Mega 400-III PLUS

Operation and Maintenance Manual

4022-7160E

Serial Number 0001 and Up

July 1998

Daewoo reserves the right to improve our products in a continuing process to provide the best possible product to the market place. These improvements can be implemented at any time with no obligation to change materials on previously sold products. It is recommended that consumers periodically contact their distributors for recent documentation on purchased equipment.

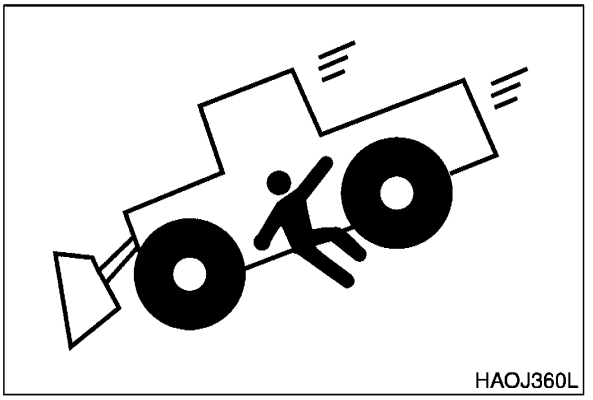
This documentation may include attachments and optional equipment that is not available in your machine's package. Please call your distributor for additional items that you may require.

Illustrations used throughout this manual are used only as a representation of the actual piece of equipment, and may vary from the actual item.

3. WARNING FOR USING WHEEL BLOCK (4190-2547)

WARNING!

Block wheels to prevent machine movement before disengaging park brake.



4. WARNINGS WHEN OPENING ENGINE HOOD (2190-2525)

WARNING!

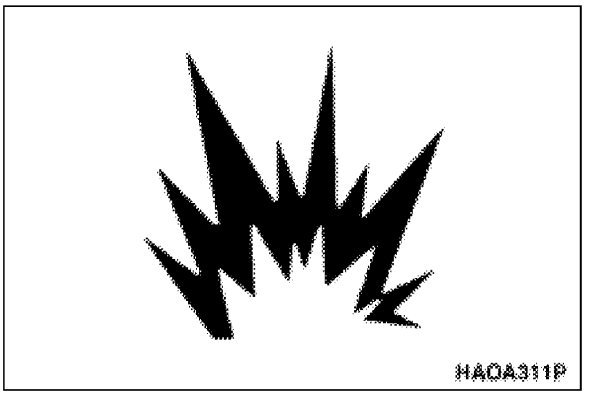
Before opening bonnet, stop engine.

5. WARNING FOR HANDLING ACCUMULATOR (2190-2528)

WARNING!

Explosion hazard

- **Keep away from flame.**
- **Do not weld or drill.**



Accumulator

Wheel loader pilot control system is equipped with an accumulator. Accumulator will store a pressure charge that may enable hydraulic controls to be activated for a brief period of time after engine has been shut down. Activation of any controls may enable selected function to operate under force of gravity.

BOOST STARTING OR CHARGING ENGINE BATTERIES

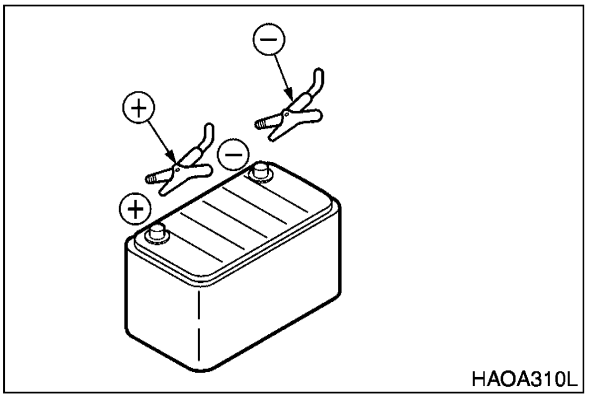


Figure 10

Turn "OFF" all electrical equipment before connecting leads to battery. This includes electrical switches on battery charger or boost starting equipment.

When boost-starting from another machine or vehicle do not allow two machines to touch. Wear safety glasses or goggles while required parallel battery connections – positive to positive and negative to negative – are made.

24 volt battery units consisting of two series-connected twelve volt batteries have a cable connecting one positive terminal on one of the 12 volt batteries to a negative terminal on the other battery. Booster or charger cable connections must be made between non-series-connected positive terminals and between negative terminal of booster battery and metal frame of machine being boosted or charged. Refer to procedure and illustration in “Starting with Auxiliary Batteries” on page 3-3.

Connect positive cable first when installing cables and disconnect negative cable first when removing them. Final cable connection, at metal frame of machine being charged or boost-started, should be as far away from batteries as possible.

KEEP “PINCH POINT” AREAS CLEAR – USE CAUTION IN REVERSE

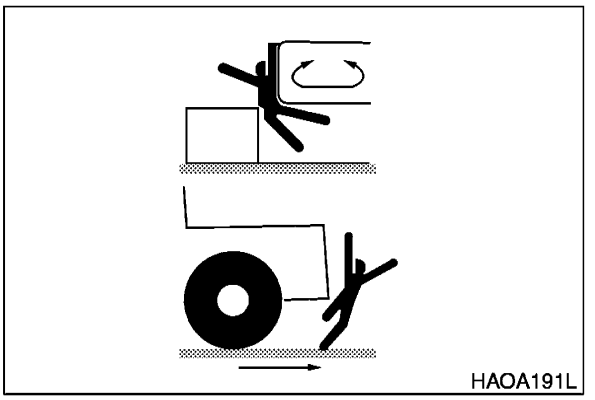


Figure 11

Use a signal person in high traffic areas and whenever operator’s view is not clear, such as when traveling in reverse.

Anyone standing near wheels, or working assemblies of the attachment, is at risk of being caught between moving parts of machine.

Never allow anyone to ride on any part of machine or attachment, including any part of operator’s cab.

TRAVEL PRECAUTIONS

Engage frame lock for long-distance travel. When traveling, wheel loader always keeps lights on; make sure that you are in compliance with all state and local regulations concerning warning flags and signs.

Attachment control levers should not be operated while traveling.

Fold in work equipment so that outer end of boom is as close to machine as possible, and is

low – 203 mm – 304 mm (8” – 12”) above ground.

Never travel over obstacles or slopes that will cause machine to tilt severely. Travel around any slope or obstacle that causes 10 degrees tilt, or more.

OPERATING CONTROLS

"Operating Controls" section presented here consists of the following groups:

Each group is explained with a point location drawing or photo and a brief description of each control, switch, gauge or valve.

Indicator lights work in addition to gauges on instrument panel. Operators should monitor machine pressure on instrument panel along with pilot lights. These lights will only give operators an indication that there is a problem

⚠ WARNING!

Warning lights. When any one or more of the warning lights located on the control console come "on", immediately discontinue operation and shutdown unit. Investigate and correct problem before proceeding with operation.

2. COOLANT TEMP. GAUGE

This gauge displays temperature of engine coolant. Coolant temperature should not exceed 103°C (217°F).

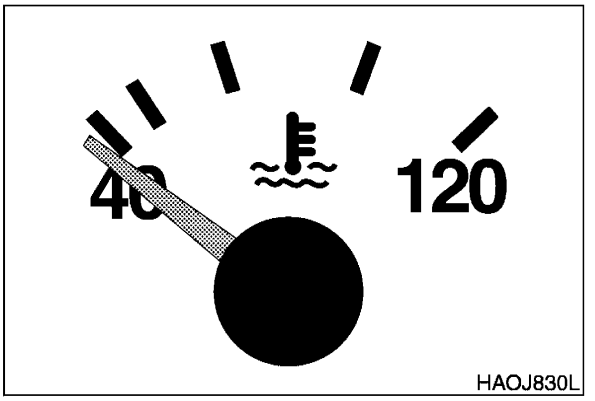


Figure 16

3. FUEL GAUGE

This gauge displays amount of fuel in tank.

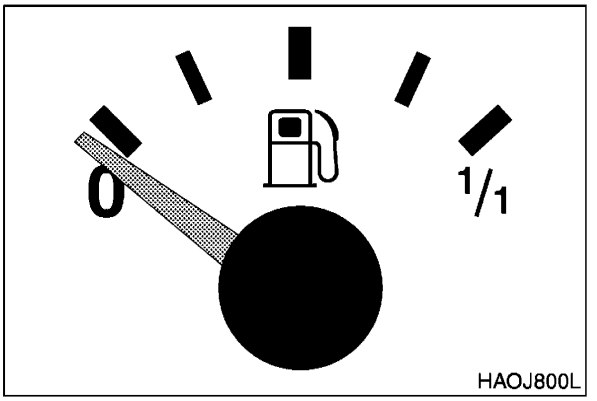


Figure 17

4. SPEEDOMETER

This meter displays speed at which vehicle is traveling.

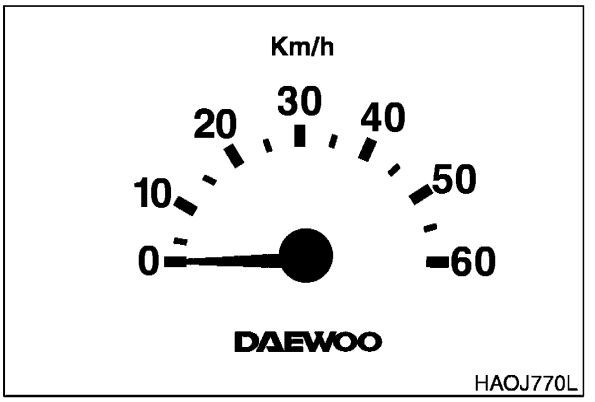


Figure 18

5. TACHOMETER

This meter displays engine speed in revolutions per minute.

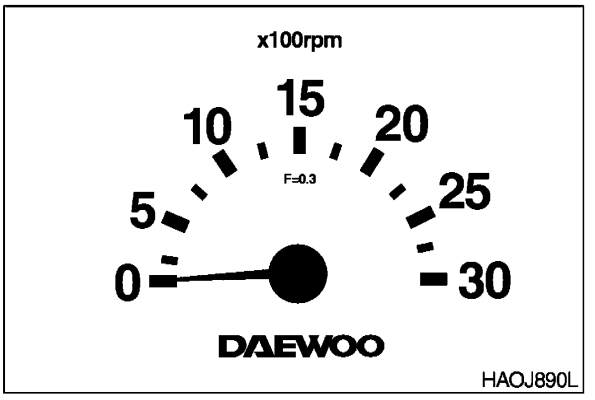


Figure 19

10. ROTATING BEACON SWITCH(OPTION)

A. "OFF" position

B. Moving this switch to "ON" position activates warning beacon.

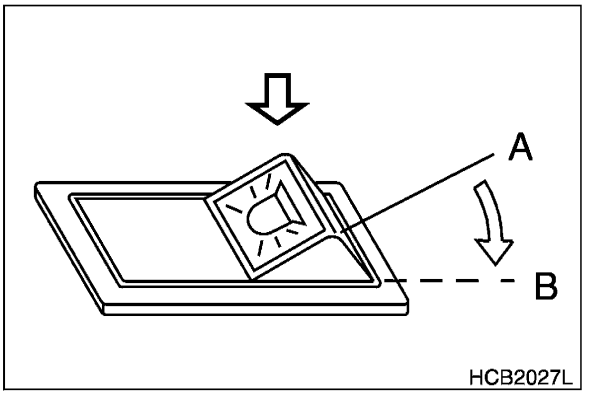


Figure 46

11. IGNITION SWITCH

A four position key switch.

O. "OFF" position. Key can be inserted or removed at this position. When key is moved to this position, engine will stop running.

I. In this position, with engine "OFF", alternator light and engine oil light will glow. In this position with engine running, electrical circuits controlled by this switch are closed.

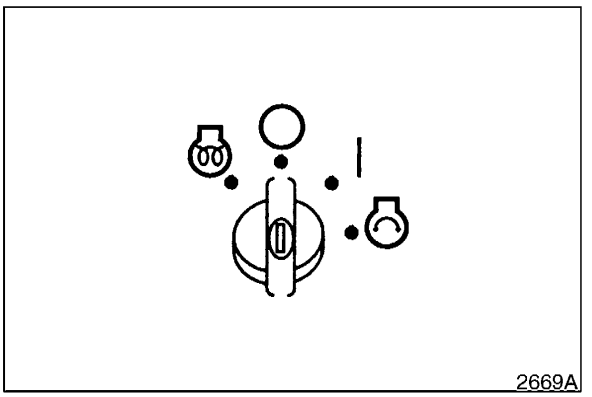


Figure 47

. Moving switch to this position will crank engine. When engine starts, release key and allow it to return to **I** position. Do not crank engine for more than 15 seconds at a time; this could damage starter motor.

. Preheat position. Used to aid engine starting in cold weather. When key is in this position, engine preheater is operating. When Preheat Cycle Indicator Light turns "ON" engine preheat cycle is complete. Now turn key to crank position and start engine.

12. FAN SWITCH

O. Turns fan "OFF."

I. Will rotate cab ventilation fan at "LOW."

II. Will rotate cab ventilation fan at "MEDIUM."

III. Will rotate cab ventilation fan at "HIGH."

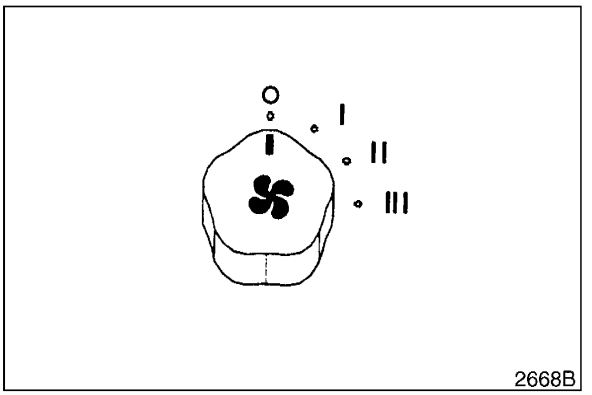


Figure 48

SEAT ADJUSTMENT

WARNING!

Whenever operator or operating condition has changed, check to see that seating position is suitable for the condition at hand. Always fasten your seat belt while operating vehicle. Adjust backrest so that the operator can fully reach and operate pedals. When setting safety lever to "LOCK" position, first make sure left arm rest is completely raised to the upright position.

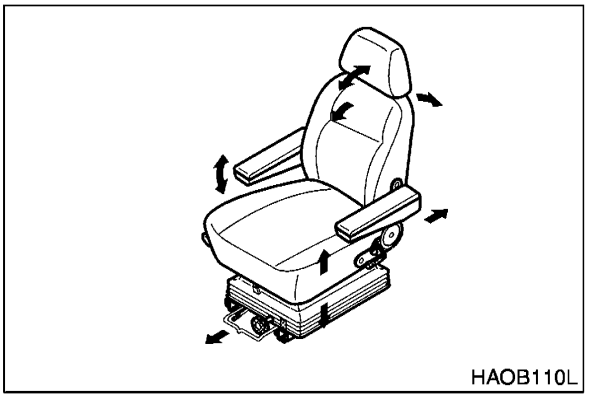


Figure 67

1. ADJUSTING SEAT FORWARD/ BACKWARD LEVER (FIGURE 67)

Holding lever and raise it up, while pushing or pulling seat to desired position. Release lever once desired position is reached. Adjustment range is 160 mm (6.3 in.)

2. ADJUSTING SEAT'S ANGLE AND HEIGHT LEVER (FIGURE 67)

Pulling left lever up allows rear part of seat to be moved up or down. Pushing it down allows front part of seat to be moved up or down. Adjust seat according to operator's size and work conditions. Adjustment range is 60 mm (2.36 in.) for both front and rear.

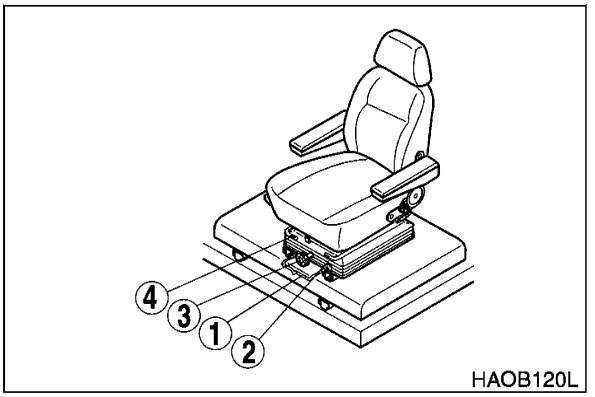


Figure 68

3. WEIGHT ADJUSTMENT KNOB (FIGURE 68)

Turning knob to right makes suspension harder. Turning knob to left makes suspension softer. Adjust according to operator's weight by checking weight indicator dial. Adjustment range is from 50 - 120 kg (110 - 265 lbs.)

4. BACKREST ADJUSTMENT LEVER (FIGURE 68)

Pulling up right lever allows seat backrest to be moved forward or backward.

⚠ WARNING!

Always secure machine with wheel chocks when parked on a slope. Leaving machine in gear will provide no braking effect because transmission clutch is hydraulically operated. When engine is turned "OFF," there is no hydraulic pressure in transmission and clutch is not engaged.

ADDITIONAL BRAKING

Machine hydraulic system can supply additional braking force during travel. To accomplish this, move bucket control lever to crowd position and hold it there. Hydraulic pump will be driven to supply output at maximum pressure (relief pressure). Energy expended to drive pump, will slow engine speed. Additional braking, along with proper gear selection, can be used to slow a vehicle that is being driven down an incline.

BOOM RAISE KICKOUT

Placing bucket lever in “HR” position will lock control lever in raise boom position. Boom will raise until trip plate (1, Figure 9) makes contact with bucket height limit switch (2). When limit switch is tripped, boom will stop raising and bucket lever will automatically be returned to “NEUTRAL” position. Trip plate can be adjusted to control maximum height that boom can be raised.

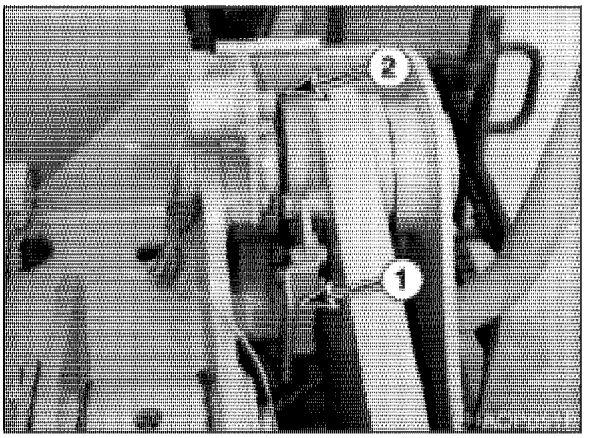


Figure 9

IMPORTANT

Trip plate must always be set to contact Limit Switch before boom cylinders reach maximum extension. Maximum extension causes pump to force fluid over relief valve.

To raise boom to maximum height, past preset height, hold bucket lever in "H" or "HR" position until boom has reached maximum height. Then remove your hand from lever. Lever will automatically return to "NEUTRAL" position. This prevents hydraulic pump from working against relief valve (maximum pressure.)

2. Remove engine oil dipstick. (Figure 3). Oil level must be between “LOW” and “FULL” marks.

   NOTE: *If oil is above "HIGH" mark on dipstick, some must be drained to return oil to proper level.*

3. To add oil, remove engine oil fill cap (Figure 4).

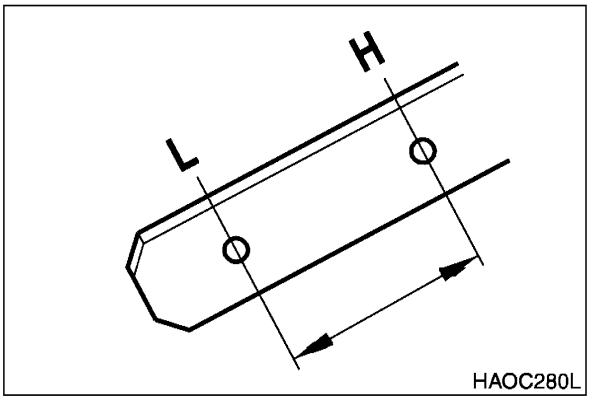


Figure 5

CHECK TRANSMISSION OIL LEVEL

1. Use two people to perform this operation.
2. Start engine and move machine to a level area.
3. Place transmission lever in "NEUTRAL."
4. Apply parking brake.
5. Allow engine to idle until engine temperature is between 82°C (180°F) and 93°C (200°F).
6. Remove transmission dipstick (1, Figure 6). Wipe dipstick clean and then insert it back into transmission.
7. Remove dipstick and check oil level mark. Oil level must be between “LOW” and “FULL” marks (Figure 7).
8. To add oil, remove transmission fill cap (2, Figure 6) from transmission oil filler pipe.
9. Shutdown engine when done.

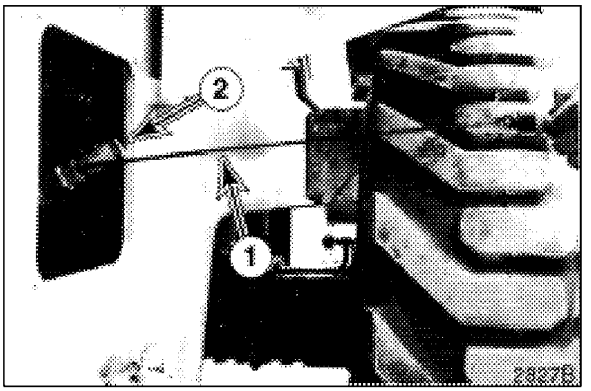


Figure 6

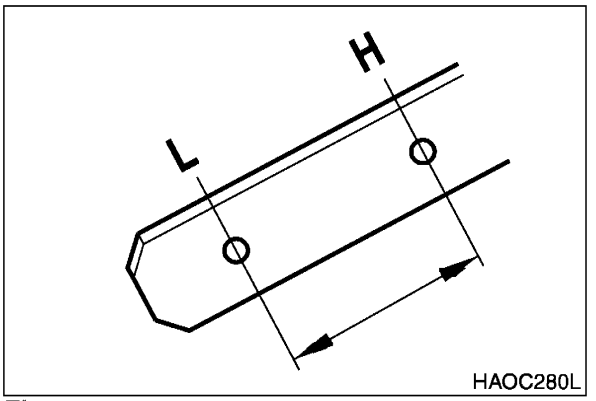


Figure 7

1) Bucket cylinder heads (left, right), 2 points. Greased from two remote grease points (1, Figure 26).

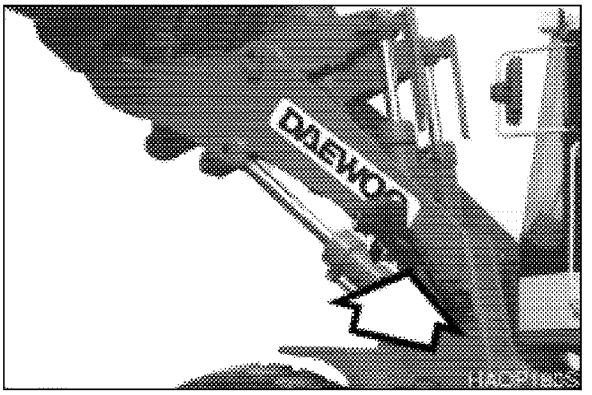


Figure 28

2) Loader arm foot ends, 2 locations on each side of machine. Greased from two remote grease points (2, Figure 26).

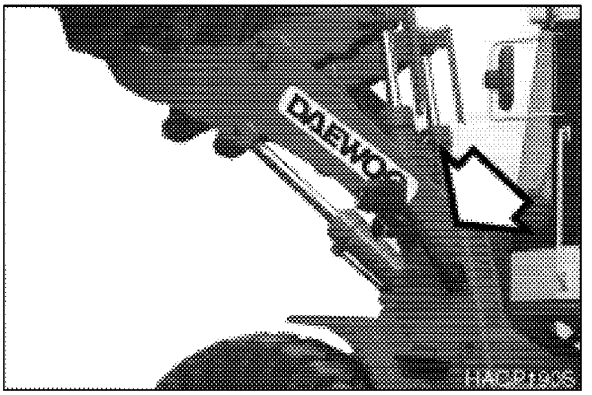


Figure 29

F: Grease Rear Axle Pivot

Rear Axle pivot (1, Figure 30), 2 locations on each side of machine. Use remote grease fittings mounted on frame shown in Figure 31.

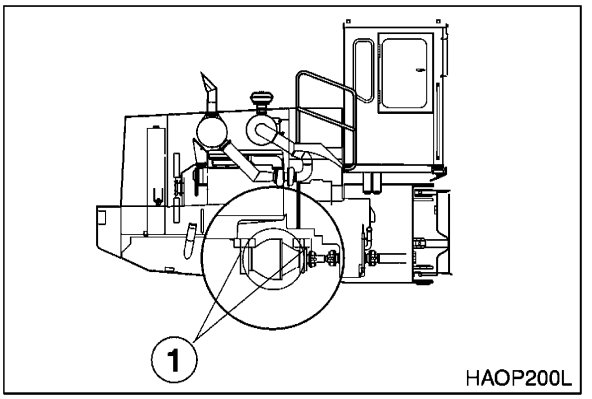


Figure 30

Figure 31

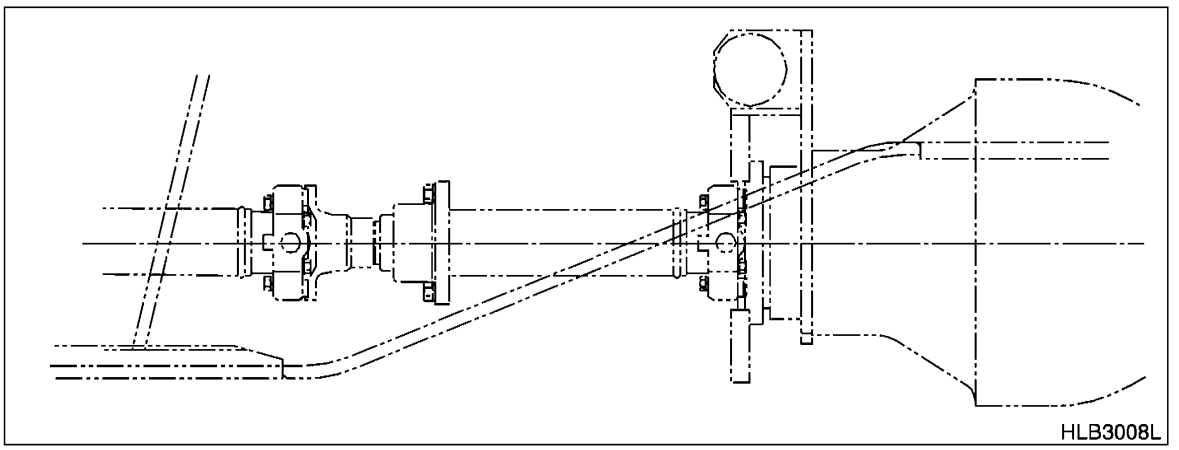


Figure 47 FRONT DRIVE SHAFT CENTER BEARING. GREASE FROM REMOTE GREASE POINT.

Center drive shaft joint, 2 locations, and spline, 1 location.

Rear drive shaft joint, 2 locations, and spline, 1 location.

Front drive shaft, 1 location.

Remote grease fitting for center bearing, 1 location (Figure 45 and Figure 46).

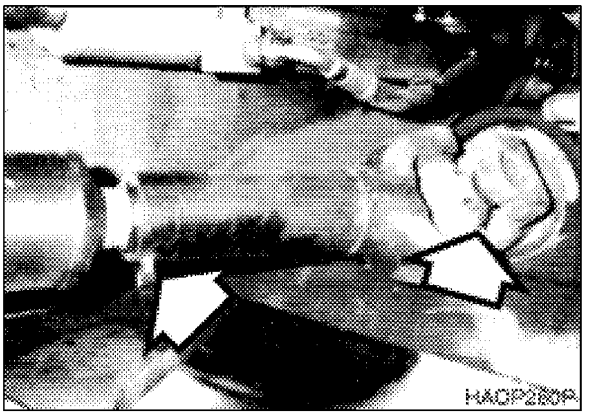


Figure 48

REPLACE OUTER AND INNER AIR CLEANER ELEMENTS

⚠ CAUTION!

Never remove air cleaner element while engine is running. This will allow dirt to be sucked into engine and cause serious engine damage. Always turn engine "OFF" before servicing air cleaner.

1. Replace inner element when outer element is replaced.
2. After removing outer element, remove wing nut and inner element.
3. Clean out inside of air cleaner housing. DO NOT use compressed air to blow out housing.
4. Install new inner element, and secure it into position with wing nut. DO NOT clean and re-use inner element.
5. Install new outer element, and secure it into position with wing nut.
6. Install air cleaner cover.

   NOTE: *Make sure that all gaskets on wing nuts and cover are properly installed and seated.*

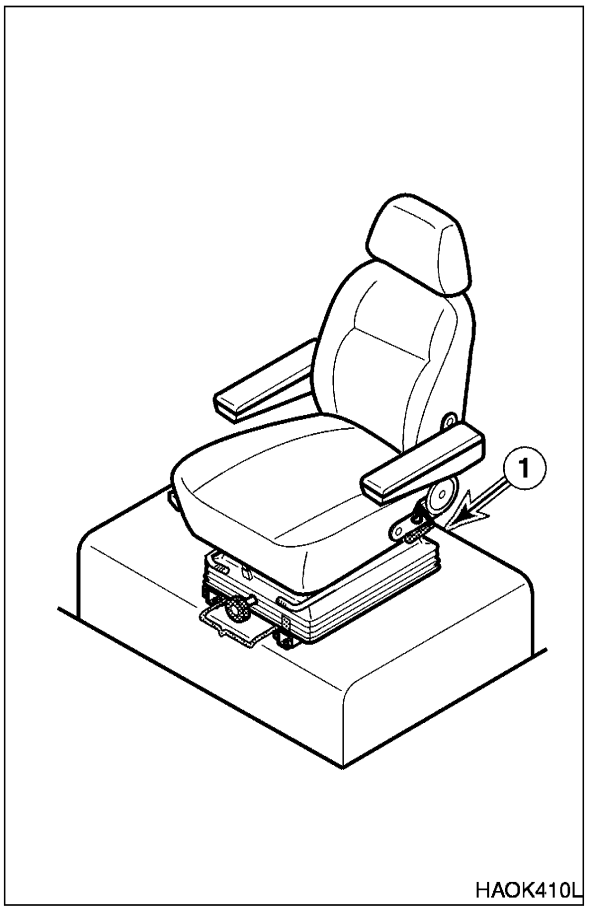


Figure 81

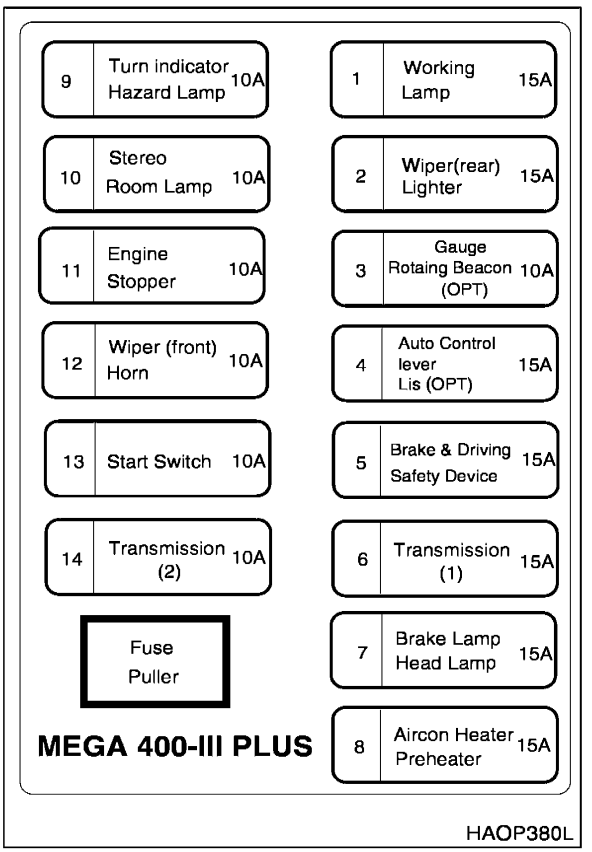


Figure 82

The fuse box (1, Figure 81) is located beneath operator's seat. Fuses are standard automotive type fuses. Description of which circuits each fuse protects, and amperage rating of each fuse, is shown in Figure 82.

If an electrical circuit stops working, check the fuse that protects that circuit. If fuse is blown, look for cause of blown fuse and correct fault. Look for an electrical short in circuit. When replacing a blown fuse, never insert a higher amperage fuse than original fuse. This could cause damage to electrical components or cause a fire.

There is also a relay panel located below seat.

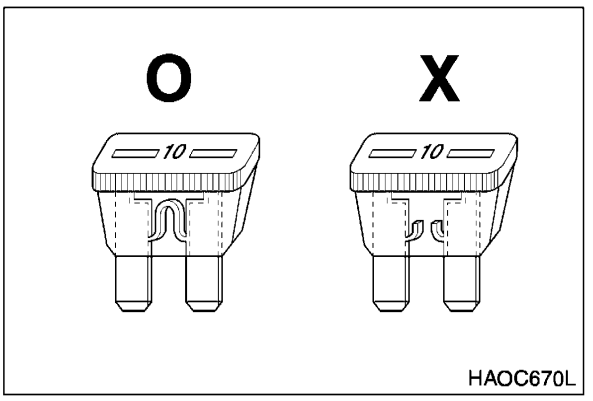


Figure 83

PROBLEM	POSSIBLE CAUSES	REMEDIES
Drive shaft vibration Noisy universal joints	Bent drive shaft	Replace drive shaft
	Loose universal joints	Tighten bolts that secure joints
	Worn or damaged universal joint	Replace universal joint
	Loose universal joints	Tighten bolts that secure universal joints
	Lack of lubrication	Lubricate universal joints
	Worn slip joint spline	Replace slip joint
Noisy Front or Rear Axle	Worn or broken gears	Replace gears
	Low oil level, poor quality oil	Add oil, change oil
	Worn bearings	Replace bearings
	Worn shaft spline	Replace spline

STEERING

PROBLEM	POSSIBLE CAUSES	REMEDIES
Steering Wheel is hard to turn	Sediment blocking direction change spool orifice, inside priority valve	Clean and repair
	Sediment blocking amplifying spool orifice, inside priority valve	Clean and repair
	Sediment blocking load sensing line orifice, inside priority valve	Clean and repair
	Priority valve spool sticking, inside steering valve	Clean and repair
	Incorrect relief valve pressure drop, inside priority valve	Adjust pressure
	Steering pump failure	Repair or replace
	Leaking steering cylinder	Repair cylinder
	Rust on steering column bearing and spline	Lubricate
	Tire air pressure is low	Inflate to proper pressure