



# 70 Diesel Tractor



JOHN DEERE

## SERVICE MANUAL 70 Diesel Tractor

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



**SERVICE MANUAL FOR  
JOHN DEERE DEALERS**

**MODEL 70 DIESEL TRACTOR**  
(GENERAL-PURPOSE AND STANDARD)

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## INTRODUCTION

This Service Manual contains maintenance instructions for the Model "70" Diesel Tractor. Included are complete instructions for removal, disassembly, inspection, repair, assembly and installation of all major parts and assemblies.

In addition, the manual contains a brief description 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 at full efficiency are explained in detail. Full instructions on preparing a new tractor for delivery to the customer are included.

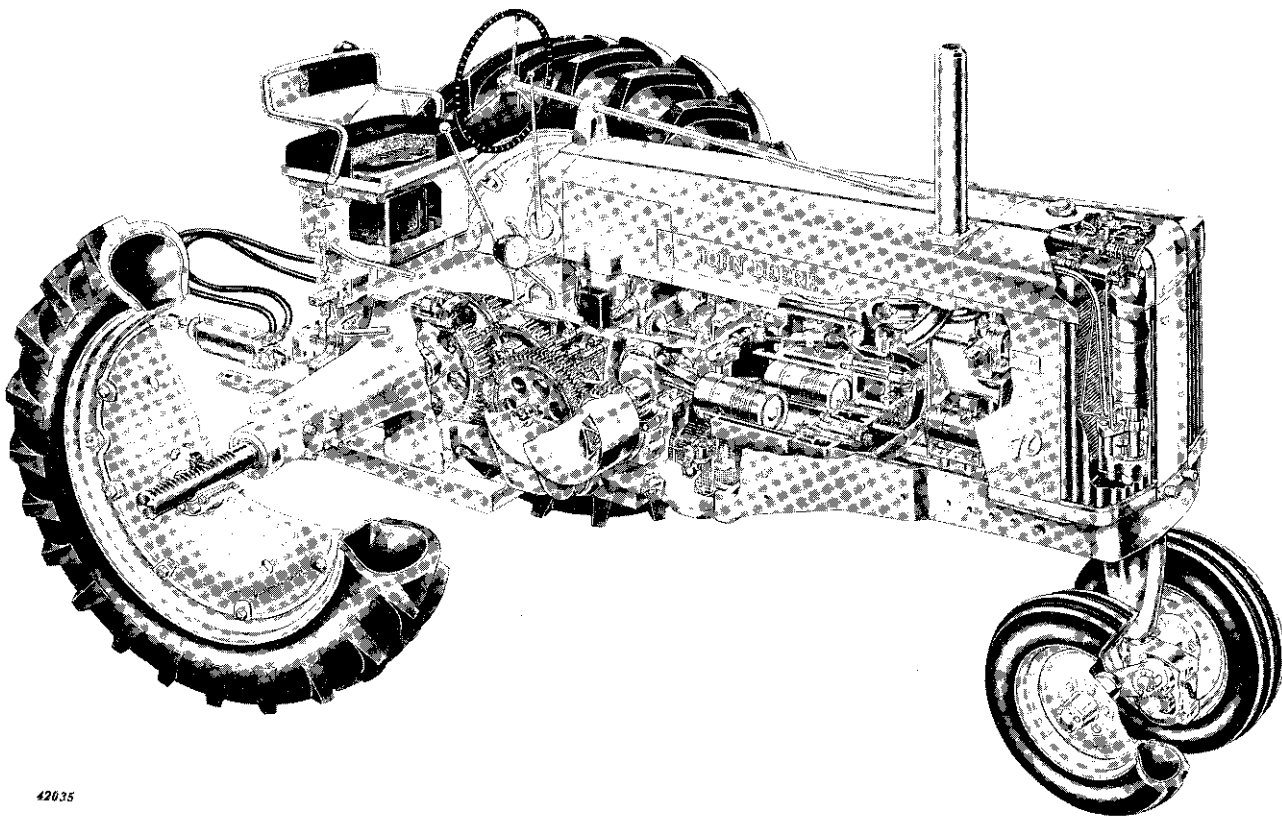
Complete instructions for testing, repairing and adjusting the generator and electric cranking motor are given in the "Tractors and Engines (General)" Service Manual. For additional information concerning the Powr-Trol mechanism, consult the "Hydraulic Equipment, Tractors (Waterloo)" Service Manual.

Full maintenance instructions for the power

steering mechanism are given in the "Power Steering for John Deere Tractors" Service Manual. When additional information concerning the injection pumps and nozzles is required, see the "Testing and Servicing Fuel Injection Pumps and Nozzles" Service Manual.

This manual was planned and written for the Service Department; its place is in the shop. Use the manual whenever in doubt about correct maintenance procedures. Use it as a text book for training new Service Department personnel who are unfamiliar with John Deere Tractors.

Daily use of the Service Manual as a guide for any and all service problems will reduce error and costly delay to a minimum and assure you the best in finished service work. In many instances your customer's confidence in your work will be improved when he sees you using the Service Manual. He knows you are following approved maintenance procedures and making proper adjustments. There is no guesswork when you use the manual.



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*Cutaway View of John Deere Model "70" Diesel Tractor*

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## Section 10

# DESCRIPTION, OPERATION, AND SPECIFICATIONS

### Group 5 DESCRIPTION

The John Deere Model "70" Diesel Tractor has sufficient power to pull four or five 14-inch plow bottoms or the equivalent under normal conditions. The tractor is available in two basic styles: general-purpose or standard. In both styles the majority of parts and components are identical. Both types have six forward speeds and one reverse.

The features of the tractor are described briefly in the paragraphs which follow. Full descriptions of each of the assemblies are given in the various sections throughout the manual.

#### SERIAL NUMBERS.

Each tractor bears a serial number located on the right-hand side of the main case just in front of the belt pulley.

The cranking engine distributor, Powr-Trol valve housing, and hydraulic remote cylinder also bear serial numbers.

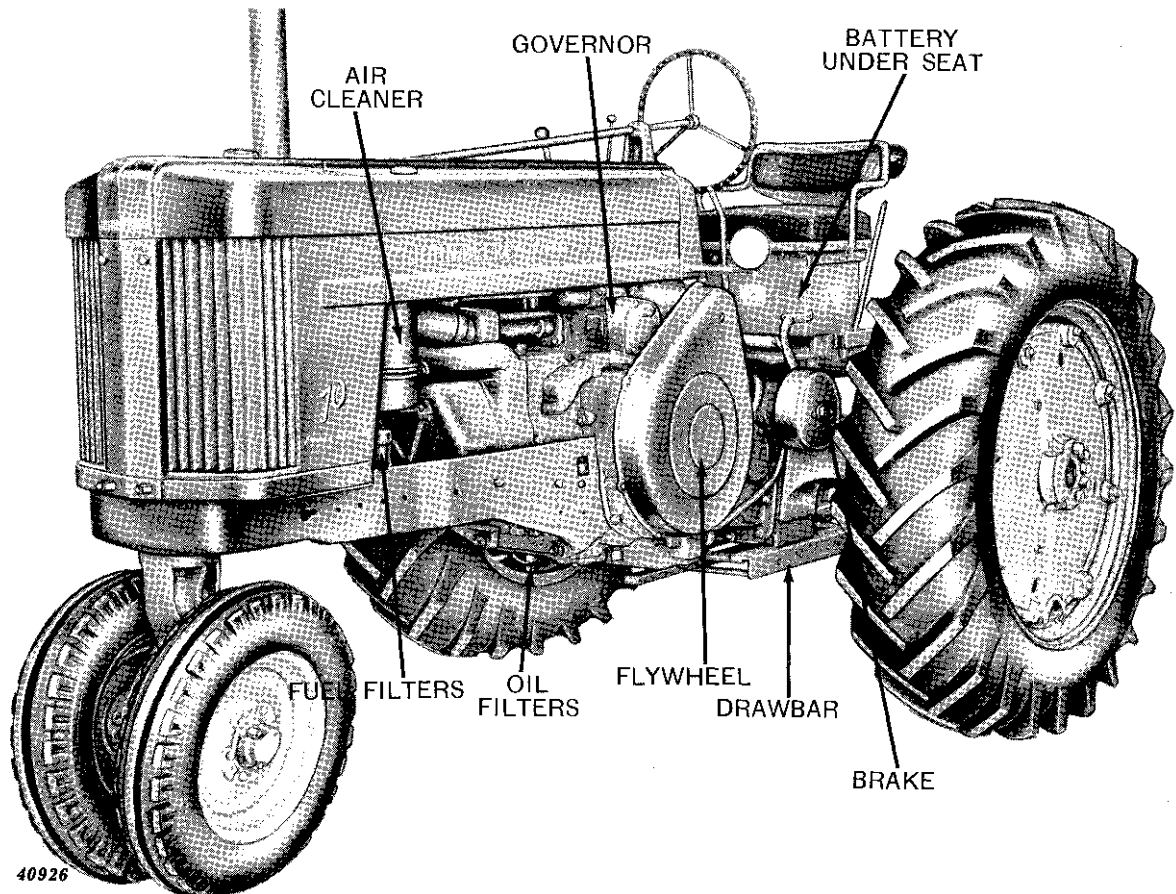


Figure 10-5-1—John Deere Model "70" Diesel Tractor (Standard)—Pulley Side



**DIESEL ENGINE.**

The tractor is powered by a full diesel four-stroke-cycle two-cylinder, valve-in-head, horizontal, cross-mounted engine with a displacement of 376 cubic inches. The bore is 6-1/8 inches. The stroke 6-3/8 inches and the rated load speed is 1125 rpm.

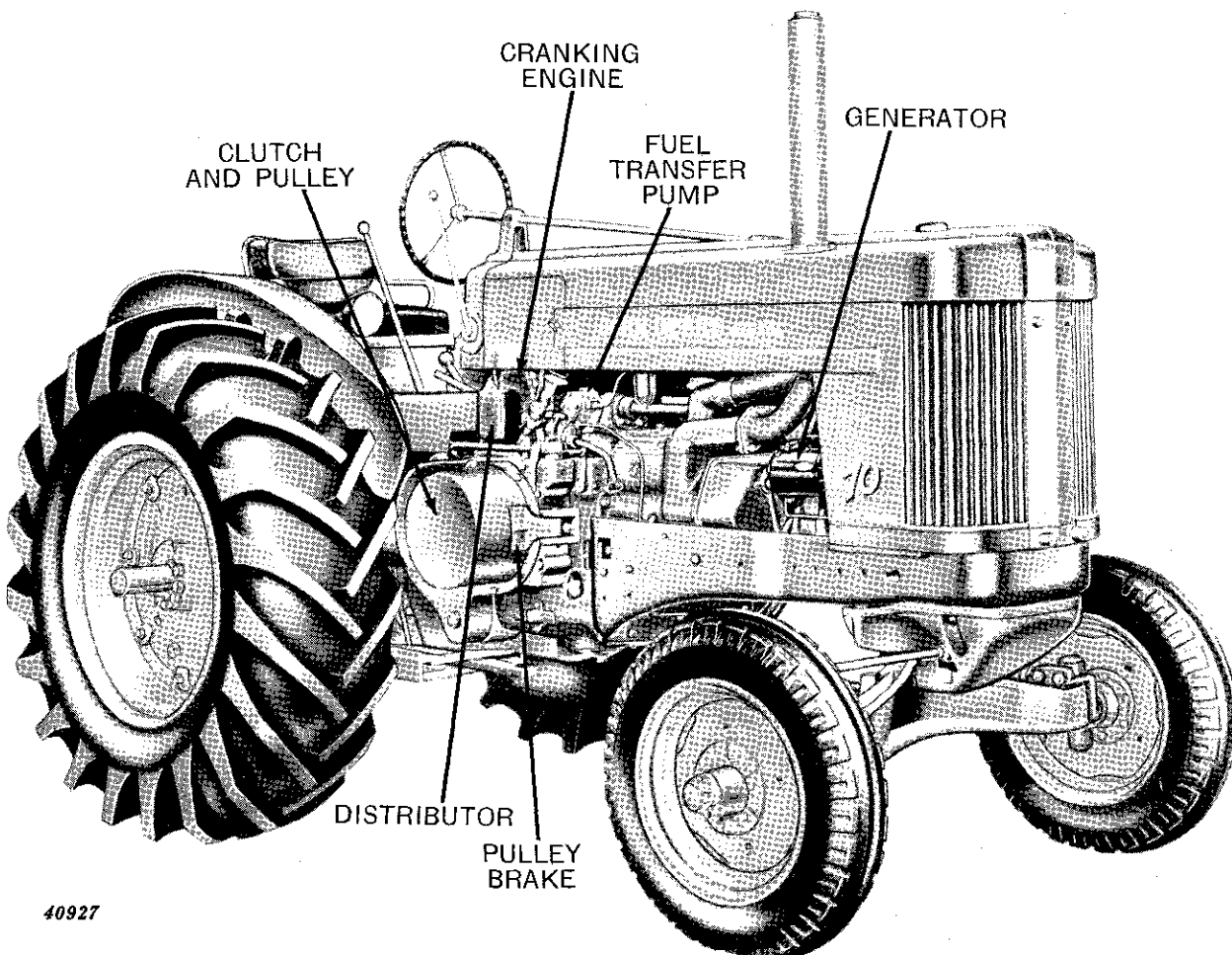
The crankshaft is supported in three main bearings. Rotation is counterclockwise when viewed from the flywheel side. All moving parts of the engine are pressure-lubricated by a force-feed pressure oiling system with a full-flow oil filter. Engine speeds are controlled by a fly-weight type governor. Full automatic crankcase ventilation is provided by clean air drawn through the cranking engine air cleaner.

**CRANKING ENGINE.**

The diesel engine is started by means of a four-

cylinder V-type gasoline cranking engine having a 2-inch bore, 1-1/2-inch stroke and a rated speed of 5500 rpm. Engine speeds are controlled by a variable speed centrifugal type governor. The engine is equipped with a separate oil pump to assure pressure lubrication of moving parts, and with a water pump to provide circulation of the coolant when the cranking engine is running.

The cranking engine fuel system consists of a 1-quart gasoline tank mounted on the inside of the cranking engine compartment door and a down-draft carburetor. Clean air is assured by a separate oil-wash type air cleaner. A six-volt battery, coil and distributor furnish ignition. The distributor contains two sets of points—one set for each bank of cylinders, but no spark-advance mechanism. The cranking engine is started by means of a six-volt automotive-type cranking motor.



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*Figure 10-5-2—John Deere Model "70" Diesel Tractor (General-Purpose)—Flywheel Side*

**DIESEL ENGINE STARTING MECHANISM.**

A transmission with automotive-type clutch is used to connect the cranking engine to the diesel engine for starting. The transmission includes an overrunning clutch to protect the cranking engine when the diesel engine starts. One lever is used to start both engines.

For detailed starting instructions see *Group 15 of this Section*.

**HEAT EXCHANGER.**

Hot exhaust gases from the cranking engine are piped to a chamber surrounding the diesel engine air intake pipe where they warm the incoming air to make diesel engine starting easier. After flowing through the heat exchanger the cranking engine exhaust is expelled to the atmosphere.

**COOLING SYSTEM.**

Both engines are cooled by an interconnected pressure-type cooling system with a capacity of 7 U.S. gallons. Adequate circulation through the diesel engine is assured by a centrifugal-type water pump located to the rear of the radiator bottom tank. The pump is driven by the generator belt. Proper engine temperature is maintained by a thermostat in the upper water manifold.

**DIESEL ENGINE FUEL SYSTEM.**

A 20 U.S. gallon tank is provided for diesel fuel. A sediment bowl with fuel shut-off is located beneath the fuel tank. Two stages of micronic-type fuel filters prevent entry of dirt or other foreign substances into the fuel injection system.

Fuel is injected into the cylinders under high pressure at precisely the right moment by two injection nozzles which protrude into the combustion chambers through the cylinder head. Fuel is supplied to the nozzles by two injection pumps located in a compartment on top of the cylinder block. The pumps are operated by the engine camshaft. The amount of fuel delivered by the pumps to the nozzles is controlled by the governor and by the position of the speed control lever.

An adequate supply of fuel from the filters to the pumps is assured by a fuel transfer pump driven by the right-hand end of the diesel engine governor shaft.

**CLUTCH.**

A dry disk, hand-operated clutch is located within the belt pulley. When the clutch is disengaged a pulley brake prevents pulley rotation.

**TRANSMISSION AND DIFFERENTIAL.**

The underdrive-type transmission lies cross-wise in the main case. Shifting through the six forward speeds and reverse is accomplished by two shift levers.

The differential is of the conventional type with a ring gear and spider driven directly by a pinion in the transmission.

**BRAKES.**

Two individually operated foot brakes are provided to stop the tractor, hold it on inclines, or assist in making short turns. Each brake has two internal-expanding shoes and a drum with a shaft and gear which meshes with the final drive gear. The brakes can be held in the engaged position by brake latches.

**STEERING MECHANISM.**

The tractor may be equipped with manual steering or optional hydraulic power steering. The manual system utilizes a worm and gear with adjustments provided to compensate for all wear. The power system contains a gear-type hydraulic pump driven by the fanshaft, a valve assembly controlled by the steering shaft, and a hydraulic cylinder and vane which impart turning motion to the steering spindle and front wheels.

**FRONT WHEEL ASSEMBLIES.**

The tractor may be equipped with a variety of front end assemblies. For the general-purpose tractor these include Roll-O-Matic, duel front wheels, wide adjustable front axle, single front wheel, and 38-inch fixed tread. The standard tractor may be equipped with fixed or adjustable front ends.





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