4430 and 4630 Tractors

JOHN DEERE

TECHNICAL MANUAL

4430 and 4630
Tractors

TM1172 (01Jan77) English

John Deere Tractor Works
TM1172 (01Jan77)

LITHO IN U.S.A.
ENGLISH

4430 AND 4630 TRACTORS TECHNICAL MANUAL TM-1172 (JAN-77)

CONTENTS

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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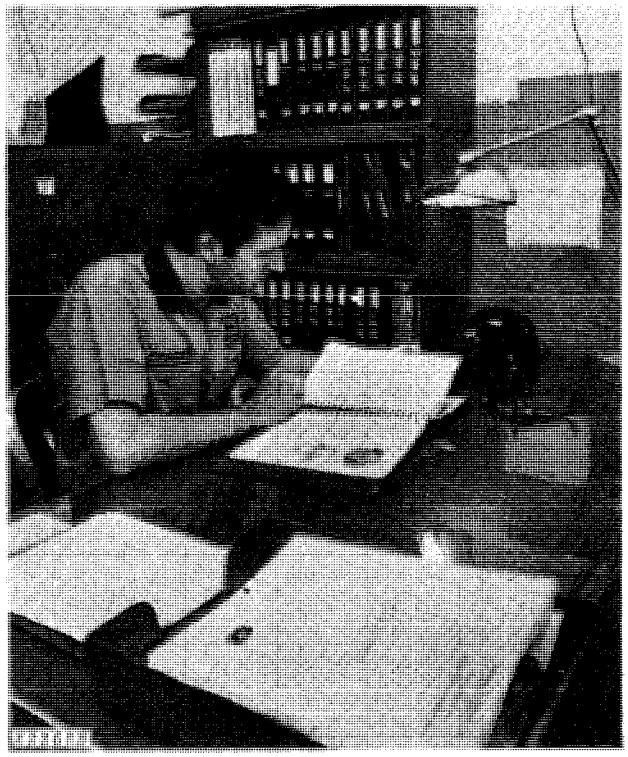
INTRODUCTION



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.

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Section 10
GENERAL

CONTENTS OF THIS SECTION

Group 5
GENERAL TRACTOR SPECIFICATIONS

HORSEPOWER:*
4430 ..... 125.88 hp (93.87 kW)
4630 ..... 150.66 hp (112.43 kW)
ENGINE:
Type ..... 6-cylinder, in-line, valve-in-head, diesel, turbocharged
Bore and stroke ..... 4-1/4 x 4-3/4 in. (108 x 121 mm)
Displacement ..... 404 cu. in. (6620 cm^3)
Compression ratio ..... 15.5 to 1
Firing order 1-5-3-6-2-4
Valve clearance ..... In.-0.018 in. (0.46 mm)
Ex.-0.028 in. (0.71 mm)
Injection pump timing ..... TDC
Engine Speeds:
Working range ..... 1500 to 2200 rpm
Maximum transport speed ..... 2400 rpm
Engine speeds:
Slow idle ..... 800 rpm
Fast idle ..... 2400 rpm

**Official test: hp. measured at the PTO at 2200 engine rpm.*

LUBRICATION SYSTEM: ..... Full pressurized with full-flow micronic oil filter, water cooled oil cooler, and bypass valves for filter and cooler.
FUEL SYSTEM:
Type ..... Diesel, direct injection
Filter ..... Two-stage with replaceable impregnated paper element.
Injection pump type ..... Multiple plunger, in-line
Air cleaner ..... Dry type, with safety element
COOLING SYSTEM:
Type ..... Pressurized with centrifugal pump
Temperature control ..... Heavy-duty thermostats

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CAPACITIES
- Fuel Tank
  - 4430 ..... 46 U.S. gals. (175 l)
  - 4630 ..... 65 U.S. gals. (245 l)
- Cooling system*
  - 4430 ..... 30 U.S. qts. (28 l)
  - 4630 ..... 36 U.S. qts. (34 l)
  - *Add 2 qts. (2 l) if equipped with Sound-Gard Body heater.
- Engine crankcase (includes filter change) ..... 17 U.S. qts. (16 l)
- Transmission-hydraulic system—drain and fill**
  - 4430 Syncro-Range ..... 11 U.S. gals. (42 l)
  - 4430 Quad-Range ..... 11 U.S. gals. (42 l)
  - 4430 Power Shift ..... 10 U.S. gals. (38 l)
  - 4630 Syncro-Range ..... 21 U.S. Gals. (80 l)
  - 4630 Quad-Range ..... 21 U.S. Gals. (80 l)
  - 4630 Power Shift ..... 12 U.S. Gals. (46 l)
  - **Add 3 to 6 gals. if transmission is disassembled and all oil removed. Add 5 gals. (19 l) if equipped with power front-wheel drive.
- Hi-Crop final drive (each side) ... 2 U.S. qts. (2 l)

SYNCRO-RANGE TRANSMISSION:
- Type ..... Syncro-range, constant mesh
- Perma-Clutch ..... Hydraulically operated, wet clutch, multiple disk
- Gear selections ..... 8 forward and 2 reverse
- Shifting ..... 4 stations, synchronized forward speed shifting within stations

QUAD-RANGE TRANSMISSION:
- Type ..... 2-speed, power shifted, planetary and 8-speed, syncro-range transmission with constant mesh gears
- Perma-Clutch ..... Hydraulically operated multiple disk wet clutch
- Gear selections ..... 16 forward and 6 reverse
- Shifting
  - Range selector lever ..... Collar shifted between ranges
  - Speed selector lever
    - Forward-rearward lever movement — Mechanically synchronized forward speed shifting of syncro-range transmission
    - Sideways lever movement ..... Power shifted planetary transmission speeds

POWER SHIFT TRANSMISSION:
- Type ..... Planetary gears, hydraulically actuated wet disk clutches and brakes
- Gear selections ..... 8 forward and 4 reverse
- Shifting ..... Hydraulic, powershifting controlled by speed selector

POWER TAKE-OFF
- Type ..... Independent PTO with rear power take-off controlled by hand-operated clutch lever stub shafts used for dual speed PTO speed conversion
- Speed (2200 engine rpm) ..... Dual speed—540 or 1000 rpm; single speed—1000 rpm
- PTO ahead of drawbar hitch point ..... 540 rpm—14 in. (356 mm) 1000 rpm—16 in. (406 mm)

ELECTRICAL SYSTEM
- Type ..... 12-volt, negative grounded
- Batteries:
  - Diesel ..... Two, 6-volt, 5D group, 800 amps cold cranking at 0°F (−18°C) 376 minutes reserve capacity at 25 amps
  - Alternator ..... 12-volt, 55 amp with Sound-Gard body, 37 amp without Sound-Gard body

POWER FRONT-WHEEL DRIVE
- Type ..... Hydraulic motor driven with planetary gear reduction in wheel hub, uses pressure oil from hydraulic system
- Torque ..... Low (series connected) and high (parallel connected)
- Controls ..... Solenoid-operated control valves, synchronized with transmission controls

HYDRAULIC SYSTEM
- Type ..... Closed center, constant pressure Actuates power steering, power brakes, power front-wheel drive, and implement control
- Standby pressure ..... 2250 psi (155 bar)

BRAKES
- Type ..... Hydraulically actuated power disk-type operating in oil

STEERING
- Type ..... Hydraulically actuated power, manual operation in case of hydraulic failure

TIRES AND TREADS ..... See page 10-6.

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GROUND SPEEDS

Approximate ground speeds are given in the following charts. Speeds are shown in miles per hour, with kilometers per hour in parentheses.

Speeds are for a 4430 Tractor with 20.8-34 tires or a 4630 Tractor with 20.8-38 tires.

SYNCRO-RANGE TRANSMISSION GROUND SPEEDS

Gear	1500 Engine rpm		2200 Engine rpm	
1st	1.3	(2.1)	2.0	(3.2)
2nd	2.1	(3.4)	3.1	(5.0)
3rd	2.8	(4.5)	4.1	(6.6)
4th	3.6	(5.8)	5.3	(8.5)
5th	4.5	(7.2)	6.6	(10.6)
6th	5.9	(9.5)	8.7	(14.0)
7th	7.7	(12.4)	11.2	(18.0)
8th	12.5	(20.1)	18.3	(29.5)
1st rev.	2.7	(4.3)	4.0	(6.4)
2nd rev.	4.4	(7.1)	6.4	(10.3)
With optional Creeper engaged:				
1st	0.3	(0.5)	0.4	(0.6)
2nd	0.5	(0.8)	0.7	(1.1)
3rd	0.6	(1.0)	0.9	(1.4)
4th	0.8	(1.3)	1.1	(1.8)
5th	1.0	(1.6)	1.4	(2.3)
1st reverse	0.6	(1.0)	0.8	(1.3)
2nd reverse	0.9	(1.4)	1.3	(2.1)

POWER SHIFT TRANSMISSION GROUND SPEEDS

Gear	1500 Engine RPM		2200 Engine RPM	
1st	1.2	(1.9)	1.7	(2.7)
2nd	1.7	(2.7)	2.5	(4.0)
3rd	2.6	(4.2)	3.8	(6.1)
4th	3.4	(5.5)	5.0	(8.0)
5th	4.4	(7.1)	6.5	(10.5)
6th	5.8	(9.3)	8.5	(13.7)
7th	7.4	(11.9)	10.9	(17.5)
8th	12.6	(20.3)	18.5	(29.8)
1st rev.	1.4	(2.3)	2.1	(3.4)
2nd rev.	2.0	(3.2)	3.0	(4.8)
3rd rev.	3.2	(5.1)	4.7	(7.6)
4th rev.	4.2	(6.8)	6.1	(9.8)

QUAD-RANGE TRANSMISSION GROUND SPEEDS

Range	Speed	1500 Engine RPM		2200 Engine RPM	
A	1	1.4	(2.3)	2.0	(3.2)
	2	1.7	(2.7)	2.5	(4.0)
	3	2.2	(3.5)	3.3	(5.3)
	4	2.8	(4.5)	4.1	(6.6)
	1R	2.2	(3.5)	3.2	(5.1)
	2R	2.7	(4.3)	4.0	(6.4)
B	1	3.1	(5.0)	4.6	(7.4)
	2	4.0	(6.4)	5.8	(9.3)
	3	5.1	(8.2)	7.5	(12.1)
	4	6.5	(10.5)	9.6	(15.4)
	1R	5.0	(8.0)	7.3	(11.7)
	2R	6.3	(10.1)	9.3	(15.0)
C	1	3.7	(6.0)	5.4	(8.7)
	2	4.7	(7.6)	6.8	(10.9)
	3	6.0	(9.7)	8.8	(14.2)
	4	7.7	(12.4)	11.2	(18.0)
	1R	5.9	(9.5)	8.6	(13.8)
	2R	7.5	(12.1)	10.9	(17.5)
D	1	5.7	(9.2)	8.3	(13.4)
	2	7.2	(11.6)	10.5	(16.9)
	3	9.3	(15.0)	13.6	(21.9)
	4	11.8	(19.0)	17.3	(27.8)

DIMENSIONS (4430):

	Tractor without Roll-Gard*	Tractor with Sound-Gard Body*
Wheel base	106-5/8 in. (2 710 mm)	106-5/8 in. (2 710 mm)
Over-all length	160-3/4 in. (4 080 mm)	160-3/4 in. (4 080 mm)
Height to muffler cover	109-5/16 in. (2 770 mm)	125-1/4 in. (3 180 mm)
Height to steering wheel	85-1/4 in. (2 160 mm)	---
Height to top of Sound-Gard Body	---	114 in. (2 900 mm)
Over-all width (regular axle)	89-5/8 in. (2 280 mm)	89-5/8 in. (2 280 mm)
Width at fender	70-7/8 in. (1 800 mm)	82 in. (2 080 mm)
Width at roof	----	54-3/8 in. (1 380 mm)
Turning radius	147 in. (3.73 m)	147 in. (3.73 m)

**Tractor equipped with 18.4-38 R-1 rear tires and 10.00-16 front tires.*

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DIMENSIONS (4630):

	Tractor without Roll-Gard*	Tractor with Sound-Gard Body*
Wheel base	112-5/8 in. (2.86 m)	112-5/8 in. (2.86 m)
Overall length	171-1/4 in. (4.35 m)	171-1/4 in. (4.35 m)
Height to muffler cover	110-1/8 in. (2.80 m)	127-5/8 in. (3.24 m)
Height to steering wheel	89-3/8 in. (2.27 m)	---
Height to top of Sound-Gard Body	---	118-1/8 in. (3.00 m)
Overall width (regular axle)	95-7/8 in. (2.44 m)	95-7/8 in. (2.44 m)
Width at roof	----	54-3/8 in. (1.38 m)
Width at fenders	70-7/8 in. (1.80 m)	82 in. (2.08 m)
Turning radius	158 in. (4.01 m)	158 in. (4.01 m)

**Tractor equipped with 20.8-38 rear tires and 10.00-16 front tires.*

SHIPPING WEIGHT**

	Tractor without Roll-Gard	Tractor with Sound-Gard Body
4430	9,732 lbs. (4415 kg)	10,762 lbs. (4880 kg)
4630	12,465 lbs. (5654 kg)	13,365 lbs. (6062 kg)

***With equipment for average field service, less fuel and ballast. Add 375 lbs. (170 kg) if equipped with a Power Shift transmission. Add 125 lbs. (57 kg) if equipped with a Quad-Range transmission. Add 450 lbs. (204 kg) if equipped with a 4-post Roll-Gard. Add approximately 1000 lbs. (454 kg) if equipped with a Power Front-Wheel Drive.*

ADDITIONAL SPECIFICATIONS:

For additional specifications, refer to the section of this manual which covers that particular part of the tractor.

(Specifications and design subject to change without notice.)

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Group 10
PREDELIVERY, DELIVERY, AND AFTER-SALE SERVICES

The John Deere Delivery Receipt, when properly filled out and signed by the dealer and customer, verifies that the predelivery and delivery services were satisfactorily performed. When delivering this machine, give the customer his copy of the delivery receipt and the operator's manual. Explain their purpose to him.

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.

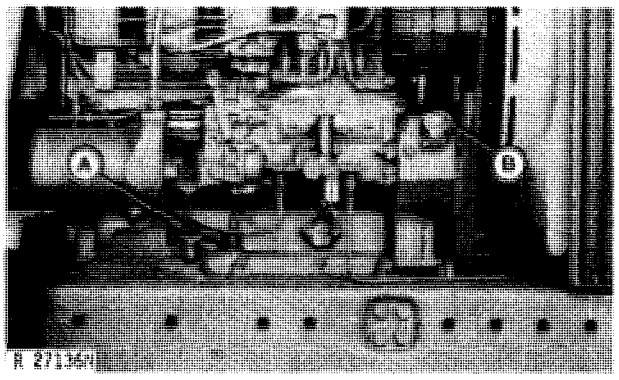
A tag pointing out the factory-recommended procedure for predelivery service is attached to each new tractor before it leaves the factory.

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 that portion of the customer's John Deere Delivery Receipt is completed.

BEFORE UNLOADING TRACTOR

Before starting tractor to unload it, make a few quick checks to be sure it is in good operating condition.

Checking Engine Oil Level



A—Dipstick **B—Filler Cap**

Fig. 1-Engine Oil Dipstick and Filler Cap

Loosen and remove engine oil dipstick (A, Fig. 1). Observe oil level. If necessary, add sufficient oil to bring oil level to full mark on dipstick. Use John Deere Torq-Gard Supreme SAE 10W-20 or its equivalent.

NOTE: Tractor should be on a level surface when oil level is checked. If it is not, check only to make sure the crankcase is not dry. Recheck oil level later, when tractor is on level ground.

Checking Coolant Level

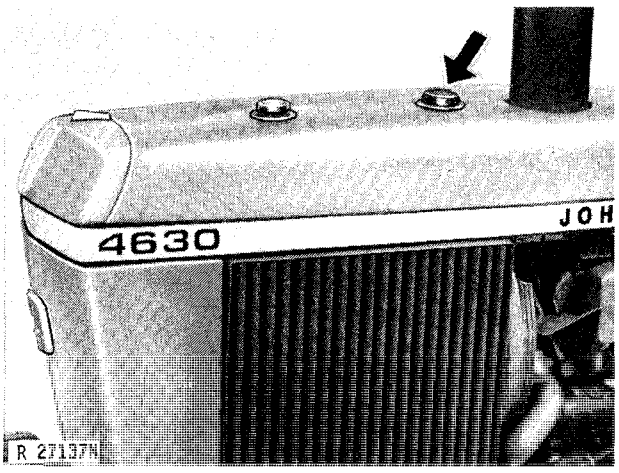


Fig. 2-Radiator Filler Cap

Remove radiator filler cap and check coolant level. Coolant should be at least 1-1/2 inches (38 mm) above baffle in radiator top tank. If necessary, add coolant to obtain this level. Use permanent type, ethylene glycol antifreeze which contains a rust inhibitor but does not contain a stop-leak additive.

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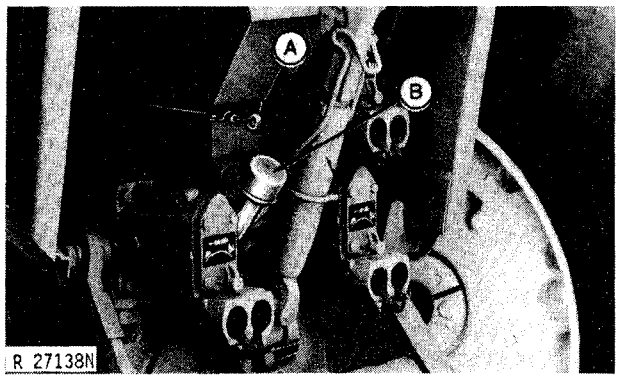
Checking Transmission-Hydraulic System Oil Level



A—Dipstick **B—Filler Cap**

Fig. 3-Transmission-Hydraulic System Dipstick

Remove transmission-hydraulic system dipstick (A, Fig. 3) and observe oil level on dipstick. If necessary, add sufficient oil to bring level to full mark on dipstick. Use John Deere Hy-Gard Transmission and Hydraulic Oil or its equivalent.

NOTE: Tractor should be on a level surface when oil level is checked. If it is not, check only to make sure the system is not dry. Recheck oil level later, when tractor is on level ground.

Reducing Tire Pressure

Tires are overinflated for shipping. To avoid risk of tire damage, reduce inflation pressure before driving tractor.

Front Tires

Tire Size	Ply Rating	Maximum Pressure
7.5L-15	6	44 psi (3.0 bar) (3.0 kg/cm²)
7.50-18	6	44 psi (3.0 bar) (3.0 kg/cm²)
7.50-20	6	44 psi (3.0 bar) (3.0 kg/cm²)
9.50-20	8	44 psi (3.0 bar) (3.0 kg/cm²)
10.00-16	6	32 psi (2.2 bar) (2.2 kg/cm²)
11L-15	6	32 psi (2.2 bar) (2.2 kg/cm²)
11.00-16	8	40 psi (2.8 bar) (2.8 kg/cm²)
12.4-24	6	24 psi (1.7 bar) (1.7 kg/cm²)
14L-16.1	6	28 psi (1.9 bar) (1.9 kg/cm²)
14.9-24	6	20 psi (1.4 bar) (1.4 kg/cm²)

Rear Tires

Tire Size	Ply Rating	Maximum Pressure
12.4-42	6	12 psi (0.8 bar) (0.8 kg/cm²)
15.5-38	6	20 psi (1.4 bar) (1.4 kg/cm²)
15.5-38	8	26 psi (1.8 bar) (1.8 kg/cm²)
16.9-38	8	24 psi (1.7 bar) (1.7 kg/cm²)
18.4-34	6	16 psi (1.1 bar) (1.1 kg/cm²)
18.4-34	8	20 psi (1.4 bar) (1.4 kg/cm²)
18.4-38	6	16 psi (1.1 bar) (1.1 kg/cm²)
18.4-38	8	20 psi (1.4 bar) (1.4 kg/cm²)
18.4-38	10	26 psi (1.8 bar) (1.8 kg/cm²)
20.8-34	6	18 psi (1.2 bar) (1.2 kg/cm²)
20.8-34	8	18 psi (1.2 bar) (1.2 kg/cm²)
20.8-38	8	18 psi (1.2 bar) (1.2 kg/cm²)
20.8-38	10	22 psi (1.5 bar) (1.5 kg/cm²)
23.1-30	8	16 psi (1.1 bar) (1.1 kg/cm²)
23.1-34	8	16 psi (1.1 bar) (1.1 kg/cm²)
24.5-32	10	20 psi (1.4 bar) (1.4 kg/cm²)

Inspecting Tractor

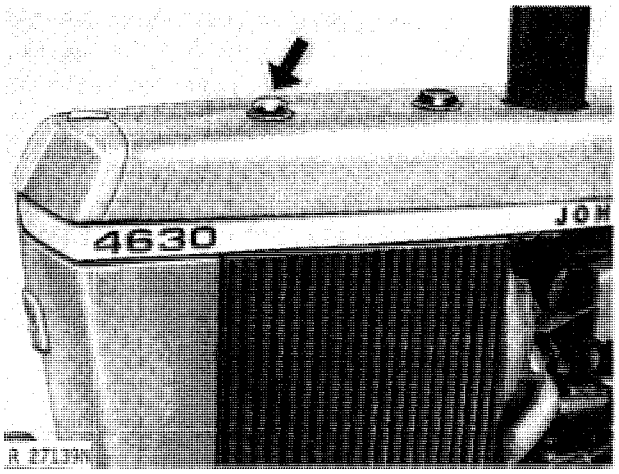


Fig. 4-Fuel Tank Filler Cap

1. Check fuel tank to be sure tractor has enough fuel for unloading and driving around the lot. If not, add a little fuel. Try to never run a diesel engine out of fuel.

2. Inspect tractor for any damage in transit. Notify carrier immediately if you find any.

3. At the same time, check for any oil leaks, missing parts, or obvious defects. Notify your service manager if you find any.

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Unloading Tractor

NOTE: Muffler outlet is plugged before shipment, to prevent wind from turning turbocharger and possibly damaging bearings. Remove plug before starting engine.

1. Remove tie downs and blocking. See that there are no obstructions in the way.

2. Be sure transmission is in park. Push engine stop knob in, and position hand throttle approximately 1/3 of the way forward.

3. Turn key switch all the way clockwise to start engine. Release key as soon as engine starts. Run engine at approximately 1000 rpm.

Do not operate starter more than 30 seconds at a time, to prevent overheating starter. Wait at least two minutes between attempts.

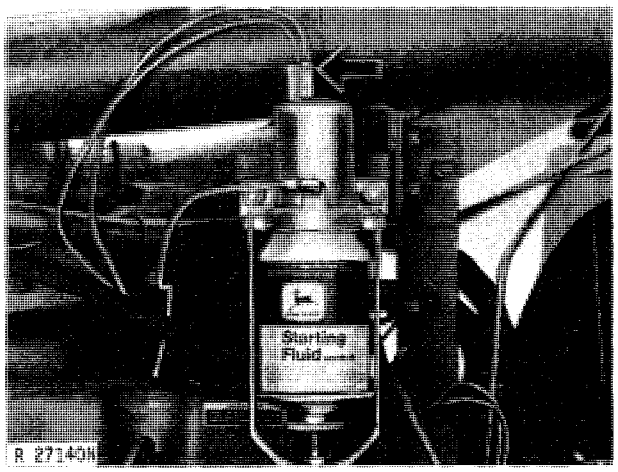

Fig. 5-Electric Starting Aid Connector

NOTE: Electric starting aid is not connected. If necessary, attach connector to solenoid.

4. After engine starts, make sure engine oil pressure gauge rises to the green band. If it does not, stop engine immediately and determine the cause.

5. Check brakes before moving tractor. Pedal travel should not exceed three inches (80 mm).

6. With transmission in lowest gear, carefully drive tractor onto level ground.

TRACTOR STORAGE

To prevent deterioration of tractor during storage, spend a few minutes properly preparing it.

Short-Term (Under 30 Days)

1. Fill fuel tank. This prevents condensation of moisture in tank.

2. Check engine oil level, transmission-hydraulic oil level, and coolant level. Add oil or coolant if necessary. During cold weather, be sure coolant contains sufficient anti-freeze.

3. Check electrolyte level in batteries. If electrolyte does not cover plates, add distilled water. Make sure batteries are fully charged.

4. Store tractor in a dry, protected place. If necessary to store tractor outside, cover it with a protective material. Protect tires from heat, sunlight, and petroleum products.

Long-Term (Over 30 Days)

1. If tractor is to be stored longer than 30 days, use an AR41785 Engine Storage Kit and an extra can of AR41870 Internal Corrosion Inhibitor. Follow instructions in kit, except do not change engine oil, replace filters, or drain and flush cooling system on a new tractor.

2. Loosen fan belts and air conditioning compressor belt.

3. Clean the tractor. Touch up any painted surfaces which are scratched or chipped.

4. Coat exposed metal surfaces, such as axles and piston rods of hydraulic cylinders, with grease or corrosion preventative.

5. Store tractor in a dry, protected place. If necessary to store tractor outside, cover it with a protective material. Protect tires from heat, sunlight, and petroleum products.

6. When removing tractor from storage, remove protective cover and unseal all openings. Check engine oil level, transmission-hydraulic system oil level, coolant level, and tire inflation pressure. Install batteries. Adjust belt tension. Fill fuel tank. Perform 600-hour service. Hold engine stop knob out and crank engine until oil pressure builds up before starting engine. (Do not crank engine longer than 30 seconds. Wait at least two minutes for starter to cool before trying again.)

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PREDELIVERY SERVICE

ELECTRICAL SYSTEM

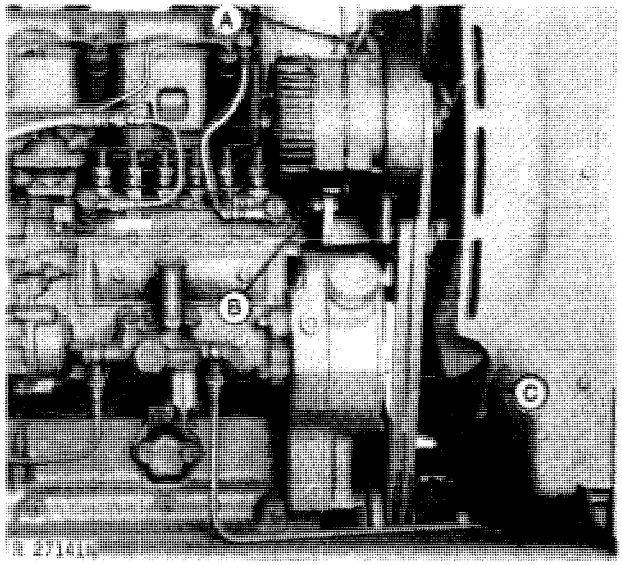
Batteries

1. Check battery terminals and battery cable ends. If they are corroded, clean and coat them with a mixture of petroleum jelly and baking soda.

2. Check electrolyte level in each battery cell. Add distilled water if necessary to bring level above cell plates.

3. If batteries are not fully charged, charge them. Connect charger to positive cable to starter and to tractor frame. If using a fast charging rate, loosen cap on each cell while charging.

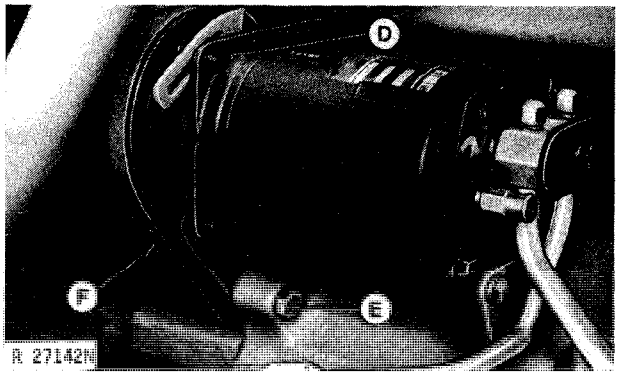
Belt Tension



A—Adjusting Cap Screw **C—1" (25 mm) Flex**
B—Mounting Bolt

Fig. 6-Adjusting Fan Belt Tension

Check tension of fan belts and air conditioning compressor belt. Adjust if necessary. Fan belts should deflect one inch (25 mm) when a 25-pound (110 N) force is applied midway between pulleys.



D—Adjusting Cap Screw **F—1/4" (6 mm) Flex**
E—Mounting Bolt

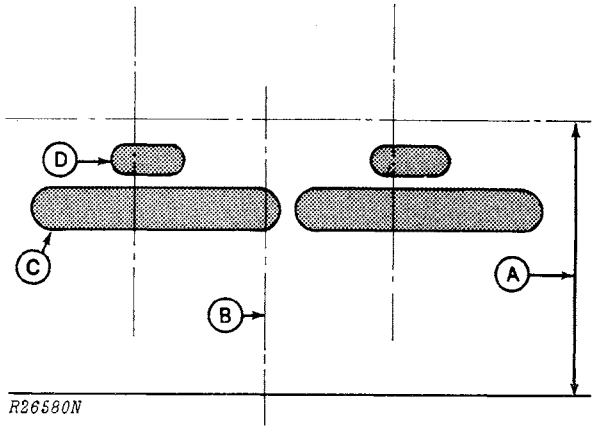
Fig. 7-Adjusting Compressor Belt Tension

Compressor belt should deflect one-fourth inch (6 mm) when a 15-pound (65 N) force is applied midway between pulleys.

Lighting

1. Install light switch knob.

2. See that all lights work properly.



A—Height of Lamp **C—Lower Light Zone**
B—Centerline of Tractor **D—Upper Light Zone**

Fig. 8-Light Pattern at 25 ft. (8 m)

3. Check headlight adjustment. Direct headlight beams slightly downward and to the right. See that no lights will blind the operators of other vehicles.

4. If flashing lights are prohibited by local regulations, see that warning lamps are prepared for non-flashing operation. On tractors with turn signals, use AR67398 Turn Signal Controller. On tractors without turn signals, disconnect flasher in electrical load center and install AR41694 Wiring Lead at connector.

Starting Aid

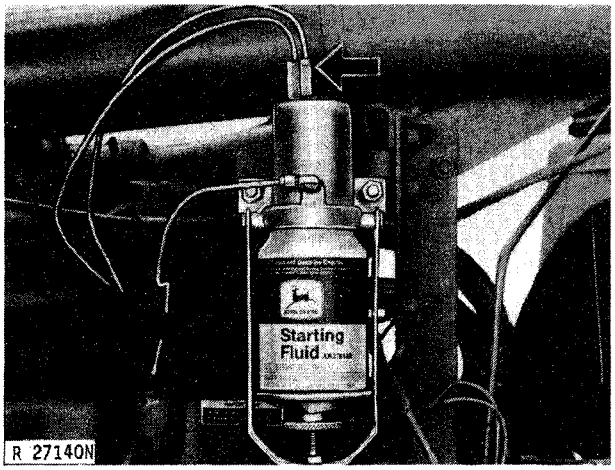


Fig. 9-Electric Starting Aid Connector

Tractors are shipped with electric starting aid disconnected. Before delivering tractor, attach connector to solenoid.

Power Front-Wheel Drive

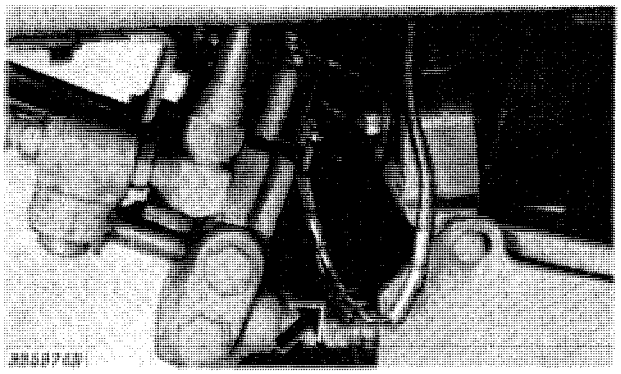


Fig. 10-Power Front-Wheel Drive Connector

Tractors with power front-wheel drive are shipped with solenoids disconnected. Before delivering tractor, connect wiring harness to solenoids.

COOLING SYSTEM

Coolant Level

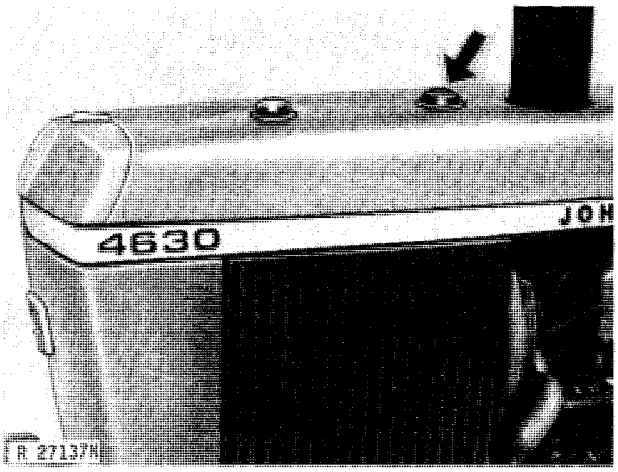


Fig. 11-Radiator Cap

Remove radiator cap and check coolant level. Level should be at least 1-1/2 inches (38 mm) above baffle in radiator top tank. If coolant is low, fill to proper level and try to determine why coolant was lost.

Anti-Freeze Protection

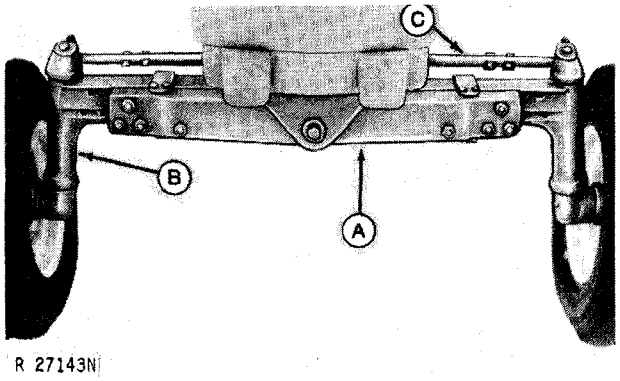
Use a dependable, temperature-correcting hydrometer to check anti-freeze protection of coolant. If more is needed, use permanent type, ethelyne glycol anti-freeze which contains a rust inhibitor but does not contain a stop-leak additive.

Leaks

Check entire cooling system—radiator, heater, engine oil cooler, intercooler, and all connecting pipes and hoses—for any sign of leaks. Tighten clamps on radiator hoses and heater hoses.

TIRES, WHEELS, AND WEIGHTS

Adjusting Front Tread Width



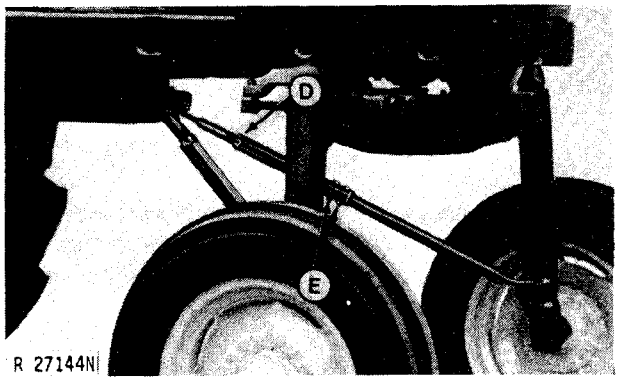
A—Front Axle **C—Tie Rod**
B—Knee

Fig. 12-Front Axle

Adjust front tread width to customer's needs.

1. Jack up front end of tractor.

IMPORTANT: Do not place jack under engine oil pan or, on Power Front-Wheel Drive tractor, under the hose guard at front axle.



D—Slotted Nut **E—Lock Bolts**

Fig. 13-Hi-Crop Radius Rods

2. On Hi-Crop tractors, loosen the slotted nuts on radius rods away from couplings and remove radius rod coupling lock bolts.

3. Remove bolts from front axle and from tie rods. Move the front axle knees out to desired tread width.

4. Reinstall bolts. Tighten axle-to-knee bolts to 370 ft-lbs (500 Nm) (50 kgm) on all 4430 Tractors except Hi-Crop. Tighten to 445 ft-lbs (600 Nm) (60 kgm) on Hi-Crop and 4630 Tractors.

5. On Hi-Crop tractors, adjust radius rod couplings so that lock bolt holes are aligned. Install lock bolts and tighten slotted nuts. Exposed threads on radius rods must never exceed 1-3/8 inches (35 mm).

6. On Power Front-Wheel Drive tractors, make sure small bleed hoses are not pinched or kinked.

7. Check toe-in each time front tread is changed. See the following instructions.

Checking Toe-In

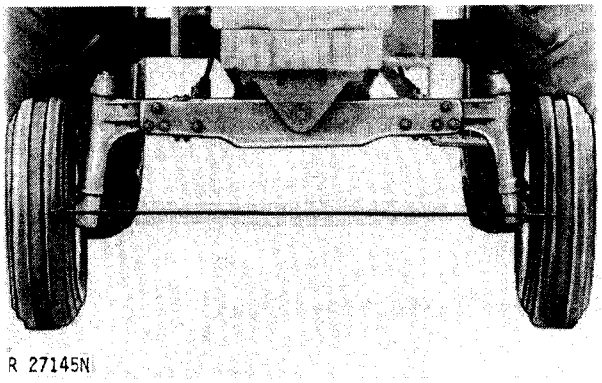


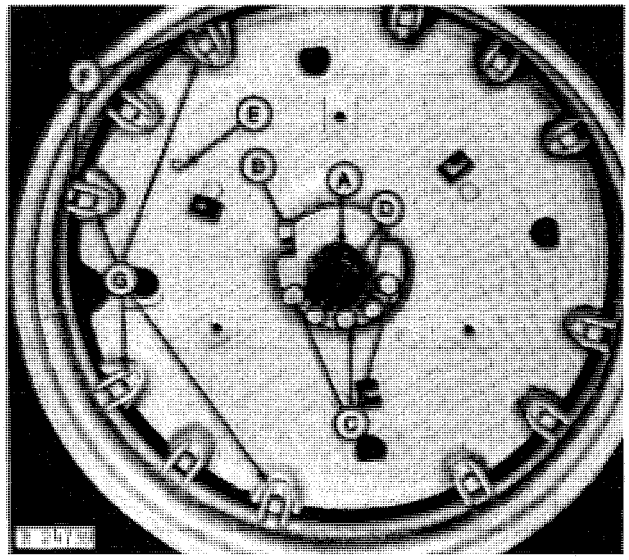
Fig. 14-1/8 to 3/8 in. (3 to 9 mm) Toe-In

To check toe-in, steer front wheels straight ahead and measure distance from tire to tire, first at front of tires and then at rear. Front measurement should be 1/8 to 3/8 inch (3 to 9 mm) less than rear.

If toe-in adjustment is needed, remove bolts from tie rod tubes and loosen clamps on inner ends of tie rods. Turn tie rod tubes in or out until toe-in is correct. Replace bolts and tighten clamps.

Tie rods should be adjusted to equal length, so tractor will turn equally sharp in either direction.

Adjusting Rear Tread Width



A—Rack
B—Pinion
C—Special Bolts
D—Jack Screws
E—Weight Reference Mark
F—Rim Driving Lugs
G—Wheel Driving Lugs

Fig. 15-Rack and Pinion Wheel

Adjust rear tread width to customer's needs.

⚠ CAUTION: Unless tractor is equipped with double rear wheels, tread width must be at least 60 inches (1.52 m) for tractor stability.

1. Jack up tractor. Rotate wheel so that rack is on top of axle.

2. If needed, clean axle with a steel brush.

3. Loosen the three special bolts (C, Fig. 15) approximately 3/8 inch (10 mm) each.

4. Tighten the two jack screws (D) evenly until key sleeve loosens.

NOTE: If sleeve is difficult to break loose, also loosen the three special bolts on inboard side of wheel. If sleeve still will not break loose, strike end of axle several times with a heavy hammer and evenly retighten jack screws. It helps to soak sleeves with penetrating oil.

5. Turn pinion (B) to slide wheel in or out on axle to desired position. For extreme tread positions, it may be necessary to reverse wheel on axle or change rim position on wheel.

IMPORTANT: Tires or weights must have at least one inch (25 mm) clearance with fenders. To prevent damaging pinion when hub is tightened, do not put wheel in its very innermost position—back it out at least 1/8 inch (3 mm).

6. Back jack screws all the way out against stop. Do not force.

7. Lubricate threads and tighten special bolts to 300 ft-lbs (410 Nm) (41 kgm). Retighten bolts several times until all three stay tightened to specified torque. Jack screws must be free to turn after hub is tightened. If necessary, loosen jack screws further and retighten special bolts.

IMPORTANT: After driving tractor approximately 100 yards (100 m), retighten special bolts to proper torque. Instruct customer to retighten them after 3 hours work and again after 10 hours work, and to keep them tight.

Installing Ballast

Rear Wheel Weights

1. See that weight reference mark (E, Fig. 15) on wheel is up, so hand holds on weights will be in horizontal position.

2. Position weights so that reference mark on weight matches reference mark on wheel. Otherwise, certain weights would not leave wrench clearance for adjusting wheel tread.

3. Install mounting bolts and tighten securely.

IMPORTANT: On a tractor with double wheels, ballasting the outer wheel is not recommended.

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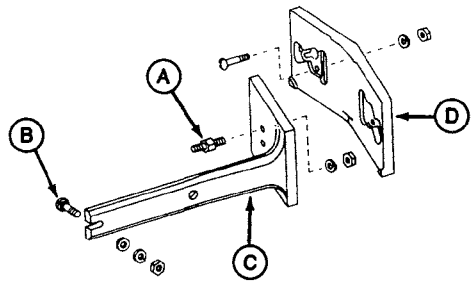
Installing Ballast—Continued

Single Front Weights



R 27146N

A—Special Screw
B—Bolt
C—Side Weight
D—Single Front Weight

Fig. 16-Single Front Weights

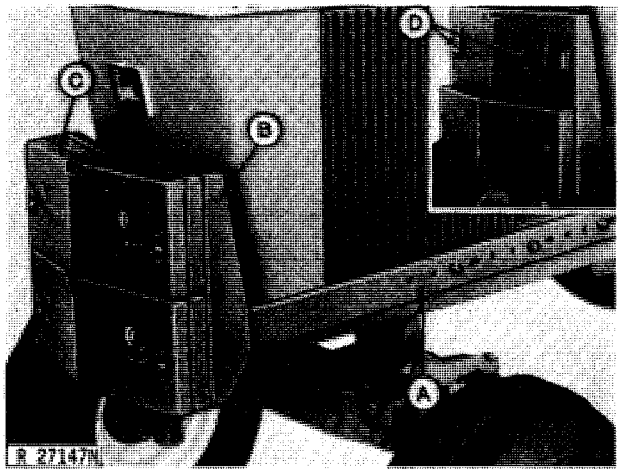
1. Install special screws (A, Fig. 16) in upper holes in mounting pad, short end first. Tighten screws securely.

2. Install bolt (B) loosely in side frame.

3. Slide side weight (C) onto special screw and bolt. Install washers and nuts, and tighten securely.

4. After both side weights are installed, install front weights (D) one at a time. Rotate each weight 180° with respect to preceding weight to line up mounting holes. As many as eight front weights may be used.

Double Front Weights



A—Weight Support
B—Double Front Weight
C—Single Front Weights
D—Spring Nuts

Fig. 17-Double Front Weights

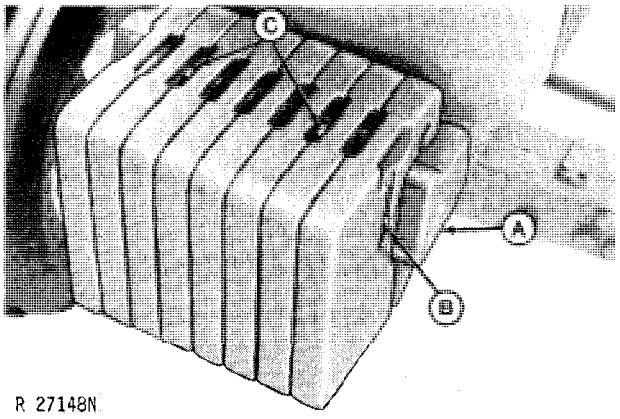
1. Install weight supports (A, Fig. 17) first. Instructions are included with mounting hardware.

2. Attach double weight (B) to weight supports, using four square-head bolts, and tighten securely.

3. Use four longest round-head bolts to attach first two single front weights. Hold bolts in position with spring washers.

4. Install additional single front weights one at a time. Rotate each weight 180° with respect to preceding weight to line up mounting holes. Two rows of up to seven single weights may be used.

Quik-Tatch Front Weights



A—Weight Support
B—Bolt
C—Retainers

Fig. 18-Quik-Tatch Front Weights

Up to 10 Quik-Tatch Front Weights may be installed on weight support. Complete instructions are included with mounting hardware.

If fabricated steel (rather than cast iron) weight support is used, side wings and up to four additional weights may be added.

Liquid Ballast in Tires

Liquid ballast can be used in any tires—front or rear, tubeless or tube type.

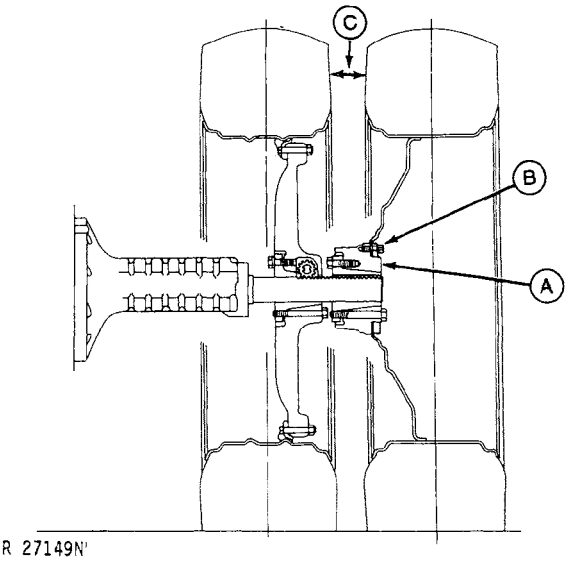
Special equipment is required for installing fluid in tires. Follow instructions provided with equipment, and observe the following restrictions.

1. Use calcium chloride to keep water from freezing. A mixture of 3.5 pounds of calcium chloride per gallon of water (0.42 kg/l) will not freeze solid above −50°F (−45°C).

2. Fill tire only to level of valve stem. This leaves 25% air space to absorb impacts.

3. On a tractor equipped with double wheels, ballasting the outer wheel is not recommended.

Installing Double Wheels



A—Hub
B—Cap Screws
C—Minimum Gap of 4 in. (100 mm)

Fig. 19-Double Wheels

Hubs Installed at Factory

If hubs are already installed on axles, simply attach steel wheels to hubs. Tighten wheel retaining cap screws to 240 ft-lbs (325 Nm) (32 kgm) torque.

IMPORTANT: Be sure gap between tires is at least four inches (100 mm). See page 7 for tread adjustment instructions.

IMPORTANT: After driving tractor approximately 100 yards (100 m) retighten wheel retaining cap screws to 240 ft-lbs (325 Nm) (32 kgm) torque. Instruct customer to retighten them after 3 hours work and again after 10 hours work, and to keep them tight.

Installing Double Wheels—Continued

Hubs Not Installed

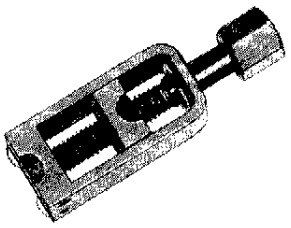


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*Fig. 20-JDG-18 Snap Ring Tool**

*Order from Service Tools, Box 314, Owatonna MN 55060.

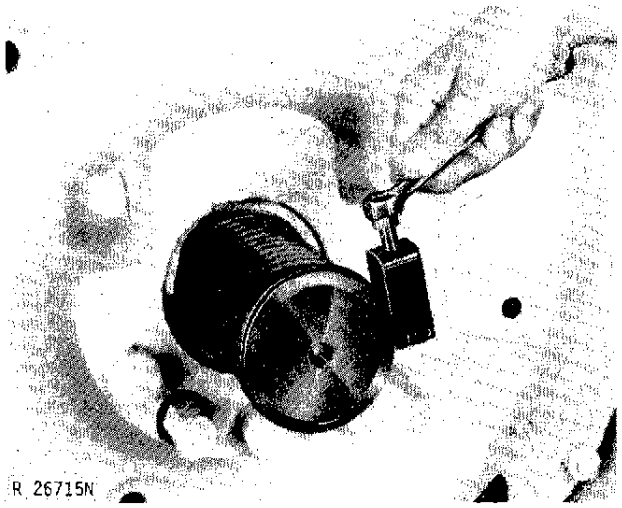

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Fig. 21-Using JDG-18 Snap Ring Tool

1. If hubs are not installed, remove snap ring from end of axle. Use JDG-18 Snap Ring Tool as shown in Fig. 21.

2. Install wheel on axle, and adjust tread to desired position. See tread adjustment instructions on page 7.

IMPORTANT: Be sure gap between tires is at least four inches (100 mm).

3. Reinstall snap ring on end of axle.

4. Install other wheel in same manner.

IMPORTANT: After driving tractor approximately 100 yards (100 m), tighten hub special screws to 300 ft-lbs (410 Nm) (41 kgm) torque. If steel outer wheels are used, tighten wheel retaining cap screws to 240 ft-lbs (325 Nm) (32 kgm) torque. Instruct customer to retighten them after 3 hours work and again after 10 hours work, and to keep them tight.

Checking Tire Inflation Pressure

Check inflation pressure of all tires before delivering tractor. Adjust pressure to the maximums listed below. The customer can then easily reduce pressure slightly if necessary, depending on how tractor is used.

Front Tires

Tire Size	Ply Rating	Maximum Pressure
7.5L-15	6	44 psi (3.0 bar) (3.0 kg/cm²)
7.50-18	6	44 psi (3.0 bar) (3.0 kg/cm²)
7.50-20	6	44 psi (3.0 bar) (3.0 kg/cm²)
9.50-20	8	44 psi (3.0 bar) (3.0 kg/cm²)
10.00-16	6	32 psi (2.2 bar) (2.2 kg/cm²)
11L-15	6	32 psi (2.2 bar) (2.2 kg/cm²)
11.00-16	8	40 psi (2.8 bar) (2.8 kg/cm²)
12.4-24	6	24 psi (1.7 bar) (1.7 kg/cm²)
14L-16.1	6	28 psi (1.9 bar) (1.9 kg/cm²)
14.9-24	6	20 psi (1.4 bar) (1.4 kg/cm²)

Rear Tires

Tire Size	Ply Rating	Maximum Pressure
12.4-42	6	12 psi (0.8 bar) (0.8 kg/cm²)
15.5-38	6	20 psi (1.4 bar) (1.4 kg/cm²)
15.5-38	8	26 psi (1.8 bar) (1.8 kg/cm²)
16.9-38	8	24 psi (1.7 bar) (1.7 kg/cm²)
18.4-34	6	16 psi (1.1 bar) (1.1 kg/cm²)
18.4-34	8	20 psi (1.4 bar) (1.4 kg/cm²)
18.4-38	6	16 psi (1.1 bar) (1.1 kg/cm²)
18.4-38	8	20 psi (1.4 bar) (1.4 kg/cm²)
18.4-38	10	26 psi (1.8 bar) (1.8 kg/cm²)
20.8-34	6	18 psi (1.2 bar) (1.2 kg/cm²)
20.8-34	8	18 psi (1.2 bar) (1.2 kg/cm²)
20.8-38	8	18 psi (1.2 bar) (1.2 kg/cm²)
20.8-38	10	22 psi (1.5 bar) (1.5 kg/cm²)
23.1-30	8	16 psi (1.1 bar) (1.1 kg/cm²)
23.1-34	8	16 psi (1.1 bar) (1.1 kg/cm²)
24.5-32	10	20 psi (1.4 bar) (1.4 kg/cm²)