John Deere 3020 Row Crop Standard and Hi-Crop Tractors (Serial No. 123000-)

JOHN DEERE

OPERATORS MANUAL

John Deere 3020 Row Crop Standard and Hi-Crop Tractors (Serial No. 123000-)

OMR46012 Issue B9 English

John Deere Waterloo Works
OMR46012 Issue B9

LITHO IN U.S.A. (REVISED)
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.

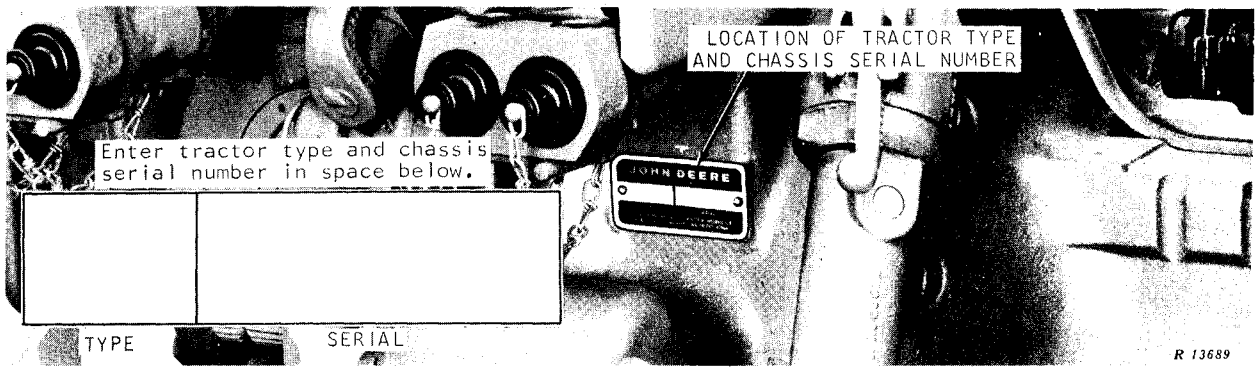
We are confident this modern tractor, combined with equally advanced John Deere tools and implements, will help you to farm better, easier, and more profitably.

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.

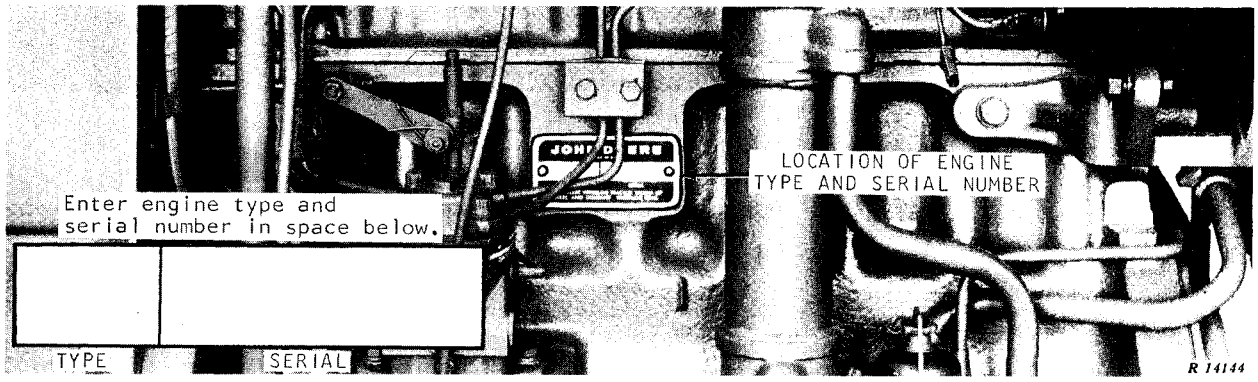
The warranty of this tractor appears on your copy of the purchase order which you should have received from your dealer when you purchased the tractor.

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.

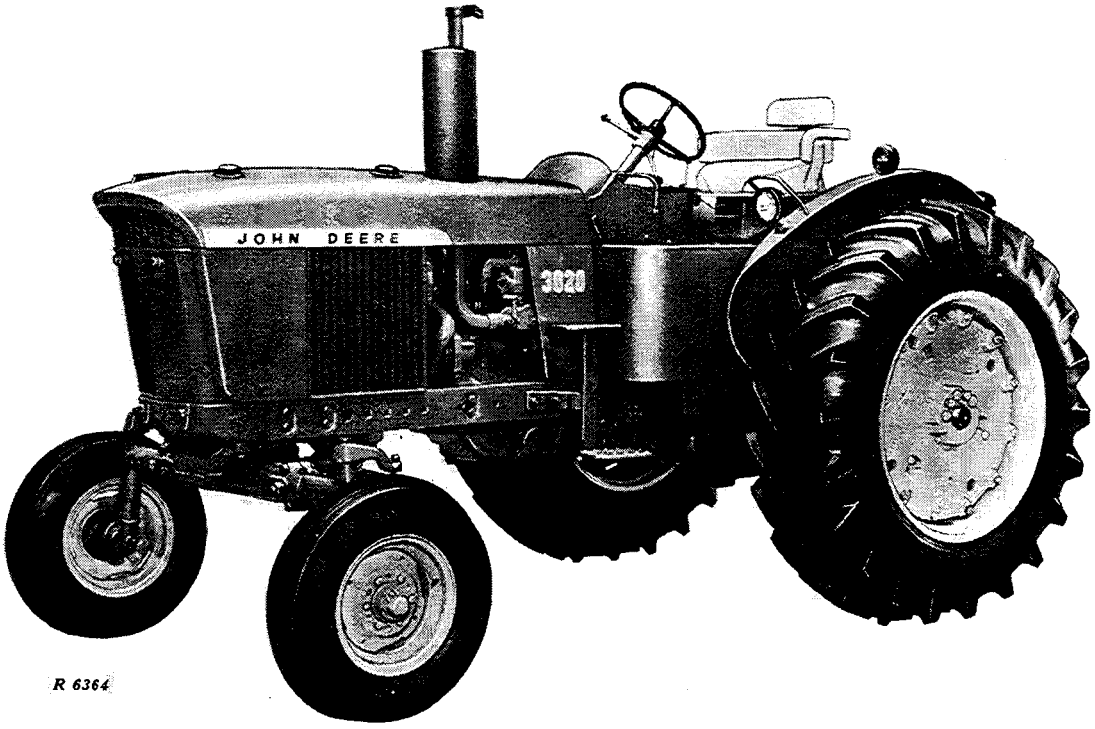


Tractor Type and Chassis Serial Number



Engine Type and Serial Number

CONTENTS



John Deere 3020 Standard Tractor with Gasoline Engine

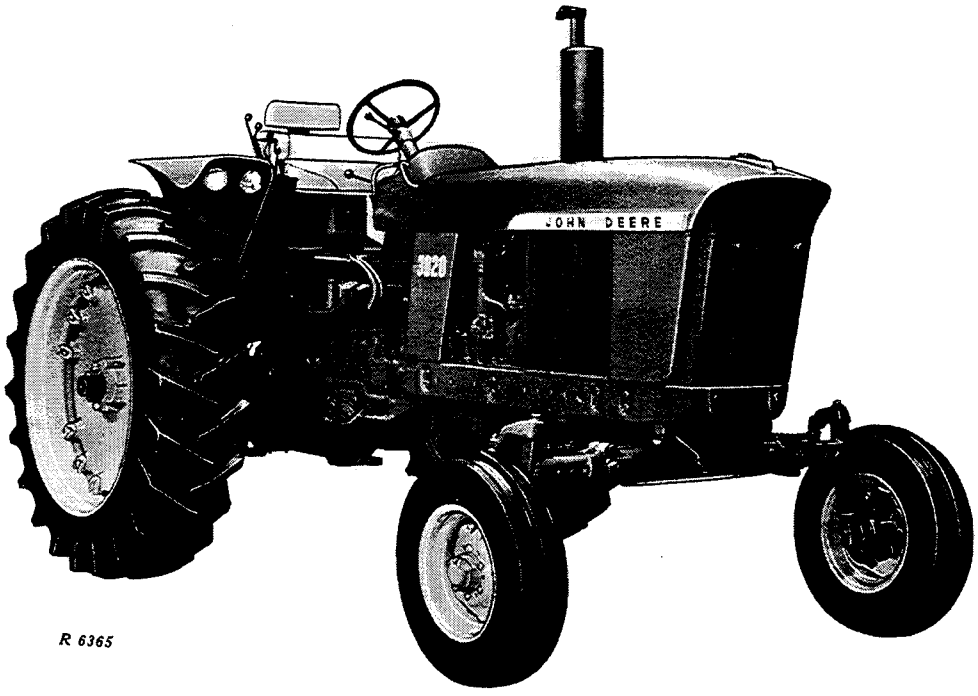
SPECIFICATIONS

HORSEPOWER (observed):*	*Diesel*	*Gasoline*	*LP-Gas*
PTO (Syncro-Range Transmission) . .	70 h.p.	70 h.p.	70 h.p.
PTO (Power-Shift Transmission) . . .	65 h.p.	64 h.p.	64 h.p.
Drawbar (Power-Shift Transmission).	57 h.p.	55 h.p.	56 h.p.

ENGINE:			
Type	4-cylinder, in-line, valve-in-head		
Engine speeds:			
Normal slow idle.	800 rpm	800 rpm	800 rpm
Working range	1500 to 2500 rpm	1500 to 2500 rpm	1500 to 2500 rpm
Bore and stroke	4-1/4 in. x 4-3/4 in.	4-1/4 in. x 4-1/4 in.	4-1/4 in. x 4-1/4 in
Displacement.	270 cu. in.	241 cu. in.	241 cu. in.
Compression ratio	16.5 to 1	7.5 to 1	9.0 to 1
Firing order	1-3-4-2	1-3-4-2	1-3-4-2
Intake valve clearance.	0.018 in.	0.015 in.	0.015 in.
Exhaust valve clearance	0.018 in.	0.028 in. (hot)	0.028 in. (hot)
Injection pump timing	TDC	. . . . .	. . . . .
Distributor timing (see page 64 for engine speed)	. . . . .	20° BTDC	25° BTDC
Distributor point gap.	. . . . .	0.022 in.	0.022 in.
Spark plug gap	. . . . .	0.025 in.	0.015 in.

ELECTRICAL SYSTEM:			
Electrical system voltage	12 volts	12 volts	12 volts
Batteries (see page 72)	Two (connected in series)	One	One

**Maximum observed horsepower at 2500 engine rpm (factory observed).*



John Deere 3020 Row-Crop Tractor with Gasoline Engine and Power Shift Transmission

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

LUBRICATION SYSTEM . . . . . Force-feed pressure-ized type with full-flow oil filter

CAPACITIES:
- Fuel tank . . . . . Diesel and gasoline-- 29 U.S. gals.
  LP-Gas (80% full)-- 33.6 U.S. gals.
- Crankcase. . . . . Dry system-- 9 U.S. qts.
  At service intervals-- 8 U.S. qts.
- Transmission-hydraulic system (add approx. 4-1/2 U.S. gals. for Power Front-Wheel Drive):
  - Syncro-Range . . . . . Dry system-- 11 U.S. gals.
    At service intervals-- 8 U.S. gals.
  - Power Shift . . . . . Dry system-- 14 U.S. gals.
    At service intervals-- 11 U.S. gals.
- Cooling system. . . . . -- 19 U.S. qts.
- Hi-crop final drive housings . . . . . -- 1-3/4 U.S. qts.
- Belt pulley. . . . . -- 2-1/2 U.S. pints

SYNCRO-RANGE TRANSMISSION:
- Type. . . . . Syncro-Range, constant mesh
- Gear selections. . . . . 8 forward and 2 reverse
- Shifting. . . . . 4 stations, synchronized shifting within stations

POWER SHIFT TRANSMISSION:
- Type. . . . . Planetary gears, hydraulically actuated wet disk clutches and brakes
- Gear selections. . . . . 8 forward and 4 reverse
- Shifting. . . . . Hydraulic, powershifting controlled by speed selector

POWER FRONT WHEEL DRIVE:
- Type. . . . . Hydraulic motor driven with planetary gear reduction in wheel hub, uses pressure oil from hydraulic system
- Torque . . . . Low (series connected) and high (parallel connected)
- Controls . . . Solenoid operated control valves, synchronized with transmission controls

POWER TAKE-OFF:
- Type . . . . . Independent PTO with front and mid power take-off. Stub shafts used for rear PTO speed conversion on dual speed PTO.
- Speed (2100 engine rpm) . . . . . Mid—1000 rpm
  Dual speed rear—540 or 1000 rpm
  Single speed rear—1000 rpm

HYDRAULIC SYSTEM:
- Type . . . . . Closed center, constant pressure. Includes power steering, power brakes, and implement control
- Maximum pressure. . . . . 2250 psi

BRAKES . . . . . Hydraulically power actuated, disk-type, operating in oil

GROUND SPEEDS. . . . . See page 13

FRONT TIRES**
- Row-crop. . . . . 6.00 - 16, 6-ply
- Standard . . . . . 7.50 - 16, 6-ply

REAR TIRES**
- Row-crop. . . . . 15.5 - 38, 6-ply
- Standard . . . . . 18.4 - 30, 6-ply

FRONT WHEEL TREAD. . . . . See page 18

REAR WHEEL TREAD:
- Regular and offset wheels . . . . . See page 19
- Double wheels. . . . . See page 21

DIMENSIONS	*Row-Crop*	*Standard*
Wheel base	90 in.	81-1/2 or 92-3/4 in.
Over-all length	140 in.	140-1/4 in.
Over-all height	87-1/2 in.	88-3/8 in.
Height to steering wheel	77-1/8 in.	77-1/8 in.
Width (regular axle)	89-5/8 in.	89-5/8 in.
Turning radius	101 in.	111 in.

SHIPPING WEIGHT (With equipment for average field service, less fuel and ballast). Add 225 lbs. if tractor has Power Shift transmission. Add 550 lbs. if equipped with Power Front Wheel Drive:

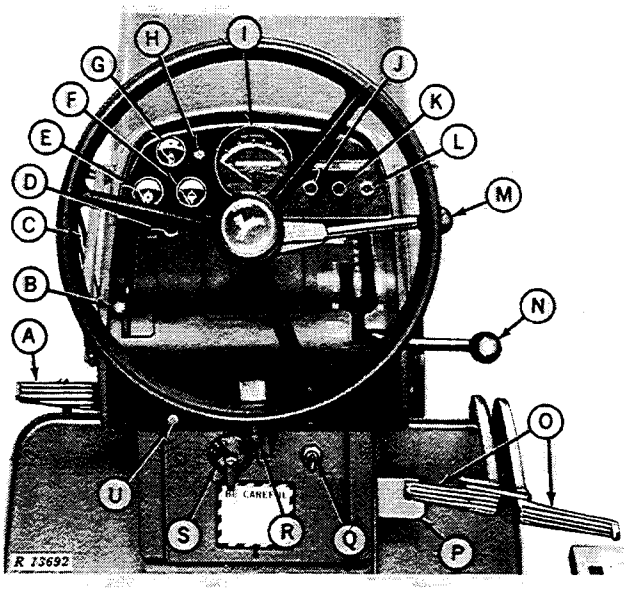
	Row-Crop	*Standard*
Diesel	7610 lbs.	7560 lbs.
Gasoline	7395 lbs.	7345 lbs.
LP-Gas	7545 lbs.	7495 lbs.

***Additional tires available for special purposes.*

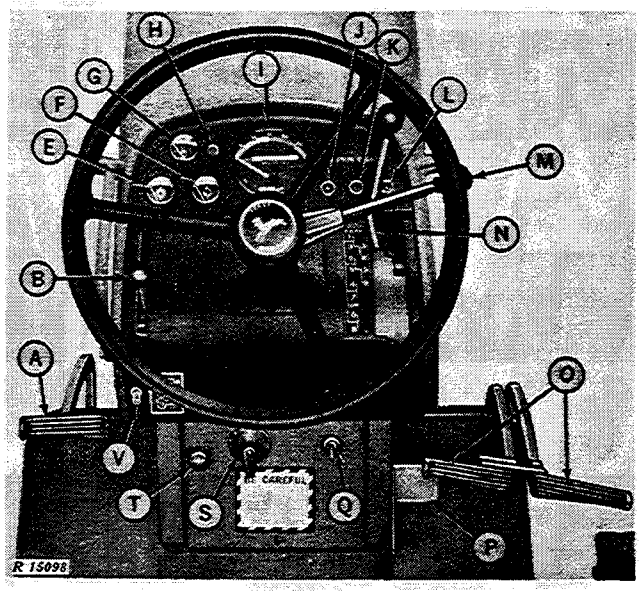
Specifications and design subject to change without notice.

CONTROLS AND INSTRUMENTS

Before attempting to operate your new tractor, become familiar with the location and purpose of its controls and instruments. Additional information will be found on the page number following the control or instrument. World-wide graphic symbols are used to assist identification and operation.

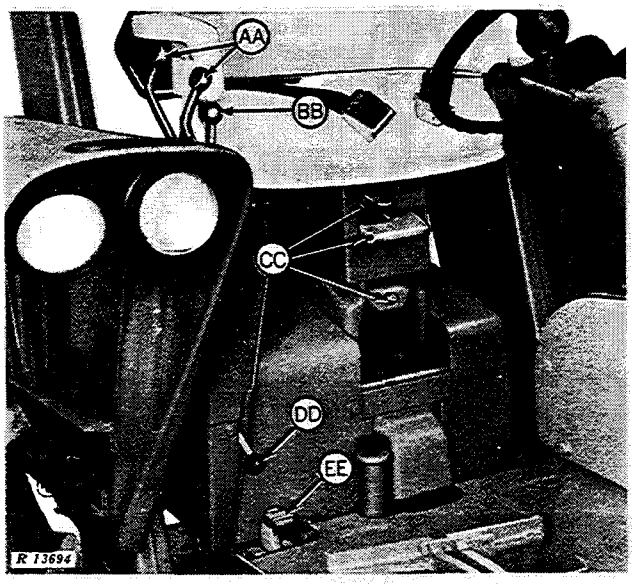


Tractor with Diesel Engine and Power Shift Transmission



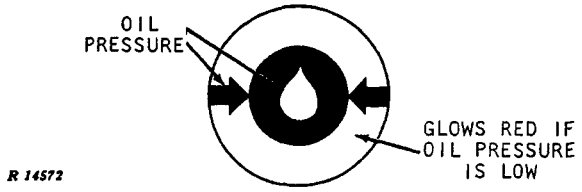
Tractor with Gasoline Engine and Syncro-Range Transmission

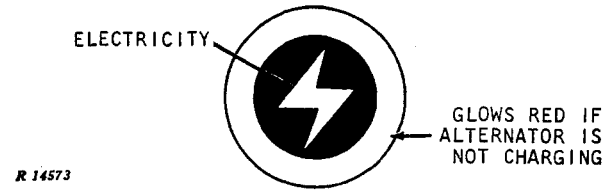
A – Clutch Pedal (Syncro-Range Tractors, page 15)
Inching Pedal (Power Shift Tractors, page 13)
B – Power Take-Off Clutch Lever (page 41)
C – Engine Disconnect Lever (Power Shift Tractors, page 9)
D – Transmission Oil Filter Indicator Light (Power Shift Tractors, page 14)
E – Transmission Oil Temperature Gauge (pages 14 and 15)
F – Coolant Temperature Gauge
G – Fuel Gauge
H – Speed Indicator Knob (page 13)
I – Speed-Hour Meter (pages 13 and 50)
J – Alternator Indicator Light (pages 6 and 7)
K – Air Cleaner Indicator Light (pages 6 and 7)
L – Oil Pressure Indicator Light (pages 6 and 7)
M – Hand Throttle (page 10)
N – Shift Lever (Syncro-Range Tractors, page 15)
Speed Selector (Power Shift Tractors, page 13)
O – Brake Pedals (page 17)
P – Foot Throttle (page 10)
Q – Key Switch (pages 6, 7, and 11)
R – Ether Starting Fluid Adapter (Diesel Tractors, page 8)
S – Light Switch (page 25)
T – Engine Choke Knob (Gasoline Tractors, page 7)
U – Disconnect Lever Latch (Power Shift Tractors, page 9)
V – Power Front Wheel Drive Operating Switch (page 16)

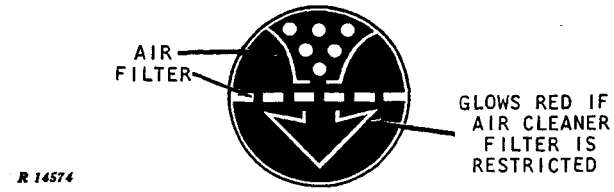


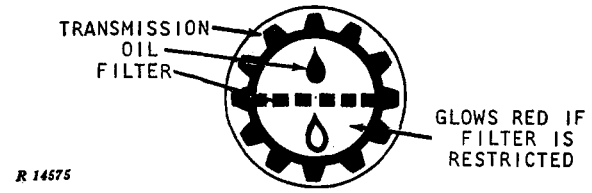
AA – Remote Cylinder Operating Levers (page 36)
BB – Rockshaft Control Lever (page 27)
CC – Seat Controls (page 12)
DD – Rockshaft Selector Lever (page 28)
EE – Differential Lock Pedal (page 17)

INDICATOR LIGHTS

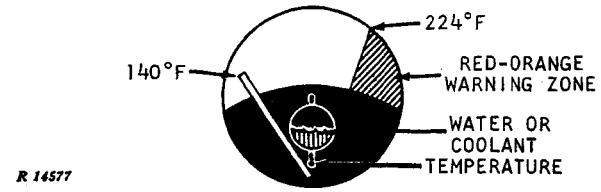


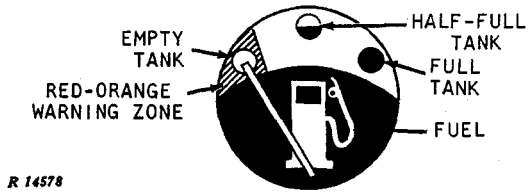


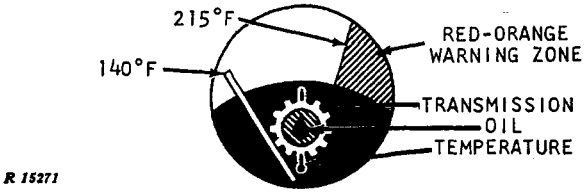




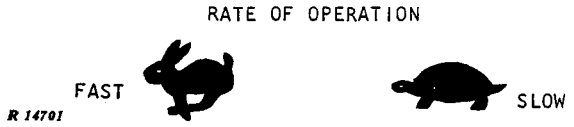
GAUGES

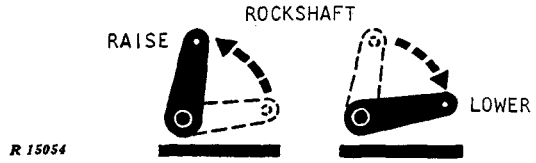


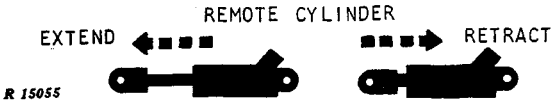


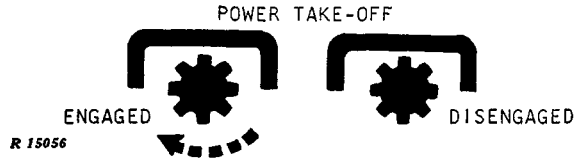


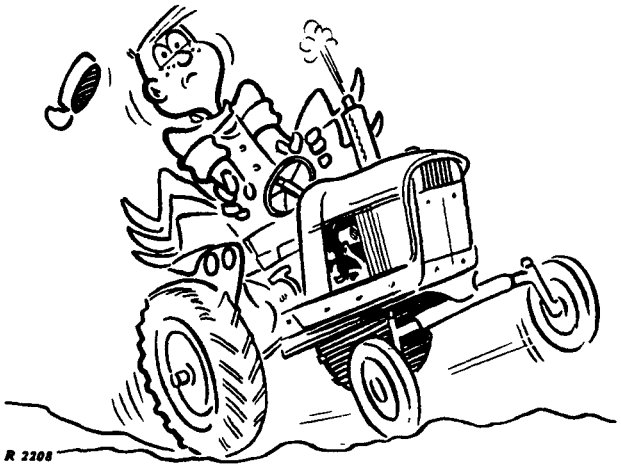
CONTROL SYMBOLS











CAUTION: Fast driving causes many accidents. Couple the brake pedals together and always drive at a safe speed.

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 - see page 54.

(2) Check the radiator coolant level - see page 54.

(3) If tractor has a precleaner, check the collector bowl - see page 55.

(4) If tractor has a fuel pump, check the sediment bowl - see page 55.

(5) Grease the wide-swing drawbar rollers, Hi-Crop rear axles, and the Roll-O-Matic or wide front axle grease fittings - see page 55.

(6) Grease the front wheel bearings if the tractor has been operated in extremely wet or muddy conditions - see page 55.

STARTING THE DIESEL ENGINE

NOTE: If the prevailing temperature is 40 degrees Fahrenheit or lower, it may be necessary to use a cold weather starting aid to start the engine (page 8).

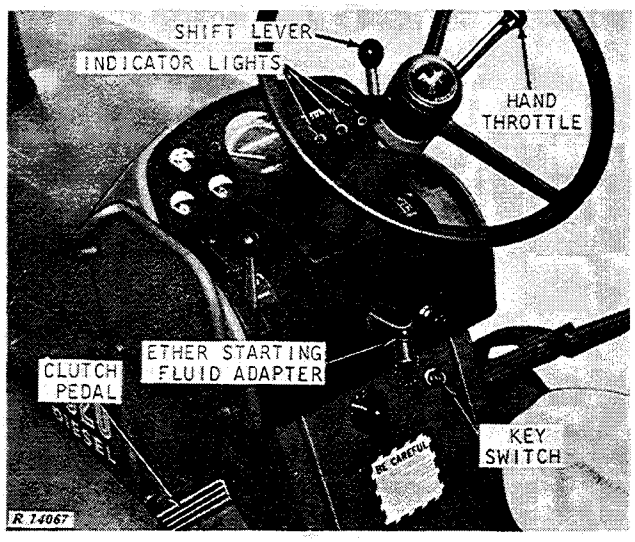
Perform the prestarting checks listed above.

(1) Make sure the fuel shut-off valve on the bottom of the fuel tank is open—see page 62.

(2) See that the shift lever or the speed selector is in the "PARK" position. Depress the clutch pedal or the inching pedal.

(3) PLACE THE HAND THROTTLE IN THE 1200 RPM POSITION, approximately one-third of its travel downward.

(4) Turn the key switch clockwise to the first position. The alternator and oil pressure indicator lights should glow. Turning the key switch further to the start position should cause the air cleaner indicator light to glow. On Power Shift tractors the transmission oil filter indicator light should glow. If any light fails to glow, turn off the key switch and determine the cause.



Diesel Starting Controls

(5) Turn the key switch all the way to the right to start the engine. Do not operate the starter for more than 30 seconds at a time. To do so may overheat the starter. If the engine does not start the first time, wait for a minute or two before trying again. If it does not start after four attempts, see "Troubleshooting."

If the key switch is released before the engine starts, wait until the starter and the engine stop before trying again. This will prevent possible damage to the starter.

Before the starter will operate, the shift lever or the speed selector lever must be in "PARK" or neutral.

(6) After the engine starts, the indicator lights should go out. The transmission oil filter indicator light may continue to glow when the oil is cold. If any other light continues to glow after the engine has been running 10 seconds, stop the engine and determine the cause.

If the Power Shift engine disconnect clutch was disengaged, engage the clutch immediately after starting the engine. This will prevent damage to the tractor.

STARTING THE GASOLINE ENGINE

Perform the Prestarting checks on page 6.

(1) Make sure the fuel shut-off valve on the bottom of the fuel tank is open—see page 62.

(2) See that the shift lever or the speed selector is in "PARK" position. Depress the clutch pedal or the inching pedal.

(3) Move the hand throttle all the way up.

(4) PULL THE ENGINE CHOKE KNOB OUT.

NOTE: At low temperatures it may be necessary to use a cold weather starting aid (page 8).

(5) Turn the key switch clockwise to the first position. The alternator and oil pressure indicator lights should glow. Turning the key switch further to the start position should cause the air cleaner indicator light to glow. On Power Shift tractors the transmission oil filter indicator light should glow. If any light fails to glow, turn off the key switch and determine the cause.

(6) Turn the key switch all the way to the right to start the engine. If the engine is warm, push the choke knob in after a few revolutions. To prevent overheating the starter, do not operate the starter for more than 30 seconds at a time. Then wait a minute or two before trying again. If the engine does not start after four such attempts, see "Troubleshooting."

If the key switch is released before the engine starts, wait until the starter and the engine stop before trying again. This will prevent possible damage to the starter.

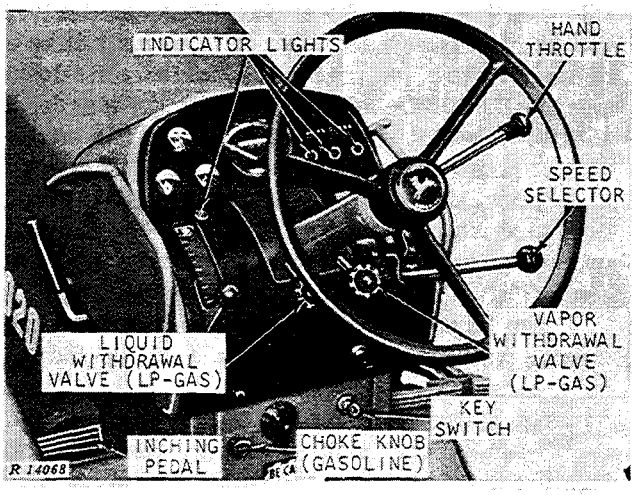
Before the starter will operate, the shift lever or the speed selector lever must be in "PARK" or neutral.

(7) If the engine is cold, push the choke knob in after the engine starts. In cold weather, it may be necessary to leave the choke partially on for the first few minutes.

(8) After the engine starts, the indicator lights should go out. The transmission oil filter indicator light may continue to glow when the oil is cold. If any other light continues to glow after the engine has been running 10 seconds, stop the engine and determine the cause.

If the Power Shift engine disconnect clutch was disengaged, engage the clutch immediately after starting the engine. This will prevent damage to the tractor.

STARTING THE LP-GAS ENGINE



Starting Controls on Gasoline and LP-Gas Tractors

Perform the Prestarting checks on page 6.

(1) See that the shift lever or the speed selector is in "PARK" position. Depress the clutch pedal or the inching pedal.

(2) Move the hand throttle all the way up to the SLOW IDLE POSITION. Depress the starting pedal (rear pedal of the combination foot throttle and starting pedal illustrated on page 11). This closes the carburetor throttle and prevents hard starting that would occur if the carburetor throttle were open.

(3) Open the VAPOR withdrawal valve slowly. If the valve is opened too fast, it may cause the excess flow valve (inside the withdrawal valve) to close and prevent normal flow of vapor. If this happens, close the vapor withdrawal valve and open it more slowly. Engine will not start on liquid fuel.

(4) Turn the key switch clockwise to the first position. The alternator and oil pressure indicator lights should glow. Turning the key switch further to the start position should cause the air cleaner indicator light to glow. On Power Shift tractors the transmission oil filter indicator light should glow. If any light fails to glow, turn off the key switch and determine the cause.

(5) Turn the key switch all the way to the right to start the engine. Before the starter will operate, the shift lever or the speed selector must be in "PARK" or neutral.

(6) Do not move hand throttle from the slow idle position until the engine fires regularly. If the temperature is 20° F. or lower, it may be necessary to slowly move the hand throttle downward AFTER the engine has fired. Release the starter when it no longer is turning the engine.

Operating the starter for more than 30 seconds at a time may overheat the starter. If the engine does not start the first time, wait for a minute or two before trying it again. If it does not start after four attempts, see "Troubleshooting."

If the key switch is released before the engine starts, wait until the starter and the engine stop before trying again. This will prevent possible damage to the starter.

(7) After the engine starts, the indicator lights should go out. The transmission oil filter indicator light may continue to glow when the oil is cold. If any other light continues to glow after the engine has been running for 10 seconds, stop the engine and determine the cause.

If the Power Shift engine disconnect clutch was disengaged, engage the clutch immediately after starting the engine. This will prevent damage to the tractor.

(8) Operate the engine on vapor until the cooling system is warm. Then slowly open the liquid withdrawal valve and close the vapor valve. Opening the liquid withdrawal valve too fast may cause the excess flow valve to close and prevent normal flow of liquid. If this happens, close the withdrawal valve and open it more slowly.

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CAUTION: Before starting the tractor engine, be sure there is plenty of ventilation. Never operate the tractor in a shed or garage.

COLD WEATHER STARTING AIDS

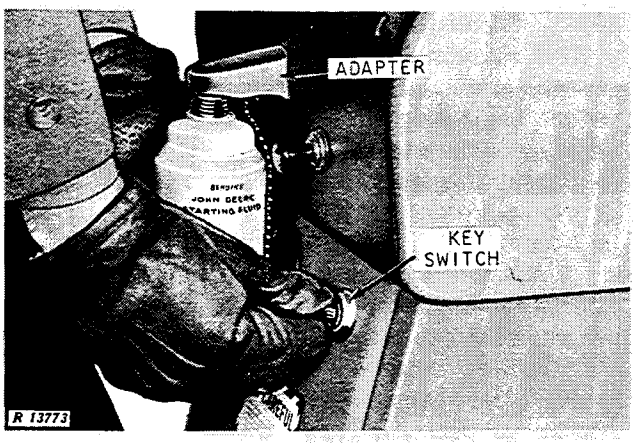
For cold weather starting, the diesel tractor is equipped with an ether starting fluid adapter. The Power Shift transmission tractor is equipped with an engine disconnect lever. Other starting aids are available from your John Deere dealer.

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 heavy viscosity, and high electrical resistance which may prevent the engine from starting.

ETHER STARTING FLUID ADAPTER (Diesel Tractors)

The diesel tractor is equipped with this adapter which is used to inject atomized starting fluid into the engine air intake system. Pressurized cans of starting fluid are available from your John Deere dealer.

To use the can of 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.



Injecting Starting Fluid

To inject a "shot" of starting fluid, momentarily push up on the can.

IMPORTANT: To avoid damage, turn engine with starter one or two revolutions before injecting starting fluid. Inject starting fluid only while the engine is turning.

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