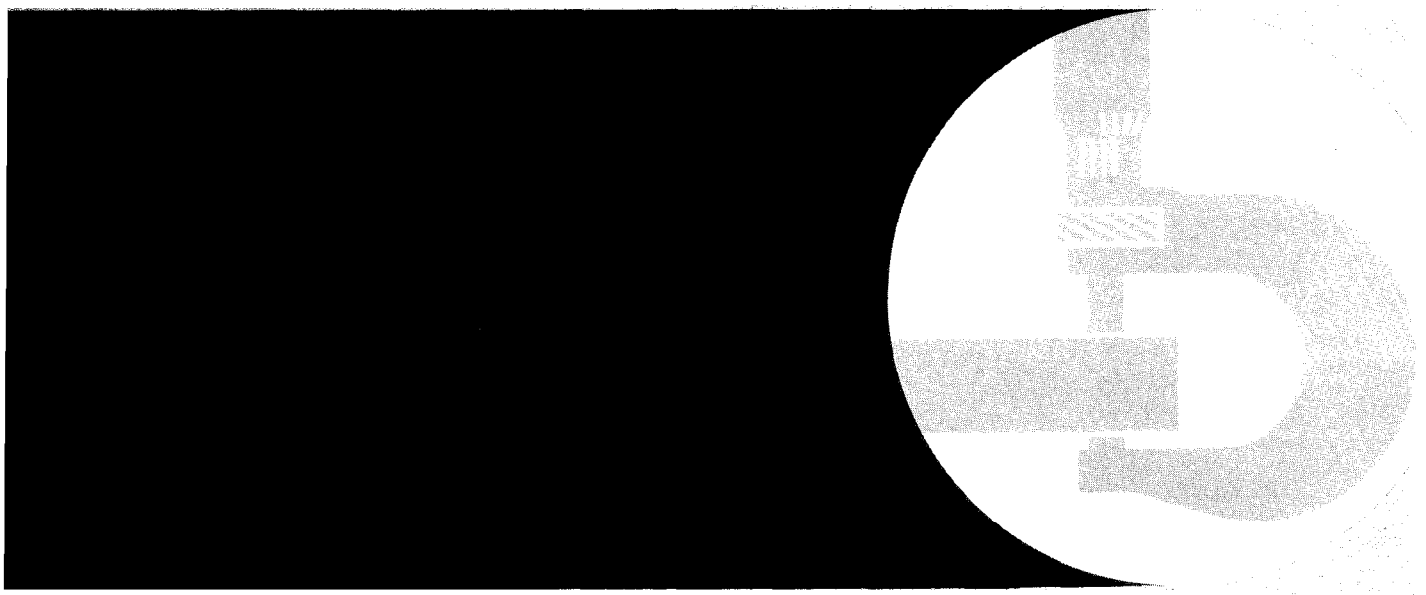
John Deere 670A and 672A Motor Grader Repair



TECHNICAL MANUAL

TM-1188 (Dee-87)
LITHO IN U.S.A.

TO JOHN DEERE DEALERS

IMPORTANT: Please remove this page and route through your service department.

This is a complete revision for TM-1188, JD670-A and JD672-A Motor Graders Repair.

Binder and tabs from old manual may be saved and used with this bound manual.

The new pages are dated (Dec-87). Listed below is a brief explanation of "WHAT" was changed and "WHY" it was changed.

This manual was revised:

- To clarify assembly of clutch plate disks.
- To update engine section and add engine CTM-4.
- To add Weather Pack™ electrical connectors information.
- To update hydraulic section and add radial piston pump CTM-7.
- To add serial number breaks and new art on pump drive assemblies.
- To add information on cylinder piston cap seals.

JD670-A AND JD672-A MOTOR GRADERS

Technical Manual
TM-1188 (Dec-87)

SECTION AND GROUP CONTENTS

Continued on next page

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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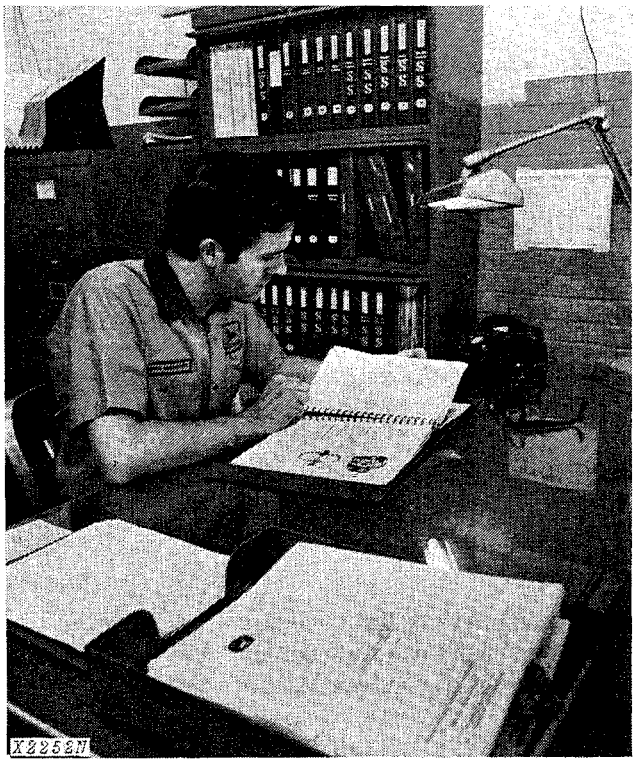
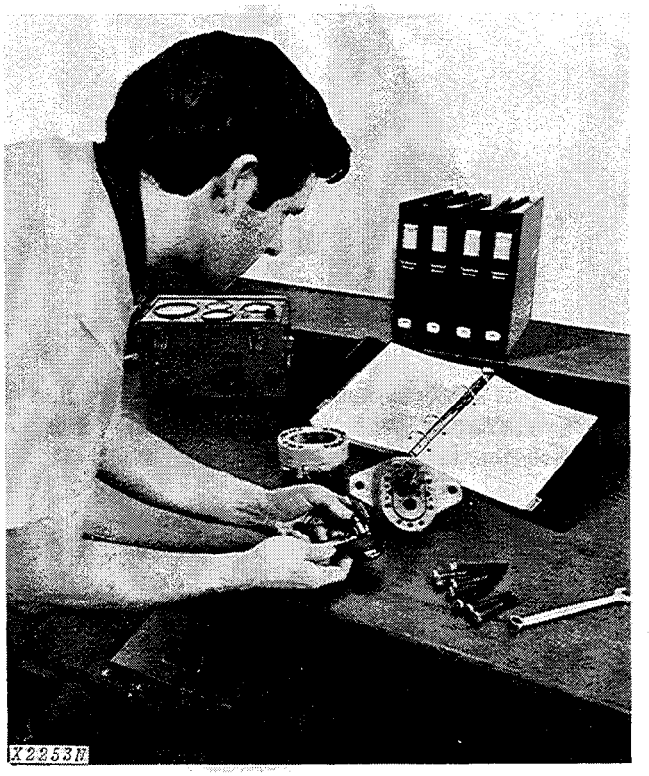
Litho in U.S.A.

Group II
INTRODUCTION AND SAFETY INFORMATION

INTRODUCTION



Use FOS Manuals for Reference



Use Technical Manuals for Actual Service

This technical manual is part of a twin concept of service:

The two kinds of manuals work as a team to give you both the general background and technical details of shop service.

•FOS Manuals - For Reference

Fundamentals of Service (FOS) Manuals cover basic theory of operation, fundamentals of trouble-shooting, general maintenance, and basic types of failure and their causes. FOS Manuals are for training new personnel and for reference by experienced service technicians.

When a service technician should refer to a FOS Manual for more information, A FOS symbol like the one at the left is used in the technical manual.

•Technical Manuals - For Actual Service

Technical manuals are concise service guides for specific machines. Technical manuals are on-the-job guides containing only the vital information needed by an experienced service technician.

This technical manual was written for you - an experienced service technician. Keep it in a permanent binder in the shop where it is handy. Read it when you need to know correct service procedures or specifications.

Some features of this manual:

- Inside front cover - "Table of Contents".
- Section I - General specifications and services.
- Sections 1 through 46 - Removal, repair, testing (components removed), installation, and adjustment.
- Section 90 - Detailed explanation of system operation, diagnosis, visual inspection, testing, and adjustments.
- Specifications are listed and illustrated at the end of each section.

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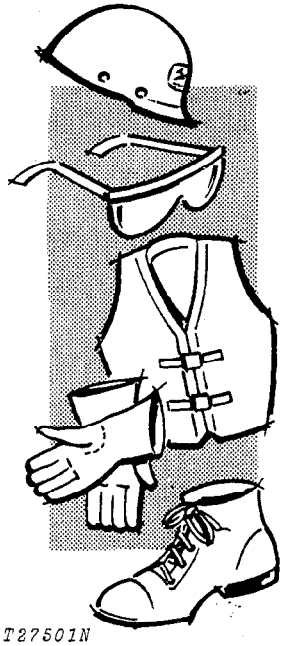
MAINTENANCE WITHOUT ACCIDENT
WORK SAFELY

T27999N

This safety symbol is used for important safety messages. When you see this symbol, follow the safety message to avoid personal injury.

EVERY EMPLOYER HAS A SAFETY PROGRAM. KNOW WHAT IT IS!



T27501N

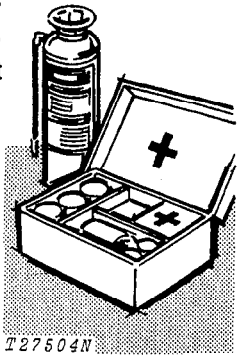
See your shop supervisor for specific instructions on a job, and the safety equipment required.

For instance, you may need: Hard hat, safety shoes, safety goggles, heavy gloves, reflector vest, ear protectors, respirator.

T27502N

BE ALERT!

Plan ahead—work safely—know how to use a first-aid kit and a fire extinguisher—and where to get assistance.



T27504N

Maintenance Area

Make sure the maintenance area has enough ventilation.

Keep the maintenance area CLEAN AND DRY. Oily and wet floors are slippery. Greasy rags are a fire hazard. Wet spots are dangerous when working with electrical equipment.

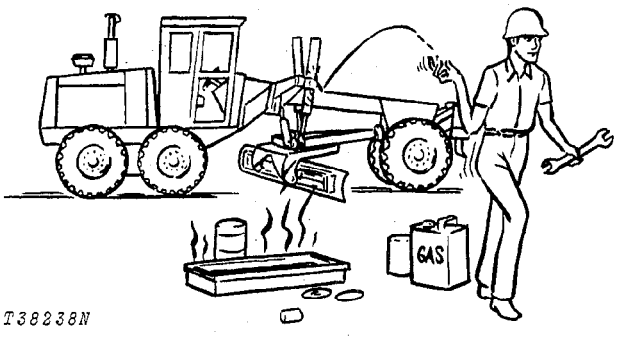
Keep starting aids in a cool, well-ventilated place, out of reach of unauthorized personnel.

Litho in U.S.A.

MAINTENANCE WITHOUT ACCIDENT

AVOID FIRE HAZARDS—

Fuel Is Dangerous!



T38238N

Do not smoke while putting fuel in the fuel tank.

Do not smoke while working with material that will start on fire easily.

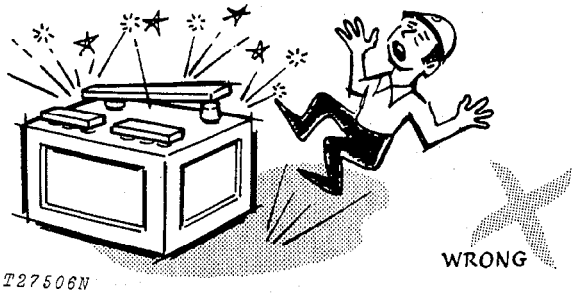
Stop the engine before filling the fuel tank.

If the engine is hot, use care when putting fuel in the fuel tank.

Do not use gasoline or diesel fuel for cleaning parts. Use solvents that will not start on fire.

Battery Gas Is Highly Flammable!

When charging batteries, be sure there is enough ventilation.



T27506N

Do not check the battery charge by putting metal objects across the posts.

Do not let sparks or open flame near batteries.

Do not smoke near battery.

Flame Is Not a Flashlight!

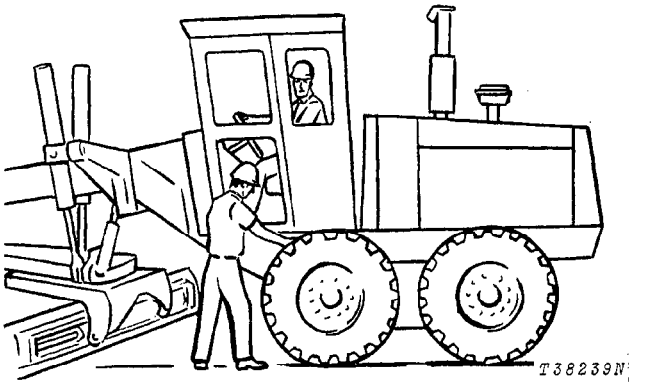
NEVER USE OPEN FLAME AROUND THE MACHINE.

KNOW WHERE FIRE EXTINGUISHERS ARE KEPT!

UNDER ALL MAINTENANCE CONDITIONS—

Do not work on the equipment unless you are approved to do so. Then be sure you know the safe and correct procedure.

Never work on equipment while it is being operated.


T38239N

When the engine is running, avoid working on equipment.

If you must work on the machine with the engine running, ALWAYS USE TWO service technicians. One must be at the controls. The other must be within sight of the operator.

KEEP HANDS AWAY FROM MOVING PARTS

Put a support under all raised equipment.

Never work under a raised blade, ripper, or scarifier.

Lower all equipment to the ground.

If the machine is on a slope, use blocks to hold it in place.

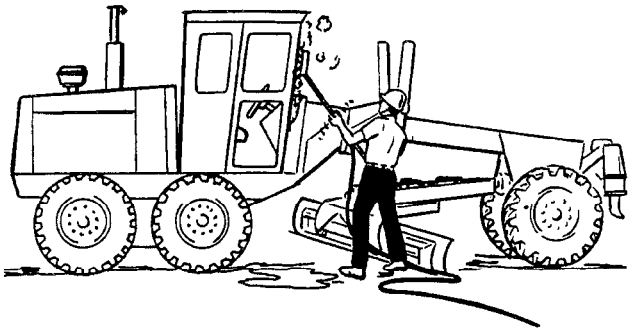
Do not lift heavy parts by yourself. Use hoisting equipment for this.

TAKE CARE! WATCH OUT FOR OTHER PEOPLE IN THE AREA

When drilling, grinding, or hammering metal, wear safety glasses.

Litho in U.S.A.

BE CAREFUL DURING SERVICE AND REPAIR



T38242N

Keep ALL equipment free of dirt and oil.

Clean oil, grease, mud, ice or snow from the operator's station, steps and hand rails.

When getting the engine ready for storage, remember that inhibitor changes easily into gas and is dangerous. After adding the inhibitor, seal and tape openings. When you are not using the inhibitor, keep the can tightly closed.

Do not remove the radiator cap unless you can hold your hand on the radiator tank. First, loosen the cap slowly to the stop. Then release all pressure in the cooling system before removing the cap.

Check the exhaust system regularly for leaks.

Release hydraulic pressure before working on the hydraulic system. Stop the engine. Lower all equipment to the ground. Move the control levers until the equipment does not move.

When checking hydraulic pressure, be sure to use the correct test gauge.

Before working on the fuel system, close the fuel shutoff valve.

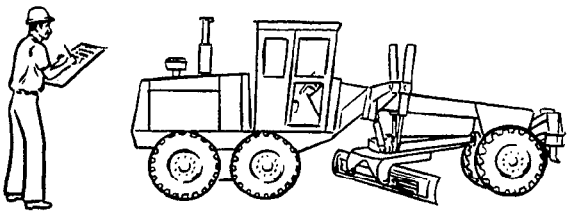
Before working on the electrical system, or making a major overhaul, disconnect the batteries.

KNOW EQUIPMENT IS READY!

Check all guards, shields, and safety bars. Every one must be in place and tight.

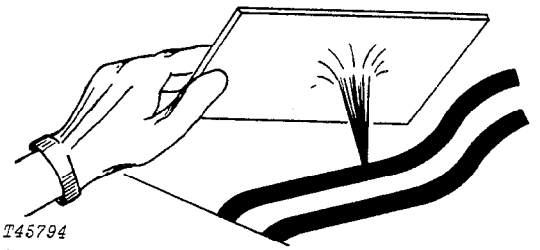
CHECK IT OUT!

- ☐ GUARDS
- ☐ SHIELDS
- ☐ SAFETY BARS
- ☐ ROLL-OVER PROTECTIVE STRUCTURES
- ☐ SEAT BELTS, ETC.



T38243N

Carefully inspect all systems for leaks.



T45794

Use a piece of cardboard or wood, rather than hands, to search for suspected leaks.

Escaping fluid under pressure can penetrate the skin.

If injured by escaping fluid, see a doctor at once.

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Group III
GENERAL SPECIFICATIONS

(Specifications and design subject to change without notice. Wherever applicable, specifications are in accordance with ICED and SAE Standards. Except where otherwise noted, these specifications are based on a unit equipped with 13.00-24, 12 ply rating, tubeless tires, 12 ft. (3.66 m) moldboard, and standard equipment. Weights include lubricants, coolants, full fuel tank and 175 lb. (79 kg) operator.)

I

Power

(at 2300 engine rpm):	SAE	DIN
Gross	135 hp (100.7 kW)	
Net	125 hp (93.2 kW)	126.7 PS

Net engine flywheel power is for an engine equipped with fan, air cleaner, water pump, lubricating oil pump, fuel pump, alternator, and muffler. The gross engine power is without fan. Flywheel power ratings are under SAE standard conditions of 500 ft. altitude and 85°F temperature, and DIN 70 020 conditions (non-corrected). No derating is required up to 10,000 ft. (3000 m) altitude.

Engine: John Deere turbocharged diesel, vertical 6-cylinder, valve-in-head, 4-stroke cycle.

Bore and stroke	4.19x5 in. (106.5x127 mm)
Piston displacement	414 cu. in. (6784 cm³)
Compression ratio	16.2 to 1
Maximum torque @ 1300 rpm	372 lb.-ft. (504 Nm) (51.4 kg/m)
NACC or AMA (U.S. Tax) horsepower	42.1
Main bearings	7
Lubrication	Pressure system w/full-flow filter
Cooling	Pressurized, w/thermostat and fixed bypass
Fan	Suction
Air cleaner w/restriction indicator	Dry
Electrical system	24 volt w/alternator
Batteries (2) 12 volt	Reserve capacity: 180 minutes

Transmission..... Direct drive full Power Shift with planetary gear reductions. Foot inching pedal.

Travel Speeds (2300 engine rpm, no tire slip):

Shift Lever Position	Forward		Reverse	
	mph	km/h	mph	km/h
1	2.3	3.6	2.8	4.5
2	3.2	5.1	3.9	6.3
3	4.8	7.8	5.9	9.5
4	6.3	10.1	7.6	12.3
5	8.2	13.2		
6	10.5	17.0		
7	14.1	22.8		
8	23.9	38.4		

Differential Lock.....Foot-operated, hydraulically actuated

Front Drive: (JD672-A only)
Hydrostatic motor in each wheel controlled through a flow divider to provide optimum traction. Free-wheeling in gears 5 through 8. Switch controlled for two modes of operation.

Pump.....5.43 cu. in. (89 cm³) variable displacement pump driving a 2.03 cu. in. (33 cm³) reversible motor in each wheel.

Rear Drive...Inboard planetary final drives with heat-treated, splined steel torque shafts. Oscillating welded construction tandems; nodular cast sprockets driving 2 in. (51 mm) pitch roller chain in oil bath.

Front Axle: Fabricated steel box-frame with steel spindles
Total oscillation.....30 deg.
Wheel lean range (either direction).....20 deg.

Steering:
Front...Full hydraulic power system. Steering capabilities without power
Rear...Hydraulically articulated frame steering (25 deg. left or right)
Minimum turning radius
(JD670-A).....22 ft. (6.7 m)
Minimum turning radius
(JD672-A).....22 ft. 6 in. (6.86 m)

Brakes:
Service...Foot-operated, hydraulically-actuated, wet-disk, effective on 4 tandem wheels
Parking..... Foot-operated, mechanical, dry-disk, effective on 4 tandem wheels
Hydraulic System: Closed-center
Pressure controlled variable-displacement pump...35 gpm (132 L/min) @ 2300 engine rpm

Blade:
Length ..... 12 ft. (3.66 m)
Height.....24 in. (610 mm)
Thickness.....0.88 in. (22 m)

Blade Range:
Lift above ground..... 1 ft. 4.10 in. (409 mm)
Blade side shift:
Right or left..... 2 ft. 2.9 in. (683 mm)
Shoulder reach outside wheels:
Right or left.....7 ft. (2.13 m)
Pitch at ground line..... 44 deg. forward
10 deg. back

Blade Lifting Mechanism:
Control.....Dual-lever, hydraulic w/float position

Lift Arms: Nodular cast
Positions 7
Control ..... Hydraulic, foot operated

Circle: Fabricated steel angle construction
Circle diameter.....4 ft. 10 in. (1.47 m)
Rotation .....360 deg.
Drive...Hydraulic motor and worm gear w/positive position lock
Sideshift, right and left ..... 31.2 in. (792 mm)

Drawbar.....Welded box section, 3.5x7x0.5 in. (89x178x13 mm) wall w/ball and socket draft connection

Frame:
Rear main frame...Welded box section from articulation joint to main frame arch
Width, minimum ..... 9.25 in. (235 mm)
Height, minimum ..... 14.65 in. (372 mm)
Thickness, sides..... 0.63 in. (16 mm)
top and bottom (min.).. 0.75 in. (19 mm)
Weight per ft. (m), minimum .... 110 lb. (164 kg/m)
Minimum vertical section modulus.. 125 inches cubed (2050 cm cubed)
Front main frame...Welded box section from main frame arch to front hood
Width ..... 10 in. (254 mm)
Height, minimum ..... 13 in. (330 mm)
Thickness, minimum ..... 0.50 in. (13 mm)
Weight per ft. (m), minimum .... 110 lb. (164 kg/m)
Minimum vertical section modulus.. 109 inches cubed (1786 cm cubed)

Capacities:	U.S.	Imp.	Liters
Fuel tank	60 gal.	50.0 gal.	227
Cooling system	7 gal.	5.8 gal.	26.5
Engine lubrication, including filter	20 qt.	16.7 qt.	18.9
Transmission case	14 gal.	12 gal.	53
Transmission and hydraulic system (JD670-A)	28 gal.	23.3 gal.	106
Transmission and hydraulic system (JD672-A)	38 gal.	32 gal.	144
Tandem housings (each)	4 gal.	3.3 gal.	15.1
Worm gearbox	3 qt.	2.5 qt.	2.8

Additional Standard Equipment:

Transistorized voltage regulator
Lights (2 white front w/stop and tail light)
Work lights (2 front and 2 rear floods)
Turn signals
Horn
Deluxe suspension seat
Mechanical hour meter
Cold weather starting aid
Precleaner
Engine side shields
ROPS cab w/seat belt
Front and rear windshield wipers
Floor mat
Gauges:
Water temperature
Transmission temperature
Transmission lube pressure
Transmission pressure
Engine oil pressure
Fuel
Indicators:
All-wheel drive charge pressure (JD672-A)
Air filter
Transmission filter
All-wheel drive filter (JD672-A)

JD670-A

SAE Operating Weight	On Front Wheels	On Rear Wheels	Total
Standard equipment	7728 lb. (3 505 kg)	18,252 lb. (8 279 kg)	25,980 lb. (11 784 kg)
Standard equipment and scarifier	8828 lb. (4 004 kg)	18,252 lb. (8 279 kg)	27,080 lb. (12 283 kg)
Standard equipment, scarifier and ripper	8031 lb. (3 643 kg)	21,549 lb. (9 775 kg)	29,580 lb. (13 418 kg)

JD672-A

SAE Operating Weight	On Front Wheels	On Rear Wheels	Total
Standard equipment	8568 lb. (3 886 kg)	18,507 lb. (8 395 kg)	27,075 lb. (12 281 kg)
Standard equipment and scarifier	9668 lb. (4 385 kg)	18,507 lb. (8 395 kg)	28,175 lb. (12 780 kg)
Standard equipment, scarifier and ripper	8871 lb. (4 024 kg)	21,804 lb. (9 890 kg)	30,675 lb. (13 914 kg)

Tires:

13.00-24, 8 or 12 ply rating; 8 in. rim
14.00-24, 10 or 12 ply rating; 8 or 10 in. rim
17.5-25, 12 ply rating; 14 in. rim

Dimensions:

Tire Size	Wheel Tread Front	Wheel Tread Rear	Width Front	Width Rear	Ground Clearance (Front Axle)
13.00-24	76.60 in. (1.94 m)	79.61 in. (2.02 m)	7 ft. 10 in. (2.34 m)	7 ft. 10 in. (2.34 m)	1 ft. 10 in. (559 mm)
14.00-24	76.60 in. (1.94 m)	79.61 in. (2.02 m)	8 ft. (2.44 m)	8 ft. (2.44 m)	1 ft. 10.5 in. (571 mm)
17.5-25	79.36 in. (2.01 m)	82.37 in. (2.09 m)	8 ft. 6 in. (2.59 m)	8 ft. 6 in. (2.59 m)	1 ft. 11.2 in. (589 mm)

Height to top of steering wheel... 7 ft. 4.4 in. (2.25 m)

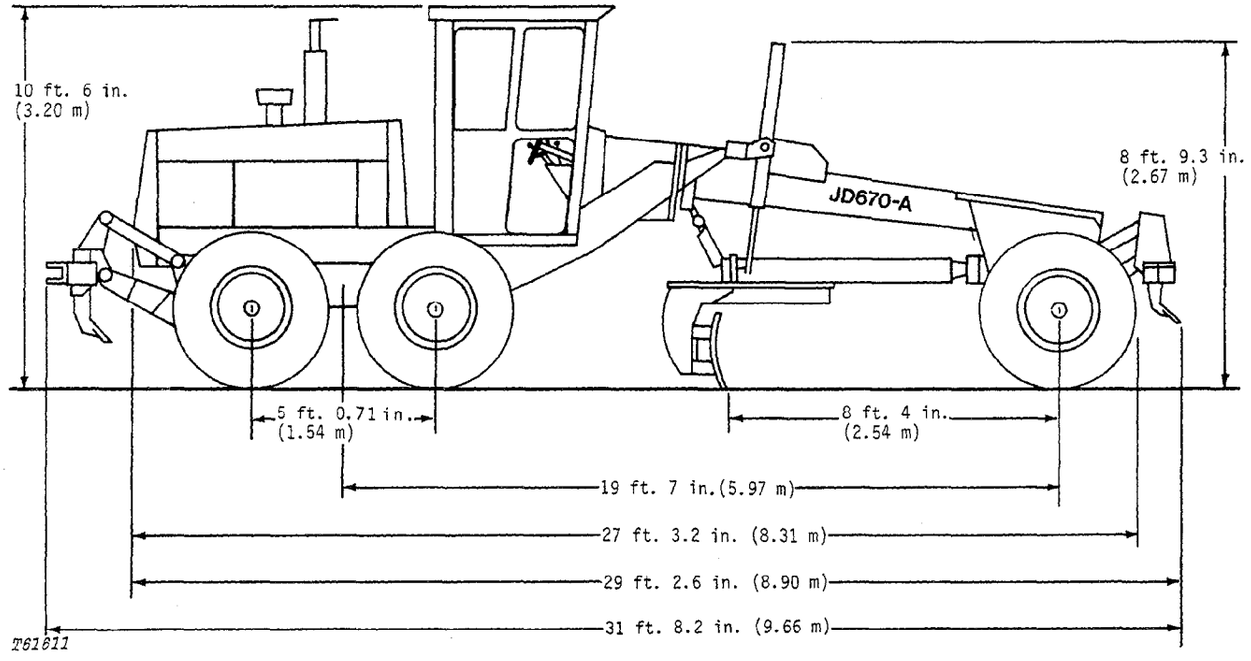
Scarifier (Special Equipment):
V-type for 4 ft. (1.22 m) cut with 3 manual pitch positions and hydraulic float
Number of teeth (9 possible) 5
Lift above ground..... 1 ft. 10 in. (559 mm)
Penetration ..... 12 in. (305 mm)
Shank size..... 1.25x4 in. (31.7x102 mm)

Ripper (Special Equipment): 8 ft. (2.44 m) cut width, parallelogram linkage, 2 manual shank vertical positions
Number of shank pockets 5
Number of shanks 3
Lift above ground..... 1 ft. 2.5 in. (368 mm)
Penetration ..... 1 ft. 2 in. (356 mm)
Shank size..... 2x5 in. (51x127 mm)
Lift above ground (shanks in upper position)..... 1 ft. 11.5 in. (597 mm)

Special Equipment:

Scarifier
Heavy-duty scarifier
Below-cab blade lights
Bench seat
Cab heater (40,000 BTU)
Cab heater (19,000 BTU)
Cab defroster fan
Air conditioning w/50 amp heavy-duty alternator
Roof-mounted heater (w/air conditioner only)
Outside rear view mirrors
ROPS canopy w/seat belt
Coolant heater
2 ft. (610 mm) moldboard extensions, right or left
13 ft. (3.96 m) and 14 ft. (4.27 m) moldboards
Overlay end bits
Transmission bottom guard
Heavy-duty bottom guard w/drawbar
Rear-mounted ripper w/drawbar hitch
Drawbar hitch
Toolbox
Articulation indicator
Engine disconnect
Reverse warning system
Sound-baffled engine side shields
3 in. seat belt
Heavy-duty cutting edge
Automatic blade control

DIMENSIONS



NOTE: Dimensions for the JD672-A are the same as those shown above. When a motor grader has air conditioning, the height is 10 ft. 7 in. (3.23 m).

Litho in U.S.A.

Group IV
PREDELIVERY, DELIVERY, AND AFTER-SALE SERVICES

TEMPORARY GRADER STORAGE

After receiving your grader from the factory and before putting the machine into temporary storage, perform the following checks.

1. Check the battery electrolyte level. Charge the battery, if necessary.

2. Check the level of the coolant in the radiator. The coolant must be 4 in. (102 mm) below the top of the filler neck.

3. Fill the fuel tank.

4. Check the crankcase oil level. Oil must be between marks on the dipstick after the engine has been stopped for 10 minutes.

5. Relieve hydraulic pressure by lowering the blade, stopping the engine and operating the hydraulic control levers until no equipment moves.

PREDELIVERY SERVICE

The service technician must carefully check and service the machine before the dealer delivers it to the customer. When the customer receives a machine that is correctly prepared, the customer is well-satisfied. For these reasons, correct predelivery service is very important to the dealer and the customer.

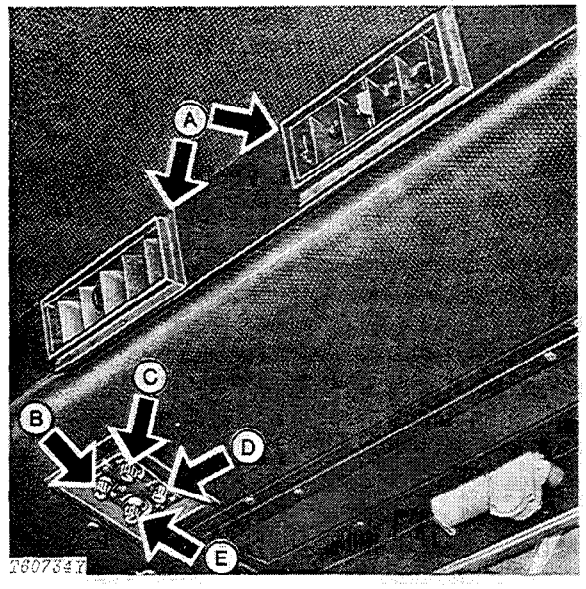
Use the following check list when getting a unit ready for delivery to the customer.

1. Cab Equipment

Check the operation of doors, windows, seat belts, horn, defroster fan, dome light, wipers, heater, etc.

Check air conditioner controls.

NOTE: Air temperature must be 60°F (16°C) or higher.



A—Louvers
B—Recirculating Air Control
C—Heat Control Knob
D—Cooling Control Knob
E—Blower Control Knob

Fig. 1-Air Conditioner Controls

1 - Turn key switch ON. Operate the blower control knob (E) in all positions. Check the fan speeds and air volume from the louvers (A).

2 - Turn the key and blower switches ON. Turn the cooling control knob (D) clockwise toward maximum cooling. Listen for the click from the compressor clutch.

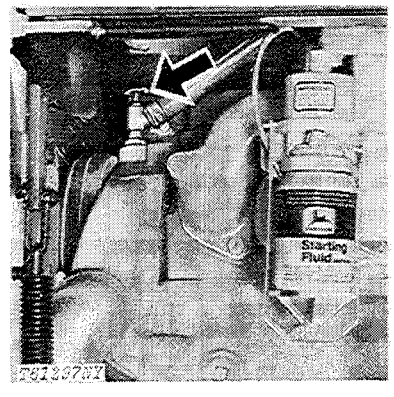


Fig. 2-Heater Valve

3 - Turn the heater valve (Fig. 2) clockwise to closed position.

4 - Turn the blower control knob clockwise to high speed. Turn the cooling control knob clockwise to maximum cooling. Run the engine at approximately 2000 rpm.

5 - After ten minutes check sight glass for bubbles. The sight glass is on the receiver-dryer in the engine compartment next to the compressor.

NOTE: Bubbles may be seen immediately after the compressor cycles ON. If bubbles are seen under any other condition, see Section 90, Group 9031.

6 - Check the temperature of air from louvers. Hold a thermometer in louver until you get the lowest reading.

When air temperature is above 80°F (27°C), the temperature of air from louvers must be 25°-30°F (14°-17°C) lower.

When air temperature is below 80°F (27°C), the temperature of air from louvers must be less than 50°F (10°C).

7 - When the unit does not operate correctly, see Section 90, Group 9031.

Cab equipment checked *Yes* *No*

2. Seat

Check operation of seat controls.

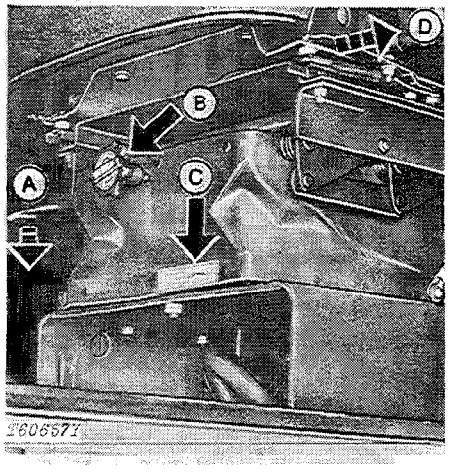


Fig. 3-Controls for Cab Seat and Seat without Cab

A - Height adjustment lever - Push down the lever. Move the seat to the desired position. Release the lever.

B - Weight adjustment knob - Turn the knob clockwise for a firm ride. Turn the knob counterclockwise for a soft ride. Use the flip-out handle to crank the knob.

C - Weight adjustment tube - Sit on the seat. Turn knob B until the yellow pointer inside the tube is flush with tube.

D - Forward and rearward adjustment lever - Move the lever outward to the left (L.H.). Move the seat forward or rearward to the desired position. Release the lever.

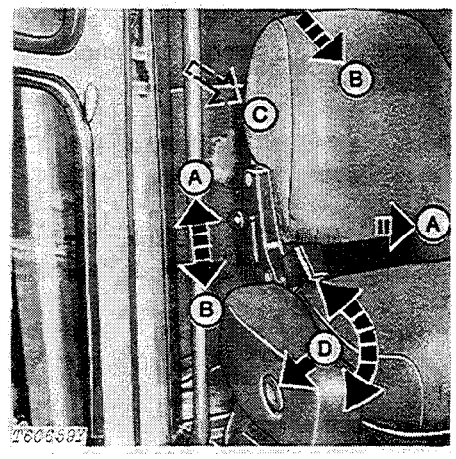


Fig. 4 - Cab Seat Controls

A - Backrest tilt knob - Lift the knob to tilt the bottom of the backrest forward.

B - Lower the knob to tilt the top of the backrest forward.

C - Backrest knob - Raise the knob for a soft backrest. Lower the knob for a firm backrest.

D - Armrest button - Hold the button in. Move the armrest up or down to the desired position. Release the button. The armrest will latch in four different positions.

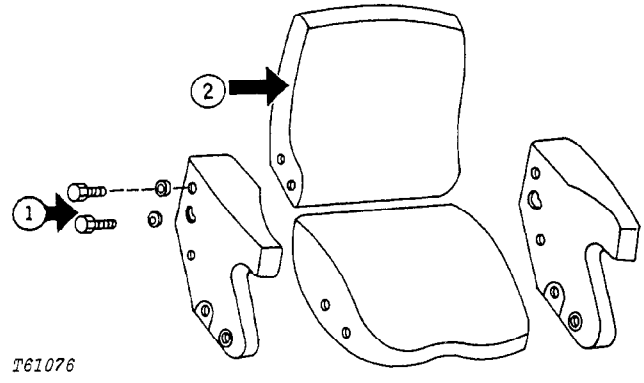


Fig. 5-Adjustment for Seat without Cab

Adjust backrest tilt as follows:

1 - Loosen two cap screws on each side.

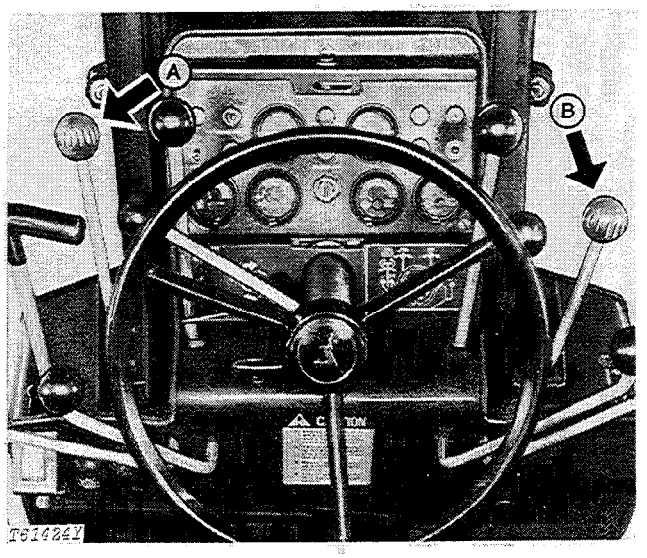
2 - Move the backrest to the desired position.

3 - Tighten the cap screws.

Seat controls checked *Yes* *No*

3. Transmission Shifting

Check the operation of the grader in all gears.



A—Direction Selector Lever **B—Transmission Shift Lever**

Fig. 6-Transmission Shifting Levers

A - Direction Selector Lever: Push lever ahead to F to move grader forward. Pull lever back to R to move grader in reverse. This can be done without using the inching pedal.

When the transmission is in 5th gear or higher, reverse is locked out.

A smoother F to R or R to F shift can be made by stopping the grader and slowly engaging the inching pedal or by reducing engine speed.

NOTE: Parking brake must be released before the direction selector lever can be moved out of neutral.

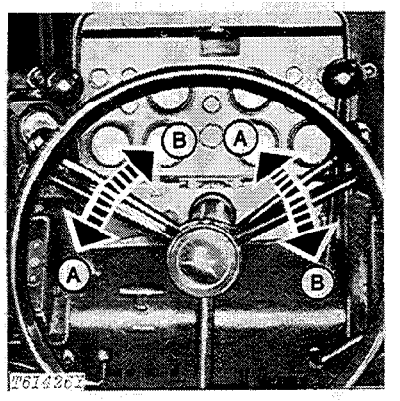
B - Transmission Shift Lever: Shift this lever when the grader is stopped or moving. Shift one gear at a time.

NOTE: When transmission shift lever is in reverse (R), rear warning alarm will sound at intervals.

Transmission shifting checked *Yes* *No*

4. Control Levers

Check the operation of all control levers.



A—Frame Steer Left (L.H.) **B—Frame Steer Right (R.H.)**

Fig. 7-Frame Steering Lever

Move either lever to aid turning. The frame will articulate 25 degrees left (L.H.) or right (R.H.).

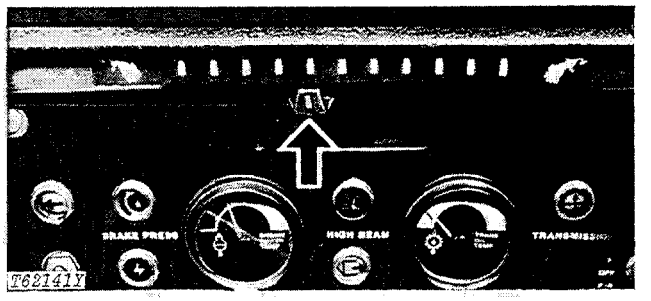
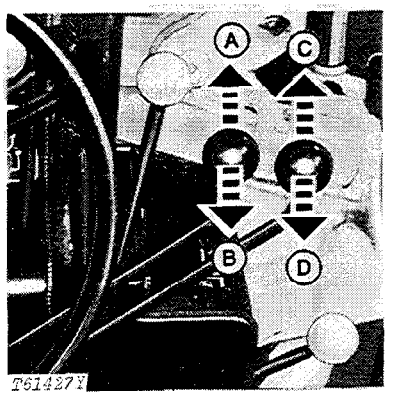


Fig. 8-Rear Steer Indicator

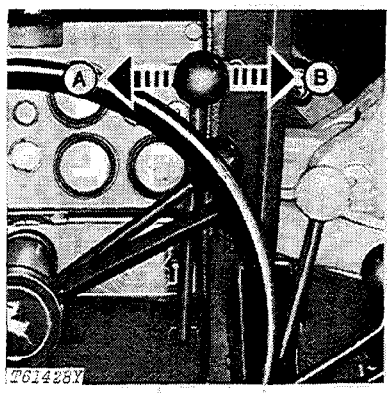
The rear steer indicator shows whether the rear of the grader is in line with the front or pivoted to the left (L.H.) or right (R.H.)



A—Lower Left (L.H.) End of Blade
B—Raise Left (L.H.) End of Blade
C—Lower Right (R.H.) End of Blade
D—Raise Right (R.H.) End of Blade

Fig. 9-Blade Lift Levers

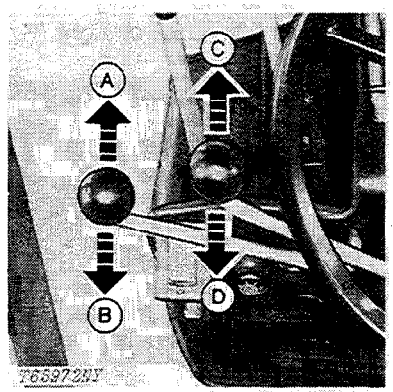
Move one lever at a time or both levers together.



A—Wheel Lean Left (L.H.) **B—Wheel Lean Right (R.H.)**

Fig. 10-Wheel Lean Lever

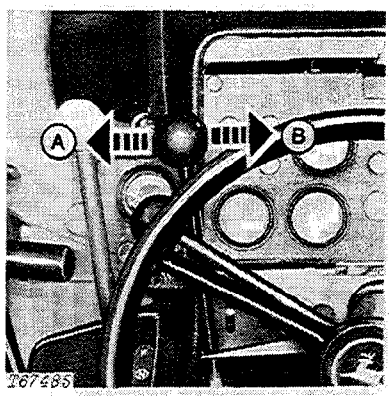
Lean wheels toward turn to make a sharper turn.



A—Lower Scarifier
B—Raise Scarifier
C—Pitch Blade Forward
D—Pitch Blade Rearward

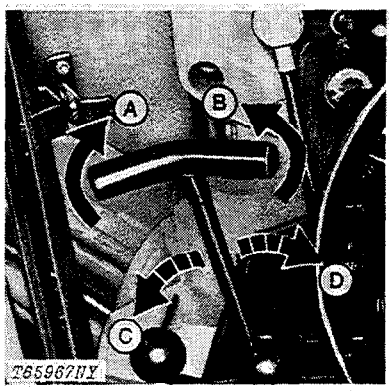
Fig. 11-Scarifier Lever and Blade Pitch Lever

Scarifier Lever: Push the lever forward until it locks in float position. Pull the lever back to release it from float.



A—Circle Side-Shift Left (L.H.) **B—Circle Side-Shift Right (R.H.)**

Fig. 12-Circle Side-Shift Lever



A—Rotate Circle Clockwise
B—Rotate Circle Counterclockwise
C—Blade Side-Shift Left (L.H.)
D—Blade Side-Shift Right (R.H.)

Fig. 13-Circle Rotation Lever and Blade Side-Shift Lever

IMPORTANT: Be sure blade does not contact tires or main frame during rotation.

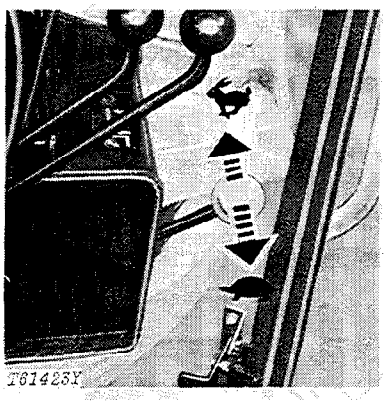


Fig. 14-Hand Throttle

Use the hand throttle to operate at constant speed.

Control levers checked *Yes* *No*

5. Control Pedals

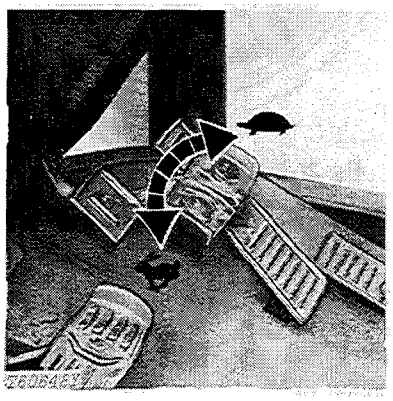


Fig. 15-Accelerator Pedal

Push down the pedal to increase speed quickly. When you release the pedal, speed will go back to the hand throttle setting.

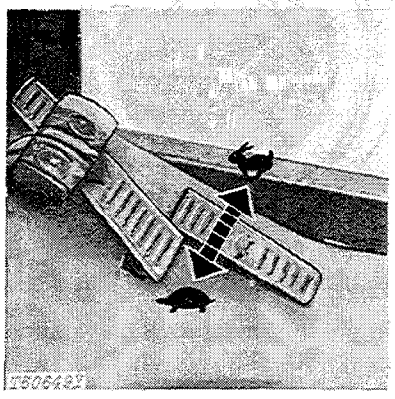
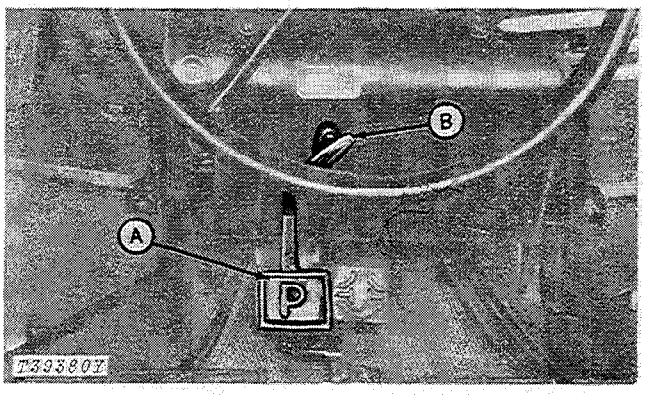


Fig. 16-Decelerator

Push down the pedal to decrease speed quickly. When you release the pedal, speed will go back to the hand throttle setting.

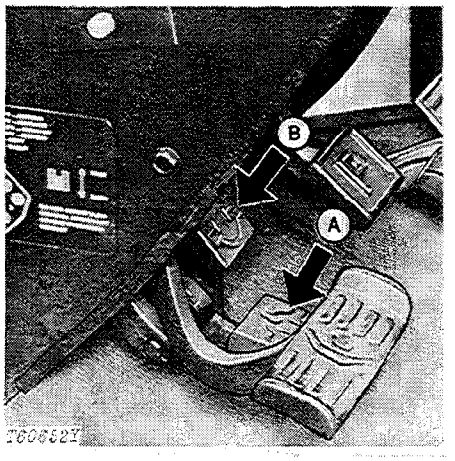


A—Engage Pedal **B—Disengage Handle**

Fig. 17-Parking Brake

Push down the parking brake. When the pedal uses over 3/4 total travel to fully engage the brake, change the adjustment. See page I-IV-26.

To release the parking brake, pull handle B, while holding down pedal A to take the load off the latch.



A—Differential Engage Pedal **B—Differential Disengage Pedal**

Fig. 18-Differential Lock Pedals

Check the operation of the differential lock. Engage the lock and attempt to turn the steering wheel. If the lock is working correctly, steering resistance must be felt.

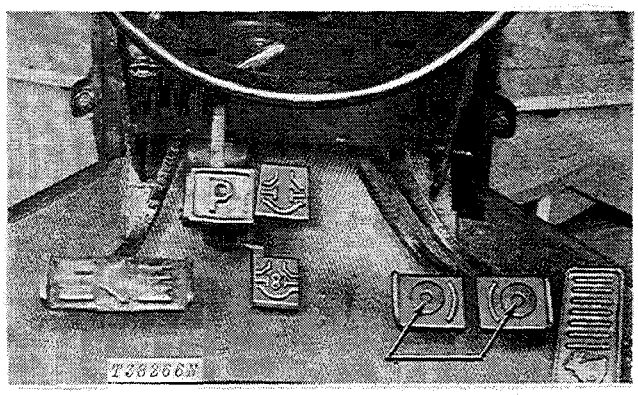
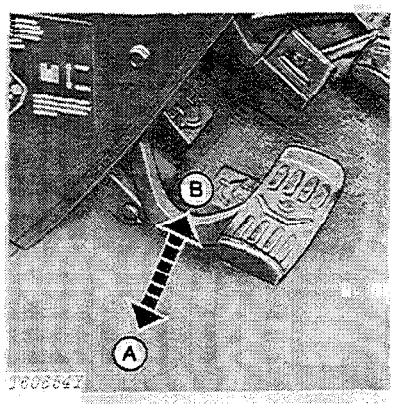


Fig. 19-Brake Pedals

Check the brake system for leaks or wrong operation.

Put the grader in gear. Push down the brake pedal. Moderate pedal force must hold grader in place.

If pedal force does not hold the grader in place, pedal feels spongy or bottoms out, repair is needed, or air must be removed from the system.



A—Disengaged **B—Engaged**

Fig. 20-Inching Pedal

Use the inching pedal for precise control of the grader when hitching equipment to the grader or when you need a slow, smooth start.

Push down the pedal (A) to disengage the clutch. Release the pedal (B) to engage the clutch.

IMPORTANT: Do not "ride" the inching pedal. Do not use this pedal for normal transmission shifting. Do not push down the pedal for an emergency stop unless the engine is running.

To check the adjustment of the inching pedal, stop the grader. Push down the pedal all the way. When the grader moves ahead strongly, the pedal needs adjustment. See page I-IV-27.

Control pedals checked *Yes* *No*

6. Gauges

Check the operation of all gauges.

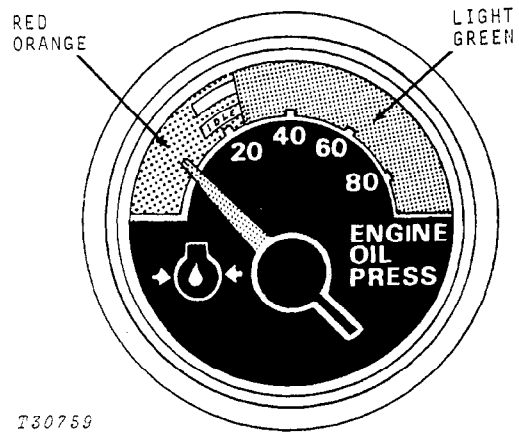


Fig. 21-Engine Oil Pressure Gauge

Normal operating range is shown by the green zone (25-80 psi [1.7-5.5 bar]).

If the indicator hand goes into the red-orange zone, stop the grader. Check the engine oil level. If the oil level is not low, check for restrictions in the oil lines or wrong viscosity oil.

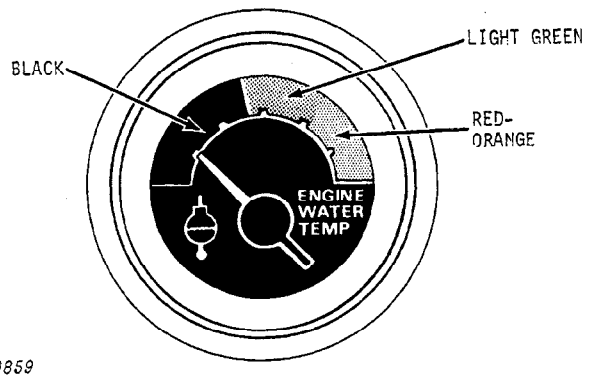


Fig. 22-Engine Coolant Temperature Gauge

The light green zone shows the normal operating temperatures, 160-224°F (71-107°C).

IMPORTANT: If the indicator hand goes into the RED-ORANGE ZONE, stop the engine and find the cause.