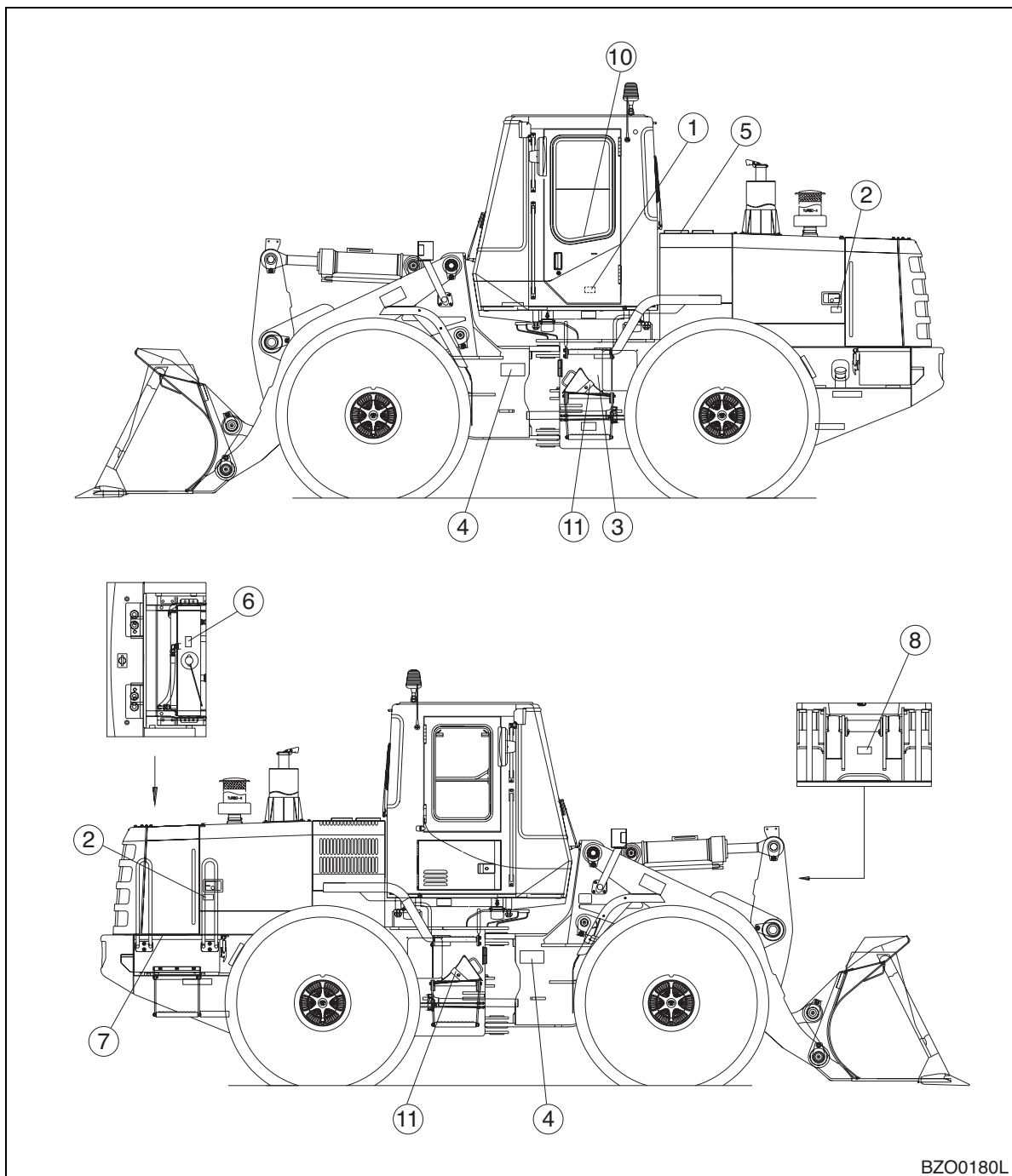


# LOCATION OF SAFETY LABELS

Always keep these labels clean. If they are lost or damaged, attach them again or replace them with a new label. Make sure replacement parts have current labels.

There are other labels in addition to safety labels that follow so handle them in the same way. Safety labels may be available in languages other than English. To find out what labels are available, contact your Daewoo distributor.



**Figure 1** (S/N 3001 thru 4000)

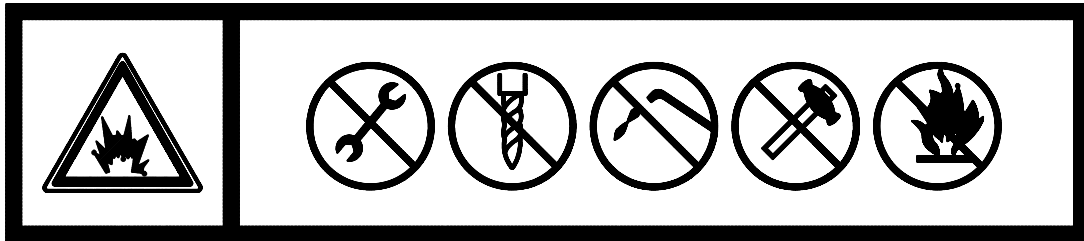
### 3. WARNING FOR HANDLING ACCUMULATOR (190-00703, 190-00099)



## WARNING!

### Explosion hazard:

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



ACO1480L

### 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.



## CAUTION!

**Any raised attachment will lower to ground if accumulator holds a charge.**

When shutting machine down, lower front attachment to ground. After engine has been shut down, turn key to "ON" position and move joystick controls to release pressure in accumulator. Remove key.

## IMPORTANT

**Refer to Shop Manual for service procedures. Do not release any pilot lines until pressure within accumulator has been released.**

## **BEFORE STARTING TO DIG, CONTACT AUTHORITIES**

Below ground hazards also include natural gas lines, water mains, tunnels and buried foundations. Know what's underneath work site before starting to dig.

## **BE AWARE OF HEIGHT OBSTACLES**

Any type of object in vicinity of boom could represent a potential hazard, or cause operator to react suddenly and cause an accident. Use a spotter or signal person working near bridges, phone lines, work site scaffolds, or other obstructions.

## **USE CARE ON LOOSE SUPPORT**

Working heavy loads over loose, soft ground or uneven, broken terrain can cause dangerous side load conditions and possible tipover and injury. Travel without a load or balanced load may also be hazardous.

If temperatures are changing, be cautious of dark and wet patches when working or traveling over frozen ground. Stay away from ditches, overhangs and all other weak support surfaces. Halt work and install support mats or blocking if work is required in an area of poor support.

## **USE SOLID SUPPORT BLOCKING**

Never rely on lift jacks or other inadequate supports when work is being done. Block wheels fore and aft to prevent any movement.

## **DIGGING BENEATH OVERHANGS**

Digging beneath an overhang is dangerous. Overhang could collapse on top of operator and cause serious injury or death. Go onto another digging area before steep overhangs are formed. Know height and reach limits of wheel loader and plan ahead while working. Park wheel loader away from overhangs before work shut down.

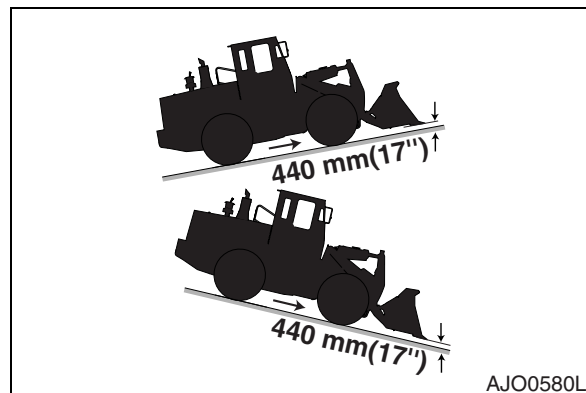
## **DIGGING BENEATH WHEEL LOADER**

Digging beneath wheel loader is dangerous. Earth beneath could collapse. This could cause wheel loader to tip, which could cause serious injury or death to operator. Working around deep pits, trenching or along high walls may require support blocks, especially after heavy rainfalls or during spring thaws.

## **SLOPING TERRAIN REQUIRES CAUTION**

Dig evenly around work site whenever possible, trying to gradually level any existing slope. If it's not possible to level area or avoid working on a slope, reducing size and cycling rate workload is recommended.

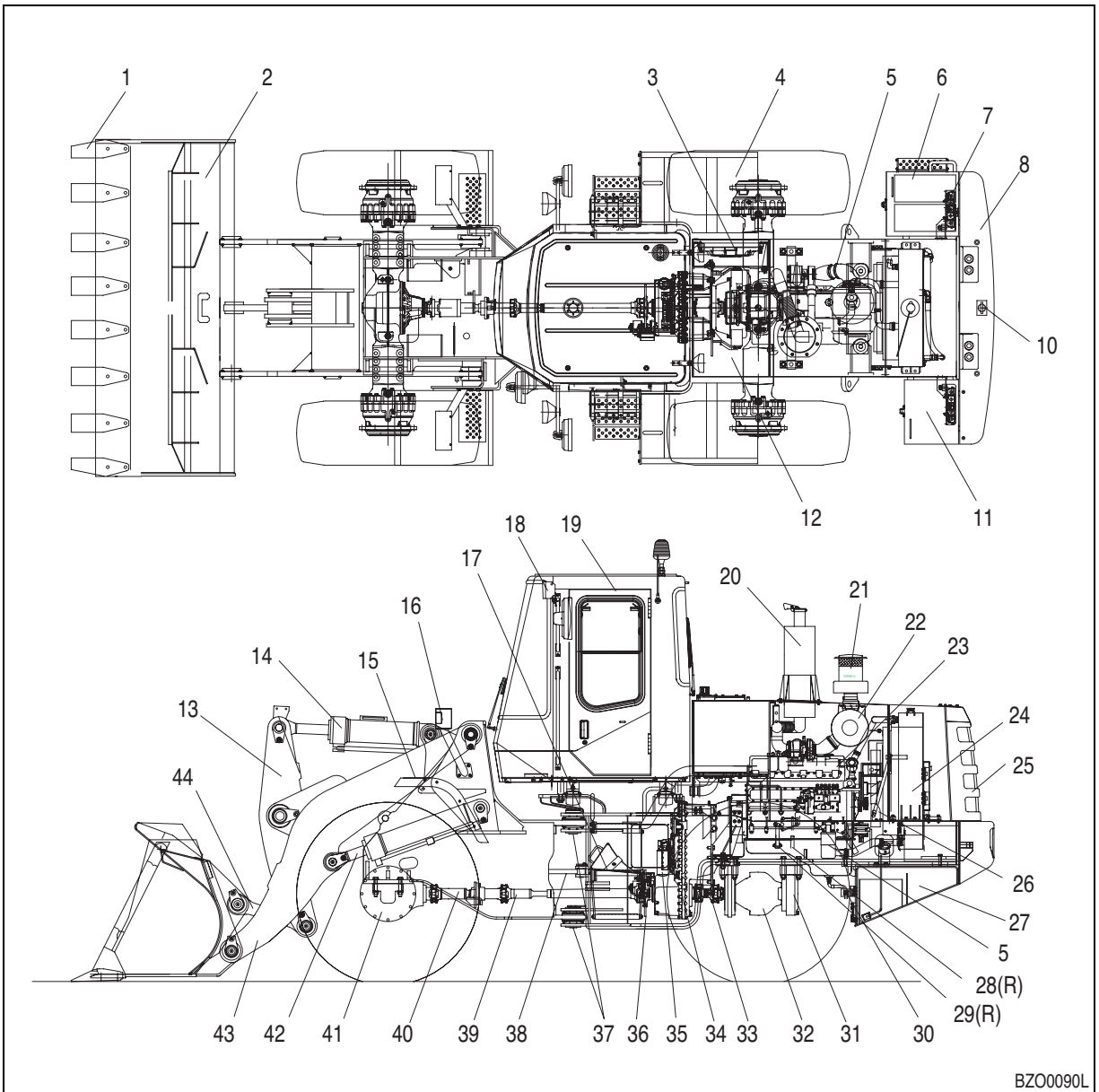
On sloping surfaces, use caution when positioning wheel loader before starting a work cycle. Stay alert for unstable situations to avoid getting into them. For example, you should always avoid working bucket over downhill side of machine when parked perpendicular to slope. Avoid full extensions of bucket in a downhill direction. Lifting bucket too high, too close to machine, while wheel loader is turned uphill can also be hazardous.



**Figure 4**

# COMPONENT LOCATIONS

The following figure identifies the location of major machine components.



**Figure 1** (S/N 3001 thru 4000)

## 9. TRANSMISSION LEVER

- F** Forward - When the lever is pushed forward, transmission is in "FORWARD." 1st, 2nd, 3rd and 4th are available.
- N** Neutral - When the lever is returned to the center position, between forward and reverse, the transmission is in "NEUTRAL."
- R** Reverse - When the lever is pulled back, transmission is in "REVERSE" 1st, 2nd and 3rd are available.

Rotating the switch shifts transmission between 1st, 2nd, 3rd, or 4th gear.

**NOTE:** *There is a transmission display, on the dash, that indicates, gears, direction of travel, error codes and kick-down activation. (See page 2-15)*

A transmission neutral lever lock is in base of transmission lever. This neutral lever lock prevents the transmission lever from being moved out of "NEUTRAL."

- N** "NEUTRAL LOCK" position. Prevents lever from being moved out of "NEUTRAL."
- D** "DRIVE" position. Allows lever to be moved from "NEUTRAL" to "FORWARD and REVERSE."



### CAUTION!

"LOCK" transmission lever. When ever machine is parked, "LOCK" transmission lever in "NEUTRAL" to prevent accidental machine movement.

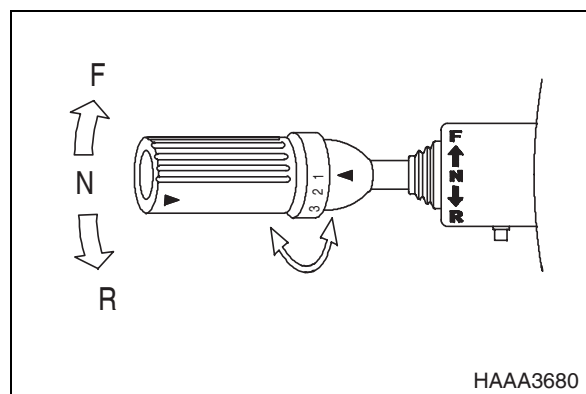


Figure 17



Figure 18

## 12. PILOT CUTOFF SWITCH

- O. In this position the operator cannot operate the pilot control valve lever (joystick).
- I. In this position the operator can fully control the movement of the pilot control valve lever (joystick).



### CAUTION!

When driving or parking, the pilot cutoff switch should be changed to "O" position.

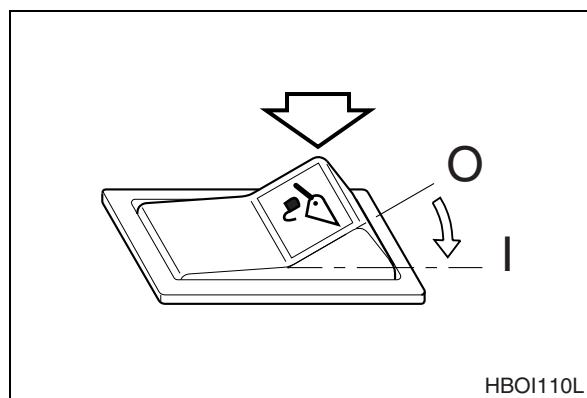


Figure 61

HBOI110L

## 13. TRANSMISSION CUTOFF SWITCH

This switch changes the mode of the brake pedal from "INCHING" to "NO INCHING."

- O. In this position, the "NO INCHING" mode is selected.

In the "NO INCHING" mode, the power transmission line is still connected when the brake pedal is pressed, thus, making it easier to start off on an incline. This mode is also suitable for traveling, because both engine braking and the service brake can be used in descending grades.

- I. In this position, the "INCHING" mode is selected.

In this mode, the transmission is put in "NEUTRAL" by pressing the left brake pedal. This mode is suitable for load handling operation. When the accelerator pedal is pressed under this condition, more power is concentrated on the load handling system, to quicken the boom lifting speed.

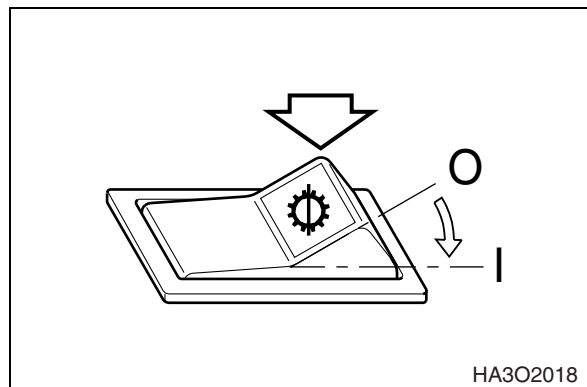


Figure 62

HA3O2018

**NOTE:** 1) Transmission "CUTOFF" function dose not operate at 3rd and 4th gear for protection of transmission.

2) Despite transmission "CUTOFF" switch, the right brake pedal has braking function only.



### WARNING!

When pressing brake pedal while traveling or working on a slope, set this switch to "O" for engine brake.

# STEREO

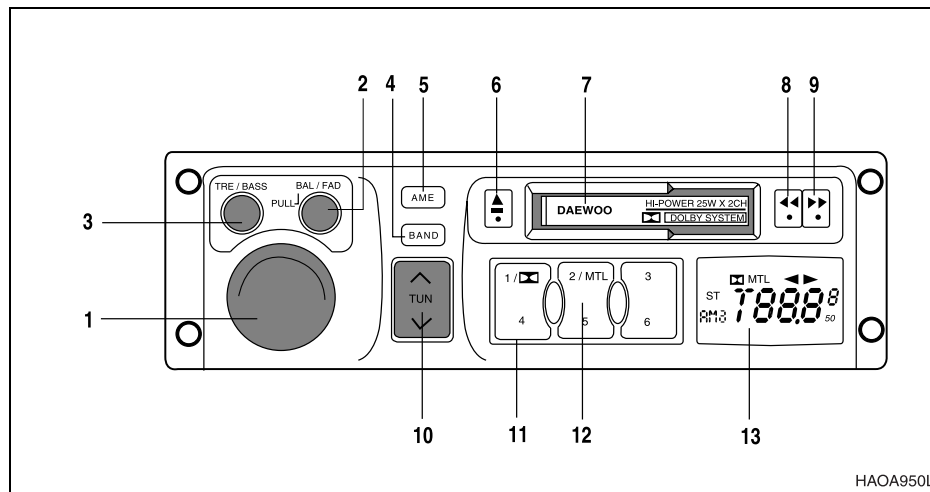


Figure 89

- |                                 |                               |
|---------------------------------|-------------------------------|
| 1. ON-OFF / VOLUME CONTROL KNOB | 7. CASSETTE SLOT              |
| 2. BALANCE / FADER CONTROL      | 8. & 9. PLAY DIRECTION BUTTON |
| 3. BASS/TREBLE CONTROL          | 10. AUTOMATIC SELECTOR        |
| 4. AM/FM BAND SELECTOR          | 11. DOLBY B SELECTOR          |
| 5. AUTOMATIC MEMORY (AME)       | 12. METAL SELECTOR            |
| 6. TAPE EJECT BUTTON            | 13. LCD DISPLAY PANEL         |

## 1. ON-OFF / VOLUME CONTROL KNOB

When this button is pressed, stereo will be turned "ON."

When this button is pressed a second time, power turns "OFF."

Increase volume by rotating control clockwise.

When stereo is turned "ON," LCD display will indicate radio stations and/or tape functions.

## 2. BALANCE / FADER CONTROL

This control adjusts both side to side balance of stereo sound and front to back fading.

Rotating control counterclockwise will increase volume to the left speakers, clockwise increases volume to the right speakers.

Press on control and it will pop out; you can now adjust the fader (front/rear) balance.

Rotating control counterclockwise increases volume to the rear speakers, clockwise increases volume to the front speakers.

## 3. BASS / TREBLE CONTROL

This control adjust bass and treble tone levels.

To adjust treble tone level rotate control counterclockwise to decrease treble and clockwise to increase treble.

## COLD WEATHER ENGINE START

1. Set parking brake switch to the "I" (APPLIED) position. This will ensure that the parking brake is "APPLIED."

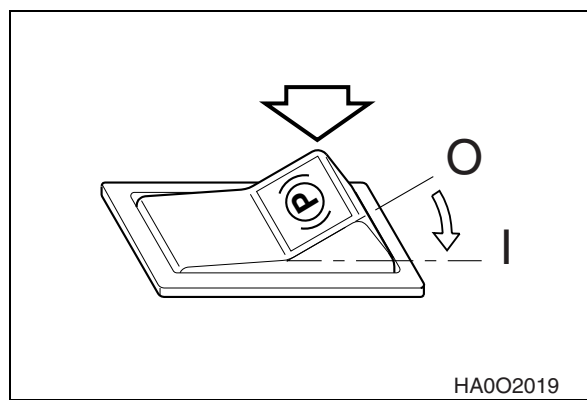


Figure 8

2. Move all control levers to "NEUTRAL" position.

### IMPORTANT

If transmission lever is not in "NEUTRAL" position, engine will not start.

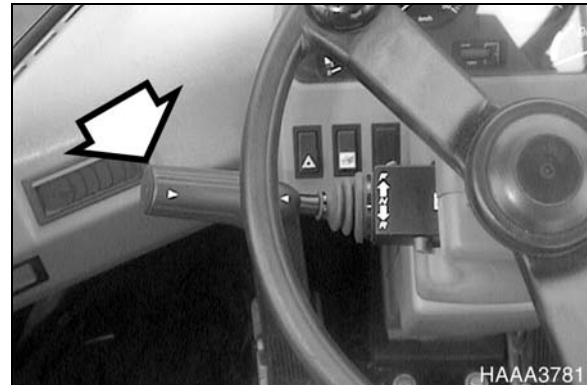


Figure 9

3. Make sure transmission neutral lock is in the "N" (NEUTRAL LOCK) position.

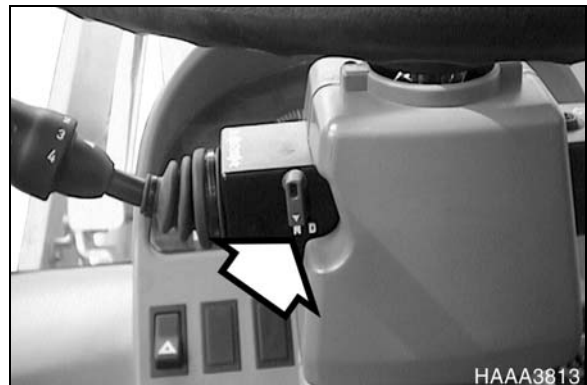


Figure 10

4. Set pilot cutoff switch to "O" (LOCKED) position. This will "LOCK" pilot control valve lever (joystick).

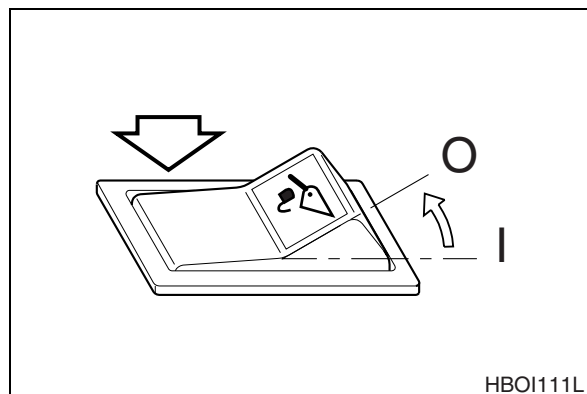


Figure 11



# MACHINE TRAVEL (STANDARD TRANSMISSION CONTROLS)



## WARNING!

If vehicle is moved while parking brake is engaged, serious damage to parking brake disk will result.

Select a transmission gear that is appropriate for top speed that will be traveled. Choosing a gear that is too high will reduce acceleration and will unnecessarily heat transmission converter oil.

Never place transmission in "NEUTRAL" when going down a hill. Over speeding transmission can damage transmission gears.

Never change direction of vehicle travel at high speed. Serious damage to transmission will result.

1. Unlatch frame lock plate between front and rear frames before traveling. Secure lock plate to rear frame (Figure 22).

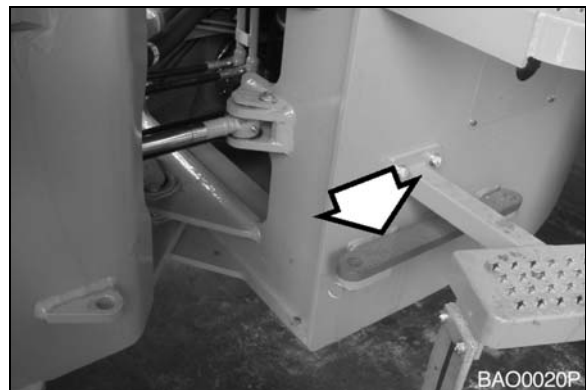


Figure 22

2. Set pilot cutoff switch to "I" (UNLOCKED) position. Raise bucket to a height of 20 -30 cm (8 - 12 in) above the ground. Tilt bucket completely back.

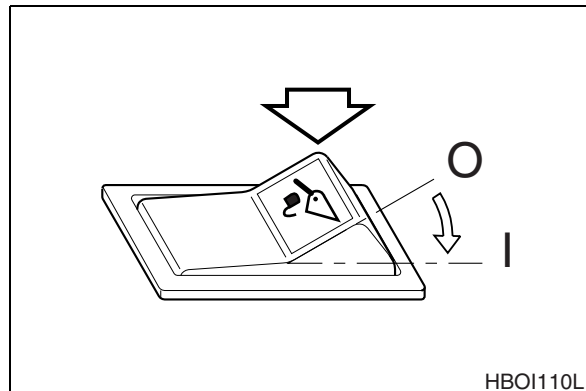


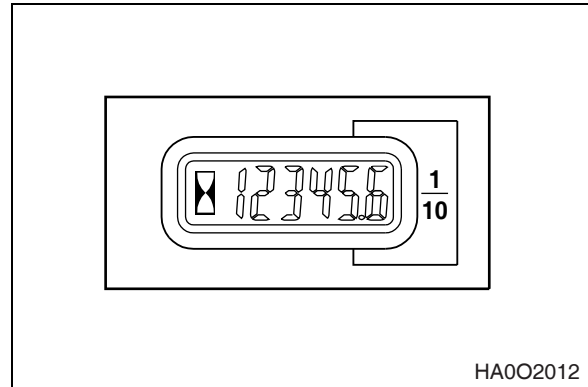
Figure 23

# INSPECTION, MAINTENANCE AND ADJUSTMENT

## PREVENTIVE MAINTENANCE

Periodic checks and replacement of oil, grease, filters, etc. must be made at specific intervals, to keep machine in good working condition. The following pages describe items to be checked, lubricants to be used, and time interval between each check.

**NOTE:** *Time interval between each service check may need to be shortened if machine is operating in severe atmospheric conditions. Machines working in extremely hot or dusty conditions will require more frequent service checks. Total hours of machine operation are determined by hour meter that is on the front instrument panel.*



**Figure 47**

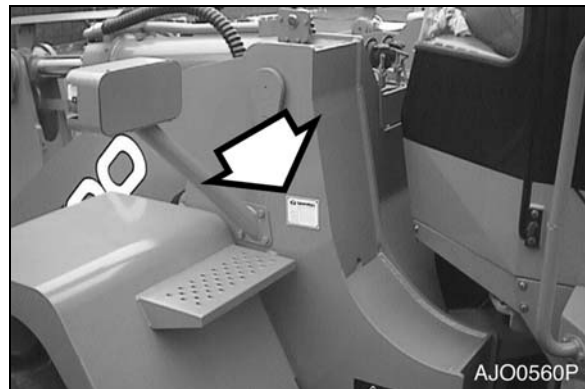
### SERIAL NUMBERS

There are two serial number plates attached to the body of wheel loader.

Please make note of these numbers and their locations. These will be required whenever warranty service work is requested.

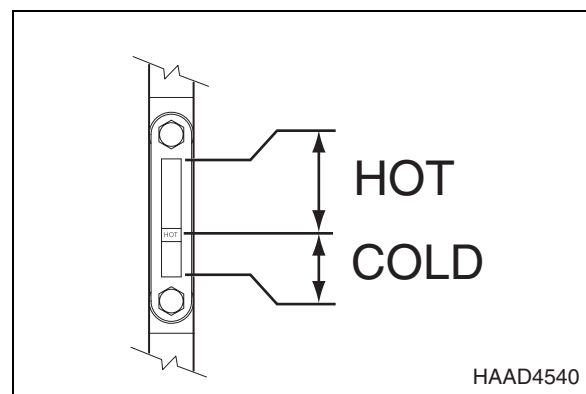
#### Machine Serial Number

The machine serial number plate is on left side of front frame above wheel cover (Figure 1).




**Figure 1**

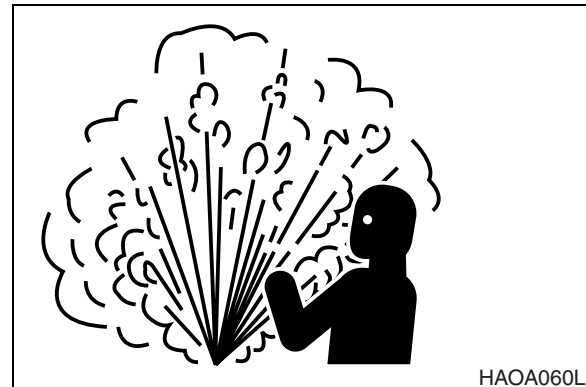
7. To add oil, remove transmission fill cap (Figure 8) from transmission oil fill pipe. Refer to “Table of Recommended Lubricants” on page 4-3, of this manual for recommended oil for the operating conditions.
8. Shut down engine when done.



**Figure 10** TRANSMISSION SIGHT GAUGE

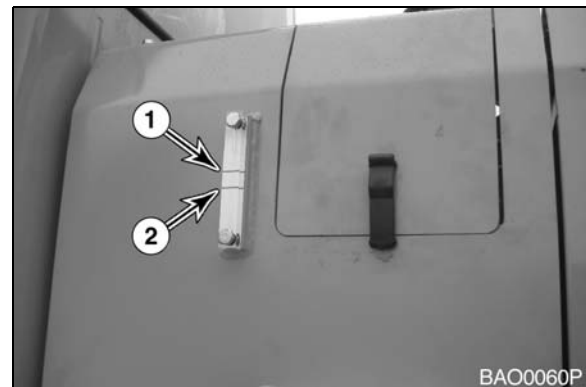
#### CHECK HYDRAULIC SYSTEM OIL LEVEL

 <b>WARNING!</b>
<p>The hydraulic oil will be hot after normal machine operation. Allow system to cool before attempting to service any of the hydraulic components.</p> <p>The hydraulic tank is pressurized. Turn the breather cap slowly to allow the pressurized air to vent. After the pressure has been released, it is safe to remove either the fill cap or service covers.</p>



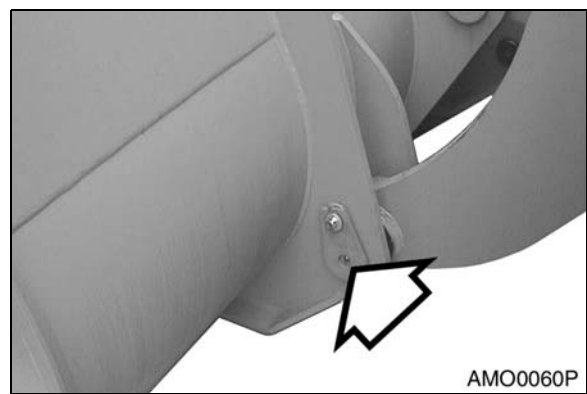
**Figure 11**

1. Move machine to a level area and shut down engine.
2. Apply parking brake.
3. Lower bucket to ground.
4. Check sight gauge that is attached to hydraulic reservoir. Oil level must be between upper limit (1, Figure 12) and lower limit (2) shown on gauge.



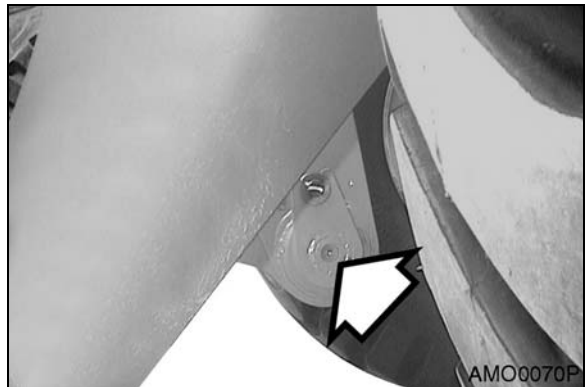
**Figure 12**

- A. Bucket hinge pins, 2 locations (Figure 28).



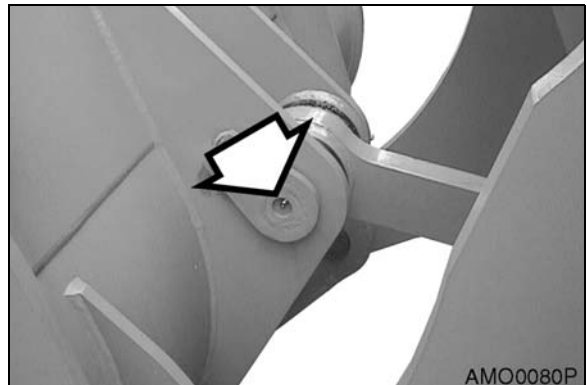
**Figure 28**

- Lever link connecting pin, 1 location (Figure 29).



**Figure 29**

- Bucket link connecting pin, 1 location (Figure 30).



**Figure 30**

- B: Arm-lever connecting pin, 1 location. (Figure 31).



**Figure 31**

## CHANGE ENGINE OIL AND FILTER (TIER I ENGINE)

**NOTE:** Change engine oil and filter after first 50 hours on a new machine and every 250 hours for Tier I engine and 500 hours for Tier II engine thereafter.



### CAUTION!

**Never attempt to change oil or filter on a hot engine. Hot oil could splash and cause burns. Allow engine to cool down before changing oil or filter.**

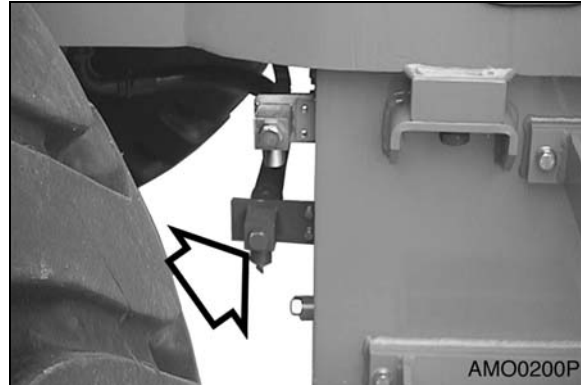
1. Position a larger container under drain drain valve beside left wall of fuel tank. Loosen drain valve and allow all engine oil to drain out. Tighten drain valve.

**NOTE:** Oil warming is good when replacing oil. If machine is cold, operate the engine to bring the coolant temperature up to about 40°C (104°F). When the needle of the coolant temperature gauge reaches the middle of the "WHITE ZONE," the temperature is about 40°C (104°F).

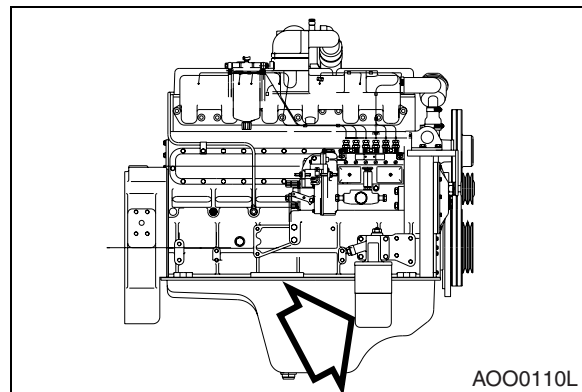
**NOTE:** Dispose of drained fluids according to local regulations.

2. Replace engine oil filter (Figure 60). Engine oil filter is a spin-on type. Remove and discard filter.
3. Install new filter. Apply a small amount of oil around filter gasket. Screw filter on head until gasket contacts head by hand, turn filter 3/4~1 turn more with filter wrench.

**NOTE:** See "Fluid Capacities" on page 4-5 for capacity and "Table of Recommended Lubricants" on page 4-3, of this manual for the recommended oil for the operating conditions.



**Figure 59**



**Figure 60 (S/N 3001 thru 4000)**

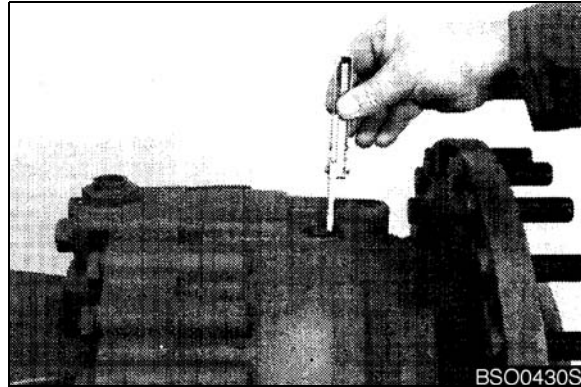
## AXLE BRAKE DISK WEAR MEASUREMENT

**NOTE:** A wear measurement on the multidisk brake must be made at least once a year, especially in case of a change in braking behavior like, e.g..

- *Braking noise.*
- *Braking power reduced.*
- *Deceleration changed.*
- *Brake fluid level changed.*
- *Braking pressure changed.*

A wear measurement must be made on both output sides.

Remove screw plug, actuate brake and determine "Dimension X" according to Figure 77 and Figure 78 using a feeler gauge. "Dimension X" corresponds with the thickness of an inner brake disk on the piston side.

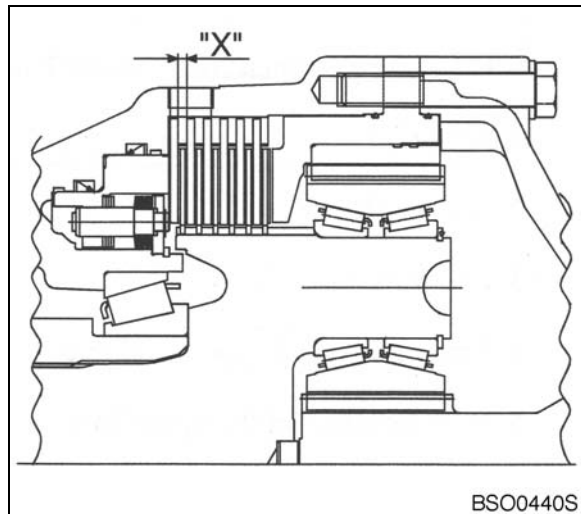


**Figure 77**

**NOTE:** If Dimension X less than or equal to 4.0 mm (0.16 in), the lined disks on both sides must be replaced.

Install level plug with a new O-ring.

**NOTE:** Tightening Torque: = 7.1 kg•m (51 ft lb)



**Figure 78**

# BOLT TORQUE CHART

## TIGHTENING TORQUE SPECIFICATIONS FOR METRIC BOLTS (FOR COATED THREADS, PRELUBRICATED ASSEMBLIES)

Grade	Gr. 8.8		Gr. 10.9		Gr. 12.9	
Dia.	kg•m	ft lb	kg•m	ft lb	kg•m	ft lb
5 mm x std	0.59	4.3	0.79	5.7	1.0	7.2
6 mm x std	1.00	7.3	1.38	10	1.66	12
8 mm x std	2.49	18	3.46	25	4.15	30
8 mm x 1.0	2.76	20	3.87	28	4.56	33
10 mm x std	4.84	35	6.92	50	8.30	60
10 mm x 1.0	4.84	35	7.05	51	8.30	60
12 mm x std	8.57	62	11.89	86	14.52	105
12 mm x 1.5	9.00	65	12.59	91	14.94	108
14 mm x std	13.55	98	18.95	137	23.10	167
14 mm x 1.5	14.94	108	21.02	152	24.89	180
16 mm x std	20.88	151	29.46	213	35.54	257
16 mm x 1.5	22.54	163	31.53	228	38.03	275
18 mm x std	28.90	209	40.52	293	48.41	350
18 mm x 1.5	32.50	235	45.92	332	55.04	398
20 mm x std	40.94	296	57.95	419	69.01	499
20 mm x 1.5	46.05	333	64.03	463	77.03	557
22 mm x std	54.90	397	77.86	563	93.08	673
22 mm x 1.5	61.00	441	86.02	622	105.00	759
24 mm x std	71.00	513	100.00	723	120.00	868
24 mm x 2.0	78.00	564	109.95	795	130.00	940
27 mm x 2.0	115.06	832	160.00	1157	195.00	1410