John Deere 1020, 1120 and 1630 Tractors

JOHN DEERE

TECHNICAL MANUAL

John Deere 1020, 1120 and 1630 Tractors

TM4286 (01AUG73) English

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

J020, 1120 ond 1630 Troclors

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

Technical Manual
TM-4286 (Aug-73)

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Group J
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SER IAL **NUMBERS**

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

NOTE: I f ord ering engine parts, indicate a II digits of th e seria l numb er or *the name p late.*

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

NOTE.' I f ordering trac tor parts, excfttding engine parts), ind icate a II d igits o f the seria l number or *th e name plate.*

MODE L **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.

SPECI F ICATIONS

ENGINE

Number of cylinders . 3

Cylinder liner bore
1020 and 1120 - - - - - - 112 mm (4.02 in.)
16 30 - - - - - - - - - - - - 106.5 mm (4.19 in.)

Stroke . 110 mm (4.33 in.)

Displacement
1020 and 1120 2688 cm (164 cu.in.)
1630 2938 cm (179 cu.in.)

Compression ratio
1020 and 1120 - - - - - - - - - - - - 16.7 ' l
1630 - - - - - - - - - - - - - - - - - - 112 : l -

Maximum torque
1020 at 1500 rpm . 15.5 mkp (l 12 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 6 rpm0

Working speed range .. . 1500 to 2500 rpm

Flywheel horsepower at 2500 rpm

1020	1120	1630
46 HP (33.8 kw) * 48 HP (35.8 kw) **	51 HP (37. 5 kw)* 63 HP (39.6 kw)**	5 6 HP (41.2 kw)* 69 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	i 1120	1630
43 PS (31.6 kw)** 40 HP (29.9 kw)***	48 PS (35.3 kw)* * 45 HP (3 3.6 kw) ***	62 PS (38.2 kw)** 49 HP (36.6 kw) ***

* With engine run in (mo re than 100 hours of operation) and having reached operating temperature (engine and transmission) ; measured by means of a dy namometer. Permissible variation + 59o.
** DIN 70020
*** SAE J 816 b

ELECTR ICAL SY STEM

Batteries - - - - - - - - - - - - - - - 2 x 12 volts, 55 ampere-hours

Starting motor - - - - - - - - - - 1volts, 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).

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TRAN SM I SSIO N

Collar shift transmission with helical cut gears.

'I'his transmission is available in two variations:

8 speed transmission with parking track, iVithout independent hand brake;
8 speed transmission with out park ink lock anal with independent hand hi-ake.

ñ'ith this transmission 8 forward and 4 reverse speerls are availahle.

I II GI I-LOW SI I I FT UNIT

I lydraulically controlled reduction gear which can he shifted under load, with "wet" multiple disk clutch and "wet" multiple disk h rak e. Allows reduction of the inrlividual gear speeds by 217•.

DIP FERENTIAL AND FINAL DRIV EN

Planetary reduction gear and differential with spiral bevel gears.

DIFF ARE N'1'IAL LOCK

Hand or foot operated; spring-loade‹l out of engagement.

PTO

font inuous Runnin PTO

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

Ind epe.nd cut PTO

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

)'he independent P)'O shaft is engagerl by a hydraulically operated disc clutch. Disengaging the clutch is achieved by operating the hydraulically actuated band type brake.

PTO Sha(t Speed s (in rpm)

Engine Speed rpm	540 rpm shaft	1000 rpm shaft
650	169	815
2067	588	1000
2075	540	1004
2500	650	1210
2650	689	12H3

HYDRAtJ LIC SYSTEM

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

Spend- by *pr essu* re	15G to 160 kp /c m2 (2220 to 2280 psi)
Pu mp	4 or S-pist‹an pump driven by the engine

POWER STE ERIN U

The steering system is a "closed center" type incorporated in the hydraulic system and supplied with oil by the tractor hydraulic pump. 1t is connected to the front wheels by means of a steering linkage.

MANUAL S"I'EE1tI NG

The manual steering is a recirculating ball bearing, worm and nut type. A num her 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 hy‹l raulically controlled.

HANDBRAKE

Band-type locking brake acting' on differential.

PAPA(/ITIFS	Ltr.	U S.gals.	Imp.gals.
Fuel tank			
1020 and 1120	62.5	16.5	13.'75
1630	74	19. 5	16. 3
Cooling system			
1020and 1120	10.5	2.75	2.3
1630	0	2.6	2.2
Engine crankcase incl, filter	5.7	1.5	1.25
Tra nsm iss io n -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

3'RAV EL SPEEDS

See Operator's Manual.

FRONT AND REAR WHEELS

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

DIMENSl ONS AND WEIGHTS

See Operator's Manual.

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Predelivery, Delivery and After-Sole s Inspections

PREDELIV ERY SERVICE

F'very new JOHN DF FiRE tractor leaves the fartory in such a condition that it tan be dt livered to the customer after a minimum of scrvice.

'1'o promote complete customer satisfaction, proper predelivery sefvice including mending o(possible shipping damage and giving the finishing touch es to the tractor, arc of prime importance to the healer.

A tab pointing out the factory-recommended procedure for predelivery service is attached to every nez tractor before it leaves the tae tory. The reverse side of this tag is filled in by the factory afte)' 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 1.he job. The tag will then serve as ‹i basis for certify ing that the unit has received the proper predelivery service.

TEMPORARY TRACTOR STORAGE

Service	Specifications	Reierencr
C"her'k radiatt›r for coolant loss and antifrecze prom ction (gravity of anti-freeze and rust inhibitor mixture)	Coolant level sht›uld he mid - way hetween radiator core and bott‹um edge of filler neck	Operator's manu‹il
IMPORTANT: When the tractor is delivered, red cable is not connected to alternator terminal "B+". F urther, the alternator three-terminal plug is nat connected. Connect cab le and plu g before oper ati ng tractor for the first time.		Section 40, group 10
If the tractor is to be operated for a short time w ithout battery (using a slave battery for starting), do nat, under any circum-stances, 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 addi-tional current (lights) while engine is run-ning. 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.		
Remove batteries. Drain electrolyte and store batteries	Store at room temperature	
Ileducc shipping pressure of tires		Operator's manual
Cover tractor and tires for prott ction and cleanliness		

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PR EDE L IV E RY INSPECT ION

Service	Specifications	Relcrnc‹
COOLING BY S1 EM		
Check raiiiator *for ‹ ooh* arit loss	Co olant 1evel sh ould be rn idway between radiator core and bottom edge of filler neck	Operator’s manua1
Check gravity of antitreeze and rust inhibitor mixture		Operator’s munilal
ELECTRICAL SYSTEM		
IMPO RTANT: When t he tractor is delivered, red cable is not connected to alternator terminal ”B+”. F urther, the alternator three-ter mi nal pl ug is not con nected. Connect cab ie and plug before operating tractor for the first time.		Secion40,goup lU
If the tramor is to be operated for a short time without battery (using a slave battery for starting), do not, under any circum-stances, interrupt the circu it by switching off the key switch, before stopping engine by means of fuel pump shut-off cab ie. Further, it is recommended to use add i-tional current (lights) while engine is run-ning. Insulating tape on battery cab ie end leading to starting motor should not be removed.		
If t his advice is disregarded, damage to alternator and regulator may result.		
It the batteries are to be installed in the rrat'tor, remove insulating tape on ter-minal of battery cable. ’th is is to be done if the tractor was shipped with dry- c har-ged batteries or without batteries.		
Connect batteries in the proper polarity. If they are i mproper Iy connected ("+” and ”-”), the rectif ier diodes will be immediately destroyed.		Section t0, group 10
First connect positive (+) r!ab1e and then ground (-) strap of each battery. Only then start tractor engine.		Section 40, grr›ijp 10

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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 l5
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

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PREDEL I VERY **INSPECTION** — **Continued**

S e r v i c e	Specifications	R e f e r e n c e
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		

DE LIVERY SERV ICE

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:

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AFTER-SALES INSPECT **ION**

Service	SPe‹:ilications	Reference
C*OOL I NC. SYS'£EM		
Check coolant level	Coolant level should be midway between radiator core and bottom edge of Miller neck	Operator's manual
filean exterior of radiator		
Check h ose connections		
FUEL SYSTEM		
Check sediment howls and elements of fuel filter for water or sediment and clean transfer pump screen		Operator's manual
Check line connections		
ELfifi"£RICAL SY S) EM		
Check gravity of bat Very electrolyte	C ravity should be **1.250** at an electroly te temperature of 27* C (80° F)	
Check electrolyte level of batteries	To bottom of 1'illt•r neck in each cell	OJaerator's manual
Check tension of fan belt	19 mm (3/4 in.) det'1ection with a 9 kp (20 lbs.) force	Operator's manual and section 20, group 35
Start engine and check operation ot' lights, indicator lamps and instruments		Operator's manual
LUBR ICATIO N		
Check c rankcase 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 h ole	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 mkp (94 ft.lbs.)	Section 80, group 20
Tighten accessible hydraulic llnes		
Visual inspection of tractor	Damaged paint, loose connections, proper positioning of hoses and lines, leaks, operation of all mechanical parts	

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Group J5

Lubricotion 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.

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Group 20
Engine ond Troctor 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 ENGI NE TESTI NG

Service	Specifications	Reference
Checking air intake system by means of vacuum gauge	35 to 63 mm (14 to 26 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 j3q3/h (50 cu.ft. Ohr.)	
1630	1. 7 m /h (60 cu.ft. Ohr.)	
Check compression which should be at least (using special tool No. 19. 58-90. 578)	21 kp /cm2 (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”	

* *Measu re in ith a sta ndard gas gauge, placing hose over end o f cranh case vent tu be. The engine must be tested at 2500 rp m a nd full load, normal ru nning tern peratu re and should be ru n in (at least 1 00 hon rs). Measu* re *ouer a period o(5* mins tes *ond* multiply *measured ualue b y 12 ((or* hourly *rate). Corn pare u› ith values quoted above.*

There is no undue wear on piston rings *and c y find er liners i/ the measu red ualue is loin er than that qno ted abone. Should a further test be dr.sired, carry out a compression test. I f the ”blo w- by” reading is more than that quoted a bone, th e decline in perfo rmanc e is due to ex cessiue w ear añd the engine should be ouerhau led.*

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ENG INE TUNE-UP

Service	Specifications	Reference
AIR INTAKE SYSTEM		
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 m kp (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
BATTERIES		
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
ALTERNATOR		
Check fan belt tension	19 mm (3/4 in.) deflection with 9 kp (20 lbs.) force	Section 20, group 35
FUEL SYSTEM		
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

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ENG I NE TU N E-UP - Continued

Service	Specifications	Reference
11NCl NE LGBRICAT ION SYST Fi5J		
Chem k engine oil pressure	3.5to4 kpcm2 (51 Lo60 ps) atS5N0rpm	Section 20, group 00
COO LI NCi SY S'FEM		
Clean and flush cOo ling sy4tem	. . . . .	FOS "flu ndamentais of Service, Engine" manual
Check radiator hoses fr›r clamage iincl left ks		
Clear racliator core of restrictions		

CHECKING ENG IN E PE R FO RMANCE

FOS After the c mine has been tuned up as explained previously, determine powei'shaft horscpoz er by means of a d yiaamometer, See "Fundamentals of Service, Engine" in‹anual.

Compare niea.sured per forinanc e in I I P i i th ou tJ ut measured before carrying out "Fi nginc I.ri m'-u F"

TRACTOR TUNE-UP

After carrying out engine tunc-iip. make the fo he wing a‹ijHstments on the tra‹:tor:

Service	Specifications	Reference
ENGINE CLUTCH		
Adjust cout c h pedal free travel	Apprcix. 25 mm (1 in.)	Sectit›n SO, group 5
FRONT' WHO k LS		
Clean and lubricate front wheel bC'aTings		Section 80, group l5
Adjust fro nt wheel bearings		Section 80, group 15
Check toe-in	3 to 6.5 mm (0.123 to 0.25 in.)	Section 60, group 5
Check torque of front wheel bolts	12 mkp (87 ft.lbs.)	
I IYD R A U LI C BRA K ES		
Bleed lirake system		Section 60, group lS

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TRACTOR TUNE-UP - Continued

Service	Specifications	Reference
HYDRAULIC SYSTEM		
Check stand-by pressure of hydraulic pump	156 to 160 kp/cm2 (2220 to 2280 psi)	Section 70, group 5
Check rockshaft lift cycle time at 2500 rpm engine speed	1. 8 sec. to 2.3 sec.	Section 70, group 5
Check time required for extending or retracting remote cylinder at 2100 rpm engine speed	2 sec.	Section 70, group 5
Check operating pressure of HIGH-LOW shift unit	8.8 to 9.5 kp/cm2 (125 to 135 psi)	Section 60, group 10
Check operating pressure of PTO clutch and PTO brake	8. 8 to 9.5 kp/cm2 **(125 to 135 psi)**	Section 50, group 30
TIRES		
Check tire inflation pressure		Operator's manual
TORQUES		
Check all accessible cap screws and nuts of tractor for proper torque		Torque chart

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