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MANUAL PREVIEW

Bobcat
Service Manual
600, 600D,
610 & 611
Skid Steer

Service Manual

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BC-S-600+

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. Check battery condition, electrolyte level and cables.
5. 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 by lifting the rear of the machine and turning the rear 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 (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.

GENERAL
SERVICE

TROUBLESHOOTING

DRIVE
SYSTEM

HYDRAULIC
SYSTEM

WISCONSIN
ENGINE SERVICE

DEUTZ[®]
ENGINE SERVICE

PETTER
ENGINE SERVICE

SPECIFICATIONS

ALPHABETICAL
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GENERAL SERVICE

1-1 TIRES

Tire air pressure on standard 7:00 x 15,6 ply should be 55 psi (379 kPa). Flotation tire air pressure should be 25 psi (172 kPa). Air pressure must be the same in all tires for longer life.

Tires can be filled with calcium chloride for more load stability and traction. They must not be filled to more than 80% of capacity of tire.

NOTE: Flotation tires should not be filled with calcium chloride except in pulpwood operation.

Tire rotation should be done when 1/8 inch (3.2 mm) difference is found in wear of tire (Fig. 1-1).

When putting new tire on loader, check that size is the same as other tires on loader.

1-2 LOADER LUBRICATION

See Fig. 1-2 for lubricant fitting locations. Use a good lithium base grease. Check service schedule (Page 1-1) for correct time intervals.

1-3 CHANGING AND ADDING HYDRAULIC OIL

The loader holds 18 gallons of hydraulic oil which need not be changed unless loader is run under very dirty conditions for a long period of time. Otherwise change oil every 1000 hours or if oil has become dirty or white in color.

Check oil level every 50 hours of operation, on a level surface. When low add approved oil and fill to the upper check plug (Fig. 1-3).

1-4 REMOVING WATER FROM HYDRAULIC TANKS

Water should be removed every 1000 hours of operation or more often if loader is operated in a climate where much water is present in the air.

To remove water from the reservoir:

1. Use tilt control to raise front wheels of loader several inches off of ground.
2. Allow loader to stand for 3-4 hours.
3. Remove drain plug (Fig. 1-3) for water to run off.



Fig. 1-1 Tire Rotation

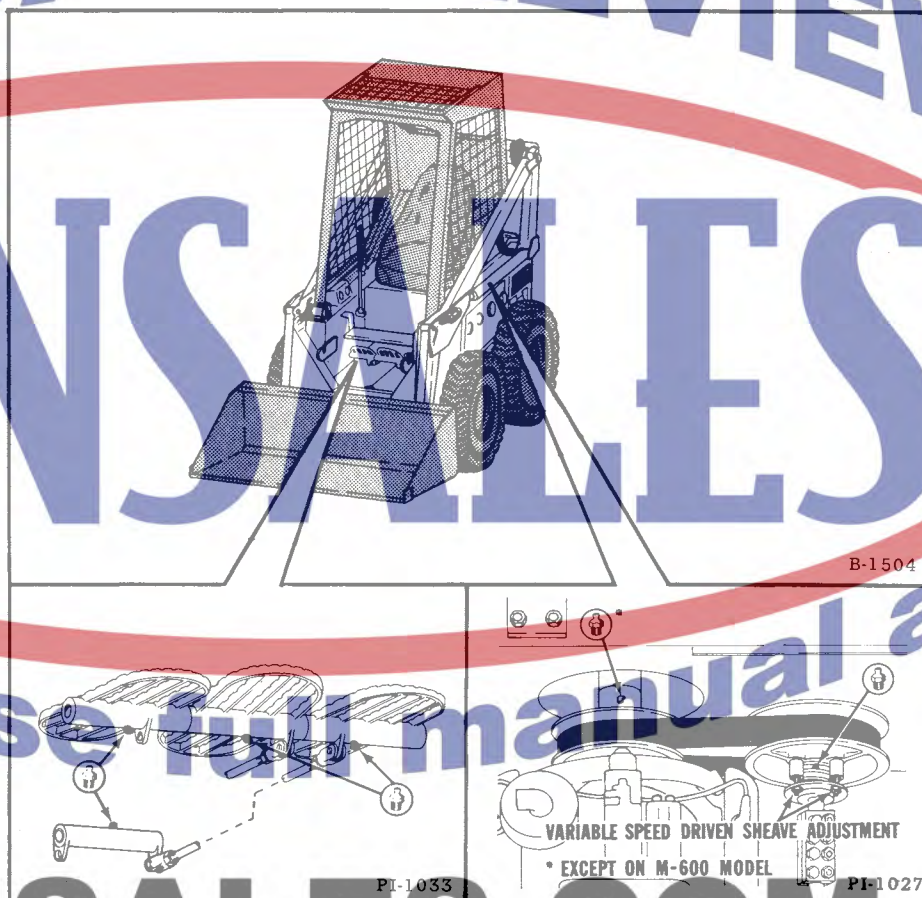


Fig. 1-2 Loader Lubrication

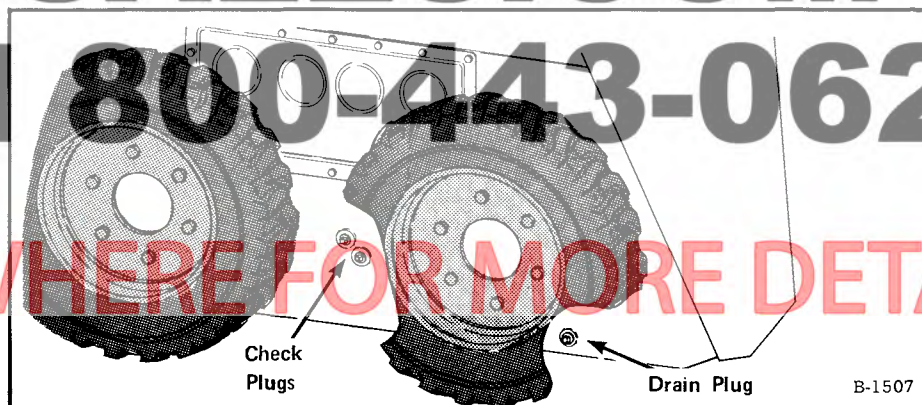


Fig. 1-3 Reservoir Check and Drain Plugs

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TROUBLESHOOTING

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5 WISCONSIN ENGINE SERVICE

5-1 RETURN OF NORMAL COMPRESSION

On a new engine or on one which has been out of operation for some time, the oil may have run off cylinder walls so that compression will be low. Loss of compression will cause hard starting. To correct, remove spark plugs and add about a fluid ounce (.03 kg) of engine oil through the spark plug hole into each cylinder.

Turn the engine over several times by hand for distribution of oil over the cylinder walls. Then install spark plugs and compression should be correct.

5-2 GOVERNOR ADJUSTMENT

The control rod between the governor and carburetor must have proper adjustment length, or governor will not operate correctly. With engine stopped, the governor spring will hold the fly weight in, and the control rod must be of such length as to hold the carburetor throttle wide open. The adjustments can be checked by disconnecting the control rod from the governor lever, and pushing the rod toward the carburetor as far as it will go. This will open the throttle. The governor lever must then be moved as far as possible in the same direction. All of this is done with the rod disconnected from the lever while holding both parts in above position (Fig. 5-1). The rod must be turned into the swivel block on the carburetor, until the bent end of the rod is in line with the hole in the lever. The turn rod in two more turns. Install rod into hole in governor lever and install the cotter pin (Fig. 5-2). With the governor lever pushed toward the carburetor as far as it will go, there must be about 1/16 of an inch (1.5 mm) clearance between the throttle lever and the stop pin on the carburetor (Fig. 5-3). The clearance will cause the lever to bounce back from stop pin, rather than stop against pin, when a load is applied to idling engine.

The governor lever has 12 holes for installing the governor spring (Fig. 5-4). Install the governor spring in the correct hole (See Chart). The full load speed of the engine will be 125 to 150 RPM less than the no load RPM. Use a tachometer and adjust the screw on the spring until you get the correct full load speed.

VF4D Engine	
Hole Number	RPM (under load)
10	2400
VH4D Engine	
Hole Number	RPM (under load)
12	2800



Fig. 5-1 Governor Adjustment



Fig. 5-2 Governor Lever Installation



Fig. 5-3 Stop Pin Clearance

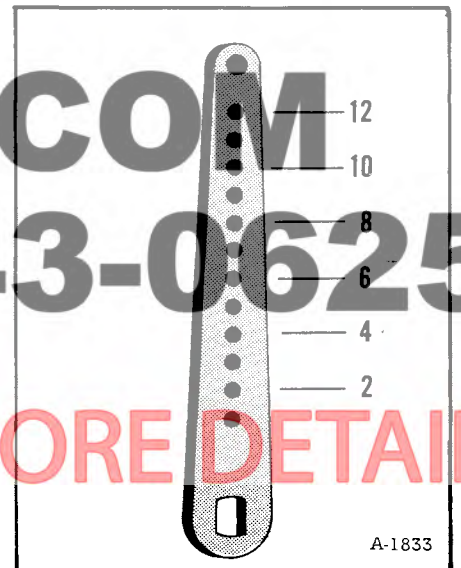


Fig. 5-4 Governor Lever

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FOREWORD

This Service Supplement provides additional information necessary for servicing early model Bobcat loader. Use this supplement in conjunction with the 600 thru 611 Service Manual (#6556276), to provide complete servicing instruction for the 444, 500 and early 600 Bobcat loaders.

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HYDRAULIC SYSTEM (444 & 500)

Figure 3 shows hydraulic fluid flow.

Fluid drawn from the reservoir, through the hydraulic oil filter (Item 1) by the hydraulic pump (Item 2). The pump delivers fluid to the control valves (Item 3, 4 & 5). The main relief valve (Item 6) is a diversion valve set to open when a control valve is actuated and the corresponding cylinders reach the end of their stroke, or when you attempt to lift a load greater than the machine's capacity. When you move the variable speed control lever forward, oil is diverted by the variable speed control valve (Item 5) to the variable speed cylinder (Item 7). This moves the drive sheaves together, giving you a faster ground speed. Pulling the lever back decreases ground speed. A restrictor in the clutch lubrication manifold (Item 8) maintains a constant pressure of 20 PSI to the drive clutches. The small arrows show oil flow through tube lines (not shown) to the clutch pins.

CHANGING HYDRAULIC OIL FILTER ELEMENT (Filter Located at Front of Machine, Under Floor Panels)

(1) Raise the FRONT of the machine 5 to 6 inches to prevent the oil in the reservoir from running out when you remove the filter.

(2) Disconnect the control pedal linkages at the pedals and remove the floor panels.

NOTE: To remove the floor panels and the filter element, it is NOT necessary to remove the control pedals.

(3) Remove the element, seals and spring from the can. Remove the seal gasket from the center post.

(4) Clean the seals, spring, center post and can in a suitable solvent. Dry them with compressed air.

Discard the oil filter element.

(5) Reassemble the filter on the filter head. Figure 4 shows the relationship of parts. Check the quad-ring seal on the filter head for damage before reinstalling the can.

The housing, center post and quad-ring seal must be free of foreign material to insure good sealing. Tighten the large nut on the end of the center post to 12 ft.-lbs. (maximum).

(6) Lower the front of the machine. Make sure the machine is setting level. Start the engine and let it idle until the hydraulic system works smoothly (when the boom will raise and lower without jerking). Watch the filter can for leaks due to improper seating of the quad-ring seal.

Stop the engine. Remove the high oil level check plug and the hydraulic oil filter plug (Fig. 5). You will need to add about 2 quarts of fluid to replace the oil that was in the oil filter element. Add type "A" automatic transmission or Dextron fluid until it runs out the high level check port. Replace the check and fill plugs.

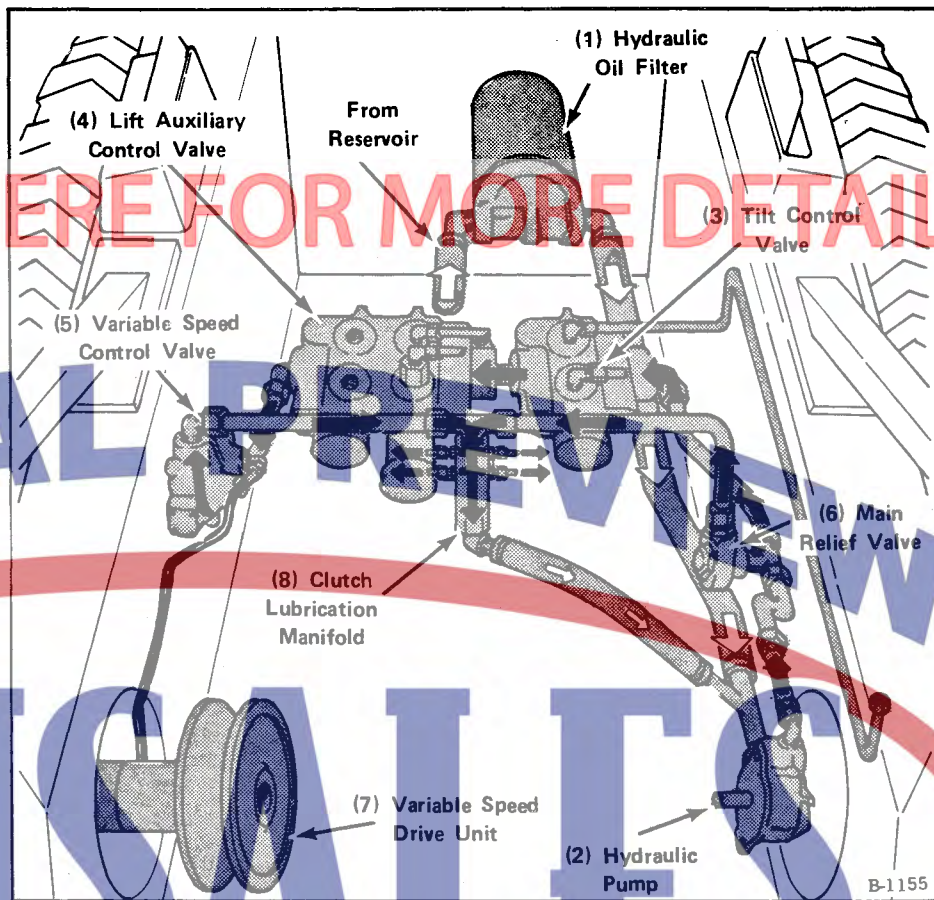


Fig. 3 Hydraulic System (500 & 444 Gasoline & LP Gas)



Fig. 4 Hydraulic Oil Filter

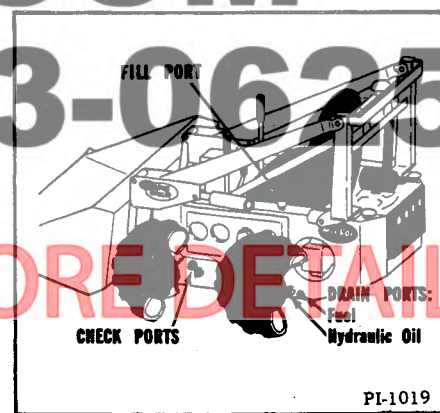


Fig. 5 Check & Fill Ports

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