

Pre-start Checks



Table of Contents

Daily Pre-start Checks	7-5
Shut-down Position	7-5
Engine Oil	7-5
Engine Coolant	7-6
Hydraulic Oil Level	7-7
Air Cleaner	7-8
Fuel Tank.....	7-9
Transmission Oil Level	7-10
Tire Inflation	7-11
Battery Isolation Switch(es)	7-12
Lights, Warning Lights and Safety Signs	7-13
Radiator and Oil Cooler	7-13
Walk-around Inspection	7-14
Supplemental Steering System	7-15
Service Brakes Warning System Check	7-16
Hand Brake	7-16

Table of Contents continued

Weekly Pre-start Checks	7-17
Shut-down Position	7-17
Final Drive Oil Level - SR30 and SR40	7-17
Final Drive Oil Level - Gearco Twin Bull Gear	7-18
Tandem Oil Level	7-19
Tandem Oil Level - Drum Brakes	7-19
Tandem Oil Level - Oil Disc Brakes	7-20
Service Brakes Master Cylinder Fluid Level	7-21
Clutch Fluid Level	7-22
Pump Drive Gearbox Oil Level - All Wheel Drive	7-23
Batteries	7-24
Clutch Free Play	7-25
Hand Brake	7-25
Circle Adjustment	7-26

Conduct a daily inspection of your grader every 4 to 24 hours of operation or at the beginning of each work shift. Before making any checks ensure the grader is in the Shut-down Position.

*Max oil change
250 hr.
15W40*

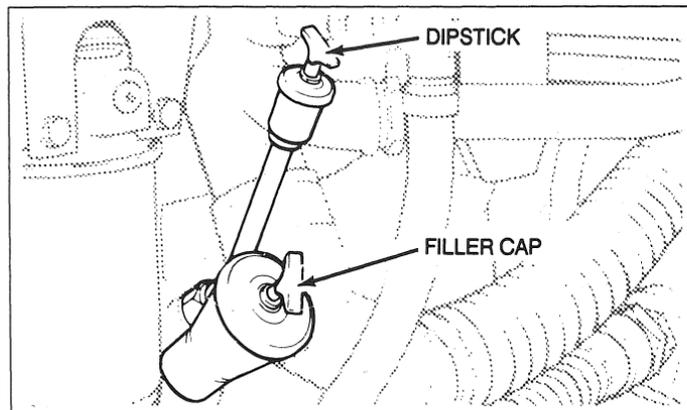
Shut-down Position

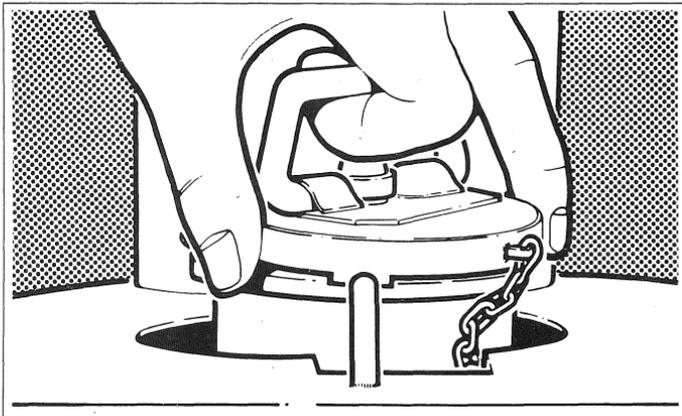
- Park the grader on a level surface.
- Place the transmission in NEUTRAL and apply the hand brake.
- Lower the moldboard and all attachments to the ground.
Do not apply down-pressure.
- Shut down the engine.
- Remove and retain the ignition key.
- Turn the battery isolation switch(es) to the OFF position.

Engine Oil

Refer to the Engine Manual to locate the dipstick and the oil filler cap.

- Withdraw the dipstick and check the oil level.
- Add engine oil as required. Consult your engine manual for the correct oil type.
- Check the oil for contaminants or water. Consult your Engine Manual if the oil is contaminated.





Engine Coolant

The radiator cap is located on top of the engine hood at the rear of the grader.

- Carefully remove the cap. The coolant level should be approximately 2 in. (5 cm.) from the top of the filler neck.
- Add coolant as required. Refer to the Engine Manual for correct coolant type.
- Install the cap. Refer to the section - **Maintenance and Lubrication - Engine Cooling System** page 14-18. Extreme loss of coolant indicates a leak in the cooling system or a serious engine malfunction. Consult a qualified service technician.



⚠ WARNING

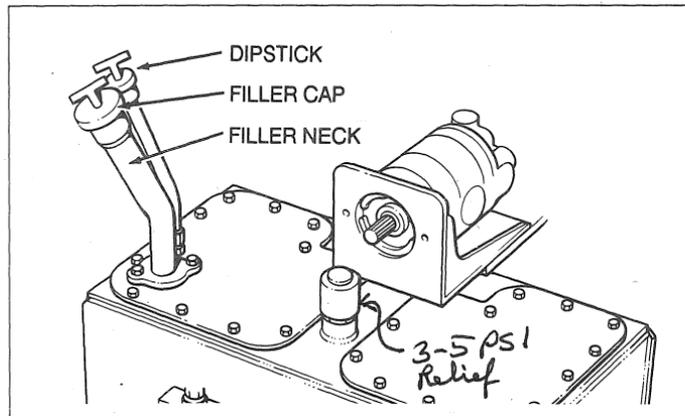
Hot pressurized coolant.
Remove cap only when
engine is cool.

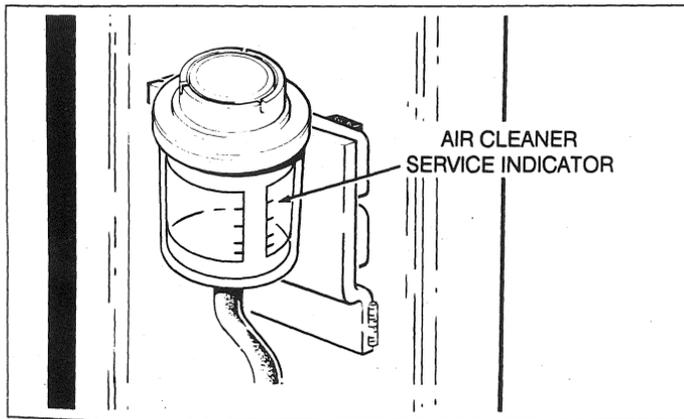
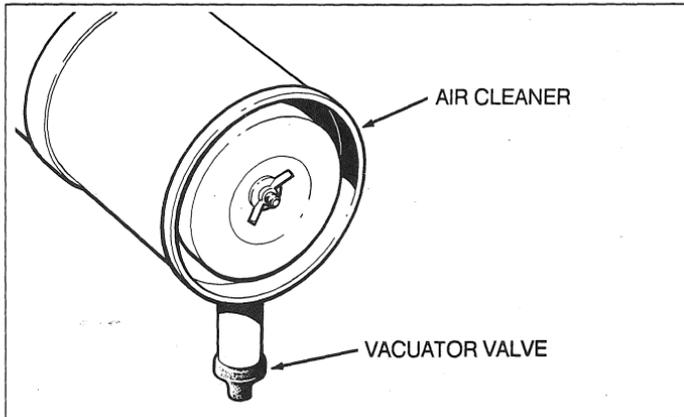
48628

Hydraulic Oil Level

The hydraulic tank filler cap and dipstick is located at the rear of the grader, on the right-hand side below the radiator and hydraulic pumps.

- To check the hydraulic oil level, start the engine, centralize the circle and moldboard under the grader and fully lower the blade and all attachments.
- Put the grader in the shut down position. Refer to the beginning of this section.
- Clean all dirt from around the filler cap and dipstick.
- Remove the dipstick from the hydraulic tank and wipe clean.
- Replace the dipstick and seat it firmly. Remove the dipstick and check the oil level.
- Add fresh hydraulic oil as necessary through the filler neck. Refer to the section - **Maintenance and Lubrication - Lubrication Specifications** page 14-26, for the correct oil type.





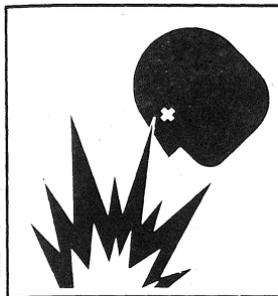
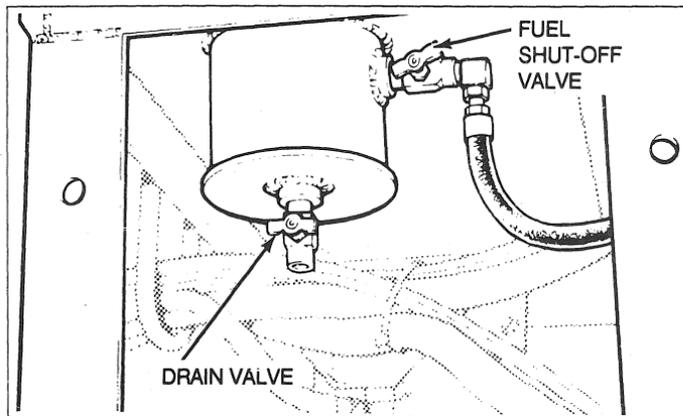
Air Cleaner

- Tap the air cleaner end cover with your hand and empty the vacuator valve. Make sure that the vacuator valve is securely fastened.
- Check the air cleaner service indicator located in the cab on the rear left hand side. If the indicator has reached the red 25 in. (635 mm) line on the transparent indicator body, you must service the air cleaner. Refer to the section - **Maintenance and Lubrication - Engine Air Filter Elements** page 14-6. Do not service the air cleaner unless the indicator has reached the red line. Unnecessary service may contaminate the engine.
- Check the tubes and connections leading from the air cleaner to the engine. Look for loose clamps, cracks, or accumulation of dust which may indicate a leak.

Reset daily

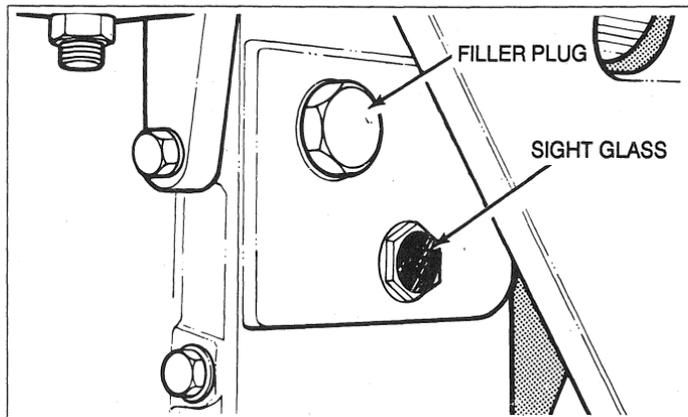
Fuel Tank

- Keep the fuel tank full to reduce the chance of condensation and corrosion. Do not fill the fuel tank to capacity. Leave room for fuel expansion.
- Before starting the engine, open the fuel shut-off valve located on the rear of the fuel tank sump.
- Open the drain valve on the bottom of the sump to remove water or other accumulated contaminants.
- Clean up any spilled fuel immediately. Refer to the section - **Safety Precautions - Fuel Handling Precautions** page 4-23.



⚠ WARNING

Keep open flames and sparks away from fueling area. Do not smoke. Severe personal injury or death could result.



Transmission Oil Level

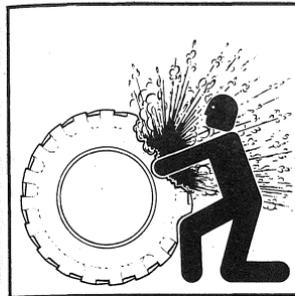
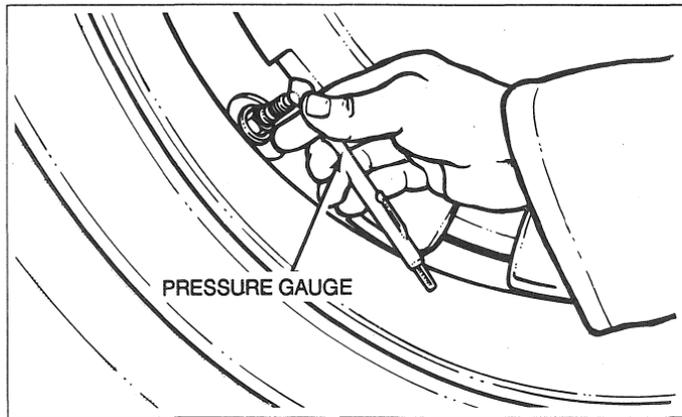
Check the transmission oil level at operating temperature. The best time is at the end of each shift. However, the transmission oil sight glass should be full when the engine is shut down.

- Park the grader on level ground and place the transmission in NEUTRAL.
- Apply the hand brake and lower the moldboard and all attachments to the ground.
- The transmission oil level sight glass is located on the left-hand side of the transmission case. When the engine speed is at idle, the fluid level should be at the middle of the sight glass. If additional fluid is required, shut down the engine.
- Remove the filler plug located above and to the left of the sight glass. Add transmission oil as required. Refer to the section - **Maintenance and Lubrication - Lubrication Specifications** page 14-26, for the correct oil type.
- Recheck this level with the engine idling in NEUTRAL.
- Shut down the engine when the check is complete.

Tire Inflation

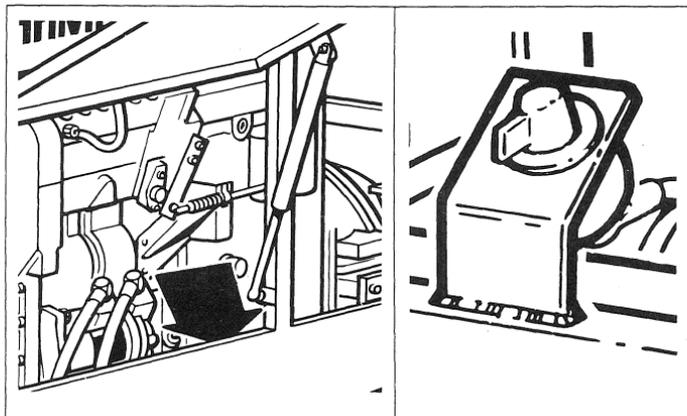
Premature tire wear is caused by improper tire inflation. The grader's ride and handling are also affected.

- Check the tire pressure with an accurate pressure gauge when the tires are cold. Refer to the section - **Maintenance and Lubrication - Tire Inflation** page 14-12, for the correct tire pressure. Also refer to the section - **Safety Precautions - Tire Maintenance Precautions** page 4-19.
- Check for cuts, abrasions and uneven or excessive tread wear. Tire repair or replacement must be performed by qualified personnel only.



⚠ WARNING

Failure to use a safety cage when inflating tires could result in severe personal injury or death.



Battery Isolation Switch(es)

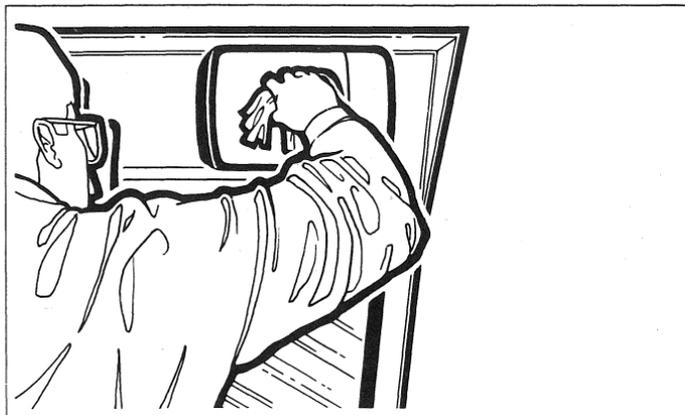
The battery isolation switch(es) is located inside the engine compartment. The switch(es) cuts off electricity between the batteries and the grader's electrical system.

- Ensure the connections are clean and tight.
- Ensure the switch(es) functions correctly. All electrical devices should be inoperative with the switch in the OFF position.

Do not bypass the battery isolation switch(es). Have the switch(es) repaired if it is not working properly.

Lights, Warning Lights and Safety Signs

- Ensure the lights, back-up alarms and other warning and safety devices are clean and working properly.
- Ensure the safety signs are clean and in good condition. Replace them if damaged, missing or illegible.

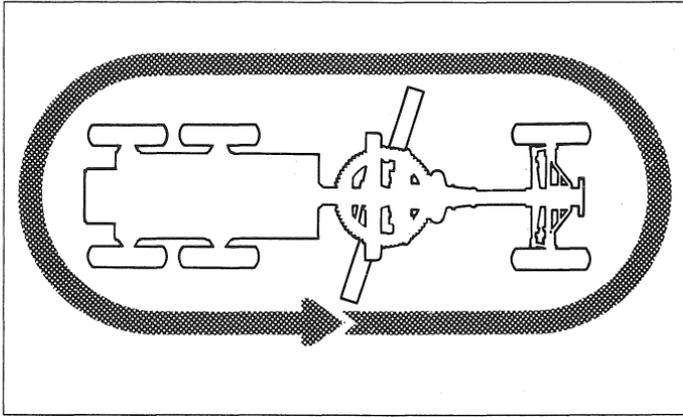


Radiator and Oil Cooler

- Remove any debris from the radiator and cooler fins.
- Check the drive belts and fan blades.
- Clean the radiator with compressed air in the opposite direction to the normal air flow.

▲ WARNING

When using pressurized air for cleaning, wear a face shield and protective clothing. Do not direct the air hose nozzle at yourself or others. Severe personal injury could result.



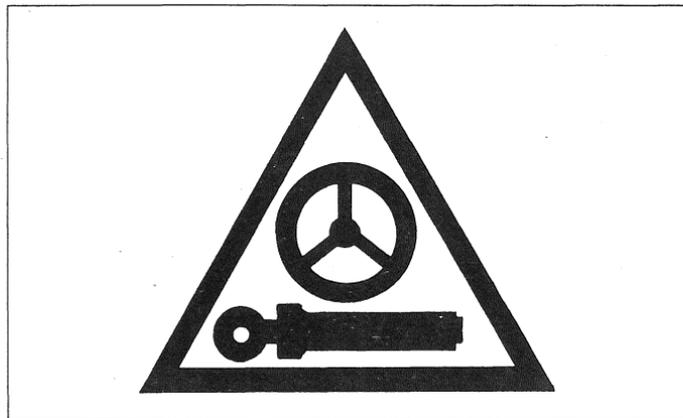
Walk-around Inspection

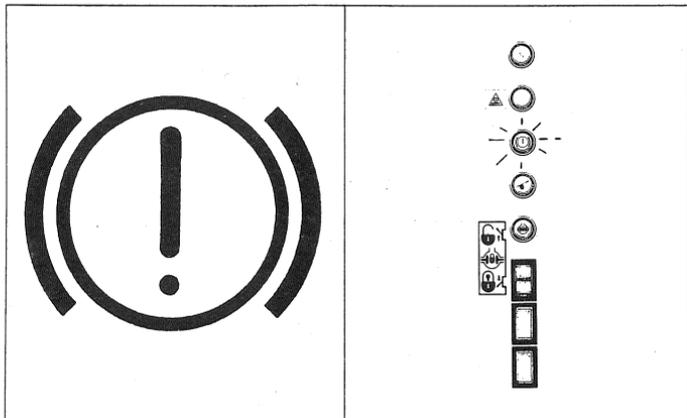
Perform a walk-around inspection before climbing into the cab.

1. Look for oil and coolant leaks, tire damage, pinched hoses, loose bolts or worn cutting edges. Have them repaired or replaced.
2. Visually check the brake fluid level through the semi-transparent reservoir on graders equipped with drum brakes. Refer to this section, page 7-21.
3. Ensure tools and any other objects are removed from the grader, before starting it.
4. Clean the cab glass.
5. Clear away any debris from the moldboard or circle turn area.
6. See that the circle and moldboard slide rails are clean and lubricated. Refer to the section - **Maintenance and Lubrication - Circle Lubrication** page 14-11.
7. Check the grader for 'DO NOT OPERATE' or similar warning tags.
8. Adjust rearview mirrors.

Supplemental Steering System

If your grader is equipped with the supplemental steering system, check it before you start the engine. Refer to the section - **Driving the Grader - Supplemental Steering System** page 8-29.





Service Brakes Warning System Check

Check the service brakes warning system daily.

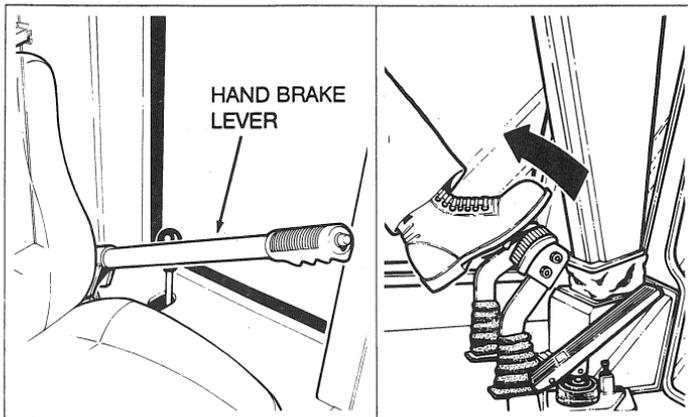
- Turn the battery isolation switch(es) to the ON position.
- Insert the ignition key and turn to the ON position.
- The brake warning light and alarm should energize. This indicates the master cylinder booster electric motor pump is working.
- If the warning light and alarm do not energize, the brake system is faulty and must be repaired by a qualified service technician. Do not drive the grader.

Hand Brake

Check the hand brake operation daily.

- Apply the hand brake until the pawl engages the sixth ratchet tooth (this should require approximately 60 lb [27 kg] of effort).
- Start the engine only when it is safe to do so.
- Adjust the engine speed to low idle.
- Depress the clutch pedal and select third speed forward.
- Slowly release the clutch pedal - take approximately two seconds to do so. The engine must stall. If the engine does not stall, the caliper assembly needs adjustment.

Refer to the section **Maintenance and Lubrication - Hand Brake Adjustment Frequency - All Models** page 14-14 and subsequent paragraphs for detailed adjustment instructions. Have the hand brake adjusted by qualified service personnel only.



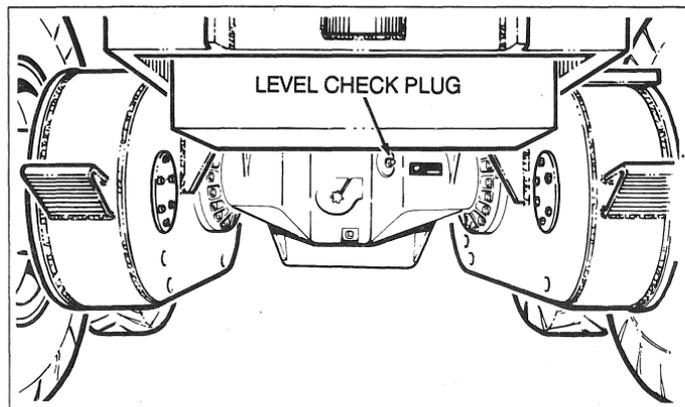
Conduct this inspection once a week or every 50 hours of operation, whichever comes first. As with the daily checks, put the grader in the Shut-down Position.

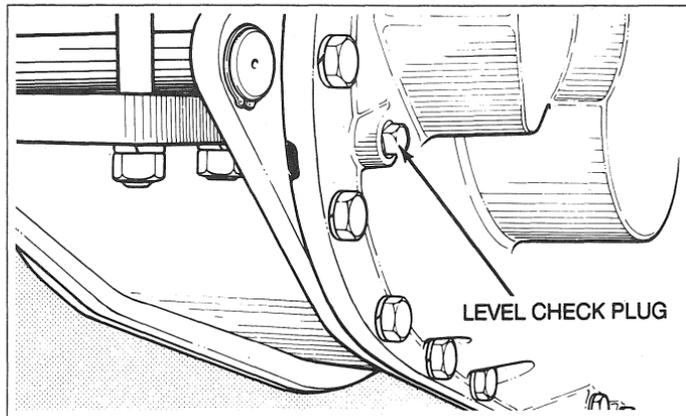
Shut-down Position

- Park the grader on a level surface.
- Place the transmission in NEUTRAL and apply the hand brake.
- Lower the moldboard and all attachments to the ground. Do not apply down-pressure.
- Shut down the engine.
- Remove and retain the ignition key.
- Turn the battery isolation switch(es) to the OFF position.

Final Drive Oil Level - SR30 and SR40

- Chock the tires properly.
- The level check/fill plug for the final drive is the top plug on the rear of the final drive case. Clean all dirt from around the plug.
- The oil should be at the level of the hole.
- Add final drive oil as required. Refer to the section - **Maintenance and Lubrication - Lubrication Specifications** page 14-27, for the correct oil type.





750 + 7A0

Final Drive Oil Level - Gearco Twin Bull Gear

- Chock the tires properly.
- The level check plug for the final drive is located in the right side housing behind the cross shaft cap. Clean all dirt from around the plug.
- Remove the plug. The oil should be at the level of the hole.
- To add more oil, remove the breather cap from the filler tube located on the left side of the engine compartment.

Refer to the section - **Maintenance and Lubrication - Lubrication Specifications** page 14-27, for the correct oil type.

80W90 or AW140

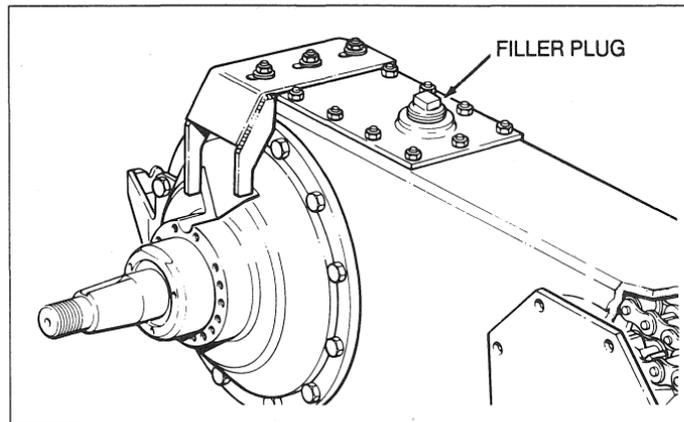
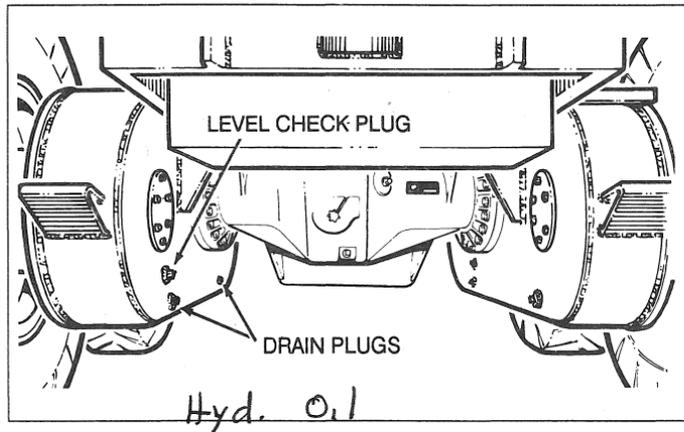
Tandem Oil Level

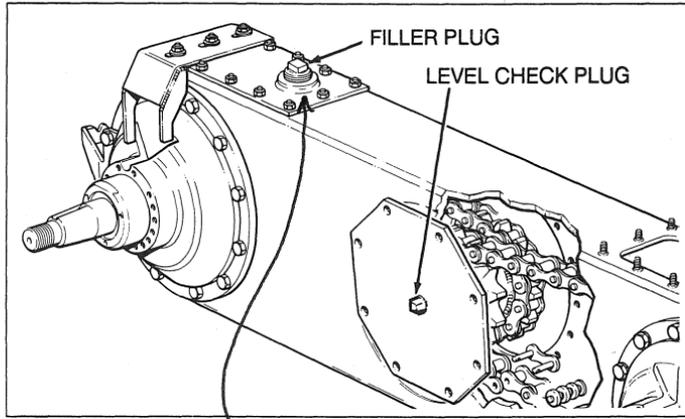
- Ensure the tandems are level for an accurate oil level check.
- Slight oil pressure inside the tandem may give a false oil level indication when the level check plug is removed. Relieve the pressure by removing the plug slowly.

Tandem Oil Level - Drum Brakes

- The level check plug for the right-hand tandem is located above the drain plug on the inside face at the front end of the tandem case. The level check plug for the left-hand tandem is located above the drain plug on the inside face at the rear end of the tandem case.
- Clean all dirt from around the plug.
- Remove the plug. The oil level should be at the bottom of the hole. Add more oil if the level is below the bottom of the hole.
- To add more oil, remove the filler plug located on the top of the tandem case.

Refer to the section - **Maintenance and Lubrication - Lubrication Specifications** page 14-26, for the correct oil type.





Dip stick on newer machines on fill plug.

Tandem Oil Level - Oil Disc Brakes

- The level check plug is located in the center of the tandem cover plate.
- Clean all dirt from around the plug.
- Remove the plug. A small amount of oil should flow from the hole.
- To add more oil, remove the filler plug located on the top of the tandem case.

Refer to the section - **Maintenance and Lubrication - Lubrication Specifications** page 14-26, for the correct oil type.

Hyd. Oil

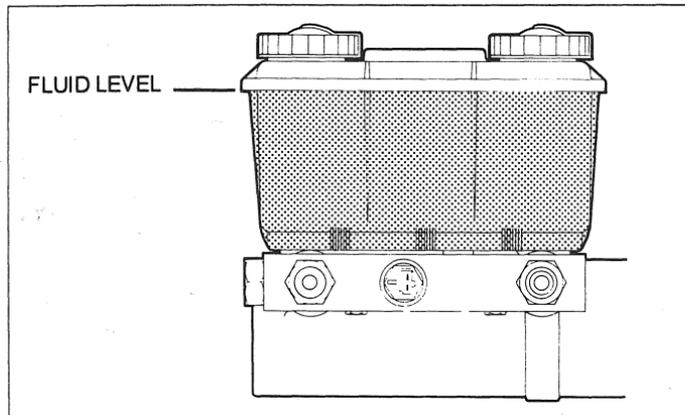
Service Brakes Master Cylinder Fluid Level

▲WARNING

Sudden loss of any fluid indicates a serious malfunction. Stop grader. Consult a qualified service technician.

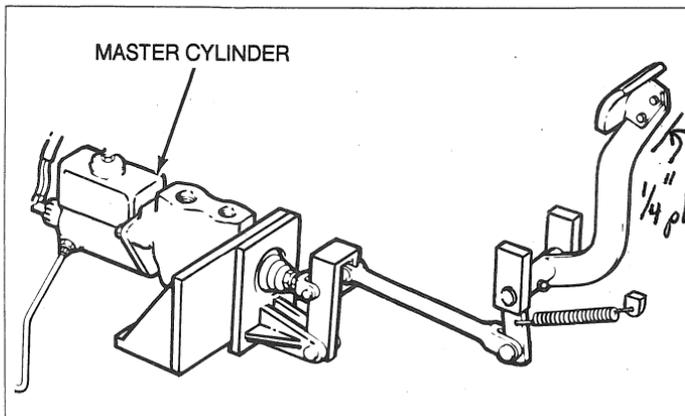
- The service brakes master cylinder is located under the right-hand side of the cab.
- Clean the outside of the reservoir.
- The fluid level should be at the reservoir flange.
- Add the correct fluid type as required.
- Clean up spilled fluid immediately.

Refer to the section - **Maintenance and Lubrication - Lubrication Specifications** page 14-27, for the correct fluid type.



▲WARNING

Brake fluid can harm eyes. Wear eye protection. If contact occurs, flush your eyes with large amounts of water. Seek medical attention immediately.



⚠ WARNING

Brake fluid can harm eyes. Wear eye protection. If contact occurs, flush your eyes with large amounts of water. Seek medical attention immediately.

Clutch Fluid Level

⚠ WARNING

Sudden loss of any fluid indicates a serious malfunction. Stop grader. Consult a qualified service technician.

- The clutch master cylinder is located under the left-hand side of the cab.
- Clean the top of the reservoir.
- Remove the cap. The fluid level should be approximately 1/2 in. (13 mm) from the top.
- Add the correct brake fluid type as required.
- Clean up spilled fluid immediately.

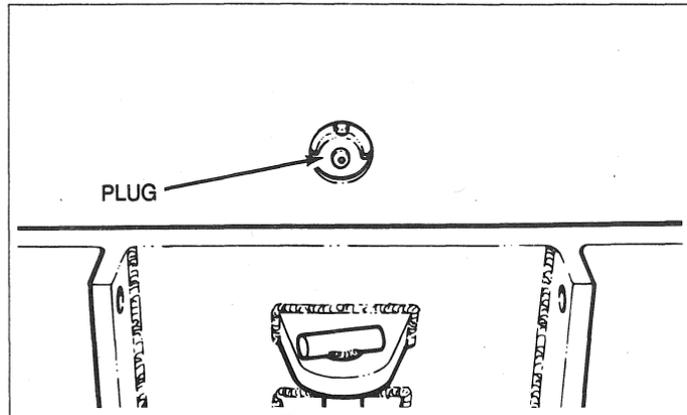
Refer to the section - **Maintenance and Lubrication - Lubrication Specifications** page 14-27, for the correct fluid type.

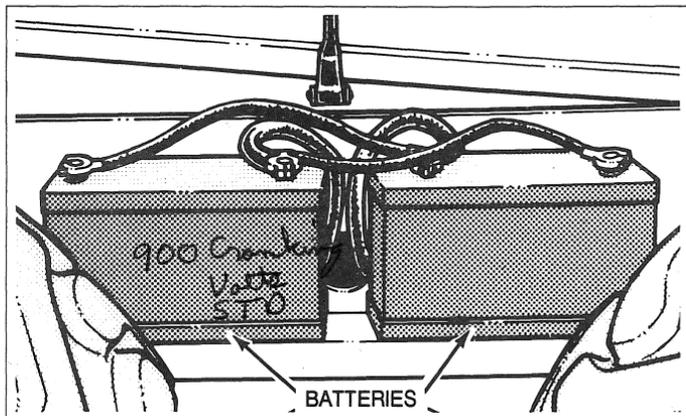
Brake fluid

Pump Drive Gearbox Oil Level - All Wheel Drive

- To check the pump drive gear box oil level, remove the plastic plug from the access hole in the gearbox cover plate.
- Remove the socket head plug from the gearbox housing. A small amount of oil should flow from the hole.
- Add more oil through the same hole as required.

Refer to the section - **Maintenance and Lubrication - Lubrication Specifications** page 14-27, for the correct oil type.





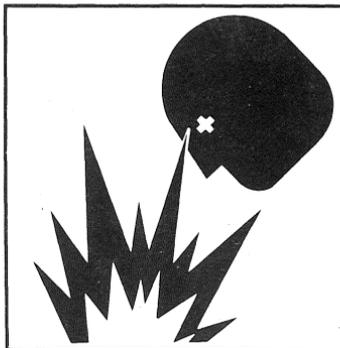
Batteries *12 volt System*

Batteries are located inside battery boxes on one or both of the tandems.

- Remove the battery box cover(s).
- Check the terminals for corrosion and tighten the cable connectors.
- If the batteries have filler caps, remove the caps and check the level of the electrolyte.
- Add distilled water only. Install the caps.
- Check and tighten the battery hold down clamps and do not let your tools or metal objects come in contact with the battery terminals.
- Replace the battery box cover(s).

Batteries produce explosive gases. Keep sparks, flames, smoking materials, or other ignition sources away from batteries. Use a flashlight to check the electrolyte level.

Refer to the section - **Maintenance and Lubrication** - pages 14-20 and 14-21, and the section **Safety Precautions - Battery Maintenance Precautions** page 4-20, for further information on batteries.



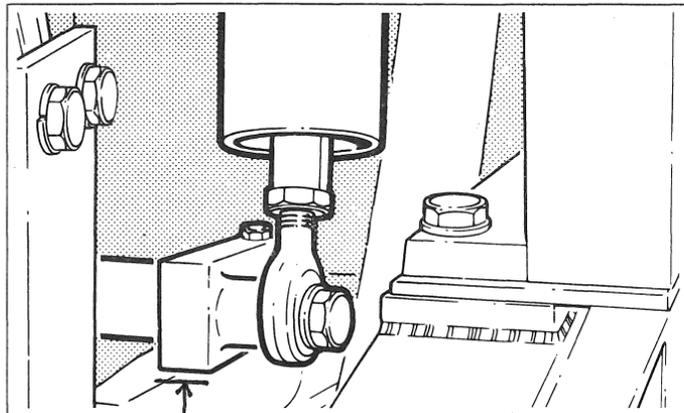
⚠ WARNING

**Explosive gases.
No smoking. Keep
sparks and flames
away from batteries.**

Clutch Free Play

The slave cylinder is located on the right-hand side of the clutch housing.

- Press the cross shaft arm downwards. This will rotate the cross shaft.
- Press until a firm resistance is felt. This means that the release bearing is engaging the lever arms of the clutch.
- The slave cylinder should extend to the measurement specified in the **700 Series Shop Manual P/N L-2005**.

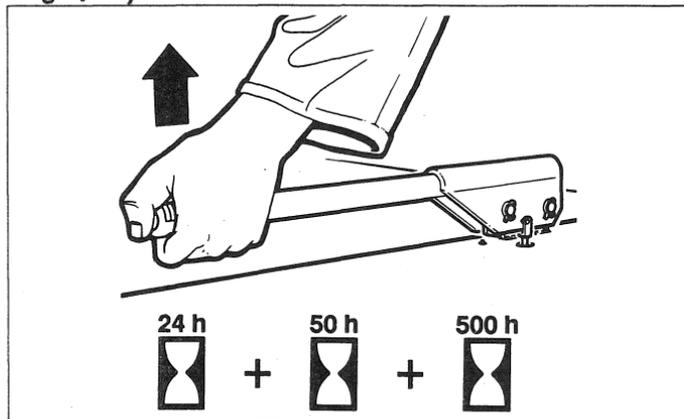


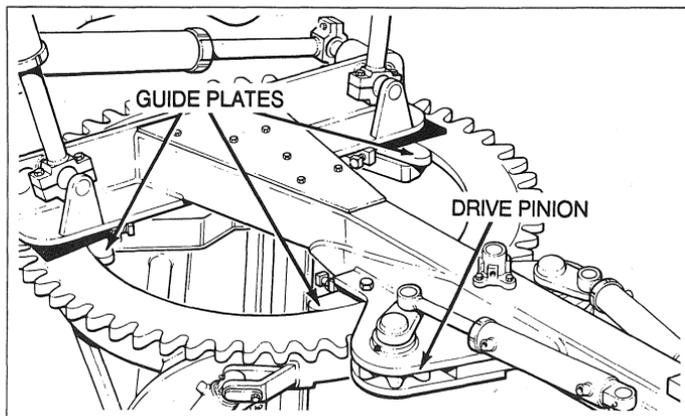
1/8" play

Hand Brake

After 50 hours and at every 500 hours check for cable stretch.

Refer to this section, page 7-16. Refer to the **700 Series Shop Manual P/N L-2005**.





Circle Adjustment

- Adjust the front guide plate(s) to contact the inner face of the circle. Contact should be across the complete width of the guide plate(s).
- Check the backlash of both drive pinions. It should be 0.080 in. (2,0 mm).
- Check the backlash of the circle turn valve pinion. It should be 0.080 in. (2,0 mm).
- Adjust the clearance of the rear guide plates to 0.040 in. to 0.080 in. (1,0 mm to 2,0 mm) evenly between the guide plates and the circle.

Refer to the **700 Series Shop Manual P/N L 2005**, for detailed adjustment instructions. Have the circle adjusted by qualified service personnel.