

3.6.3 AXLE MOUNTING

ITEM	STEP #	NAME	TORQUE	
			N-M	FT-LBS
A	3.4.4.6	U-joint capscrews	49	36
B	3.4.4.4	Rear axle support capscrews	600	445
		Front axle attaching capscrews	425	315
C	3.4.3.88	Axle support cover capscrews	196	145

ITEM	STEP #	NAME	DIMENSIONS	
			mm	in.
		End play		
D	3.4.3.86	Oscillating axle end play	0.1 - 0.5	0.0040 - 0.0200
		Shim thickness available	0.5, 1.0	0.0200, 0.0390
E		Support I. D.	175.0 - 175.04	6.8900 - 6.8910
		Bushing O. D.	175.07 - 175.11	6.8925 - 6.8940
		Bushing I. D. (installed)	160.0 - 160.08	6.2990 - 6.3020
		Pivot hub O. D.	159.85 - 159.915	6.2930 - 6.2960
F		Axle housing bore	105.0 - 105.05	4.1340 - 4.1360
		Pivot hub O. D.	105.013 - 105.048	4.1343 - 4.1357

C

C

C

**REMOVE THIS PAGE AND
INSERT ALL PAGES UNTIL
THE NEXT BLACK EDGED
PAGE APPEARS UNDER
SECTION 4**

C

C

C

SECTION 4 BRAKE SYSTEM

TABLE OF CONTENTS

TOPIC	TITLE	PAGE
4.1	General Descripton	1
4.2	Troubleshooting	4
4.3	Testing	5
4.4.1	Brake Pump	11
4.4.2	Brake Treadle Valve	15
4.4.3	Brake Master Cylinder	26
4.4.4	Brake Caliper	33
4.4.5	Brake Bleeding	41
4.4.6	Parking Brake Valve	43
4.5	Tools	50
4.6.1	Specifications	51
4.6.2	Schematic (early version)	52
4.6.3	Schematic (later version)	53

C

C

C

BRAKE SYSTEM

4.1.1 GENERAL DESCRIPTION

BRAKE SCHEMATIC Prior to S/N 610977

The FR10B utilizes a hydraulic over hydraulic braking system. The implement oil system includes the implement tank (13), brake pump (12), foot operated treadle valve (1) two accumulators (14 and 15) and the master cylinder. In addition there is a parking brake circuit which uses parking brake valve and spring applied cylinder. The brake fluid system includes the master cylinder, brake fluid reservoirs(16) and brake calipers(19).

The foot operated treadle valve has two systems which are identical in operation. The one foot pedal forces both plungers (2) into the valve body and in turn the poppet (3) on its seat (7) when the operator forces the pedal down. Oil from the brake pump is no longer indexed to the implement oil tank. Oil is directed around the plunger to a passage within the valve body and to two check valves (10). The check valves are forced off their seats and oil is indexed to the master cylinder and to the valve seat (7). Oil flows through the valve seat to the sealed passage between the poppet and seat. The pin (5) forces the ball (8) off its seat (7) allowing oil to the flow to the accumulators. The accumulators allow the brakes to apply when the machine is shut off. The brake accumulators have enough oil in them to apply the brakes during an emergency situation. The master cylinder piston (21) actually consists of two pistons. Oil gets behind the left piston and forces both pistons to the right. These pistons (21) force the brake fluid pistons (23) to the right. The movement of the brake fluid piston displaces an amount of brake fluid from the brake fluid reservoir through the fill valve (24) and to the brake caliper piston.

In a dead engine condition oil in the accumulator is used as the source. The operator presses down on the foot treadle valve. The plunger's poppet is forced against the seat and seals the passage of oil so that it cannot escape to the implement oil tank. At the same time as the poppet seals against the seat the pin forces the ball off of the seat's bottom. Accumulator oil can flow past the ball around the seat and to the brake master cylinder's pistons. Oil cannot flow back to the pump because of the two check valves (10) between seat and the pump.

BRAKE VALVE SCHEMATIC

1. Treadle valve
2. Plunger
3. Poppet
4. Spring
5. Pin
6. Spring
7. Seat
8. Ball
9. Spring
10. Check ball
11. Relief valve
12. Pump
13. Implement oil tank
14. Accumulator
15. Accumulator
16. Brake fluid reservoirs
17. Parking brake valve
18. Parking brake cylinder & spring
19. Brake calipers
20. Tire
21. Brake master cylinder
22. Piston
23. Piston
24. Valve

BRAKE SYSTEM

4.1.2 GENERAL DESCRIPTION

BRAKE SCHEMATIC S/N 610977 and up

SCHEMATIC: ENGINE NOT RUNNING

The system contains the following components: four accumulators [two brake accumulators(1,2); one parking brake accumulator(16); one damper accumulator(2)]; two brake circuit pressure control valves(6,8); four check valves; three accumulator check valves(5,12,21); and one main check valve(23); unloader valve(25); pilot valve(19); pilot valve unseating piston(18); brake master cylinder booster(14); brake fluid reservoirs(4); wheel calipers(24); brake light switch(13); low system pressure switch(17); clutch cut-off switch(3); parking brake assembly(27); parking brake control valve(15); brake system supply pump(26).

The brake system uses a gear, fixed displacement type pump, mounted on the engine timing gear housing.

The unloader valve(25), pilot valve(19) and unseating piston (18) work together to control system pressure. They cause the pump to unload and re-circulate to tank when a given pressure is reached in the system. As system pressure decreases, the unloader(25) seats and the pump charges the system. This action is repeated during machine operation.

The main check valve(23) seats during pump unloading cycle. It traps the pressurized oil in the accumulator brake valve circuits and parking brake circuit.

The brake valve's spools (6,8) control the pressure between the brake accumulators(1,7) and master cylinder boost pistons(9).

The brake accumulators and their associated check valves maintain and supply pressurized oil to the brake valves and master cylinder boost pistons. Either for normal brake apply or dead engine brake apply.

The damper accumulator(23) stabilizes the pressure in the unseating piston cavity.

The parking brake accumulator(16) and check valve(21) supply pressurized oil to release the parking brake.

The parking brake control valve(15) directs oil from the parking brake accumulator(16) to the parking brake release cylinder(27).

The parking brake assembly has a spring which applies the parking brake and a cylinder to release the parking brake by overcoming the spring.

The master cylinder(14) contains two boost pistons(9) which receive pressurized oil from the brake valves and two pistons (10,11) that pressurize the brake fluid in the caliper circuits.

The brake fluid reservoirs(4) supply the master cylinder caliper circuits.

SCHEMATIC: ENGINE RUN, SYSTEM CHARGING

When the engine is started the pump flow(26) enters the brake valve at the unloader valve cavity(25). The pump flow unseats and flows through the main check valve(23). The oil unseats and flows through the accumulator check valves(5,12,21) and charges the brake and parking brake accumulators(1,7,16). Oil is blocked at the brake valves(6,8). Oil flows through the orifice in the unloader valve(25) and charges the pilot valve(19) spring cavity. The spring plus the pressurized oil hold the pilot valve seated.

The master cylinder boost pistons(9) oil is indexed to sump at the brake valves. The parking brake is applied by the spring, as oil from the release piston is indexed to sump through the parking brake control valve.

SCHEMATIC SYSTEM CHARGE, PUMP UNLOAD

When the specified pressure is reached in the system, the pressure acting on the unseating piston(18) overcomes the pressure and spring force acting on the pilot valve(19). The pilot valve is unseated allowing the oil in the pilot valve and unloader valve(25) spring cavities to be sumped through the pilot valve seat area. This allows the unloader valve to move and index pump flow to sump.

The instant the pump starts to unload the main check valve(23) seat and traps the pressurized oil in the brake valves and parking brake circuits.

Due to leakage in the brake valves and the parking brake valve, pressure gradually decreases. When the pressure decreases to a specific value, the pilot valve(19) will seat, causing the unloader valve(25) to move and cover the sump port. The main check valve(23) will open and the pump(26) will again charge the circuits. As the pressure increases the unloading cycle will be repeated.

The design of the system allows the pump to be unloaded the majority of the time, reducing the load on the engine.

BRAKE SYSTEM

SCHEMATIC: BRAKES APPLIED

When the operator steps on the pedal(2) to apply the brakes he is moving the pedal against the springs at the top of the brake valves. These springs determine the pressure in the master cylinder boost piston circuits.

The force of the springs move the brake valves(6,8) down. The upper valve pushes the lower valve down against the return spring at the bottom of the lower brake valve. As the valves move down they close the sump ports. They then open the accumulator parts(1,7) and index accumulator oil to the boost pistons. Through cross drillings in the brake valves, system pressure is allowed to act on the bottom areas of the brake valves. The pressure acting between the upper and lower spools cancel each other out. The pressure acting at the bottom of the lower spool moves both spools up against the springs. When hydraulic force equals spring force, the brake valves close the accumulator ports. Due to spool leakage to sump, the pressure decreases slightly and the valves move down again and open the accumulator ports. The pressure again increases moving the valves up. This up and down movement continues as long as the brake pedal is held at a given position. This determines the pressure acting on the master cylinder boost pistons. This pressure in turn determines caliper pressure and brake effort. If the pedal is pushed down further the springs generate a greater force and the pressure required to move the valves is increased. In this way the pressures and brake effort can be modulated. The spring effort can be increased to a point where the hydraulic effort cannot overcome the spring effort this will become the maximum pressure point and provide maximum brake effort.

The two accumulators(1,7), two brake valves(6,7) and two boost pistons(9) provide two separate circuits. If either circuit fails the other circuit can provide full brake apply effort.

The two master cylinder brake apply pistons(10,11) also provide two separate systems one for the front axle brakes and the other for the rear axle brakes. This provides braking on one axle when one of the systems fail.

The transmission clutch cut-off circuit is activated by the clutch cut-off switch when the brakes are applied. The switch operates a solenoid valve that allows transmission main pressure to act on the clutch cut-off valve in the transmission control valve. The clutch cut-off valve releases the direction clutches when activated.

1. Accumulator(brake)
2. Brake pedal
3. Brake switch
4. Brake fluid reservoirs
5. Check valve(accumulator)
6. Brake spool
7. Accumulator(brake)
8. Brake spool
9. Boost pistons
10. Apply piston
11. Apply piston
12. Check valve(accumulator)
13. Brake switch
14. Master cylinder
15. Parking brake valve
16. Accumulator(parking brake)
17. Parking brake switch
18. Unseating Piston
19. Pilot valve
20. Pressure adjusting screw
21. Check valve(parking brake)
22. Accumulator(damper)
23. Main check valve
24. Brake Caliper
25. Unloader valve
26. Pump
27. Parking brake

BRAKE SYSTEM

4.2 TROUBLESHOOTING

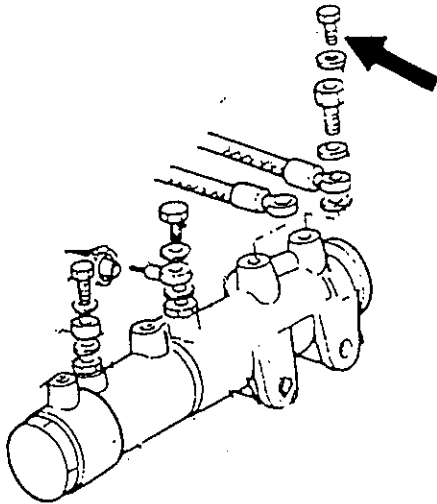
Symptom	Probable Cause	Tools Required	Test	Solution
STIFF PEDAL	Brake master cylinder pistons seized		Disassemble valve and verify seizure.	Replace cylinder
	Caliper delivery lines obstructed			Clean lines
BRAKE DOES NOT RELEASE AFTER PEDAL RELEASED	Caliper piston seized		Disassemble caliper and check piston movement	Clean parts and replace seals
	Brake treadle valve seized		Disassemble valve and verify seizure	Replace valve
	Relief valve opening pressure too low	Pressure gauge	Test brake pressure at pump	Set pressure to specification
NOISE WHEN BRAKING	Brake pads worn		Disassemble and verify pad dimension	Replace pads
BRAKE PEDAL TRAVEL EXCESSIVE	Air lock in brake fluid system			Bleed all brakes
	Filling valve not sealing		Disassemble and verify complaint	Replace master cylinder
	Master cylinder internal leakage		Disassemble and verify complaint	Replace master cylinder
BRAKING EFFORT INEFFECTIVE	Brake pads worn, if accompanied by noise		Disassemble caliper and verify complaint	Replace brake pads
	Low brake application pressure	Pressure gauge	Test hydraulic brake portion for correct pressure	Set operating pressure
	Filling valve not sealing		Verify complaint	Replace master cylinder
	Master cylinder internal leakage		Disassemble and verify complaint	Replace master cylinder

4.3 TESTING

SYMPTOM	PROBABLE CAUSE	SOLUTION
Excessive braking:	Wrong pressure setting.	Reduce the pressure acting on the adjusting device located under the pedal, checking the pressure value with a pressure gauge.
Insufficient braking:	Wrong pressure setting.	Increase the pressure acting on the adjusting device located under the pedal, checking the pressure value with a pressure gauge. Warning: never exceed the specified pressures.
Fluctuating pressure during one or multiple brakings:	The minimum pressure initiating the recharge of the accumulators is lower than the maximum brakes actuating pressure.	Check that the accumulator recharge starting pressure is correctly set. To check the pressure with empty accumulators, connect a pressure gauge (250 bar scale) to the pressure switch port on the brake pedal valve.
		Start the engine. Actuate the brakes several times to recharge the accumulators and read the recharging start minimum pressure. The max/min. pressure differential is not adjustable. Set the minimum pressure through the adjusting screw according to the specifications.
Constant or too frequent recharging of the accumulators:	Nitrogen pressure too low or too high	Check the nitrogen pressure in the accumulators.
	Leakages through the one-way check valve located inside the brake pedal valve.	To inspect the valve, remove the Allen type plug under the brake valve lower block. To ensure a tighter closing, the check valve ball has been superseded by a mushroom head valve and hardened taper seat.
	Leakages in the parking brake disengagement control diverter P/N 7907 1633.	To check performance of the diverter, disconnect the output pipe from the brake pedal valve and delivery to the diverter and plug it to avoid oil leakages. If the recharging time is increasing, the diverter needs to be replaced. Please note that a normal recharging cycle of the accumulators requires 20 minutes or more with idling engine without actuating the brakes.
Feeding pump constantly pressurized:	Worn pump.	Repair or replace the pump.
	Dirt in the brake valve.	Check the valve (free sliding of components, perfect condition of sealing surfaces and mating surfaces).
Accumulators do not charge:	Priority valve seized by dirt.	Check that components slide freely, in particular the input valve. Check, after overhauling the accumulator charge valve, that the piston locking pin located in front of the feeding connection is correctly installed.
The brakes remain partially engaged	Linkage out of adjustment.	Check that the pedal setting lock leaves some clearance between the linkage and the actuating pistons.

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

4.3.1 SYSTEM PRESSURE CHECK PRIOR TO S/N 610977



4.3.1.1

Remove the plug from the brake master cylinder fitting. Install fitting P/N 75300603 in its place. Install gauge P/N 75300110 onto the fitting.

4.3.1.2

WARNING

Do not run the engine of this machine in closed areas without proper ventilation to remove deadly exhaust gasses.

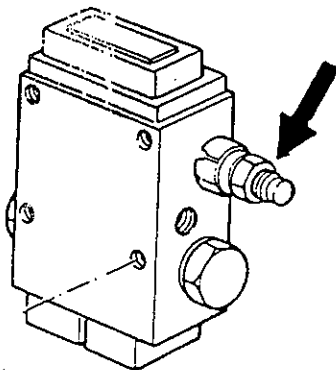
Observe all start up and shut down procedures and "WARNINGS" listed in the operation and maintenance instruction manual.

This machine and its attachments are to be operated only by qualified operator seated in the operator's seat.

Before starting machine, check, adjust and lock the operator's seat for maximum comfort and control of the machine.

Replace seat belts every two years on open canopy units and every three years on machinery with cabs or at change of ownership.

Start the engine and operate at low idle, place the transmission in neutral and apply the parking brake. Depress the brake pedal fully and note the pressure.



4.3.1.3

The pressure should be between 86-90 bar (1260-1305 psi). Pressure adjustment is accomplished by loosening the jam nut on the brake treadle valve and adjusting the screw. Do not operate the brake system at higher than specified pressure.

Study **SAFETY RULES** in the front of this manual thoroughly for the protection of machine and safety of personnel.

BRAKE SYSTEM

4.3.1 SYSTEM PRESSURE CHECK S/N 610978 & up

4.3.1.1

Remove the low pressure switch, item 1 and install 75300110 and adaptor 75301064.

4.3.1.2

WARNING

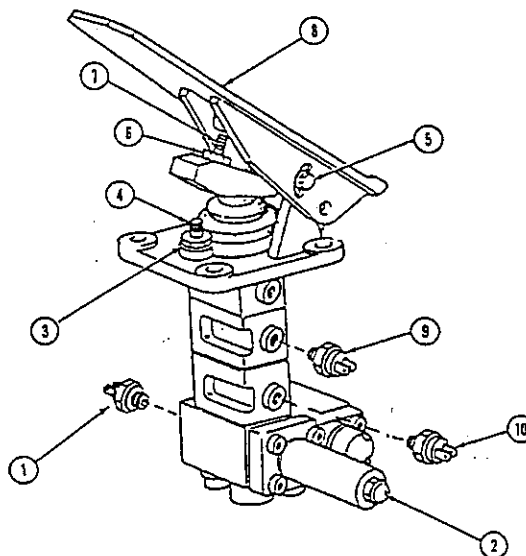
Do not run the engine of this machine in closed areas without proper ventilation to remove deadly exhaust gasses.

Observe all start up and shut down procedures and "WARNINGS" listed in the operation and maintenance instruction manual.

This machine and its attachments are to be operated only by qualified operator seated in the operator's seat.

Before starting machine, check, adjust and lock the operator's seat for maximum comfort and control of the machine.

Replace seat belts every two years on open canopy units and every three years on machinery with cabs or at change of ownership.



Start the engine and operate at low idle, place transmission in neutral and apply the parking brake. Repeatedly operate the brake pedal.

4.3.1.3

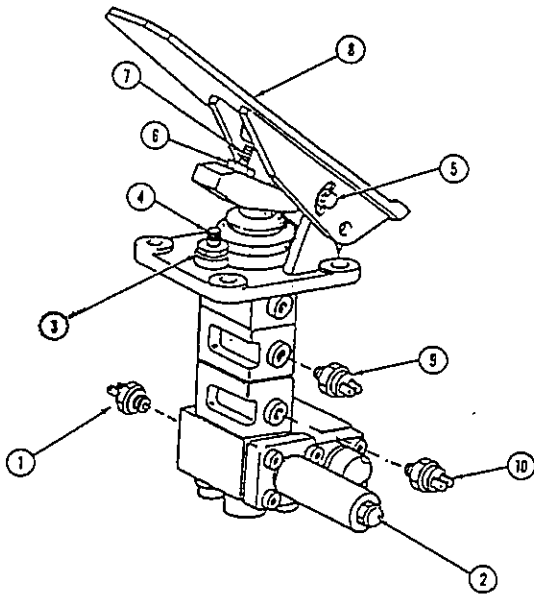
Note low point on pressure gauge as well as high point on the gauge. Pressure low point should be no lower than 126 bar (1827 psi) while the high pressure is 150 bar (2175 psi).

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

BRAKE SYSTEM

4.3.1.4

Pressure adjustment is accomplished by removing nut 2 and adjusting the screw. Do not operate the brake system at higher than specified pressures.



4.3.2 MASTER CYLINDER PRESSURE

S/N 610978 & up

4.3.2.1

Remove the stop light switch (10) and install adaptor 75301064 and pressure gauge 75300110.

- 9. Transmission clutch cut-off switch
- 10. Stop light switch
- 11. Low system pressure switch

4.3.2.



WARNING

Do not run the engine of this machine in closed areas without proper ventilation to remove deadly exhaust gasses.

Observe all start up and shut down procedures and "WARNINGS" listed in the operation and maintenance instruction manual.

This machine and its attachments are to be operated only by qualified operator seated in the operator's seat.

Before starting machine, check, adjust and lock the operator's seat for maximum comfort and control of the machine.

Replace seat belts every two years on open canopy units and every three years on machinery with cabs or at change of ownership.

Start the engine and operate at low idle, place transmission in neutral and apply the parking brake. Depress brake pedal fully. Pressure reading should be 87 - 90 bar (1260 - 1305 psi).

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

BRAKE SYSTEM

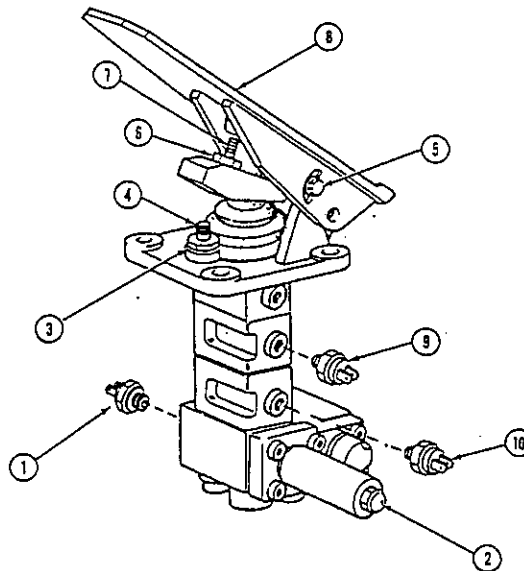
4.3.2.3

Pressure adjustment is made at the brake pedal's valve item 4. Remove nut 3 and adjust item 4.

4.3.3 PARKING BRAKE ACCUMULATOR (LARGE) PRIOR TO S/N 610977

4.3.3.1

Block tires so machine will not roll when machine is operated.



4.3.3.2.2



WARNING

Do not run the engine of this machine in closed areas without proper ventilation to remove deadly exhaust gasses.

Observe all start up and shut down procedures and "WARNINGS" listed in the operation and maintenance instruction manual.

This machine and its attachments are to be operated only by qualified operator seated in the operator's seat.

Before starting machine, check, adjust and lock the operator's seat for maximum comfort and control of the machine.

Replace seat belts every two years on open canopy units and every three years on machinery with cabs or at change of ownership.

Operate engine and depress the brake pedal for ten seconds to charge the accumulators.

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

BRAKE SYSTEM

4.3.3.3

Move parking brake lever to the applied position.

4.3.3.4

Shut off engine. Have an assistant observe the action of the parking brake linkage. Release the parking brake lever. Linkage should move full stroke.

4.3.3.5

Apply the parking brake and release the brake twice. If the parking brake linkage does not stroke fully, the accumulator is defective.

4.3.4 BRAKE ACCUMULATOR (SMALL) PRIOR TO S/N 610977

4.3.4.1

Apply the parking brake

BRAKE SYSTEM

4.3.4.2



WARNING

Do not run the engine of this machine in closed areas without proper ventilation to remove deadly exhaust gasses.

Observe all start up and shut down procedures and "WARNINGS" listed in the operation and maintenance instruction manual.

This machine and its attachments are to be operated only by qualified operator seated in the operator's seat.

Before starting machine, check, adjust and lock the operator's seat for maximum comfort and control of the machine.

Replace seat belts every two years on open canopy units and every three years on machinery with cabs or at change of ownership.

Raise the front wheels 25 mm (1 in) off the ground with the boom hydraulics. After the wheels are off the ground, center the boom lever and apply the implement lever lock.

4.3.4.3

Shut off engine. Have an assistant rotate one wheel. Step down on the brake pedal. Do not pump the brake pedal.

4.3.4.4

The wheel should stop and unable to rotate. Repeat the rotation application five times. If the test shows that the wheel can be rotated during any of the brake applications, then one or both of the brake accumulators are defective.

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

BRAKE SYSTEM

4.3.4.5



WARNING

Do not run the engine of this machine in closed areas without proper ventilation to remove deadly exhaust gasses.

Observe all start up and shut down procedures and "WARNINGS" listed in the operation and maintenance instruction manual.

This machine and its attachments are to be operated only by qualified operator seated in the operator's seat.

Before starting machine, check, adjust and lock the operator's seat for maximum comfort and control of the machine.

Replace seat belts every two years on open canopy units and every three years on machinery with cabs or at change of ownership.

Restart the machine and lower the wheels.

BRAKE SYSTEM

4.4.1 BRAKE PUMP

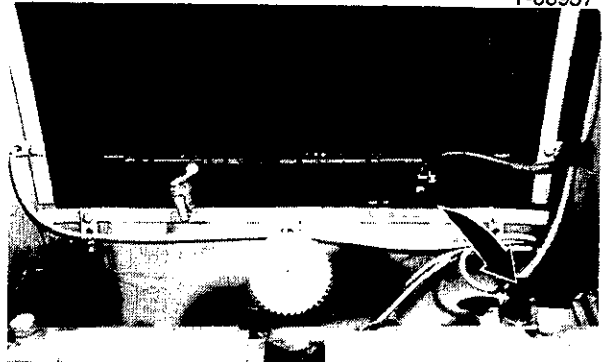


WARNING

Always turn the master switch to the off position before cleaning, repairing, servicing or parking the machine to prevent injury.

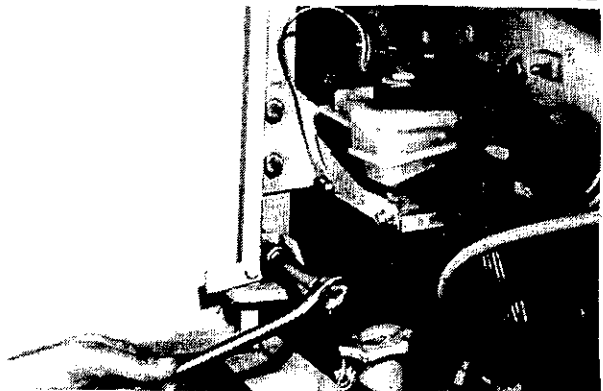
4.4.1.1

Disconnect electrical master switch



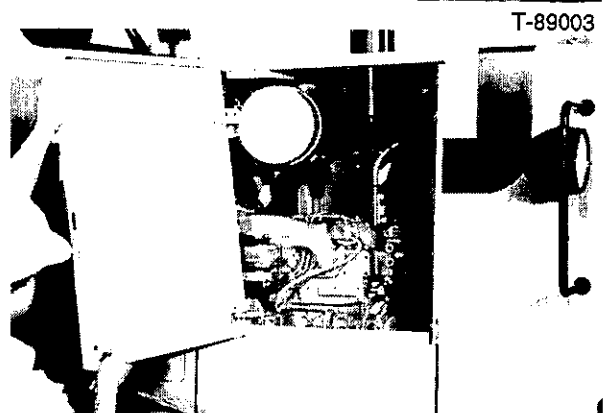
4.4.1.2

Remove capscrews attaching hinge to tank.



4.4.1.3

Remove door.



4.4.1.4

Remove lower panel.



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

BRAKE SYSTEM

T-88929



4.4.1.5

! DANGER

Fluid under pressure - turn cap or cover slowly to relieve pressure before removing.

Remove cap to drain hydraulic tank. Drain oil into a length of hose and into a pan to keep oil off of tires.

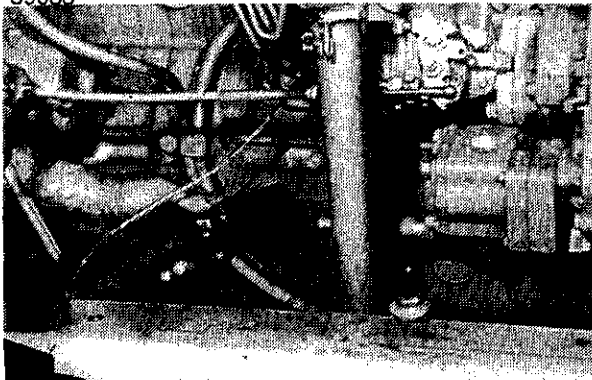
T-89032



4.4.1.6

Disconnect tube attached to top of brake pump.

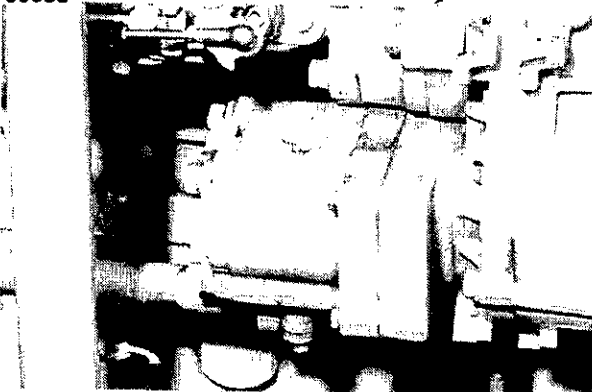
T-89033



4.4.1.7

Disconnect hose attached to bottom of brake pump.

T-89033



4.4.1.8

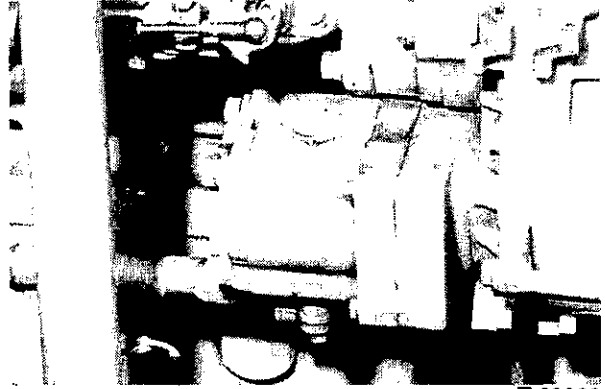
Remove the four capscrews holding the pump to the engine.

BRAKE SYSTEM

4.4.1.9

When installing the brake pump onto the engine, be sure that the pump's small outlet is on top. Tighten the attaching capscrews to specified torque.

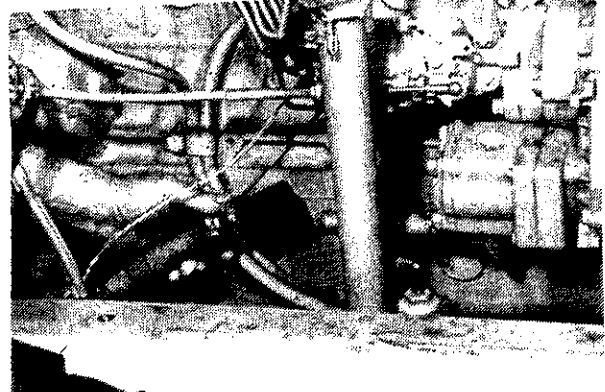
T-89033



4.4.1.10

Install the o-ring on the low pressure hose and attach the hose to the bottom pump outlet.

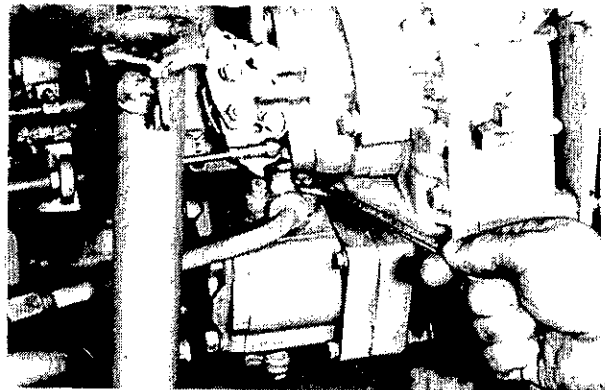
T-89033



4.4.1.11

Install the o-ring on the high pressure hose and attach the hose to the top pump outlet.

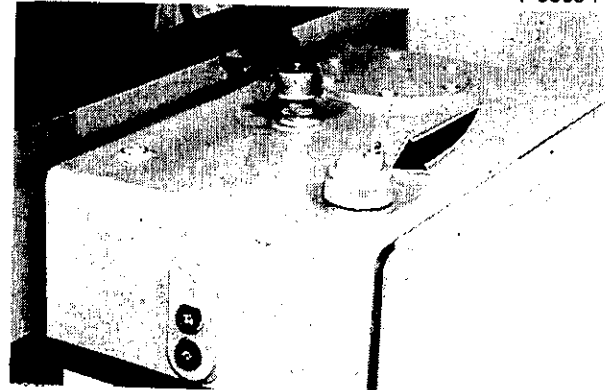
T-89032



4.4.1.12

Fill the implement tank with oil as specified on the lubrication chart decal.

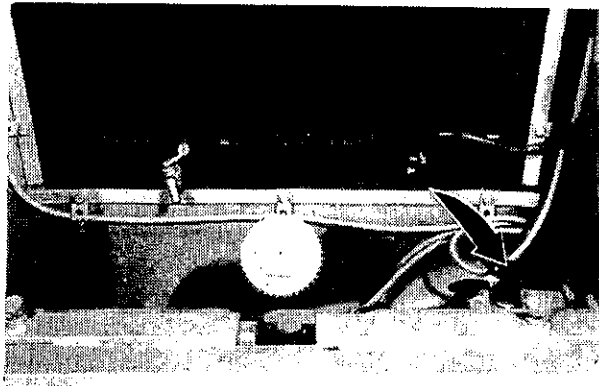
T-88954



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

BRAKE SYSTEM

T-88937



4.4.1.13

WARNING

Do not run the engine of this machine in closed areas without proper ventilation to remove deadly exhaust gases.

Observe all start up and shut down procedures and "WARNINGS" listed in the operation and maintenance instruction manual.

This machine and its attachments are to be operated only by qualified operator seated in the operator's seat.

Before starting machine, check, adjust and lock the operator's seat for maximum comfort and control of the machine.

Replace seat belts every two years on open canopy units and every three years on machinery with cabs or at change of ownership.

Turn on master switch. Operate the tractor and check for leaks.

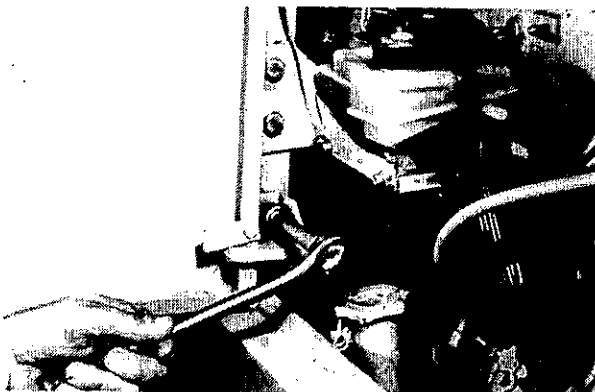
T-89004



4.4.1.14

After checking for leaks, install the lower panel.

T-89002



4.4.1.15

Attach door hinge to the implement oil tank.

BRAKE SYSTEM

4.4.2.1 Brake treadle valve



WARNING

Always turn the master switch to the off position before cleaning, repairing, servicing or parking the machine to prevent injury.

4.4.2.1.1

The brake treadle valve, located below the operator's platform on the left side of the loader, can be resealed but no spools can be interchanged within the valve.

Turn off electrical master switch.

4.4.2.1.2

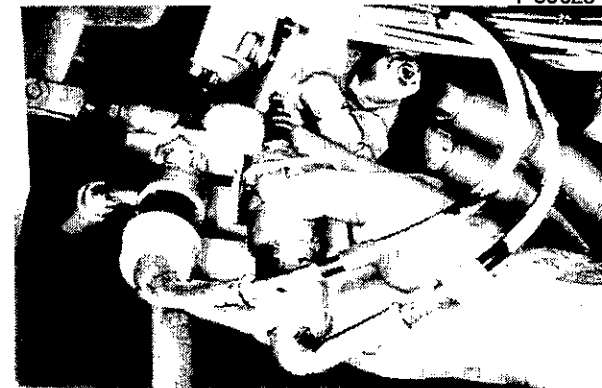
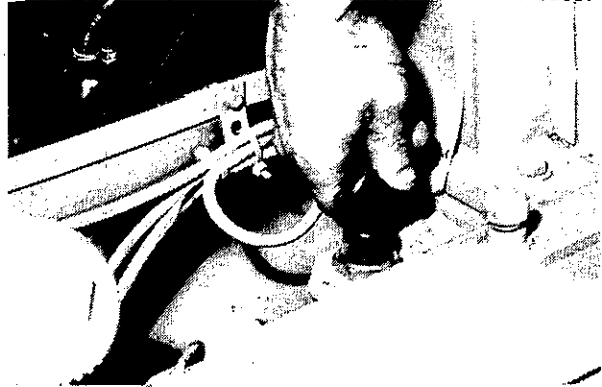
Drain the implement oil tank.

4.4.2.1.3

Remove the electrical switches connected to the valve.

4.4.2.1.4

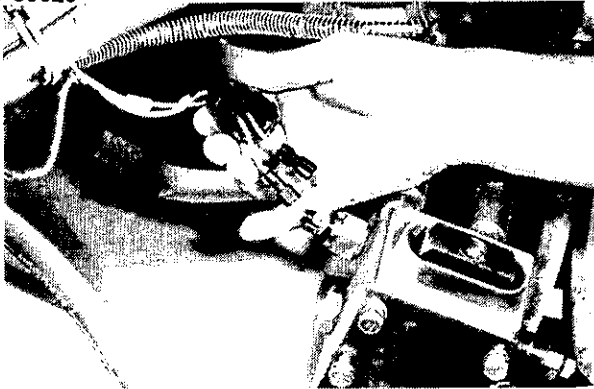
Remove the valve attaching screws from the platform.



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

BRAKE SYSTEM

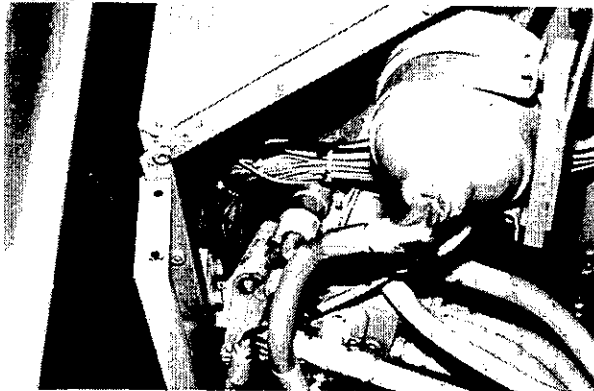
T-89628



4.4.2.1.5

Remove the hoses and any electrical wires from the valve.

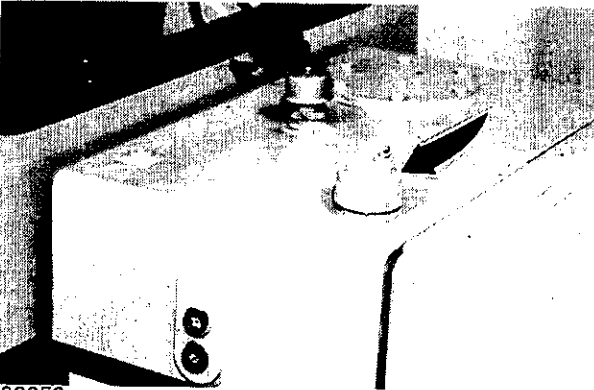
T-89650



4.4.2.1.6

Installation is the reverse of removal.

T-88954



T-88953

4.4.2.1.7

Fill the implement tank with the specified oil and to the proper level.

4.4.2.1.8

! WARNING

Do not run the engine of this machine in closed areas without proper ventilation to remove deadly exhaust gases.

Observe all start up and shut down procedures and "WARNINGS" listed in the operation and maintenance instruction manual.

This machine and its attachments are to be operated only by qualified operator seated in the operator's seat.

Before starting machine, check, adjust and lock the operator's seat for maximum comfort and control of the machine.

Replace seat belts every two years on open canopy units and every three years on machinery with cabs or at change of ownership.

Turn on master switch.

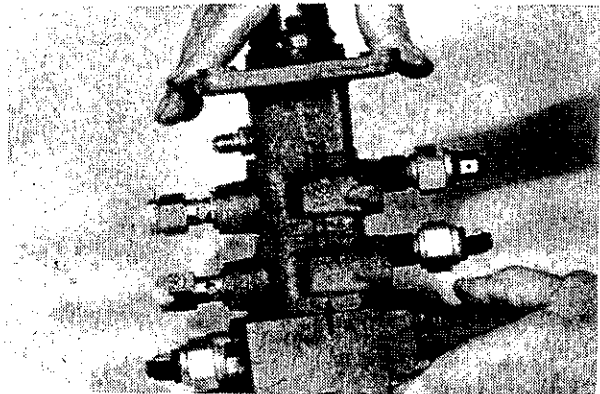
BRAKE SYSTEM

4.4.2.2 Brake treadle valve disassembly above s/n 610977

4.4.2.2.1

Mark valve assembly sections with alignment marks for reassembly.

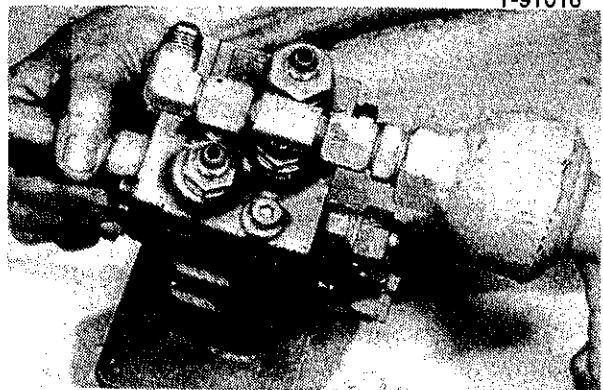
T-91012



4.4.2.2.2

Remove damping accumulator and two sump line fitting from the bottom of pressure control body section. Loosen all pressure switches and fittings.

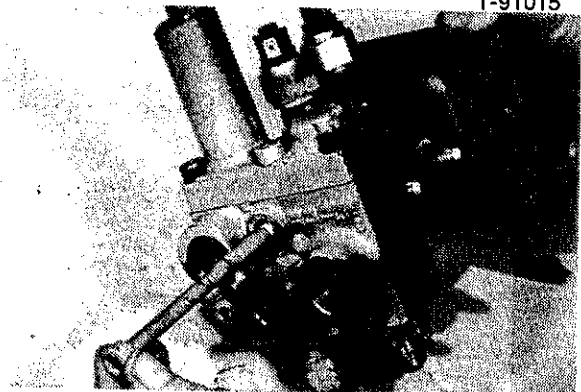
T-91016



4.4.2.2.3

Remove two (2) valve section assembly retaining allen head capscrews from the bottom of pressure control body section. Be sure sections do not separate.

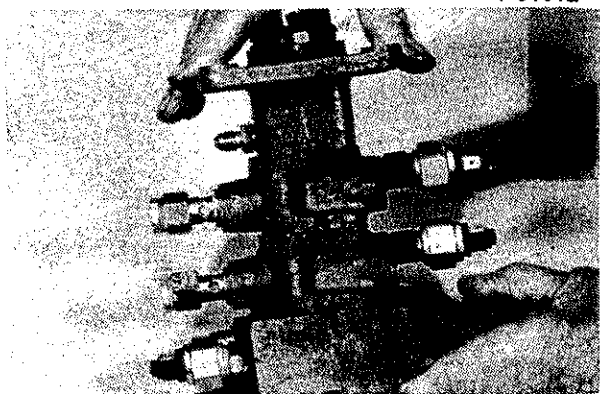
T-91015



4.4.2.2.4

Turn valve section assembly up right on work bench.

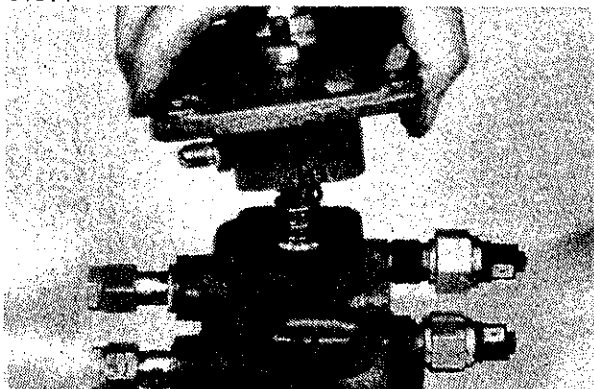
T-91012



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

BRAKE SYSTEM

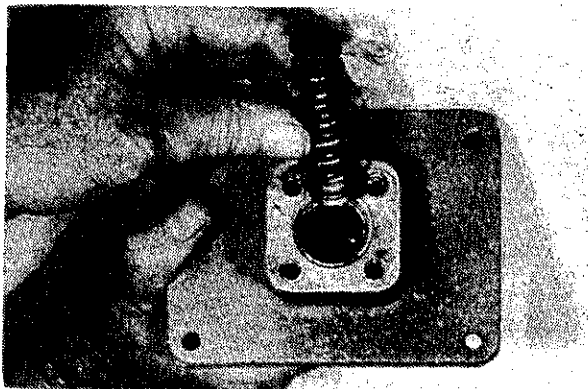
T-91014



4.4.2.2.5

Remove upper brake valve housing section.

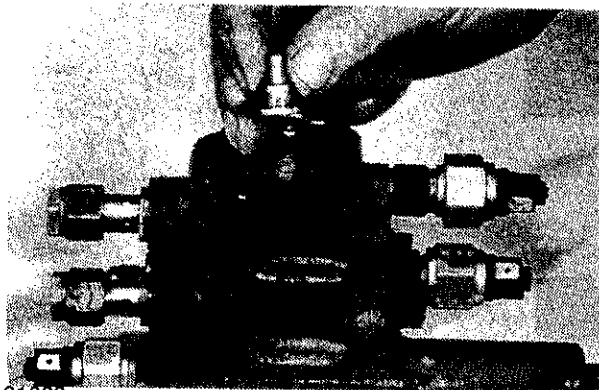
T-91011



4.4.2.2.6

Remove two (2) springs and upper spring retainer.

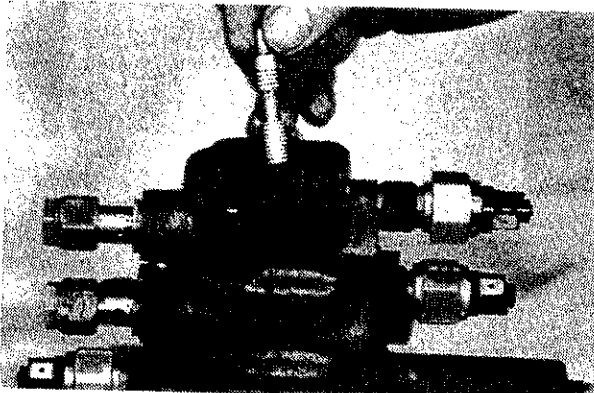
T-91010



4.4.2.2.7

Remove lower spring retainer

T-91009



4.4.2.2.8

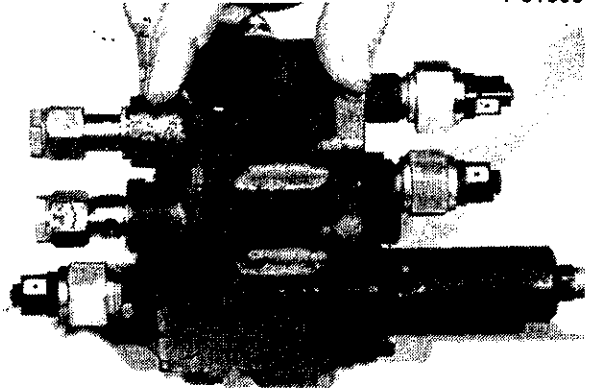
Remove pressure regulator valve, identify valve with section from which it was removed.

BRAKE SYSTEM

4.4.2.2.9

Remove first brake booster pressure regulating valve body section.

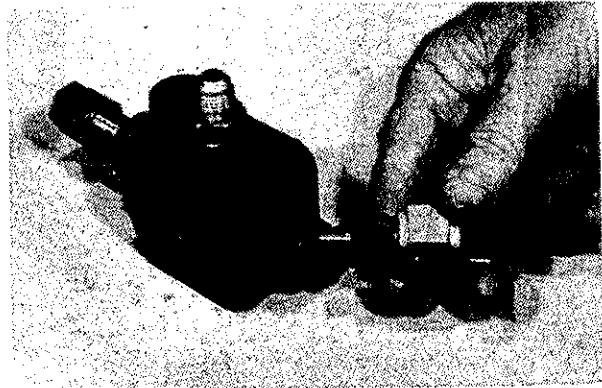
T-91008



4.4.2.2.10

Remove clutch cut-off pressure switch.

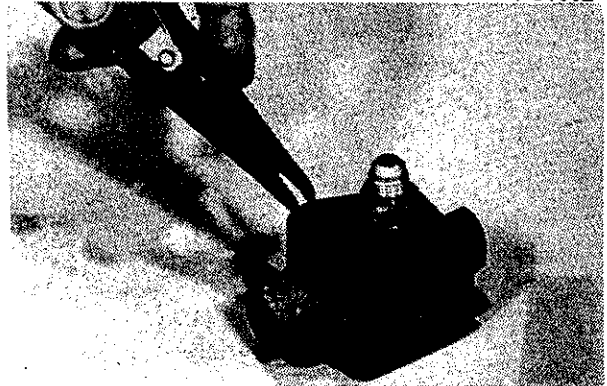
T-91003



4.4.2.2.11

Remove accumulator check valve cartridge assembly retaining ring.

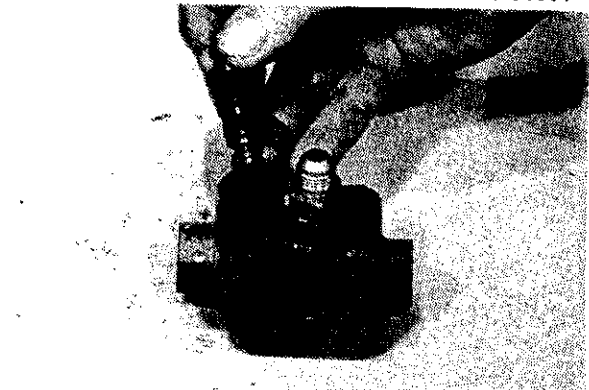
T-91002



4.4.2.2.12

Remove check valve cartridge assembly.

T-91001



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

BRAKE SYSTEM

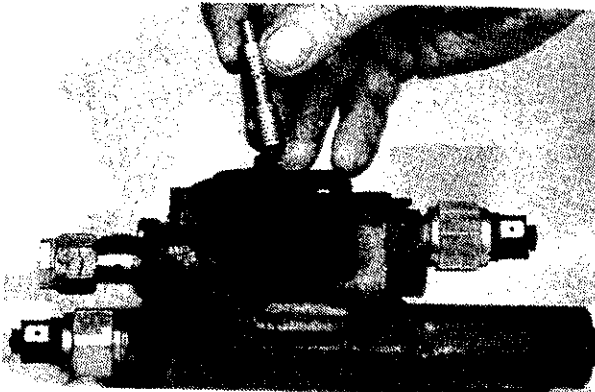
T-91000



4.4.2.2.13

Remove check valve and spring from cartridge.

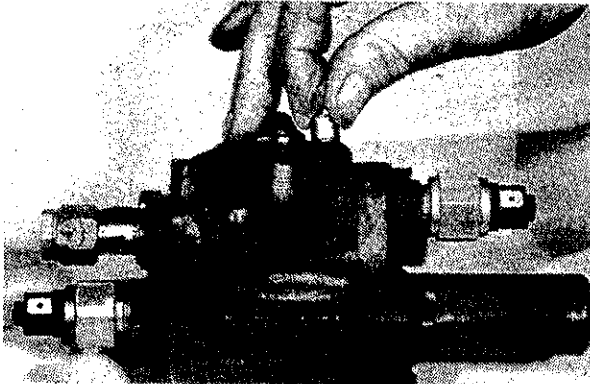
T-91005



4.4.2.2.14

Remove pressure regulator valve and spring, identify valve and spring with section from which it was removed.

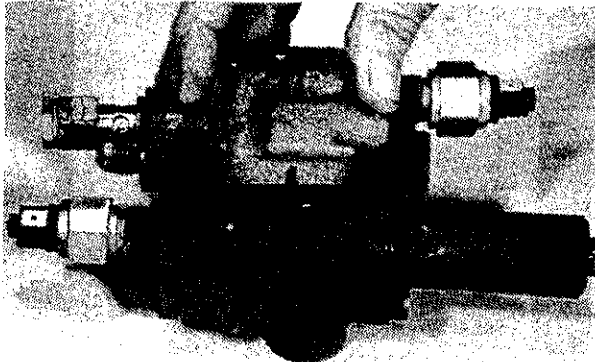
T-91006



4.4.2.2.15

Remove two (2) alignment dowel sleeves.

T-91004



4.4.2.2.16

Remove second brake booster pressure regulating valve body section.

BRAKE SYSTEM

4.4.2.2.17

Remove rear stop light pressure switch.

T-91003



4.4.2.2.18

Remove accumulator check valve cartridge assembly retaining ring.

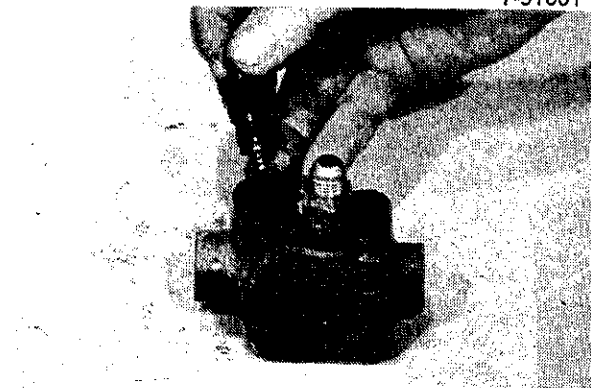
T-91002



4.4.2.2.19

Remove check valve cartridge assembly.

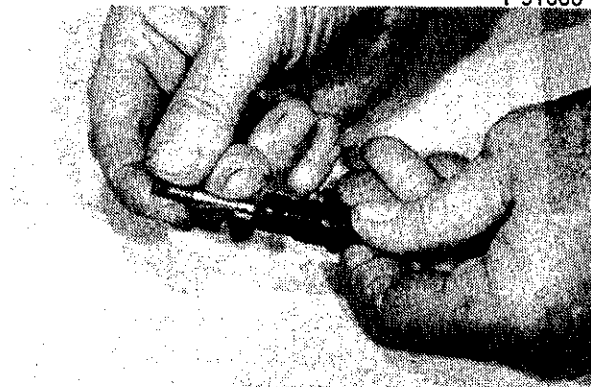
T-91001



4.4.2.2.20

Remove check valve and spring from cartridge.

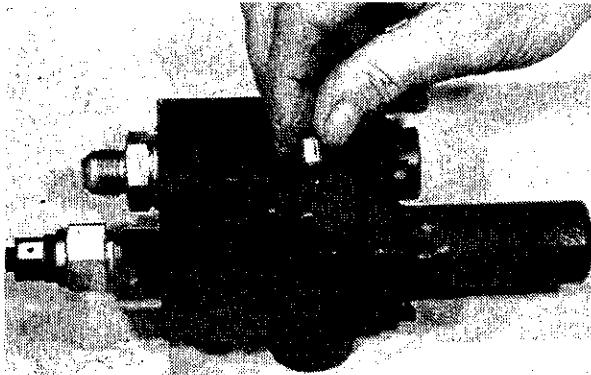
T-91000



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

BRAKE SYSTEM

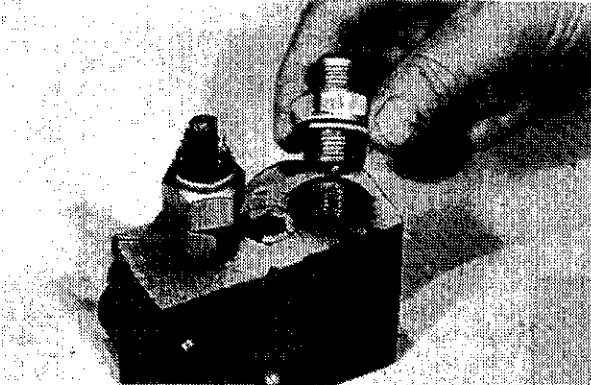
T-90998



4.4.2.2.21

Remove two (2) alignment dowel sleeves from pressure control body.

T-90987



4.4.2.2.22

Remove pump inlet fitting.

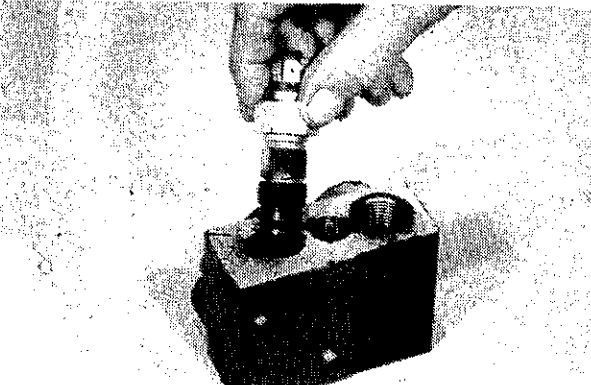
T-90985



4.4.2.2.23

Remove inlet check valve.

T-90984



4.4.2.2.24

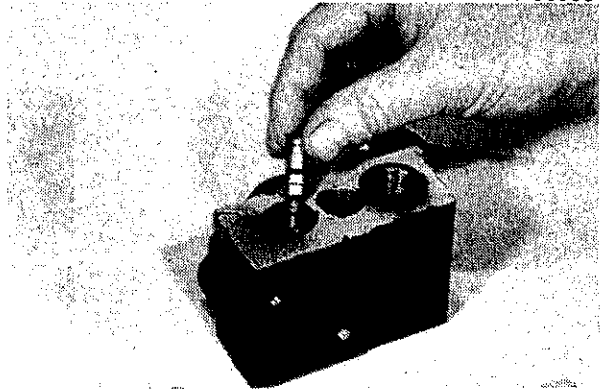
Remove low brake fluid pressure switch.

BRAKE SYSTEM

4.4.2.2.25

Remove pilot valve unseating piston.

T-90983



4.4.2.2.26

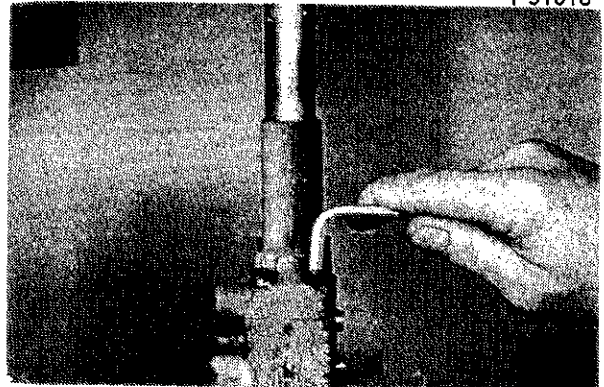


WARNING

Brake valves have a heavy spring compressed inside them. Always follow recommended procedures when assembling or disassembling these valves.

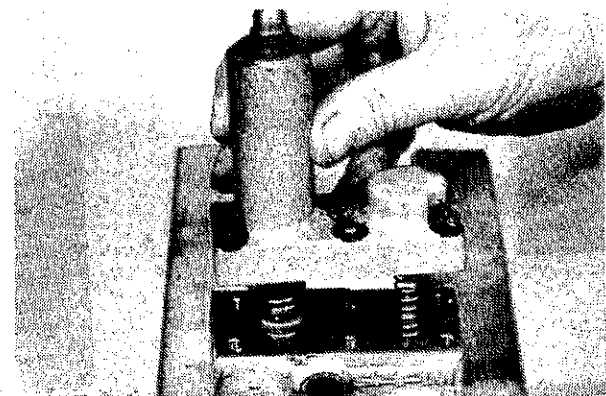
Place pressure control body in a press. Use sleeve to protect the acorn nut. Remove six (6) allen head retaining capscrews.

T-91018



4.4.2.2.27

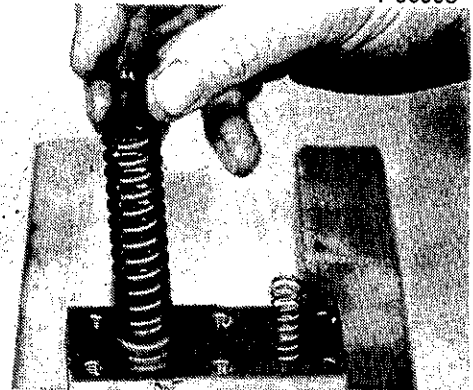
Remove the end cap.



4.4.2.2.28

Remove pilot valve spring retainer.

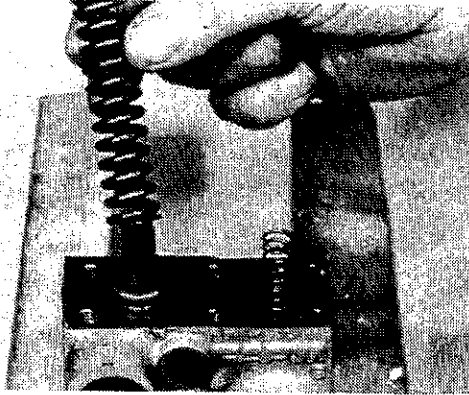
T-90993



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

BRAKE SYSTEM

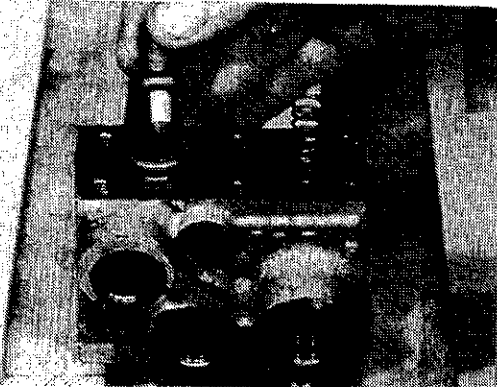
T-90990



4.4.2.2.29

Remove two (2) pilot valve springs, (one small, one large).

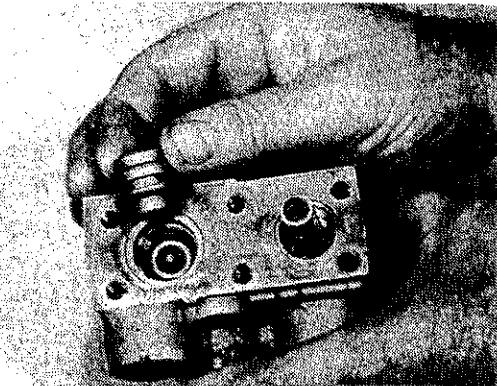
T-90990



4.4.2.2.30

Remove pilot valve.

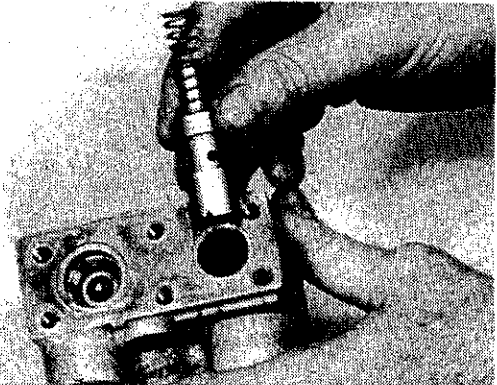
T-90989



4.4.2.2.31

Remove pilot valve seat.

T-90988



4.4.2.2.32

Remove unloader/relief valve and spring.

BRAKE SYSTEM

4.4.2.2.33



DANGER

Never use gasoline solvent or other flammable fluids to clean elements. Use authorized commercial, non-flammable, non-toxic solvents.

Clean all parts.

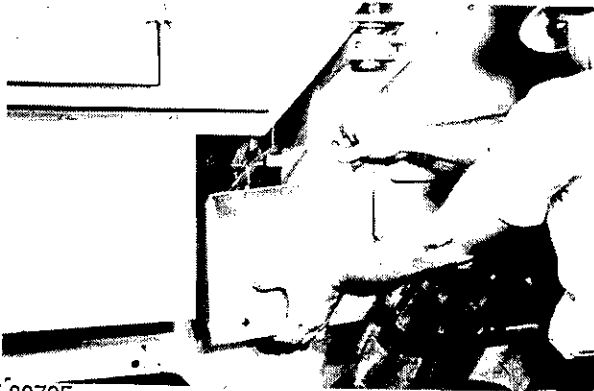
4.4.2.3 ASSEMBLY

4.4.2.3.1

Reassembly of the treadle valve is the reverse of disassembly. When assembling, be sure to use new O-ring. Tighten all capscrews to their specified torque.

BRAKE SYSTEM

T-89796



4.4.3.1 BRAKE MASTER CYLINDER

4.4.3.1.1

Remove the access panel from the left side of the frame.

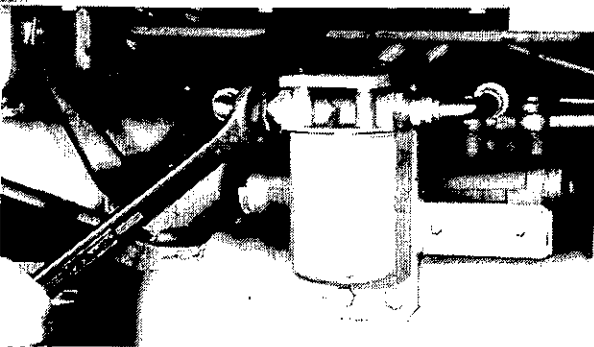
T-89795



4.4.3.1.2

Remove skirting from bottom edge of operator's platform. Ladder is removed for picture clarity and does not need to be removed.

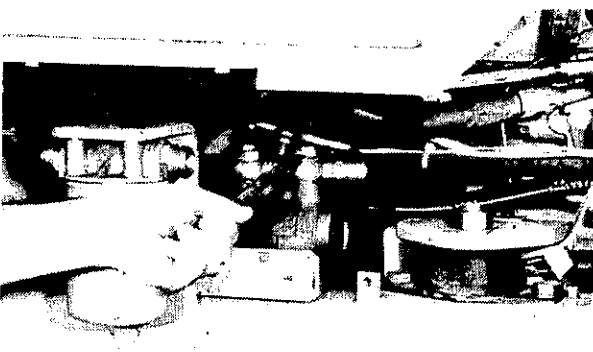
T-89950



4.4.3.1/3

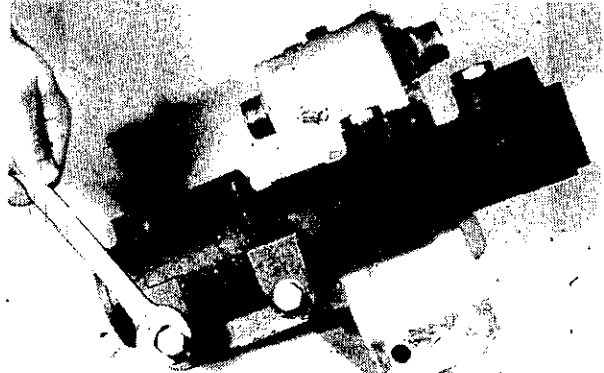
Disconnect the hoses that go to the transmission filter.

T-89951



4.4.3.1.4

Disconnect the six hoses from the master cylinder and mark their positions.



BRAKE SYSTEM

4.4.3.1.5

Remove the filter and master cylinder bracket from the frame. The bracket is held in place by means of bolts, lockwashers and nuts.



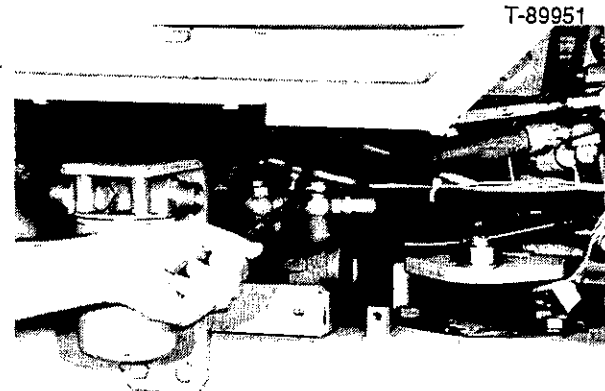
4.4.3.1.6

Remove the master cylinder from the bracket.

T-89954

4.4.3.1.7

Installation of the master cylinder is the reverse of removal. Be sure to tighten all capscrews to their specified torque.



4.4.3.1.8

Bleed the brake system and test the master cylinder for proper functioning.

DANGER

The hydraulic port of the brake system requires a solid column of brake fluid, free of air bubbles, if it is to function properly. If air is present in the hydraulic fluid, compression of the air bubbles may nullify effective stroking of the brake actuating piston and will make the brakes ineffective. Possible personal injury or property damage could result.

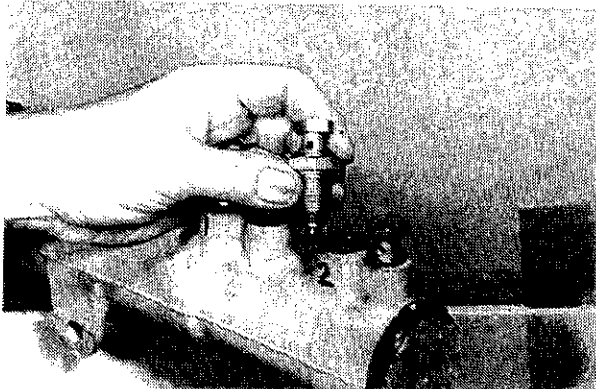
Brake fluid reservoirs must be filled with fluid to the proper level. Fill with specified fluid.



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

BRAKE SYSTEM

T-90958

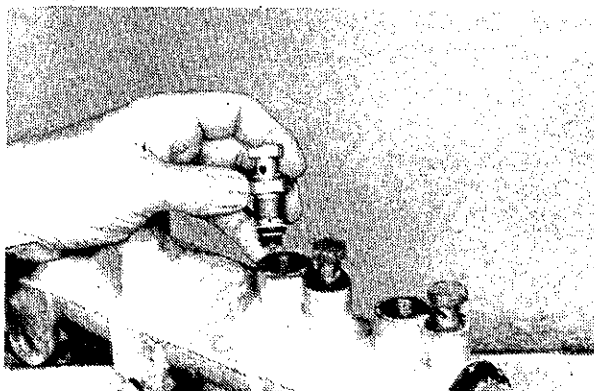


4.4.3.2 MASTER CYLINDER DISASSEMBLY

4.4.3.2.1

Remove front axle brake fluid supply tip check valve (identify valve with port from which it was removed).

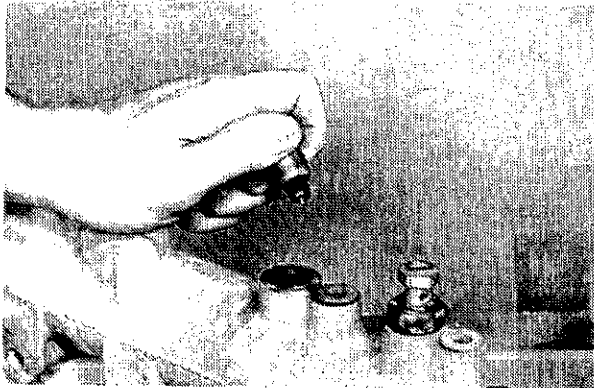
T-90954



4.4.3.2.2

Remove rear axle brake fluid supply tip check valve (identify valve with port from which it was removed).

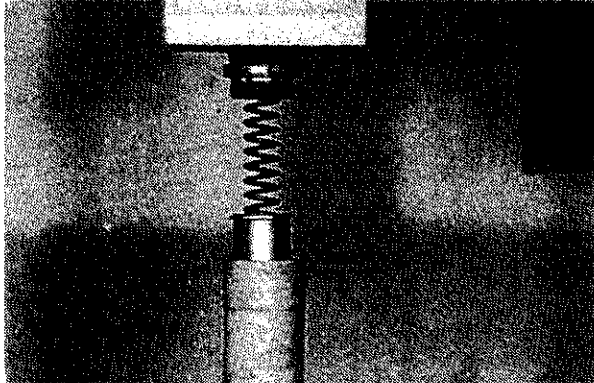
T-90957



4.4.3.2.3

Be sure both tip check valves have free movement (depress valve stem inside of fitting).

T-90952



4.4.3.2.4



WARNING

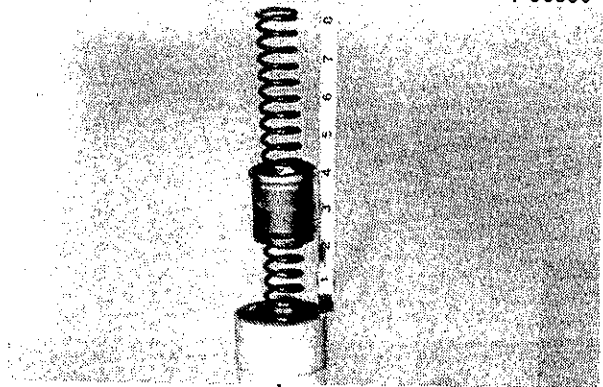
Brake valves have a heavy spring compressed inside them. Always follow recommended procedures when assembling or disassembling these valves.

Place cylinder in a vise, break spring retaining cap loose, no more than two (2) threads. Then place cylinder in a press and remove spring retaining cap. (Brake fluid end of cylinder)

BRAKE SYSTEM

8" of spring free play

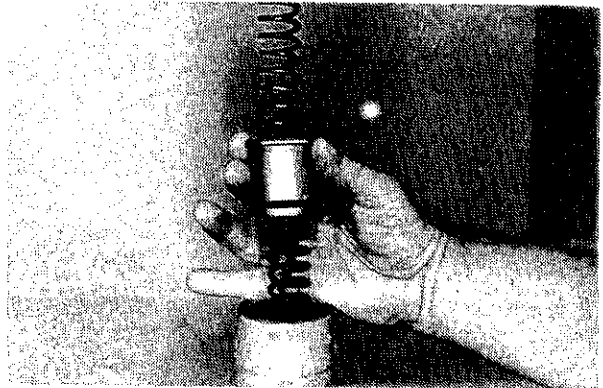
T-90950



4.4.3.2.5

Remove first spring and piston with seal ring (short piston).

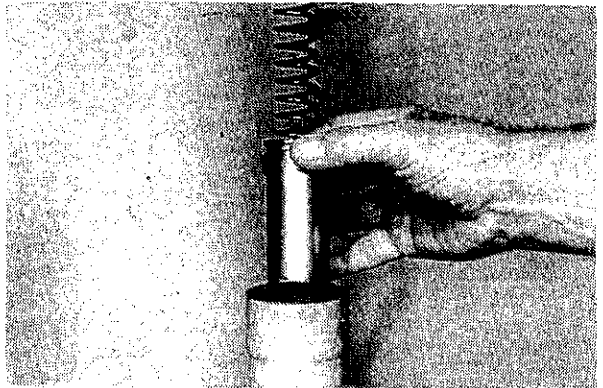
T-90949



4.4.3.2.6

Remove second spring and piston (long piston).

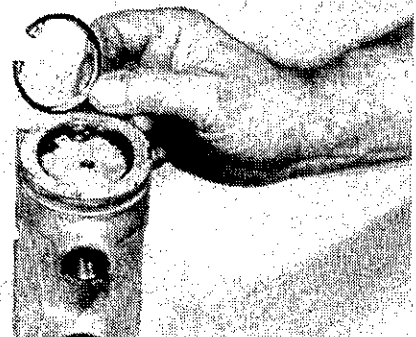
T-90948



4.4.3.2.7

Remove retaining ring (hydraulic oil end of cylinder).

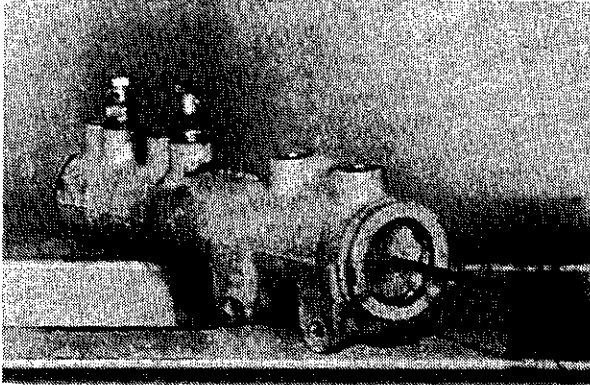
T-90961



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

BRAKE SYSTEM

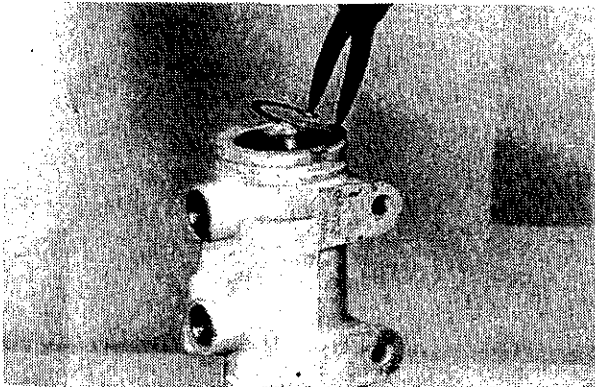
T-90955



4.4.3.2.8

Remove end plug with seal ring (use 8mm bolt to pull plug)

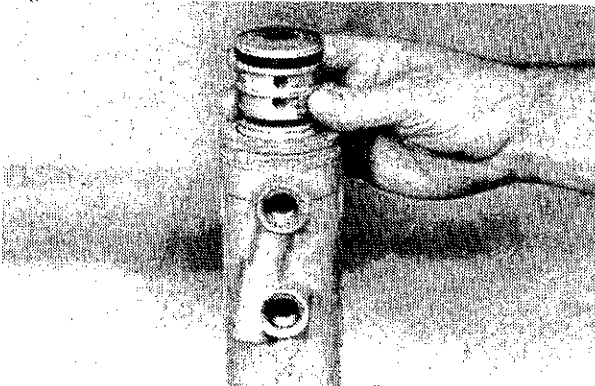
T-90959



4.4.3.2.9

Remove inner retaining ring.

T-90945



4.4.3.2.10

Remove two (2) power pistons with seal rings.

4.4.3.2.11



DANGER

Never use gasoline solvent or other flammable fluids to clean element. Use authorized commercial, non-flammable, non-toxic solvents.

Clean all parts

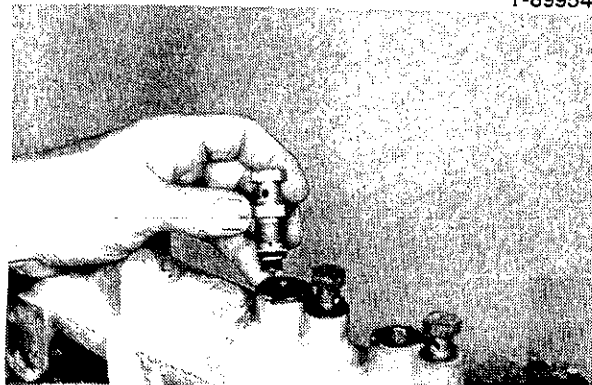
BRAKE SYSTEM

4.4.3.3 ASSEMBLY

4.4.3.3.1

Reassembly of the master cylinder follows the guidelines of disassembly. Reverse the procedure except for the following.

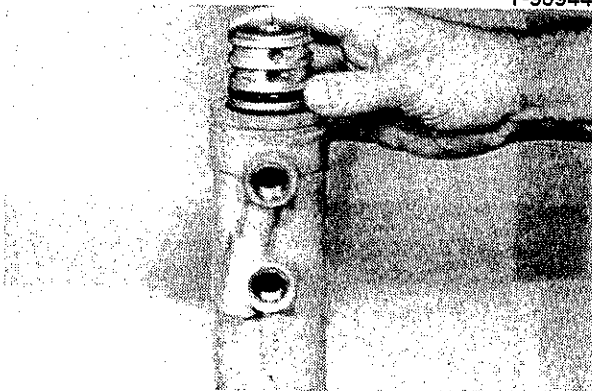
T-89954



4.4.3.3.2

Install first power piston with seal ring down (hydraulic oil end of cylinder).

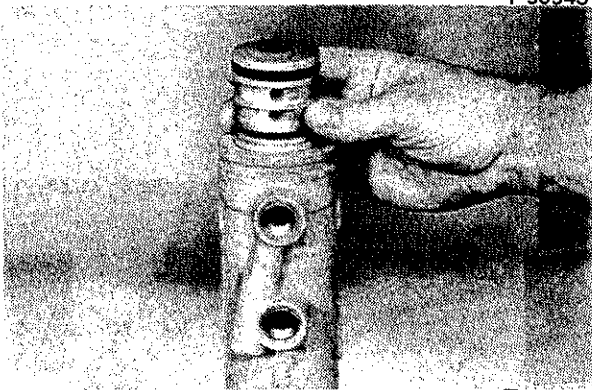
T-90944



4.4.3.3.3

Install second power piston with seal ring up.

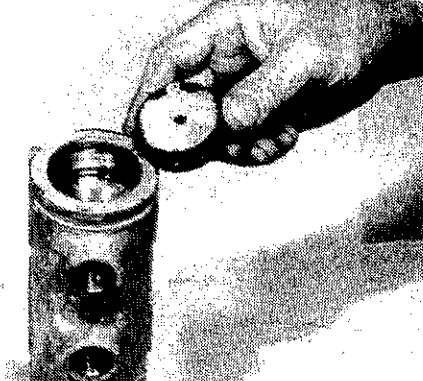
T-90945



4.4.3.3.4

Install end plug with seal ring (tap in until it seats on inner retaining ring).

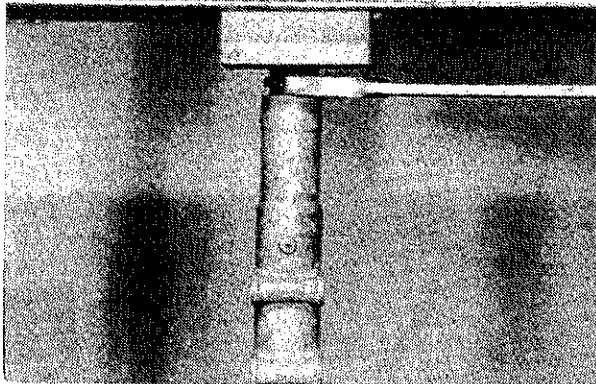
T-90960



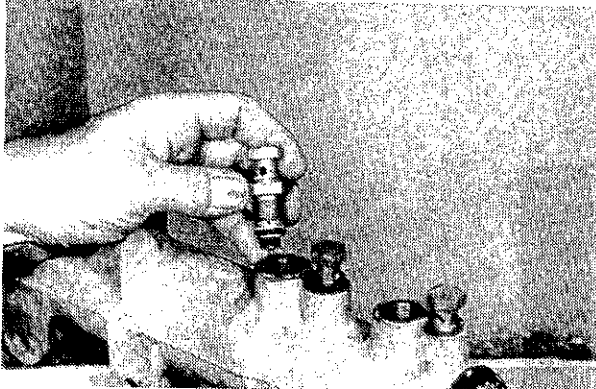
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

BRAKE SYSTEM

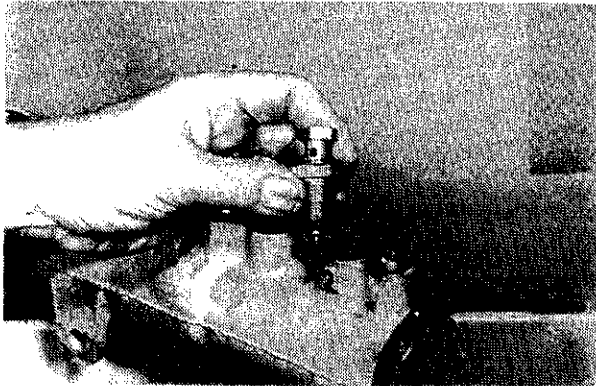
T-90953



T-90954



T-90958



4.4.3.3.5

DANGER

Brake valves have a heavy spring compressed inside them. Always follow recommended procedures when assembling or disassembling these valves.

Thread spring retaining cap into cylinder until it seats. Place cylinder in a vise and tighten retaining cap.

4.4.3.3.6

Install rear axle brake fluid supply tip check valve and tighten.

4.4.3.3.7

Install front axle brake fluid supply tip check valve and tighten.

BRAKE SYSTEM

4.4.4.1 CALIPER REMOVAL

NOTE : THE ILLUSTRATIONS IN THIS SECTION SHOW THE REAR AXLE. THE FRONT AXLE IS SIMILAR AND UNLESS OTHERWISE NOTED , THE PROCEDURES APPLY TO BOTH. THE MAIN DIFFERENCE BETWEEN THE TWO IS THE WAY THEY ARE MOUNTED. THE FRONT AXLE IS RIGID AND BOLTS DIRECTLY TO THE FRAME. THE REAR AXLE OSCILLATES AND IS ATTACHED TO THE FRAME BY TWO SUPPORTS.

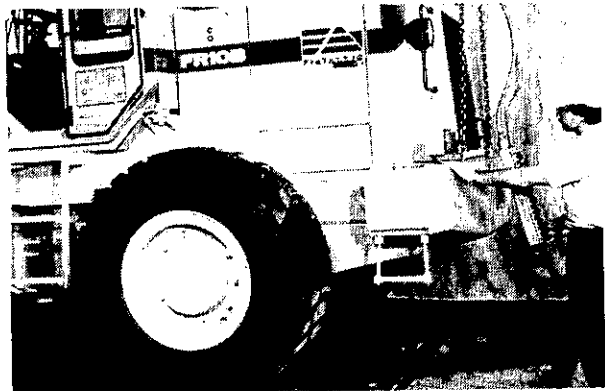
4.4.4.1.1

WARNING

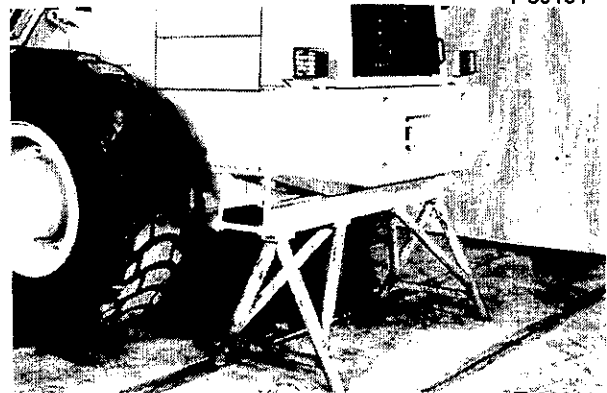
Lift and handle all heavy parts with a lifting device of proper capacity. Be sure parts are supported by proper slings and hooks. Use lifting eyes if provided. Watch out for people in the vicinity.

Using suitable hoist and sling, raise appropriate end of machine. Weight is approximately 5000 kg (11000 lbs.)

T-89150



T-89151



T-89011



4.4.4.1.2

WARNING

When any supporting machine component must be removed or installed and jacks are used, be sure the support of the jack at the machine and on the ground are appropriate to the load to be applied. Transfer the load to authorized blocking or jack stand immediately. Do not work on or under the machine or its components while supported only on a jack or other lifting device, according to local or national requirements.

Position a jack stand under machine that will support the load.

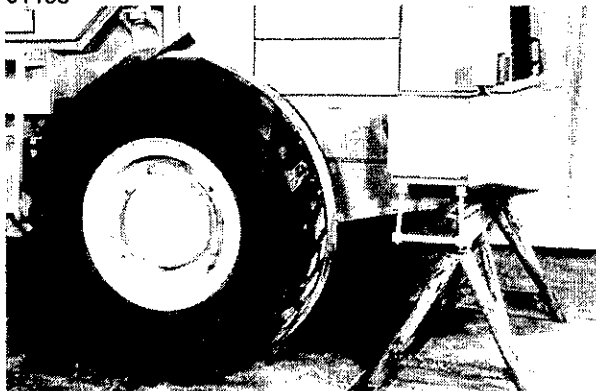
4.4.4.3

Remove fenders.

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

BRAKE SYSTEM

T-91155



4.4.4.1.4

WARNING

Lift and handle all heavy parts with a lifting device of proper capacity. Be sure parts are supported by proper slings and hooks. Use lifting eyes if provided. Watch out for people in the vicinity.

Position a suitable hoist and sling to lift wheel and tire assembly. Standard tire and wheel assembly weighs approximately 225 kg (500 lbs.).

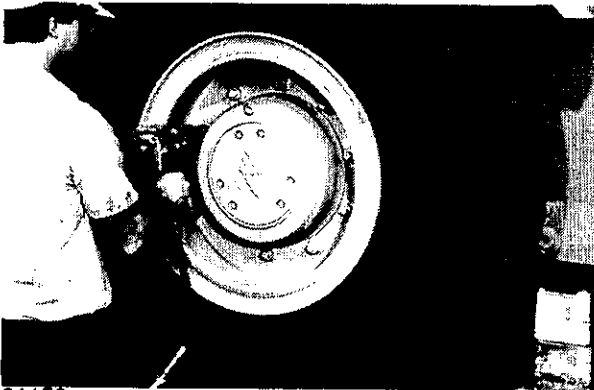
T-89154



4.4.4.5

Place wood blocks between rear axle housing and frame to keep axle from oscillating when wheel assembly is removed.

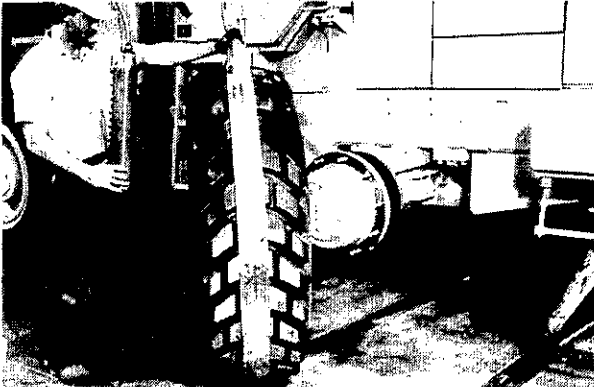
T-89981



4.4.4.6

Remove wheel nuts.

T-91156



4.4.4.7

Remove wheel and tire assembly. Repeat wheel removal procedure to remove wheel from opposite side.

BRAKE SYSTEM

4.4.4.1.8

Disconnect hydraulic brake line.

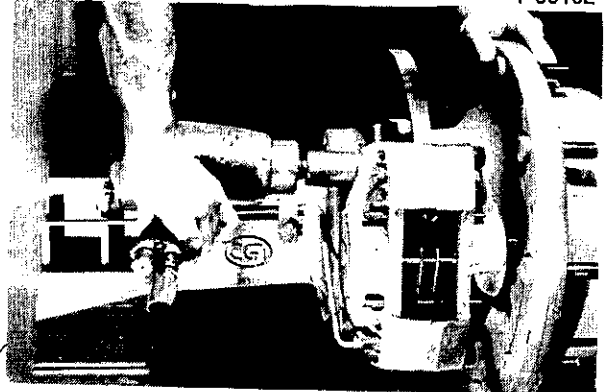
T89165



4.4.4.1.9

Remove brake caliper capscrews. Note location of each capscrew as they are different.

T-89162



4.4.4.1.10

Remove brake caliper.

T-89166

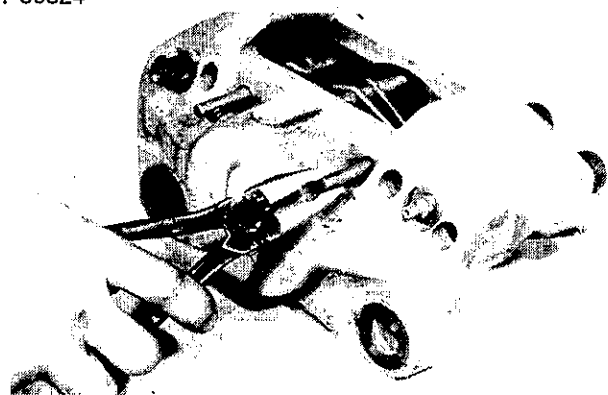
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

BRAKE SYSTEM

4.4.4.2 BRAKE CALIPER REBUILD

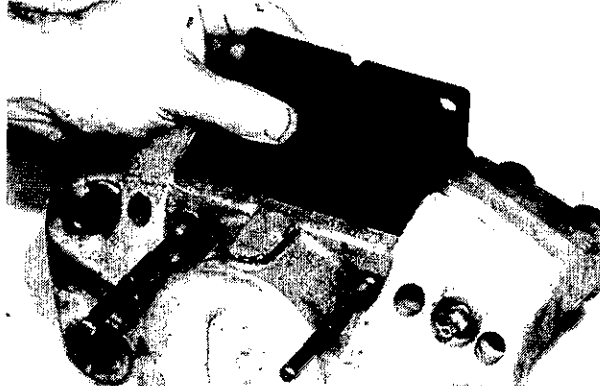
NOTE: All repairs, except leaks where the halves meet, can be performed without separating the caliper halves.

T-89324



4.4.4.2.1
Remove pins and spring.

T-89329



4.4.4.2.2
Remove brake pads.

T-89332

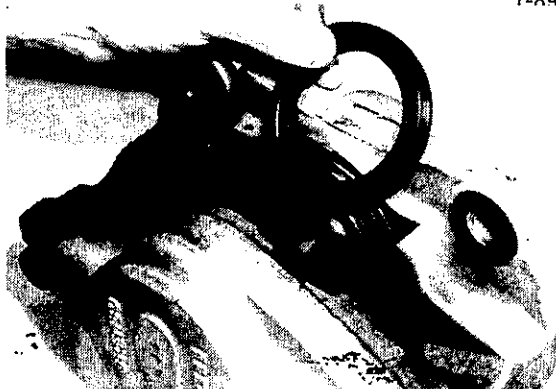


4.4.4.2.3
Use two small screwdrivers and pry out piston. If piston is stuck in bore, clamp opposite piston and attach a hand pump to inlet port to force out piston.

BRAKE SYSTEM

- 4.4.4.2.4
Remove dust seal

T-89328



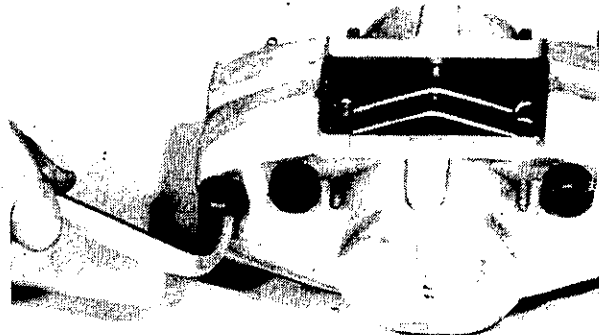
- 4.4.4.2.5
Remove wiper ring and O-ring.

T-89326



- 4.4.4.2.6
Remove screws to separate the caliper halves if O-ring seals between the halves need to be replaced. Tighten screws to specified torque.

T-89331



- 4.4.4.2.7
Install O-ring and wiper ring.

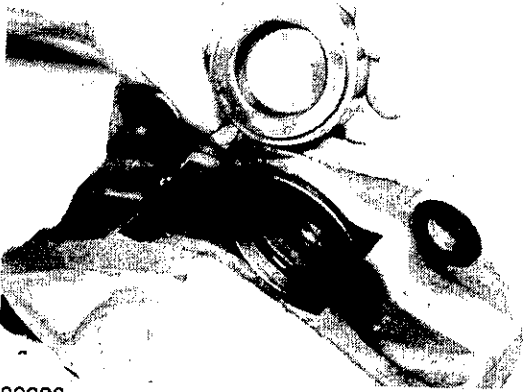
T-89326



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

BRAKE SYSTEM

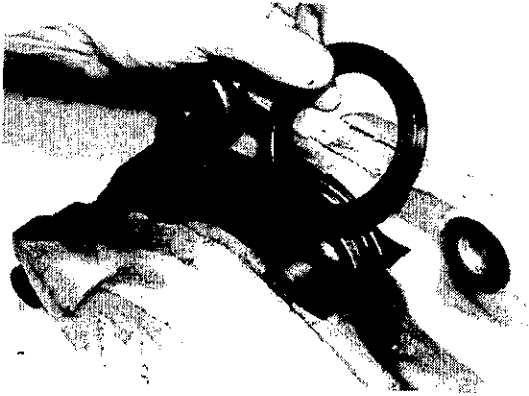
T-89327



4.4.4.2.8

Coat piston and O-ring with brake fluid. Carefully install piston through O-ring and wiper ring.

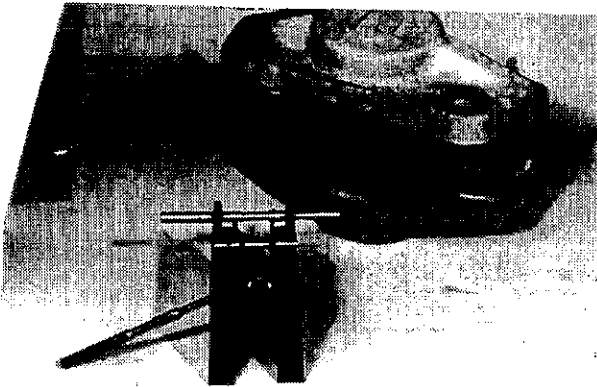
T-89328



4.4.4.2.9

Install dust seal.

T-89325



4.4.4.2.10

Install pads, spring, and pins.

BRAKE SYSTEM

4.4.4.3 CALIPER INSTALLATION

4.4.4.3.1

Coat capscrews with thread lock# 75000776(Loctite 262) . Shoulder capscrew goes into the bottom hole.

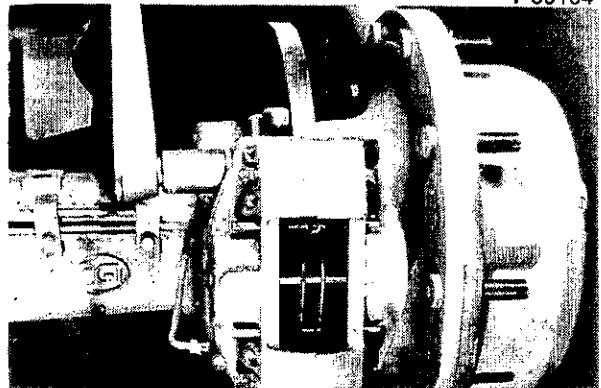
T-89193



T-89164

4.4.4.3.2

Tighten capscrews to specified torque.



T-89165

4.4.4.3.3

Install brake line to axle assembly.



T-91155

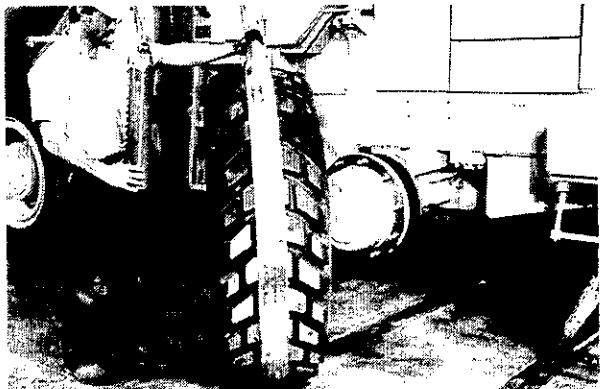
4.4.4.3.4



WARNING

Lift and handle all heavy parts with a lifting device of proper capacity. Be sure parts are supported by proper slings and hooks. Use lifting eyes if provided. Watch out for people in the vicinity.

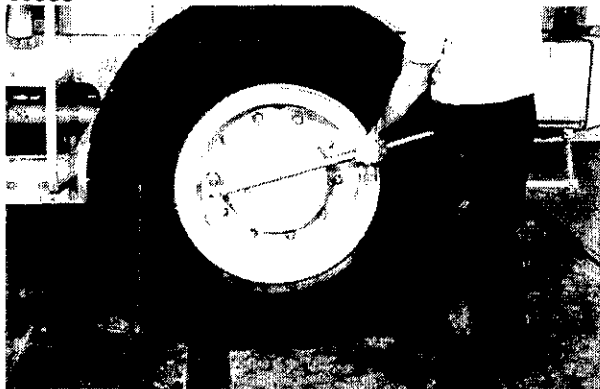
Install wheel and tire assembly onto the axle. Tire and wheel assembly weighs 225 kg (500 lbs.). Tighten the nuts until nuts hold the wheel tight to the axle. Repeat wheel installation procedure for other axles.



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

BRAKE SYSTEM

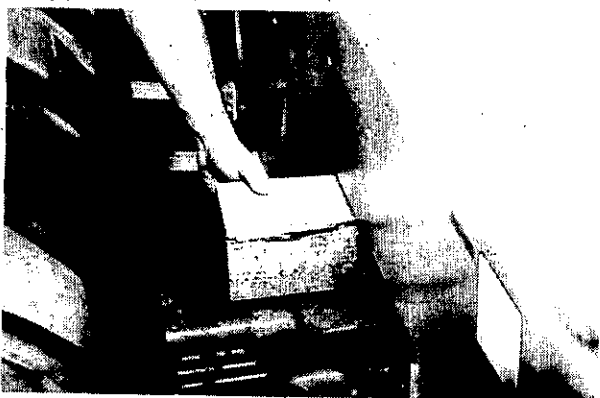
T-89388



4.4.4.3.5

Using a crossing pattern, tighten the nuts to specified torque.

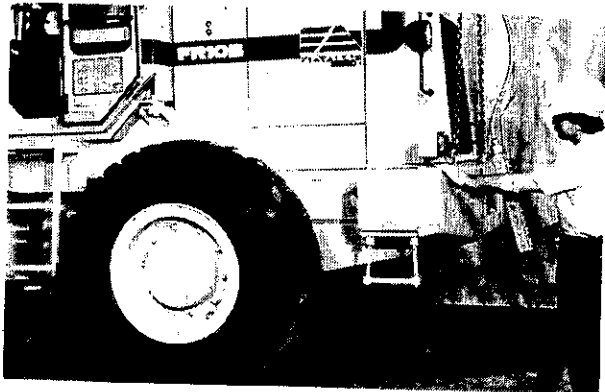
T-89154



4.4.4.3.6

Remove wood blocks from the rear axle area.

T-89150



4.4.4.3.7



WARNING

Lift and handle all heavy parts with a lifting device of proper capacity. Be sure parts are supported by proper slings and hooks. Use lifting eyes if provided. Watch out for people in the vicinity.

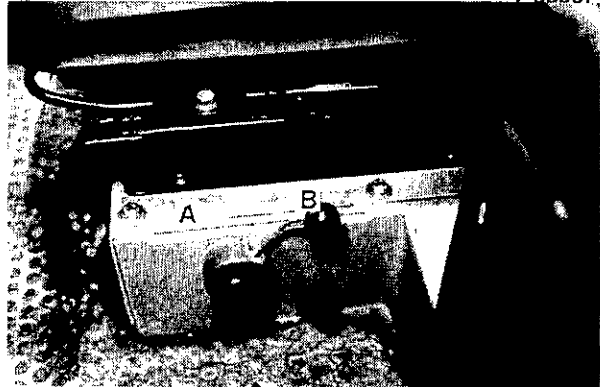
Use a suitable hoist to raise the machine from the jack stands. Weight is approximately 5000 kg (11000 lbs.)

BRAKE SYSTEM

4.4.5 BRAKE BLEEDING

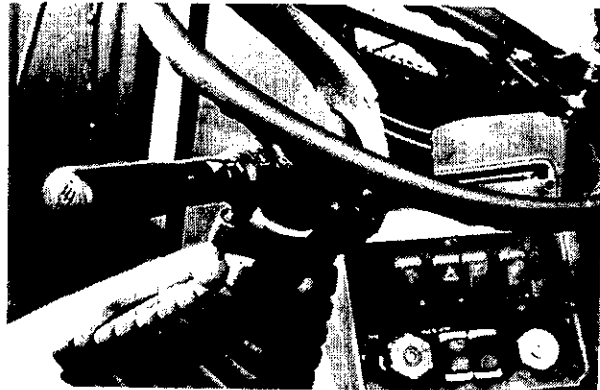
4.4.5.1

Brakes must be bled with the engine operating and with the aid of an assistant. Place the machine in a level condition so that it does not roll. Set the parking brake and chock the wheels to prevent movement.



4.4.5.2

Place the transmission selector lever in the neutral position and lock it there with the neutral lock lever.



4.4.5.3



WARNING

Do not run the engine of this machine in closed areas without proper ventilation to remove deadly exhaust gases.

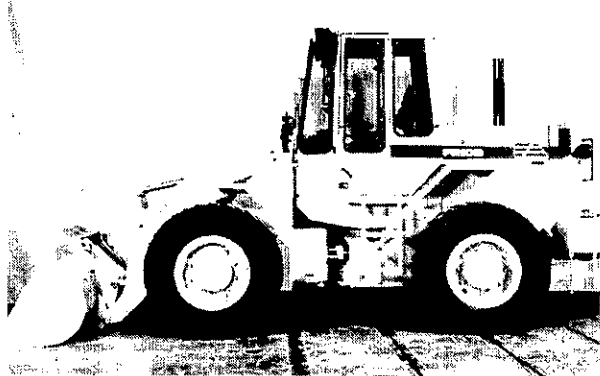
Observe all start up and shut down procedures and "WARNINGS" listed in the operation and maintenance instruction manual.

This machine and its attachments are to be operated only by qualified operator seated in the operator's seat.

Before starting machine, check, adjust and lock the operator's seat for maximum comfort and control of the machine.

Replace seat belts every two years on open canopy units and every three years on machinery with cabs or at change of ownership.

Start the engine.



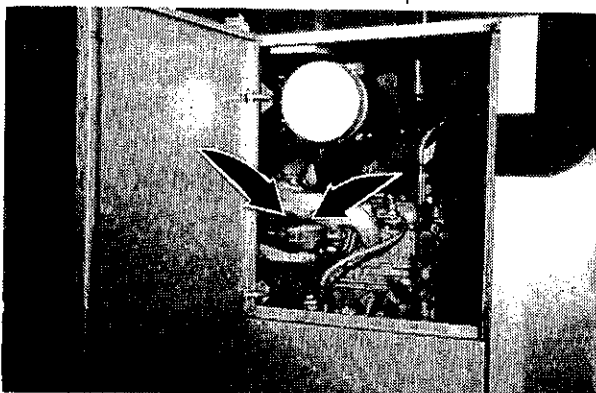
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

BRAKE SYSTEM

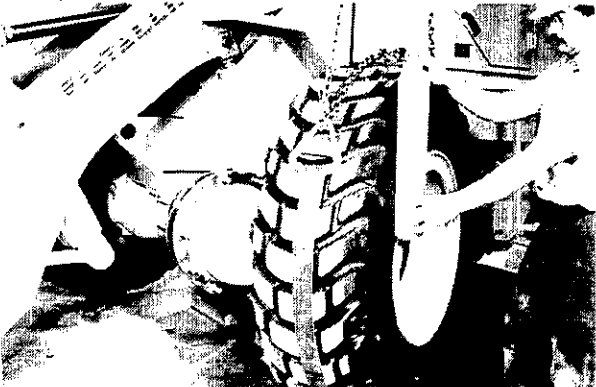
4.4.5 .4

The assistant must depress the brake pedal several times with the engine running.

T-89168



T-90498



4.4.5 .5

DANGER

The hydraulic portion of the brake system requires a solid column of brake fluid, free of air bubbles, if it is to function properly. If air is present in the hydraulic fluid, compression of the air bubbles may nullify effective stroking of the brake actuating piston and will make the brakes ineffective. Possible personal injury or property damage could result.

Brake fluid reservoirs must be filled with fluid to the proper level. Fill with specified fluid.

With the pedal depressed loosen the brake bleeder fitting located on the brake caliper. (wheel and tire removed for picture clarity.) Tighten the fitting before the assistant lets his foot from the pedal. Repeat the steps until a solid column of fluid flows from the fitting.

4.4.5 .6

Be sure to keep the master cylinder full of fluid during the bleeding process.

4.4.5 .7

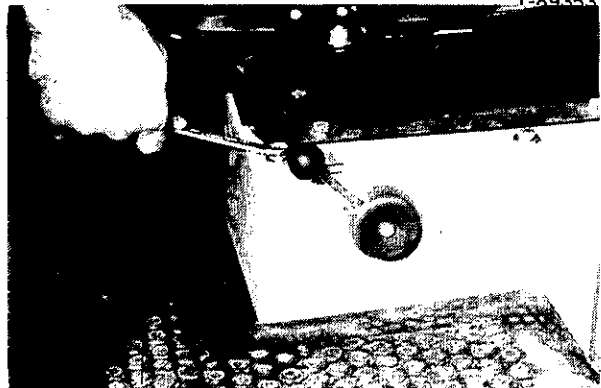
Repeat the procedure for all other brakes.

BRAKE SYSTEM

4.4.6.1 PARKING BRAKE VALVE

4.4.6.1.1

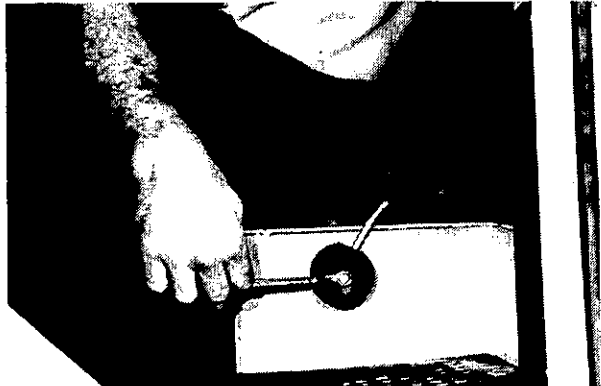
Remove the seat from the frame.



T-89353

4.4.6.1.2

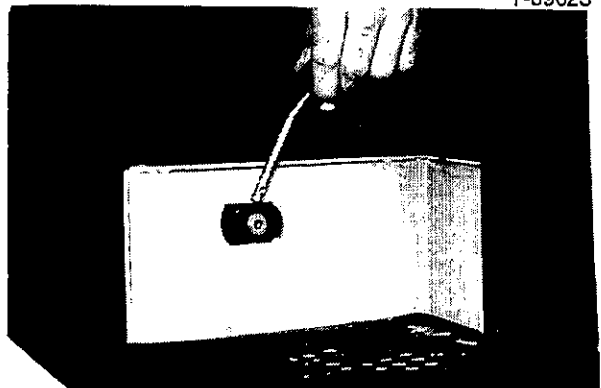
The parking brake valve, located to the lower left of the seat, can be removed by removing the cover.



T-89622

4.4.6.1.3

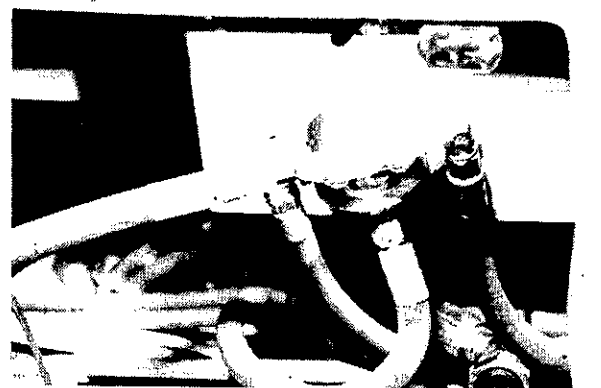
Remove the handle. Disconnect the valve from the seat frame and hoses.



T-89623

4.4.6.1.4

Installation of the valve is the reverse of removal.

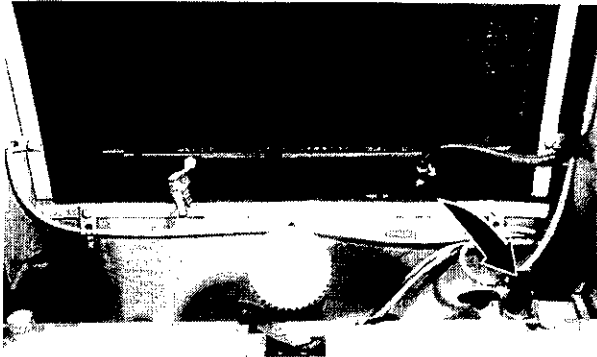


T-89614

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

BRAKE SYSTEM

T-88937



4.4.6.2 PARKING BRAKE CYLINDER

4.4.6.2.1

WARNING

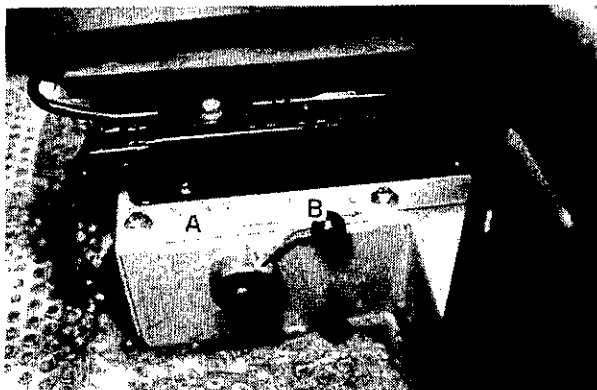
Do not run the engine of this machine in closed areas without proper ventilation to remove deadly exhaust gases.

Always turn the master switch to the off position before cleaning, repairing, servicing or parking the machine to prevent injury.

Observe all start up and shut down procedures and "WARNINGS" listed in the operation and maintenance instruction manual.

If the machine has been inoperative for a long period of time and the parking brake is applied, the engine may need to be ran so that the brake accumulators can be charged. After this operation turn off the electrical master switch and chock the wheels so that the machine does not roll.

T-88967



4.4.6.2.2

WARNING

Parking brake has a heavy spring compressed inside. Always follow procedures recommended in brake service manual when assembling or disassembling this valve.

Be sure the parking brake is released by hydraulic pressure by shifting the parking brake lever to the released position "B". Check to see that the brake is actually released, as the parking brake is hydraulically released and spring applied.

T-89797



4.4.6.2.3

Remove the left access plate from the left side of the loader frame.

BRAKE SYSTEM

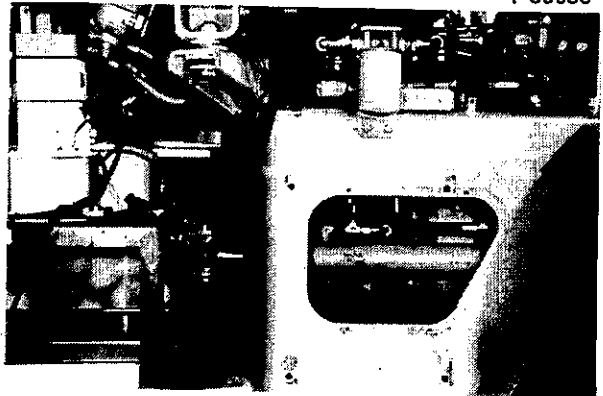
4.4.6.2.4

Remove the skirt at the bottom of the left side of the operator's platform.



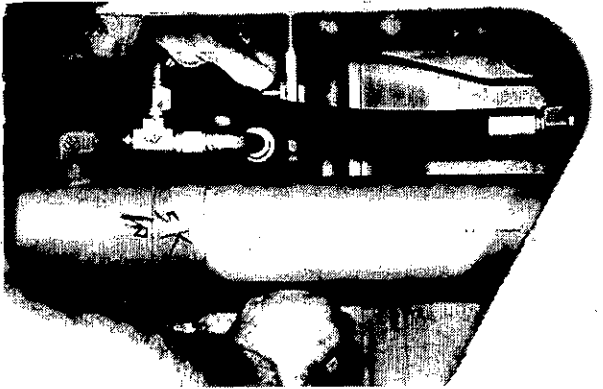
4.4.6.2.5

One other way to release the parking brake is to charge the brake cylinder by the use of a hydraulic pump. Use P/N 75300880 and an adaptor to connect the pump to the cylinder.



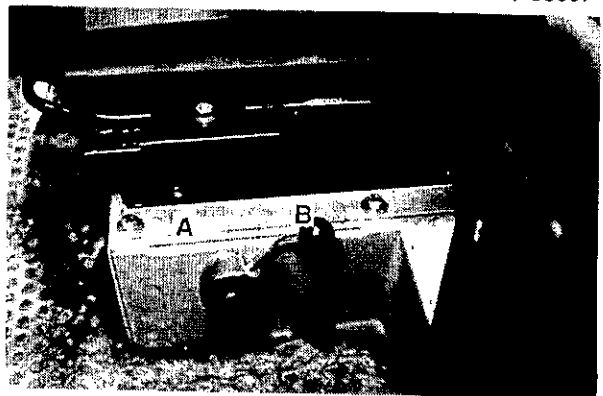
4.4.6.2.6

Disconnect the parking brake cylinder from the linkage by removing the cotter pin and pin.



4.4.6.2.7

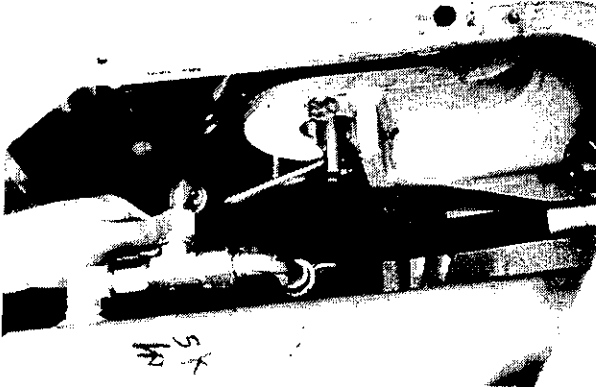
Apply the parking brake by means of the parking brake lever if there was sufficient pressure in the brake system to release the brake. If the brake was released by the hydraulic pump method, release the pump's fluid. This will cause the spring tension to relax.



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

BRAKE SYSTEM

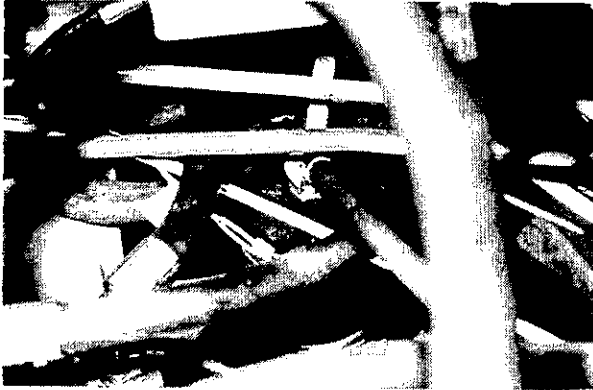
T-89957



4.4.6.2.8

Remove the two cap screws at the bottom of the parking brake cylinder spring.

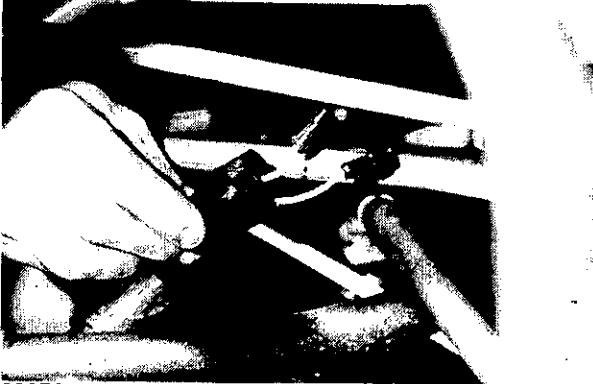
T-89960



4.4.6.2.9

Disconnect the hose at the top of the cylinder.

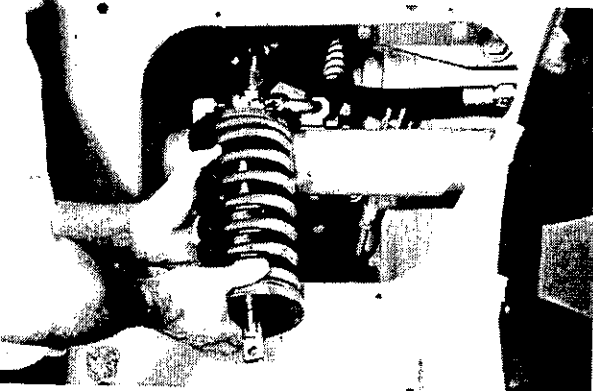
T-89961



4.4.6.2.10

Disconnect the electrical switch at the top of the cylinder.

T-89956



4.4.6.2.11

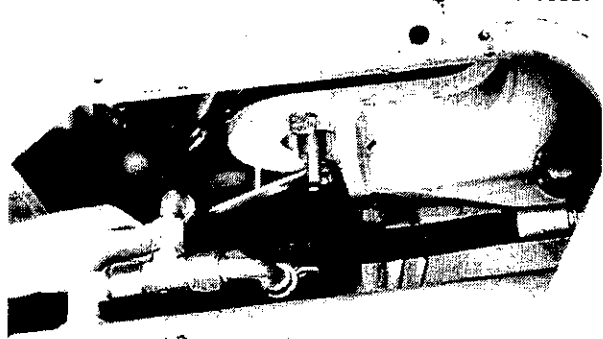
Lower the cylinder from the tractor.

BRAKE SYSTEM

4.4.6.2.12

Insert a new parking brake cylinder into the tractor and tighten the two capscrews at the spring base.

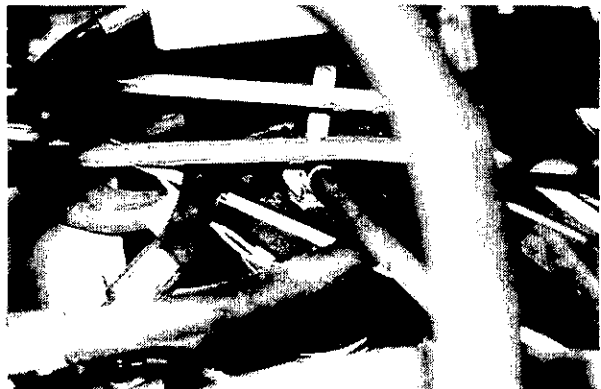
T-89957



4.4.6.2.13

Connect the parking brake hose to the top of the cylinder.

T-89960



4.4.6.2.14

Connect the electrical switch to the top of the cylinder.

T-89961



4.4.6.2.15

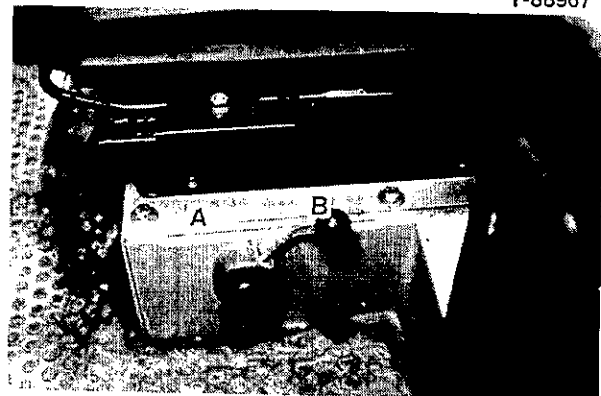
WARNING

Do not run the engine of this machine in closed areas without proper ventilation to remove deadly exhaust gases.

Always turn the master switch to the off position before cleaning, repairing, servicing or parking the machine to prevent injury.

Observe all start up and shut down procedures and "WARNINGS" listed in the operation and maintenance instruction manual.

T-89967

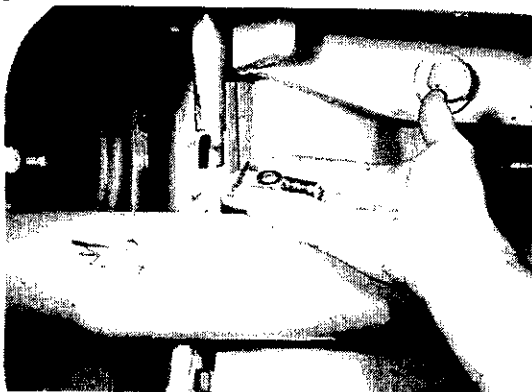


If there is sufficient brake actuation pressure, release the parking brake spring by forcing the parking brake lever to the brake release position. If there is insufficient pressure, start the loader and step down on the brake pedal for several seconds. This will charge the brake circuit so that there will be enough pressure to release the parking brake. Stop the loader's engine.

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

BRAKE SYSTEM

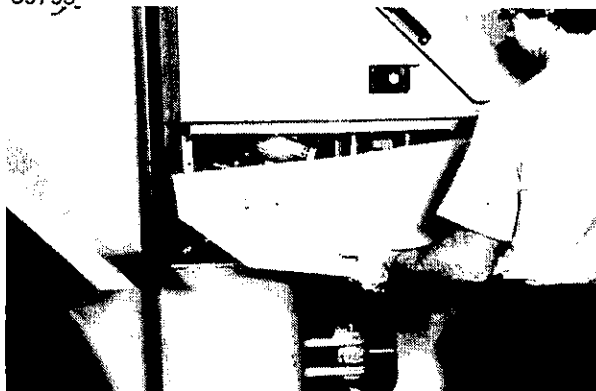
T-89959



4.4.6.2.16

Install the parking brake cylinder's rod to the parking brake linkage by means of the cotter retaining pins.

T-89795



4.4.6.2.17

Install the platform's skirt.

T-89797



4.4.6.2.18

Attach the access plate to the frame. Tighten the capscrews to specified torque.

4.4.6.2.19



WARNING

Do not run the engine of this machine in closed areas without proper ventilation to remove deadly exhaust gases.

Observe all start up and shut down procedures and "WARNINGS" listed in the operation and maintenance instruction manual.

This machine and its attachments are to be operated only by qualified operator seated in the operator's seat.

Before starting machine, check, adjust and lock the operator's seat for maximum comfort and control of the machine.

BRAKE SYSTEM

Start the machine. Depress the brake pedal several times to purge any air from the hydraulic hoses. Move the loader to a safe area so that the parking brake can be tested. Apply the parking a nd place the transmission lever in the third forward position. Release the foot brake. Bring the engine RPM to high idle and see if the parking brake holds the loader. If it holds, the parking brake is functioning properly. If it does not, then the linkage may need to be adjusted at the cylinder.

BRAKE SYSTEM

4.5 TOOLS

Service tools required to perform the repair operations in this manual are listed below. Order tools from your *FIATALLIS*® dealer unless otherwise noted.

All other tools are considered to be standard tools which can be ordered from local tool suppliers.

<u>Topic no.</u>	<u>Description</u>	<u>Part no.</u>
4.3.1.1	Adaptor	75301064
4.3.1.1	Multi-gauge 150-600-5000 psi	75300110
4.4.6.2.5	17 1/2 ton shop ram set	75300882

BRAKE SYSTEM

4.6 SPECIFICATIONS

4.6.1 TORQUES

TOPIC NO.	ITEM	daNm.	ft. lb.
4.4.1.9	Brake pump mount to engine	1	7
4.4.1.10	Pump flange screw	1.5	11
4.4.3.1.7	Master cylinder mounting capscrew	9	66
4.4.4.2.6	Caliper halves capscrews	18.6	130
4.4.4.3.2	Brake caliper capscrews	53-57	390-420
4.4.4.3.5	Wheel nuts	60	442
4.4.6.2.12	Parking brake cylinder mount	11	81

4.6.2 DIMENSIONS

ITEM	mm	in
Brake disc nominal thickness	22	0.86
Minimum thickness after grinding	20	0.78
Pad thickness	13	0.51
Pad wear limit	3	0.12
Pump shaft seat diameter in supports	17.03 - 17.04	.6704 - .6708
Shaft diameter at supports	16.97 - 16.98	.6681 - .6685
Shaft to support clearance	.05 - .07	.0019 - .0027
Gear and support seat diameter in pump body	36.51 - 36.52	1.4373 - 1.4377
Support width	20.480 - 20.495	.8062 - .8068
Gear width	10.795 - 10.805	.4249 - .4253
Gears and supports end play in pump body	.065 - .120	.0025 - .0047
Accumulator capacity	.75 L	.8 qt.
Accumulator capacity	1 L	.10 qt.
Pre-charge pressure	45 bar	652 psi
Pump flow at 2000 rpm	23.8 l/min	6.3 gpm
Brake relief pressure	150 bar	2175 psi

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

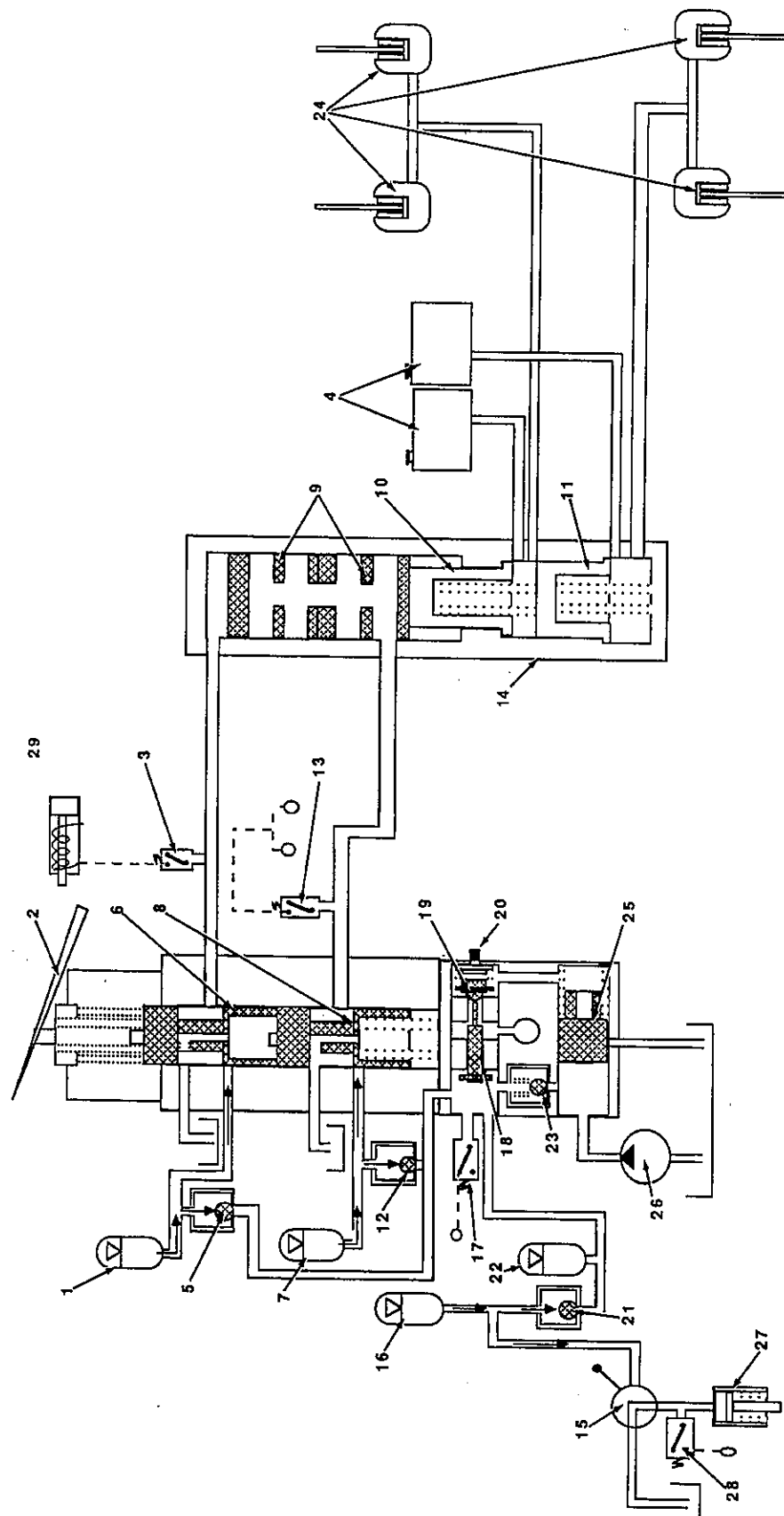
This schematic diagram illustrates a vacuum furnace system with a gas atmosphere. The main components are labeled as follows:

- 1-9:** Detailed cross-section of the furnace chamber assembly, including the heating element (1), insulation layers (2, 3, 4), and the chamber body (5, 6, 7, 8, 9).
- 10-12:** Components related to the gas supply and control, including a gas inlet valve (10), a pressure sensor or control valve (11), and a gas supply unit (12).
- 13:** A large rectangular component, likely a gas storage tank or a main supply unit.
- 14:** A gas supply line or pipe connecting the main supply to the furnace chamber.
- 15:** A circular component, possibly a pressure gauge or a control valve.
- 16:** A small rectangular component, likely a control unit or a sensor.
- 17:** A large circular component, possibly a main control unit or a pressure sensor.
- 18:** A cylindrical component, likely a gas supply line or a pipe.
- 19:** A rectangular component, likely a gas supply unit or a control unit.
- 20:** A rectangular component, likely a gas supply unit or a control unit.
- 21-24:** Detailed cross-section of the furnace chamber assembly, showing the heating element (21), insulation layers (22, 23), and the chamber body (24).

4-52

Added 7/89

BRAKE SCHEMATIC S/N 619077 AND UP



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

C

C

C

**REMOVE THIS PAGE AND
INSERT ALL PAGES UNTIL
THE NEXT BLACK EDGED
PAGE APPEARS UNDER
SECTION 5**

SECTION 5 STEERING & IMPLEMENT SYSTEM

TABLE OF CONTENTS

<u>TOPIC</u>	<u>TITLE</u>	<u>PAGE</u>
5.1.1	GENERAL DESCRIPTION STEERING	5-1
5.2.1	TROUBLESHOOTING	5-4
5.3.1	TESTING.....	5-6
5.4	REPAIR PROCEDURES.....	5-8
5.4.1	Pump removal and installation.....	5-8
5.4.2	Steering valve	5-12
5.4.3	Stering cylinder	5-28
5.1.2	GENERAL DESCRIPTION IMPLEMENT.....	5-34
5.2.2	TROUBLESHOOTING IMPLEMENT	5-36
5.3.2	TESTING IMPLEMENT.....	5-39
5.4.5	Implement control valve removal	5-46
5.4.5	Implement control valve rebuild.....	5-51
5.4.6	Bucket cylinder removal	5-58
5.4.7	Boom cylinder removal.....	5-63
5.4.8	Cylinder rebuild	5-68
5.4.9	Implement tank removal.....	5-74
5-6	TOOLS.....	5-79
4.6	SPECIFICATIONS	5-81
4.6.1	Torques.....	5-81
4.6.2	Dimensions.....	5-83

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

Revised 7/89

5.1.1 STEERING SCHEMATIC

Steering Schematic Neutral

The steering system consists of a gear charging pump (6), and gerotor type steering valve (3), combination circuit relief valves (1) and two opposing cylinders(9). The implement oil tank (8) supplies the charging pump with oil.

The charging pump directs oil to the gerotor type valve. The valve consists of an anticavitation valve (5), a spool (4) and a bi-directional pump (2). The bi-directional pump and spool is attached to the bottom end of the steering column. As the operator turns the wheel, the shaft turns a spring centered spool. When the loader is not being steered, oil is directed from the charging

pump to the spool. Because of the spool's position, oil flows back to the implement oil tank.

Oil in the cylinders is in a closed loop as long as the steering wheel is not being rotated. This static oil is protected from high surge pressures due to the loader tire hitting an obstruction and creating a thrust upon the cylinders.

The valve's anticavitation valve (5) is designed to supply oil to the bi-directional pump whenever the supply pump is not supplying oil for whatever reason. If the supply pump does not supply oil, steering will be greatly effected, and it will be impossible to overcome the resistance to steering.

STEERING VALVE SCHEMATIC

1. *Combination circuit relief and anticavitation valve*
2. *Bi-directional pump within steering valve*
3. *Steering valve*
4. *Steering spool (actually two rotating spools)*
5. *Anticavitation valve*
6. *Steering charging pump*
7. *Oil filter and cold oil relief valve*
8. *Suction screen*
9. *Steering cylinders*

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

5.1.1 STEERING SCHEMATIC

Steering Schematic Turning

The steering system consists of a gear charging pump, and gerotor type steering valve, combination circuit relief and anticavitation valves and two opposing cylinders. The implement oil tank supplies the charging pump with oil.

The charging pump directs oil to the gerotor type valve. The valve consists of an anticavitation valve, a spool and a bi-directional pump. The bi-directional pump and spool is attached to the bottom end of the steering column. As the operator turns the wheel, the shaft turns a spring centered spool. This allows oil to be directed from the charging pump through the spool and to the bi-directional pump. The bi-directional pump sends the oil back past the spool and out of the valve and to the combination valve.

The combination valve is actually a one way check valve which serves as an anticavitation valve and a relief valve kept closed by a spring. Oil passing from the bi-directional pump cannot unseat the anticavitation valve, nor can it unseat the relief valve because the pressure in the cylinders cannot overcome the spring setting.

Oil flows from the combination valve and flows to the two cylinders. Oil flows to the rod end of one cylinder and the tail end of the other. Return oil from the opposite ends of the cylinders flows back to the tank by way of the spool valve.

Oil returning to the tank flows through the filter before going into the main tank to be sent once again through-out the steering and implement circuits.

STEERING VALVE SCHEMATIC

1. *Combination circuit relief and anticavitation valve*
2. *Bi-directional pump within steering valve*
3. *Steering valve*
4. *Steering spool (actually two rotating spools)*
5. *Anticavitation valve*
6. *Steering charging pump*
7. *Oil filter and cold oil relief valve*
8. *Suction screen*
9. *Steering cylinders*

5.1 GENERAL DESCRIPTION

5.1.1A EMERGENCY STEERING (Special Equipment)

NOTE: The conditions under which emergency steering will automatically become effective are:

- Engine off
- Machine moving
- Steering wheel turning

The ground drive pump draws oil from the reservoir through the check valve block; the purpose of the block is to allow emergency steering in either a forward or backward direction.

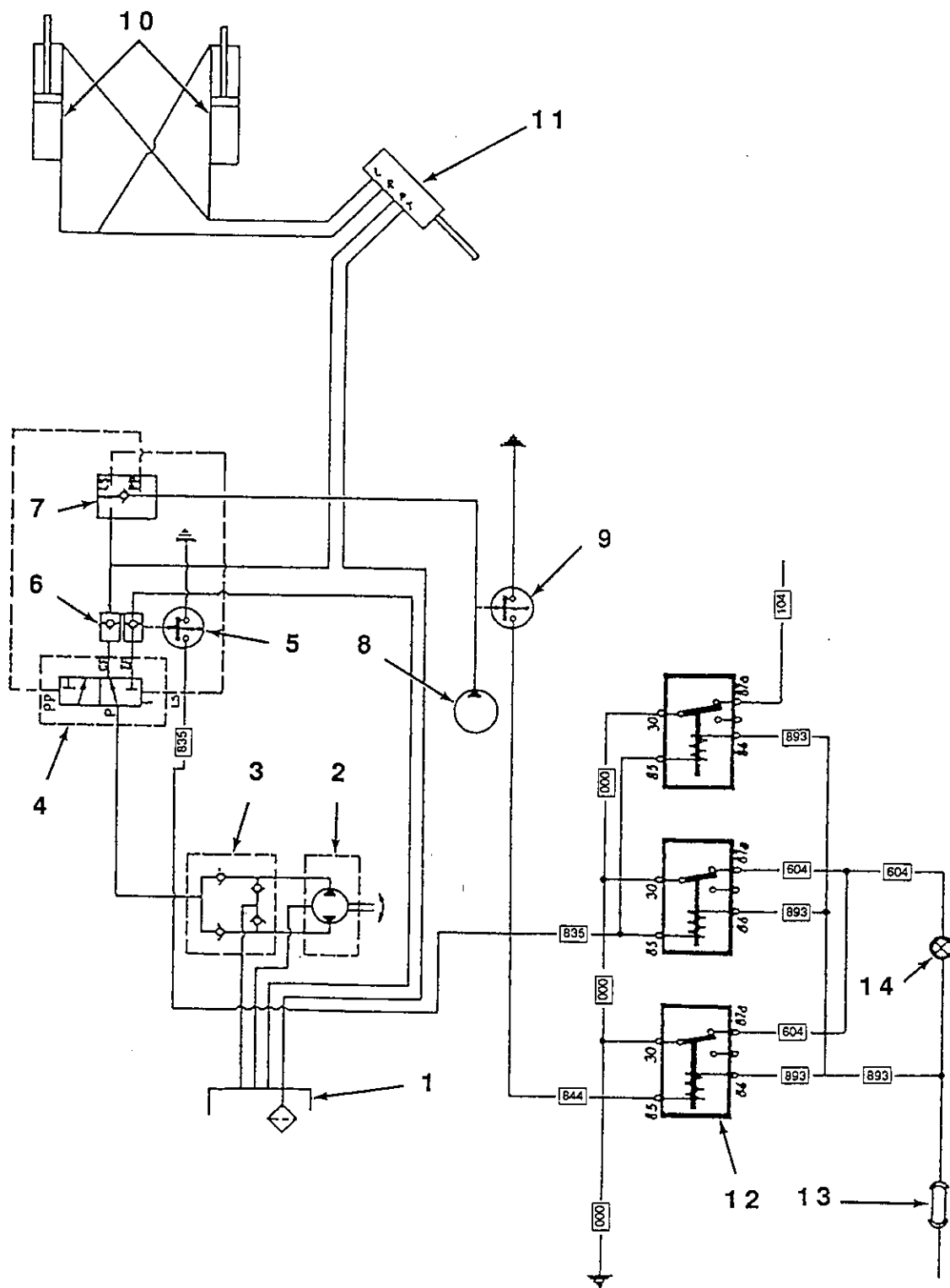
Oil from the pump flows through the block to the priority valve and to the pressure switch and warning light; the switch is activated (closed) by pressurized oil to turn on the warning light (if the ignition switch is on.).

Oil flows through the priority valve, opens the check valve and flows to the pilot valve; a portion of the oil flows through a small check valve (in the valve) and flows back to the priority valve (to hold it in position for directing oil to the steering valve). The main flow goes to the gerotor (meter) valve which directs the oil to the steering cylinders.

When normal steering is taking place, engine running, the main pump flow is blocked from the priority valve by a one-way check valve. But, the oil can flow to the right end of valve pushing the valve to the left, opening emergency pump flow to sump; this, of course lowers the pressure in the emergency system and the warning light goes out.

- | | | |
|-------------------------------------|--|--|
| 1. Reservoir | 6. Check Valve | 11. Gerotor (meter) Valve |
| 2. Ground Drive Pump | 7. Pilot Valve | 12. Relay |
| 3. Check Valve block | 8. Primary Steering Pump | 13. Fuse |
| 4. Priority Valve | 9. Primary Steering System Pressure Switch | 14. Emergency Steering Indicator Light |
| 5. Emergency System Pressure Switch | 10. Steering Cylinders | |

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

5.1.1 STEERING SCHEMATIC

Steering cylinder forced

If a cylinder receives a high thrust, then this thrust is translated to a high pressure within the cylinder. The circuit relief valve spring setting would be lower than the cylinder's oil pressure. The oil pressure would open the valve hydraulically. This allows a small amount of oil to go to the tank, which lowers the pressure on the cylinder. The opposite ends of the cylinder are momentarily at a lower pressure than tank pressure; therefore, the anticavitation valve opens, which allows oil to transfer from one end of the cylinder to the other. Consequently, the cylinders stay full of oil, and the loader turns a slight amount. The operator will have to compensate for this turning by steering in the opposite direction.

STEERING VALVE SCHEMATIC

1. *Combination circuit relief and anticavitation valve*
2. *Bi-directional pump within steering valve*
3. *Steering valve*
4. *Steering spool (actually two rotating spools)*
5. *Anticavitation valve*
6. *Steering charging pump*
7. *Oil filter and cold oil relief valve*
8. *Suction screen*
9. *Steering cylinders*

TROUBLESHOOTING

SYMPTOM	PROBABLE CAUSE	TOOLS REQUIRED	TEST	SOLUTION
Loader Oversteers	Steering valve return springs broken or weak		Examination	Change springs
	Sleeve and rotary spool in steering valve locked in the delivery position		Examination	Clean spool
Wheel Shimmy	Steering cylinder pins and bushings worn		Examination	Change worn parts
	Steering cylinder circuit relief valve stuck open		Examination	Clean circuit relief valve

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

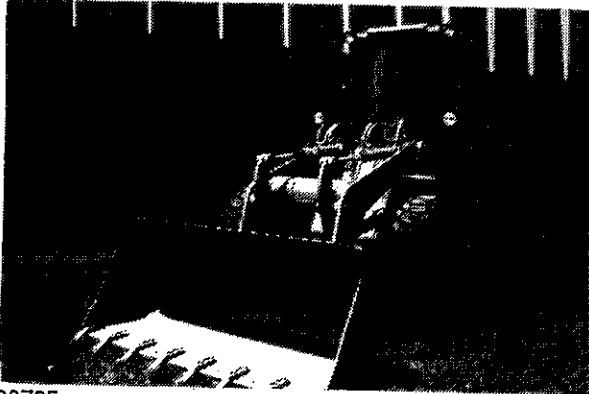
TROUBLESHOOTING

SYMPTOM	PROBABLE CAUSE	TOOLS REQUIRED	TEST	SOLUTION
Steering Wheel Hard to Turn	Steering supply pump failure	Flow meter	Conduct a flow meter test on the pump	If flow is low, replace pump
	Contamination sticking spools in steering valve			Clean steering valve and replace filter
	Steering shaft binding			Replace shaft
Steering wheel play excessive	Excessive clearance between steering shaft and rotary spool in steering valve		Examination	Replace worn parts
	Excessive clearance between steering shaft and drive pin		Examination	Replace worn parts
	Broken springs in steering valve		Examination	Replace worn parts
Steering wheel turns normally but response is slow	Steering cylinder pistons leak		Examination	Change piston seals
	Failure of bi-directional pump shaft		Examination	Change worn parts
Continuous Corrections on Steering Wheel	Lack of oil		Examination	Refill to correct level
	Steering cylinder piston seals worn		Examination	Renew seals
	Steering circuit relief valves stuck open		Examination	Clean the circuit relief valves
	Steering circuit relief valve set too low	Pressure gauge	Conduct a pressure check	Set the relief valves to the correct setting

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

5.3 TESTING

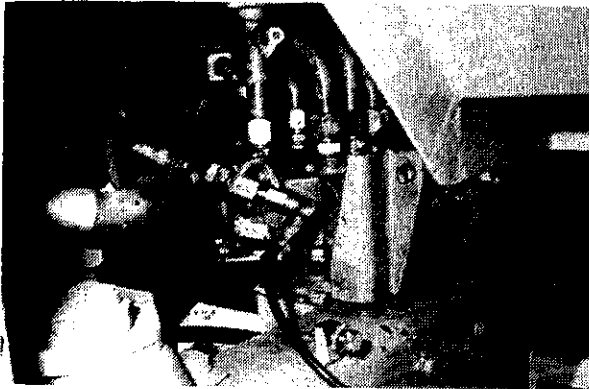
T-90444



T-89795



T-90416



5.3.1 STEERING RELIEF TEST

5.3.1.1

Whenever the steering system does not respond as it should and steering system pressure is thought to be the problem, a simple pressure check can identify the problem, area within a few minutes.

5.3.1.2

Gain access to the right lower side of the operator platform by removing skirting.



WARNING

Always turn the master switch to the off position before cleaning, repairing, servicing, or parking the machine to prevent injury.

5.3.1.3

Connect a pressure gauge P/N 75300110 which can withstand 350 kg/cm² (5000 psi) to the steering test port. An adapter 75300970 may need to be used.

5.3.1.4

Warm the machine's steering oil system to normal working conditions.



WARNING

Observe all start up and shut down procedures and 'WARNINGS' listed in the operation and maintenance instruction manual.

Do not run the engine or this machine in closed areas without proper ventilation to remove deadly exhaust gases.

The machine and its attachments are to be operated only by qualified operator seated in the operator's seat.

Before starting machine, check, adjust and lock the operator's seat for maximum comfort and control of the machine.

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

5.3 TESTING

T-90415

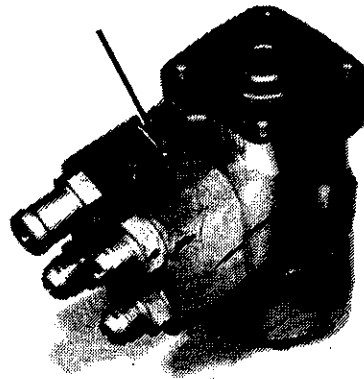
5.3.1.5

With the engine at high idle, steer the machine to the extreme left or right. When the machine gets to the extreme limit of travel, note the pressure reading on the gauge. Repeat the test procedure at low idle.

5.3.1.6

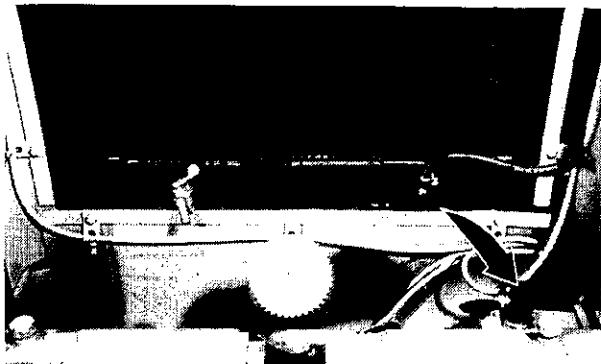
Compare the results of the test with the specifications for steering relief valve. If the test does not fall within specifications, adjust the steering relief valve opening pressure. Turning the screw in raises pressure, while turning the screw out reduces pressure.

T-91071



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

5.4.1 STEERING PUMP



5.4.1.1

Turn off the master switch.



WARNING

Always turn the master switch to the off position before cleaning, repairing, servicing or parking the machine to prevent injury.



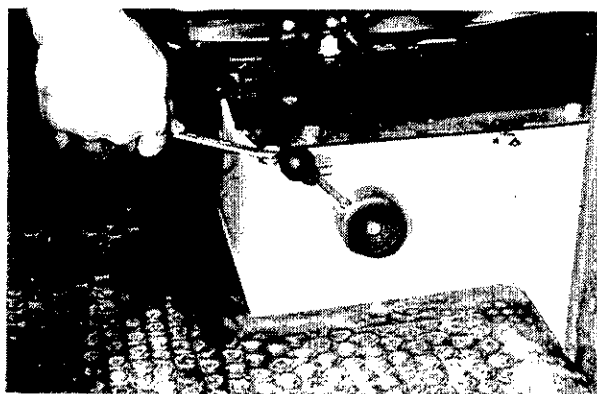
5.4.1.2

Drain the implement oil tank.



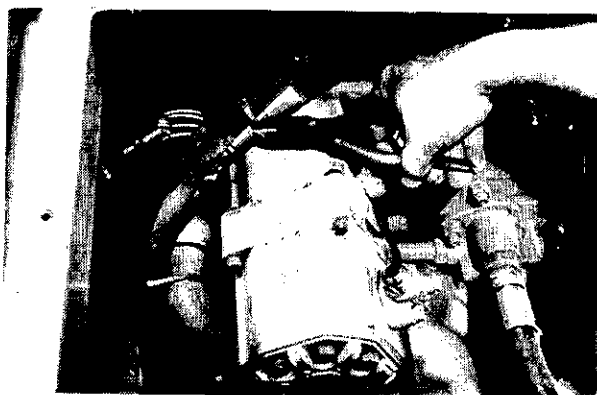
WARNING

Fluid under pressure - turn cap or cover slowly to relieve pressure before removing.



5.4.1.3

Remove seat and suspension assembly.



5.4.1.4

Cut and remove two ties from lines from hydraulic tank.

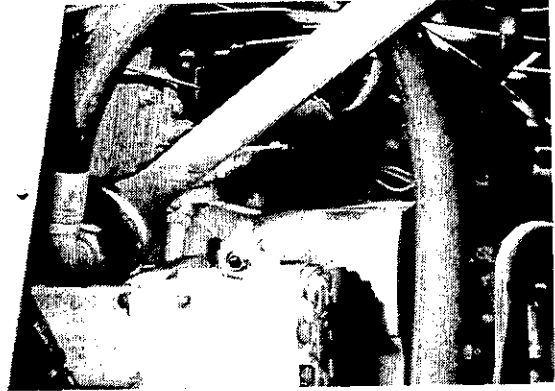
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

Revised 7/89

5.4.1 STEERING PUMP

5.4.1.5

Disconnect and tag three lines to implement hydraulic pump.



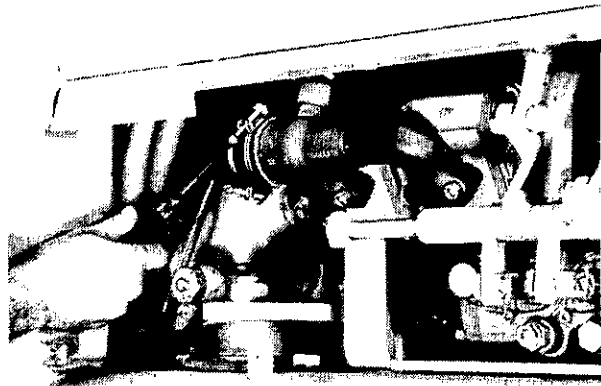
5.4.1.6

Disconnect and tag small line from hydraulic valve.



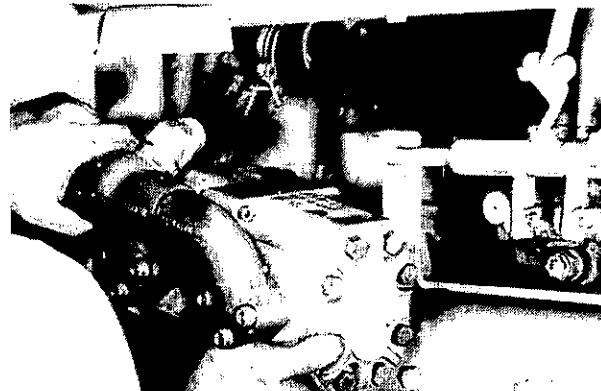
5.4.1.7

Remove two clamps attaching hose from hydraulic tank to pump.



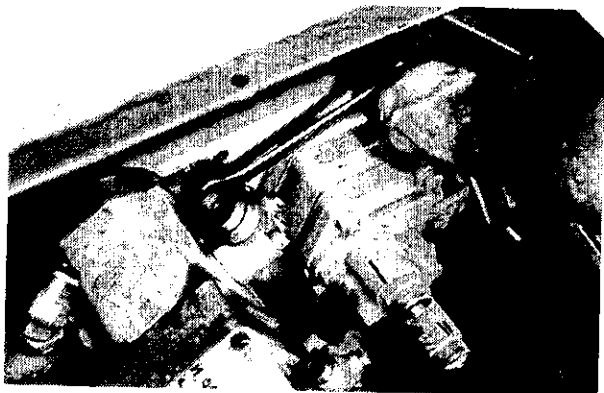
5.4.1.8

Remove capscrews attaching the implement hydraulic pump and remove pump.

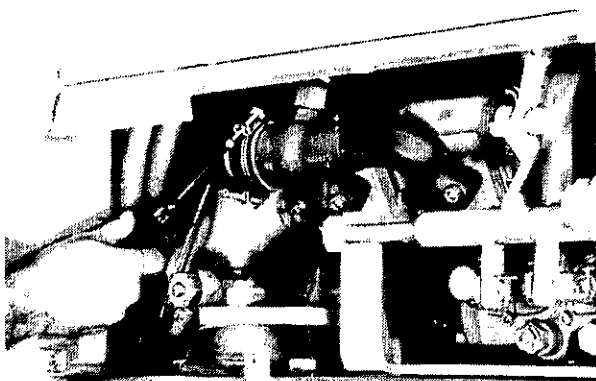


Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

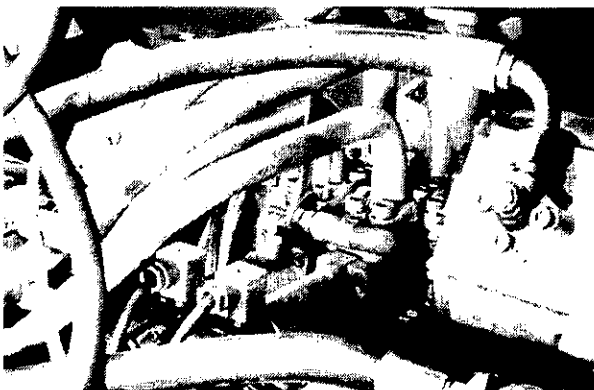
5.4.1 STEERING PUMP



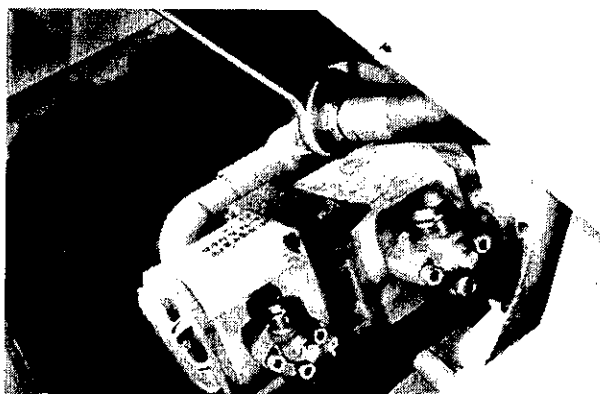
5.4.1.9
Install implement hydraulic pump. Tighten the cap-screws to specified torque.



5.4.1.10
Connect large hose from hydraulic tank to pump.



5.4.1.11
Connect small hose from hydraulic tank to control valve.



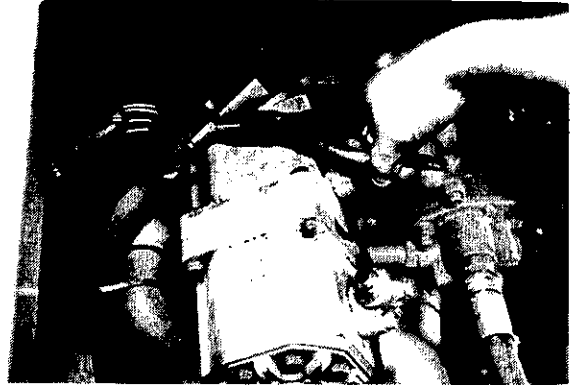
5.4.1.12
Connect three lines to implement hydraulic pump.

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.
Revised 7/89

5.4.1 STEERING PUMP

5.4.1.13

Install ties as required to secure small line (from hydraulic tank to control valve), to tube at pump.



5.4.1.14

Install seat and suspension assembly. Tighten the capscrews to specified torque.

5.4.1.15

Fill the implement oil tank with the specified quantity and type of oil. Turn on the electrical master switch and test for leaks.



WARNING

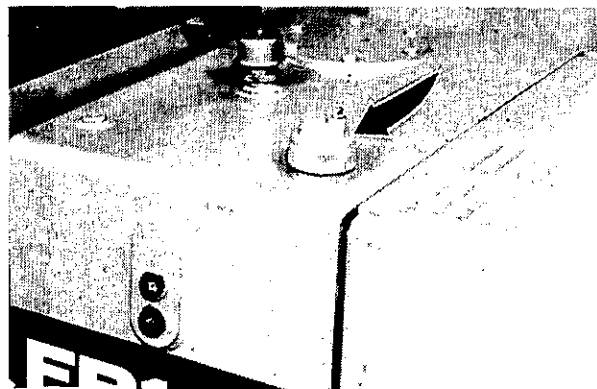
Observe all start up and shut down procedures and "WARNINGS" listed in the operation and maintenance instruction manual.

This machine and it's attachments are to be operated only by qualified operator seated in the operator's seat.

Before starting machine, check, adjust and lock the operator's seat for maximum comfort and control of the machine.

Replace seat belts every two years on open canopy units and every three years on machinery with cabs or at change of ownership.

Do not run the engine or this machine in closed areas without proper ventilation to remove deadly exhaust gases.



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

5.4.2 STEERING VALVE REMOVAL



5.4.2.1.1

Turn off the master switch prior to removing steering components.



5.4.2.1.2

Drain the implement oil tank.



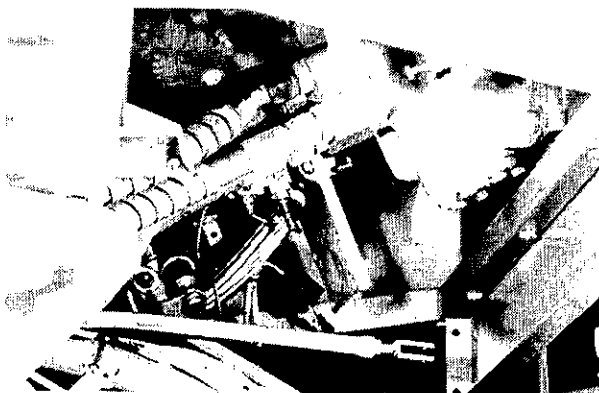
WARNING

Fluid under pressure - turn cap or cover slowly to relieve pressure before removing.



5.4.2.1.3

Remove the skirting from the bottom of the operator's platform.



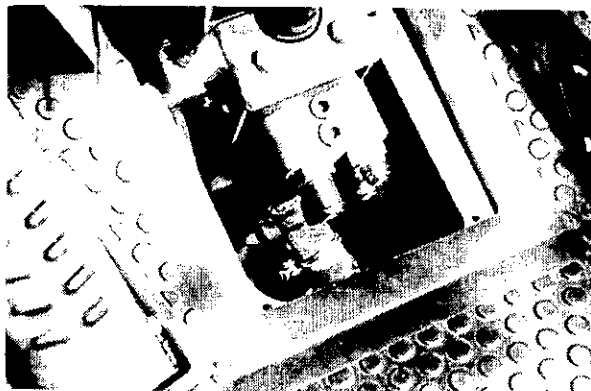
5.4.2.1.4

Disconnect the hoses going from the steering control valve.

5.4.2 STEERING VALVE REMOVAL

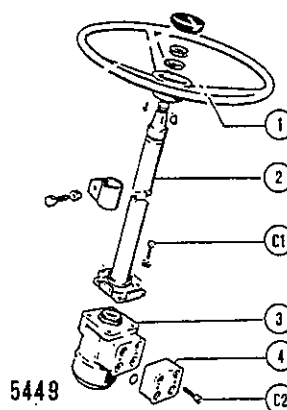
5.4.2.1.5

Remove the four attaching capscrews in the operator's compartment.



5.4.2.1.6

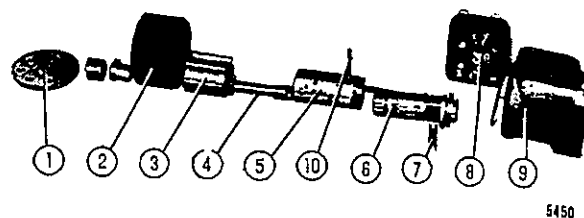
Remove the circuit relief and anticavitation valve block from the steering control valve.



5.4.2.1.7

Steering valve components.

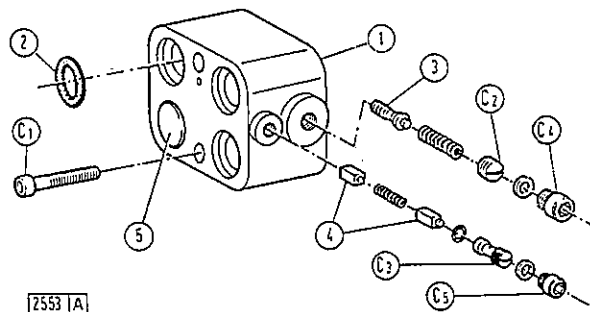
1. Cover
2. Housing
3. Rotor
4. Shaft
5. Housing sleeve
6. Rotary spool
7. Return spring
8. Valve block
9. Housing
10. Sleeve drive pin



5.4.2.1.8

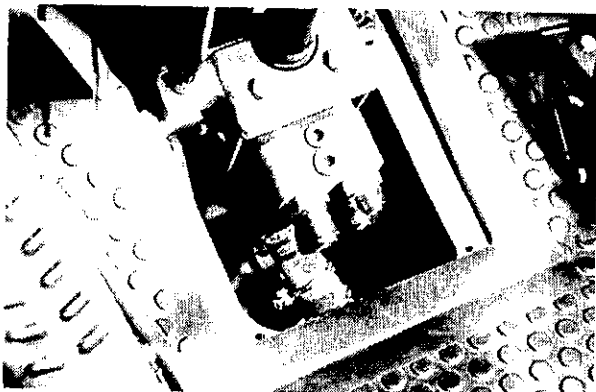
Circuit relief valve components.

1. Housing
2. O-ring
3. Pressure relief valve plunger
4. Combination circuit relief and anti-cavitation valve plunger
5. Check valve



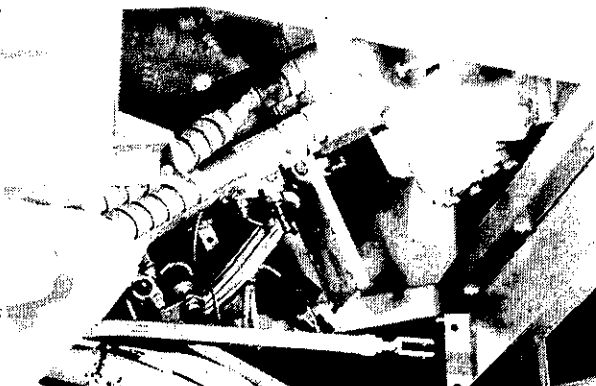
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

5.4.2 STEERING VALVE REMOVAL



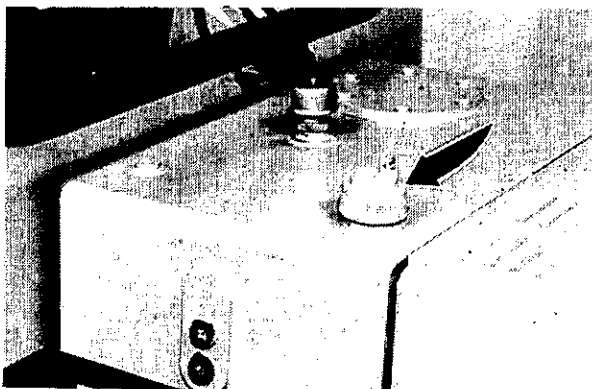
5.4.2.9

Install the steering control valve onto the steering column.



5.4.2.10

Connect the hoses to the valve



5.4.2.11

Fill the implement tank with the specified amount of the correct oil. Turn on the master switch and check for leaks. Operate the machine at low idle to test the steering operation.



WARNING

Observe all start up and shut down procedures and "WARNINGS" listed in the operation and maintenance instruction manual.

Do not run the engine or this machine in closed areas without proper ventilation to remove deadly exhaust gases.

This machine and it's attachments are to be operated only by qualified operator seated in the operator's seat.

Before starting machine, check, adjust and lock the operator's seat for maximum comfort and control of the machine.

Replace seat belts every two years on open canopy units and every three years on machinery with cabs or at change of ownership.

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

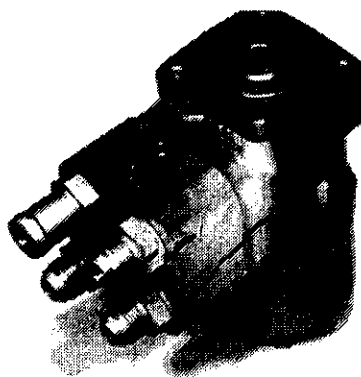
5.4.2 STEERING VALVE

5.4.2.2 STEERING VALVE REBUILD

5.4.2.2.1

Mark the valve assembly sections with alignment marks for reassembly.

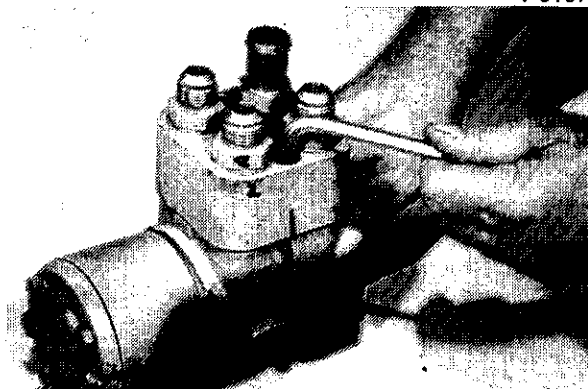
T-91071



5.4.2.2.2

Remove the valve block's two retaining allen head capscrews and remove the block.

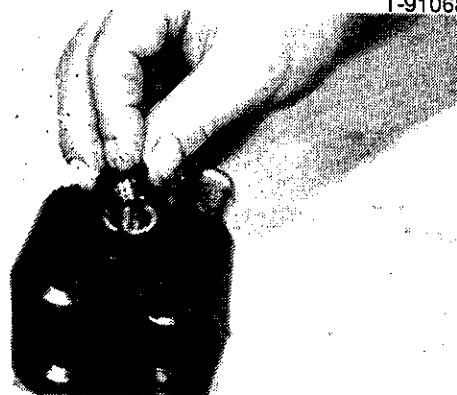
T-91070



5.4.2.2.3

Remove allen head plug from pressure relief port.

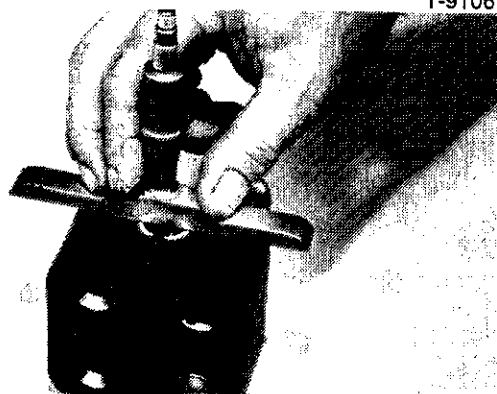
T-91068



5.4.2.2.4

Measure depth of the pressure relief valve plunger retaining screw. Record measurement for reassembly.

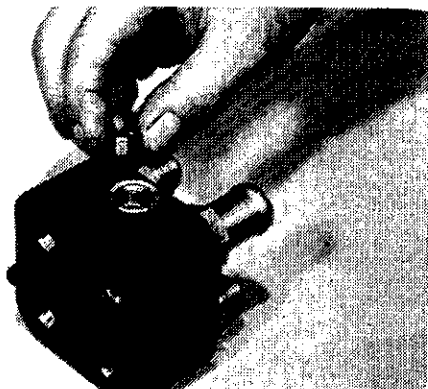
T-91067



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

5.4.2 STEERING VALVE

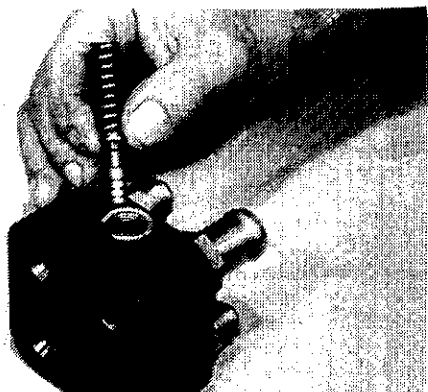
T-91066



5.4.2.2.5

Remove retaining screw from valve block.

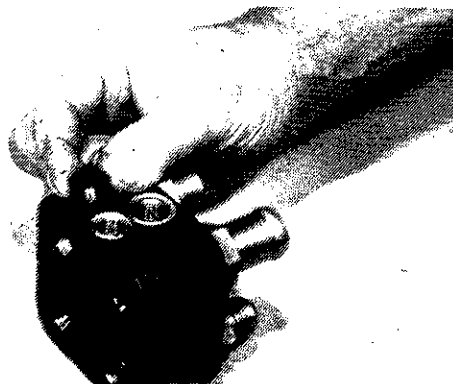
T-91065



5.4.2.2.6

Remove the pressure relief valve spring and plunger from the valve block.

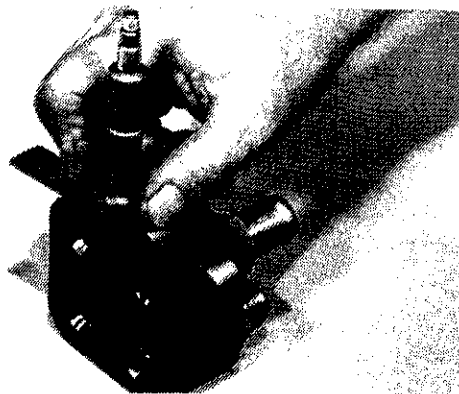
T-91064



5.4.2.2.7

Remove the allen head plug from the combination circuit relief and anti-cavitation port.

T-91063



5.4.2.2.8

Measure depth of the anti-cavitation valve plunger's retaining screw. Record measurement for reassembly.

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

Revised 7/89

5.4.2 STEERING VALVE

5.4.2.2.9

Remove the retaining screw from the valve block.

T-91062



5.4.2.2.10

Remove the combination circuit relief and anti-cavitation valve plungers and spring.

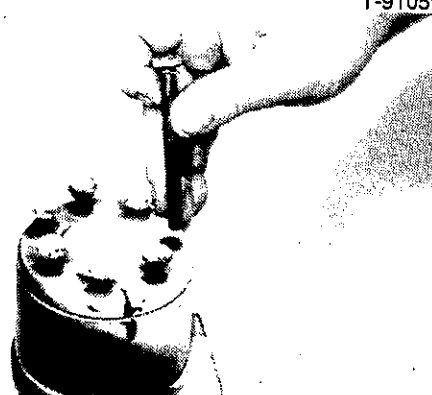
T-91061



5.4.2.2.11

Remove the steering valve sections retaining cap-screws.

T-91059



5.4.2.2.12

Identify the check ball limit travel capscrew with the hole from which it was removed.

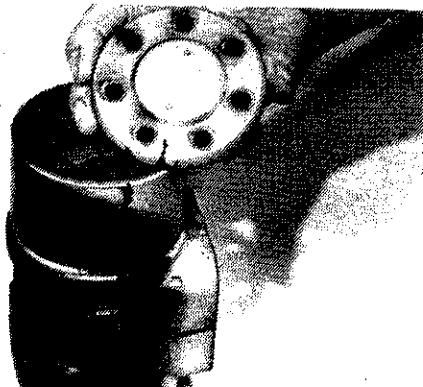
T-91058



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

5.4.2 STEERING VALVE

T-91057



5.4.2.2.13
Remove the end cap.

T-91056



5.4.2.2.14
Remove the end spacer.

T-91055



5.4.2.2.15
Remove center spacer.

T-91054



5.4.2.2.16
Remove gerotor meter housing.

5.4.2 STEERING VALVE

5.4.2.2.17

Remove gerotor inner gear.

T-91053



5.4.2.2.18

Remove the drive.

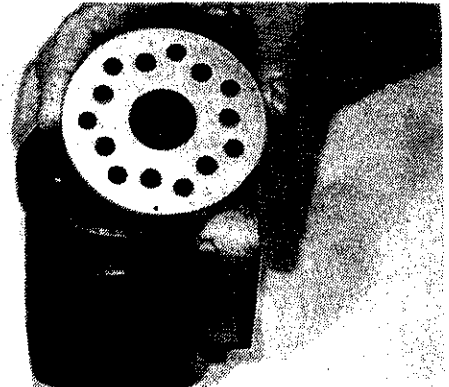
T-91052



5.4.2.2.19

Remove the spacer .

T-91051



5.4.2.2.20

Remove the check ball retaining screw.

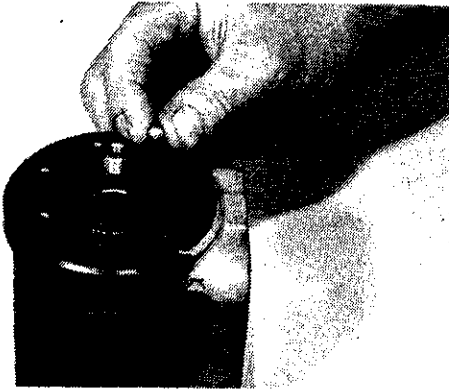
T-91050



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

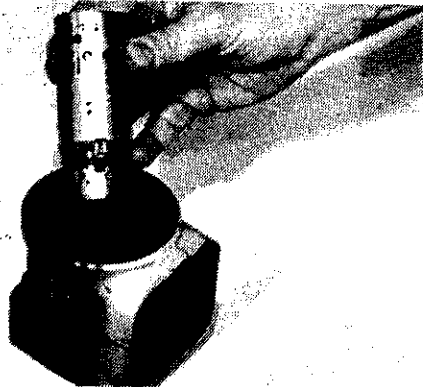
5.4.2 STEERING VALVE

T-91049



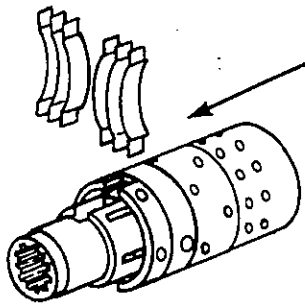
5.4.2.2.21
Remove the check ball.

T-91042



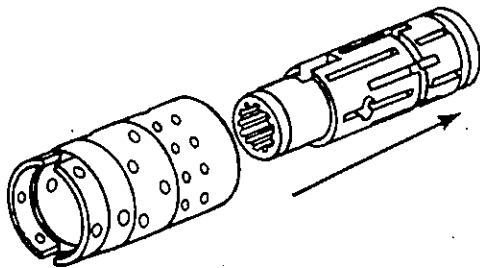
5.4.2.2.22
Remove the control sleeve and control spool assembly. Remove the pin from the spool and sleeve assembly.

T-100037



5.4.2.2.23
Push spool forward partially from the control end of the sleeve. Then remove the centering springs.

T-100037



5.4.2.2.24
Push the spool back through and out of sleeve. Rotate the spool slowly when removing it.

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

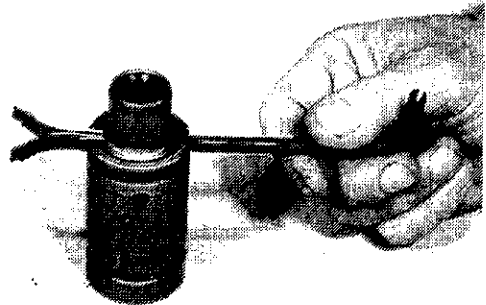
Revised 7/89

5.4.2 STEERING VALVE

5.4.2.2.25

T-91072

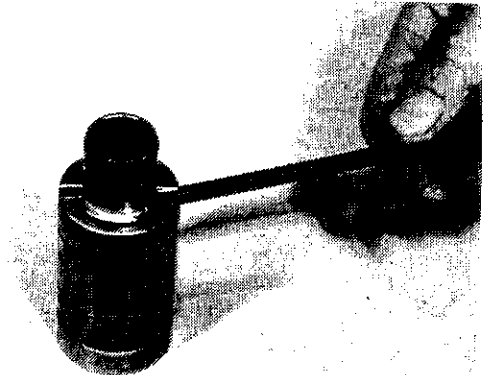
Install the control spool in the control sleeve. Rotate the spool slowly when installing it. Set the spool and sleeve on a bench. Align spring slots. Insert spring installation tool through the slots. Insert one end of the entire centering spring set into the tool.



5.4.2.2.26

T-91073

Compress extended end of the spring set and push into spool sleeve assembly withdrawing tool at the same time. Center springs so they are down and flush with upper surface of the spool and sleeve assembly. Install pin until its flush on both sides on the control sleeve.



5.4.2.2.27

T-91074

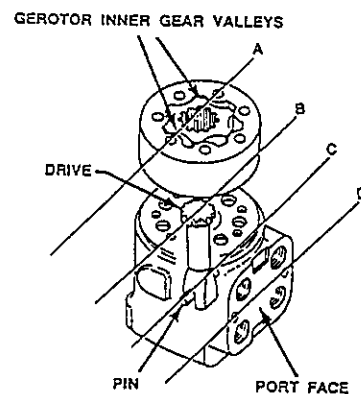
Installation tool can be made from an allen wrench that will fit through spring slots by slotting long end of the wrench to a depth of 12.7 mm (0.50 in) and a width of 3.175 mm (0.125 in).



5.4.2.2.28

T-100038

To assure proper timing and alignment of the steering valve, note the parallel relationship of the reference lines A, B, C, and D.



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

5.4.2 STEERING VALVE

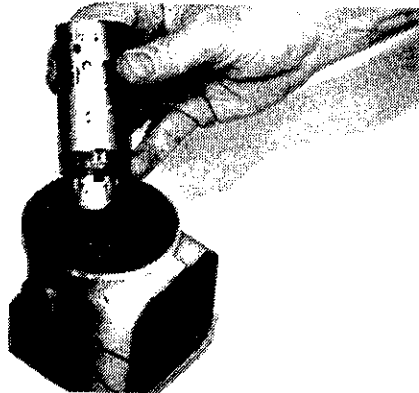
T-91044



5.4.2.2.29

When assembled, be sure the gerotor inner gear valleys, drive slot and pin are in alignment and must be positioned parallel with the port face of the valve body.

T-91042



5.4.2.2.30

Install the control sleeve and spool assembly into the body. The pin must be parallel with the body port face.

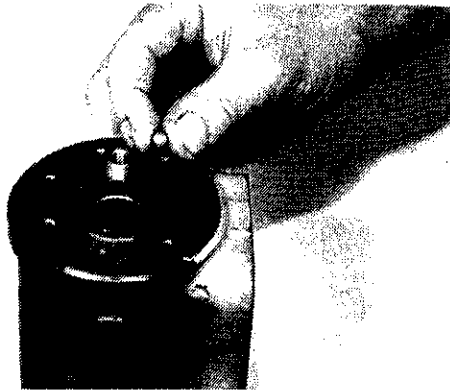
T-91048



5.4.2.2.31

Install O-rings on the valve body and both ends of the gerotor metering housing.

T-91049



5.4.2.2.32

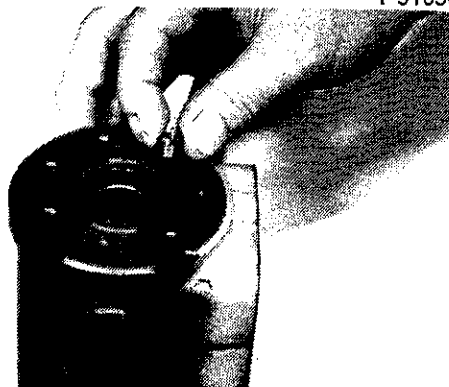
Install the check ball.

5.4.2 STEERING VALVE

5.4.2.2.33

Install the check ball retaining screw.

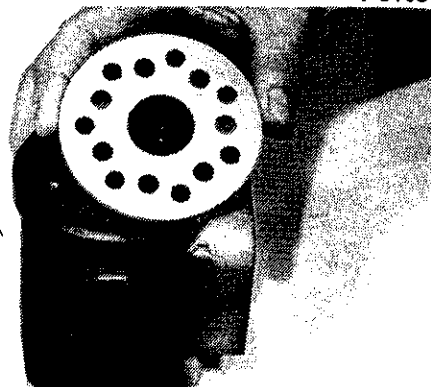
T-91050



5.4.2.2.34

Install the spacer plate.

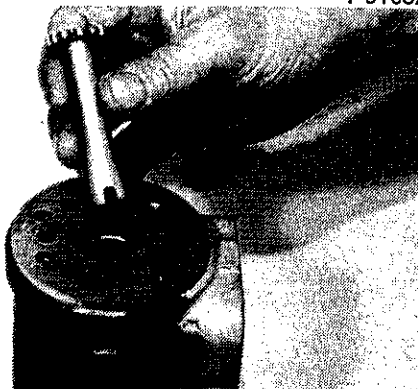
T-91051



5.4.2.2.35

Install the drive shaft. Be sure the drive shaft slot is engaged on the pin. The pin and drive slot must be parallel with valve body port face.

T-91052



5.4.2.2.36

Install the gerotor inner gear. The gear valleys must be parallel with valve body port face.

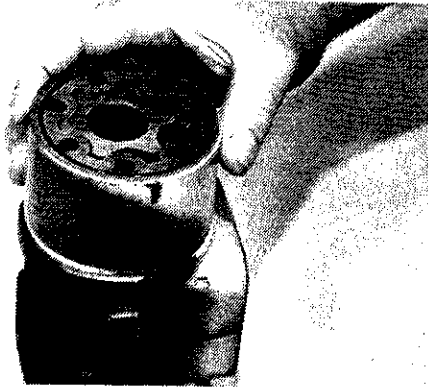
T-91053



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

5.4.2 STEERING VALVE

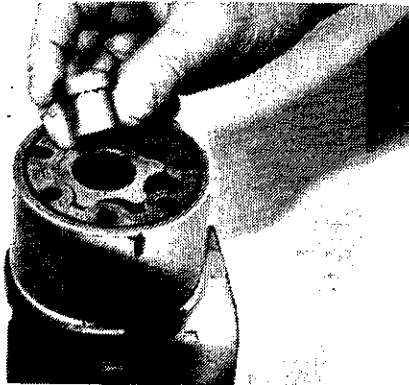
T-91054



5.4.2.2.37

Install the gerotor meter housing. Be sure the alignment marks match up.

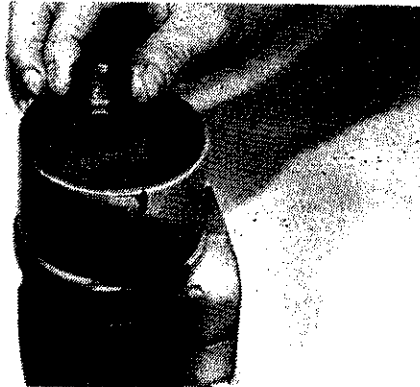
T-91055



5.4.2.2.38

Install the center spacer with the shoulder facing up.

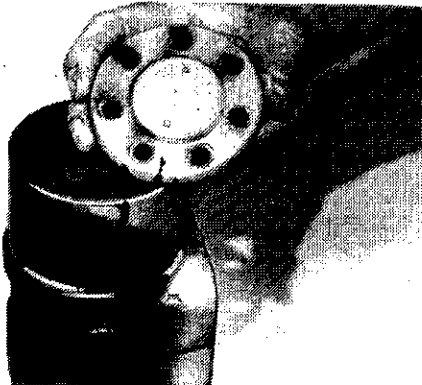
T-91056



5.4.2.2.39

Install the end spacer.

T-91057



5.4.2.2.40

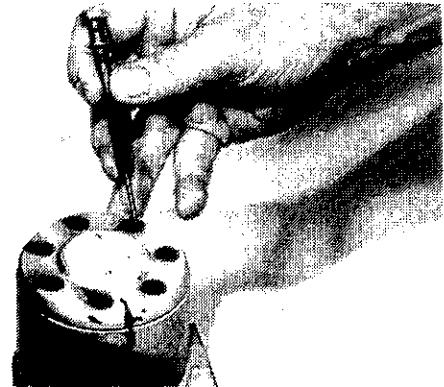
Install the end cap. Be sure the alignment marks match.

5.4.2 STEERING VALVE

5.4.2.2.41

Install the check ball limit travel capscrew in the correct hole from which it was removed in the end cap.

T-91058



5.4.2.2.42

Install the balance of the end cap capscrews and tighten all capscrews to specified torque.

T-91059



5.4.2.2.43

Install combination circuit relief and anti-cavitation valve plungers and springs.

T-91061



5.4.2.2.44

Install anti-cavitation valve plunger's retaining screw.

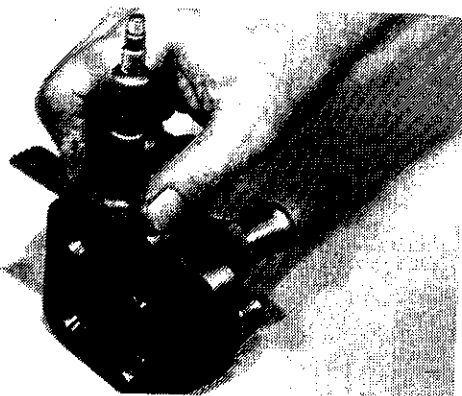
T-91062



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

5.4.2 STEERING VALVE

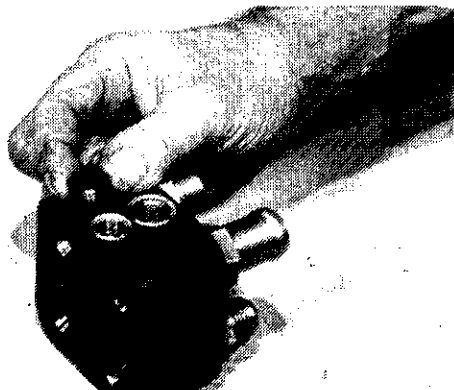
T-91063



5.4.2.2.45

Set the screw to the correct depth as recorded at disassembly.

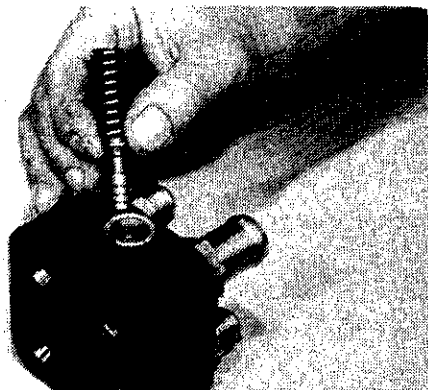
T-91064



5.4.2.2.46

Install allen head plug in port and tighten.

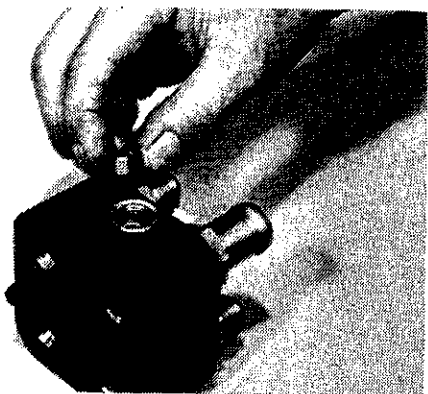
T-91065



5.4.2.2.47

Install pressure relief valve plunger and spring.

T-91066



5.4.2.2.48

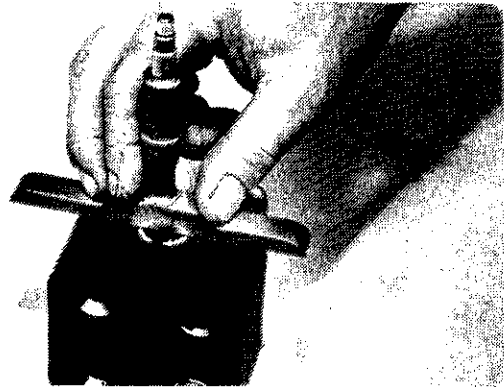
Install pressure relief valve retaining screw.

5.4.2 STEERING VALVE

5.4.2.2.49

Set screw to correct depth as recorded at disassembly.

T-91067



5.4.2.2.50

Install allen head plug in the port and tighten.

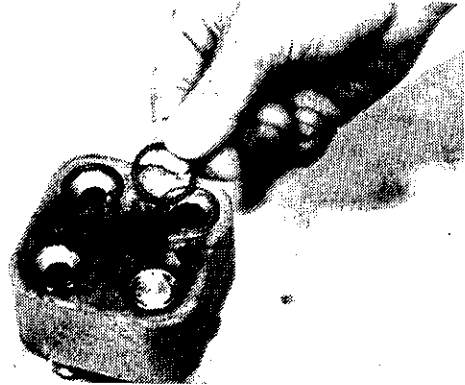
T-91068



5.4.2.2.51

Install O-rings.

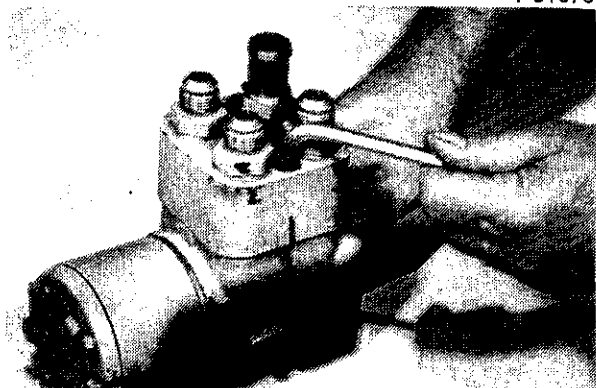
T-91069



5.4.2.2.52

Install block on valve. Be sure alignment marks match.
Install two retaining allen head capscrews and tighten.

T-91070



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

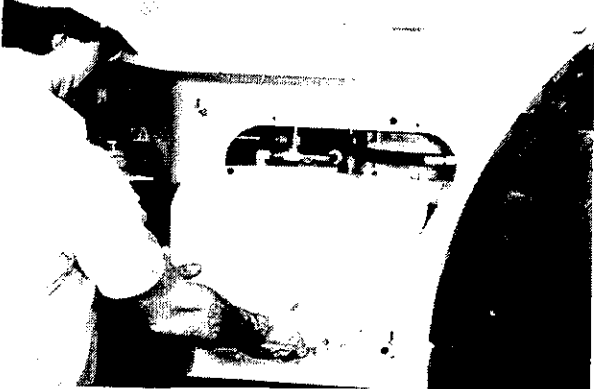
5.4.3 STEERING CYLINDER

T-88929



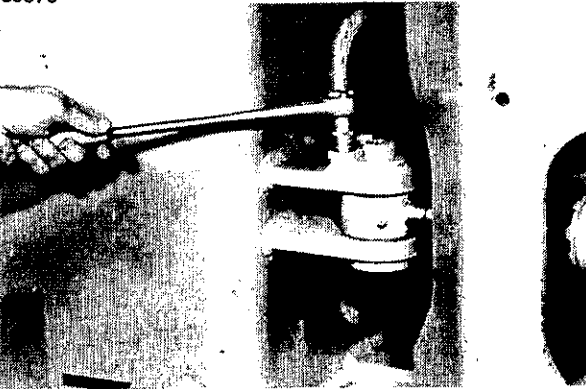
5.4.3.1 Drain Implement oil tank

T-89797



5.4.3.2 Remove access cover from the loader frame.

T-889870



5.4.3.3 Remove the cap screws and lock plate holding the steering cylinders front and rear pins in position.

T-89873



5.4.3.4 Remove the front and rear pin by driving the pin from the boss and rod.



WARNING

It is unsafe to strike hardened steel parts with anything other than a soft iron or non-ferrous hammer. When installing or removing such parts wear safety glasses with side shields and heavy gloves, etc., to reduce the possibility of injury.

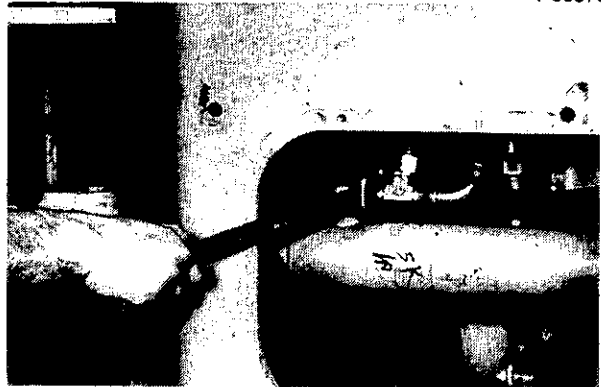
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

5.4.3 STEERING CYLINDER

5.4.3.5

Remove the front hose supplying oil to the cylinder.

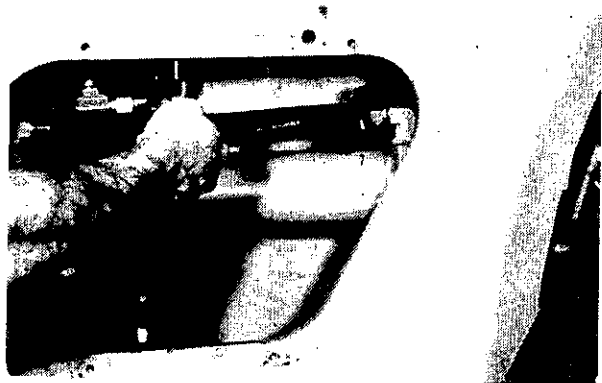
T-89875



5.4.3.6

Remove the rear hose supplying oil to the cylinder.

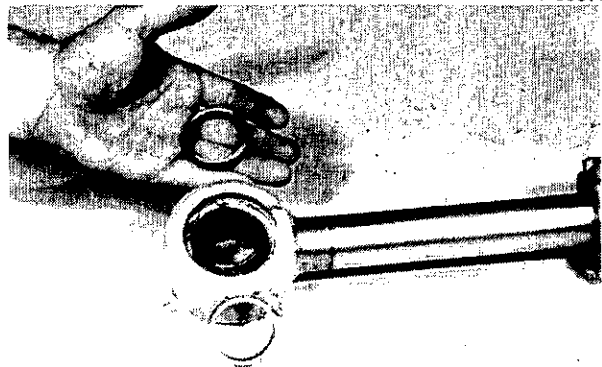
T-89876



5.4.3.7

Two spacers will be found on either side of the steering cylinder's clevis as the cylinder is removed.

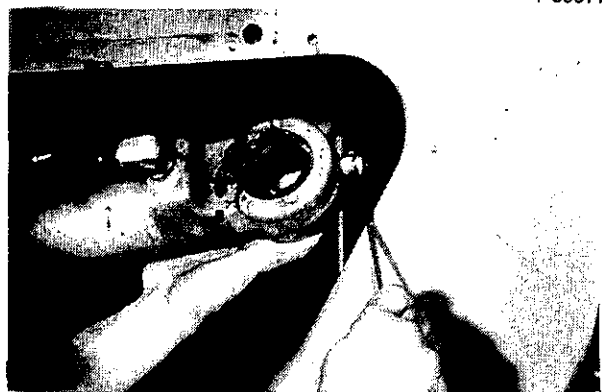
T-89879



5.4.3.8

Remove the grease fitting from the rear of the steering cylinder.

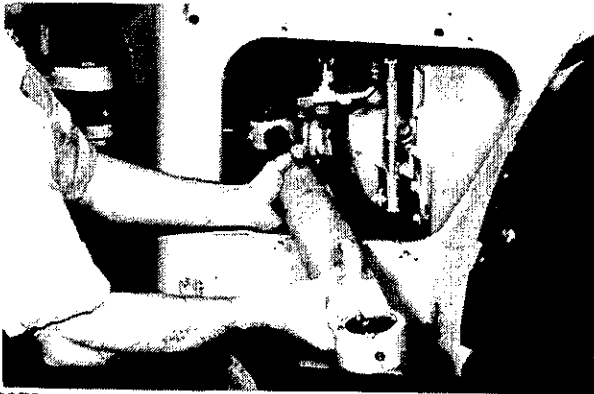
T-89877



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

5.4.3 STEERING CYLINDER

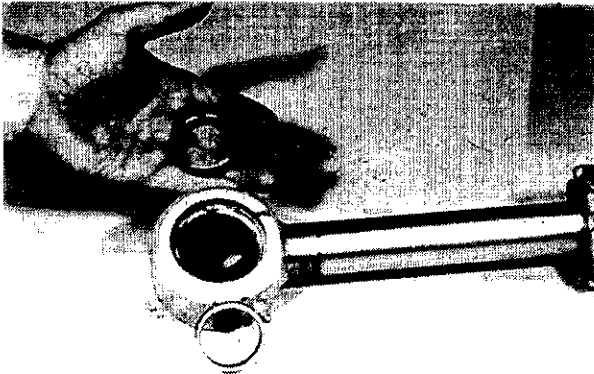
T-89878



5.4.3.9

Remove the cylinder through the access hole.

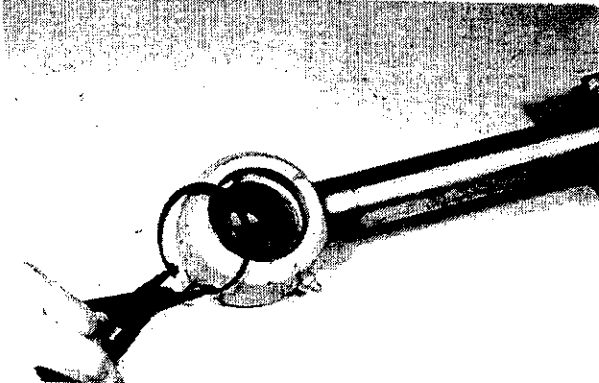
T-89879



5.4.3.10

Keep the spacers on either side of the cylinder eye attached to the cylinder.

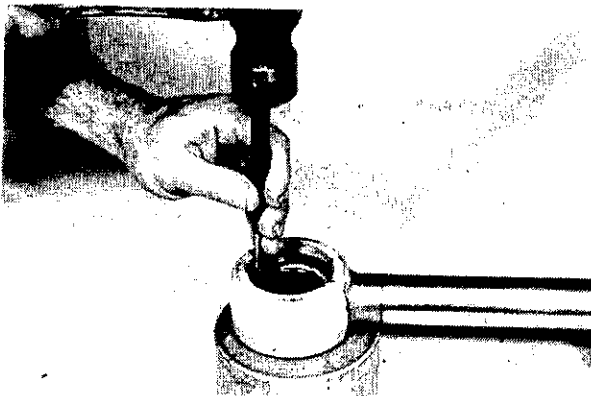
T-89880



5.4.3.11

Remove the snap ring from the cylinder eye.

T-89881



5.4.3.12

Use a drift and a hammer to remove the bushing from the cylinder eye. For further rebuild of the cylinder please see Section 5.4.8.

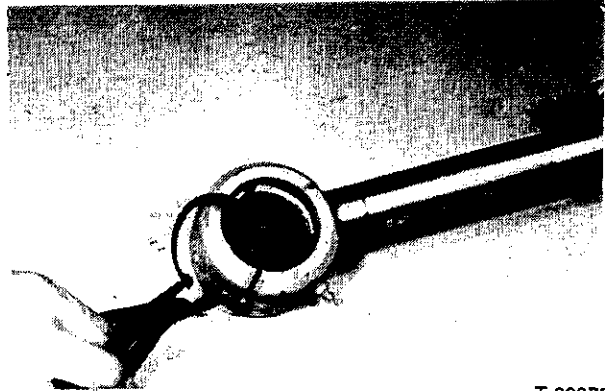
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

5.4.3 STEERING CYLINDER

5.4.3.13

Install one snap ring into the cylinder eye. Drive the bushing into the eye and install the other snap ring.

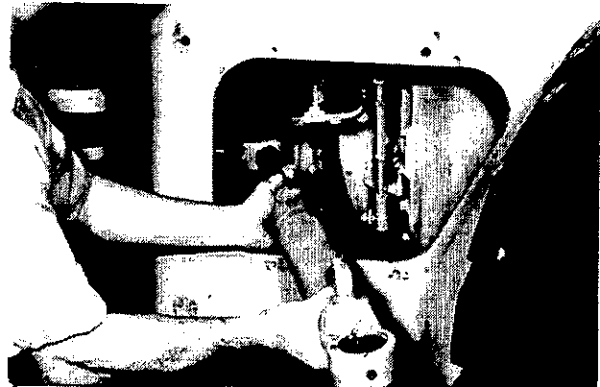
T-89881



5.4.3.14

Install the cylinder through the access hole in the loader.

T-89878



5.4.3.15

Connect the grease fitting to the rear of the cylinder.

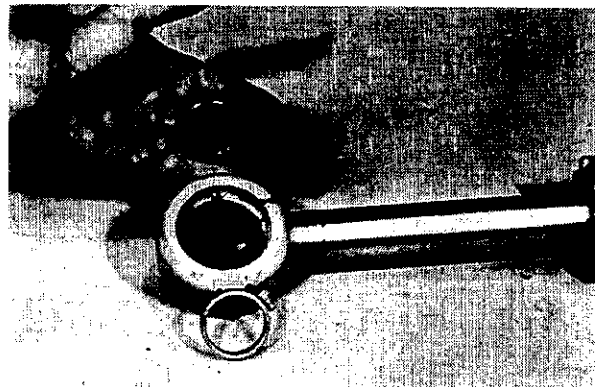
T-89877



5.4.3.16

Install the cylinder's spacer on either side of cylinder clevis.

T-89879



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

5.4.3 STEERING CYLINDER

T-89874



5.4.3.17

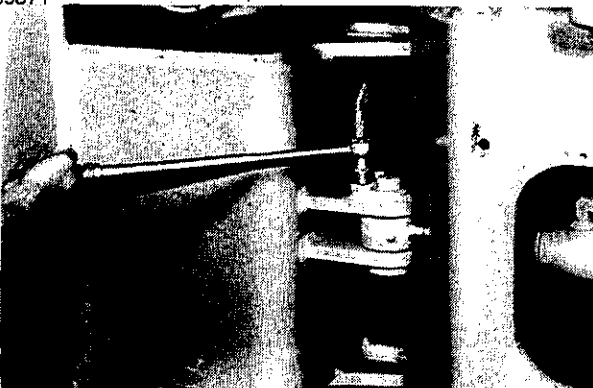
Install the pins in the front and rear of the cylinder to mate the cylinder to the loader frame.

WARNING

It is unsafe to strike hardened steel parts with anything other than a soft iron or non-ferrous hammer. When installing or removing such parts wear safety glasses with side shields and heavy gloves, etc., to reduce the possibility of injury.

Use proper tools to bring holes into alignment. "DO NOT USE FINGERS OR HANDS".

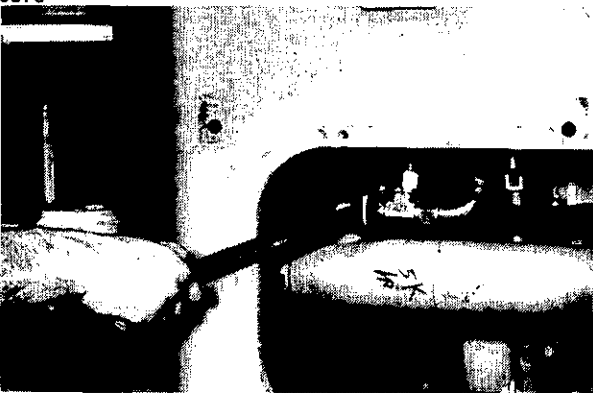
T-89871



5.4.3.18

Install pin lock plate and capscrews. Tighten capscrews to specified torque.

T-89875



5.4.3.19

Connect cylinder's front and rear hoses to the cylinder.

5.4.3.20

Fill the implement oil tank and operate the loader and test for leaks.

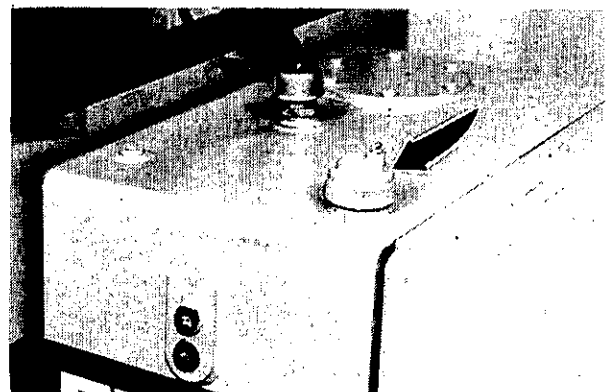
WARNING

Do not run the engine of this machine in closed areas without proper ventilation to remove deadly exhaust gases.

Observe all start up and shut down procedures and "WARNINGS" listed in the operation and maintenance instruction manual.

This machine and its attachments are to be operated only by qualified operator seated in the operator's seat.

Before starting machine, check, adjust and lock the operator's seat for maximum comfort and control of the machine.



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.
Revised 7/89

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

5.1.2 IMPLEMENT HYDRAULIC SCHEMATIC

SPOOLS IN NEUTRAL POSITION

The boom and bucket spools are not energized in this schematic. The machine is operating in such a way that the bucket tipback circuit has received a sudden pressure increase due to hitting an object when dozing with the bucket.

The implement pump is continually pulling oil from the tank and supplying the implement control valve with oil. The oil circulating in the valve and back to the valve is at a very low pressure because the valve and the hoses are the only things causing a restriction to flow. In this condition there is no flow to the cylinders. Oil returning from the implement control valve passes through a filtration compartment within the implement tank. A relief valve opens when the filter restriction is too great to allow the flow through the filter.

The main relief valve is not functioning in this condition because of the low circulating pressure. The boom circuit relief valve also has very little pressure against it because the sudden pressure increase is felt in the bucket circuit only.

The bucket tipback circuit relief valve senses the increase in pressure by opening a passage for oil to flow back to the tank. As the oil flows to the tank, the bucket cylinder rods retract into the cylinder. This retraction causes a void in the opposite end of the cylinder. This void is eliminated by the bucket dump anticavitation portion of the combination valve opening. This allows oil at tank pressure to flow to the cylinder's rod end, keeping the cylinder full of oil and thus preventing voids in the oil.

1. *Implement control valve*
2. *Boom lower anticavitation valve*
3. *Boom raise combination circuit relief and anticavitation valve*
4. *Bucket dump combination circuit relief and anticavitation valve*
5. *Bucket tipback combination circuit relief and anticavitation valve*
6. *Boom spool*
7. *Bucket spool*
8. *Main pressure regulating valve*
9. *Boom spool check valve*
10. *Bucket spool check valve*
11. *Boom spool kickout solenoid*
12. *Bucket spool kickout solenoid*
13. *Boom cylinders*
14. *Bucket cylinders*
15. *Cold oil relief valve*
16. *Oil filter*
17. *Implement oil tank*
18. *Drive end section of the tandem implement and steering pump*

IMPLEMENT HYDRAULIC SCHEMATIC

IMPLEMENT SCHEMATIC BUCKET TIPPING BACK

The implement control valve is a series type valve which prevents oil from the pump to flow to both spools at the same time. In the condition shown the operator has positioned the bucket spool in the tip back position. The implement control lever is locked in position by the detent.

Oil coming from the pump is initially blocked from flowing around the bucket spool. Pump oil is delivered to the main relief valve and to the check valve. The check valve remains closed until the increasing pressure, due to the lack of an oil passage, opens the check valve, which has residual cylinder oil pressure delivered to its spring side. Once the check valve is open, pump oil can flow to the bucket cylinders. The pump oil is also delivered to the bucket dump circuit relief valve which does not open because at this time oil pressure within the cylinder is not high enough to open the valve.

If the operator continues to leave the implement lever in the tipback position, the bucket tipback solenoid will

energize and force the bucket spool to the neutral position. This allows the bucket to be at the proper digging angle for the next cycle.

If the operator overrides the kickout and manually forces the lever in the tipback position, the cylinders' rods will continue out of the cylinder until the piston bottoms in the bore. When this occurs, oil pressure increases rapidly for there is no place for the oil to go. The main relief valve senses this high pressure and opens. This directs pump oil back to the tank by way of the valve passages. This condition will continue to exist until the operator places the bucket spool in the neutral position.

While the bucket spool is shifted in either direction, no pump oil can flow to the boom circuit. The boom spool can be positioned in raise, neutral, lower and float. The bucket spool can only be positioned in dump, neutral, and tipback.

1. *Implement control valve*
2. *Boom lower anticavitation valve*
3. *Boom raise combination circuit relief and anticavitation valve*
4. *Bucket dump combination circuit relief and anticavitation valve*
5. *Bucket tipback combination circuit relief and anticavitation valve*
6. *Boom spool*
7. *Bucket spool*
8. *Main pressure regulating valve*
9. *Boom spool check valve*
10. *Bucket spool check valve*
11. *Boom spool kickout solenoid*
12. *Bucket spool kickout solenoid*
13. *Boom cylinders*
14. *Bucket cylinders*
15. *Cold oil relief valve*
16. *Oil filter*
17. *Implement oil tank*
18. *Drive end section of the tandem implement and steering pump*

IMPLEMENT SYSTEM

TROUBLESHOOTING

SYMPTOM	PROBABLE CAUSE	TOOLS REQUIRED	TEST	SOLUTION
Lack of Hydraulic Power	Low hydraulic oil level		Observe oil level gauge with bucket flat on ground	If low, fill to proper level
	Clogged suction screen			Clean suction screen
	Foaming oil caused by air in suction line		Shut down machine and check the oil tank for foam in oil	Tighten all fittings or replace faulty hoses
	Foaming oil caused by improper oil	Operator manual	Compare specifications to those of oil	Fill implement oil tank with specified fluid
	Leaking piston packing			Replace packing
	Main relief valve set too low	Pressure gauge	See Sec 5.2	Adjust pressure
	Dirt holding relief valve open	Pressure gauge	See Sec 5.2	Loosen the adjusting screw two turns and operate the machine, then reset pressure setting
	Hydraulic Pump defective	Flow meter	Conduct flow test of pump	If pump test low, rebuild or replace pump
	Hydraulic level too low or overfilled		Observe the oil level with the bucket flat upon the ground	If incorrect, add or drain oil
	Restricted suction line	Flow meter	Pump flow test See Sec 5.2	Clean line
System Oil Overheating	Improper oil	Operator manual	Compare specifications to those of oil	Fill implement oil tank with specified fluid
	Main relief valve open	Pressure gauge	Check main relief opening pressure	Clean the valve and reset pressure

IMPLEMENT SYSTEM

TROUBLESHOOTING

SYMPTOM	PROBABLE CAUSE	TOOLS REQUIRED	TEST	SOLUTION
Boom drops slightly before raising	Raise circuit relief valve open	Pressure gauge	See Sec 5.2	Adjust relief pressure
	Boom check valve open			Inspect check valve and clean seal
Boom Drifts when In Hold	Raise circuit relief valve open	Pressure gauge	See Sec 5.2	Adjust relief pressure
	Boom cylinder piston packing defective	Flow meter		If cylinder leaks, replace packing
	Worn or scored cylinder		Observe the drift rate with loader shutoff and bucket in air	Replace cylinder
No Down Pressure	Cylinder packing defective			Replace packing
	Main relief valve malfunctioning	Pressure gauge	Conduct Pressure test	Reset or replace main relief
No Down or Raise Pressure	Anticavitation valve stuck open	Pressure gauge	Check pressure in bucket circuit and then in boom lower circuit	If main relief pressure is good in the bucket positions and incorrect in the boom lower, then correct anticavitation valve
Boom Slow to Raise	Boom raise circuit relief valve open	Pressure gauge	Conduct boom pressure check	Correct the pressure or replace the valve
	Lift cylinder packing defective			Replace packing
	Excessive pump leakage	Flow meter	See Sec 5.2	Replace the pump if too low

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

IMPLEMENT SYSTEM

TROUBLESHOOTING

SYMPTOM	PROBABLE CAUSE	TOOLS REQUIRED	TEST	SOLUTION
Bucket Lacks Power In Retract	Retract circuit relief valve malfunctioning	Pressure gauge		Check condition of valve and reset valve opening pressure
	Bucket cylinder packing defective			Replace packing
Valve spool sticking	Control valve linkage misaligned			Correct misalignment
	Foreign matter in spool bore			Remove spool and clean bore and spool

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

Revised 7/89

5.3.2 TESTING

5.3.2.1 HYDRAULIC CYLINDER DRIFT

5.3.2.1.1

Tools required

75294511	flow block plate
70923002	cap (2)
70924290	plug (2)
70921244	cap
70922195	cap
70922266	cap
70924692	cap

5.3.2.1.2

If the bucket is slow to retract, suspect the dump cylinders of leaking internally and perform a simple check. Operate the machine until the hydraulic oil temperature is 80-85°C (175-185°F).



WARNING

Do not run the engine of this machine in closed areas without proper ventilation to remove deadly exhaust gases.

Observe all start up and shut down procedures and "WARNINGS" listed in the operation and maintenance instruction manual.

This machine and its attachments are to be operated only by qualified operator seated in the operator's seat.

Before starting machine, check, adjust and lock the operator's seat for maximum comfort and control of the machine.

5.3.2.1.3

Load the bucket with material and lower the bucket to the ground so that the bucket cutting edge is parallel to the ground.

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

5.3.2 TESTING

5.3.2.1.4

Shut off the engine and relieve pressure in the bucket and boom cylinders by activating the bucket and boom control lever.



WARNING

Always turn the master switch to the "OFF" position before cleaning, repairing, servicing or parking the machine to prevent injury.

5.3.2.1.5

Block the base end of the dump cylinder by disconnecting the hose which goes from the valve to the dump cylinder junction and installing the plug and cap.

5.3.2.1.6

Start the engine and raise the boom. Do not activate bucket circuit.



WARNING

Do not run the engine of this machine in closed areas without proper ventilation to remove deadly exhaust gases.

Observe all start up and shut down procedures and "WARNINGS" listed in the operation and maintenance instruction manual.

This machine and its attachments are to be operated only by qualified operator seated in the operator's seat.

Before starting machine, check, adjust and lock the operator's seat for maximum comfort and control of the machine.

5.3.2 TESTING

5.3.2.1.7

Return the boom lever to the neutral position and shut-off engine.

5.3.2.1.8

Observe action of bucket cutting edge. If the edge tilts toward the ground, then the cylinder seals are defective.

5.3.2.1.9

Prior to working on the cylinder, lower the bucket, relieve pressure and remove the line blocks. See section 5.4.6 for removal and 5.4.8 for cylinder rebuild.

5.3.2 TESTING

5.3.2.2 BOOM CYLINDER DRIFT TEST

5.3.2.2.1

If the boom cylinders are suspected of internal leakage, because of the boom drifting, a simple test can be performed. Operate the machine until the implement oil is 80 - 85°C (175 - 185°F).



WARNING

Do not run the engine of this machine in closed areas without proper ventilation to remove deadly exhaust gases.

Observe all start up and shut down procedures and "WARNINGS" listed in the operation and maintenance instruction manual.

This machine and its attachments are to be operated only by qualified operator seated in the operator's seat.

Before starting machine, check, adjust and lock the operator's seat for maximum comfort and control of the machine.

5.3.2.2.2

Operate the boom and raise the boom. Support the boom with a hoist of sufficient capacity to take the weight off the boom and linkage.



WARNING

Lift and handle all heavy parts with a lifting device of proper capacity. Be sure parts are supported by proper slings and hooks. Use lifting eyes if provided. Watch out for people in the vicinity.

5.3.2.2.3

Shut-off engine and relieve hydraulic pressure by activating the implement control lever.



WARNING

Always turn the master switch to the "OFF" position before cleaning, repairing, servicing or parking the machine to prevent injury.

5.3.2 TESTING

5.3.2.2.4

Block the base end of the boom cylinder by disconnecting the hose which goes from the valve to the boom cylinder junction. Plug and cap the line.

5.3.2.2.5

Lower the hoist so that the boom's weight is supported by the cylinder's oil. The lift cylinders should support the boom without any lowering of the boom. If the boom drifts downward, the trouble is either in the cylinder packing or at the control valve.

5.3.2.2.6

Prior to working on the cylinder, support the boom with the hoist and take the pressure off of the cylinder. Remove the plug and cap and reconnect the hose. Lower the boom to the ground and relieve the pressure. See section 5.4.7 for removal and 5.4.8 for cylinder rebuild.

5.3.2 TESTING

5.3.2.3 BOOM & BUCKET PROXIMITY SWITCH TEST

5.3.2.3.1

A voltmeter is necessary to conduct this test.

5.3.2.3.2

Connect the voltmeter between the terminals of the blue and black wires. Connect the brown wire to a known 24 volt positive terminal. Connect the blue wire to the negative terminal.

5.3.2.3.3

The voltmeter should not detect a voltage at this time.

5.3.2.3.4

Pass a piece of iron across the sensor end. The iron does not need to contact the switch, but it should be no further than 2 mm (0.008 in). Voltage should be detected as the iron is near the sensor. If it does not, the proximity switch is defective.

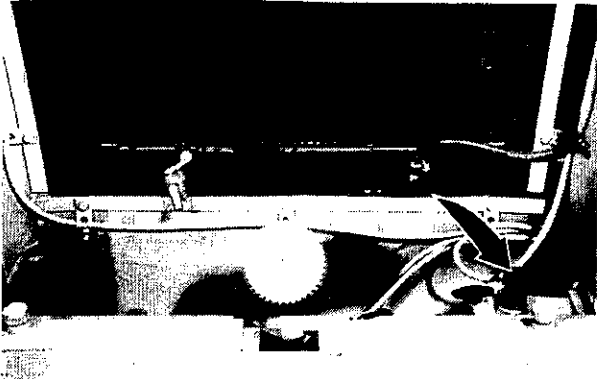
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

Revised 7/89

5.3.2 TESTING

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

IMPLEMENT SYSTEM



5.4.5.1

Pump removal is covered in Section 5.4.1. To remove the control valve drain implement oil tank. Turn off the electrical master switch.



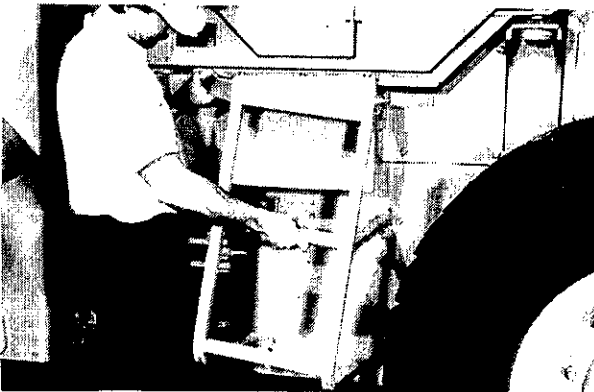
WARNING

Always turn the master switch to the off position before cleaning, repairing, servicing or parking the machine to prevent injury.



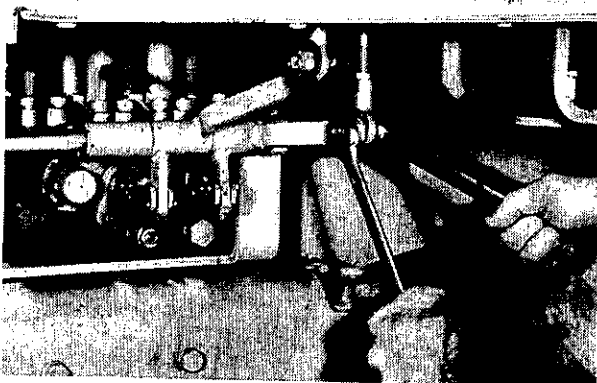
5.4.5.2

Remove the skirt from the right side of the loader.



5.4.5.3

Remove step and fender from the right side of loader.



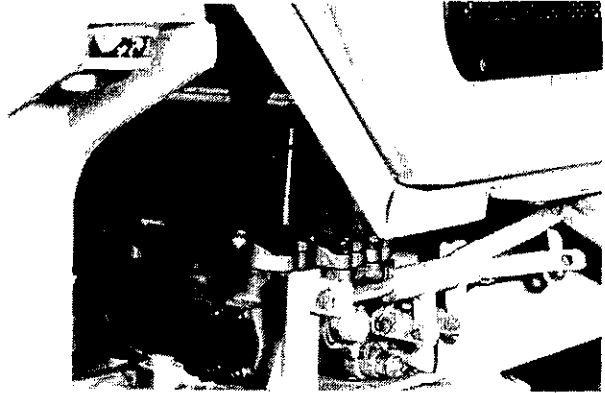
5.4.5.4

Disconnect the implement control lever linkage to the implement control valve at the pivot bracket.

IMPLEMENT SYSTEM

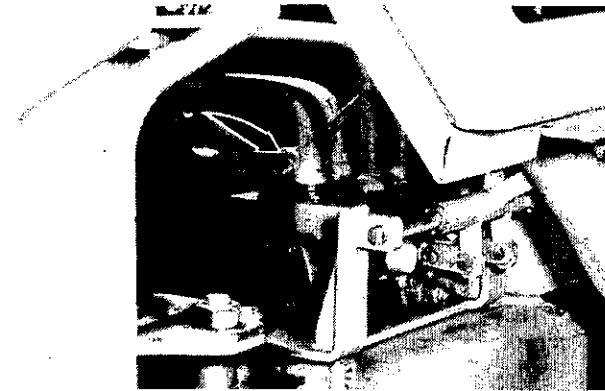
5.4.5.5

Remove the tube clamp capscrews from the clamps and control valve.



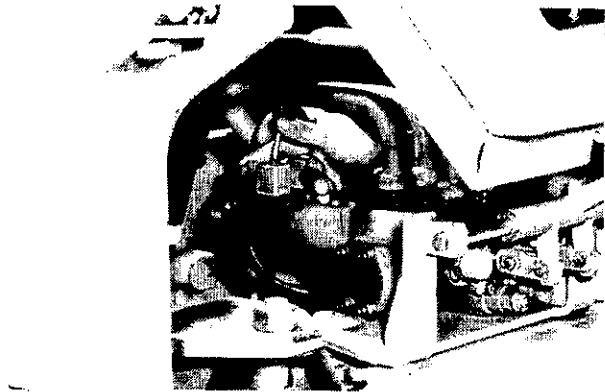
5.4.5.6

Remove the hose which goes from the control valve end cap to the oil tank.



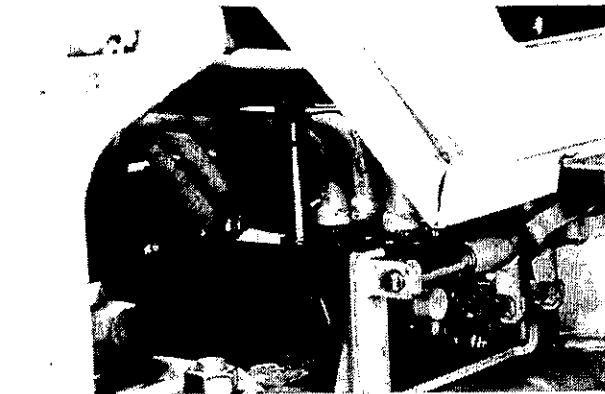
5.4.5.7

Remove the two electrical kickout wires from the detent area of the control valve.



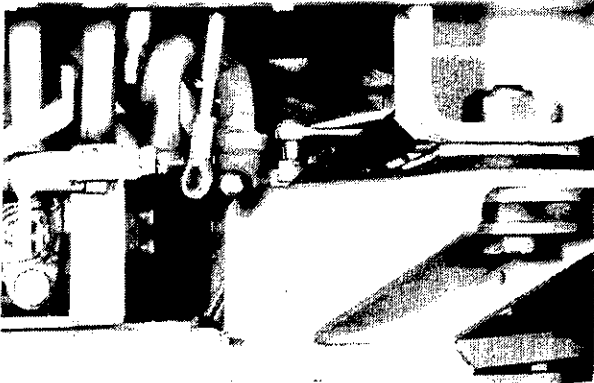
5.4.5.8

Remove the three capscrews holding the valve and plate to the loader frame.

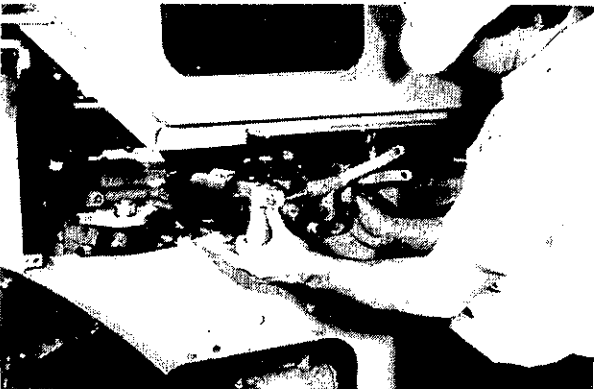


Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

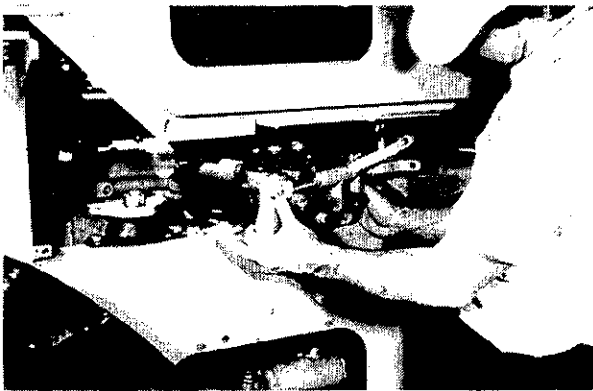
IMPLEMENT SYSTEM



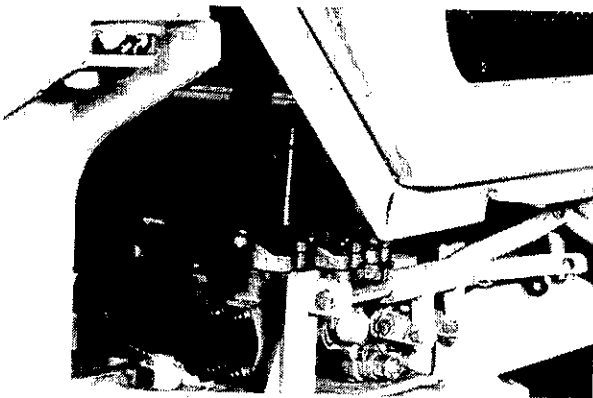
- 5.4.5.9
Loosen the tube bracket in the hitch area.



- 5.4.5.10
Remove the valve from the loader after the tubes are raised from the valve.



- 5.4.5.11
Install the valve into position. Raise the implement oil supply tubes. Fasten the valve into position by means of the three capscrews. Tighten the capscrew to specified torque.



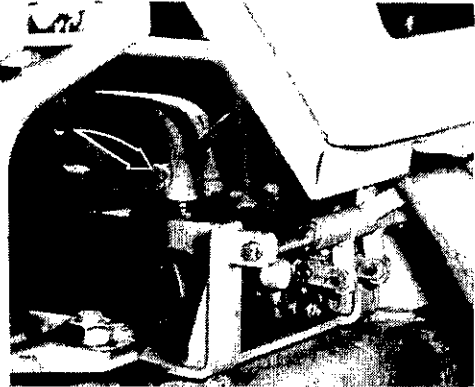
- 5.4.5.12
Install new O-rings in the tube's counter-bore and fasten the tubes to the valve by means of the tube clamps. Tighten the capscrews to specified torque.

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

IMPLEMENT SYSTEM

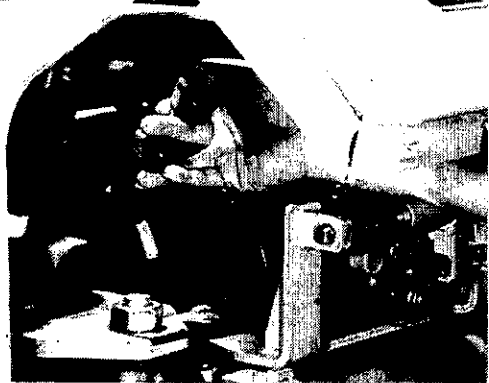
5.4.5.13

Connect the hose which goes from the control valve end cap to the tank.



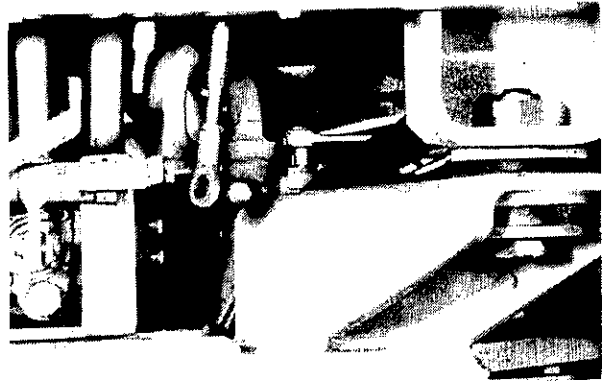
5.4.5.14

Make sure the kickout connectors seal is in position. Connect the two electrical kickout wires from the detent area of the control valve.



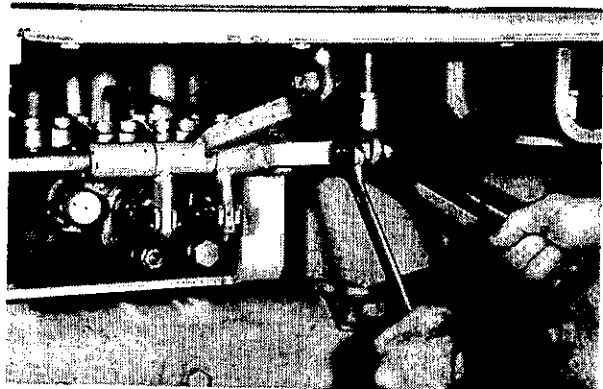
5.4.5.15

Tighten the tube bracket in the hitch area.



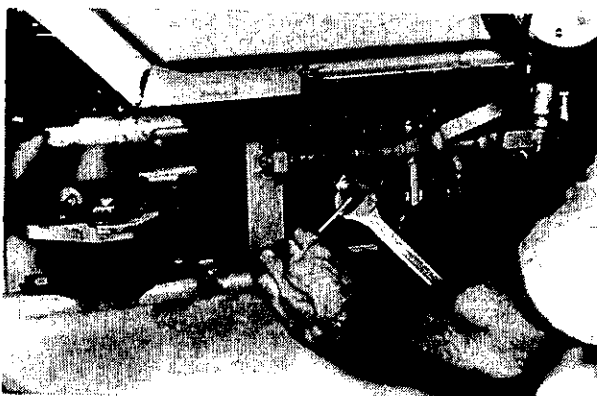
5.4.5.16

Connect the implement control lever linkage to the implement control valve at the pivot bracket.



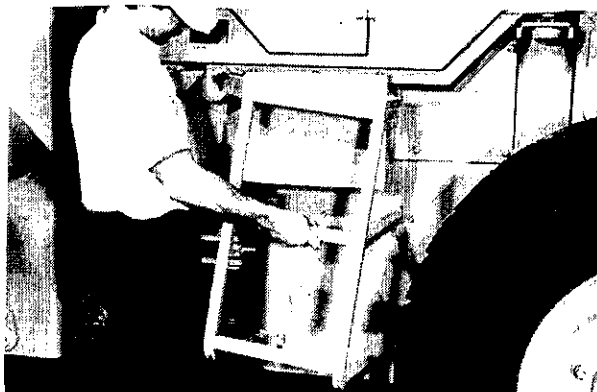
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

IMPLEMENT SYSTEM



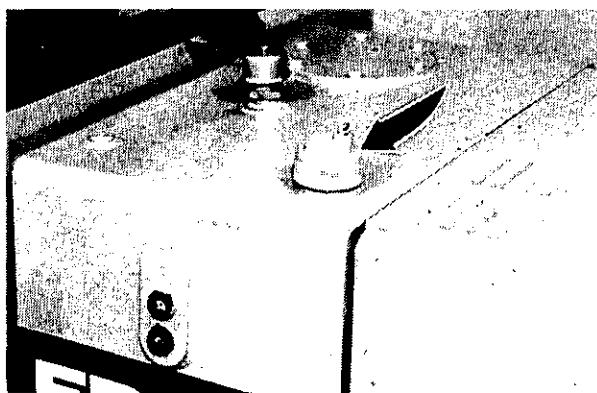
5.4.5.17

Loosen the jam nut on the main pressure regulating valve and screw out the main pressure relief valve two turns.



5.4.5.18

Install the step and fender from the right side of the loader.



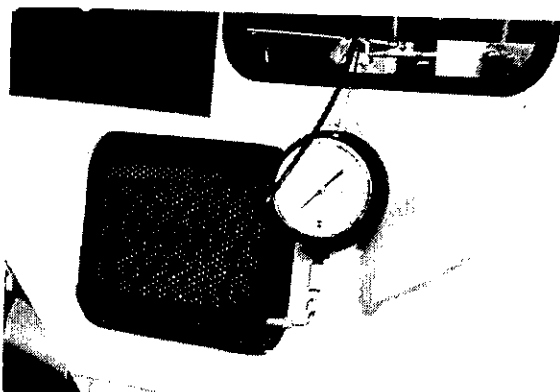
5.4.5.18

Fill the implement oil tank and test the control valve in all functions.

WARNING

Do not run the engine of this machine in closed areas without proper ventilation to remove deadly exhaust gases.

Observe all start up and shut down procedures and "WARNINGS" listed in the operation and maintenance instruction manual.



5.4.5.19

Install a pressure gauge and set the main relief valve opening pressure.

WARNING

This machine and its attachments are to be operated only by qualified operator seated in the operator's seat.

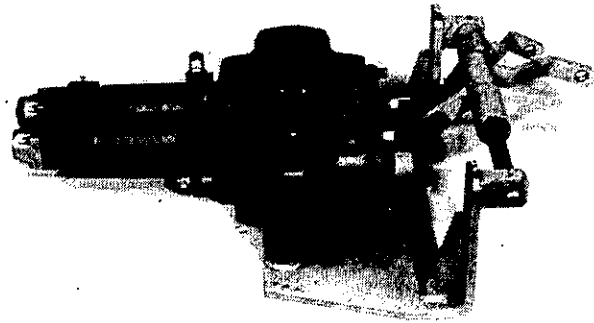
Before starting machine, check, adjust and lock the operator's seat for maximum comfort and control of the machine.

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

IMPLEMENT VALVE REBUILD

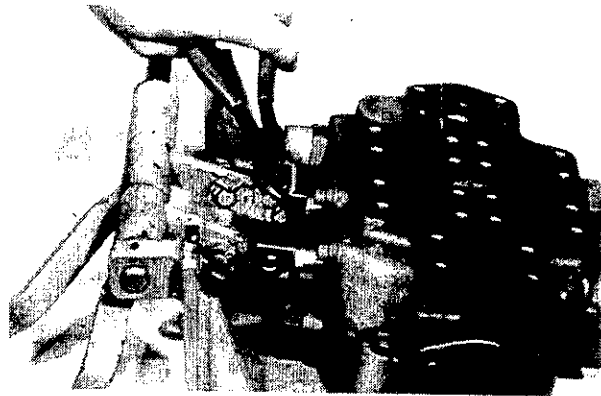
5.4.5.20

Place valve on clean work surface.



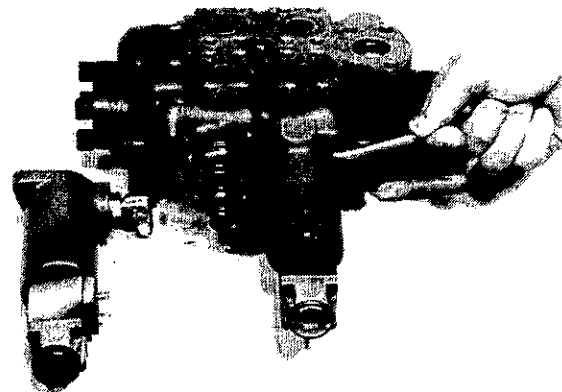
5.4.5.21

Remove the spool eyes from the bracket by removing the cotter pins and removing the pin.



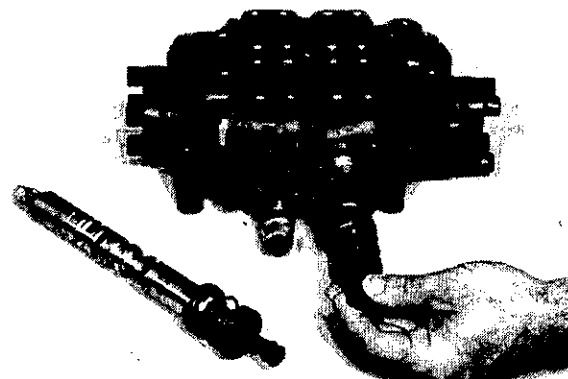
5.4.5.22

Remove end cap capscrews and remove the end caps from the spools.



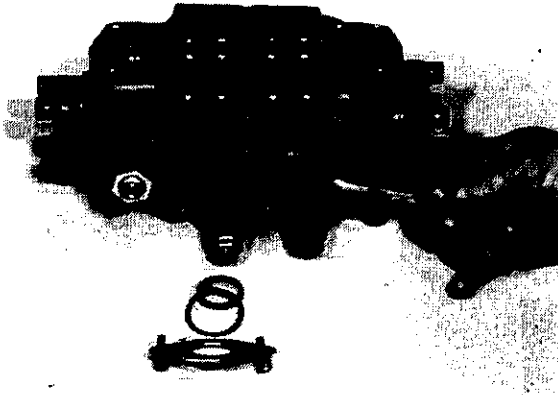
5.4.5.23

Slide spools from implement control valve body.



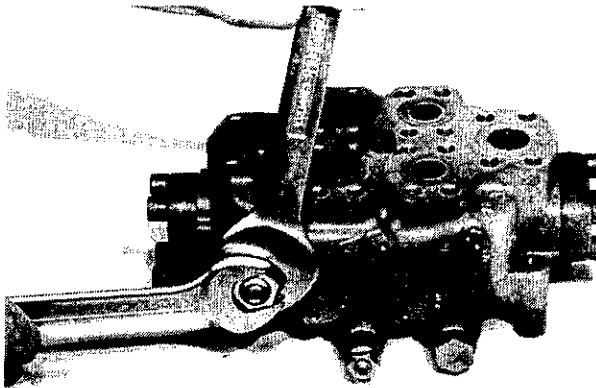
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

IMPLEMENT VALVE REBUILD



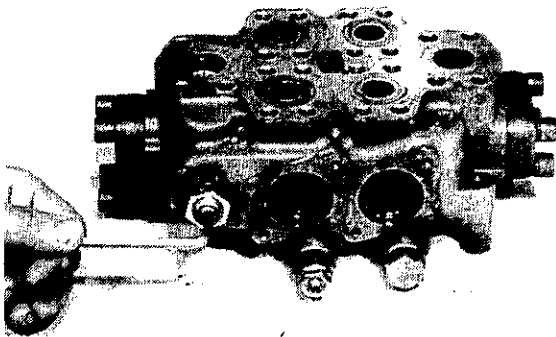
5.4.5.24

Remove the two seal retainers from the spool eye side of the valve.



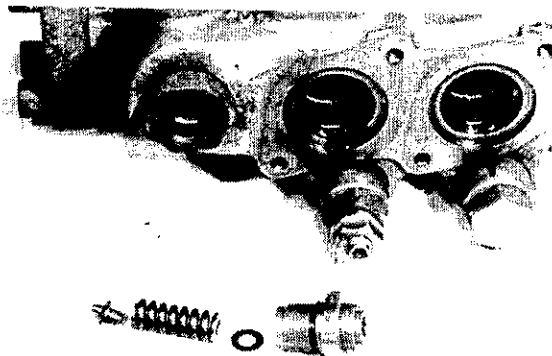
5.4.5.25

Loosen main relief valve jam nut.



5.4.5.26

Loosen the main relief adjusting screw several turns while the main relief valve is still in the control valve body.



5.4.5.27

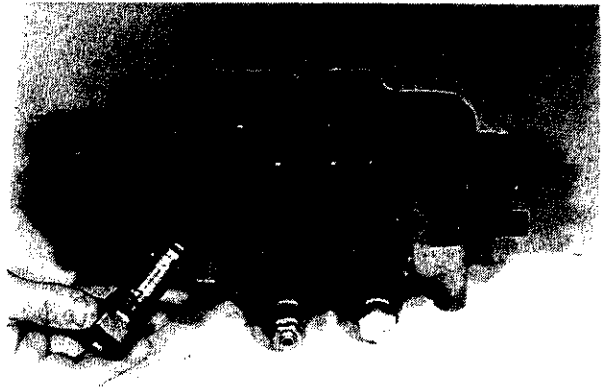
The pilot portion of the main relief valve contains a poppet, spring, shims and adjusting screw. The screw is sealed with an O-ring.

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

IMPLEMENT VALVE REBUILD

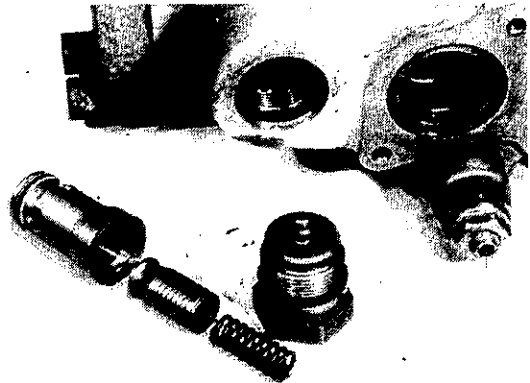
5.4.5.28

Remove main relief valve from the control valve body.



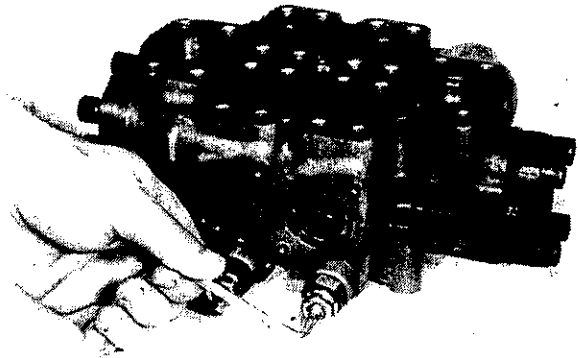
5.4.5.29

Disassemble the valve by pulling the main relief valve cartridge apart. The relief valve consists of the seat, valve, spring and end cap. The end cap has a small orifice in its stem that allows main pressure oil to index to the pilot valve poppet area.



5.4.5.30

Loosen the jam nut on the circuit relief valve.



5.4.5.31

Remove the adjusting screw from the circuit relief valve.



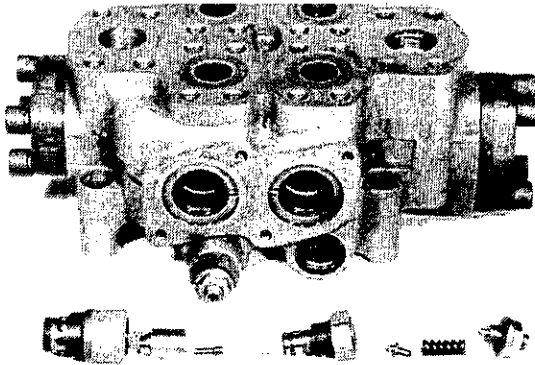
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

IMPLEMENT VALVE REBUILD



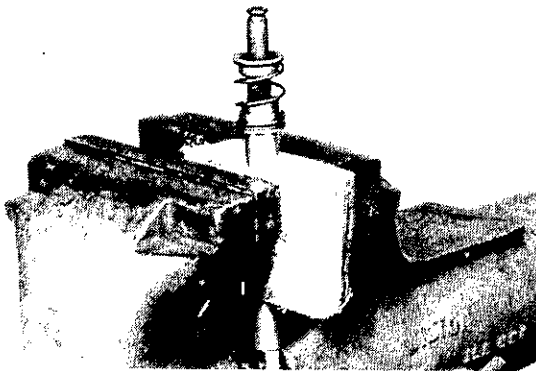
5.4.5.32

Remove circuit relief valve cartridge from the valve body.



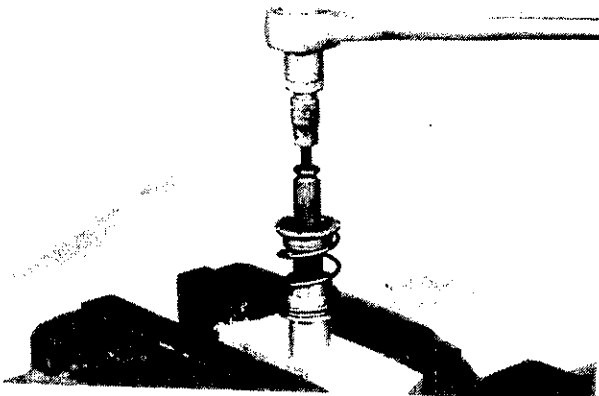
5.4.5.33

Place the circuit relief valve in a pipe vise and loosen the cap from the cartridge. Remove the valve's components, which are cartridge, valve, poppet, spring, pilot body, pilot poppet, spring and adjustment screw.



5.4.5.34

Place the spool in a machined block of wood so that the spool can be disassembled.



5.4.5.35

Remove the detent stud from the spool.

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

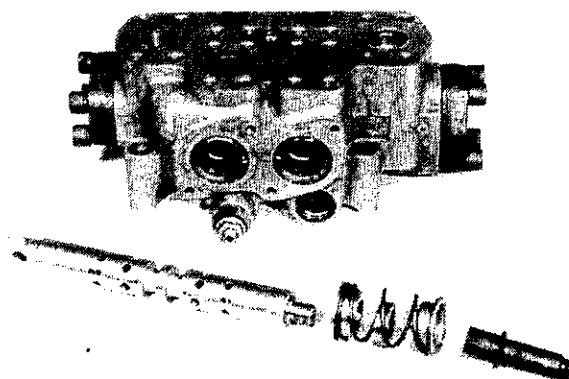
Revised 7/89

5-54

IMPLEMENT VALVE REBUILD

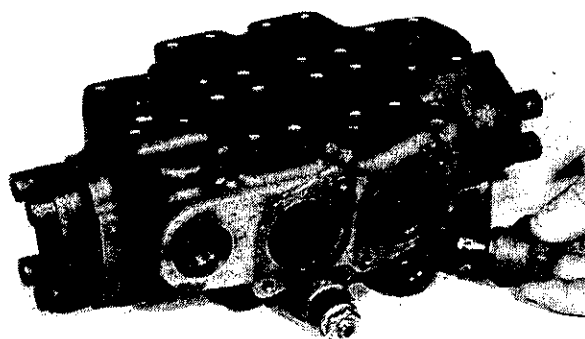
5.4.5.36

The detent stud holds the spring retainers spring and spacer in position.



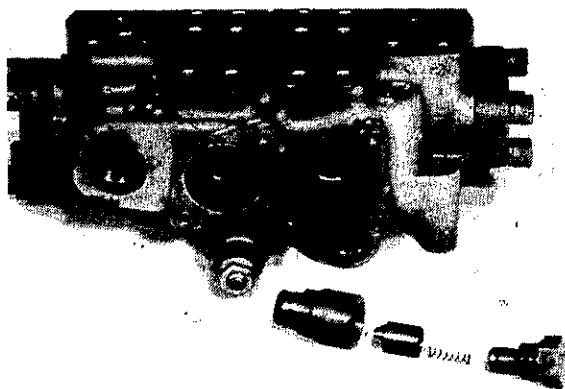
5.4.5.37

Remove the anticavitation valve cartridge from the valve body.



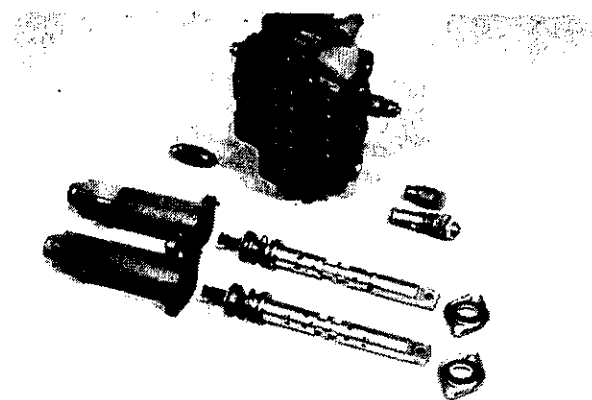
5.4.5.38

Place the cartridge in a pipe vise and loosen the plug on the anticavitation valve. Remove the parts; which are cartridge, poppet, spring and plug.



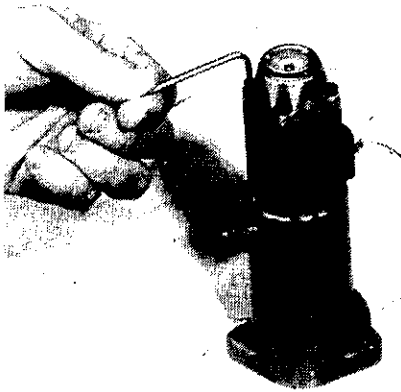
5.4.5.39

Control valve ports are marked by letters and numbers. "A" ports are for the bucket while "B" ports are for the boom. Circuit relief valves are found in ports "A", "A", and "B". The anticavitation valve is found in port "B".



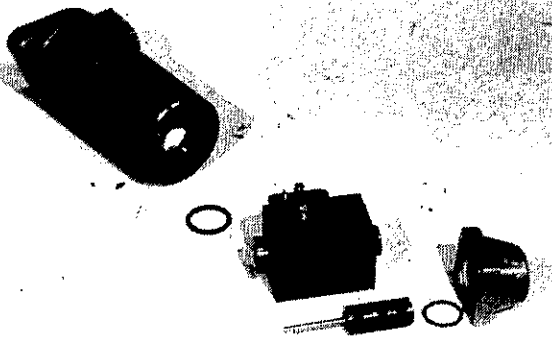
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

IMPLEMENT VALVE REBUILD



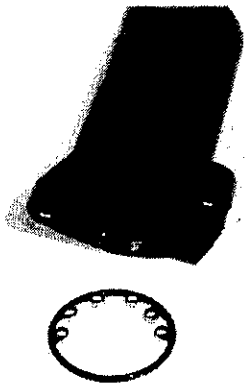
5.4.5.40

Remove the screws that hold the electrical kickout to the detent cap.



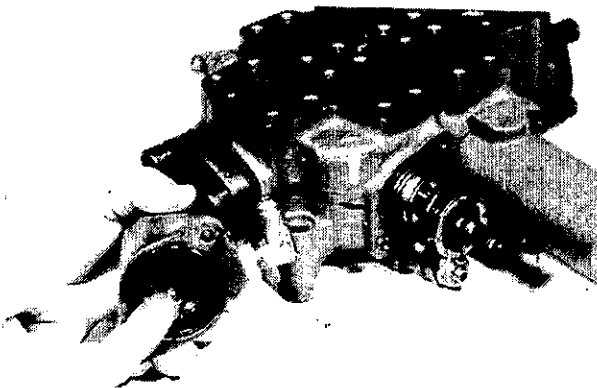
5.4.5.41

The kickout consists of an end cap, spacer, plunger, solenoid and O-ring.



5.4.5.42

There are six detent balls that may fall out of the cap when the cap is removed. An O-ring seals the cap to the valve body.



5.4.5.43

Install the six balls in the detent cap by applying petroleum jelly to the balls and inserting the balls in their respective positions. The solenoid must be off for this operation as the balls must be forced away from the spool when the detent cap is placed on the valve body.

Study **SAFETY RULES** in the front of this manual thoroughly for the protection of machine and safety of personnel.

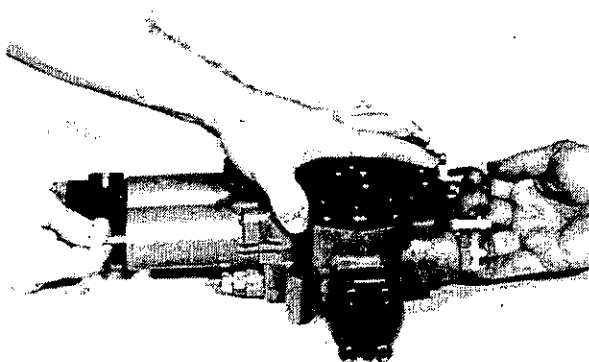
Revised 7/89

IMPLEMENT VALVE REBUILD

5.4.5.44

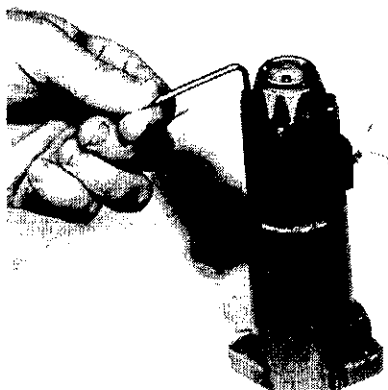
Install the detent cap on the valve body.

Test for spool movement and holding by the detent.



5.4.5.45

Install the solenoid on the detent cap.



5.4.6 BUCKET CYLINDER REMOVAL



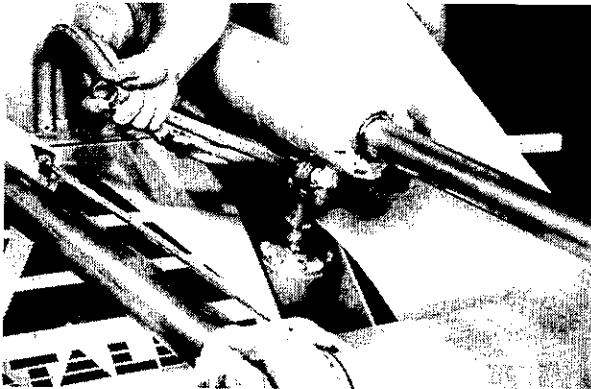
5.4.6.1

Turn off the electric master switch.



WARNING

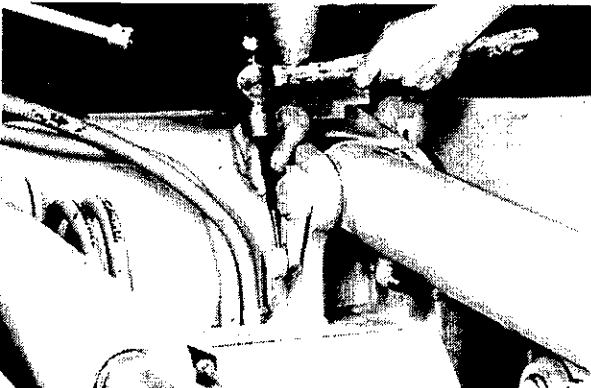
Always turn the master switch to the off position before cleaning, repairing, servicing or parking the machine to prevent injury.



5.4.6.2

Relieve all pressure on the bucket cylinder by moving the implement control lever from side to side while the bucket is grounded.

Remove the two hoses from the cylinder to be removed. Allow cylinder and tube oil to drain into a receptacle.



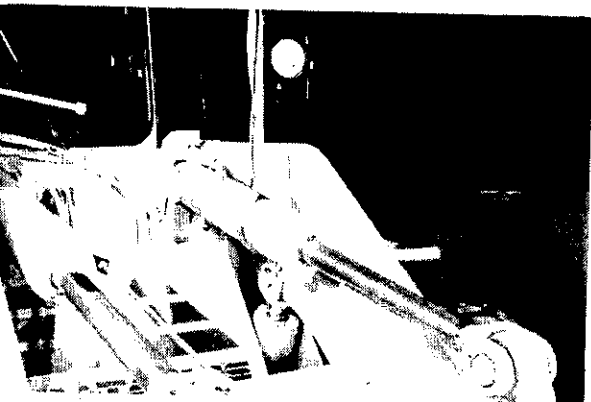
5.4.6.3

Drive the roll pin from the washer retainer and remove retainer.



WARNING

It is unsafe to strike hardened steel parts with anything other than a soft iron or non-ferrous hammer. When installing or removing such parts wear safety glasses with side shields and heavy gloves, etc., to reduce the possibility of injury.



5.4.6.4

Sling the cylinder with an approved lifting device.



WARNING

Lift and handle all heavy parts with a lifting device of proper capacity. Be sure parts are supported by proper slings and hooks. Use lifting eyes if provided. Watch out for people in the vicinity.

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

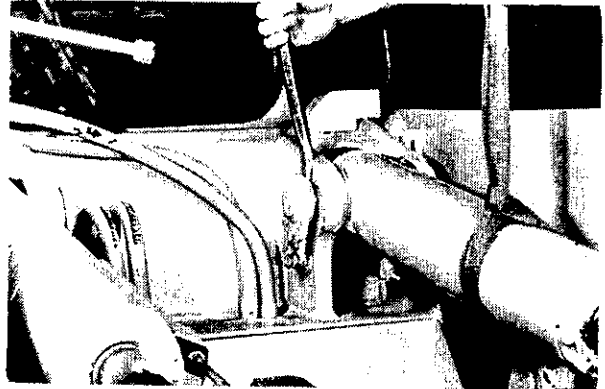
5.4.6 BUCKET CYLINDER REMOVAL

5.4.6.5

Drive the cylinder support pin from the loader frame.

WARNING

It is unsafe to strike hardened steel parts with anything other than a soft iron or non-ferrous hammer. When installing or removing such parts wear safety glasses with side shields and heavy gloves, etc., to reduce the possibility of injury.



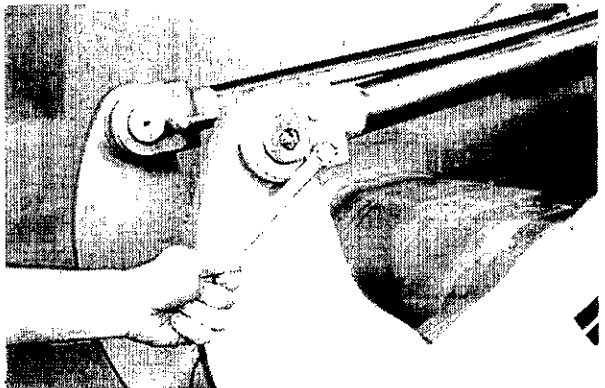
5.4.6.6

Save the shims in their exact location for reassembly purposes.



5.4.6.7

Remove the cylinder rod support pin's lock plate cap-screws and lock plate.

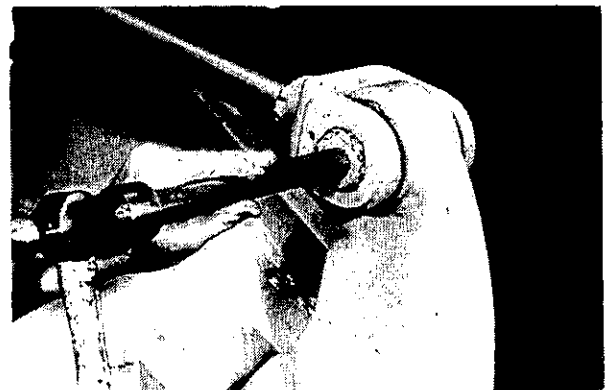


WARNING

It is unsafe to strike hardened steel parts with anything other than a soft iron or non-ferrous hammer. When installing or removing such parts wear safety glasses with side shields and heavy gloves, etc., to reduce the possibility of injury.

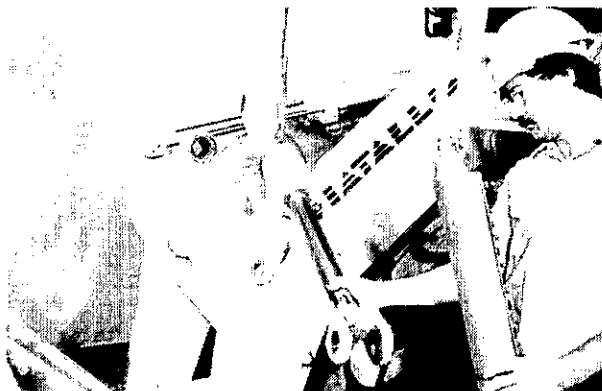
5.4.6.8

Drive the bucket cylinder rod's support pin from the cylinder.



Study **SAFETY RULES** in the front of this manual thoroughly for the protection of machine and safety of personnel.

5.4.6 BUCKET CYLINDER INSTALLATION

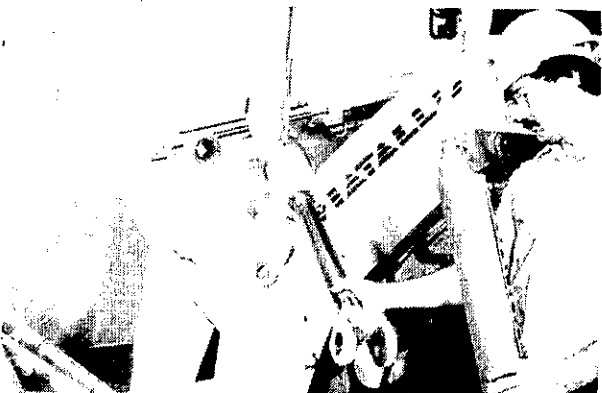


WARNING

Lift and handle all heavy parts with a lifting device of proper capacity. Be sure parts are supported by proper slings and hooks. Use lifting eyes if provided. Watch out for people in the vicinity.

5.4.6.9

Lift the cylinder from the tractor.

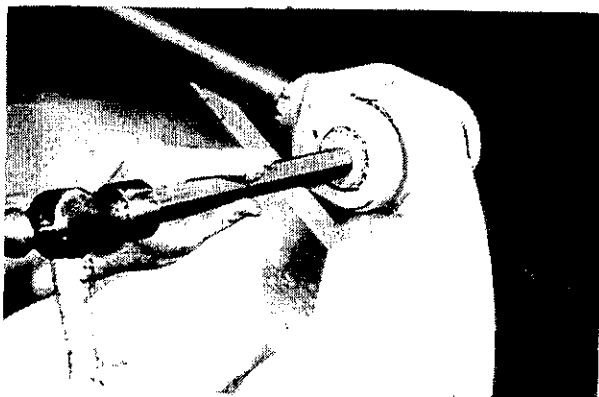


WARNING

Lift and handle all heavy parts with a lifting device of proper capacity. Be sure parts are supported by proper slings and hooks. Use lifting eyes if provided. Watch out for people in the vicinity.

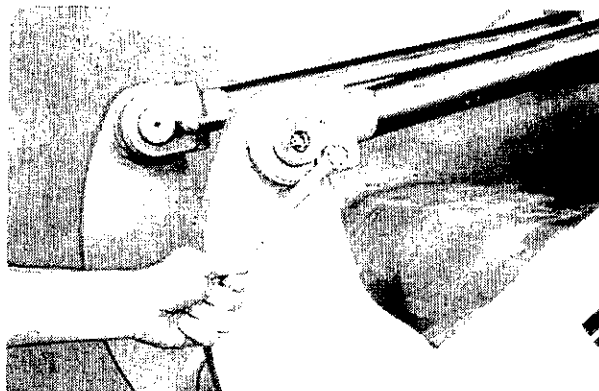
5.4.6.10

Sling the cylinder and lower the cylinder into position on the loader.



5.4.6.11

Install the rod to frame pin through the rod eye.



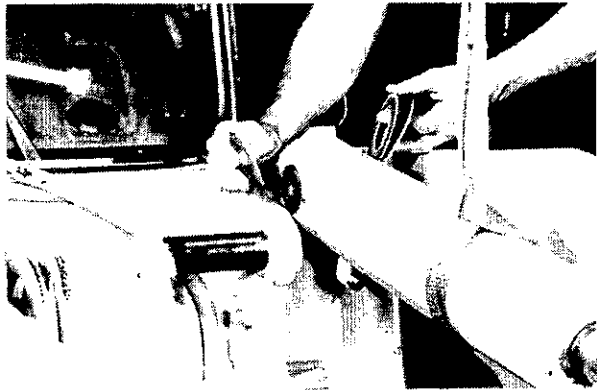
5.4.6.12

Install the lock plate and tighten the capscrews to specified torque.

5.4.6 BUCKET CYLINDER INSTALLATION

5.4.6.13

Install the shims which were removed on their respective sides of the cylinder so that the cylinder is centered and does not bind.

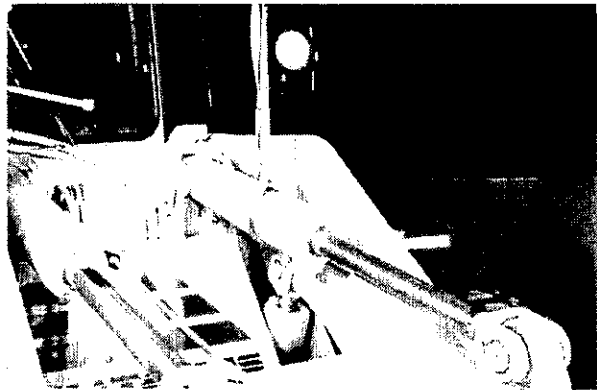


WARNING

It is unsafe to strike hardened steel parts with anything other than a soft iron or non-ferrous hammer. When installing or removing such parts wear safety glasses with side shields and heavy gloves, etc., to reduce the possibility of injury.

5.4.6.14

Drive the anchor pin through the frame, shims and cylinder.

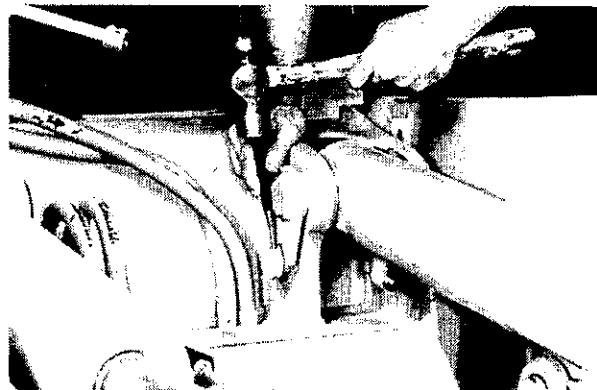


WARNING

It is unsafe to strike hardened steel parts with anything other than a soft iron or non-ferrous hammer. When installing or removing such parts wear safety glasses with side shields and heavy gloves, etc., to reduce the possibility of injury.

5.4.6.15

Install the washer retainer. Drive the roll pin through the washer.



5.4.6.16

Connect the cylinder to its oil supply tubes.



Study **SAFETY RULES** in the front of this manual thoroughly for the protection of machine and safety of personnel.

5.4.6 BUCKET CYLINDER INSTALLATION



WARNING

Observe all start up and shut down procedures and **"WARNINGS"** listed in the operation and maintenance instruction manual.

Do not run the engine of this machine in closed areas without proper ventilation to remove deadly exhaust gases.

5.4.6.17

Turn on the master switch. Test the system for leaks and proper operation.

5.4.7 BOOM CYLINDER REMOVAL

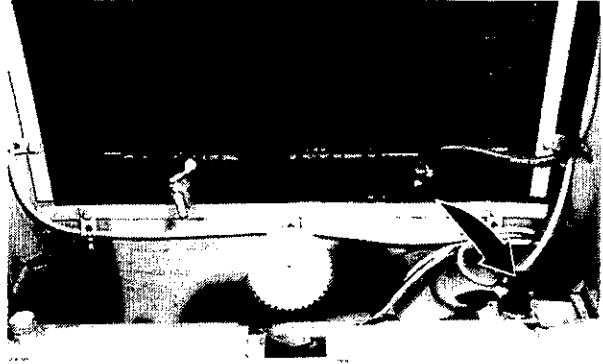


WARNING

Always turn the master switch to the off position before cleaning, repairing, servicing or parking the machine to prevent injury.

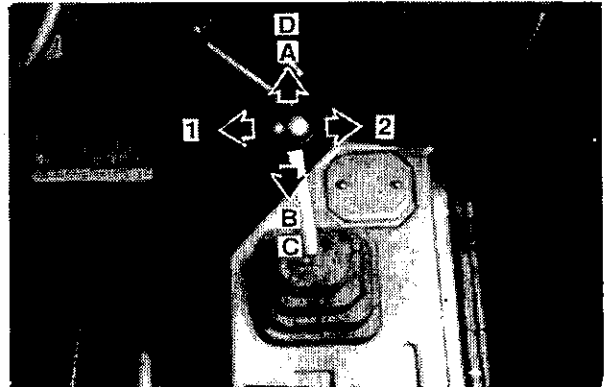
5.4.7.1

Turn off the master switch.



5.4.7.2

Place the implement control lever in the bucket roll back position and tie it in that position so that the implement oil tank does not have to be drained.

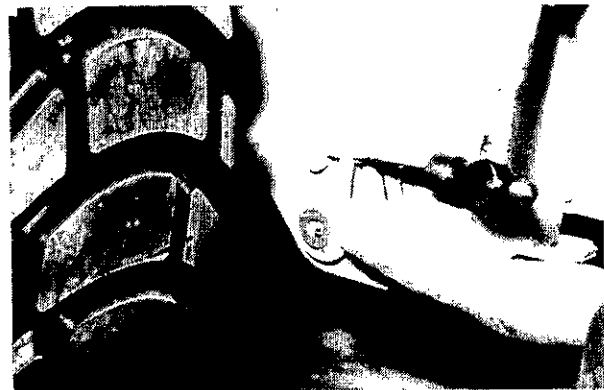


WARNING

It is unsafe to strike hardened steel parts with anything other than a soft iron or non-ferrous hammer. When installing or removing such parts wear safety glasses with side shields and heavy gloves, etc., to reduce the possibility of injury.

5.4.7.3

Remove the roll pin holding the boom cylinder support pin in position. Remove washer.

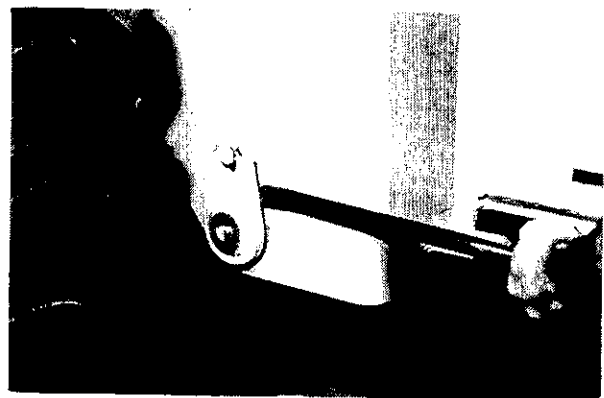


WARNING

It is unsafe to strike hardened steel parts with anything other than a soft iron or non-ferrous hammer. When installing or removing such parts wear safety glasses with side shields and heavy gloves, etc., to reduce the possibility of injury.

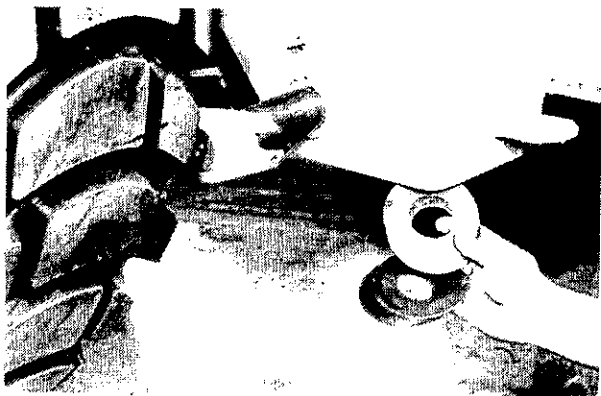
5.4.7.4

Drive the support pin from the frame and cylinder.



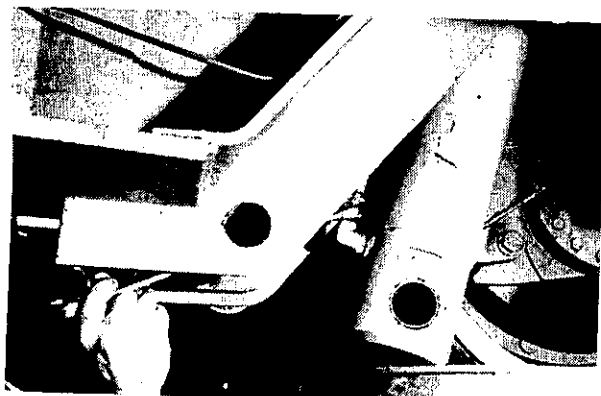
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

5.4.7 BOOM CYLINDER REMOVAL



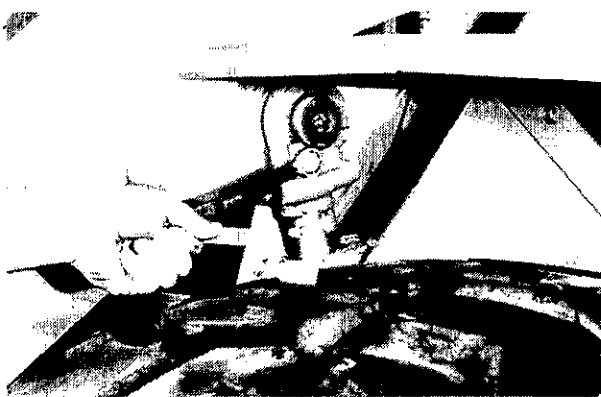
5.4.7.5

Keep the shims in their relative position.



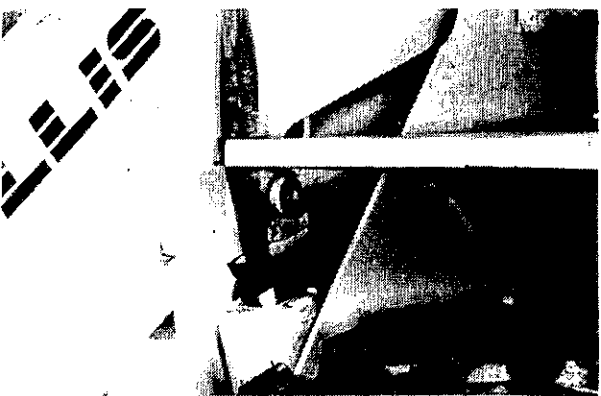
5.4.7.6

Remove the hoses at the cylinder. The bottom hose can be reached by working under the machine, while the top hose can be removed from the rod end of the cylinder.



5.4.7.7

Remove the rod pin lock plate cap screws.



WARNING

Lift and handle all heavy parts with a lifting device of proper capacity. Be sure parts are supported by proper slings and hooks. Use lifting eyes if provided. Watch out for people in the vicinity.

5.4.7.8

Sling the cylinder and support the sling with an overhead hoist.

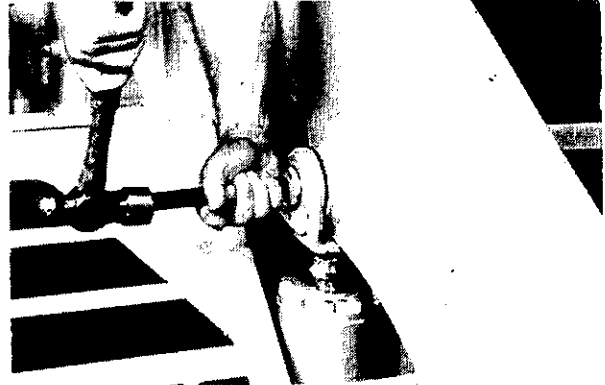
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

5.4.7 BOOM CYLINDER INSTALLATION



WARNING

It is unsafe to strike hardened steel parts with anything other than a soft iron or non-ferrous hammer. When installing or removing such parts wear safety glasses with side shields and heavy gloves, etc., to reduce the possibility of injury.



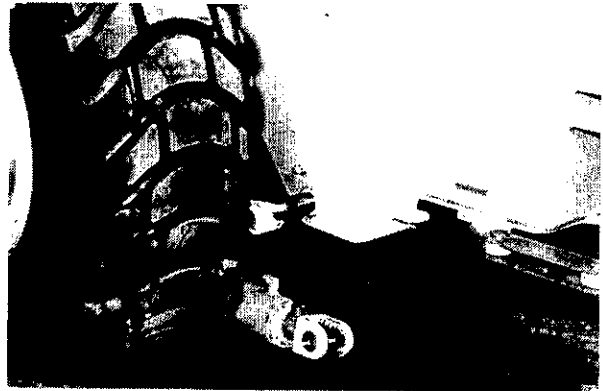
5.4.7.9

Drive the pin from the frame and eye.



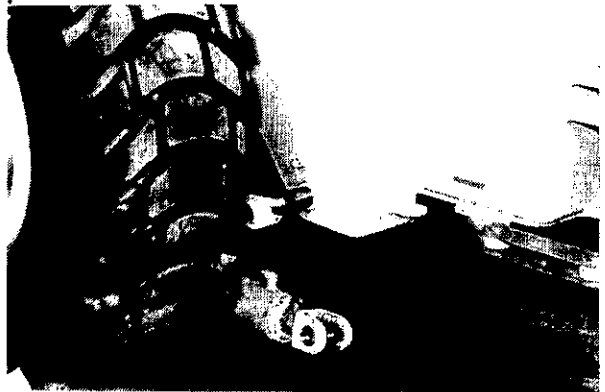
WARNING

Lift and handle all heavy parts with a lifting device of proper capacity. Be sure parts are supported by proper slings and hooks. Use lifting eyes if provided. Watch out for people in the vicinity.



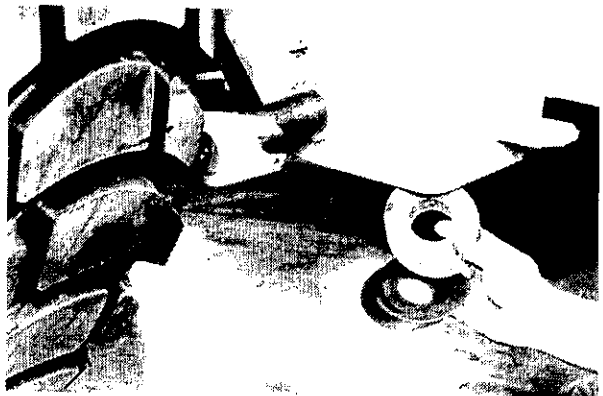
5.4.7.10

Lower the cylinder and bring the capped end toward the bucket. The rod end should face the rear of the machine when the cylinder is removed.



5.4.7.11

Prevent dirt from entering the cylinder by capping the two fittings during installation. Raise the cylinder into position by placing a strap around the rod end of the cylinder. Place the rod to the rear of the tractor. Make sure the cylinder does not damage any of the oil tubes within the frame.



WARNING

It is unsafe to strike hardened steel parts with anything other than a soft iron or non-ferrous hammer. When installing or removing such parts wear safety glasses with side shields and heavy gloves, etc., to reduce the possibility of injury.

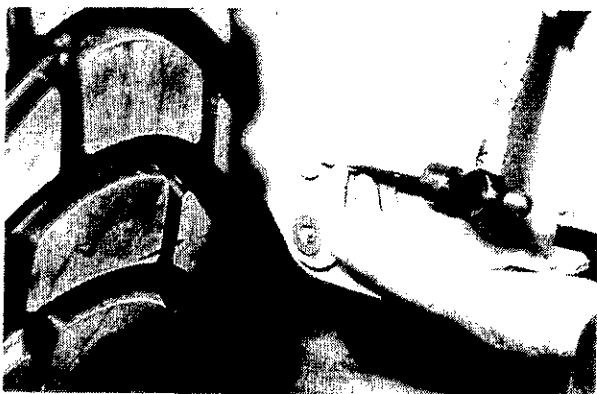
Use proper tools to bring holes into alignment. "DO NOT USE FINGERS OR HANDS".

5.4.7.12

Install lower pin first as the tire prevents directing a hard blow to the pin. Be sure to install the shims in their respective positions so that the cylinder is centered on the rod eye.

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

5.4.7 BOOM CYLINDER INSTALLATION

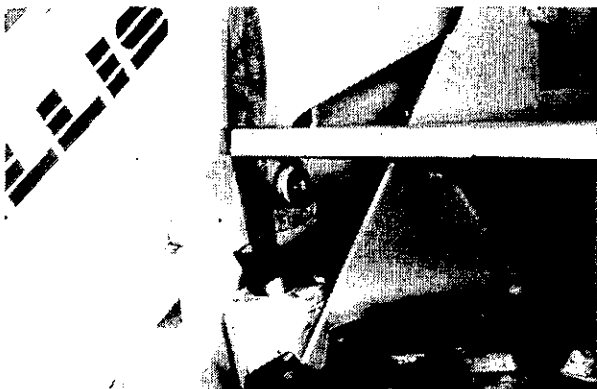


WARNING

It is unsafe to strike hardened steel parts with anything other than a soft iron or non-ferrous hammer. When installing or removing such parts wear safety glasses with side shields and heavy gloves, etc., to reduce the possibility of injury.

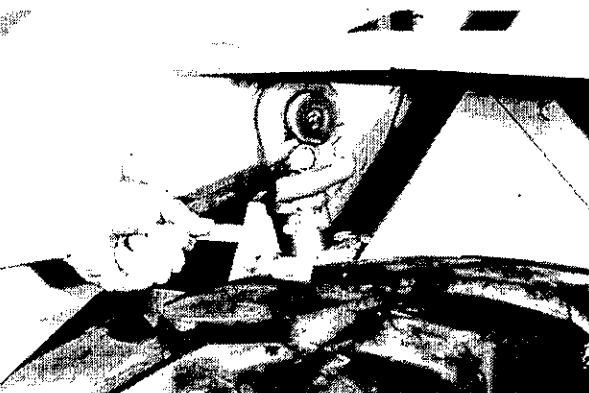
5.4.7.13

Install the lock and roll pin through the lock and frame.



5.4.7.14

Install the pin through the frame and rod eye.



5.4.7.15

Install lock plate and tighten capscrews to specified torque.



5.4.7.16

Remove the sling from the cylinder and connect the hydraulic tubes to the cylinder.

Study **SAFETY RULES** in the front of this manual thoroughly for the protection of machine and safety of personnel.

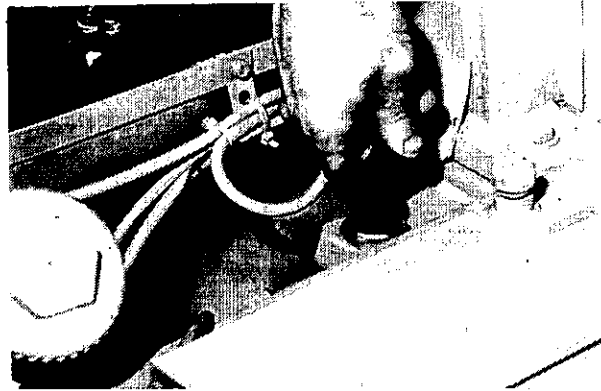
5.4.7 BOOM CYLINDER INSTALLATION



WARNING

Observe all start up and shut down procedures and "WARNINGS" listed in the operation and maintenance instruction manual.

Do not run the engine of this machine in closed areas without proper ventilation to remove deadly exhaust gases.



5.4.7.17

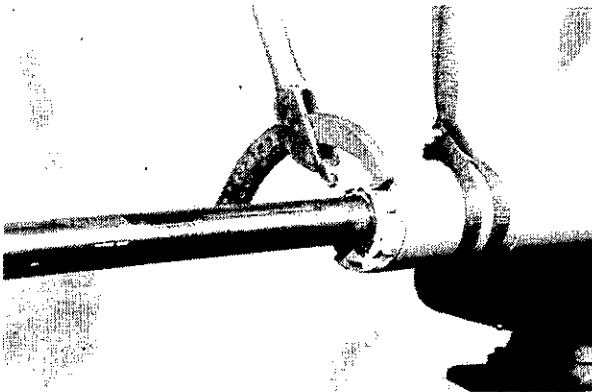
Remove the wire holding the implement control lever in the bucket roll back position. Turn on the master switch and test for leaks.

5.4.8 CYLINDER TEARDOWN



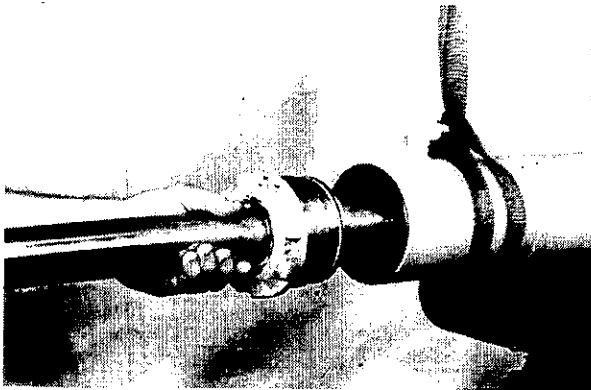
5.4.8.1

Place the capped end of the cylinder in a soft jawed vise and support the cylinder by an overhead hoist.



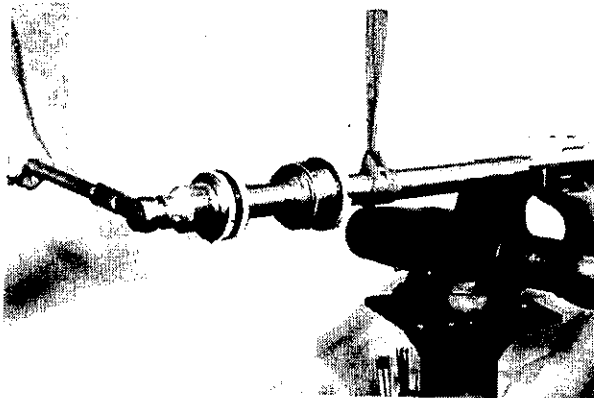
5.4.8.2

Use tool P/N 75300478 and loosen the cylinder head from the cylinder tube.



5.4.8.3

Pull the cylinder rod from the tube.



5.4.8.4

Remove the piston retaining nut from the rod.

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

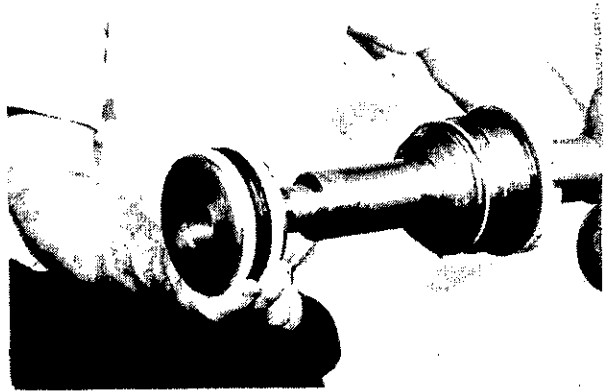
Revised 7/89

5-68

5.4.8 CYLINDER TEARDOWN

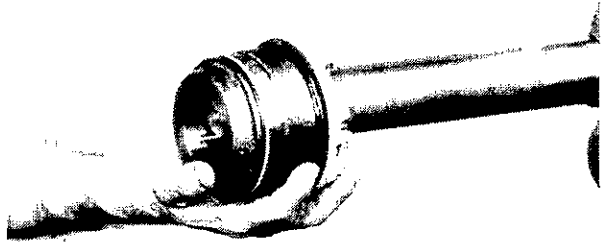
5.4.8.5

Remove the piston from the rod.



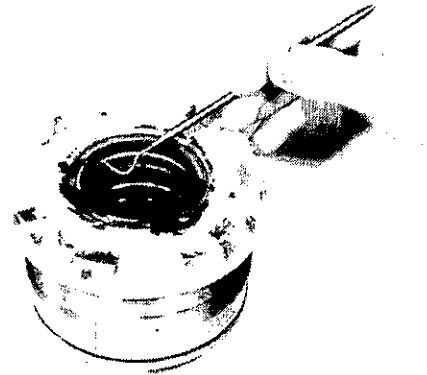
5.4.8.6

Remove the cylinder head from the rod.



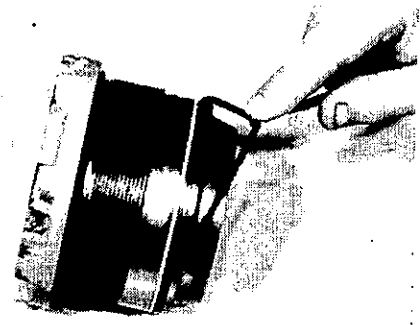
5.4.8.7

Remove the three seals from the head's inner diameter.



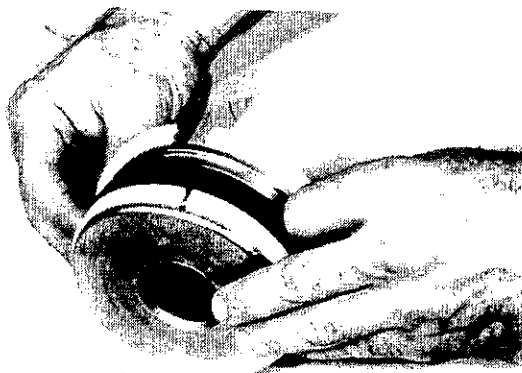
5.4.8.8

Remove the seals from head's outer diameter.

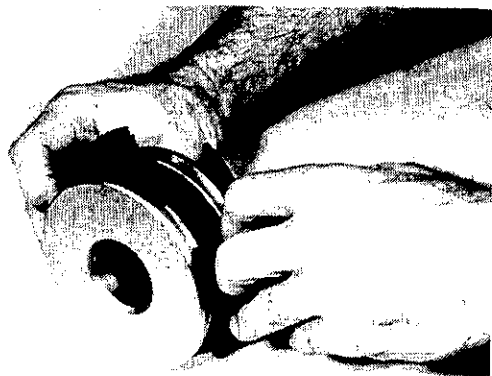


Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

5.4.8 CYLINDER TEARDOWN



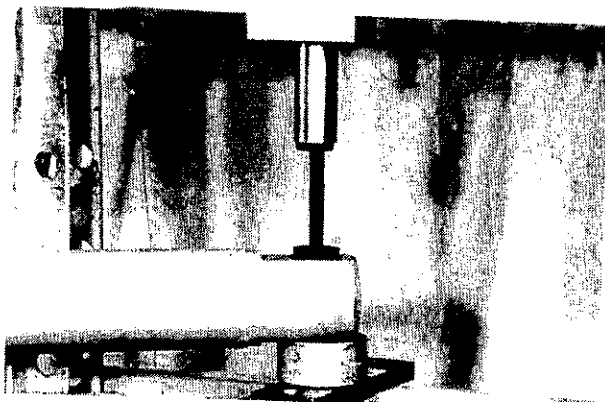
5.4.8.9
Remove the wiper rings from the piston.



5.4.8.10
Remove the back up rings from the piston seal.



5.4.8.11
Remove the piston seal.



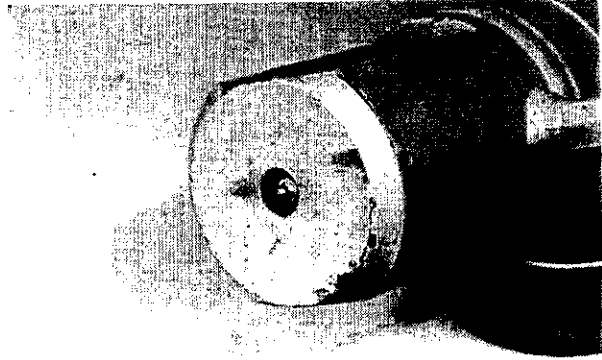
5.4.8.12
Remove the seals and bushings from the end of the tube by pressing the items using a shop press and a 60 mm (2.35 in) plate.

Study **SAFETY RULES** in the front of this manual thoroughly for the protection of machine and safety of personnel.

5.4.8 CYLINDER TEARDOWN

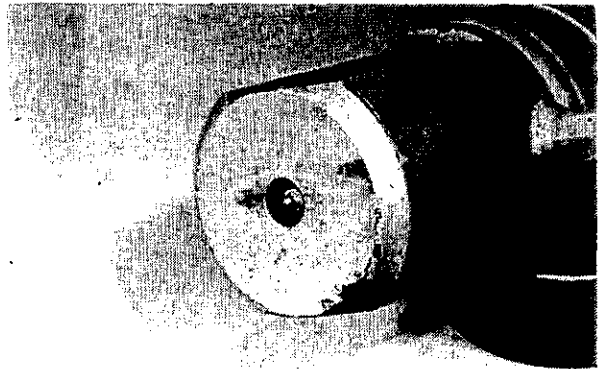
5.4.8.13

Remove the grease fitting from the tube.



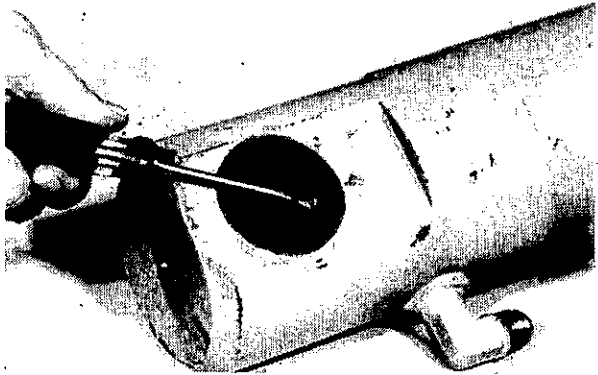
5.4.8.14

Insert a new grease fitting after the cylinder is cleaned.



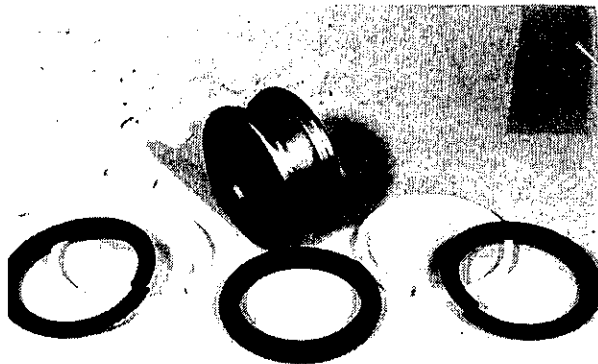
5.4.8.15

Install new bushings and seals in the rod eye and in the tube.



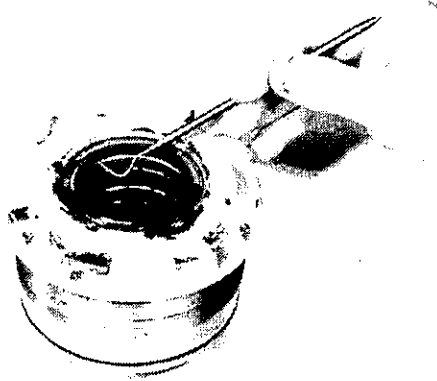
5.4.8.16

Install new piston seals on the piston. Be sure that the seal guides are inserted so that the lip fits into the backup ring.



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

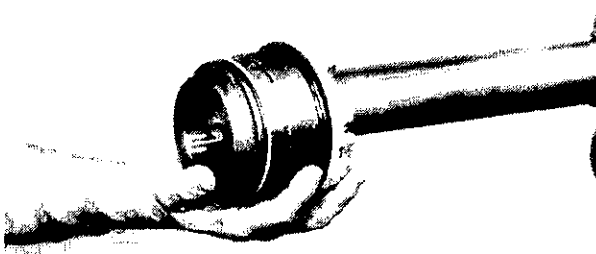
5.4.8 CYLINDER REBUILD



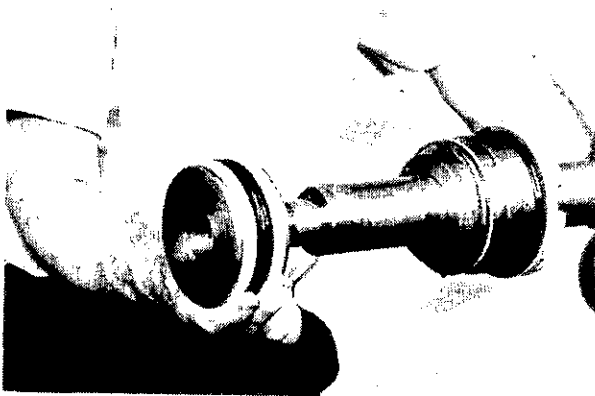
5.4.8.17
Install the three seals in the head inner diameter.



5.4.8.18
Install the seals on the head outer diameter. The backup ring goes away from the pressure.



5.4.8.19
Install the head onto the rod.

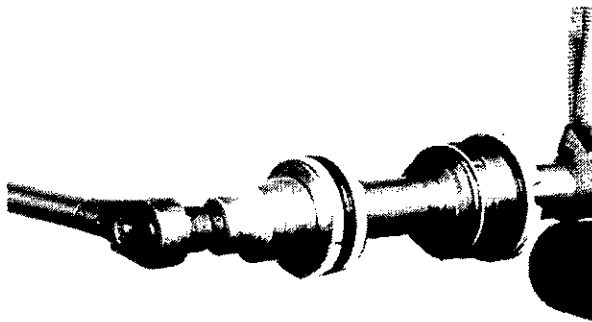


5.4.8.20
Install the piston on the rod.

5.4.8 CYLINDER REBUILD

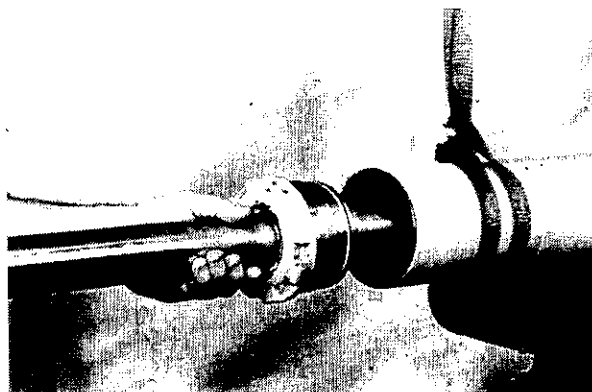
5.4.8.21

Tighten piston nut to specified torque.



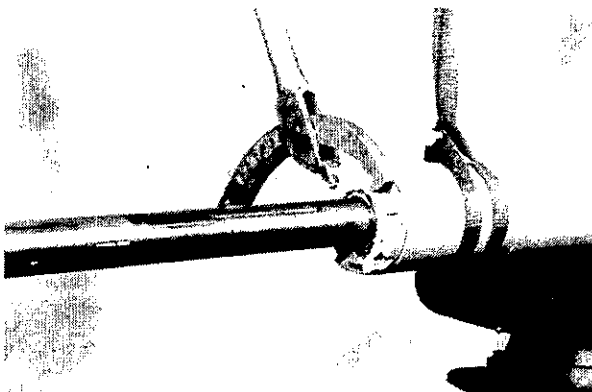
5.4.8.22

Install the piston and rod into the cylinder tube being careful of not damaging the piston seal as the piston enters the threaded portion or goes over the chamfered portion.



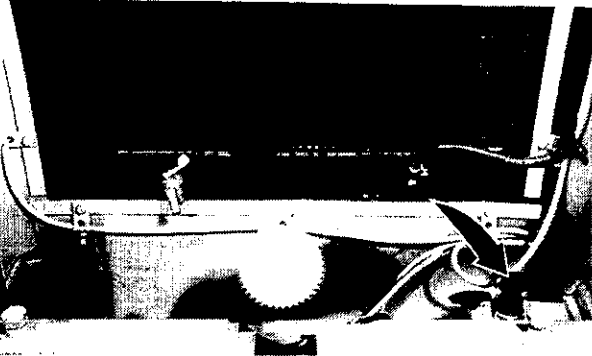
5.4.8.23

Tighten cylinder head to specified torque.



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

5.4.9 IMPLEMENT TANK REMOVAL

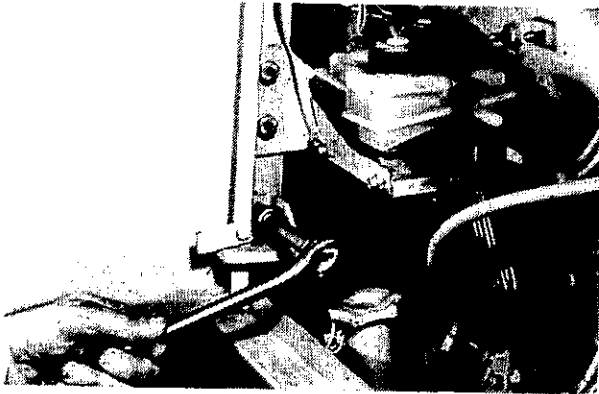


WARNING

Always turn the master switch to the off position before cleaning, repairing, servicing or parking the machine to prevent injury.

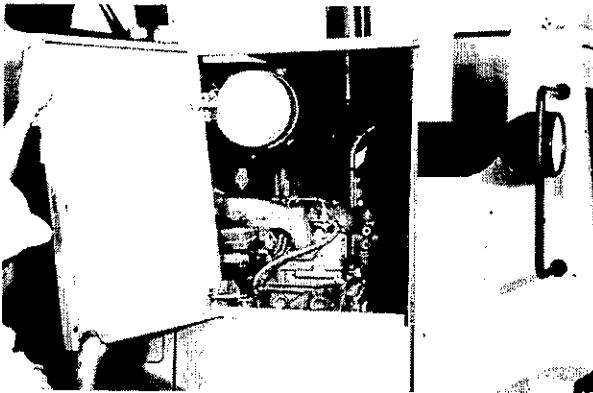
5.4.9.1

Disconnect electrical master switch



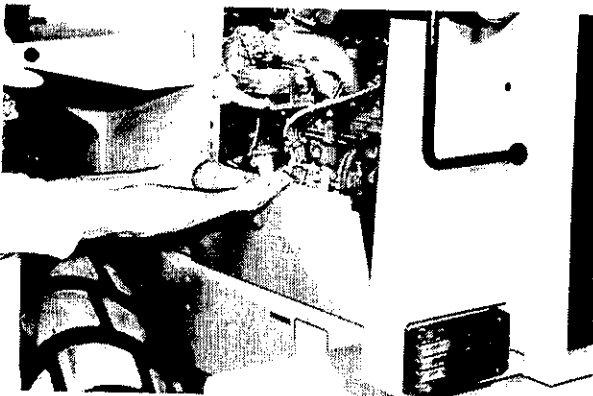
5.4.9.2

Remove capscrews attaching side panel hinges to implement oil tank.



5.4.9.3

Remove doors on each side.



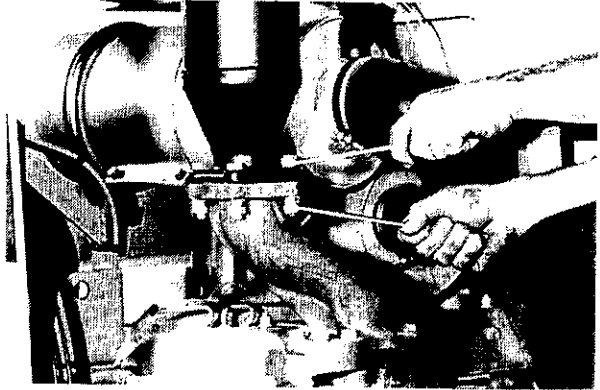
5.4.9.4

Remove lower panels.

5.4.9 IMPLEMENT TANK REMOVAL

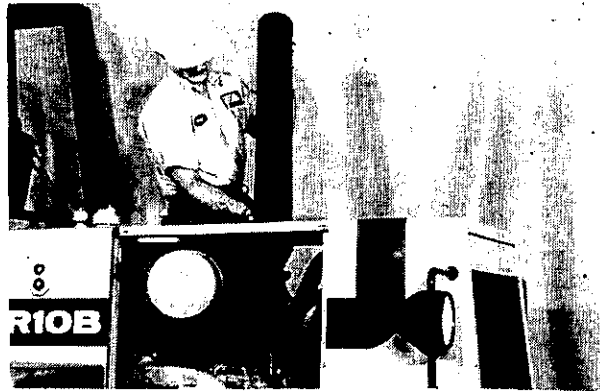
5.4.9.5

Make sure that muffler is cool. Remove capscrews attaching muffler .



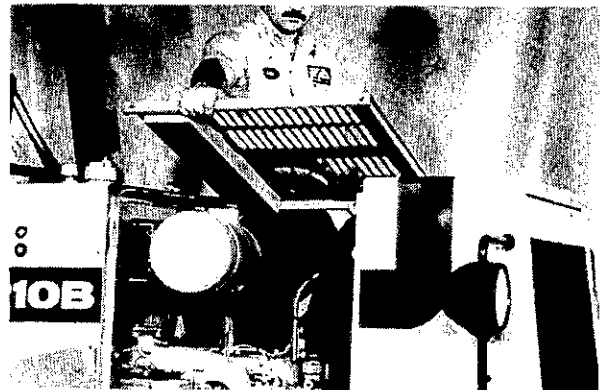
5.4.9.6

Remove muffler .



5.4.9.7

Remove capscrew from each corner of hood; remove hood.



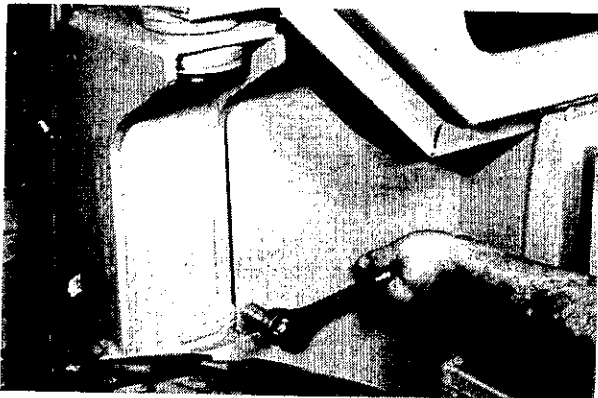
5.4.9.8

Remove fenders.



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

5.4.9 IMPLEMENT TANK REMOVAL



5.4.9.9

Remove right and left side access panels.

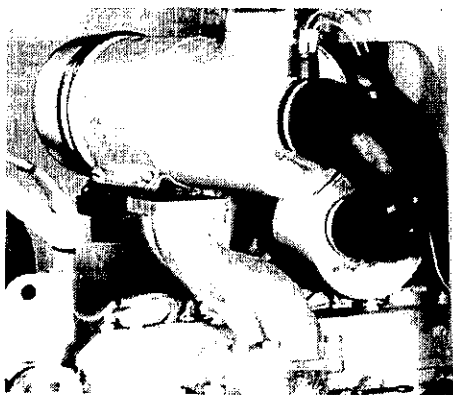


DANGER

Fluid under pressure - turn cap or cover slowly to relieve pressure before removing.

5.4.9.10

Remove cap to drain hydraulic tank. Drain oil into a length of hose and into a pan to keep oil off of tires.



5.4.9.11

Remove air cleaner hose and two sensor wires.



5.4.9.12

Remove two large hydraulic oil hoses from bottom of tank. Disconnect the larger hose by removing the tube from tank. There is a filter held in by the tube. The smaller hose can be disconnected from extension on tank. Disconnect wire from sensor in bottom of tank.

5.4.9 IMPLEMENT TANK REMOVAL

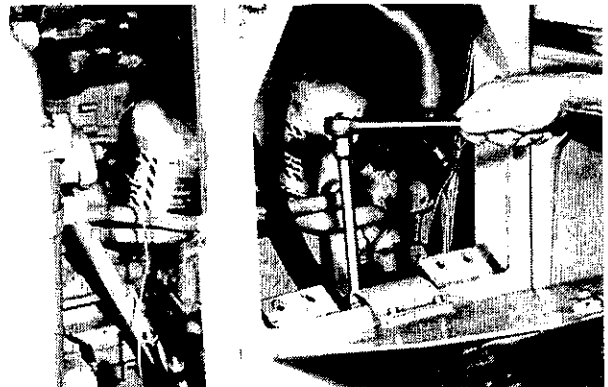
5.4.9.13

Remove the filter and seal.



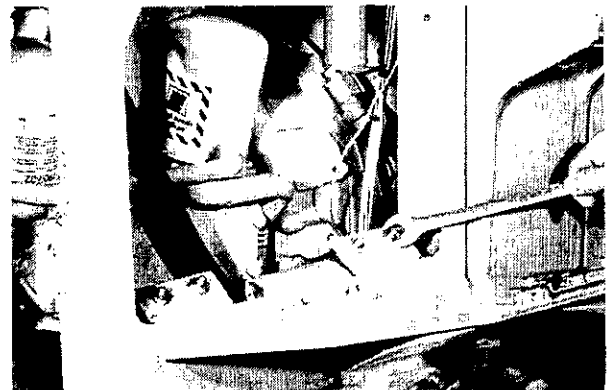
5.4.9.14

Remove capscrews holding tank to frame (3 capscrews on each side).



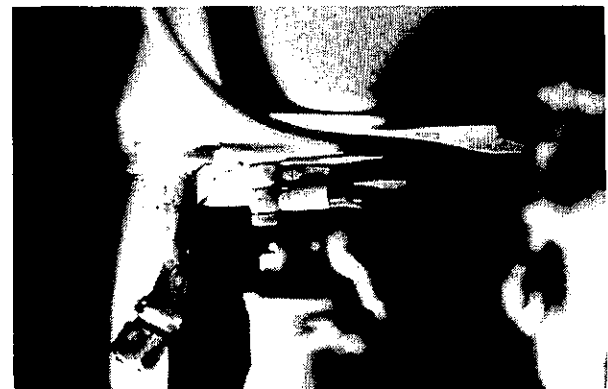
5.4.9.15

Disconnect the four grease fittings from the access door flange.

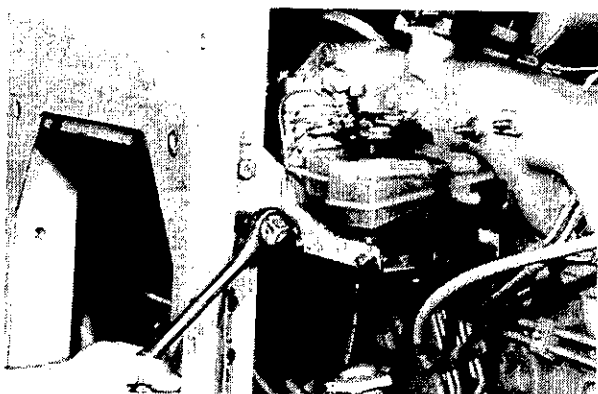


5.4.9.16

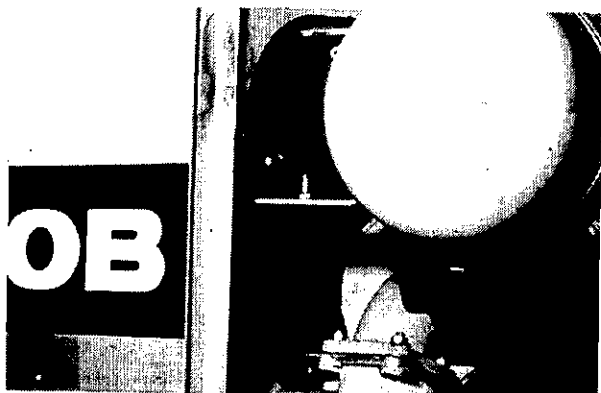
Remove two small hydraulic lines from bottom of tank.



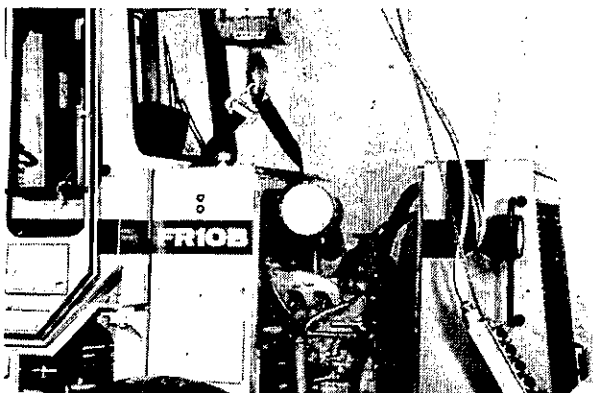
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.



5.4.9.17
Remove brake reservoir support bracket. Lay reservoirs against engine.



5.4.9.18
Remove fuel tank breather hose.



WARNING

Lift and handle all heavy parts with a lifting device of proper capacity. Be sure parts are supported by proper slings and hooks. Use lifting eyes if provided. Watch out for people in the vicinity.

5.4.9.19
Using a suitable hoist and sling, remove tank from frame.

5.4.9.20
Installation is the reverse of removal

5.6 TOOLS

Service tools required to perform the repair operations in this manual are listed below. Order tools from your *FIATALLIS*® dealer unless otherwise noted.

All other tools are considered to be standard tools which can be ordered from local tool suppliers.

Topic no.	Tool description	Part no.
5.3	Flow meter 200 gpm	75300836
5.3	Multi-gauge 150-600-5000 psi	75300110
5.4.8.2	Wrench	75300478
5.4.8.23	Wrench	75300478

Revised 7/89

5.6 SPECIFICATIONS

5.6.1 PUMP SPECIFICATIONS

Flow		
	Lit/min	GPM
Steering Section	83.5	22
2500 rpm & 7 bar (100 psi) pressure		
Implement Section	137.5	36.3
Brake pump	26.4	7
2325 rpm		

TORQUES	daNm	ft lbs
Pump Mount	13.9	103
Tube connector at pump	3.2	24
Tube connector at tank	7.9	58

STEERING VALVE SPECIFICATIONS

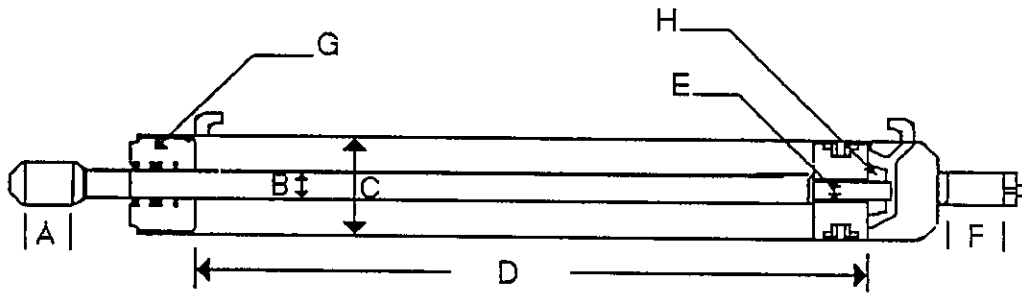
PRESSURE		
	BAR	PSI
Main Relief	140±5	2030±70
Circuit Relief	200±5	2900±70
TORQUES	daNm	ft lbs
Valve Mount	7.2	53

IMPLEMENT CONTROL VALVE SPECIFICATIONS

PRESSURE		
	BAR	PSI
Main Relief	190 ± 3	2735 ± 45
Bucket dump	120 ± 3	1745 ± 45
Bucket tipback	210 ± 3	3045 ± 45
Boom Raise	230 ± 3	3335 ± 45
TORQUES	daNm	ft lbs
Valve Mount	3.2	24
Tube Connector at valve	7.9	58
Tube connector at tank	13.9	103
Hose support to frame	3.2	24

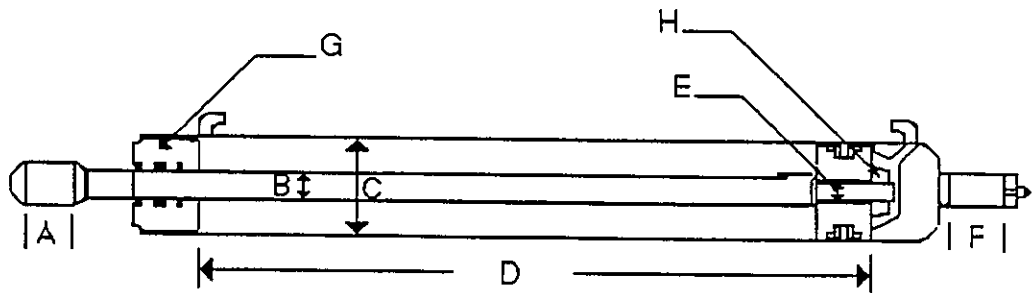
Revised 7/89

STEERING CYLINDER SPECIFICATION



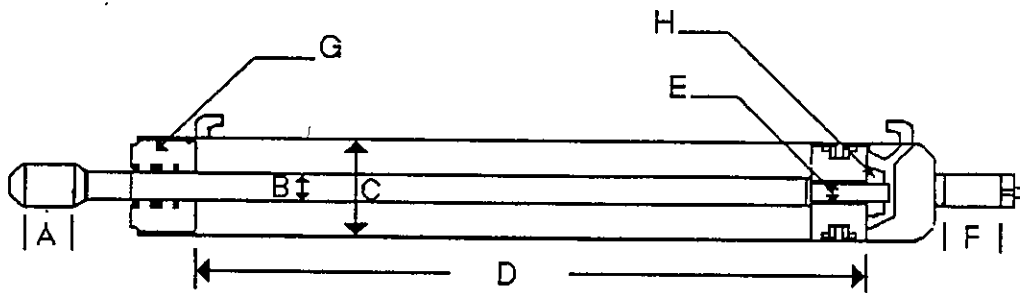
	mm	in
A.		
B.	36	1.417
C.	70	2.756
D. Stroke	350	13.779
E.	26	1.024
F.		
	daNm	ft lb
G.	50-60	360-430
H.	29-32	170-185
Cylinder lock capscrew	13.9	102

BOOM CYLINDER SPECIFICATION



	mm	in
A.	50	1.969
B.	56	2.205
C.	110	4.331
D. Stroke	725	28.543
E.	37	1.457
F.	65	2.559
	daNm	Ft. Lbs
G.	162-178	1170-1285
H.	65.5-72.5	475-520
Cylinder lock capscrew	13.9	102

BUCKET CYLINDER SPECIFICATION



	mm	in
A.	50	1.969
B.	56	2.205
C.	110	4.331
D. Stroke	407	16.024
E.	37	1.457
F.	65	2.559
	daNm	Ft. Lbs
G.	162-178	1170-1285
H.	65.5-72.5	475-520
Cylinder lock capcrew	13.9	102

**REMOVE THIS PAGE AND
INSERT ALL PAGES UNTIL
THE NEXT BLACK EDGED
PAGE APPEARS UNDER
SECTION 6**

SECTION 6 HITCH

TABLE OF CONTENTS

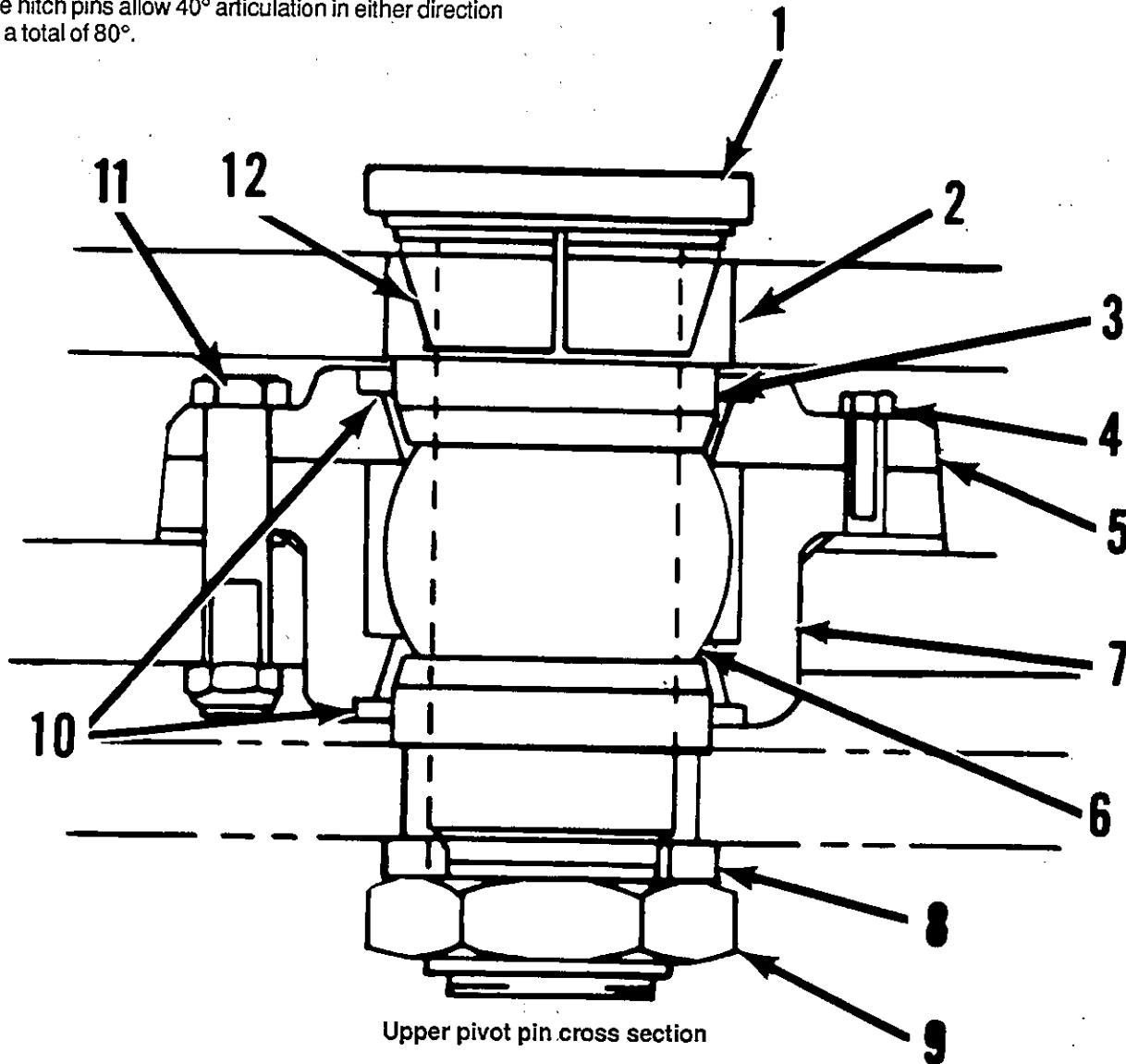
<u>TOPIC</u>	<u>TITLE</u>	
<u>PAGE</u>		
6.1	GENERAL DESCRIPTION	6-1
6.4	REPAIR PROCEDURES.....	6-2
6.4.1	Hitch disassembly	6-2
6.4.2	Hitch assembly.....	6-11
6.5	TOOLS	6-17
6.6	SPECIFICATIONS	6-18

HITCH

FRAME ARTICULATION PIVOTS

The frame articulation pivots consists of two pins which ride on two bushings attached to the front module. The bushings are encased in a cartridge. The pins are held to the rear frame by means of a nut. Seals protect the bushing from damage due to contamination.

The hitch pins allow 40° articulation in either direction for a total of 80°.

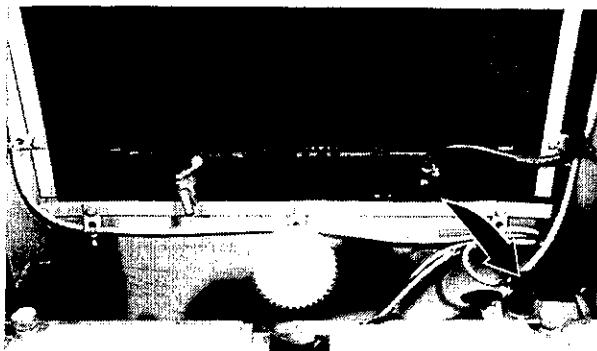


1. Frame connecting collar
2. Pivot pin outer collar
3. Pivot pin boss
4. Capscrew
5. Self aligning bushing retainer
6. Self aligning bushing

7. Bushing retainer
8. Pivot pin spacer
9. Nut
10. Seal
11. Capscrew
12. Pivot pin inner collar

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

HITCH REMOVAL



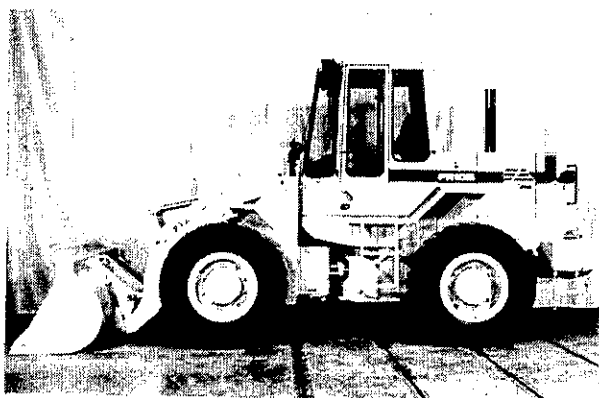
6.4.1.1

Turn off the master switch prior to separating the front and rear sections at the pivot pins.



WARNING

Always turn the master switch to the off position before cleaning, repairing, servicing or parking the machine to prevent injury.



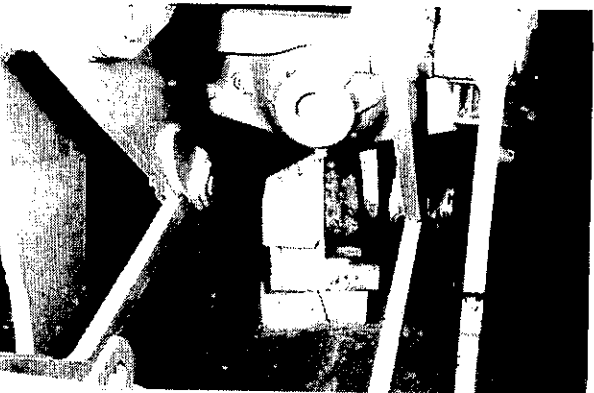
6.4.1.2

Make sure the bucket is resting upon the ground.

96601



96602



6.4.1.3

Support the front module by blocking under the front portion of the hitch area.



WARNING

When any supporting machine component must be removed or installed and jacks are used, be sure the support of the jack at the machine and on the ground are appropriate to the load to be applied. Transfer the load to authorized blocking or jack stand immediately. Do not work on or under the machine or its components while supported only on a jack or other lifting device, according to local or national requirements.

6.4.1.4

Block under the front axle.



WARNING

When any supporting machine component must be removed or installed and jacks are used, be sure the support of the jack at the machine and on the ground are appropriate to the load to be applied. Transfer the load to authorized blocking or jack stand immediately. Do not work on or under the machine or its components while supported only on a jack or other lifting device, according to local or national requirements.

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

HITCH REMOVAL

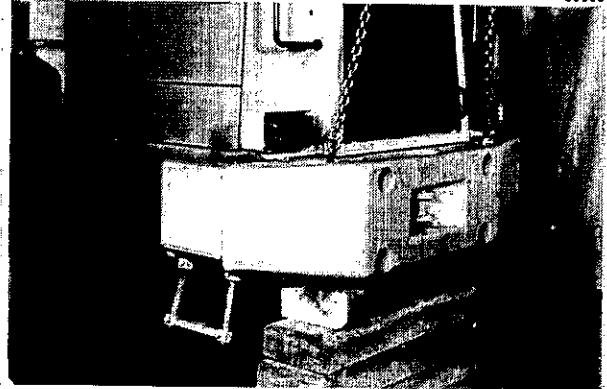
6.4.1.5

Support the rear module by means of an overhead hoist.



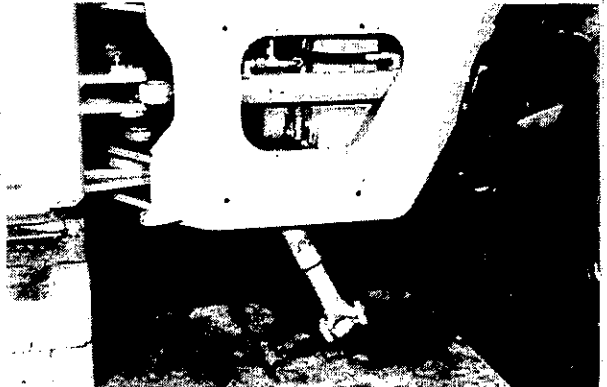
WARNING

Lift and handle all heavy parts with a lifting device of proper capacity. Be sure parts are supported by proper slings and hooks. Use lifting eyes if provided. Watch out for people in the vicinity.



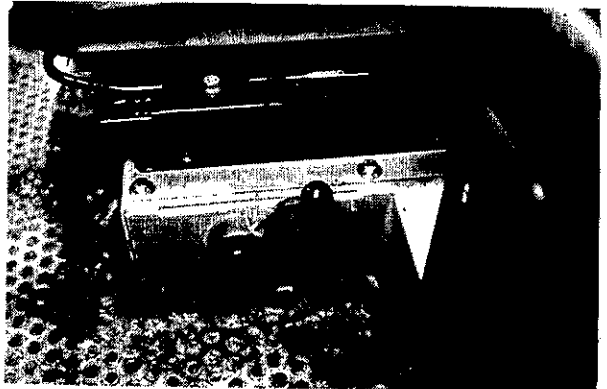
6.4.1.6

Remove the drive shaft from the transmission and pillow block. Remove the drive shaft.



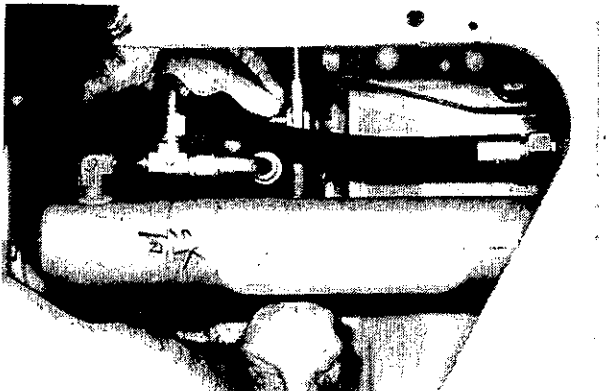
6.4.1.7

Release the parking brake at the parking brake lever.



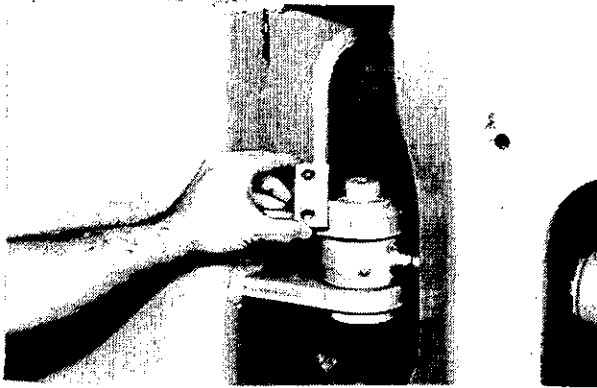
6.4.1.8

Disconnect the parking brake linkage at the parking brake cylinder. After the brake is disconnected, apply the brake.



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

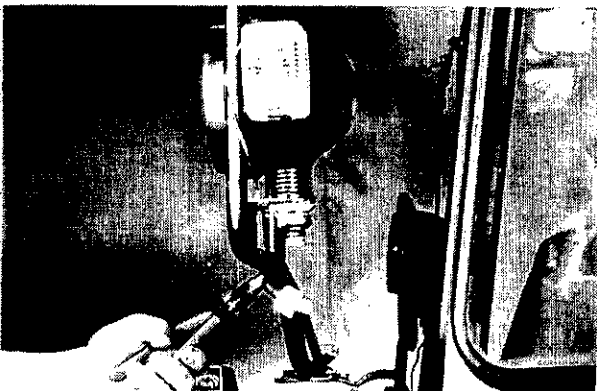
HITCH REMOVAL



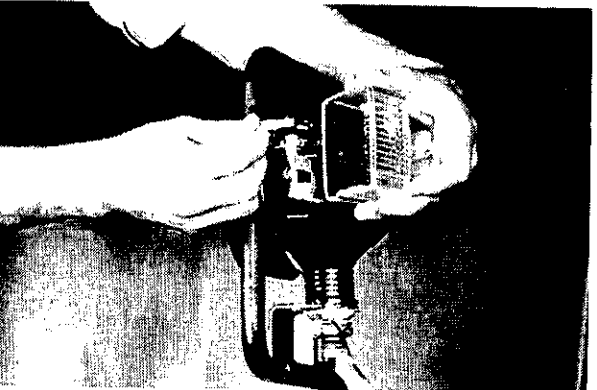
86605



86606



86607



6.4.1.9

Disconnect the steering cylinders from the front frame by removing the lock plates and driving the pins from the rod eyes.

6.4.1.10

Force the steering cylinders rods into their bores. Be sure to remove the spacers on either side of the rod. Save the spacers for re-assembly purposes.

6.4.1.11

Disconnect the front lights. Remove the wire ties from the support.

6.4.1.12

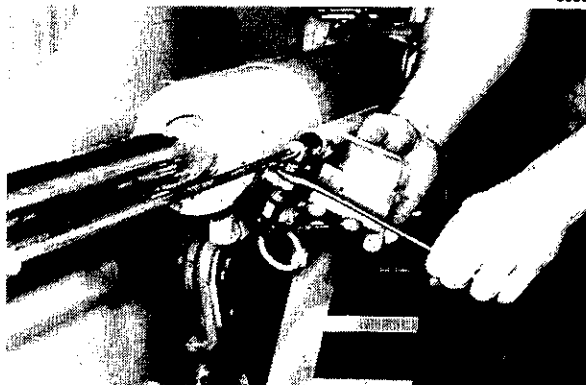
Remove the cover from the turn signal and disconnect the wire.

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

HITCH REMOVAL

6.4.1.13

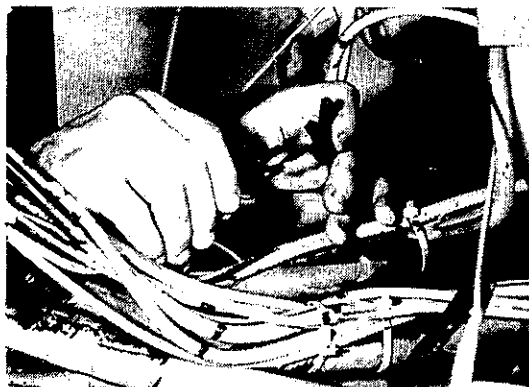
Remove the bucket kickout sensor from the support. It is a good idea to measure the gap between the sensor and the magnetic probe for re-assembly purposes. Carefully unthread the wire through the frame and unclip.



86608

6.4.1.14

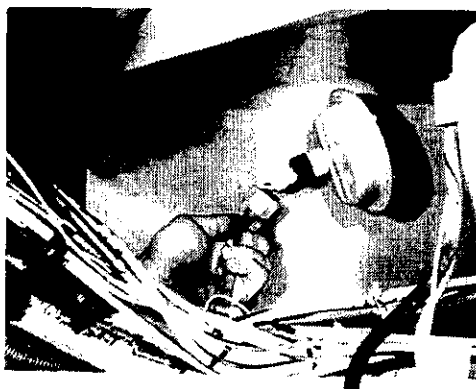
Disconnect the boom kickout sensor wires. Remove the tie wires from the implement hose tubing.



86609

6.4.1.15

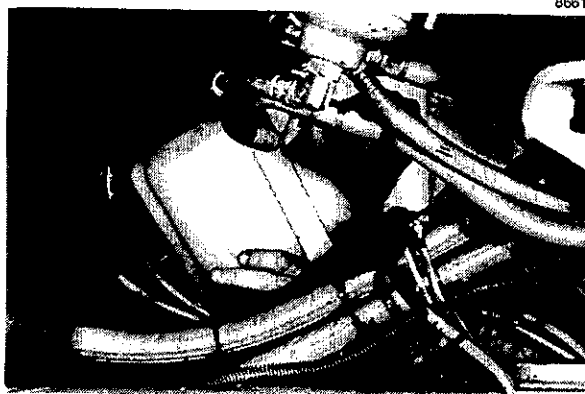
Disconnect the horn wiring.



86610

6.4.1.16

Remove the washer bottle along with the tubing and wiring from the front frame. Place the bottle on the outside of the loader.

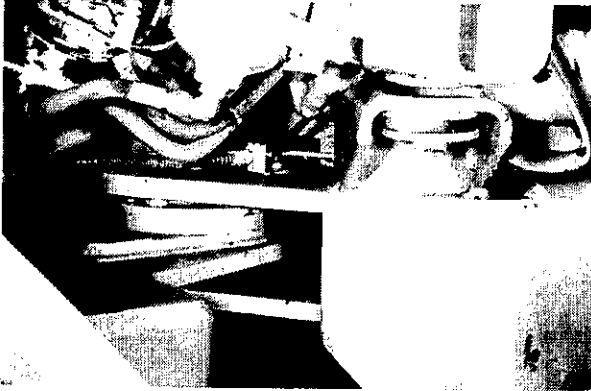


86611

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

HITCH REMOVAL

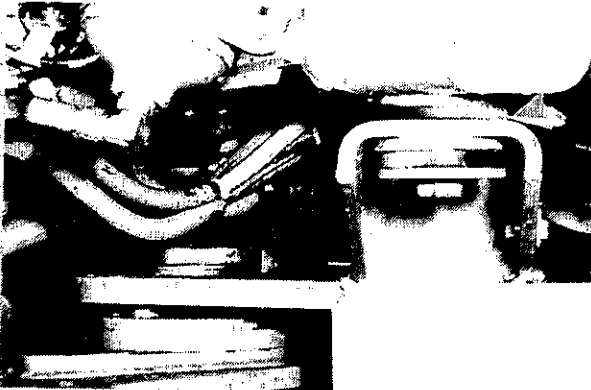
86612



6.4.1.17

Disconnect the front brake line at the hitch area.

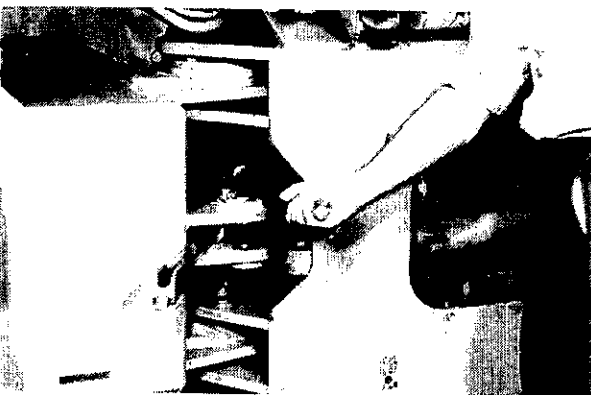
86613



6.4.1.18

Remove the brake line bracket. Disconnect the implement oil supply hoses from the block above the hitch.

86614



6.4.1.19

Remove the lower hitch pin nut by means of a 4 to 1 torque multiplier P/N 75291279 and 75294258.

86615



6.4.1.20

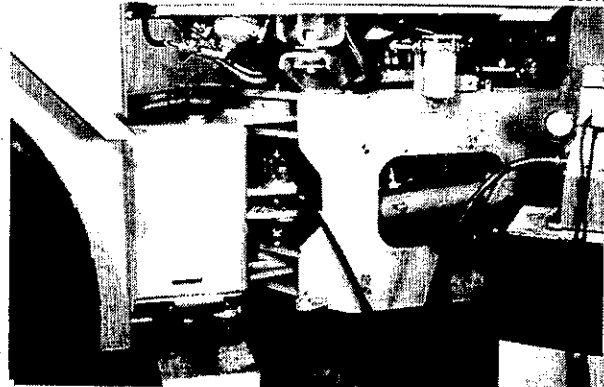
Remove the upper hitch pin nut by means of a 4 to 1 torque multiplier and a couple of blocks of wood to support the socket and multiplier.

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

HITCH REMOVAL

6.4.1.21

Use a 17 1/2 ton press P/N 75300882 and a spacer to remove upper and lower pins.



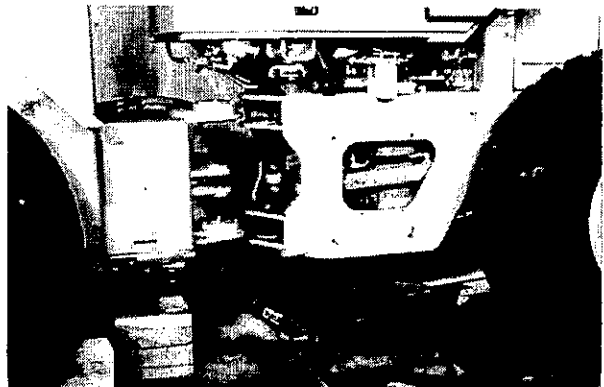
6.4.1.22

Remove the upper pivot pin inner collar.



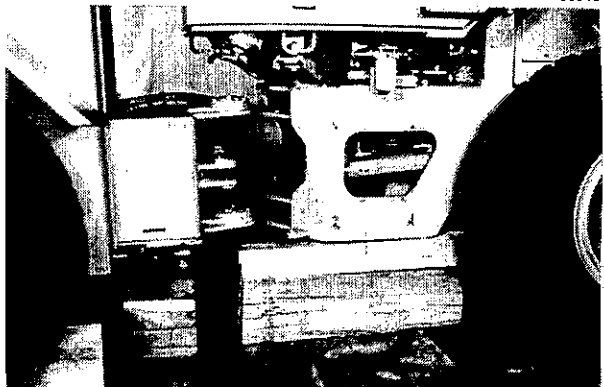
6.4.1.23

Make sure that both front and rear module is parallel by using a floor jack under rear module. Separate the two modules.



6.4.1.24

Block the front of the rear module to support the module.



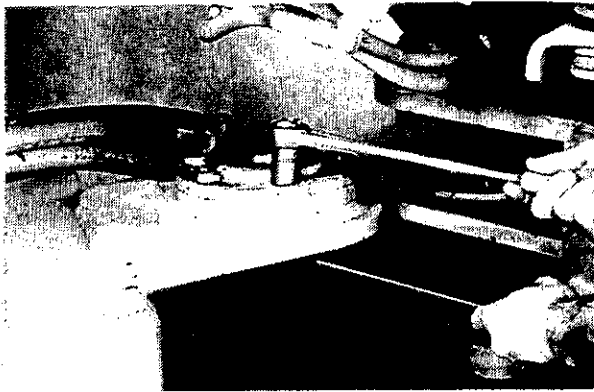
WARNING

When any supporting machine component must be removed or installed and jacks are used, be sure the support of the jack at the machine and on the ground are appropriate to the load to be applied. Transfer the load to authorized blocking or jack stand immediately. Do not work on or under the machine or its components while supported only on a jack or other lifting device, according to local or national requirements.

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

HITCH REMOVAL

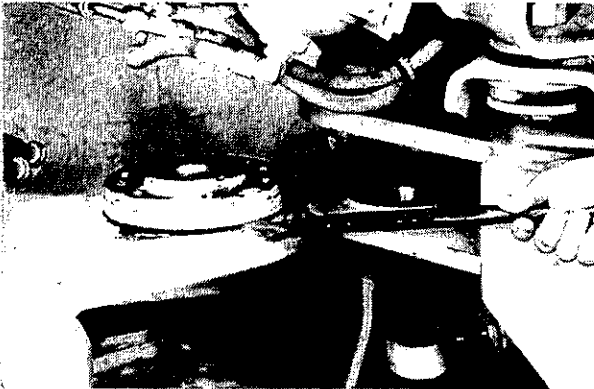
86620



6.4.1.25

Remove the cap screws holding the bushing retainer to the hitch.

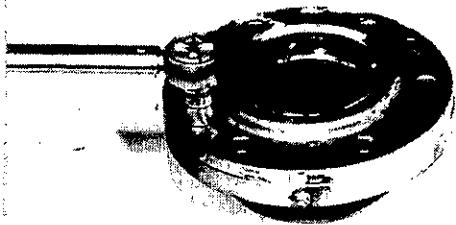
86621



6.4.1.26

Pry the bushing retainer from the hitch.

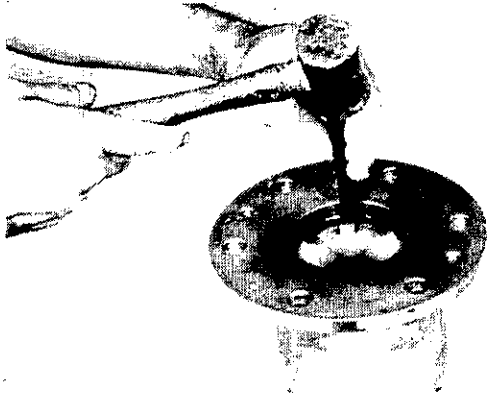
86622



6.4.1.28

Place the retainer on a clean work surface and remove the two cap screws holding the seal retainer to the bushing retainer.

86623



6.4.1.28

Remove the seal from the retainer.



WARNING

It is unsafe to strike hardened steel parts with anything other than a soft iron or non-ferrous hammer. When installing or removing such parts wear safety glasses with side shields and heavy gloves, etc., to reduce the possibility of injury.

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

HITCH REMOVAL

6.4.1.29

Install the seal in the seal retainer using P/N 75300850.



WARNING

It is unsafe to strike hardened steel parts with anything other than a soft iron or non-ferrous hammer. When installing or removing such parts wear safety glasses with side shields and heavy gloves, etc., to reduce the possibility of injury.

6.4.1.30

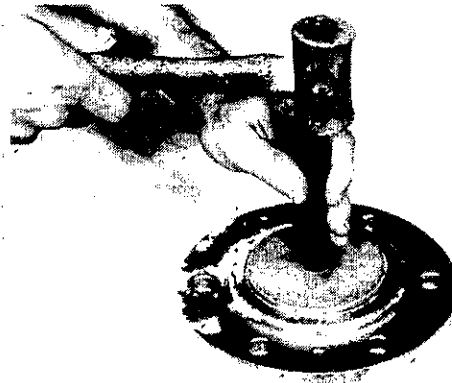
Remove the bushing from the bushing retainer using P/N 75300850.

6.4.1.31

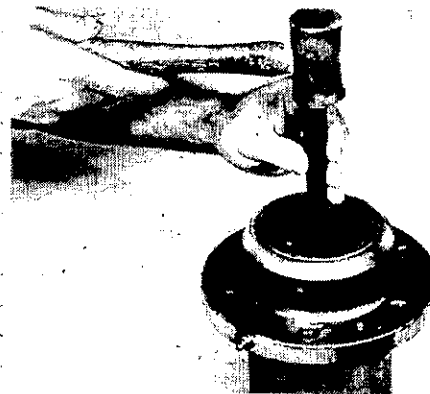
Install the bushing using a driver that is 96 mm (3.885 in) in diameter.

6.4.1.33

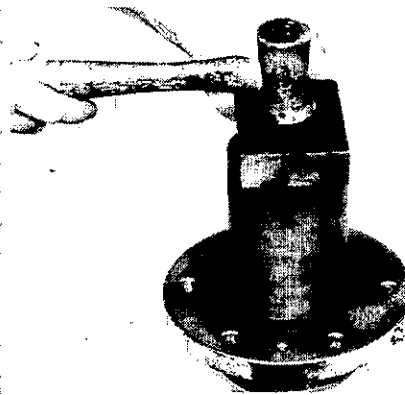
Remove the bottom seal.



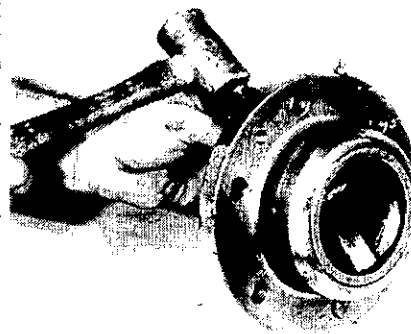
86624



86625



86626

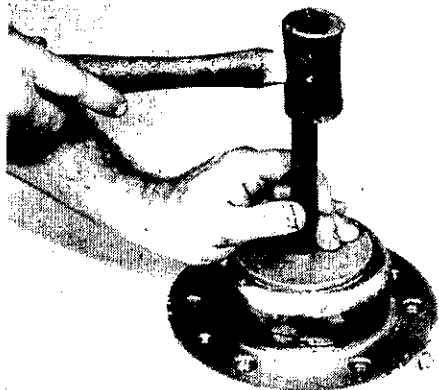


86627

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

HITCH REMOVAL

86628



6.4.1.33

Install the bottom seal in the bushing retainer.

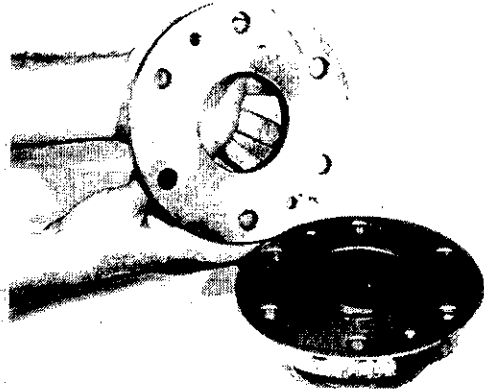
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

HITCH INSTALLATION

86629

6.4.2.1

Install the seal retainer on the bushing retainer and tighten the capscrews to specified torque.



86630

6.4.2.2

Drive the bushing retainer in the rear module. Be sure that the grease zerk is accessible when the frames are rejoined. Align the retainer with the capscrews.



WARNING

It is unsafe to strike hardened steel parts with anything other than a soft iron or non-ferrous hammer. When installing or removing such parts wear safety glasses with side shields and heavy gloves, etc., to reduce the possibility of injury.



86631

6.4.2.3

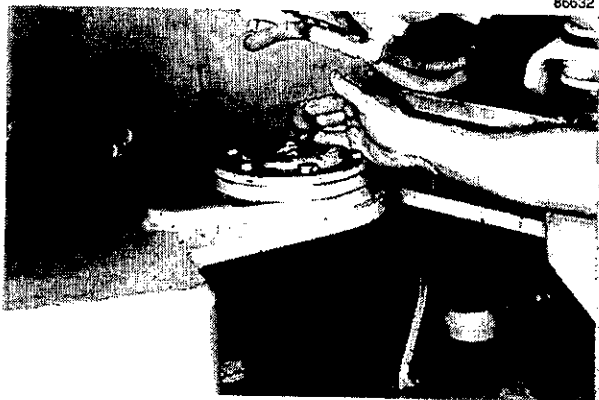
Tighten the bushing to frame bolts to specified torque.



86632

6.4.2.4

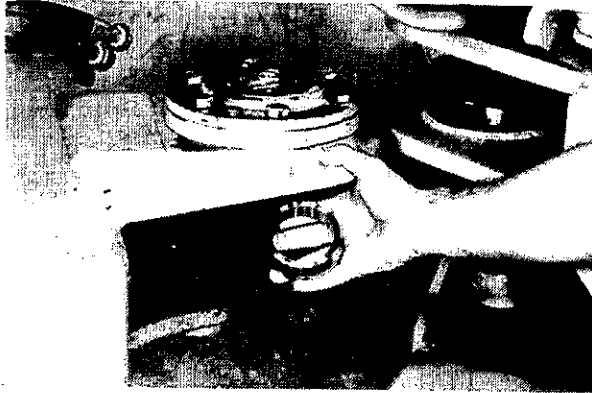
Lubricate the seal and pin with the lubricant as specified in the operation and maintenance manual.



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

HITCH INSTALLATION

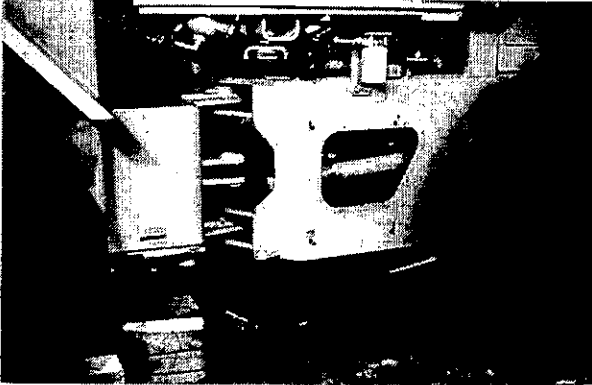
86633



6.4.2.5

Install the pivot pin bosses in the top and bottom of each hitch.

86634



6.4.2.6

Install the floor jack under the front part of the rear module. Remove the blocking and align the two modules, making sure the two sections are parallel.



WARNING

When any supporting machine component must be removed or installed and jacks are used, be sure the support of the jack at the machine and on the ground are appropriate to the load to be applied. Transfer the load to authorized blocking or jack stand immediately. Do not work on or under the machine or its components while supported only on a jack or other lifting device, according to local or national requirements.

Use proper tools to bring holes into alignment. "DO NOT USE FINGERS OR HANDS".

86635



6.4.2.7

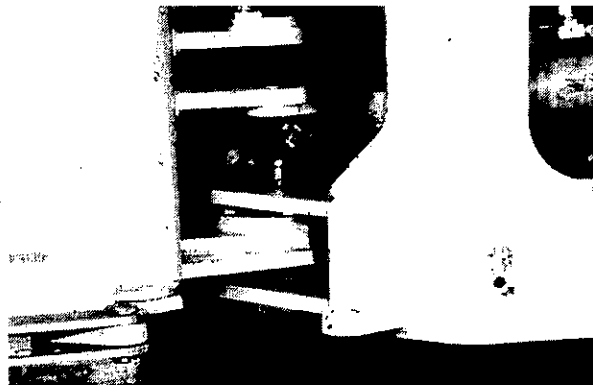
Install the pre-greased pin through the bottom and top bushing.

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

HITCH INSTALLATION

6.4.2.8

Install pivot pin inner and outer collar.



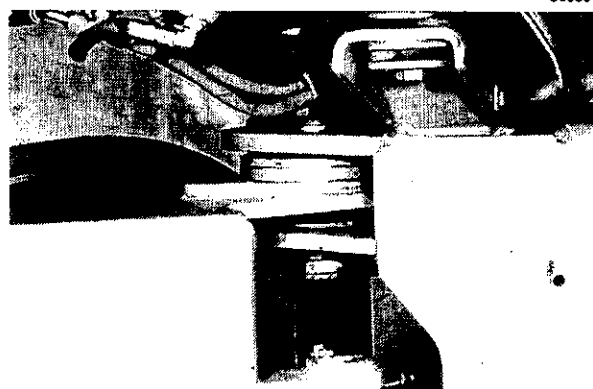
6.4.2.9

Install the nut on the pin.



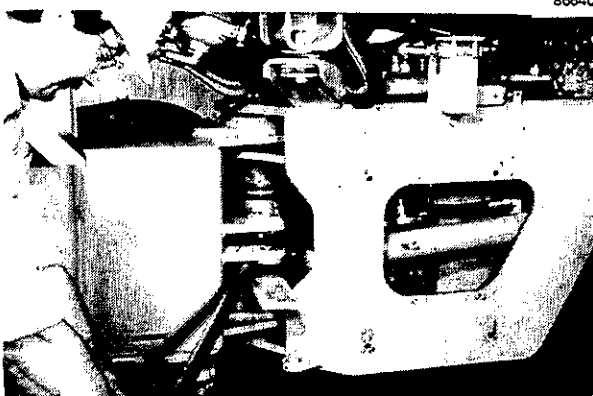
6.4.2.9

Follow the same procedure on the top pin that was done on the bottom with the exception that the top pin does not have a bottom inner and outer collar. Install the washer and nut.



6.4.2.10

Tighten the bottom nut to specified torque and then tighten the top nut. It is important to tighten in this sequence as the top pin floats.



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

HITCH INSTALLATION

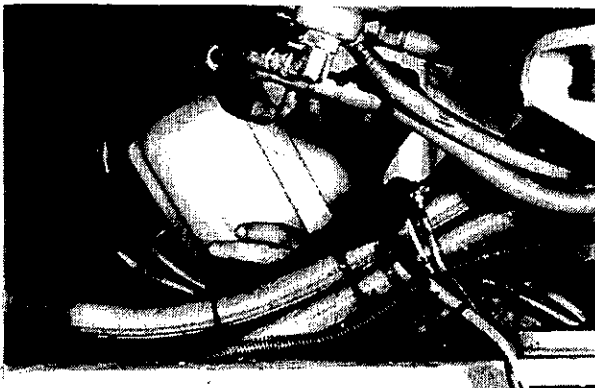
86612



6.4.2.11

Connect the implement oil supply hoses from the block above the hitch. Connect the front brake line to the bracket.

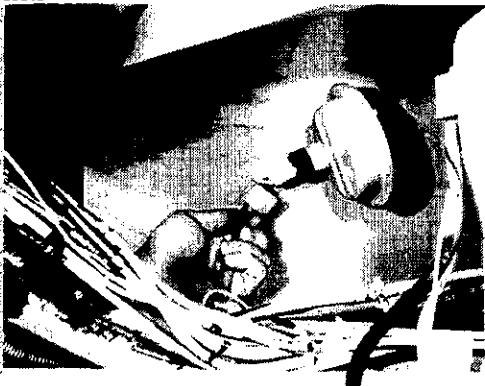
86611



6.4.2.12

Install the windshield washer bottle along with the tubing and wiring to the front frame.

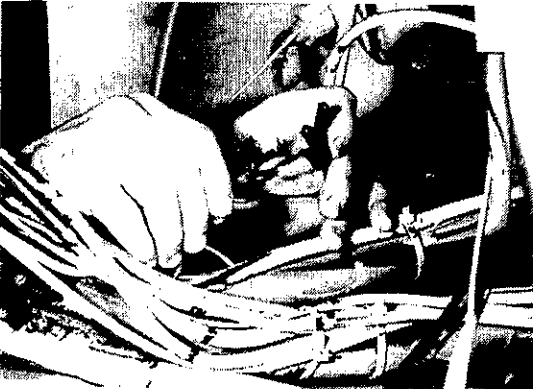
86610



6.4.2.13

Connect the horn wiring.

86609



6.4.2.14

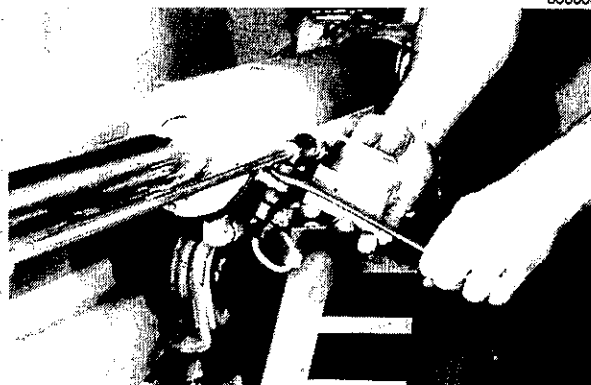
Connect the boom kickout wiring if the loader has the optional boom kickout. Clip the wires to the implement hose tubings so the wires can be protected.

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

HITCH INSTALLATION

6.4.2.15

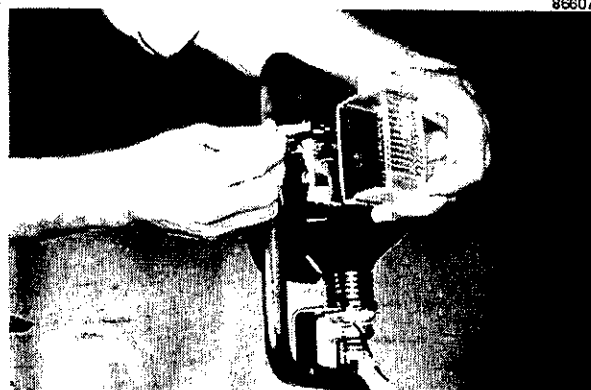
Thread the bucket kickout wire through the front frame. Attach the wires to the bucket cylinder's supply tube. Install the bucket kickout sensor to its support. Position the kickout sensor so that the distance between the sensor and the magnetic probe is 4mm (0.160 in). Install the sensor cover.



866008

6.4.2.16

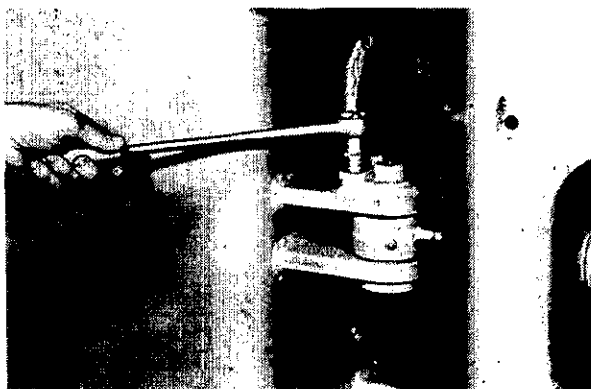
Connect the turn signals and head lights. Reattach the wires to the signal support.



866007

6.4.2.17

Pull the steering cylinder rods from the cylinders and connect the cylinder to the front frame. Be sure the spacers on either side of the rod eye are in position. Install the pin and lock it with the lock plate. Tighten the capscrews to specified torque.

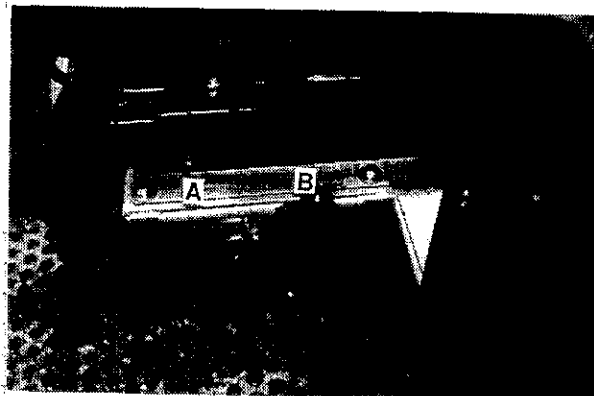


WARNING

Use proper tools to bring holes into alignment.
"DO NOT USE FINGERS OR HANDS".

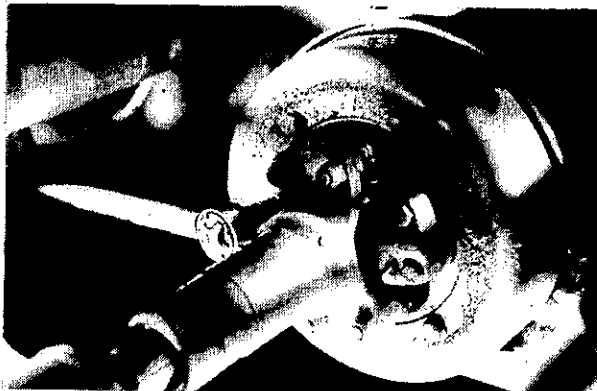
6.4.2.18

Place the parking brake control switch in the released position "B". Observe whether the brake cylinder rod extended from its spring. If it did, connect the rod to the transmission's parking brake. If it did not, then see the transmission section for the correct procedure.

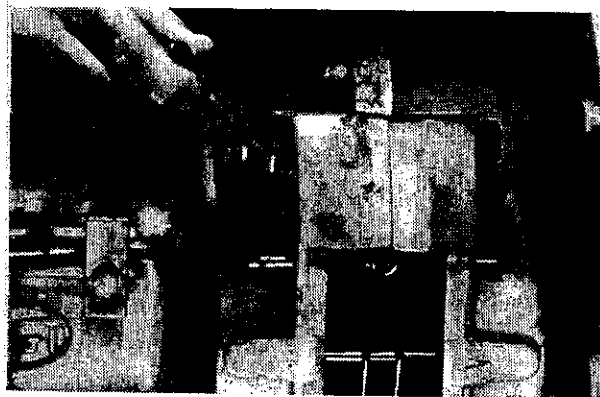
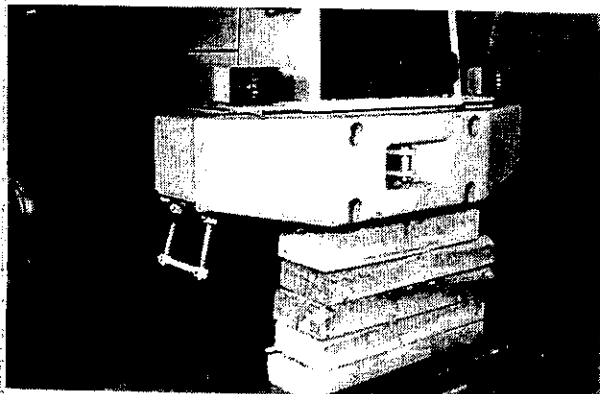


Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

HITCH INSTALLATION



86603



6.4.2.19

Install the drive shaft. Tighten the capscrews to specified torque.

6.4.2.20

Remove the front and rear module from the blocks.



WARNING

Lift and handle all heavy parts with a lifting device of proper capacity. Be sure parts are supported by proper slings and hooks. Use lifting eyes if provided. Watch out for people in the vicinity.

6.4.2.21

Bleed the brake system. See brake section for bleeding instructions.



DANGER

The hydraulic portion of the brake system requires a solid column of brake fluid, free of air bubbles, if it is to function properly. If air is present in the hydraulic fluid, compression of the air bubbles may nullify effective stroking of the brake actuating piston and will make the brakes ineffective. Possible personal injury or property damage could result.

Brake fluid reservoirs must be filled with fluid to the proper level. Fill with specified fluid.

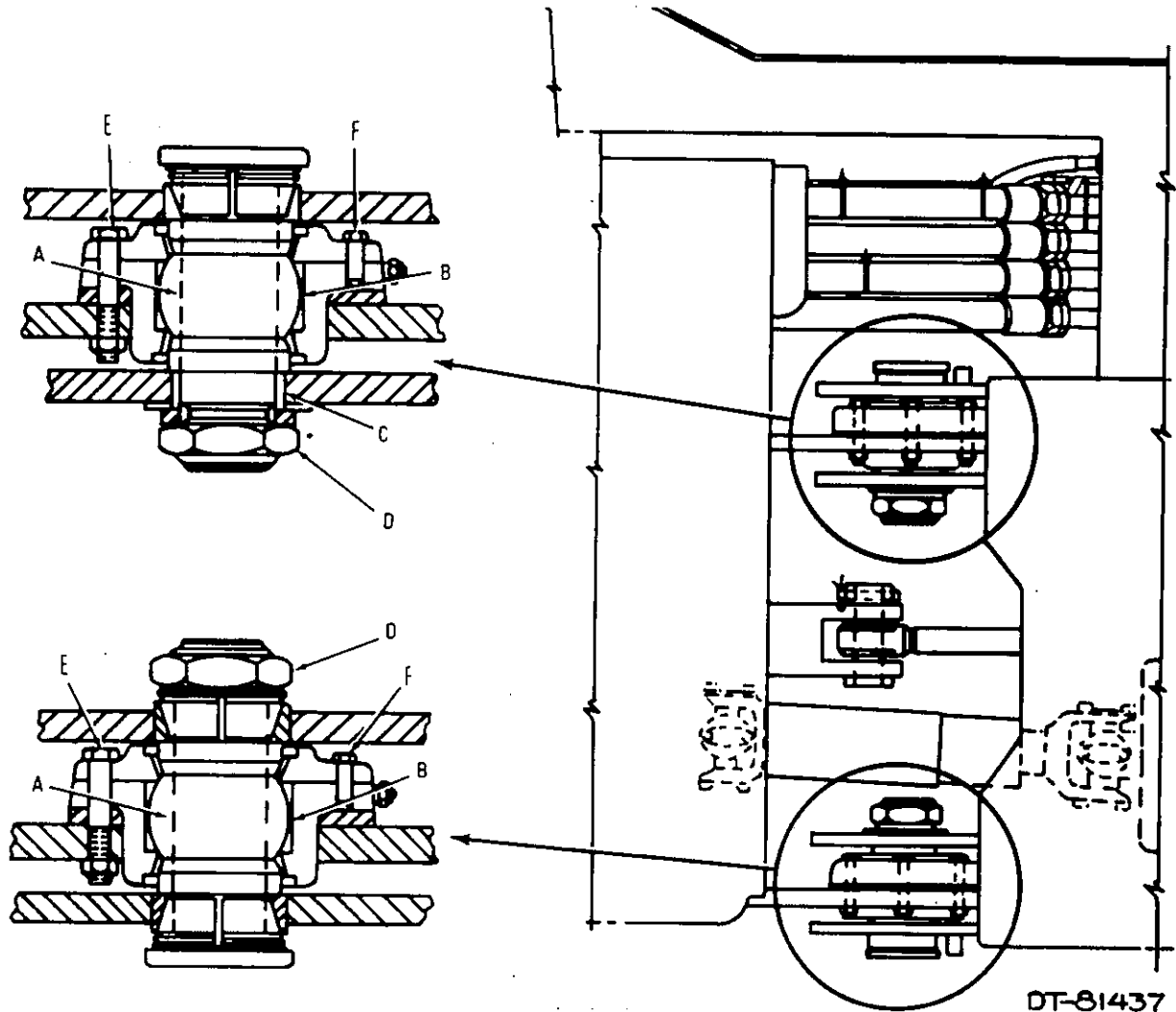
6.5 TOOLS

Service tools required to perform the repair operations in this manual are listed below. Order tools from your **FIATALLIS®** dealer unless otherwise noted.

All other tools are considered to be standard tools which can be ordered from local tool suppliers.

Topic no.	Tool description	Part no.
6.4.1.19	Torque multiplier 4 x 1	75291279
6.4.1.19	Torque multiplier 4 x 1	75294258
6.4.1.21	17 1/2 ton ram set	75300882
6.4.1.29	Master bearing & seal driver set	75300850
6.4.1.30	Master bearing & seal driver set	75300850

6.6 FRAME SPECIFICATIONS



ITEM	DIMENSION	mm	in
A	Pivot pin O.D.	63.467-63.485	2.4987-2.4994
B	Self aligning bushing O.D.	99.992-100.012	3.9367-3.9375
C	Spacer O. D.	85.598-85.725	3.370-3.375
	Spacer I. D.	63.576-63.70	2.503-2.508
ITEM	TORQUE	dNm	ft. lb.
D	Nut	271	2000
E	Capscrew	7.5-8.0	55-60
F	Capscrew	4.5-6.0	33-45

To rework the rear frame pivot pin bores observe the correct bore diameters as given below.

	mm	in
Lower plate, upper pivot	63.52-63.57	2.501-2.503
All other pivot plates	76.17-76.22	2.999-3.001
Front frame pivot pin bore	130.16-130.24	5.1244-5.1275

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

**REMOVE THIS PAGE AND
INSERT ALL PAGES UNTIL
THE NEXT BLACK EDGED
PAGE APPEARS UNDER
SECTION 7**

C

C

C

SECTION 7 ELECTRICAL SYSTEM

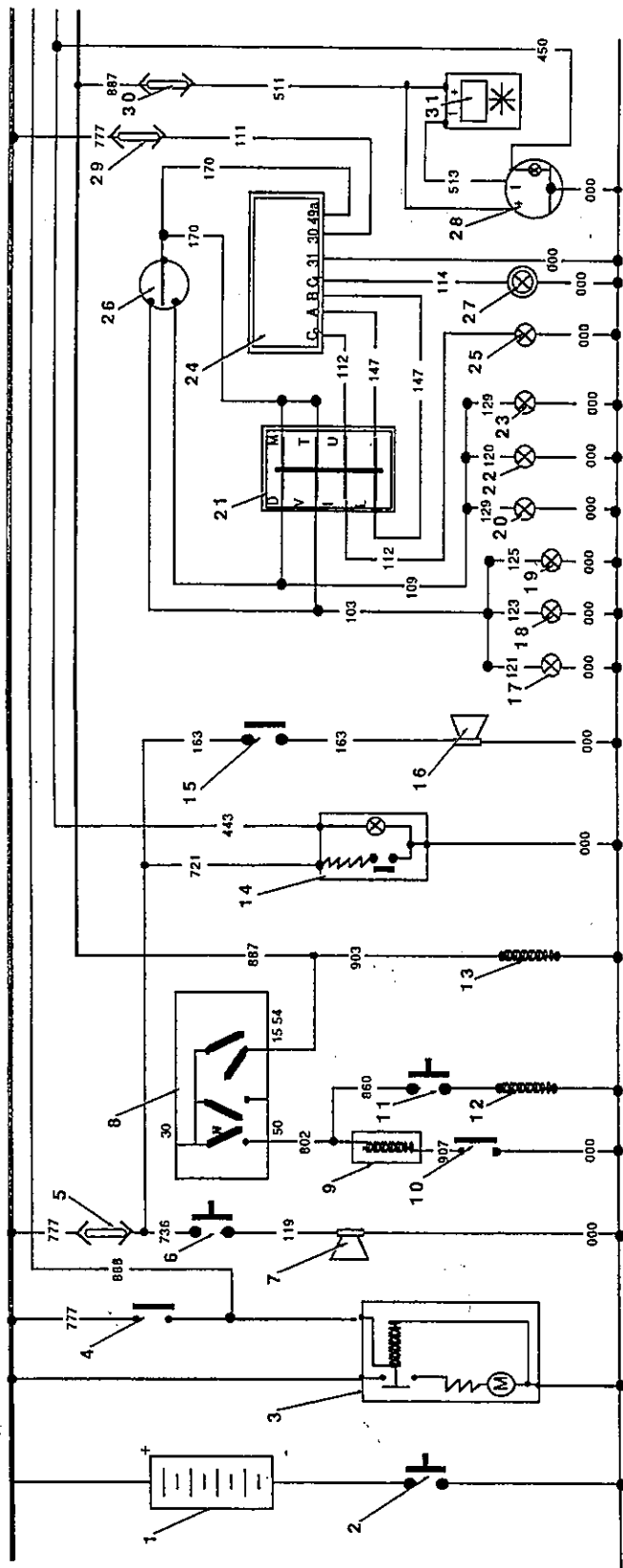
TABLE OF CONTENTS

TOPIC	TITLE	PAGE
7.1	Schematic	1
7.2	Individual components	5

C

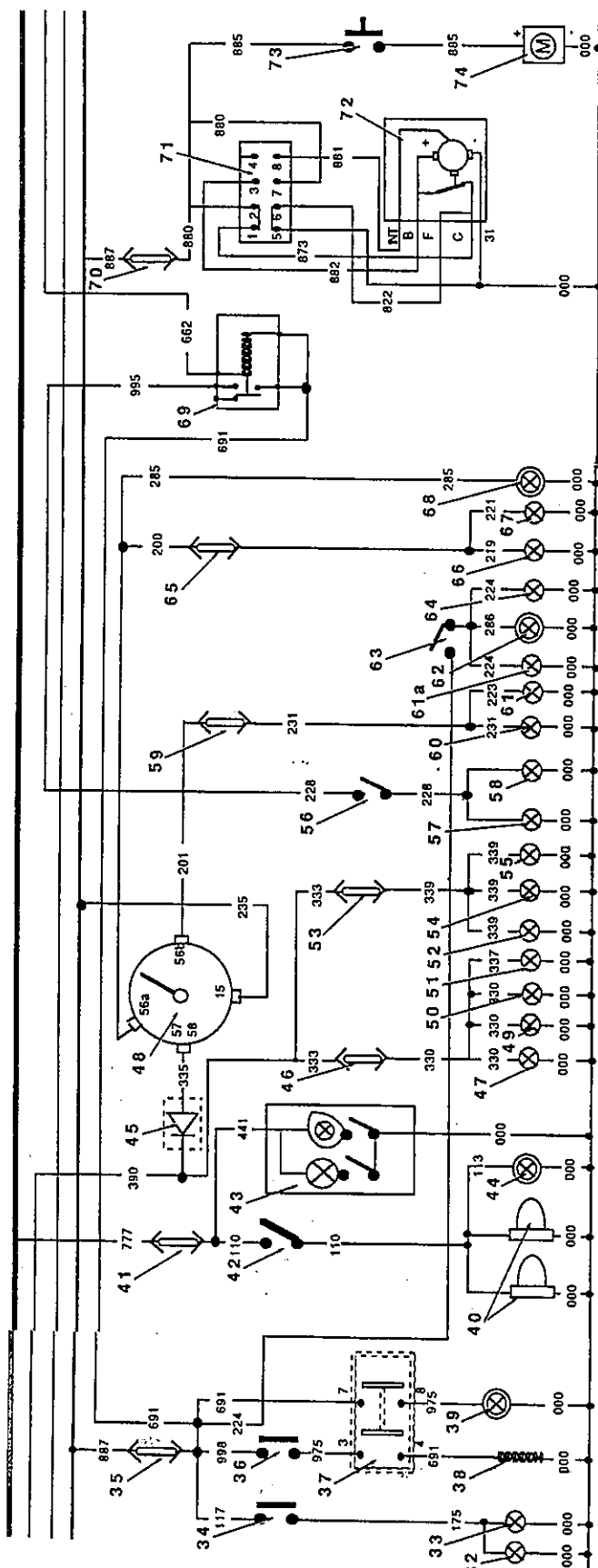
C

C



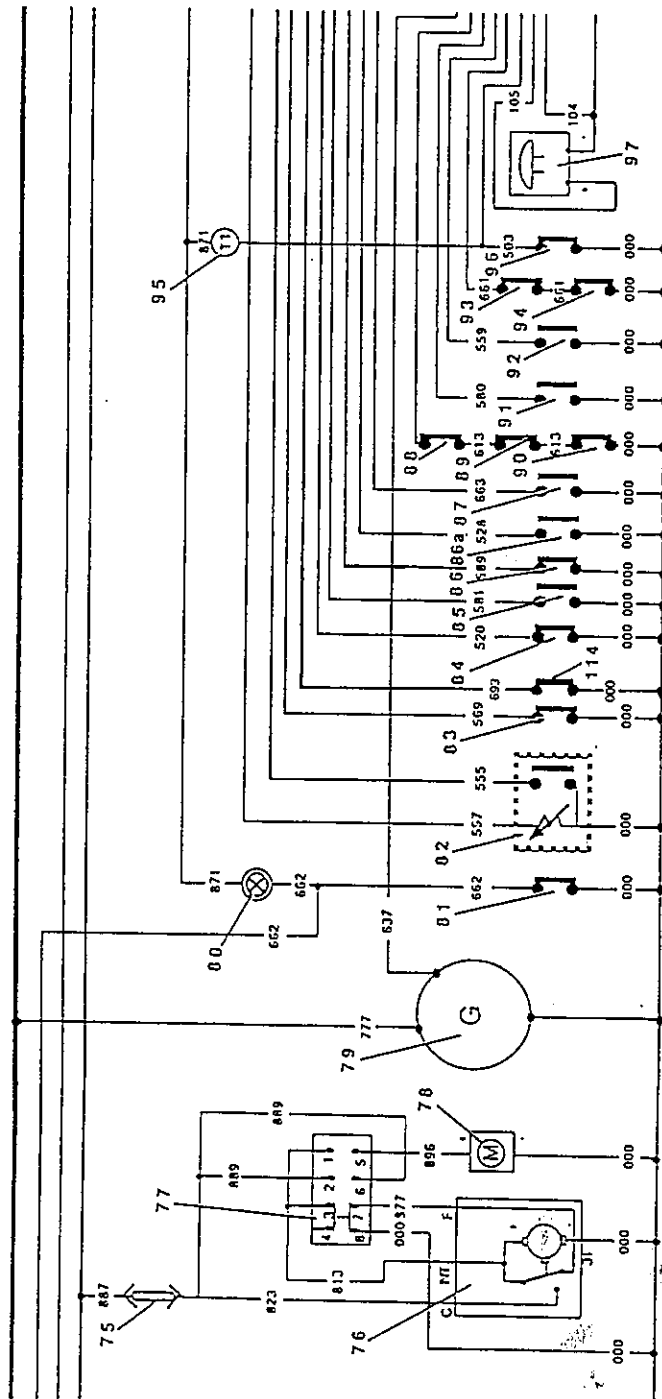
Item	Description	Page
87.	Air cleaner restriction warning switch	7-57
79.	Alternator	
16.	Backup alarm	7-15
15.	Backup alarm switch	7-14
1.	Batteries	7-5
40.	Beacon lights	7-34
108.	Boom height release solenoid	7-72
109.	Boom relay	7-73
110.	Boom height release switch	7-74
93.	Brake fluid level warning switch	7-61
94.	Brake fluid level warning switch	7-61
88.	Brake fluid low pressure warning switch	7-58
89.	Brake fluid low pressure warning switch	7-58
90.	Brake fluid low pressure warning switch	7-58
111.	Bucket kickout release solenoid	7-75
112.	Bucket kickout relay	7-76
113.	Bucket kickout switch	7-77
97.	Buzzer	7-64
58.	Cab front left work light	7-39
57.	Cab front right work light	7-39
56.	Cab front work light switch	7-38
43.	Ceiling lamp unit	7-36
14.	Cigarette lighter	7-13
12.	Cold starting relay	7-12
11.	Cold starting switch	7-11
45.	Diode	
99.	Electronic Data Monitor	7-65
24.	Electronic flasher	7-24
28.	Electronic speedometer	7-28
18.	Emergency flasher switch	7-17
100.	Emergency steering buzzer relay	7-67
104.	Emergency steering flow valve pressure relay	7-70
105.	Emergency steering flow valve pressure switch	7-71
102.	Emergency steering pump pressure relay switch	7-68
103.	Emergency steering pump pressure switch	7-69
101.	Emergency steering warning light	7-26
86a.	Engine coolant high temperature warning switch	7-56

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.



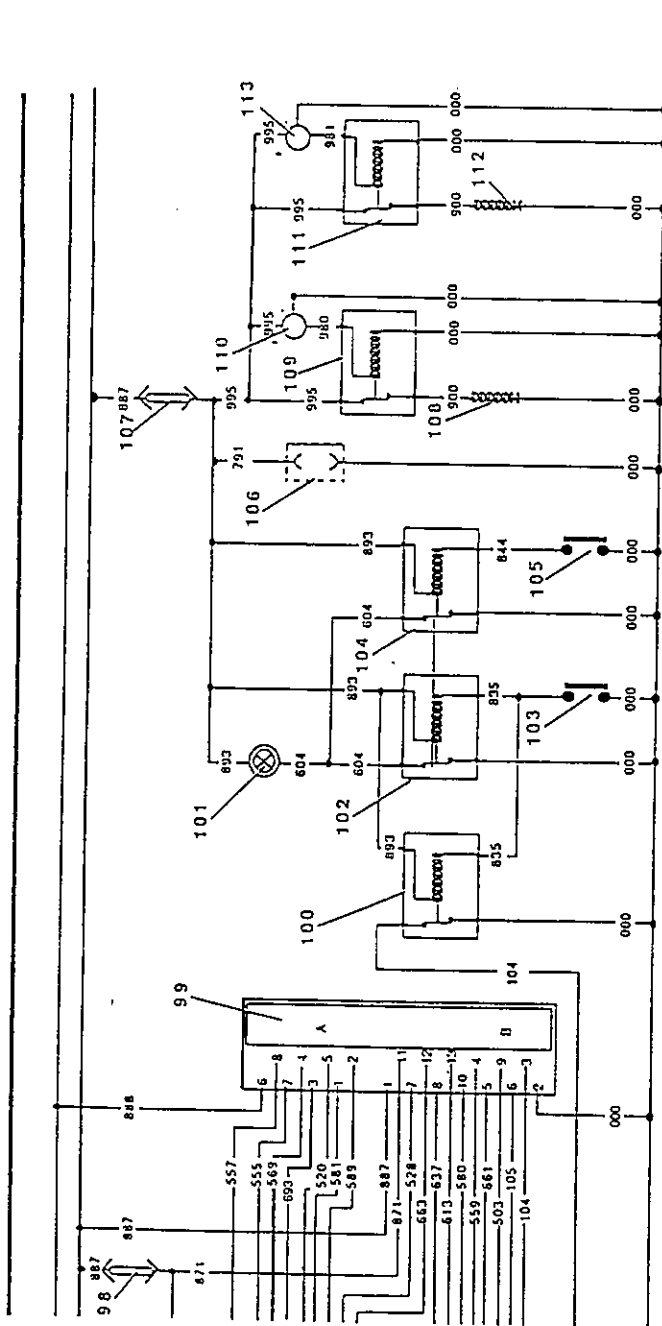
Item	Description	Page
84.	Engine coolant level warning sensor	7-53
13.	Engine fuel shutoff solenoid	
96.	Engine oil/Hourmeter control low pressure sensor	7-63
83.	Engine oil level warning sensor	7-52
91.	Equipment oil filter restriction warning switch	7-59
52.	Front Left work light	
49.	Front Right position light	
82.	Fuel level warning sensor	7-51
5.	Fuse 10 amp	
107.	Fuse 10 amp	
98.	Fuse 4 amp	
29.	Fuse 7.5 amp	
30.	Fuse 7.5 amp	
35.	Fuse 7.5 amp	
41.	Fuse 7.5 amp	
46.	Fuse 7.5 amp	
53.	Fuse 7.5 amp	
59.	Fuse 7.5 amp	
65.	Fuse 7.5 amp	
75.	Fuse 7.5 amp	
70.	Fuse 7.5 amp	
81.	Hand brake pressure switch	7-50
80.	Hand brake warning light	7-25
27.	Hazard warning indicator light	7-25
21.	Hazard warning light switch	7-22
68.	High beam indicator	
7.	Horn	7-8
95.	Hourmeter	7-62
31.	Impulse generator	7-29
22.	Left front turn light	7-23
66.	Left headlamp - high beam	7-40
60.	Left headlamp - low beam	7-40
32.	Left tail lamp stop light	7-19
23.	Left turn light (T U V)	7-16
55.	Left turn light (T U V)	7-16
51.	License plate light	
48.	Light switch	7-37
2.	Master switch	7-5
10.	Neutral start switch	7-10
69.	Parking brake to transmission clutch cut-off relay	7-44
6.	Pedal button switch	7-7
50.	Rear Left position light	
61a.	Rear Left work light	7-42
54.	Rear Right work light	
64.	Rear Right work light	7-42
78.	Rear window washer pump motor	7-47
77.	Rear window washer/wiper switch	7-49
76.	Rear window wiper motor	7-48
62.	Rear work light indicator	7-26
63.	Rear work light switch	7-43
44.	Revolving beacon indicator	7-26
42.	Revolving beacon switch	7-35

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.



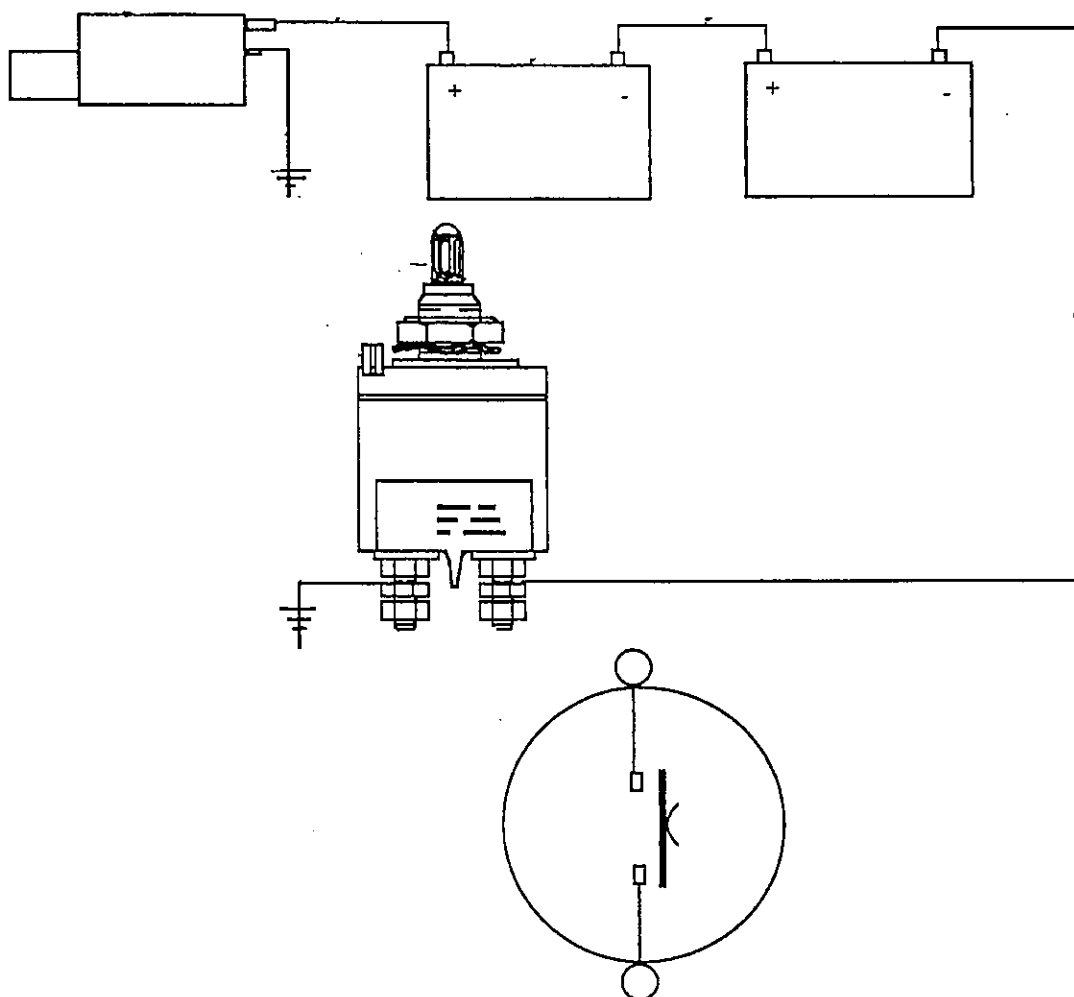
Item	Description	Page
19.	Right front turn light	7-18
17.	Right front turn light (T U V)	7-16
67.	Right headlamp - high beam	7-41
61.	Right headlamp - low beam	7-41
20.	Right rear turn light	7-19
33.	Right tail lamp stop light	7-19
47.	Right turn light (T U V)	7-16
106.	Solenoid circuit energizing control	
3.	Starter motor	7-5
4.	Starter relay	7-6
9.	Starting relay	7-6
8.	Starting switch	7-9
34.	Stop light switch	7-30
36.	Trans. cut-off pressure switch	7-31
37.	Transmission cut-off control energizing switch	7-32
39.	Transmission cut-off indicator	7-25
38.	Transmission cut-off relay	7-33
86.	Transmission fluid level warning switch	7-55
85.	Transmission fluid low pressure warning switch	7-54
92.	Transmission high temperature warning switch	7-60
25.	Turn signal indicator light	7-25
26.	Turn signal switch	7-27
74.	Windshield washer pump motor	7-47
73.	Windshield washer pump switch	
72.	Windshield wiper motor	7-46
71.	Windshield wiper switch	7-45
114.	Transmission low lube pressure switch (Prior to units S/N 611354)	7-78

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

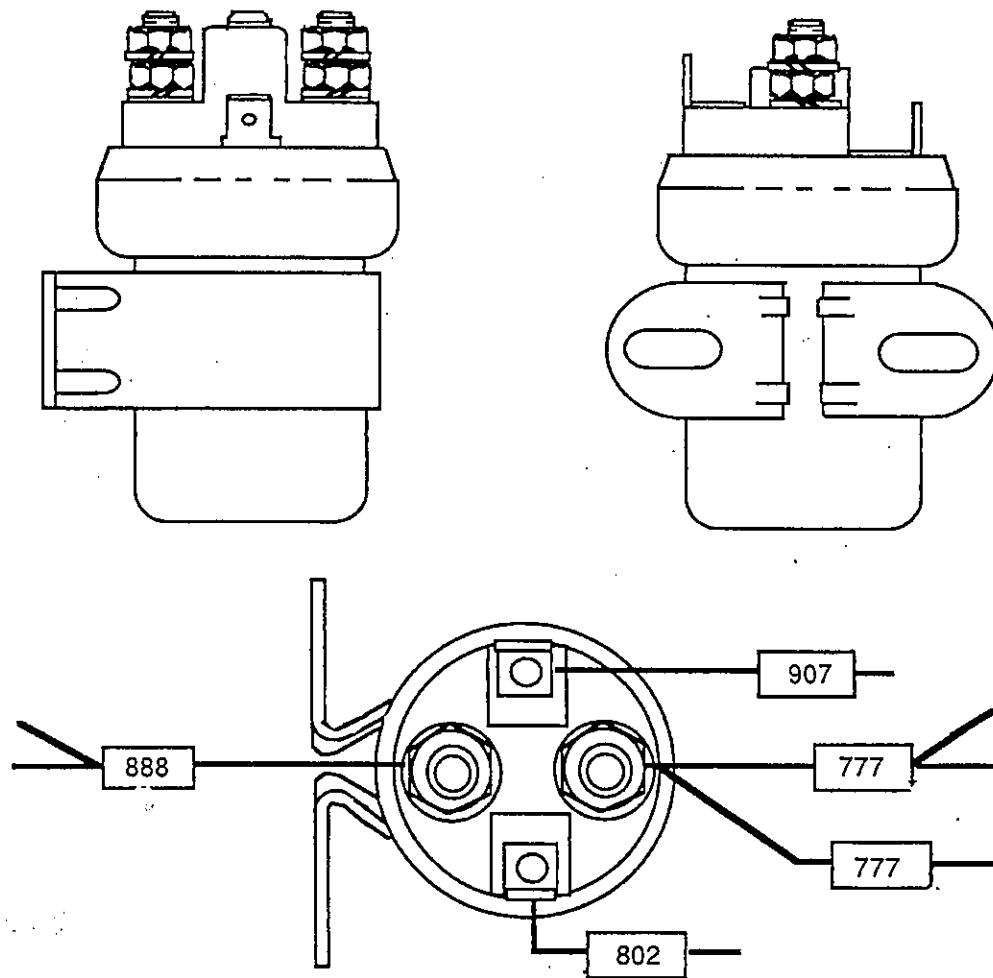
STARTING CABLE GROUP



T-100021

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

STARTER RELAY SWITCH

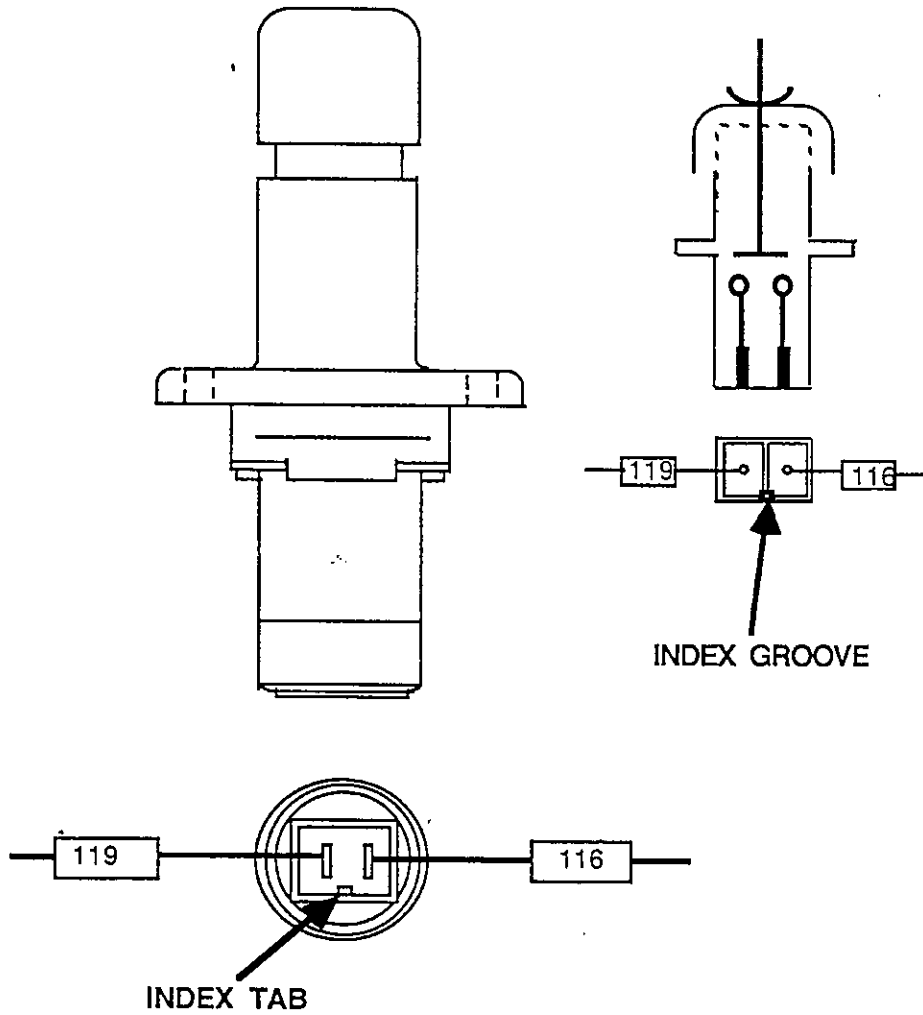


T-100002

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

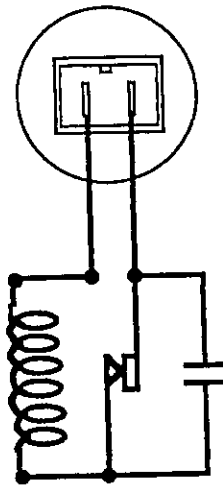
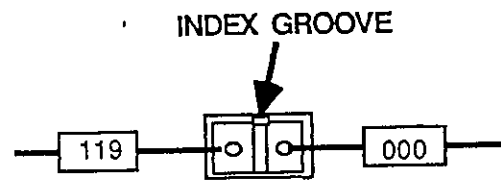
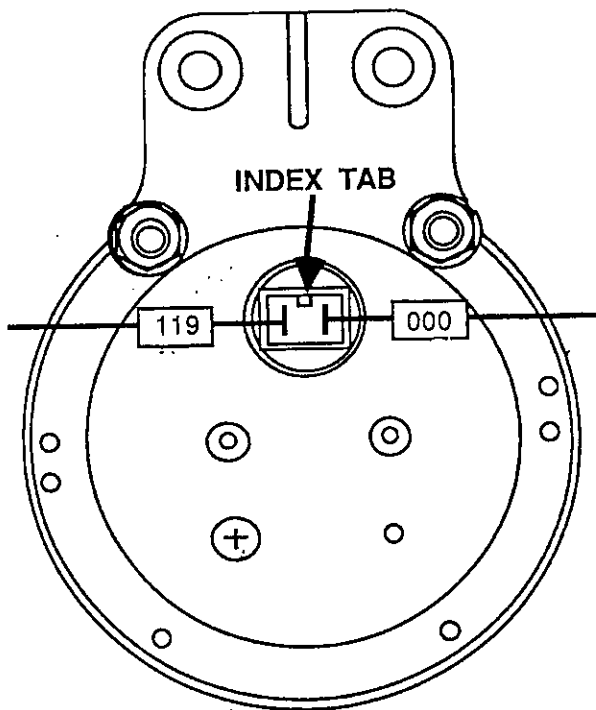
Added 7/89

CONNECTOR TO HORN BUTTON



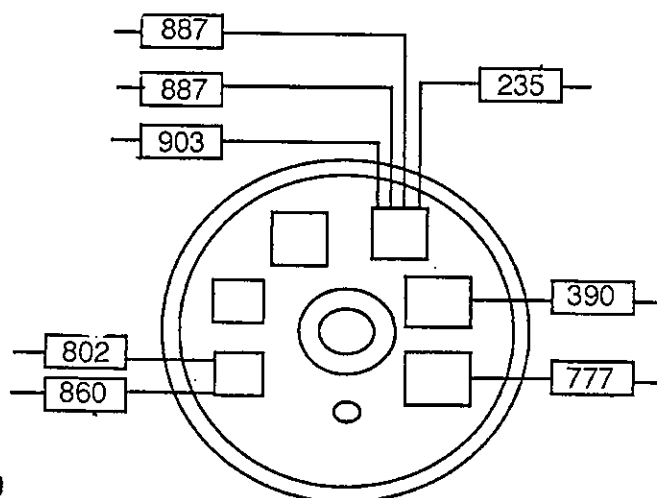
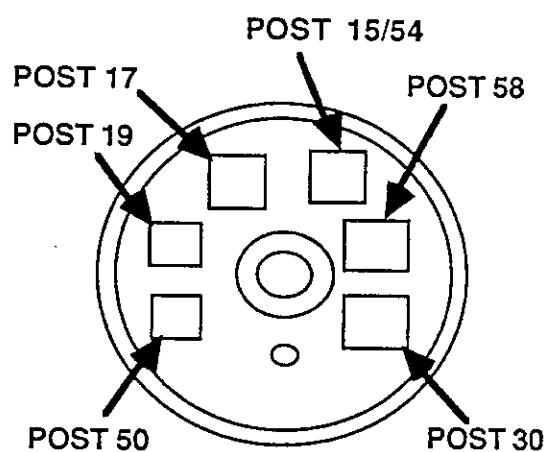
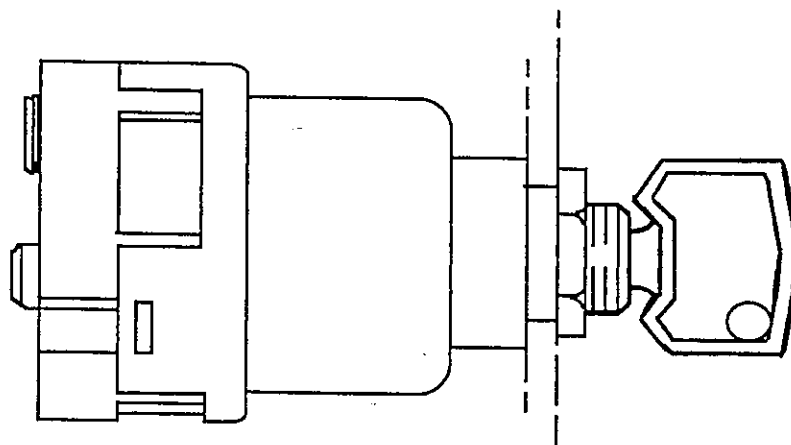
Study **SAFETY RULES** in the front of this manual thoroughly for the protection of machine and safety of personnel.

CONNECTOR TO HORN



T-100006

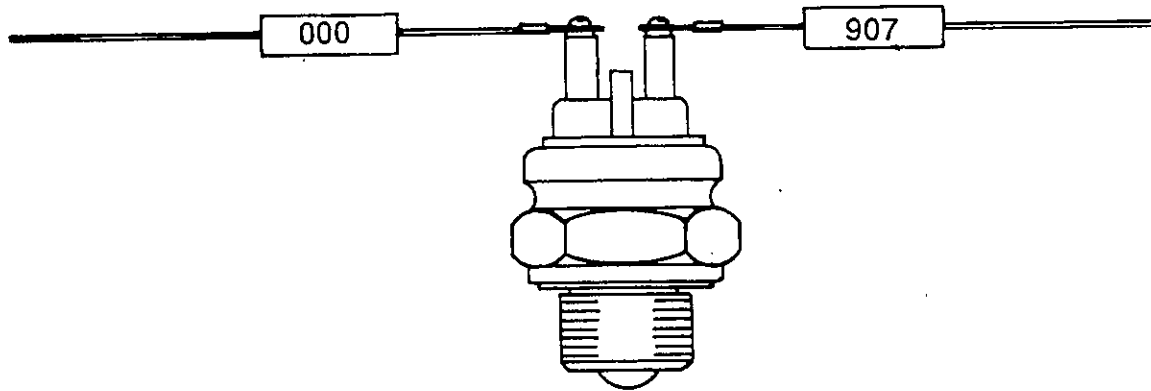
KEY SWITCH



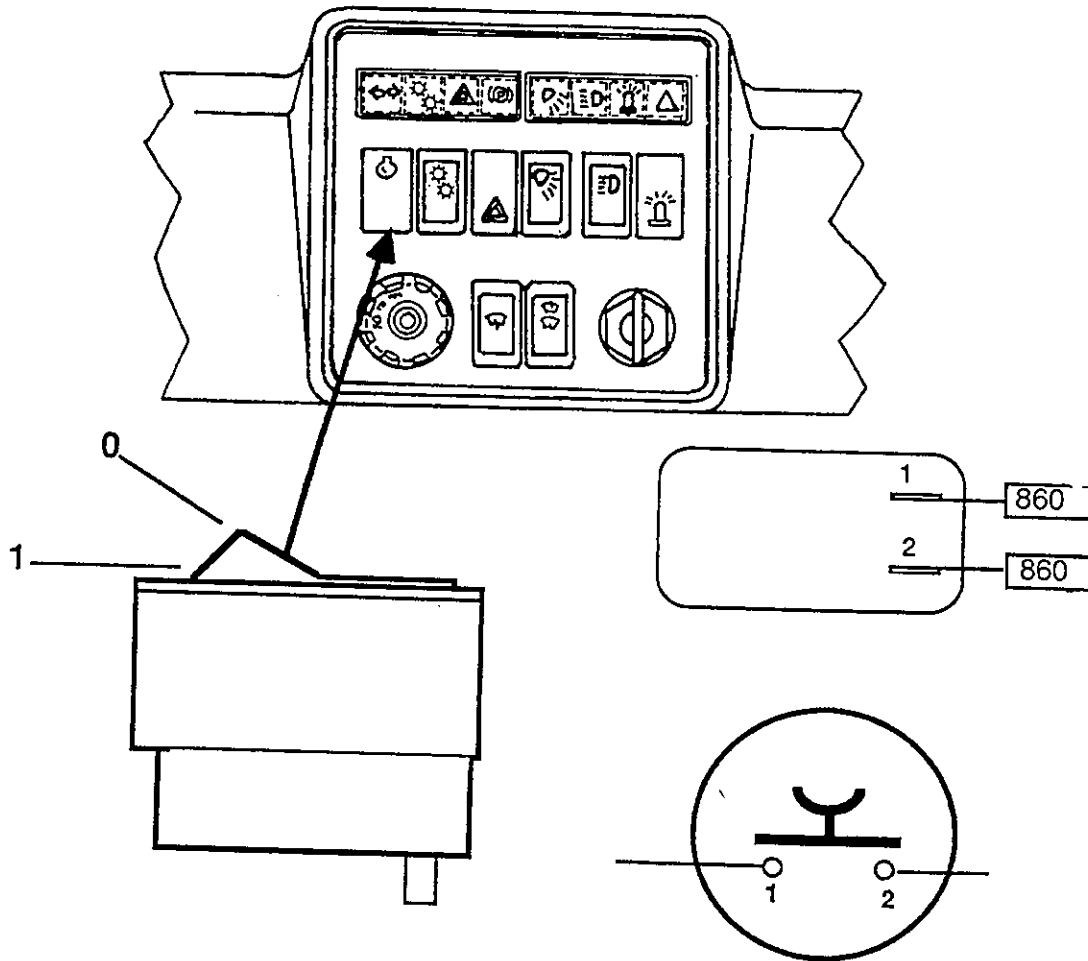
T-85997

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

NEUTRAL START SWITCH



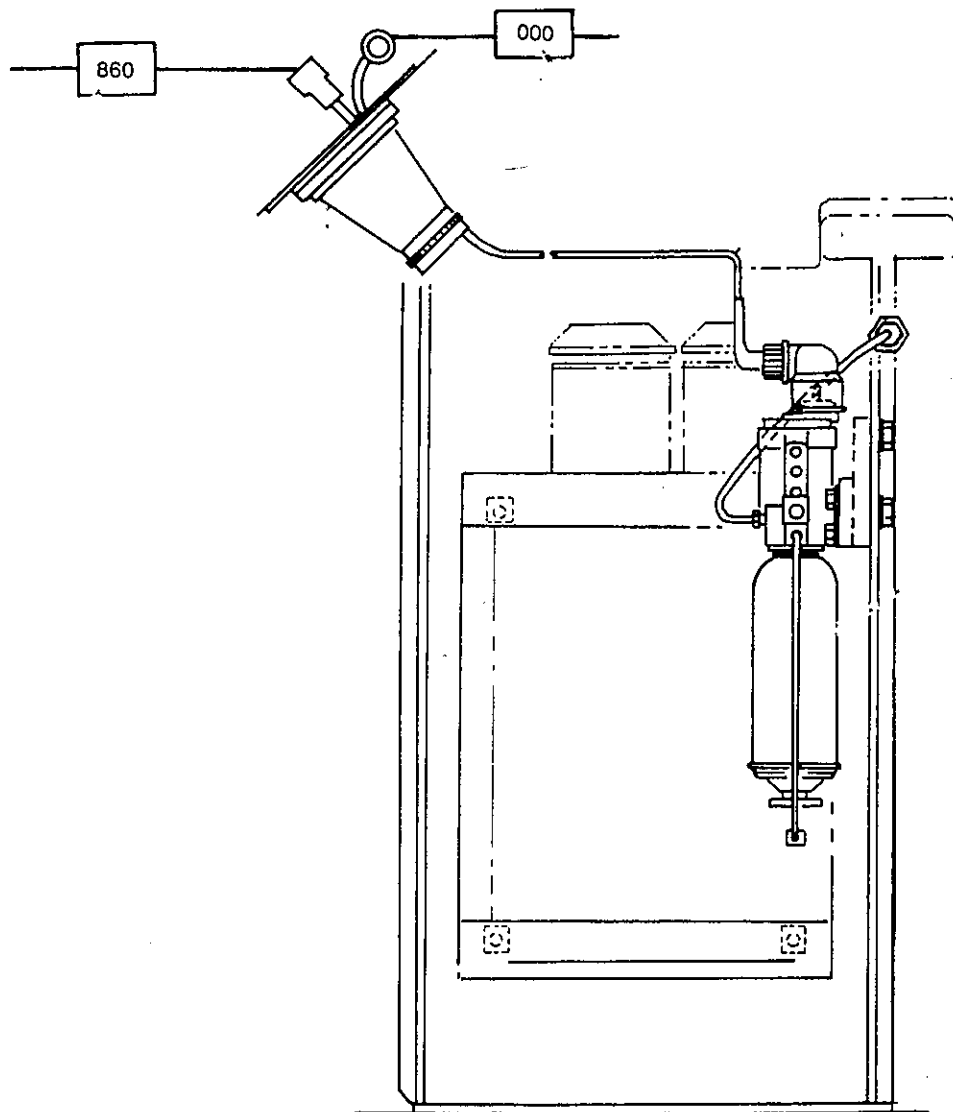
COLD WEATHER STARTING AID SWITCH



T-85982

Study **SAFETY RULES** in the front of this manual thoroughly for the protection of machine and safety of personnel.

COLD WEATHER STARTING AID GROUP

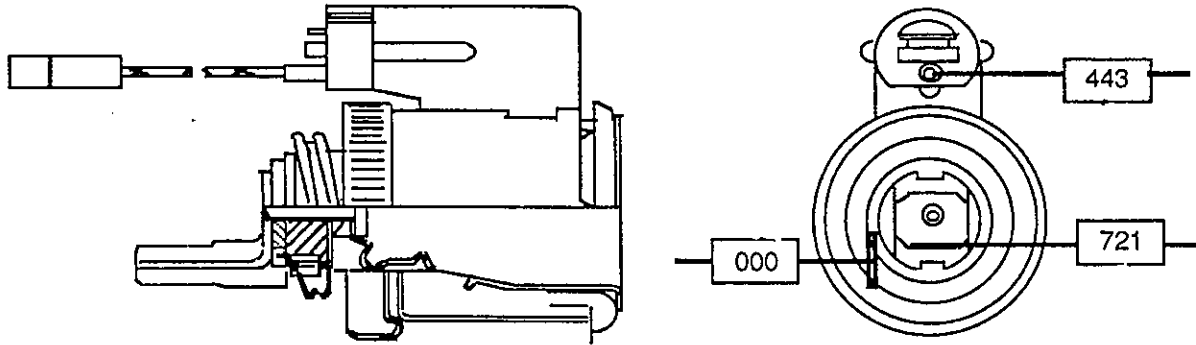


T-100012

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

Added 7/89

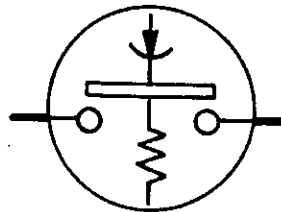
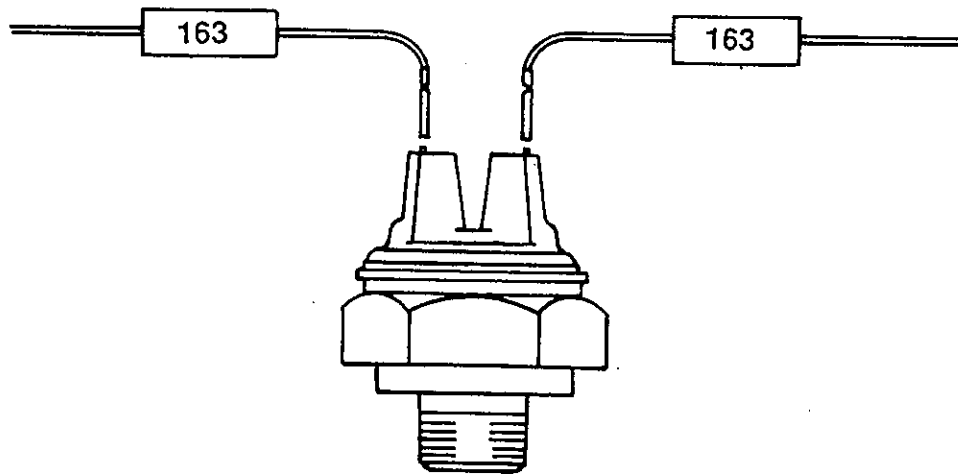
CIGARETTE LIGHTER



T-85996

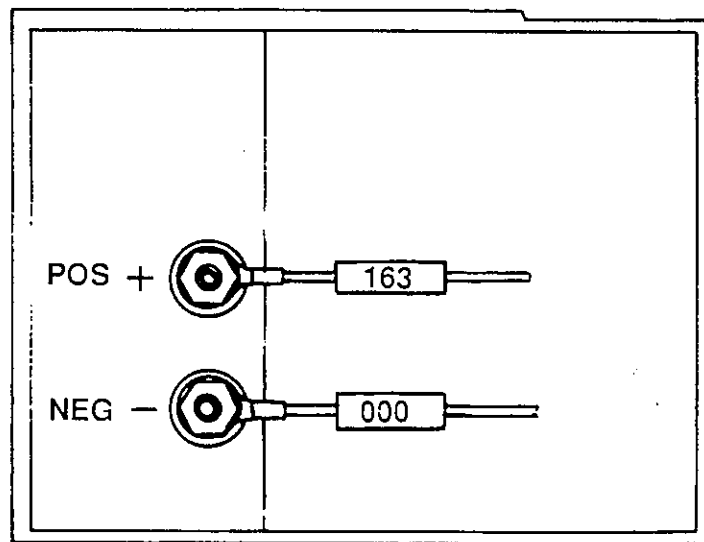
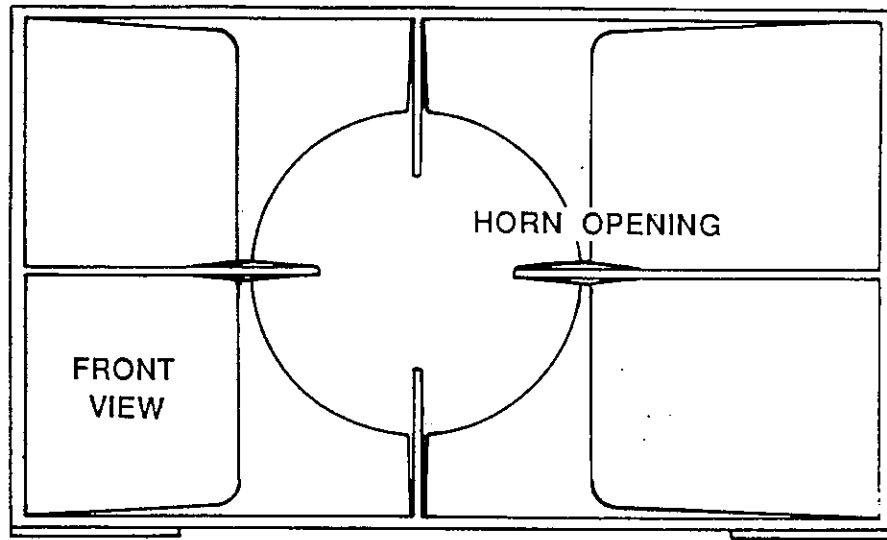
Study **SAFETY RULES** in the front of this manual thoroughly for the protection of machine and safety of personnel.

BACK-UP ALARM PRESSURE SWITCH



T-100031

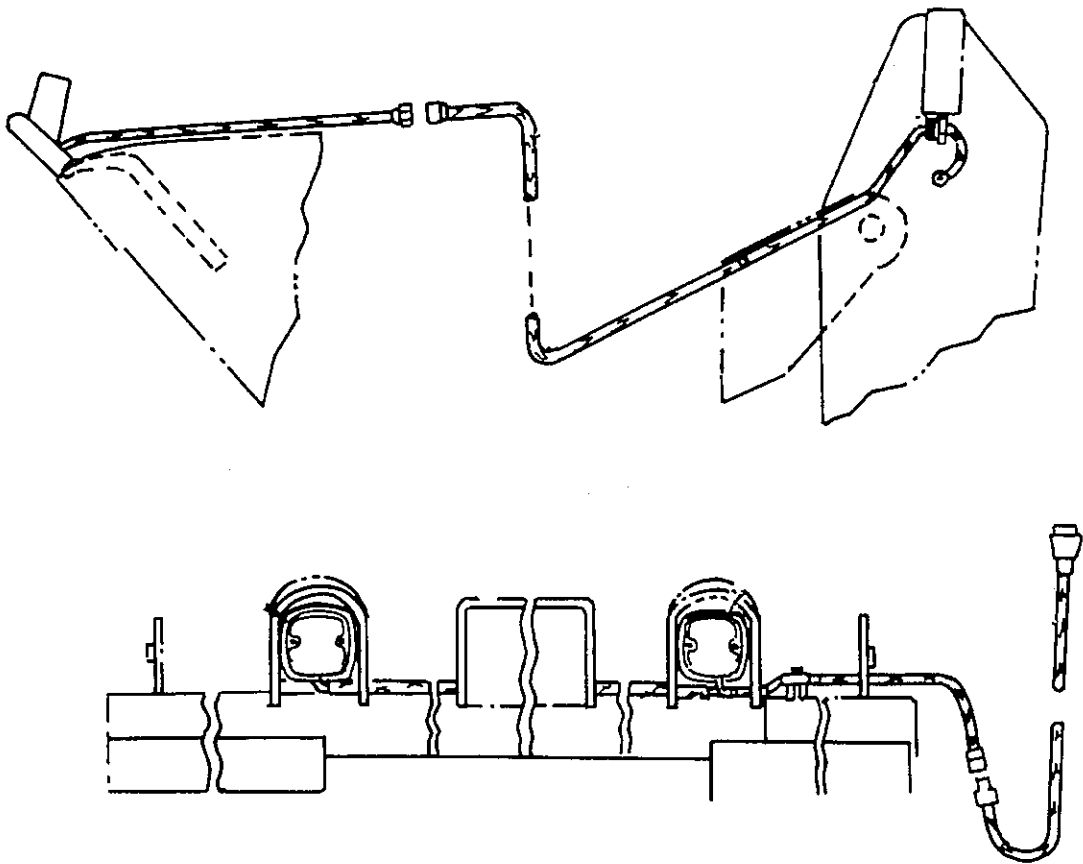
BACK-UP ALARM



T-100020

Study **SAFETY RULES** in the front of this manual thoroughly for the protection of machine and safety of personnel.

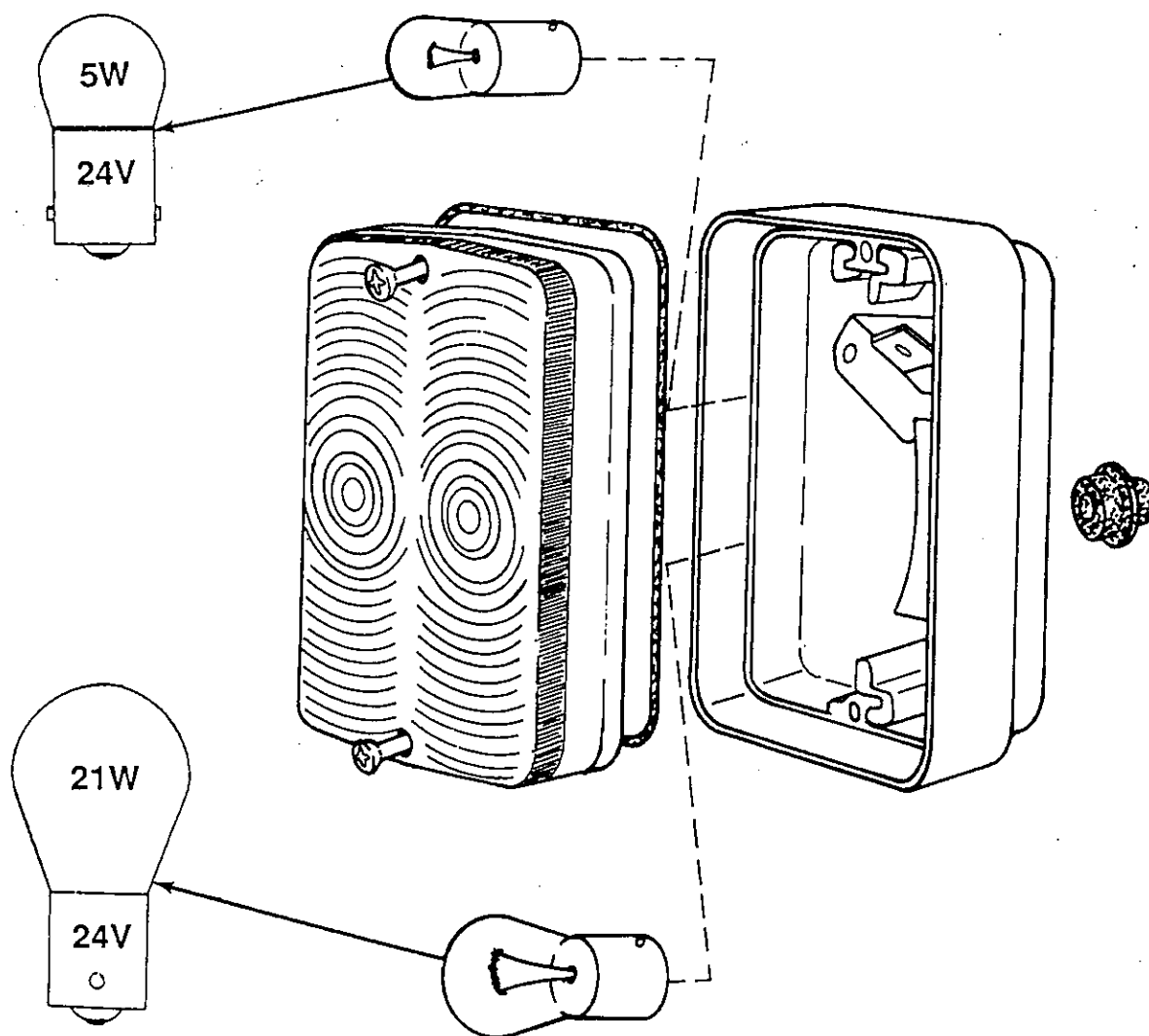
T.U.V. BUCKET TOOTH GUARD GROUP



T-85907

Study **SAFETY RULES** in the front of this manual thoroughly for the protection of machine and safety of personnel.
Added 7/89

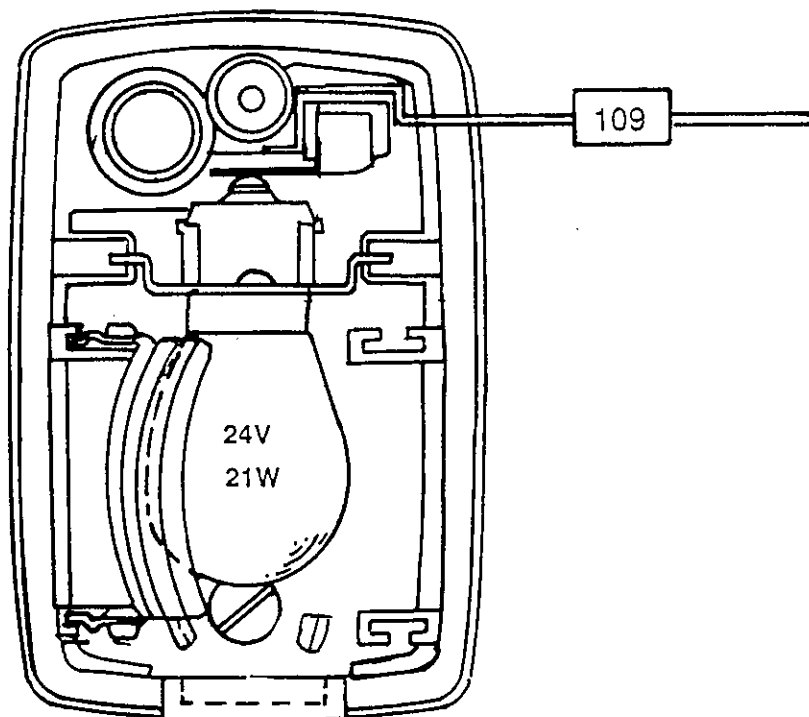
T.U.V. BUCKET TOOTH GUARD LIGHT



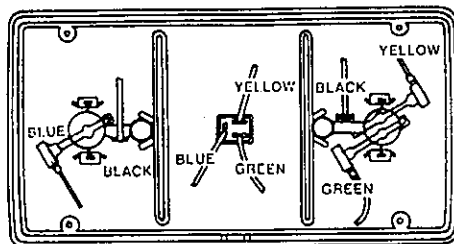
T-85365

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

FRONT TURN SIGNAL LIGHT (Left Hand)

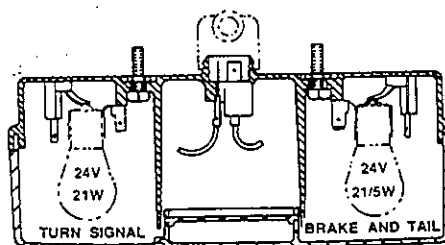


BRAKE, TAIL & TURN SIGNAL LIGHTS GROUP



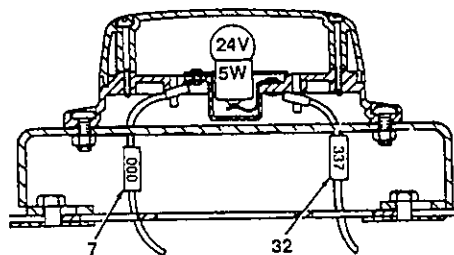
Lamp Wiring (Left hand)
Right hand is opposite

T-100033



Left Hand Light Assembly
Right hand is opposite

T-100034

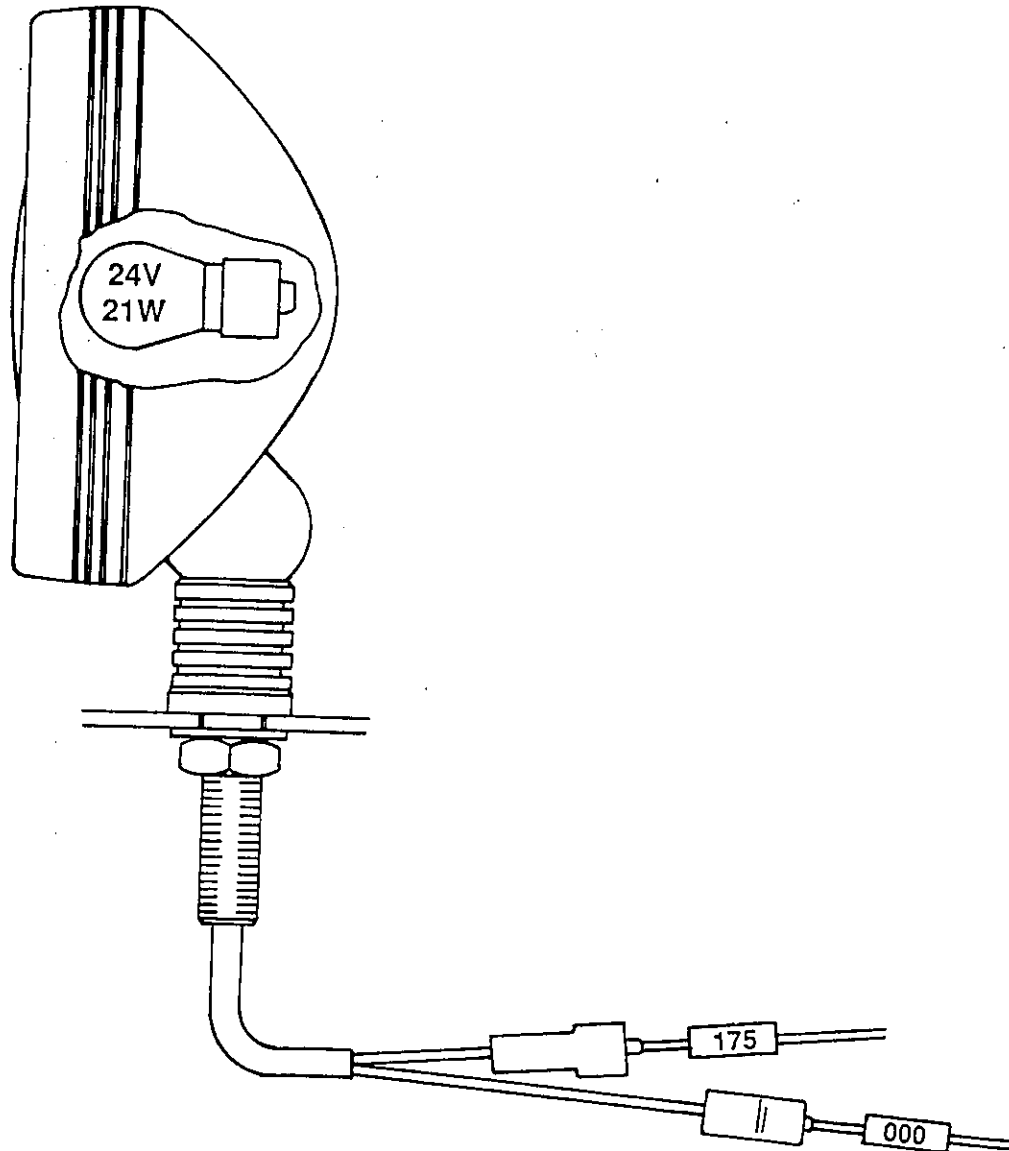


Lamp, Number Plate

T-100032

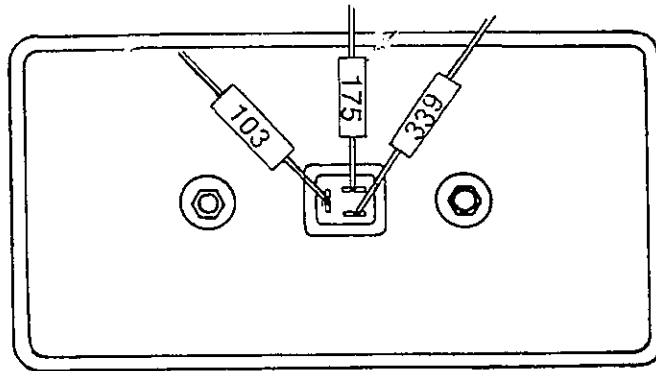
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

REAR BRAKE LIGHT GROUP



T-100018

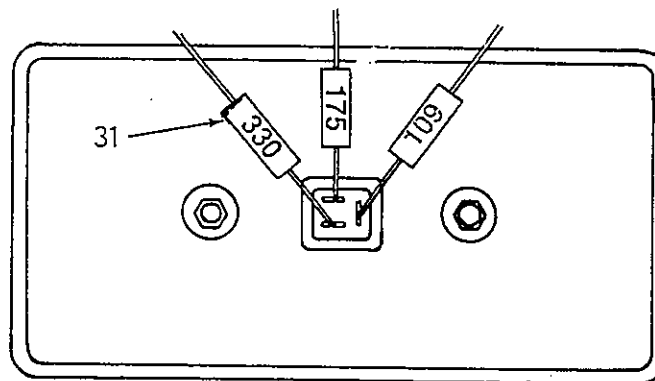
BRAKE, TAIL & TURN SIGNAL LIGHTS GROUP



T-100022

ke, Tail & Turn Signal light

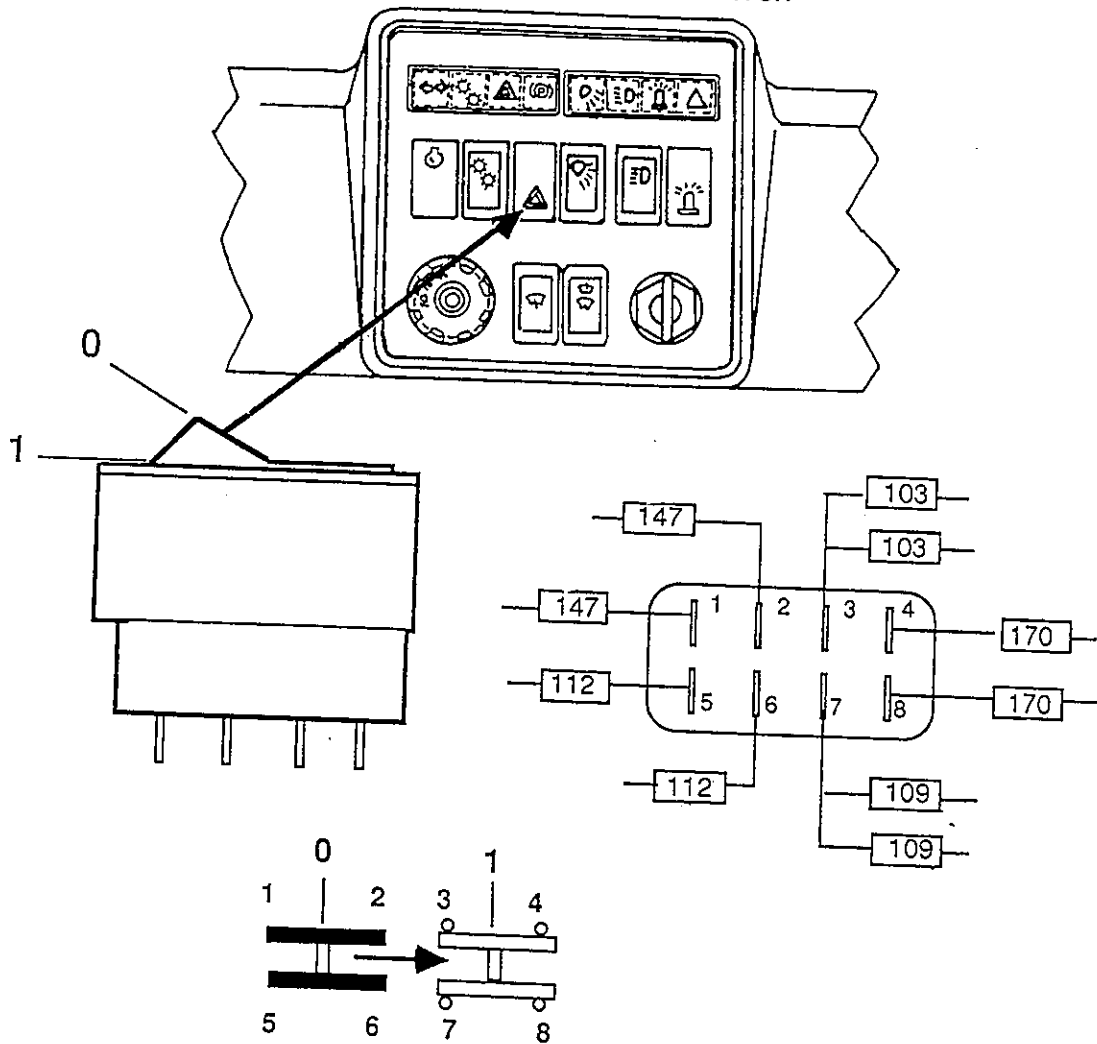
Left hand Brake Tail & Turn Signal Light



T-100022

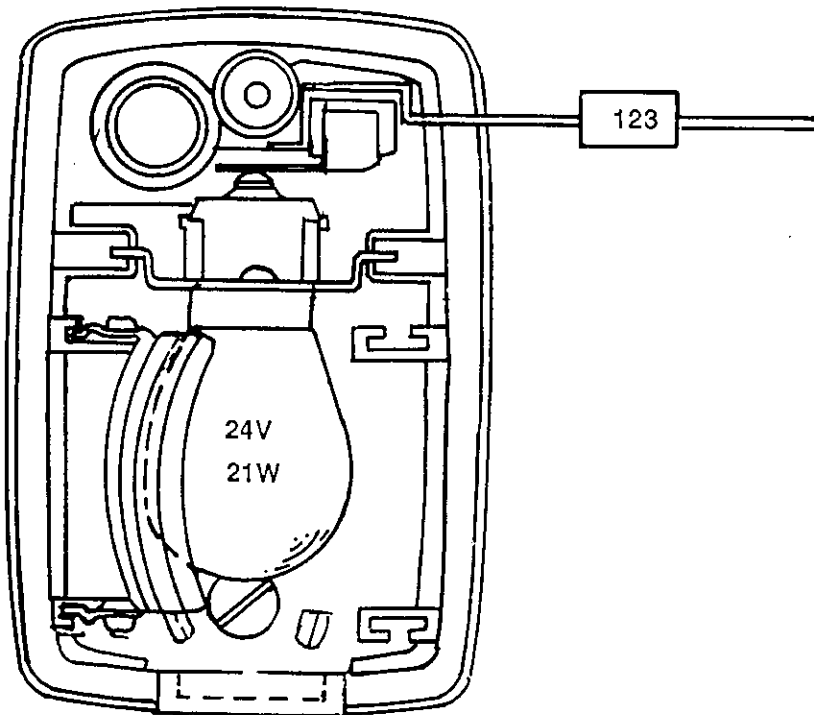
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

EMERGENCY FLASHER SWITCH



T-85981

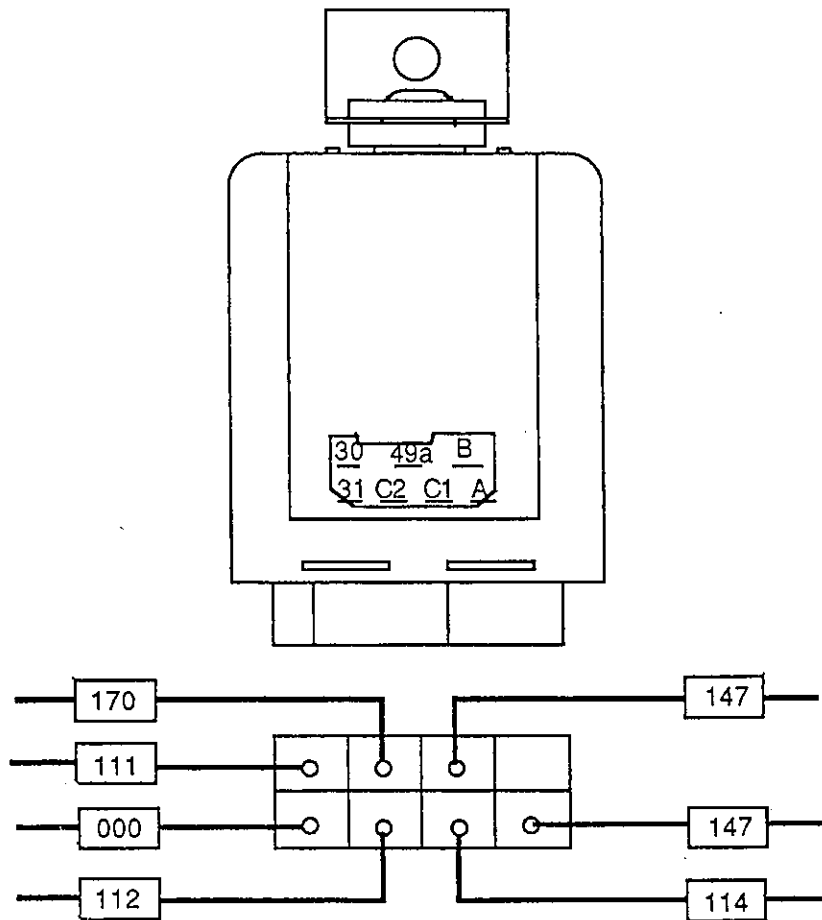
FRONT TURN SIGNAL LIGHT (Right Hand)



T-85980

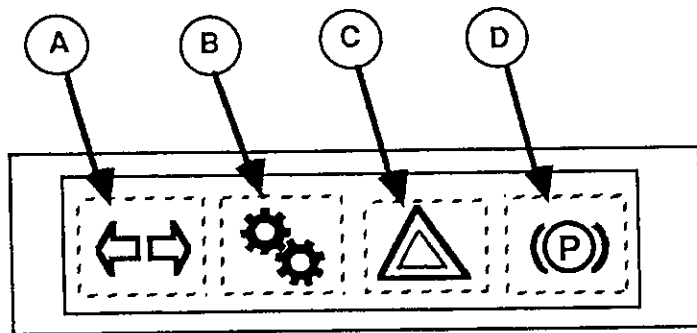
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

FLASHER UNIT

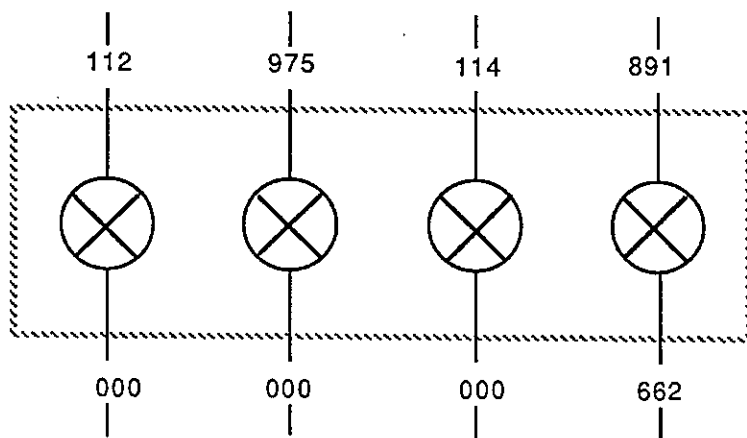


T-85977

INDICATOR LIGHT PANEL



2W
24V

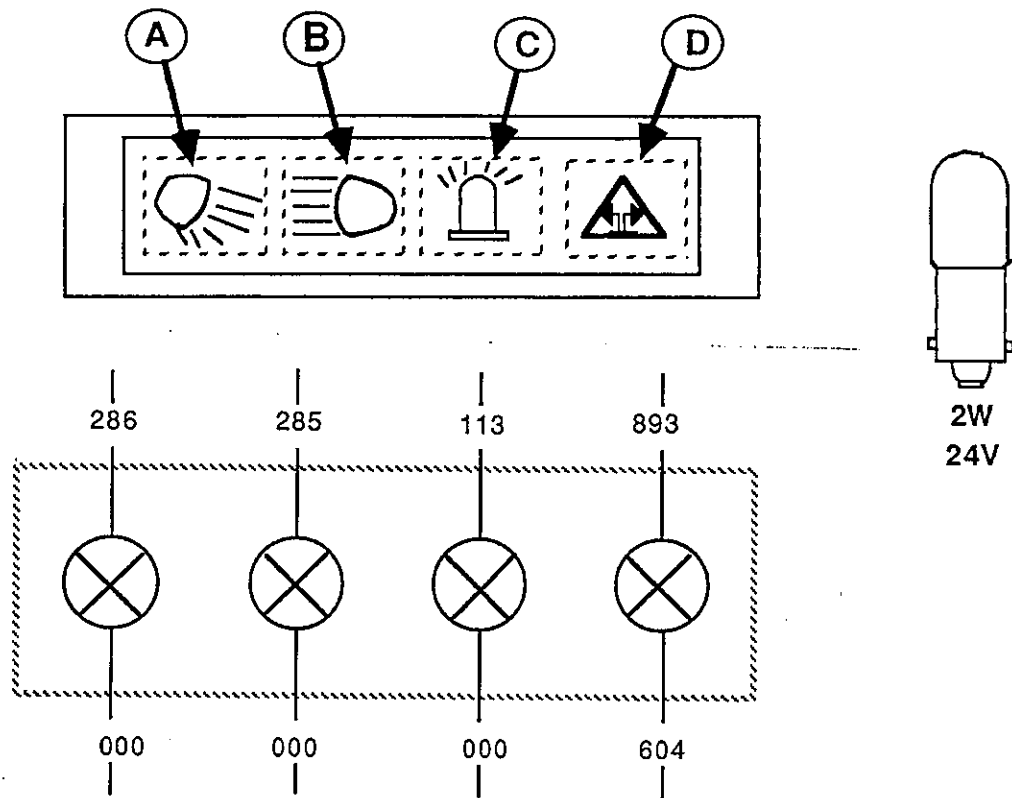


T-85969

- A. Turn Signals
- B. Clutch Cut-off
- C. Emergency Flashers
- D. Parking Brake

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

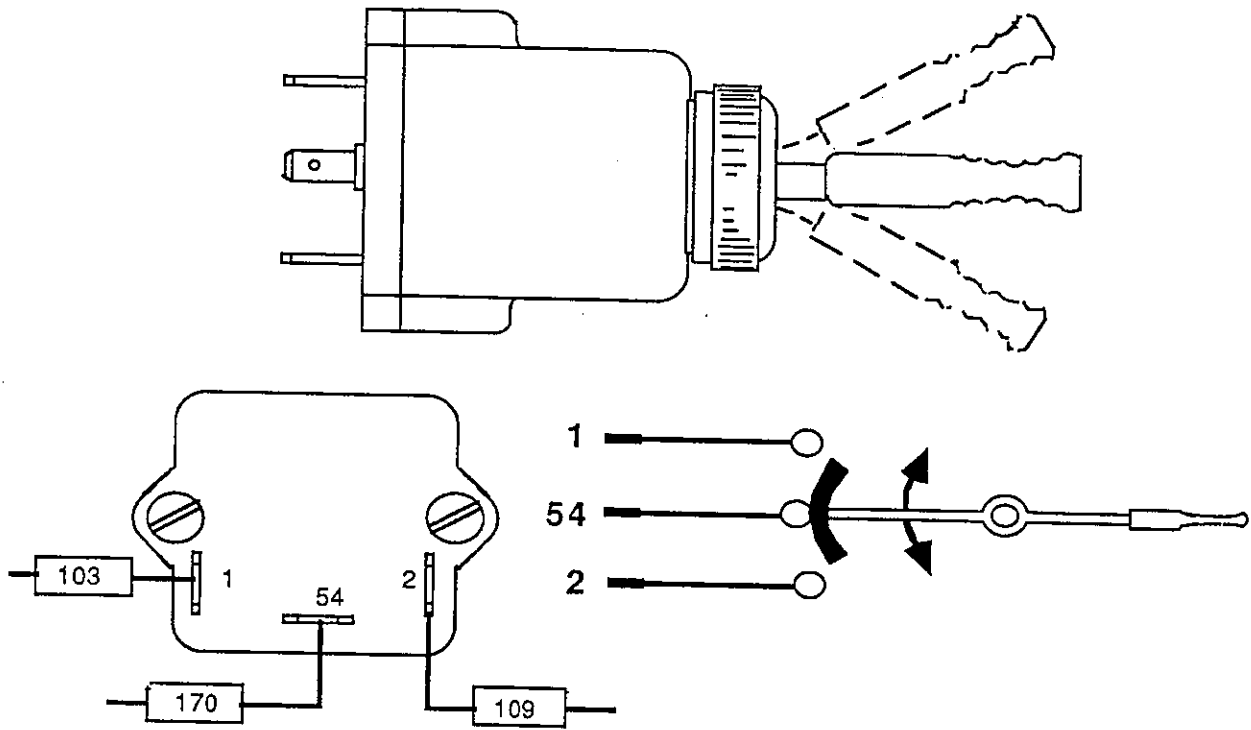
INDICATOR LIGHT PANEL



- A. Rear Flood Lights
- B. Cab and Front Flood Lights
- C. Rotating Beacon
- D. Emergency Steering

T-85968

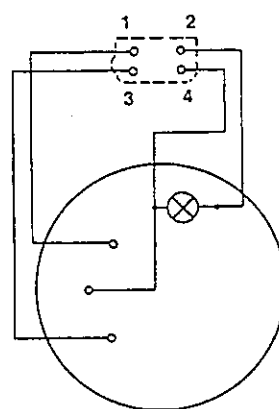
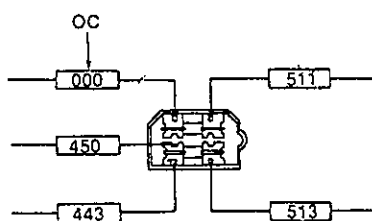
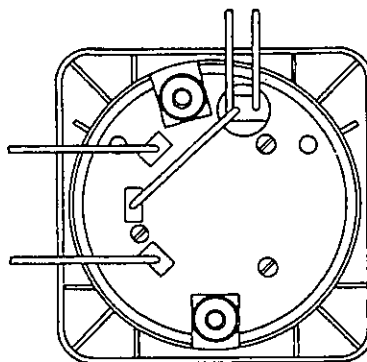
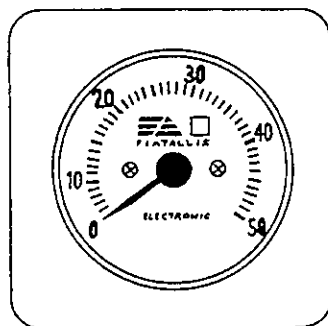
TURN SIGNAL SWITCH



T-85994

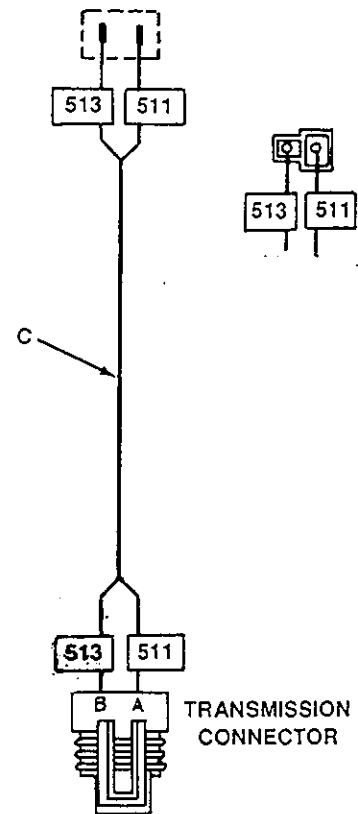
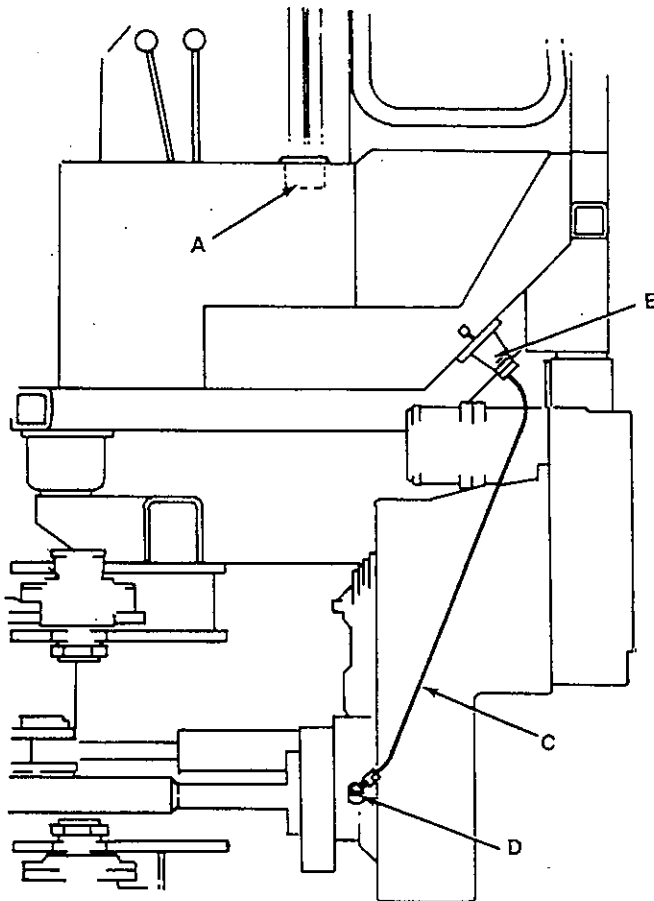
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

TACHOMETER



T-85999

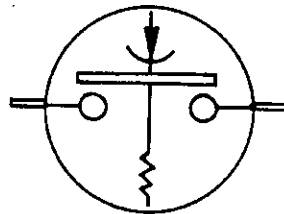
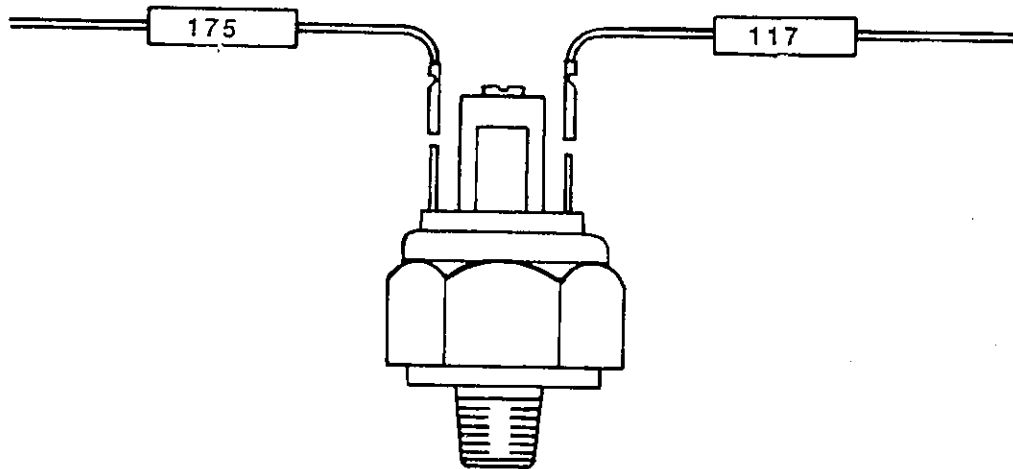
TACHOMETER GROUP



- A. Tachometer
- B. Boot
- C. Harness
- D. Sending Unit

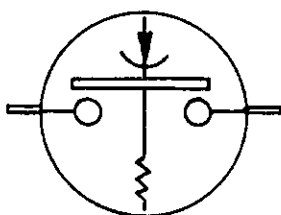
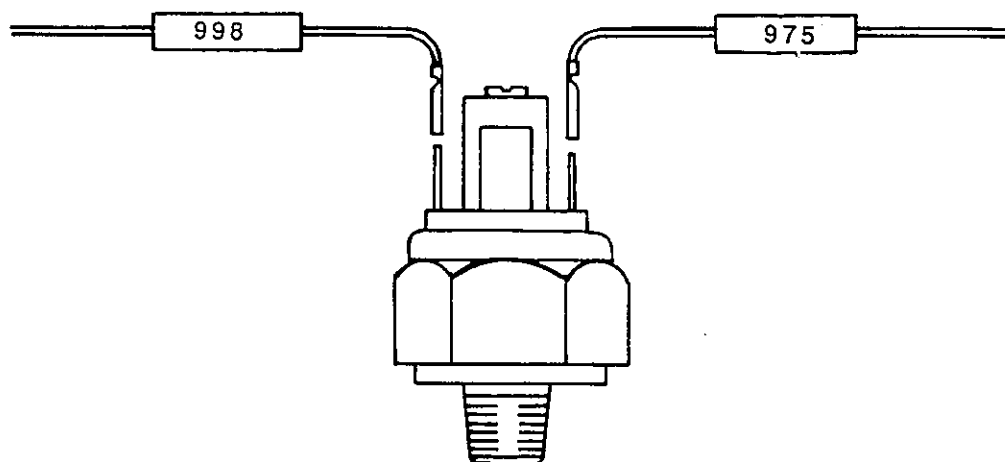
Study **SAFETY RULES** in the front of this manual thoroughly for the protection of machine and safety of personnel.

REAR STOP LIGHT PRESSURE SWITCH



T-85979

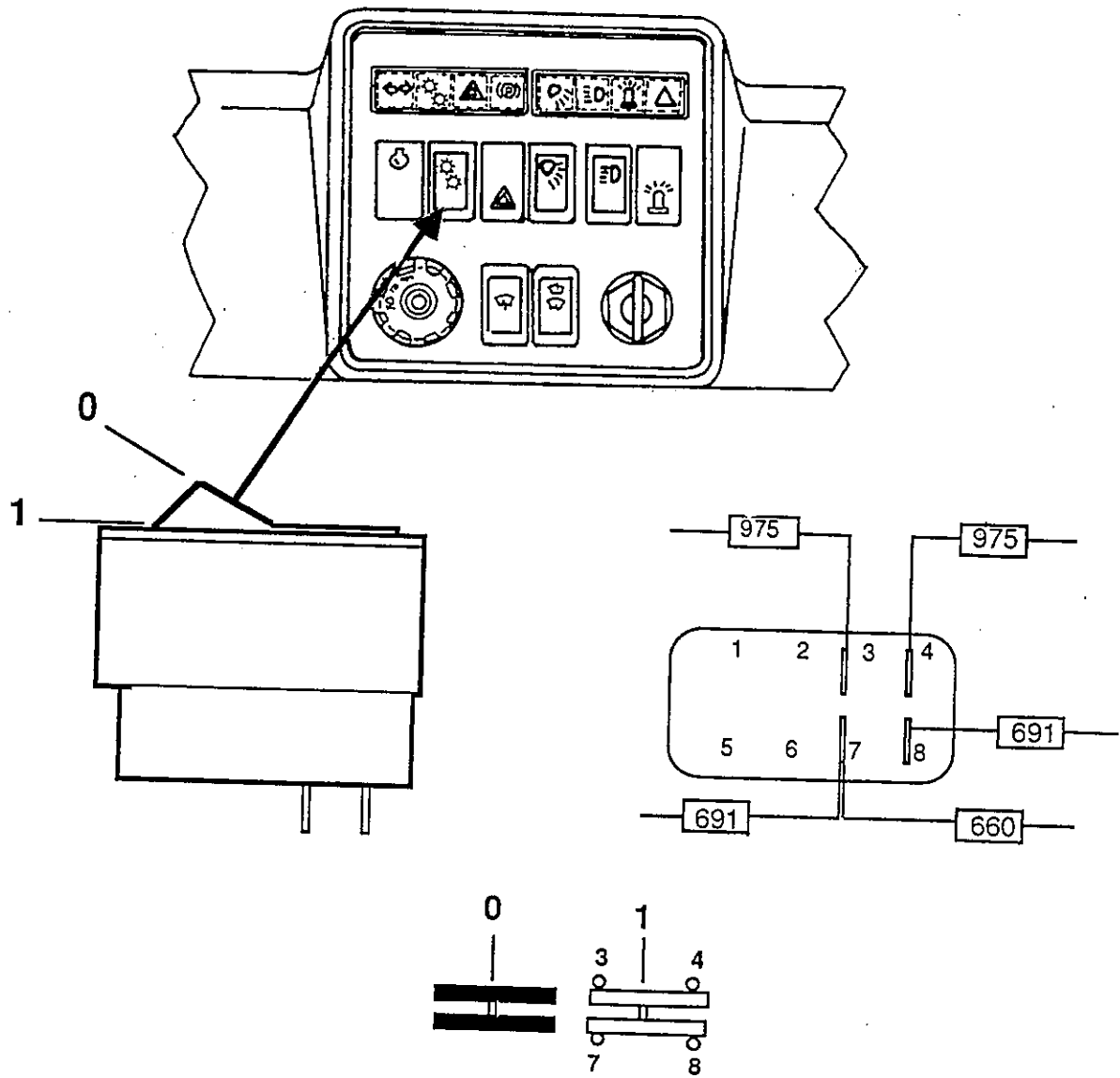
CLUTCH CUT-OFF PRESSURE SWITCH



T-85979

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

CLUTCH CUT-OFF SWITCH

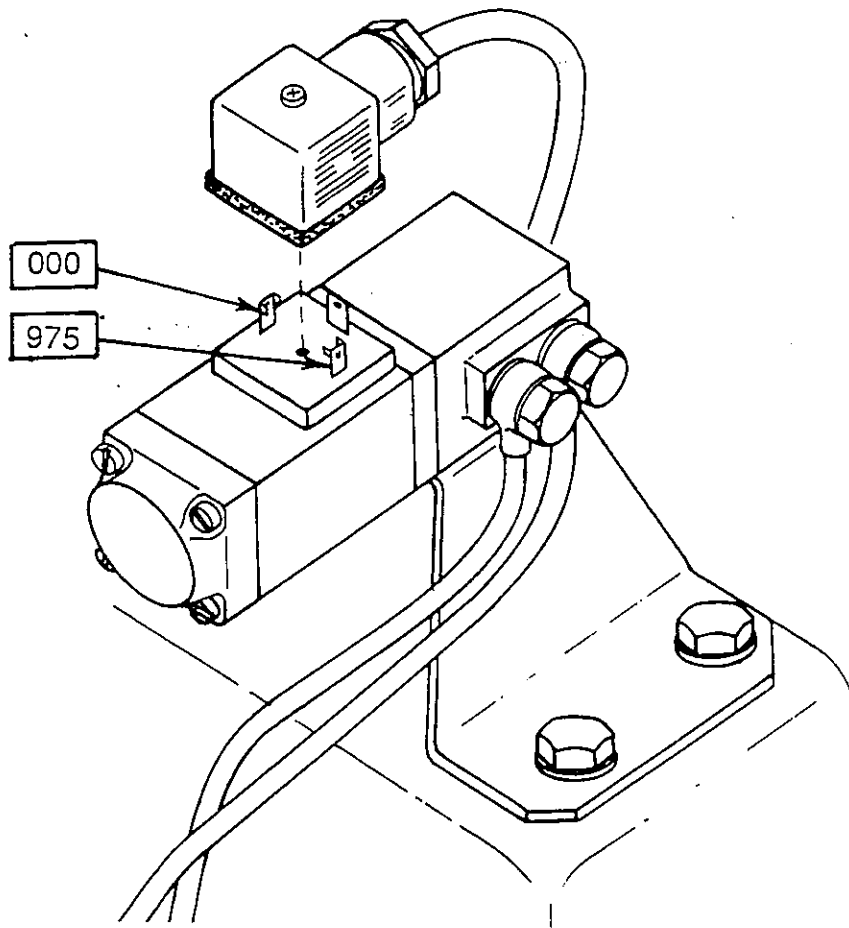


T-85981

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

Added 7/89

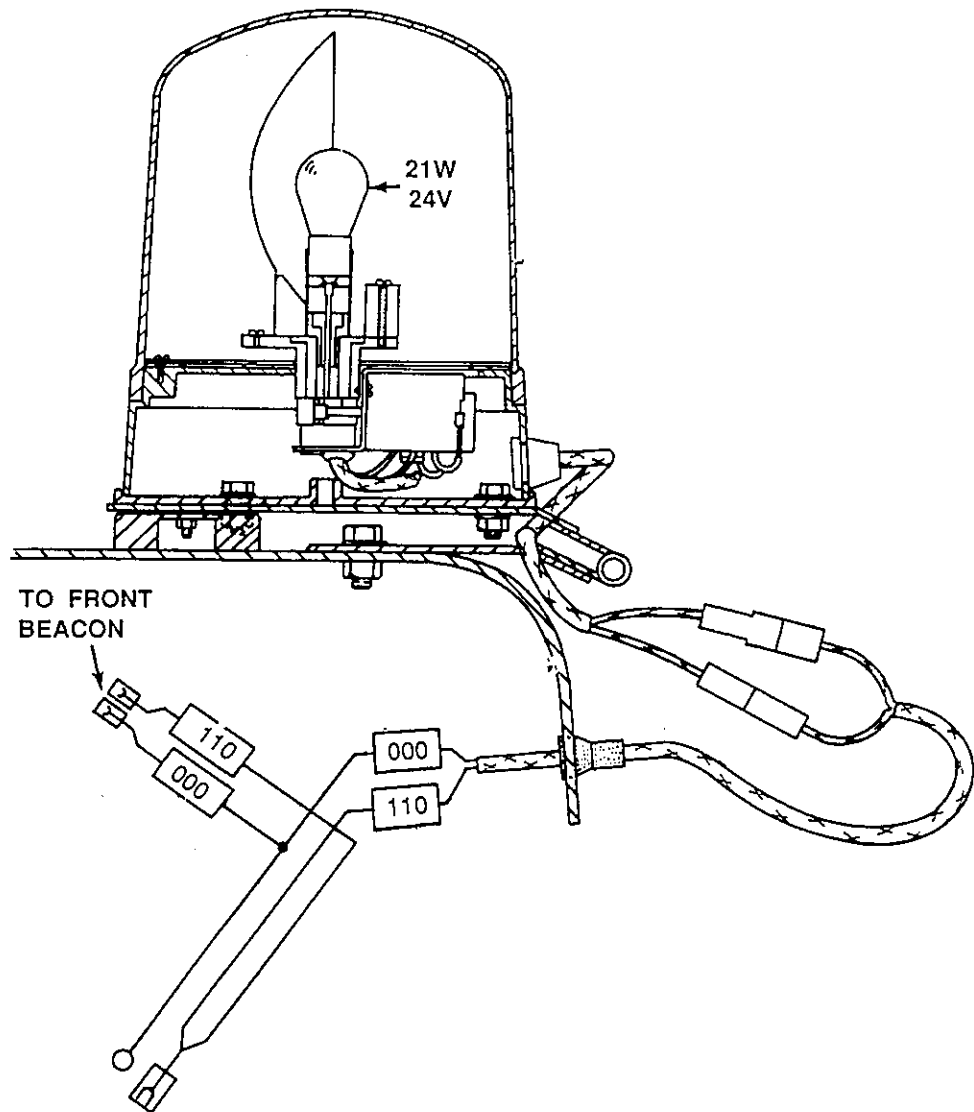
CLUTCH CUT-OFF VALVE SWITCH



T-100039

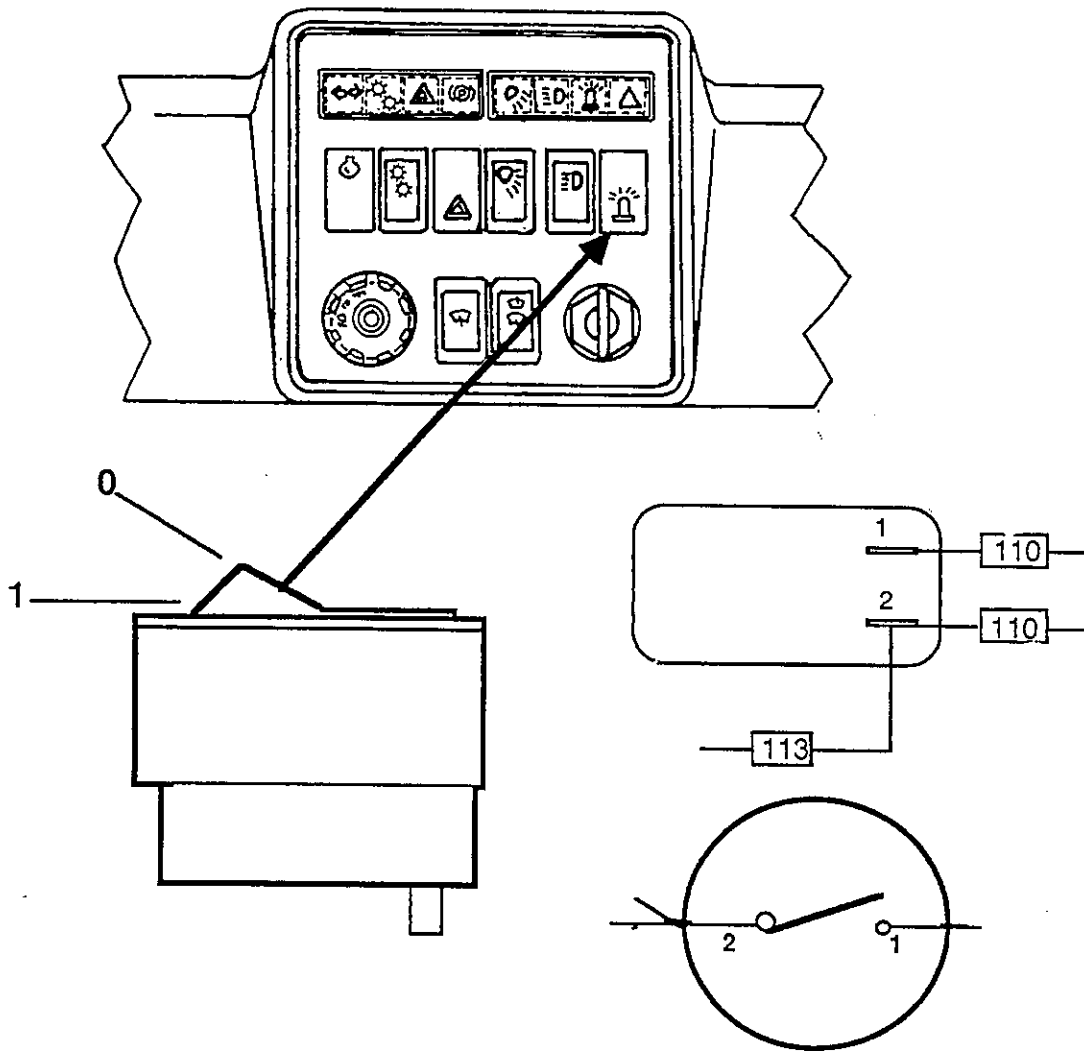
Study **SAFETY RULES** in the front of this manual thoroughly for the protection of machine and safety of personnel.

ROTATING BEACON GROUP



T-100011

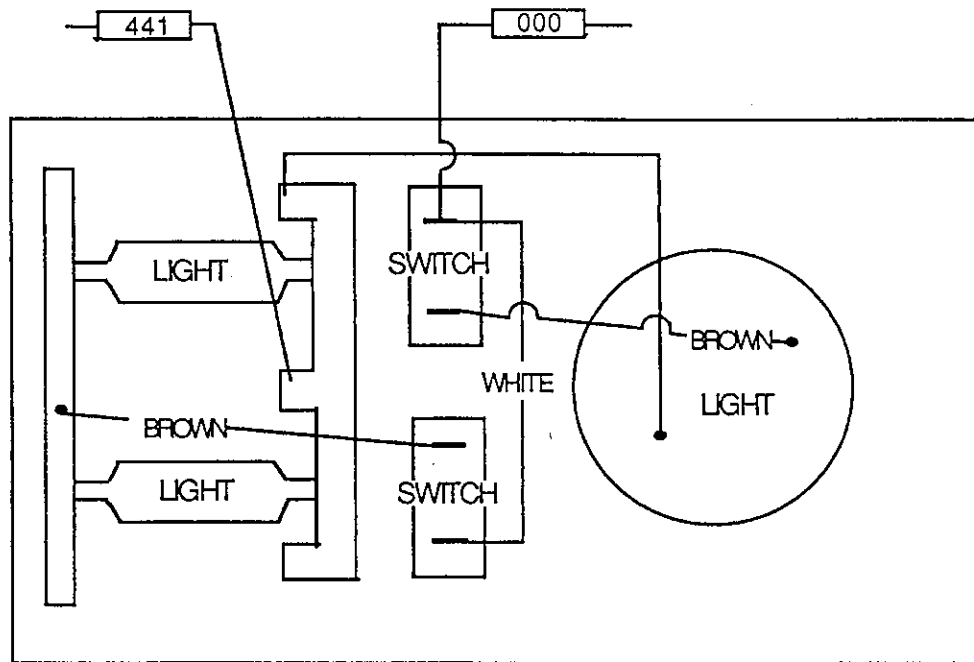
ROTATING BEACON SWITCH



T-85982

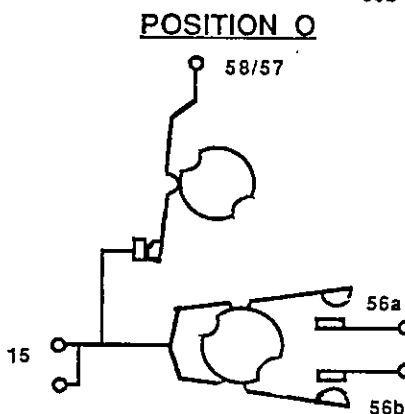
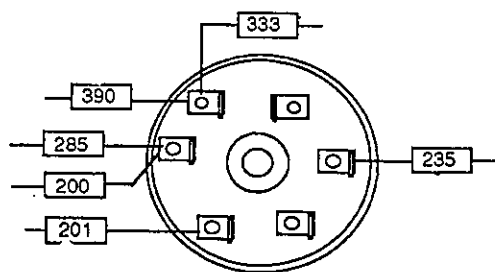
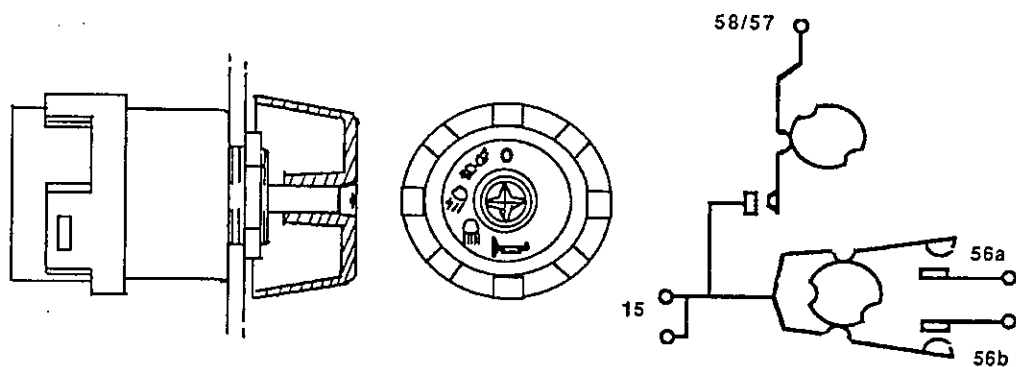
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

CAB DOME LIGHT

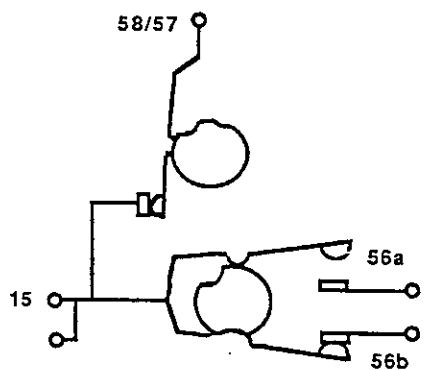


T-85976

LIGHT SWITCH



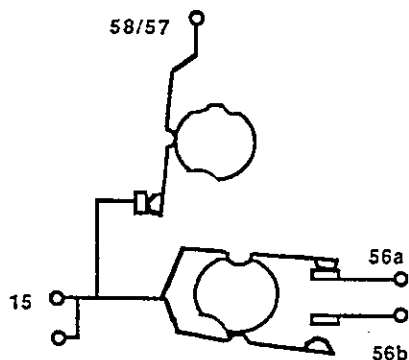
POSITION 0



POSITION 2 15-58/57-56b

T-85995

POSITION 1 15-58/57

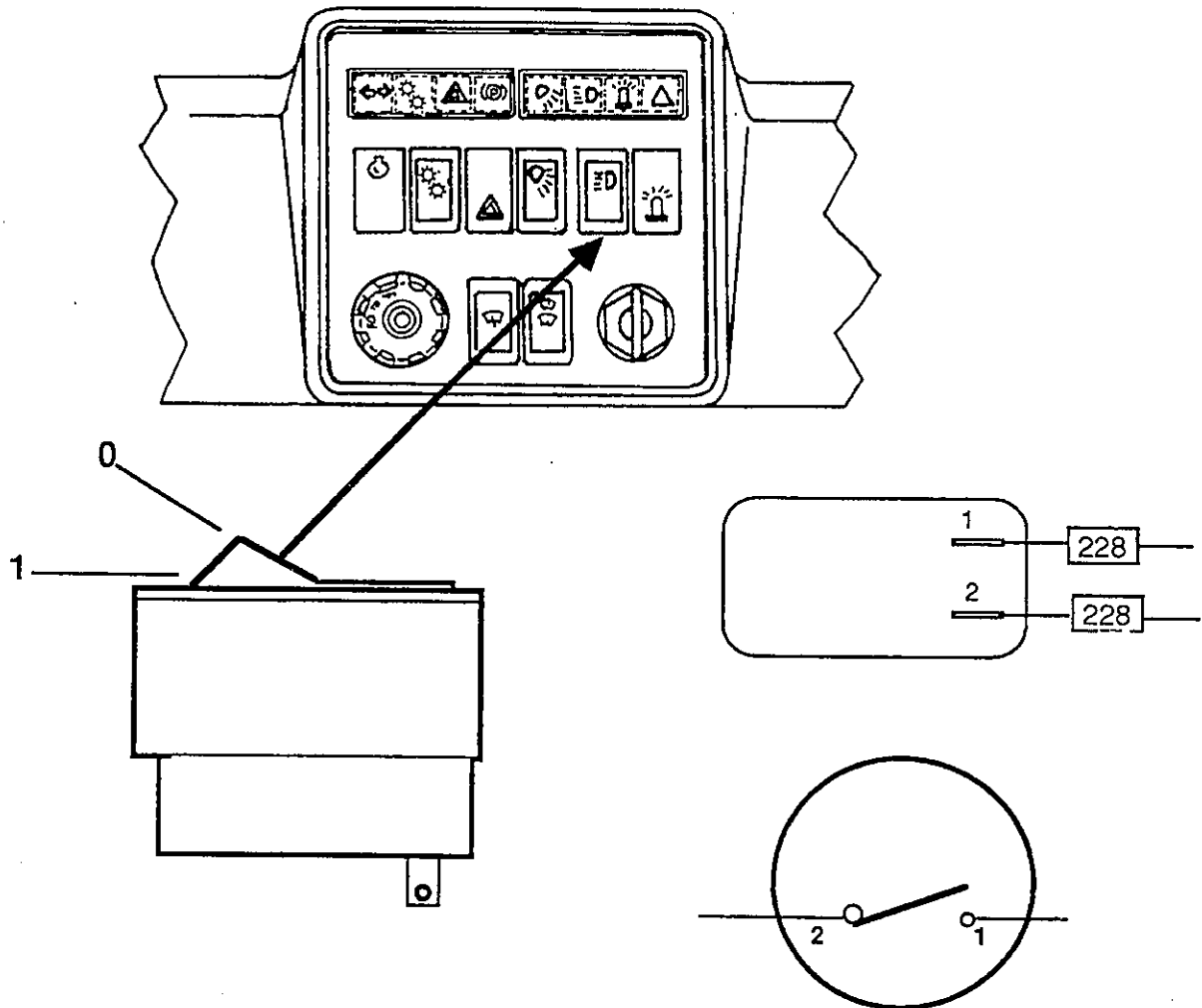


POSITION 3 15-58/57-56a

T-85995

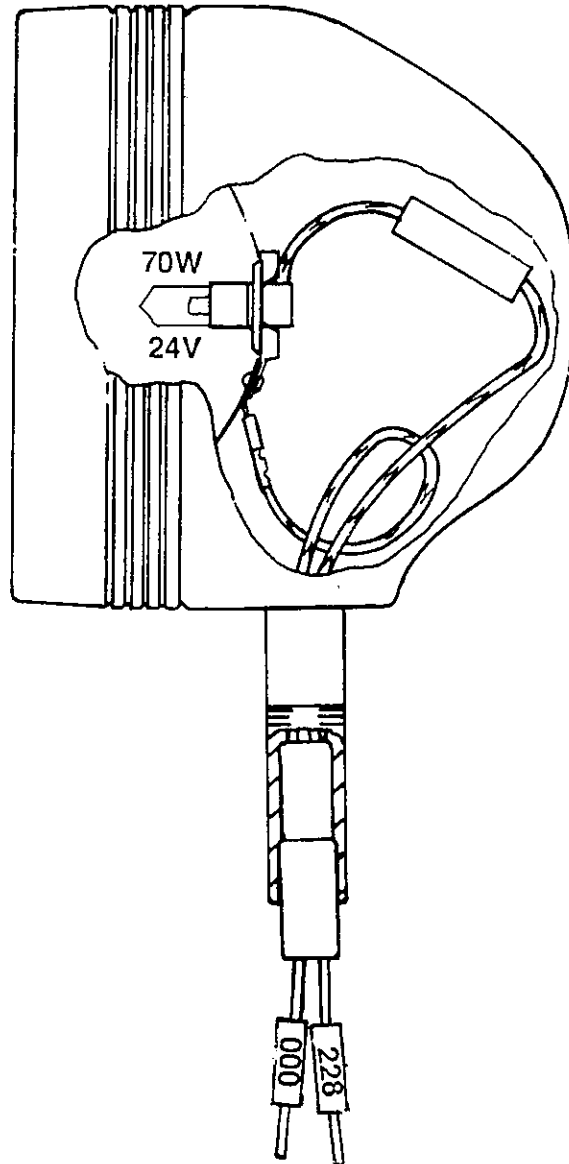
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

CAB FLOOD LIGHT SWITCH



T-85982

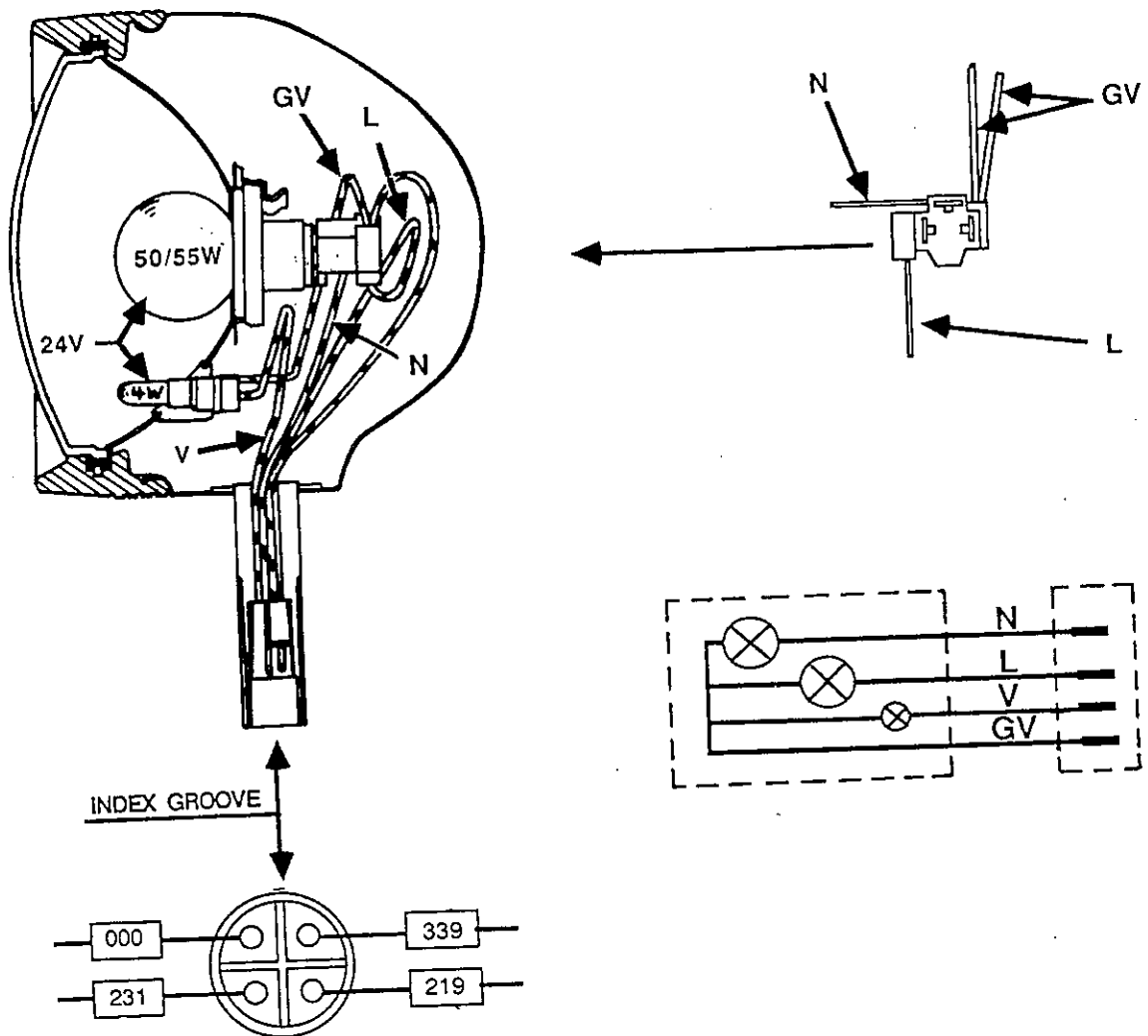
CAB FLOOD LIGHTS



T-85983

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

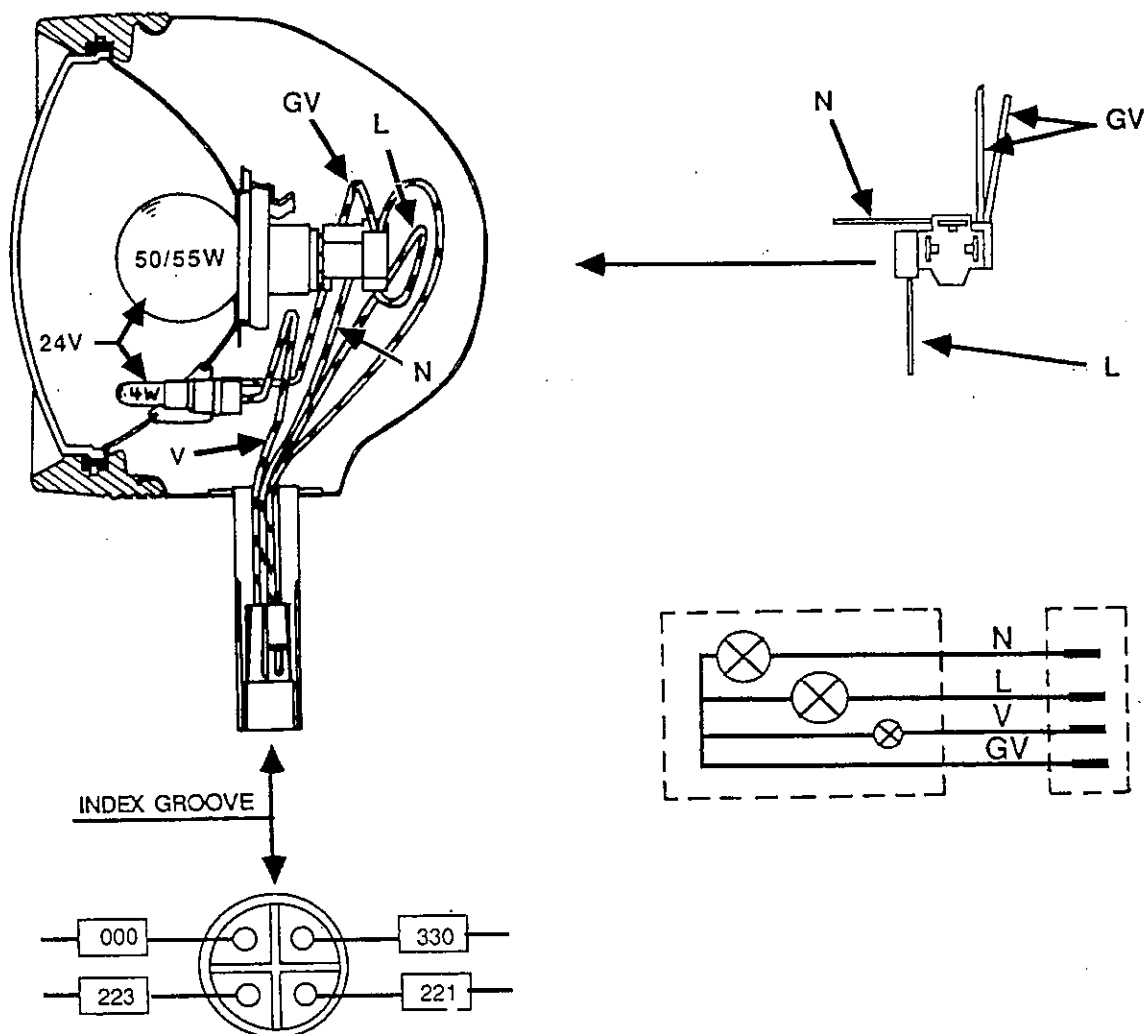
CONNECTOR TO FLOOD LIGHT (Right Hand)



"N" Black (Low Beam)
 "L" Blue (High Beam)
 "V" Green (Parking Light)
 "GV" Yellow/Green (Ground)

T-100004

CONNECTOR TO FLOOD LIGHT (Left Hand)

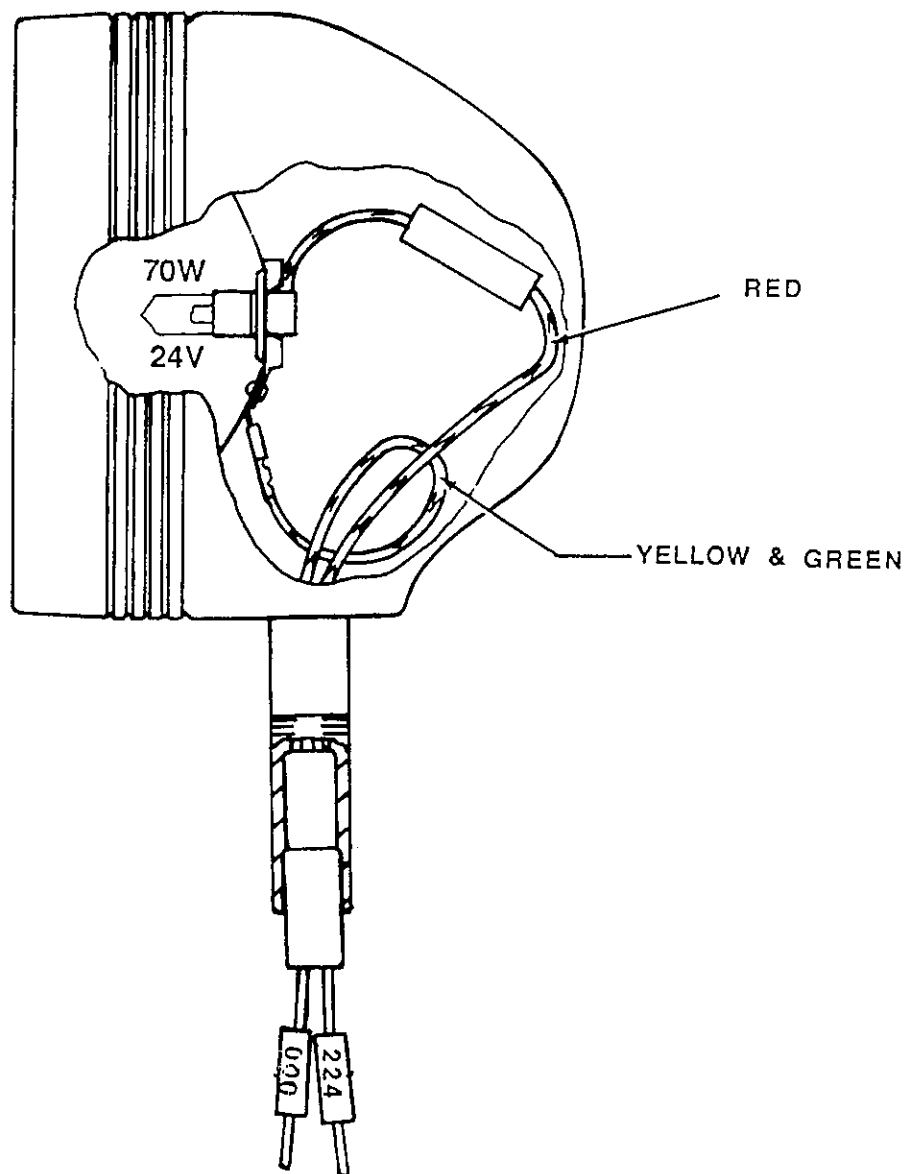


"N" Black (Low Beam)
 "L" Blue (High Beam)
 "V" Green (Parking Light)
 "GV" Yellow/Green (Ground)

T-100004

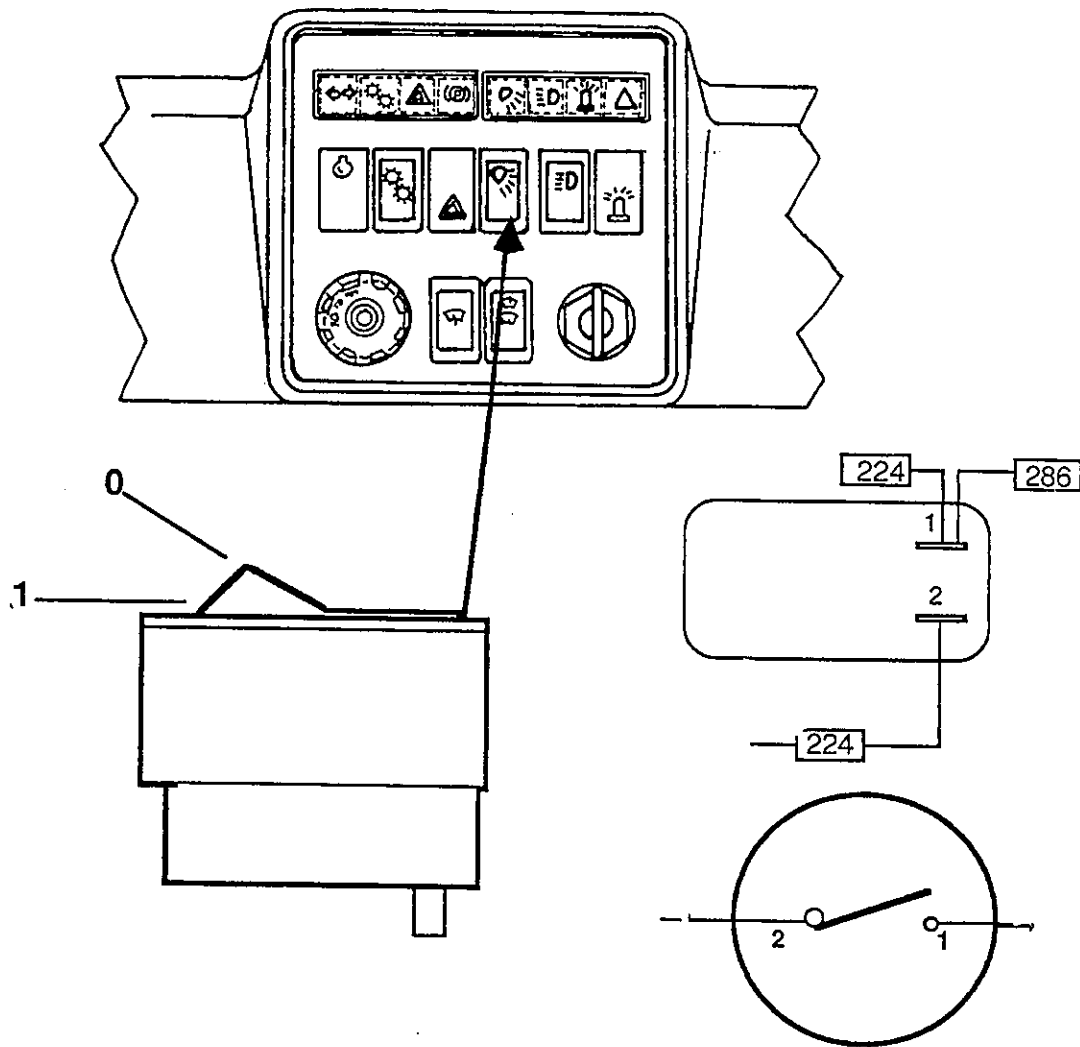
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

REAR FLOOD LIGHTS GROUP



T-85983

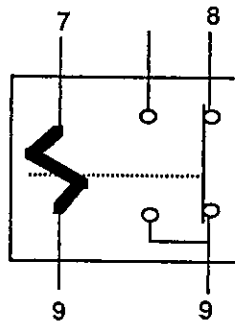
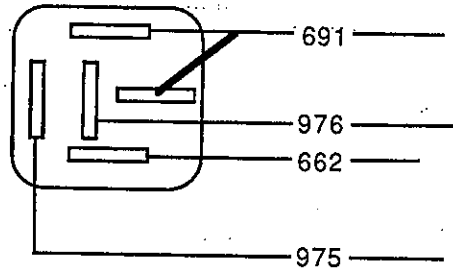
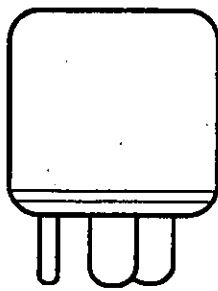
REAR FLOOD LIGHT SWITCH



T-85982

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

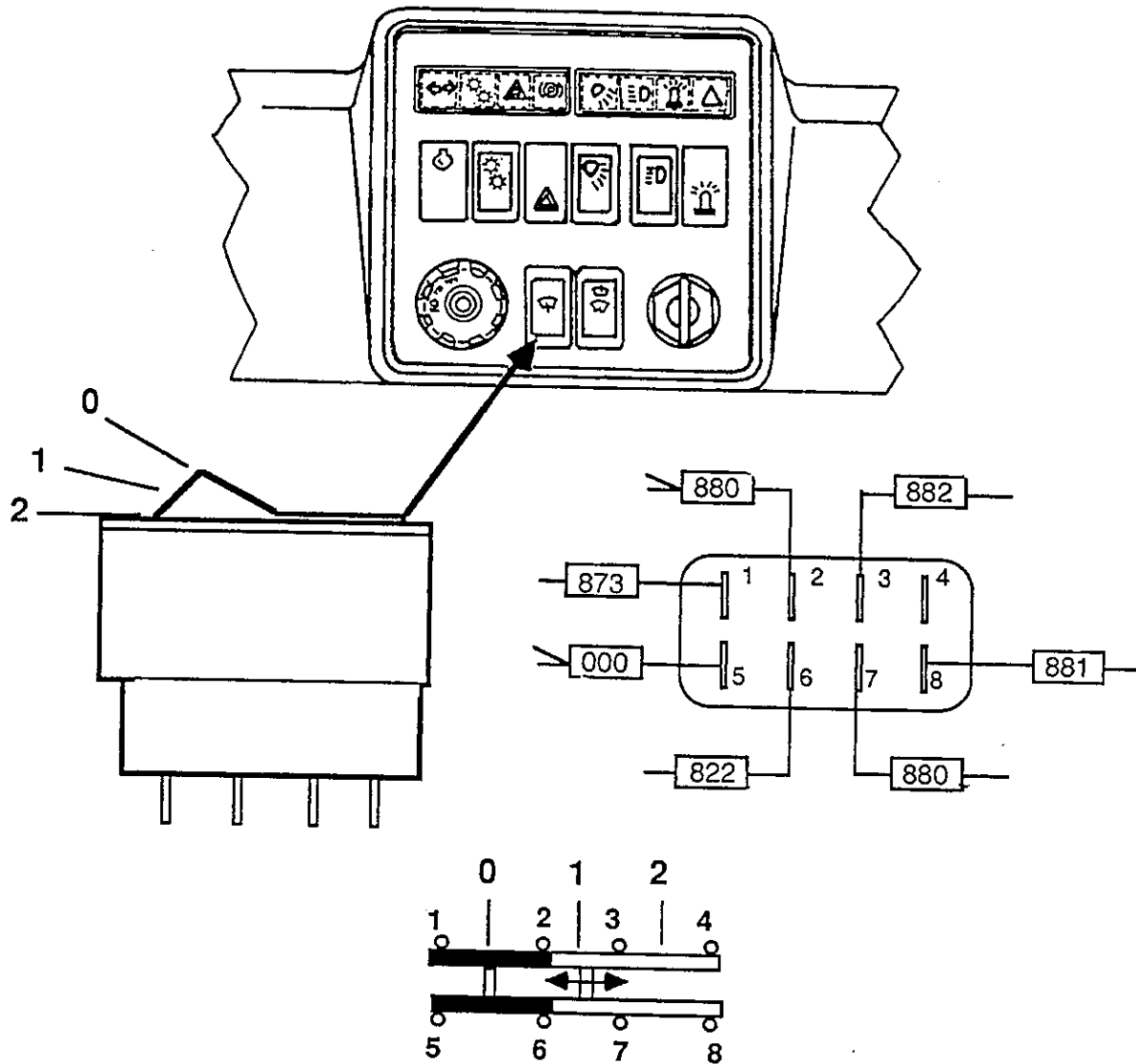
PARKING BRAKE TO CLUTCH CUT-OFF RELAY



T-85975

Study **SAFETY RULES** in the front of this manual thoroughly for the protection of machine and safety of personnel.
Added 7/89

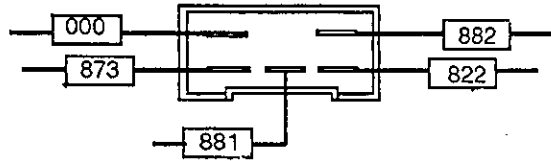
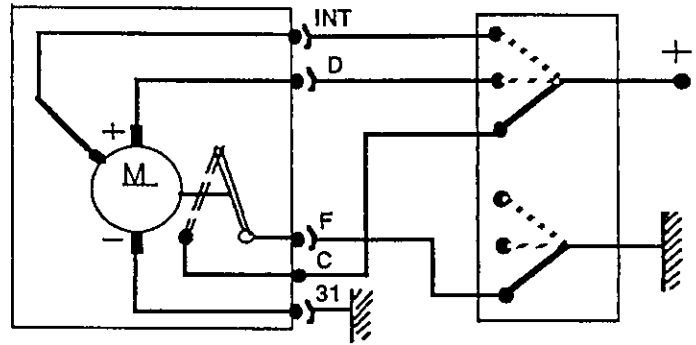
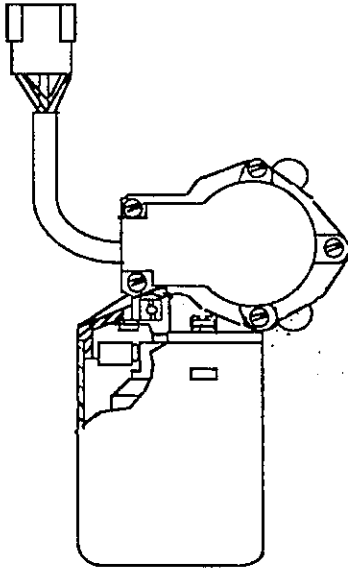
FRONT WIPER SWITCH



T-85981

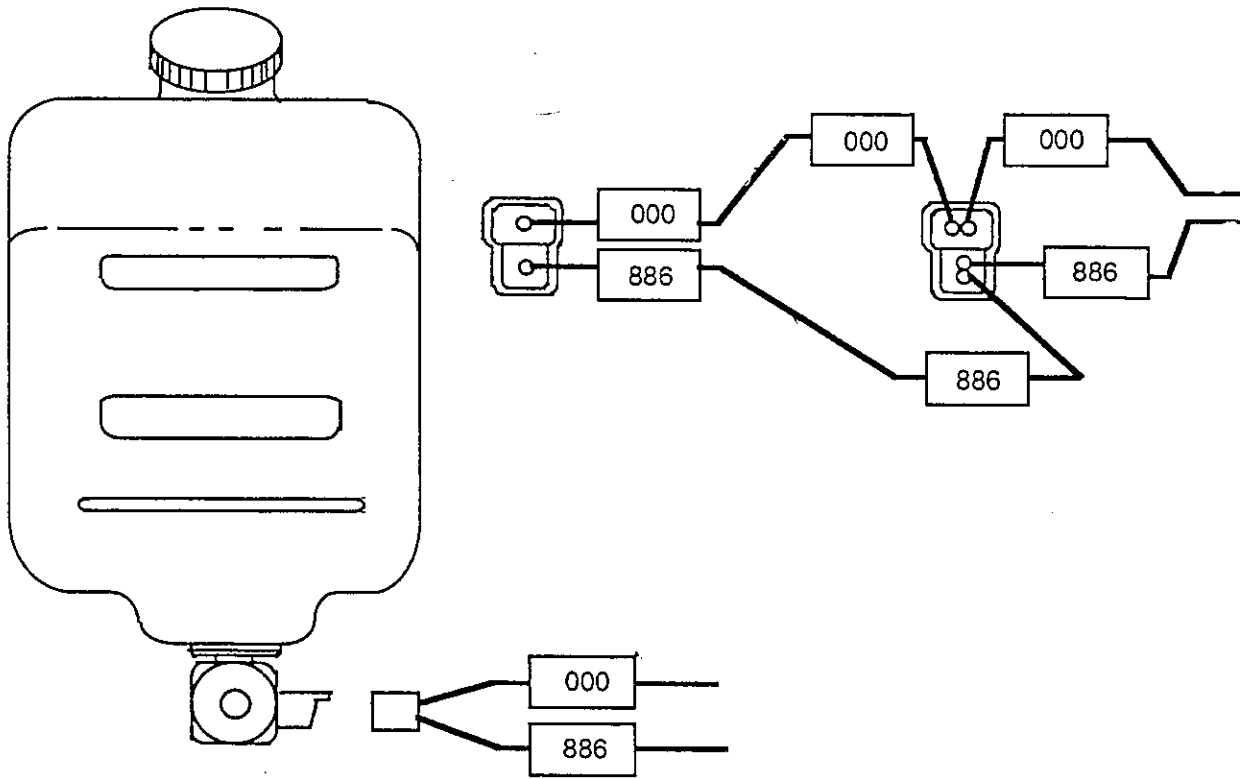
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

FRONT WIPER MOTOR 'C'



T-85978

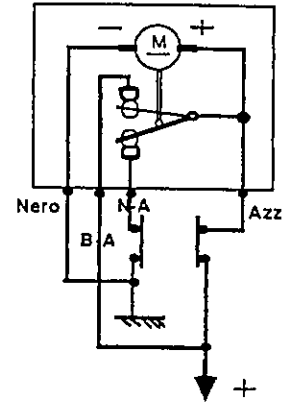
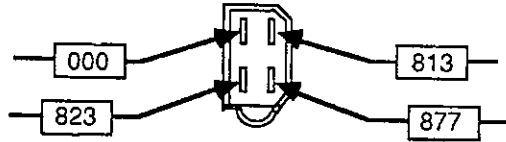
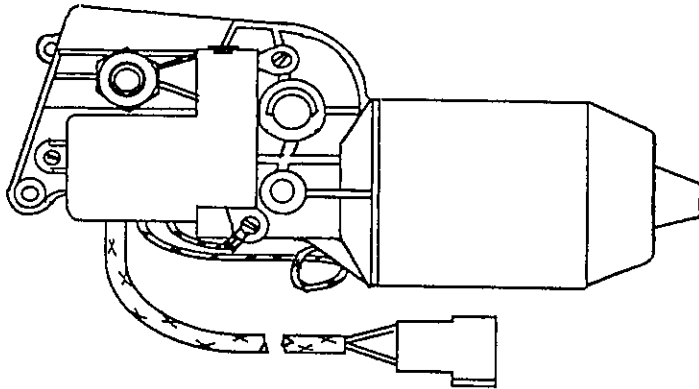
TO WINDOW WASHER PUMP MOTOR



T-100007

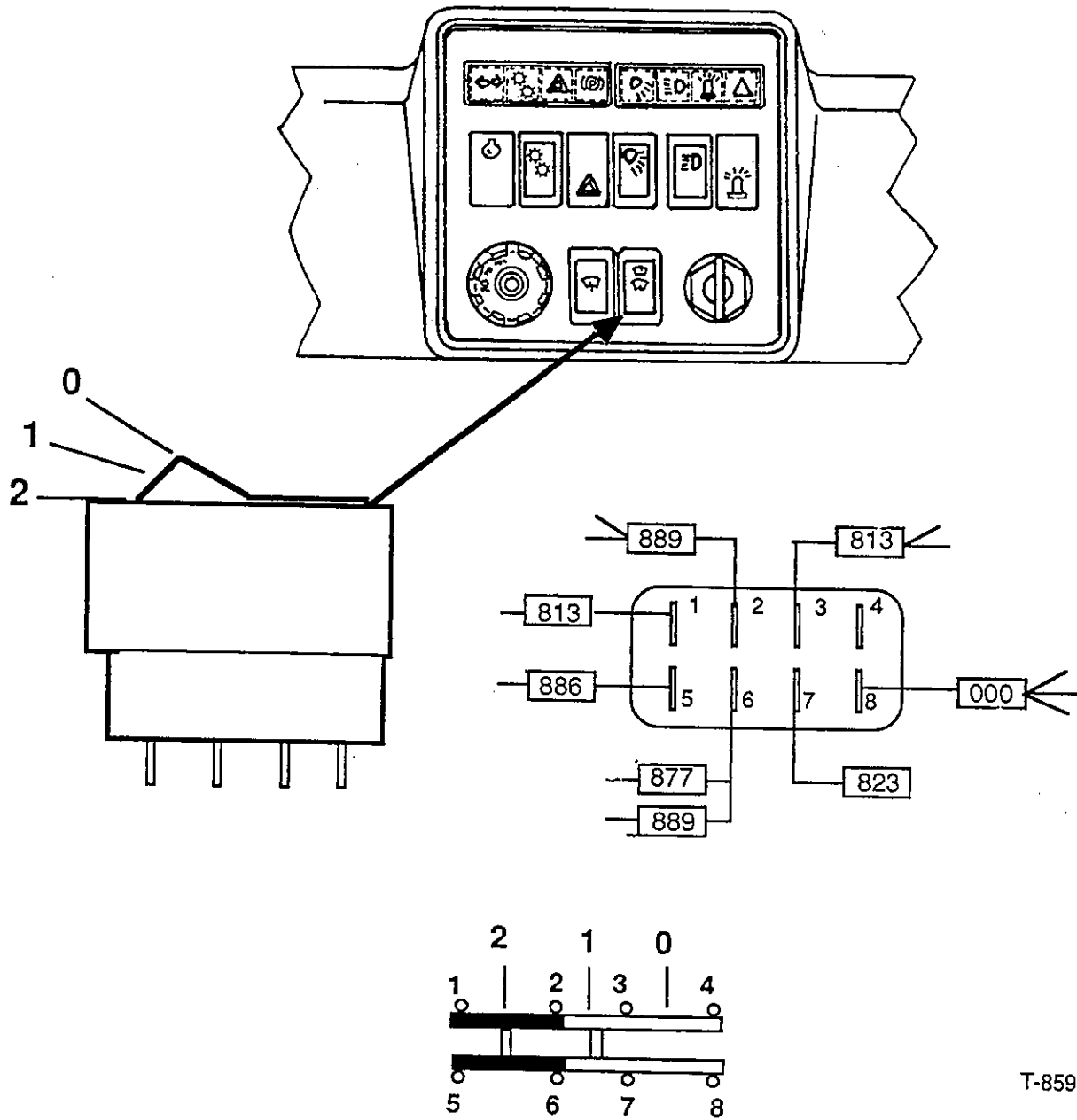
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

REAR WIPER MOTOR



T-100003

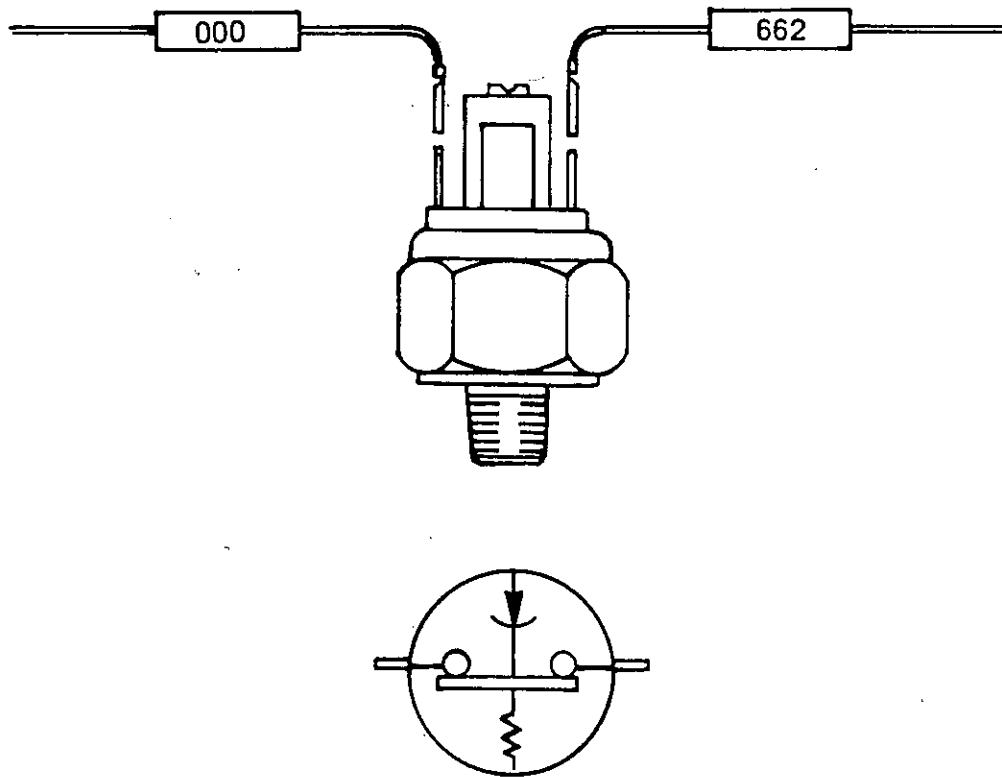
REAR WIPER SWITCH



T-85981

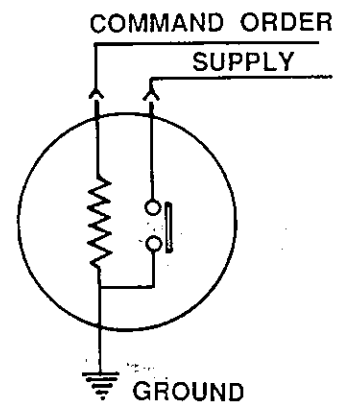
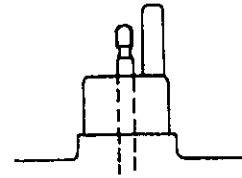
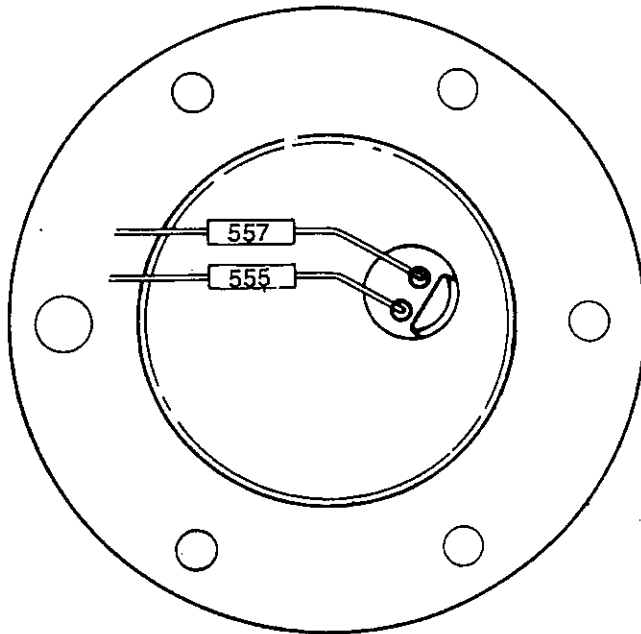
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

PARKING BRAKE PRESSURE SWITCH



T-85971

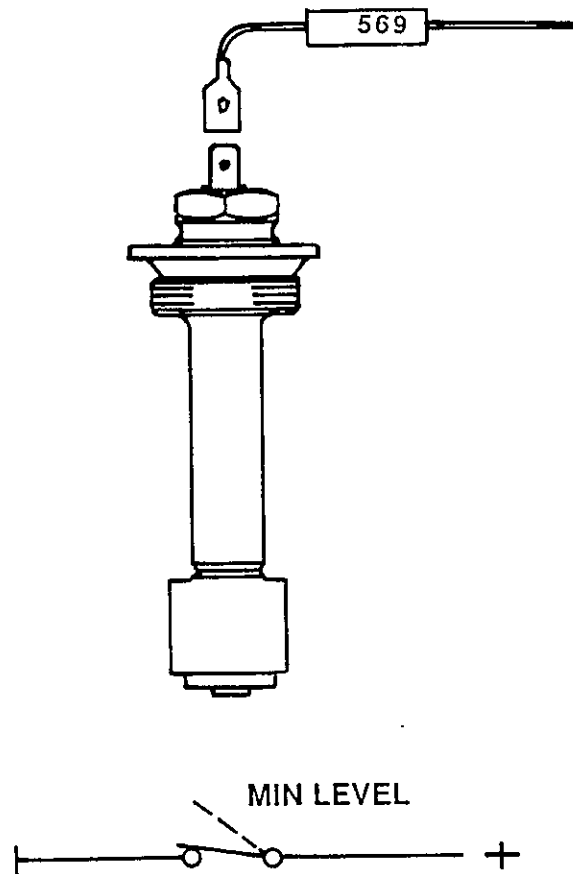
FUEL LEVEL SENDING UNIT



T-100023

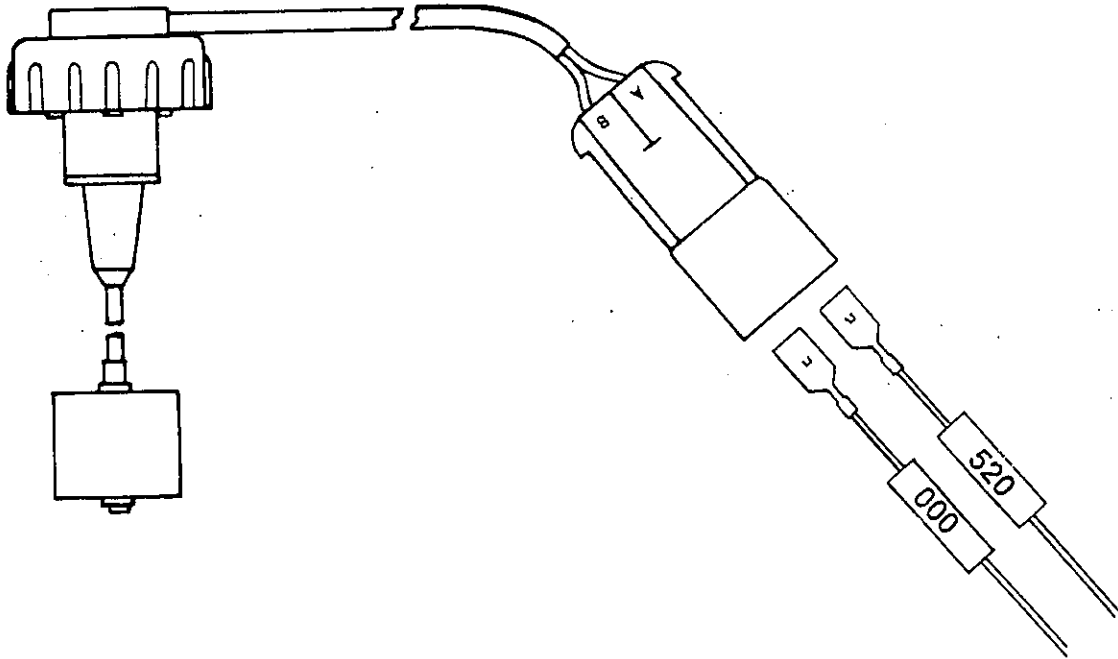
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

ENGINE OIL LEVEL SENDING UNIT



T-100029

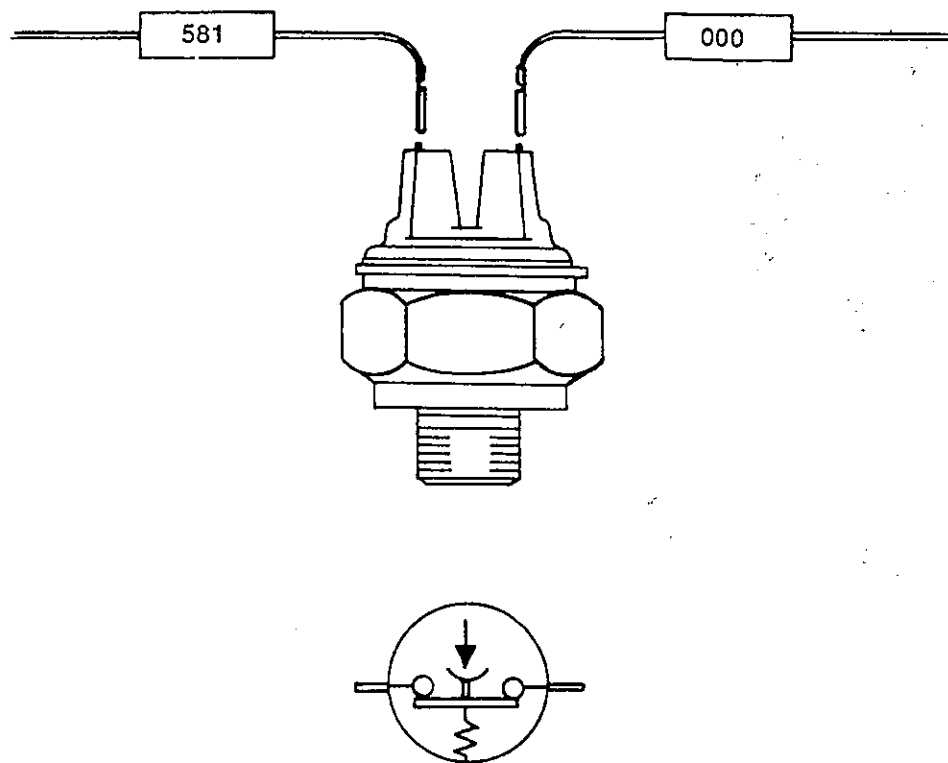
WATER LEVEL SENDING UNIT



T-100026

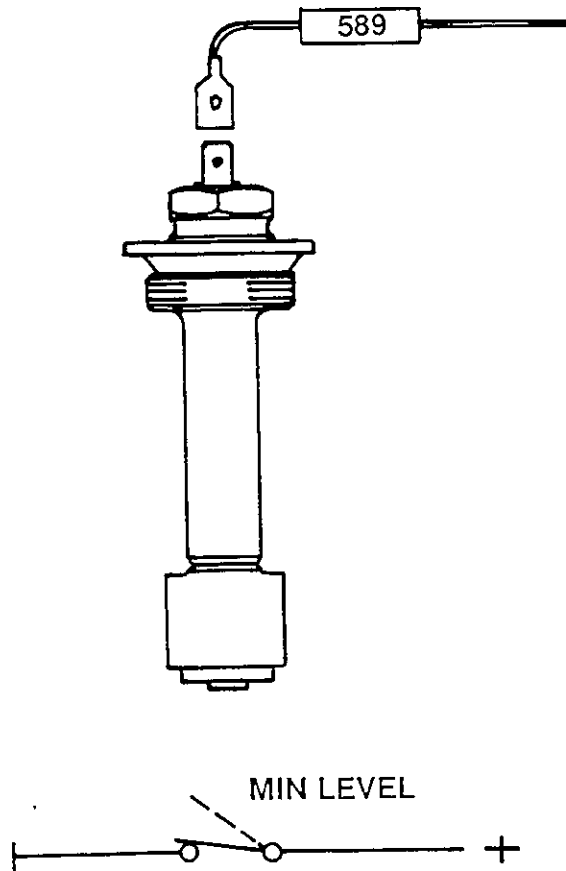
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

TRANSMISSION OIL PRESSURE SWITCH



T-100015

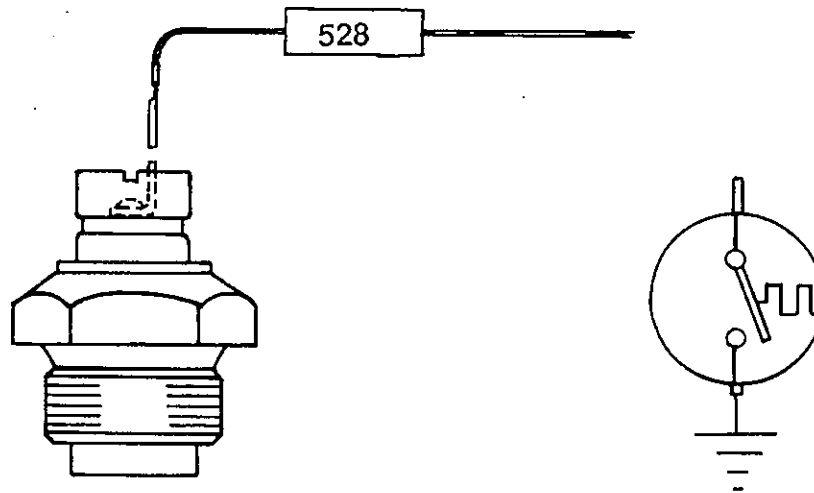
TRANSMISSION OIL LEVEL SENDING UNIT



T-100029

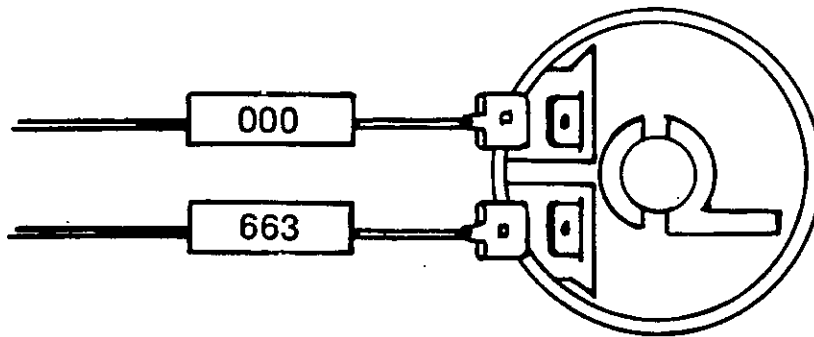
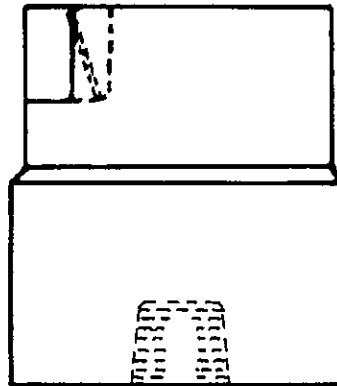
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

WATER TEMPERATURE SENDING UNIT



T-100016

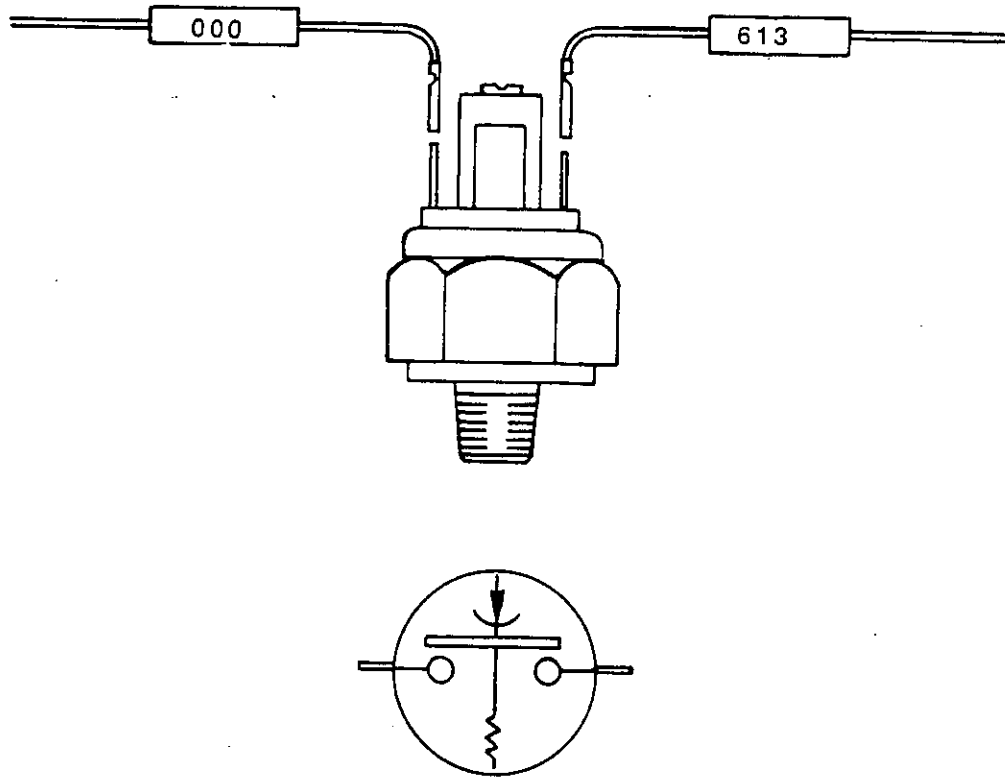
AIR FILTER RESTRICTION INDICATOR SWITCH



T-100028

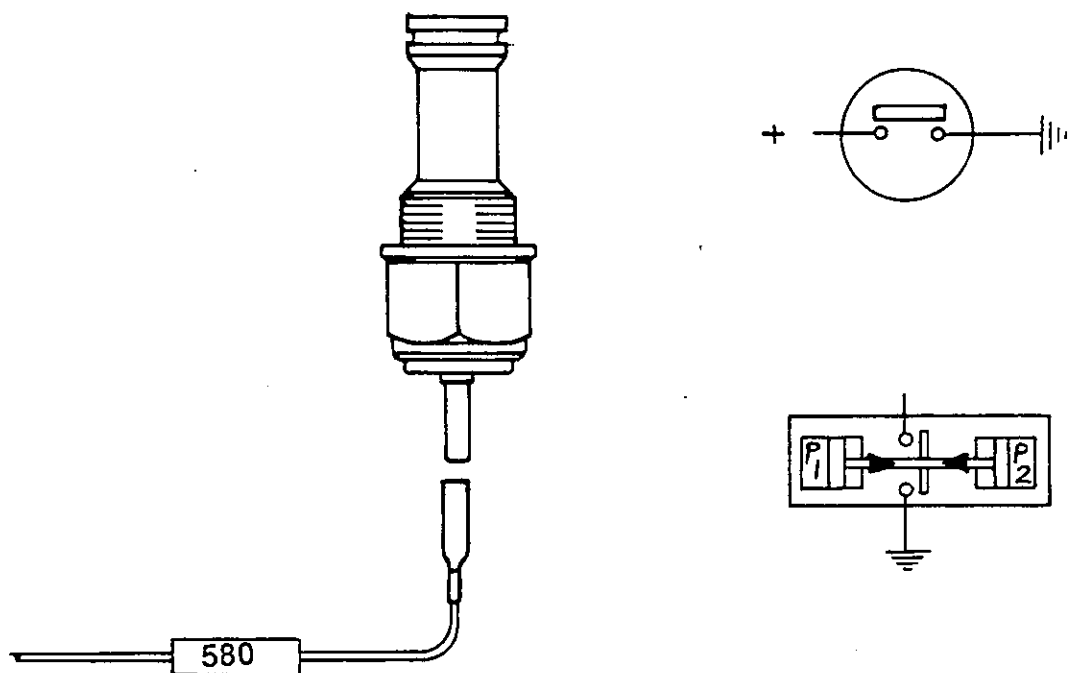
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

BRAKE SYSTEM LOW PRESSURE WARNING SWITCH



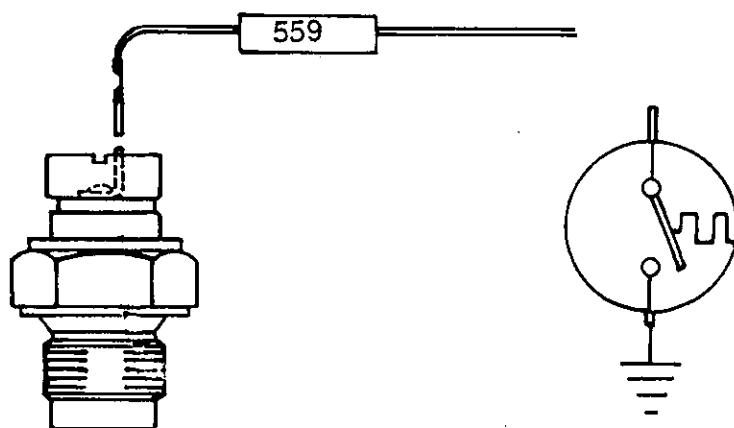
T-85979

HYDRAULIC TANK OIL FILTER RESTRICTION INDICATOR SWITCH



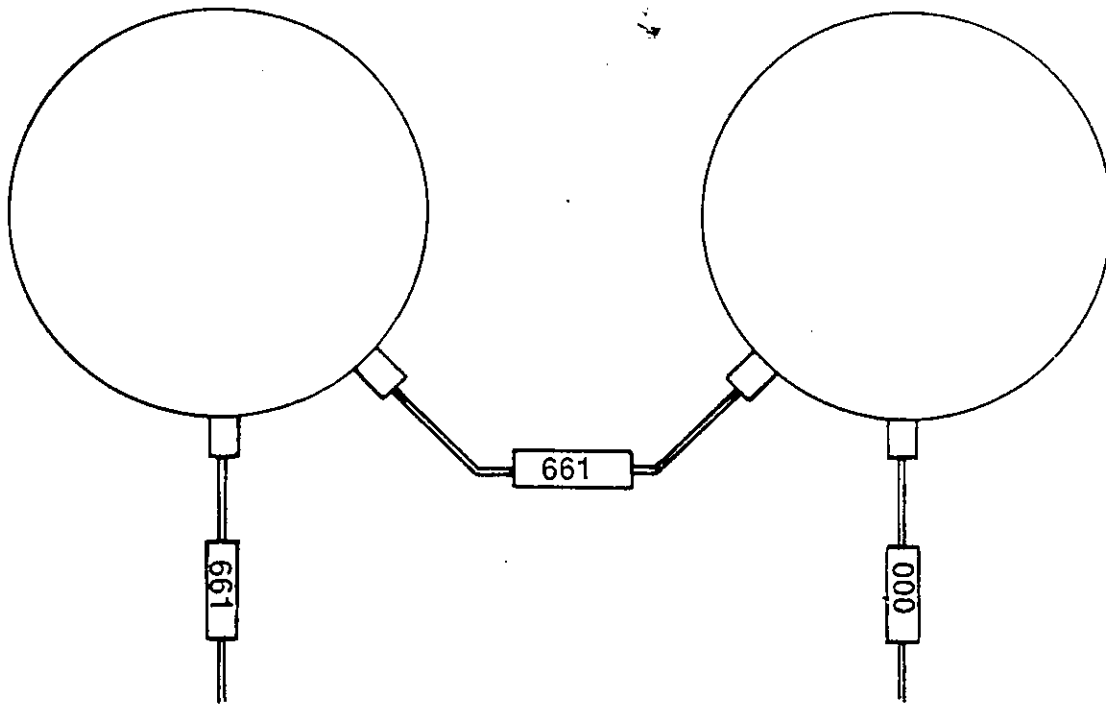
T-100025

TRANSMISSION OIL TEMPERATURE SENDING UNIT



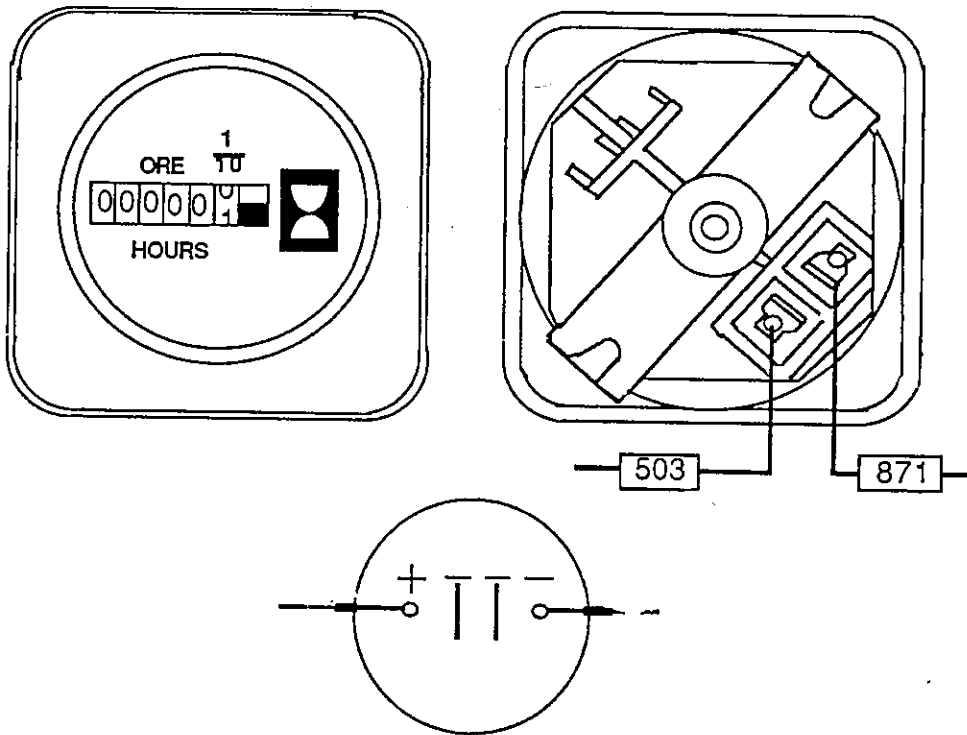
T-100014

BRAKE FLUID LEVEL SENDING UNIT



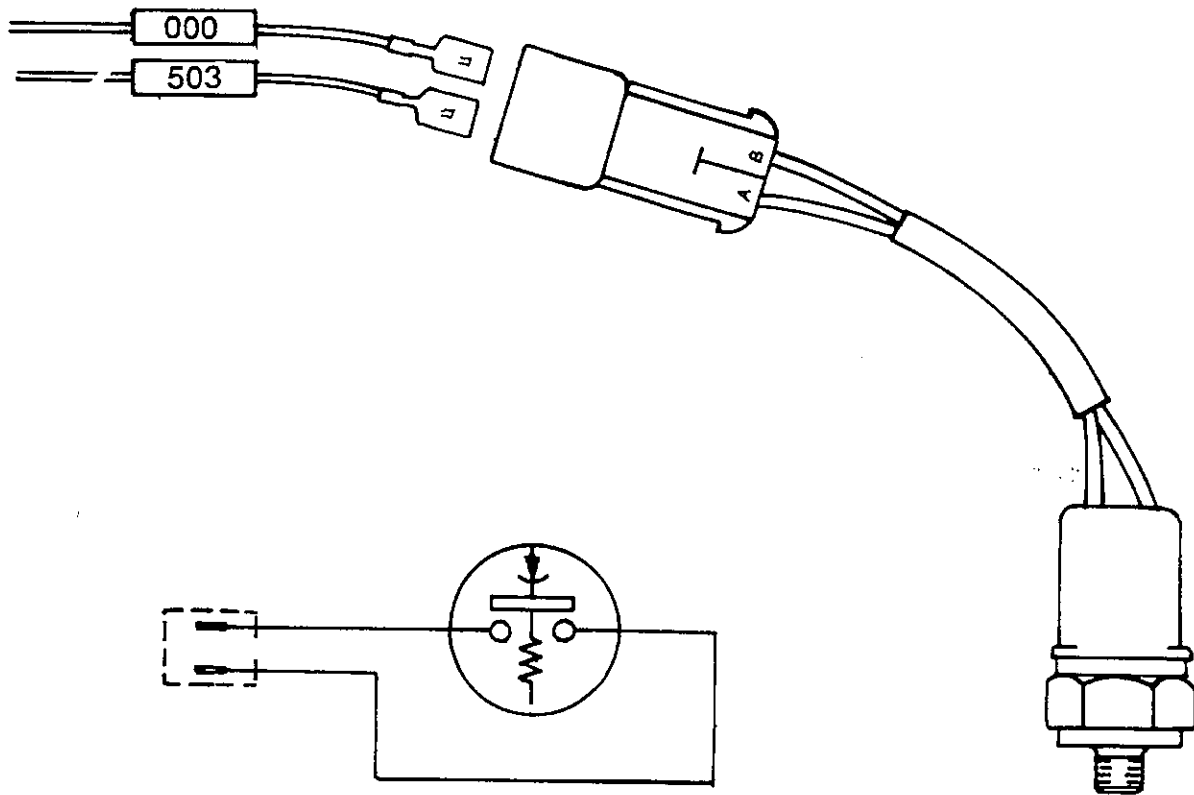
T-100024

HOUR METER



T-85998

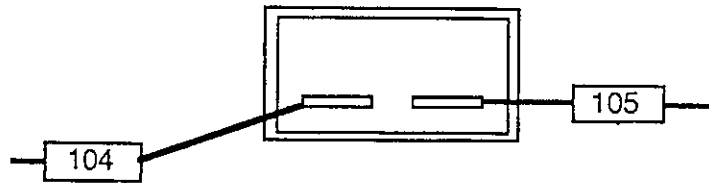
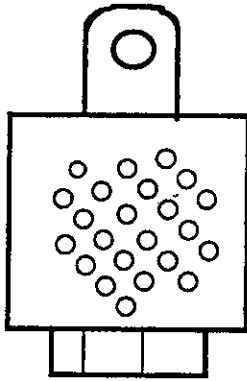
ENGINE OIL PRESSURE SWITCH



T-100017

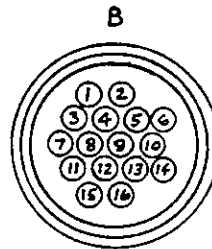
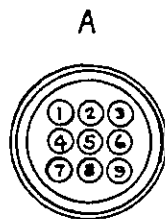
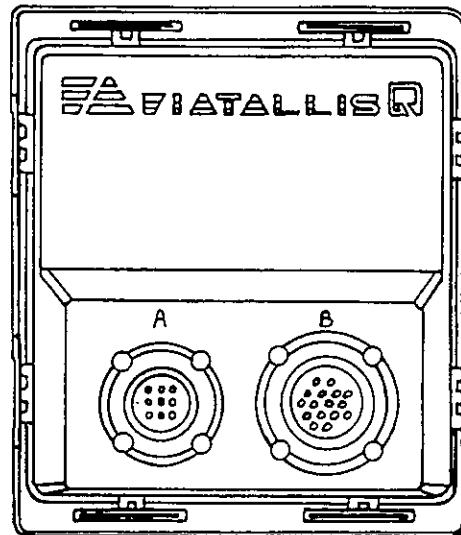
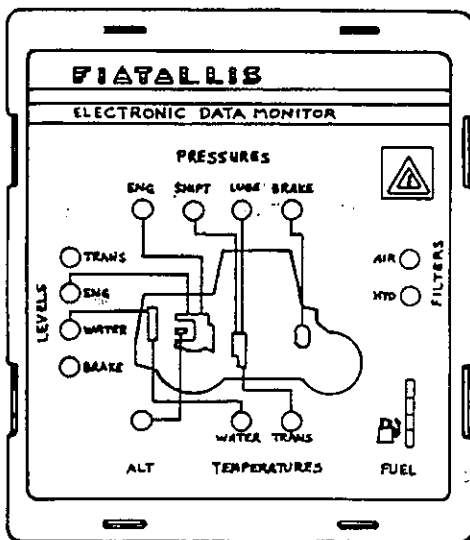
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

BUZZER UNIT



T-85972

ELECTRONIC DATA MONITOR (Connection "A")



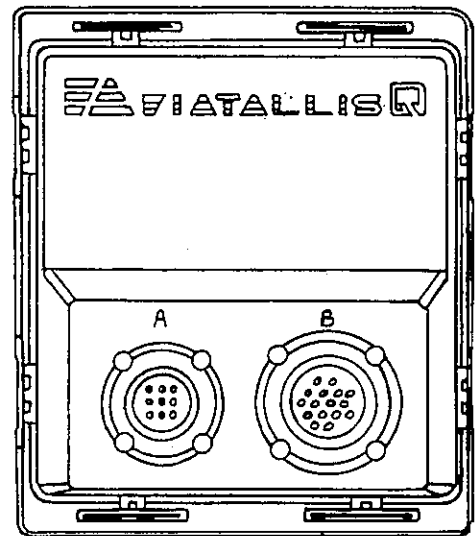
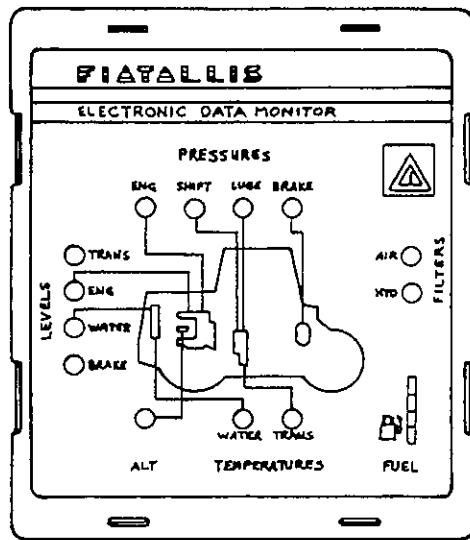
T-85993

POSITION#	ITEM#	WIRE#
1.		581
2.		589
3.		693 (Prior to units S/N 611354)
4.		569
5.		520
6.		888
7.		555
8.		557
9.		

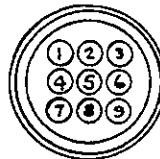
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

ELECTRONIC DATA MONITOR

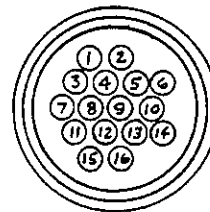
(Connection "B")



A



B



T-85993

POSITION # ITEM # WIRE #

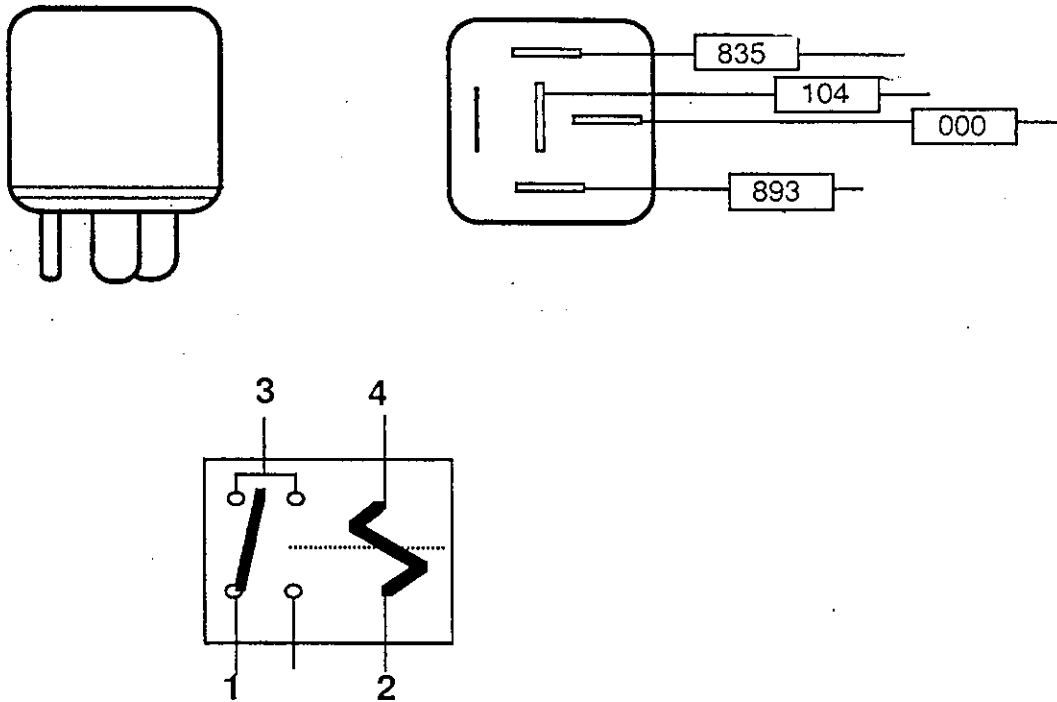
1.		887
2.		000
3.		104
4.		559
5.		661
6.		105
7.		528
8.		637
9.		503
10.		580
11.		871
12.		663
13.		613
14.		
15.		
16.		

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

Added 7/89

7-66

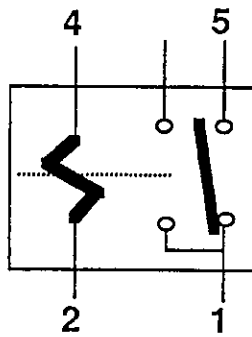
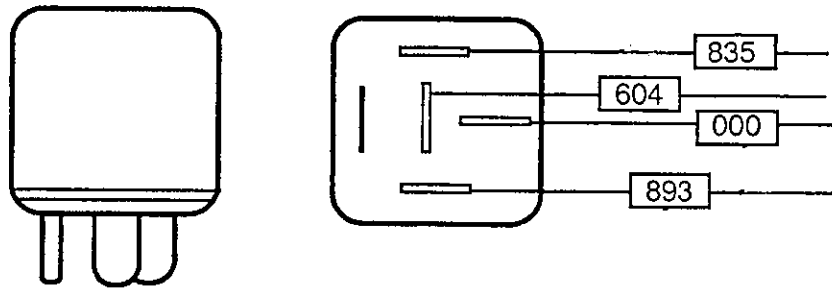
EMERGENCY STEERING BUZZER RELAY



T-85973

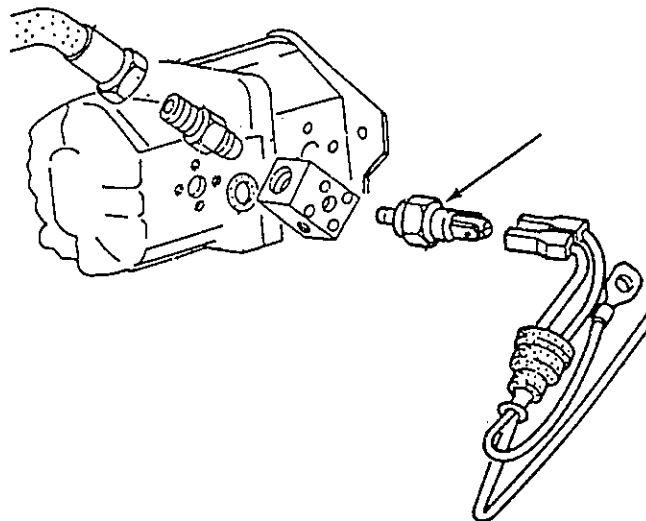
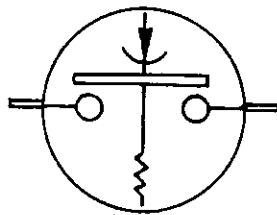
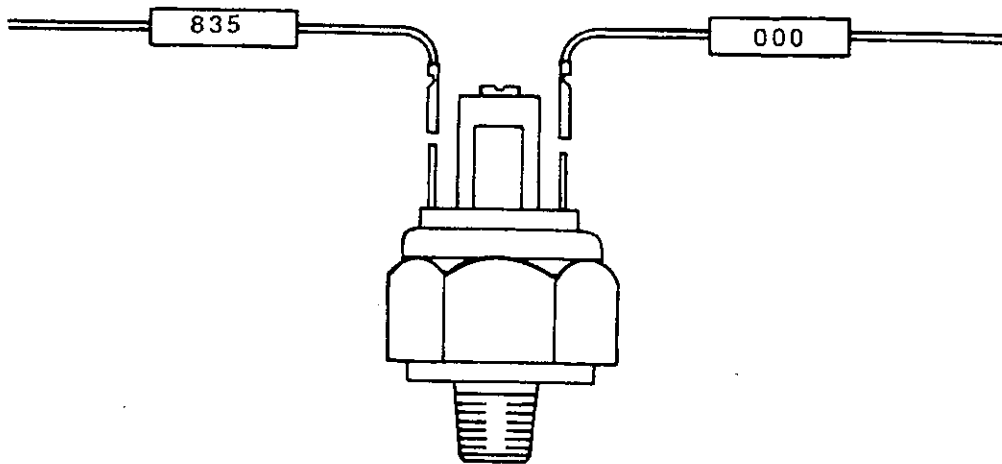
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

EMERGENCY STEERING PUMP PRESSURE SWITCH RELAY



T-85975

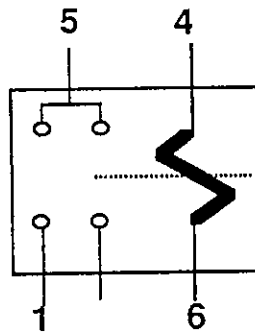
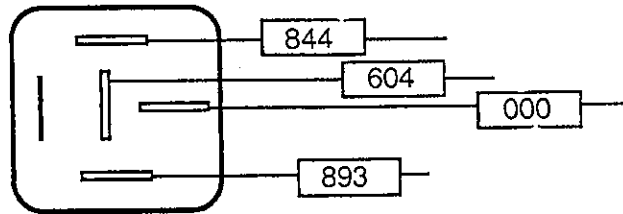
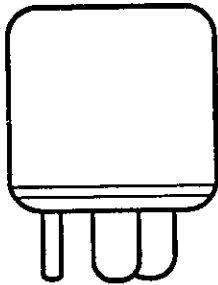
EMERGENCY STEERING PUMP PRESSURE SWITCH



T-85979

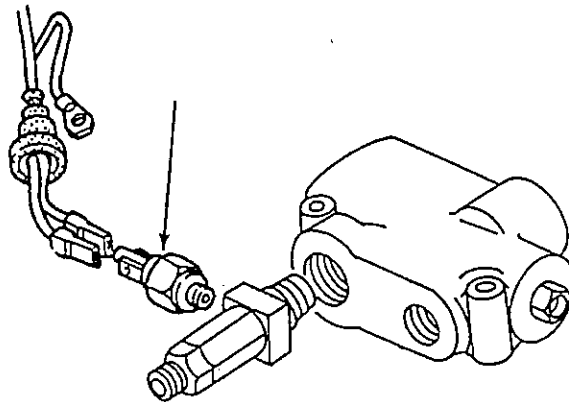
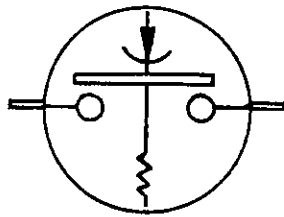
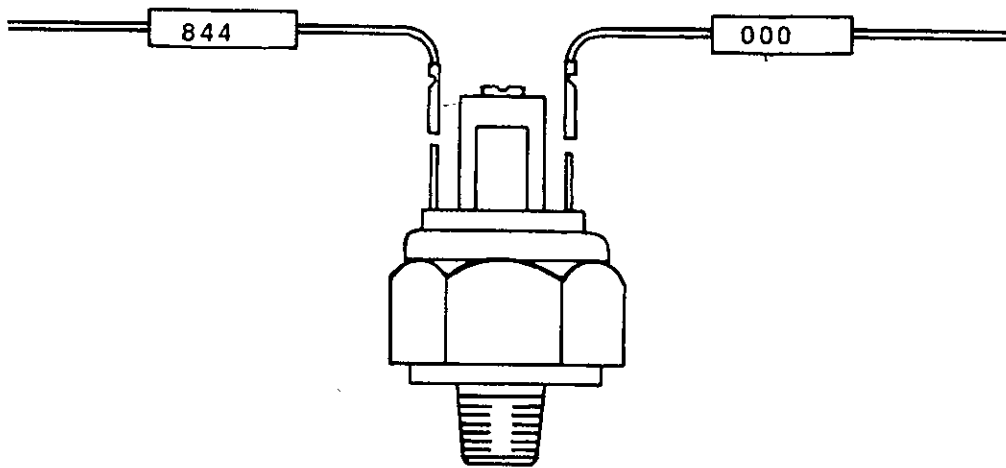
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

EMERGENCY STEERING FLOW VALVE PRESSURE SWITCH RELAY



T-85979

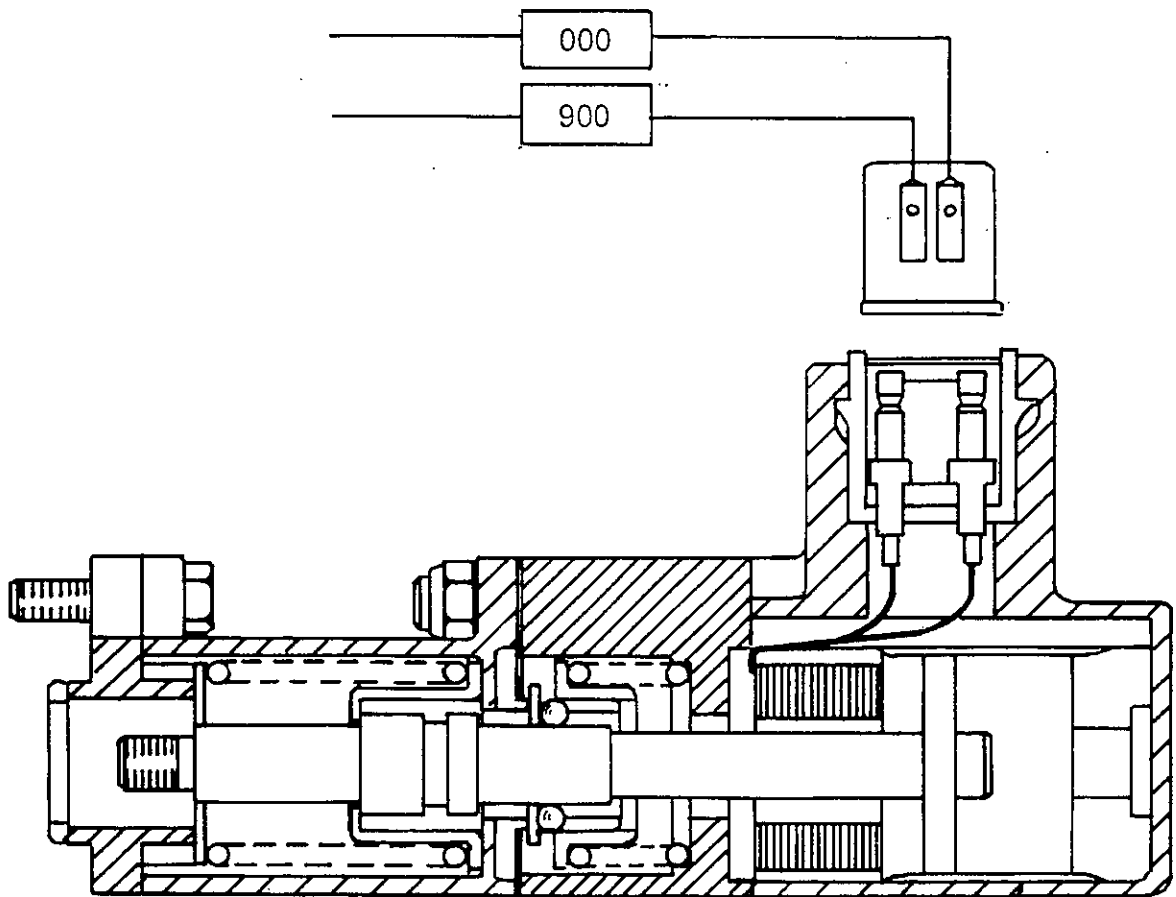
EMERGENCY STEERING FLOW VALVE PRESSURE SWITCH



T-85979

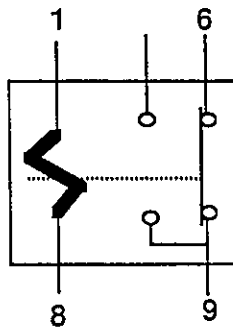
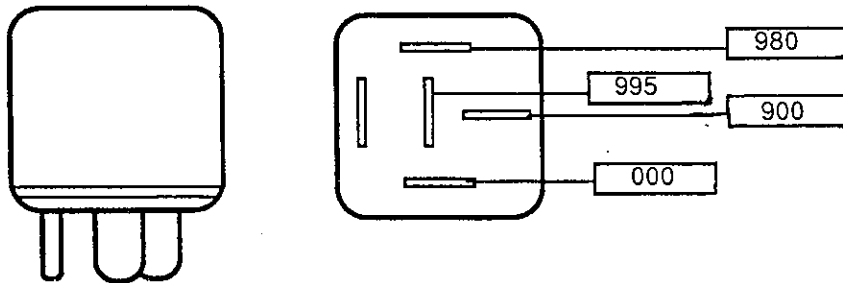
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

BOOM KICK-OUT VALVE SWITCH



T-100009

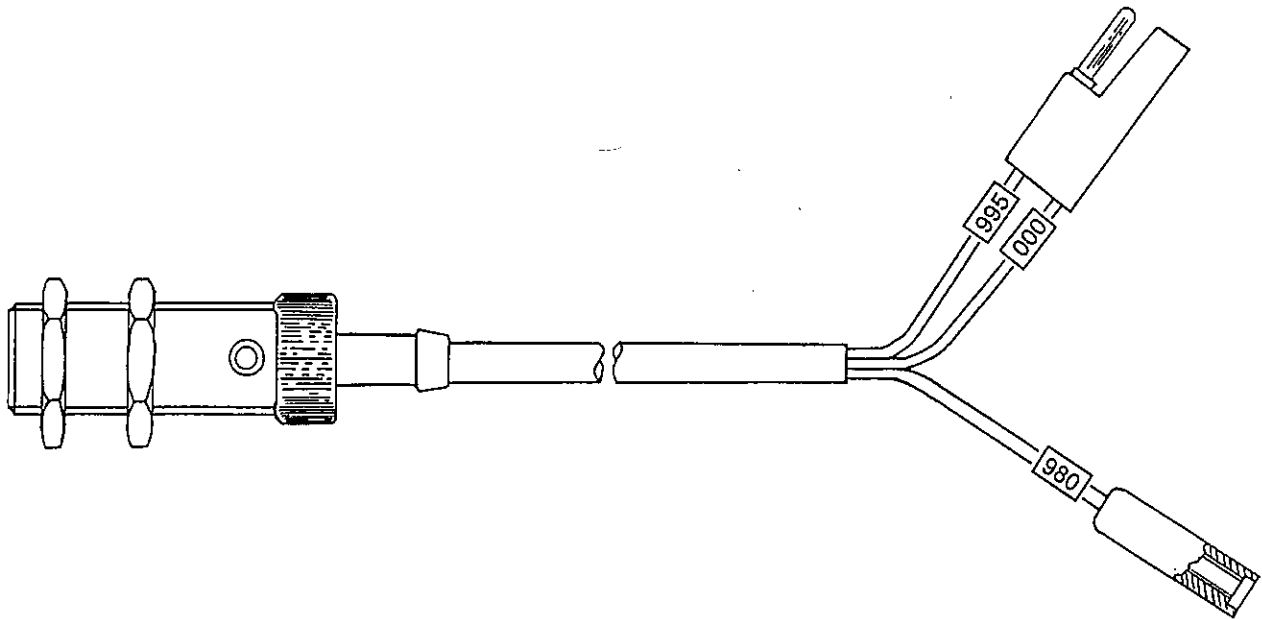
BOOM KICK-OUT RELAY



T-85974

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

BOOM KICK-OUT PICKUP SWITCH

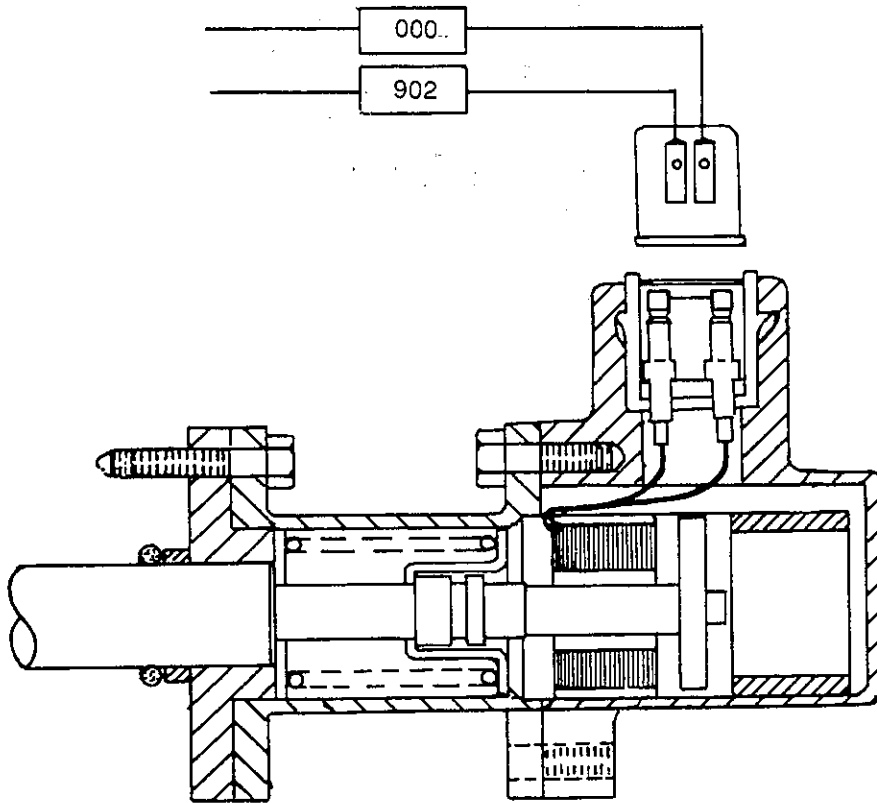


WIRE#	COLOR CODE
995	BROWN
000	BLUE
980	BLACK

T-100010

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

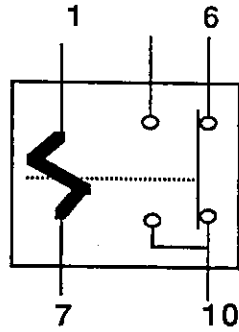
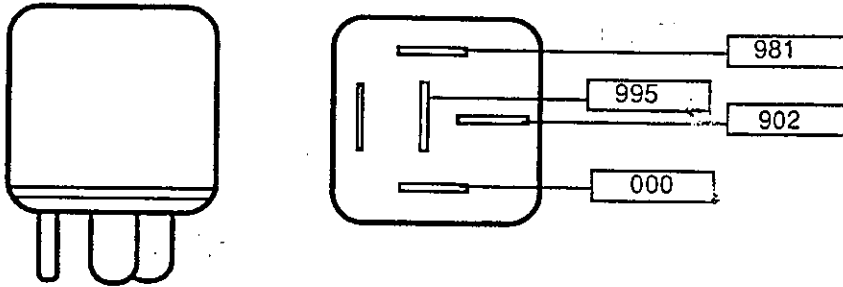
BUCKET POSITIONER VALVE SWITCH



T-100008

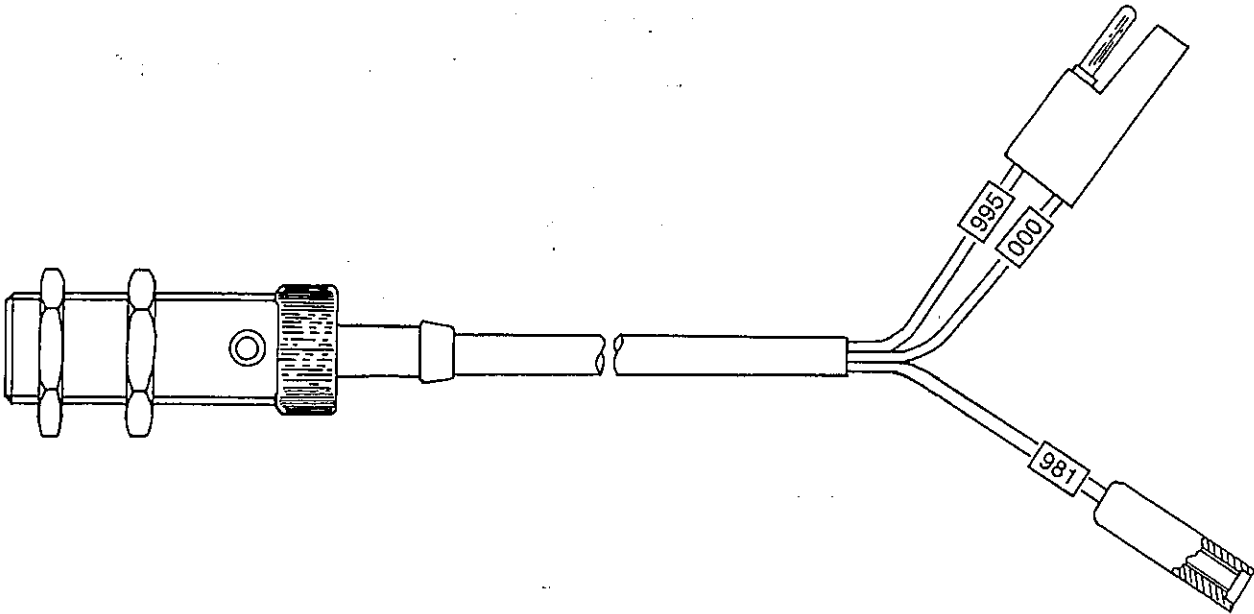
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

BUCKET KICK-OUT RELAY



T-85974

BUCKET KICK-OUT PICKUP SWITCH

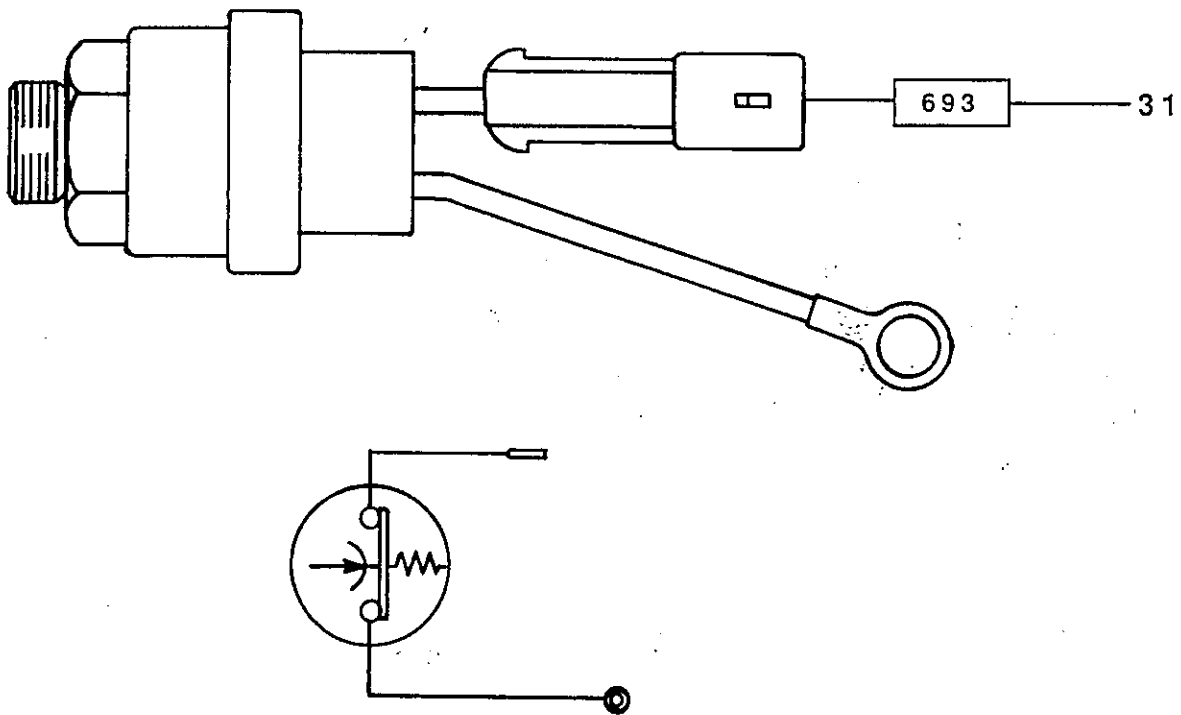


WIRE#	COLOR CODE
995	BROWN
000	BLUE
981	BLACK

T-100010

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

TRANSMISSION LUBE OIL PRESSURE SWITCH



T-100027

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

**REMOVE THIS PAGE AND
INSERT ALL PAGES UNTIL
THE NEXT BLACK EDGED
PAGE APPEARS UNDER
SECTION 8**

SECTION 8 CAB

TABLE OF CONTENTS

TOPIC	TITLE	PAGE
8.1	GENERAL DESCRIPTION	8-1
8.2	TROUBLESHOOTING.....	8-3
8.3	TESTING SYSTEMS.....	8-5
8.4	REPAIR PROCEDURES.....	8-7
8.4.1	Cab Removal.....	8-7
8.4.2	Cab Installation.....	8-21
8.4.3	Cab Disassembly and Assembly.....	8-35
8.4.3.1	Seat Assembly.....	8-35
8.4.3.2	Inside Panels and Headliner.....	8-36
8.4.3.3	Ashtray, Cigarette Lighter and Coat Hook.....	8-40
8.4.3.4	Mirror and Sun Visor.....	8-40
8.4.3.5	Window Wipers and Washers.....	8-42
8.4.3.6	Heater and Blower Fan.....	8-45
8.4.3.7	Cab Wiring (Electrical).....	8-56
8.4.3.8	Doors.....	8-59
8.4.3.9	Cab Glass.....	8-62
8.4.3.10	Reference Drawings.....	8-67
8.5	TOOL SECTION.....	8-77
8.6	SPECIFICATIONS.....	8-79
8.6.1	Torques.....	8-79
8.6.2	Capacities.....	8-79

8.1 GENERAL DESCRIPTION



T-85390

8.1.1

Cab is certified as a roll-over protective structure (ROPS).

8.1.2

Standard features include heater, defroster, front and rear window wipers and washers, dome light, safety glass, rear view mirror, sun visor and emergency exit.

8.1.3

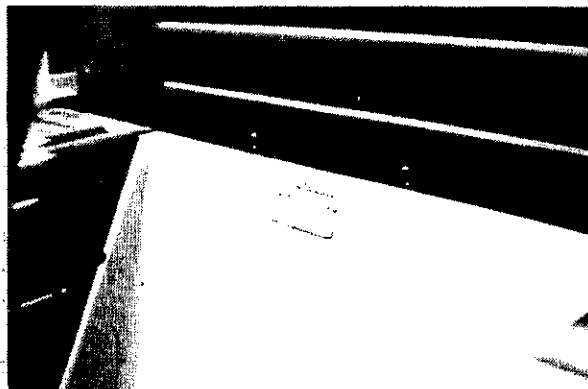
Doors are equipped with locks and keys for security. Doors can be latched in the open position. Right side door is used as an emergency exit or entrance.

8.1.4

Major components such as hydraulic tank, hydraulic pump and valve, steering control valve and cylinders, drive shafts and transmission can be removed or repaired without removing the cab.

8.1.5

Cab serial number is located on a plate mounted behind the seat assembly.



CAB S/N LOCATION

T-88081

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

MEMO

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.2 TROUBLESHOOTING

SYMPTOM	PROBABLE CAUSE	TOOLS REQUIRED	TEST	SOLUTION
Low heat (Heater)	<ol style="list-style-type: none"> 1. Air filter restricted 2. Air louvers clogged or misdirected 3. Heater control valve malfunctioning 4. Heater core clogged or leaking 5. Blower motor malfunctioning 6. Heater hoses or shut-off valves clogged 			<ol style="list-style-type: none"> 1. Clean or replace filter 2. Adjust air louvers for maximum circulation and ventilation 3a. Check control linkage 3b. Repair or replace valve 4. Repair or replace heater core 5a. Check fuse 5b. Repair or replace blower motor 6a. Turn shut-off valves "OPEN" 6b. Disconnect hoses from heater core and flush hoses to remove restriction

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.2 TROUBLESHOOTING

SYMPTOM	PROBABLE CAUSE	TOOLS REQUIRED	TEST	SOLUTION
No heat (Heater)	1. Heater control valve malfunctioning			1a. Check control linkage 1b. Repair or replace valve
	2. Blower motor malfunctioning			2a. Check fuse 2b. Repair or replace blower motor
	3. Heater core clogged or leaking			3. Repair or replace heater core
	4. Heater hoses or shut-off valves clogged			4a. Turn shut-off valves "OPEN" 4b. Disconnect hoses from heater core and flush hoses to remove restriction
	5. No hot water from engine			5. Correct engine problem

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.3 TESTING SYSTEMS

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.3 TESTING SYSTEMS

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

8.4.1 CAB REMOVAL

8.4.1.1

Position loader on a level surface and block the tires securely to prevent loader from moving.



WARNING

Do not work under or near unblocked or unsupported linkage, parts or machine.

8.4.1.2

Turn electrical master switch to the "OFF" position.



WARNING

Always turn the master switch to the off position before cleaning, repairing, servicing or parking the machine to prevent injury.

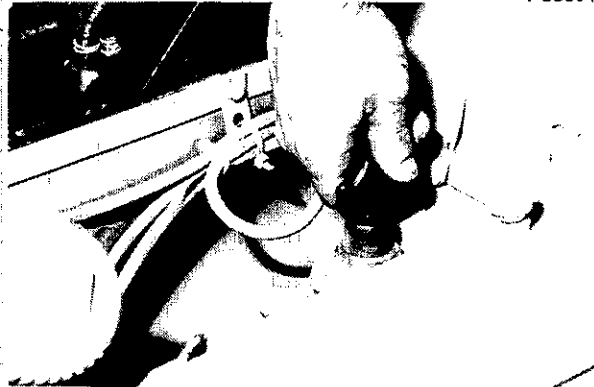
8.4.1.3

Place a warning tag "MACHINE INOPERATIVE", on the steering wheel or in plain view of all personnel.

8.4.1.4

Remove hood.

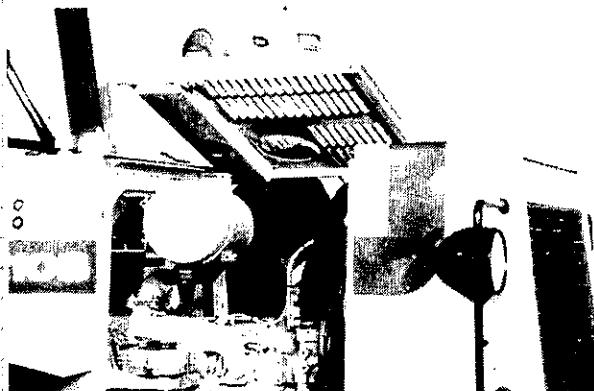
T-85504



T-88001



T-85495



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

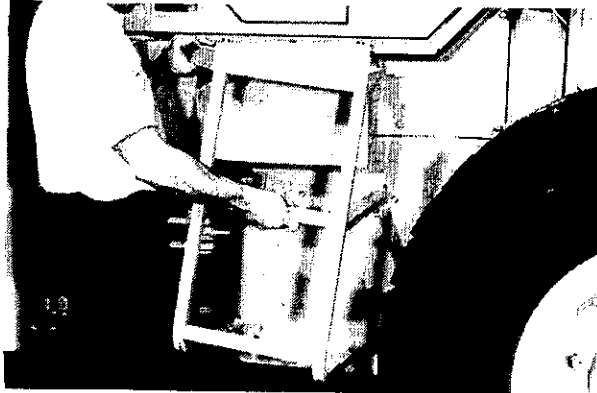
T-85496



8.4.1.5

Remove rear fenders.

T-88002



8.4.1.6

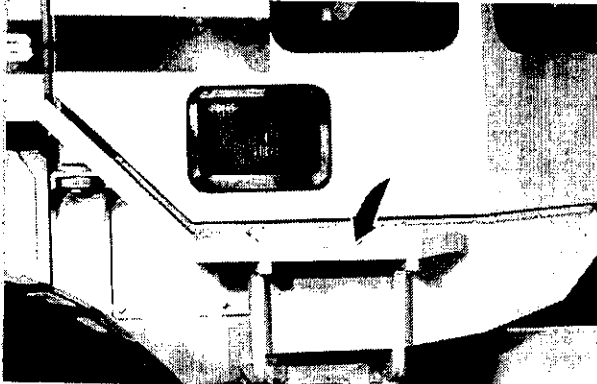
Remove left side ladder.



WARNING

When servicing or maintenance requires access to areas that cannot be reached from the ground, use a ladder or step platform that meets local or national requirements to reach the service point. Perform all service or maintenance carefully.

T-88082



8.4.1.7

Remove right side platform.

T-88003



8.4.1.8

Remove cab corner panels.

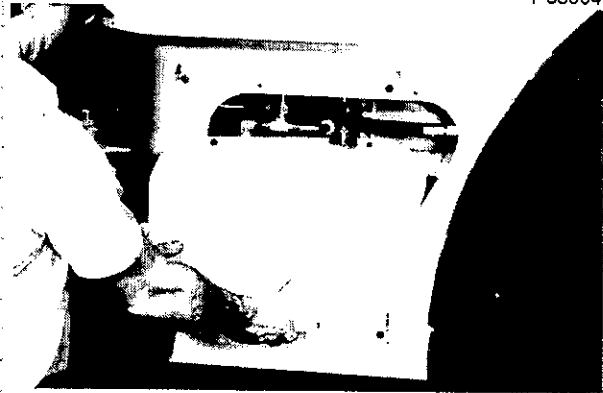
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

8.4.1.9

Remove side access panels.

T-88004



8.4.1.10

Remove skirting around bottom of cab.

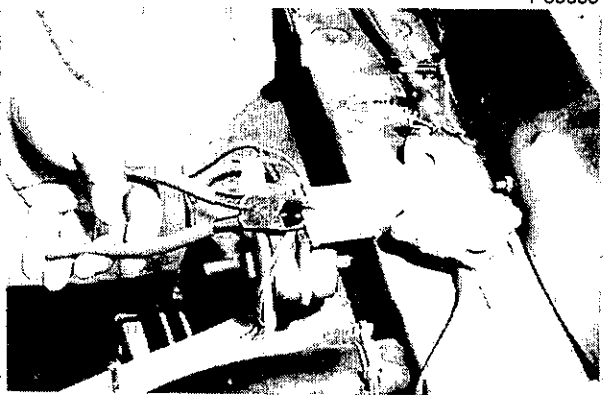
T-88005



8.4.1.11

Cut ties attaching wires to radiator sensor.

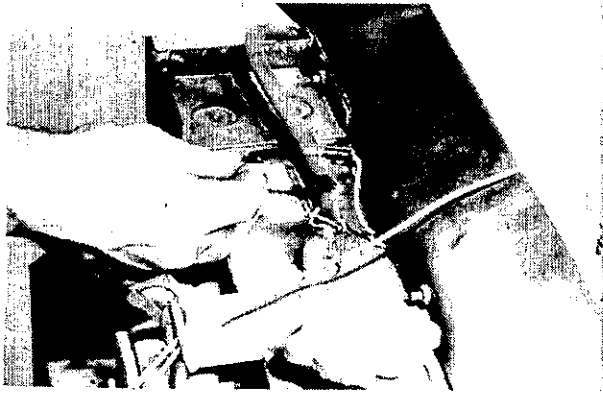
T-85533



8.4.1.12

Disconnect and tag wires to radiator level sensor.

T-85532



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

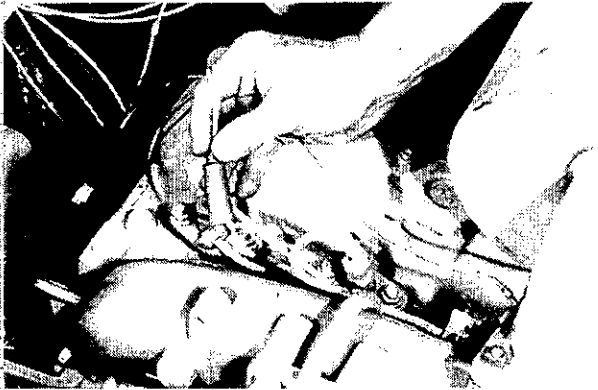
T-85499



8.4.1.13

Disconnect and tag wire to air cleaner restriction sensor.

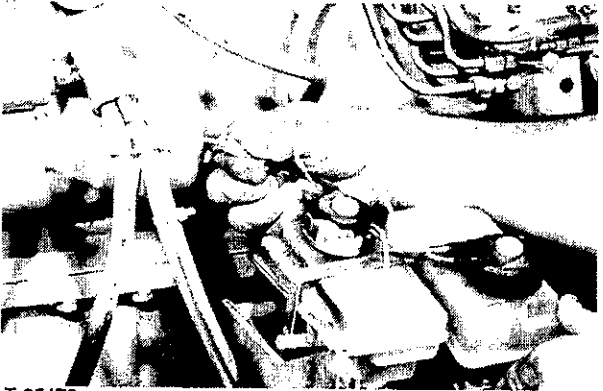
T-85524



8.4.1.14

Disconnect and tag wire from sensor in top of engine cylinder head.

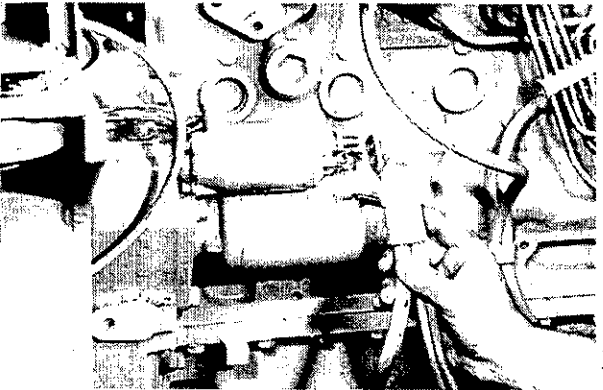
T-85471



8.4.1.15

Disconnect and tag wire to brake reservoir.

T-85470



8.4.1.16

Disconnect and tag starter wires.

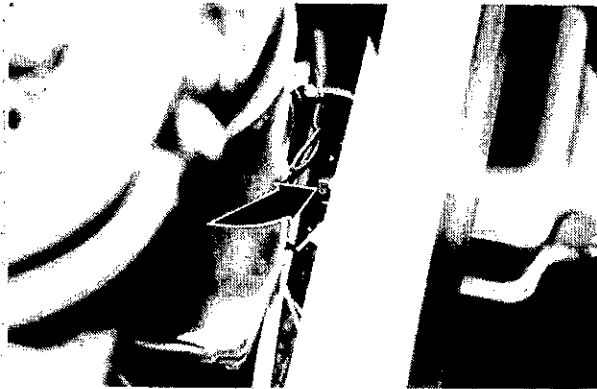
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

8.4.1.17

Disconnect and tag ground wire from sensor in side of block near heat exchanger.

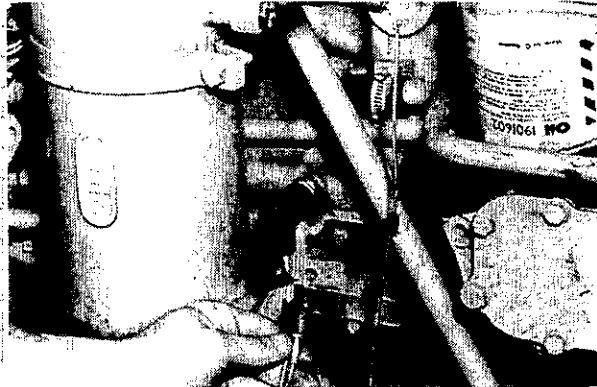
T-88006



8.4.1.18

Disconnect and tag wire to sensor in side of block near heat exchanger.

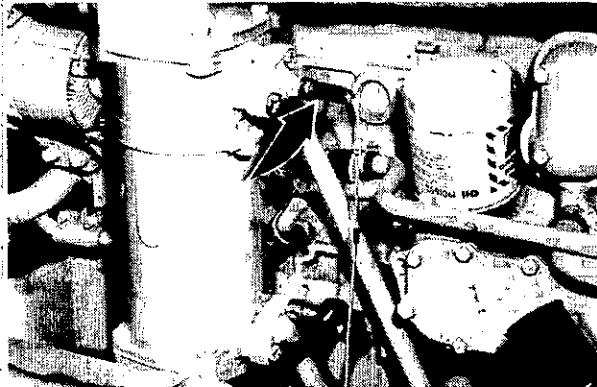
T-85467



8.4.1.19

Disconnect and tag wire from heat exchanger sensor.

T-85468



8.4.1.20

Disconnect and tag wires to alternator.

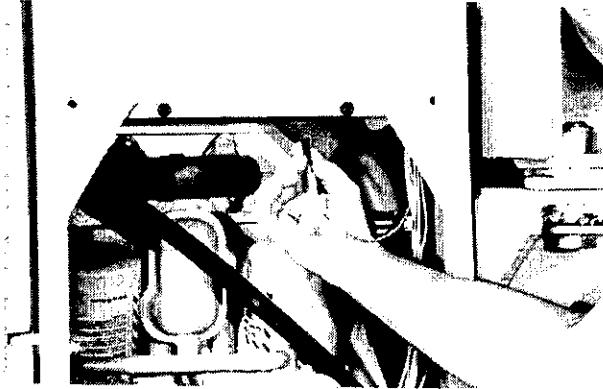
T-85466



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

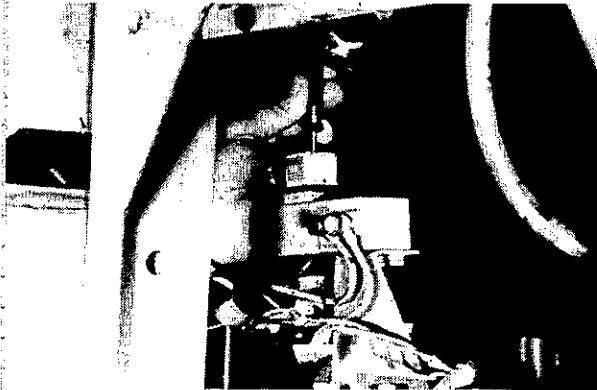
T-88007



8.4.1.21

Disconnect and tag wire to sensor in bottom of hydraulic tank.

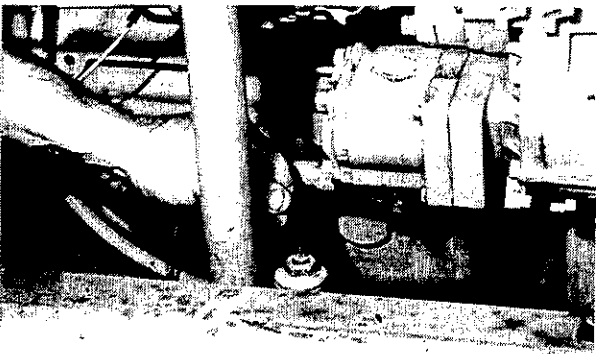
T-88008



8.4.1.22

Remove screw and disconnect and tag wire at clutch cut-off block.

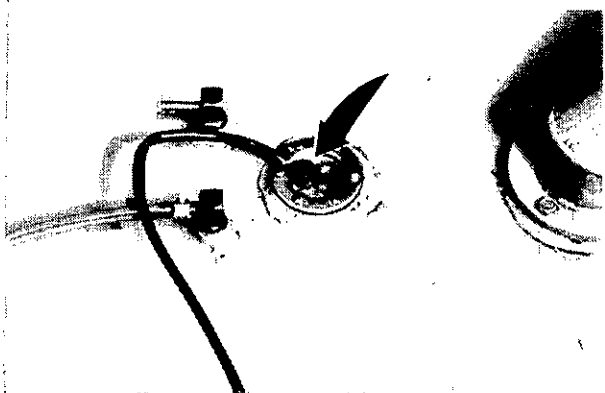
T-85476



8.4.1.23

Disconnect and tag sensor wire to engine oil filler tube.

T-88009



8.4.1.24

Disconnect and tag wire to fuel tank level gauge.

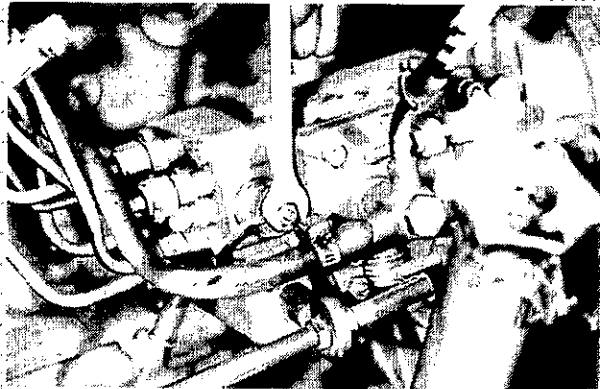
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

8.4.1.25

Disconnect and tag wire to fuel injection pump.

T-85477



8.4.1.26

Disconnect and tag wires to clutch cut-off pressure switch. (tubes may have to be disconnected to free wires or cut the boot between the wires to separate the wires)

T-88010



8.4.1.27

Disconnect ground strap from cab to frame.

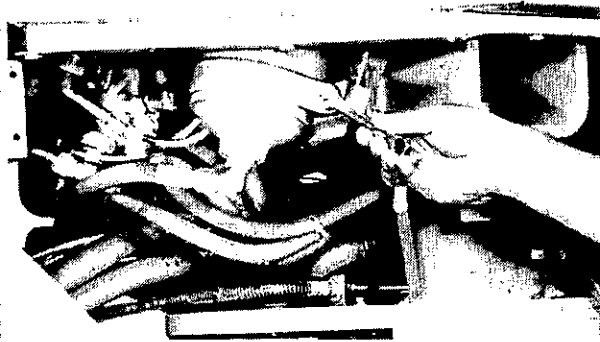
T-88011



8.4.1.28

Remove left side brake accumulator.

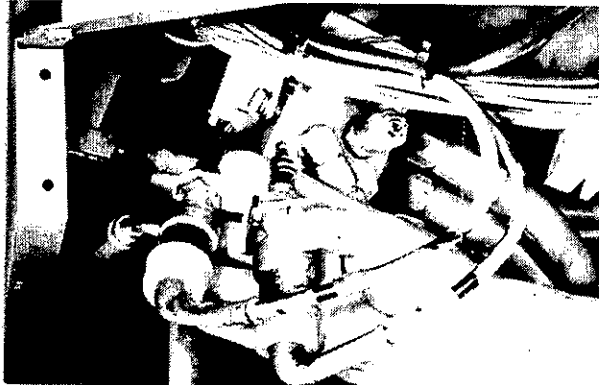
T-88012



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

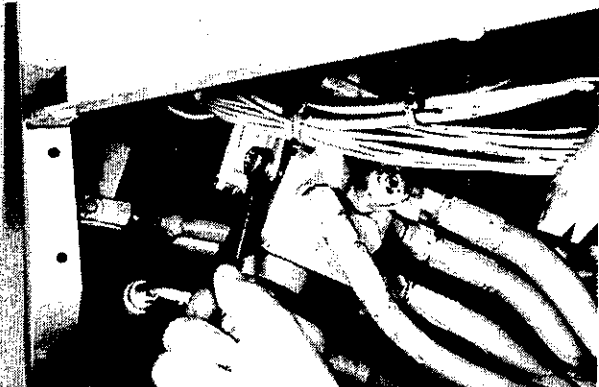
T-88013



8.4.1.29

Remove right and left brake light switches.

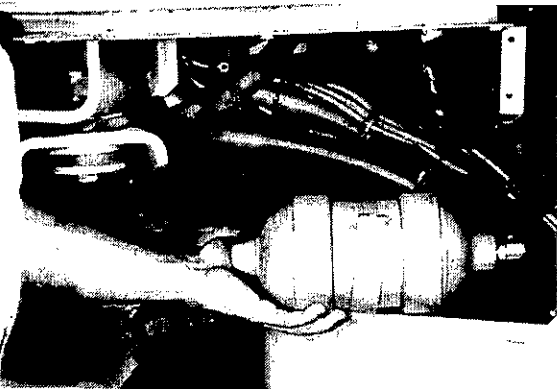
T-88014



8.4.1.30

Remove capscrews attaching brake valve to cab and remove valve.

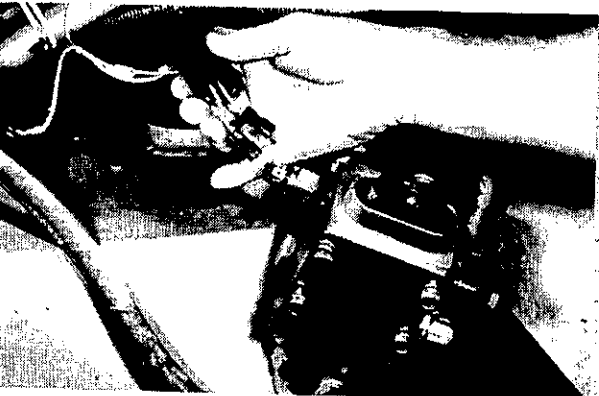
T-88015



8.4.1.31

Remove right side brake accumulator.

T-88016



8.4.1.32

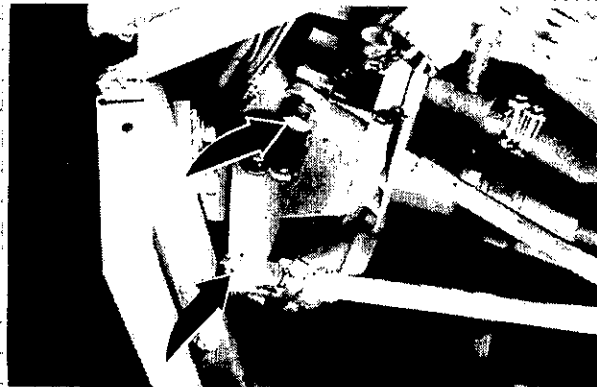
Disconnect and tag wire to sensor switch on brake valve.

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

8.4.1.33

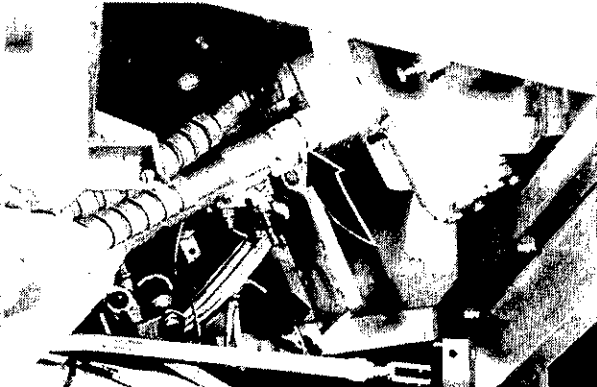
Disconnect and remove two rods from transmission shift linkage.



T-88017

8.4.1.34

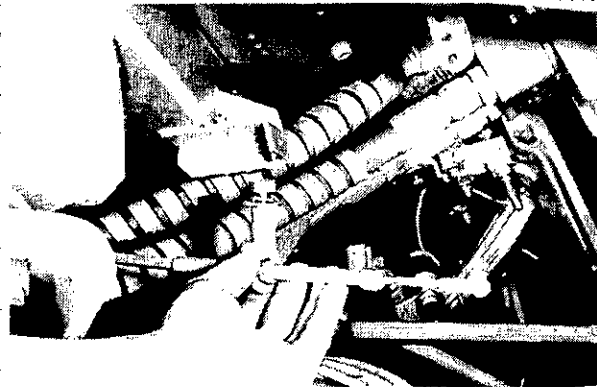
Disconnect and tag four hoses at steering control valve.



T-88018

8.4.1.35

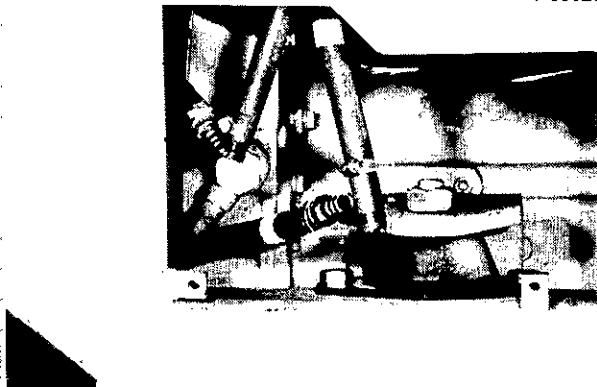
Disconnect throttle linkage.



T-88019

8.4.1.36

Shut off valves and disconnect and tag heater hoses.

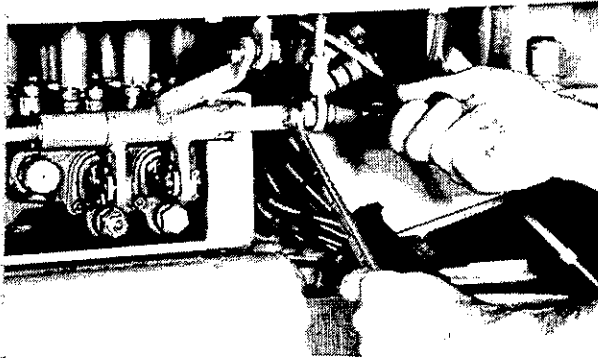


T-88020

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

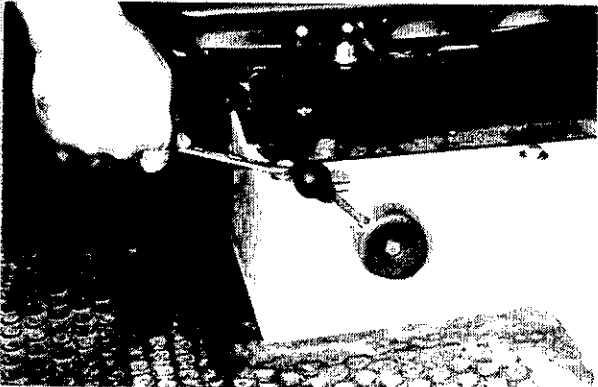
T-88021



8.4.1.37

Disconnect and remove implement control valve linkage.

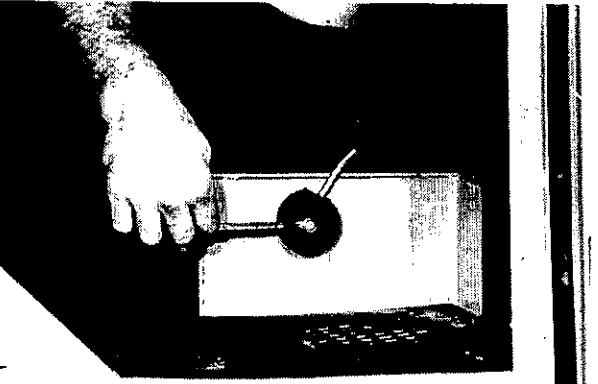
T-88022



8.4.1.38

Remove seat and suspension assembly.

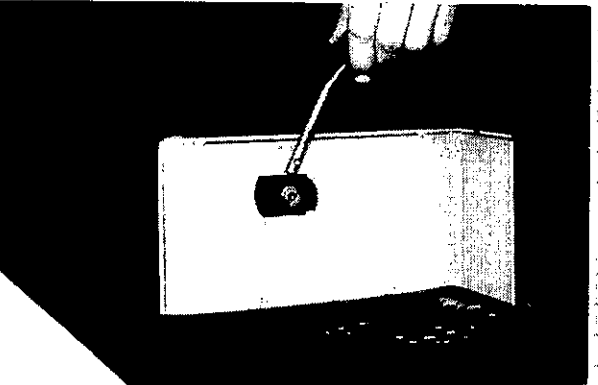
T-88023



8.4.1.39

Remove parking brake control valve cover and setscrew.

T-88024



8.4.1.40

Remove parking brake control valve lever.

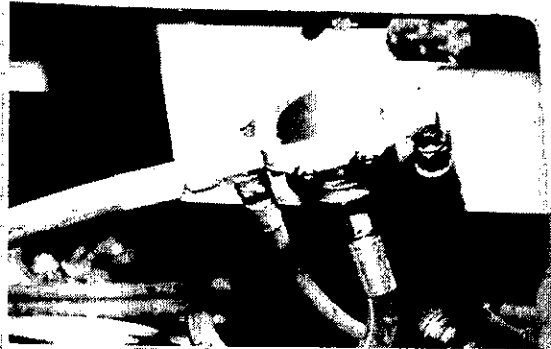
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

T-88025

8.4.1.41

Remove screws attaching parking brake control valve and remove valve.



T-88026

8.4.1.42

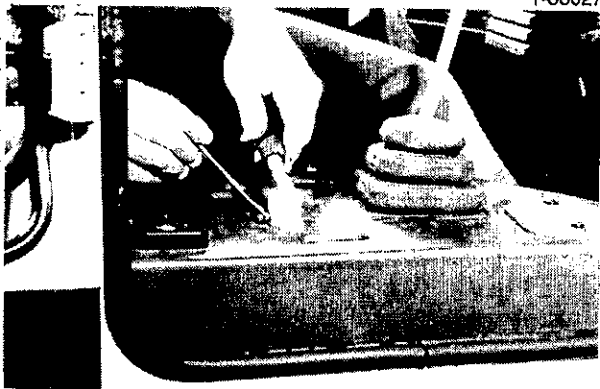
Remove floor mat.



T-88027

8.4.1.43

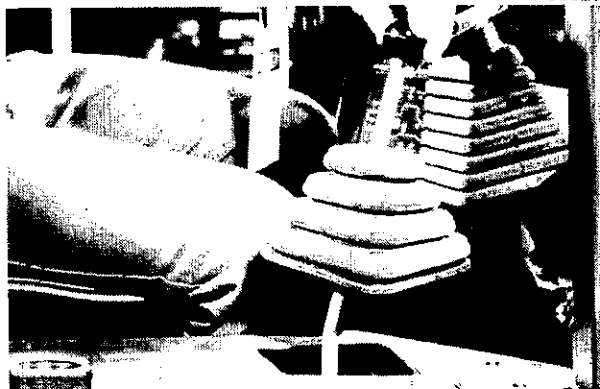
Loosen setscrew and remove hydraulic control lever lock handle.



T-88028

8.4.1.44

Remove hydraulic control lever knob and boot.



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

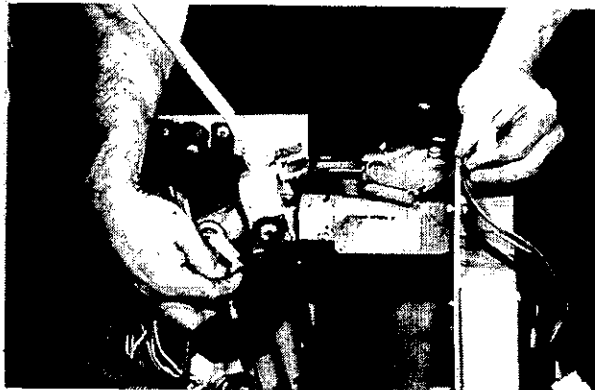
T-88029



8.4.1.45

Remove right front cab corner panel.

T-88030



8.4.1.46

Remove screws attaching right side console panel. Disconnect and tag wires to hour meter and cigarette lighter. Remove right side console panel.

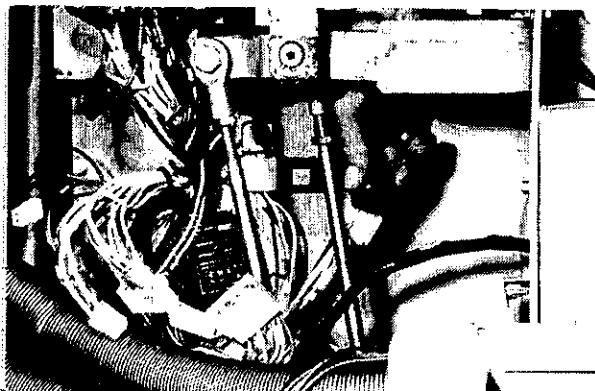
T-88031



8.4.1.47

Disconnect and tag wiring harness at two locations.

T-88032



8.4.1.48

Disconnect two relays.

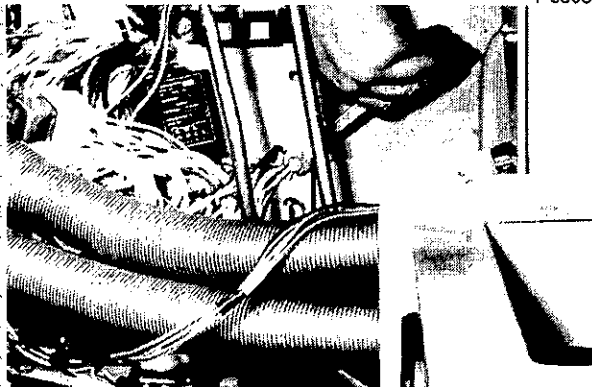
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

8.4.1.49

Disconnect ground wires.

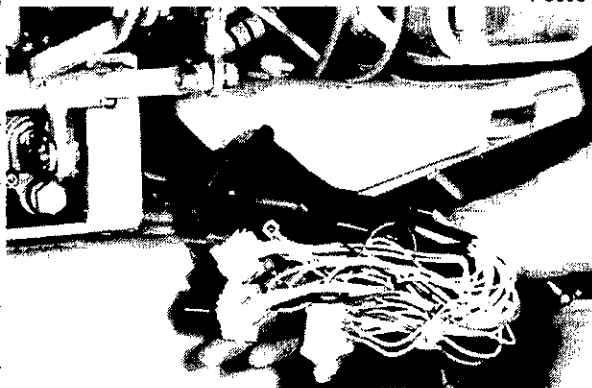
T-88033



8.4.1.50

Pull wiring harness and boot through floor of cab to outside of cab.

T-88034



8.4.1.51

Cut and tag hose for rear windshield washer and disconnect hose for front windshield washer.

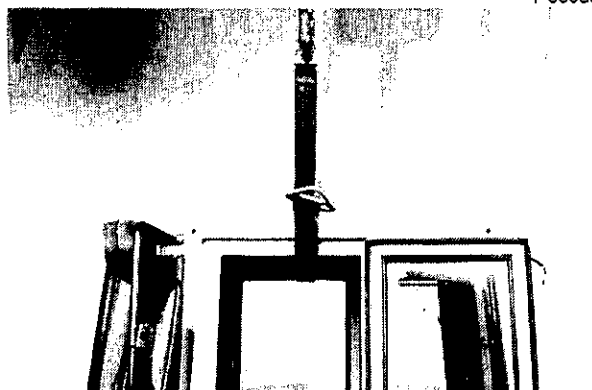
T-88034



8.4.1.52

Position a lifting device of proper capacity above the cab and attach a strap through the cab door and out the side window. *(May want to install 4 lifting eyes to the four holes at top of cab)*

T-88035



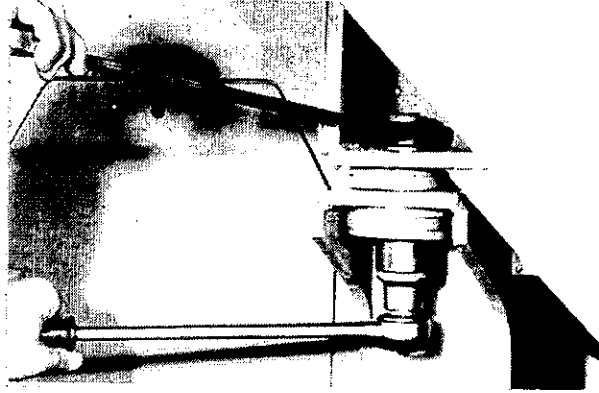
WARNING

Lift and handle all heavy parts with a lifting device of proper capacity. Be sure parts are supported by proper slings and hooks. Use lifting eyes if provided. Watch out for people in the vicinity.

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

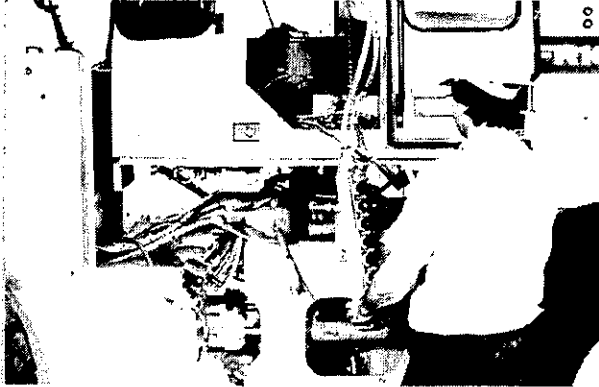
T-88036



8.4.1.53

Disconnect and remove the four mounting cap screws and locknuts attaching the cab to the frame.

T-88037



8.4.1.54

Lift the cab from the frame and move aside for further disassembly.

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

8.4.2 CAB INSTALLATION

8.4.2.1

Position a lifting device of proper capacity above the cab and attach a strap through the cab door and out the side window. *(May want to install 4 lifting eyes to the four holes at top of cab)*



WARNING

Lift and handle all heavy parts with a lifting device of proper capacity. Be sure parts are supported by proper slings and hooks. Use lifting eyes if provided. Watch out for people in the vicinity.

8.4.2.2

Lift the cab over the loader and slowly lower it to the frame.

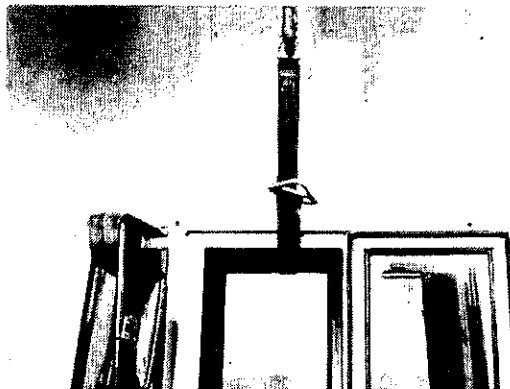
8.4.2.3

Install the four mounting capscrews and locknuts attaching the cab to the frame.

8.4.2.4

Install a connector on the hose for rear windshield washer and connect hose for front windshield washer.

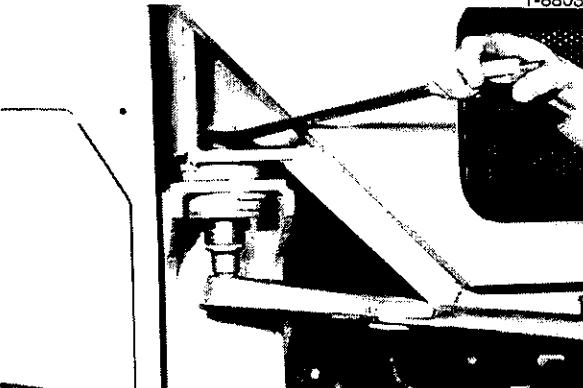
T-88035



T-88037



T-88038



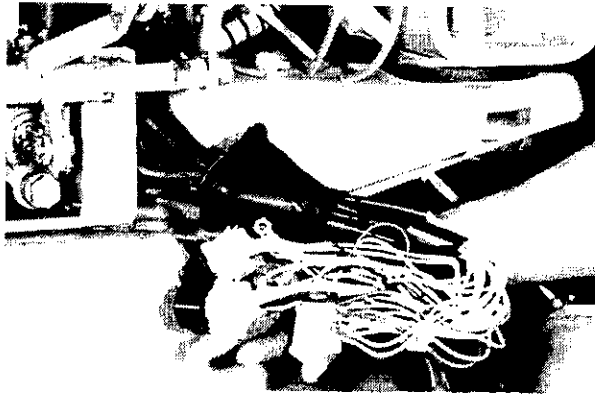
T-88034



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

T-88034



8.4.2.5

Install wiring harness and boot through floor of cab to inside of cab.

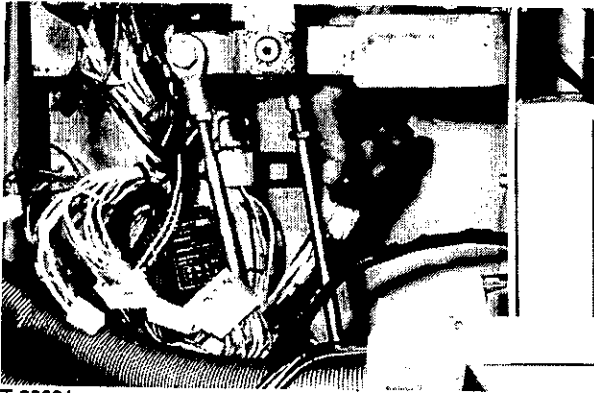
T-88033



8.4.2.6

Connect ground wires.

T-88032



8.4.2.7

Connect two relays.

T-88031



8.4.2.8

Connect wiring harness at two locations.

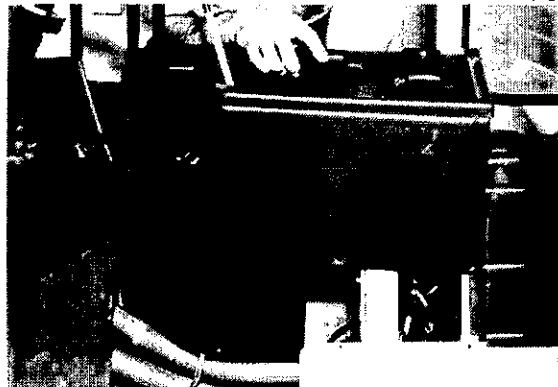
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

8.4.2.9

Install right side console panel. Connect wires to hour meter and cigarette lighter. Install screws attaching right side console panel.

T-88039



8.4.2.10

Install right front cab corner panel.

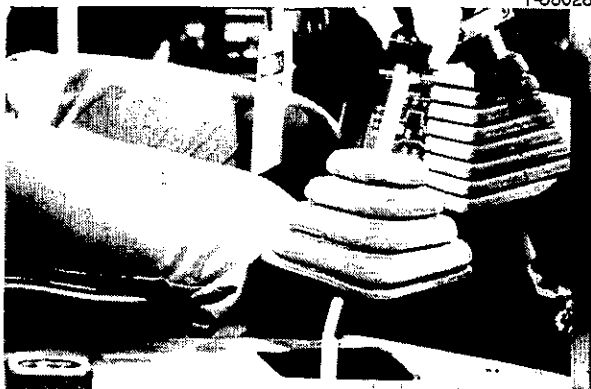
T-88029



8.4.2.11

Install hydraulic control lever knob and boot.

T-88028



8.4.2.12

Install hydraulic control lever lock handle and tighten setscrew.

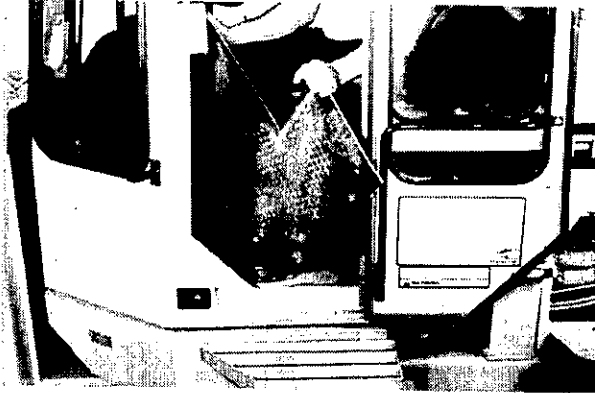
T-88027



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

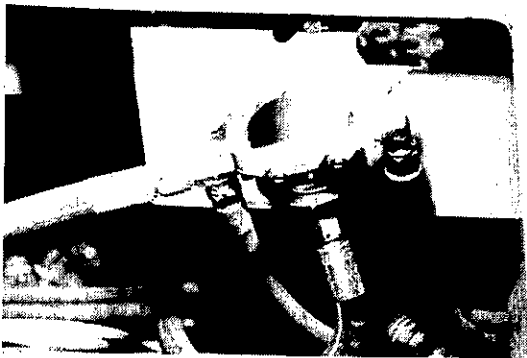
8.4 REPAIR PROCEDURES

T-88026



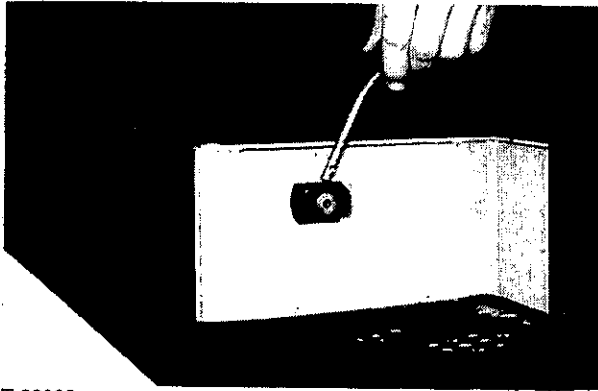
8.4.2.13
Install floor mat.

T-88025



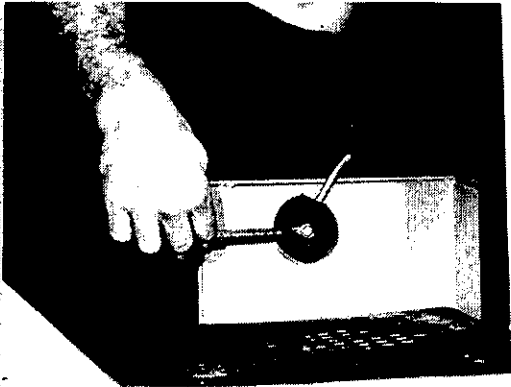
8.4.2.14
Install parking brake control valve.

T-88024



8.4.2.15
Install parking brake control valve lever.

T-88023



8.4.2.16
Install parking brake control valve cover and
setscrew.

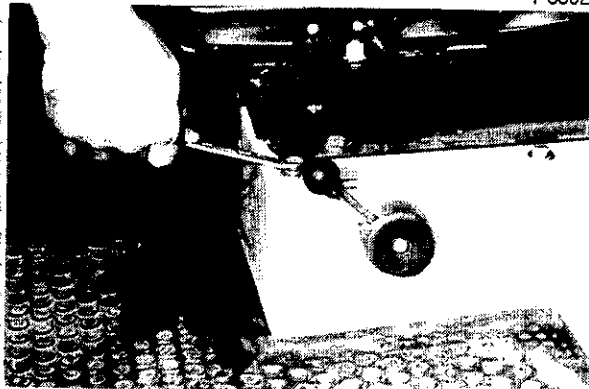
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

8.4.2.17

Install seat and suspension assembly.

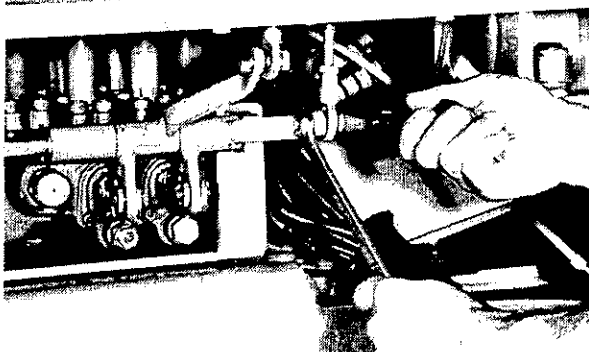
T-88022



8.4.2.18

Connect implement control valve linkage.

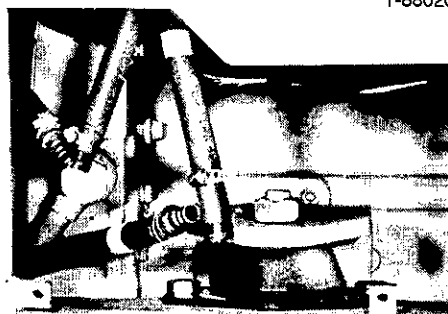
T-88021



8.4.2.19

Connect heater hoses and open valves.

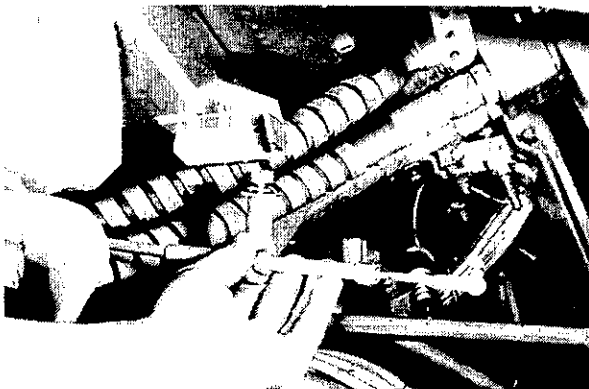
T-88020



8.4.2.20

Connect throttle linkage.

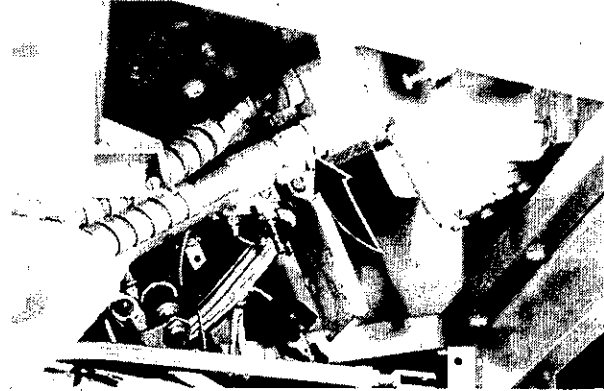
T-88019



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

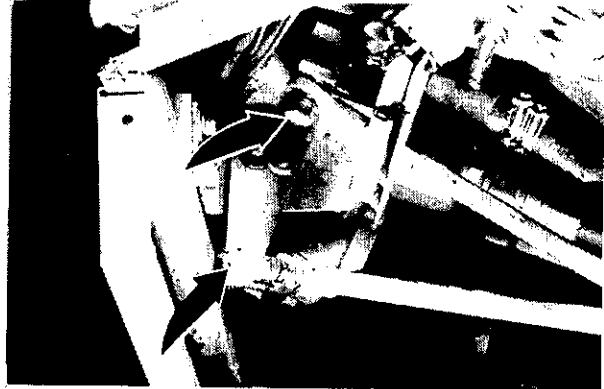
T-88018



8.4.2.21

Connect four hoses at steering control valve.

T-88017



8.4.2.22

Connect two rods to transmission shift linkage.

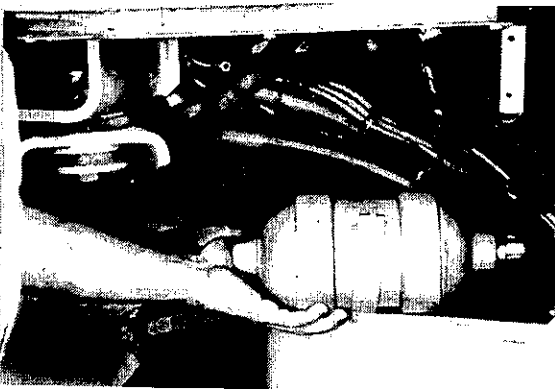
T-88016



8.4.2.23

Connect wire to sensor switch on brake valve.

T-88015



8.4.2.24

Install right side brake accumulator.

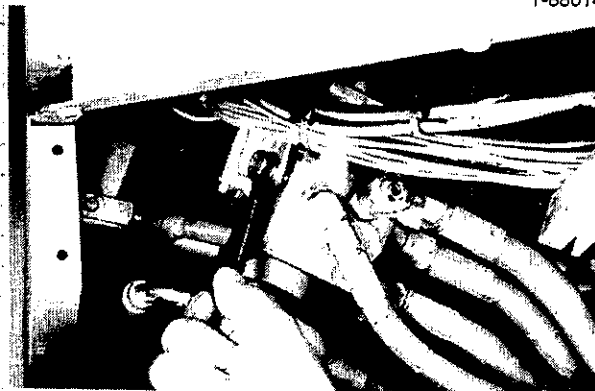
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

8.4.2.25

Install capscrews attaching brake valve to cab.

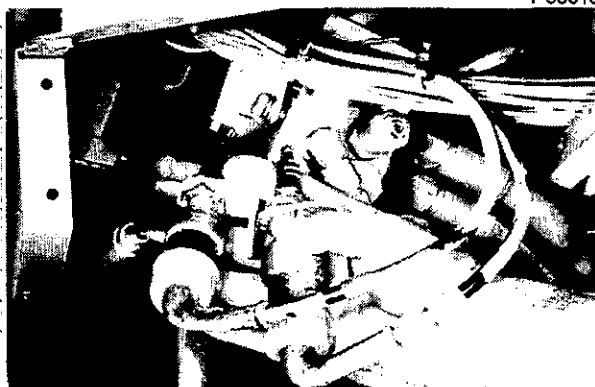
T-88014



8.4.2.26

Install right and left brake light switches.

T-88013



8.4.2.27

Install left side brake accumulator.

T-88012



8.4.2.28

Connect ground strap from cab to frame.

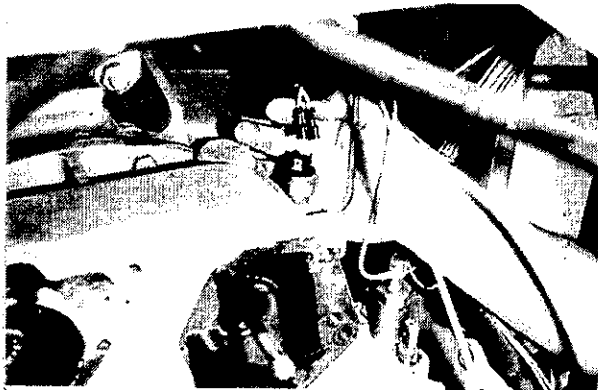
T-88011



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

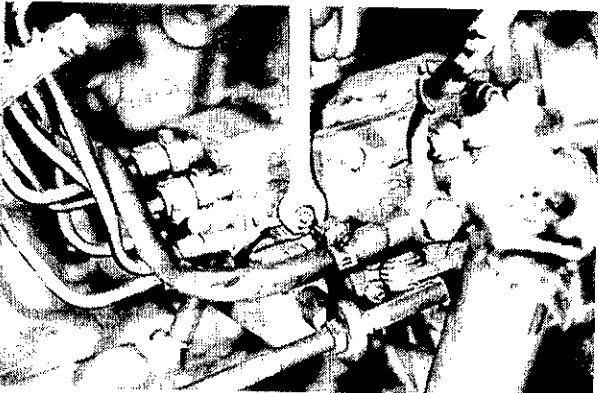
T-88010



8.4.2.29

Connect wires to clutch cut-off pressure switch. (tubes may have to be disconnected to install wires or if the boot was cut between the wires, insert wires into the boot)

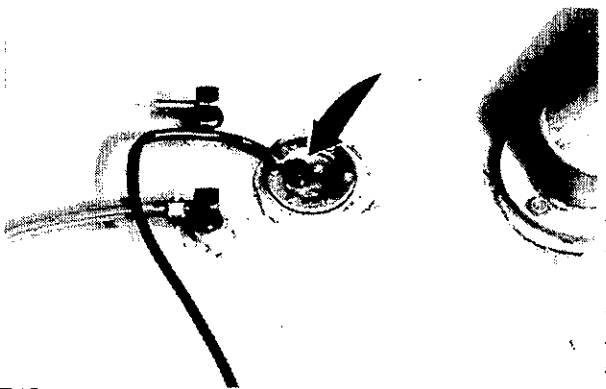
T-85477



8.4.2.30

Connect wire to fuel injection pump.

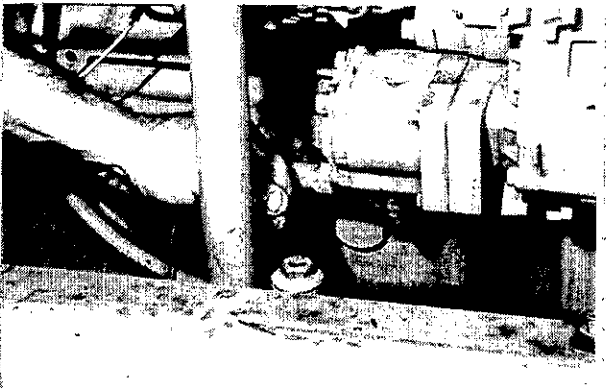
T-88009



8.4.2.31

Connect wire to fuel tank level gauge.

T-85476



8.4.2.32

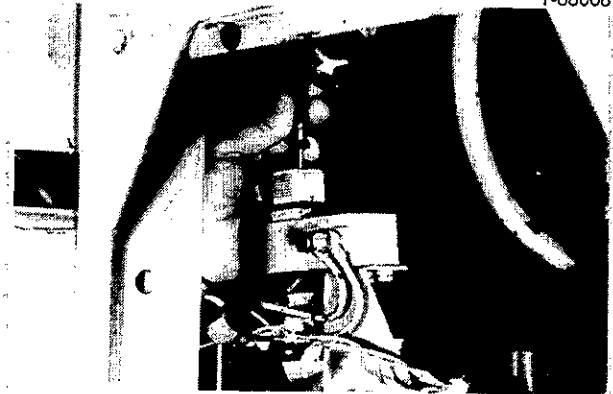
Connect sensor wire to engine oil filler tube.

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

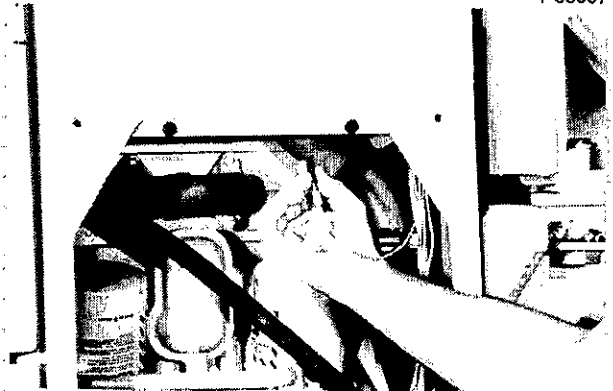
8.4.2.33

Connect wire at clutch cut-off block and tighten screw.



8.4.2.34

Connect wire to sensor in bottom of hydraulic tank.



8.4.2.35

Connect wires to alternator.



8.4.2.36

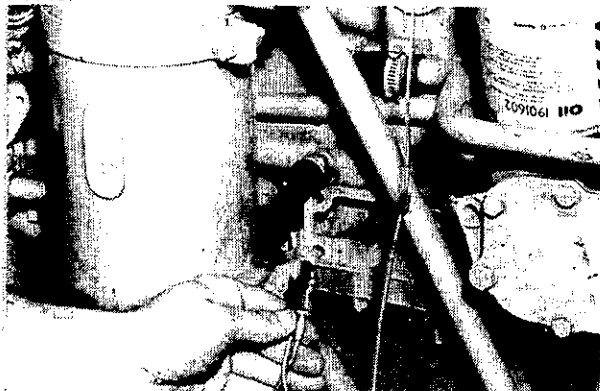
Connect wire to heat exchanger sensor.



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

T-85467



8.4.2.37

Connect wire to sensor in side of block near heat exchanger.

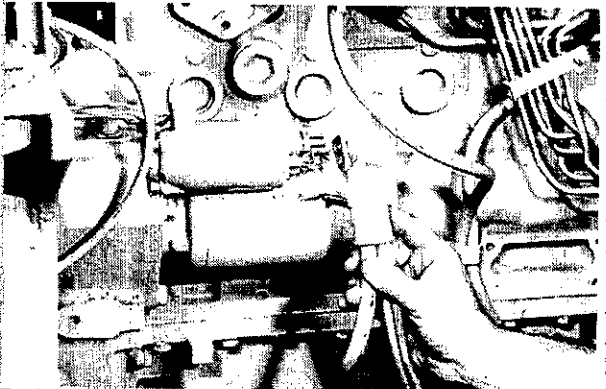
T-88006



8.4.2.38

Connect ground wire from sensor in side of block near heat exchanger.

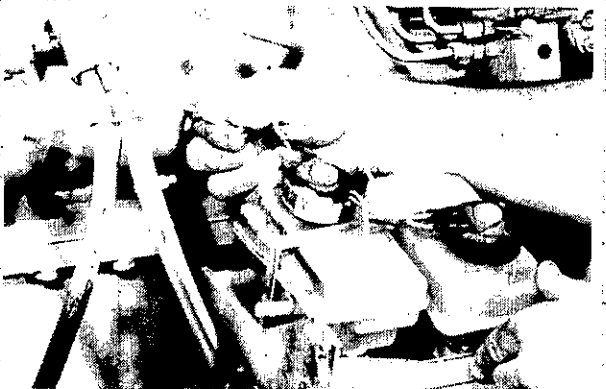
T-85470



8.4.2.39

Connect starter wires.

T-85471



8.4.2.40

Connect wire to brake reservoir.

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

8.4.2.41

Connect wire from sensor in top of engine cylinder head.

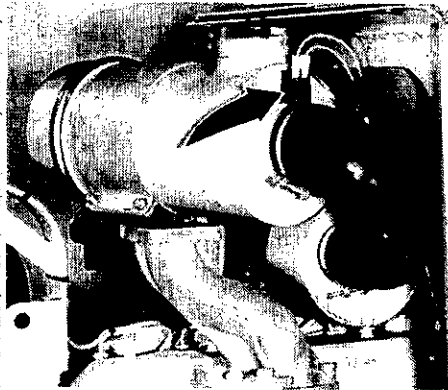
T-85524



8.4.2.42

Connect wire to air cleaner restriction sensor.

T-85499



8.4.2.43

Connect wires to radiator level sensor.

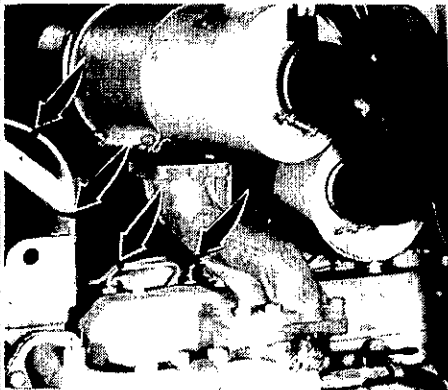
T-85532



8.4.2.44

Install ties attaching wires to radiator sensor.

T-85499



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

T-88005



8.4.2.45

Install skirting around bottom of cab.

T-88004



8.4.2.46

Install side access panels.

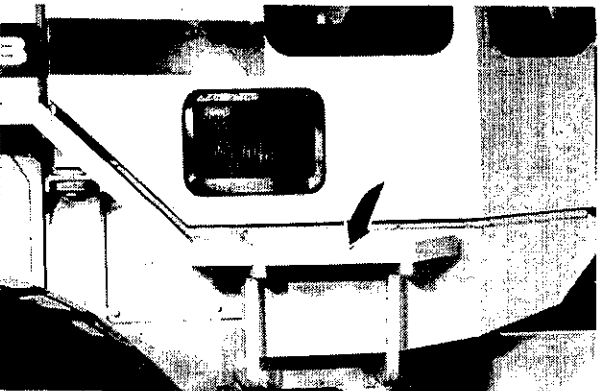
T-88003



8.4.2.47

Install cab corner panels.

T-88082



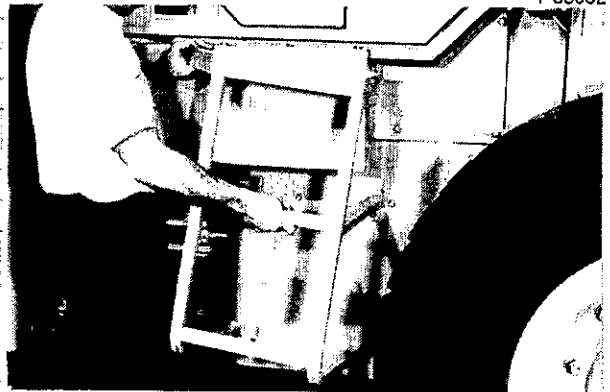
8.4.2.48

Install right side platform.

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

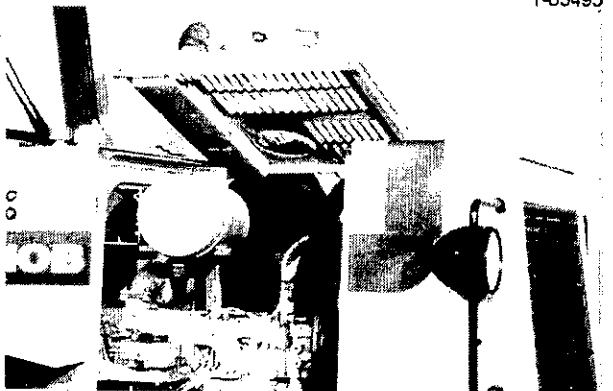
8.4.2.49
Install left side ladder.



8.4.2.50
Install rear fenders.



8.4.2.51
Install hood.



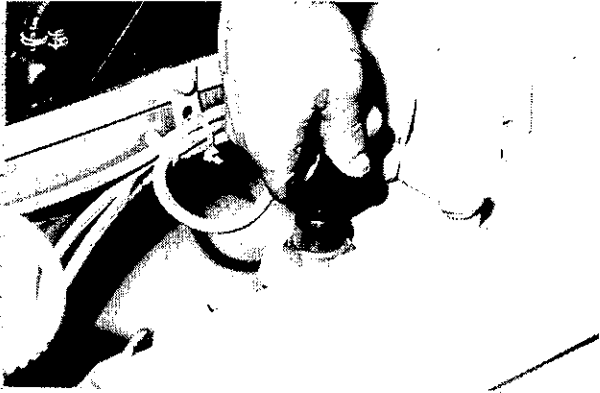
8.4.2.52
Remove warning tag "MACHINE INOPERATIVE",
from the steering wheel.



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

T-85504



8.4.2.53

Turn electrical master switch to the "ON" position.

8.4.2.54

Remove all blocks from tires and machine.

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

8.4.3 CAB DISASSEMBLY AND ASSEMBLY

8.4.3.1 SEAT ASSEMBLY



WARNING

This machine and its attachments are to be operated only by qualified operator seated in the operator's seat.

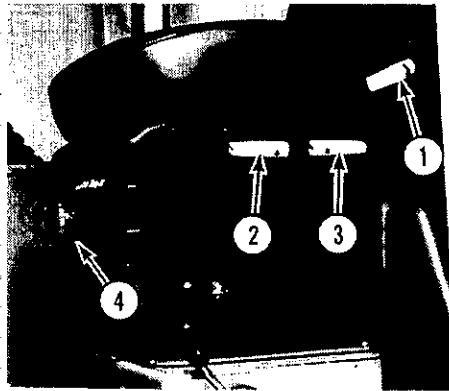
Before starting machine, check, adjust and lock the operator's seat for maximum comfort and control of the machine.

Replace seat belts every two years on open canopy units and every three years on machinery with cabs or at change of ownership.

8.4.3.1.1

The seat is provided with the necessary devices which allow adjustments of cushion inclination and height, back rake, controls reaching distance and operator's weight. The operator may therefore choose the position which suits him best for operating.

1. *Back rake adjustment*
2. *Reaching distance adjustment*
3. *Cushion inclination adjustment*
4. *Seat suspension (operator's weight) adjustment*

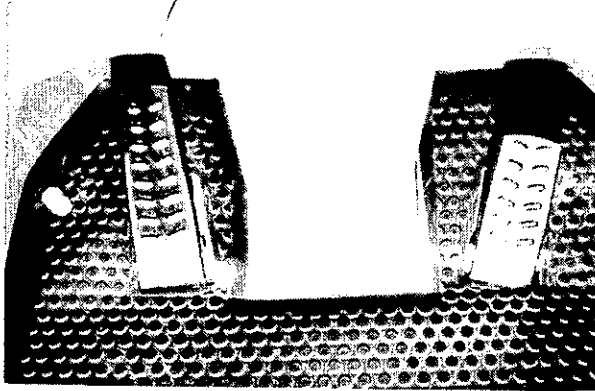


T-85402

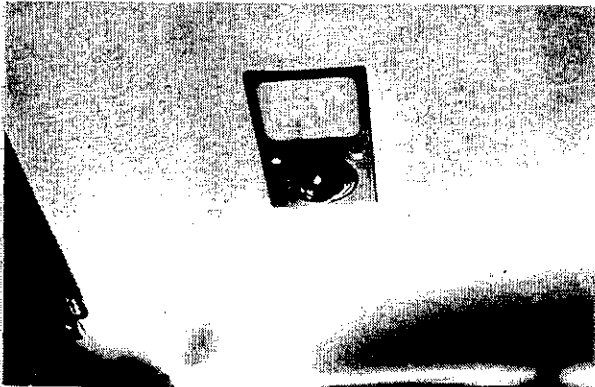
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

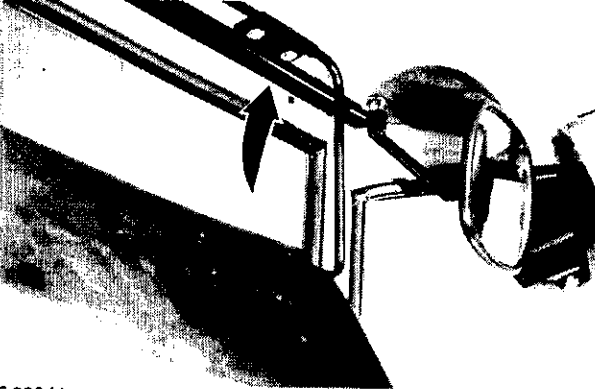
T-85393



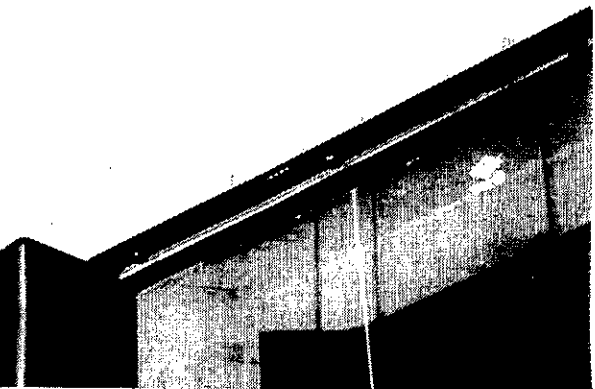
T-85406



T-88040



T-88041



8.4.3.2 INSIDE PANELS and HEADLINER

Various panels inside the Cab provide both an attractive interior and easy access to accessories. The following is a list of panels and their locations.

8.4.3.2.1 Floor mat.

8.4.3.2.2 Headliner.

8.4.3.2.3 Headliner front retainer. **NOTE:** To remove the headliner, all four cab corner post panels must first be removed as well as the front and rear retainers.

8.4.3.2.4 Headliner rear retainer.

Study **SAFETY RULES** in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

8.4.3.2.5
Right rear corner post panel.

T-88042



8.4.3.2.6
Left rear corner post panel. (similar to right rear panel)

8.4.3.2.7
Right front corner post panel.

T-88029



8.4.3.2.8
Upper left front corner post panel.

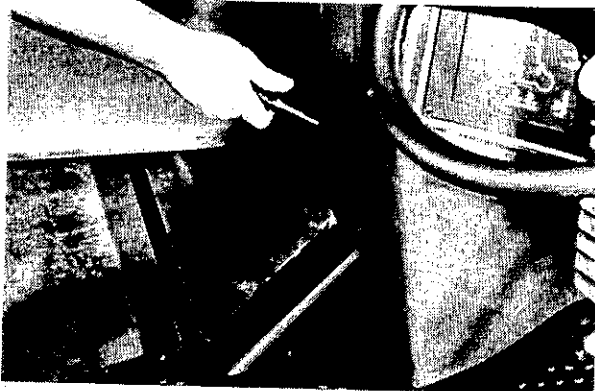
T-88043



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

T-88044



8.4.3.2.9

Lower left front corner post panel.

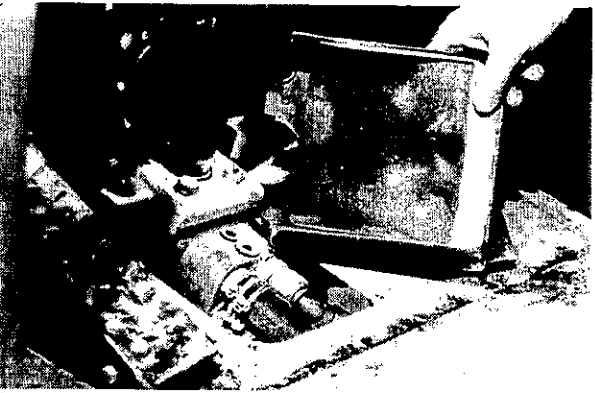
T-88045



8.4.3.2.10

Upper steering column panel.

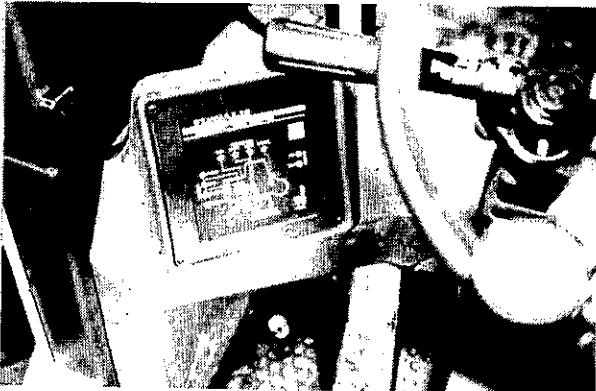
T-88046



8.4.3.2.11

Lower steering column panels.

T-88083



8.4.3.2.12

Instrument console panel.

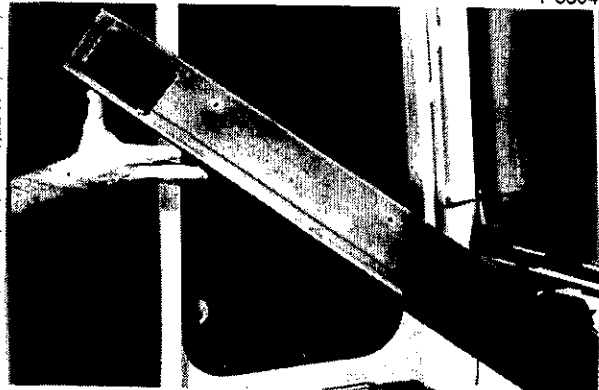
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

8.4.3.2.13

Rear wiper motor cover panel.

T-88047



8.4.3.2.14

Glove box and storage compartment.

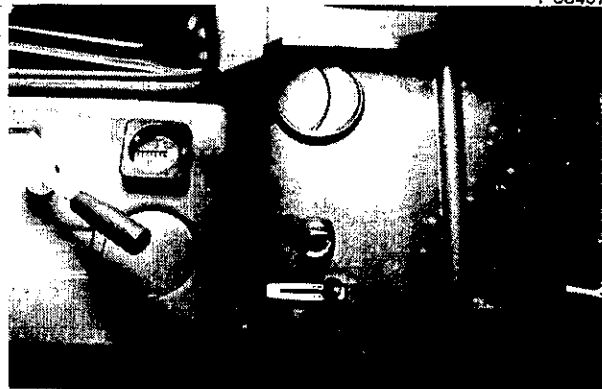
T-88048



8.4.3.2.15

Heater and blower fan access panel.

T-85407



8.4.3.2.16

Fuse block and hydraulic controls access panel.

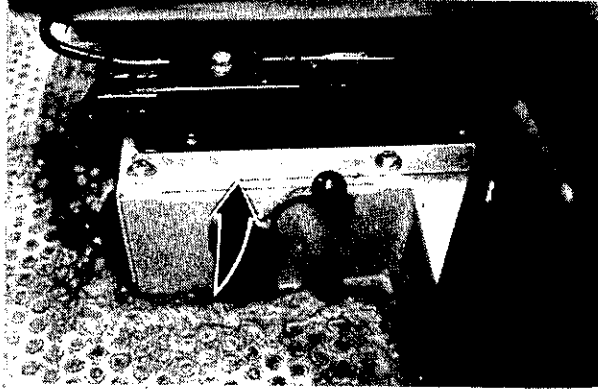
T-85396



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

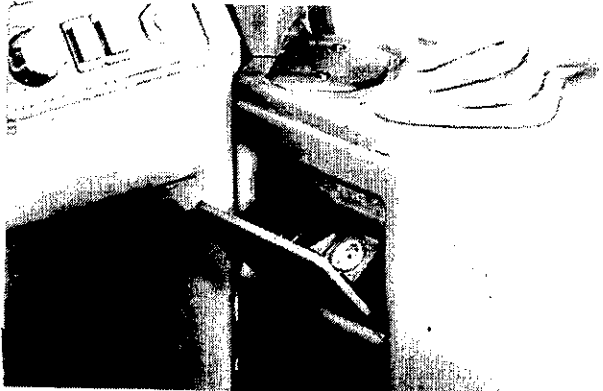
T-85392



8.4.3.2.17

Seat mounting plate and access cover.

T-88049

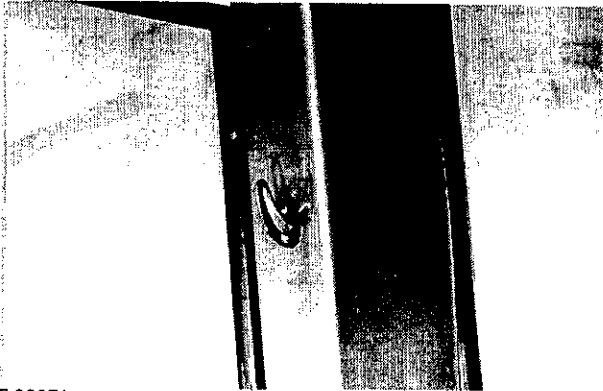


8.4.3.3 ASHTRAY, CIGARETTE LIGHTER and COAT HOOK

8.4.3.3.1

Ashtray and cigarette lighter are located on the fuse block and hydraulic controls access panel.

T-88050



8.4.3.3.2

Coat hook is located on the right rear cab corner post panel.

T-88051



8.4.3.4 MIRROR and SUN VISOR

8.4.3.4.1

Inside rear view mirror can be adjusted at two ball joint pivots.

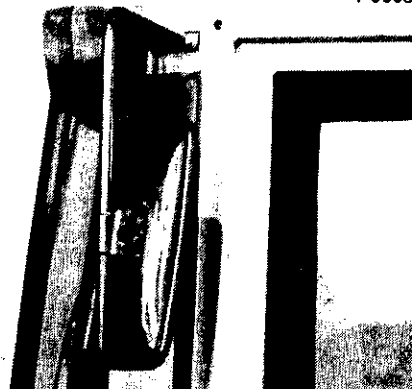
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

8.4.3.4.2

Outside rear view mirrors can be adjusted at a four-way pivot bracket.

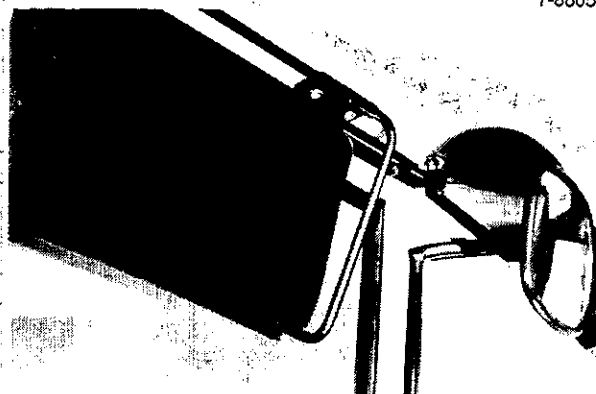
T-88035



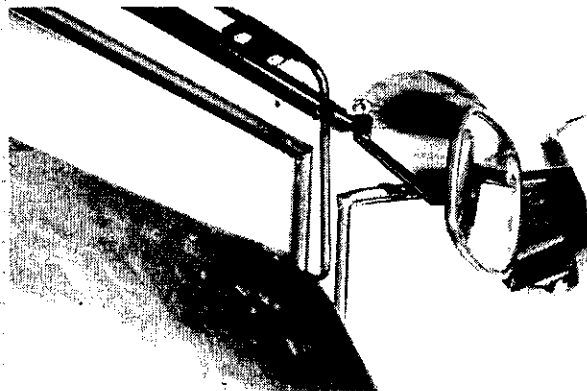
8.4.3.4.3

Sun visor pivots at two locations for three positions as shown:

T-88052



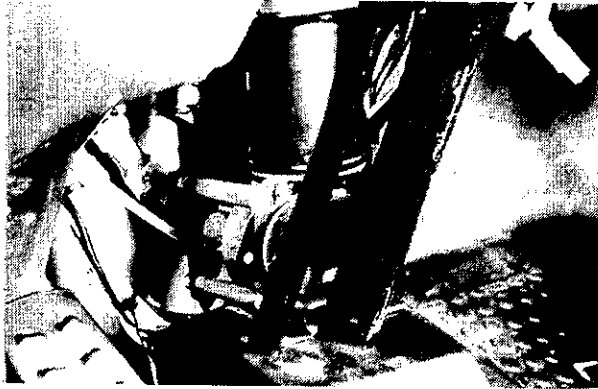
T-88040



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

T-88053

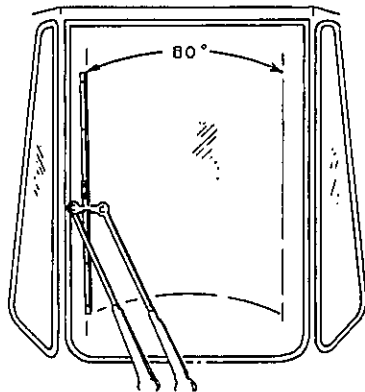


8.4.3.5 WINDOW WIPERS and WASHERS

8.4.3.5.1

Front windshield wiper motor is located behind steering column inside cab.

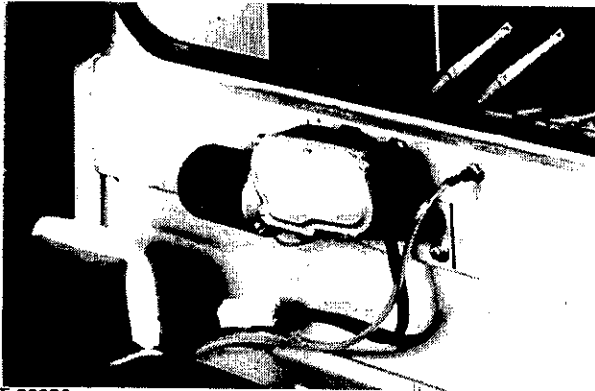
T-88085



8.4.3.5.2

Front wiper motor operates at two speeds (50 rpm - 74 rpm). Since motor rotates a complete 360°, the bell crank assembly allows for a 80° sweep of the wiper arm.

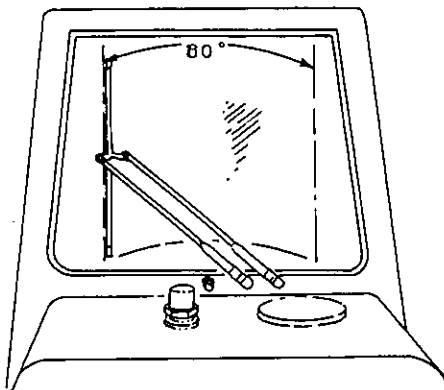
T-88054



8.4.3.5.3

Rear windshield wiper motor is located under panel directly behind the operator's seat below the window.

T-88086



8.4.3.5.4

Rear wiper motor operates at a single speed. Internal gearing offers an oscillation of approximately 53-67 cycles per minute and a 80° sweep of the wiper arm.

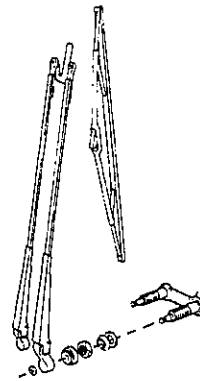
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

8.4.3.5.5

Adjustment is necessary when replacing either the motor or arm assembly in order to center the action on the window. This adjustment is made by selecting the proper position on the knurled driver.

T-88084

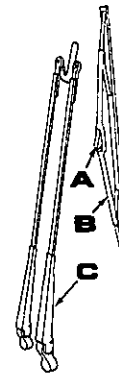


8.4.3.5.6

Should visibility be unsatisfactory as a result of faulty wiper blade operation, clean rubber blades using a specific detergent or alcohol. Should faulty operation persist after cleaning, change the blades as follows:

1. Depress clip(A) on wiper blade assembly(B).
2. Lift and detach wiper blade (B) from wiper arm(C).

T-88084



8.4.3.5.7

Window washer reservoir is located inside the front frame. Before operating wipers, use washers to minimize scratching of windows. NOTE: Always use washer fluid that is suitable for prevailing temperatures to prevent freezing and has proper cleaning qualities. With a 50% FIAT DP 1 detergent solution, the fluid will not freeze down to -10°C (14°F). For protection below this temperature, use unmixed DP 1 detergent.

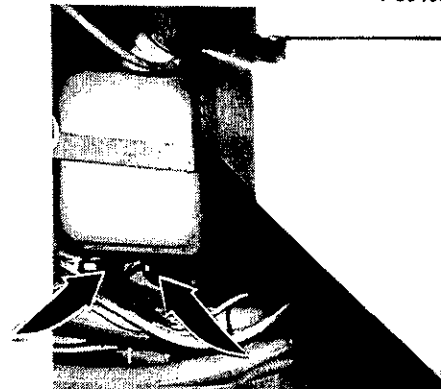
T-85408



8.4.3.5.8

Reservoir includes two pumps for front and rear windows.

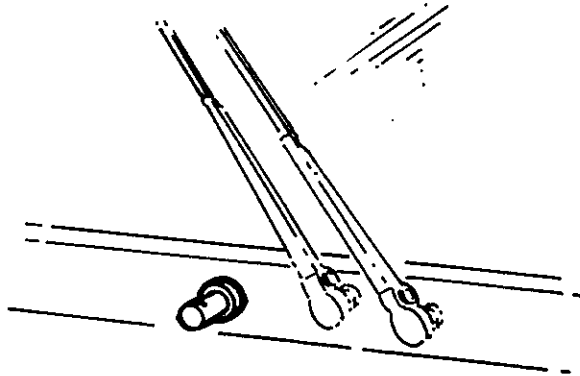
T-85408



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

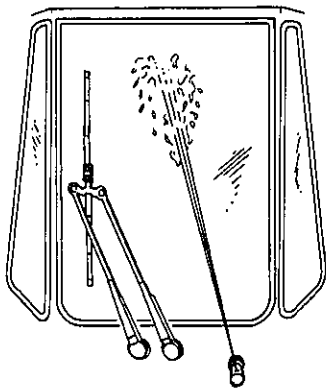
T-88084



8.4.3.5.9

Hoses from pumps lead to nozzles located below each window. Nozzles may become clogged with particles and can be cleared by running a needle through the orifice.

T-88088



8.4.3.5.10

Nozzle should be adjusted so that fluid will strike the window at the top of the wiper sweep arc.

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

8.4.3.6 HEATER and BLOWER FAN

8.4.3.6.1 HEATER REMOVAL

8.4.3.6.1.1

Remove floor mat.



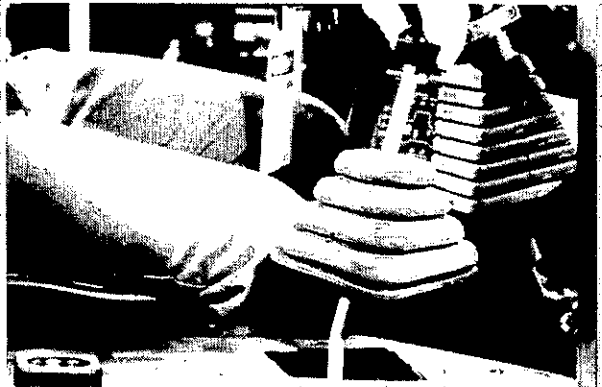
8.4.3.6.1.2

Loosen setscrew on hydraulic controls lock lever and remove lever.



8.4.3.6.1.3

Unscrew knob on hydraulic control lever and remove boot.



8.4.3.6.1.4

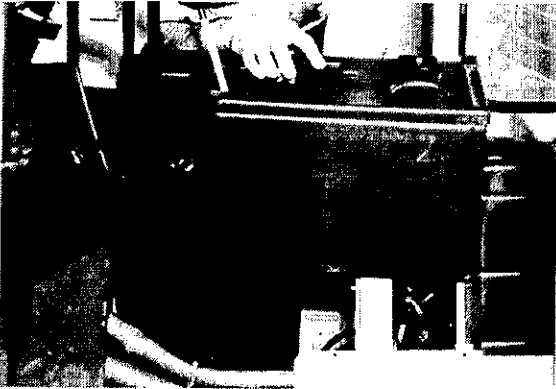
Remove right front cab corner panel.



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

T-88039



8.4.3.6.1.5

Remove screws attaching right side console panel. Move the panel enough to disconnect wiring to both the cigarette lighter and the hour meter. Remove the panel.

T-88030



8.4.3.6.1.6

Tag wiring to the cigarette lighter and the hour meter.

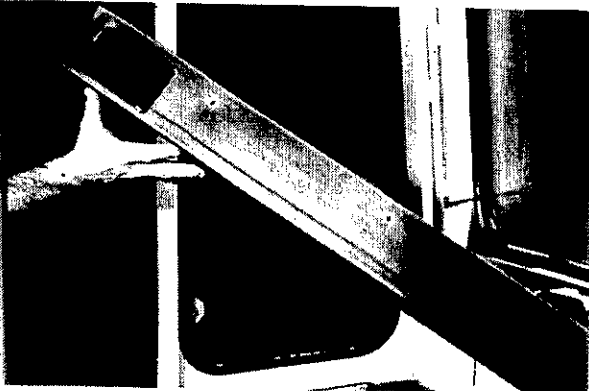
T-88042



8.4.3.6.1.7

Remove right rear corner panel.

T-88047



8.4.3.6.1.8

Remove rear panel.

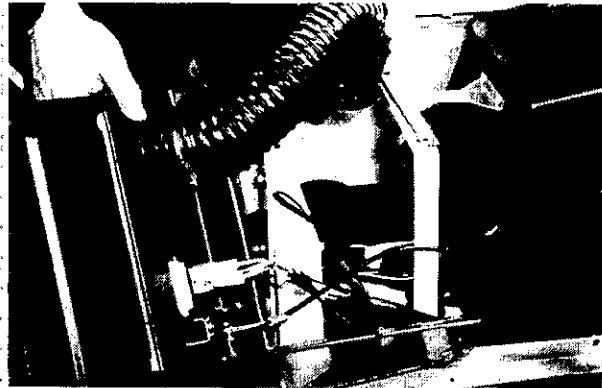
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

8.4.3.6.1.9

Remove screws attaching right rear console panel and tilt panel toward inside of cab. Pull blower flex hose loose from bottom connection. Lay panel over into seat area.

T-88055



8.4.3.6.1.10

Disconnect and tag wires to blower switch.

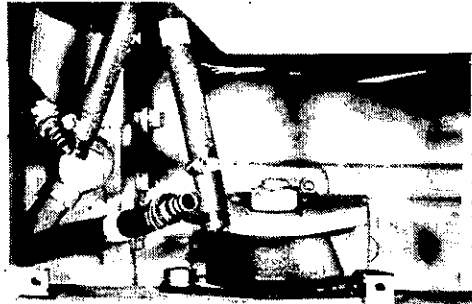
T-88056



8.4.3.6.1.11

Disconnect and tag heater hoses from under cab.

T-88020



8.4.3.6.1.12

While lifting blower assembly upward, pull heater hoses up through floor of cab.

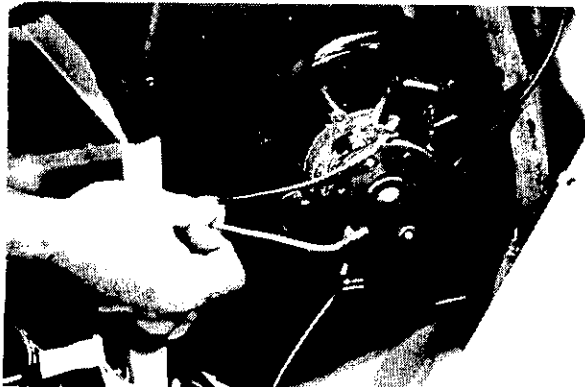
T-88057



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

T-88058



8.4.3.6.1.13

Disconnect wires to blower motor. **NOTE:** Orange wire connects to terminal marked positive (+).

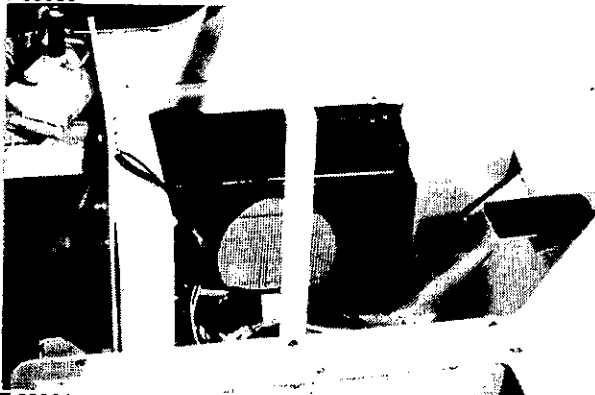
T-88059



8.4.3.6.1.14

Remove blower as an assembly along with the console panel, blower switch and temperature control lever.

T-88060

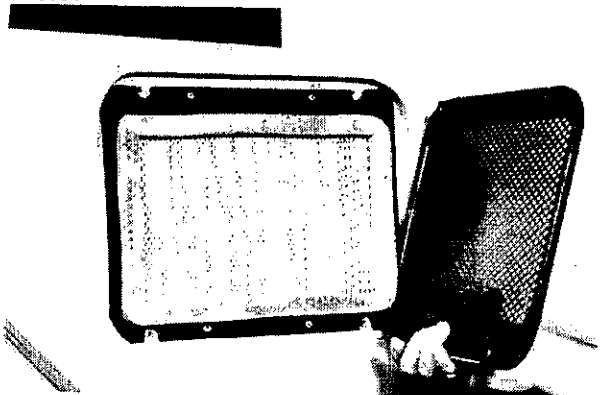


8.4.3.6.2 FILTER REMOVAL

8.4.3.6.2.1

View from inside cab of grommets for heater hoses, air intake connection for blower and rear view of filter housing.

T-88061



8.4.3.6.2.2

Remove outside screen plate.

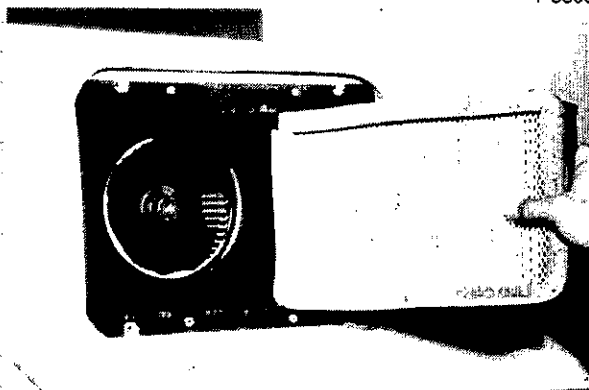
Study **SAFETY RULES** in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

8.4.3.6.2.3

Remove filter assembly.

T-88062



8.4.3.6.3 BLOWER and HEATER CORE DISASSEMBLY

T-88063

8.4.3.6.3.1

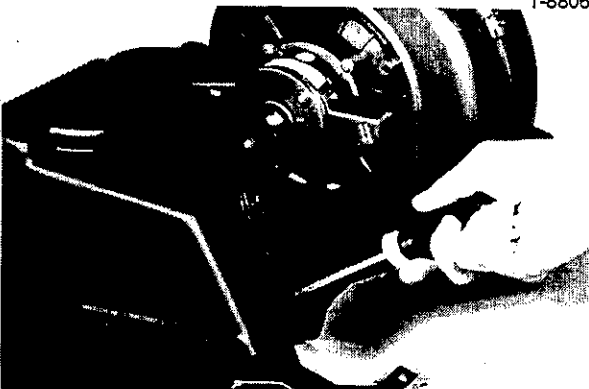
Overall view of blower and heater core assembly.



8.4.3.6.3.2

Remove four screws attaching blower to heater core.

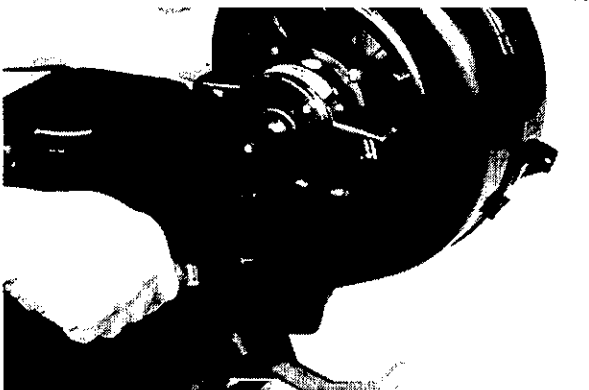
T-88064



8.4.3.6.3.3

Using a putty knife, separate the blower assembly from the heater housing.

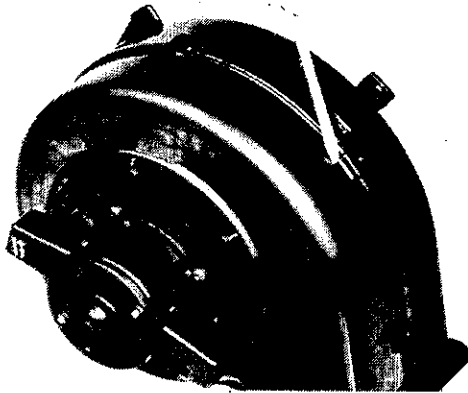
T-88065



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

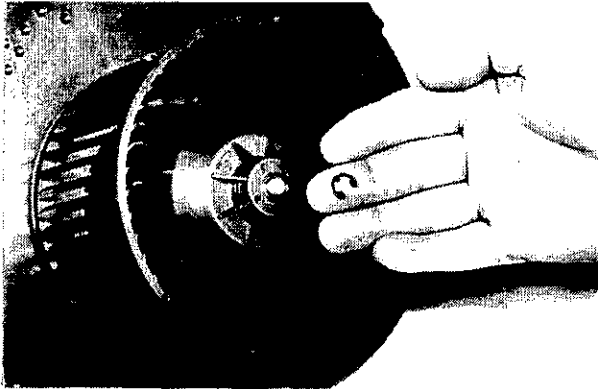
T-88066



8.4.3.6.3.4

Remove six (6) clips attaching two halves of blower housing and separate housings.

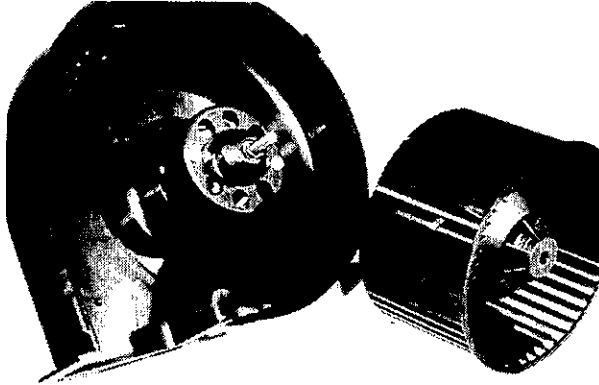
T-88067



8.4.3.6.3.5

Remove snap ring attaching turbine to blower motor.

T-88068



8.4.3.6.3.6

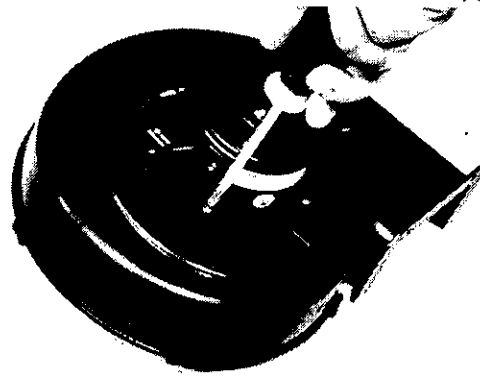
Remove turbine from blower motor. **NOTE:** Weight on turbine for balance.

8.4 REPAIR PROCEDURES

8.4.3.6.3.7

Remove four screws retaining blower motor to housing.

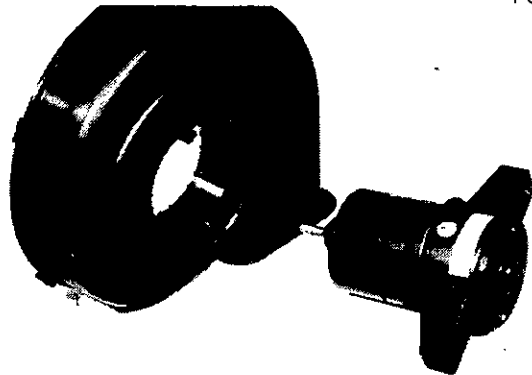
T-88069



8.4.3.6.3.8

Remove blower motor from housing.

T-88070

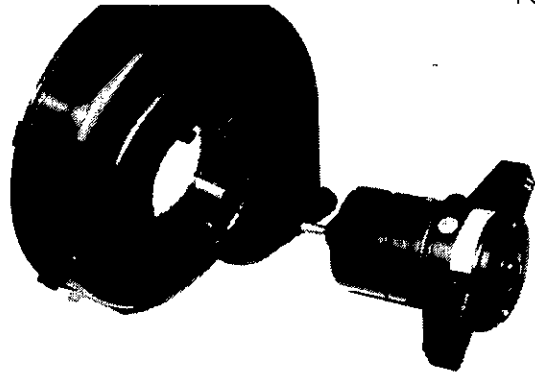


8.4.3.6.4 BLOWER and HEATER CORE ASSEMBLY

T-88070

8.4.3.6.4.1

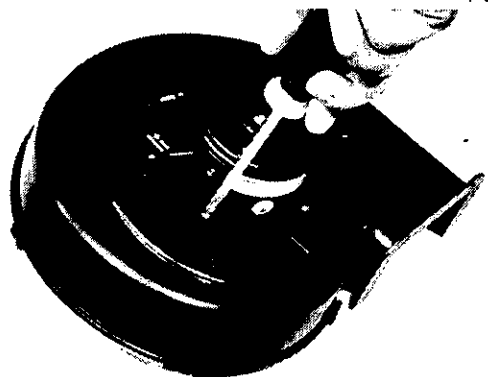
Install blower motor into housing.



8.4.3.6.4.2

Install four screws to retain motor to housing.

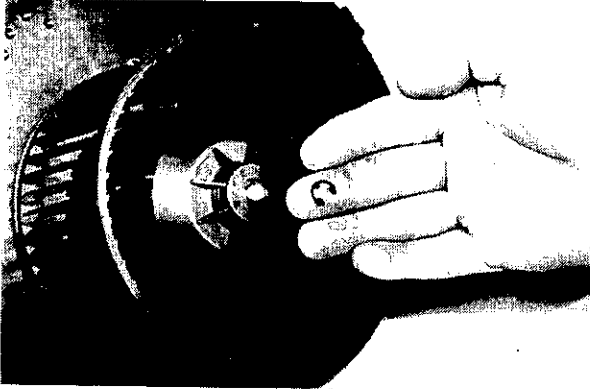
T-88069



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

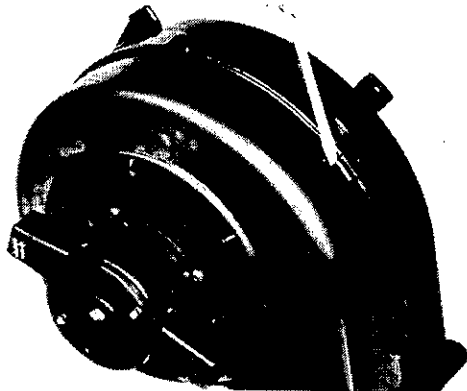
T-88067



8.4.3.6.4.3

Install turbine onto blower motor and secure in place with snap ring.

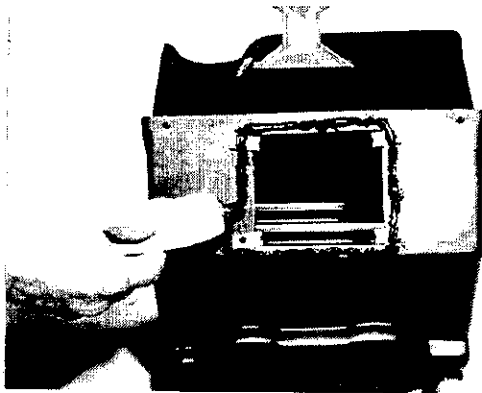
T-88066



8.4.3.6.4.4

Place two housing halves together and retain them with six (6) clips.

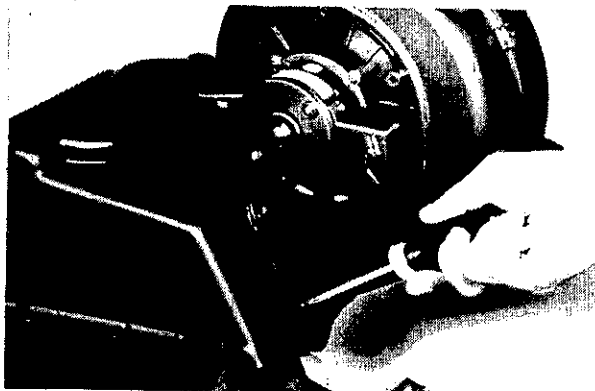
T-88071



8.4.3.6.4.5

Apply a coat of sealant (F.A. #70935406) to mating surfaces of blower assembly and heater housing.

T-88064



8.4.3.6.4.6

Attach blower assembly to heater housing with four (4) screws.

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

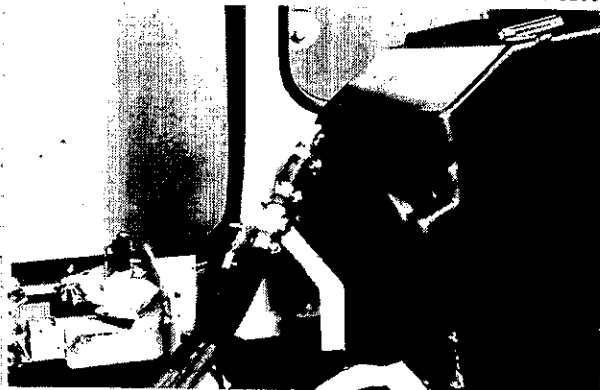
8.4 REPAIR PROCEDURES

8.4.3.6.5 BLOWER and HEATER CORE INSTALLATION

T-88059

8.4.3.6.5.1

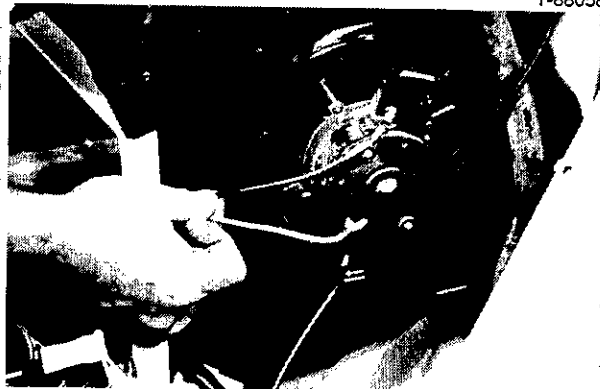
Place blower and heater as an assembly along with the console panel, blower switch and temperature control lever into position at right side of operator's seat.



T-88058

8.4.3.6.5.2

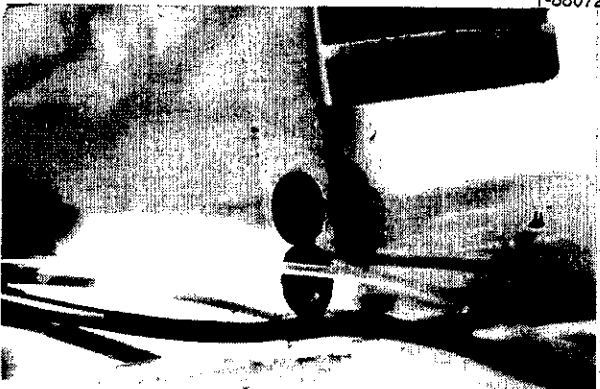
Connect wires to blower motor. NOTE: Orange wire connects to terminal marked positive (+).



T-88072

8.4.3.6.5.3

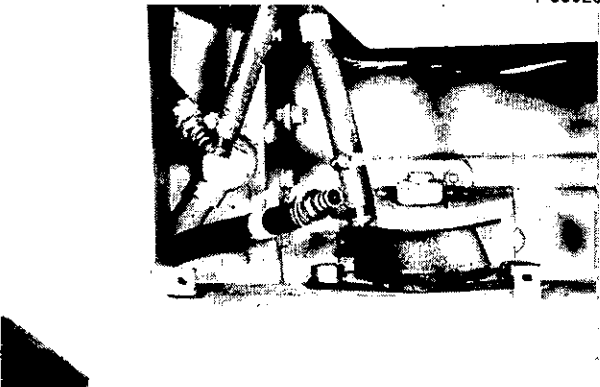
Push heater hoses through grommets in floor of cab.



T-88020

8.4.3.6.5.4

Connect heater hoses to connections under cab.



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

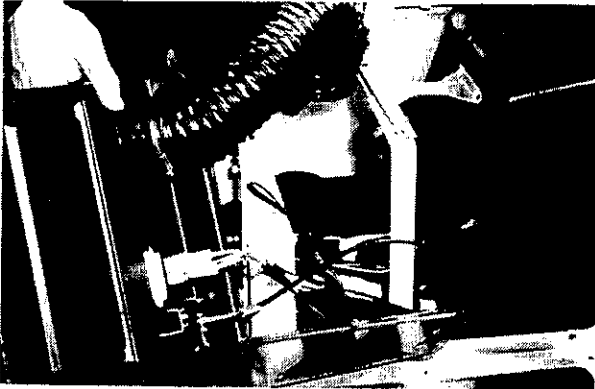
T-88056



8.4.3.6.5.5

Connect wires to blower switch.

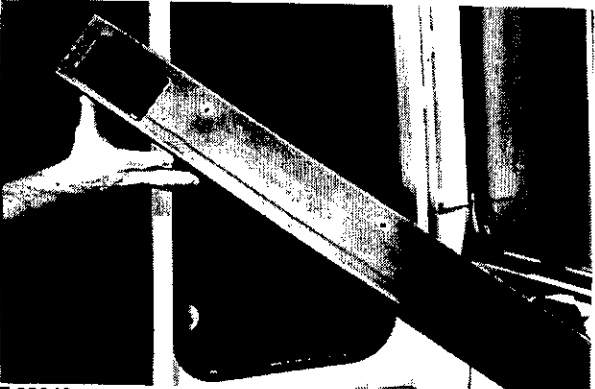
T-88055



8.4.3.6.5.6

Install blower flex hose to bottom connection and position panel in place over blower. Secure panel with screws.

T-88047



8.4.3.6.5.7

Install rear panel.

T-88042



8.4.3.6.5.8

Install right rear cab corner panel.

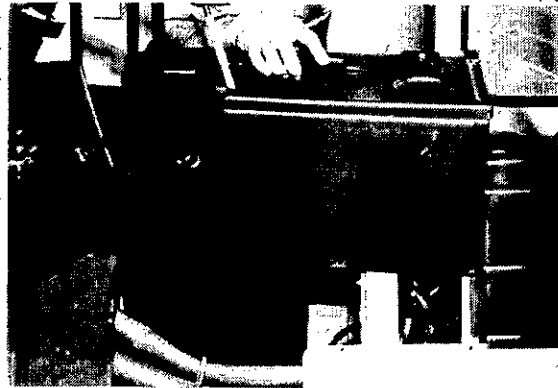
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

8.4.3.6.5.9

Connect wires to cigarette lighter and hourmeter and install right side console panel.

T-88039



8.4.3.6.5.10

Install right front cab corner panel.

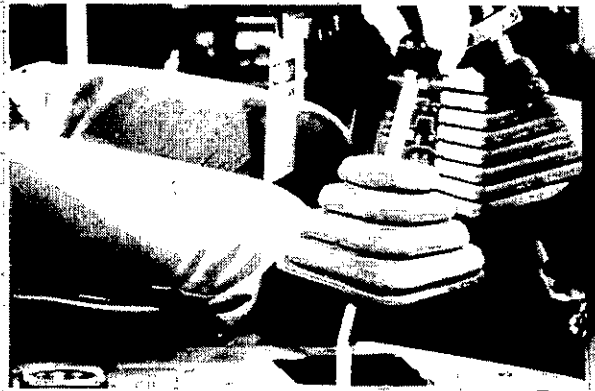
T-88029



8.4.3.6.5.11

Install boot and knob to hydraulic control lever.

T-88028



8.4.3.6.5.12

Install hydraulic controls lock lever and tighten setscrew.

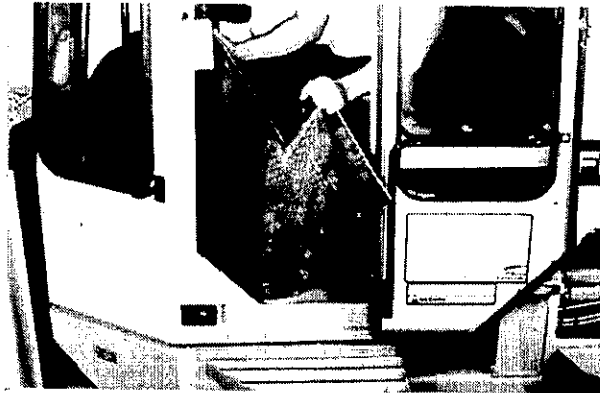
T-88027



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

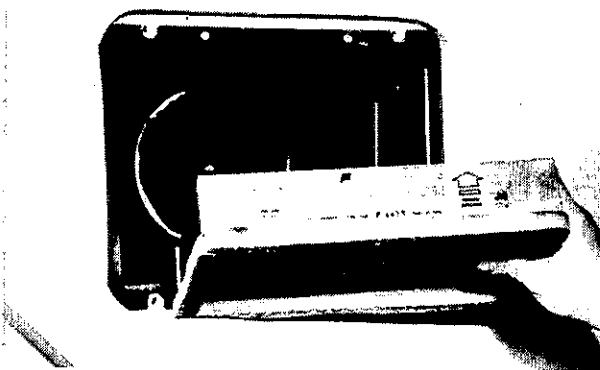
8.4 REPAIR PROCEDURES

T-88026



8.4.3.6.5.13
Install floor mat.

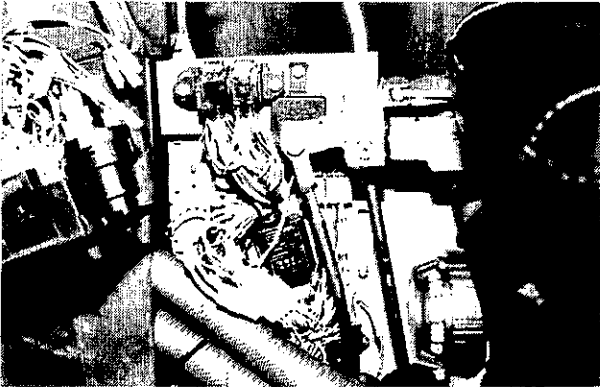
T-88073



8.4.3.6.6 FILTER INSTALLATION

8.4.3.6.6.1
Install a new filter with arrows pointing toward inside of cab.

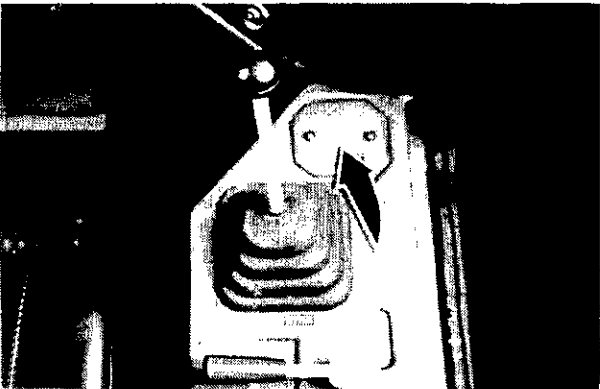
T-88074



8.4.3.7 CAB WIRING (ELECTRICAL)

8.4.3.7.1
Cab wiring connects to main wiring inside the cab behind the fuse block and hydraulic controls access panel.

T-85395-B



8.4.3.7.2
Access to fuse block can be made by removing smaller access cover at top of control console.

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

ELECTRICAL SCHEMATIC

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

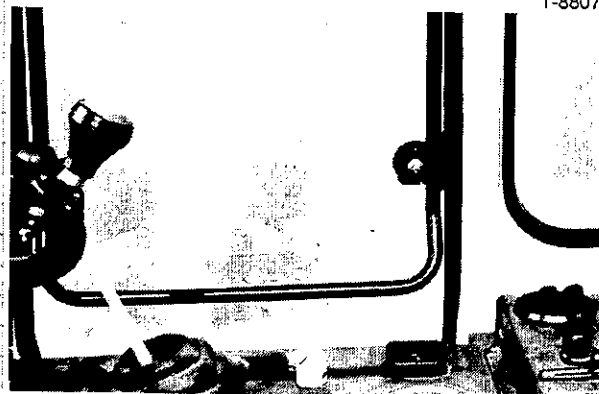
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

8.4.3.8 DOORS

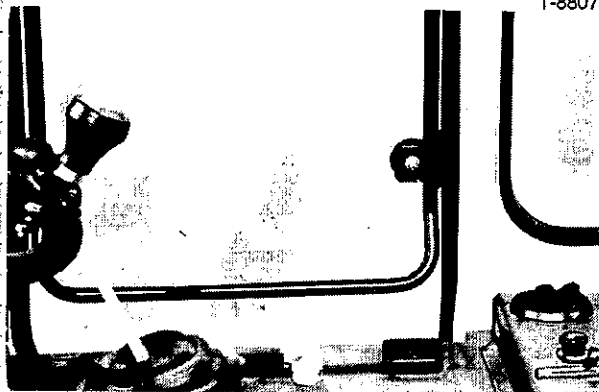
8.4.3.8.1

Right side door can be used as an emergency exit or entrance.



8.4.3.8.2

Tubular frame around right side door is also used as a closure bar.



8.4.3.8.3

Right side door latches from inside only.



8.4.3.8.4

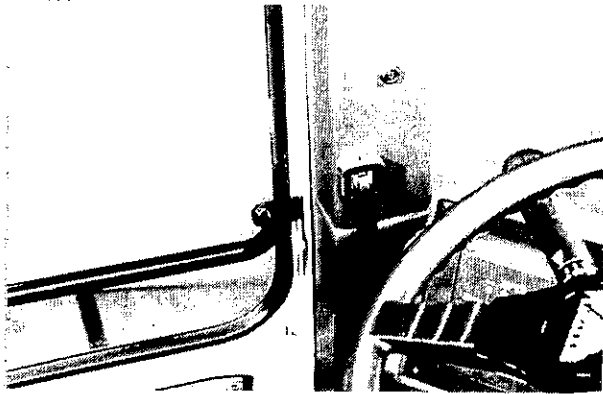
Left side door latch on inside of cab.



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

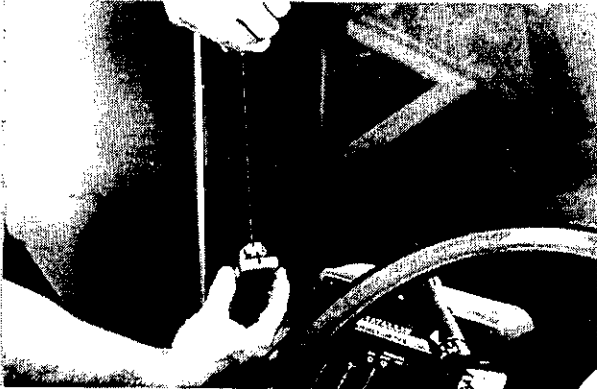
T-88077



8.4.3.8.5

Left side door is provided with a closure bar.

T-88078

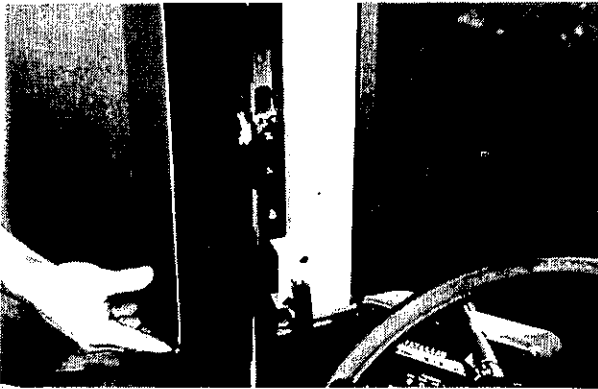


8.4.3.8.6

Access to latch linkage for left side door is gained as follows:

(1) Pry off latch cover.

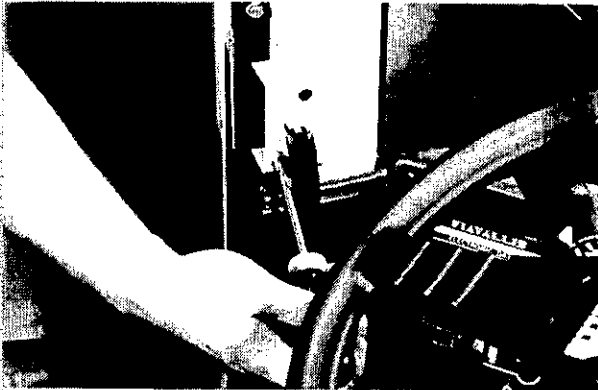
T-88043



8.4.3.8.7

(2) Remove upper left front cab corner panel.

T-88079



8.4.3.8.8

(3) Remove latch assembly.

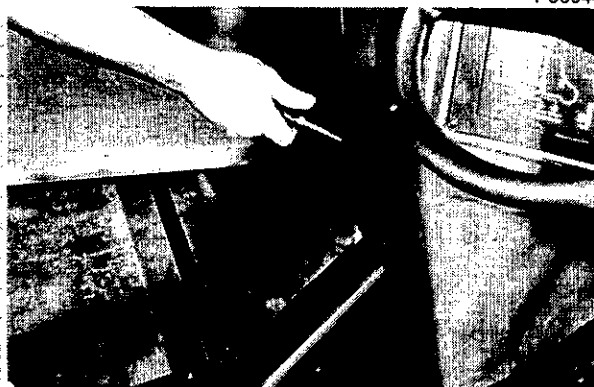
Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

8.4.3.8.9

(4) Remove lower left front cab corner panel.

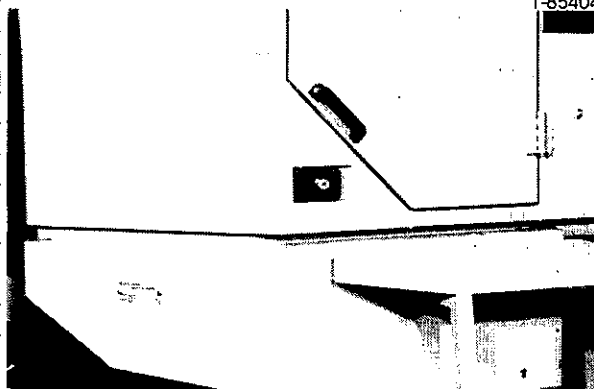
T-88044



8.4.3.8.10

Left side door latch on outside of cab.

T-85404



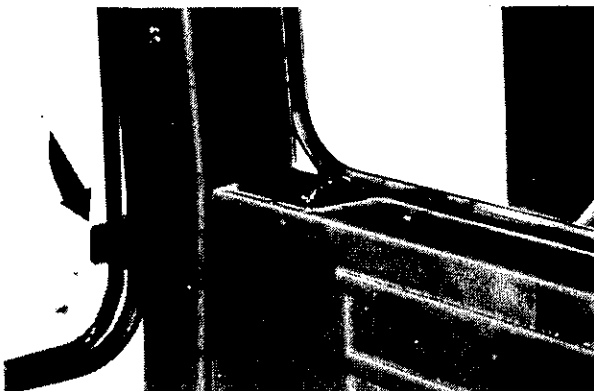
8.4.3.8.11

Outside latch for left side door can be locked with keys.

8.4.3.8.12

Right or left doors can be latched in the open position as shown.

T-88080



Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

8.4.3.9 CAB GLASS

8.4.3.9.1

The glass used throughout the cab is tempered safety type with the exception of the windshield glass which is laminated. Glass must be ordered from *FIATALLIS* ®. The glass should be kept clean at all times for good visibility. When cleaning glass, pre-soaking with a solution of water and detergent or a commercial cleaner along with the use of a squeegee, will reduce abrasion and will make it easier to clean.

IMPORTANT: Never use hot water solution on cold glass or cold water solution on hot glass. Solution should be near glass temperature to prevent fracturing the glass.



WARNING

Always wear safety glasses with side shields when removing, replacing or handling glass panels.

For replacement, use only safety glass as specified.

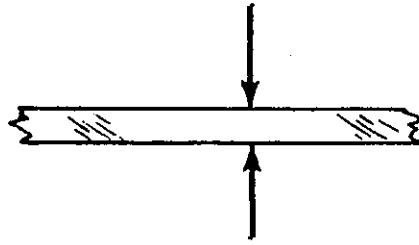
Do not strike glass to remove it from cab parts. Glass may shatter and cause personal injury.

8.4 REPAIR PROCEDURES

8.4.3.9.2

All glass, with the exception of the windshield, should be 5.0mm (0.197") thick.

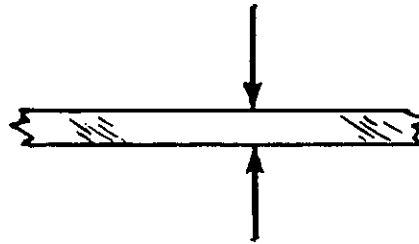
T-88087



8.4.3.9.3

Windshield glass should be 6.0-7.4mm (.236-.281") thick.

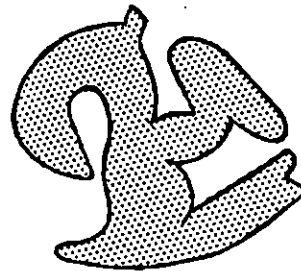
T-88087



8.4.3.9.4

Glass is held in place by rubber seals.

T-85651



8.4.3.9.5

The glass can be set in the seals without the aid of a special tool, however, the use of a tool is recommended. Always cut seal 25mm (1") longer to provide a tight fit in the frame.

8.4 REPAIR PROCEDURES

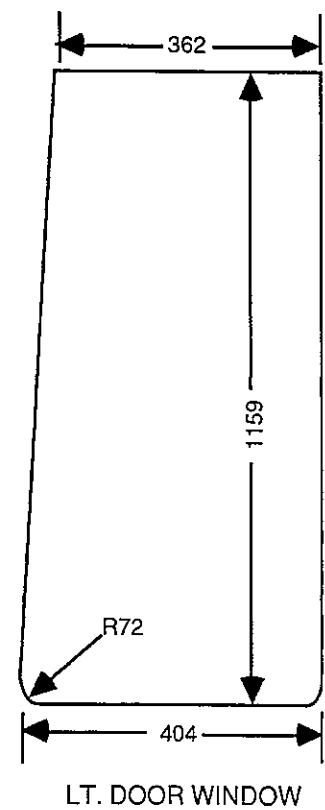
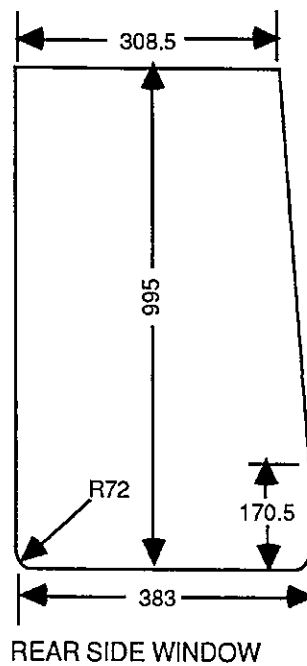
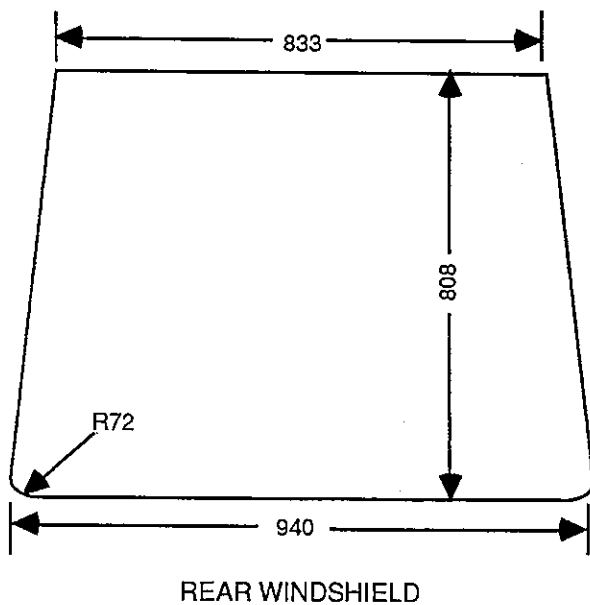
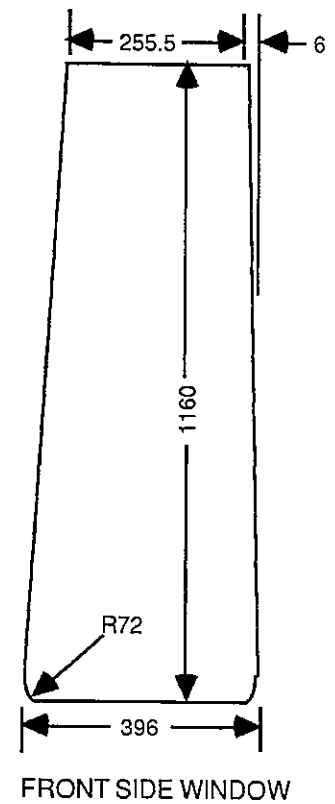
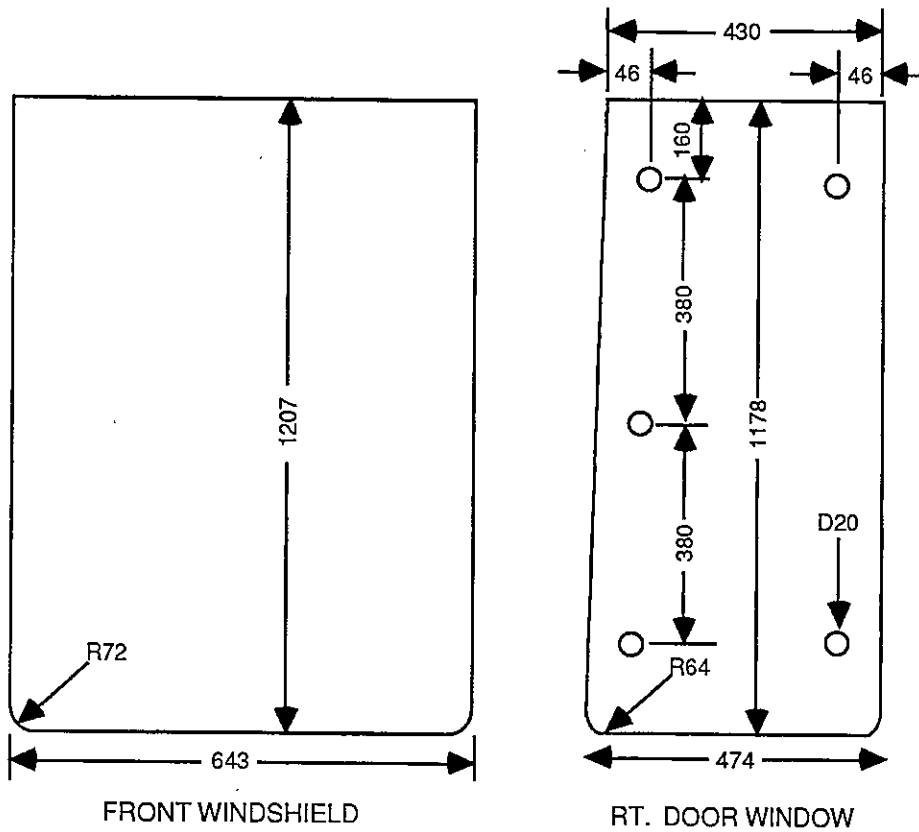
8.4.3.9.6

Glass dimensions are given on the following page.
Glass should be cut and finished by a qualified glass specialist. Dimension conversions are as follows:

<u>MM</u>	<u>IN</u>	
D 20	D 0.79	
R 64	R 2.52	
R 72	R 2.83	
6	0.24	
46	1.81	
160	6.30	
170.5	6.71	
255.5	10.06	
308.5	12.14	
362	14.25	
380	14.96	
383	15.08	
396	15.59	
404	15.91	
430	16.93	
474	18.66	
643	25.31	
808	31.81	
833	32.79	
940	37.01	
995	39.17	
1159	45.63	
1160	45.67	
1178	46.38	
1207	47.52	
6.0-7.4	0.236-0.281	Front windshield thickness
5.0	0.197	All other windows thickness

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES CAB GLASS DIMENSIONS



NOTE: See preceding page for thickness of glass and metric to inches conversion..

8.4 REPAIR PROCEDURES

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

8.4.3.10 REFERENCE DRAWINGS

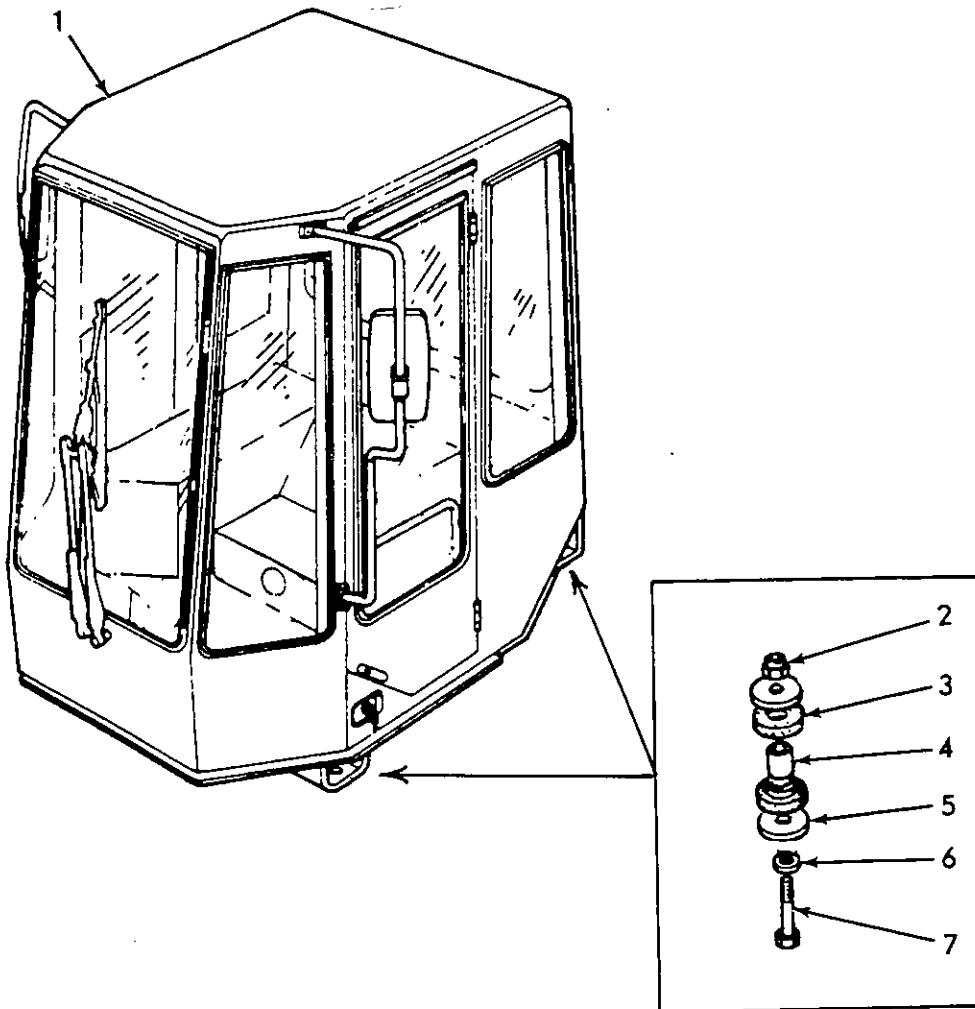


FIG. 8-1 CAB ASSEMBLY

T-85641

- 1. CAB ASSEMBLY
- 2. NUT
- 3. BUSHING
- 4. SPACER

- 5. WASHER
- 6. WASHER
- 7. CAPSCREW

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

8.4.3.10 REFERENCE DRAWINGS

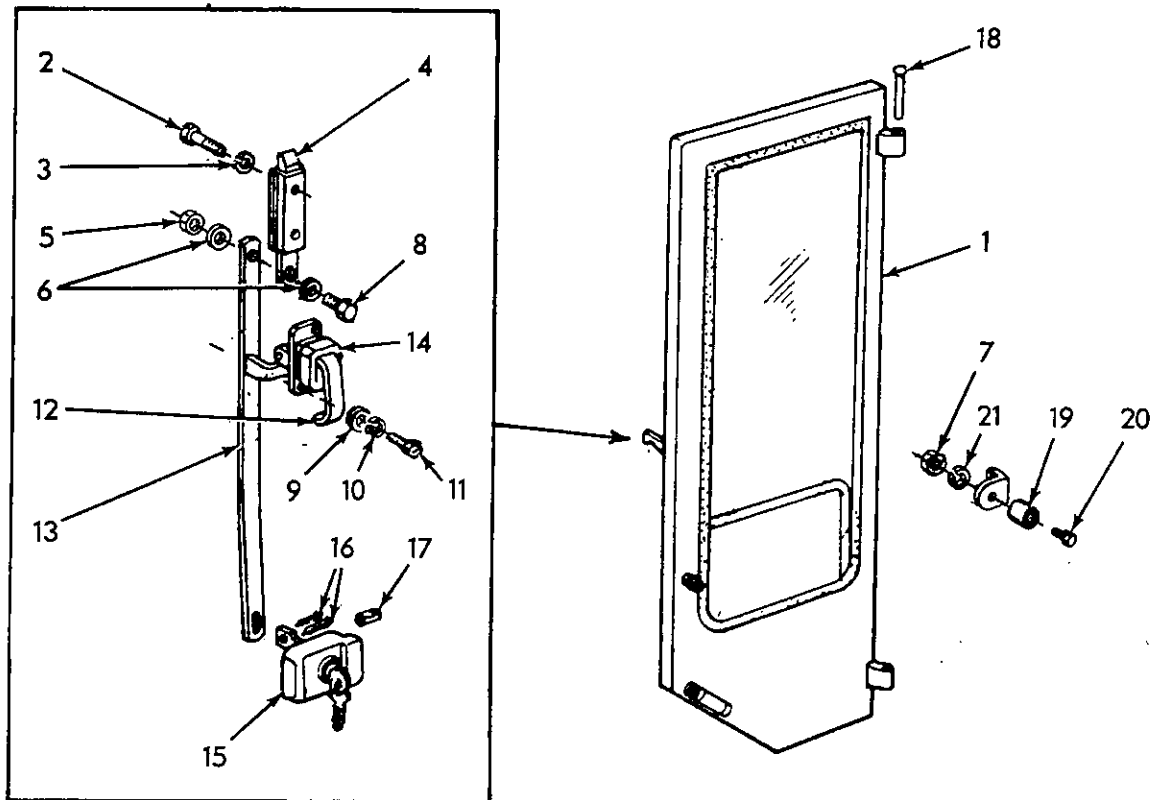


FIG. 8-2 LEFT SIDE DOOR LATCH LINKAGE

T-85642

- 1. DOOR ASSEMBLY
- 2. CAPSCREW
- 3. LOCKWASHER
- 4. LATCH
- 5. NUT
- 6. WASHER
- 7. NUT

- 8. CAPSCREW
- 9. WASHER
- 10. LOCKWASHER
- 11. CAPSCREW
- 12. LATCH
- 13. ROD
- 14. COVER

- 15. LOCK & KEYS
- 16. COTTER PIN
- 17. SPRING
- 18. PIN
- 19. BLOCK
- 20. SCREW
- 21. LOCKWASHER

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

8.4.3.10 REFERENCE DRAWINGS

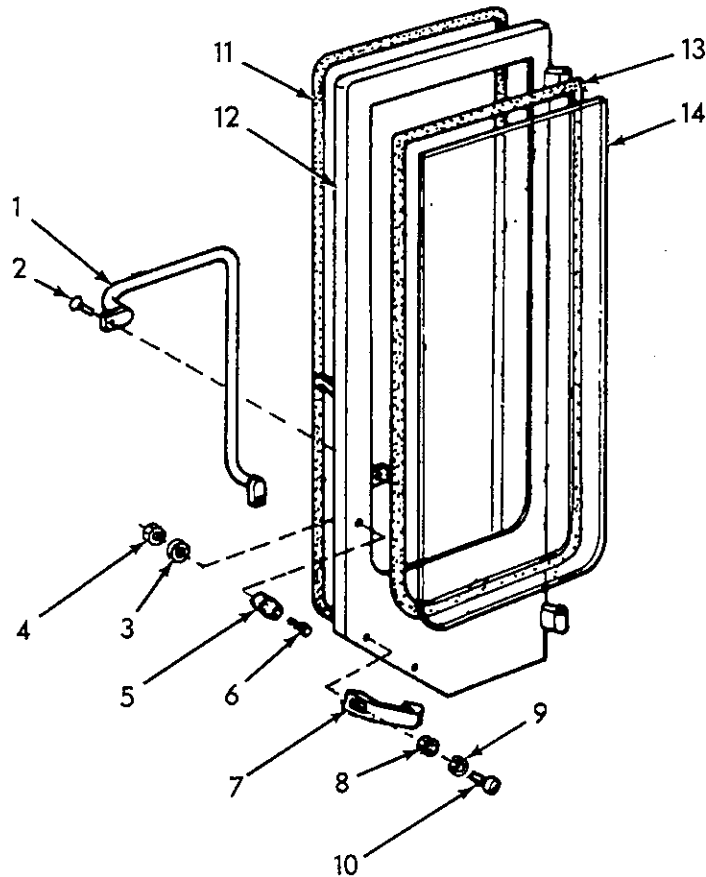


FIG. 8-3 LEFT SIDE DOOR ASSEMBLY

T-85643

1. HANDLE
2. SCREW
3. WASHER
4. NUT
5. BLOCK

6. SCREW
7. HANDLE
8. NUT
9. LOCKWASHER
10. SCREW

11. SEAL
12. DOOR
13. SEAL
14. GLASS

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

8.4.3.10 REFERENCE DRAWINGS

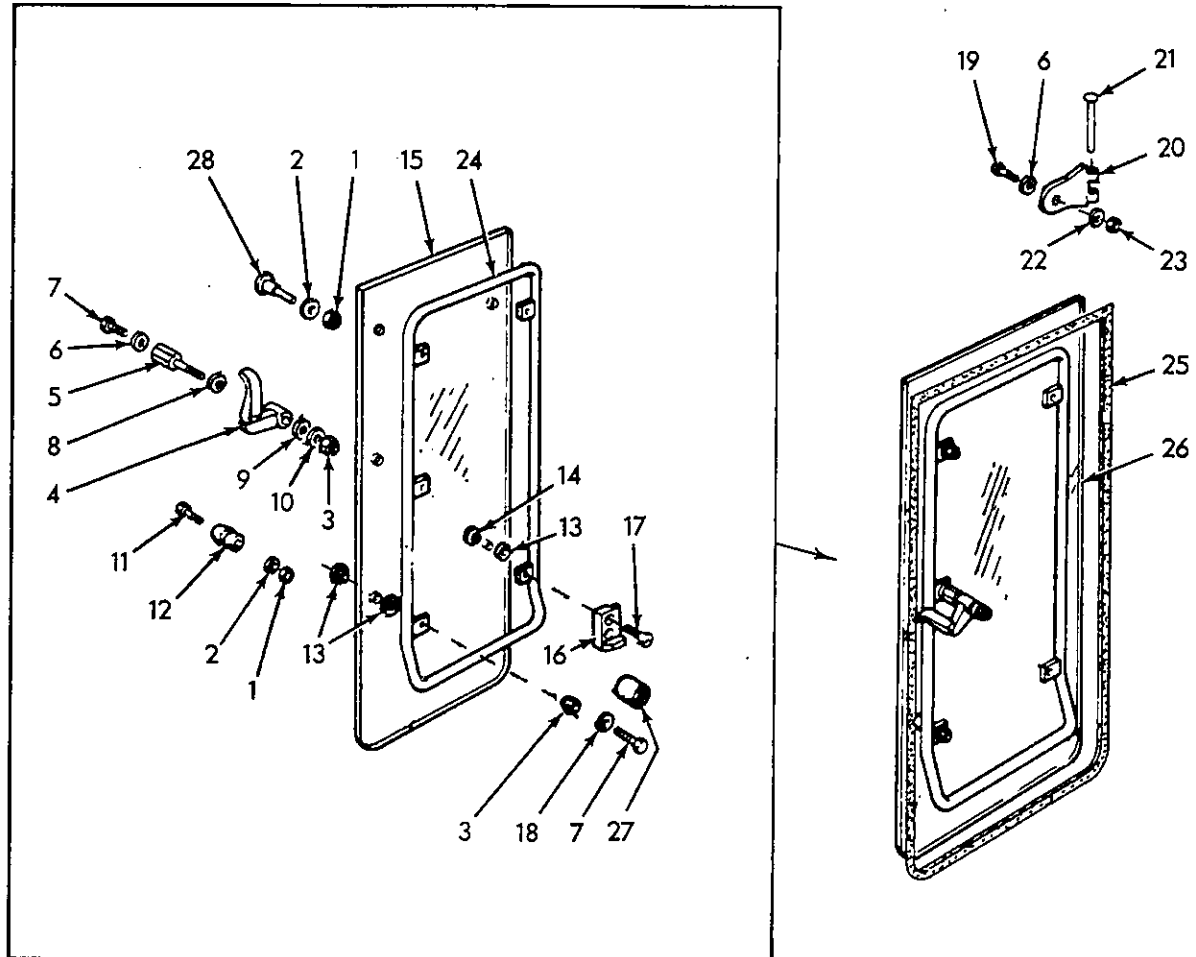


FIG. 8-4 RIGHT SIDE DOOR ASSEMBLY

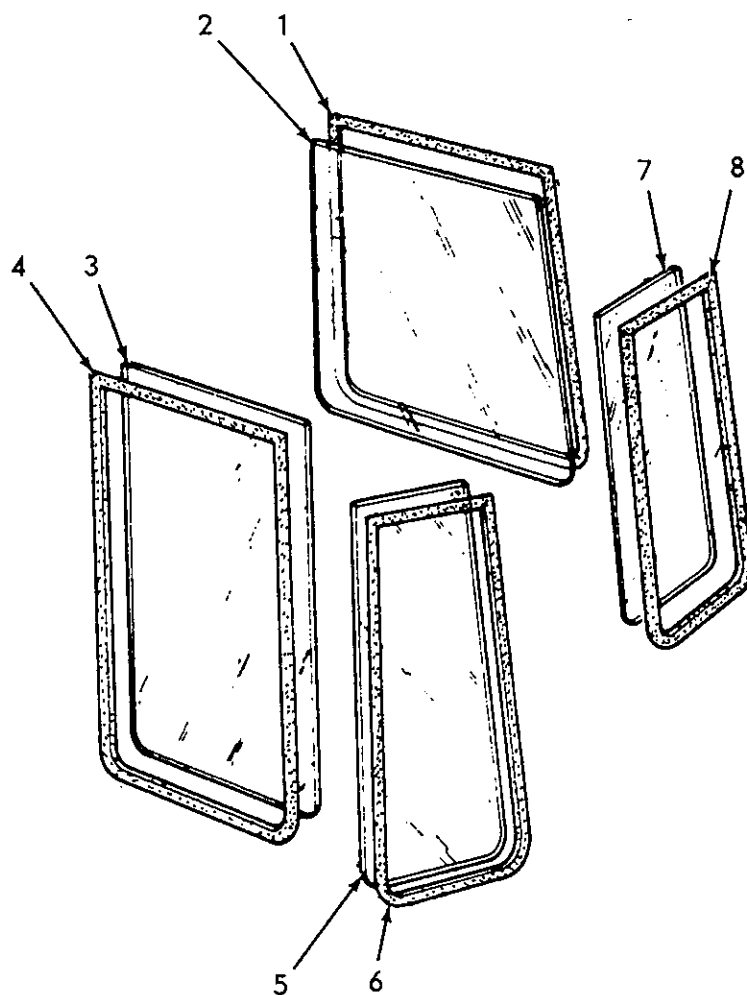
T-85644

- | | | |
|---------------|--------------|-------------------|
| 1. NUT | 11. SCREW | 21. PIN |
| 2. LOCKWASHER | 12. BLOCK | 22. LOCKWASHER |
| 3. NUT | 13. WASHER | 23. NUT |
| 4. HANDLE | 14. WASHER | 24. FRAME |
| 5. STUD | 15. GLASS | 25. SEAL |
| 6. WASHER | 16. PLATE | 26. DOOR ASSEMBLY |
| 7. SCREW | 17. SCREW | 27. BLOCK |
| 8. WASHER | 18. WASHER | 28. SCREW |
| 9. WASHER | 19. CAPSCREW | |
| 10. WASHER | 20. HINGE | |

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

8.4.3.10 REFERENCE DRAWINGS



T-85645

FIG. 8-5 CAB GLASS

- 1. SEAL
- 2. GLASS
- 3. GLASS
- 4. SEAL

- 5. GLASS
- 6. SEAL
- 7. GLASS
- 8. SEAL

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

8.4.3.10 REFERENCE DRAWINGS

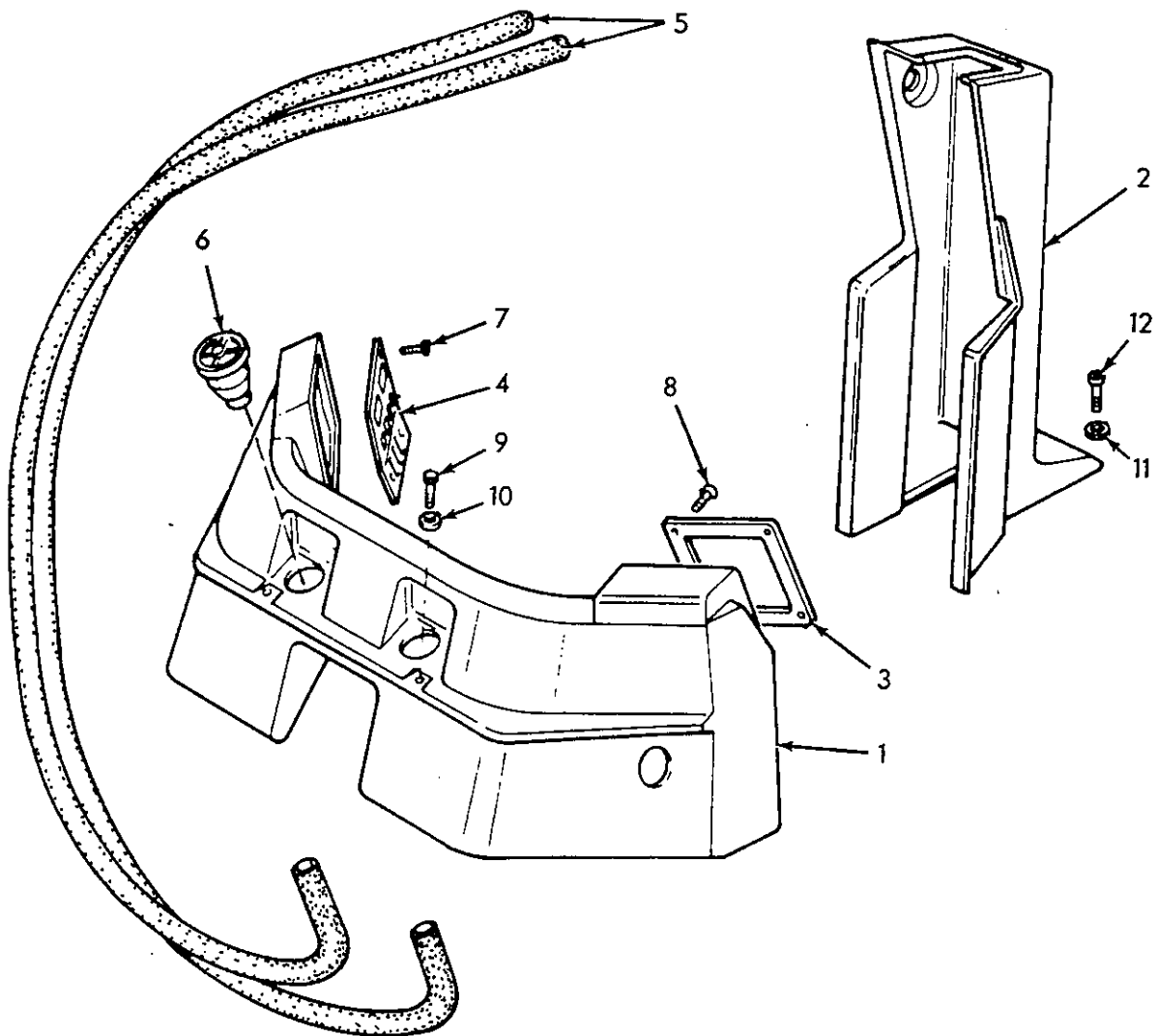


FIG. 8-6 DASHBOARD & STEERING COLUMN PANELS

T-85646

1. DASHBOARD
2. PANEL
3. PLATE
4. PLATE

5. HOSE
6. LOUVER
7. SCREW
8. SCREW

9. SCREW
10. WASHER
11. WASHER
12. SCREW

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4.3.10 REFERENCE DRAWINGS



FIG. 8-7 FLOOR MAT & CONSOLE PANELS

- Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.**

8.4 REPAIR PROCEDURES

8.4.3.10 REFERENCE DRAWINGS

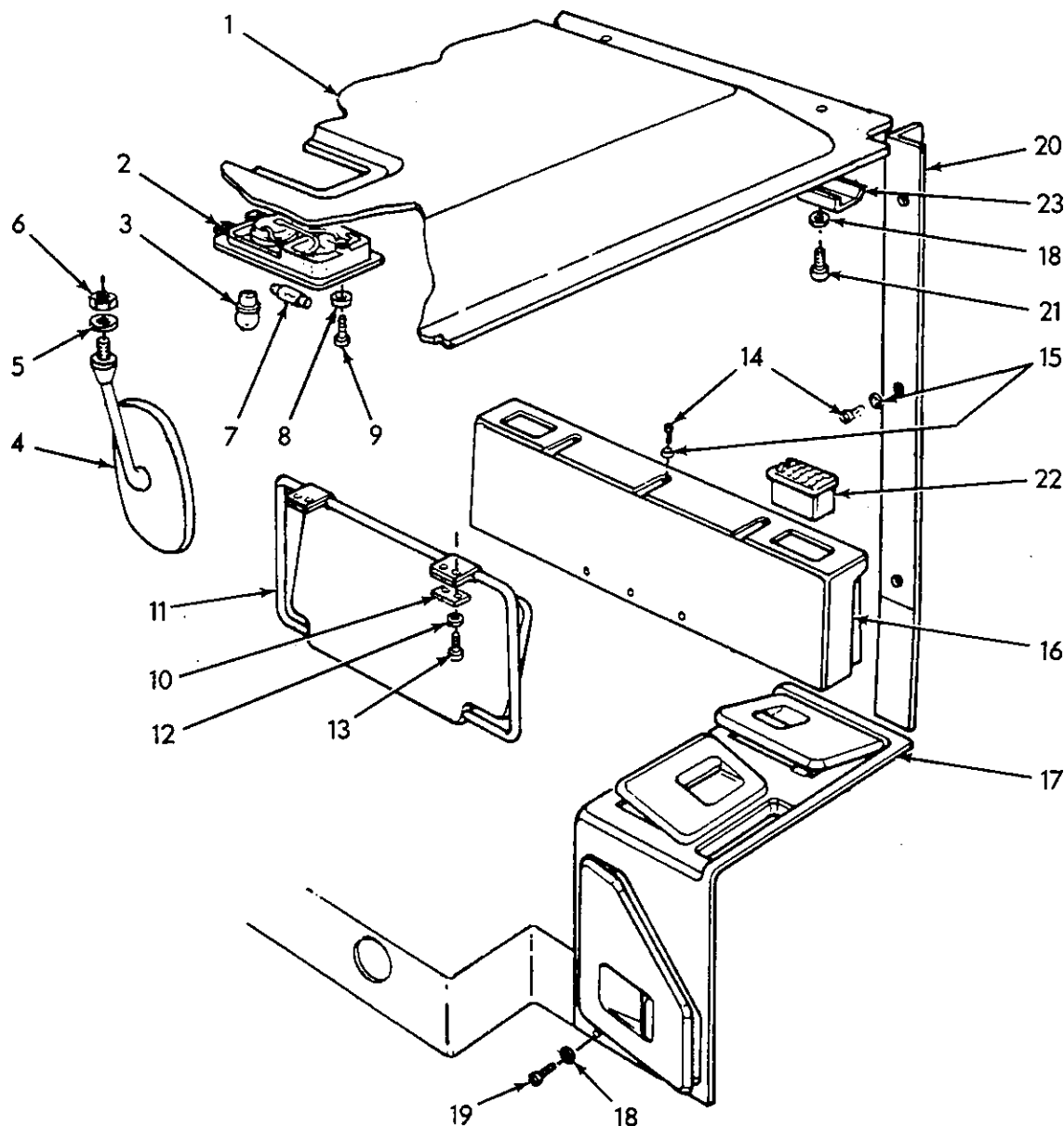


FIG. 8-8 HEADLINER & INSIDE PANELS

T-85648

- | | | |
|---------------------|----------------------|----------------------------|
| 1. HEADLINER | 9. SCREW | 17. GLOVE BOX CONSOLE |
| 2. DOME LIGHT | 10. PLATE | 18. WASHER |
| 3. BULB | 11. SUN VISOR | 19. SCREW |
| 4. REAR VIEW MIRROR | 12. WASHER | 20. REAR CORNER PANEL |
| 5. WASHER | 13. SCREW | 21. SCREW |
| 6. NUT | 14. SCREW | 22. LOUVER |
| 7. BULB | 15. WASHER | 23. HEADLINER RETAINER BAR |
| 8. WASHER | 16. REAR COVER PANEL | |

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

8.4.3.10 REFERENCE DRAWINGS

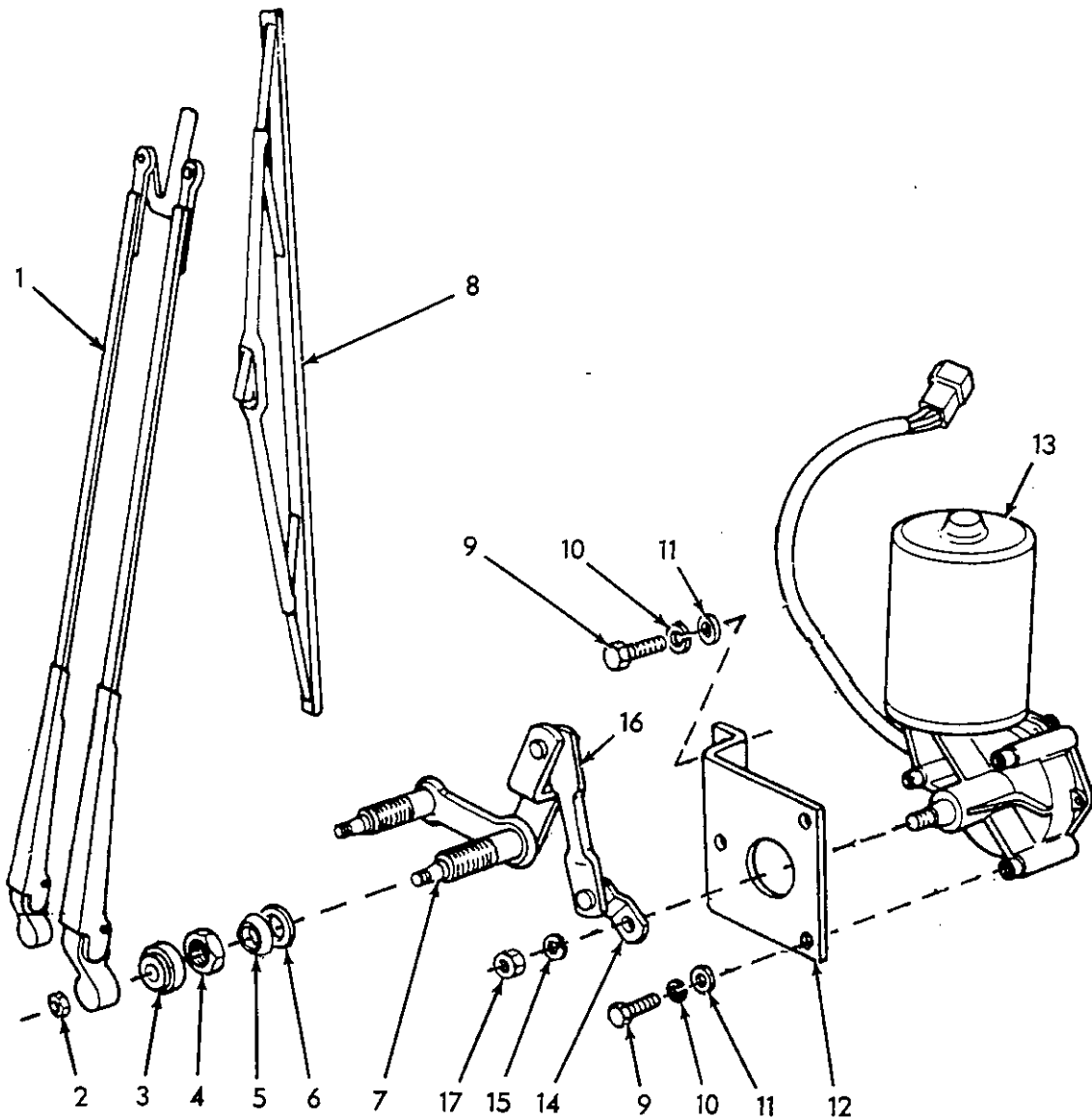


FIG. 8-9 FRONT WINDSHIELD WIPER

T-85649

1. WIPER ARM
2. NUT
3. CAP
4. NUT
5. SPACER
6. WASHER

7. BELL CRANK
8. WIPER BLADE
9. CAPSCREW
10. LOCKWASHER
11. WASHER
12. BRACKET

13. MOTOR
14. LINK
15. LOCKWASHER
16. LINK
17. NUT

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.4 REPAIR PROCEDURES

8.4.3.10 REFERENCE DRAWINGS

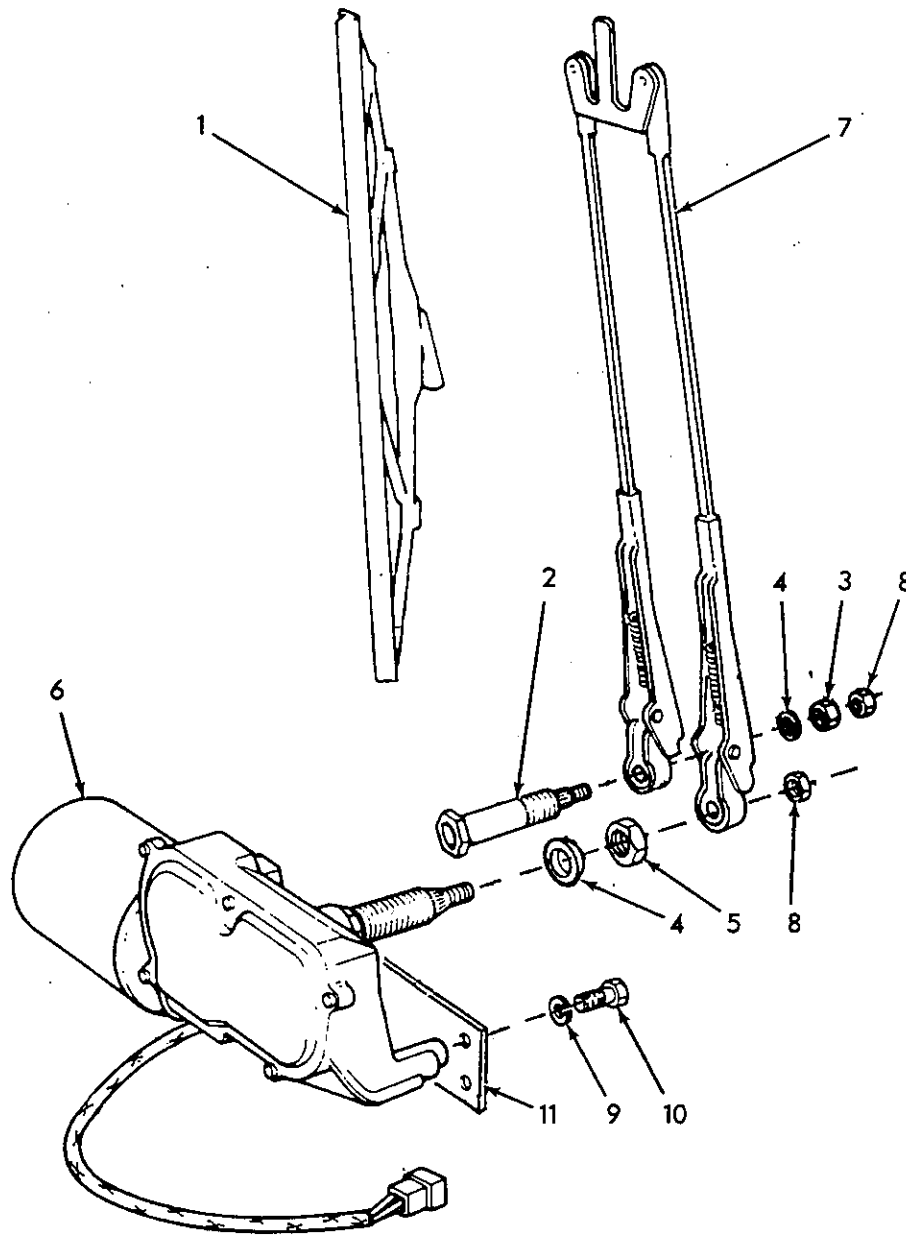


FIG. 8-10 REAR WINDOW WIPER

T-85650

1. WIPER BLADE
2. BELL CRANK
3. NUT
4. SPACER

5. NUT
6. MOTOR
7. WIPER ARM
8. NUT

9. LOCKWASHER
10. CAPSCREW
11. BRACKET

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.5 TOOL SECTION

Service tools required to perform the repair operations in this manual are listed below. Order tools from your *FIATALLIS*® dealer unless otherwise noted.

All other tools are considered to be standard tools which can be ordered from local tool suppliers.

<u>DESCRIPTION</u>	<u>PART NO.</u>
Glass and seal removal and installation tool	_____
Wire cutters	_____
Torque wrench	75300810
Putty knife	_____
Silicone sealant	70935406

8.5 TOOL SECTION

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.6 SPECIFICATIONS

8.6.1 TORQUES

<u>PARAGRAPH</u>	<u>TORQUE</u>	
	<u>Nm</u>	<u>(lbs.ft.)</u>
8.4.2.3	1020	(752)
8.4.2.17	32.8	(24)
8.4.2.24	32.8	(24)
8.4.2.25	32.8	(24)
8.4.2.27	32.8	(24)
8.4.2.45	10.3	(8)
8.4.2.46	32.8	(24)
8.4.2.47	70.0	(51)
8.4.2.48	70.0	(51)
8.4.2.49	70.0	(51)
8.4.2.50	70.0	(51)
8.4.2.51	32.8	(24)

8.6.2 CAPACITIES

<u>PARAGRAPH</u>	<u>DESCRIPTION</u>	<u>AMOUNT</u> <u>LITERS (QTS.)</u>
8.4.3.5.7	Window washer reservoir	_____ (_____)

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

8.6 SPECIFICATIONS

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

COPYRIGHT BY FIATALLIS

FIATALLIS NORTH AMERICA, INC.
1st Issue - 1a Edizione - VI - 1986 (600)
1st Revision - 1a Revisione - VIII - 1989 (425)
2nd Revision - 2a Revisione - I - 1991 (350)

Form No. 73151988

Printed in U.S.A.

