

# John Deere 1020, 1120 and 1630 Tractors



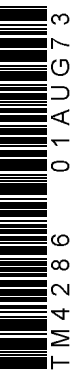
JOHN DEERE

## TECHNICAL MANUAL John Deere 1020, 1120 and 1630 Tractors

TM4286 (01AUG73) English

**TM4286 (01AUG73)**

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



# 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.*

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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 cm <sup>3</sup> (164 cu.in.)
1630	2938 cm <sup>3</sup> (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/cm<sup>2</sup>  
(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.
<b>Fuel tank</b>			
1020 and 1120 . . . . .	62.5	16.5	13.75
1630 . . . . .	74	19.5	16.3
<b>Cooling system</b>			
1020 and 1120 . . . . .	10.5	2.75	2.3
1630 . . . . .	10	2.6	2.2
<b>Engine crankcase incl. filter . . . . .</b>	5.7	1.5	1.25
<b>Transmission-hydraulic system</b>			
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
<p>Check radiator for coolant loss and antifreeze protection (gravity of anti-freeze and rust inhibitor mixture)</p> <p><b>IMPORTANT:</b> 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.</p> <p>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.</p> <p>Remove batteries. Drain electrolyte and store batteries</p> <p>Reduce shipping pressure of tires</p> <p>Cover tractor and tires for protection and cleanliness</p>	<p>Coolant level should be mid-way between radiator core and bottom edge of filler neck</p> <p>.....</p> <p>Store at room temperature</p> <p>.....</p> <p>.....</p>	<p>Operator's manual</p> <p>Section 40, group 10</p> <p>.....</p> <p>Operator's manual</p> <p>.....</p>

**PREDELIVERY INSPECTION**

Service	Specifications	Reference
<b>COOLING SYSTEM</b>		
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
<b>ELECTRICAL SYSTEM</b>		
<p><b>IMPORTANT:</b> 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.</p>	.....	Section 40, group 10
<p>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.</p>		
<p>If this advice is disregarded, damage to alternator and regulator may result.</p>		
<p>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.</p>	.....	.....
<p><b>Connect batteries in the proper polarity. If they are improperly connected ("+" and "-"), the rectifier diodes will be immediately destroyed.</b></p>	.....	Section 40, group 10
<p>First connect positive (+) cable and then ground (-) strap of each battery. Only then start tractor engine.</p>	.....	Section 40, group 10

**PREDELIVERY INSPECTION – Continued**

Service	Specification	Reference
<b>TIRES AND WHEELS</b>		
Check tire inflation pressure	.....	Operator's manual
Retighten wheel bolts	.....	Section 80, group 15 and Operator's manual
<b>LUBRICATION</b>		
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
<b>ENGINE</b>		
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
<b>OPERATION</b>		
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
<b>GENERAL</b>		
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
<b>COOLING SYSTEM</b>		
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	.....	.....
<b>FUEL SYSTEM</b>		
Check sediment bowls and elements of fuel filter for water or sediment and clean transfer pump screen	.....	Operator's manual
Check line connections	.....	.....
<b>ELECTRICAL SYSTEM</b>		
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
<b>LUBRICATION</b>		
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
<b>ENGINE</b>		
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
<b>GENERAL</b>		
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 mkp (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.



# Group 20

# Engine and Tractor Tune-Up

## GENERAL INFORMATION

Before tuning up the engine, determine whether a tune-up will restore operating efficiency. If there is doubt, the following preliminary tests will help to determine if the engine can be tuned up.


## PRELIMINARY ENGINE TESTING

Service	Specifications	Reference
Checking air intake system by means of vacuum gauge	355 to 635 mm (14 to 25 in.) water head; engine running at fast idle speed	 "Fundamentals of Service, Engine" manual under "Diagnosis and Testing"
Check radiator for air bubbles or oil film	.....	.....
Measure blow-by at crankcase vent tube *		
1020 and 1120	1.4 m <sup>3</sup> /h (50 cu.ft./hr.)	
1630	1.7 m <sup>3</sup> /h (60 cu.ft./hr.)	
Check compression which should be at least (using special tool No. 19.58-90.578)	21 kp/cm <sup>2</sup> (300 psi)	 "Fundamentals of Service, Engine" manual under "Diagnosis and Testing"
Measure engine horsepower at powershaft (using a dynamometer)	Record measured performance and compare with performance measured after carrying out "Engine Tune-up"	.....


\* Measure with a standard gas gauge, placing hose over end of crankcase vent tube. The engine must be tested at 2500 rpm and full load, normal running temperature and should be run in (at least 100 hours). Measure over a period of 5 minutes and multiply measured value by 12 (for hourly rate). Compare with values quoted above.

*There is no undue wear on piston rings and cylinder liners if the measured value is lower than that quoted above. Should a further test be desired, carry out a compression test. If the "blow-by" reading is more than that quoted above, the decline in performance is due to excessive wear and the engine should be overhauled.*

**ENGINE TUNE-UP**

Service	Specifications	Reference
<b>AIR INTAKE SYSTEM</b>		
Service air cleaner and check system for leaks	.....	 Operator's manual and "Fundamentals of Service, Engine" manual
Check crankcase vent tube for foreign particles (restriction)	.....	.....
Tighten cylinder head cap screws	15 mkp (110 ft.lbs.)	Section 20, group 10
Check and adjust valve clearance	Intake valve: 0.35 mm (0.014 in.) Exhaust valve: 0.45 mm (0.018 in.)	Section 20, group 10
<b>BATTERIES</b>		
Thoroughly clean wires, connections and batteries	.....	.....
Tighten cable clamp screws	.....	.....
Liberally coat battery terminals and cable connectors with petroleum jelly	.....	.....
Check electrolyte level of battery	.....	Operator's manual
Check specific gravity of electrolyte	.....	Operator's manual
<b>ALTERNATOR</b>		
Check fan belt tension	19 mm (3/4 in.) deflection with 9 kp (20 lbs.) force	Section 20, group 35
<b>FUEL SYSTEM</b>		
Check fuel tank and lines for leaks or restriction	.....	.....
Clean screen of fuel transfer pump	.....	Operator's manual
Check fuel filter element and replace, if necessary	.....	Section 30, group 10
Check injection timing and adjust, if necessary	.....	Section 30, group 15
Bleed fuel system	.....	Section 30, group 15
Check engine speeds and adjust speed control linkage, if necessary	.....	Section 20, group 40

**ENGINE TUNE-UP - Continued**

Service	Specifications	Reference
<b>ENGINE LUBRICATION SYSTEM</b>		
Check engine oil pressure	3.5 to 4.2 kp/cm <sup>2</sup> (50 to 60 psi) at 2500 rpm	Section 20, group 30
<b>COOLING SYSTEM</b>		
Clean and flush cooling system	.....	 "Fundamentals of Service, Engine" manual
Check radiator hoses for damage and leaks	.....	.....
Clear radiator core of restrictions	.....	.....

**CHECKING ENGINE PERFORMANCE**



After the engine has been tuned up as explained previously, determine powershaft horsepower by means of a dynamometer, see "Fundamentals of Service, Engine" manual.

Compare measured performance in IIP with output measured before carrying out "Engine tune-up".

**TRACTOR TUNE-UP**

After carrying out engine tune-up, make the following adjustments on the tractor:

Service	Specifications	Reference
<b>ENGINE CLUTCH</b>		
Adjust clutch pedal free travel	Approx. 25 mm (1 in.)	Section 50, group 5
<b>FRONT WHEELS</b>		
Clean and lubricate front wheel bearings	.....	Section 80, group 15
Adjust front wheel bearings	.....	Section 80, group 15
Check toe-in	3 to 6.5 mm (0.125 to 0.25 in.)	Section 60, group 5
Check torque of front wheel bolts	12 mkp (87 ft.lbs.)	.....
<b>HYDRAULIC BRAKES</b>		
Bleed brake system	.....	Section 60, group 15

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