

S220

TURBO

S220

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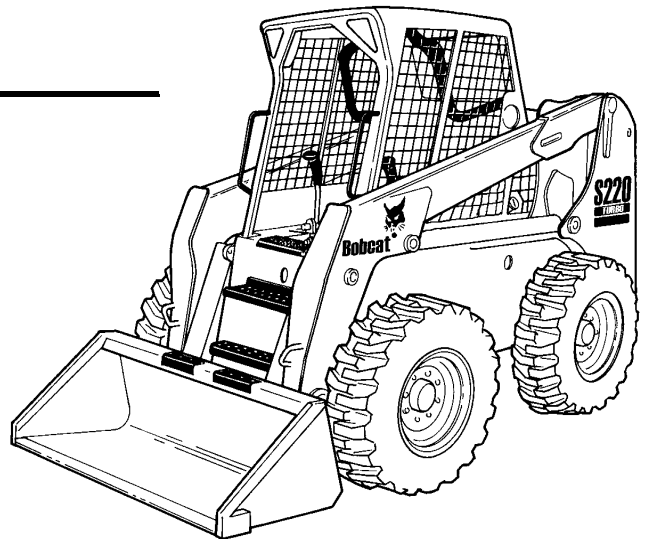
HIGH FLOW



Bobcat® Operation & Maintenance Manual

S/N 526214400 & Above

S/N 526312100 & Above



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**EQUIPPED WITH
BOBCAT INTERLOCK
CONTROL SYSTEM (BICS)**

6904176 (12-06) Revised (5-12) (3)

 **Ingersoll Rand**
Compact Vehicle Technologies

Printed in U.S.A.

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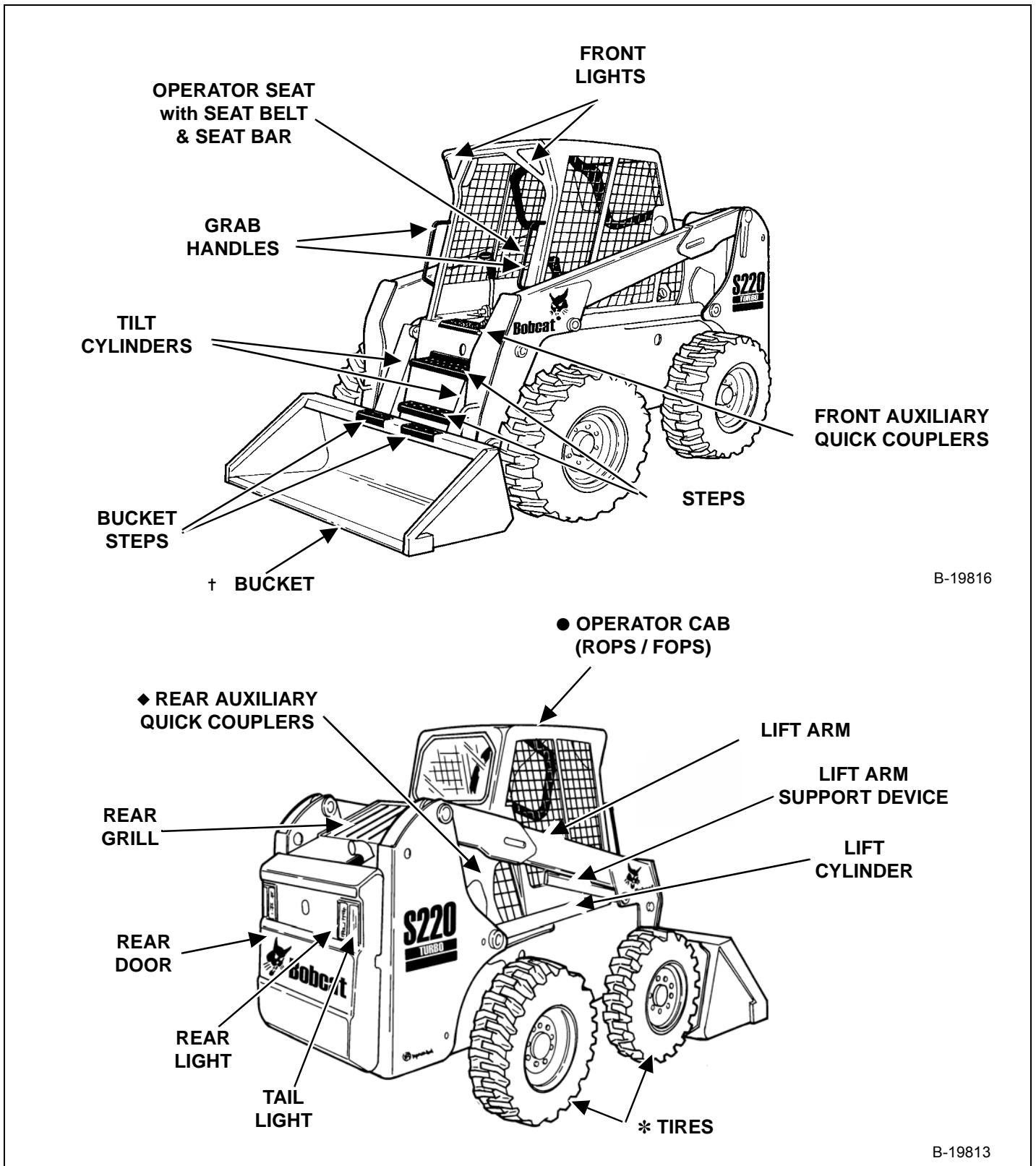
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MACHINE IDENTIFICATION



B-19816

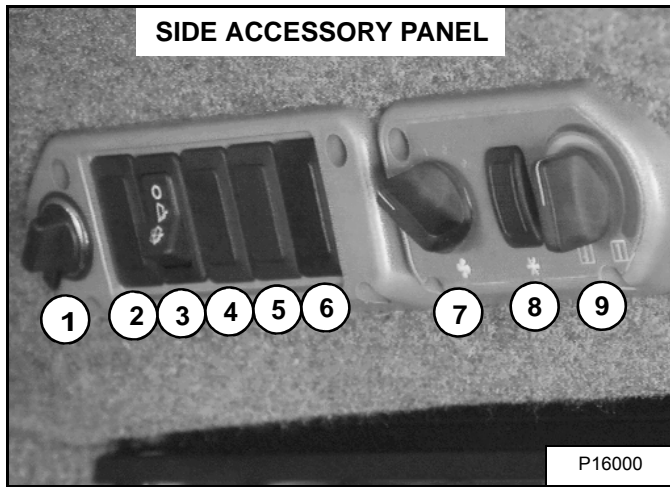
B-19813

- ◆ Optional or Field Accessory (Not Standard Equipment)
- * TIRES - Tires shown may not be standard. The machine is factory equipped with standard tires. Other tires are available.
- † Bucket - Several different buckets and other attachments are available for this machine.
- ROPS, FOPS - Roll Over Protective Structure, per SAE J1040 and ISO 3471, and Falling Object Protective Structure per SAE J1043 and ISO 3449, Level I. Level II is available.

INSTRUMENT PANEL IDENTIFICATION (CONT'D)

Option And Field Accessory Panels (If Equipped)

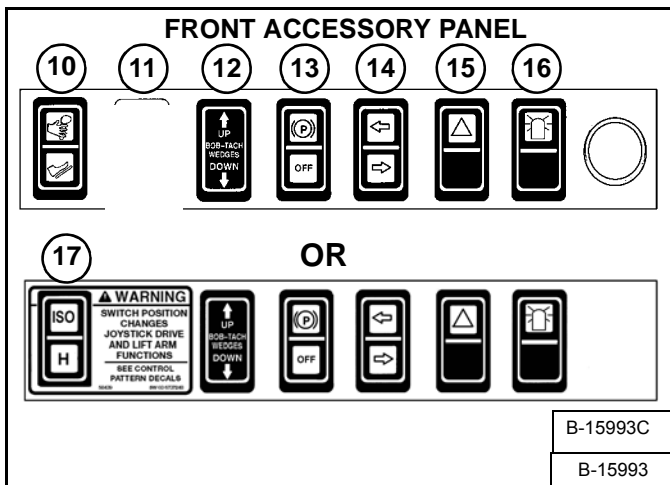
Figure OI-6



Side Accessory Panel [Figure OI-6].

REF. NO.	DESC.	FUNCTION/OPERATION
1.	POWER PLUG	Provides a 12V receptacle for accessories.
2.	NOT USED	---
3.	FRONT WIPER	Press the top of the switch to start the front wiper (press and hold for washer fluid). Press the bottom of the switch to stop the wiper.
4.	REAR WIPER	Press the bottom of the switch to start the rear wiper. Press the top of the switch to provide washer fluid to clean the rear window.
5.	NOT USED	---
6.	NOT USED	---
7.	FAN MOTOR	Turn clockwise to increase fan speed; counterclockwise to decrease. There are four positions; OFF-1-2-3.
8.	AIR COND. SWITCH	Press top of switch to start; bottom to stop. Fan Motor (Item 7) must be ON for A/C to operate.
9.	TEMP. CONTROL	Turn clockwise to increase the temperature; counterclockwise to decrease.

Figure OI-7



Front Accessory Panel [Figure OI-7]

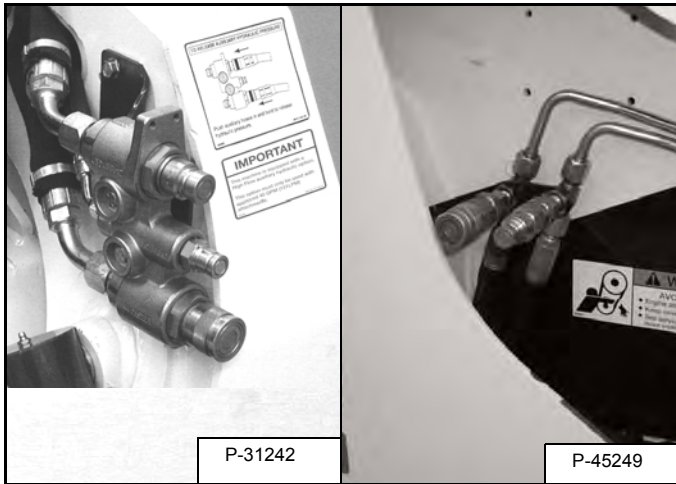
REF. NO.	DESC.	FUNCTION/OPERATION
10.	ADVANCED CONTROL SYSTEM (ACS)	Press the top to select Hand Controls; bottom to select Foot Controls.
11.	NOT USED	---
12.	POWER BOB-TACH	Press and hold the up arrow to disengage the the Bob-Tach wedges. Press and hold the down arrow to engage the wedges into the mounting frame holes.
13.	PARKING BRAKE (Standard on all Loaders)	Press the top to engage the PARKING BRAKE; bottom to disengage.
14.	TURN SIGNAL INDICATORS	Indicates left or right TURN SIGNALS are ON.
15.	HAZARD LIGHTS	Press the top to turn the HAZARD LIGHTS ON; bottom to turn OFF.
16.	ROTATING BEACON	Press the top to turn the ROTATING BEACON ON; bottom to turn OFF.
17.	SELECTABLE JOYSTICK CONTROL (SJC)	Press the top to select 'ISO' Control Pattern; bottom to select 'H' Control Pattern.

NOTE: Parking Brake (Item 13) [Figure OI-7] is Standard on all loaders.

HYDRAULIC CONTROLS (CONT'D)

Quick Couplers

Figure OI-30



To Connect: Remove dirt or debris from the surface of both the male and female couplers, and from the outside diameter of the male coupler. Visually check the couplers for corroding, cracking, damage or excessive wear. If any of these conditions exist, the coupler(s) [Figure OI-30] must be replaced.

Install the male coupler into the female coupler. Full connection is made when the ball release sleeve slides forward on the female coupler.

To Disconnect: Hold the male coupler. Retract the sleeve on the female coupler until the couplers disconnect.

Releasing Hydraulic Pressure (Loader and Attachment)

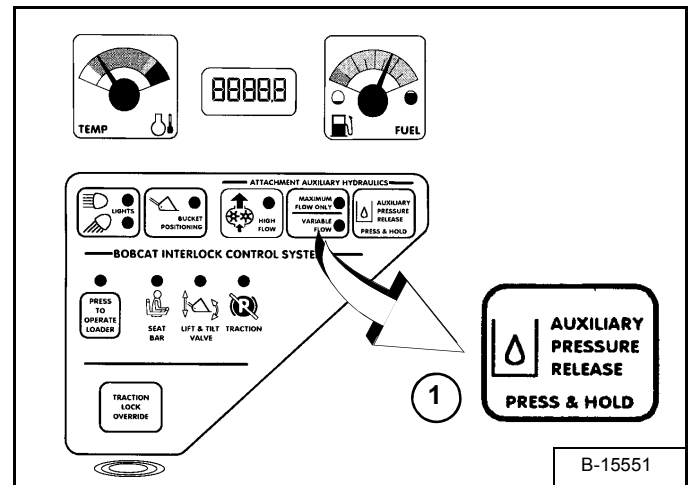
Front Auxiliary Quick Couplers

When Connecting: Push the quick couplers tightly together and hold for five seconds; the pressure is automatically released as the couplers are connected.

When Disconnecting: Push the quick couplers tightly together and hold for five seconds; then retract the sleeve until the couplers disconnect.

Rear Auxiliary Quick Couplers

Figure OI-31



Press the AUXILIARY PRESSURE RELEASE Button (Item 1) [Figure OI-31]. Hold it for two seconds after the engine comes to a complete stop. The pressure will be released.

! WARNING

AVOID BURNS

Hydraulic fluid, tubes, fittings and quick couplers can get hot when running machine and attachments. Be careful when connecting and disconnecting quick couplers.

W-2220-0396

STARTING THE ENGINE (DELUXE PANEL, KEYLESS START)

Procedure



AVOID INJURY OR DEATH

- Engines can have hot parts and hot exhaust gas. Keep flammable material away.
- Do not use machines in atmosphere containing explosive gas.

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Perform the PRE-STARTING PROCEDURE. (See PRE-STARTING PROCEDURES on Page OI-25.)

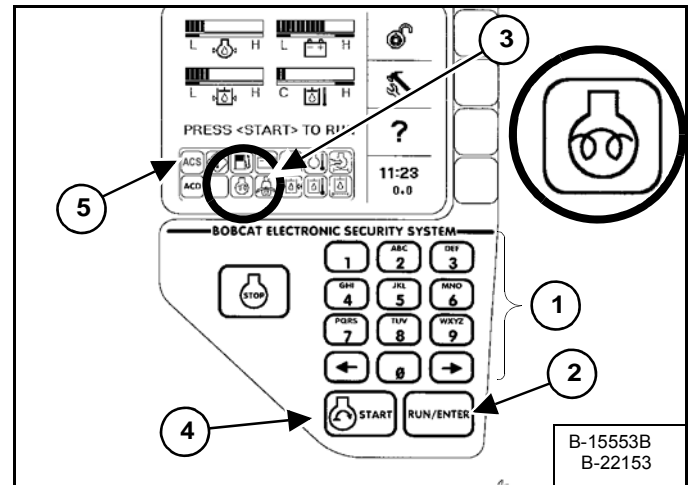
Figure OI-53



Set the engine speed control at the 1/2 speed position [Figure OI-53]

NOTE: Loaders with Deluxe Instrument Panel have a permanent, randomly generated Master Password set at the factory. Your loader will be assigned an Owner Password. Your dealer will provide you with this password. Change the password to one that you will easily remember to prevent unauthorized use of your loader. (See DELUXE INSTRUMENT PANEL SETUP on Page SA-10.) Keep your password in a safe place for future needs.

Figure OI-54



Use the numeric keypad (Item 1) [Figure OI-54] to enter the password, then press the RUN / ENTER Button (Item 2) [Figure OI-54].

If the temperature is cold, the intake air heater will automatically cycle and the Icon (Item 3) [Figure OI-54] will be ON.

When the Icon light goes OFF, press the START Button (Item 4) [Figure OI-54]. Release the button when the engine starts.

NOTE: Make sure both hand controls (ACS) or Joysticks (SJC) are in the neutral position before starting the engine. Do not move the levers or joysticks from the neutral position when attempting to start the engine.

If controls are moved:

- a. The neutral position for the hydraulic valve spool and hand control may not be correctly calibrated. This can result in slight movement of the lift or tilt hydraulic cylinders when the hand control lever is returned to the neutral position after start-up.

OR

- b. ACS indicator light (Item 5) [Figure OI-54] on right instrument panel will be ON.

If either condition occurs, return key to STOP. Put the controls in neutral position and re-start engine.

OPERATING PROCEDURE

Operating With A Full Bucket

When operating on a public road or highway, always follow local regulations.

For example: Slow Moving Vehicle Sign or direction signals may be required.

Always warm the engine and hydrostatic system before operating the loader.

IMPORTANT

Machines warmed up with moderate engine speed and light load have longer life.

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Operate the loader with engine at full speed for maximum horsepower. Move the steering levers only a small amount to operate the loader slowly.

New operators must operate the loader in an open area without bystanders. Operate the controls until the loader can be handled at an efficient and safe rate for all conditions of the work area.

Figure OI-75

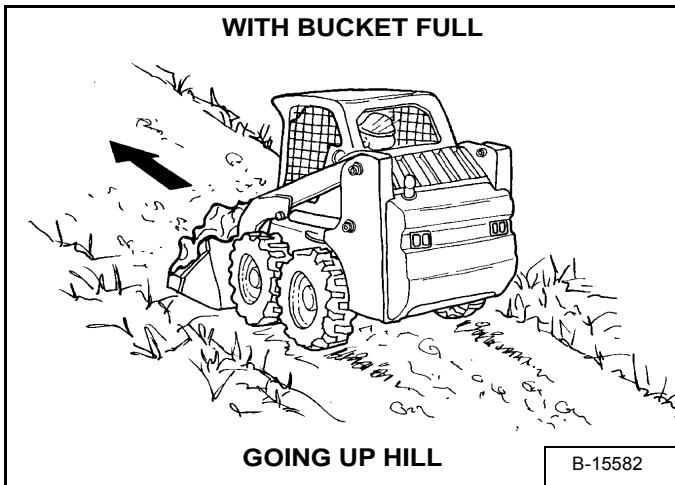
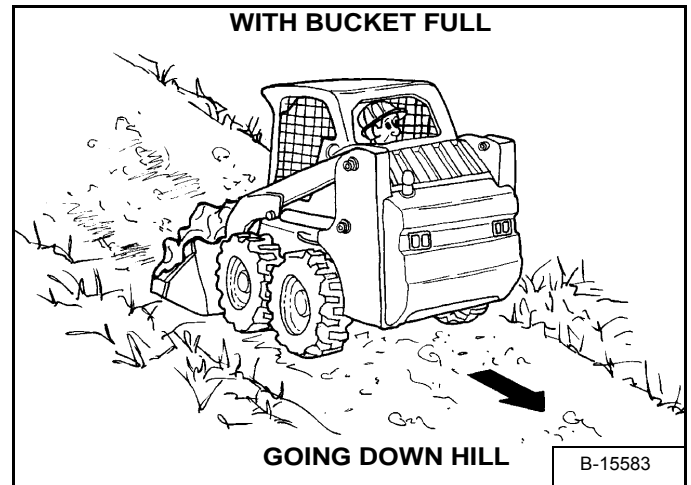


Figure OI-76



With a full bucket, go up or down the slope with the heavy end toward the top of the slope [Figure OI-75] and [Figure OI-76].

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TOWING THE LOADER

Towing Procedure

To prevent damage to the loader's hydrostatic system, the loader must be towed only a short distance at slow speed. (Example: Moving the loader onto a transport vehicle.)

The towing chain (or cable) must be rated at 1 & 1/2 times the weight of the loader. (See Performance on Page SPEC-4.)

- Turn the key switch to RUN (*Standard Panel*) OR press the RUN / ENTER Button (*Deluxe Panel*).
- Press the TRACTION LOCK OVERRIDE Button.
- Tow the Bobcat
- at 2 mph (3,2 km/hr.) or less for not more than 25 feet (7,6 meters).

If the electrical system is not functioning, contact your Bobcat Loader dealer.

OPERATOR CAB (CONT'D)

Lowering The Operator Cab

Always stop the engine before raising or lowering the cab.

NOTE: Make sure the seat bar is fully raised or lowered when lowering the cab. Always use the grab handles to lower the cab.

Figure PM-9



Pull down on the bottom of the operator cab until it stops at the latching mechanism [Figure PM-9].

NOTE: The weight of the cab increases when equipped with options and accessories such as cab door, heater, air conditioning, etc. In these cases, the cab may need to be raised slightly from the latch to be able to release the latch.

Support the cab and release the latching mechanism (Inset) [Figure PM-9]. Remove your hand from latching mechanism when the cab is past the latch stop. Use both hands to lower the cab all the way.

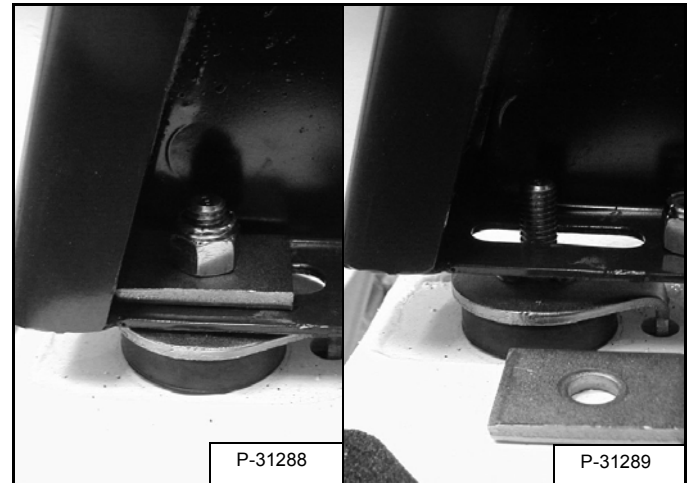
! WARNING

PINCH POINT CAN CAUSE INJURY

Remove your hand from the latching mechanism when the cab is past the latch stop.

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Figure PM-10

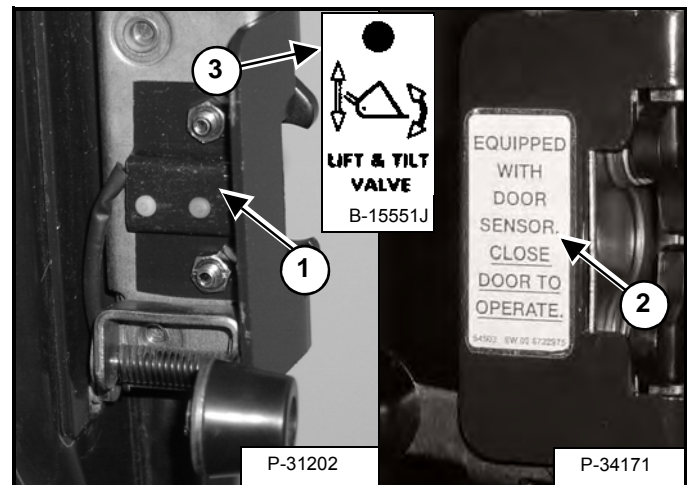


Install the plates and nuts (both sides) [Figure PM-10].

Tighten the nuts to 40-50 ft.-lb. (54-68 N•m) torque.

Cab Door Sensor (If Equipped)

Figure PM-11



The cab door (option) has a sensor (Item 1) [Figure PM-11] installed which deactivates the lift and tilt valves when the door is open.

A decal is located on the latch mechanism (Item 2) [Figure PM-11].

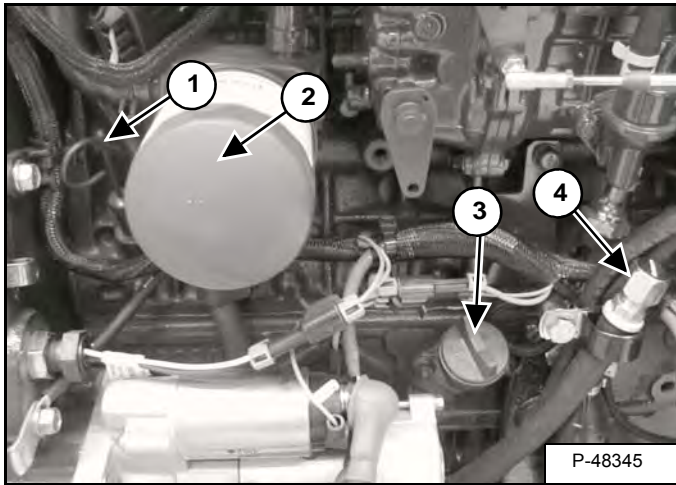
The LIFT & TILT VALVE light (Item 3) [Figure PM-11] will be ON when the door is closed and the PRESS TO OPERATE LOADER Button is pressed.

ENGINE LUBRICATION SYSTEM

Checking Engine Oil

Check the engine oil level every day before starting the engine for the work shift.

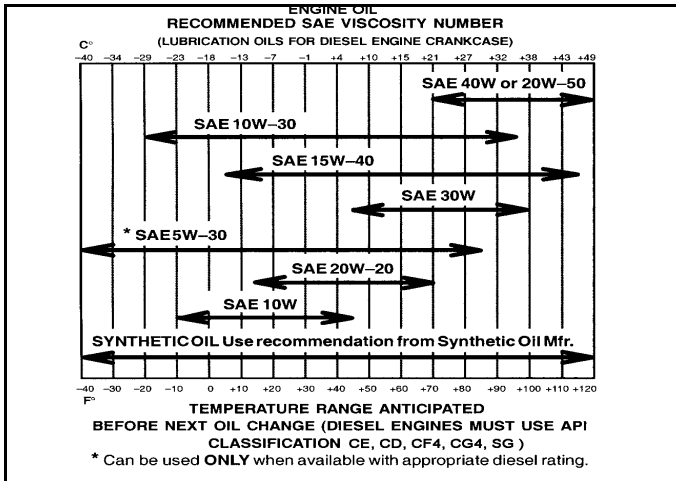
Figure PM-32



Open the rear door and remove the dipstick (Item 1) [Figure PM-32].

Keep the oil level between the marks on the dipstick.

Figure PM-33



Use good quality motor oil that meets API Service Classification of CD or better [Figure PM-33].

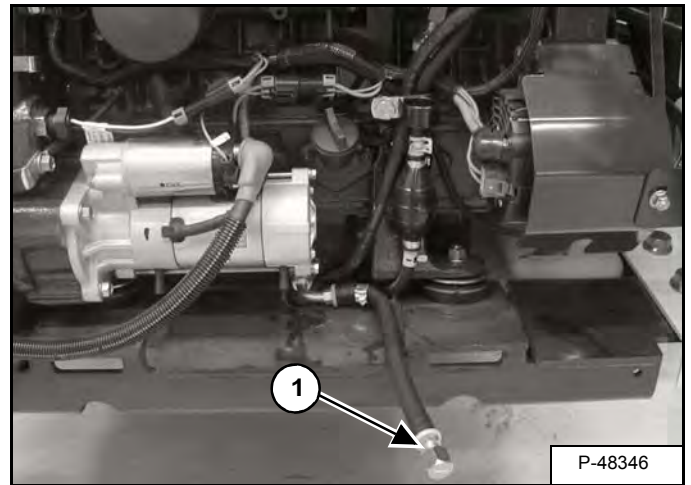
Replacing The Oil And Filter

For the service interval for replacing the engine oil and filter (See SERVICE SCHEDULE on Page PM-5.)

Run the engine until it is at operating temperature. Stop the engine.

Open the rear door and remove the drain hose from its storage position (Item 4) [Figure PM-32].

Figure PM-34



Remove the drain plug (Item 1) [Figure PM-34] and drain the oil into a container and recycle or dispose of used oil in an environmentally safe manner.

Reinstall the drain plug.

Remove the oil filter (Item 2) [Figure PM-34] and clean the filter housing surface.

Use genuine Bobcat filter only.

Put oil on the new filter gasket, install the filter and hand tighten.

Remove the fill cap (Item 3) [Figure PM-34].

Put oil in the engine. For the correct quantity (See LOADER SPECIFICATIONS (S220) on Page SPEC-3.)

Start the engine and let it run for several minutes. Stop the engine and check for leaks at the filter.

Remove the dipstick (Item 1) [Figure PM-32] and check the oil level.

Add oil as needed if it is not at the top mark on the dipstick.

Install the dipstick and close the rear door.



Always clean up spilled fuel or oil. Keep heat, flames, sparks or lighted tobacco away from fuel and oil. Failure to use care around combustibles can cause explosion or fire which can result in injury or death.

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TIRE MAINTENANCE

Wheel Nuts

Figure PM-55



For the service interval to check the wheel nuts (See SERVICE SCHEDULE on Page PM-5.) The correct torque is 105-115 ft.-lb. (142-156 N•m) torque [Figure PM-55]

Rotating

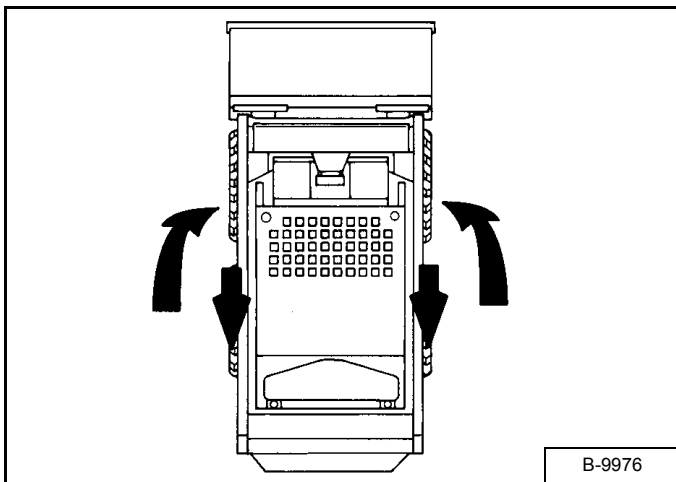
Check the tires regularly for wear, damage and pressure.

IMPORTANT

Inflate tires to the **MAXIMUM** pressure shown on the sidewall of the tire. **DO NOT** mix brands of tires used on the same loader.

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Figure PM-56



Rear tires usually wear faster than front tires. To keep tire wear even, move the front tires to the rear and rear tires to the front [Figure PM-56].

It is important to keep the same size tires on each side of the loader. If different sizes are used, each tire will be turning at a different rate and cause excessive wear. The tread bars of all the tires must face the same direction.

Recommended tire pressure must be maintained to avoid excessive tire wear and loss of stability and handling capability. Check for correct pressure before operating the loader.

Mounting

Tires are to be repaired only by an authorized person using the proper procedures and safe equipment.

Tires and rims must always be checked for correct size before mounting. Check rim and tire bead for damage.

The rim flange must be cleaned and free of rust.

The tire bead and rim flange must be lubricated with a rubber lubricant before mounting the tire.

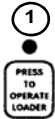



Avoid excessive pressure which can rupture the tire and cause serious injury or death.

During inflation of the tire, check the tire pressure frequently to avoid over inflation.

BICS SYSTEM

Troubleshooting Guide

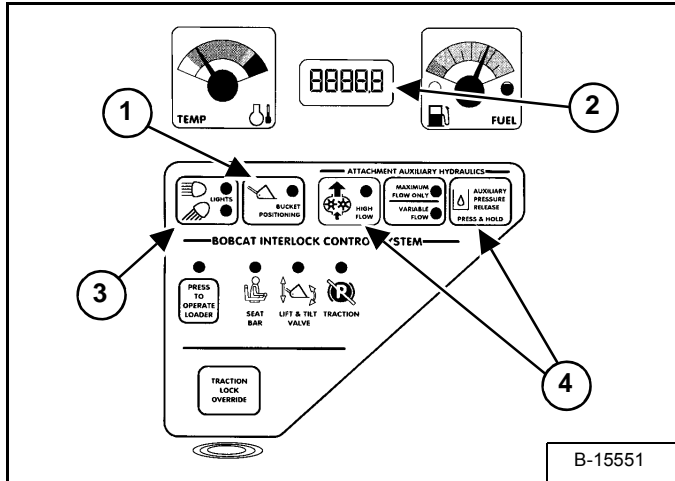
The following chart shows the effects which can happen to the loader, and the probable causes when the BICS™ System lights are off or flashing and associated service codes. (See DIAGNOSTICS SERVICE CODES on Page SA-4.)

Indicator Light	Light ON	Light OFF	Effect on Operation of Loader When Light is OFF	SERVICE CODES Means System Error (See Your Bobcat Dealer for Service)		
				No. of Flashes	Service Code	Causes
	PRESS TO OPERATE LOADER Button is pressed.	PRESS TO OPERATE LOADER Button is not pressed.	----	----	----	----
	Seat Bar is down.	Seat Bar is up.	Lift and tilt functions will not operate.	2	11-05	Seat Bar sensor circuit shorted to battery voltage*.
				3	11-06	Seat Bar sensor circuit shorted to ground.
				Continuous Flashing	03-09 03-10	System voltage low System voltage high
	Control valve can be used.	Control valve cannot be used.	Lift, tilt and traction functions will not operate.	1	17-07	Valve output circuit is open.
				2	17-05	Valve output circuit shorted to battery voltage*.
				3	17-06	Valve output circuit shorted to ground.
				3	17-06	Controller not grounded or intermittent ground.
				Continuous Flashing	03-09 03-10	System voltage low System voltage high
				Continuous Flashing	03-09 03-10	System voltage low System voltage high
	Loader can be moved forward & backward	Loader cannot be moved forward and backward.	Loader cannot be moved forward and backward.	1	16-07	Traction lock hold solenoid circuit is open.
				2	16-05	Traction lock hold solenoid circuit shorted to battery voltage*.
				3	16-06	Traction lock hold solenoid circuit shorted to ground.
				5	15-02	Traction lock pull solenoid circuit is shorted to battery voltage* - ERROR ON (Should be OFF).
				6	15-03	Traction lock pull solenoid circuit ERROR OFF (Should be ON).
				Continuous Flashing	03-09 03-10	System voltage low System voltage high
				Continuous Flashing	03-09 03-10	System voltage low System voltage high

* Normal BICS operating voltage is less than electrical system voltage.

SHUTDOWN FEATURE

Figure SA-6



Press and hold the BUCKET POSITIONING Button (Item 1) [Figure SA-6] for two seconds. If the SHUTDOWN feature is installed, **Shtdn** will appear in the HOURMETER / CODE DISPLAY (Item 2) [Figure SA-6]. If it is not installed, **BASE** will appear.

The Operational Code (Software version) will also appear.

See your Bobcat dealer about installation of this feature.

SERVICE CLOCK RESET

Press the LIGHTS button (Item 3) [Figure SA-6] to turn the panel ON.

Press and hold the HIGH FLOW and AUXILIARY PRESSURE RELEASE buttons (Item 4) [Figure SA-6] simultaneously, until **rEsET** appears in the display (Item 2).

The Service Clock alerts the operator when the next service interval is due. *EXAMPLE:* The Service Clock can be set at 250 hour intervals as a reminder for the next service interval.

See your Bobcat dealer about installation of this feature.

SPECIFICATIONS

ADDITIONAL PUBLICATIONS AND TRAINING MATERIALS SPEC-7

LOADER SPECIFICATIONS (S220).....	SPEC-3
Capacities	SPEC-6
Controls	SPEC-4
Drive System	SPEC-6
Electrical	SPEC-5
Engine	SPEC-4
Hydraulic System	SPEC-5
Machine Dimensions	SPEC-3
Performance	SPEC-4
Tires	SPEC-6

SPECIFICATION

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