John Deere 2000 Series Tractors

JOHN DEERE

SERVICE MANUAL

John Deere 2000 Series
Tractors

SM2035 (01SEP63) English

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SERVICE MANUAL FOR JOHN DEERE DEALERS

2000 SERIES TRACTORS

CONTENTS

SM-2035 (9-63)

TO THE JOHN DEERE SERVICEMAN

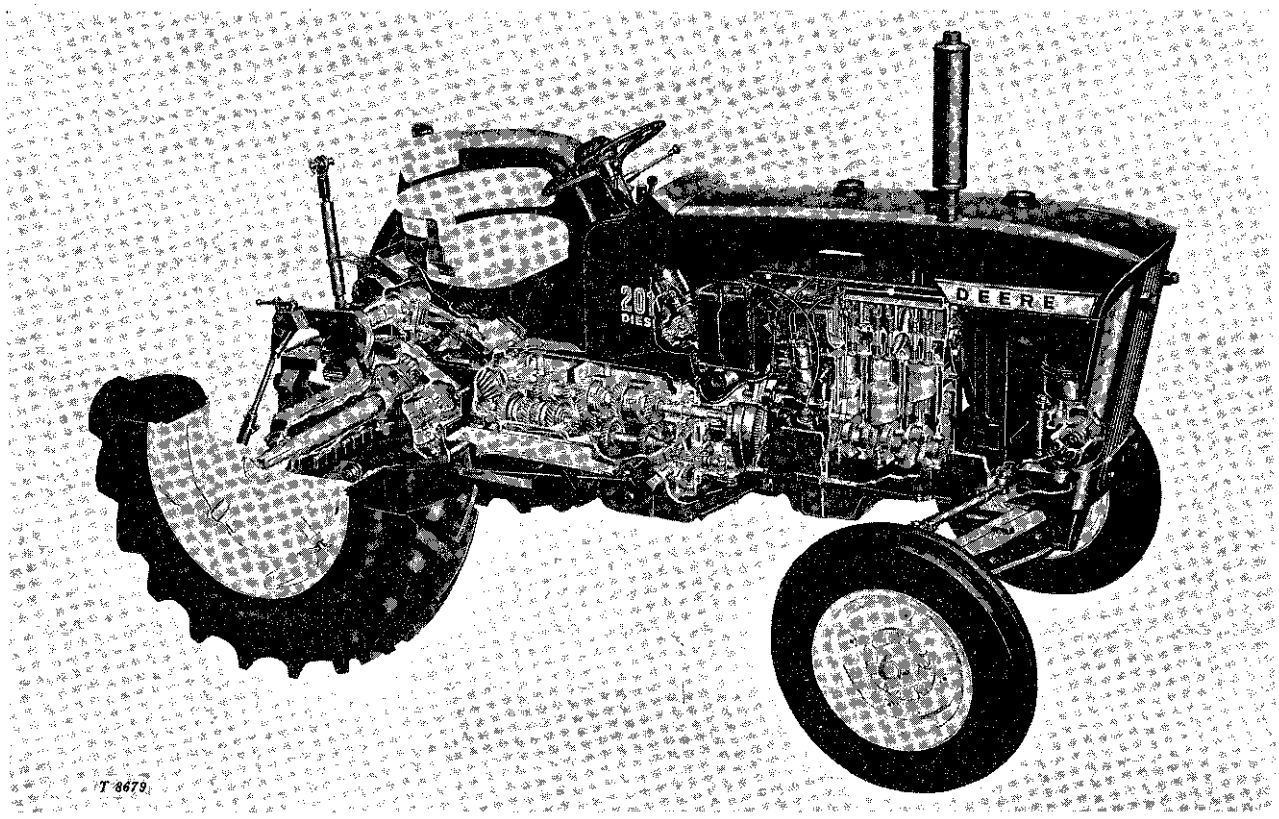
This service manual contains maintenance instructions for John Deere 2000 Series tractors. Included are complete instructions for removal, disassembly, inspection, repair, assembly and installation of the major parts and assemblies of the tractor.

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.

A section on "Tune-Up and Adjustment" contains instructions for performing the services necessary to help the tractor perform efficiently and economically after it has been in the field for some time.

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.



Cutaway View of John Deere 2010 Row-Crop Utility Tractor

Section 10

DESCRIPTION, OPERATION AND SPECIFICATIONS

Group 5
DESCRIPTION

DESCRIPTION

The 2010 Row-Crop is a general-purpose tractor which can be equipped with Roll-O-Matic, dual front wheels, single front wheel, or adjustable front axles. It is especially useful for planting and cultivating two, four, or six rows, mowing, seedbed preparation, and similar jobs.

The 2010 Row-Crop Utility Tractor is, as the name implies, an all-around agricultural row-crop type tractor. Its low center of gravity provides excellent stability and maneuverability even when working under adverse conditions. Its groundhugging features make it ideally suited for general purpose farming.

The 2010 Hi-Crop Tractor provides 34-inch crop clearance under the front axle and 31-inch clearance under the transmission, making late cultivating possible without damage to tall, bushy, or high-bedded crops. The flexibility of this tractor makes it ideal for bedding, planting, side-dressing, cultivating, and harvesting.

These tractors have ample power to pull two or three plow bottoms, or the equivalent, in most soils.

The tractors in the 2010 Series line are identical in many respects. Features which are common to both types are described briefly in the paragraphs which follow. The distinctive features of each are also mentioned briefly.

COMMON FEATURES

GASOLINE AND LP-GAS ENGINES

The 2010 Series has a vertical, four-cylinder, valve-in-head, four-stroke cycle, internal combustion engine. A bore of 3-5/8 inches and a stroke of 3-1/2 inches gives a piston displacement of approximately 145 cubic inches.

The 2010 Series is available with either gasoline-burning equipment or LP-Gas-burning equipment. The compression ratio of the gasoline-burning engine is 7.9 to 1 as opposed to 8.9 to 1 in the LP-Gas engine. (Pistons are available for high altitude operation of gasoline engines which provide a 9.0 to 1 compression ratio.)

A replaceable "sleeve and deck" assembly is used in the cylinders of both gasoline and LP-Gas models. This feature provides lower costs at time of engine overhaul.

Crankshaft rotation is clockwise when viewed from the front.

The engine has replaceable precision-type main and connecting rod bearing inserts. All bearings and other parts of the engine are lubricated by a force-feed and splash-type system with a replaceable-type oil filter. The crankcase is ventilated by means of a ventilator outlet tube attached to the rocker arm cover. This tube discharges below the crankcase flange. Engine speeds are controlled by a flyweight-type governor, gear-driven from the camshaft gear.

DIESEL ENGINES

The 2010 Series has a vertical, 4-cylinder, valve-in-head, fuel injection, four-stroke cycle, internal combustion engine. A bore of 3-7/8 inches and a stroke of 3-1/2 inches gives a piston displacement of approximately 165 cubic inches.

The compression ratio of the Diesel engine is 19 to 1.

The engine has replaceable precision-type main and connecting rod bearing inserts. All bearings and other parts of the engine are lubricated by a force-feed and splash-type system with a replaceable-type oil filter. The crankcase is ventilated by means of a ventilator outlet tube attached to the rocker arm cover and discharging below the crankcase flange. Engine speeds and injection timing are controlled by the fuel injection pump.

A replaceable "sleeve and deck" assembly is used in the cylinders of the Diesel engine.

Crankshaft rotation is clockwise when viewed from the front.

FUEL SYSTEM

The 2010 Series gasoline fuel system is equipped with a 16 U.S. gallon fuel tank. The carburetor is a single-throat, updraft, adjustable idle jet type.

The 2010 Series Diesel uses a distributor-type fuel injection pump. The fuel system consists of a 16 U.S. gallon fuel tank, fuel filters, fuel strainer, fuel injection pump, fuel injection nozzles, and turbulence chambers. The fuel injection pump is an opposed plunger, inlet metering, distributor-type. Pintle-type injector nozzles are located in turbulence chambers mounted at the top of each cylinder.

The LP-Gas fuel system has a cylindrical, heavy welded tank and is equipped with several pressure valves and gauges designed as safety features. The tank has a capacity of 22.6 U.S. gallons at 80% fill. A direct reading, magnetic-type fuel gauge is mounted on the rear of the tank. A coolant-heated converter is used to turn pressurized LP-Gas fuel into a gas and reduce pressure. The carburetor is a converter-fed, single-throat, updraft model.

CAUTION: Before operating the LP-Gas-fuel system, read carefully the information in Section 92, Group 10, regarding the nature of LP-Gas and the rules for handling it safely.

IGNITION

Gasoline and LP-Gas models have a battery-distributor type ignition system with automatic spark advance. A 12-volt battery, generator, and starter are standard equipment.

The Diesel engines are equipped with an electrical pre-heating system called "glow plugs" which are electrical heating elements located above the fuel injectors on the cylinder head and extending into the turbulence chambers. There are four glow plugs on the 2010 Series Diesel Tractors. They are used when starting a cold engine and need not be used when starting a warm engine. A 12-volt battery, generator, and starter are standard equipment.

LIGHTING SYSTEM

All lighting equipment is optional and includes hood-mounted headlights, dual or single fender-mounted headlights, a dash light, a tail light, a combination white and red rear warning light, a rear warning light, a rear work light, and auxiliary plug-in light socket.

COOLING SYSTEM

The engines are liquid cooled; the coolant flows by pressure through passages around the cylinders in the block, and around valves in the cylinder head. Coolant is circulated evenly in all passages in the block, head, (converter in LP-Gas models) and through the radiator by a centrifugal water pump located on the cylinder block, and operated by the fan belt. A thermostat and fixed by-pass insure a quick and thorough engine warm-up.

LUBRICATION

The engine lubrication systems are force-fed by a positive displacement, gear driven oil pump. The oil pump on Diesel models is located under the fuel injection pump (distributor on Gasoline and LP-Gas) and extends into the bottom of the crankcase. Oil is fed under pressure onto governor bearings, crankshaft main bearings, and connecting rods, and splashed onto piston pins, and valve tappet assembly. These lubrication systems employ an oil filter with a replaceable filter element.

CLUTCH

The engine clutch used on the 2010 Series Tractors is a spring-loaded, single dry-disk, foot-operated clutch, located in front of the transmission. Adjustment for free clutch pedal travel can be made externally.

TRANSMISSION

The Syncro Range Transmission (Section 120) has a high range, low range, and reverse. It is a synchronized shift in series with four speed gear ratios to provide eight forward speeds and three reverse speeds.

A conventional ring-gear and bevel-pinion type differential is enclosed in the rear of the transmission case. Bevel pinion and gear backlash adjustment is made by shims between the ring gear carrier and the bearings.

POWER TAKE-OFF

The power take-off is the continuous-running type, governed by its own separate clutch, and is available with dual speeds of 540 rpm or 1000 rpm. It is an engine-driven type and is completely independent of tractor ground travel. It fully meets all ASAE-SAE standards.

BELT PULLEY

A belt pulley is available as an attachment. The pulley assembly slips over the power take-off shaft and is attached to the power take-off housing. The belt pulley is driven by the power take-off shaft. The belt speed is 3100 feet per minute at 1900 engine rpm.

BRAKES

Two individually or simultaneously operated, self-energizing double-disk brakes are provided, Fig. 10-5-1. Braking is applied by foot pedals through rod and lever linkage.

The 2010 Row-Crop and Row-Crop Utility brakes are mounted on the outside of the final drive housings. The 2010 Hi-Crop brakes are located inside the final drive housings. Brake adjustments are made externally on all tractors.

STEERING MECHANISM

The 2010 Series Tractors are steered by a steering gear and drag link which connects to a spindle mechanism over the front wheels. Power steering is optional.

REAR WHEELS

Row-Crop tractors can be equipped with sliding hub, rack and pinion, or power adjusted rear wheels. Row-Crop Utility Tractors can be equipped with demountable rim, fixed hub, sliding hub, rack and pinion, or power-adjusted rear wheels. Hi-Crop Tractors have either a steel disk wheel on a reversible hub or a cast disk wheel with demountable rim on a reversible hub.

FRONT AXLES

The Row-Crop Utility tractor is equipped with adjustable front axles of either the straight or swept-back type. Both types of axle have an adjustable tread of 50 to 74 inches in 2-inch steps, which can be increased to 79-1/8 inches by reversing the wheels. Swept-back axles give a shorter turning radius for sharper turns in the field or in close-quarters work. An optional straight front axle can be adjusted from 62 to 88 inches (93-1/8 inches with wheels reversed).

The Row-Crop Tractor may be equipped with a front axle of the spindle and knuckle type (dual), adjustable front axle of the straight type, Roll-O-Matic type, or single front wheel type. The adjustable front axle provides a tread range of 50 to 74 inches in 2-inch steps, which can be increased to 79-1/8 inches by reversing the wheels. An optional adjustable front axle can be adjusted from 62 to 88 inches (93-1/8 inches with wheels reversed).

The Hi-Crop Tractor is equipped with a front axle which provides wheel treads of 54 to 84 inches in 6-inch steps (89-1/8 inches with wheels reversed). Radius rods are available to provide increased strength under unfavorable working conditions.

HYDRAULIC SYSTEM, 3-POINT HITCH, AND LOAD-AND-DEPTH CONTROL

As optional equipment, the 2010 Series Tractors may be equipped with a single or dual hydraulic system, a single or dual remote control system, and a 3-point hitch.

Depending on individual needs, the tractors can be equipped with either a single hydraulic system to raise, lower, or set integral implements to desired depth, or a dual hydraulic system which will raise, lower, or set at desired depth, part of an integral implement independently (such as one side of a two-row cultivator) or all of the implement simultaneously. By simple adjustments, both cylinders

may be made to act together, approximately doubling the lifting capacity.

The load-and-depth control system regulates implement working depth over uneven ground, compensating for the effect of ridges and depressions.

The desired implement working depth is set by the hydraulic system control levers. When the tractor front wheels pass over a ridge, the implement mounted at the rear of the tractor is forced downward. This pushes the center link of the 3-point hitch forward, actuating the load control yoke and linkage causing the system to raise the implement until the system is again in balance and the implement is working at the correct depth.

When tractor front wheels drop into a depression, the implement tends to rise in relation to the ground level. The resulting pull on the center link causes the load-and-depth control to lower the implement to the proper working depth. In addition, when soil conditions change so that the implement is working in abnormally hard soil, the implement is forced backward, causing the center link to push forward. The system then raises the implement sufficiently to reduce draft and minimize strain on the tractor and implement.

When once more operating in normal soil, the load-and-depth control again returns the implement to the operating depth determined by the position of the control lever.

A positive-displacement, gear-type hydraulic pump is mounted on the transmission front cover. The pump is driven by a coupling on the front end of the driveshaft. All 2010 Series Tractors use the same pump (with varying gear sizes and capacities) in their hydraulic systems. Refer to Section 190, Group 5 of this Manual.

The tractor may be equipped to operate single-acting or double-acting remote hydraulic cylinders. A single remote cylinder is connected by hoses to a breakaway coupler mounted at the rear of the tractor. If a second cylinder is used, it is connected by short hoses to the control valve. Pressure oil from the hydraulic pump is directed by the selective control valve to the cylinder or cylinders.

If the tractor is equipped with one remote cylinder, the cylinder can be used to control a drawn implement or to control front-mounted tools. Two remote cylinders (with dual system) permit selective control of front-mounted units and dual hookups on drawn machines. The two remote cylinders may be operated individually or simultaneously.

The 3-point hitch on all tractors provides an efficient, versatile means of attaching integral implements to the tractor.

FRONT-MOUNTED ROCKSHAFT

Tractors may be equipped with a front rockshaft to control the front rigs of cultivators and other front-mounted tools. The front rockshaft can be powered by the rear rockshaft lift arms (H, R, RU) or by one or two remote cylinders (R only). When powered by the rear rockshaft, rigs on the front rockshaft can be operated together with rigs at the rear or as separate units (with dual rear rockshafts only). Remote cylinder powered front rockshafts are available in single or dual systems, which provide both up and down pressure.