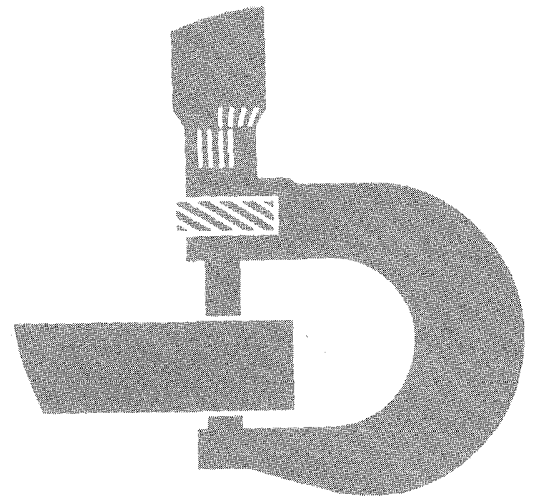


**John Deere
JD646
Compactor**



TECHNICAL MANUAL

TM-1073
Litho in U.S.A. (T) New

JD646 COMPACTOR

TECHNICAL MANUAL
TM-1073 (Mar-74)

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Group 5

SPECIFICATIONS

HORSEPOWER* (at 2,200 engine rpm):	SAE	PS
Gross	141	143
Net	131	133

* Net engine flywheel horsepower is for an engine equipped with fan, air cleaner, water pump, lubricating oil pump, fuel pump, alternator, and muffler. The gross engine horsepower is without fan. Gross and net flywheel horsepower ratings are under SAE standard conditions of 500-ft. altitude and 85°F. temperature and DIN 70 020 (non-corrected). Engine maintains rated horsepower up to 10,000 feet (3,000 m) altitude.

ENGINE:

John Deere Diesel, vertical 6-cylinder, valve-in-head, 4-stroke cycle—turbo-built with turbocharger.
Bore and stroke 4.25x4.75 in. (108x121 mm)
Piston displacement 404 cu. in. (6620 cm)
Compression ratio 16.5 to 1
Maximum torque @ 1,600 rpm 348 lb.-ft. (48, 1 kg-m)
N.A.C.C. or A.M.A. (U.S. Tax) horsepower 43.3
Lubrication Pressure system with full-flow filter
Cooling Pressurized with thermostat and fixed bypass
Fan Suction-type
Air cleaner ... Dry type, dual element with restriction indicator
Lights and starting system 12-volt with alternator
Batteries, two Reserve capacity: 180 minutes each

TRANSMISSION:

Twin-turbine torque converter with Power-Shift transmission (4 speeds forward—2 reverse).

TORQUE MULTIPLICATION RATIO 3.2 to 1

DIFFERENTIALS:

Front "No-Spin" type
Rear Standard

DRIVE AXLES:

4-wheel drive with inboard-mounted planetary gears to each wheel. Front axle fixed. Rear axle oscillates 22-degree total. 15.3 in. (339 mm) vertical travel at center of tire.

RECOMMENDED TRAVEL SPEEDS:

Forward and reverse 4.5 mph maximum

BRAKES:

Service...Power actuated, 4-wheel, inboard-mounted wet disk. Foot-operated by either right or left pedal.
Parking...10x1.5-in. (254x38 mm) expanding shoe type on transmission output shaft. Adjustable, hand operated with warning light on dash.

STEERING:

Full power steering. Frame articulated 80 degrees by two hydraulic cylinders. Vehicle clearance circle is 36 ft. 10.8 in. (11,25 m).

HYDRAULIC SYSTEMS:

Loader functions system...Live, transmission-driven, vane-type pump delivers 60 gpm (227 lpm) at 2,200 engine rpm and 2,250 psi (158,2 kg/cm²) relief-valve pressure setting.

ControlDual-lever, triple hydraulic system. bucket.

Steering and brake systems...Engine-driven, eight-piston, variable-displacement-type pump delivers 26 gpm (98 lpm) at 2,200 engine rpm and 2,250 psi (158.2 kg/cm²).

LANDFILL BUCKETS:

	Capacity	Width
Refuse Dirt:	2-3/4 cu. yd. (2,10 m ³)	110.77 in. (2,81 m)
..... Refuse:	4-1/2 cu. yd. (3,44 m ³)	
Light materials	4-1/2 cu. yd. (3,44 m ³)	110.77 in. (2,81 m)
Multi-purpose Dirt:	2-1/4 cu. yd. (1,72 m ³)	106.4 in. (2,70 m)
..... Refuse:	3-1/2 cu. yd. (2,68 m ³)	

COMPACTOR WHEELS:

Width 23 in. (584 mm)
Diameter 55 in. (1397 mm)
60° cleats, 32/wheel 5 in. (127 mm)
Encased General tires 13-24, 12 pr
Compaction Up to 2,898 psi

WHEEL TREADS AND WIDTH:

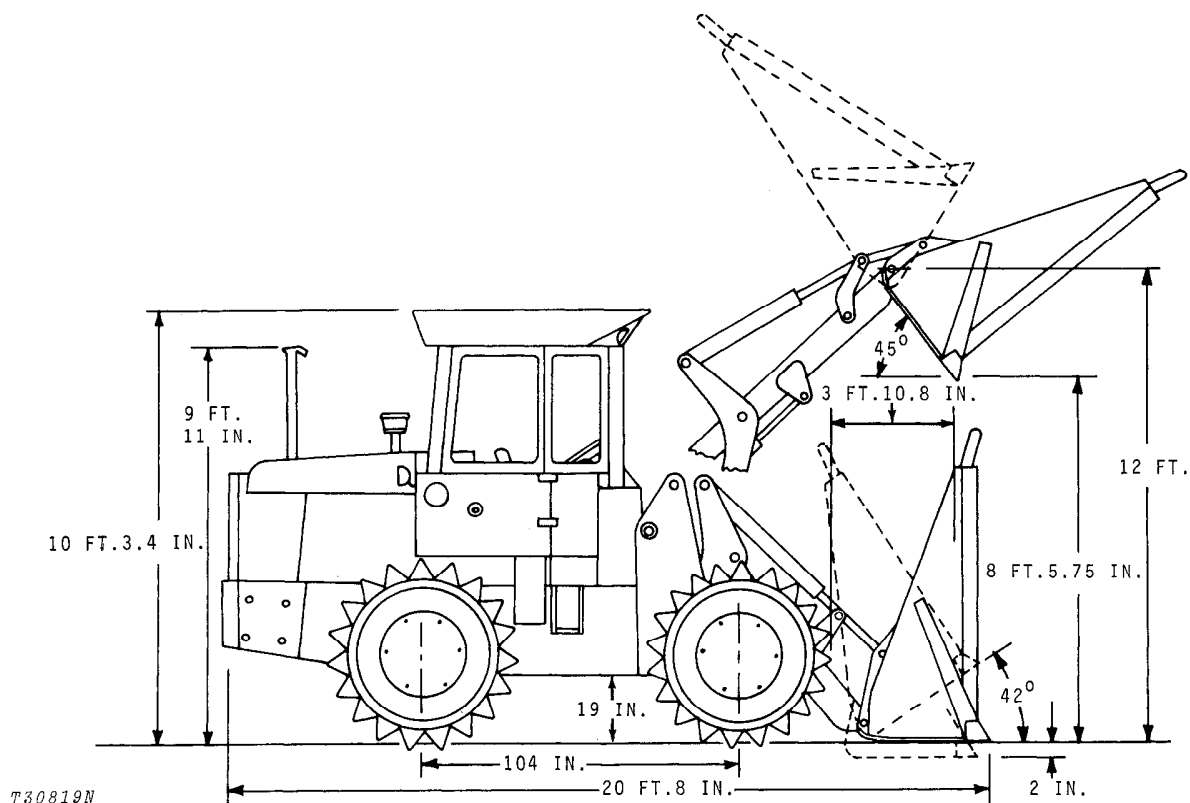
Front and rear (center-to-center) 81.5 in. (2,07 m)
Width outside wheels 104.5 in. (2,65 m)

CAPACITIES:

	U.S.	Liters
Cooling system	9 gal.	34,1
Fuel tank	50 gal.	189,3
Crankcase and filter	17 qt.	16,1
Transmission case and filters	9.75 gal.	36,9
Front differential	6 gal.	22,7
Rear differential	6.5 gal.	24,6
Loader hydraulic sump	17.5 gal.	66,2

OPERATING WEIGHT:

	lb.	kg
With refuse bucket	30,012	13625
With multi-purpose bucket	30,282	13747



ADDITIONAL STANDARD EQUIPMENT:

- Adjustable cushioned seat
- Engine side shields
- Key switch
- Cigarette lighter
- Vandal protection
- Horn
- Automatic return-to-dig
- Fixed drawbar
- Vertical exhaust w/rain cap
- Hand grips
- Electric hour meter
- Ether starting aid
- Heater for cab
- Defroster
- Fire extinguisher
- Radiator screen
- Push button safety start
- ROPS cab and seat belt

SPECIAL EQUIPMENT:

- Pre-cleaner
- Multi-purpose refuse bucket:
 - 2-1/4 yd. dirt capacity, 3-1/2 yd. refuse capacity
- Light-materials bucket:
 - 4-1/2 yd. capacity

(Specifications and design are subject to change without notice. Wherever applicable, specifications are in accordance with IEMC and SAE Standards. Except where otherwise noted, these specifications are based on a unit equipped with demolition wheels; refuse bucket, and standard equipment.)

Group 10

PREDELIVERY, DELIVERY AND AFTER-SALE SERVICES

PREDELIVERY SERVICE

Because of the shipping factors involved, plus extra finishing touches that are necessary to promote customer satisfaction, proper delivery service is of prime importance to the dealer.

A tag pointing out the factory-recommended procedure for predelivery service is attached to each new compactor before it leaves the factory.

After completing the factory-recommended dealer checks and services listed on the predelivery tag, remove the tag from the compactor and file it with the shop order for the job. The tag will then serve as a basis for certifying that the compactor has received the proper predelivery service when that portion of the customer's John Deere Delivery Receipt is completed.

TEMPORARY COMPACTOR STORAGE

Service	Specification	Reference
Check radiator for coolant loss and antifreeze protection	Bottom of filler neck	.....
Reduce shipping pressure of tires	.....	Operator's Manual
Cover compactor for protection and cleanliness	.....	.....

PREDELIVERY INSPECTION

COOLING SYSTEM

Inspect radiator for coolant loss	Bottom of filler neck	.....
Check antifreeze protection	.....	.....

ELECTRICAL SYSTEM

Check battery terminals to be sure they are tight	.....	.....
Remove brake fuse from spare fuse holder and insert into fuse block. Test lights	.....	Section 40, Group 10

TIRES AND WHEELS

Adjust tire pressure	70 psi	Operator's manual
Check all wheel retainers for tightness	275 ft-lbs torque	Operator's manual

PREDELIVERY INSPECTION—Continued

Service	Specification	Reference
LUBRICATION		
Check crankcase oil level	To top mark on dipstick	Operator's manual
Compactor hydraulic system oil level	Check oil level at window (JD303 Special-Purpose Oil)	Operator's manual
Check oil level in front and rear differentials	To level of check plug (cold) (JD303 Special-Purpose Oil)	Operator's manual
Check transmission oil level	To top mark on dipstick (J.D. Torque-Converter Fluid Type C-2)	Operator's manual
Lubricate grease fittings	John Deere Multi-Purpose Lubricant or an equivalent	Operator's manual
ENGINE		
Check air cleaner	.....	Operator's manual
Fill fuel tank and start engine	50 U.S. gallons	Operator's manual
Check operation of lights, gauges and indicator lights	.....	Operator's manual
Check speed control linkage	.....	Section 20, Group 20
Check engine speeds	.....	Section 20, Group 20
OPERATION		
Shift transmission through all ranges	.....	Operator's manual
Check hydraulic system operation	.....	Section 70, Group 5
Check clutch cutoff control disconnect	.....	Section 60, Group 5
Check rear axle disconnect operation	.....	Section 50, Group 15
Check fire extinguisher	.....	Operator's manual
Check brake operation	.....	Section 60, Group 5
Check steering operation	.....	Section 60, Group 5
Check seat operation	.....	Operator's manual
GENERAL		
Tighten accessible nuts and cap screws	.....	.....
Clean compactor and touch up paint	.....	.....

DELIVERY SERVICE

A thorough discussion of the operation and service of a new compactor at the time of delivery helps to assure customer satisfaction. Proper delivery should be an important phase of a dealer's program. A portion of the John Deere Delivery Receipt emphasizes the importance of proper delivery service.

It is a well-known fact that many complaints have arisen simply because the owner was not shown how to operate and service his new unit properly. Devote enough time, at the customer's convenience, to introduce the owner to his new compactor and explain to him how to operate and service it.

The following procedure is recommended before the service man and the owner complete the delivery acknowledgments portion of the delivery receipt.

Using the compactor operator's manual as a guide, be sure that the owner understands these points thoroughly:

1. The importance of safety.
2. The importance of lubrication and periodic services.
3. Controls and Instruments.
4. How to start and stop the engine.
5. The importance of the break-in period.
6. All functions of the hydraulic system.

After explaining and demonstrating the above features, have the owner sign the delivery receipt and give him the operator's manual.

AFTER-SALE SERVICE

The purchaser of a new John Deere compactor is entitled to a free inspection at some mutually agreeable time within the warranty period after the equipment has been "run in." The terms of this after-sale inspection are outlined on the back of the customer's John Deere delivery receipt.

The purpose of this inspection is to make sure that the customer is receiving satisfactory performance from his compactor. At the same time, the inspection should reveal whether or not the compactor is being operated, lubricated, and serviced properly.

If the recommended after-sale service inspection is followed, the dealer can eliminate a needless volume of service work by preventing minor irregularities from developing into serious problems later on. This will promote strong dealer - customer relations and present the dealer an opportunity to answer questions that may have arisen during the first few days of operation. During the inspection service, the dealer has the further opportunity of promoting the possible sale of other new equipment.

AFTER-SALE INSPECTION

Service	Specification	Reference
COOLING SYSTEM		
Check radiator coolant level	Bottom of filler neck	.....
Check hoses and connections for leaks	.....	.....
FUEL SYSTEM		
Bleed fuel system	.....	Operator's manual

AFTER-SALE INSPECTION—Continued

Service	Specification	Reference
Check fuel line connections	.....	.....
Check air cleaner element and unloading valve. Clean element if necessary	.....	Operator's manual
ELECTRICAL SYSTEM		
Check specific gravity of batteries	Full charge - 1.260 at 80°F	Operator's manual
Check level of battery electrolyte	To bottom of filler neck in each cell	Operator's manual
Check alternator belt tension	75 to 85 lbs. tension (measured on a test gauge). After 3 minutes of operation, tension should be 60 lbs. minimum	Operator's manual
Check fan belt tension	110 to 110 lbs. tension (measured on a test gauge). After 3 minutes of operation, tension should be 80 lbs. minimum	Operator's manual
Start engine and check action of starter, lights, and indicator lamps	.....	Operator's manual
LUBRICATION		
Check engine crankcase oil level	To top mark on dipstick	Operator's manual
Check transmission oil level	To top mark on dipstick (J.D. Torque Converter Fluid Type C-2)	Operator's manual
Check hydraulic system oil level	Check oil level at window (JD303 Special-Purpose Oil)	Operator's manual
Check oil levels in front and rear differentials	To level of check plug (Cold oil) (JD303 Special-Purpose Oil)	Operator's manual

AFTER-SALE INSPECTION—Continued

Service	Specification	Reference
ENGINE		
Check engine valve tappet clearance	Intake - 0.018-inch Exhaust - 0.022-inch	Section 20, Group 10
CONTROLS		
Check clutch cutoff	.....	Section 50, Group 15
Check return-to-dig valve operation	Check oil level and adjust (JD303 Special-Purpose Oil)	Operator's manual
HYDRAULIC SYSTEM		
Check power steering	.....	Section 60, Group 5
Check power brakes	Less than 2 inches of travel	Operator's manual
Check brake accumulator	20 brake pedal applications with engine stopped	Section 60, Group 5
GENERAL		
Check fire extinguisher	.....	Operator's manual
Check tire pressure	70 psi	Operator's manual
Check wheel retainers for tightness	275 ft-lbs torque	Operator's manual
Clean out radiator screen	.....	Operator's manual

Group 15

TUNE-UP AND ADJUSTMENT

GENERAL INFORMATION

Before tuning up an engine, determine if it is in condition so that performance can be restored by tune-up. Perform the following tests:

PRELIMINARY ENGINE TESTING

Operation	Specification	Reference
Vacuum test (at air cleaner)	8 to 25 inches of water at fast idle	FOS Manual 30 - ENGINES Section 20, Group 30
Check radiator for air bubbles and indication of oil	.....	Section 20, Group 30
Cylinder compression	400 psi minimum*	FOS Manual 30 - ENGINES Section 20, Group 20

ENGINE TUNE-UP

AIR INTAKE SYSTEM

Air cleaner - clean primary ele- ment and dust cup	.....	Operator's manual
Check breather pipe for restric- tions	.....	.....
Retighten cylinder head cap screws	115 ft-lbs torque first tightening sequence 130 ft-lbs torque second tightening sequence	Section 20, Group 30
Check valve clearance	0.022 in. - Exhaust 0.018 in. - Intake	Section 20, Group 30

* The most important factor in compression readings is the difference between cylinders. This difference should be no more than 25 psi.

ENGINE TUNE-UP—Continued

Operation	Specification	Reference
BATTERY		
Check electrolyte level	Fill to bottom ring of each cell	.....
Clean cables, terminals and box	.....	.....
Tighten cable clamps and apply petroleum jelly	.....	.....
ALTERNATOR - FAN BELTS		
Check belt tensions	Fan Belt - 100 to 110 lbs. tension (measured on a test gauge). After 3 minutes operation, tension should be 80 lbs. minimum. Alternator Belt - 75 to 85 lbs. tension (measured on a test gauge). After 3 minutes of operation, tension should be 60 lbs. minimum.	Operator's manual
FUEL SYSTEM		
Check fuel tank and lines for leaks or restrictions	.....	.....
Replace fuel filter elements	.....	.....
Time injection pump	.....	Section 30, Group 20
Check injection pump advance	.....	Section 30, Group 20
Bleed fuel system	.....	.....
Adjust speed control linkage and check engine speeds	.....	Section 20, Group 20
ENGINE LUBRICATION SYSTEM		
Check engine oil pressure	40 to 50 psi at fast idle rpm (at normal operating temp.)	Section 20, Group 30
COOLING SYSTEM		
Clean and flush system	.....	FOS Manual 30 - ENGINES
Inspect hoses	.....	.....
Clean trash from radiator screen	.....	.....

COMPACTOR ADJUSTMENTS

Make the following compactor adjustments whenever the engine is tuned up.

Operation	Specification	Reference
BRAKES		
Bleed brakes	.....	Section 60, Group 25
Check action of brake accumulator	.....	Section 60, Group 5
Check mechanical parking brake	.....	Section 60, Group 25
POWER STEERING		
Bleed steering system	.....	Section 60, Group 20
Check time cycle (lock to lock) (fast idle)	2-1/2 seconds	Section 60, Group 30
Check steering system accumulator	.....	Section 60, Group 15
HYDRAULIC SYSTEM		
Check boom raise cycle time	5.5 to 6.5 seconds	Section 70, Group 5
Check boom lower cycle time (power down)	4.5 to 5.5 seconds	Section 70, Group 5
Check boom lower cycle time (float down)	4.5 seconds	Section 70, Group 5
Check bucket dump cycle time	1.5 to 2.0 seconds	Section 70, Group 5
Bleed bucket return-to-dig valve	.....	Section 70, Group 25
TIRES		
Check tire inflation	70 psi	Operator's manual
TIGHTEN ACCESSIBLE BOLTS AND CAP SCREWS		
	See torque chart	Section 10, Group 25

Group 20 LUBRICATION

GENERAL INFORMATION

Carefully written and illustrated lubrication instructions are included in the operator's manual furnished with your customer's machine. Remind him to follow these instructions.

For operator convenience, a periodic service chart on all JD646 Compactors is located on the front of the tool box.

For your convenience, the following chart shows capacities and types of lubricants for the compactor components and system. Specifications for lubricants follow the chart.

Item	Capacity	Type of Lubricant
Engine crankcase	17 U.S. quarts with filter 15 U.S. quarts without filter	See page 20-2
Transmission including filters and lines	9.75 U.S. gallons (approx.)	J.D. Torque Converter Fluid Type C-2
Compactor hydraulic system	17-1/2 U.S. gallons	J.D. Hy-GARD Oil or an equivalent
Return-to-dig valve	To level of filler plug	J.D. Hy-GARD Oil or an equivalent
Differentials	6-1/2 U.S. gallons	J.D. Hy-GARD Oil or an equivalent
Grease fittings	.....	John Deere Multi-Purpose Lubricant or an equivalent
Axle bearings	10 to 20 shots	John Deere Multi-Purpose Lubricant or an equivalent
Starter	Saturate wicks (3)	Engine crankcase oil (SAE 10W)
	Lubricate armature shaft splines during assembly	Engine crankcase oil (SAE 10W)

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