

# 8000 Series Tractors



## SERVICE MANUAL 8000 Series Tractors

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LITHO IN U.S.A.  
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# SERVICE MANUAL FOR JOHN DEERE DEALERS

**8 0 0 0**  
**SERIES**

# TRACTORS

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## TO THE JOHN DEERE SERVICEMAN

This service manual contains maintenance instructions for John Deere 8000 Series Tractors. Included are complete instructions for removal, disassembly, inspection, repair, assembly, and installation of the major parts and assemblies of the tractor.

In addition, the manual contains brief descriptions of the more complicated systems of the tractor and tells how they operate. Dimensions of many new wearing parts are given as an aid in determining when parts replacement is necessary. Tests and adjustments, required to keep the tractor operating efficiently, are explained in detail.

This manual was planned and written for the Service Department; its place is in the shop. Using the manual daily to solve service problems will reduce error and costly delay and assure you the best in finished service work. There is no guesswork when you use the manual.

### SPECIAL TOOLS

Service tool references in the text and in the illustrations are followed by the vendor's tool number which serves to identify each tool. The special engine tools mentioned in this manual have been developed for General Motors 6-71E Series Diesel engines and are recommended to facilitate service operations. These tools are not supplied by Detroit Diesel Engine Division and all inquiries regarding availability should be directed to the vendor: Kent-Moore Organization, Inc., 1501 South Jackson Street, Jackson, Michigan.

Other special tools mentioned in the manual are either described in detail with dimensions or are tools commonly used in the average service shop. Most of these can be obtained from local tool suppliers.



John Deere 8010 Tractor

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## Section 10

# DESCRIPTION, OPERATION AND SPECIFICATIONS

### Group 5

## DESCRIPTION



Fig. 10-5-1—John Deere 8020 Tractor

The John Deere 8020 Tractor (Fig. 10-5-1) is a heavy-duty, four-wheel-drive tractor that is tailor-made to the requirements of large-acreage grain growers or for use in irrigated land.

It is capable of pulling up to 10 plow bottoms, 31-foot tandem disk harrows, 36-foot multi-hitch grain drills, field cultivators and tool carriers, two- and three-bottom, two-way deep tillage plows with 18-inch bottoms, 18-foot offset disk harrows, large disk tillers and other similar loads.

#### ENGINE

A General Motors 6-cylinder, Model 6-71E

diesel engine powers the tractor. The engine is a two-stroke cycle, full diesel engine. It is electrically cranked and has a starting aid to facilitate starting at low temperatures. It produces approximately 200 brake horsepower at 2100 revolutions per minute rated speed. Approximately 145 horsepower is developed at tractor drawbar.

#### FUEL SYSTEM

Fuel is supplied to the engine from a 106-gallon fuel tank located behind the operator's seat.

A fuel pump, located at the end of the engine blower, assures an adequate supply of fuel to the injectors at all times.

#### CLUTCH

A disk-type, wet clutch is used. It is hydraulically actuated and is operated by a treadle-type pedal at the left of the operator's platform.

Oil, under pressure and filtered, to operate the clutch is furnished by a pump attached to the engine clutch housing.

The engine clutch housing and an auxiliary reservoir contain the oil to operate the clutch.

A clutch pump suction screen in the auxiliary reservoir and a double oil filter keep the clutch oil clean.

#### TRANSMISSION

The transmission is of the selective speed, constant mesh type. It is fully synchronized except in reverse speed gears which are sliding spur-type.

Shifting is accomplished by moving the gear-shift lever to the position that gives the desired speed. The transmission has two speed ranges—low and high—controlled by a range selector lever at the right of the operator.

A drop gear housing attached to the rear of the transmission contains the high-low range selector gears, the drop gear housing output shaft and the front drive disconnect assembly.

The transmission has eight forward speeds, ranging from 2-7/8 to 18 miles per hour and two reverse speeds of 1-7/8 and 5-5/8 miles per hour.

#### DRIVE AXLES

Double-reduction type drive axles are used. In addition to the customary bevel gear and pinion reduction, a planetary gear assembly, incorporated in the hubs, provides additional reduction. This design has the advantage of reducing the torque loads on the axle shafts and drive mechanism.

The front drive axle assembly can be disconnected for high speed operation when transporting, or under conditions where a minimum of tractive effort is necessary.

#### STEERING

Hydraulic power steering is regular equipment on the tractor. A steering valve, located under the cowl and operated by the steering

wheel, directs the flow of oil under pressure to a 5 x 15-inch steering cylinder. The tractor frame is composed of two sections (termed "bogies") which are hinged together near the center. Action of the steering cylinder causes the front bogie to turn, relative to the rear bogie, thereby causing the tractor to turn. The tractor can be turned in a 17-1/2-foot radius under full power.

Oil to operate the steering system is furnished by a 40-gallon per minute pump located at the right rear side of the clutch housing. This oil is supplied from the reservoir which also supplies the main hydraulic system.

#### BRAKES

The tractor is equipped with four-wheel air brakes. Operation of the brakes is controlled by an operating valve actuated by a pedal located near the right side of the operator's platform.

Air for operation of the brakes is furnished by a compressor located on the rear of the engine. An air tank is provided which stores the air for brake operation and contains enough air for two or three brake applications after the engine is stopped and the air compressor is not operating.

A mechanical parking brake assembly is located on the output shaft at the rear of the drop gear housing. It is foot operated and locks in the applied position. The brake is released by pulling out on a knob located on the instrument panel.

#### ELECTRICAL SYSTEM

Two 12-volt batteries, located in a compartment at the left side of the front bogie, furnish current at 24 volts for starting the engine and at 12 volts to supply the lights and other accessories when the generator is not operating.

A 24-volt generator supplies current when the engine is operating to maintain battery charge.

#### HYDRAULIC SYSTEM

The hydraulic system can be furnished to operate a rockshaft and one or two remote cylinders, or two or three remote cylinders without rockshaft.

The operating valves are controlled by operating levers located to the right of the operator's seat. One of the operating valves is designed to provide a "float" position.

A 3-point hitch attachment is available for use in conjunction with the rockshaft.

Oil for operating the hydraulic system is furnished by a positive-displacement, gear-type



pump located at the lower right rear of the clutch housing. Either a 40- or 60-gallon per minute pump is available.

The hydraulic pump can be disconnected for cold weather starting.

Oil for the hydraulic system (as well as for the power steering) is contained in a reservoir at the right side of the front bogie. The reservoir contains a suction screen for the steering system; also one for the main hydraulic system. Return oil from the steering and hydraulic systems is filtered by two stacked filter elements located in the top of the reservoir.

#### FRAME

The tractor frame is of a heavy welded steel construction. The frame is in two sections (termed "bogies") which are hinged together with a yoke and gudgeon which permits steering and, due to the oscillating characteristics of the gudgeon, maintains contact of all four wheels on the ground when operating over uneven terrain. This provides for better traction.

#### TIRES

The tractor can be furnished with 23.1-26, 12-ply tires on either 16- or 20-inch rims, high or low profile tread, or 18.00 x 25, 20-ply road grader tires on 15-inch rims.

#### OPTIONAL EQUIPMENT

Engine Air Pre-Cleaner with Air Stack

Electric Hour Meter

Tire Inflation Hose and Valve

3-Spool Hydraulic Operating Valve

40 or 60 GPM Main Hydraulic Pump

3-Point Hitch

5 x 16-Inch Remote Cylinders

Quick Disconnect Couplers

## Group 10

# OPERATION

### CONTROLS

For safe and easy operation of this tractor, become familiar with all of the controls. Regardless of your previous experience, study the next few pages carefully.

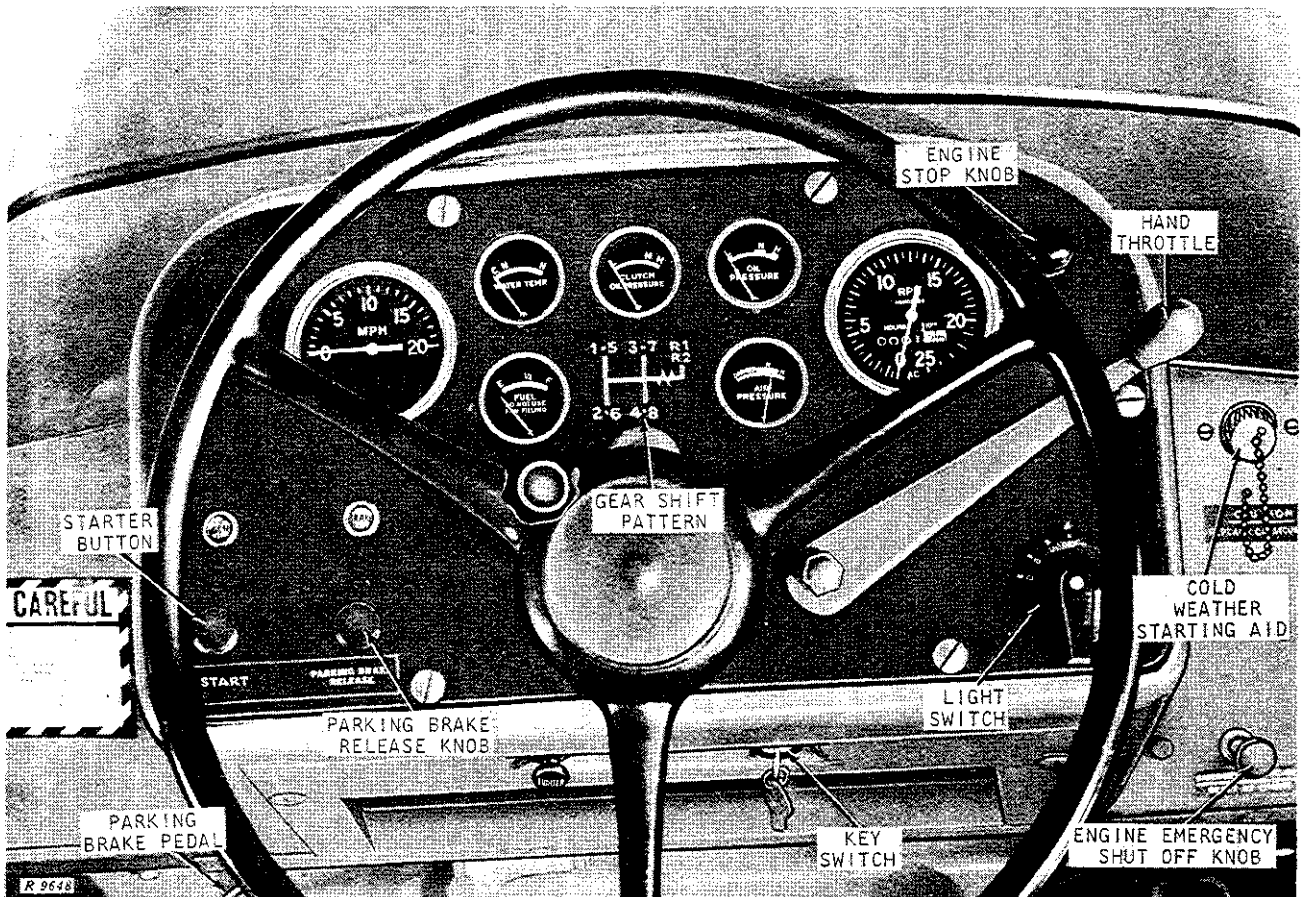


Fig. 10-10-1—Controls

#### KEY SWITCH

This switch (Fig. 10-10-1) controls the entire electrical system of the tractor. The electrical equipment on the tractor will not operate until the key switch is turned on. When the key is turned to the "ON" position, the fuel gauge is activated and current is made available to the starter and light switches and generator, parking brake, and low air and/or low engine oil pressure warning lamps.

#### COLD WEATHER STARTING AID

The covered tube (Fig. 10-10-1) on the side of the right cowl panel leads to the engine air intake system. During cold weather, ether is sprayed into this tube to help start the engine.

#### HAND THROTTLE

The hand throttle (Fig. 10-10-1) controls engine speed. Pulling the lever down increases engine speed; pushing it up decreases engine speed to slow idle.

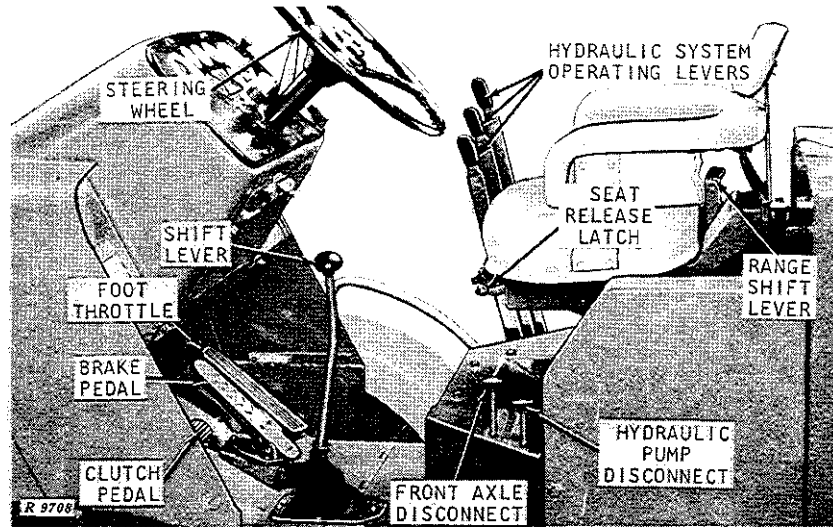


Fig. 10-10-2—Operating Controls

#### FOOT THROTTLE

Engine speed can be increased beyond the hand throttle setting by depressing the foot throttle (Fig. 10-10-2). When foot pressure is removed, engine speed reverts to the speed established by the hand throttle.

#### ENGINE STOP KNOB

This knob is located on the instrument panel (Fig. 10-10-1). The engine is normally stopped by pulling out on this knob.

#### ENGINE EMERGENCY SHUT-OFF KNOB

In rare instances, it may not be possible to stop the engine in the regular manner. In this case, the engine can be stopped by pulling out on the knob located on the right cowl panel (Fig. 10-10-1). Pulling this knob cuts off the engine air supply, causing it to stop.

**CAUTION:** Do not use this method of stopping the engine except in emergency.

#### CLUTCH PEDAL

Depressing the clutch pedal disengages the hydraulic clutch to permit shifting gears.

#### SHIFT LEVER

The transmission is shifted through its eight forward and two reverse speeds by a shift lever (Fig. 10-10-2) located at the front of the operator.

#### TRANSMISSION RANGE SELECTOR LEVER

The transmission can be operated in either of two ranges (high or low) to obtain various tractor ground speeds. The desired range is selected by the range shift lever (Fig. 10-10-2). When the lever is moved back, the transmission is in low range. When the lever is moved forward, the transmission is in high range. The lever must be in one of these two positions in order to move the tractor. The tractor motion **MUST** be stopped before changing ranges.



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