

John Deere JD480 Forklift



Technical Manual

TM1016
LITHO IN U.S.A.

JD480 FORKLIFT

TECHNICAL MANUAL

TM-1016 (Dec-73)

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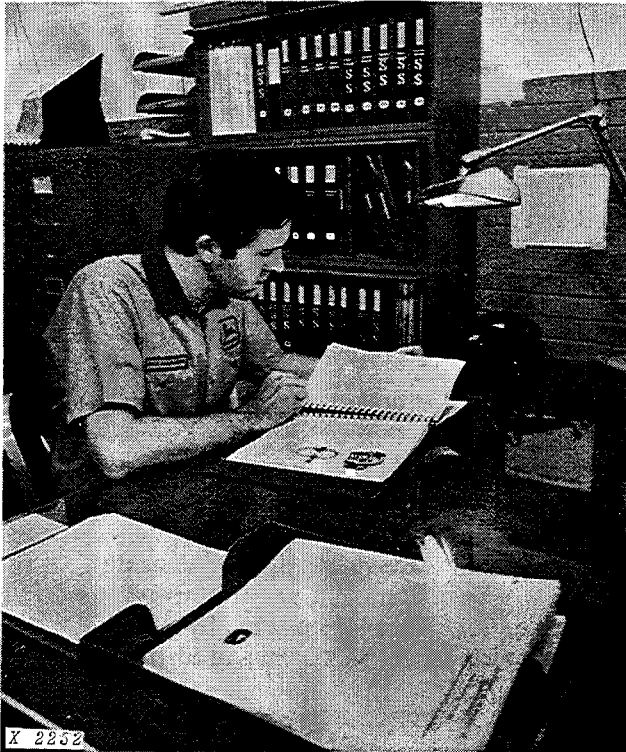
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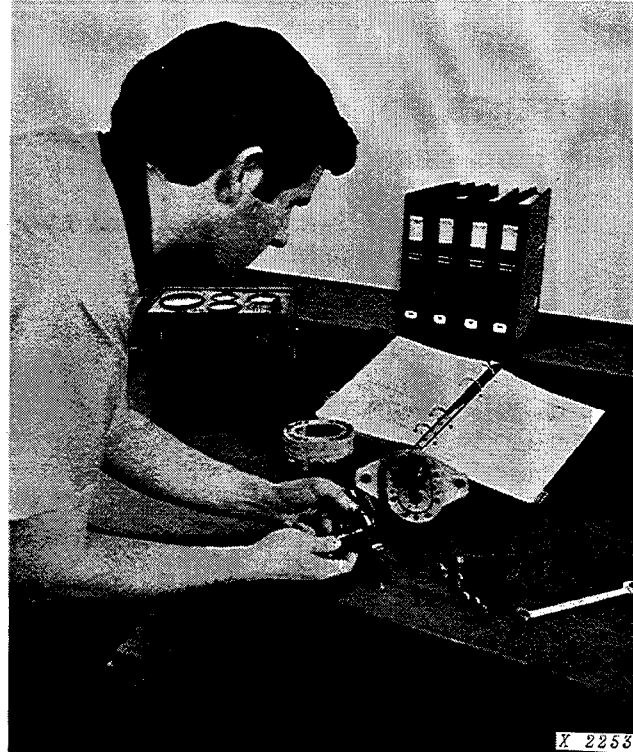
The specifications and design information contained in this manual were correct at the time this machine was manufactured. It is John Deere's policy to continually improve and update our machines. Therefore, the specifications and

design information are subject to change without notice. Wherever applicable, specifications and design information are in accordance with SAE and IEMC standards.

INTRODUCTION



Use FOS Manuals for Reference



Use Technical Manuals for Actual Service

This technical manual is part of a twin concept of service:

- **FOS Manuals**—for reference
- **Technical Manuals**—for actual service

The two kinds of manuals work as a team to give you both the general background and technical details of shop service.

Fundamentals of Service (FOS) Manuals cover basic theory of operation, *fundamentals* of trouble shooting, *general* maintenance, and *basic* types of failures and their causes. FOS Manuals are for training new men and for reference by experienced men.

Technical Manuals are concise service guides for a *specific* machine. Technical Manuals are on-the-job guides containing only the vital information needed by a journeyman mechanic.



When a serviceman should refer to a FOS Manual for more information, a FOS symbol like the one at the left is used in the TM to identify the reference.

Some features of this technical manual:

- *Table of contents at front of manual*
- *Exploded views showing parts relationship*
- *Photos showing service techniques*
- *Specifications grouped for easy reference*

This technical manual was planned and written for you—a journeyman mechanic. Keep it in a permanent binder in the shop where it is handy. Refer to it whenever in doubt about correct service procedures or specifications.

Using the technical manual as a guide will reduce error and costly delay. It will also assure you the best in finished service work.



This safety alert symbol identifies important safety messages in this manual. When you see this symbol, be alert to the possibility of personal injury and carefully read the message that follows.

Section 10 GENERAL

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Group 5 SPECIFICATIONS

FORKLIFT DESIGN

The JD480 Forklift is designed for handling, lifting, and stacking materials and other miscellaneous products either loose, strapped, bundled, or on pallets.

All references in this manual to front, rear, left, and right are determined by facing in the direction of the forklift forward travel.

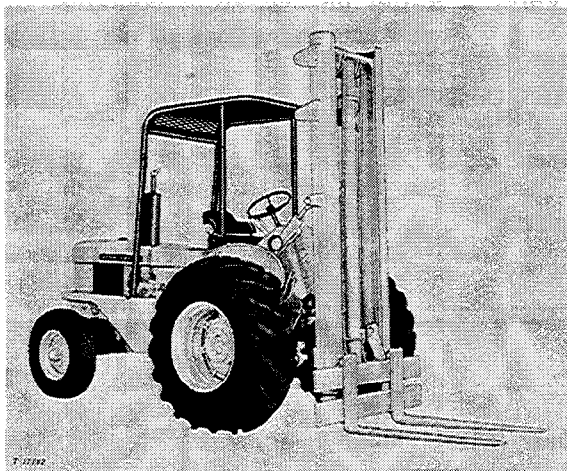


Fig. 1-JD480 Forklift

SPECIFICATIONS

TRAVEL SPEEDS (mph at 2500 engine rpm with 14.9 - 28 tires, without slip).

ENGINE

	Diesel	Gasoline
Flywheel horsepower (observed at 2500 rpm)	59.0	59.0
Max. torque in ft-lbs. at 1300 rpm (observed-nominal)	145.0	145.0
N.A.C.C. or A.M.A. horsepower rating for tax purposes	23.84	23.84
Number of cylinders	4	4
Bore and stroke (inches)	3.86 x 4.33	3.86 x 3.86
Displacement (inches)	202.2	180.0
Compression ratio	16.7 to 1	7.5 to 1*
Firing order	1-3-4-2	1-3-4-2

Gear	Forward	Reverse
1st	1.7	1.4
2nd	2.3	2.0
3rd	3.4	2.9
4th	4.3	4.1
5th	6.4	5.5
6th	9.0	7.8
7th	13.4	11.6
8th	18.8	16.2

ELECTRICAL SYSTEM

Battery voltage (nominal)	12 volts
Battery specific gravity at full charge (corrected to 80° F.)	1.260 0.010
Battery terminal grounded	Negative
Alternator regulation	Voltage regulator
Ignition system type	Battery-distributor
Spark plugs	
Size	14 mm

TRANSMISSION

Constant mesh, 8 forward speeds; helical gears and sliding collars; mechanical shuttle.

REVERSER

Hydraulic wet clutches, no clutching required. Provides reverse speeds for gear selections 1 through 8 which are 16% slower than corresponding forward speeds.

DISCONNECT CLUTCH

11-inch dry-type clutch operated by a pedal (early units) or a hand disconnect lever (later units).

*8.6 to 1 with high-altitude pistons

DRIVE AXLES

Two planetary reduction drive axles with spiral bevel gear drive differential.

FORKLIFT HYDRAULIC SYSTEM

Type - Open center, constant volume system to operate forklift functions.

Pump - Engine crankshaft driven, positive displacement, gear-type pump.

STEERING AND BRAKES HYDRAULIC SYSTEMS

Type - Open center, constant volume system to operate the forklift power steering and hydraulic brake systems.

Pump - Engine drive, positive-displacement gear type pump.

Relief

Valve - Relief mechanism is contained in the metering valve located at the pump.

TIRE OPTIONS

Front	14.9 - 28, 8 PR
	16.9 - 24, 8 PR
Rear	7.50 - 16, 10 PR
	11.00L - 15, 6 PR

WHEEL TREADS

Front	62 in.
Rear (with 7.50-16 tires)	56 in.
Rear (with 11.00L-15 tires)	62 in.

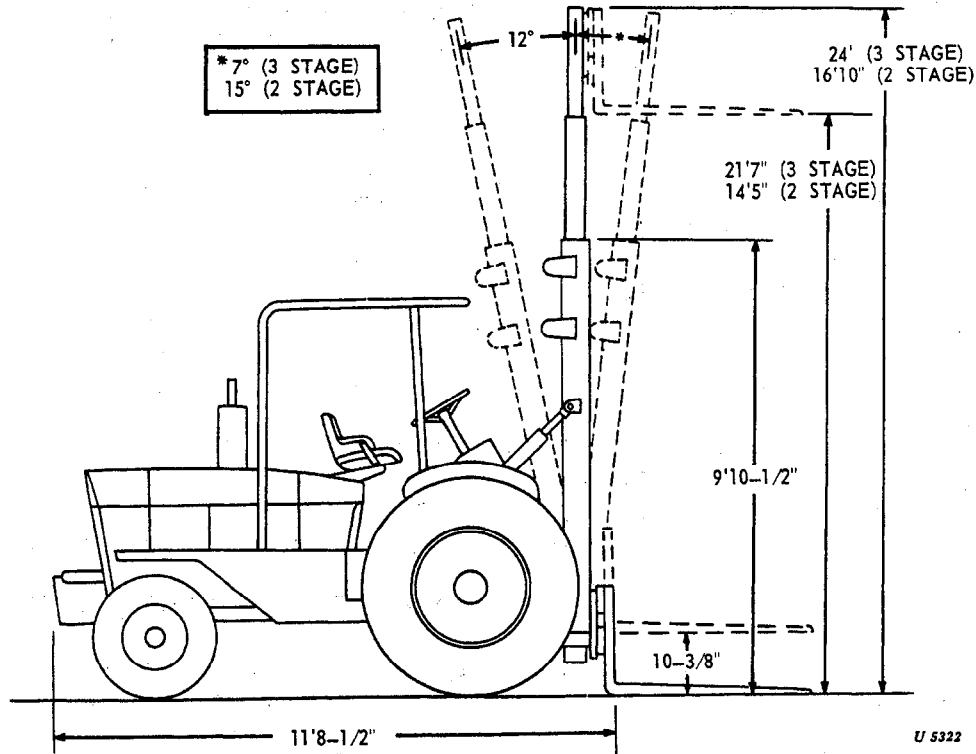


Fig. 2--Forklift Dimensions

CAPACITIES (U.S. Standard Measures)

Cooling system	3 gal.
Fuel tank	19-1/2 gal.
Engine crankcase (with filter)	6 qt.
Transmission (includes steering and brake hydraulic system)	10 gal.
Forklift hydraulic system	
14-foot mast	15 gal.
21-foot mast	14 gal.

FORKLIFT DIMENSIONS

Over-all length (without forks)	11 ft. 8-1/2 in.
Over-all width	6 ft. 7 in.
Over-all Height:	
Mast retracted	9 ft. 10-1/2 in.
Mast raised-14-foot mast	16 ft. 10 in.
21-foot mast	24 ft.
Wheelbase	6 ft. 10 in.
Freelift (max. with forks in transport position and mast fully retracted)	10-3/8 in.

Shipping weight (approx. without forks or attachments)

	<u>Diesel</u>	<u>Gasoline</u>
14-foot mast (lbs)	10,790	10,708
21-foot mast (lbs)	11,140	11,058

FORKLIFT OPERATING INFORMATION

Maximum Lifting Height

14-foot mast (2 stage)	14 ft. 5 in.
21-foot mast (3 stage)	21 ft. 7 in.

Load Capacity (At Full Lift Height and 24-inch Load Center)

14-foot mast	5000 lbs.
21-foot mast	2500 lbs.

Tilt of Mast

Forward-14-foot mast	15 degrees
21-foot mast	7 degrees
Rearward-14-foot mast	12 degrees
21-foot mast	12 degrees

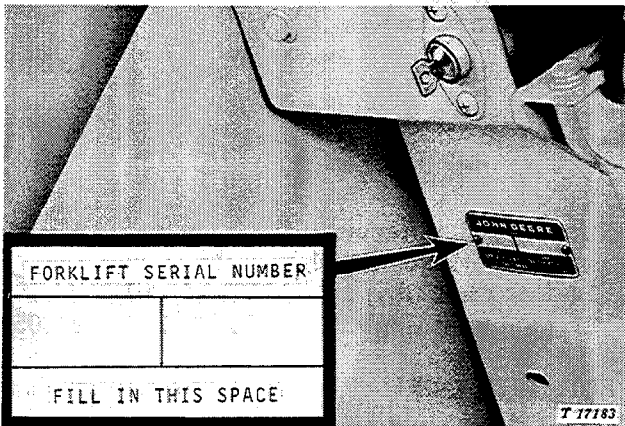
Side-shift of Mast	3 in. to right or left of center	Turning Radius Brakes applied (approx.)	127 in.
Rate of Lift (2500 engine rpm)	70 fpm	Turning Clearance Circle (Without Forks) (depending on brake application and direction of turn)	21 ft. 3 in. to 23 ft. 6 in.
Rate of Drop			
Maximum load	63-3/4 fpm		
Empty	46-1/2 fpm		

SERIAL NUMBERS

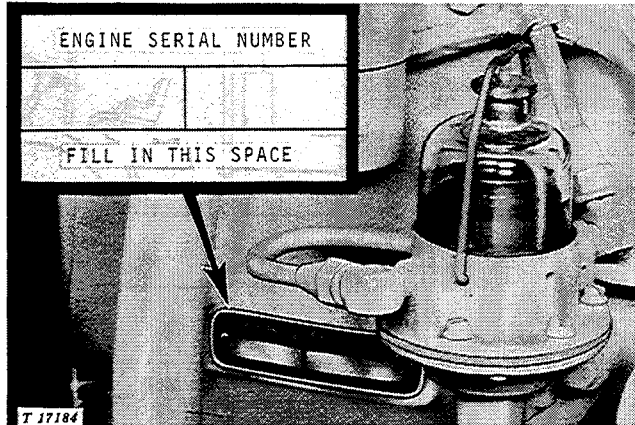
The basic forklift (chassis) serial number plate is located on the left side of the control console mounting plate.

The engine serial number plate is mounted on the left side of the engine cylinder block.

Early model forklifts had a separate serial number plate located at the top and to the rear of the upper mast.



Forklift Serial Number



Engine Serial Number

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

Group 10

PREDELIVERY, DELIVERY, AND AFTER-SALES SERVICES

PREDELIVERY SERVICE

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

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

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

TEMPORARY FORKLIFT STORAGE

Service	Specifications	Reference
Check radiator for coolant loss and antifreeze protection.	Midway between core and filler neck.	Operator's manual
Drain fuel system (gasoline).	----	Operator's manual.
Remove battery electrolyte. (Dry Charge).	Store at room temperature.	----
Remove battery (Wet Charge).	Store at room temperature.	----
Reduce shipping pressure of tires.	----	Operator's manual.
Cover forklift and tires for protection and cleanliness.	----	----

BEFORE DELIVERING FORKLIFT

COOLING SYSTEM

Inspect radiator for coolant loss.	Midway between core and filler neck.	Operator's manual.
Check antifreeze protection	----	----

ELECTRICAL SYSTEM

Remove resistor from output terminal of alternator and connect two output wires (red) to terminal. <u>Do not attempt to polarize alternator.</u>	----	Instruction card attached to the forklift.
Check battery terminals to be sure they are tight.	----	----
Install electrolyte and charge batteries.	----	"Storage Batteries" FOS Manual - "ELECTRICAL SYSTEMS"
Punch warranty tag on top of battery.	----	----

TIRES AND WHEELS

Test pressure of tires.	----	Operator's Manual.
Check front and rear wheel retainers for tightness.	----	Operator's Manual.

BEFORE DELIVERING FORKLIFT - Continued

Service	Specifications	Reference
LUBRICATION		
Check crankcase oil level.	To upper mark on dipstick.	Operator's manual.
Check transmission-hydraulic system oil level.	----	Operator's manual.
Lubricate grease fittings.	----	Operator's manual.
Check distributor lubrication.	----	Operator's manual.
Check forklift hydraulic system oil level.	----	Operator's manual.
ENGINE		
Check air cleaner.	----	Operator's manual
Fill fuel tank and start engine.	----	Operator's manual.
Check operation of lights, gauges, and indicator lights.	----	Operator's manual.
Check speed control and governor linkage for free operation.	----	Section 20, Group 20.
Check engine idle speeds.	----	Section 20, Group 20.
OPERATION		
Check pedal linkage adjustment.	----	Section 50, Group 10.
Shift transmission through all gears.	----	Operator's manual.
Check hydraulic system operation.	----	Section 60, Group 5. Section 70, Group 5.
Check brake operation.	----	Section 60, Group 5.
Check seat operation.	----	Operator's manual.
GENERAL		
Tighten accessible nuts and cap screws.	----	----
Clean forklift and touch up paint.	----	----

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DELIVERY SERVICE

A thorough discussion of the operation and service of a new forklift at the time of delivery helps to assure complete 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 forklift properly. Enough time should be devoted, at the customer's convenience, to introducing the owner to his new machine and explaining to him how to operate and service it.

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

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

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

AFTER-SALES INSPECTION

The purchaser of a new John Deere forklift 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-sales 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 forklift. At the same time, the inspection should reveal whether or not the forklift is being operated, lubricated, and serviced properly.

If the recommended after-sales 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 further opportunity of promoting the possible sale of other new equipment.

AFTER-SALES INSPECTION PROCEDURE

Service	Specifications	Reference
COOLING SYSTEM		
Check radiator coolant level.	Midway between core and filler neck.	----
Clean external surface of radiator.	----	----
Check hoses and connections for leaks.	----	----
FUEL SYSTEM		
Remove water and foreign matter from fuel pump and filter sediment bowls.	----	Operator's manual.
Check fuel line connections.	----	Operator's manual.
ELECTRICAL SYSTEM		
Check specific gravity of battery.	Full charge at 80° F. is 1.260.	Operator's manual.
Check level of battery electrolyte.	To bottom of filler neck in each cell.	Operator's manual.
Check alternator belt tension.	3/4-inch deflection with a 20-pound force.	Operator's manual.
Start engine and check action of electrical components.	----	Operator's manual.
LUBRICATION		
Check crankcase oil level.	To upper mark on dipstick.	Operator's manual.
Check air cleaner dust unloading valve, cup, and element.	----	Operator's manual.
Check transmission-hydraulic system oil level.	----	Operator's manual.
Check distributor lubrication.	----	Operator's manual.
ENGINE		
Check valve tappet adjustment.	----	Operator's manual.
Check engine speeds.	----	Operator's manual.
GENERAL		
Check clutch linkage adjustment.	----	Section 50, Group 10.
Check hydraulic system operation.	----	Section 60, Group 5.
Check steering.	----	Section 70, Group 5.
Check brakes.	----	Section 60, Group 20.
Tighten accessible nuts and cap screws.	----	Section 60, Group 25.
Tighten accessible hydraulic oil lines.	----	----
Visual inspection.	----	----

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	Specifications	Reference
Manifold vacuum test (gasoline only)	15 to 20 inches of mercury at fast idle	See "Testing and Diagnosis of Engines" in FOS Manual - "ENGINES"
Vacuum test (at air cleaner)	14 to 25 inches of water at fast idle	See "Testing and Diagnosis of Engines" in FOS Manual - "ENGINES"
Check radiator for air bubbles and indication of oil	.....	Section 20, Group 25
Cylinder compression	120 psi - gasoline 300 psi - diesel	See "Testing and Diagnosis of Engine" in FOS Manual - "ENGINES"

ENGINE TUNE-UP

AIR INTAKE SYSTEM

Air Cleaner - Clean element and dust unloading valve	.....	Section 30, Group 10
Check crankcase breather pipe for restrictions	.....	.....
Retighten cylinder head cap screws	110 ft-lbs	Section 20, Group 10
Check engine valve clearances	Gasoline - 0.022 in. -Exhaust - 0.014 in. -Intake Diesel - 0.018 in. -Exhaust - 0.014 in. -Intake	Section 20, Group 10

IGNITION SYSTEM

Clean, test, or replace spark plugs.	0.025 inch	Section 40, Group 15.
Check distributor cap, rotor, and wiring	.....	Section 40, Group 15
Clean, adjust, or replace points	0.020 in. gap - 66° to 72° dwell.	Section 40, Group 15

ENGINE TUNE-UP - Continued

Operation	Specifications	Reference
IGNITION SYSTEM (Cont.)		
Lubricate distributor cam	Cam lubricant	.....
Time distributor	.....	Section 40, Group 15
BATTERY		
Check electrolyte level	.....	.....
Clean cables, terminals, and box	.....	.....
Tighten cable clamp	.....	.....
ALTERNATOR		
Check belt tension	20 lb. at 3/4 in.	.....
GASOLINE FUEL SYSTEM		
Check fuel tank and lines for leaks or restrictions	.....	Operator's manual.
Clean fuel transfer pump bowl	.....	.....
Check carburetor choke disk operation	.....	.....
Clean carburetor fuel inlet screen	.....	.....
Adjust speed control linkage	Slow idle 600 rpm Hand throttle 2680 rpm Foot throttle 2800 rpm	Section 20, Group 20
DIESEL FUEL SYSTEM		
Check fuel tank and lines for leaks or restrictions	.....	Operator's manual.
Clean fuel transfer pump bowl	.....	.....
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	Slow idle 800 rpm Hand throttle 2650 rpm Foot throttle 2800 rpm	Section 20, Group 20