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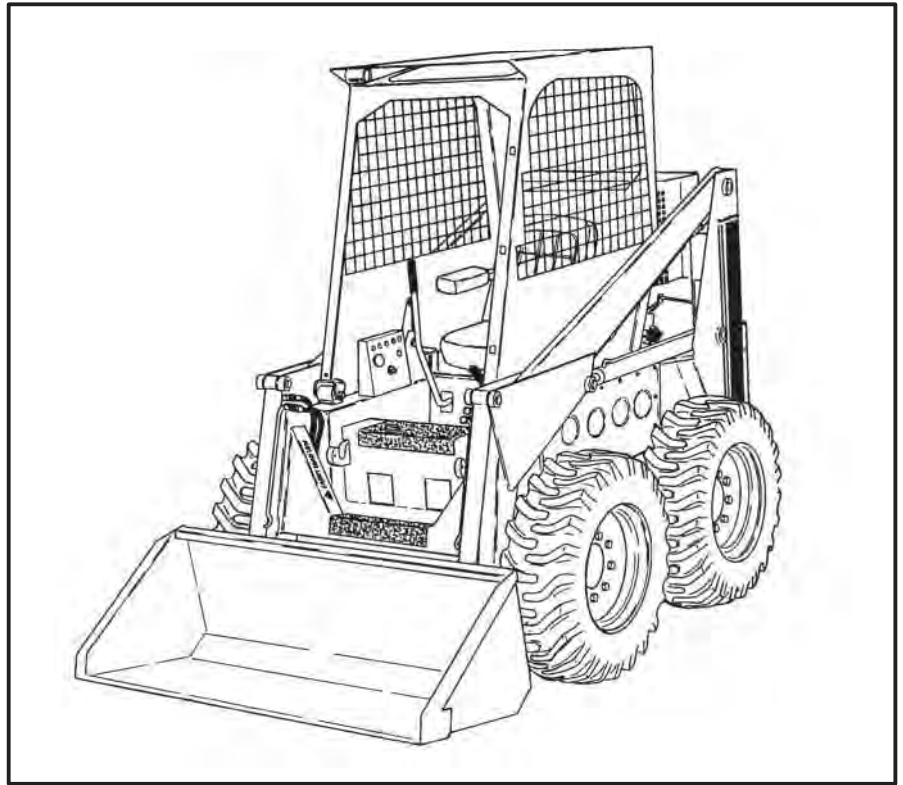
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# Service Manual



**MELROE**  
**INGERSOLL-RAND**

6556619(3-87)

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# MAINTENANCE SAFETY



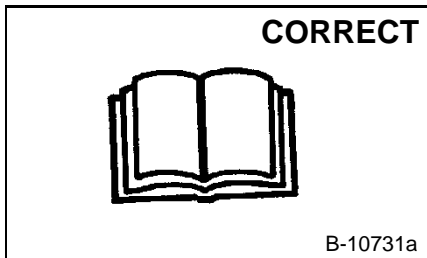
## WARNING

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.

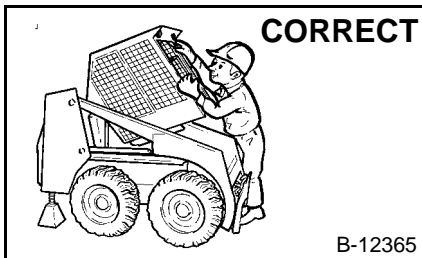
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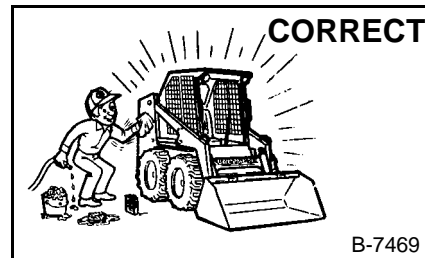
**Safety Alert Symbol:** This symbol with a warning statement, means: "Warning, be alert! Your safety is involved!" Carefully read the message that follows.



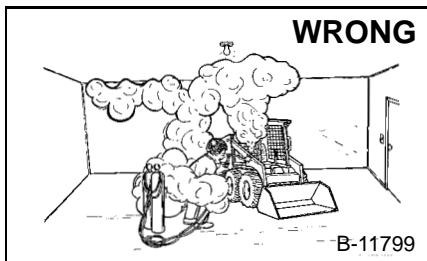
Never service the Bobcat Skid-Steer Loader without instructions.



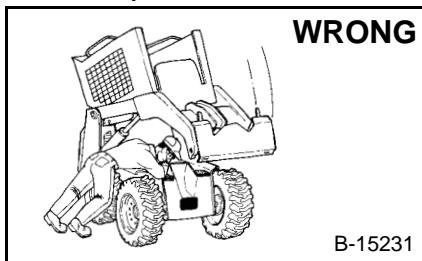
Use the correct procedure to lift or lower operator cab.



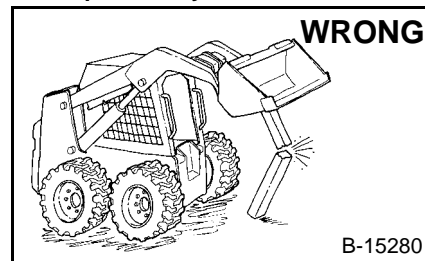
Cleaning and maintenance are required daily.



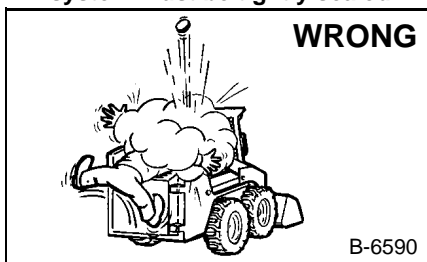
- Have good ventilation when welding or grinding painted parts.
- Wear dust mask when grinding painted parts. Toxic dust and gas can be produced.
- Avoid exhaust fume leaks which can kill without warning. Exhaust system must be tightly sealed.



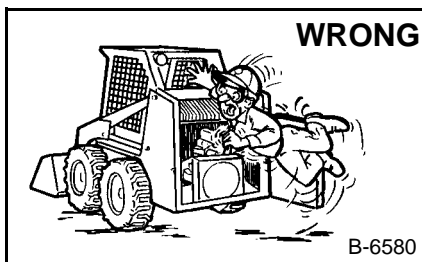
Disconnecting or loosening any hydraulic tubeline, hose, fitting, component or a part failure can cause lift arms to drop. Do not go under lift arms when raised unless supported by an approved lift arm support device. Replace it if damaged.



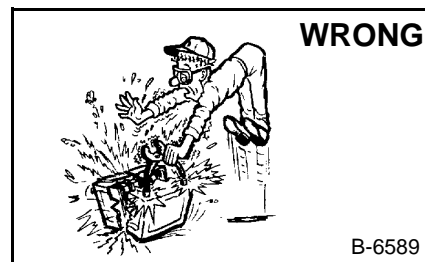
- Never work on loader with lift arms up unless lift arms are held by an approved lift arm support device. Replace if damaged.
- Never modify equipment or add attachments not approved by Bobcat Company.



- 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.



- 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.



- 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.



**Bobcat®**

## FORWARD

This manual gives instructions for correct service and adjustment of the Bobcat, and detailed overhaul instructions of the engine, drive system, 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 had 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. Make lubrication of the machine.
4. Check battery condition and cables.
5. Inspect air cleaner system for damage or leaks. Check element and make replacement, if necessary.
6. Check electrical charging system (belts, sheaves, etc.).
7. Check for loose chains by lifting the machine and turning the wheels by hand.
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 (Operator Enclosure, Seat Belt, Safety Treads, Lights, etc.).
11. Make a visual inspection for loose or broken parts or connections.
12. Operate the loader; check all functions.

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

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**PREVENTIVE  
MAINTENANCE**

**HYDRAULIC  
SYSTEM**

**HYDROSTATIC  
DRIVE SYSTEM**

**MECHANICAL  
TRANSMISSION**

**MAIN  
FRAME**

**ELECTRICAL  
SYSTEM**

**ENGINE  
SERVICE**

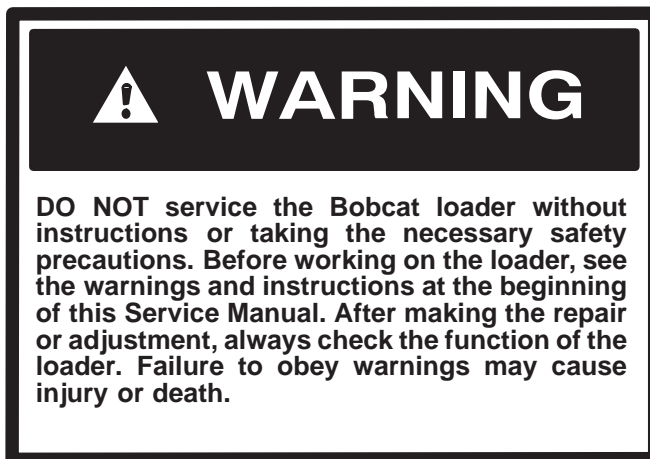
**TECHNICAL  
DATA**

**ALPHABETICAL  
INDEX**



# PREVENTIVE MAINTENANCE

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# 1 PREVENTIVE MAINTENANCE

## 1-1 INTRODUCTION

### 1-1.1 Symbols

# IMPORTANT

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

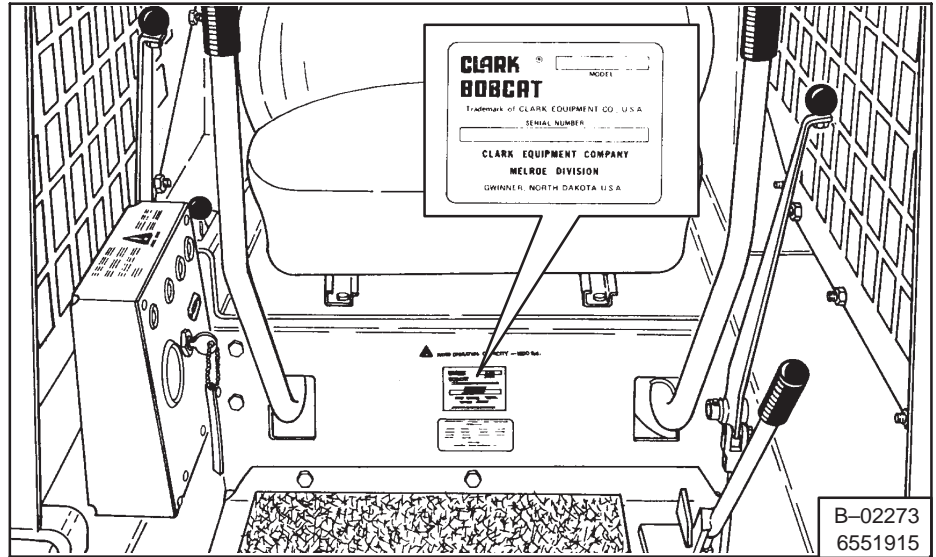


Fig. 1-1 Loader Serial Number

# ! WARNING

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

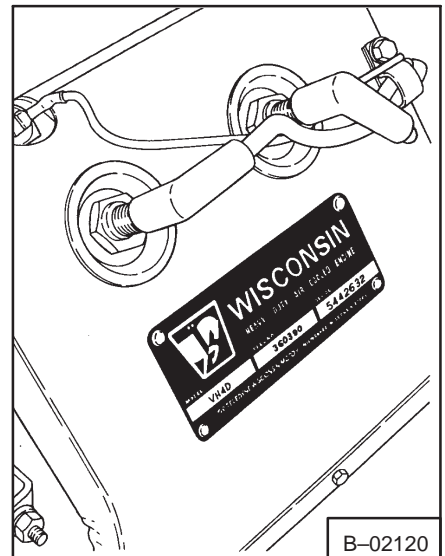


Fig. 1-2 Engine Serial Number (720)

### 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. It is possible that the present machines do not use all the same parts as earlier machines; or it is possible that different procedures are used for service or repair.

### 1-1.3 Loader Serial Number

The loader serial number plate location is in the front of and below the operators seat (Fig. 1-1).

Explanation of serial number:



### 1-1.4 Engine Serial Number

**720 Wisconsin:** (Fig. 1-2) The engine serial number location is on the engine shroud on the left side of engine. Use all numbers when ordering parts for this engine.

**721 Deutz:** (Fig. 1-3) The engine serial number location is on the right side of cylinder block. Use all numbers when ordering parts for this engine.

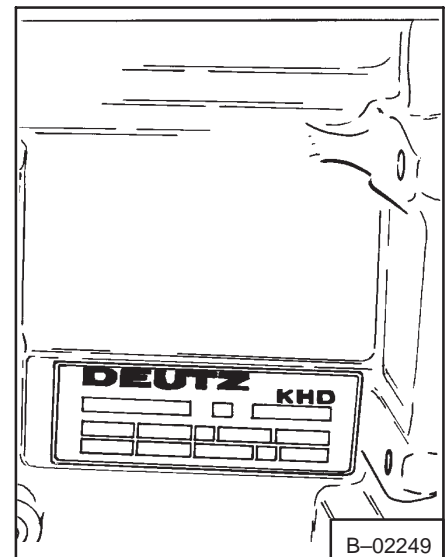


Fig. 1-3 Engine Serial Number (721)

**722 Ford:** (Fig. 1–4) the engine serial number location is on the right side of the valve cover. Use all numbers when ordering parts for this engine.

### 1–1.5 Pre-Delivery Inspection

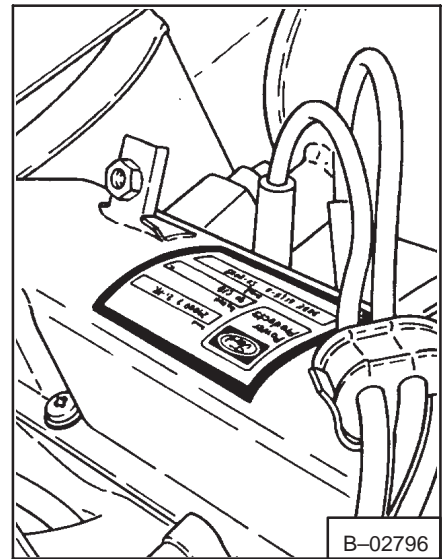
The purpose of the pre-delivery inspection is to make sure that the loader is in correct condition when it comes to the dealer and before delivery to the customer.

The pre-delivery inspection also lets the factory know when something is wrong with the loader so that the problem can be corrected and prevented 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:

**CLARK EQUIPMENT COMPANY  
MELROE DIVISION  
QUALITY CONTROL DEPT.  
GWINNER, NORTH DAKOTA 58040**



**Fig. 1–4 Engine Serial Number (722)**

The other copy is for the dealer.

### 1–1.6 30 Hour Inspection

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

The purpose of the 30 hour inspection is:

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.

All items on the 30 hours inspection for (Fig. 1–6) must be completed by the dealer's mechanic, according to specifications in this manual.

When the 30 hour inspection has been completed, the form must be signed by (1) the mechanic that completed the inspection, (2) the dealer, and (3) the owner or operator.

One copy of the completed form is to be mailed to:

**CLARK EQUIPMENT COMPANY  
MELROE DIVISION – SERVICE DEPARTMENT  
GWINNER, NORTH DAKOTA 58040**

One copy is for the owner and one copy is for the dealer.

**Fig. 1–5 Pre-Delivery Inspection**

**Fig. 1–6 30 Hour Inspection**

## 1-2 SERVICE INTERVALS

Maintenance work must be done regularly. Failure to do so will result in damage to the machine or its engine. The service schedule must be used as a guide to correct maintenance of the Bobcat loader. Use this schedule unless it is to shorten the intervals due to extremely hot, cold, dusty or corrosive operation conditions.

### 720, 721, 722

Make inspection of the following items every (8-10 hours).

ITEM	SERVICE REQUIRED
Engine air Cleaner	Clean dust cup. Check condition of system.
Engine Oil	Check oil level and add as necessary.
Tires	Check for damage and check air pressure in tires.
All Pivot Points Gauges, etc. lights, etc.	Add lubricant to all fittings. check for correct operation only of all indicators, gauges, switches,
Seat Belt	Check condition of belt & buckle and make replacement if there is a defect.
Operator Guard	Check condition of guard & bolts.
Safety Decals	Be sure all decals are in place and can be read. Make replacement as necessary.
Hydraulic Fluid	Check level and add recommended fluid as necessary.
Engine Cooling System (722)	Check coolant level. Add coolant when low. Remove any debris from radiator grill area.
Engine Cooling Inlet (720 & 721)	Check rear grill & blower inlets for restriction of air flow. Clean cylinder cooling fins and blower housing when necessary.

Make inspection of the following items as shown:

SERVICE SCHEDULE				HOURS							
720	721	722	ITEM	SERVICE REQUIRED	50	100	200	250	500	1000	2000
			Engine Oil & Filter	Replace the oil & filter.							
			Crankcase Breather	Clean breather cap every oil change.							
			Battery	Check electrolyte level. Add water if necessary.							
			Control Pedals And Steering	Check operation. Make repairs and adjustments as necessary.							
			Bob-Tach	Check locking levers and wedges for condition and operation.							
			Brakes	Check operation. Make adjustments or repairs as necessary.							
			Distributor Cam	Put very small amount of oil in oil cup.							
			Chaincase Fluid	Check fluid level. Check for water in reservoir. Add fluid if necessary.							
			Alternator Belt	Check tension of alternator belt.							
			Trans. Fluid Filter (10 Micron pressure)	Replace filter element at this interval or when <i>FILT</i> light stays on.							
			Engine Cylinder Head Bolts	Tighten to correct torque after first 100 hours. Also adjust valves.							
			Engine Air Cleaner	Check system for leaks. Replace element if necessary.							
			Ignition Points	Check points and ignition timing. Replace spark plugs.							
			Fuel Filter	Clean or replace filter element as necessary.							
			Valve Tappets	Check tappet clearance and adjust when necessary.							
			Starter	Remove clean and service starting motor as needed.							
			Compression	Check engine compression. Minimum engine compression must be at least 75% of the maximum compression reading.							
			Governor Lubrication	Check oil level in governor.							
			Hydraulic Filter (25 Micron Suction)	Replace element.							

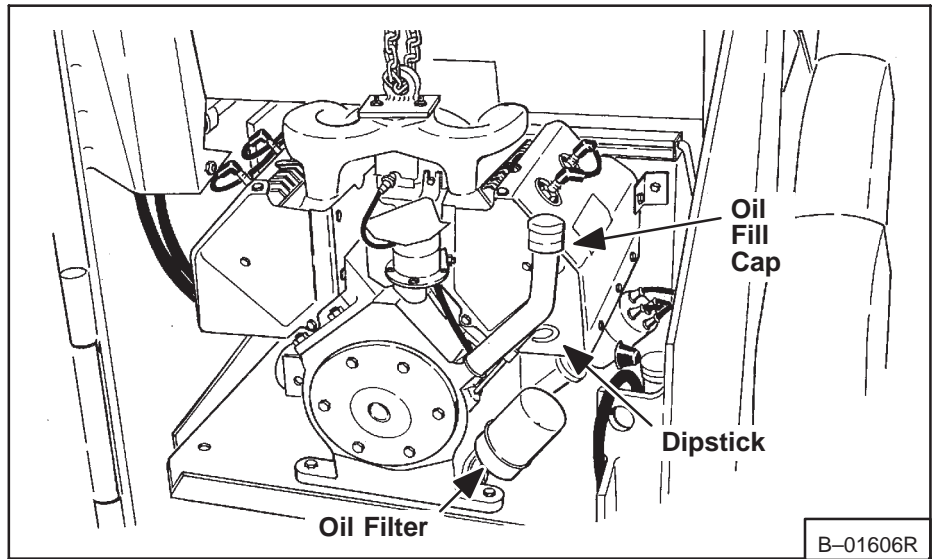


**1-3 ENGINE SERVICE (General):**

**1-3.1 Engine Oil And Filter (Fig. 1-7 thru Fig. 1-13)**

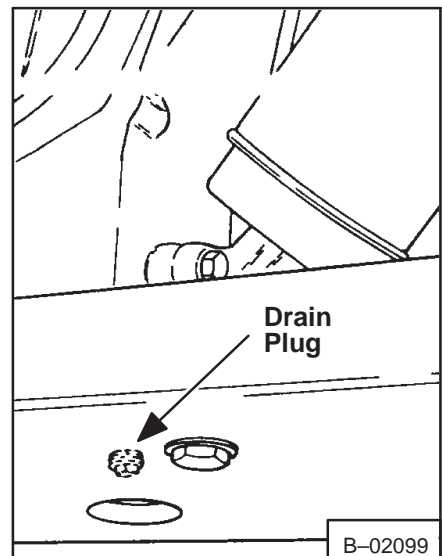
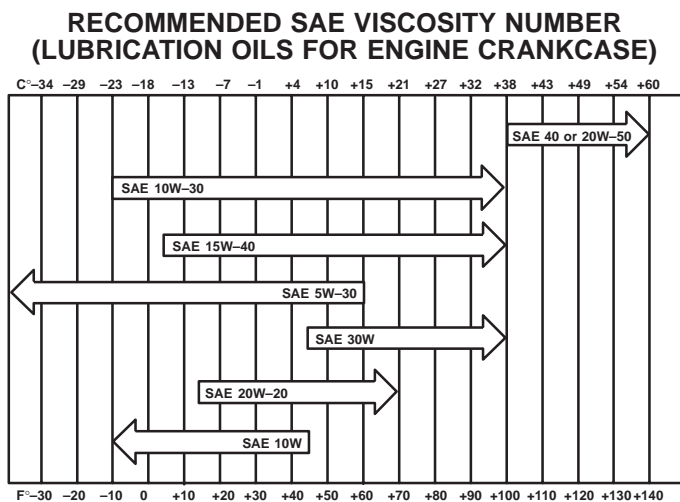
Check oil level after every eight hours of operation. (Check oil every four hours on new engine during the first 50 hours of operation.)

Oil level must be maintained between the *add* and *full* mark on the dipstick. Use a good quality detergent motor oil that meets the correct API service classification SE.



**Fig. 1-7** Engine Service (720)

Use oil of proper SAE viscosity for expected temperature conditions.

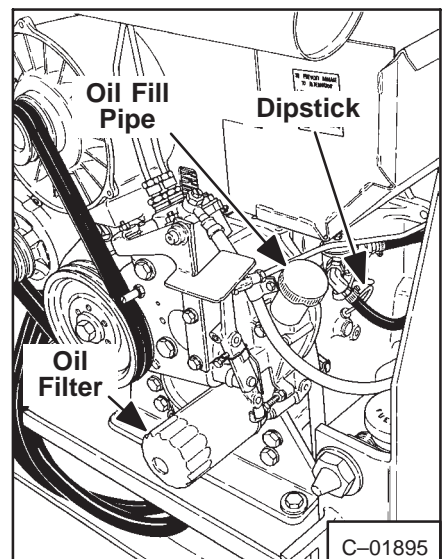


**Fig. 1-8** Engine Oil Drain (720)

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

IMPORTANT

**Never overfill the engine crankcase with oil.**



**Fig. 1-9** Engine Servicing (721)

### Checking Oil:

Engine must be stopped to check oil level. Check oil level every four hours for the first 50 hours of operation. After the first 50 hours of operation, check oil level every day (8–10 hours). Oil level must be kept between the *MIN* and *MAX* marks on the dipstick (Fig. 1–11).

### Adding Oil:

Remove oil fill cap and add enough oil of the correct specification and viscosity to make oil level near the *MAX* on the dipstick.

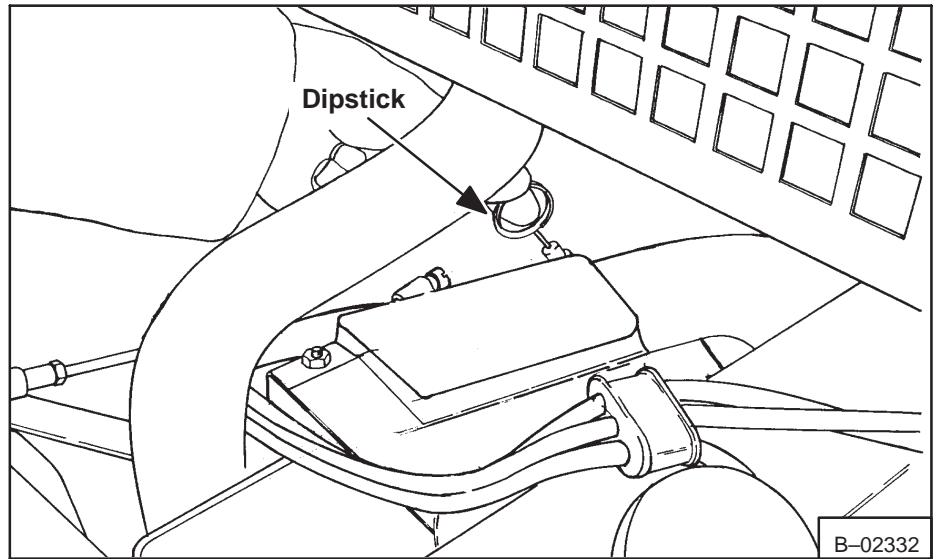


Fig. 1–10 Checking Crankcase Oil (722)

### Replacement Oil And Filter:

1. Stop the engine.
2. Remove drain plug when engine is hot.
3. Let oil flow for several minutes.
4. Remove filter.
5. Install drain plug.
6. Clean area around filter base.
7. Put clean oil on gasket of new filter and install new filter. Tighten filter by hand only.
8. Fill with four quarts (3,79 L) of oil of the correct specification and viscosity.

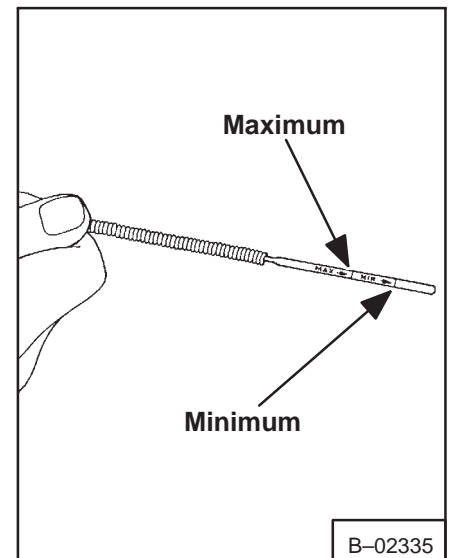


Fig. 1–11 Checking Dipstick

### 1–3.2 Crankcase Breather

**720 Wisconsin:** Remove the breather hose (Fig. 1–14). Put hose in solvent and use compressed air to blow debris from hose.

**721 Deutz:** (Fig. 1–15) the crankcase breather is located on the right side of the cylinder block.

**722 Ford:** (Fig. 1–13) the crankcase breather is also the fill cap. Clean the breather cap in solvent every time you replace the engine oil.

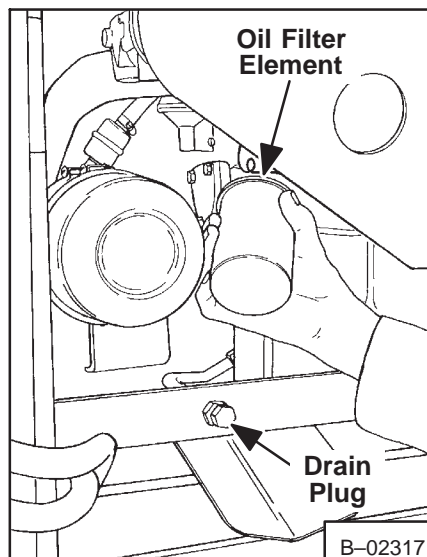


Fig. 1–12 Engine Service (722)

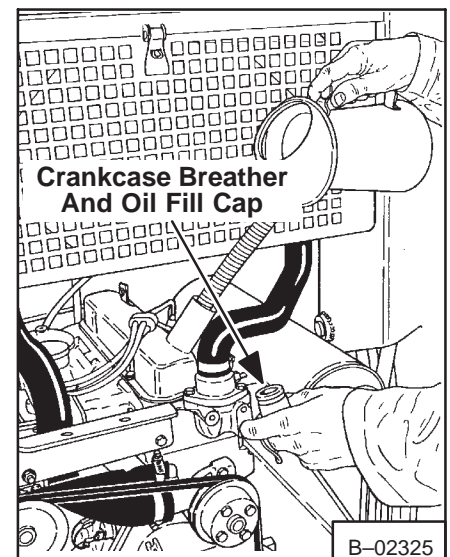


Fig. 1–13 Adding Oil (722)

### 1-3.3 Air Cleaner System

The air cleaner system must be kept clean and free from defects for good engine performance and long service life.

Service air cleaner as follows:

1. Remove and clean dust cup every day (Fig. 1-16).
2. Do not remove element unless replacement is necessary.

**NOTE: Be sure (1) gasket surfaces are clean before installing new element and (2) be sure gasket is in correct place.**

3. Check complete air cleaner system and make replacement of any parts with defects. Be sure hose connections are tight.

4. Check running operation of air cleaner system as follows:

a. Start engine and run at idle.

b. Close air inlet on air cleaner. The engine speed must become slower, then stop (722 only). Check the condition indicator for the red ring (720, 721); if the red ring appears, the system is good.

c. If the engine does not stop, the system has a leak. Check, and make repairs as necessary.

5. Check hose from air cleaner to carburetor for damage caused by the hose clamp not being correct at carburetor inlet (Fig. 1-6a).

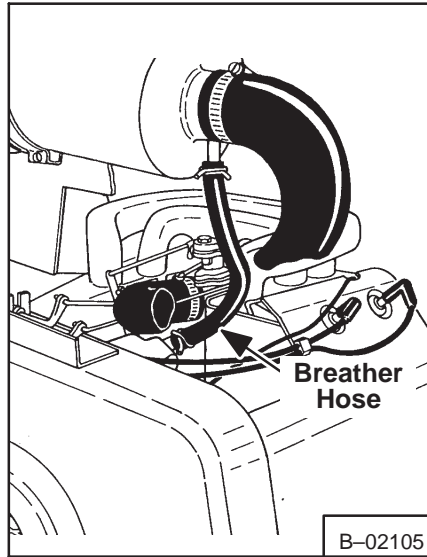


Fig. 1-14 Crankcase Breather (720)

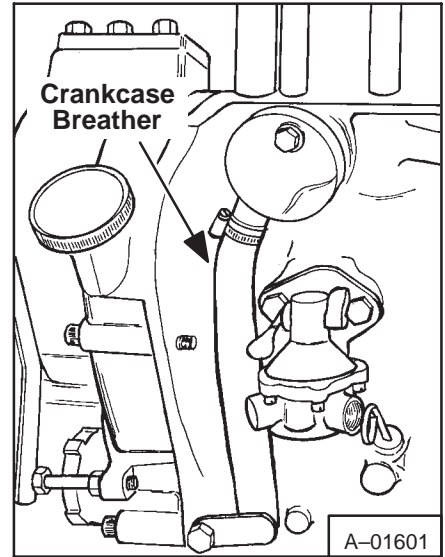


Fig. 1-15 Crankcase Breather (721)

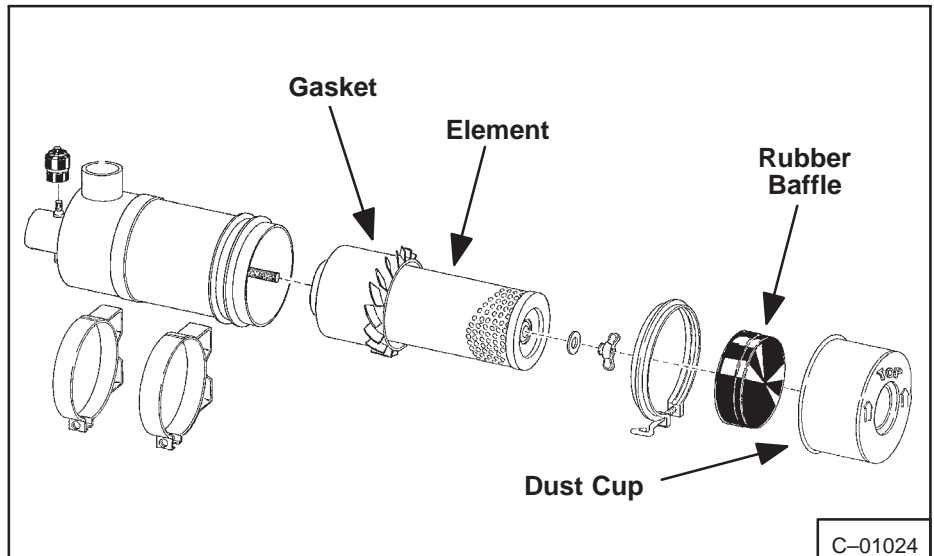


Fig. 1-16 Air Cleaner Assembly

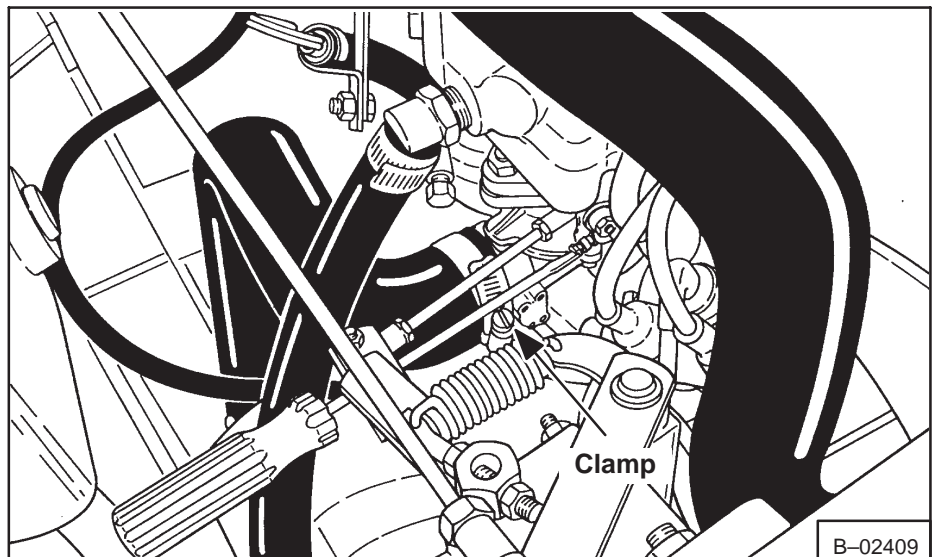


Fig. 1-16a Carburetor Clamp



### 1-3.4 Fuel System (720, 722)

Use only *regular* gasoline with an octane rating of 90-94. DO NOT USE UNLEADED GASOLINE.

1. Engine must be stopped, ignition off and engine cool before you put fuel in the tank.
2. Remove the fuel cap and fill the tank with clean fuel, using an approved safety container.
3. Put fuel in the tank ONLY when the machine is in a large open area (outside of a large building).

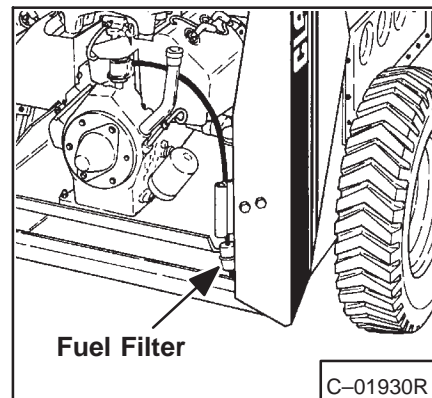


Fig. 1-17 Fuel Filter (720)

**! WARNING**

**DO NOT** put fuel in tank while near open flames or sparks. **DO NOT** SMOKE while putting fuel in tank.

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patience.**

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