

John Deere 1020, 1120 and 1630 Tractors



JOHN DEERE

TECHNICAL MANUAL

John Deere 1020, 1120 and 1630
Tractors

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1020, 1120 and 1630 Tractors

(1020 and 1120 Tractors from Serial No. 115000L)

Technical Manual
TM-4286 (Aug-73)

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All information, illustrations, and specifications contained in this technical manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.

INTRODUCTION



Use FOS Manuals for Reference

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.



Use Technical Manuals for Actual Service

Some features of this technical manual:

- Table of contents at front of whole Manual.
- Contents at front of each Section
- Exploded views showing parts relationship
- Photos showing service techniques
- Specifications at end of each Group
- Special tools at end of each Group

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 indicates 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.

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Group 5 Specifications

SERIAL NUMBERS

The engine serial number is stamped into the name plate located on the lower front right-hand side of the cylinder block.

NOTE: If ordering engine parts, indicate all digits of the serial number on the name plate.

The name plate showing the tractor serial number is located on the right-hand side of the front support.

NOTE: If ordering tractor parts, (excluding engine parts), indicate all digits of the serial number on the name plate.

MODEL NUMBERS

The injection pump, injection nozzles, alternator, starting motor and hydraulic pump have model numbers to facilitate identification of different makes of a given unit.

SPECIFICATIONS

ENGINE

- Number of cylinders 3
- Cylinder liner bore
 - 1020 and 1120 102 mm (4.02 in.)
 - 1630 106.5 mm (4.19 in.)
- Stroke 110 mm (4.33 in.)
- Displacement
 - 1020 and 1120 2688 cm³ (164 cu.in.)
 - 1630 2938 cm³ (179 cu.in.)
- Compression ratio
 - 1020 and 1120 16.7 : 1
 - 1630 16.2 : 1
- Maximum torque
 - 1020 at 1500 rpm 15.5 mkp (112 ft.lbs.)
 - 1120 at 1500 rpm 17.0 mkp (123 ft.lbs.)
 - 1630 at 1400 rpm 19.0 mkp (138 ft.lbs.)
- Firing order 1 - 2 - 3
- Valve clearance (engine hot or cold)
 - Intake valve 0.35 mm (0.014 in.)
 - Exhaust valve 0.45 mm (0.018 in.)

- Fast idle 2650 rpm
- Slow idle 650 rpm
- Working speed range 1500 to 2500 rpm
- Flywheel horsepower at 2500 rpm

1020	1120	1630
46 HP (33.8 kw)*	51 HP (37.5 kw)*	56 HP (41.2 kw)*
48 HP (35.8 kw)**	53 HP (39.6 kw)**	59 HP (44.0 kw)**

- * With accessories (DIN 70020) comprising : water pump, fan, alternator, air cleaner and muffler
- ** Less accessories (SAE J 816 b)

PTO horsepower* at 2500 rpm engine speed and 650/1210 rpm PTO shaft speed

1020	1120	1630
43 PS (31.6 kw)**	48 PS (35.3 kw)**	52 PS (38.2 kw)**
40 HP (29.9 kw)***	45 HP (33.6 kw)***	49 HP (36.6 kw)***

- * With engine run in (more than 100 hours of operation) and having reached operating temperature (engine and transmission); measured by means of a dynamometer. Permissible variation \pm 5%.
- ** DIN 70020
- *** SAE J 816 b

ELECTRICAL SYSTEM

- Batteries 2 x 12 volts, 55 ampere-hours
- Starting motor 12 volts, 4 HP
- Alternator 14 volts, 28 amps.
- Battery terminal grounded negative

ENGINE CLUTCH

- Dual dry disk clutch, foot operated.
- Single dry disk clutch with torsion damper (isolator), foot-operated (on tractors equipped with independent PTO).

TRANSMISSION

Collar shift transmission with helical cut gears.

This transmission is available in two variations:

- 8 speed transmission with parking lock, without independent hand brake;
- 8 speed transmission without parking lock and with independent hand brake.

With this transmission 8 forward and 4 reverse speeds are available.

HIGH-LOW SHIFT UNIT

Hydraulically controlled reduction gear which can be shifted under load, with "wet" multiple disk clutch and "wet" multiple disk brake. Allows reduction of the individual gear speeds by 21%.

DIFFERENTIAL AND FINAL DRIVES

Planetary reduction gear and differential with spiral bevel gears.

DIFFERENTIAL LOCK

Hand or foot operated; spring-loaded out of engagement.

PTO

Continuous Running PTO

The PTO shafts are independent of the transmission if the tractor is equipped with a dual stage engine clutch.

Independent PTO

Independent of transmission, can be engaged and disengaged under load.

The independent PTO shaft is engaged by a hydraulically operated disc clutch. Disengaging the clutch is achieved by operating the hydraulically actuated band type brake.

PTO Shaft Speeds (in rpm)

Engine Speed rpm	540 rpm shaft	1000 rpm shaft
650	169	315
2067	538	1000
2075	540	1004
2500	650	1210
2650	689	1283

HYDRAULIC SYSTEM

Closed center, constant pressure system; also includes rockshaft, power steering and selective control valves.

Stand-by pressure 156 to 160 kp/cm²
 (2220 to 2280 psi)

Pump 4 or 8-piston pump driven by the engine

POWER STEERING

The steering system is a "closed center" type incorporated in the hydraulic system and supplied with oil by the tractor hydraulic pump. It is connected to the front wheels by means of a steering linkage.

MANUAL STEERING

The manual steering is a recirculating ball bearing, worm and nut type. A number of steel balls between ball nut and steering wheel shaft provide for positive engagement of steering wheel and steering linkage.

HYDRAULIC BRAKES

The disk brakes run in an oil bath and are hydraulically controlled.

HANDBRAKE

Band-type locking brake acting on differential.

CAPACITIES

	Ltr.	US.gals.	Imp.gals.
Fuel tank			
1020 and 1120	62.5	16.5	13.75
1630	74	19.5	16.3
Cooling system			
1020 and 1120	10.5	2.75	2.3
1630	10	2.6	2.2
Engine crankcase incl. filter	5.7	1.5	1.25
Transmission-hydraulic system			
Dry system	36.0	9.5	7.9
At service intervals	28.0	7.4	6.2
Belt pulley	1.1	0.3	0.25

TRAVEL SPEEDS

See Operator's Manual.

FRONT AND REAR WHEELS

For tire sizes, treads, inflation pressure and weights see Operator's Manual.

DIMENSIONS AND WEIGHTS

See Operator's Manual.

Group 10

Predelivery, Delivery and After-Sales Inspections

PREDELIVERY SERVICE

Every new JOHN DEERE tractor leaves the factory in such a condition that it can be delivered to the customer after a minimum of service.

To promote complete customer satisfaction, proper predelivery service including mending of possible shipping damage and giving the finishing touches to the tractor, are of prime importance to the dealer.

A tag pointing out the factory-recommended procedure for predelivery service is attached to

every new tractor before it leaves the factory. The reverse side of this tag is filled in by the factory after the tractor has undergone a thorough inspection prior to shipping.

After completing the factory-recommended dealer checks and services listed on the predelivery tag, remove the tag from the tractor and file it with the shop order for the job. The tag will then serve as a basis for certifying that the unit has received the proper predelivery service.

TEMPORARY TRACTOR STORAGE

Service	Specifications	Reference
Check radiator for coolant loss and antifreeze protection (gravity of anti-freeze and rust inhibitor mixture)	Coolant level should be mid-way between radiator core and bottom edge of filler neck	Operator's manual
IMPORTANT: When the tractor is delivered, red cable is not connected to alternator terminal "B+". Further, the alternator three-terminal plug is not connected. Connect cable and plug before operating tractor for the first time. If the tractor is to be operated for a short time without battery (using a slave battery for starting), do not, under any circumstances, interrupt the circuit by switching off the key switch before stopping engine by means of fuel pump shut-off cable. Further, it is recommended to use additional current (lights) while engine is running. Insulating tape on battery cable end leading to starting motor should not be removed. If this advice is disregarded, damage to alternator and regulator may result.	.....	Section 40, group 10
Remove batteries. Drain electrolyte and store batteries	Store at room temperature	.....
Reduce shipping pressure of tires	.....	Operator's manual
Cover tractor and tires for protection and cleanliness	.....	.....

PREDELIVERY INSPECTION

Service	Specifications	Reference
COOLING SYSTEM		
Check radiator for coolant loss	Coolant level should be midway between radiator core and bottom edge of filler neck	Operator's manual
Check gravity of antifreeze and rust inhibitor mixture	.....	Operator's manual
ELECTRICAL SYSTEM		
IMPORTANT: When the tractor is delivered, red cable is not connected to alternator terminal "B+". Further, the alternator three-terminal plug is not connected. Connect cable and plug before operating tractor for the first time.	.....	Section 40, group 10
If the tractor is to be operated for a short time without battery (using a slave battery for starting), do not, under any circumstances, interrupt the circuit by switching off the key switch, before stopping engine by means of fuel pump shut-off cable. Further, it is recommended to use additional current (lights) while engine is running. Insulating tape on battery cable end leading to starting motor should not be removed.		
If this advice is disregarded, damage to alternator and regulator may result.		
If the batteries are to be installed in the tractor, remove insulating tape on terminal of battery cable. This is to be done if the tractor was shipped with dry-charged batteries or without batteries.	.....	.....
Connect batteries in the proper polarity. If they are improperly connected ("+" and "-"), the rectifier diodes will be immediately destroyed.	.....	Section 40, group 10
First connect positive (+) cable and then ground (-) strap of each battery. Only then start tractor engine.	.....	Section 40, group 10

PREDELIVERY INSPECTION — Continued

Service	Specification	Reference
TIRES AND WHEELS		
Check tire inflation pressure	Operator's manual
Retighten wheel bolts	Section 80, group 15 and Operator's manual
LUBRICATION		
Check crankcase oil level	Top mark on dip stick	Operator's manual
Check transmission-hydraulic system oil level	Operator's manual
Lubricate all lubrication points on the tractor	Operator's manual
ENGINE		
Check dry type air cleaner	Operator's manual
Fill fuel tank and start engine 1020 and 1120 1630	Fuel tank capacity: 62.5 liters (16.5 U.S.gals., 13.75 Imp.gals.) 74 liters (19.5 U.S.gals., 16.3 Imp.gals.)	Operator's manual
Check lighting system, indicator lights and instruments for proper operation	Operator's manual
Check if speed control linkage moves easily	Section 20, group 40
Check engine idle speeds	Section 20, group 40
Check injection timing	Section 30, group 15
OPERATION		
Check clutch pedal adjustment	Approx. 25 mm (1 in.) clutch pedal free travel	Section 50, group 5
Check operation of HIGH-LOW shift unit	Section 50, group 10
Shift transmission through all gears	Operator's manual
Check differential lock operation	Operator's manual
Check PTO operation	Operator's manual
Check 3-point hitch operation	Operator's manual
Check hydraulic system operation	Section 70, group 5
Check brake operation	Section 60, group 15

PREDELIVERY INSPECTION – Continued

Service	Specifications	Reference
Check steering operation	Section 60, group 10
Check seat adjustment	Operator's manual
Check operation of remote cylinder (if equipped)	Section 70, group 5
GENERAL		
Tighten accessible nuts and attaching screws	Section 10, group 20
Attach roll guard	Tighten nuts and bolts to 13 mkp (94 ft.lbs.)	Section 80, group 20
Clean tractor and touch up paint

DELIVERY SERVICE

A thorough discussion of the operation and service of the tractor at the time of its delivery helps to assure complete customer satisfaction.

Proper delivery should be an important phase of the dealer's program.

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 tractor properly. Therefore, enough time should be devoted, at the customer's convenience, to introducing him to his new tractor and explaining to him how to operate and service it.

Using the tractor operator's manual as a guide, be sure that the owner understands the following points properly.

1. Adjusting the seat
2. Operation of control levers and instruments
3. Starting and shutting off the engine
4. The importance of the tractor break-in period
5. Use of counterweights and proper tire inflation pressure as well as filling of tires with water and calcium chloride, if required
6. All functions of the hydraulic system
7. Operating the PTO and belt pulley (if equipped)
8. The importance of the safety rules
9. The importance of lubrication and periodic service

AFTER-SALES INSPECTION

In the interest of the purchaser and the dealer an after-sales inspection should be carried out by the dealer after the first 100 hours of using a new John Deere tractor.

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

Through this inspection a needless volume of service work can be eliminated by preventing

minor difficulties from developing into serious problems later on. It also will promote stronger dealer-customer relations and give the customer an opportunity to ask questions that may have arisen during the first few days of use.

Thereby the dealer has the further opportunity of promoting the possible sale of other new equipment.

The following inspection program is recommended:

AFTER-SALES INSPECTION

Service	Specifications	Reference
COOLING SYSTEM		
Check coolant level	Coolant level should be midway between radiator core and bottom edge of filler neck	Operator's manual
Clean exterior of radiator	.....	.....
Check hose connections	.....	.....
FUEL SYSTEM		
Check sediment bowls and elements of fuel filter for water or sediment and clean transfer pump screen	.....	Operator's manual
Check line connections	.....	.....
ELECTRICAL SYSTEM		
Check gravity of battery electrolyte	Gravity should be 1.260 at an electrolyte temperature of 27°C (80°F)	
Check electrolyte level of batteries	To bottom of filler neck in each cell	Operator's manual
Check tension of fan belt	19 mm (3/4 in.) deflection with a 9 kp (20 lbs.) force	Operator's manual and section 20, group 35
Start engine and check operation of lights, indicator lamps and instruments	.....	Operator's manual
LUBRICATION		
Check crankcase oil level	Top mark on dip stick	Operator's manual
Check transmission oil level	.....	Operator's manual
Check oil level of manual steering gear housing	Add oil up to filler hole	Operator's manual
Check oil level of belt pulley housing	Add oil up to filler hole	Operator's manual
Lubricate clutch throw-out bearing	.....	Operator's manual
Lubricate 3-point hitch	.....	Operator's manual

AFTER-SALES INSPECTION

Service	Specifications	Reference
ENGINE		
Check dry-type air cleaner	.....	Operator's manual
Check valve clearance	Intake valve: 0.35 mm (0.014 in.) Exhaust valve: 0.45 mm (0.018 in.)	Section 20, group 10
Check engine speed under load as well as fast and slow idle speed	.....	Section 20, group 40
Check engine performance	.....	Section 10, group 20
GENERAL		
Check clutch pedal adjustment	Approx. 25 mm (1 in.) free travel	Section 50, group 5
Check operation of HIGH-LOW shift unit	.....	Section 50, group 10
Shift transmission through all gears	.....	Operator's manual
Check operation of PTO	.....	Operator's manual
Check differential lock	.....	Operator's manual
Check operation of hydraulic system	.....	Section 70, group 5
Check steering system	.....	Section 60, group 10
Check brakes	.....	Section 60, group 15
Tighten accessible nuts and cap screws	.....	Section 10, group 20
Tighten roll guard attaching screws and nuts	13 mkg (94 ft.lbs.)	Section 80, group 20
Tighten accessible hydraulic lines	.....	.....
Visual inspection of tractor	Damaged paint, loose connections, proper positioning of hoses and lines, leaks, operation of all mechanical parts	.....

Group 15 Lubrication and Periodic Service

For brands of oil and lubricants to be used as well as for lubricating and servicing the model 1020, 1120 and 1630 tractors, see operator's manuals.

Thanks for your reading.

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Our service email:

manuals007@hotmail.com