

JOHN DEERE 7020 TRACTOR

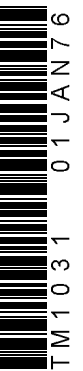


TECHNICAL MANUAL JOHN DEERE 7020 TRACTOR

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7020 TRACTOR

TECHNICAL MANUAL

TM-1031 (Jan-76)

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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.

Section 10 GENERAL

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Group 5 GENERAL TRACTOR SPECIFICATIONS

HORSEPOWER:

Maximum observed at PTO (2200
Engine rpm)* 146.17

ENGINE:

Type 6-cylinder, in-line, valve-in-head,
diesel, turbocharged, and intercooled

Engine Speeds:

Slow idle 800 rpm
Working range 1500 to 2200 rpm

Compression ratio

Tractors (-2699) 16.8:1
Tractors (2700-) 15.5:1

* In official test.

ENGINE (Continued)

Bore and stroke 4-1/4 in. x 4-3/4 in.
Displacement 404 cu. in.
Firing order 1-5-3-6-2-4
Valve clearance In.-0.018 in.
Ex.-0.028 in.

Injection pump timing TDC
Lubrication System Force-feed pres-
surized with full-flow oil filter

Fuel System:

Type Direct injection
Air cleaner Dry type
with safety element

Cooling System:

Type Pressurized with centrifugal pump
Temperature control . . Heavy-duty thermostats

Capacities:

Fuel tank	78 U.S. gals. each tank
Crankcase (with filter change)	17 U.S. qts.
Transmission-hydraulic system	22 U.S. gals.
Cooling system	32 U.S. qts.
Front differential	20 U.S. qts.

Transmission:

Type	Syncro-Range, constant mesh
Clutch	Heavy-duty, 14-3/4 in. plate, foot operated
Gear selections	8 forward and 2 reverse
Shifting	Two lever shifting, synchronized shifting within stations, except reverse gears; Optional "Hi-Lo" speed selector provides two speeds in each gear for 16 forward and 4 reverse.

Ground Speeds (in miles per hour, 2200 engine rpm) *

Gear	"Lo"	"Hi"
1st	1.99	2.29
2nd	3.18	3.66
3rd	4.20	4.83
4th	5.39	6.21
5th	6.71	7.73
6th	8.80	10.13
7th	11.39	13.11
8th	18.59	21.40
1st reverse	4.09	4.70
2nd	6.54	7.53

Electrical System:

Type	12-volt, negative grounded
Batteries	Two, 6-volt, 75-plate, 172-ampere-hour, 5D type, connected in series
Alternator	12-volt, 55-amp, with integral transistorized regulator; with air conditioner, 12-volt, 72-amp with integral transistorized regulator

Power Take-Off:

Type	Transmission-driven
Speed	1900 engine rpm in "Hi" 1000 rpm 2200 engine rpm in "Lo" or with standard 8-speed transmission 1000 rpm PTO ahead of drawbar hitch point 16 in.

Hydraulic System:

Type	Closed center, constant pressure. Includes power steering, power brakes, implement control, and transmission and differential lubrication
Standby pressure	2250 psi

Brakes Hydraulically power-actuated disk-type operating in oil

Tires* * 18.4-34, 6-ply

Wheel Tread: See operator's manual

Dimensions:

Wheel base	120 in.
Over-all length	217 in.
Over-all height (cab)	118-1/2 in. -With air conditioner 126 in.
Height to steering wheel	92-1/4 in.
Over-all width	95-1/2 in. -long-axle-114 in.
Turning radius	210 in.

Shipping Weight (With equipment for average field service, less fuel and ballast) 14,960 lbs.

* Ground speeds for tractors with standard 8-speed transmission are the same as "Lo."

* * Additional tire sizes available

(Specifications and design subject to change without notice.)

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 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 tractor before it leaves the factory.

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 certify that the tractor has received the proper predelivery service when the portion of the customer's John Deere Delivery Receipt is completed.

NOTE: A Caplug is placed in the muffler outlet to prevent turbocharger rotation during transit. Remove Caplug before unloading tractor. Reinstall Caplug before transporting the tractor to the customer.

TEMPORARY TRACTOR STORAGE

Service	Specifications	Reference
Check radiator for coolant loss and antifreeze protection	2 inches above baffle.	.....
Reduce shipping pressure of tires .....	.....	Operator's manual
Cover tractor and tires for protection and cleanliness .....	.....	.....

BEFORE DELIVERING TRACTOR

ELECTRICAL SYSTEM		
Install electrolyte and charge batteries .....	.....	FOS - 20 Manual
Stamp date code on battery .....	.....	FOS - 20 Manual
Connect alternator. Do not attempt to polarize .....	.....	Section 40, Group 10
Install light switch knob .....	.....	.....
Clean terminals and connect battery cables .....	.....	Section 40, Group 5
Check alternator belt adjustment Tractors Ser. No. (-2699)	1-inch deflection, 25 lb. force (20 lb. force on air conditioned)	Operator's manual
Tractors Ser. No. (2700-)	1-inch deflection, 25 lb. force.	
COOLING SYSTEM		
Inspect radiator for coolant loss	2 inches above baffle.	.....
Check antifreeze protection .....	.....	.....

BEFORE DELIVERING TRACTOR—Continued

Service	Specifications	Reference
TIRES AND WHEELS		
Adjust pressure of tires .....	.....	Operator's manual
Check wheel rim clamp nuts, and wheel retainer cap screws for tightness	Retainer cap screws - 300 ft-lbs Rim clamp nuts - 170 ft-lbs.....	.....
Set front and rear wheel tread to a minimum of 80 in., and add at least 1000 lb. ballast to each wheel for single wheel operation .....	.....	Operator's manual
Hillside operation—use double wheels only .....	.....	Operator's manual
LUBRICATION		
Check crankcase oil level	To upper marks on dipstick.	Operator's manual
Check transmission-hydraulic sys- tem oil level	To top of "SAFE" range on dipstick. Type 303 Special- Purpose Oil.	Operator's manual
Check front differential oil level	To level of filler plug opening. Type 303 Special-Purpose Oil.	Operator's manual
Lubricate grease fittings	SAE multipurpose-type grease.	Operator's manual
ENGINE		
Check air cleaner; inspect air intake system connections; check hose clamps for tightness.....	.....	Operator's manual
Fill fuel tank and start engine	Capacity - 78 U.S. gallons each tank	Operator's manual
Check operation of starter, alterna- tor, flasher, gauges, and indicator lights .....	.....	Operator's manual
Check engine timing	TDC	Section 30, Group 15
Check engine speeds	Slow idle - 800 rpm Fast idle - 2400 rpm	Section 30, Group 20

BEFORE DELIVERING TRACTOR—Continued

Service	Specifications	Reference
OPERATION		
Check transmission clutch free travel	Approximately 1-1/2-inch free travel (at least 3/4 in.)	Operator's manual
Shift transmission through all speeds	Operator's manual
Check throttle linkage for free operation	Section 30, Group 20
Adjust headlights and check operation	Operator's manual
Check power takeoff operation	Operator's manual
Check brakes and accumulator	3 in. maximum travel when brakes have been bled, and accumulator is working properly	Operator's manual
Check air conditioning, heater, and pressurizer operation	Operator's manual
Check hydraulic system operation: Steering, and remote cylinder	Operator's manual
Check seat operation	Operator's manual
GENERAL		
Tighten accessible nuts and cap screws
Clean tractor and touch up paint

DELIVERY SERVICE

A thorough discussion of the operation and service of a new tractor 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.

Many complaints have arisen simply because the owner was not shown how to operate and service his new tractor properly. Spend enough time, at the customer's convenience, to introduce the owner to his new tractor and explain to him how to operate and service it properly.

IMPORTANT: Install Caplug in muffler outlet if transporting tractor to customer. This will prevent damage to the turbocharger caused by air passing through the turbocharger and rotating it without lubrication when the engine is stopped.

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

Using the tractor 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. How to use liquid or cast-iron ballast.
5. All functions of the hydraulic system.
6. Using the power takeoff.
7. The importance of safety.
8. 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-SALE INSPECTION

The purchaser of a new John Deere tractor is entitled to a free inspection 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 John Deere Delivery Receipt.

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.

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.

The following inspection program is recommended within the first 100 hours of tractor operation.

INSPECTION PROCEDURE

Service	Specifications	Reference
COOLING SYSTEM		
Check radiator coolant level	2 inches above baffle. . . . .	. . . . .
Clean external surface of radiator core . . . . .	. . . . .	. . . . .
Check hoses and connections for leaks . . . . .	. . . . .	. . . . .
FUEL SYSTEM		
Remove water and foreign matter from filter sediment bowl . . . . .	. . . . .	Operator's manual
Bleed fuel system . . . . .	. . . . .	Operator's manual
Check air intake system and fuel system for leaks, correcting as required. Tighten all loose connections . . . . .	. . . . .	. . . . .
Check air cleaner element, and unloading valve. Clean element if necessary . . . . .	. . . . .	Operator's manual
ELECTRICAL SYSTEM		
Check specific gravity of battery(s)	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 belt tension . . . . .	. . . . .	. . . . .
Tractors Ser. No. (-2699)	1-inch deflection, 25 lb. force (20 lb. force on air conditioned). . . . .	. . . . .
Tractors Ser. No. (2700-)	1-inch deflection, 25 lb. force	Operator's manual




INSPECTION PROCEDURES—Continued

Service	Specifications	Reference
Start engine and check operation of starter, lights, and indicator lamps .....	.....	Operator's manual
LUBRICATION		
Check crankcase oil level	To upper marks on dipstick	Operator's manual
Check transmission-hydraulic system oil level	In "SAFE" range on dipstick. Use John Deere Type 303 Special-Purpose Oil.	Operator's manual
Check front differential oil level	To level with filler plug opening Use John Deere Type 303 Special-Purpose Oil.	Operator's manual
ENGINE		
Check valve clearance	Intake - 0.018 inch	Operator's manual
	Exhaust - 0.028 inch	
Check engine speed under load, fuel consumption, and horsepower	Specification	Group 15 of this Section.
CHECK TRACTOR AND POWER TRAIN OPERATION		
Check transmission clutch free travel	Approximately 1-1/2 inch free travel	Operator's manual
Shift transmission through all speeds .....	.....	Operator's manual
Check power steering	Smooth, easy operation	Section 70, Group 20
Check brakes and accumulator	3 inches maximum brake travel when brakes have been bled and accumulator is working properly	Operator's manual

Inspection Procedures—Continued

Service	Specification	Reference
Hydraulic System Check rockshaft and remote cylinder operation		Section 70, Group 30
Reverse signal lock out Ser. No. (-2699)		Section 70, Group 30
Negative signal stop Ser. No. (2700-)		Section 70, Group 30
Check entire tractor for leaks. Inspect drive shafts, hydraulic system pipes and hoses, and check tractor cab controls for proper operation		Operator's manual
NUTS AND CAP SCREWS Tighten accessible nuts and cap screws that seem to require adjustment		

TORQUE CHART (ft-lbs)

Bolt Diameter	 Plain Head*	 Three Radial Dashes*	 Six Radial Dashes*
1/4	6	10	14
5/16	13	20	30
3/8	23	35	50
7/16	35	55	80
1/2	55	85	120
9/16	75	130	175
5/8	105	170	240
3/4	185	300	425
7/8	160* *	445	685
1	250* *	670	1030

* The types of bolts and cap screws are identified by head markings as follows:

Plain Head: regular machine bolts and cap screws.

3-Dash Head: tempered steel high-strength bolts and cap screws.

6-Dash Head: tempered steel extra high-strength bolts and cap screws.

* * Machine bolts and cap screws 7/8-inch and larger are sometimes formed hot rather than cold, which accounts for the lower torque.

Group 15 TUNE-UP

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

tion is satisfactory, proceed with the tune-up. Choose from the following procedures only those necessary to restore the unit.

PRELIMINARY ENGINE TESTING

Operation	Specification	Section-Group Reference
Dynamometer Test (at 2200 engine rpm full load)	Compare with previous recorded output; compare with output after tune-up	FOS - 30 Manual, Chapter 12
Compression Test Tractors Ser. No. (-2699)	385-410 at 215-245 rpm	FOS - 30 Manual, Chapter 12
Tractors Ser. No. (2700-)	380 at 130 rpm	FOS - 30 Manual, Chapter 12
Engine Coolant Check Test	No air bubbles or oil film in radiator	FOS - 30 Manual, Chapter 12

ENGINE TUNE-UP

Operation	Specification	Section-Group Reference
Air Intake System Service air cleaner and check system for leaks . . . . .	. . . . .	FOS - 30 Manual, Chapter 12
Check system for restrictions using water manometer . . . . .	. . . . .	FOS - 30 Manual, Chapter 12
Normal reading, inches of water (with clean filter elements) . .	10-11 in. at 2200 rpm (Full load)	
Maximum permitted reading	25 in. at 2200 rpm (Full load)	
Check restriction indicator light operation	24-26 in. at 2200 rpm	
Check manifold pressure	16-20 psi at full load	30-10



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