John Deere
JD450
Crawler Tractors
Crawler Loaders

JOHN DEERE

SERVICE MANUAL

John Deere JD450 Crawler Tractors
Crawler Loaders

SM2064 (01MAY87) English

(SERIAL NO. 3250 AND UP)

SM2064 (01MAY87)

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

SERVICE MANUAL

JOHN DEERE

JD450

CRAWLER TRACTORS AND CRAWLER LOADERS

CONTENTS

The specifications and design information contained in this manual were correct at the time it was printed. It is John Deere's policy to continually improve and update our machines. Therefore, the specifications and design information are subject to change without notice.

SM-2064 (May-87) Litho in U.S.A.

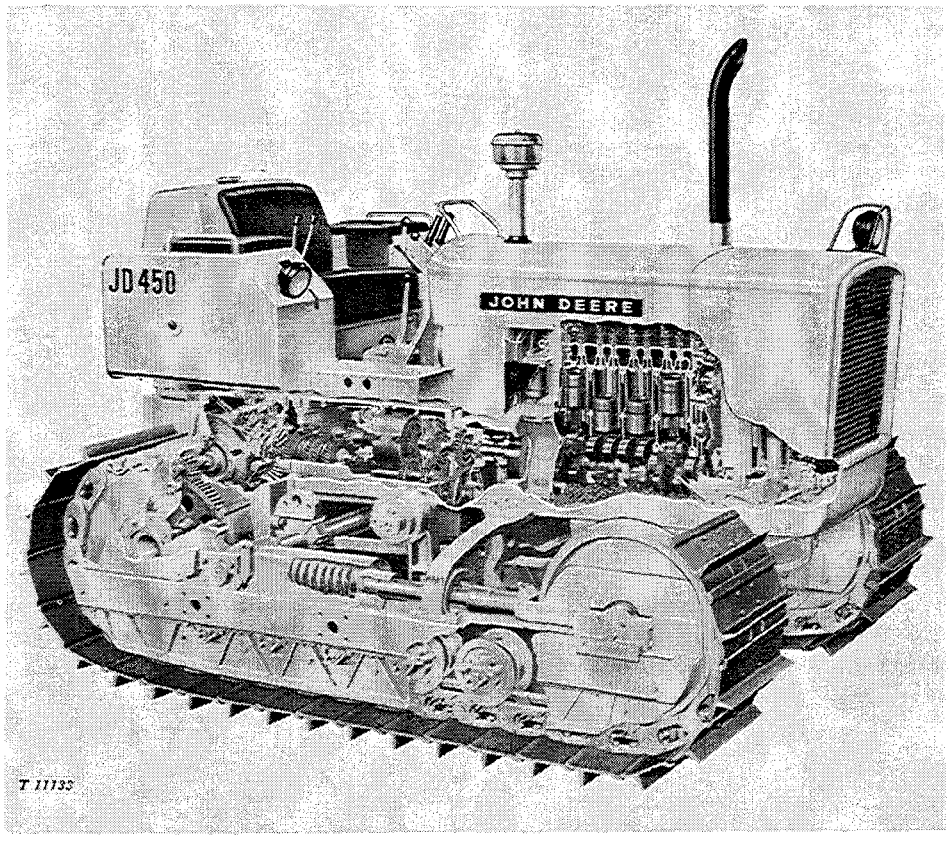
TO THE JOHN DEERE SERVICEMAN

This service manual contains maintenance instructions for John Deere JD450 Crawler Tractors and Loaders. 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. 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.



Right-Hand Cutaway View of John Deere JD450 Crawler Tractor

COMPLETE PAGE LISTING WITH LATEST DATE LINES

Vertical lines indicate pages included in this revision.

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Section 10

DESCRIPTION AND SPECIFICATIONS

Group 5

DESCRIPTION

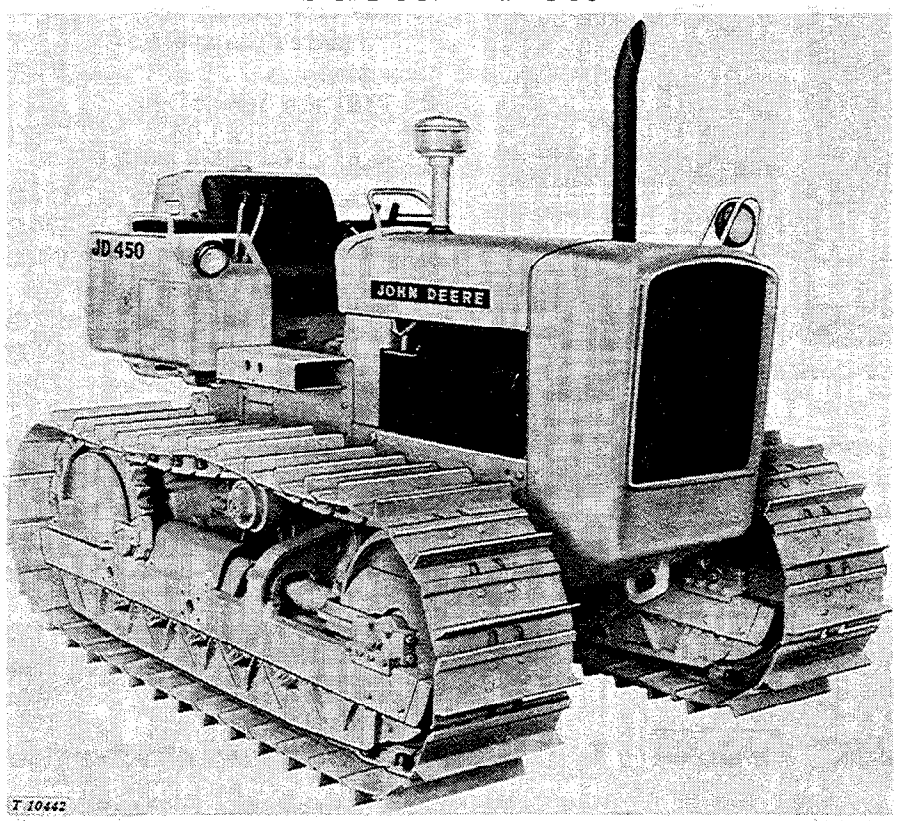


Fig. 10-5-1–Right-Hand View of JD450 Crawler Tractor

The John Deere JD450 is a heavy duty crawler tractor designed to operate with industrial equipment such as loaders and dozers and to perform various pulling and hauling jobs on construction and logging sites.

The JD450 Crawler Tractor is equipped with a diesel engine. Early model crawlers were also available with gasoline engines. A choice of H-L-R or Constant Mesh transmission is available.

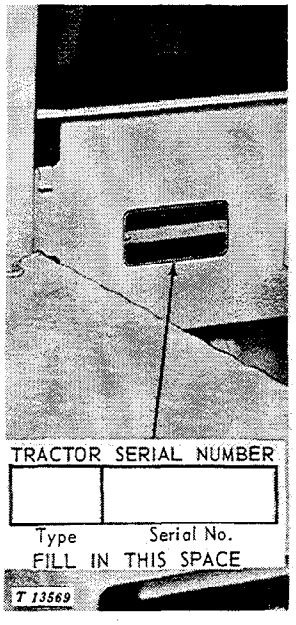
The main features of the tractor are described in the paragraphs which follow. Full descriptions of major components are given in various sections throughout this manual.

SERIAL NUMBERS

The engine serial number is stamped on a plate at the lower right side of the engine cylinder block.

The tractor serial number is located on a plate on the front panel of the operator's seat. *NOTE: When ordering tractor and engine parts, record ALL digits on the tractor serial number plates.*

The location of the engine and tractor serial numbers is shown on the next page. A detailed explanation of each serial number is also given.



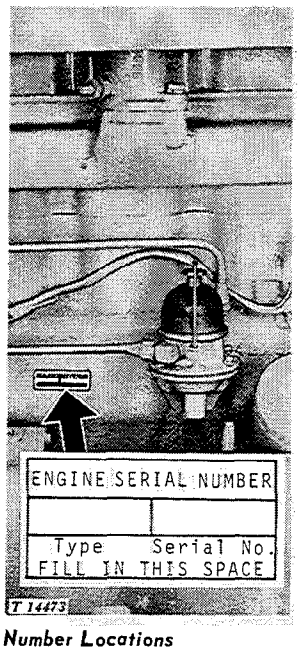
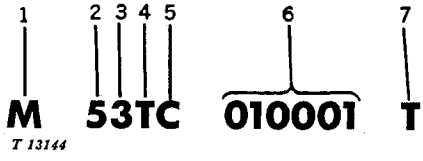


Fig. 10-5-2–Serial Number Locations

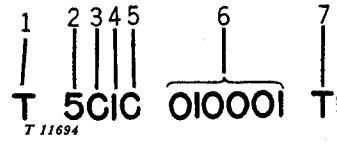
NOTE: Early model tractor and engine serial number plates have an "SN" prefix before the digits listed below.

BASIC ENGINE SERIAL NUMBER EXPLANATION



1. The first letter designates the application . . . . . M - Engine
2. This number designates the series . . . . 5 - 4-Cylinder
3. This number designates the fuel type of the engine . . . . . 1 - Gasoline
   3 - Diesel
4. Using factory . . . . . T - Dubuque
5. Application. . . . . C - Crawler
   E - Crawler-Loader
   F - Crawler-Dozer
6. Sequence serial number of six digits . . . . Differs for each engine
7. This letter designates the manufacturer . . . T - John Deere Dubuque Tractor Works

BASIC TRACTOR SERIAL NUMBER EXPLANATION



1. The first letter designates the application . . . . . T - Tractor
2. This number designates the series . . . . 5 - JD450
3. This letter designates the tractor style. . . . C - Crawler
   E - Crawler-Loader
   F - Crawler-Dozer
4. This number designates the fuel type of engine. 1 - Gasoline
   3 - Diesel
5. This letter designates the type of transmission . . . . . C - Collar Shift
   M-Hi-Low Reverse
6. Sequence serial number of six digits . . . . Differs for each tractor
7. This letter designates the manufacturer . . . T - John Deere Dubuque Tractor Works

LOADER SERIAL NUMBER (Early Models)

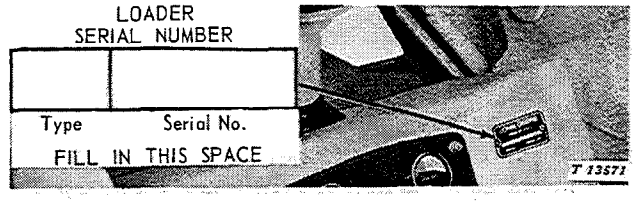


Fig. 10-5-3–Loader Serial Number Location (Early Models)

The serial number plate for the loader is located on the loader frame beside the tractor instrument panel.

WINCH SERIAL NUMBER

The serial number plate for the winch is located on the top left side of the winch housing.

MODEL NUMBERS

The distributor and the carburetor (gasoline), the fuel injection pump (diesel), the alternator, and the main hydraulic pump, have identifying model numbers.

ENGINES

The vertical, 4-cylinder, valve in head, four-stroke cycle engine is available in diesel models (early crawlers were also available with gasoline engines). The engines have four in-line cylinders using individual, replaceable wet-sleeve liners.

LUBRICATION SYSTEM

The engine lubrication system is a force-feed and splash type. The system has a positive displacement, gear-type oil pump, with an externally adjustable pressure regulating valve, and a full-flow oil filter.

GOVERNOR SYSTEM

Gasoline engine speeds are controlled by a flyweight type governor, driven from the engine crankshaft. Diesel engine speeds are governed by flyweights in the fuel injection pump.

COOLING SYSTEM

All engines are liquid cooled and are equipped with pressure cooling systems having a centrifugal water pump and a bypass-type thermostat.

FUEL SYSTEMS

The large-capacity fuel tank on all tractors is located behind the operator's seat.

GASOLINE

Gasoline fuel systems are fed by a fuel transfer pump driven by the engine camshaft.

A replaceable fuel line filter cleans fuel before it enters the single-throat, updraft carburetor.

DIESEL

Diesel fuel systems are fed by a fuel transfer pump driven by the engine camshaft.

Diesel fuel is filtered by two stages of replaceable micronic filter elements. Fuel sediment bowls are located under each filter.

Fuel is delivered to 9.5 MM injector nozzles by means of a distributor-type fuel injection pump.

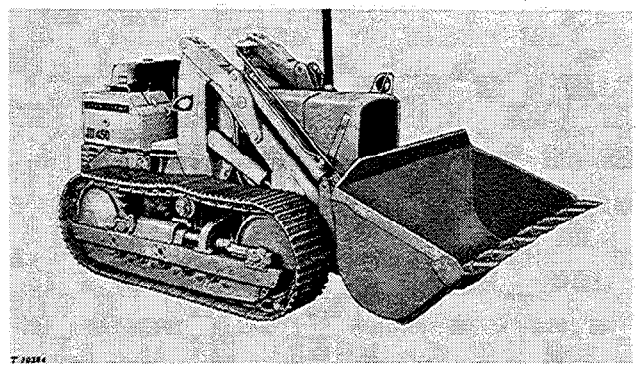


Fig. 10-5-3–Right-Hand View of JD450 Crawler Loader

ELECTRICAL SYSTEM

All units have a 12-volt, negative grounded electrical system. Current is generated by an alternator-regulator circuit. A solenoid-shift starting motor is used to start the engine.

Gasoline units may be equipped with a single 56-ampere or 90-ampere battery. Diesel units may have a single 90-ampere or two 90-ampere batteries.

LIGHTING SYSTEM

All lighting equipment is optional and includes a dash lamp, rear light, and a choice of grille-mounted or rear box-mounted headlights.

TRANSMISSIONS

H-L-R TRANSMISSION

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 under load without clutching by means of "wet" 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.

CONSTANT MESH TRANSMISSION

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 selective sliding-collar type and is shifted manually while clutching.

ENGINE CLUTCH

The engine clutch is a single, dry-disk type with friction facings riveted to either side of the driven disk. When engaged, these facings contact the rear surface of the engine flywheel and the pressure plate.

The clutch is foot-operated. On units with H-L-R transmissions, the clutch pedal is used as a disconnect for cold weather starting and also as a PTO clutch.

POWER TAKE-OFF

The power take-off is transmission driven from the rear of the tractor and is controlled by the engine clutch on tractors with Constant Mesh transmission. On tractors with H-L-R transmission, the power take-off shaft is continuous running. Shaft speed is 1000 rpm at 1900 rpm engine speed. It fully meets all ASAE-SAE standards.

WINCHES

The JD450 Crawler Tractor may be equipped with either a Manual Control winch or a Power Control winch. Both winches are gear driven from the rear of the tractor. Winch speed and pull requirements are directly related to the weight and power available in the tractor.

BRAKES

The two tractor brakes are of the contracting-band type operated in series with the steering clutch mechanism. Both brakes are operated by a single pedal located on the right-hand side of the tractor platform. A brake lock holds the brakes in applied position while the tractor is parked.

STEERING MECHANISM

The steering clutches are dry, multiple-disk types and each is controlled by a hand steering lever. Pulling back on a steering lever separates the drive facings and driven plates of the clutch on that side, interrupting the 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.

Optional power steering is available. Hydraulic booster cylinders are actuated by steering lever movement to aid in easier steering.

The brake bands can also be operated by a pedal. Depressing the pedal applies both brakes; it does not disengage the steering clutches.

TRACKS AND TRACK CARRIERS

Five-roller track frames are standard equipment. The track frames are fixed units of heavy unit-welded steel. Replaceable wear strips are provided on the front idler guides. Track alignment can be adjusted by shims. Track tension is adjusted by means of a hydraulic piston mechanism. Track tread is fixed at 52 inches.

Trackshoes are bolted to hardened links which are joined by replaceable pressed-in pins and bushings. Track shoes are available in several types and sizes to meet any job condition.

Group 10
SPECIFICATIONS

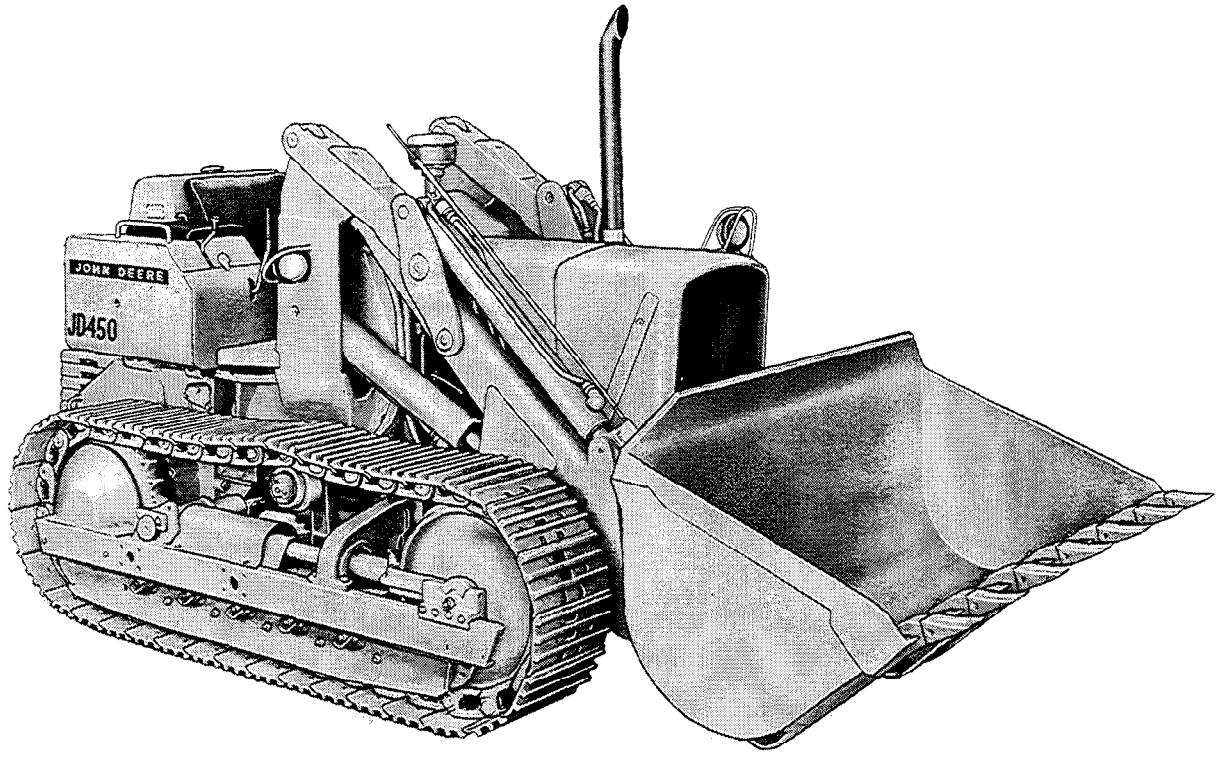


Fig. 10-10-1—Right-Hand View of JD450 Crawler Loader

TRACTOR SPECIFICATIONS

ENGINE	Diesel	Gasoline**
Flywheel horsepower (observed)	57.0	57.0
Torque in ft-lbs at 1300 rpm (observed) (nominal)	145.0	145.0
Number of cylinders	4	4
Bore and stroke, inches	3.86 x 4.33	3.86 x 3.86
Displacement in cubic inches	202.0	180.0
Compression ratio	16.3 to 1	7.5 to 1*
N.A.C.C. or A.M.A. horsepower rating for tax purposes	23.84	23.84
Slow-idle (rpm)	800	375 (15905) 600 (15906-up)
Fast-idle (rpm)	2650	2770
Governed speed range (rpm)	800 to 2650	600 to 2770
Intake valve clearance	0.014 in.	0.014 in.
Exhaust valve clearance	0.018 in.	0.022 in.
Engine clutch	with Constant Mesh: 12-in. dry disk, foot-operated; with H-L-R: 11-in., spring-loaded dry disk, foot-operated.	

**8.6 to 1 with high altitude pistons.*

TRANSMISSIONS

Constant Mesh: High, low and reverse gears grouped to shift mechanically in series with 4 shift stations to give eight forward speeds and 4 reverse speeds.

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

***Gasoline engine available on early models only.*

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TRAVEL SPEEDS, MPH (No Slip)

H-L-R Transmission		Constant Mesh Transmission	
Range	2500 rpm	Range	2500 rpm
No. 1		No. 1	
Hi Gear	1.8	Hi Gear	1.8
Lo Gear	1.3	Lo Gear	1.5
Rev. Gear	1.7	Rev. Gear	1.7
No. 2		No. 2	
Hi Gear	2.8	Hi Gear	2.8
Lo Gear	2.0	Lo Gear	2.3
Rev. Gear	2.7	Rev. Gear	2.7
No. 3		No. 3	
Hi Gear	4.3	Hi Gear	4.3
Lo Gear	3.0	Lo Gear	3.5
Rev. Gear	4.1	Rev. Gear	4.1
No. 4		No. 4	
Hi Gear	6.7	Hi Gear	6.7
Lo Gear	4.7	Lo Gear	5.5
Rev. Gear	6.4	Rev. Gear	6.4

CAPACITIES (U.S. Standard Measures)

Fuel tank . . . . . 31 gals.
Cooling system . . . . . 4 gals.
Engine lubrication (including filter) . . 9 qts.
Transmission case . . . . . 8 gals.
Final drive cases (each) . . . . . 7 qts.

DIMENSIONS

Height to top hood . . . . . 57-1/16 in.
Over-all height (without stack) . . . . . 76 in.
Over-all width, minimum, (with 12-in. shoes) . . . 65-3/8 in. (tractor)
Over-all length . . . . . 109-1/4 in. (tractor)
171 in. (loader)
Ground clearance (at rear crossbar) . . . . . 14-1/4 in.
Total weight (approx.). . . . . 10,590 lbs. (diesel tractor)
15,630 lbs. (diesel loader)

STEERING — Manually or hydraulically operated clutch-brake system

Clutch . . . . . 11-inch dry multiple disk type
No. of friction surfaces (each clutch) . . 16
Brakes . . . . . Contracting band-bonded lining
Turning clearance circle. 180 in. (tractor)
253 in. (loader)

FINAL DRIVES

Gear reduction ratio in first gear (engine to axle) . . . . . 144 to 1
Gear reduction ratio in eighth gear (engine to axle) . . . . . 27.2 to 1

TRACK EQUIPMENT

Track frame 5-roller
Track shoes (types and sizes):
Grouser . . . . . 12, 14, 16, or 18 in.
Notched grouser (snow shoe) . . . . . 12, 14, 16, or 18 in.
Triple semi-grouser . 12, 13, 14, or 16 in.
Open center grouser . . 12, 14, 16, or 18 in.
Rubber . . . . . 13 in.
Track gauge (center to center). 52 in. (fixed)
Number of track shoes (each side) 36
Total ground contact area (sq. in.):
12-inch shoes 1711
13-inch shoes 1857
14-inch shoes 2032
16-inch shoes 2294
18-inch shoes 2585
Ground pressure (lbs. per sq. in.) with 12-inch shoes . . . . . 5.7 (tractor)
8.8 (loader)
Length of track on ground (inches) . . 72-3/4

WINCHES (Manual and Power Types)

Drum speed (at 2200 rpm engine speed) . . . . . 58-1/2 rpm
Drum diameter . . . . . 6 inches
Drum capacities*
(with 1/2-inch cable) . . . . . 185 feet
(with 5/8-inch cable) . . . . . 115 feet
(with 3/4-inch cable) . . . . . 90 feet
Cable speed (at 2200 rpm engine speed)
(with bare drum) . . . . . 100 fpm**
(with full drum) . . . . . 159 fpm**
Cable pull (at 2200 rpm engine speed)
(with bare drum) . . . 13,900 lbs. (manual)
15,000 lbs. (power)
(with full drum) . . . . 8,700 lbs. (manual)
9,600 lbs. (power)

**Calculated capacities — allowance must be made for loose or uneven spooling.*

*** With 5/8-inch cable.*

(Specifications and design subject to change without notice. Wherever applicable, specifications are in accordance with IEMC standards.)

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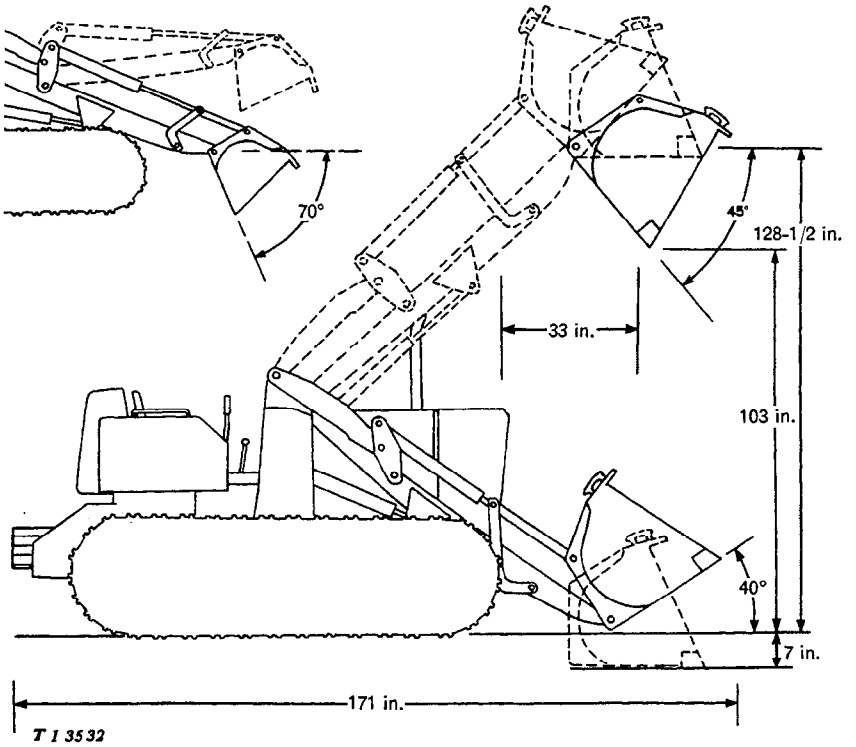

Fig. 10-10-2–Loader Dimensions

LOADER SPECIFICATIONS

LOADER DIMENSIONS (Fig. 10-10-2)

Dumping reach (full height)	33 in.
Dumping clearance (full height)	103 in.
Maximum lift (bucket at full height)	128-1/2 in.
Digging depth below ground (bucket level)	7 in.
Bucket width (1-1/8 yd. bucket)	72 in.
Dump angle	
Full height	45° from horizontal
Ground level	70° from horizontal
Bucket roll-back (ground level)	40°
Overall length	171 in.
Overall height (with exhaust stack)	81-3/8 in.
Overall width (minimum) (with 12-in. shoes)	65-3/8 in.
Ground clearance (at rear crossbar)	14-1/4 in.
Turning clearance circle (carry height, bucket rolled back)	253 in.

LOADER OPERATING INFORMATION

System pressure at 2500 engine rpm	2000 psi (-1300) 2250 psi (1301-up)
Bucket capacities	1-1/8 or 1-3/4 cu. yd.
Breakout force	12000 lbs.
Hydraulic lift capacity (full height)	5500 lbs.
Raising time	6.6 sec.
Lowering time	4 sec.
Dumping time	1.7 sec.

(Specifications and design subject to change without notice. Wherever applicable, specifications are in accordance with IEMC standards.)

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Section 20
TRACTOR SEPARATION

Group 5
ENGINE REMOVAL AND INSTALLATION

ENGINE REMOVAL

Disconnect battery ground straps for safety.

Remove engine side shields if equipped.

On crawler-loaders, support loader boom (Group 30 of this Section).

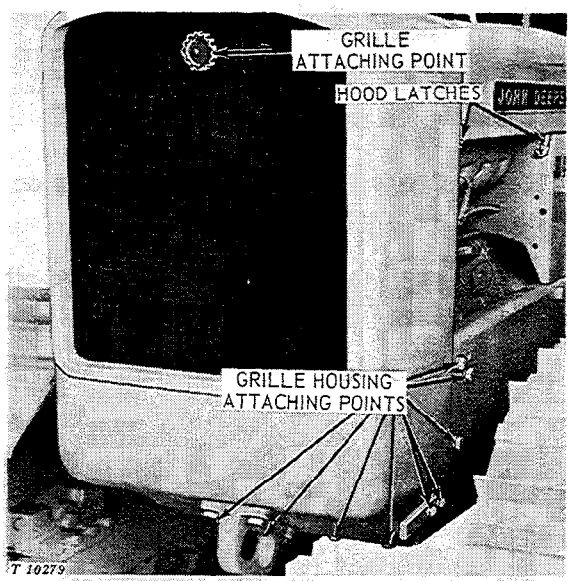

Fig. 20-5-1—Hood and Grille Housing Attaching Points

1. On each side of hood, unhook latches attaching hood to radiator and cowl supports. Remove muffler stack and lift off hood.

2. Remove grille by unscrewing knob (Fig. 20-5-1). Attach chain hoist to grille housing (Fig. 20-5-2).

3. Disconnect front light leads from headlights.

4. Remove cap screws attaching grille housing to bottom plate and side frames. Detach H-L-R oil filter base (if equipped) from inside of grille housing. With the aid of chain hoist, remove grille housing.

5. Drain radiator and disconnect water inlet and outlet hoses. Also disconnect H-L-R transmission oil cooler lines (if equipped).

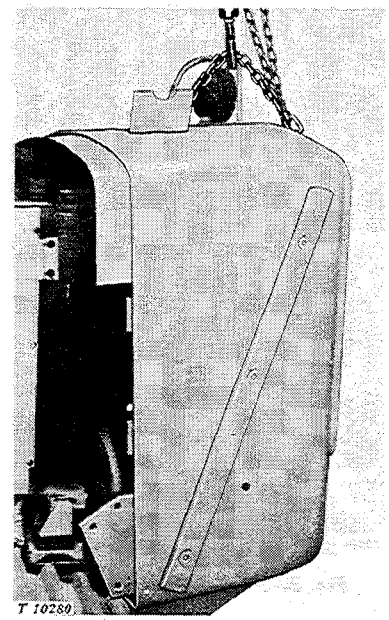

Fig. 20-5-2—Removing Grille Housing

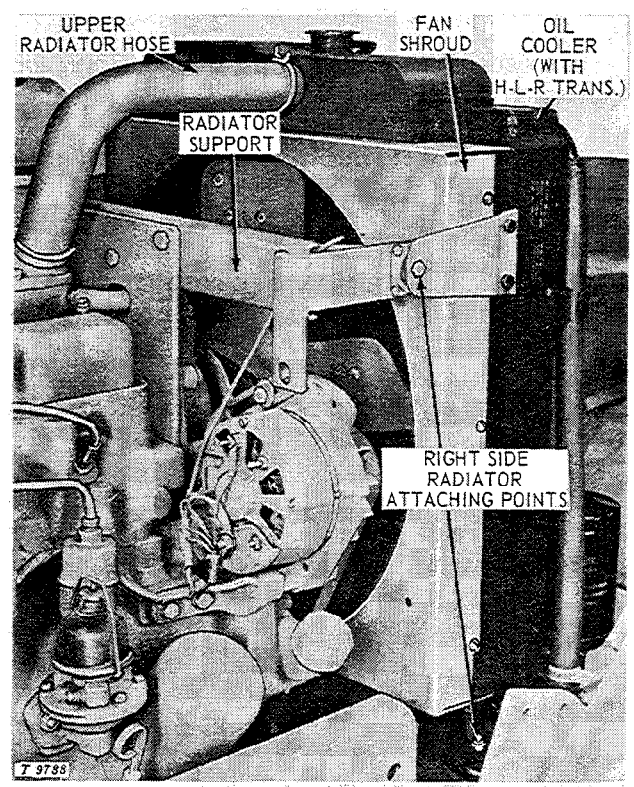

Fig. 20-5-3—Removing Radiator