Jump-starting

If the battery becomes discharged or does not have enough power to start the engine, use jumper cables and the following procedure to jump-start the engine. Remote battery connectors are located at the rear of the loader.

WARNING

The only safe method for jump-starting a discharged battery is for two people to perform the following procedure. The second person removes the jumper cables so that the operator does not have to leave the operator's compartment with the engine running.

Never make jumper cable connections directly to the starter solenoid of either engine. Do not start the engine from any position other than the operator's seat and then only after being sure all controls are in neutral.

Closely follow the procedure in order to avoid personal injury. In addition, wear safety glasses to protect your eyes. Avoid leaning over the batteries while jump-starting.

Do not jump-start the battery if it is frozen, because it may rupture or explode. Warm the battery to 60°F (16°C) before connecting it to a charger.

Note: *Be sure the jumper battery is a 12-volt D.C. battery.*

1. Turn the keyswitches of both machines to OFF. Be sure the machines are in neutral and NOT touching each other.
2. Connect the positive (+) jumper cable to the positive (+) remote battery terminal on the disabled loader first. Do not allow the jumper cables positive cable clamp to touch any metal other than the positive (+) remote terminal. Connect the other end of the positive jumper cable to the jumper machine's positive (+) terminal.
3. Connect the negative (-) jumper cable to the jumper machine's negative (-) terminal.
4. Make the final negative (-) jumper cable connection to the disabled machine negative (-) remote terminal.
5. Be sure the parking brake switch is engaged and that the controls are in neutral. Start the engine. If it does not start at once, start the jumper machine's engine to avoid excessive drain on the booster battery.
6. After the disabled loader is started and running smoothly, have the second person remove the jumper cables (negative (-) jumper cable first) from the jumper machine's battery and then from the disabled loader while being sure NOT to short the two cables together.

Allow sufficient time for the skid-steer loader alternator to build up a charge in the battery before attempting to operate the loader or shutting off the engine.

Changing Attachments

WARNING

To prevent unexpected release of the attachment from the hitch, be sure to properly secure the hitch latch pins by rotating the latch lever all the way to the left (manual All-Tach™ hitch) or by ensuring that the pin flags are all the way to the outside (Power-A-Tach™ hitch).

The skid-steer loader features either a manual or a power hitch for mounting a bucket or other attachment conforming to SAE standard J2513.

On a manual All-Tach (Fig. 25) hitch, a latch lever engages the latch pins to secure the attachment. On a Power-A-Tach (Fig. 26) hitch, a switch on the left control panel engages the latch pins to secure the attachment.

Connecting Attachments

1. **Manual hitch:** Rotate the latch lever to the right to fully retract the latch pins.

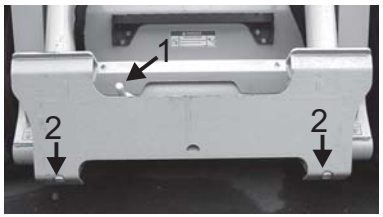


Fig. 25: Manual Hitch - disengaged
1. Latch Lever 2. Latch Pins

Power hitch: Activate the switch to unlock the hitch and fully retract the latch pins.

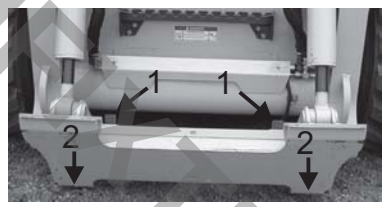


Fig. 26: Power Hitch - disengaged
1. Pin Flags 2. Latch Pins

2. Start the loader engine and be sure the lift arm is lowered and in contact with the loader frame.
3. Align the loader squarely with the back of the attachment.
4. Tilt the hitch forward until the top edge of the hitch is below the flange on the back side of the attachment and centered between the vertical plates.
5. Slowly drive the loader forward and, at the same time, tilt the hitch back to engage the flange on the back side of the attachment.
6. Stop forward travel when the flange is engaged, but continue to tilt the hitch back to lift the attachment off the ground.
7. **Manual hitch:** Exercise the MANDATORY SAFETY SHUTDOWN PROCEDURE (page 6). Leave the operator's compartment and rotate the latch lever to the left to fully engage the latch pins.

   Power hitch: Activate the switch to lock the hitch and fully engage the latch pins.

Important: *To check that the attachment is properly installed, apply downward pressure to the attachment prior to operating.*

Connecting Auxiliary Hydraulic Couplings

Note: *With the engine off, key in the ON position and the restraint bar down, the auxiliary hydraulic control can be moved to relieve any pressure in the hydraulic system.*

Standard-Flow Auxiliary Hydraulics

Coupler hookup is located on the left lift arm. When the auxiliary control is in the detent position, the top coupler is "pressure," the bottom coupler is "return."

High-Flow Auxiliary Hydraulics

Coupler hookup is located on the right lift arm. When the auxiliary control is in the detent position the top coupler is "pressure," the middle coupler is "return." The bottom coupler is for the case drain.

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CHAPTER 6
TROUBLESHOOTING

Electrical System

Problem	Possible Cause	Remedy
Entire electrical system does not function.	Battery disconnect switch is OFF position.	Turn battery disconnect switch to ON.
	Circuit breakers above battery have tripped or malfunctioned.	Check circuit and locate problem causing breaker to trip (breakers reset automatically).
	Main wiring harness connectors at rear of ROPS/FOPS not properly plugged in.	Check main harness connectors.
	Battery terminals or cables loose or corroded.	Clean battery terminals and cables and retighten them.
	Power cable from battery to circuit breaker buss bar is not connected.	Check power cable connection.
	Battery is faulty.	Test battery, replace as needed.
No instrument panel lamps with keyswitch turned to "ON".	Gauge fuse is blown.	Check circuit, install new fuse.
	Battery terminals or cables are loose or corroded.	Clean battery terminals and cables and retighten them.
Fuel gauge does not work.	Faulty fuel gauge sender.	Replace fuel gauge sender.
	Faulty fuel gauge.	Replace fuel gauge.
	Gauge fuse is blown.	Check circuit, install new fuse.
	Loose wiring/terminal connections.	Verify wiring connections.
Engine temperature gauge does not work.	Faulty temperature sender.	Replace temperature sender.
	Gauge fuse is blown.	Check circuit, install new fuse.
	Faulty temperature gauge.	Replace temperature gauge.
	Loose wiring/terminal connections.	Verify wiring connections.
Hourmeter does not work.	Loose wiring/terminal connections.	Verify wiring connections.
	Faulty alternator.	Repair alternator.
	Faulty hourmeter.	Replace hourmeter.

Problem	Possible Cause	Remedy
Starter will not engage when key is turned to START**.**	Seat or restraint bar switch malfunctioning or not actuated.	Contact your dealer.
	Poor connections to starter relay in instrument panel.	Verify relay connections.
	Battery terminal or cables loose or corroded.	Clean terminal, cables and retighten.
	Faulty starter relay in instrument panel.	Contact your dealer.
	Battery discharged or defective.	Recharge or replace battery.
	Starter solenoid not functioning.	Contact your dealer.
	Ignition wiring, seat switch, restraint bar switch, etc. loose or disconnected.	Check wiring for poor connections, broken leads; repair wiring or connection.
	Starter safety relay malfunctioning.	Verify relay is working properly, replace.
	Starter or pinion faulty.	Remove starter; repair/replace as needed.
Work lights not functioning properly.	Single light not working; light bulb burned out, faulty wiring.	Check and replace light bulb as needed. Check wiring connection to light.
	No lights; 30 ampere light fuse blown.	Check circuit and locate trouble before replacing fuse.
	Faulty light switch or poor ground.	Check ground wire connections. Replace light switch.
Lift/Tilt and/or drive lock solenoids do not work.	Wiring to solenoids disconnected or faulty.	Troubleshoot circuit, repair.
	Restraint bar or seat switch malfunction.	Contact your dealer.
	Faulty solenoid valve coil.	Contact your dealer.
	Solenoid relay malfunctioning.	Verify relay is working properly, replace.
	Faulty hydraulic solenoid relay in instrument panel.	Contact your dealer.

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CHAPTER 7

MAINTENANCE

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This *Maintenance Interval Chart* was developed to match the *Service* chapter of this manual. Detailed information on each service procedure may be found in the *Service* chapter. A *Maintenance Log* follows the chart for recording the maintenance performed. Recording the 10-hour (or daily) service intervals would be impractical and is therefore not recommended.

Important: *Under severe operating conditions more frequent service than the recommended intervals may be required. You must decide, based on your use, if your operation requires more frequent service.*

Service Procedure	Maximum Interval		
	10 Hours (or Daily)	250 Hours	500 Hours (or Annually)
Foreign Material Removal (p45)	●		
Check Engine Air Cleaner Restriction Indicator (p49)	●		
Check Engine Oil Level (p51)	●		
Check Hydraulic Oil Level (p52)	●		
Check Tire Pressures (p55)	●		
Grease Lift Arm, Hitch, Cylinder Pivots and Latch Pins (p46)	●		
Check Bucket Cutting Edge (p53)	●		
Test Safety Interlock System (p16)	●		
Check Coolant Level (p54)	●		
Clean Cooling System (p54)	●		
Check Drive Chain Tension (p48)		●	
Check Wheel Nuts Torque (p53)	❍	●	
Check Lift Arm Torque (p53)		●	
Check Oil Level in Chaincases (p48)		●	
Check Alternator/Fan Belt Tensions (p53)		●	
Change Engine Oil and Filter (p51)	☐	❖	●
Change Hydraulic Oil Filter (p53)	☐		●
Check Battery (p56)			●
Check Engine Mounting Hardware (p51)			●
Change Fuel Filters (p52)			●
Change Hydraulic Oil (p53)			♦
Change Chaincase Oil (p48)	☐		♦
Drain/Flush Cooling System (p54)			●

❍ Perform the initial procedure at 2 hours then at "●" intervals.
☐ Perform the initial procedure at 50 hours then at "●" or "♦" intervals.
❖ Severe operating conditions.
♦ Perform the procedure at 1000 hours.

Maintenance Log

Date	Hours	Service Procedure

CHAPTER 9

TORQUE SPECIFICATIONS

Use these torque values when tightening hardware (excluding locknuts, and self-tapping, thread-forming, and sheet metal screws) unless otherwise specified.

UNIFIED NATIONAL THREAD	GRADE 2		GRADE 5		GRADE 8	
	DRY	LUBED	DRY	LUBED	DRY	LUBED
8-32	19*	14*	30*	22*	41*	31*
8-36	20*	15*	31*	23*	43*	32*
10-24	27*	21*	43*	32*	60*	45*
10-32	31*	23*	49*	36*	68*	51*
1/4-20	66*	50*	9	75*	12	9
1/4-28	76*	56*	10	86*	14	10
5/16-18	11	9	17	13	25	18
5/16-24	12	9	19	14	25	20
3/8-16	20	15	30	23	45	35
3/8-24	23	17	35	25	50	35
7/16-14	32	24	50	35	70	55
7/16-20	36	27	55	40	80	60
½-13	50	35	75	55	110	80
½-20	55	40	90	65	120	90
9/16-12	70	55	110	80	150	110
9/16-18	80	60	120	90	170	130
5/8-11	100	75	150	110	220	170
5/8-18	110	85	180	130	240	180
3/4-10	175	130	260	200	380	280
3/4-16	200	150	300	220	420	320
7/8-9	170	125	430	320	600	460
7/8-14	180	140	470	360	660	500
1-8	250	190	640	480	900	680
1-12	270	210	710	530	1000	740

METRIC COARSE THREAD	GRADE 8.8		GRADE 10.9		GRADE 12.9	
	DRY	LUBED	DRY	LUBED	DRY	LUBED
M6-1	8	6	11	8	13.5	10
M8-1.25	19	14	27	20	32.5	24
M10-1.5	37.5	28	53	39	64	47
M12-1.75	65	48	91.5	67.5	111.5	82
M14-2	103.5	76.5	145.5	108	176.5	131
M16-2	158.5	117.5	223.5	165.5	271	200

*All torque values are in ft-lbs except those marked with an * which are in lbs.

For metric torque value (N·m) multiply ft-lbs value by 1.355 or the in-lbs value by 0.113.

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GEHL CONSTRUCTION
WARRANTY

GEHL CONSTRUCTION DIVISION of the GEHL COMPANY, hereinafter referred to as Gehl, warrants new Gehl construction equipment to the Original Retail Purchaser to be free from defects in material and workmanship for a period of twelve (12) months from the Warranty Start Date, except as set forth below.

GEHL CONSTRUCTION WARRANTY SERVICE INCLUDES:

Genuine Gehl parts and labor costs required to repair or replace equipment at the selling dealer's business location.

GEHL MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED (INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE), EXCEPT AS EXPRESSLY STATED IN THIS WARRANTY STATEMENT.

GEHL WARRANTY SERVICE DOES NOT INCLUDE:

1. Transportation to selling dealer's business location or, at the option of the Original Retail Purchaser, the cost of a service call.
2. Used equipment.
3. Components covered by their own non-Gehl warranties, such as tires, trade accessories and engines.
4. Normal maintenance service and expendable, wear-out items.
5. Repairs or adjustments caused by: improper use; failure to follow recommended maintenance procedures; use of unauthorized parts or attachments; accident or other casualty.
6. Liability for incidental or consequential damages of any type, including, but not limited to lost profits and expenses of acquiring replacement equipment.

No agent, employee or representative of Gehl has any authority to bind Gehl to any warranty except as specifically set forth herein. Any of these limitations excluded by local law shall be deemed deleted from this warranty; all other terms will continue to apply.

Loader Raising Procedure

To raise the loader so that all four tires are off the ground, use the procedure below:

WARNING

Do not rely on a jack or hoist to maintain the raised position without additional blocking and supports. Serious personal injury could result from improperly raising or blocking the loader.

1. Using a jack or hoist capable of lifting the fully-equipped weight of the loader (with all attached options, except hitch attachments), lift the rear of the loader until the rear tires are off the ground.
2. Stack wooden blocks under the flat part of the loader chassis. They should be parallel to, but not touch, the rear tires (Fig. 37).
3. Slowly lower the loader until its weight rests on the blocks. If the tires still touch the ground, raise the loader again, add more blocks and lower again.
4. Repeat Steps 1 through 3 for the front end. When the procedure is finished, all four tires will be off the ground so that they can be removed.

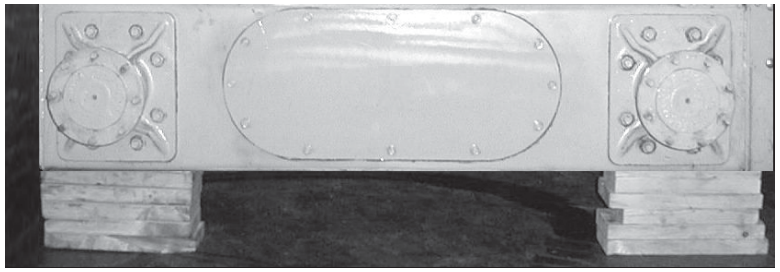


Fig. 37: Loader Properly Blocked
(Tires and wheels removed to show blocks)

Loader Lowering Procedure

When service or adjustment procedures are complete, the loader can be lowered from the raised position. To lower the loader onto its tires:

1. Using a jack or hoist, raise the front of the loader until its weight no longer rests on the front blocks.
2. Carefully remove the blocking under the front of the loader.
3. Slowly lower the loader until the front tires are resting on the ground.
4. Repeat Steps 1 through 3 for the rear of the loader. When the procedure is finished, all four tires will be on the ground and the blocks removed from under the loader.

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Engine Compartment Access

Important: *Do not raise the lift arm with the engine cover raised because the engine cover will be damaged.*

To open the engine compartment, pull the rear door latch and carefully swing open the rear door. Lift the engine cover. The side panels are removed by lifting the panels out. The side panels are easier to access if the lift arm is raised and secured (page 17).



Fig. 38: Engine Compartment Access Doors
1. Grill Cover
2. Side Panels

Tilting Back the ROPS/FOPS

A manual hydraulic pump in the engine compartment is used to tilt back the ROPS/FOPS. The pump handle is stored in the rear door. A manual lock mechanism engages to lock the ROPS/FOPS in a tilted-back position. To tilt back the ROPS/FOPS, use the following procedure:

1. Remove the two anchor bolts at the front of the ROPS/FOPS.
2. Insert the pump handle in to the pump.

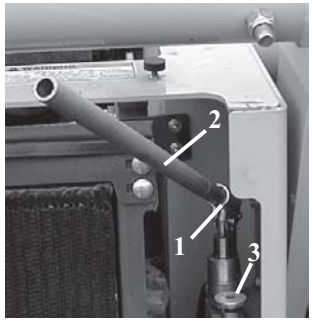


Fig. 39: ROPS/FOPS Tilt Pump
1. Pump
2. Pump Handle
3. Needle Valve



Fig. 40: ROPS/FOPS Lock Mechanism - Engaged

3. Tighten the needle valve.
4. Pump until the ROPS/FOPS is tilted back enough that the lock mechanism underneath the right side of the ROPS/FOPS engages.
5. To lower the ROPS/FOPS, return the lock mechanism to the unlocked position, and gradually loosen the needle valve. The ROPS/FOPS will slowly lower. Reinstall the anchor bolts, washers and locknuts. Refer to the Torque Specifications chart (Page 79) for torque information.

Engine

Problem	Possible Cause	Remedy
Engine turns over but will not start.	Engine cranking speed too slow.	Battery requires recharging or replacing, or, in cold temperatures, pre-warm the engine.
	Auxiliary valve engaged.	Return control valves to neutral.
	Fuel tank empty.	Refill fuel tank.
	Glow plug module malfunctioning (turbo engine only).	Check connection and voltage, replace as needed.
	Fuel shut-off solenoid not energizing.	Check electrical connections and voltage to shut-off solenoid.
	Engine not warm enough.	Install block heater.
	Ambient temperature too low.	Install block heater.
	Fuel filter plugged.	Replace filter.
	Fuel pump not working.	Contact your dealer.
Engine overheats.	Crankcase oil level too low or too high.	Add or remove oil as required.
	Fan air circulation blocked or restricted.	With engine off, remove blockage or restriction.
	Fan shroud improperly positioned.	Contact your dealer.
	Grade of oil improper or excessively dirty.	Drain and replace with proper grade new oil.
	Exhaust restricted.	Allow exhaust to cool, remove restriction.
	Air filter restricted.	Replace filter(s).
	Low coolant level.	Add coolant.
	Fan belt loose.	Tighten fan belt.

Hydrostatic Drive System

Problem	Possible Cause	Remedy
No response from either hydrostatic drive or the lift/tilt systems.	Hydraulic oil viscosity too heavy.	Allow longer warm-up or replace oil with proper viscosity oil.
	Hydraulic oil too low.	Check for low oil level in reservoir, add oil.
	Drive coupling failure.	Replace coupling.
Traction drive will not operate in either direction.	Parking brake is engaged.	Disengage parking brake.
	Hydraulic oil level low.	Check for low oil level in reservoir, add oil.
	Control rod linkage disconnected.	Check linkage connection at control levers and neutral centering mechanisms, reconnect linkage.
	Low or no charge pressure.	Contact your dealer.
	Hydrostatic pump(s) relief valves malfunctioning.	Contact your dealer.
Sluggish acceleration.	Air in hydraulic system.	Cycle lift and tilt cylinders to maximum stroke and maintain pressure for short time to clear air from system. Also check for low oil level in reservoir, fill as needed.
	Hydraulic oil level too low.	Check for low oil level in reservoir, add oil.
	Hydrostatic system charge pressure low.	Contact your dealer.
	Drive motor(s) or hydrostatic pump(s) have internal damage or leakage.	Contact your dealer.
Hydrostatic drive overheating.	Drive system overloaded continuously.	Improve efficiency of operation.
	Lift/tilt or auxiliary system overloaded continuously.	Improve efficiency of operation.
	Drive motor(s) or hydrostatic pump(s) have internal damage or leakage.	Contact your dealer.
	Oil cooler fins plugged with debris.	Clean oil cooler fins.
	Hydraulic oil filter plugged or restricted.	Replace filter.
	Loader being operated in high temperatures with no air circulation.	Reduce duty cycle; improve air circulation.

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Maintenance Log

Date	Hours	Service Procedure

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Maintenance Log

Date	Hours	Service Procedure

Engine Service

Refer to the *Maintenance Interval Chart* (page 65) for change intervals. Refer to the "*Replacement Parts*" topic (page 42) for filter part numbers.

Checking Engine Mounting Hardware

All bolts that secure the engine mounting brackets to the engine and the loader frame should be checked and re-torqued as necessary. Refer to the *Torque Specifications Chart* (page 79) for torque information.

WARNING

Allow hot engine and hydraulic system components to cool before servicing.

Checking Engine Oil Level

Open engine cover (page 44), pull out the dipstick and check the oil level. Markings on the dipstick represent FULL and LOW (add oil) levels.

Changing Engine Oil and Filter

Important: *For new units, the initial oil change should be after the first 50 hours.*

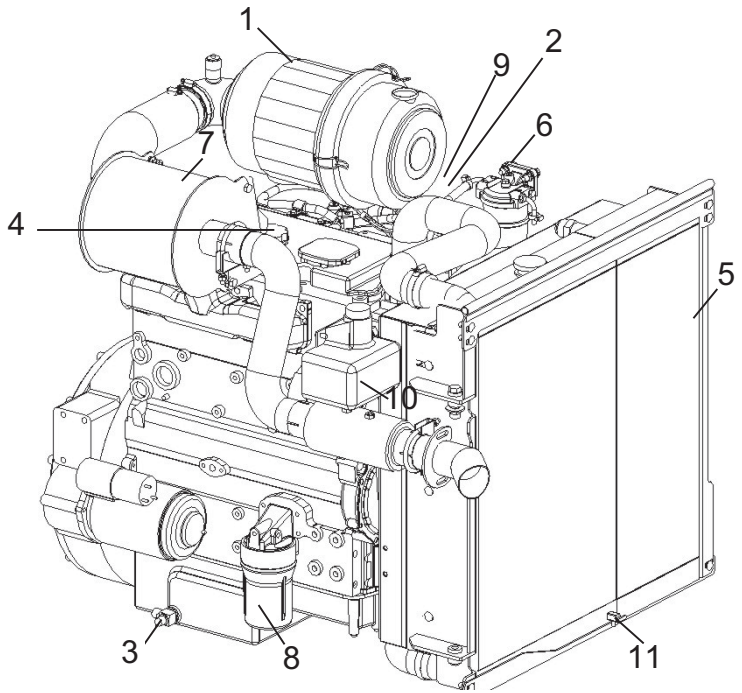


Fig. 45: Engine Service Components

1. Air Cleaner
2. Fuel Filter
3. Engine Oil Drain Valve
4. Engine Oil Fill Cap
5. Radiator/Cooler
6. Water Separator
7. Muffler
8. Engine Oil Filter
9. Engine Oil Dipstick
10. Coolant Recovery Tank
11. Radiator Coolant Drain Valve

1. Run the engine until it is at operating temperature. Stop the engine.
2. Place a pan under the hose behind the left rear tire and then open the valve (#3, Fig. 45) on the oil pan to drain the oil.



Fig. 47: Remote Engine Oil Drain

3. Remove the oil filter (#8, Fig. 45). Clean the filter sealing surface.
4. Put clean oil on the new oil filter gasket. Install and tighten the filter ½ turn past the point where the gasket contacts the filter head.
5. Close the oil drain valve.
6. Remove the oil fill cap (#4, Fig. 45) and add the recommended oil. Refer to the "Lubrication" topic (page 46) for oil recommendations and capacities.
7. Start the engine and let it run for several minutes at low idle. Stop the engine. Check for leaks at the oil filter, drain valve and remote oil drain hose. Check the oil level. Add oil if it is not at the FULL mark on the dipstick.

Changing Fuel Filter

1. Remove the filter element (#2, Fig. 45) by unscrewing filter assembly.
2. Remove cartridge.
3. Insert new cartridge.
4. Turn key to "run" position for 30 seconds to re-prime fuel lines before attempting to start engine.

Water Separator and Filter Drain

1. Loosen drain plug on bottom of water separator (#6, Fig. 45) to drain water.
2. When water is drained, tighten plug.

Hydraulic System

Refer to the *Maintenance Interval Chart* (page 65) for service intervals. Refer to the "*Replacement Parts*" topic (page 42) for filter part numbers.

WARNING

Before servicing the hydraulic system, be sure the lift arm is lowered.

Checking Hydraulic Oil Level

The loader has a sight gauge located at the rear of the skid-steer loader. Check the fluid level with the lift arm lowered and the attachment on the ground.

Add hydraulic oil as required. Refer to the "*Lubrication*" topic (page 46) for oil recommendations. Replace the fill cap.

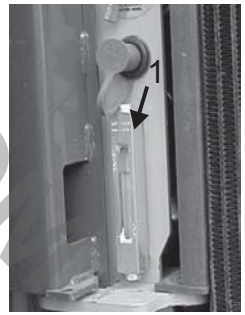


Fig. 46:

1. Sight Gauge

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