



65TMV-2



93107-00442  
September 10, 2008

# ***OPERATION & MAINTENANCE MANUAL***

## ***WHEEL LOADER***

# ***65TMV-2***

93107-00442

**NOTICE**  
READ AND UNDERSTAND THIS  
MANUAL BEFORE OPERATING  
AND SAVE THIS MANUAL ON  
THE MACHINE

CLICK HERE TO **DOWNLOAD** THE COMPLETE MANUAL

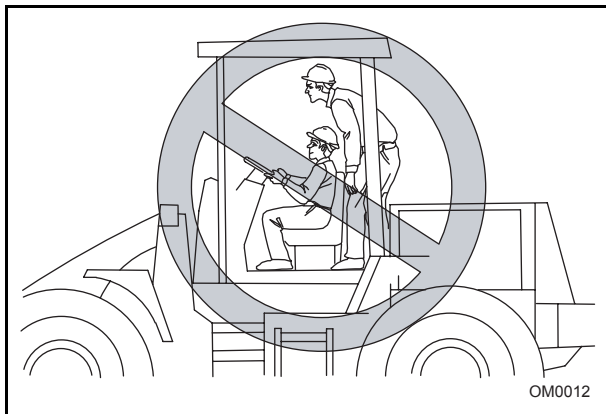
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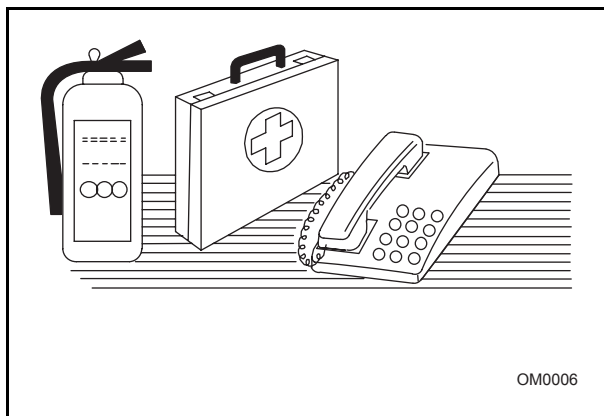
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1.4  
SAFETY  
Safe Operation



Do not allow unauthorized personnel on the machine.

### Before Starting Safety



Know the location of safety items and procedures:

- Fire extinguishers
- Fire blankets
- First aid kits
- Emergency phone numbers

Walk around the machine to be sure no one is working or laying under the machine.

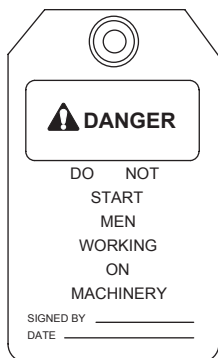
Inspect the machine for safety hazards and, if found, have them corrected:

- Broken lights, mirrors, windows, etc.
- Fuel leaks, oil leaks, or debris build-up
- Improper tire inflation or tire damage
- Missing or unreadable safety signs (decals)

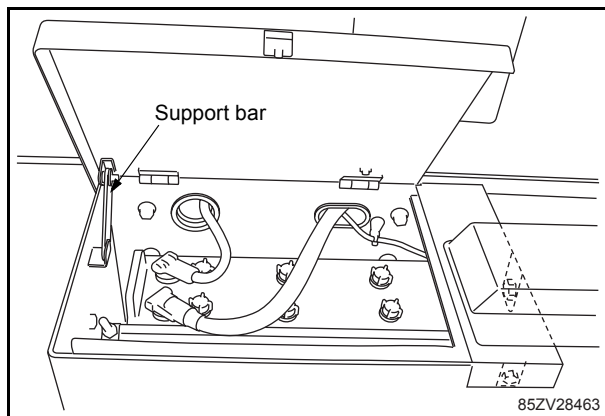
Be sure the Roll Over Protective Structure (ROPS) is:

- in place.
- properly attached (no bolts loose or missing).
- not damaged.
- not modified.

1.14  
SAFETY  
Safe Maintenance



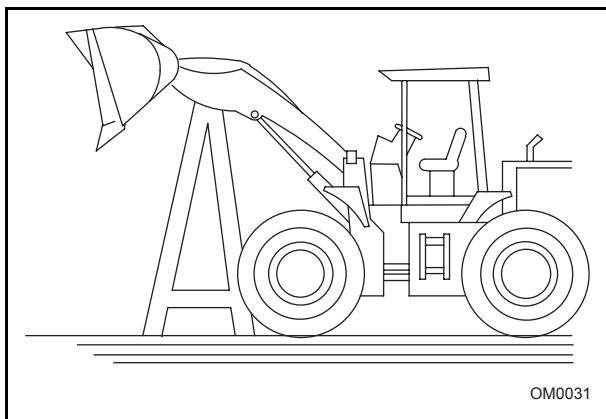
OM0182



85ZV28463

Attach a "DO NOT START" or "DO NOT OPERATE" tag on the key switch or the steering wheel.

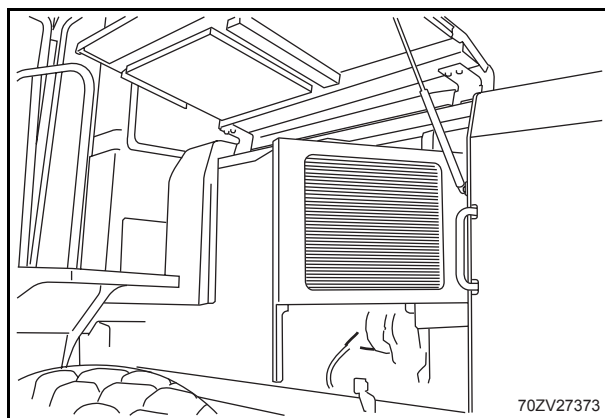
When working beneath the machine, use sturdy and stable supports to hold it up. Do not depend on hydraulic cylinders or attachment.



OM0031

If working under the raised boom or attachment, be sure to properly block or support boom.

Do not stand on tires. Use safe and sturdy working platforms.



70ZV27373

It may be a possibility that your hands or fingers are pinched with cover suddenly closed by mighty wind etc.

Surely support the cover by support bar when carrying on inspection work keeping the cover open.

Pay attention not to pinch your fingers when you close door.

1.24  
SAFETY  
Safety Signs

5.



**WARNING**

Machine will not turn with articulation stopper in locked position.

Unlock articulation stopper before operating machine.

7.

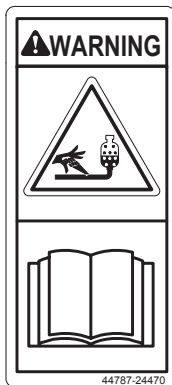


**WARNING**

Machine movement could result in death or serious injury.

Stay out of this machine.

6.



**WARNING**

Nitrogen accumulator contains compressed gas and fluid which could result in death or serious injury.

Release the oil pressure from all brake circuit (and steering circuit for 65/70ZV-2 only) before removing any oil lines or piping.

Do not attempt to service or repair accumulator unless properly trained and equipped.

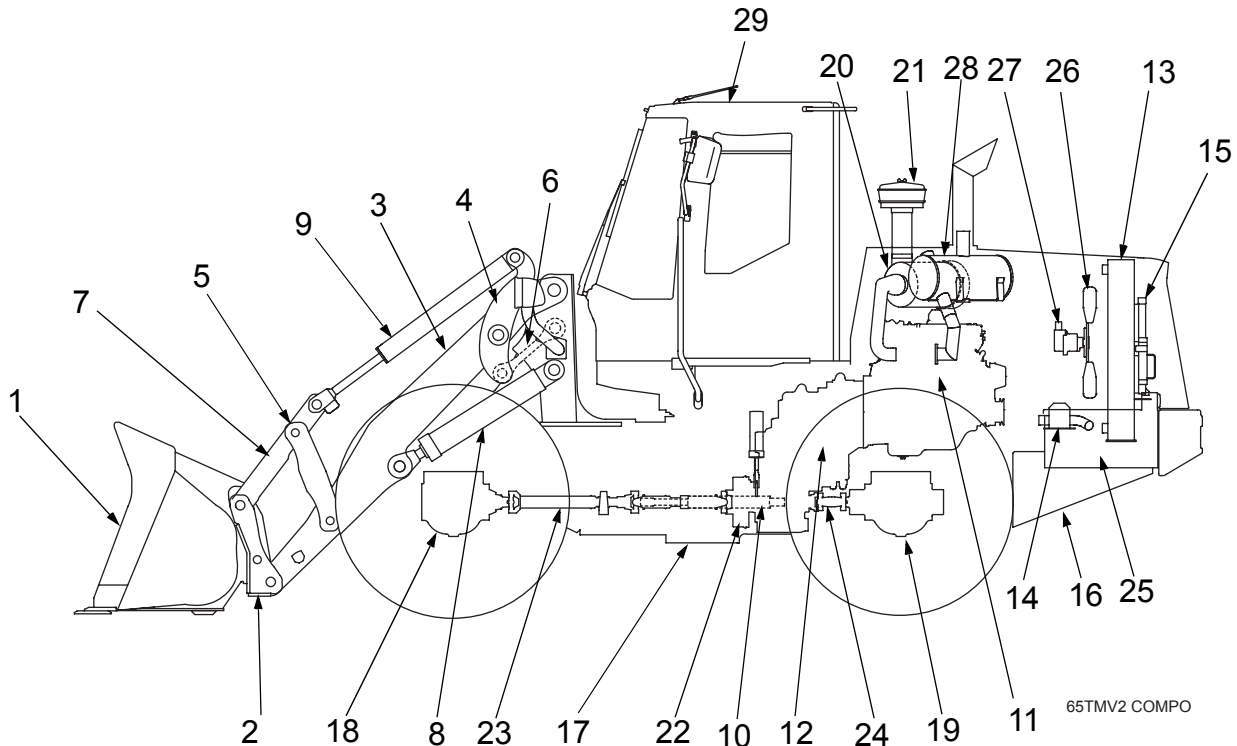
8.



**CAUTION**

When handling battery cable, you may get an electric shock.

Read, understand, and follow Operation & Maintenance Manual before servicing machine.

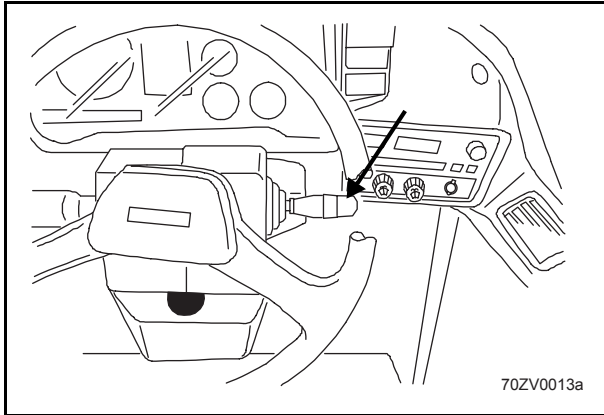
**COMPONENT NAME/LOCATION**

- |   |   |
|---|---|
| 1. Bucket (Attachment)                            | 17. Hydraulic Tank (Right hand side)    |
| 2. Quick Coupler (option)                         | 18. Front Axle / Differential Ass'y     |
| 3. Boom   | 19. Rear Axle / Differential Ass'y      |
| 4. Lever 1  | 20. Air Cleaner (Right hand side)       |
| 5. Lever 2  | 21. Precleaner                          |
| 6. Rod 1  | 22. Parking Brake                       |
| 7. Rod 2  | 23. 2nd Propeller Shaft                 |
| 8. Boom Cylinders (2)                             | 24. 3rd Propeller Shaft                 |
| 9. Bucket Cylinders (2)                           | 25. Batteries (2)                       |
| 10. Steering Cylinders (2)                        | (one each side--two 12VDC=24VDC system) |
| 11. Engine  | 26. Cooling Fan                         |
| 12. Torque Converter & Transmission Ass'y         | 27. Fan Motor (hydraulic type)          |
| 13. Radiator & Air Cooler (for engine intake air) | 28. Exhaust Muffler                     |
| 14. Torque Converter Oil Cooler                   | 29. ROPS Cab                            |
| 15. Hydraulic Oil Cooler                          |   |
| 16. Fuel Tank                                     |   |

**NOTE**

When a component or an item location is given as "Left hand side" or "Right hand side", it is according to the operator's left side or right side when sitting in the seat.

### 3. Light Switch



This is a three position switch.

#### OFF

- Width (clearance) lamps (option), tail lamps, front head lights, and gauge lamps turn off.

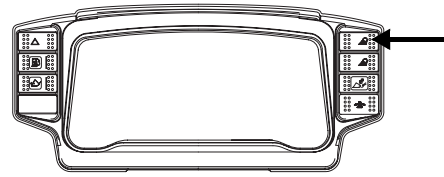


- Width (clearance) lamps (option), tail lamps, and gauge lamps turn on.

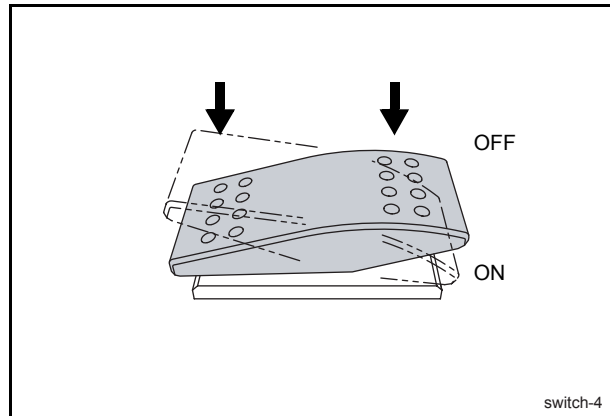


- Width (clearance) lamps (option), tail lamps, front head lights, and gauge lamps turn on.

### 4. Front Working Light Switch



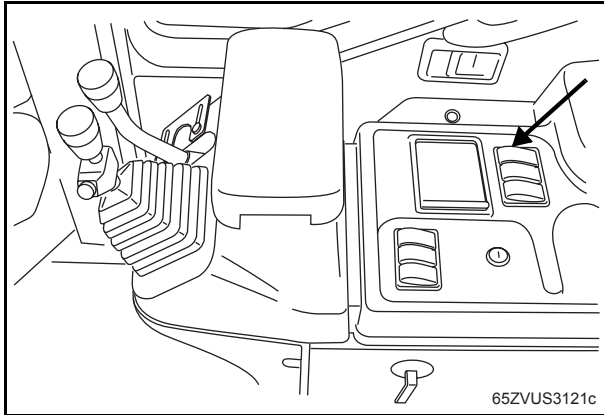
85ZV2 0002c



Front working light switch is used for turning on and off the front working lights.

Turn off the front working lights when roading to prevent blinding the driver in front of you.

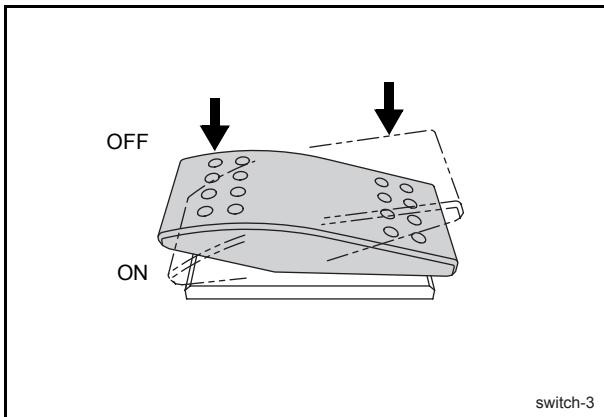
## 18. Reversal Fan Switch (option)



### Functional Limitation

When either one of the following temperatures exceeds the preset upper limit(s), the cooling fan reverse rotation function does not work:

- Engine coolant temperature
- Torque converter oil temperature
- Hydraulic oil temperature



Engaging this switch reverses the rotation of the cooling fan for cleaning the radiator fins.

When pushing this switch for more than 2 seconds while the engine is running or with the starter switch at "ON" position, the switch turns "ON", the pilot lamp in instrument panel lights up and the cooling fan turns in reverse rotation for 1 minute, after which it returns to its normal rotation.

The fan turns continuously in reverse direction for 1 minute at 30 minute intervals.

When the switch is pushed again for more than 2 seconds, the cooling fan reversal switch turns "OFF" and pilot lamp in instrument panel turns "OFF". Then the cooling fan turns in the normal direction.

The cooling fan reversal switch can be operated any time the engine is running. It is not necessary to stop the machine to push the reversal cooling fan switch.

**26. Reversal Fan Pilot Lamp (green)  
(option)**

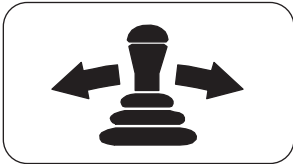


OM0223

Lights up when the reversal fan switch is ON.

Refer to "Reversal Fan Switch (option)" page 2.22.

**27. F/R Switch Indicator Lamp (green)  
(option)**

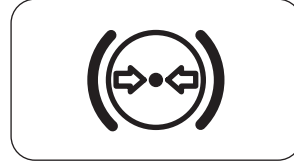


OM0218

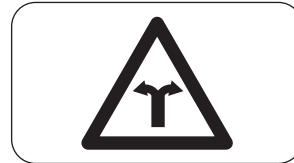
Lights up when the selection switch for shift lever or F/R switch is ON.

Refer to "Selection Switch for Shift Lever or F/R Switch (option)" page 2.20.

**28. Hydraulic Oil Level Warning Lamp  
(simultaneous flashing)(red)(11. 24.)**



OM0058



OM0072

Flashes simultaneously when hydraulic oil level is lower than specified. Also the warning buzzer sounds.

- When the lamp flashes simultaneously, IMMEDIATELY stop the machine and check for leaks in the hydraulic line.

Refill the hydraulic tank with oil as needed.  
Refer to "Check Hydraulic Oil Level" page 2.61.

2.42  
OPERATOR'S AREA  
MODM

### **Parameter Setting Monitor**

#### **Display of parameter setting monitor**










This monitor allows check of the parameters currently set.

### **Specification Setting Monitor**

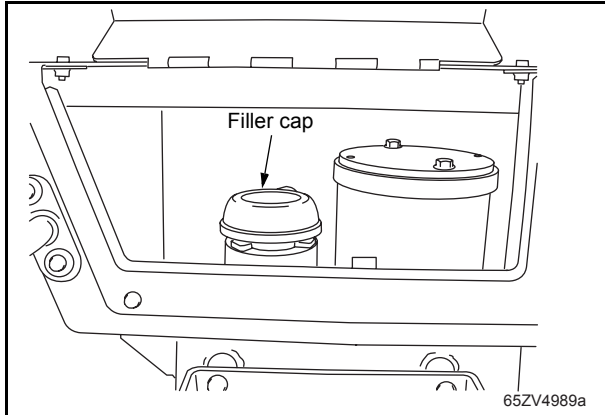
#### **Specification setting monitor display**

This monitor allows check of the specifications currently set.

2.52  
 OPERATOR'S AREA  
 Radio - AM / FM Cassette (24 Volt Type)

Symbol	Name of part	Function	Operation method	Description	Remarks
12 13	  Tuning button	Manual tuning in radio mode	PUSH Upward  Downward  for 0.5 sec. or less	Push the button for less 0.5 sec. to increase the frequency or to decrease the frequency.	
		Seeking in radio mode	PUSH Upward  Downward  for 0.5 sec. or less	Pushing the button for 0.5 sec. or longer will generate a beep sound. While SEEK UP, SEEK DOWN or ILLUMI OFF is selected, the unit will seek radio stations in DX mode. While ILLUMI ON is selected, the unit will seek radio stations in Local mode. (However, seek functions only in AM mode.)	
		In clock time setting mode	PUSH Downward 	Push the button once for less 0.5 sec. to increase the current hour value by one hour. Push the button for 0.5 sec. or longer to increase hours continuously.	
		"Hour" setting "Minute" setting	PUSH Upward 	Push the button once for less 0.5 sec. to increase the minutes value by one minute. Push the button for 0.5 sec. or longer to increase minutes continuously.	
14	1  Preset 1 REW button	In radio mode: Recalling and storing preset memories	PUSH	Push the button for less 2 sec. to recall preset stations. Pushing the button for 2 sec. or longer will generate a beep sound and the currently tuned station will be stored.	
		In cassette tape mode: REW	PUSH	Push the button to rewind the cassette tape.	
		In CD mode: DISC DOWN	PUSH	Push the button to go down to the previous disc. (Recalling the previous disc.)	

2.62  
OPERATION  
Check before Operation



5. If needed, add the required amount of the oil.

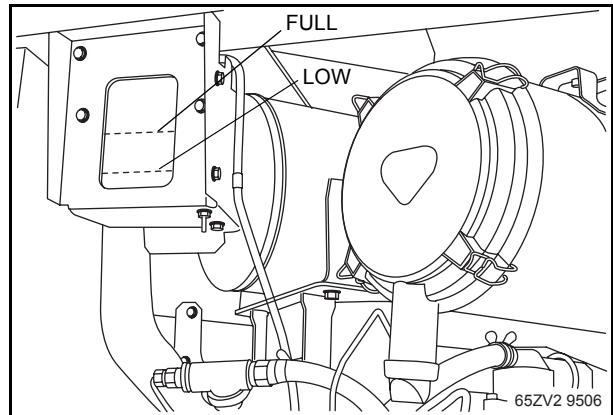
Refer to "Recommended Lubricants" page 3.53 for the suitable viscosity of the oil according to the ambient temperature.

## Check Engine Coolant Level

### CAUTION

Cooling system conditioner contains alkali that could cause caustic burns or blindness.

Avoid contact with skin and eyes to prevent injury.



1. Check the coolant level in the radiator sub-tank.
2. Coolant level is normal if it is between FULL and LOW lines.
3. If needed, add the required amount of the coolant to the radiator sub-tank.

Refer to "Coolant Specification" page 3.55 for the correct mixture.

4. Change the coolant if it is particularly dirty.

Refer to "Replace Coolant" page 3.15.

5. If the coolant contains oil, diagnose the problem and correct it.

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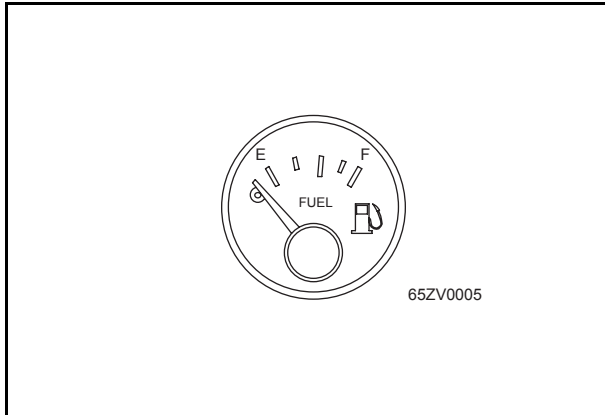


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2.72  
OPERATION  
Check after Starting the Engine

### Check Fuel Level



1. Check the fuel level with the fuel gauge on the instrument panel.
2. Add fuel to fill the tank if the gauge shows below "F".

Refer to "Recommended Lubricants" page 3.53 for the proper fuel.

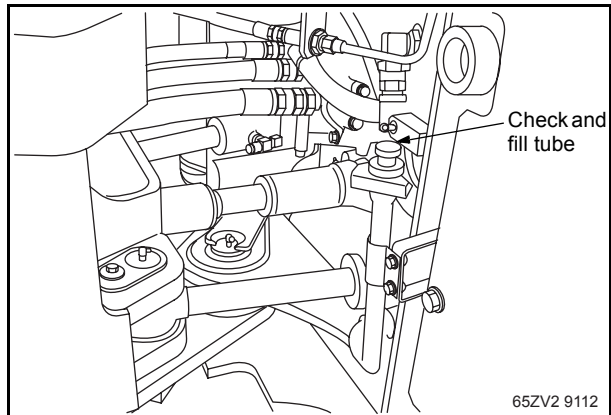
### Check Transmission Oil Level

**⚠ DANGER**

There is no room in articulation area when machine is turning. Crushing will result in serious injury or death.

When checking oil level:

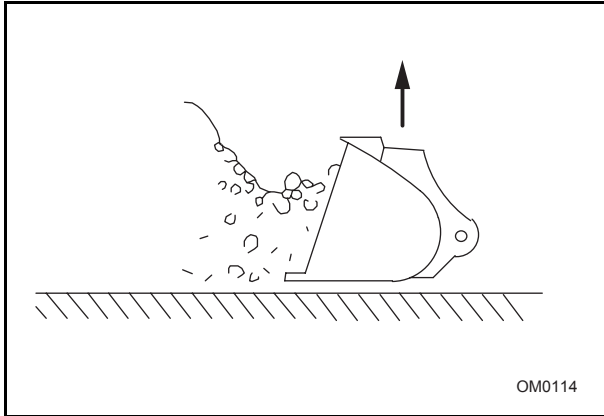
- Low attachment to ground.
- Put transmission shift lever in neutral.
- Apply parking brake.
- Place "DO NOT OPERATE" tag on steering wheel.
- Make sure nobody is on machine.



1. Park the machine on level ground, apply the parking brake, and lower the attachment to the ground. Verify that oil is up on the dipstick prior to starting.

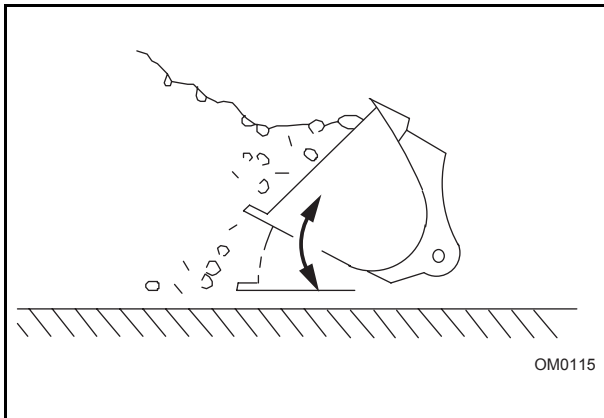
2.82  
OPERATION  
Operating Techniques

4. Drive the bucket straight into the material. Use approximately 1/2 - full engine speed.

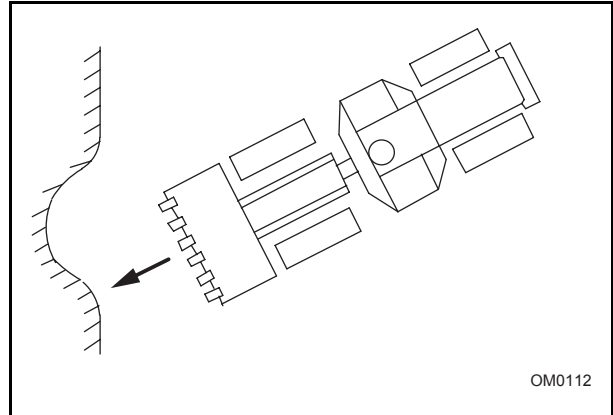


5. Move the boom control lever to the "Raise" detent position and run the machine forward slowly in 1st or 2nd speed.

Reduce wheel slippage by slightly reducing engine speed.

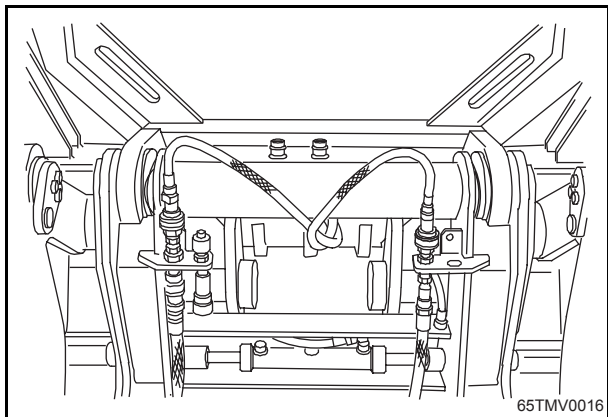


6. Move the bucket control lever to the "Roll Back" and the "Hold" position several times to get more material in the bucket.
7. When the bucket is filled, move the bucket control lever to the "Roll Back" position.
8. Release the bucket control lever to the "Hold" position and the boom will rise.
9. Reverse the machine.



10. On later passes, aim the center of the bucket at the protruding portion of the material.

2.92  
OPERATION  
Operating Techniques



6g. Route the hoses so they are free to move throughout the dump and roll back of the attachment. Connect them to fittings as shown.

6h. Start the engine and operate the Auxiliary Attachment Control Lever. The pins will extend and lock the attachment to the attachment to the coupler frame.

Also the attachment should operate.

**NOTE**

- If the attachment operates in the opposite direction it normally does, reverse the attachment hoses.
- If the attachment does not operate be sure the connectors are fully connected.

## During Storage

Once a month remove the covers, run the engine, and move the machine a short distance to form a new oil film on the lubricated parts.

### **WARNING**

Batteries contain lead, and acid which may cause burns.

Avoid contact with skin or clothing and wear hand, eye, and face protection when working on or around batteries.

If lead, or acid contacts skin or clothing, immediately wash with water.

#### 1. Check the following points.

Refer to "Check before Operation" page 2.59 and "Check after Starting the Engine" page 2.71.

- Coolant level
- Engine oil level
- Hydraulic oil level
- Transmission oil level
- Brake function
- Steering function

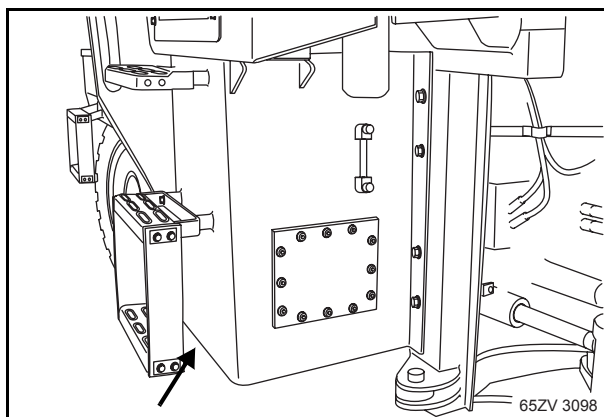
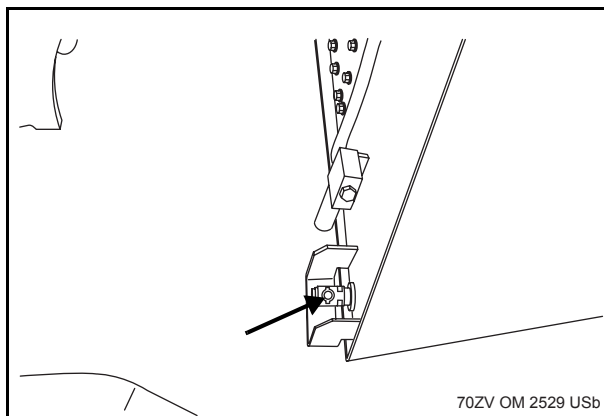
#### 2. Operate the machine as follows.

- Run just the engine for about five minutes at low idle.
- Move all cylinders of the hydraulic system full stroke 2~3 times.
- Run the machine about 10 m in every gear and direction.
- Move the steering full stroke each way about 2~3 times.

#### 3. Operate the air conditioner as follows.

- Operate the air conditioner with the engine low idle for several minutes once a month so that the lubricating oil in each part of the compressor is not eliminated.

## After Storage



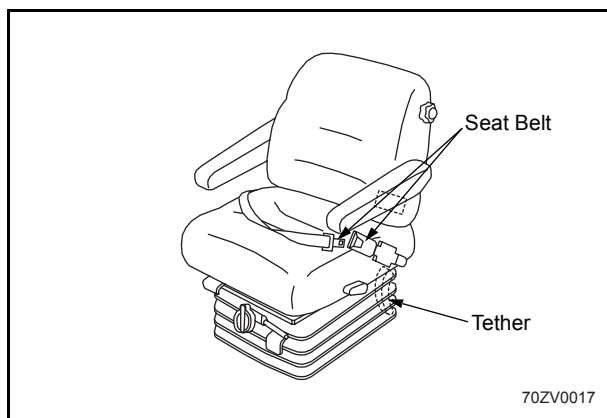
1. Loosen the drain cock or plug of the fuel tank and the hydraulic tank to drain any water into a suitable container. Dispose of properly.
2. Remove the covers, connect the cables to the batteries and start the engine.
3. Replace engine and transmission oil with new specified oil after warming up both engine and transmission.

Refer to "Replace Engine Oil and Oil Filter Cartridge" page 3.34 and "Replace Transmission Oil" page 3.40.

4. Start the engine and check for any abnormalities.
5. Warm up the machine until all gauges reach the normal range.

3.10  
MAINTENANCE  
When Required Inspection and Maintenance

### Check and/or Replace Seat Belt



1. Inspect the condition of the seat belt and all mounting hardware frequently.
2. Replace the seat belt or any part of the mounting hardware if it is damaged.
3. Replace the seat belt every three years regardless of its condition or appearance.

### Clean or Replace Air Cleaner Element

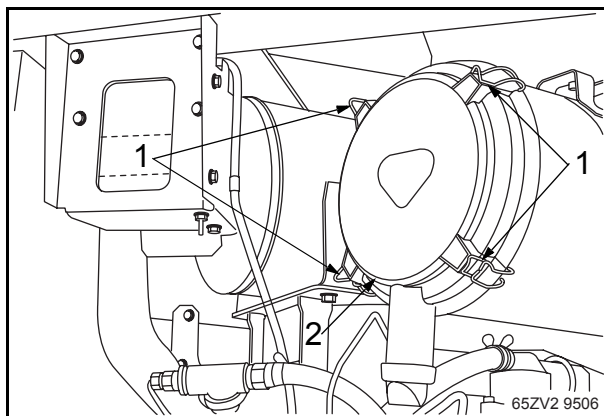
When the warning monitor lamp lights up, clean or replace the air cleaner element.

#### IMPORTANT

Improper procedure of cleaning air cleaner may cause severe engine damage.

- Do not clean or replace air filters while engine is running.
- Clean only outer element. Never clean inner element.
- Clean or replace element only when indicator lamp comes on.

1. Park the machine on level ground, apply the parking brake, lower the attachment to the ground, and stop the engine.



2. Remove air cleaner cover (2) by releasing four cover latches (1).

3.20  
MAINTENANCE  
Every 10 Hours or Daily

## Every 10 Hours or Daily



### **WARNING**

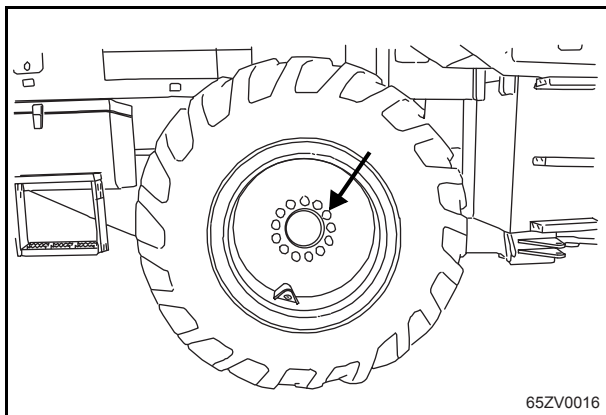
Improper inspection or maintenance could result in death or serious injury.

Read, understand, and follow all warnings and instructions contained in "Safe Maintenance" page 1.12 before performing any inspection or maintenance procedures.

See "Check before Operation" page 2.59 and "Check after Starting the Engine" page 2.71.


### Check Tightness of Wheel Bolts

1. Park the machine on level ground, apply the parking brake, lower the attachment to the ground, and stop the engine.

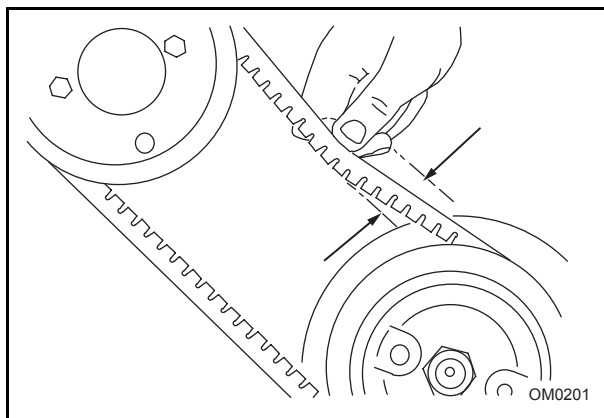


2. Check the wheel bolts are tightened to 892 N-m (658 ft-lb).
3. Retighten if necessary.

### Check and Adjust Air Conditioner Belt

 <b>CAUTION</b>	
Contact with moving belts or pulleys may cause injuries.	
Stop engine before opening engine access panel.	

1. Park the machine on level ground, apply the parking brake, lower the attachment to the ground, and stop the engine. Remove the key and page "Do Not Start" tag on the instrument panel.
2. Open the engine access panel.



3. Visually inspect the compressor belt on both top and bottom sides for looseness and damage.
4. If the belt is too stretched to permit adjustment or shows cuts or cracks, replace it and adjust the tension correctly.
5. Apply pressure approximately 98 N (22 lb) to the center of the belt between the pulleys; deflection of about 10 mm (0.39 in) is normal.

## Every 1000 Hours or 6 Months

### WARNING

Improper inspection or maintenance could result in death or serious injury.

Read, understand, and follow all warnings and instructions contained in "Safe Maintenance" page 1.12 before performing any inspection or maintenance procedures.

Every 1000 hours or 6 months, whichever comes first, perform the following inspection and maintenance in addition to the "Daily", "50 hours", "250 hours", and "500 hours" inspection and maintenance.

## Replace Transmission Oil

### WARNING

Accidental movement of machine could result in death or serious injury.

When inspecting or servicing machine in articulation area:

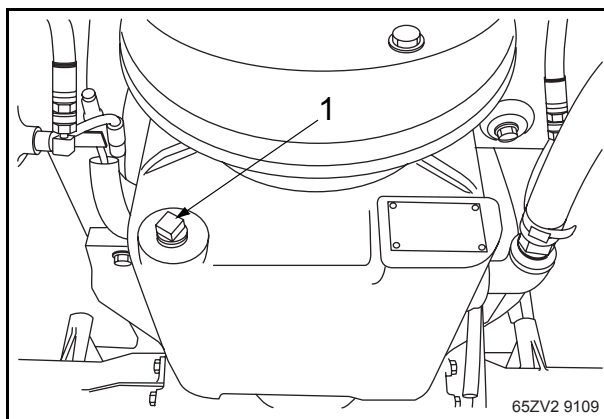
- Lower attachment to ground.
- Put transmission shift lever in neutral.
- Apply parking brake.
- Make sure nobody is on machine.
- Place "DO NOT START" or "DO NOT OPERATE" tag on steering wheel.

### CAUTION

Transmission oil may be hot and may cause burns.

Avoid contact with transmission oil.

1. If the machine is cold operate the machine for a few minutes to bring the transmission oil temperature about 30~40°C (85~105°F).
2. Park the machine on level ground, turn "ON" the parking brake switch, lower the attachment to the ground, and stop the engine.



3. Remove drain plug (1) with a 17 mm wrench.
4. Drain oil into a suitable container (about 20 liters (5.3 gal)).

Properly dispose of or recycle the waste oil.

## Check Brake Accumulator

Test the brake accumulator for proper pre-charge of nitrogen gas.

### WARNING

Pressurized nitrogen gas in brake accumulator could explode causing serious injury or death.

Never service brake accumulator unless trained properly.

1. Park the machine on level ground, apply the parking brake, and lower the attachment to the ground.
2. Run the engine at low idle for five minutes to fill the brake accumulator with oil.
3. Stop the engine.
4. Turn the key switch to the "ON" position.
5. Count the number of times you can depress the right hand brake pedal before the brake warning light comes on.
6. If the number counted is less than eight, there is some problem with the accumulator. Contact your nearest Kawasaki dealer.

## Check Service Brake Disk Wear

- Contact your Kawasaki dealer.

## Clean Filter for Brake Line

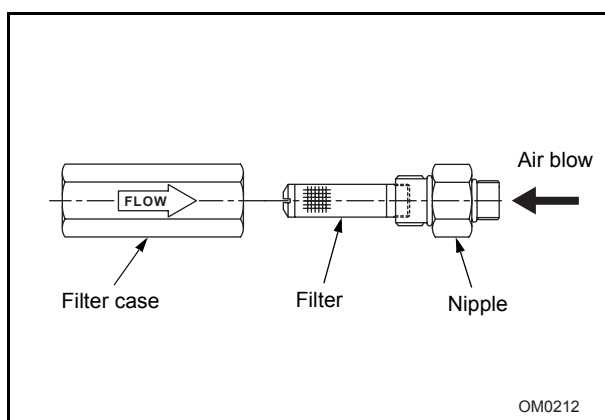
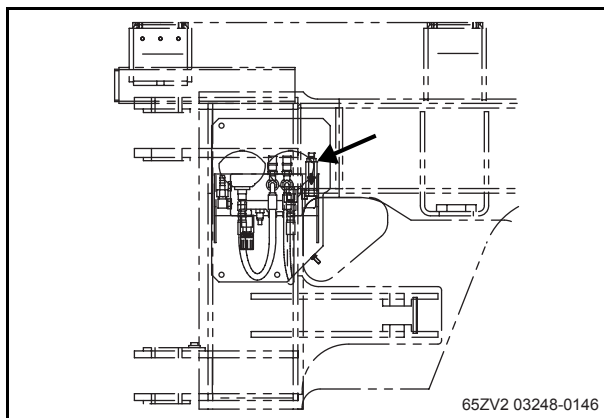
### CAUTION

Hot oil and components may cause burns.

Vent all pressure by pressing hydraulic cap down.

Avoid contact with hot oil or components.

1. Park the machine on level ground, turn "ON" the parking brake switch, lower the attachment to the ground, and stop the engine.



2. Place a suitable container under the filter.
3. Remove the nipple with filter and properly clean the filter.
4. Install the nipple with filter and tighten it with 60~80 N-m (44~59 ft-lb) torque.
5. Idle the engine about ten minutes and inspect for leaks around the filter.

### TORQUE CONVERTER & TRANSMISSION

PROBLEM	POSSIBLE CAUSES	SOLUTIONS	PAGE
Engine is running but machine does not move	Excessively cold oil / Wrong oil type	Warm oil / Replace oil with proper viscosity for temperature	3.53
	Parking brake is applied Transmission oil level too low Transmission suction strainer clogging Clutch oil pressure too low Transmission clutch failure MCU failure Defective electrical circuit	Release parking brake Add oil / Repair leak Clean strainer	2.72 3.40
Low power	Service or parking brake dragging Low oil level in transmission Suction strainer in transmission clogging Clutch oil pressure too low Torque converter oil pressure too low Transmission clutch failure	Inspect and correct Refill oil / Repair leak Clean or replace strainer	2.72 3.40
	Oil leakage from transmission	Air breather clogged Seal damage (between engine and torque converter housing)	Clean and refill with oil
Torque converter overheat	Oil level too low Dozing, continuous pushing application Operating in too high a speed range Long downhill driving Radiator clogged: coolant temp also high Defective alarm switch (gauge is in green) Torque converter / Transmission failure Oil pressure too low	Add oil / Repair leak Reduce load Use lower gear Change application Clean radiator fins	2.72 2.77 3.12

### AIR CONDITIONER

PROBLEM	POSSIBLE CAUSES	SOLUTIONS	PAGE
Low cooling when A/C "ON"	Hot water continues to flow through heater core A/C not set for maximum cooling Condenser fins plugged A/C filters plugged A/C compressor belts slipping/broken A/C refrigerant charge low	Shut off valve in heater hose line at block Adjust controls/vents Clean Clean or replace Adjust/Replace	2.55 3.15 3.31 3.30
	Engine not warmed up No hot water flow to heater core Air conditioner running Heater vents not adjusted properly Defective heater motor or switch	Warm up engine Open shut off valve on block Turn A/C off Adjust controls/vents	2.55

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