John Deere
2000 Series
Crawler Tractors

SERVICE MANUAL

John Deere 2000 Series
Crawler Tractors

SM2037 (01MAY87) English

SM2037 (01MAY87)

LITHO IN U.S.A.
ENGLISH

JOHN DEERE

2000 SERIES

CRAWLER TRACTORS

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SM-2037 (5-87) Litho in U

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DESCRIPTION

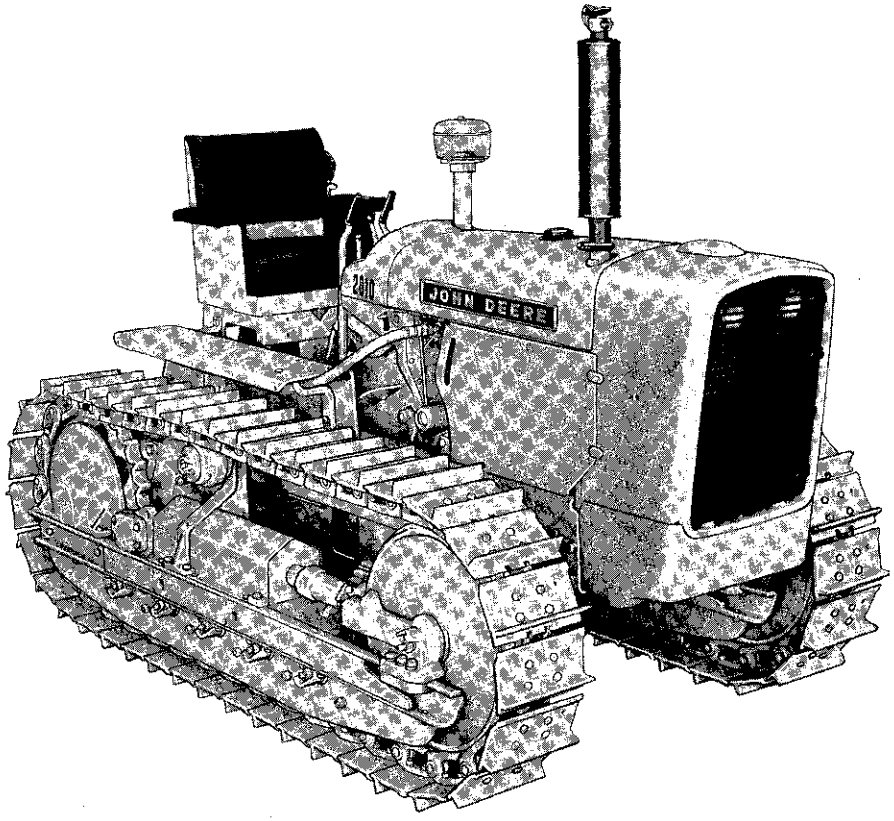


Fig. 10-5-1—Right-Hand View of 2010 Crawler Tractor

The John Deere 2010 Series Crawler Tractor (Fig. 10-5-1) is rugged and strong to meet the needs of industrial users. Its track-laying tread makes this tractor especially useful whenever good flotation and additional traction or extra stability are desirable. Because of the wide variety of equipment available for use with this tractor, the 2010 Crawler plays an important role in the construction and logging industries.

FEATURES

GASOLINE ENGINE

The 2010 Series Gasoline Crawler has a vertical, 4-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 compression ratio is 7.9 to 1. Pistons with 9.0 to 1 compression ratio are available for high altitude operation.

Engine speeds are controlled by a flyweight-type governor, gear-driven from the camshaft gear.

The tractor is equipped with a 16 U.S. gallon fuel tank and a conventional, updraft-type carburetor.

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

DIESEL ENGINE

The 2010 Series Diesel Crawler 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. Engine speeds and injection timing are controlled by the fuel injection pump.

The 2010 Series diesel engine uses a distributor-type fuel injection pump. The fuel system consists of a 16-gallon fuel tank, two fuel filters, fuel strainer, turbulence chambers, fuel injection pump and nozzles.

The fuel injection pump is an opposed plunger, inlet metering, distributor-type. Injection nozzles are of the outward opening pintle type and are located in turbulence chambers mounted at the top of each cylinder.

The diesel engines are equipped with electrical pre-heating devices called "glow plugs" which are located above the fuel injectors on the turbulence chambers. The engines may also be equipped with a solid fuel primer located on the air intake manifold. Both devices are used for cold weather starting only. For information regarding engine starting, refer to the tractor's operator's manual.

A 12-volt battery actuates the diesel starting system.

DIESEL AND GASOLINE ENGINES

Crankshaft rotation is clockwise when viewed from the front.

A wet-type "sleeve and deck" assembly is used. This feature allows worn cylinder walls to be renewed without replacing or reboring the cylinder block.

The engines have 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 bypass-type oil filter. The system includes a positive displacement gear-driven oil pump. The pump is located underneath the fuel injection pump on diesel models and underneath the distributor on gasoline models. The pump extends into the bottom of the crankcase. Oil is fed under 35 to 50 pounds pressure to the lubricating parts of the engine.

The engines are liquid cooled with a pressure type system; the coolant flows through passages around the cylinders in the block, and around valves in the cylinder head and through the radiator by a centrifugal water pump located on the cylinder block, and operated by the fan belt. A thermostat and fixed bypass insure a quick and thorough engine warm-up.

LIGHTING SYSTEM

All lighting equipment is optional and includes grille-mounted headlights, a dash light, a combination white and red rear warning light, and auxiliary plug-in light socket.

TRANSMISSION (CONSTANT MESH)

The constant mesh transmission consists basically of the shafts which carry the necessary gears, pinions, collar gears, and shifters to provide eight forward speeds and four reverse speeds. It is a selective sliding-collar type and is clutched and shifted manually.

TRANSMISSION (H-L-R)

The H-L-R transmission is basically a standard collar shift transmission plus an automatic reverser and underdrive unit. The gears in the speed change box are shifted manually, while the gears in the range change box are shifted hydraulically by means of hydraulic clutches. The operator can use the reverser lever to select a high, low, or reverse range for any shift station. This gives a choice of eight forward gears and four reverse gears.

ENGINE CLUTCH

The engine clutch used on the constant mesh and H-L-R transmissions is a single, dry disk type with friction facings riveted to either side of the driven disk. When in the engaged position, these facings contact the rear surface of the engine flywheel and the pressure plate.

On the constant mesh transmission the clutch assembly is controlled by a pedal and is used for transmission shifting.

On the H-L-R transmission the clutch assembly is controlled by a disconnect lever and is used only for cold weather starting.

In both cases movement is transmitted through the linkage assembly and throw-out bearing to the pressure plate.

POWER TAKE-OFF

The power take-off is an engine-driven type and is completely independent of tractor ground travel. It fully meets all ASAE-SAE standards.

BRAKES

The two brakes are of the contracting band type, and are operated by a pedal located on the right-hand side of the tractor. A brake lock, located above the brake pedal, holds the brakes in the applied position when the tractor is parked.

STEERING MECHANISM

The 2010 Crawler Tractor is steered by two combination clutch and brake mechanisms located in the steering clutch housings. Pulling back on a steering lever separates the drive facings and driven plates of the dry-type multiple disk clutch on that side, interrupting flow of power to that track sprocket. Any further rearward movement of the steering lever contracts a brake band around the drum on the clutch driven assembly, retarding or stopping motion of the sprocket and track.

The brake bands can also be operated by the pedal located on the right-hand side of the tractor. Depressing the pedal applies both brakes; it does not disengage the steering clutches.

3-POINT HITCH

The 2010 Crawler Tractor may be equipped with a 3-point hitch to which a wide variety of equipment can be attached. The hitch is actuated through the rockshaft by one or two remote hydraulic cylinders.

The hitch is designed for use with equipment having a category 2 hitch.

TRACKS

The tracks are made of extremely tough steel. Replaceable, four-bolt track shoes are bolted to hardened links which are joined together by replaceable pressed-in pins and bushings. Track shoes are available in 10-, 12-, and 14-inch widths.

TRACK CARRIER ASSEMBLIES

Tracks are held in position by heavy steel carrier assemblies.

Track tread width is fixed at 48 inches.

Tracks are aligned and adjusted for tension by shifting the idler wheels forward or backward as required. A hydraulic track tension adjuster is available as optional equipment.

SERIES 20 WINCH

The Series 20 Winch is a gear-driven, hydraulically controlled mechanism that mounts by means of adapters to the left and right steering clutch housings and is coupled to, and driven by, the powershaft clutch drive shaft.

Group 10
SPECIFICATIONS

PERFORMANCE

	Diesel	Gasoline
Nebraska Test No.	830	829
Max. drawbar pull (lbs) (gasoline tractor weighing 9550 lbs. and diesel tractor weighing 9645 lbs.)	10,283	10,093
Max. PTO horsepower	47.72	47.45
Max. drawbar horsepower	39.35	39.18

ENGINE

Flywheel horsepower (SAE corrected)	52.0	52.0
Torque (ft-lbs.) Max. (SAE corrected) (1500 rpm)	124.5	119.0
Torque (ft-lbs.) (SAE corrected) (2500 rpm)	109.3	109.3
Number of cylinders	4	4
Bore and stroke (inches)	3-7/8 x 3-1/2	3-5/8 x 3-1/2
Displacement in cubic inches	165	145
N.A.C.C. or A.M.A. horsepower rating for tax purposes	24.03	21.03
Intake valve clearance (cold) (in.)	0.012	0.012
Exhaust valve clearance (cold) (in.)	0.018	0.018
Compression ratio	19 to 1	7.9 to 1*
Slow-idle (rpm)	800	600
Fast-idle (rpm)	2650	2700
Working speed range (rpm)	1500-2500	1500-2500

Engine clutch: 1. Constant Mesh: 11-inch spring-loaded, dry disk, foot operated.

2. H-L-R: 10-inch, spring-loaded, dry disk, hand lever operated (for cold weather starting only).

TRANSMISSION

Constant Mesh: High range, low range, and reverse grouped to shift mechanically in series with 4-speed gear ratios to give eight forward speed and 4 reverse speeds. Helical gears.

H-L-R: High, low, and reverse grouped to shift (under full load with a hydraulic assist) in series with 4 speed gear ratios to give 8 forward speeds and 4 reverse speeds. Wet clutches.

**9.0 to 1 for high altitude engines.*

TRAVEL SPEEDS, MPH (NO SLIP)

Gear	H-L-R Transmission RPM 1500	H-L-R Transmission RPM 2500	Constant Mesh Transmission RPM 1500	Constant Mesh Transmission RPM 2500
1st	.8	1.3	.9	1.5
2nd	1.1	1.8	1.1	1.8
3rd	1.2	2.0	1.4	2.3
4th	1.7	2.8	1.7	2.8
5th	1.8	3.0	2.1	3.5
6th	2.6	4.3	2.6	4.3
7th	2.8	4.7	3.3	5.5
8th	4.0	6.7	4.0	6.7
Rev. 1	1.0	1.7	1.0	1.7
Rev. 2	1.7	2.7	1.6	2.7
Rev. 3	2.5	4.1	2.5	4.1
Rev. 4	3.8	6.4	3.8	6.4

CAPACITIES (U.S. Standard Measures)

Fuel tank	16. U.S. gal.
Cooling system	3 U.S. gal.
Air cleaner cup	To mark
Engine crankcase (including filter)	6 U.S. qts.

Transmission Case:

H-L-R	27 qts.
Constant Mesh (-34742)	27 qts.
Constant Mesh (34743-Up)	32 qts.
Final drive case (each	1/2 gal.

DIMENSIONS

Height to top of hood	54-1/16 inches
Over-all height	72-7/8 inches
Over-all width, min.	61-1/4 inches
Over-all length	
with drawbar	120-7/16 inches
without drawbar	112-7/16 inches
Clearance	
with drawbar	11-1/4 inches
without drawbar	11-11/16 inches
Shipping weight (approx.)	8500 Diesel 8400 Gasoline

TRACK EQUIPMENT

Track frame	5 roller
Track shoes (types and sizes):	
Open center full grouser (12- or 14-inch)	
All-purpose semi-grouser (12-inch)	
Steel grouser (10-, 12-, or 14-inch)	
Snow shoes (12- or 14-inch)	
Rubber (10-inch)	
Offset open center grouser (14-inch)	
Track tread (center to center)	48 inches
Number of track shoes (each side)	39
Total ground contact area (sq. inch):	
10-inch shoes	1445
12-inch shoes	1734
14-inch shoes	2023
Ground pressure (lbs. per sq. inch) with 14-inch shoes	4.1
Length of track on ground (ins.)	72-1/4

STEERING

Clutches	multiple disk
Brakes	contracting band
Number of friction surfaces (each clutch)	16
Turning clearance circle	190 in.

FINAL DRIVE

Induction hardened spur-gear type.
Gears mounted on anti-friction type bearings

Gear reduction ratio in first gear (engine to axle) (H-L-R)	144 to 1
Gear reduction ratio in first gear (engine to axle) (Constant Mesh)	124.4 to 1
Gear reduction ratio in eighth gear (engine to axle) (H-L-R and Constant Mesh)	27.2 to 1

IGNITION SYSTEM (Gasoline)

Type	Battery-distributor
Distributor point gap	0.022-inch
Spark plugs	
Size	14 mm
Gap	0.025-inch

ELECTRICAL SYSTEM

Battery (dry) voltage (nominal)	12 volts
Battery specific gravity full charge	1.250 (plus or minus .010)
Battery terminal grounded	positive
Generator regulation	Voltage regulator
Fuse (electrical outlet socket)	SFE 20
Fuse (front lights)	AGC 7-1/2

SERIES 20 WINCH

Drum speed (at 2200 rpm engine speed)	58-1/2 rpm
Drum diameter	6 inches
Drum capacities: *	
(with 1/2-inch cable)	195 feet
(with 5/8-inch cable)	125 feet
(with 3/4-inch cable)	100 feet
Cable speeds (at 2200 rpm engine speed):	
(with bare drum)	100 fpm
(with full drum)	159 fpm
Cable pulls (at 2200 rpm engine speed):	
(with bare drum)	13,900 lbs.
(with full drum)	8,700 lbs.

**Calculated capacities-allowance must be made for looseness or uneven spooling.*

(Specifications and design subject to change without notice)

Section 20
TRACTOR SEPARATION

Group 5
SEPARATING FRONT END SUPPORT FROM ENGINE

Remove fuel tank cap and vertical muffler.

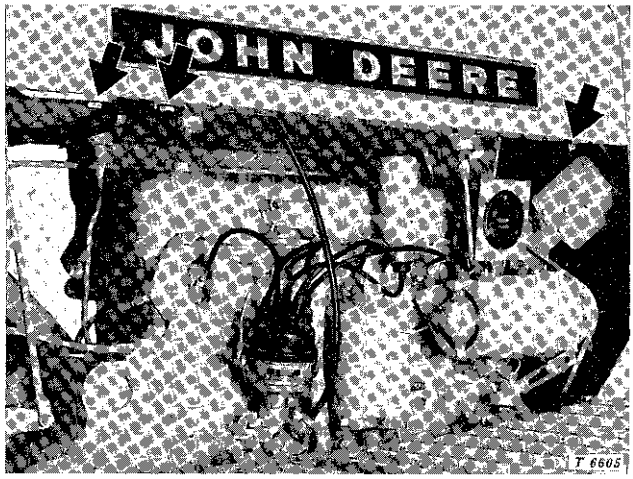


Fig. 20-5-1—Hood Attaching Points

On each side of hood, remove cap screws at rear (Fig. 20-5-1). Loosen hex. nuts on eyebolts attaching hood to grille housing. Lift off hood.

Remove grille screen and attach hoist to grille housing.

Disconnect leads from front headlights.

Remove the cap screws attaching grille to front end support.

With the aid of chain hoist remove grille housing.

Refer to illustrations and remove or disconnect the following parts.

1. Drain radiator and disconnect water inlet and outlet hoses. Remove oil cooler lines.

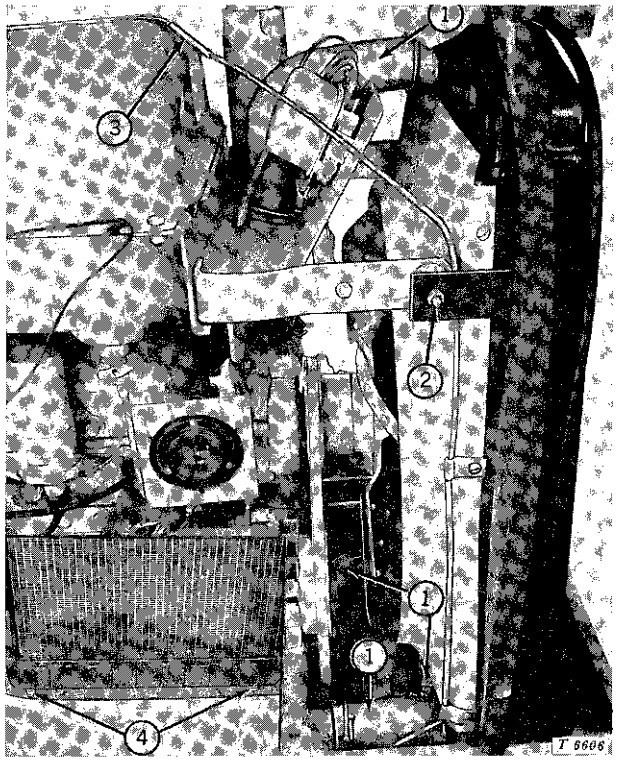


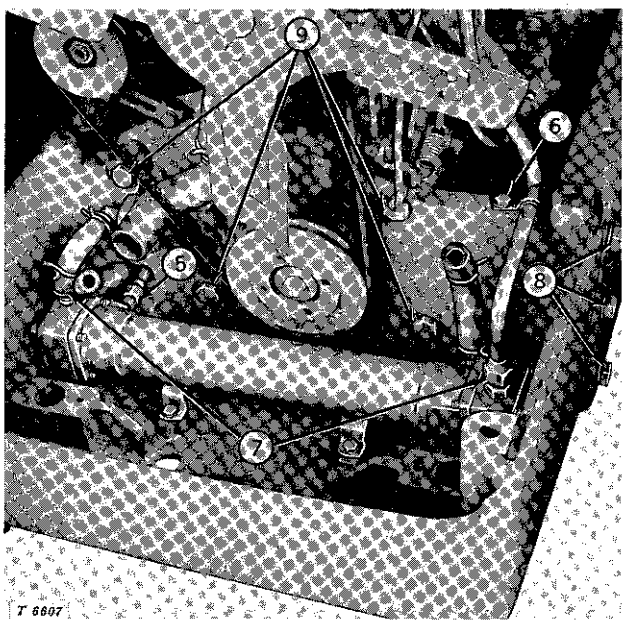
Fig. 20-5-2—Disconnecting Radiator

NOTE: To prevent excessive loss of oil, keep transmission oil cooler lines propped up.

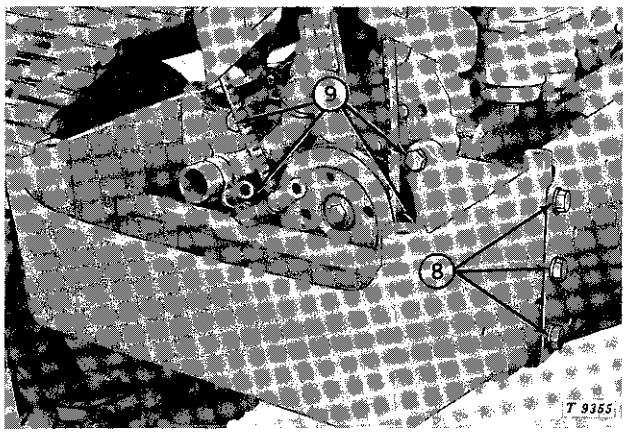
2. Remove lock nuts which secure radiator braces to radiator.

3. Disconnect fuel vent line.

4. Remove stop nuts which secure the radiator to the front end supports. Lift radiator from tractor. Remove lower baffle.



Tractors (-45155) (H-L-R Unit Shown)



All Tractors (45156-Up)

Fig. 20-5-3–Removing Front End Support

5. On tractors (-45155) equipped with H-L-R transmissions, disconnect oil cooler from hydraulic line.

6. On tractors (-45155) equipped with H-L-R transmissions, remove clamp from water line.

7. On tractors (-45155) equipped with H-L-R transmissions, disconnect water lines from cooler.

8. Remove the six cap screws attaching the front end support to the side frames. Remove five cap screws attaching front end support to bottom plate.

9. Remove the four cap screws attaching the front end support to the engine block and pull front end support free of engine.

ASSEMBLY

Position the front end support in line with the mounting points of the engine and install the four attaching cap screws. Tighten cap screws to 170 foot-pounds.

Line up side frame with front end support and install cap screws with lock washers. Torque cap screws to 150 foot-pounds.

Secure bottom plate to front end support with cap screws and lock washers.

On tractors (-45155) equipped with H-L-R transmissions, connect oil cooler lines and clamp the water line to the front end support.

Install radiator baffle.

Install radiator and secure with stop nuts.

Connect the radiator inlet and outlet hoses and the oil cooler lines to the radiator.

Connect fuel tank vent line.

Secure the radiator braces to the radiator.

Install grille housing on front end support with all baffling in place. Secure to front end support. Torque the rear screws to 85 foot-pounds. Torque the front screws to 170 foot-pounds.

Connect light leads.

Install grille screen in grille housing.

Secure hood and muffler. Install fuel tank cap.

Fill cooling system with clean soft water or antifreeze solution as required. Install radiator cap.