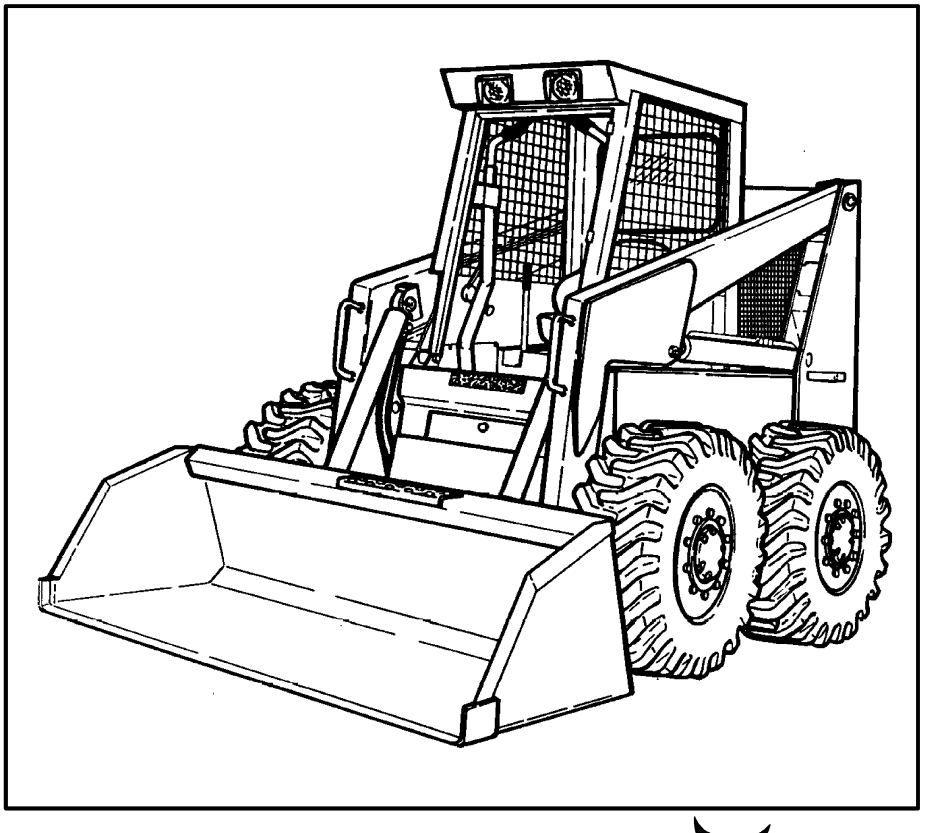
9
7
4

9
7
5

Service Manual



MELROE
INGERSOLL-RAND

bobcat®

6556214 (11–85) Printed in U.S.A.

MAINTENANCE SAFETY

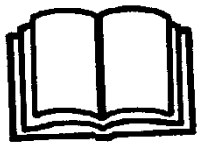
WARNING

Instructions are necessary before operating or servicing machine. Read and understand the Operation & Maintenance Manual, Operator's Handbook and signs (decals) on machine. Follow warnings and instructions in the manuals when making repairs, adjustments or servicing. Check for correct function after adjustments, repairs or service. Untrained operators and failure to follow instructions can cause injury or death.

W-2003-0903

Safety Alert Symbol: This symbol with a warning statement, means: "Warning, be alert! Your safety is involved!" Carefully read the message that follows.

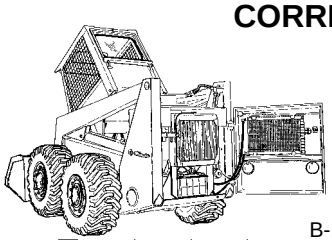
CORRECT



B-10731a

Never service the Bobcat Skid-Steer Loader without instructions.

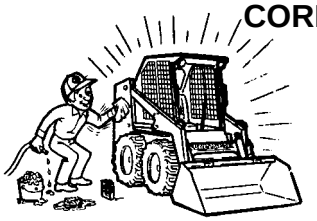
CORRECT



B-11103

Use the correct procedure to lift or lower operator cab.

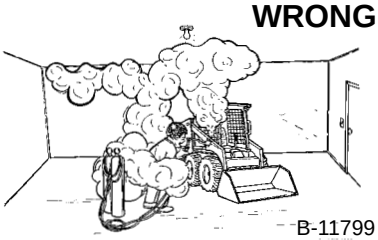
CORRECT



B-7469

Cleaning and maintenance are required daily.

WRONG



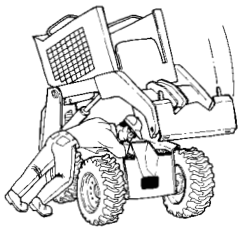
B-11799

Have good ventilation when welding or grinding painted parts.

Wear dust mask when grinding painted parts. Toxic dust and gas can be produced.

Avoid exhaust fume leaks which can kill without warning. Exhaust system must be tightly sealed.

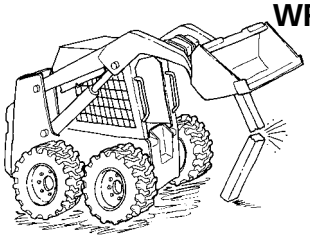
WRONG



B-15231

Disconnecting or loosening any hydraulic tubeline, hose, fitting, component or a part failure can cause lift arms to drop. Do not go under lift arms when raised unless supported by an approved lift arm support device. Replace it if damaged.

WRONG

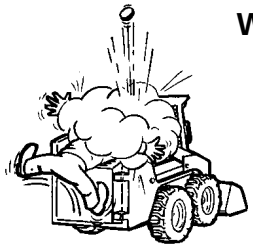


B-15280

Never work on loader with lift arms up unless lift arms are held by an approved lift arm support device. Replace if damaged.

Never modify equipment or add attachments not approved by Bobcat Company.

WRONG



B-6590

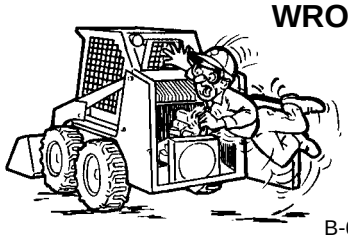
Stop, cool and clean engine of flammable materials before checking fluids.

Never service or adjust loader with the engine running unless instructed to do so in the manual.

Avoid contact with leaking hydraulic fluid or diesel fuel under pressure. It can penetrate the skin or eyes.

Never fill fuel tank with engine running, while smoking or when near open flame.

WRONG



B-6580

Keep body, jewelry and clothing away from moving parts, electrical contact, hot parts and exhaust.

Wear eye protection to guard from battery acid, compressed springs, fluids under pressure and flying debris when engines are running or tools are used. Use eye protection approved for type of welding.

Keep rear door closed except for service. Close and latch door before operating the loader.

WRONG

B-6589

Lead-acid batteries produce flammable and explosive gases.

Keep arcs, sparks, flames and lighted tobacco away from batteries.

Batteries contain acid which burns eyes or skin on contact. Wear protective clothing. If acid contacts body, flush well with water. For eye contact flush well and get immediate medical attention.

Maintenance procedures which are given in the Operation & Maintenance Manual can be performed by the owner/operator without any specific technical training. Maintenance procedures which are **not** in the Operation & Maintenance Manual must be performed **ONLY BY QUALIFIED BOBCAT SERVICE PERSONNEL. Always use genuine Bobcat replacement parts.** The Service Safety Training Course is available from your Bobcat dealer.

MSW02-0805

FOREWORD

This manual provides instruction for proper routine servicing and adjustment of the Bobcat, and detailed overhaul instructions of the power train, loader hydraulic/hydrostatic system and general mainframe components.

Refer to the Owner's Manual for general operating instructions (Starting Procedure, Daily Checks, Bucket Operation, Minor Maintenance, etc.).

A general inspection of the following items should be made whenever the machine has undergone service or repair:

1. Check hydraulic fluid level, engine oil level and fuel supply.
2. Inspect for any sign of fuel, oil or hydraulic fluid leaks.
3. Lubricate the machine.
4. Inspect air cleaner system for damage or leaks. Check element and make replacement, if necessary.
6. Check alternator drive belt for condition and tension.
7. Check for loose drive chains.
8. Check tires for wear and pressure.
9. Check the Bob-Tach attachment for condition. Inspect the wedges for damage or wear.
10. Inspect safety items for condition (ROPS Guard, Seat Belt, Safety Treads, Lights, etc.).
11. Make a visual inspection for loose or broken parts or connections.
12. Operate the loader, checking all functions.

Advise the owner if any of the above items are in need of repair.

CONTENTS

I. SAFETY INSTRUCTIONS

A. SAFETY IS YOUR RESPONSIBILITY

The Bobcat Loader is a highly maneuverable and compact machine. In operation, it is rugged and useful under a wide variety of conditions. This presents an operator with hazards which are common for off highway, rough terrain applications but are not unique for use of Bobcat loaders. The loader has an internal combustion engine with resultant heat and exhaust. All exhaust gases can kill so the loader must be used with adequate ventilation. The loader must not be used in an area with explosive dusts or gases or so that the engine exhaust can contact flammable material. The loader has a spark arrestor muffler which is required for operation in certain areas.

The dealer recommends the capabilities and restrictions of the loader and attachments for each application. The dealer demonstrates the safe operation of the loader according to the manufacturer's instructional materials which are also available to all operators. The dealer can also identify unsafe modifications or use of unapproved attachments. The attachments and buckets are designed for rated capacity and secure fastening to the loader. For each model loader, the user must check with the dealer or manufacturer's literature to identify each bucket or attachment for safe loads of materials of specified densities.

The following publications provide information on the safe use of the loader and attachments:

1. The Delivery Report is used to check whether complete instructions have been given to the new owner.
2. The Operator's Manual delivered with every loader gives operating information as well as routine maintenance and service.
3. Every loader has machine signs (or decals) which instruct on the safe care and operation of the loader. The complete signs and their location are shown in the Operator's Manual. All signs are available from your Bobcat dealer.
4. The loader has a plastic Operator Handbook fastened to the operator cab. It has brief instructions always available to the operator. The handbook is available from your Bobcat dealer.
5. The Service Manual and Parts Manual are optional manuals from your Bobcat dealer for use by mechanics to do shop-type service and repair work.

The dealer and owner/operator review the recommended uses of the loader and attachments at the time of delivery of the loader. If change of the use of the loader occurs, the owner/operator must remember to ask the dealer for recommendations on the new use of the loader.

B. BEFORE OPERATING THE BOBCAT LOADER

⚠ WARNING

Operator must have instructions before operating loader. Failure to obey warnings can cause injury or death.

W-2001-0284

B-7023

This Service Manual was written to give the service personnel instructions on the safe service of the Bobcat loader. READ AND UNDERSTAND THIS SERVICE MANUAL BEFORE SERVICE YOUR BOBCAT.

⚠ WARNING

For your safety, warnings are on loader and in manual. Failure to obey warnings can cause injury or death.

W-2044-0284

IMPORTANT

This notice identifies procedures which must be followed to avoid damage to the loader.

I-2019-0284

C. SAFE OPERATION NEEDS A QUALIFIED OPERATOR

A QUALIFIED OPERATOR* MUST DO THE FOLLOWING:

1. UNDERSTAND THE WRITTEN INSTRUCTIONS, RULES AND REGULATIONS

   a. The written instructions from Melroe Company include the delivery report, loader operator's handbook and manual, attachment manual and machine signs (decals).

   b. Check the rules and regulations at your location. The rules may include an employer's work safety requirements. Regulations may identify a hazard such as utility supply line.

2. HAVE TRAINING WITH ACTUAL OPERATION

   a. Operator training must consist of a demonstration and verbal instruction. This training is given by the Bobcat dealer before the loader is delivered.

   b. The new operator should start in an area without bystanders and use all the controls until he can control the loader at full use under the conditions for his work area.

3. KNOW THE WORK CONDITIONS

   a. For each material to be handled, the operator must know how to avoid exceeding the rated operating capacity of the loader. For example, he must know whether he can safely take a full load or just part of a bucket load when handling a certain loose material with a given bucket.

   b. The operator must know any prohibited uses or work areas for the loader. For example, he needs to know about excessive slopes.

* For an operator to be qualified, he must not use drugs or alcoholic drinks which change his alertness or coordination while working. An operator who is taking prescription drugs must get medical advice on whether or not he can safely operate a machine.

II. FIRE PREVENTION

The loader has several components which are at high temperature under normal operating conditions. The primary source of high temperatures is the engine and exhaust system. The electrical system, if damaged or incorrectly maintained, can be a source of arcs or sparks. These conditions make it necessary to avoid applications where explosive dust or gases can be ignited by arcs, sparks or heat.

Flammable debris (leaves, straw, etc.) must be removed regularly. If flammable debris is allowed to accumulate, it will increase the condition for fire hazard. The loader must be cleaned as often as necessary to avoid this accumulation. This flammable debris in the engine compartment can be a fire hazard when the loader is parked with a hot engine.

The spark arrestor muffler is designed to control the emission of hot particles from the engine and exhaust system, but the muffler and the exhaust gases are still hot. This spark arrestor muffler does not change the need to avoid use of the loader in an atmosphere with explosive dust or gases or where the exhaust can contact flammable material.

1. Do not use the Bobcat loader in applications where explosive dust or gases can be ignited by arcs, sparks, hot components or exhaust gases.

2. The operator cab, engine compartment and engine cooling system must be inspected every day and cleaned if necessary to prevent overheating. Remove all flammable material.

3. Check all electrical wiring and connections for damage. Keep the battery terminals clean and tight. Repair or replace any damaged part.

4. Check for damage and leakage at all the fuel, oil and hydraulic tubes, hoses and fittings. Tighten or replace any that show leakage. Always clean fluid spills.

5. Use ether or starting fluids only when approved by the engine manufacturer. Do not use ether or starting fluids on any engine which has glow plugs. These starting aids can cause an explosion and injure bystanders.

6. Always clean the loader before doing any welding. Cover rubber hoses, battery and all other flammable parts. Keep a fire extinguisher near the loader when welding.

7. Stop the engine and let it cool before adding fuel. No smoking.

8. Use the procedure in Operator's Manual for connecting and charging batteries.

9. Use the procedure in Operator's Manual for servicing the spark arrestor muffler.

PREVENTIVE MAINTENANCE

1—1 INTRODUCTION

1—1.1 Symbols

⚠ WARNING

For your safety, this warning is on the loader and in the manual. It will give warning of actions or danger which can cause personal injury.

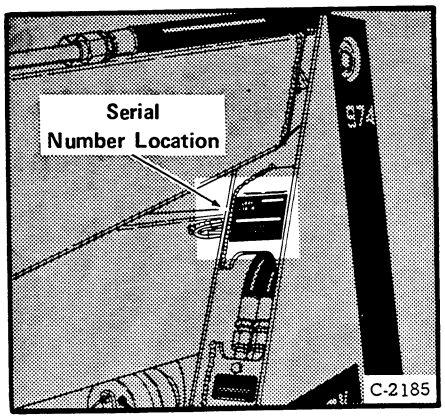


Fig. 1—1 974 & 975 Serial No. Location

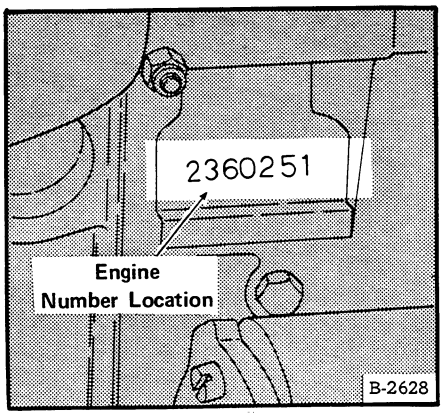


Fig. 1—2 974 Engine S/N Location (early)

IMPORTANT

This notice shows important procedures which must be followed to prevent damage to the loader.

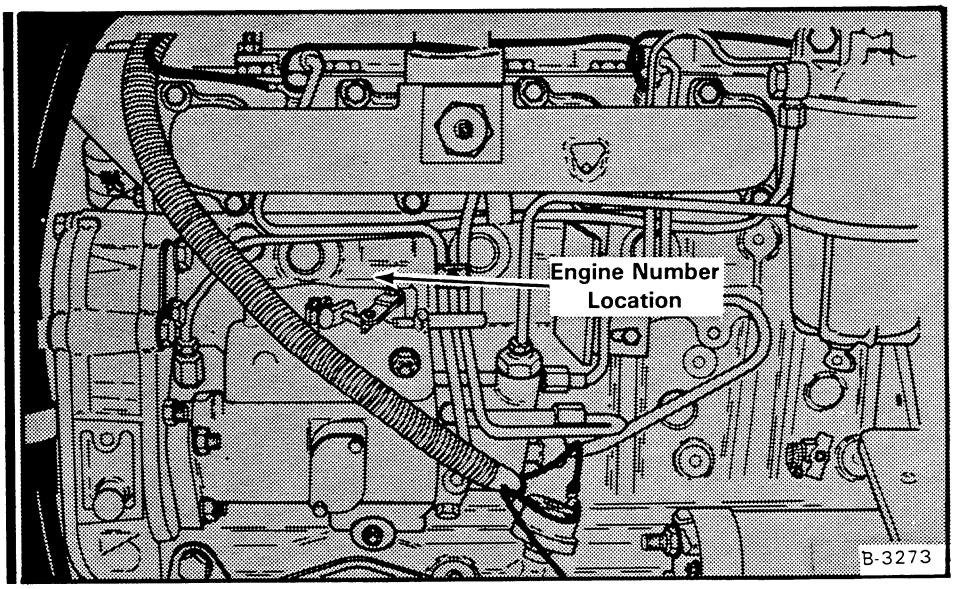


Fig. 1—3 974 Engine Serial Number Location (current)

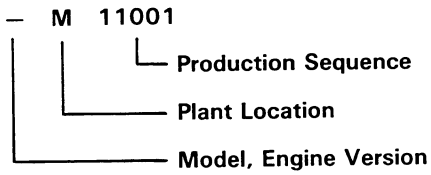
1—1.2 Serial Number Identification

It is important to make correct reference to the serial number of the loader when making repairs or ordering parts. Early or later made models (identification made by "Lot") sometimes use different parts, or it may be necessary to use a different procedure in doing a specific job.

1—1.3 Loader Serial Number

The loader serial number plate location is inside left upright (Fig. 1—1).

The serial number is made up as follows:



1—1.4 Engine Serial Number

For the location of the engine serial number, see figure 1—2, 1—3 or 1—4.

1—1.5 Pre-Delivery Inspection

The purpose of the pre-delivery inspection is to make sure that the loader is in correct operating condition when it comes to the dealer and before it is delivered to the customer.

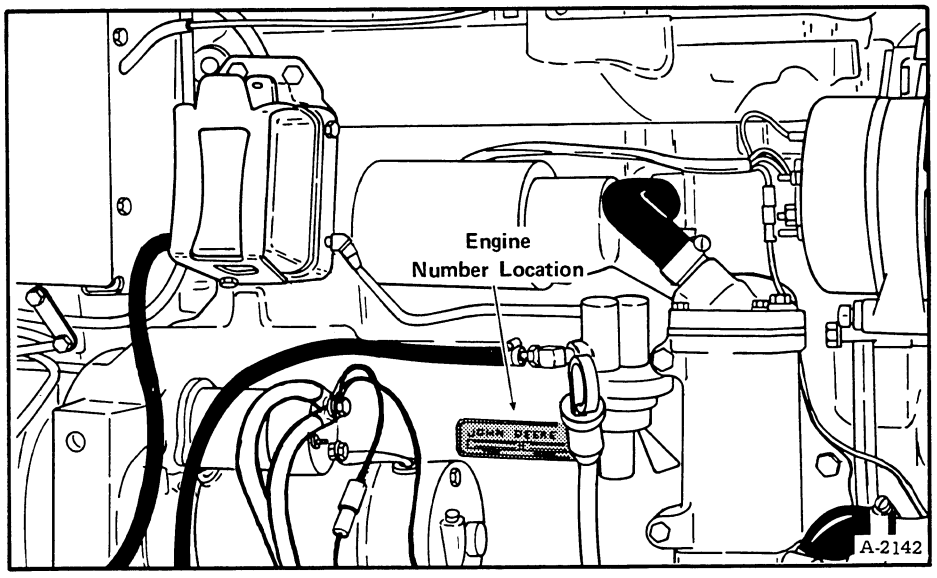


Fig. 1—4 975 Engine Serial Number Location

The pre-delivery inspection also lets the factory know when something is wrong with the loader so that action can be taken to prevent the problem from happening in the future.

All items on the inspection form (Fig. 1–5) must be completed according to specifications in this manual.

One copy of the completed form is to be mailed to the attention of Quality Control, Melroe Division.

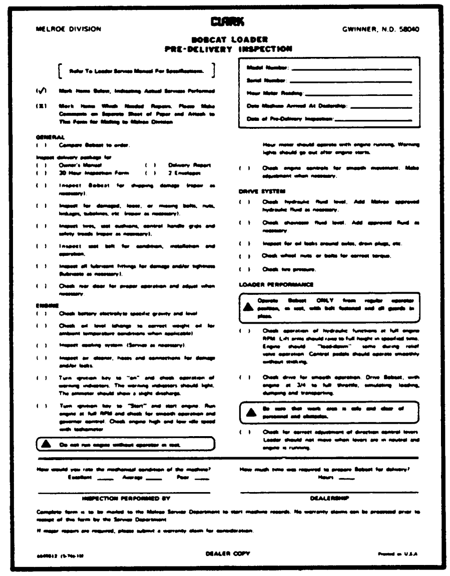

MELROE DIVISION CLARK GWINNER, N.D. 58040
BOBCAT LOADER
PRE-DELIVERY INSPECTION
DEALER COPY

Fig. 1–5 Pre-Delivery Inspection

1–1.6 30 Hour Inspection

The 30 hour inspection must be completed soon after the first 30 hours of loader operation.

The purpose of the 30 hour inspection is as follows:

(1) For adjustment and inspection after first work period.

(2) To correct wrong maintenance and operating methods.

(3) For demonstration of correct service procedures to customer.

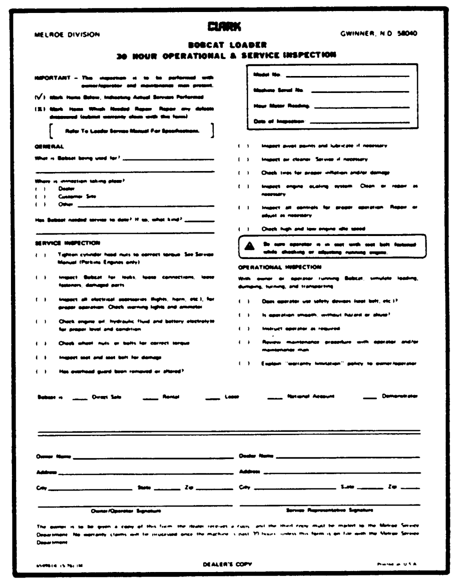

MELROE DIVISION CLARK GWINNER, N.D. 58040
BOBCAT LOADER
30 HOUR OPERATIONAL & SERVICE INSPECTION
DEALER'S COPY

Fig. 1–6 30 Hour Inspection

All items on the 30 hour inspection form (Fig. 1–6) must be completed by the mechanic according to specifications in the manual.

When the 30 hour inspection has been completed, the form must be signed by the mechanic completing the inspection, the dealer and owner or operator.

One copy of the completed form is for the owner of the loader. Another copy is to be sent to the attention of Service Department, Melroe Division. The remainder copy is for the Dealer.

SERVICE SCHEDULE

Maintenance work must be done regularly. Failure to do so will result in damage to the loader or engine. The service schedule is a guide for correct maintenance of the Bobcat loader. Do not change from this service schedule unless to increase frequency of intervals when the Bobcat loader is operated in very hot, cold, dusty or corrosive conditions.

BOBCAT SERVICE SCHEDULE*

ITEM	SERVICE REQUIRED	HOURS 10	50	100	250	600	1000
Engine Oil	Check and add oil as necessary.	■					
Engine Cooling System	Check coolant level in radiator. Add coolant when low. Remove any foreign material from radiator grill area.	■					
Air Cleaner Indicator	Replace element when red ring shows in window.	■					
Fuel Bowl	Check for sediment or water. Drain off water and sediment, if necessary.	■					
All Pivot Pins	Add lubricant to all fittings until extra grease shows.	■					
Tires	Check the air pressure, and any damage to tires.	■					
Hydraulic Reservoir Level	Add correct fluid as necessary.	■					
Wheel Nuts	Tighten loose nuts to correct torque.	■					
Hydraulic Hoses	Check for damage and leaks and replace.	■					
Fan and Alternator Belt	Check the belt tension and adjust as necessary.		■				
Battery	Check water level and inspect cables.		■				
Final Drive Chaincase	Check fluid level, when low add fluid by removing side cover and fill to check plug level.		■				
Engine Oil and Filter Element	Change engine oil and filter.		■				
Cylinder Head Nuts (974)	Tighten to correct torque. Adjust valves.		■				
Final Drive Chains	Check for correct tension and adjust as needed.			■			
Hoses and Clamps	Inspect and tighten as necessary.			■			
Primary (10 Micron) Hydraulic Filter	Replace element.			■			
Spark Arrestor Muffler	Clean spark chamber.			■			
Secondary Hyd. Filters	Replace elements.				■		
Fuel Filter(s)	Install new filter element(s) and vent air from system.					■	
Crankcase Vent Tube (PCV) Valve	Remove and clean.					■	
Fluid Level in Reduction Gear Housing	Check fluid level and add correct oil and fill to check plug level as needed.					■	
Hydraulic Oil Reservoir	Slide skid plate open. Remove drain plug and remove condensation.					■	
Engine Cooling System	Drain and flush cooling system. Refill with water and, for protection from freezing, add anti-freeze as needed.						■
Reduction Gear Housing	Drain the fluid, fill to check plug level with correct fluid.						■
Final Drive Chaincase	Drain the fluid and flush. Fill to check plug level with correct fluid.						■
Hydraulic Fluid	Drain the fluid and fill to check plug level with correct fluid.						■
Starter Wicks (975)	Add lubrication. Use 10W oil.						■

***IMPORTANT NOTE:** **See "30 Hour Inspection" on page**

1–3 REAR DOOR AND ENGINE COVER

The rear door is opened by pulling out on the handle and turning it (Fig. 1–7). Pull the door fully open. The rear door weight is 453 lbs. (205 kg).

The top engine cover is removed by releasing the two rubber fasteners at the cab end of the cover (Fig. 1–8 & 1–9) then slide it to the rear. The cover will slide to the rear so the ROPS can be tilted on model 975 loaders. The muffler must be removed to remove the engine cover. The engine cover weight is 73 lbs. (33 kg).

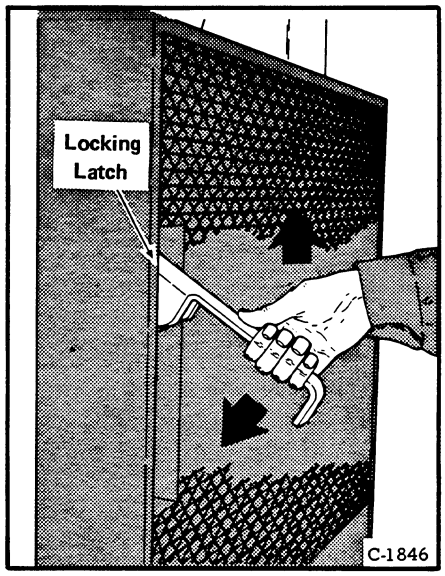


Fig. 1–7 Opening Rear Door

1–4 REMOVAL OF SIDE PANEL (FENDER)

Remove the two fastening nuts and bolts from the fender (one at a each end). Remove the fender. The fender weight is 35 lbs. (15 kg).

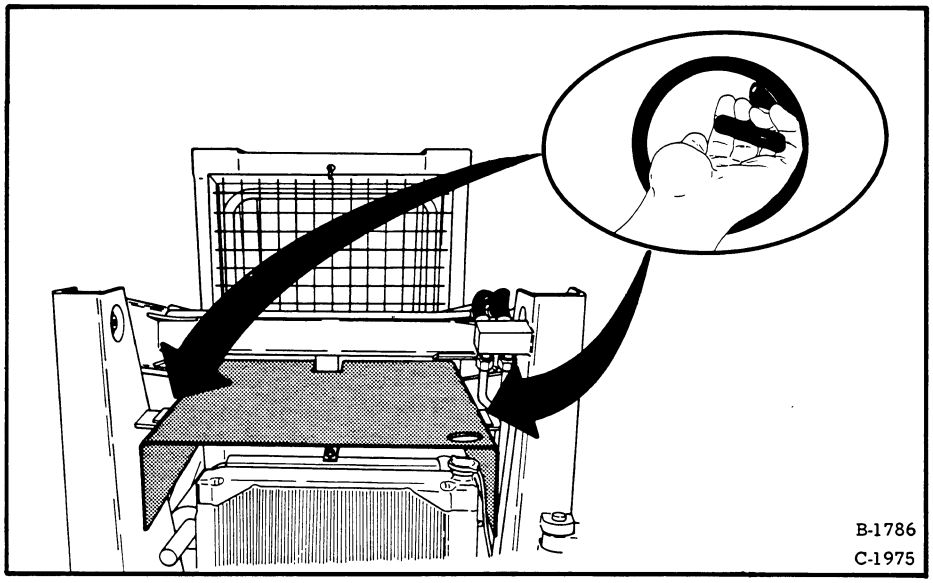


Fig. 1–8 Removing Engine Cover (974)

1–5 TILTING THE ROPS (Operator Enclosure) (Fig. 1–10)

The ROPS on the Bobcat Loader can be tilted to provide access when servicing.

1–5.1 Tilting ROPS Forward

(1) Lower attachment to the ground. Slide operator's seat to the rear, and set throttle about 3 inches ahead of the left steering lever. Connect the seat belt together.

(2) Release rubber fasteners and slide top engine cover back several inches.

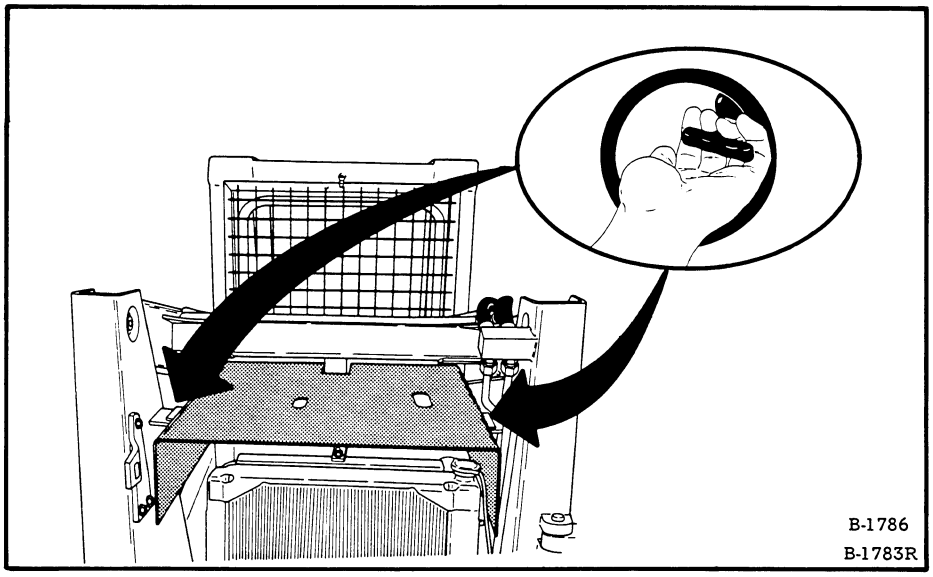


Fig. 1–9 Removing Engine Cover (975)

(3) Remove rear pins from both sides of enclosure. (Momentarily activate the cab tilt switch if pins are hard to remove.)

(4) Activate tilt switch and tilt the enclosure. Check control levers when tilting to make sure that they are clear.

(5) Lower safety leg above tilt cylinder until it is against the cylinder rod. Lower enclosure until its weight is supported by safety leg (Fig. 1—11).

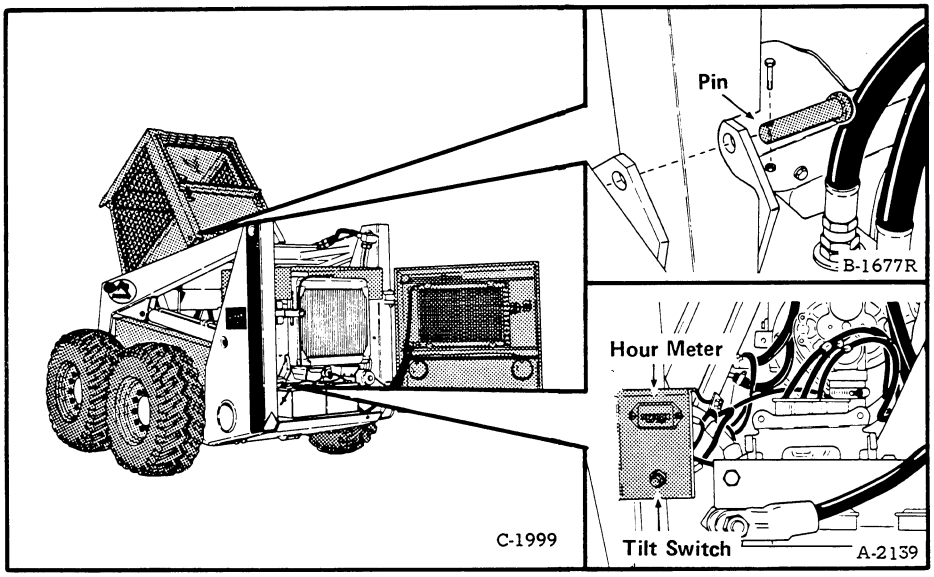


Fig. 1—10 Tilting ROPS Enclosure

1—5.2 To Lower ROPS

(1) Tilt forward enough to remove weight from safety leg. Move leg up nto storage position.

(2) Move throttle lever and directional control levers so that they do not hit enclosure as it is lowered, then activate switch to lower the enclosure.

(3) Replace mounting pins when enclosure is fully lowered. Secure pins with lock pins.

(4) Slide top engine cover forward and hold with rubber fasteners.

1—6 CONTROL LEVER LOCK

A control lever lock keeps the operating levers in neutral position, so they can not be moved by accident while operating the engine during service.

To install the lock:

(1) Tilt the ROPS.

(2) Put the hook of the bolt through the tab on the floor (Fig. 1—12, Item 1).

(3) Lift the centering arm. Put the bolt through the hole in the centering arm (Fig. 1—12, Item 2).

(4) Install the wing nut on the bolt. The control lever lock must be installed if engine is to be operated during service.

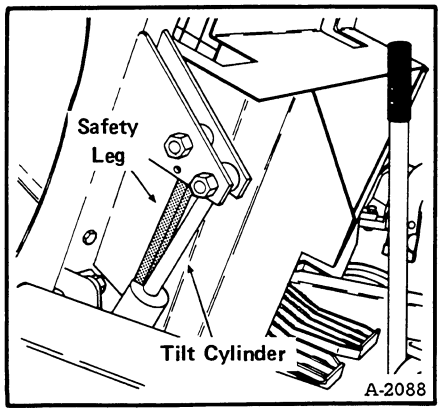


Fig. 1—11 Safety Leg

1—7 TO CLEAN ROPS AND SKID PLATE AREA

Clean ROPS and foot pedal area frequently to remove dirt and foreign material. Keep machine clean to prevent a fire from starting.

1—7.1 To Open the Skid Plate

(1) Remove bolt from the hole of retaining bar at the rear of the skid plate.

(2) Install the removal tool (fastened inside the rear grill) on the skid plate (Fig. 1—13).

(3) Fasten a chain to the tool and fasten other end to a tree or post.

(4) Slowly move the machine forward until the skid plate is fully open against the stop.

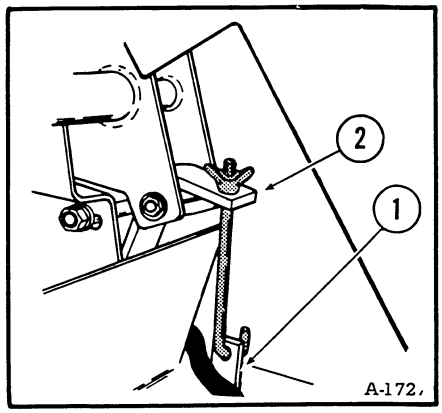


Fig. 1—12 Control Lever Lock

(5) Remove all foreign material from the machine.

1—7.2 To Close the Skid Plate

(1) Turn the Bobcat around, fasten the chain to the tool and slowly move the machine backward until the plate is closed.

(2) Remove the tool and install retaining bolt.

NOTE: Always install the rear pins after ROPS is lowered and before operating Bobcat.

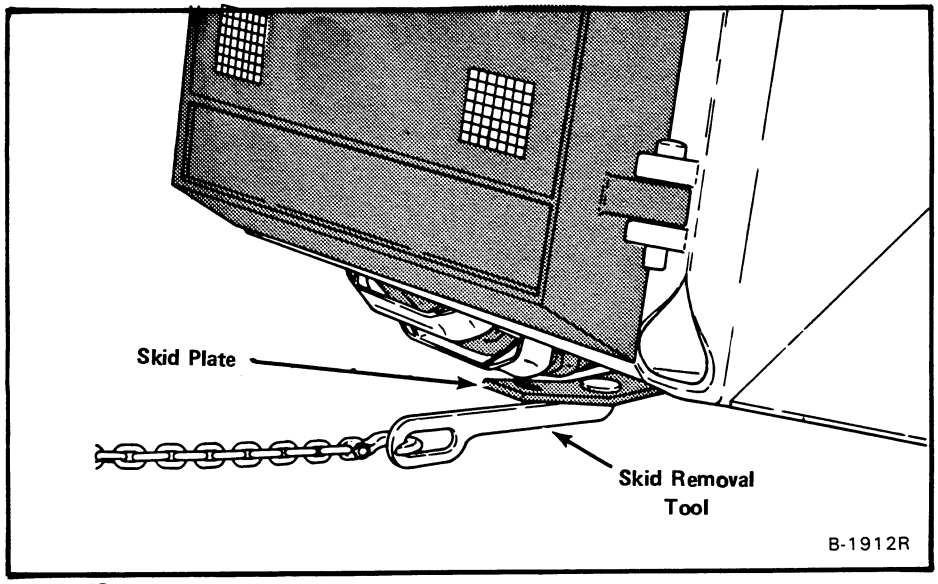


Fig. 1—13 Removing Skid Plate

1—8 ENGINE MAINTENANCE (General)

1—8.1 Starting the Engine

(1) Put throttle lever in full open position.

(2) Operate starter switch.

For cold weather starting see 7—22.10 "Cold Weather Starting Aid".

1—8.2 Engine Oil Check

(1) Check oil level every eight hours of operation.

(2) Oil level on new Bobcats should be checked every 2 to 4 hours during the first 50 hours of operation.

(3) Oil level must always be kept between the "Full" and "Low" marks on the dipstick (Fig. 1—14).

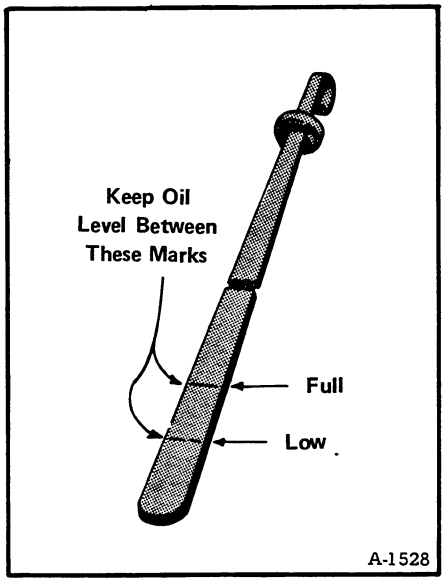
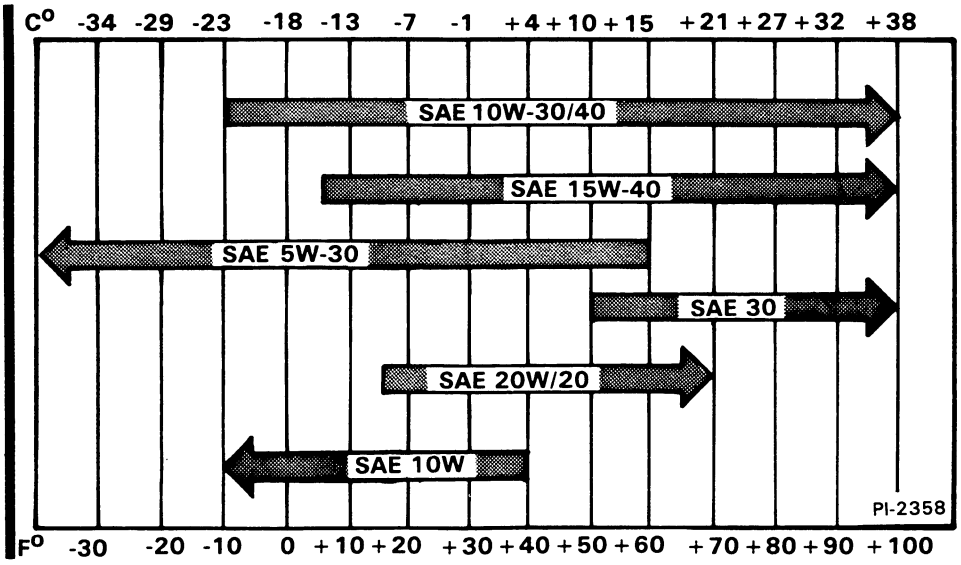


Fig. 1—14 Engine Oil Dipstick

1—8.3 Specifications

RECOMMENDED SAE VISCOSITY NUMBER
(LUBRICATION OILS FOR ENGINE CRANKCASE)



TEMPERATURE RANGE ANTICIPATED BEFORE NEXT OIL CHANGE
(GASOLINE: USE API CLASSIFICATION SE)
(DIESEL: USE API CLASSIFICATION CD)

1–9 CRANKCASE VENT TUBE

The crankcase vent tube must be cleaned every 50 hours of operation.

Remove tube and clean with solvent. A brush and air pressure can be used to aid in cleaning.

1–10 REPLACEMENT OF ENGINE OIL AND FILTER

Engine oil and filter require replacement every 100 hours of operation. In extremely hot, cold, dirty or corrosive conditions, make oil and filter replacement more frequently.

Start engine and allow it to reach operating temperature before making replacement of oil.

Replacement of engine oil and filter:

(1) Remove crankcase drain plug (located at the end of crankcase drain hose)(Fig. 1–15).

(2) Remove engine oil filter cartridge.

(3) Clean filter sealing surface.

(4) Apply small amount of new oil to sealing surface of filter and install on engine.

(5) Allow oil to flow from crankcase for about five minutes, then replace drain plug.

(6) Fill to "Full" mark on dipstick (Fig. 1–14). Do not overfill. Capacity is 8 quarts (7,5 litres) with filter replacement.

(7) Start engine and run for about five minutes. Check for leaks around filter.

(8) Stop engine. Check oil level and add oil as necessary.

NOTE: Do not overfill, as this will cause oil foaming, oil consumption, high engine temperature, and oil leaks at the engine seals.

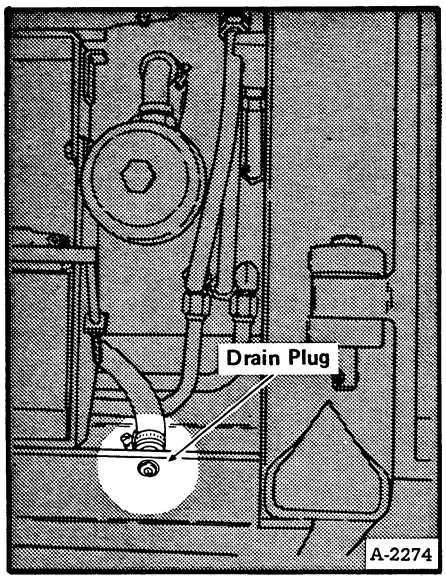


Fig. 1–15 Engine Oil Drain

1–11 ENGINE AIR INLET SYSTEM (Air Cleaner)

Correct maintenance of air inlet system is necessary for long engine life. A small leak in the system can destroy an engine within minutes. Do not overservice! Service only when red ring appears in condition indicator window.

1–11.1 Air Cleaner Service (Fig. 1–16)

(1) Remove element by loosening retainer bar. Wipe filter can clean with a soft cloth.

NOTE: Do not use air pressure; dirt can be forced into the engine.

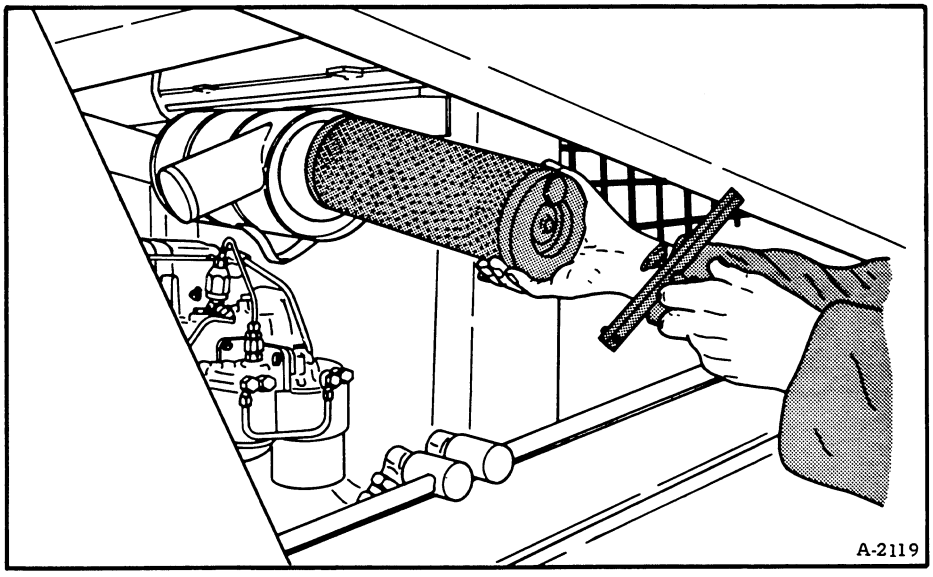


Fig. 1–16 Removing Air Cleaner Element

(2) Install new element carefully and reassemble.

(3) Press in button, located at bottom of condition indicator, to retract red ring from sight window (Fig. 1–17).

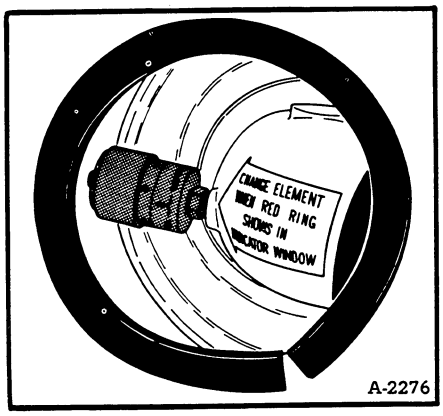


Fig. 1–17 Filter Condition Indicator

1–11.2 Air Inlet System Service

When servicing air cleaner, carefully inspect all of the air inlet system as follows:

(1) Check all connections for tightness.

(2) If the air cleaner body has been dented, check for separations in seams and/or holes.

(3) Check hoses for cracks.

(4) Inspect intake manifold for cracks and manifold gasket for damage or looseness.

(5) If adjustment does nor correct the problem, make replacement of necessary parts immediately.

1–12 ENGINE COOLING SYSTEM

Keep the coolant at the correct level or engine overheating can result.

⚠ WARNING

Remove the radiator filler cap only when the coolant temperature is below boiling point. Then loosen the cap slightly to the stop to relieve pressure before completely removing cap.

Put the Bobcat on a level surface. Carefully remove radiator cap and check coolant level. If coolant level is below midway between core and filler neck, add clean water or anti-freeze as necessary to maintain protection of the cooling system. The capacity of the cooling system is 19 U.S. quarts (18 litres).

The cooling system is pressurized (6-1/4 to 7-1/2 PSI [43 to 52 kPa]) so all components and connections must be in good condition for correct operation. Loss of pressure will result in overheating and loss of coolant.

The radiator grill area must be kept clear for good cooling. Use air or water pressure on the outside of radiator to force debris out of core.

⚠ WARNING

When using air pressure wear eye protection to prevent injury from debris. Do not use water on a hot engine or in any fertilizer application.

1–13 FLUSHING THE COOLING SYSTEM

At least one time each year, the complete cooling system must be flushed and filled again with clean coolant and conditioner.

Use flushing procedure on next page: (Fig. 1–18)

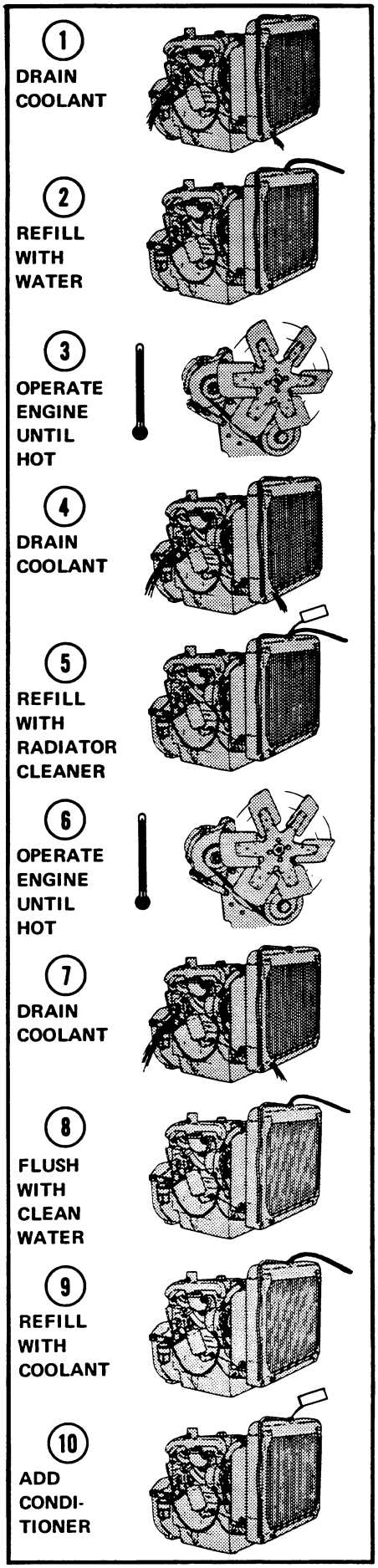


Fig. 1–18 Flushing Cooling System

(1) Open drains on engine block (Fig. 1—19 & 1—20) and on the radiator (Fig. 1—21) to let the coolant out.

NOTE: On the 975 take off the hose at oil cooler to remove coolant (Fig. 1—20A).

(2) Close both drains and fill the system with clean water.

IMPORTANT

Never put hot water into a cold engine; or cold water into a hot engine. The head or the cylinder block can crack. DO NOT run the engine without coolant in the radiator and cylinder block.

(3) Start the engine and run it until hot to loosen rust or sediment.

(4) Stop engine and open drains immediately, while rust and sediment is still in suspension.

(5) Close both drains again and fill cooling system with a solution of "radiator cleaner" and water.

(6) Start engine and run until hot.

(7) Stop engine and open drains again.

(8) Close both drains and fill cooling system with clean water. Run engine until hot. Stop engine and open drains.

(9) Close drains and fill cooling system to midway between filler neck and baffle in radiator tank.

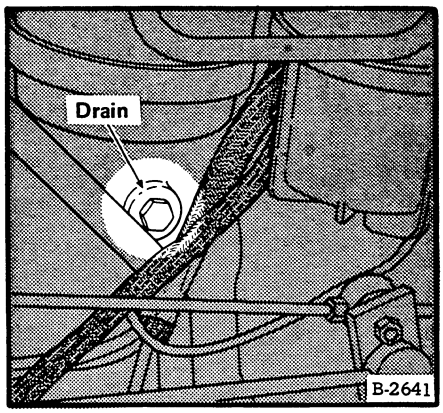


Fig. 1—19 Engine Coolant Drain (974)

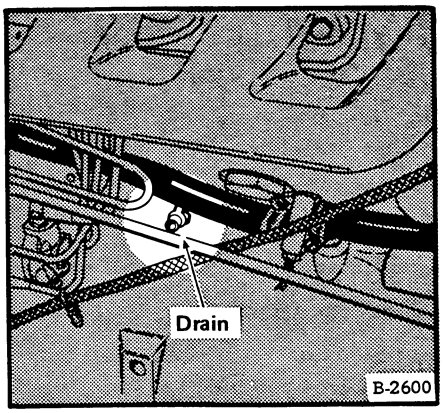


Fig. 1—20 Engine Coolant Drain (975)

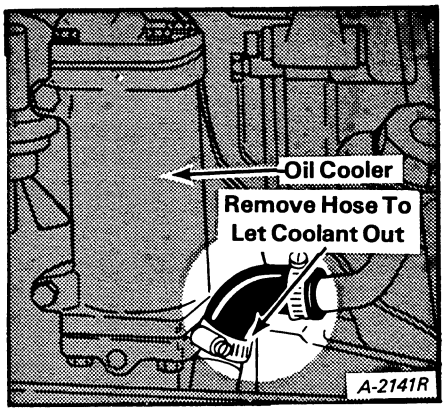


Fig. 1—20A Oil Cooler (975)

Use clean "soft"* water.

For protection in freezing temperatures, use ethylene glycol type anti-freeze.

For use in non-freezing temperature, use a summer "coolant conditioner".

*"Soft water" is water that has little or no minerals in it. Excessive minerals in the coolant can cause corrosion or rusting, and can restrict the flow of coolant causing reduced efficiency and damage to the engine.

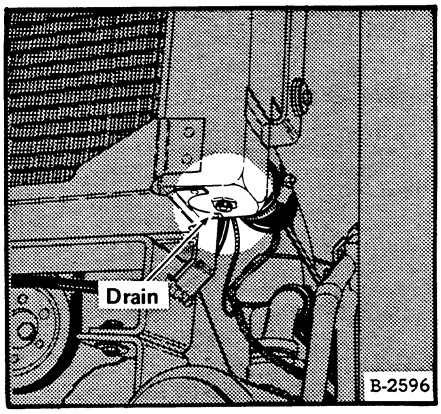


Fig. 1—21 Radiator Coolant Drain

1—14 ADJUSTMENT OF FAN BELT

Keep the fan belt in adjustment.

A loose fan belt will result in unnecessary wear of the belt. A loose belt can also cause the engine to overheat by not properly turning the water pump or a low charging rate of the generator.

If adjustment is over-tight, the bearings in the water pump and generator will overload.

To make adjustment of the fan belt (Fig. 1—22):

(1) Loosen the generator adjusting bolt.

(2) Make adjustment of belt tension by moving generator towards or away from the engine. Make adjustment so the belt will move 1/2" (12,7 mm) between sheaves.

(3) Tighten the screw.

When a new belt has been installed, recheck movement after eight hours operation. Make adjustment if necessary.

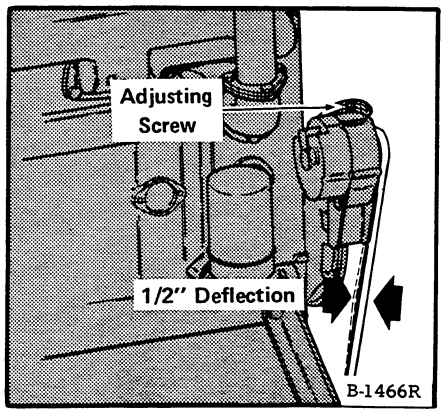


Fig. 1—22 Fan Belt Adjustment

1–15 FUEL SYSTEM (General)

⚠ WARNING

NEVER FILL WITH FUEL WHEN ENGINE IS HOT (Fig. 1–23).

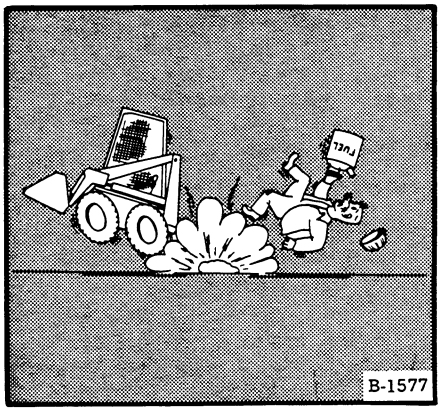


Fig. 1–23 Never Fuel A Hot Engine

The fuel fill point is located on the right side of the Bobcat, behind the front tire.

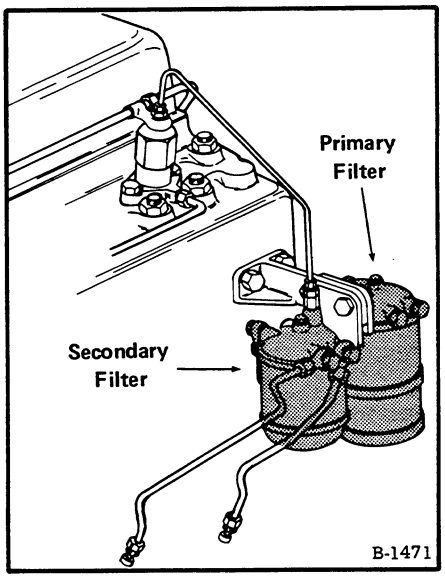


Fig. 1–24 Fuel Filters

1–16 FUEL SPECIFICATIONS

Use clean No. 1-D or No, 2–D diesel fuel. (See chart below.)

Type of Loader Operation	Air Temperature	Diesel Fuel Grade No.
Light load, low speed, considerable idling.	Above 80°F.	2-D
	Below 80°F.	1-D
Intermediate and heavy load, high speed, minimum of idling.	Above 40°F.	2-D
	Below 40°F.	1-D
At altitudes above 5,000 feet.	All	1-D

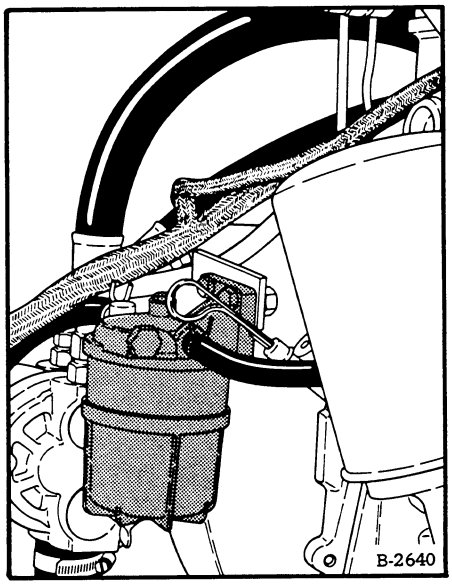


Fig. 1–25 Water Trap & Sediment Bowl

1–17 974 FUEL SYSTEM SERVICE

The engine is equipped with a primary and secondary fuel filter located on the right side of the engine (Fig. 1–24). A water trap and sediment bowl is also installed next to the fuel pump on the left side of the engine (Fig. 1–25).

Remove contents of the water trap bowl whenever water can be seen at the bottom.

To replace fuel filter elements:

(1) Carefully clean filter housing area.

(2) Loosen and remove retaining screws of both primary and secondary filters (Fig. 1–26, Item 1).

(3) Remove filter cartridges and O-ring seals.

(4) Clean water trap and fuel bowl.

(5) Install new filters and O-ring seals of identical type. Hold firmly in position while tightening retaining screw. DO NOT overtighten!

(6) After filters are reassembled, it is necessary to remove air from the fuel system. See "Changing the fuel system" below.

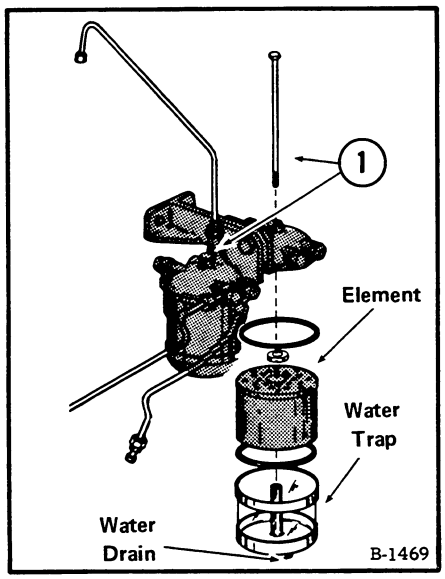


Fig. 1–26 Fuel Filter Parts

1–18 CHARGING FUEL SYSTEM

To remove air from the fuel system:

(1) Loosen vent screw located near top of governor control lever (Fig. 1–27, Item 1).

(2) Loosen vent screw located on the side of fuel pump (Fig. 1–27, Item 2).

(3) Loosen and remove fuel outlet pipe assembly on top of filter cover (Fig. 1–28).

(4) Operate priming lever on fuel lift pump (Fig. 1–29) to force fuel and air bubbles through vent points.

(5) When no more air bubbles come from all vent points, tighten vent screws in the following order:

a. Fuel filter outlet pipe assembly (Fig. 1–28).

b. Fuel pump vent screw (Fig. 1–27, Item 2).

c. Governor vent screw (Fig. 1–27, Item 1).

(6) Loosen fitting at fuel injection pump inlet (Fig. 1–27, Item 3).

(7) Operate priming lever again until no air bubbles can be seen coming from threads.

NOTE: If priming lever does not pump fuel; turn engine one complete revolution.

(8) Retighten fitting at injection pump inlet.

(9) Loosen fitting on injector end of each high pressure fuel line (four places) (Fig. 1–30).

(10) Set throttle to full open position and operate starter until no air bubbles flow from loosened fittings.

(11) Retighten fitting. Engine is now ready to start.

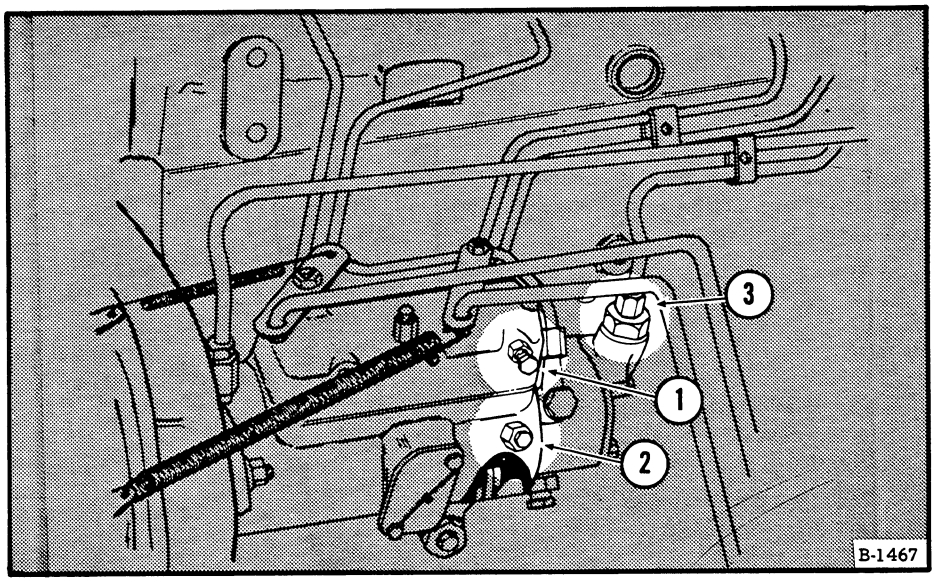


Fig. 1–27 Removing Air From Injection Pump

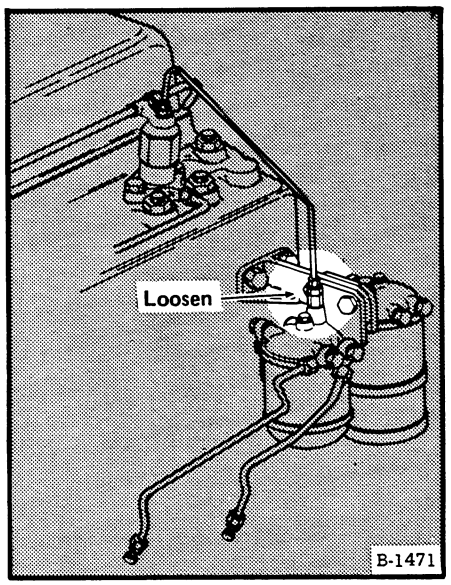


Fig. 1–28 Removing Air From Filters

1–19 975 FUEL SYSTEM SERVICE

1–19.1 Fuel Pump

General Information

The fuel pump is operated by a lobe on the engine camshaft. This pump supplies fuel to the filter and injector pump at 3-1/2 to 4-1/2 psi (idle speed).

Diagnosing Malfunctions

Before making replacement of the pump when fuel does not flow (or only a small amount flows), check the following items:

Hand primer left in the upward position.

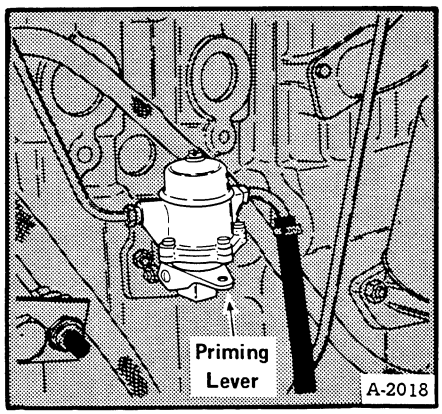


Fig. 1–29 Fuel Pump

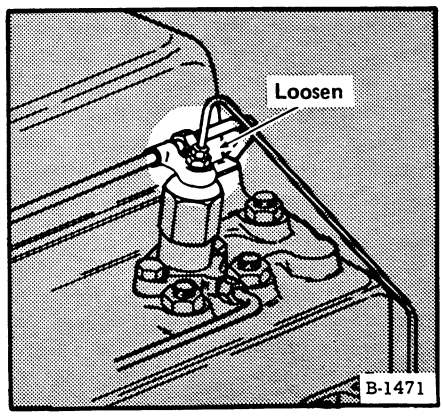


Fig. 1–30 Removing Air From Injectors

Restriction in fuel line.

Loose or damaged fuel line connections.

The fuel pump is defective, if correct fuel flow is not present. Make replacement of the fuel pump.

Removal

(1) Disconnect the pump inlet and outlet pipes (Fig. 1–31).

(2) Remove the engine oil dipstick and tube from engine.

(3) Remove mounting bolts, and remove pump from engine block.

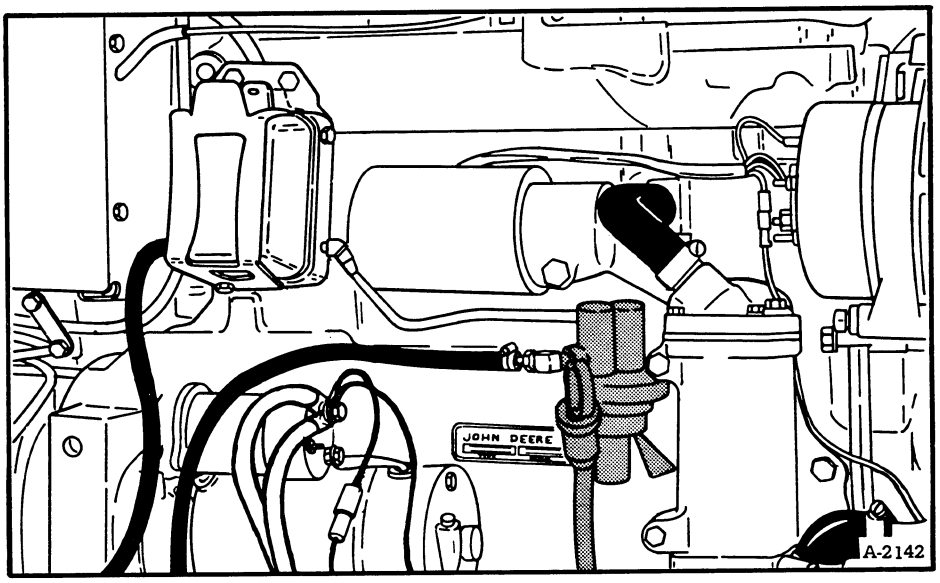


Fig. 1–31 Fuel Pump & Dipstick

Repair

The fuel pump is not designed for repair. If pump is defective, install a new one.

Installation

(1) Clean the engine block pad and install pump.

(2) Install oil dipstick and tube to engine.

(3) Connect the fuel pipes.

(4) Remove air from the fuel system (See page 1–13).

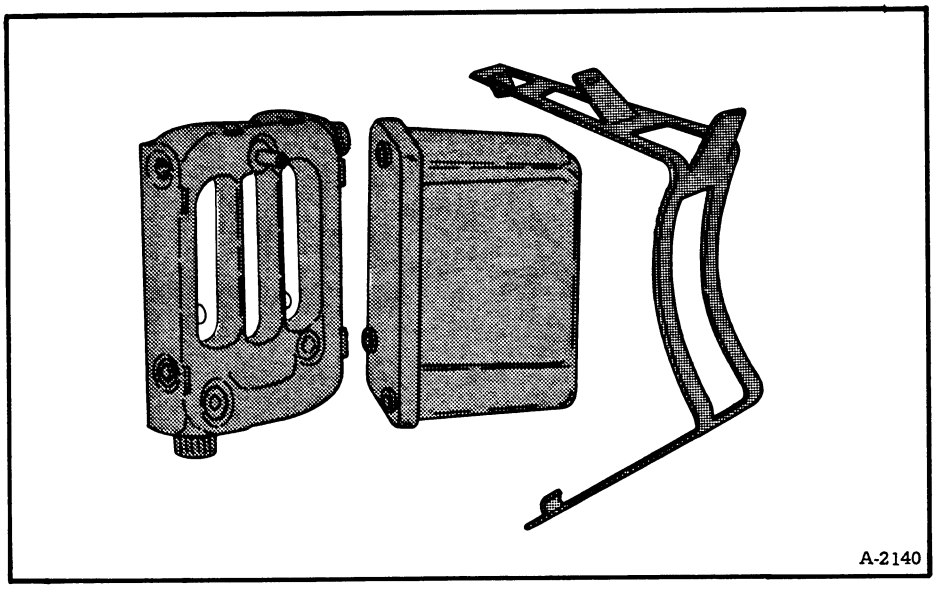


Fig. 1–32 Fuel Filter Parts

1–19.2 Fuel Filter

A combination first and second stage filter element is contained in the sediment bowl as a complete assembly (Fig. 1–32). The filter should be changed whenever a tune-up or an overhaul has been performed on the engine and as often as necessary between tune-ups.

To release filter retaining spring, press inward on the outside finger tab and squeeze tabs together to disengage the top hook of the spring. Pull filter off and push the new filter over spring pin. Hook bottom of the filter retaining spring first and the top hook last (Fig. 1–33).

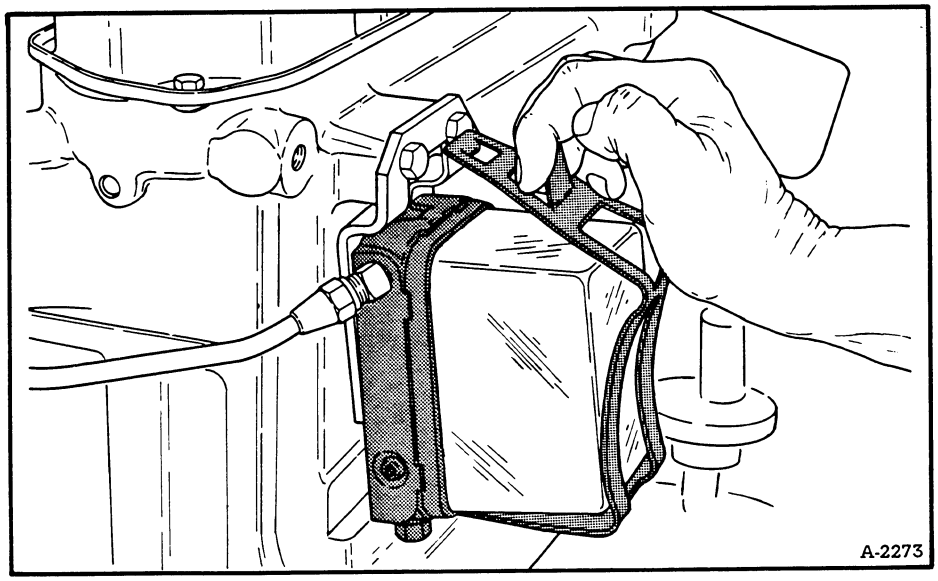


Fig. 1–33 Removing Fuel Filter

1–19.3 To Charge Fuel System

Remove air from the filter before starting the engine when fuel filter replacement has been made (See below).

⚠ WARNING

Escaping diesel fuel under pressure can have sufficient force to penetrate the skin, causing serious personal injury. Before disconnecting lines be sure all connections are tight and that lines, pipes and hoses are not damaged. Fluid escaping from a small hole can be almost invisible. Use a piece of cardboard or wood, rather than hands, to search for suspected leaks.

If injured by escaping fluid, see a doctor at once. Serious infection or reaction can develop if proper medical treatment is not administered immediately.

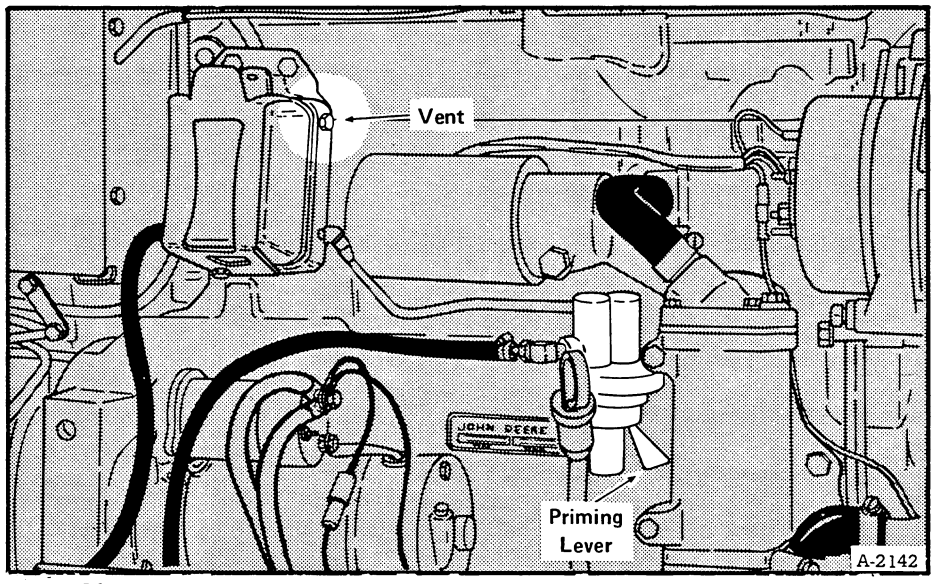


Fig. 1–34 Venting Air From Filter

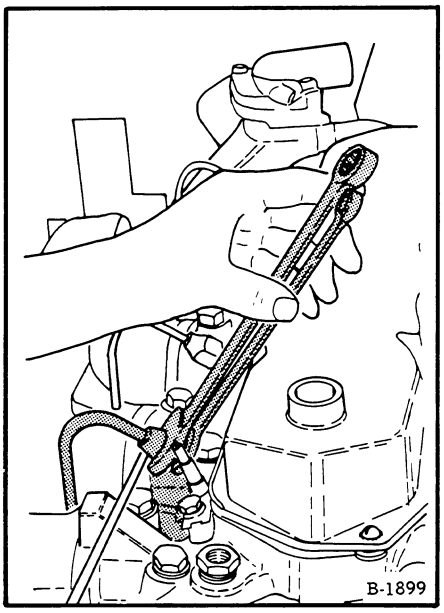


Fig. 1–35 Venting Injectors

1–19.4 Remove of Air From Fuel System

When fuel filter is removed or if the Bobcat has run out of fuel, remove air from fuel filter after refueling before operating engine.

To remove air, loosen filter vent plug near top of the filter (Fig. 34, Item 1). Operate primer lever (Fig. 1–34, Item 2) on fuel pump until most of the air bubbles in filter are gone and fuel flows from the plug. Tighten the plug with primer lever in down position.

NOTE: **If the primer does not pump fuel and no resistance is felt at upper portion of lever stroke, turn engine one revolution with the starter. Always return priming lever to fully down position after priming.**

If the engine misses after removing air from filter and will not run smoothly, charge the entire fuel system. First charge the filter. Then loosen high pressure fuel pipe on one or more injectors (Fig. 1–35) using two wrenches. With hand throttle half way forward turn engine with starter until fuel without foam flows from loose connections (the engine may start). Tighten the connections using two wrenches. Charge the other injectors until the engine runs smoothly.

1–20 REMOVAL OF FUEL TANK

To remove the fuel tank:

(1) Remove ROPS (See Page 5–1).

(2) Disconnect clutch linkage rod.

(3) Disconnect control pedal linkages. Remove floor and foot pedal assembly.

(4) Disconnect fuel level gauge electrical wire.

(5) Disconnect fuel tank filler hose and engine fuel hoses.

(6) Remove tank fasteners.

(7) Remove plug to let the fuel out of tank.

(8) Lift tank out of machine. The tank weight is 40 lbs. (18 kg) when empty.

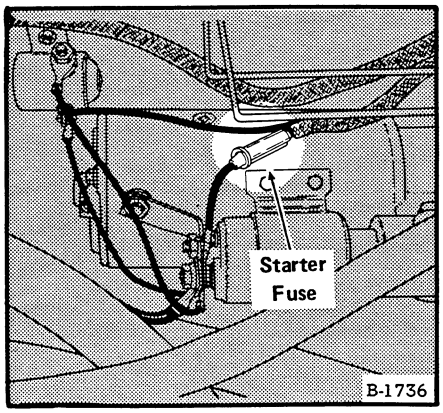


Fig. 1–36 Starter Fuse (974)

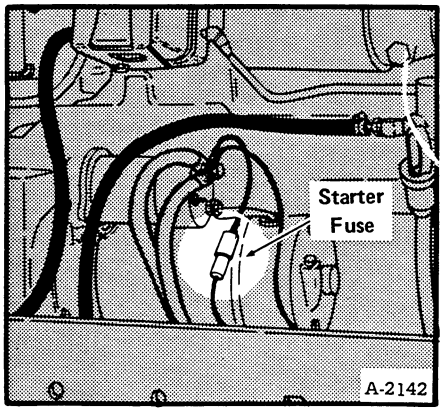


Fig. 1–37 Starter Fuse (975)

1–21 ELECTRICAL SYSTEM MAINTENANCE

The Bobcat is equipped with a 12 volt electrical system using two 12 volt batteries.

The electrical system is protected by three fuses, two 40 AMP and one 30 AMP. One is located in the wiring harness above the starter (Fig. 1–36 & 1–37). The other two are located behind the dash panel (Fig. 1–38).

If a fuse is burned out; it is an indication that the electrical system is overloaded. Find and correct the problem before operating the machine. Look for a broken wire or broken insulation.

Replace fuses with a fuse of equal rating only.

Check wiring connections for tightness and look for worn insulation.

Correct wiring defects immediately.

General maintenance of the electrical system is as follows:

(1) Check electrolyte level in battery and fill as needed with distilled water.

(2) Check battery cables for corrosion. Remove acid corrosion with soda and water solution. Cover connections with grease to prevent corrosion.

(3) Check generator drive belt for tension. Make adjustment like figure 1–16 "Fan Belt Adjustment".

(4) Check the condition of the wiring to the warning indicators (HYDRO/HOT, LUBE/HOT, and ENG/HOT). Check if the indicator lights are working.

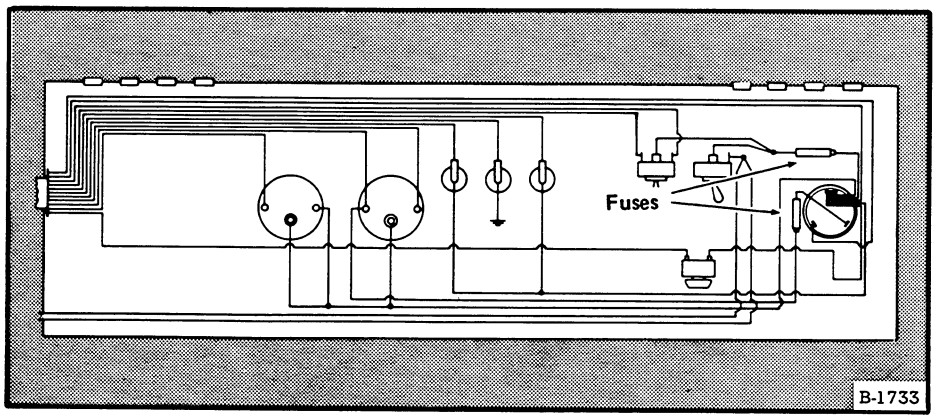


Fig. 1–38 Dash Panel Fuses

Check indicators by:

(1) Turn ignition switch to "on".

(2) Disconnect wires for indicator switches. HYDRO (hydraulic oil temperature) switch (Fig. 1—39), and ENG (engine water temperature) switch is located on top of engine head (Fig. 1—40 & 1—41).

(3) Ground the wires against the frame. If indicator lights are on, all circuits are good.

(4) LUBE (engine oil pressure) indicator should be on when the ignition switch is turned on.

If any of the indicators still have light while engine is running stop engine immediately. This is an indication of a malfunction in the system. Refer to troubleshooting section on page 3—3.

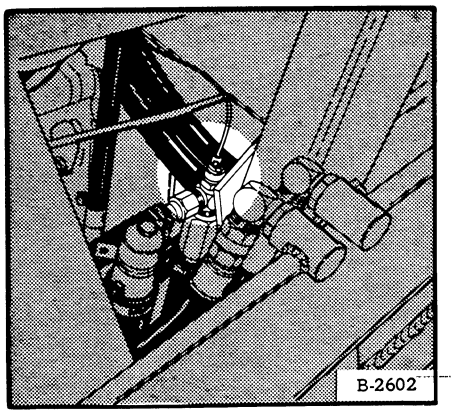


Fig. 1—39 Hydrostatic Temp. Switch

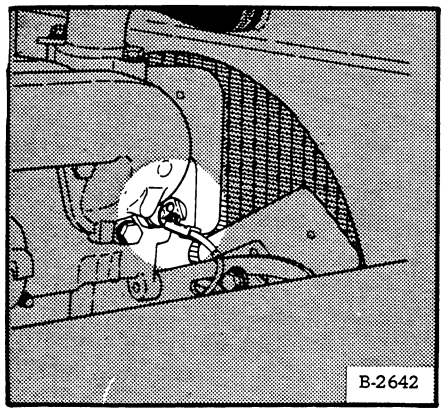


Fig. 1—40 Engine Temp. Switch (974)

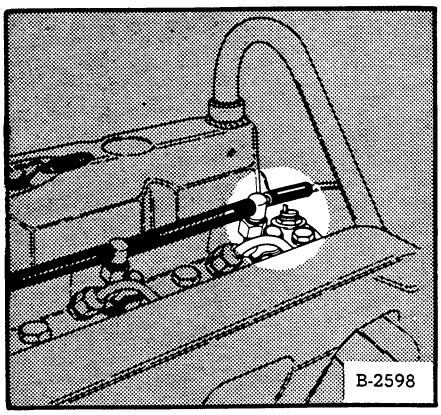


Fig. 1—41 Engine Temp. Sender (975)

1—22 ADJUSTMENT OF CLUTCH/BRAKE

The clutch/brake is located next to the tilt hydraulic pedal (Fig. 1—42). The clutch/brake pedal disengages the hydrostatic and hydraulic system from the engine and engages the brake.

NOTE: Make sure the clutch/brake is disengaged when starting a cold engine. Engage the clutch/brake pedal at a slow rate to prevent damage to the hydrostatic system.

Make sure you follow the clutch/brake pedal adjustment in the proper order to prevent damage to the thrust bearing, clutch and parking brake (Fig. 1—43).

(1) Move the belly pan to the rear of the Bobcat (See Section on Skid Plate Area Page 1—7).

(2) Lift the Bobcat off the floor and put two jackstands under the front and two jackstands under the rear of the Bobcat.

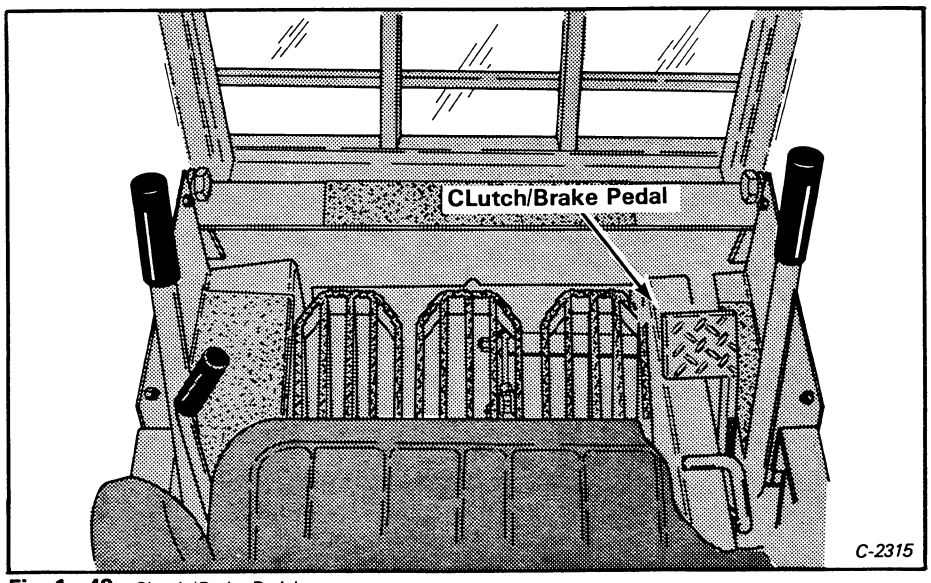


Fig. 1—42 Clutch/Brake Pedal

(3) Remove the right side panel (See Section on Side Panel Fender Removal Page 1—4).

(4) Disconnect the spring at the clutch/brake pedal (Item 1).

(5) Turn the adjustment screw out (Item 2) until it is even with the lock nut.

(6) Loosen the left brake rod as much as possible (Item 3).

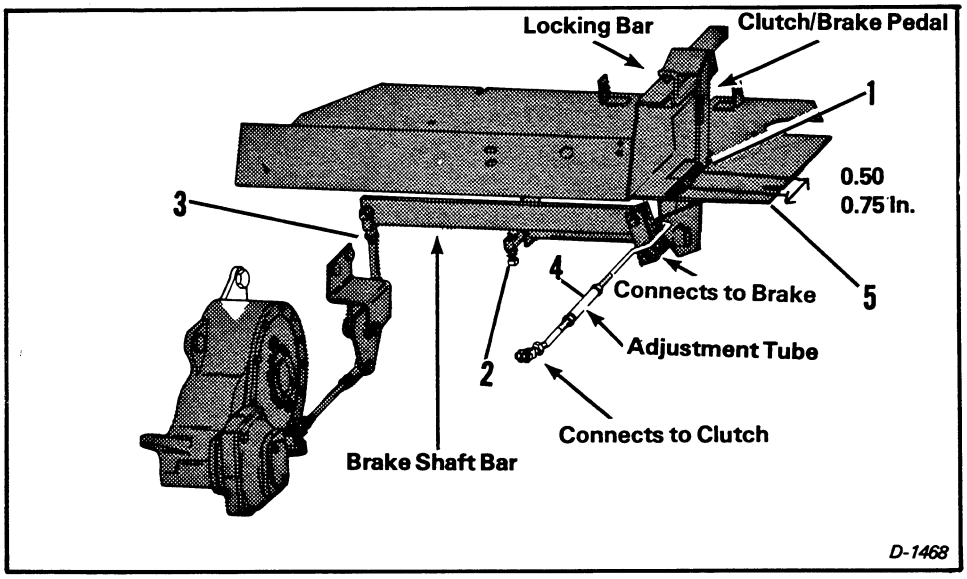


Fig. 1—43 Clutch/Brake Adjustment

(7) Loosen the lock nut on the clutch linkage rod (Item 4) an use the adjustment tube to position the clutch/brake pedal 0.50 to 0.75 (12,7 to 19,05 mm) from the rear of the "Cut-Out" in the floor panel (Item 5). Tighten the lock nuts.

(8) Attach the spring at the clutch/brake pedal. The clutch/brake pedal should touch the locking bar.

(9) The clutch is now adjusted. Start the Bobcat and push the clutch/brake pedal all the way forward and hold.

(10) Push both steering levers forward and hold. Let the clutch/brake pedal up at a slow rate until the wheels just start to move. Lock the clutch/brake with the lock bar.

(11) Stop the engine.

(12) Take out all the extra movement of the brake linkage using the left brake linkage adjustment (Item 3).

(13) Tighten the adjustment screw (Item 2) to take out any remaining movement and tighten the lock nuts.

(14) Install the side panel.

(15) Remove the jackstands and lower the Bobcat.

(16) Install the belly pan.

1—22.1 Clutch/Brake Spring

When the clutch/brake pedal does not stay fully back, be sure to check that there is a spring installed.

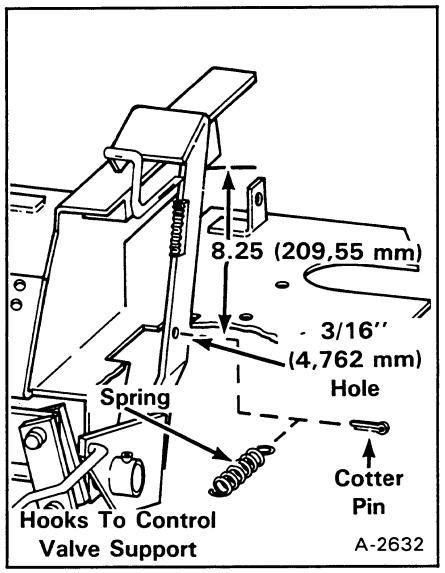


Fig. 1—43a Clutch/Brake Pedal

To check for a loose or missing spring, use the following procedure:

Raise the ROPS. If the holes are drilled on the clutch/brake pedal and the control valve plate, install a 3/16" (4,762 mm) cotter pin into the hole of the clutch/brake pedal. Connect the spring (P/N 6591126) to the eye of the cotter pin and to the control valve plate.

⚠WARNING

Safety glasses or goggles are always needed for eye protection from fluids under pressure, flying debris or loose material when engine is running or tools are used. Failure to obey warnings can cause injury or death.

W-2019-0284

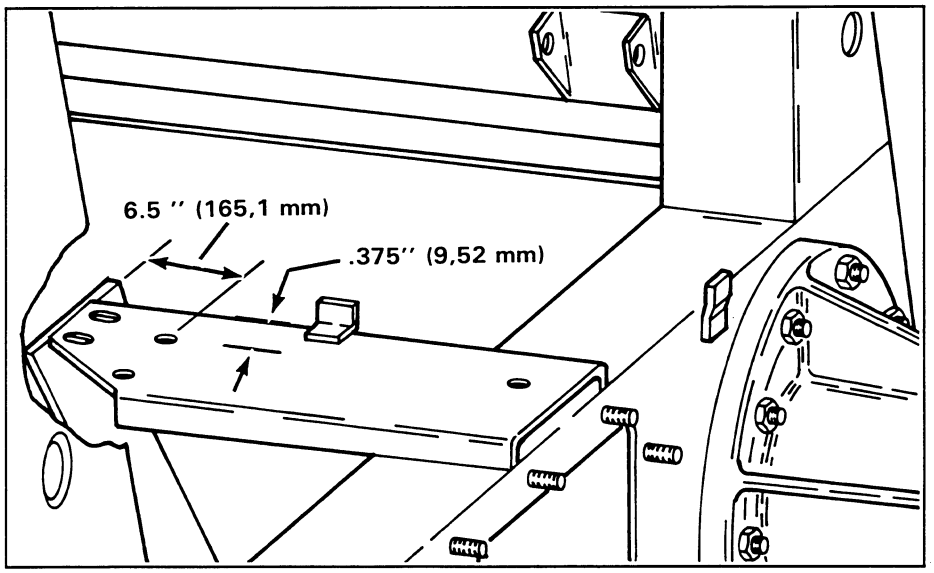


Fig. 1—43b Control Valve Support Plate

If there are no holes drilled in the clutch/brake pedal or the control valve plate, drill a 3/16" (4,762 mm) hole in the clutch/brake pedal at the dimension shown in figure 1—43a and install cotter pin. Drill a .25 (6,35 mm) hole in the control valve plate at the dimension shown in figure 1—43b. Connect the spring (P/N 6591126). Lower the ROPS.

NOTE: The hooked ends of the spring may have to be bent together so it will stay hooked at both ends.

1—23 HYDRAULIC/HYDROSTATIC SYSTEM (General)

IMPORTANT

Always keep hydraulic and hydrostatic parts clean. Clean outside of all assemblies before beginning repairs. Use plugs and caps to cover open ports. Dirt can quickly damage the system.

I-2021-0284

In very cold conditions (0°F. (-18°C.) or less) keep loader in a warm place. Extra time must be taken for system to get to operating temperature. Cold oil becomes thick and will not move easily. LOSS OF OIL FLOW TO HYDROSTATIC PUMP WILL CAUSE DAMAGE IN LESS THAN 60 SECONDS.

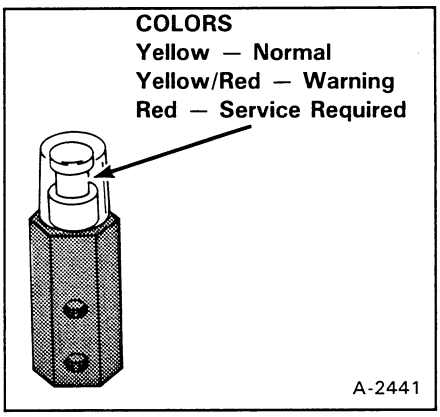


Fig. 1—44 Hydraulic Filter Condition Indicator

1—24 HYDRAULIC FLUID

The Bobcat hydraulic fluid reservoir, when delivered new, contains factory installed Clark hydraulic/hydrostatic fluid. This fluid is recommended for use in temperatures ranging from below freezing to very hot climate conditions.

1—25 HYDRAULIC FLUID FILTERS

975's S/N 11001 & Below and early 974's have one 10 micron filter and a "Hydro" indicator light. If flow is stopped tnrough the 10 micron filter, the "Hydro" indicator light will come on and oil will not get to hydrostatic pump and motors. Stop the Bobcat and replace the 10 micron filter.

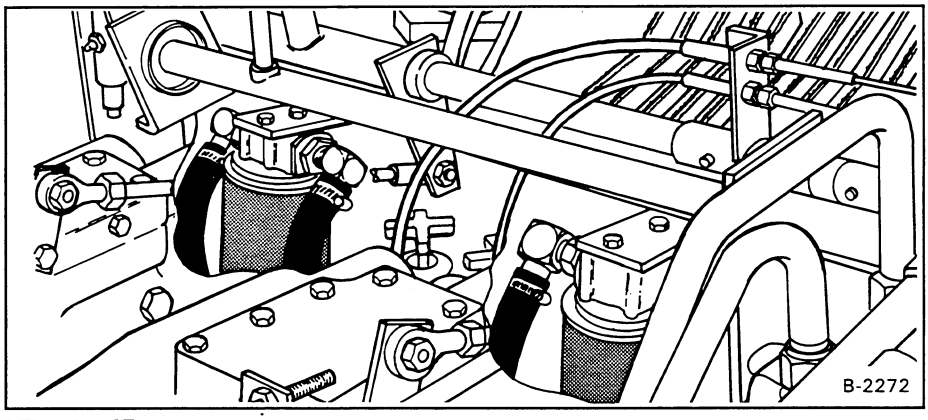


***Fig. 1—45** Ten Micron Filters (Early Models)

If the indicator light is not working properly or on 975's S/N 11001 & Above and later 974's, this condition (no oil flow through filter) can be identified by a very rough or slow hydrostatic drive action. 975's S/N 11001 & Above and later 974's also has two filter (10 Micron). Filters are located in front of each hydrostatic pump (Fig. 1—45 or 1—45a). Replace the small 10 micron filters every 250 hours or when the main 10 micron filter has broken open or has other failure.

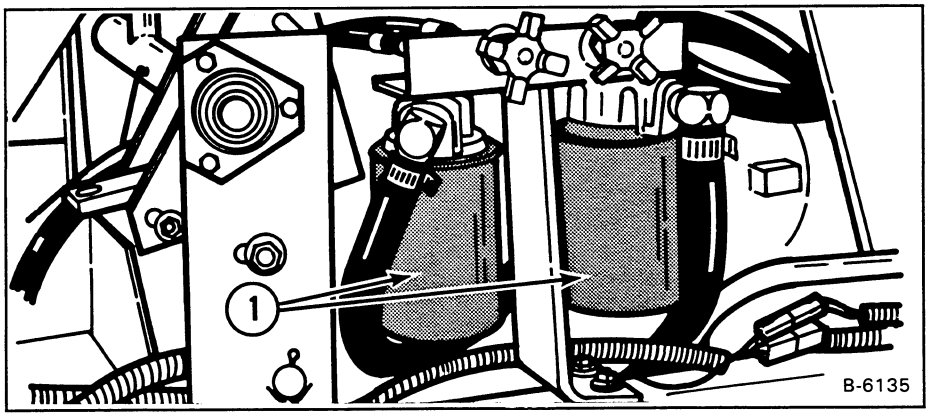


***Fig. 1—45a** Secondary Hydraulic Filters (Current Models)

Replace main filter element within the first 100 hours and thereafter as conditions indicate.

Water in the fluid will also stop the flow through the filter.

To replace the filter:

(1) Open the rear grill.

(2) Clean area around filter container.

(3) Loosen filter container retaining bolt (Fig. 1—46, Item 1).

(4) Remove the filter container and element (Fig. 1—46, Items 2 and 3).

(5) Clean and inspect all gaskets, seals and the container before installation. Replace gaskets and/or seals if damaged.

(6) Install new element and assemble container.

(7) Install container to base. Make sure the "O-ring" seal is in place. Tighten retainer bolt to 12 ft.-lbs. (16,27 Nm) torque.

(8) Start the engine and check filter area for leaks. Tighten if necessary to correct leakage.

1–26 HYDRAULIC RESERVOIR REMOVAL OF WATER OR HYDRAULIC FLUID

Water must be removed from the reservoir at regular intervals. Water will cause the filter element to break and allow unfiltered oil to enter the hydrostatic system. UNFILTERED OIL WILL DAMAGE THE HYDROSTATIC PUMPS AND MOTORS WITHIN MINUTES.

To remove water from hydraulic reservoir:

(1) Slide skid plate open (See page 1–6).

(2) Put Bobcat on an incline so that the right side is higher than the left. Let machine stay in this position for at least four hours.

(3) Remove plug from left end of reservoir. Let fluid flow out until only pure hydraulic oil flows.

(4) Replace plug and skid plate.

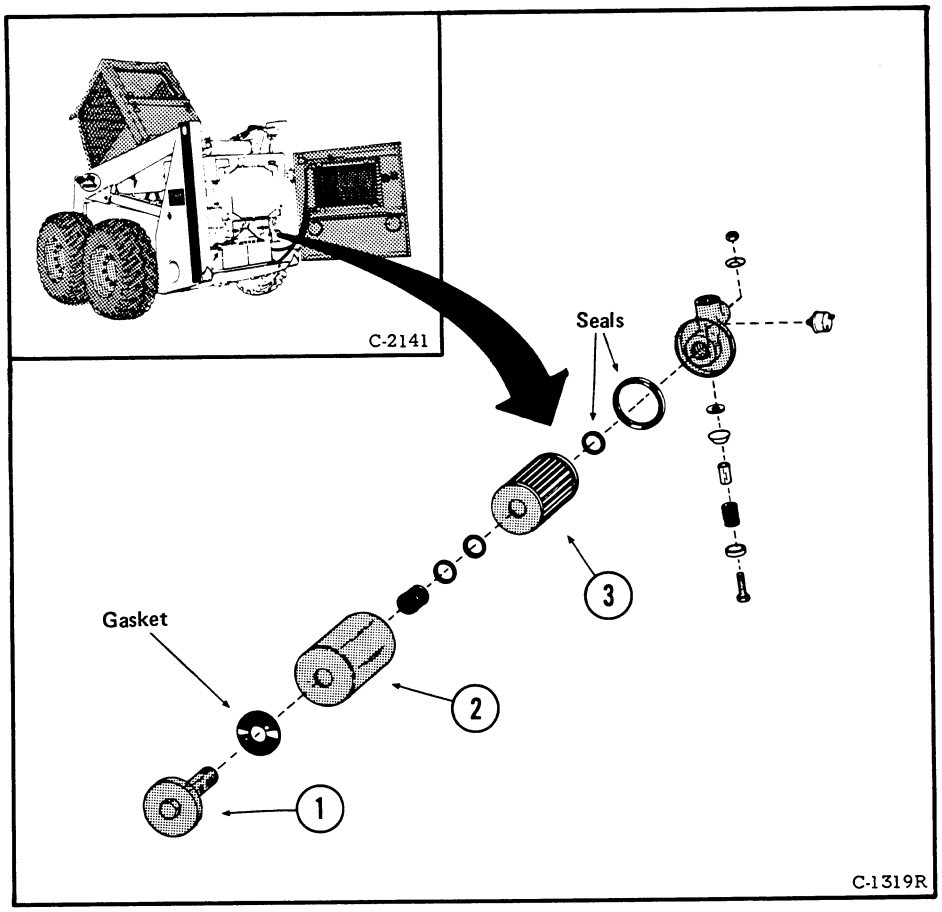


Fig. 1–46 Ten (10) Micron Hydraulic Filters

1–27 HYDRAULIC FLUID TO CHECK, ADD OR REPLACE

To check or add fluid:

(1) Remove filler cap/dipstick, located on right side of machine inside engine compartment.

(2) Fill with approved fluid (See page 1–16) to full mark on dipstick.

Fluid replacement must be made every 1000 hours or:

(1) More often in dirty conditions.

(2) When there has been a system failure.

(3) When the fluid becomes a "milky gray" color (water contamination).

To make replacement of fluid:

(1) Slide skid plate open (See page 1–6).

(2) Place Bobcat on an incline so that the right side is higher than the left.

(3) Remove plug from the left end of reservoir. Let fluid flow out.

(4) Replace plug.

(5) Fill with approved fluid (See page 1–16) to full mark on dipstick.

(6) Install skid plate.

1–28 REMOVAL OF HYDRAULIC RESERVOIR

(1) Slide skid plate open (See page 1–6).

(2) Remove fill hose and clamp (Fig. 1–47, Item 1).

(3) Remove 3 hoses from top of 100 mesh screen (Fig. 1–47, Item 2).

(4) Remove plug to let fluid out of reservoir.

(5) Remove fasteners (Fig. 1–47, Item 3) and remove reservoir. The reservoir weight is 55 lbs. (25 kg).

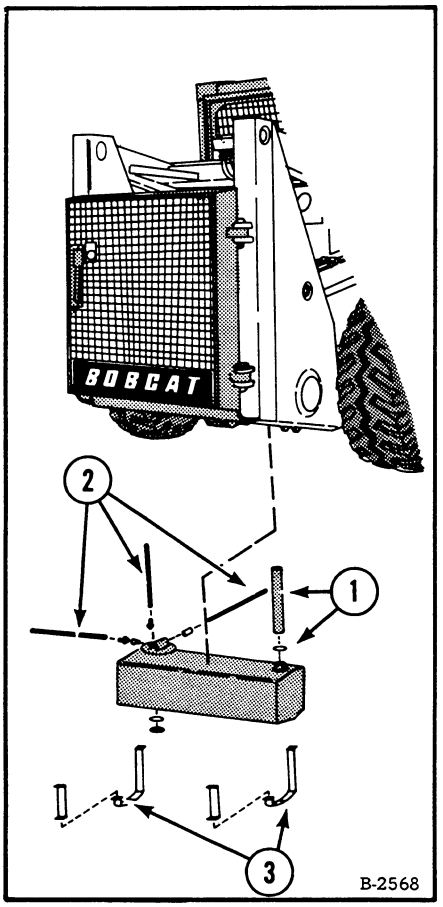


Fig. 1–47 Hydraulic Reservoir Removal

1–29 TO CHECK FOR HYDRAULIC SYSTEM LEAKS

Regular inspection must be made to find leaks at tube fittings, hose connections, lift and tilt cylinders, filters, etc. Correct leaks immediately. A small leak will be a large loss of fluid in a short period of time. Do not over tighten tube fittings. This can cause a larger leak. A tube fitting that still leaks after it has been properly tightened must be disconnected and checked for foreign particles or damaged joint.

1–30 TO CLEAN 100 MESH FILTER SCREEN

Remove and clean 100 mesh screen, located in hydraulic fluid reservoir, once each year.

To clean 100 mesh screen:

(1) Clean the area around the filter fastening plate.

(2) Remove the hydraulic pump inlet hose (Fig. 1–48, Item 1), the oil cooler return hose (Fig. 1–48, Item 2) and breather hose (Fig. 1–48, Item 3). from the hydraulic reservoir.

(3) Remove four bolts and lift the filter body from the reservoir (Fig. 1–48, Item 4).

(4) Clean mesh with solvent and compressed air. Be careful not to damage mesh.

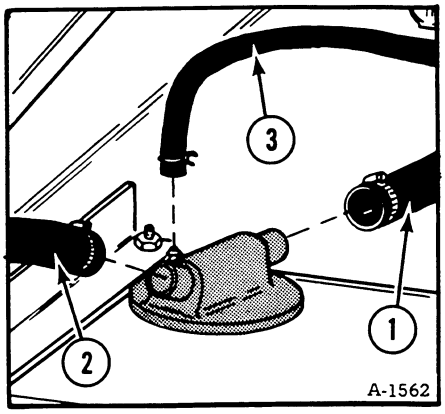


Fig. 1–48 Removing 100 Mesh Filter

IMPORTANT

Do not put solvent into hydraulic reservoir. Be sure mesh is dry before installing in hydraulic reservoir.

(5) Install two new gaskets (Fig. 1–49). Clean all surfaces and install the mesh.

(6) Check hose condition and replace if necessary.

(7) Tighten the fastening bolts to 20 ft.-lbs. (27,12 Nm) torque.

(8) Connect hoses to filter fastening plate.

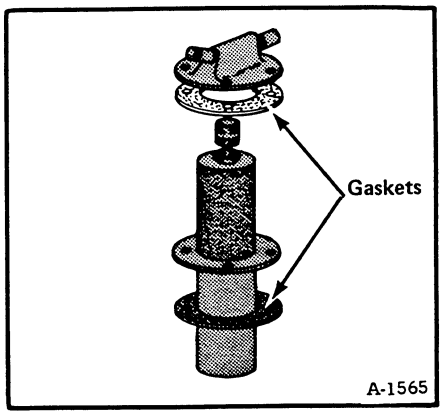


Fig. 1–49 100 Mesh Filter Assembly

1–31 OIL COOLER

The oil cooler, mounted in the rear door, cools the hydraulic fluid. The grill area of the cooler must be kept clean and free of debris or it will not cool correctly.

To clean the oil cooler:

(1) Use compressed air or water pressure to force debris out of oil cooler. Force debris out toward the back of the rear door.

(2) Use a brush (not a wire brush) to aid in removing material.

⚠ WARNING

Always wear eye protection when using air pressure or water pressure.

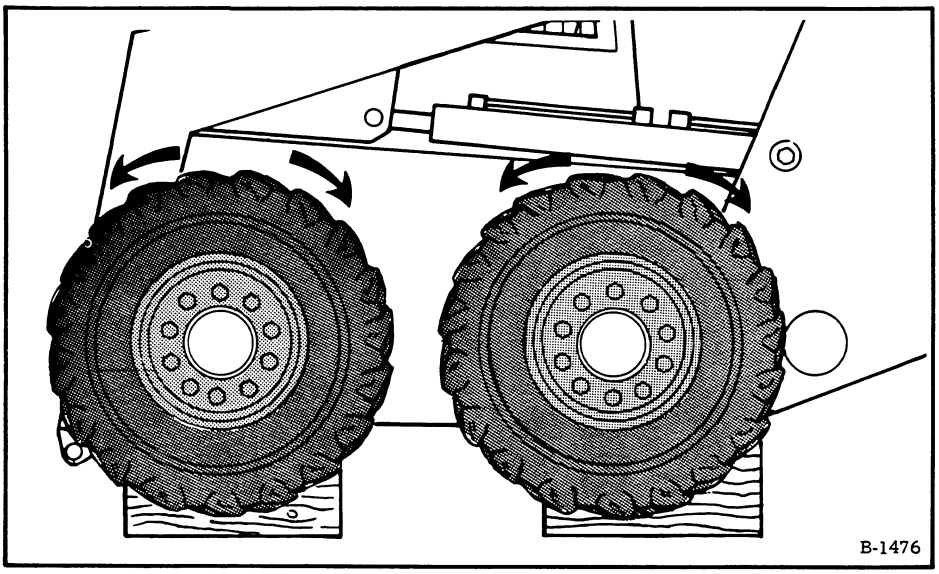


Fig. 1–50 Checking Drive Chain For Free Travel

1–32 HYDROSTATIC TRANSMISSION

The most important item to remember when caring for or servicing the hydrostatic system is: KEEP IT CLEAN! Do not let dirt fall into reservoir, and be sure to install cap. USE THE CORRECT OIL (See "Hydraulic Fluid" page 1–16).

1–33 FINAL DRIVE CHAIN

A roller chain makes the final reduction to the loader wheels. One final drive chain is used to drive each side of the loader.

Lubricate the final drive chains with the same lubricants as the hydrostatic system (See "Hydraulic Fluid" page 1–16).

To check chain tension:

(1) Lift the Bobcat until all four wheels are off the ground.

(2) Block the machine securely.

(3) Turn one of the wheels backwards and then forward (Fig. 1–50). If there is more than 1/4 inch (6,35 mm) of free travel measured at the tire tread, the chain needs adjustment. Repeat procedure on other side of Bobcat.

1–34 TO TRANSPORT

IMPORTANT

Never attempt to start the Bobcat Loader by towing. Serious damage to the hydrostatic system will result.

Suggest:

If the above button click is invalid.

Please download this document

first, and then click the above link

to download the complete manual.

Thank you so much for reading

A Bobcat that will not operate with its' own power can be towed a short distance (50 yards 46 metres) if necessary. Two tow valves are located at rear of the control pedal mounting assembly (under the ROPS). It is necessary to tilt the ROPS (See "Tilting the ROPS" page 1–4) to gain access to these valves (Fig. 1–51). Open the valves before towing.

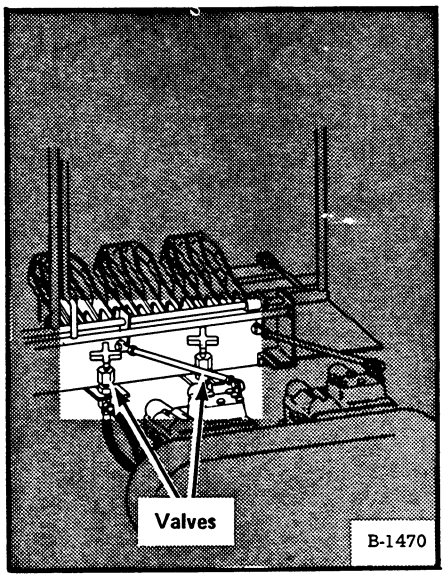


Fig. 1–51 Tow Valves

⚠ WARNING

Do not tow the Bobcat Loader at more than 2 MPH (3,2 km/h) or for a distance greater than 50 yards (46 m) or serious damage to the hydrostatic system will result.

NOTE: Close the tow valves after repairs have been made. The Bobcat will not operate with these valves open.

Use steel ramps of a suitable length to load the Bobcat onto the transporting vehicle. Do not use wood planks as a substitute for steel ramps. This machine weights more than 12,000 pounds (5443 kg)!

When Bobcat is being loaded with bucket attached on without an attachment installed always back onto transporting vehicle (Fig. 1–52).

When Bobcat is being loaded with a heavy attachment, such as a backhoe, installed, always drive forward onto transporting vechile. In this case the attachment must remain installed when Bobcat is unloaded again.

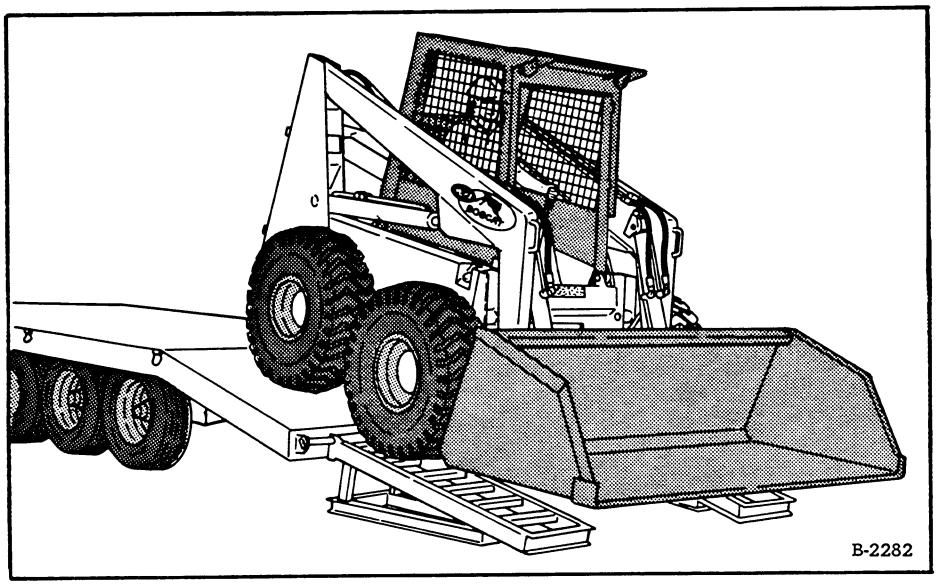


Fig. 1–52 Loading Onto Trailer

When loaded, lower attachment to the floor and chain machine in place.

1–35 TIRES (Fig. 1–53)

Several types of tires are available to fit the use of the Bobcat. It is important that the Bobcat be equipped with the correct tires for the application. Following is a basic tire list and recommendation for use.

(Item 1) 15 x 19.5, 12 ply Standard . . . . . General Service operations.

(Item 2) 10:00 x 20 Solid Durocushion . . Foundry, scrap or sanitary land-fill operations.

(Item 3) 15 x 19.5, 12 Steel Guard-
(With all service sure grip lug tread) . . . . .Regular construction loading, excavating quarry.

(Item 4) 38 x 20-16.1, 10 Ply Flotation . . Flotation and traction in mud, swamp, sand, etc.

(Item 5) 15 x 19.5, 12 Ply Steel Guard-
(rock lug tread) . . . . . Better traction requirements in rocky or soft digging operation, etc.