline	4100 lbs.	4700 lbs.	4150 lbs.
diesel	4150 lbs.	4750 lbs.	4220 lbs.

**Height to top of steering wheel.*

(Specifications and design subject to change without notice.)

CONTROLS AND INSTRUMENTS

Before attempting to operate your new tractor, become familiar with the location and purpose of its controls and instruments. Study the next few pages carefully, regardless of your previous tractor experience.



A – Steering Wheel
B – Water Temperature Gauge
C – Alternator Indicator Light
D – Speed-Hour Meter
E – Engine Oil Pressure Indicator Light
F – Fuel Gauge
G – Hand Throttle (page 5)
H – Selective Control Levers (page 29)
I – Rockshaft Control Lever (page 22)
J – Load and Depth Control Lever (page 22)
K – Foot Throttle (page 8)
L – Brake Pedals (page 12)
M – Choke (gasoline) (page 6)
N – Diesel Starting Fluid Adapter (page 6)
O – Gear Shift Lever (page 10)
P – Range Shift Lever (page 10)
Q – Cigar Lighter
R – Light Switch (page 21)
S – Starter Switch (page 5)
T – Clutch Pedal (page 5)
U – Differential Lock Pedal (page 12)
V – Mid PTO Selector Lever (page 33)
W – Rear PTO Selector Lever (page 33)
X – Hi-Lo Shift Lever (page 11) or Reverser Lever (page 11)
Y – Independent PTO Control Lever (page 33)

OPERATION

Complete instructions for operating your tractor safely and efficiently are given on the following pages. By following these directions carefully, you can be sure that you are taking full advantage of the many features built into your tractor.

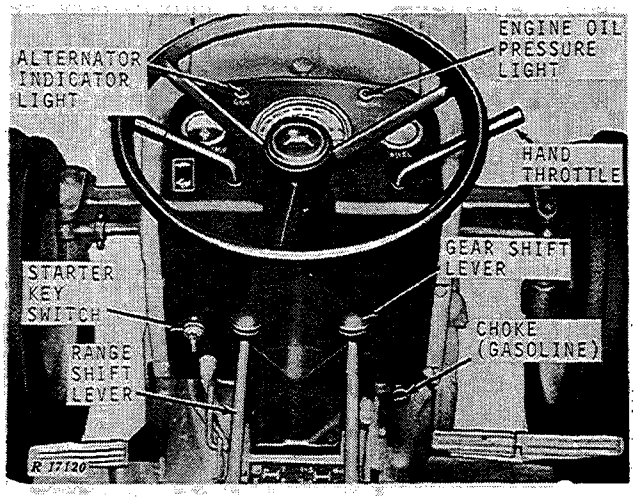
OPERATING THE ENGINE

PRESTARTING CHECKS

Perform the following checks and services before starting the engine for the first time each day:

1. Check the engine crankcase oil level.
2. Check the radiator coolant level.
3. Inspect air cleaner.
4. Drain the sediment from the fuel filter sediment bowl.
5. Check pre-cleaner.
6. Make sure the fuel shut-off valve at fuel tank is open.

STARTING THE ENGINE



Engine Starting Controls

1. The tractor is equipped with a starter safety switch, so range shift lever must be in neutral or in park (P) position when starting engine. Apply foot brake and depress clutch pedal to decrease drag on engine.

2. Place the hand throttle in slow idle position (gasoline) or halfway open position (diesel).

3. On gasoline engines, pull out choke knob full distance. (If tractor engine is warm, start engine without choking.)

4. At temperatures below 32° F., use cold weather starting aids, if so equipped (see "Cold Weather Starting Aids").

5. Turn starter switch clockwise to start engine. (Do not crank engine for more than 30 seconds at a time. To do so may overheat the starter. Wait a minute or two before trying again.)

6. On gasoline engines, push choke all the way in after engine has turned a few revolutions. During cold weather it may be necessary to leave choke out part way for the first few minutes.

7. As soon as engine starts, release starter switch and adjust engine speed to approximately half throttle. The engine oil pressure indicator light, and the alternator indicator light should go out. If the lights do not go out after the engine has been running for 10 seconds, the engine should be shut off at once and the cause of difficulty determined.

8. Release clutch pedal. In cold weather, warm engine and transmission for five minutes by operating engine at half throttle. Do not allow engine to operate at slow idle speed during engine warm-up. Observe gauges.

NOTE: If engine fails to start, refer to trouble shooting charts (page 70).

IMPORTANT: Never attempt to start a tractor with Hi-Lo Shift or reverser by towing or pushing, as the clutches may be damaged. On tractors with standard transmissions, never tow at a speed greater than normal for the gear in which the tractor is being towed. Tow the tractor for starting only in 6th, 7th, or 8th gear. On diesel models, be sure key switch is "ON" before engine is turned over.

COLD WEATHER STARTING AIDS

To assist in cold weather starting, several aids are available. These optional aids are explained below. Auxiliary batteries can be used. For diesel tractors, a starting fluid adapter can be used. See your John Deere dealer for additional batteries and other starting aids.

These aids are effective at low temperatures only when the engine is otherwise operating satisfactorily. They will not correct such deficiencies as low battery charge, crankcase oil of too heavy viscosity, or high electrical resistance, any of which may prevent the engine from starting.

DIESEL STARTING FLUID ADAPTER

Your diesel tractor may be equipped with a John Deere Starting Fluid Adapter. This attachment is used to inject atomized starting fluid into the engine air intake system when starting the engine at temperatures below 32° F.

Injecting Starting Fluid

CAUTION: Starting fluid is highly flammable.

To use starting fluid, remove the safety cap and plastic spray button from the can. Remove the cap from the adapter and position the can under the adapter as shown with the tube in the adapter hole. To inject fluid, push up on can; then release it, while cranking engine.

IMPORTANT: To avoid damage, turn engine with starter one or two revolutions before injecting starting fluid. Inject starting fluid only while engine is turning. Inject starting fluid intermittently, not continuously.

Relax pressure on the can between "shots" of fluid. Stop injecting fluid as soon as the engine starts. If engine begins to die during the first few minutes of operation, inject another "shot" of fluid. When the engine is running smoothly, remove the can from the adapter and replace the safety cap on the can.

Be sure to put the cap back on the adapter when not in use. This prevents dust from being drawn into the engine.

Store starting fluid cans where they will not be subject to extreme cold or heat. For best results, store fluid at room temperature.

CAUTION: Do not puncture or incinerate starting fluid containers.

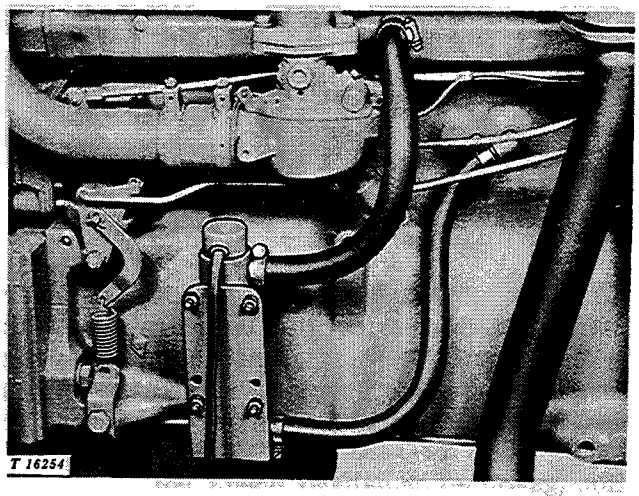
ADDITIONAL BATTERY

Starting the engine in cold weather can be made easier by connecting an additional 12-volt (booster) battery in parallel with the 12-volt battery or batteries on the tractor.

Use jumper cables to connect the positive (+) terminal of the booster battery to the positive (+) terminal of the tractor battery and the negative (-) terminal of the booster battery to negative (-) terminal of the tractor battery. See your John Deere dealer for booster batteries.

IMPORTANT: The batteries on your tractor are NEGATIVE grounded only. Reversed polarity in battery or alternator connections will result in damage to electrical system.

ENGINE COOLANT HEATER

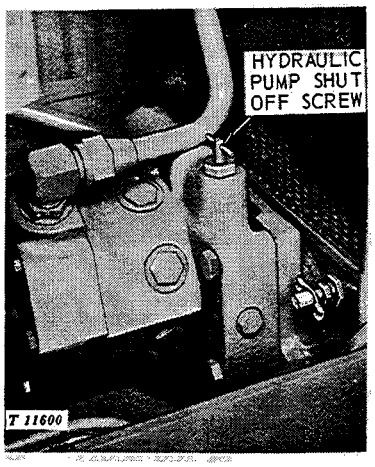


Engine Coolant Heater

A 1000-watt, 115-volt electrical coolant heater can be installed on the engine. The heater can be plugged into any 115-volt electrical source.

⚠ CAUTION: To avoid shock or hazardous operation, always use a three wire heavy-duty electrical cord equipped with 3-wire connectors. If a 2- to 3-contact adapter is used at the wall receptacle, always connect the green wire to a good ground.

HYDRAULIC PUMP SHUT-OFF SCREW



Hydraulic Pump Shut-Off Screw

If the tractor has a hydraulic pump shut-off screw (available from your John Deere dealer), the cranking speed may be increased during cold weather by destroking the hydraulic pump so it will not build up pressure. To do so, turn the shut-off screw in (clockwise) until resistance is felt. Turn screw in one more turn.

After the engine has started, back the shut-off screw all the way out (turn the screw counterclockwise). The pump will now build up pressure.

NOTE: Oil will leak past the shut-off screw if it is not backed all the way out against the internal stop.

TRACTOR WARM-UP PERIOD

Always be sure the tractor is warmed up properly before operating under a full load.

A good way to do this is first to idle the engine at about 1500 rpm for 5 minutes and then operate it at about 1900 rpm for another 5 minutes.

It is good practice to operate the tractor for the first 30 minutes in a lower gear than is normally required for the load. This gives the oil a chance to circulate freely and prevents undue wear on engine or transmission parts.

ENGINE IDLING

Avoid unnecessary engine idling. Prolonged engine idling may cause the engine coolant temperature to fall below its normal range. This in turn causes crankcase oil dilution, due to incomplete fuel combustion, and permits formation of gummy deposits on valves, pistons, and piston rings. It also promotes rapid accumulation of engine sludge and unburned fuel in the exhaust system. When the tractor is to remain idle for a considerable length of time, stop the engine.

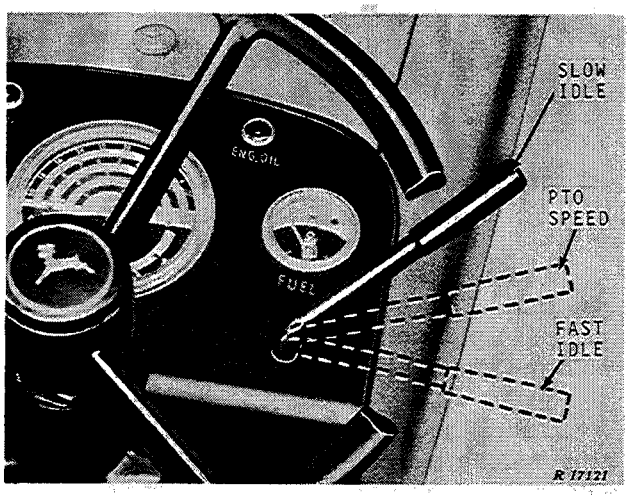
ENGINE SPEEDS

The engine is designed to operate under load at speeds ranging from 1500 to 2500 rpm. These are variable governed speeds, and the engine can be operated at any speed between the two extremes to meet various working conditions. Maximum continuous power at full load is obtained at 2500 rpm.

Operate the engine at 2100 rpm to obtain SAE standard PTO speeds. Use this speed when operating the power take-off.

USING HAND THROTTLE

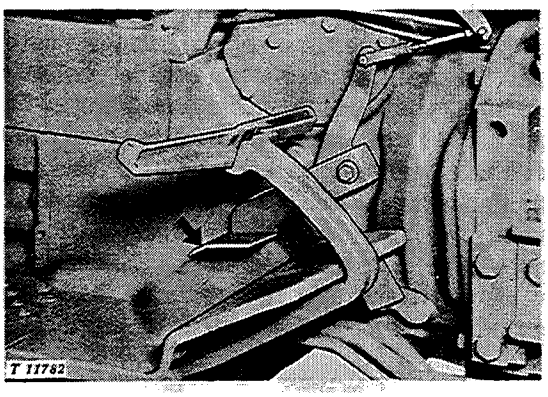
Use hand throttle to select any of the variable engine speeds between slow idle and fast idle. Move lever counterclockwise to slow down engine; move lever clockwise to speed up engine.



Range of Hand Throttle Positions

USING FOOT THROTTLE

Use the foot throttle to speed up the engine quickly, as during transport. The foot throttle is also a handy control during loader operation

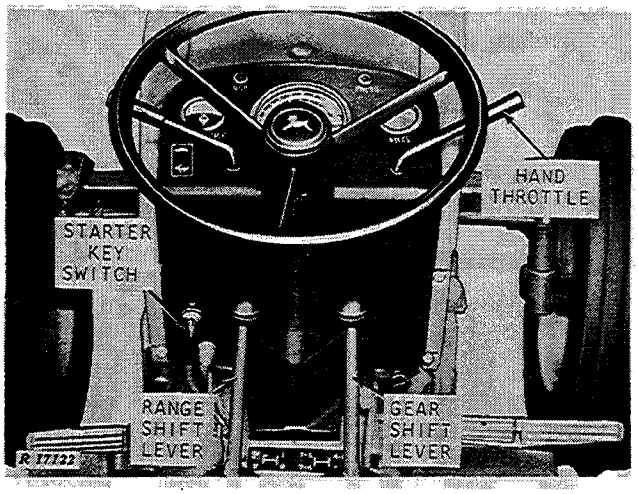


Foot Throttle

when the hands are busy with levers. When the pedal is released, the engine speed returns to the hand throttle setting.

STOPPING THE ENGINE

Stop the engine by performing the following steps:



Engine Stopping Controls

1. Move the gear shaft lever into any gear position. Then place the range shift lever in park (P) position. This will lock the gears and hold the tractor in place.

2. Run the engine at 1500 rpm for a short time before stopping it. Sudden stopping of a hot engine may allow some parts to overheat momentarily and possibly cause damage.

3. Turn the starter key switch to the vertical "OFF" position to stop the engine.

IMPORTANT: Never attempt to stop the diesel engine by turning off the fuel supply. This will cause the fuel injection pump to run dry and damage internal parts.

After stopping the engine, remove the key from the switch to prevent tampering and unauthorized operation. Removing the key also prevents battery discharge if the switch is accidentally left in the "on" position.

IMPORTANT: Starter key switch should be kept in vertical (OFF) position at all times when engine is stopped. Failure to do so will run down batteries and may cause overheating of ignition resistor (gasoline).

BREAK-IN PERIOD

To be sure that all bearing surfaces will be properly lubricated, operate the tractor at normal load for the first 100 hours of operation. Avoid light loads or excessive engine idling. Check periodically to be sure that an adequate supply of oil is maintained in the crankcase. If it becomes necessary to add oil during the first 100 hours, use new oil of the normal types recommended on page 39.

At the end of this 100-hour period, drain oil, replace filter element, and fill the crankcase with new oil as recommended on page 39. Thereafter, drain and refill crankcase every 100 hours of operation.

At the end of the first 4 hours and 8 hours of operation, retighten all wheel retainers. Check tightness of the retainers frequently for the first 100 hours of operation (see pages 13 and 14).

At the end of the first 50 hours of operation, change the transmission-hydraulic system oil filter (see page 49).

After the first 100 hours, retighten the front axle tie rods and steering drag link end nuts to 55 ft-lbs. Advance nut to line up slot and hole in rod end and install cotter pin.