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# Bobcat®

## Operation & Maintenance Manual

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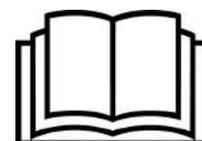


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# S450

## Skid-Steer Loader

S/N B4J711001 & Above



# OPERATOR SAFETY WARNINGS

## WARNING

Operator must have instructions before operating the machine. Untrained operators can cause injury or death.

W-2001-0502

**CORRECT**

P-90216

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

**! Never use the loader without instructions. See machine signs (decals), Operation & Maintenance Manual, and Operator's Handbook.**

**CORRECT**

NA1254

**CORRECT**

NA1198

**WRONG**

NA1201

**! Always use the seat bar and fasten seat belt snugly.**  
**! Always keep feet on the foot pedals or footrests when operating loader.**

**! Never use loader without operator cab with ROPS and FOPS approval. Fasten your seat belt.**

**! Never use loader as man lift or elevating device for personnel.**

**WRONG**

NA1190

**WRONG**

NA1199

**WRONG**

NA1194

**! Do not use loader in atmosphere with explosive dust, explosive gas, or where exhaust can contact flammable material.**

**! Never carry riders.**  
**! Keep bystanders away from work area.**

**! Always carry bucket or attachments as low as possible.**  
**! Do not travel or turn with lift arms up.**  
**! Load, unload, and turn on flat level ground.**

**WRONG**

NA1196

**WRONG**

NA1197

**WRONG**

NA1195

**! Never exceed Rated Operating Capacity.**

**! Never leave loader with engine running or with lift arms up.**  
**! To park, engage parking brake and put attachment flat on the ground.**

**! Never modify equipment.**  
**! Use only attachments approved by Bobcat Company for this model loader.**

## SAFETY EQUIPMENT

The Bobcat® loader must be equipped with safety items necessary for each job. Ask your Bobcat dealer for information on the availability and safe use of attachments and accessories.

1. SEAT BELT: Check belt fasteners and check for damaged webbing or buckle.
2. SEAT BAR: When up, it must lock the loader controls.
3. OPERATOR CAB (ROPS and FOPS): It must be on the loader with all fasteners tight.
4. OPERATOR'S HANDBOOK: Must be in the cab.
5. SAFETY SIGNS (DECALS): Replace if damaged.
6. SAFETY TREADS: Replace if damaged.
7. GRAB HANDLES: Replace if damaged.
8. LIFT ARM SUPPORT DEVICE: Replace if damaged.
9. PARKING BRAKE
10. BOBCAT INTERLOCK CONTROL SYSTEM (BICS)

# CONTENTS

FOREWORD .....	2
SAFETY AND TRAINING RESOURCES .....	13
OPERATING INSTRUCTIONS .....	32
PREVENTIVE MAINTENANCE .....	117
SYSTEM SETUP AND ANALYSIS .....	186
SPECIFICATIONS .....	210
WARRANTY .....	217
ALPHABETICAL INDEX .....	219

## REFERENCE INFORMATION

Write the correct information for YOUR Bobcat loader in the spaces below. Always use these numbers when referring to your Bobcat loader.

Loader Serial Number \_\_\_\_\_  
Engine Serial Number \_\_\_\_\_

NOTES:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

YOUR BOBCAT DEALER:

\_\_\_\_\_  
ADDRESS:

\_\_\_\_\_  
PHONE:

\_\_\_\_\_



Bobcat Company  
P.O. Box 128  
Gwinner, ND 58040-0128  
UNITED STATES OF AMERICA

Doosan Bobcat EMEA s.r.o.  
U Kodetky 1810  
263 12 Dobris  
CZECH REPUBLIC

## FOREWORD

This Operation & Maintenance Manual was written to give the owner / operator instructions on the safe operation and maintenance of the Bobcat loader. READ AND UNDERSTAND THIS OPERATION & MAINTENANCE MANUAL BEFORE OPERATING YOUR BOBCAT LOADER. If you have any questions, see your Bobcat dealer. This manual may illustrate options and accessories not installed on your loader.

DECLARATION OF CONFORMITY .....	3
BOBCAT COMPANY IS ISO 9001 CERTIFIED .....	5
REGULAR MAINTENANCE ITEMS .....	5
Fluids, Lubricants And Fuel .....	6
SERIAL NUMBER LOCATIONS .....	7
Loader Serial Number .....	7
Engine Serial Number .....	7
DELIVERY REPORT .....	7
LOADER IDENTIFICATION .....	8
FEATURES, ACCESSORIES, AND ATTACHMENTS .....	9
Standard Items .....	9
Options And Accessories .....	9
Buckets Available .....	10
Attachments .....	10
Special Applications Kit .....	11
Special Applications Kit Inspection And Maintenance .....	11
Forestry Door And Window Kit .....	12
Forestry Door And Window Kit Inspection And Maintenance .....	12

## DECLARATION OF CONFORMITY

### Contents of EC Declaration of Conformity

This information is provided in the operators manual to comply with clause 1.7.4.2(c) of Annex I of Machinery Directive 2006/42/EC.

The official EC Declaration of Conformity is supplied in a separate document.

#### Manufacturer



Bobcat Company  
World Headquarters  
250 East Beaton Drive  
West Fargo, ND 58078-6000  
UNITED STATES OF AMERICA

#### Directive 2000/14/EC: Noise Emission in the Environment by Equipment For Use Outdoors

##### Notified Body

Technical and Test Institute for Construction  
Prague, Czech Republic  
Notified Body Number: 1020

##### EC Certificate No.

1020-090-022395

##### Conformity Assessment Procedure(s)

2000/14/EC, Annex VIII, Full Quality Assurance

##### Sound Power Levels [Lw(A)]

Measured Sound Power	97,8 dBA
Guaranteed Sound Power	99 dBA

#### Technical Documentation

Homologation Manager  
Doosan Bobcat EMEA s.r.o.  
U Kodetky 1810  
26312 Dobris  
CZECH REPUBLIC

#### Description of Equipment

Type of Equipment: Wheeled Loader  
Model Name: S450  
Model Code: B4J7  
Lot Series: 11001

Engine Manufacturer: Bobcat Company  
Engine Model: DM02VB DM02-MFL02  
Engine Power: 36,5 kW @ 2600 RPM

#### Equipment conforms to CE Directive(s) Listed Below

2006/42/EC: Machinery Directive  
2014/30/EU: Electromagnetic Compatibility Directive

#### Declaration of Conformance

This equipment conforms to the requirements specified in all the EC Directives listed in this declaration.

#### Effective From:

22 January 2020

## DECLARATION OF CONFORMITY (CONT'D)



**DOOSAN BOBCAT EMEA**  
U Kodetky 1810,  
Dobris, 263 12  
Czech Republic  
T: +420 318 532 444

[www.doosanbobcat.com](http://www.doosanbobcat.com)

### Declaration of conformity with Article 14 of Regulation (EU) No 517/2014 of the European Parliament and of the Council

We Doosan Bobcat EMEA s.r.o. with VAT number CZ26489201, acting in its capacity as EU only representative for the import of goods from CLARK EQUIPMENT COMPANY doing business as BOBCAT COMPANY, a corporation organized under the law of the state of Delaware, USA with its registered address located at 250 East Beaton Drive, West Fargo, North Dakota, USA, declare under our sole responsibility that when placing on the market pre-charged equipment, which we import to or manufacture in the Union, the hydrofluorocarbons contained in that equipment are accounted for within the quota system referred to in Chapter IV of Regulation (EU) No 517/2014 as:

A. we hold authorisation(s) issued in accordance with Article 18(2) of Regulation (EU) No 517/2014 and registered in the registry referred to in Article 17 of that Regulation, at the time of release for free circulation to use the quota of a producer or importer of hydrofluorocarbons subject to Article 15 of Regulation (EU) No 517/2014 that cover(s) the quantity of hydrofluorocarbons contained in the equipment.

B. *[for importers of equipment only]* the hydrofluorocarbons contained in the equipment have been placed on the market in the Union, subsequently exported and charged into the equipment outside the Union, and the undertaking that placed the hydrofluorocarbons on the market made a declaration stating that the quantity of hydrofluorocarbons has been or will be reported as placed on the market in the Union and that it has not been and will not be reported as direct supply for export in the meaning of Article 15(2)(c) of Regulation (EU) No 517/2014 pursuant to Article 19 of Regulation (EU) No 517/2014 and Section 5C of the Annex to Commission Implementing Regulation (EU) No 1191/2014 (c).

C. *[for equipment manufactured in the Union only]* the hydrofluorocarbons charged into the equipment were placed on the market by a producer or importer of hydrofluorocarbons subject to Article 15 of Regulation (EU) No 517/2014.

Miguel Mallo Marcos

27th March, 2019

Doosan Bobcat EMEA s.r.o. | Identification No. 264 89 201 | Prague Commercial Register Section C, Entry 85459



**BOBCAT COMPANY IS ISO 9001 CERTIFIED**

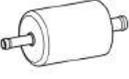
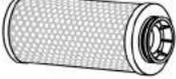


**ISO 9001** is an international standard that specifies requirements for a quality management system that controls the processes and procedures which we use to design, develop, manufacture, and distribute Bobcat products.

British Standards Institute (**BSI**) is the Certified Registrar Bobcat Company chose to assess the company’s compliance with the ISO 9001 at Bobcat’s manufacturing facilities in Gwinner, North Dakota (U.S.A.), Pontchâteau (France), and the Bobcat corporate offices (Gwinner, Bismarck, and West Fargo) in North Dakota. **TÜV Rheinland** is the Certified Registrar Bobcat Company chose to assess the company’s compliance with the ISO 9001 at Bobcat’s manufacturing facility in Dobris (Czech Republic). Only certified assessors, like BSI and TÜV Rheinland, can grant registrations.

ISO 9001 means that as a company we say what we do and do what we say. In other words, we have established procedures and policies, and we provide evidence that the procedures and policies are followed.

**REGULAR MAINTENANCE ITEMS**

 <p><b>ENGINE OIL FILTER</b> 7343102</p>	 <p><b>BATTERY</b> 7306047</p>
 <p><b>FUEL FILTER, Pre-Filter</b> 7348032</p>	 <p><b>HYDRAULIC FILTER</b> 7024037</p>
 <p><b>FUEL FILTER, Main</b> 7336334</p>	 <p><b>HYDRAULIC CHARGE FILTER</b> 7319444</p>
 <p><b>AIR FILTER, Outer</b> 7286322</p>	 <p><b>HYDRAULIC FILL / BREATHER CAP</b> 6727475</p>
 <p><b>AIR FILTER, Inner</b> 7221934</p>	

**NOTE: Always verify Part Numbers with your Bobcat dealer.**

## REGULAR MAINTENANCE ITEMS (CONT'D)

### Fluids, Lubricants And Fuel

The fluids, lubricants and fuel described below are those used in the factory and apply to operating conditions in European temperate climate areas. Please see your Bobcat dealer for requirements in other climate areas.

Read and understand the preventive maintenance required before adding or replacing any fluids or lubricants. (See PREVENTIVE MAINTENANCE on Page 117.)

ENGINE SYSTEMS				
Machine Components	Fluids And Lubricants	T° Range	Packaging**	Part Number
Engine	- Bobcat Engine Power SAE 10W30 CK4 / ACEA E9	-25°C - +30°C	A, B, C, D	7341377*
	- Bobcat Engine Power SAE 15W40 CK4 / ACEA E9	-20°C - +40°C	A, B, C, D	7395725
Cooling Circuit	- Bobcat PG Coolant Concentrated	-36°C	B, C, D	6987813*
	- Bobcat PG Coolant 4 Seasons	-36°C	A, B, C, D	6987793
Fuel Tank	- High-quality diesel fuel that meets EN590 (See FUEL SYSTEM on Page 143.)	-	-	*

HYDRAULIC / HYDROSTATIC SYSTEMS				
Machine Components	Fluids And Lubricants	T° Range	Packaging**	Part Number
Hydraulic Fluid Tank	- Bobcat Superior SH Hydraulic / Hydrostatic	-35°C - +50°C	A, B, C, D	6987791*
	- Bobcat Biodegradable Hydraulic / Hydrostatic	-35°C - +50°C	A, B, C, D	6987792

MECHANICAL SYSTEMS				
Machine Components	Fluids And Lubricants	Drop Point	Packaging**	Part Number
All Mechanical Systems	- Bobcat Multipurpose Grease	From 260°C	E	6987888*
	- Bobcat Supreme HD Grease	From 280°C	E	6987889
	- Bobcat Extreme HP Grease	From 260°C	E	6987890

(\*) Factory Filled Fluids And Lubricants

(\*\*) Packaging Available:

A = 5 L Can

B = 25 L Container

C = 209 L Drum

D = 1000 L Tank

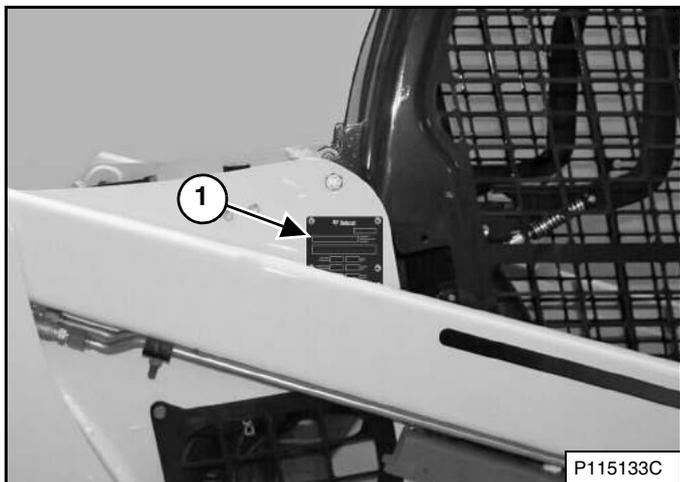
E = 400 g Tube

## SERIAL NUMBER LOCATIONS

Always use the serial number of the loader when requesting service information or when ordering parts. Earlier or later models (identification made by serial number) may use different parts, or there may be different procedures to follow when performing a specific service operation.

### Loader Serial Number

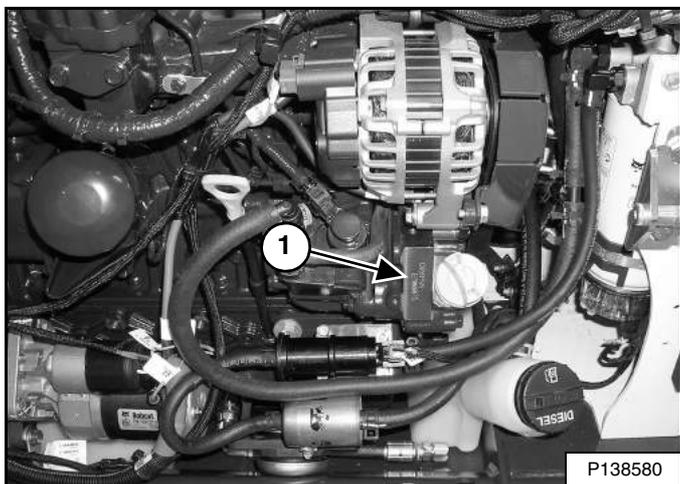
Figure 1



The loader serial number plate (Item 1) [Figure 1] is located on the outside of the loader frame.

### Engine Serial Number

Figure 2



The engine serial number (Item 1) [Figure 2] is located on the side of the engine next to the oil fill cap.

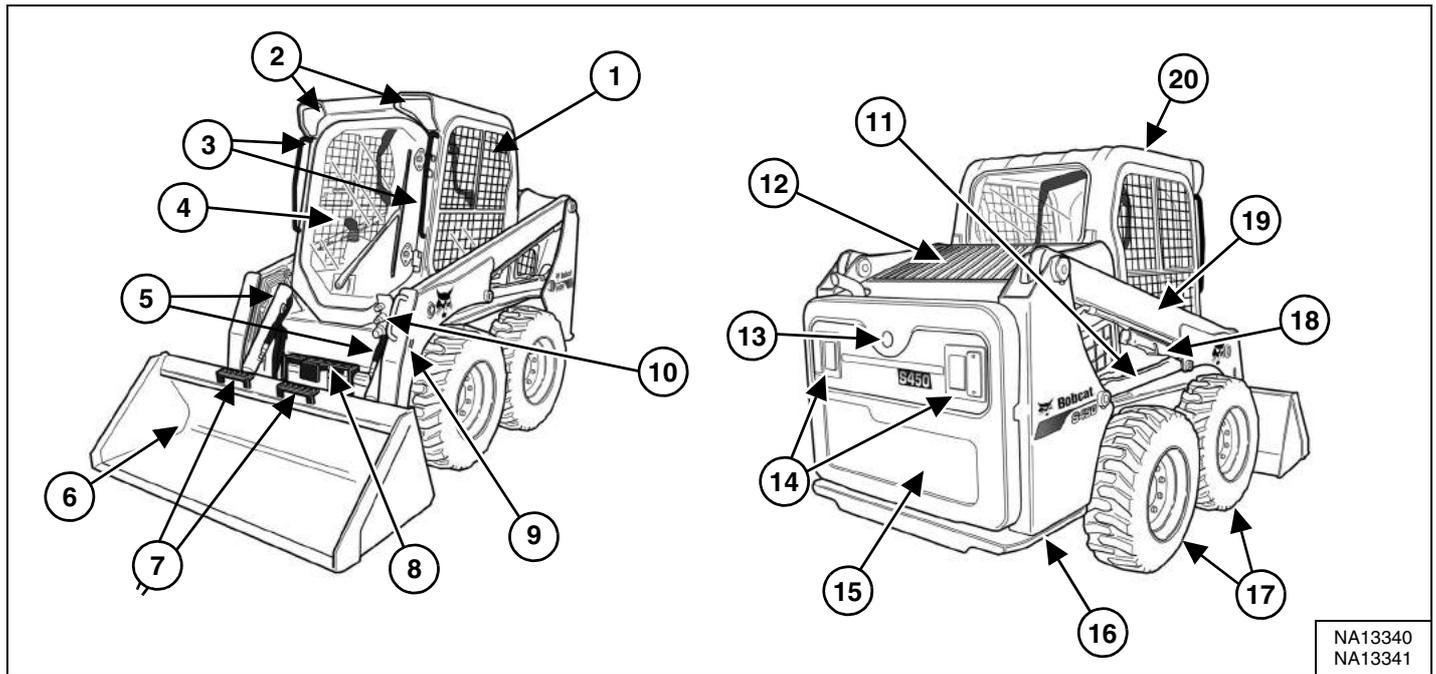
## DELIVERY REPORT

Figure 3

The delivery report [Figure 3] contains a list of items that must be explained or shown to the owner or operator by the dealer when the Bobcat loader is delivered.

The delivery report must be reviewed and signed by the owner or operator and the dealer.

## LOADER IDENTIFICATION



ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	Operation & Maintenance Manual and Operator's Handbook	11	Lift Cylinder (Both Sides)
2	Front Lights	12	Rear Grille
3	Grab Handles	13	Back-up Alarm [D]
4	Operator Seat with Seat Belt and Seat Bar	14	Rear Work Lights and Taillights
5	Tilt Cylinders	15	Rear Door
6	Bucket [A]	16	Rear Tie-down (Both Sides) Front Tie-down located behind Bucket
7	Bucket Steps	17	Tyres [C]
8	Step	18	Lift Arm Support Device
9	Alternate Front Tie-down (Both Sides)	19	Lift Arm
10	Front Auxiliary Quick Couplers	20	Operator Cab (ROPS and FOPS) [B]

[A] Bucket – Several different buckets and other attachments are available for the Bobcat loader.

[B] ROPS – Roll-Over Protective Structure per ISO 3471 and FOPS – Falling-Object Protective Structure per ISO 3449, Level I. Level II is available.

[C] Tyres – Standard tyres are shown. Several different tyre styles and sizes are available for the Bobcat loader.

[D] Optional or Field Accessory, (Not Standard Equipment.)

## FEATURES, ACCESSORIES, AND ATTACHMENTS

### Standard Items

This model S450 Bobcat loader is equipped with the following standard items:

- 36,5 kW Bobcat Engine Turbo Stage V Diesel Engine
- Access Covers
- Adjustable Suspension Seat
- Auxiliary Hydraulics: Variable Flow
- Bobcat Interlock Control System (BICS™)
- Bob-Tach®
- Cab (includes: rear and side windows and polycarbonate top window) ROPS and FOPS (Level I) Approved
- Cab Accessory Harness
- CE Certification
- Controls: Bobcat Standard
- Cylinder Cushioning (Lift and tilt)
- Deluxe Instrumentation Panel with Keyless Start
- Deluxe Interior with Storage Compartments
- DPF Management
- Electronic Engine Speed Control
- Engine / Hydraulic Systems Shutdown
- Front Horn
- Glow Plugs (Automatically activated)
- Instrumentation: Hourmeter, Engine rpm, System Voltage; Engine Temperature and Fuel Gauges; Warning Lights
- Lift Arm Support Device
- Lights: Front and Rear
- Parking Brake
- Seat Bar
- Seat Belt – Retractable
- Sound Reduction Kit (Reduces noise at operator ear)
- Spark Arrester Device
- Tailgate Lock
- Tyres (Bobcat Heavy Duty, 10 – 16.5, 10 PR)

### Options And Accessories

Below is a list of some equipment available from your Bobcat loader dealer as Dealer and / or Factory Installed Accessories and Factory Installed Options. See your Bobcat dealer for other available options and accessories.

- Air Conditioning
- Air Filter Precleaner
- Attachment Control Device (ACD) (7-Pin, 14-Pin)
- Auto Idle (Available only on SJC equipped loaders)
- Automatic Ride Control
- Back-up Alarm
- Cab Door with Emergency Exit
- Cab Heater
- Cab Reseal Plug Kit

### Options And Accessories (Cont'd)

- Controls: Selectable Joystick Controls (SJC)
  - (Selectable 'ISO' or 'H' Pattern Control and Remote Control Ready)
- Counterweight Kit
- Dual Steering Damper
- Engine Block Heater
- Exhaust Guard Kit
- Extended Pedals
- Fire Extinguisher
- FOPS Kit (Level II)
- FOPS Window Kit
- Forestry Door and Window Kit
- Forestry Door Wiper
- Four-Way Flashers (Also adds Turn Signal function)
- Front and Rear Light Guards
- Hose Guide
- Hydraulic Bucket Positioning (With On / Off Selection)
- Hydraulic Muffler
- Lift Kit (Four-Point, Single-Point)
- Maintenance Platform
- Power Bob-Tach®
- Radio
- Rear Auxiliary Hydraulics
- Rear Bumper
- Rear Camera Kit
- Rear Window Wiper
- Reversing Fan
- Road Kit
- Road Option
- Rotating Beacon
- Seat Belt with 3-Point Restraint (Standard on Two-Speed Models)
- Special Applications Kit
- Strobe Light
- Tilt Cylinder Guard Kit
- Tyres:
  - Bobcat Heavy Duty Offset, 7 – 15, 8 PR
  - Bobcat Industrial Flex, 31 x 10 - 20
  - Bobcat Severe Duty, 10 – 16.5, 10 PR
  - Bobcat Solidflex, 31 x 6 x 10
  - Bobcat Standard Duty, 10 – 16.5, 8 PR
  - Bobcat Versatile Duty, 10 – 16.5, 10 PR
- Two-Speed Travel (Available only on SJC equipped loaders)
- Windows:
  - Externally Removable Rear Window
  - Polycarbonate Rear Window
  - Polycarbonate Side Windows

***Specifications subject to change without notice and standard items may vary.***

## FEATURES, ACCESSORIES, AND ATTACHMENTS (CONT'D)

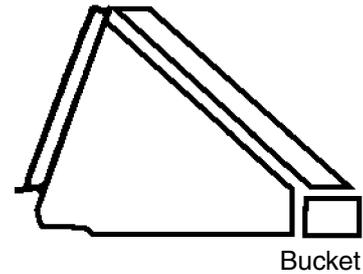
These and other attachments are approved for use on this model loader. Do not use unapproved attachments. Attachments not manufactured by Bobcat may not be approved.

The versatile Bobcat loader quickly turns into a multijob machine with a tight-fit attachment hook-up ... from bucket to grapple to pallet fork to backhoe, and a variety of other attachments.

See your Bobcat dealer for information about approved attachments and attachment Operation & Maintenance Manuals.

Increase the versatility of your Bobcat loader with a variety of bucket styles and sizes.

### Buckets Available



Many bucket styles, widths, and different capacities are available for a variety of different applications. They include Construction and Industrial, Low Profile, Fertiliser, and Snow, to name a few. See your Bobcat dealer for the correct bucket for your Bobcat loader and application.

---

### Attachments

- Angle Broom
- Auger
- Backhoe
- Bale Fork
- Blades – Dozer, Snow, Snow V-Blade
- Breaker, Hydraulic
- Brush Saw
- Brushcat™ Rotary Cutter
- Buckets
- Combination Bucket
- Concrete Mixer
- Digger
- Dumping Hopper
- Flail Cutter
- Grader
- Grapples – Farm / Utility, Industrial, Root
- Landplane
- Landscape Rake
- Packer Wheel
- Pallet Fork
- Planer
- Radio Remote Control
- Rock Bucket
- Scarifier
- Scraper
- Snow Pusher
- Snowblower
- Sod Layer
- Soil Conditioner
- Spreader
- Stabiliser, Rear
- Steel Tracks
- Sweeper
- Tiller
- Tilt-Tatch™
- Trencher
- Utility Fork
- Utility Frame
- Vibratory Roller
- Whisker Broom

## FEATURES, ACCESSORIES, AND ATTACHMENTS (CONT'D)

### Special Applications Kit

# WARNING

### AVOID INJURY OR DEATH

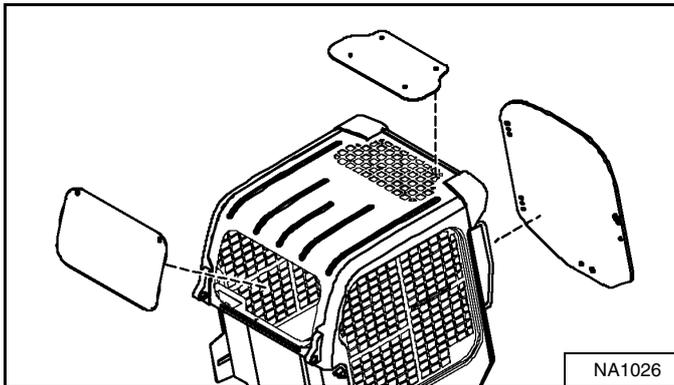
Some attachment applications can cause flying debris or objects to enter front, top or rear cab openings. Install the Special Applications Kit and Top Guard (if applicable) to provide added operator protection in these applications.

W-2737-0917

### Special Applications Kit Inspection And Maintenance

- Inspect for cracks or damage. Replace if required.
- Prerinse with water to remove gritty materials.
- Wash with a mild household detergent and warm water.
- Use a sponge or soft cloth. Rinse well with water and dry with a clean soft cloth or rubber squeegee.
- Do not use abrasive or highly alkaline cleaners.
- Do not clean with metal blades or scrapers.

Figure 4



Available for special applications to restrict material from entering cab openings. Kit includes 12,7 mm (0.5 in) thick polycarbonate front door and polycarbonate rear window [Figure 4].

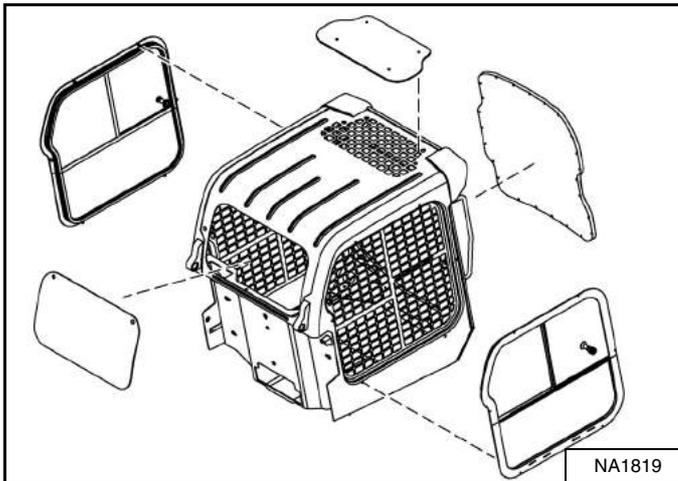
Polycarbonate top window (standard item) must be installed for special applications to restrict material from entering cab openings.

See your Bobcat dealer for availability.

## FEATURES, ACCESSORIES, AND ATTACHMENTS (CONT'D)

### Forestry Door And Window Kit

Figure 5



Available for special applications to prevent flying debris and objects from entering the cab. Kit includes 19,1 mm (0.75 in) thick laminated polycarbonate front door, polycarbonate side windows, and polycarbonate rear window [Figure 5].

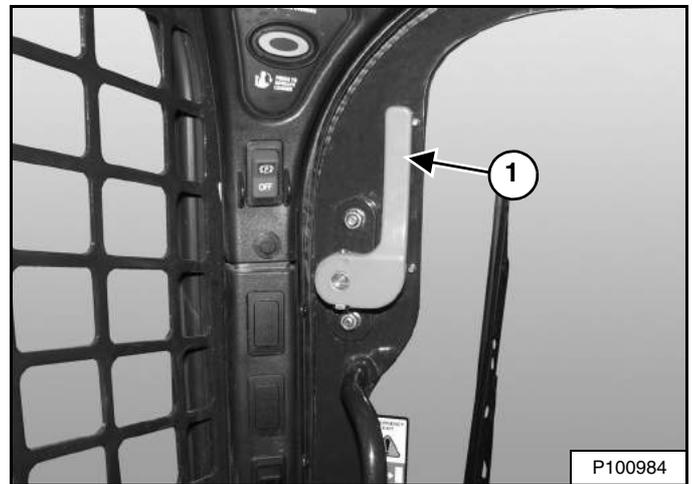
Polycarbonate top window (standard item) must be installed as part of the Forestry Door And Window Kit to restrict material from entering cab openings.

### Forestry Door And Window Kit Inspection And Maintenance

- Inspect for cracks or damage. Replace if required.
- Order part number 7171104 if door frame is damaged and needs to be replaced.
- Order kit part number 7193293 if door polycarbonate is damaged and needs to be replaced.
- Prerinse with water to remove gritty materials.
- Wash with a mild household detergent and warm water.
- Use a sponge or soft cloth. Rinse well with water and dry with a clean soft cloth or rubber squeegee.
- Do not use abrasive or highly alkaline cleaners.
- Do not clean with metal blades or scrapers.

### Forestry Door Emergency Exit

Figure 6



- Inspect both emergency exit levers (Item 1) [Figure 6], linkages, and hardware for loose or damaged parts.
- Repair or replace if necessary.

## SAFETY AND TRAINING RESOURCES

SAFETY INSTRUCTIONS .....	14
Before Operation .....	14
Safe Operation Is The Operator's Responsibility .....	15
Safe Operation Needs A Qualified Operator .....	15
Avoid Silica Dust .....	16
FIRE PREVENTION .....	16
Maintenance .....	16
Operation .....	16
Electrical .....	16
Hydraulic System .....	17
Fueling .....	17
Starting .....	17
Spark Arrester Exhaust System .....	17
Welding And Grinding .....	17
Fire Extinguishers .....	17
PUBLICATIONS AND TRAINING RESOURCES .....	18
MACHINE SIGNS (DECALS) .....	19
Pictorial Only Safety Signs .....	21

## SAFETY INSTRUCTIONS

### Before Operation

Carefully follow the operating and maintenance instructions in this manual.

The Bobcat loader is highly manoeuvrable and compact. It is rugged and useful under a wide variety of conditions. This presents an operator with hazards associated with off motorway, rough terrain applications, common with Bobcat loader usage.

The Bobcat loader has an internal combustion engine with resultant heat and exhaust. All exhaust gases can kill or cause illness so use the Loader with adequate ventilation.

The dealer explains the capabilities and restrictions of the Bobcat loader and attachment for each application. The dealer demonstrates the safe operation according to Bobcat instructional materials, which are also available to operators. The dealer can also identify unsafe modifications or use of unapproved attachments. The attachments and buckets are designed for a Rated Operating Capacity (some have restricted lift heights). They are designed for secure fastening to the Bobcat loader. The user must check with the dealer, or Bobcat literature, to determine safe loads of materials of specified densities for the machine - attachment combination.

The following publications and training materials provide information on the safe use and maintenance of the Bobcat machine and attachments:

- The Delivery Report is used to assure that complete instructions have been given to the new owner and that the machine and attachment is in safe operating condition.
- The Operation & Maintenance Manual delivered with the machine or attachment gives operating information as well as routine maintenance and service procedures. It is a part of the machine and can be stored in a container provided on the machine. Replacement Operation & Maintenance Manuals can be ordered from your Bobcat dealer.
- Machine signs (decals) instruct on the safe operation and care of your Bobcat machine or attachment. The signs and their locations are shown in the Operation & Maintenance Manual. Replacement signs are available from your Bobcat dealer.
- An Operator's Handbook is fastened to the operator cab of the loader. Its brief instructions are convenient to the operator. See your Bobcat dealer for more information on translated versions.

The dealer and owner / operator review the recommended uses of the product when delivered. If the owner / operator will be using the machine for a different application(s) he or she must ask the dealer for recommendations on the new use.

## SAFETY INSTRUCTIONS (CONT'D)

### Safe Operation Is The Operator's Responsibility



Operator must have instructions before operating the machine. Untrained operators can cause injury or death.

W-2001-0502



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

I-2019-0284



The signal word **DANGER** on the machine and in the manuals indicates a hazardous situation which, if not avoided, will result in death or serious injury.

D-1002-1107



The signal word **WARNING** on the machine and in the manuals indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

W-2044-1107

The Bobcat loader and attachment must be in good operating condition before use.

Check all of the items on the Bobcat Service Schedule Decal under the 8-10 hour column or as shown in the Operation & Maintenance Manual.

### Safe Operation Needs A Qualified Operator

For an operator to be qualified, he or she must not use drugs or alcoholic drinks which impair alertness or coordination while working. An operator who is taking prescription drugs must get medical advice to determine if he or she can safely operate a machine.

*A Qualified Operator Must Do The Following:*

*Understand the Written Instructions, Rules and Regulations*

- The written instructions from Bobcat Company include the Delivery Report, Operation & Maintenance Manual, Operator's Handbook and machine signs (decals).
- Check the rules and regulations at your location. The rules may include an employer's work safety requirements. For driving on public roads, the machine must be equipped as stipulated by the local regulations authorising operation on public roads in your specific country. Regulations may identify a hazard such as a utility line.

*Have Training with Actual Operation*

- Operator training must consist of a demonstration and verbal instruction. This training is given by your Bobcat dealer before the product is delivered.
- The new operator must start in an area without bystanders and use all the controls until he or she can operate the machine and attachment safely under all conditions of the work area. Always fasten seat belt before operating.

*Know the Work Conditions*

- Know the weight of the materials being handled. Avoid exceeding the Rated Operating Capacity (ROC) of the machine. Material which is very dense will be heavier than the same volume of less dense material. Reduce the size of the load if handling dense material.
- The operator must know any prohibited uses or work areas, for example, he or she needs to know about excessive slopes.
- Know the location of any underground lines.
- Wear tight fitting clothing. Always wear safety glasses when doing maintenance or service. Safety glasses, respiratory equipment, hearing protection or Special Applications Kits are required for some work. See your Bobcat dealer about Bobcat Safety Equipment for your model.

SI SSL EMEA-0913

## SAFETY INSTRUCTIONS (CONT'D)

### Avoid Silica Dust



Cutting or drilling concrete containing sand or rock containing quartz may result in exposure to silica dust. Use a respirator, water spray or other means to control dust.

## FIRE PREVENTION



### Maintenance

The machine and some attachments have components that are at high temperatures 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.

Flammable debris (leaves, straw, etc.) must be removed regularly. If flammable debris is allowed to accumulate, it can cause a fire hazard. Clean often to avoid this accumulation. Flammable debris in the engine compartment is a potential fire hazard.

The operator's area, engine compartment and engine cooling system must be inspected every day and cleaned if necessary to prevent fire hazards and overheating.

All fuels, most lubricants and some coolants mixtures are flammable. Flammable fluids that are leaking or spilled onto hot surfaces or onto electrical components can cause a fire.

### Operation

Do not use the machine where exhaust, arcs, sparks or hot components can contact flammable material, explosive dust or gases.

### Electrical



Check all electrical wiring and connections for damage. Keep the battery terminals clean and tight. Repair or replace any damaged part or wires that are loose or frayed.

Battery gas can explode and cause serious injury. Use the procedure in the Operation & Maintenance Manual for connecting the battery and for jump starting. Do not jump start or charge a frozen or damaged battery. Keep any open flames or sparks away from batteries. Do not smoke in battery charging area.

SI SSL EMEA-0913

## FIRE PREVENTION (CONT'D)

### Hydraulic System

Check hydraulic tubes, hoses and fittings for damage and leakage. Never use open flame or bare skin to check for leaks. Hydraulic tubes and hoses must be properly routed and have adequate support and secure clamps. Tighten or replace any parts that show leakage.

Always clean fluid spills. Do not use petrol or diesel fuel for cleaning parts. Use commercial non-flammable solvents.

### Fueling



Stop the engine and let it cool before adding fuel. No smoking! Do not refuel a machine near open flames or sparks. Fill the fuel tank outdoors.

Ultra Low Sulfur Diesel (ULSD) poses a greater static ignition hazard than earlier diesel formulations with higher Sulfur content. Avoid death or serious injury from fire or explosion. Consult with your fuel or fuel system supplier to ensure the delivery system is in compliance with fueling standards for proper grounding and bonding practices.

### Starting

Do not use ether or starting fluids on any engine that has glow plugs or air intake heater. These starting aids can cause explosion and injure you or bystanders.

Use the procedure in the Operation & Maintenance Manual for connecting the battery and for jump starting.

### Spark Arrester Exhaust System

The spark arrester exhaust system 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.

Check the spark arrester exhaust system regularly to make sure it is maintained and working properly. Use the procedure in the Operation & Maintenance Manual for cleaning the spark arrester muffler (if equipped).

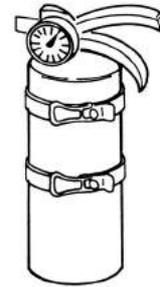
### Welding And Grinding

Always clean the machine and attachment, disconnect the battery, and disconnect the wiring from the Bobcat controllers before welding. Cover rubber hoses, battery and all other flammable parts. Keep a fire extinguisher near the machine when welding.

Have good ventilation when grinding or welding painted parts. Wear dust mask when grinding painted parts. Toxic dust or gas can be produced.

Dust generated from repairing non-metallic parts such as hoods, fenders or covers can be flammable or explosive. Repair such components in a well ventilated area away from open flames or sparks.

### Fire Extinguishers

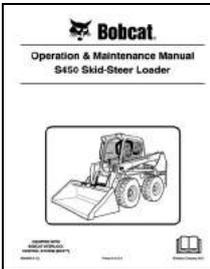


Know where fire extinguishers and first aid kits are located and how to use them. Inspect the fire extinguisher and service the fire extinguisher regularly. Obey the recommendations on the instructions plate.

## PUBLICATIONS AND TRAINING RESOURCES

The following publications are also available for your Bobcat loader. You can order them from your Bobcat dealer.

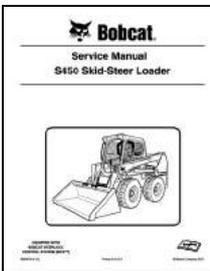
For the latest information on Bobcat products and the Bobcat Company, visit our website at **Bobcat.com**



### OPERATION & MAINTENANCE MANUAL

7397846enGB

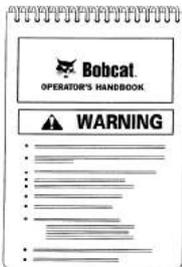
Complete instructions on the correct operation and the routine maintenance of your Bobcat loader.



### SERVICE MANUAL

7397845enUS

Complete maintenance instructions for your Bobcat loader.



### OPERATOR'S HANDBOOK

7398585enGB

Gives basic operation instructions and safety warnings.

# MACHINE SIGNS (DECALS)

Follow the instructions on all the Machine Signs (Decals) that are on the loader. Replace any damaged machine signs and be sure they are in the correct locations. Machine signs are available from your Bobcat loader dealer.

1 7168038

2 Standard 7168141

3 3-Point Restraint 7184346  
Inside Cab

4 SJC 7168081 SJC 7168082

5 SJC 7168143

6 SJC 7177707

7 Standard 7371292

8 Back-up Alarm 7180087

9 7168037

10 7168034

11 7168040

12 7168033

13 Single-Point Lift 7168022 (2) Single-Point Lift 7142142 (2)

14 Four-Point Lift 7168040 Four-Point Lift 7168020  
Lift Kit Options

Door Gas Spring 7170360

Door Gas Spring 7169291

Door 7168025

Rear Window with Latches 7167991

Standard 7398585enGB

Standard 7168137

SJC 7168145

ISO 7168081

H 7168081

ISO 7168082

H 7168082

SJC 7400955

Door Gas Spring 7170360

Door Gas Spring 7169291

Standard 7168273

Standard 7168141

9 7168037

7173403 (Behind Bob-Tach)

10 7168034

11 7168040

12 7168033

13 Single-Point Lift 7168022 (2) Single-Point Lift 7142142 (2)

14 Four-Point Lift 7168040 Four-Point Lift 7168020  
Lift Kit Options

7168031

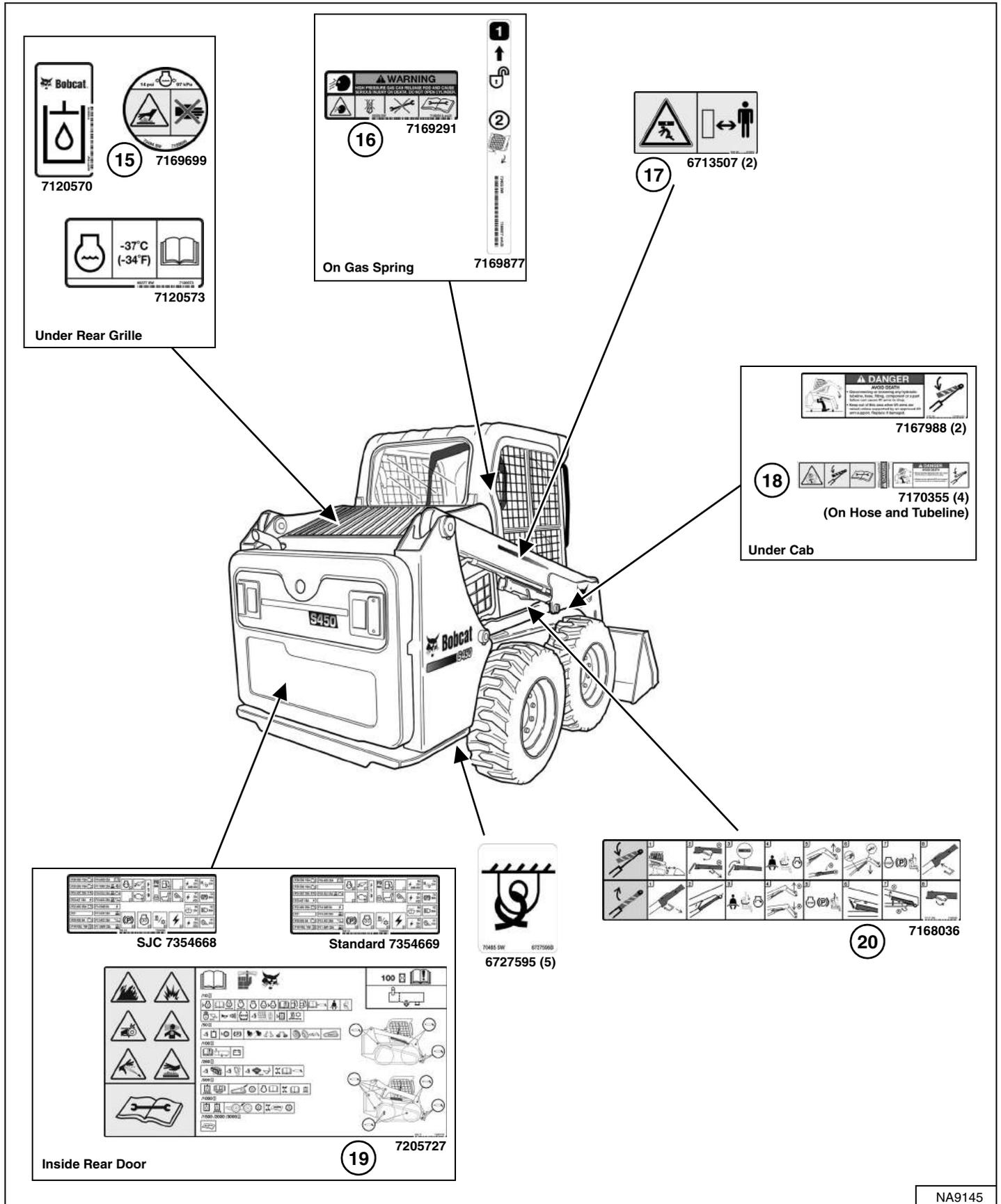
7265935

99 dB

NA9144

## MACHINE SIGNS (DECALS) (CONT'D)

Follow the instructions on all the Machine Signs (Decals) that are on the loader. Replace any damaged machine signs and be sure they are in the correct locations. Machine signs are available from your Bobcat loader dealer.



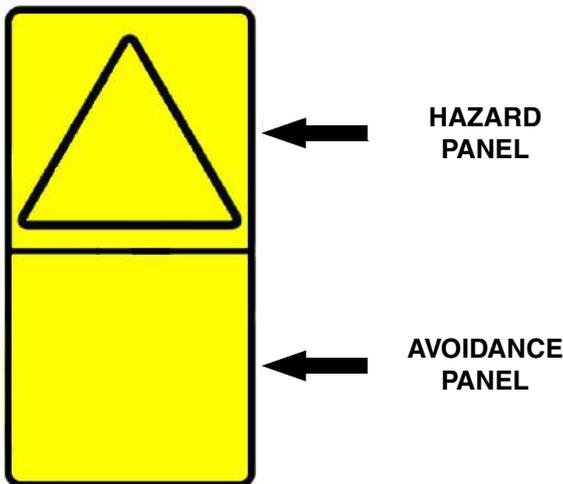
NA9145

## MACHINE SIGNS (DECALS) (CONT'D)

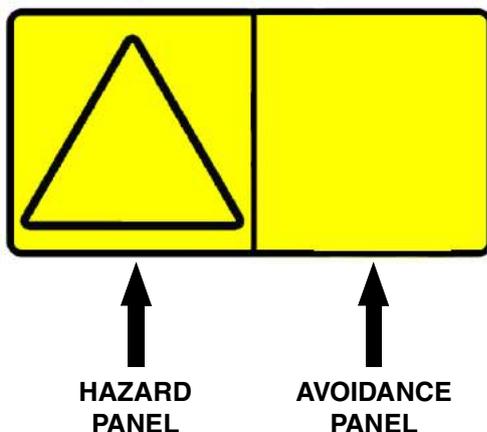
### Pictorial Only Safety Signs

Safety signs are used to alert the equipment operator or maintenance person to hazards that may be encountered in the use and maintenance of the equipment. The location and description of the safety signs are detailed in this section. Please become familiarised with all safety signs installed on the machine / attachment.

#### Vertical Configuration



#### Horizontal Configuration



The format consists of the hazard panel(s) and the avoidance panel(s):

Hazard panels depict a potential hazard enclosed in a safety alert triangle.

Avoidance panels depict actions required to avoid the hazards.

A safety sign may contain more than one hazard panel and more than one avoidance panel.

**NOTE: See the numbered MACHINE SIGNS (DECALS) on Page 19 and MACHINE SIGNS (DECALS) (CONT'D) on Page 20 for the machine location of each correspondingly numbered pictorial only decal.**

#### 1. General Hazard Warning (7168038)

This safety sign is located in the operator cab in the lower right hand corner.



#### AVOID INJURY OR DEATH

**Never use the loader without instructions. Read Operation & Maintenance Manual and Handbook.**

**Never modify equipment or use attachments not approved by Bobcat Company.**

**On slopes, keep heavy end of loader uphill.**

**Do not travel or turn with lift arms up. Load, unload and turn on flat level ground. Do not exceed Rated Operating Capacity (see sign on loader).**

W-2837-0310

## MACHINE SIGNS (DECALS) (CONT'D)

### Pictorial Only Safety Signs (Cont'd)

#### 2. To Leave the Loader (7168141)

This safety sign is located in the operator cab in the lower right hand corner.



**AVOID INJURY OR DEATH**

#### TO LEAVE THE LOADER:

1. Lower the lift arms and put attachment flat on the ground.
2. Stop the engine.
3. Engage the brake.
4. Raise seat bar.
5. Move pedals and hand controls until both lock.
6. Exit the loader.

W-2838-0310

#### 3. High Range Speeds (7184346)

This safety sign is located in the operator cab on loaders equipped with a seat belt with 3-point restraint.



**HITTING OBSTRUCTIONS AT HIGH RANGE SPEEDS  
CAN CAUSE SERIOUS INJURY OR DEATH**  
Fasten shoulder belt for additional restraint when  
operating at high range speeds.

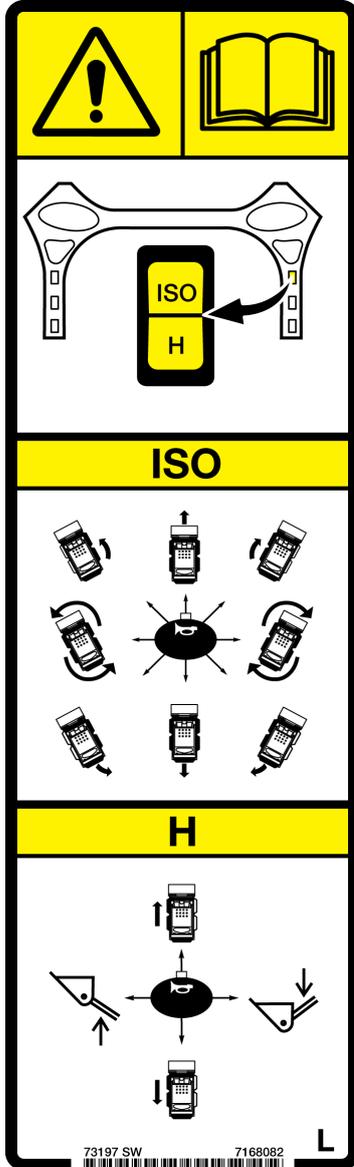
W-2754-0908

**MACHINE SIGNS (DECALS) (CONT'D)**

**Pictorial Only Safety Signs (Cont'd)**

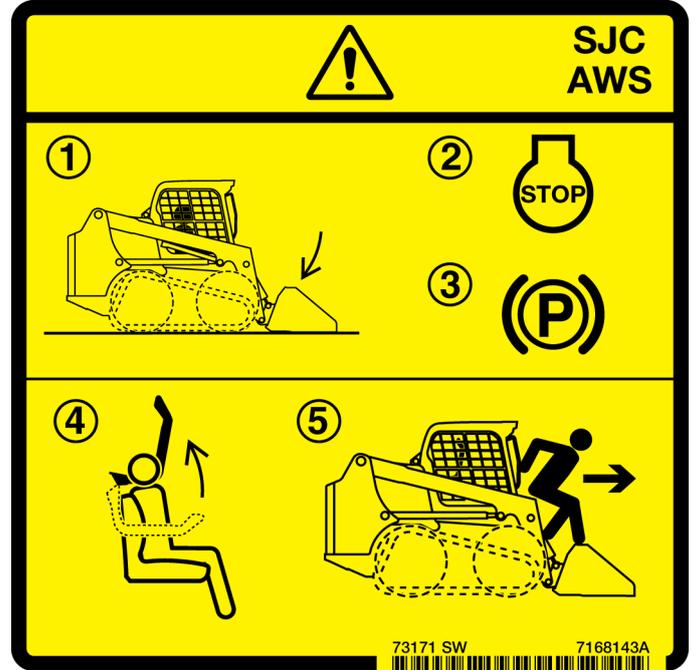
**4. SJC Left Hand Joystick (7168082)**

This safety sign is located in the operator cab on the left armrest.



**5. To Leave the Loader (7168143)**

This safety sign is located in the operator cab in the lower right hand corner.



**AVOID INJURY OR DEATH**

**TO LEAVE THE LOADER:**

1. Lower the lift arms and put attachment flat on the ground.
2. Stop the engine.
3. Engage the brake.
4. Raise seat bar.
5. Exit the loader.

W-2839-0310



**ACCIDENTAL LOADER MOVEMENT CAN CAUSE SERIOUS INJURY OR DEATH**

Read and understand the Operation & Maintenance Manual for more information.

- Drive, lift arm and tilt functions operate on different joysticks in each control mode.
- Know and understand the selected control mode before operating.

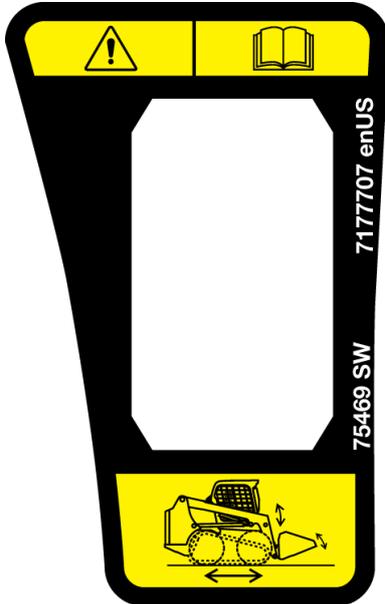
W-2788-0309

## MACHINE SIGNS (DECALS) (CONT'D)

### Pictorial Only Safety Signs (Cont'd)

#### 6. SJC Control Pattern Switch (7177707)

This safety sign is located in the operator cab around the SJC control pattern switch on the right panel.



**ACCIDENTAL LOADER MOVEMENT CAN CAUSE  
SERIOUS INJURY OR DEATH**

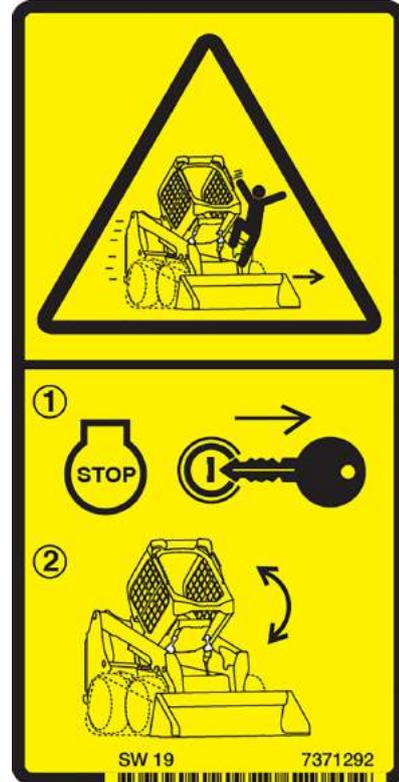
Read and understand the Operation & Maintenance Manual for more information.

- Drive, lift arm and tilt functions operate on different joysticks in each control mode.
- Know and understand the selected control mode before operating.

W-2788-0309

#### 7. Unexpected Loader, Lift Arm or Attachment Movement (7371292)

This safety sign is located in the operator cab on the left side of the seat.



**UNEXPECTED LOADER, LIFT ARM OR ATTACHMENT  
MOVEMENT CAUSED BY CAB CONTACT WITH  
CONTROLS CAN CAUSE SERIOUS  
INJURY OR DEATH**

- STOP ENGINE before raising or lowering cab.

W-2758-0908

**MACHINE SIGNS (DECALS) (CONT'D)**

**Pictorial Only Safety Signs (Cont'd)**

**8. Back-Up Alarm (7180087)**

This safety sign is located in the operator cab on the lower left side.



**9. Tipping, Rollover or Loss of Visibility (7168037)**

This safety sign is located on the back side of the lift arms facing the operator.



**TIPPING, ROLLOVER OR LOSS OF VISIBILITY CAN  
CAUSE SERIOUS INJURY OR DEATH**  
Carry load low.

W-2836-0310



**AVOID INJURY OR DEATH**

- Always keep bystanders away from the work area and travel path.
- The operator must maintain a clear view of the direction of travel and look before and during machine movement.
- The back-up alarm must sound when operating the machine in the reverse direction.

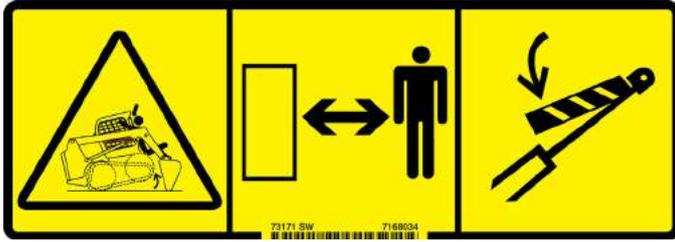
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**MACHINE SIGNS (DECALS) (CONT'D)**

**Pictorial Only Safety Signs (Cont'd)**

**10. Frame Raising (7168034)**

This safety sign is located on the front of the loader.



**AVOID DEATH**

Attachment can be forced against the ground and cause front frame to raise.

Never go under or reach under lift arms or lift cylinder without an approved lift arm support device installed.

D-1021-0310

**11. Falling Hazard (7168040)**

This safety sign is located on the front of the loader.



**AVOID INJURY OR DEATH**

- Never carry riders.
- Never use loader as a man lift or work platform.

W-2835-0310

## MACHINE SIGNS (DECALS) (CONT'D)

### Pictorial Only Safety Signs (Cont'd)

#### 12. Lift Arm Crushing (7168033)

This safety sign is located on the front of the loader.



#### AVOID DEATH

Keep out of this area when lift arms are raised unless supported by an approved lift arm support device.

Moving lift arm control or failure of a part can cause lift arms to drop.

D-1020-0310

#### 13. Single-Point Lift (7142142)

This safety sign is located on the side arm of the single-point lift.



FAILURE OF THE LIFT ASSEMBLY CAN CAUSE  
SERIOUS INJURY OR DEATH

#### BEFORE LIFTING LOADER:

1. Check the hardware and fasteners of the Single Point Lift and Operator Cab (ROPS) for proper torque.
2. Inspect Single Point Lift for damage or cracked welds. Repair or replace components as necessary.

- No riders on loader during lifting. Keep 5 m (15 ft) away while lifting.
- See Operation & Maintenance Manual for more information.

W-2841-0910

## MACHINE SIGNS (DECALS) (CONT'D)

### Pictorial Only Safety Signs (Cont'd)

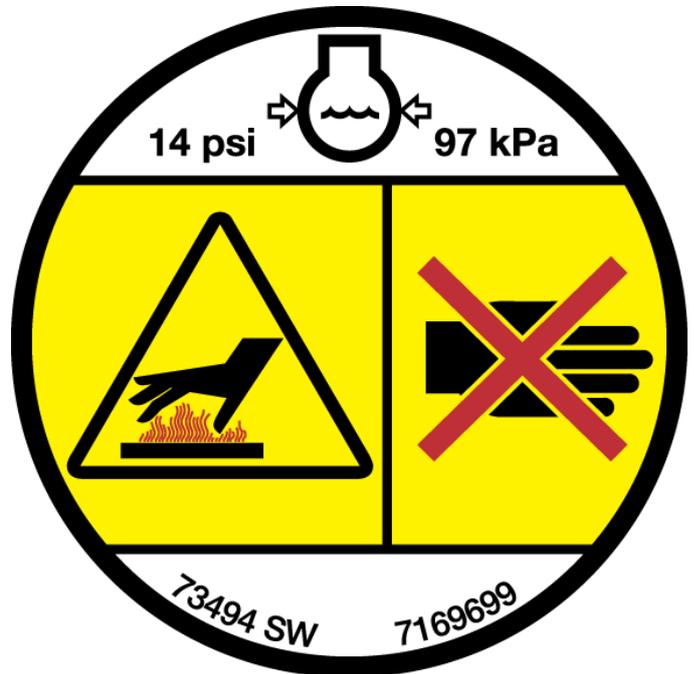
#### 14. Four-Point Lift (7168020)

This safety sign is located on the front of the loader.



#### 15. Hot Pressurised Fluid (7169699)

This safety sign is located on the engine coolant tank cap.



**HOT PRESSURISED FLUID CAN CAUSE  
SERIOUS BURNS**

- Never open hot.
- OPEN SLOWLY.

W-2755-EN-0909



**FAILURE OF THE LIFT ASSEMBLY CAN CAUSE  
SERIOUS INJURY OR DEATH**

#### BEFORE LIFTING LOADER:

1. Check the hardware and fasteners at all lift points for proper torque.
  2. Inspect lift points for damage or cracked welds. Repair or replace components as necessary.
- No riders on loader and keep 5 m (15 ft) away while lifting.
  - See Operation & Maintenance Manual for more information.

W-2840-0910

**MACHINE SIGNS (DECALS) (CONT'D)**

**Pictorial Only Safety Signs (Cont'd)**

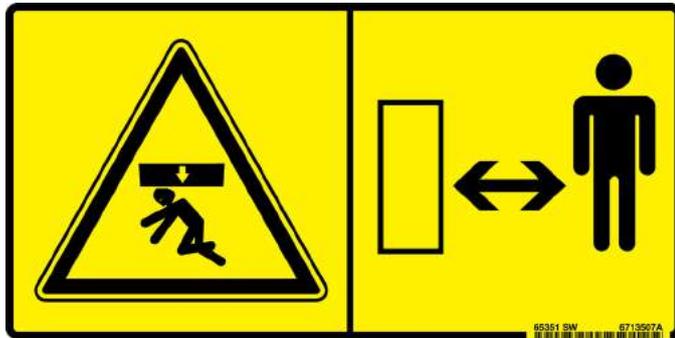
**16. High Pressure Gas (7169291)**

This safety sign is located on the gas spring component(s) supporting the cab and on the front door option.



**17. Crush Hazard (6713507)**

This safety sign is located on the side of each lift arm.



**18. Lift Arm Crushing (7170355)**

This safety sign is located on certain hoses or tubelines inside the loader frame underneath the operator cab.

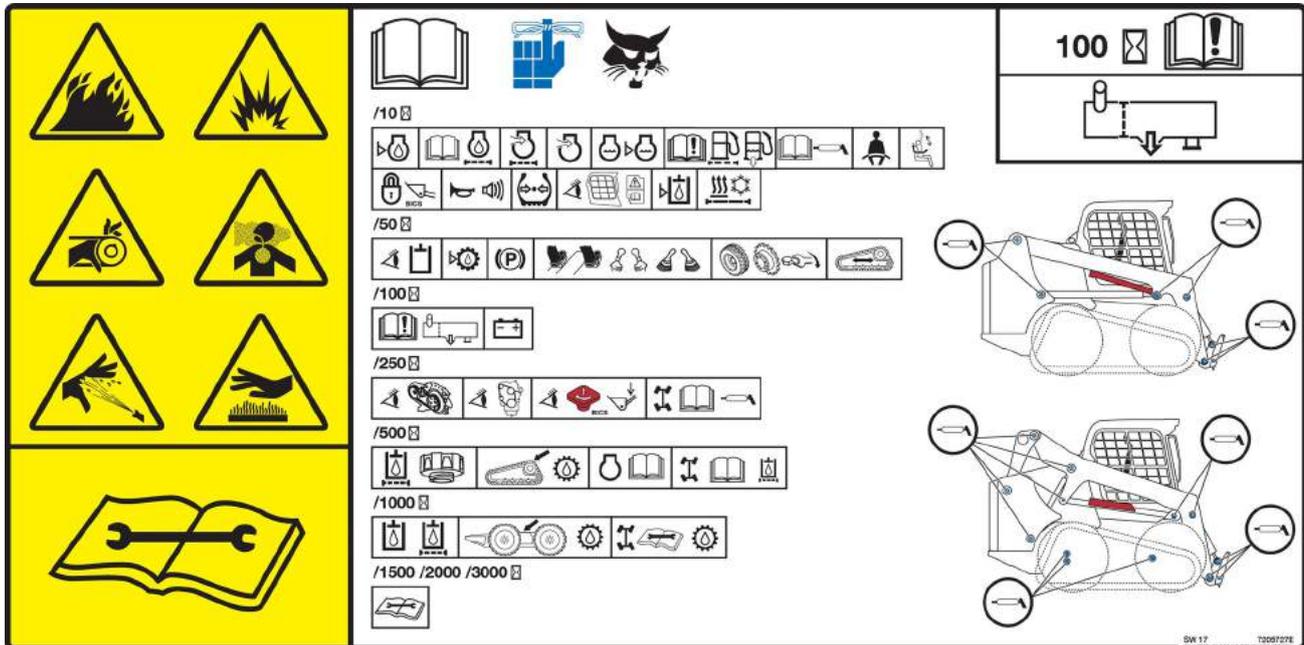


## MACHINE SIGNS (DECALS) (CONT'D)

### Pictorial Only Safety Signs (Cont'd)

#### 19. Service Checklist And Schedule (7205727)

This safety sign is located inside the rear door (tailgate).



## ! WARNING

### AVOID INJURY OR DEATH

- Keep door / cover closed except for service.
- Keep engine clean of flammable material.
- Keep body, loose objects and clothing away from electrical contacts, moving parts, hot parts and exhaust.
- Do not use the machine in space with explosive dusts or gases or with flammable material near exhaust.
- Never use ether or starting fluid on diesel engine with glow plugs or air intake heater. Use only starting aids as approved by engine manufacturer.
- Leaking fluids under pressure can enter skin and cause serious injury.
- Battery acid causes severe burns; wear goggles. If acid contacts eyes, skin, or clothing, flush with water. For contact with eyes, flush and get medical attention.
- Battery makes flammable and explosive gas. Keep arcs, sparks, flames and lighted tobacco away.
- For jump start, connect negative cable to the machine engine last (never at the battery). After jump start, remove negative connection at the engine first.
- Exhaust gases can kill. Always ventilate.

W-2782-0409

## IMPORTANT

This machine is factory equipped with a spark arrester exhaust system that must be maintained for proper function.

- **WITH MUFFLER**  
The muffler chamber must be emptied every 100 hours of operation to keep it in working condition.
- **WITH SELECTIVE CATALYST REDUCTION (SCR) AND / OR DIESEL OXIDATION CATALYST (DOC)**  
Do not remove or modify the DOC or SCR.  
  
The SCR must be maintained according to the instructions in the Operation & Maintenance Manual for proper function.
- **WITH DIESEL PARTICULATE FILTER (DPF)**  
The DPF must be maintained according to the instructions in the Operation & Maintenance Manual for proper function.

(If this machine is operated on flammable forest, brush or grass cover land, a spark arrester attached to the exhaust system may be required and must be maintained in working order. Refer to local laws and regulations for spark arrester requirements.)

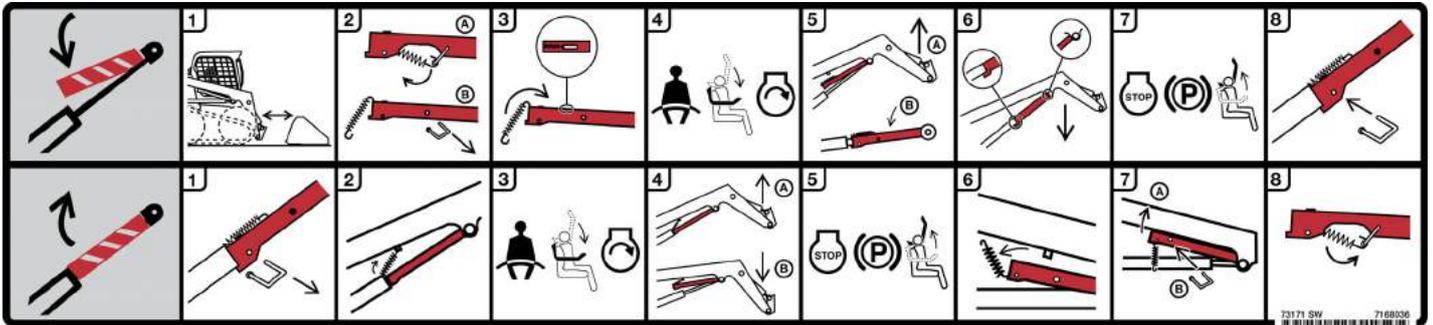
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## MACHINE SIGNS (DECALS) (CONT'D)

### Pictorial Only Safety Signs (Cont'd)

#### 20. Lift Arm Support Device (7168036)

This safety sign is located on the outside of the operator cab on the lower right side.



#### *To Engage Lift Arm Support Device:*

1. Remove attachment from loader.
2. Unhook spring from pin. Hold lift arm support device. Remove pin. Lower the lift arm support device to the top of the cylinder.
3. Hook spring into slot on top of lift arm support device.
4. Enter loader, fasten seat belt, lower seat bar, and start engine.
5. Raise lift arms until lift arm support device drops on cylinder rod.
6. Lower lift arms slowly until movement stops.
7. Stop engine. Raise seat bar. Move pedals until both pedals lock. Leave loader.
8. Install pin into rear of lift arm support device below cylinder rod.

#### *To Disengage Lift Arm Support Device:*

1. Remove pin.
2. Hook spring into bracket below lift arm.
3. Enter loader, fasten seat belt, lower seat bar, and start engine.
4. Raise lift arms until lift arm support device raises off cylinder rod. Lower lift arms.
5. Stop engine. Raise seat bar. Move pedals until both pedals lock. Leave loader.
6. Unhook spring from bracket.
7. Raise lift arm support device to storage position. Insert pin through lift arm support device and bracket.
8. Hook spring to pin.

**NOTE:** More illustrated and detailed information regarding Installing and Removing the lift arm support device is located in this manual. (See LIFT ARM SUPPORT DEVICE on Page 128.)

# OPERATING INSTRUCTIONS

INTENDED USE .....	36
INSTRUMENT PANEL IDENTIFICATION .....	37
Overview .....	37
Left Panel .....	38
Display Screen .....	40
Right Panel .....	41
Left Switch Panel .....	43
Right Switch Panel .....	43
Left Side Lower Panel .....	44
Right Side Lower Panel .....	44
Radio .....	45
Rear View Camera System .....	47
CONTROL IDENTIFICATION .....	49
Description .....	49
Standard Controls .....	49
Selectable Joystick Controls (SJC) .....	50
OPERATOR CAB .....	51
Description .....	51
Side Windows .....	51
Door Operation .....	51
Front Wiper .....	52
Cab Light .....	52
BOBCAT INTERLOCK CONTROL SYSTEM (BICS™) .....	53
Description .....	53
Operation .....	53
SEAT BAR RESTRAINT SYSTEM .....	54
Description .....	54
Operation .....	54
DIESEL PARTICULATE FILTER (DPF) SYSTEM .....	55
Description .....	55
DPF Icons .....	55
DPF Regeneration Tables .....	56
Automatic Regeneration Operation .....	57
Forced Regeneration Operation .....	58
Forced Parked Regeneration Operation .....	59
Inhibit Mode Operation .....	60
PARKING BRAKE .....	61
Operation .....	61
TRACTION LOCK OVERRIDE .....	61
Description .....	61
Operation .....	61

ENGINE SPEED CONTROL .....	62
Operation .....	62
AUTO IDLE .....	62
Description .....	62
Operation .....	62
LIFT ARM BYPASS CONTROL .....	63
Description .....	63
Operation .....	63
EMERGENCY EXIT .....	64
Rear Window Identification .....	64
Rear Window Removal (Latches) .....	64
Rear Window Removal (Rubber Cord) .....	64
External Access (Rear Window With Latches) .....	65
External Access (Rear Window With Rubber Cord) .....	65
Front Door .....	65
BACK-UP ALARM SYSTEM .....	67
Description .....	67
Operation .....	67
DRIVING AND STEERING THE LOADER .....	68
Available Control Configurations .....	68
Operation (Standard) .....	68
Operation (SJC) In 'ISO' Control Pattern .....	69
Operation (SJC) In 'H' Control Pattern .....	70
STOPPING THE LOADER .....	71
Using The Control Levers Or Joysticks .....	71
TWO-SPEED CONTROL .....	72
Description .....	72
Operation .....	72
SPEED MANAGEMENT .....	73
Description .....	73
Operation .....	73
Changing The Factory Default Setting .....	74
DRIVE RESPONSE .....	75
Description .....	75
Operation .....	75
STEERING DRIFT COMPENSATION .....	77
Description .....	77
Operation .....	77
LIFT AND TILT COMPENSATION .....	79
Description .....	79
Operation .....	79

HYDRAULIC CONTROLS .....	81
Description .....	81
Standard Controls .....	81
Selectable Joystick Controls (SJC) In 'ISO' Control Pattern .....	82
Selectable Joystick Controls (SJC) In 'H' Control Pattern .....	82
Hydraulic Bucket Positioning .....	83
Automatic Ride Control .....	84
Reversing Fan .....	85
FRONT Auxiliary Hydraulics Operation .....	86
FRONT Auxiliary Hydraulics Operation (CONTINUOUS FLOW) .....	87
FRONT Auxiliary Hydraulics Operation (REVERSE CONTINUOUS FLOW) .....	87
REAR Auxiliary Hydraulics Operation .....	88
Quick Couplers .....	89
Quick Coupler Troubleshooting .....	89
Relieve Auxiliary Hydraulic Pressure (Loader And Attachment) .....	90
ATTACHMENT CONTROL DEVICE (ACD) .....	91
Description .....	91
DAILY INSPECTION .....	92
Daily Inspection And Maintenance .....	92
PRE-STARTING PROCEDURE .....	94
Entering The Loader .....	94
Operation & Maintenance Manual And Operator's Handbook Locations .....	94
Seat Adjustment .....	95
Seat Belt Adjustment .....	97
Seat Bar .....	98
Joystick Position Adjustment .....	98
STARTING THE ENGINE .....	99
Deluxe Instrumentation Panel .....	99
Warming The Hydraulic / Hydrostatic System .....	101
Cold Temperature Starting .....	101
MONITORING THE DISPLAY PANELS .....	102
Left Panel .....	102
Warning And Shutdown .....	102
STOPPING THE ENGINE AND LEAVING THE LOADER .....	103
Procedure .....	103
COUNTERWEIGHTS .....	104
Description .....	104
Effect On The Loader And Loader Operation .....	104
When To Consider Using Counterweights .....	104
When To Consider Removing Counterweights .....	104
Accessories That Affect Machine Weight .....	104

ATTACHMENTS .....	105
Choosing The Correct Bucket .....	105
Pallet Fork .....	105
Installing And Removing The Attachment (Hand Lever Bob-Tach) .....	106
Installing And Removing The Attachment (Power Bob-Tach) .....	109
OPERATING PROCEDURE .....	112
Inspect The Work Area .....	112
Basic Operating Instructions .....	112
Driving On Public Roads .....	112
Operating With A Full Bucket .....	113
Operating With An Empty Bucket .....	113
TOWING THE LOADER .....	114
Procedure .....	114
LIFTING THE LOADER .....	114
Single-Point Lift .....	114
Four-Point Lift .....	115
TRANSPORTING THE LOADER ON A TRAILER .....	116
Loading And Unloading .....	116
Fastening .....	116

## INTENDED USE

This machine is classified as a Skid-Steer Loader as defined in ISO 6165. This machine has wheels or tracks and commonly a front mounted bucket for the principle intended functions of digging, moving, levelling, lifting, carrying, and loading loose materials such as earth, gravel, or crushed rock.

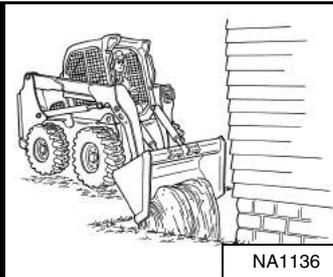
Additional Bobcat approved attachments allow this machine to perform other tasks described in the attachment Operation & Maintenance Manuals.

Examples of intended use include:

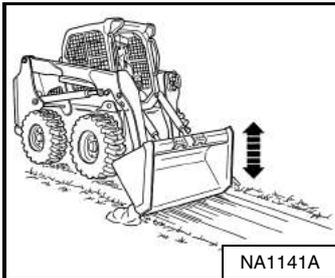
**Digging**



**Backfilling**



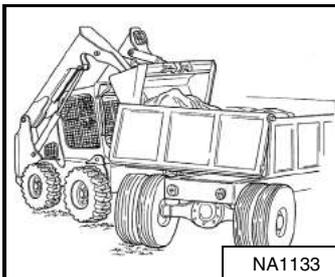
**Leveling**



**Piling Material**



**Loading Material**



**Moving Palletised Loads**



## **WARNING**

Load, unload and turn on flat level ground. Do not exceed Rated Operating Capacity (ROC) shown on sign (decal) in cab. Failure to obey warnings can cause the machine to tip or rollover and cause injury or death.

W-2056-1112

## **WARNING**

Never dump over an obstruction, such as a post, that can enter the operator cab. The machine could tip forward and cause injury or death.

W-2057-0694

## **IMPORTANT**

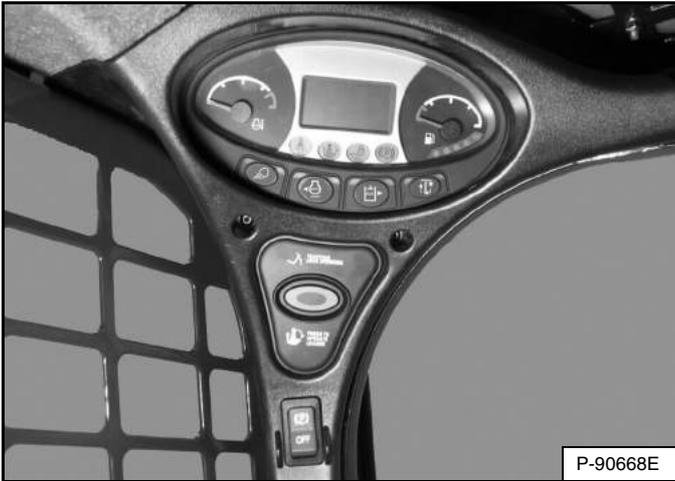
Never drive forward when the hydraulic control for lift arms is in float position.

I-2005-1285

# INSTRUMENT PANEL IDENTIFICATION

## Overview

Figure 7



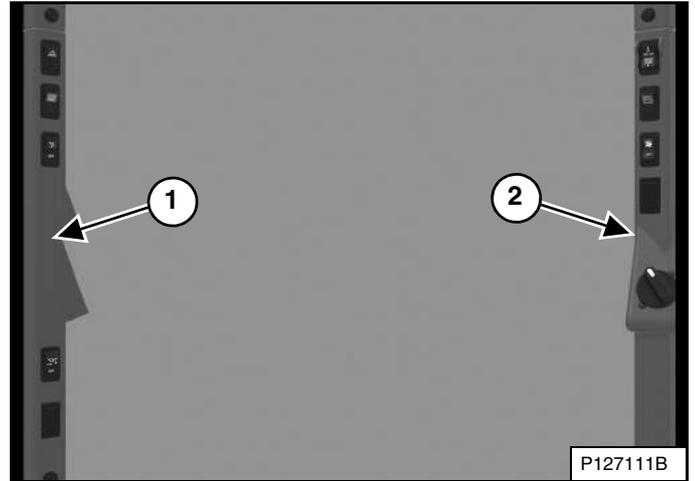
The left panel [Figure 7] is described in more detail. (See Left Panel on Page 38.)

Figure 8



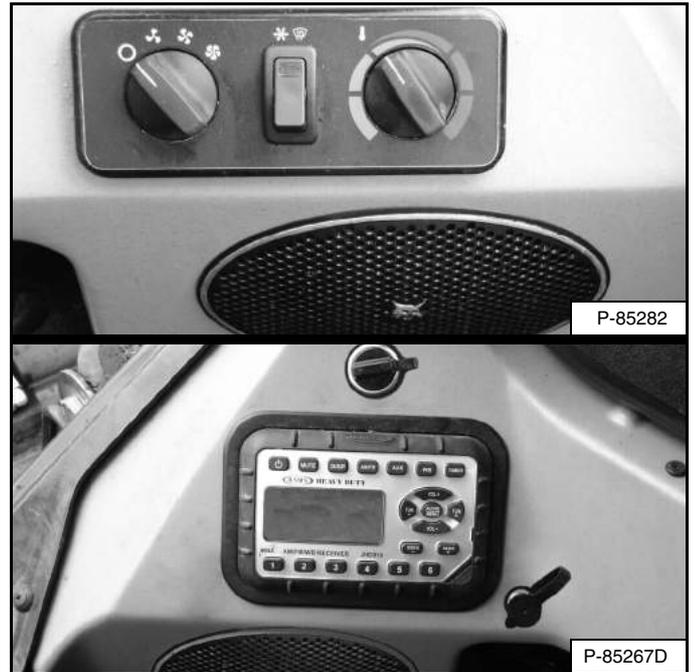
The right panel [Figure 8] is described in more detail. (See Right Panel on Page 41.)

Figure 9



The left (Item 1) and right (Item 2) [Figure 9] switch panels are described in more detail. (See Left Switch Panel on Page 43.) and (See Right Switch Panel on Page 43.).

Figure 10

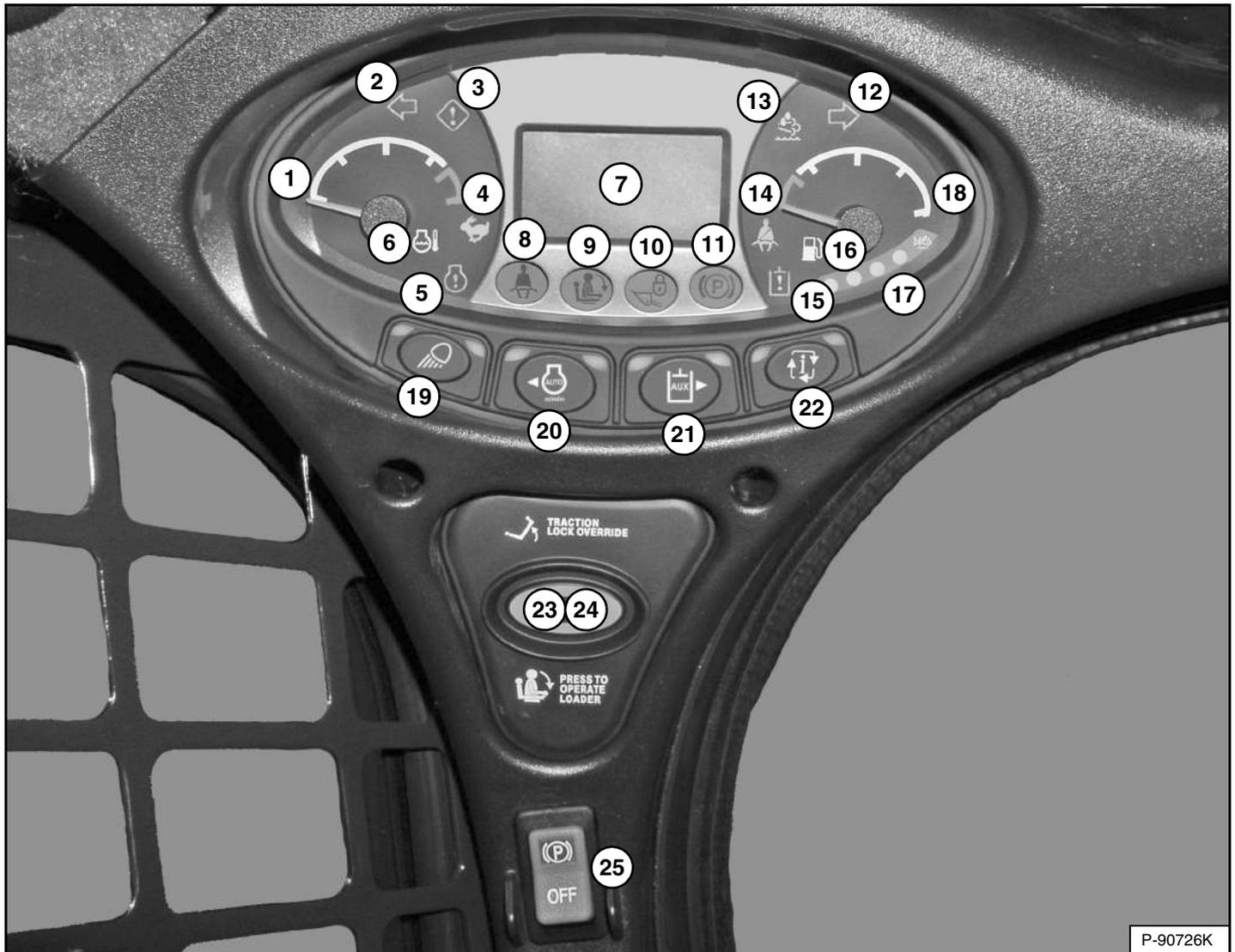


The left and right side lower panels [Figure 10] are described in more detail. (See Left Side Lower Panel on Page 44.) and (See Right Side Lower Panel on Page 44.).

## INSTRUMENT PANEL IDENTIFICATION (CONT'D)

### Left Panel

Figure 11



P-90726K

The left panel [Figure 11] is the same for all machines regardless of options and accessories.

ITEM	DESCRIPTION	FUNCTION / OPERATION
1	ENGINE TEMPERATURE GAUGE	Shows the engine coolant temperature.
2	LEFT TURN SIGNAL (Option)	Indicates left turn signals are ON.
3	GENERAL WARNING	Malfunction with one or more machine functions. (See Service Codes*)
4	TWO-SPEED (Option)	High range selected.
5	CHECK ENGINE	Engine malfunction or failure. (See Service Codes*)
6	ENGINE COOLANT TEMPERATURE	Engine coolant temperature high or sensor error.
7	DISPLAY SCREEN	Displays information. (See Display Screen in this manual.)
8	SEAT BELT	Instructs operator to fasten seat belt. Remains lit for 45 seconds.
9	SEAT BAR	The light is on when the seat bar is UP.
10	LIFT AND TILT VALVE	The light is on when the lift and tilt functions cannot be operated.
11	PARKING BRAKE	The light is on when the loader cannot be driven.

## INSTRUMENT PANEL IDENTIFICATION (CONT'D)

### Left Panel (Cont'd)

ITEM	DESCRIPTION	FUNCTION / OPERATION
12	RIGHT TURN SIGNAL (Option)	Indicates right turn signals are ON.
13	DIESEL EXHAUST FLUID (DEF)	Not used.
14	SHOULDER BELT (Option)	Instructs operator to fasten shoulder belt when operating in high range. Remains lit while in high range.
15	HYDRAULIC SYSTEM MALFUNCTION	Hydraulic system malfunction or failure. (See Service Codes*)
16	FUEL	Fuel level low or sensor error.
17	DIESEL EXHAUST FLUID (DEF) / AdBlue® LEVEL	Not used.
18	FUEL GAUGE	Shows the amount of fuel in the tank.
19	LIGHTS without road option	Press once for REAR taillights. (Right green LED will light.) Press a second time to turn FRONT and REAR work lights ON. REAR taillights will turn OFF. (Left green LED will light.) Press a third time to turn all lights off. (Left and right green LEDs will be off.)
	LIGHTS with road option	Press once for FRONT boom light, license plate light and REAR taillights. (Right green LED will light.) Press a second time to turn FRONT and REAR work lights ON. FRONT boom light, license plate light and REAR taillights will turn OFF. (Left green LED will light.) Press a third time to turn all lights off. (Left and right green LEDs will be off.)
		Press and hold 5 seconds to show software version in display screen.
20	AUTO IDLE (Option)	Press once to engage auto idle. (Left green LED lights.) Press a second time to disengage. (See AUTO IDLE in this manual.)
		Move cursor to the left inside the DISPLAY SCREEN when using certain INFORMATION button menus.
21	AUXILIARY HYDRAULICS	Press once to activate the auxiliary hydraulic system. (Left green LED lights.) Press a second time to deactivate the system.
		Move cursor to the right inside the DISPLAY SCREEN when using certain INFORMATION button menus.
22	INFORMATION	Cycles through (after each button press): <ul style="list-style-type: none"> <li>• Hourmeter (On startup)</li> <li>• Engine rpm</li> <li>• Battery voltage</li> <li>• Drive response menu</li> <li>• Steering drift compensation menu</li> <li>• Maintenance clock</li> <li>• Service codes*</li> </ul>
23	TRACTION LOCK OVERRIDE	Functions only when the seat bar is raised and the engine is running. Press once to unlock the brakes. Allows you to use the steering levers or joystick(s) to move the loader forward or backward when using the backhoe attachment. (See TRACTION LOCK OVERRIDE in this manual.) Press a second time to lock the brakes.
24	PRESS TO OPERATE LOADER	Press to activate the BICS™ when the seat bar is down and operator is seated in operating position. Button will light.
25	PARKING BRAKE (Standard on all loaders)	Press the top to engage the Parking Brake. Press the bottom to disengage. (See PARKING BRAKE in this manual.)

\* This manual contains a table with Service Code descriptions. (See DIAGNOSTIC SERVICE CODES on Page 187.)

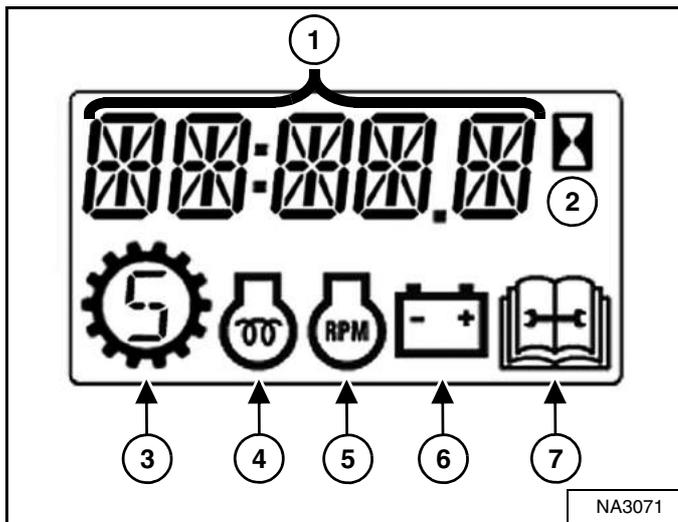
## INSTRUMENT PANEL IDENTIFICATION (CONT'D)

### Display Screen

The display screen can display the following information:

- Operating hours
- Engine rpm
- Battery voltage
- Drive response setting
- Steering drift compensation setting
- Maintenance clock countdown
- Service codes
- Speed management setting
- Lift and tilt compensation setting

Figure 12



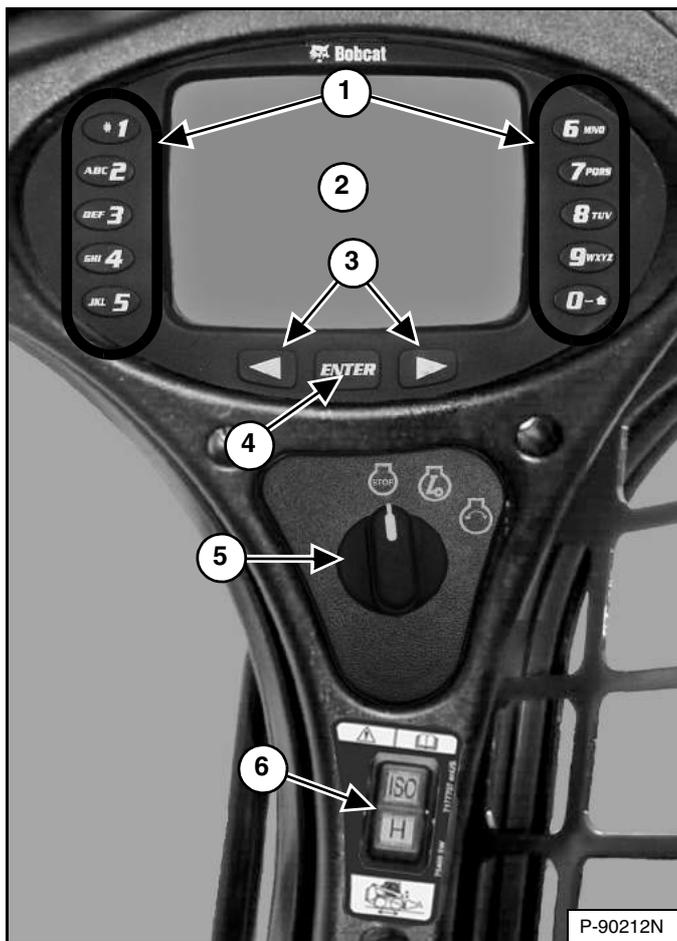
The display screen is shown in [Figure 12]. The data display will show operating hours upon startup.

1. **Data Display**
2. **Hourmeter**
3. **Speed Management**
4. **Engine Preheat**
5. **Engine RPM**
6. **Battery / Charging Voltage**
7. **Service**

## INSTRUMENT PANEL IDENTIFICATION (CONT'D)

### Right Panel

Figure 13



6. **Selectable Joystick Controls (SJC) Control Pattern Switch (Option):** Press the top to select 'ISO' Control Pattern; bottom to select 'H' Control Pattern.

The right panel [Figure 13] is the same for all machines regardless of options and accessories.

1. **Keypad (keys 1 through 0):** The keypad has two functions:
  - To enter a number code (password) to allow starting the engine.
  - To enter a number as directed for further use of the display screen.
2. **Display Screen:** The display screen is where all system setup, monitoring, and error conditions are displayed.
3. **Scroll Buttons:** Used to scroll through display screen choices.
4. **ENTER Button:** Used to make selections on the display screen.
5. **Key Switch:** Used to turn the loaders electrical system on and off, and to start and stop the engine.

## INSTRUMENT PANEL IDENTIFICATION (CONT'D)

### Right Panel (Cont'd)

Figure 14



The first screen you will see on your new loader is shown in [Figure 14].

When this screen is on the display you can enter the password and start the engine or change the default language.

**NOTE:** Your new loader will have an Owner Password. Your dealer will provide you with this password. Change the password to one that you will easily remember to prevent unauthorised use of your loader. (See Changing The Owner Password on Page 206.) Keep your password in a safe location for future needs.

#### *Change Language:*

Press the left or right scroll button to cycle through the languages. The language that is stopped on becomes the default language used for the Deluxe Instrumentation Panel [Figure 14].

The language can be changed at any time. (See CONTROL PANEL SETUP on Page 202.)

#### *Enter The Password:*

Use the numbers on the keypad to enter the password, then press the [ENTER] button. A symbol will appear on the display screen for each number entered. The left scroll button can be used to backspace if an incorrect number is entered.

If the correct password is not entered, [INVALID PASSWORD TRY AGAIN] will appear on the display screen and the password will have to be reentered.

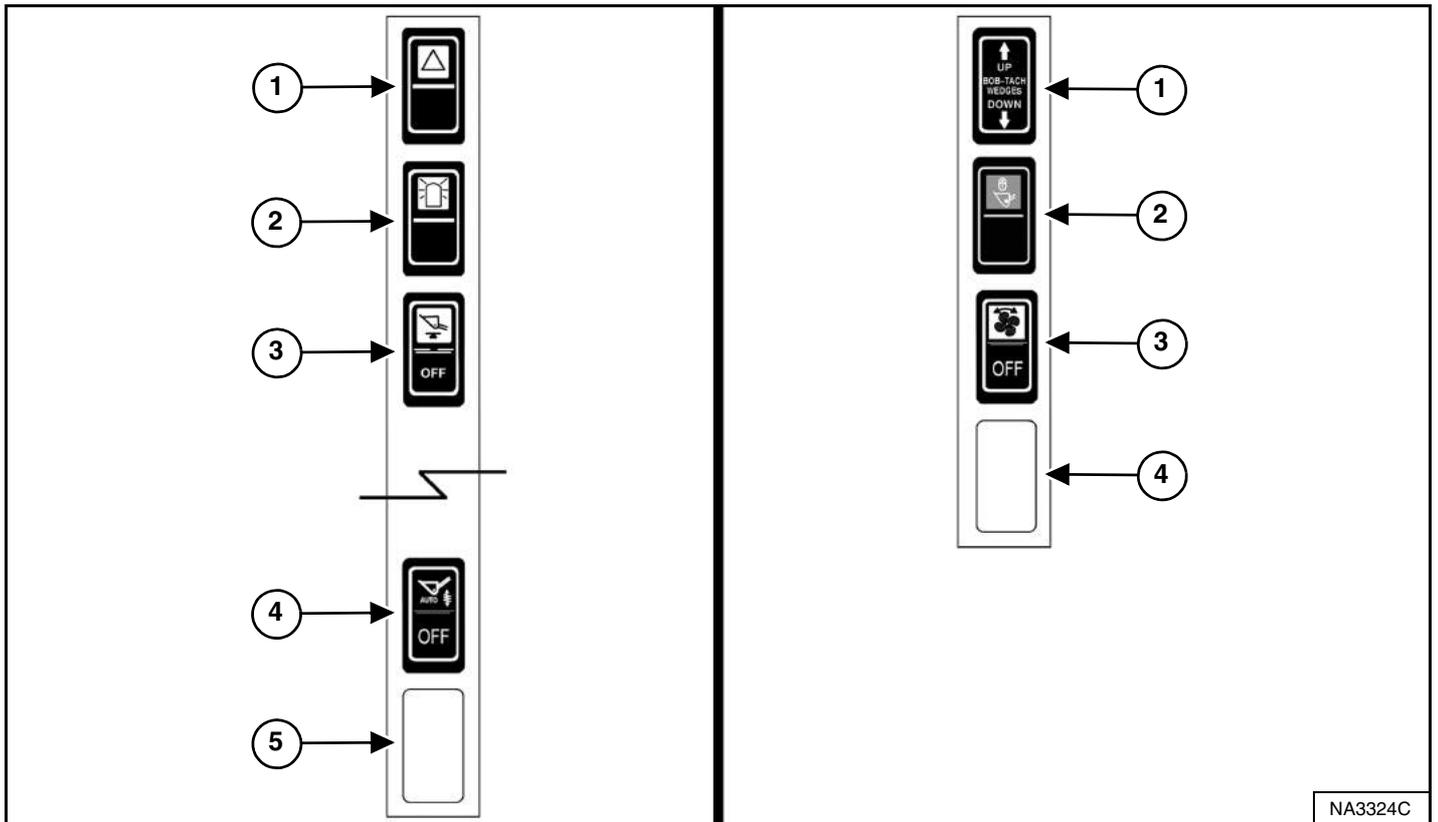
See CONTROL PANEL SETUP for further description of screens to set up the system for your use. (See CONTROL PANEL SETUP on Page 202.)

# INSTRUMENT PANEL IDENTIFICATION (CONT'D)

## Left Switch Panel

## Right Switch Panel

Figure 15



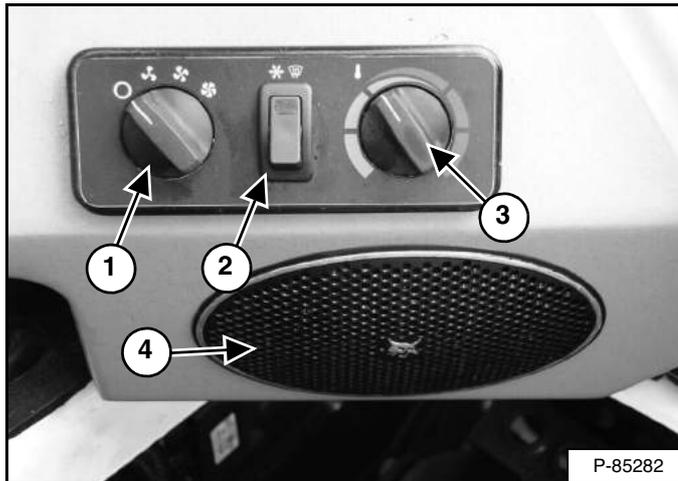
ITEM	DESCRIPTION	FUNCTION / OPERATION
1	FOUR-WAY FLASHER LIGHTS (Option)	Press the top to turn lights ON; bottom to turn OFF.
2	ROTATING BEACON (Option) <b>OR</b> STROBE LIGHT (Option)	Press the top to turn light ON; bottom to turn OFF.
3	HYDRAULIC BUCKET POSITIONING (Option)	Press the top to engage Hydraulic Bucket Positioning; bottom to disengage.
4	AUTOMATIC RIDE CONTROL (Option)	Press the top to engage Automatic Ride Control; bottom to disengage.
5	NOT USED	---

ITEM	DESCRIPTION	FUNCTION / OPERATION
1	POWER BOB-TACH (Option)	Press and hold the up arrow to disengage the Bob-Tach wedges. Press and hold the down arrow to engage the Bob-Tach wedges into the attachment mounting frame holes.
2	TRAVEL LOCK	Press the top of the switch to lock the lift and tilt hydraulic functions for travel. Press the bottom of the switch to turn travel lock OFF.
3	REVERSING FAN (Option)	Automatic Operation - middle position; Manual Operation - press top momentarily; press bottom to disengage.
4	NOT USED	---

## INSTRUMENT PANEL IDENTIFICATION (CONT'D)

### Left Side Lower Panel

Figure 16

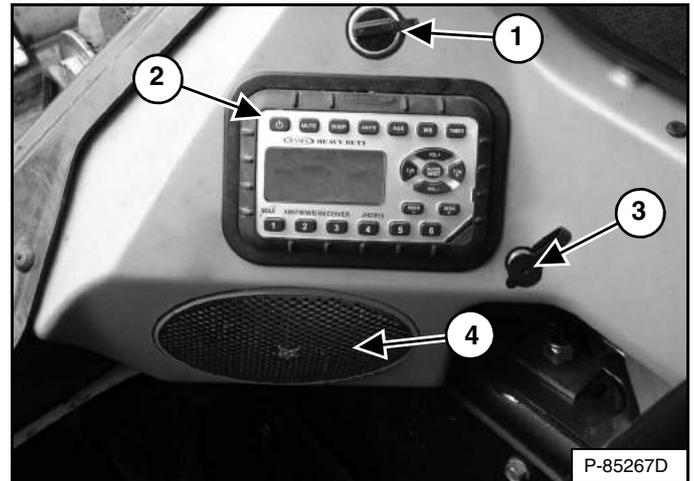


P-85282

ITEM	DESCRIPTION	FUNCTION / OPERATION
1	FAN MOTOR (Option)	Turn clockwise to increase fan speed; anticlockwise to decrease. There are four positions; OFF-1-2-3.
2	AIR CONDITIONING / DEFROST SWITCH (Option)	Press top of switch to start; bottom to stop. Switch will light when started. Fan Motor (Item 1) must be ON for air conditioning to operate.
3	TEMPERATURE CONTROL (Option)	Turn clockwise to increase the temperature; anticlockwise to decrease.
4	SPEAKER (Option)	Left speaker used with optional radio.

### Right Side Lower Panel

Figure 17



P-85267D

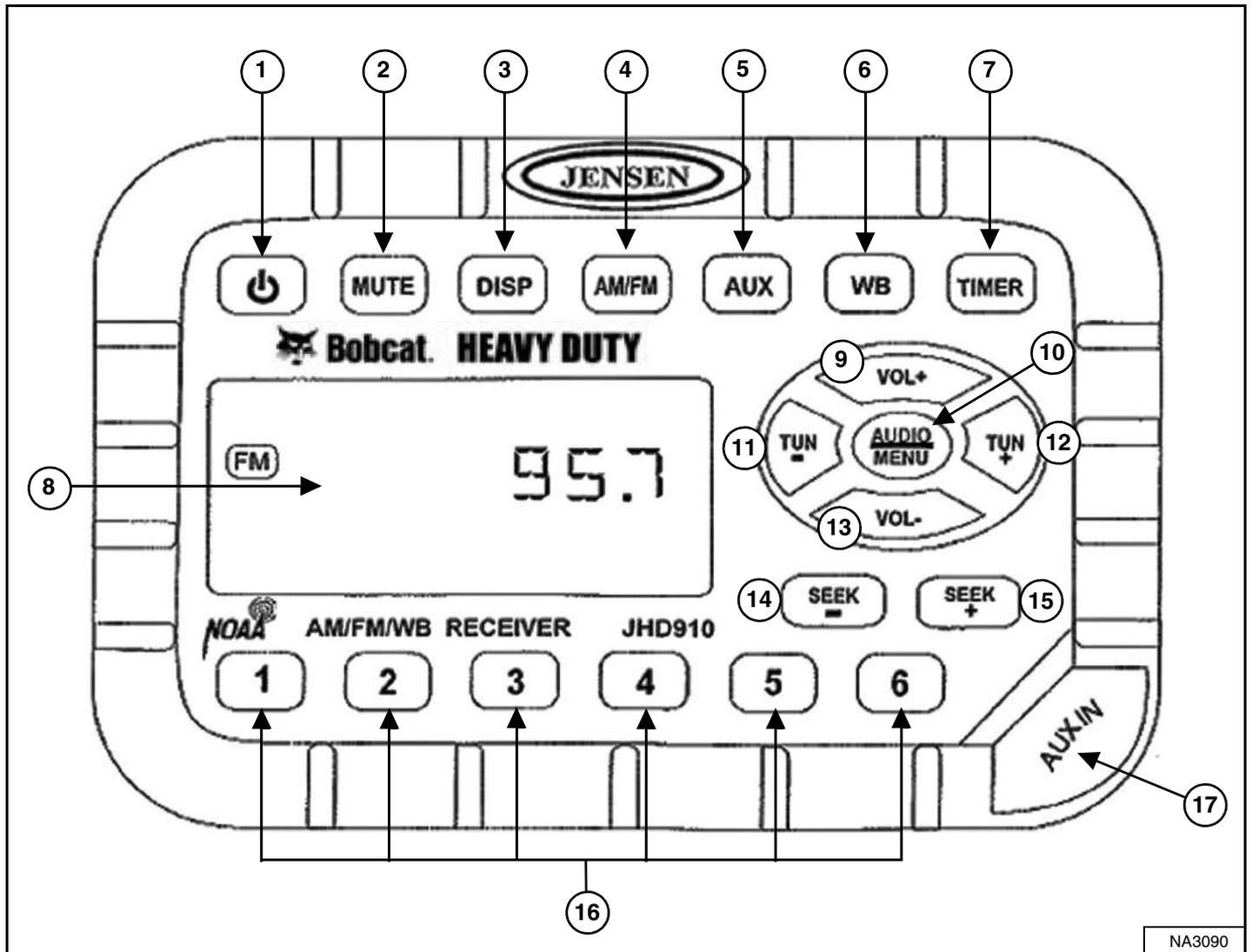
ITEM	DESCRIPTION	FUNCTION / OPERATION
1	POWER PORT	Provides a 12 volt receptacle for accessories.
2	RADIO (Option)	See Radio in this manual.
3	HEADPHONE JACK (Option)	Used to connect headphones to the optional radio output. Automatically silences speakers when used.
4	SPEAKER (Option)	Right speaker used with optional radio.

**INSTRUMENT PANEL IDENTIFICATION (CONT'D)**

**Radio**

This machine may be equipped with a radio.

**Figure 18**



NA3090

The table on the next page shows the DESCRIPTION and FUNCTION / OPERATION for each of the controls of the radio [Figure 18].

**NOTE:** See DISPLAY in the table for clock setting instructions.

## INSTRUMENT PANEL IDENTIFICATION (CONT'D)

### Radio (Cont'd)

ITEM	DESCRIPTION	FUNCTION / OPERATION
1	POWER	Press to turn ON; press again to turn OFF.
2	MUTE	Press to mute audio output; <b>[MUTE]</b> will appear in display screen; press again to turn OFF.
3	DISPLAY	Press to toggle between function mode (showing tuner frequency, auxiliary input, weather band information, or timer) and clock mode.
		Press and hold to enter clock setting mode; use FREQUENCY DOWN (TUN -) button to adjust hours and FREQUENCY UP (TUN +) button to adjust minutes; normal operation will resume automatically.
4	BAND	Press to select tuner mode. Press to cycle through 2 AM (MW) bands and 3 FM bands.
5	AUXILIARY	Press to select Auxiliary Input mode. Portable audio device (MP3 player) must be attached to auxiliary input jack.
6	WEATHER BAND	Press to select weather band; use FREQUENCY UP (TUN +) and FREQUENCY DOWN (TUN -) buttons to adjust to the clearest station.
		The weather alert feature, if activated, will automatically switch from the current function to the weather band if a weather warning is received. See AUDIO / MENU ADJUSTMENT in this table.
7	TIMER	Press to access timer mode. Press to start the timer function; press again to stop timer; press again to resume timer or press and hold to reset timer and exit from timer mode.
8	DISPLAY SCREEN	Displays the time, frequency, and activated functions.
9	VOLUME UP	Adjusts volume up; current volume (0 – 40) will appear briefly in display screen.
10	AUDIO / MENU ADJUSTMENT	AUDIO ADJUSTMENT: Press to cycle through bass, treble, and balance settings; use VOLUME UP (VOL +) and VOLUME DOWN (VOL -) buttons to adjust when desired option is displayed; normal operation will resume automatically.
		MENU ADJUSTMENT: Press and hold for 3 seconds to enter menu adjustment settings; press to cycle through the following settings; use VOLUME UP (VOL +) and VOLUME DOWN (VOL -) buttons to adjust when desired option is displayed; normal operation will resume automatically. <ul style="list-style-type: none"> <li>• Beep Confirm (On or Off) – Determines if beep will sound with each button press.</li> <li>• Operation Region (USA or Europe) – Selects the appropriate region.</li> <li>• Clock Display (12 or 24) – Selects a 12-hour or 24-hour clock display.</li> <li>• Display Brightness (Low, Medium, or High) – Determines brightness level of display screen.</li> <li>• Backlight Colour (Amber or Green) – Determines backlight colour of display screen.</li> <li>• Power On Volume (0 – 40) – Selects default volume setting when radio is turned on.</li> <li>• WB Alert (On or Off) – Determines if weather band alert feature is activated.</li> </ul>
11	FREQUENCY DOWN	Press to manually tune the radio frequency down.
12	FREQUENCY UP	Press to manually tune the radio frequency up.
13	VOLUME DOWN	Adjusts volume down; current volume (0 – 40) will appear briefly in display screen.
14	SEEK FREQUENCY DOWN	Press to automatically tune frequency down to next strong station.
15	SEEK FREQUENCY UP	Press to automatically tune frequency up to next strong station.
16	PRESET STATIONS	Used to store and recall stations for each AM and FM band. Press and hold to store current station; press button to recall station.
17	AUXILIARY INPUT JACK	Connect headphone or line output of portable audio device (MP3 player) to 3,5 mm (1/8 in) jack and press AUXILIARY button.

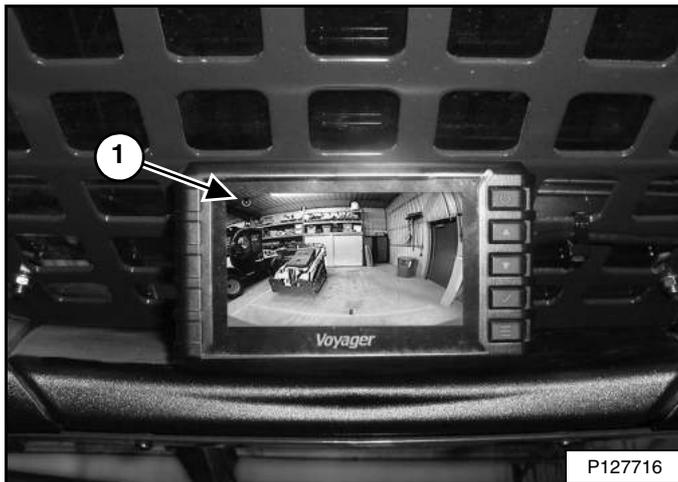
## INSTRUMENT PANEL IDENTIFICATION (CONT'D)

### Rear View Camera System

This machine may be equipped with a rear view camera system.

A rear view camera system is not a substitute for keeping bystanders away from the work area. Operators must remain fully aware of the surroundings using direct visibility and the rear view camera system. The operator must service and maintain the camera system to ensure proper function.

**Figure 19**



The camera display is located above the front door [Figure 19].

**NOTE: Objects viewed on the camera display are closer than they appear.**

The rotating icon (Item 1) [Figure 19] in the upper left corner of the display indicates a live broadcast from the camera.

If the icon freezes, it indicates that the camera is not supplying a live broadcast and service may be required.

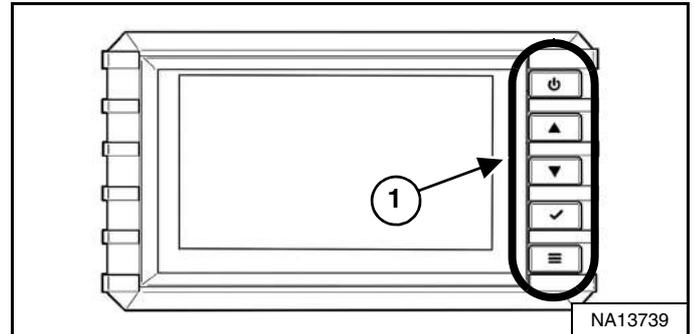
## **WARNING**

### **AVOID INJURY OR DEATH**

- Always keep bystanders away from the work area and travel path.
- The operator must maintain a clear view of the direction of travel and look before and during machine movement.
- The back-up alarm must sound when operating the machine in the reverse direction.

W-2783-0118

**Figure 20**



The table below explains the function of each button (Item 1) [Figure 20] on the camera display.

ITEM	DESCRIPTION	FUNCTION / OPERATION
	POWER	Press to turn display ON; press again to turn OFF.
	UP	Press to navigate up through menu screen choices; also used to adjust menu settings.
	DOWN	Press to navigate down through menu screen choices; also used to adjust menu settings.
	SELECT	Press to select the highlighted function or option setting. Pressing the select button while on the main screen will change the camera input to a blank screen labeled CAM2 or CAM3. Press the button until the input is returned to CAM1 for normal system operation.
	MENU	Press to enter the menu settings; also used to return to previous menu.

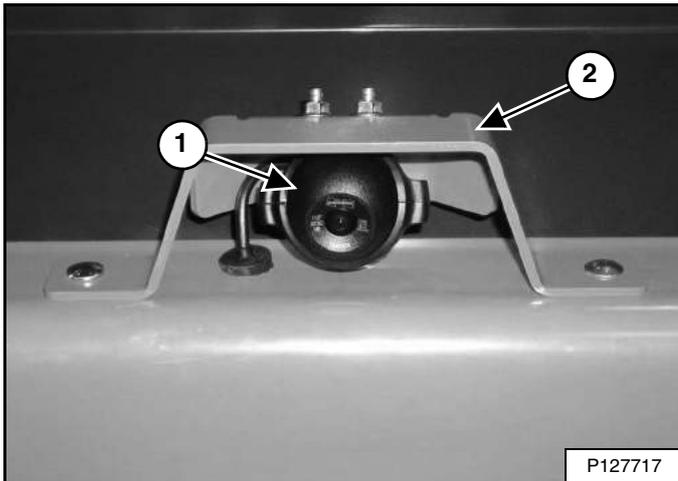
Commonly used menu settings:

- PICTURE - Brightness, contrast, colour, tint
- SETTING - Screen saver, auto power
- MISCELLANEOUS - Language, reset.

## INSTRUMENT PANEL IDENTIFICATION (CONT'D)

### Rear View Camera System (Cont'd)

Figure 21



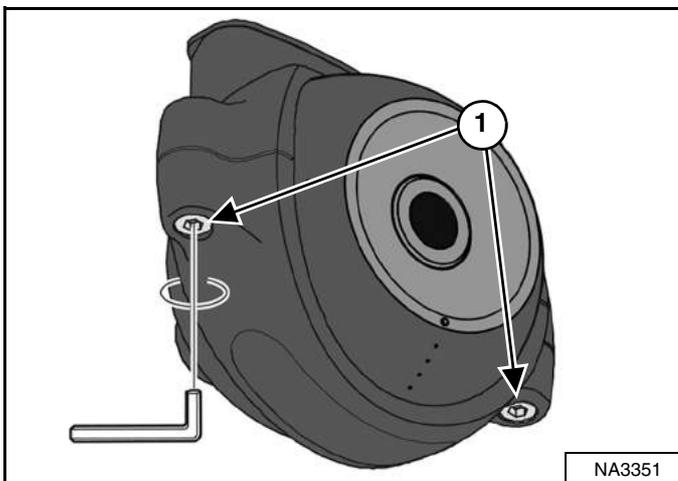
The rear camera (Item 1) is located inside a bracket (Item 2) [Figure 21] mounted on top of the rear door.

Perform the following daily or as needed:

- Clean the lens of the camera using a soft cloth and clean water.
- Remove mud, snow, ice or other debris that could affect the clear view provided by the camera system.
- Verify proper camera adjustment. Adjust camera if needed.
- Replace damaged rear view camera system components. See your Bobcat dealer for service and parts.

#### Rear Camera Adjustment

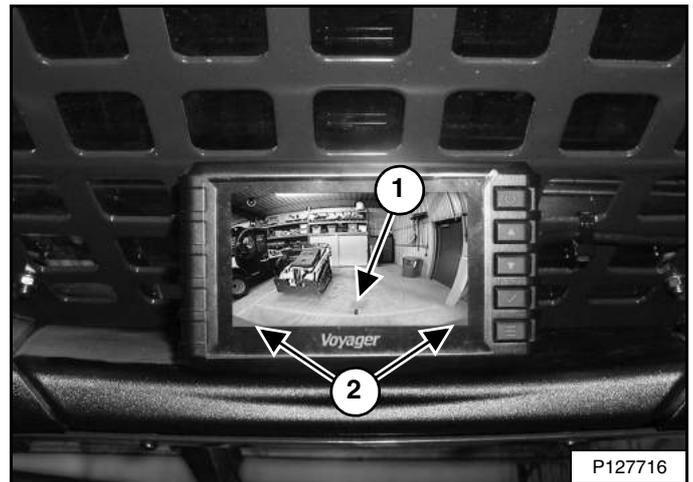
Figure 22



Perform the following steps to adjust the rear camera:

1. Make a mark on the ground 1,25 m (4 ft) behind the machine.
2. Loosen the screws (Item 1) [Figure 22] of the clamp holding the camera.
3. Turn the key switch to RUN **without starting the engine**. Turn the display ON.

Figure 23



4. Look at the camera display through the rear window of the machine. The image should be as a mirror, an object to the left of the machine appears on the left of the display. See display menu to adjust if needed.
5. Adjust the camera down until the rear door (Item 2) is just visible on the display. Ensure the camera is centred left and right. The mark on the ground (Item 1) [Figure 23] from step 1 should be visible on the display.
6. Tighten the screws to 0,8 – 1,0 N•m (7 – 8.8 in-lb) torque.
7. Turn the key switch to STOP.

## CONTROL IDENTIFICATION

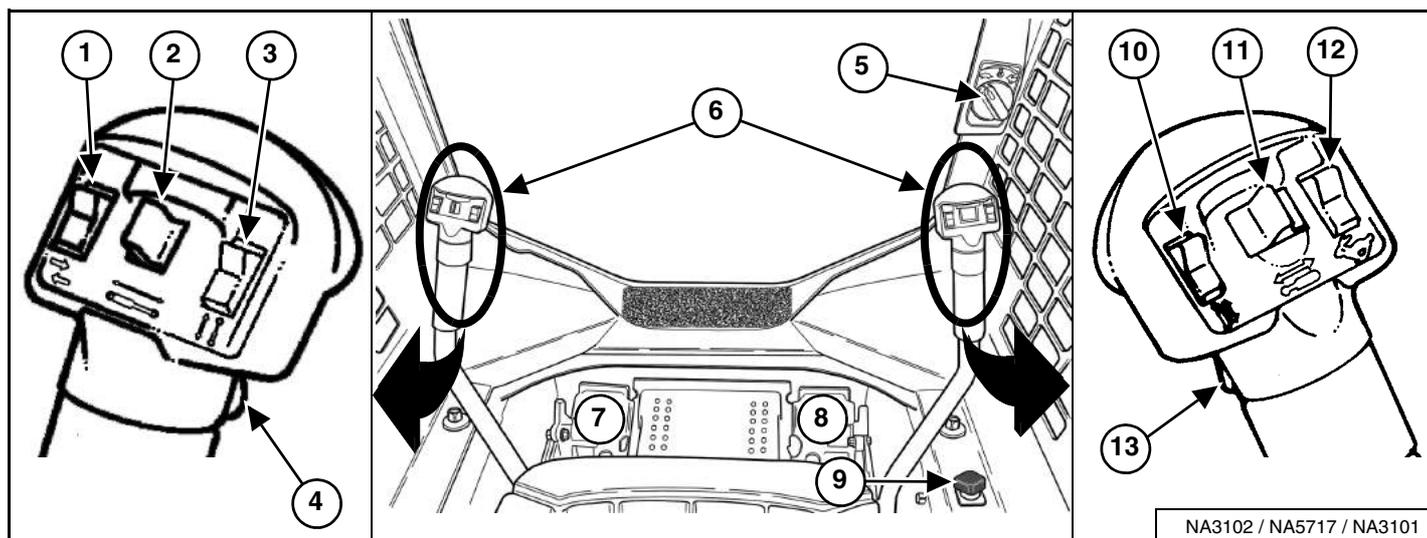
### Description

This loader has two control configurations available to operate lift / tilt functions and driving / steering the loader:

- Standard Controls – Uses foot pedals for lift and tilt functions.  
Uses steering levers for driving and steering the loader.
- Selectable Joystick Controls (SJC) (Option) – Uses joysticks for lift / tilt functions and driving / steering the loader.

### Standard Controls

Figure 24

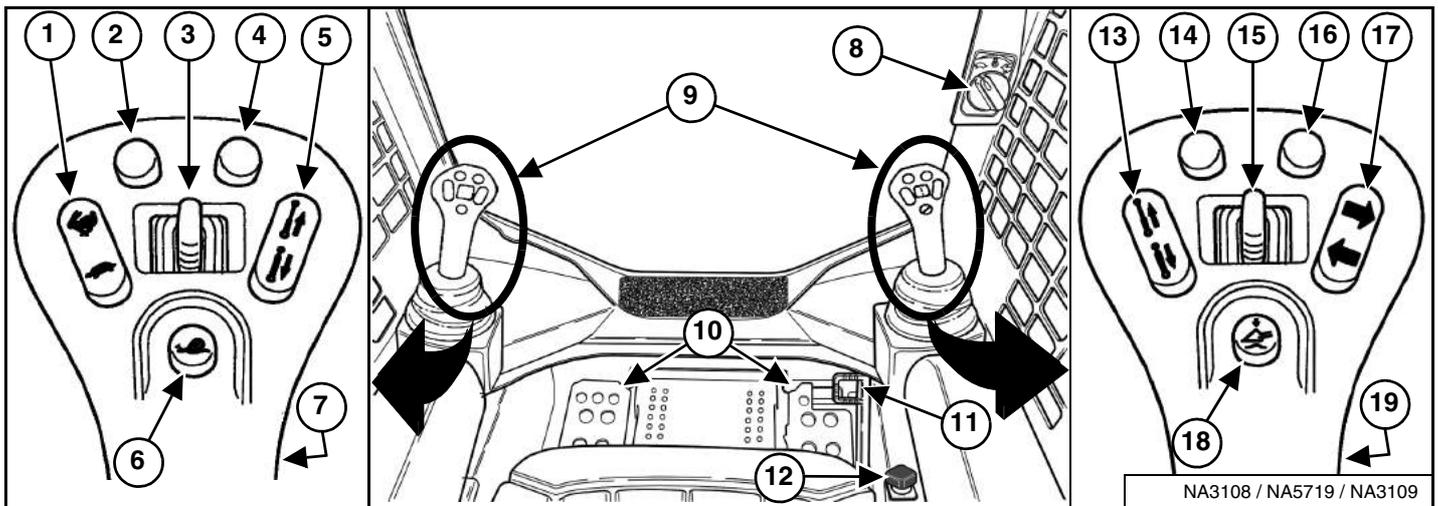


ITEM	DESCRIPTION	FUNCTION / OPERATION
1	TURN SIGNALS (Option)	Press the top to activate right signal; bottom to activate left signal; centre position to turn off.
2	REAR AUXILIARY HYDRAULICS (Option)	See REAR Auxiliary Hydraulics Operation in this manual.
	Also: ATTACHMENT FUNCTION CONTROL	See ATTACHMENT CONTROL DEVICE in this manual.
3	ATTACHMENT FUNCTION CONTROL	See ATTACHMENT CONTROL DEVICE in this manual.
4	FRONT HORN	Press the front switch to sound the front horn.
5	ENGINE SPEED CONTROL	See ENGINE SPEED CONTROL in this manual.
6	STEERING LEVERS	See DRIVING AND STEERING THE LOADER in this manual.
7	LIFT ARM PEDAL	See HYDRAULIC CONTROLS in this manual.
8	TILT PEDAL	See HYDRAULIC CONTROLS in this manual.
9	LIFT ARM BYPASS CONTROL	See LIFT ARM BYPASS CONTROL in this manual.
10	ATTACHMENT FUNCTION CONTROL	See ATTACHMENT CONTROL DEVICE in this manual.
11	FRONT AUXILIARY HYDRAULICS	See FRONT Auxiliary Hydraulics Operation in this manual.
12	NOT USED	---
13	CONTINUOUS FLOW CONTROL FOR AUXILIARY HYDRAULICS	See FRONT Auxiliary Hydraulics Operation (CONTINUOUS FLOW) in this manual.

## CONTROL IDENTIFICATION (CONT'D)

### Selectable Joystick Controls (SJC)

Figure 25



ITEM	DESCRIPTION	FUNCTION / OPERATION
1	TWO-SPEED CONTROL	See TWO-SPEED CONTROL in this manual.
	Also: SPEED MANAGEMENT	See SPEED MANAGEMENT in this manual.
2 *	STEERING DRIFT COMPENSATION	See STEERING DRIFT COMPENSATION in this manual.
	Also: DRIVE RESPONSE	See DRIVE RESPONSE in this manual.
3	REAR AUXILIARY HYDRAULICS (Option)	See REAR Auxiliary Hydraulics Operation in this manual.
	Also: ATTACHMENT FUNCTION CONTROL	See ATTACHMENT CONTROL DEVICE in this manual.
4 *	STEERING DRIFT COMPENSATION	See STEERING DRIFT COMPENSATION in this manual.
	Also: DRIVE RESPONSE	See DRIVE RESPONSE in this manual.
5	ATTACHMENT FUNCTION CONTROL	See ATTACHMENT CONTROL DEVICE in this manual.
6	SPEED MANAGEMENT	See SPEED MANAGEMENT in this manual.
7	FRONT HORN	Press the front switch to sound the front horn.
8	ENGINE SPEED CONTROL (HAND)	See ENGINE SPEED CONTROL in this manual.
9	JOYSTICKS	See DRIVING AND STEERING THE LOADER and HYDRAULIC CONTROLS in this manual.
10	FOOTRESTS	Keep your feet on the footrests at all times.
11	ENGINE SPEED CONTROL (FOOT)	See ENGINE SPEED CONTROL in this manual.
12	LIFT ARM BYPASS CONTROL	See LIFT ARM BYPASS CONTROL in this manual.
13	ATTACHMENT FUNCTION CONTROL	See ATTACHMENT CONTROL DEVICE in this manual.
14 *	NOT USED	---
15	FRONT AUXILIARY HYDRAULICS	See FRONT Auxiliary Hydraulics Operation in this manual.
16 *	NOT USED	---
17	TURN SIGNALS (Option)	Press the top to activate right signal; press again to turn off. Press the bottom to activate left signal; press again to turn off.
18	FLOAT CONTROL	See HYDRAULIC CONTROLS in this manual.
19	CONTINUOUS FLOW CONTROL FOR AUXILIARY HYDRAULICS	See FRONT Auxiliary Hydraulics Operation (CONTINUOUS FLOW) in this manual.

\* Also used as Attachment Function Control: See your attachment Operation & Maintenance Manual.

## OPERATOR CAB

### Description

The Bobcat loader has an operator cab (ROPS and FOPS) as standard equipment to protect the operator from rollover and falling objects. The seat belt must be worn for rollover protection.

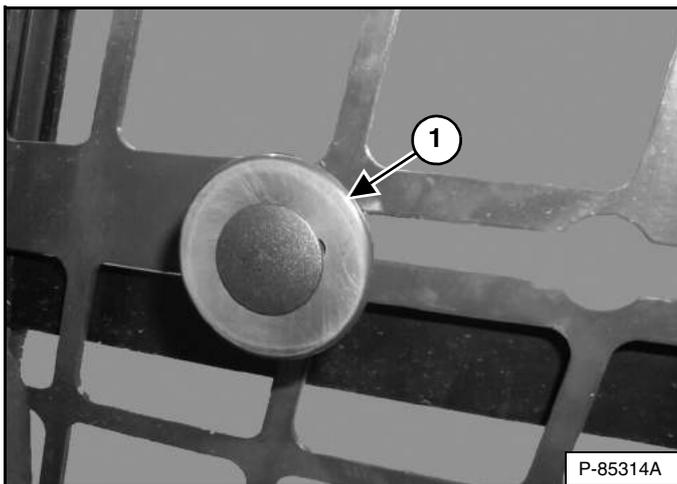
## WARNING

Never modify operator cab by welding, grinding, drilling holes or adding attachments unless instructed to do so by Bobcat Company. Changes to the cab can cause loss of operator protection from rollover and falling objects, and result in injury or death.

W-2069-0200

### Side Windows

Figure 26

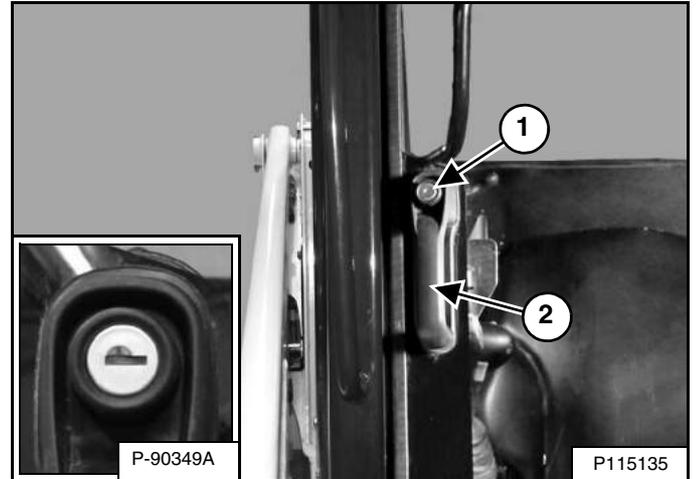


Pull the knob (Item 1) [Figure 26] and slide backward to open window. Release knob at cutout to lock in desired position. Pull the knob and slide forward to close window.

### Door Operation

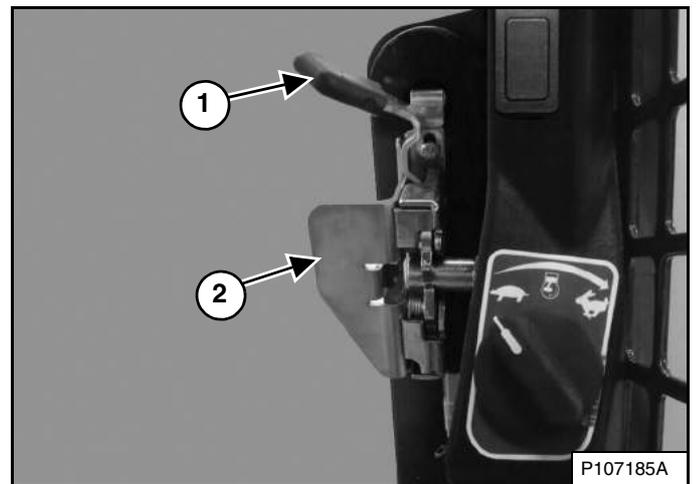
This machine may be equipped with a front door.

Figure 27



Push the knob (Item 1) and pull the handle (Item 2) to open the front door. A lock is provided in the knob (Inset) [Figure 27] to lock the front door when the loader is not in use.

Figure 28



Pull the front door closed using the handle (Item 2) [Figure 28].

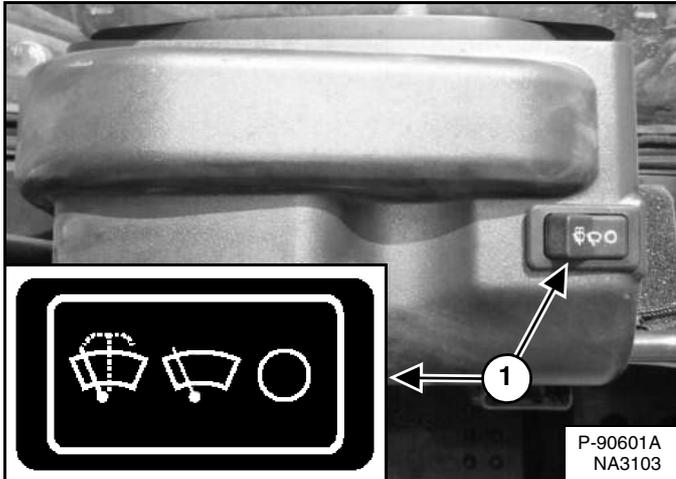
Pull the lever (Item 1) toward you to unlatch the front door. Push on the handle (Item 2) [Figure 28] to open the front door.

## OPERATOR CAB (CONT'D)

### Front Wiper

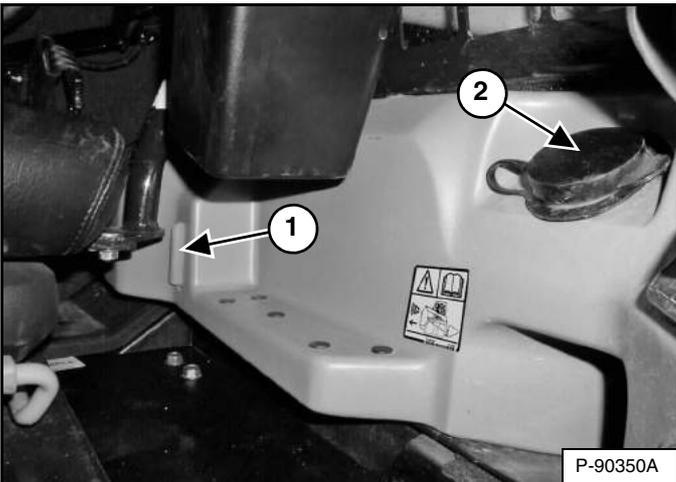
This machine may be equipped with a front wiper.

**Figure 29**



Press the left side of the switch (Item 1) [Figure 29] to start the front wiper (press and hold for washer fluid). Press the right side of the switch to stop the wiper.

**Figure 30**

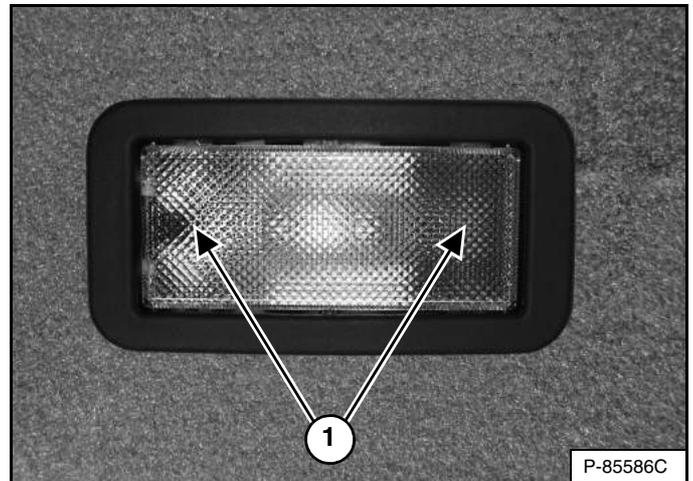


The washer fluid tank is located to the left of the operator seat. Check the fluid level in the sight gauge (Item 1). Remove the cap (Item 2) [Figure 30] to add washer fluid.

### Cab Light

The cab light is located above the operator's left shoulder.

**Figure 31**



Push either side of the lens (Item 1) [Figure 31] to turn the light ON. Return the lens to the middle position to turn the light OFF.

## BOBCAT INTERLOCK CONTROL SYSTEM (BICS™)

### Description



#### AVOID INJURY OR DEATH

The Bobcat Interlock Control System (BICS™) must deactivate the lift, tilt and traction drive functions. If it does not, contact your dealer for service. **DO NOT** modify the system.

W-2151-1111

Figure 32



The Bobcat Interlock Control System (BICS™) has a pivoting seat bar with armrests (Item 1) [Figure 32]. The operator controls the use of the seat bar.



#### AVOID INJURY OR DEATH

When operating the machine:

- Keep the seat belt fastened snugly.
- The seat bar must be lowered.
- Keep your feet on the pedal controls or footrests and hands on the controls.

W-2261-0909

The BICS™ requires the operator to be seated in the operating position with the seat bar fully lowered before the lift, tilt, auxiliary hydraulics, and traction drive functions can be operated. The seat belt must be fastened anytime you operate the machine.

### Operation

Figure 33



There are three display lights (Items 1, 2, and 3) [Figure 33] located on the left instrument panel that must be OFF to fully operate the machine.

When the seat bar is lowered, the engine is running, the PRESS TO OPERATE LOADER button is activated, and the parking brake is released; the lift, tilt, auxiliary hydraulics, and traction drive functions can be operated.

When the seat bar is raised; the lift, tilt, auxiliary hydraulics, and traction drive functions are deactivated.



#### AVOID INJURY OR DEATH

Before you leave the operator's seat:

- Lower the lift arms and put the attachment flat on the ground.
- Stop the engine.
- Engage the parking brake.
- Raise the seat bar.
- Move all controls to the NEUTRAL / LOCKED position to make sure the lift, tilt and traction drive functions are deactivated.

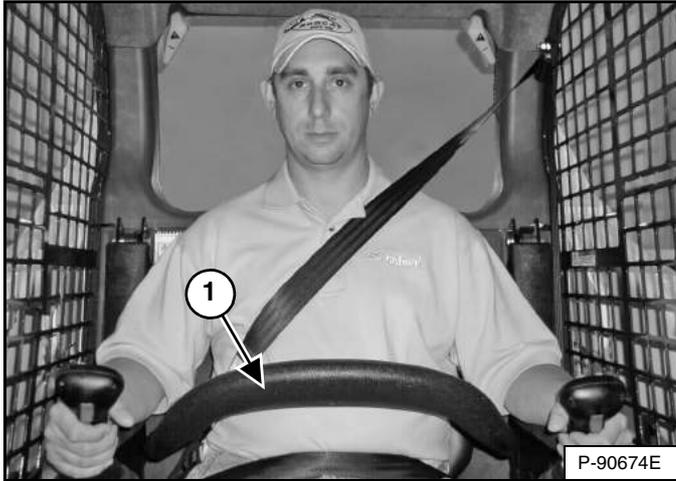
The seat bar system must deactivate these functions when the seat bar is up. See your Bobcat dealer for service if controls do not deactivate.

W-2463-1110

## SEAT BAR RESTRAINT SYSTEM

### Description

Figure 34



The seat bar restraint system has a pivoting seat bar with armrests (Item 1) [Figure 34].

The operator controls the use of the seat bar. The seat bar in the down position helps to keep the operator in the seat.

## WARNING

### AVOID INJURY OR DEATH

When operating the machine:

- Keep the seat belt fastened snugly.
- The seat bar must be lowered.
- Keep your feet on the pedal controls or footrests and hands on the controls.

W-2261-0909

### Operation

When the seat bar is down, the engine is running, the PRESS TO OPERATE LOADER button is activated, and the brake is released; the lift, tilt, and traction drive functions can be operated.

When the seat bar is raised; the lift, tilt, and traction drive functions are deactivated and both foot pedals (if equipped) are locked when returned to NEUTRAL position.

## WARNING

### AVOID INJURY OR DEATH

Before you leave the operator's seat:

- Lower the lift arms and put the attachment flat on the ground.
- Stop the engine.
- Engage the parking brake.
- Raise the seat bar.
- Move all controls to the NEUTRAL / LOCKED position to make sure the lift, tilt and traction drive functions are deactivated.

The seat bar system must deactivate these functions when the seat bar is up. See your Bobcat dealer for service if controls do not deactivate.

W-2463-1110

## DIESEL PARTICULATE FILTER (DPF) SYSTEM

### Description

The engine exhaust system is equipped with a diesel particulate filter (DPF).

The DPF is an emissions reduction device that removes diesel particulate matter (soot) from the exhaust gases of the diesel engine. The DPF will trap and collect the soot until it is burned off.

The process of burning off the collected soot is called regeneration. There are five types of regeneration: passive, automatic, forced, forced parked, and service. An inhibit mode is also available to the operator.

**Passive Regeneration** - The engine provides adequate exhaust temperature during operation for regeneration.

**Automatic Regeneration** - The engine control unit (ECU) automatically controls active regeneration. Active regeneration can occur any time the engine is operating once the soot accumulated in the DPF reaches a certain level. (See Automatic Regeneration Operation on Page 57.)

**Forced Regeneration** - The operator activates a forced regeneration. This selection requires confirmation after certain machine conditions are met. (See Forced Regeneration Operation on Page 58.)

**Forced Parked Regeneration** - The operator activates a forced parked regeneration. This selection requires confirmation after certain machine conditions are met. (See Forced Parked Regeneration Operation on Page 59.)

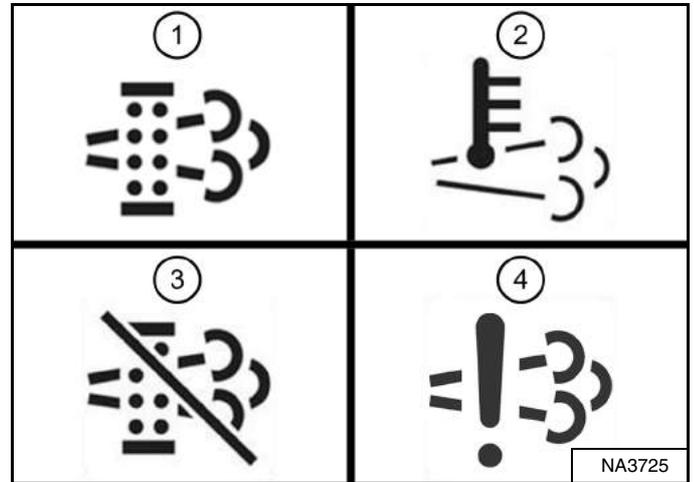
**Service Regeneration** - Your Bobcat dealer uses specialized equipment to perform a service regeneration. (See Service Regeneration on Page 171.)

**Inhibit Mode** - Active regeneration will not occur. This selection requires confirmation. (See Inhibit Mode Operation on Page 60.)

### DPF Icons

The following icons located on the right panel communicate regeneration status:

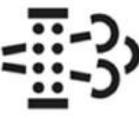
Figure 35



1. DPF - Appears on the right panel during regeneration. Machine is requesting that operator activate a forced or forced parked regeneration when flashing.
2. Hot Exhaust System Temperature (HEST) - Appears on the right panel during regeneration to indicate that exhaust and exhaust gases can be hot.
3. Inhibit - Appears on the right panel when the operator has selected inhibit mode.
4. Emissions Error - Appears on the right panel to indicate a problem with the DPF system.

## DIESEL PARTICULATE FILTER (DPF) SYSTEM (CONT'D)

### DPF Regeneration Tables

SOOT LOAD	ACTIVE REGENERATION STATUS	INHIBIT ALLOWED	FORCED ALLOWED	FORCED PARKED ALLOWED	DPF ICON [A]	HEST ICON [A]	CHECK ENGINE ICON [B]
							
0 - 75%	Not Required	Yes	No	No	Off	Off	Off
75 - 100%	Not Required	Yes	Yes	Yes	Off	Off	Off
100 - 105%	Regenerating	Yes	Yes	Yes	On	On	Off
105 - 110%	Regenerating	Yes	Yes	Yes	Flashing Slowly	On	Off
110 - 120%	Regenerating	Yes	Yes	Yes	Flashing Slowly	On	On
120 - 150%	Not Regenerating	Yes	No	No	Flashing Quickly	Off	On
> 150%	Not Regenerating	Yes	No	No	Off	Off	On

SOOT LOAD	REGENERATION TYPE	SOOT LOAD BAR COLOUR	SERVICE CODE	TORQUE DERATE	OPERATOR ACTION
0 - 75%	Passive	Grey	None	None	None
75 - 100%	Passive	Blue	None	None	None
100 - 105%	Automatic	Blue	None	None	None
105 - 110%	Automatic	Red	None	None	Activate Forced or Forced Parked Regeneration when possible
110 - 120%	Automatic	Red	P2463	Mild	Activate Forced or Forced Parked Regeneration when possible
120 - 150%	Service	Red	P24A3	Severe	Dealer Service Regeneration Required (See Service Regeneration on Page 171.)
> 150%	None	Red	P24A3	Severe	Contact your Bobcat dealer to replace the DPF

[A] The DPF and HEST icons are located on the right panel. (See DPF Icons on Page 55.)

[B] The Check Engine icon is located on the left panel. (See Left Panel on Page 38.)

**NOTE: The general warning icon on the left and right panels will also turn on to alert operator of active service codes.**

## DIESEL PARTICULATE FILTER (DPF) SYSTEM (CONT'D)

### Automatic Regeneration Operation

Automatic regeneration mode is selected by default every time the machine is started.

The DPF management screen is available on the right panel, where you can check the status of the DPF and select the required regeneration mode.

Figure 36



1. Press a scroll button repeatedly until the machine settings icon (Item 1) [Figure 36] is highlighted.

Figure 37



2. Press the [4] button to select DPF MANAGEMENT [Figure 37].

Figure 38



3. Press the [6] button to select automatic regeneration mode [Figure 38].

Figure 39



4. Press the [ENTER] button (Item 2) [Figure 39] to engage automatic mode.

The ECU will monitor soot load and perform a regeneration automatically. The operator will be informed that an automatic regeneration has started by the HEST icon.

The machine should be operated during this regeneration.

**NOTE: The regeneration process can last for 30 minutes or longer.**

It is recommended to increase engine speed to high idle during an automatic regeneration and operate the machine under load if possible.

It is recommended to allow the regeneration cycle to finish before turning the machine off.

Pressing the left scroll button (Item 1) [Figure 39] will return to the gauges screen.

## DIESEL PARTICULATE FILTER (DPF) SYSTEM (CONT'D)

### Forced Regeneration Operation

A forced regeneration can be activated by the operator using the DPF management screen. The machine should be operated as normal during this regeneration.

**NOTE:** The regeneration process can last for 30 minutes or longer.

Figure 40



1. Press a scroll button repeatedly until the machine settings icon (Item 1) [Figure 40] is highlighted.

Figure 41



2. Press the [4] button to select DPF MANAGEMENT [Figure 41].

Figure 42



3. Press the [7] button to activate forced regeneration [Figure 42].

Figure 43



The following machine conditions must be met before forced regeneration is allowed:

- No active DPF related service codes
- Engine coolant temperature higher than 40°C (104°F)
- Soot load between 75 percent and 120 percent
- More than 25 percent fuel in the tank

4. Increase engine speed to high idle.
5. Press the [ENTER] button (Item 2) [Figure 43] to start regeneration.

It is recommended to allow the regeneration cycle to finish before turning the machine off.

Pressing the left scroll button (Item 1) [Figure 43] will return to the gauges screen without starting regeneration.

## DIESEL PARTICULATE FILTER (DPF) SYSTEM (CONT'D)

### Forced Parked Regeneration Operation

A forced parked regeneration can be activated by the operator using the DPF management screen. The machine cannot be operated during this regeneration.

**NOTE:** The regeneration process can last for 30 minutes or longer.

Figure 44



1. Press a scroll button repeatedly until the machine settings icon (Item 1) [Figure 44] is highlighted.

Figure 45



2. Press the [4] button to select DPF MANAGEMENT [Figure 45].

## IMPORTANT

Stopping the engine during the regeneration cycle may cause severe damage to the DPF.

I-2352-0412

Figure 46



3. Press the [8] button to activate forced parked regeneration [Figure 46].

Figure 47



The following machine conditions must be met before forced parked regeneration is allowed:

- No active DPF related service codes
- Engine coolant temperature higher than 40°C (104°F)
- Soot load between 75 percent and 120 percent
- Parking brake engaged
- Engine speed at low idle
- Hydraulic functions disabled
- More than 25 percent fuel in the tank

4. Press the [ENTER] button (Item 2) [Figure 47] to start regeneration.

The ECU will control engine speed until the regeneration cycle is finished.

Pressing the left scroll button (Item 1) [Figure 47] will return to the gauges screen without starting regeneration.

## DIESEL PARTICULATE FILTER (DPF) SYSTEM (CONT'D)

### Inhibit Mode Operation

Regeneration can be prevented from occurring by selecting inhibit mode. The machine should be operated under load when inhibit mode is selected.

# IMPORTANT

## MACHINE DAMAGE HAZARD

Operating the machine in inhibit mode for extended periods may cause severe damage to the DPF.

I-2409-1219

The DPF will be inhibited from actively regenerating until a regeneration mode is selected or the machine is turned OFF. The machine will revert to automatic DPF regeneration the next time the machine is turned ON.

Figure 48



1. Press a scroll button repeatedly until the machine settings icon (Item 1) [Figure 48] is highlighted.

Figure 49



2. Press the [4] button to select DPF MANAGEMENT [Figure 49].

Figure 50



3. Press the [9] button to select inhibit mode [Figure 50].

Figure 51



4. Press the [ENTER] button (Item 2) [Figure 51] to inhibit regeneration.
5. After running the machine in inhibit mode, take one of the below actions as soon as possible:
  - Place the machine in automatic regeneration mode
  - Perform a forced regeneration if possible (The soot load bar must be blue or red.)
  - Perform a forced parked regeneration if possible (The soot load bar must be blue or red.)

Pressing the left scroll button (Item 1) [Figure 51] will return to the gauges screen without selecting inhibit mode.

## PARKING BRAKE

### Operation

Figure 52



Press the top of the switch (Item 1) [Figure 52] to engage the parking brake. The red light in the switch will turn ON. The traction drive system is locked.

Move steering levers or joystick(s) slowly forward and backward. The TRACTION lock must be engaged. See your Bobcat dealer for service if loader fails to stop.

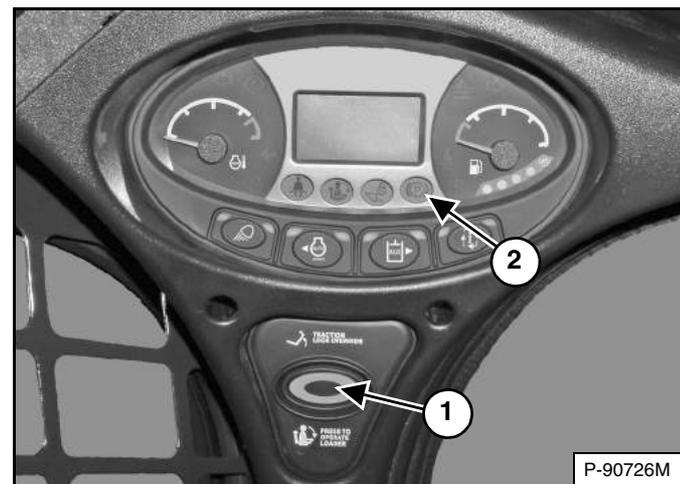
Press the bottom of the switch (Item 2) [Figure 52] to disengage the parking brake. The red light in the switch will turn OFF. The traction drive system is unlocked.

**NOTE: The PARKING BRAKE light on the left instrument panel will remain ON until the engine is started, the PRESS TO OPERATE LOADER button is pressed, and the parking brake is disengaged.**

## TRACTION LOCK OVERRIDE

### Description

Figure 53



*(Functions Only When The Seat Bar Is Raised And The Engine Is Running)* There is a TRACTION LOCK OVERRIDE button (Item 1) [Figure 53] on the left instrument panel that will allow you to use the steering controls to move the loader forward and backward when using the backhoe attachment.

### Operation

Press the TRACTION LOCK OVERRIDE button once to unlock traction drive. The PARKING BRAKE light (Item 2) [Figure 53] is OFF.

Press the button a second time to lock the traction drive. The PARKING BRAKE light (Item 2) [Figure 53] is ON.

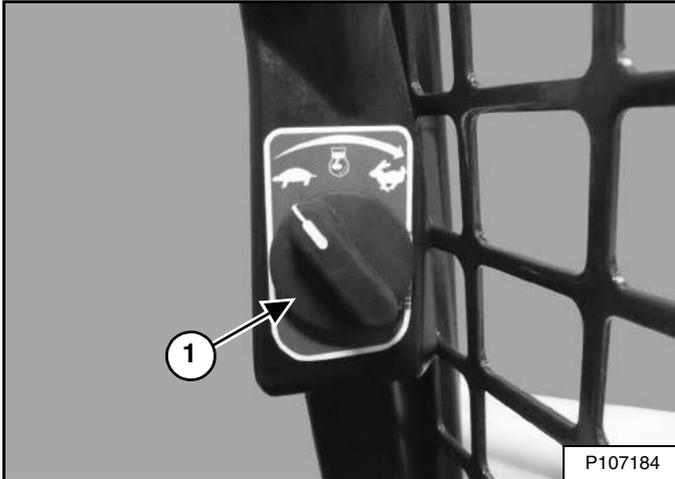
**NOTE: The TRACTION LOCK OVERRIDE button will unlock the traction drive when the seat bar is raised and the engine is running.**

**NOTE: The TRACTION LOCK OVERRIDE button will function if the parking brake is in the engaged or disengaged position and the engine is running. If the Parking Brake switch is turned ON, the red light in the Parking Brake switch will turn OFF when TRACTION LOCK OVERRIDE is engaged.**

## ENGINE SPEED CONTROL

### Operation

Figure 54

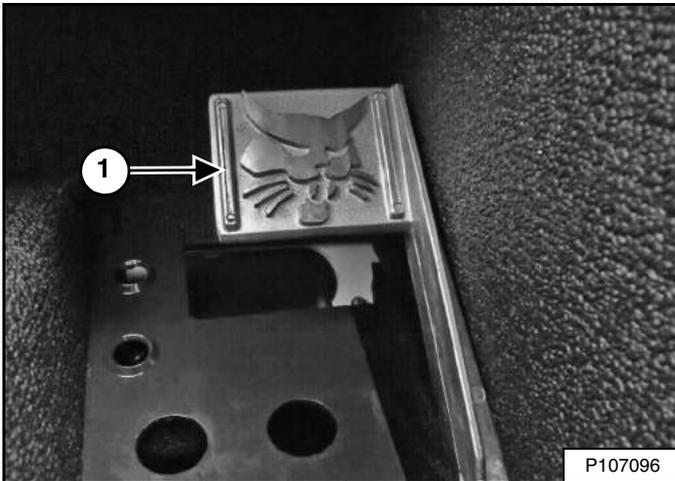


The engine speed control (Item 1) [Figure 54] is located alongside the door frame below the right panel.

Turn the knob clockwise to increase engine speed. Turn the knob anticlockwise to decrease engine speed.

**NOTE: The full range of the engine speed control will not be available until the engine controller determines the engine is adequately warmed.**

Figure 55



SJC equipped machines have a foot operated engine speed control pedal (Item 1) [Figure 55] in addition to the engine speed control knob. The pedal is located on the right side floor above the footrest.

## AUTO IDLE

Auto Idle is available on SJC equipped machines.

### Description

The auto idle feature (when engaged) reduces the engine speed to low idle when the joysticks are in NEUTRAL and not used for about five seconds.

All of the following conditions / actions must be met to allow the engine speed to reduce to low idle when auto idle is ON:

- Joysticks are not moved out of NEUTRAL.
- Auxiliary hydraulics is not engaged.
- Foot operated engine speed control pedal is not depressed.
- Engine speed controls are not moved.

Any of the following conditions / actions return the engine speed to the set position from low idle:

- Moving a joystick out of NEUTRAL.
- Engaging auxiliary hydraulics.
- Moving either engine speed control.

**NOTE: The five second time delay before the engine speed reduces to low idle can be changed (See Right Panel Setup (Deluxe Instrumentation Panel) on Page 202.)**

### Operation

Figure 56



Press the button (Item 2) to engage auto idle. The light (Item 1) [Figure 56] is ON.

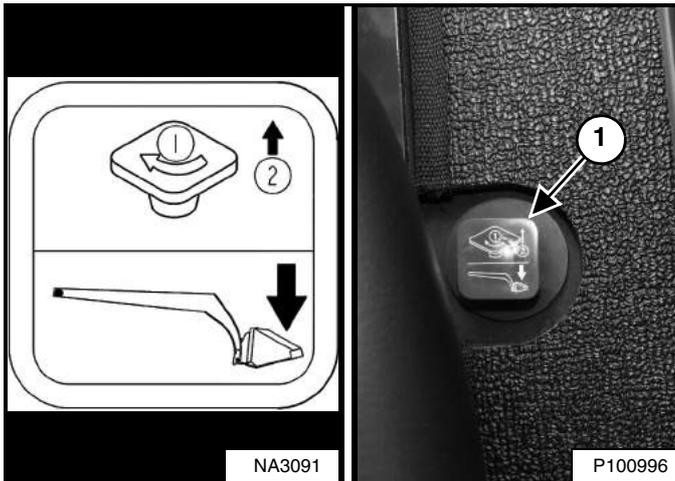
Press the button again to disengage auto idle. The light is OFF.

**NOTE: Always disengage the auto idle feature when loading or unloading the loader on a trailer.**

## LIFT ARM BYPASS CONTROL

### Description

Figure 57



The lift arm bypass control (Item 1) [Figure 57], located to the right of the operator's seat, is used to lower the lift arms if the lift arms cannot be lowered during normal operations.

### Operation

Perform the procedure below to operate the lift arm bypass control:

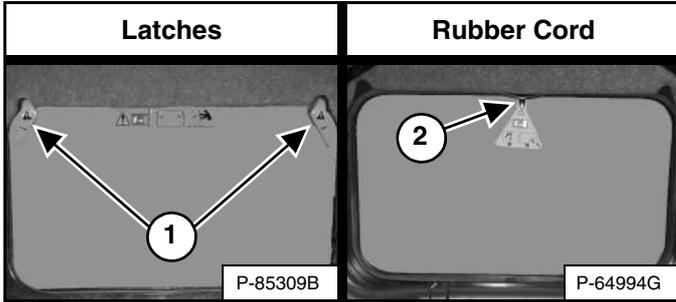
1. Sit in the operator's seat.
2. Fasten the seat belt and lower the seat bar.
3. Turn the knob (Item 1) [Figure 57] 90° clockwise.
4. Pull up and hold the knob until the lift arms lower.

## EMERGENCY EXIT

The front opening on the operator cab and rear window provide exits.

### Rear Window Identification

Figure 58



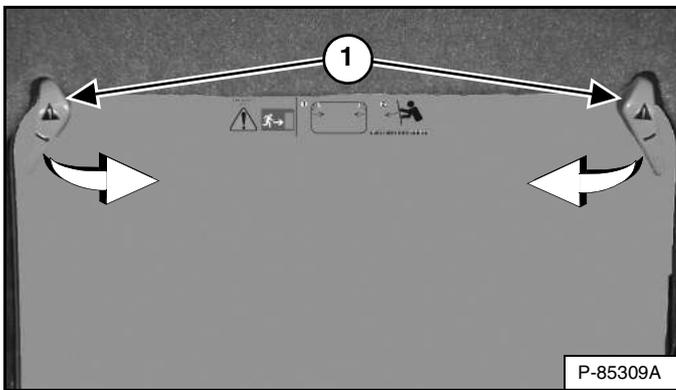
There are two different procedures for removing the rear window from your machine:

1. This window is equipped with latches [Figure 58].
2. This window is equipped with a rubber cord and tag [Figure 58].

**NOTE:** Use these procedures to remove the rear window only under emergency conditions. Damage to machine may occur.

### Rear Window Removal (Latches)

Figure 59



Turn both latches (Item 1) [Figure 59] in until they disengage from the window frame.

Push the rear window out of the rear of the operator cab.

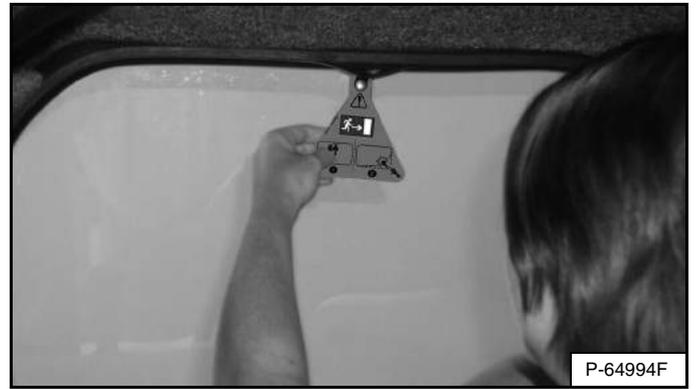
Figure 60



Exit through the rear of the operator cab [Figure 60].

### Rear Window Removal (Rubber Cord)

Figure 61



Pull on the tag on the top of the rear window to remove the rubber cord [Figure 61].

Push the rear window out of the rear of the operator cab.

Figure 62

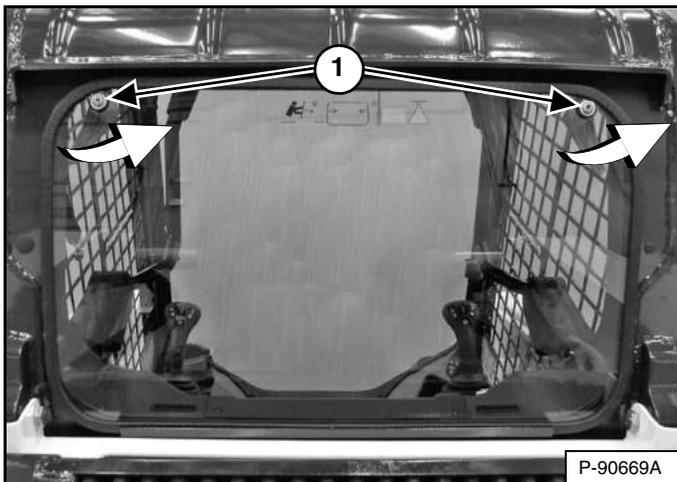


Exit through the rear of the operator cab [Figure 62].

## EMERGENCY EXIT (CONT'D)

### External Access (Rear Window With Latches)

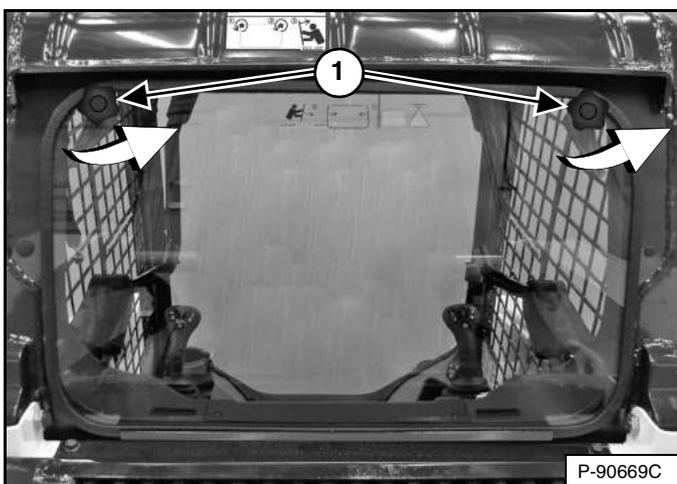
Figure 63



The rear window can be removed from outside the loader using a T40 TORX® Drive tool. Turn both screws (Item 1) [Figure 63] anticlockwise until the latches disengage from the window frame. Pull the top of the window away from the cab and lift up to remove.

**OR**

Figure 64



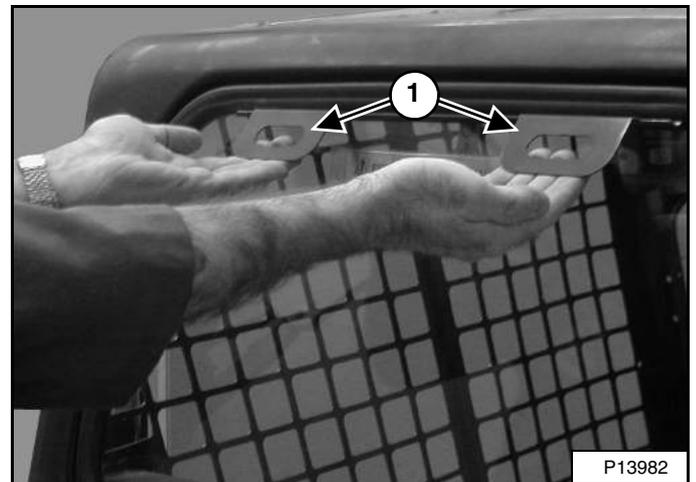
A kit is available to allow removal of the latch equipped rear window from outside the machine without tools. See your Bobcat dealer for availability.

Turn both knobs (Item 1) [Figure 64] anticlockwise until the latches disengage from the window frame. Pull the top of the window away from the cab and lift up to remove.

### External Access (Rear Window With Rubber Cord)

A kit is available to allow removal of the rubber cord equipped rear window from outside the machine. See your Bobcat dealer for availability.

Figure 65

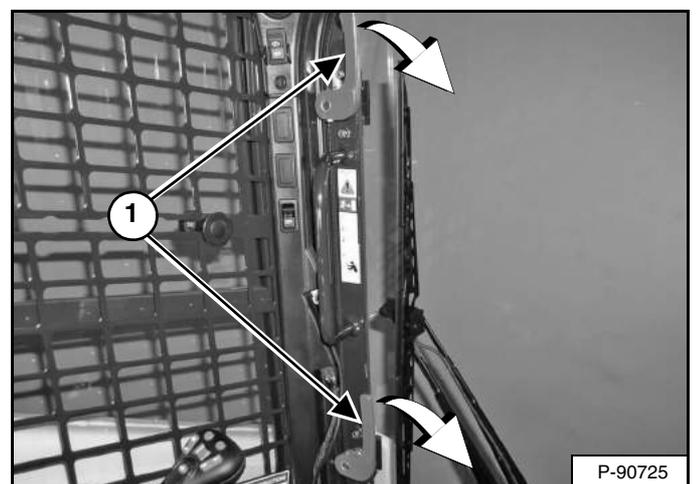


Pull both handles (Item 1) [Figure 65] up and out to remove the rear window.

### Front Door

**NOTE: Use this procedure to remove the front door only under emergency conditions. Damage to machine may occur.**

Figure 66



Turn both latches (Item 1) [Figure 66] down until they disengage from the door frame.

Push the door out of the operator cab door frame and exit through the opening.

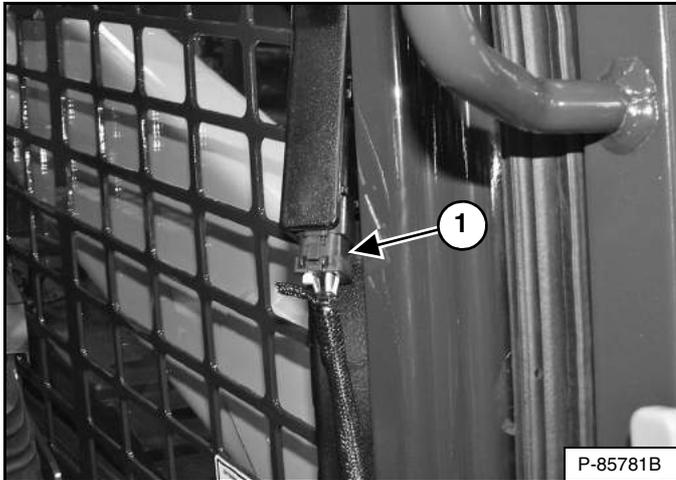
## EMERGENCY EXIT (CONT'D)

### Front Door (Cont'd)

#### Front Door Reassembly

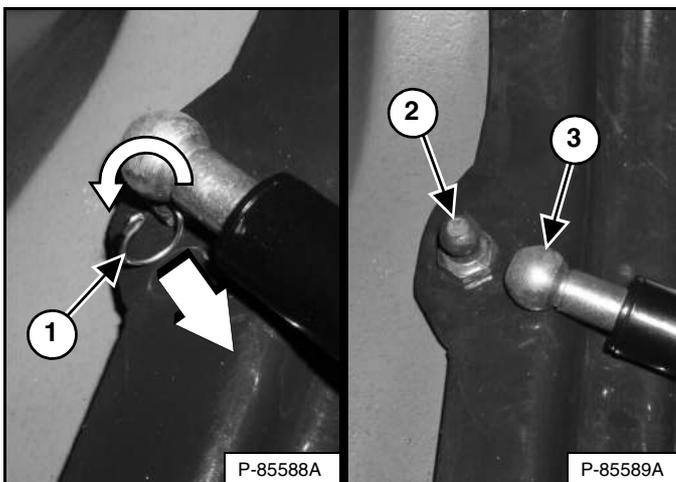
Reassemble the front door using the following instructions if the door was opened using the emergency exit procedure.

**Figure 67**



Disconnect electrical connector (Item 1) [Figure 67].

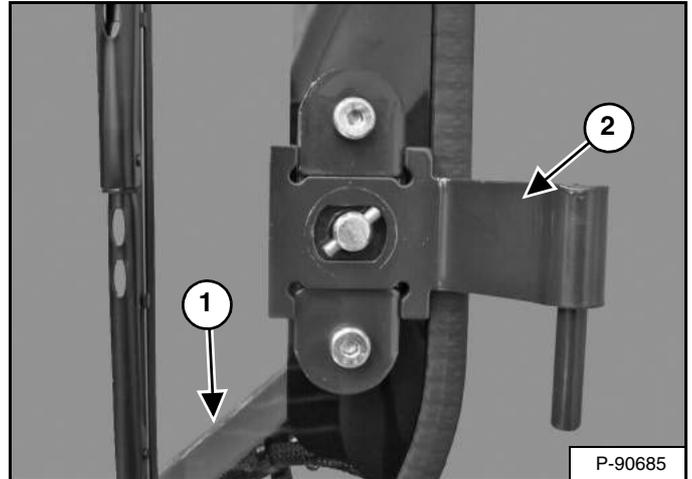
**Figure 68**



Rotate and pull the clip (Item 1) out of the gas spring socket. Pull the gas spring socket (Item 3) straight off the ball stud fitting (Item 2) [Figure 68].

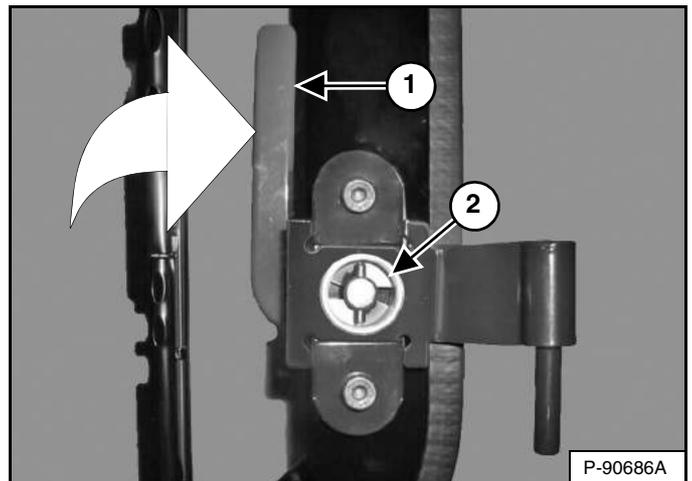
Remove the door hinges from the loader.

**Figure 69**



Orient the latches as shown (Item 1) and install the door hinges (Item 2) [Figure 69] on the door. (Bottom hinge shown.)

**Figure 70**



Install cast washers (Item 2) on door hinges taking care to match rectangular surfaces. Hold cast washer firmly against door and rotate latch (Item 1) [Figure 70] up to lock cast washer into position. (Bottom hinge shown.) (Plastic cap shown removed for visual clarity.)

Install door on loader. Install the gas spring socket on the ball stud fitting. Install the clip into the hole in the gas spring socket. Rotate the clip to lock into position [Figure 68].

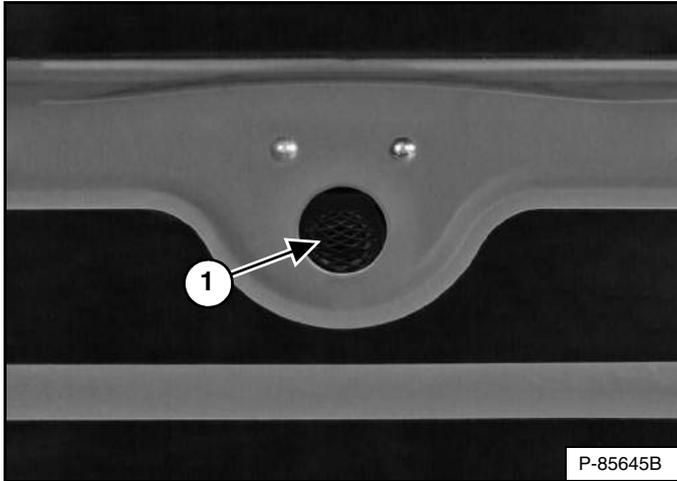
Connect electrical connector [Figure 67].

## BACK-UP ALARM SYSTEM

This machine may be equipped with a Back-up Alarm.

### Description

Figure 71



The back-up alarm (Item 1) [Figure 71] is located on the inside of the rear door.

**A back-up alarm is not a substitute for looking to the rear when operating the loader in reverse, or for keeping bystanders away from the work area.** Operators **must always** look in the direction of travel, including **reverse**, and must also keep bystanders away from the work area, even though the loader is equipped with a back-up alarm.

Operators must be trained to **always** look in the direction of travel, **including when operating the loader in reverse** and to keep bystanders away from the work area. Other workers should be trained to **always** keep away from the operator's work area and travel path.

### Operation

## WARNING

### AVOID INJURY OR DEATH

- Always keep bystanders away from the work area and travel path.
- The operator must maintain a clear view of the direction of travel and look before and during machine movement.
- The back-up alarm must sound when operating the machine in the reverse direction.

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The back-up alarm will sound when the operator moves both steering levers or joystick(s) into the reverse position. Slight movement of the steering levers into the reverse position is required with hydrostatic transmissions, before the back-up alarm will sound.

If alarm does not sound or for adjustment instructions, see inspection and maintenance instructions for the back-up alarm system in the preventive maintenance section of this manual. (See BACK-UP ALARM SYSTEM on Page 131.)

## DRIVING AND STEERING THE LOADER

### Available Control Configurations

This loader has two control configurations available:

- *Standard Controls* – Two steering levers control drive and steering functions.
- *Selectable Joystick Controls (SJC) (Option):*  
*(‘ISO’ Pattern)* – Left joystick controls the drive and steering functions.  
*(‘H’ Pattern)* – Left and right joysticks control left and right side drive and steering functions.

### Operation (Standard)

## ! WARNING

### AVOID INJURY OR DEATH

When operating the machine:

- Keep the seat belt fastened snugly.
- The seat bar must be lowered.
- Keep your feet on the pedal controls or footrests and hands on the controls.

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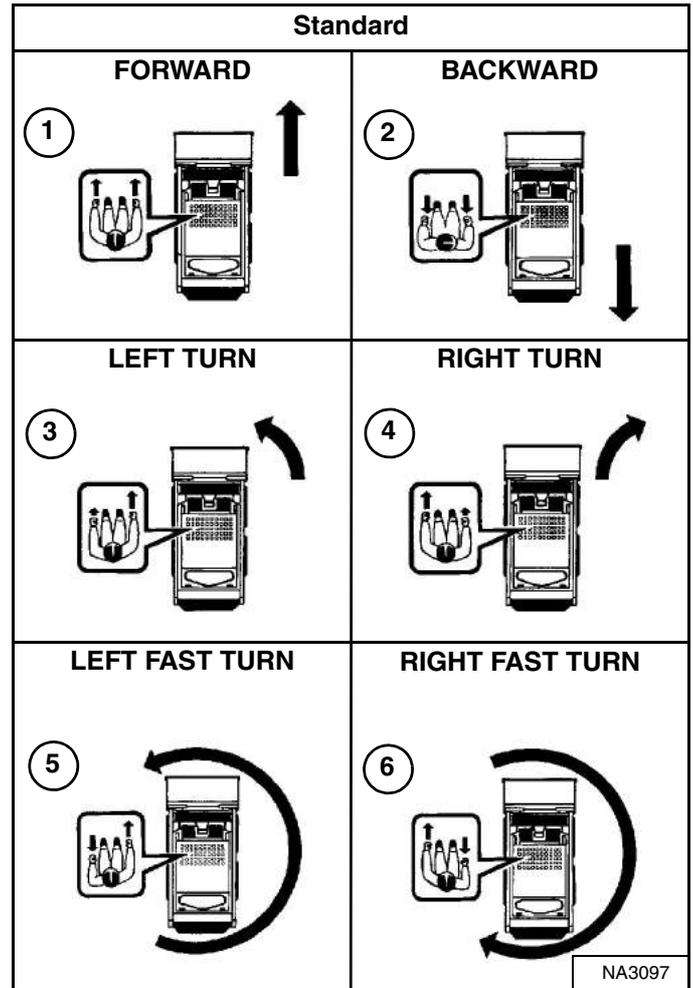
Figure 72



The steering levers (Item 1) [Figure 72] are on the left and right side in front of the seat.

Move the levers smoothly. Avoid sudden starting and stopping.

Figure 73



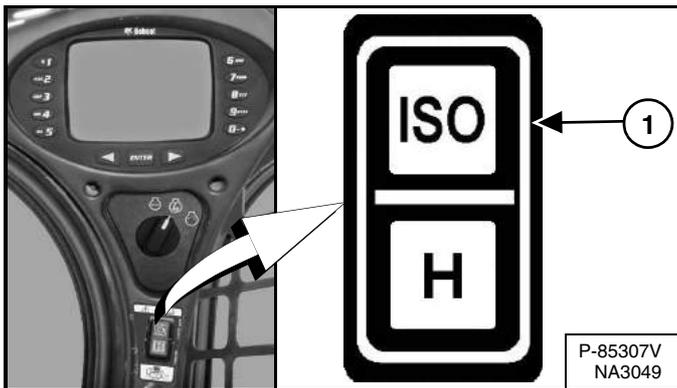
### Steering Lever Functions (Drive And Steering) [Figure 73]:

1. **Forward Travel** – Push both levers forward.
2. **Backward Travel** – Pull both levers backward.
3. **Left Turn** – Move the right lever farther forward than the left lever.
4. **Right Turn** – Move the left lever farther forward than the right lever.
5. **Left Fast Turn** – Move the left lever backward and the right lever forward.
6. **Right Fast Turn** – Move the right lever backward and the left lever forward.

## DRIVING AND STEERING THE LOADER (CONT'D)

### Operation (SJC) In 'ISO' Control Pattern

Figure 74



Select the 'ISO' control pattern by pressing the top of the switch (Item 1) [Figure 74].

## **WARNING**

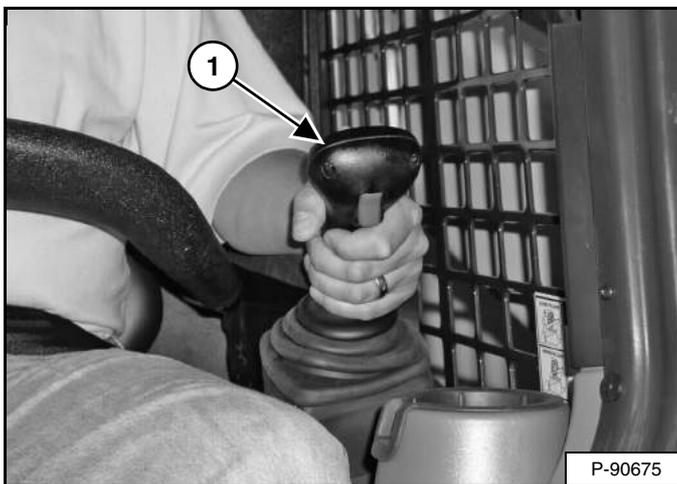
### AVOID INJURY OR DEATH

When operating the machine:

- Keep the seat belt fastened snugly.
- The seat bar must be lowered.
- Keep your feet on the foot rests and hands on control levers.

W-2399-0501

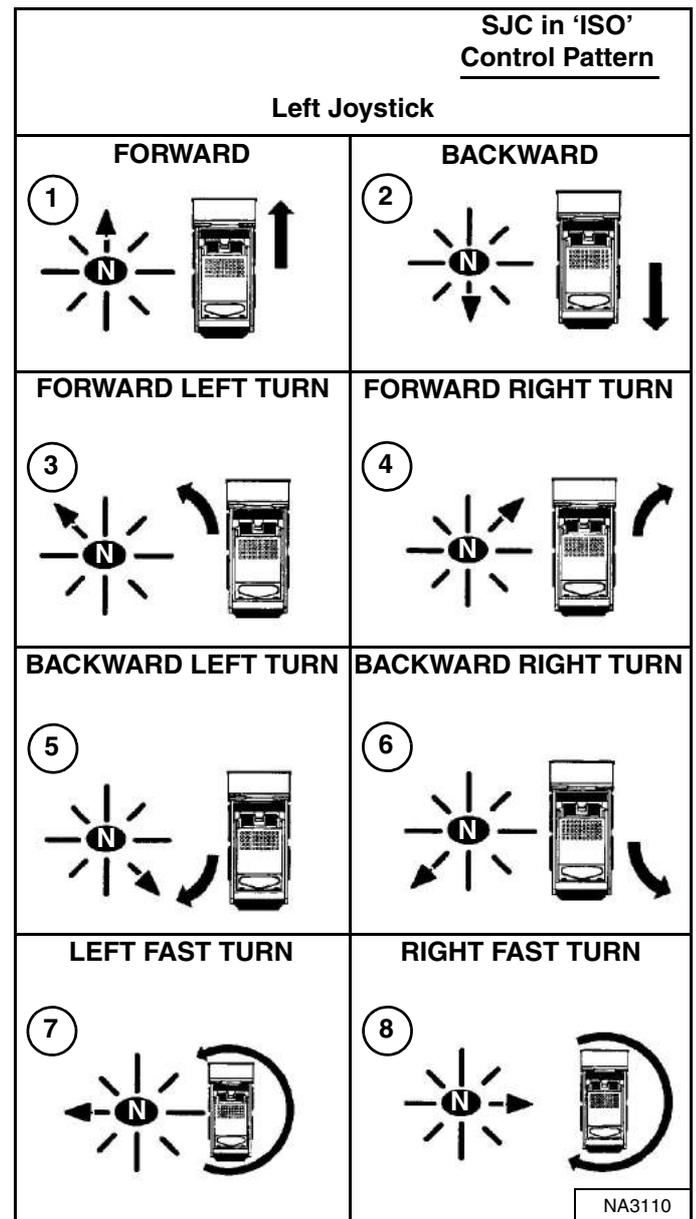
Figure 75



The joystick that controls drive and steering is on the left side in front of the seat (Item 1) [Figure 75].

Move the joystick smoothly. Avoid sudden starting and stopping.

Figure 76



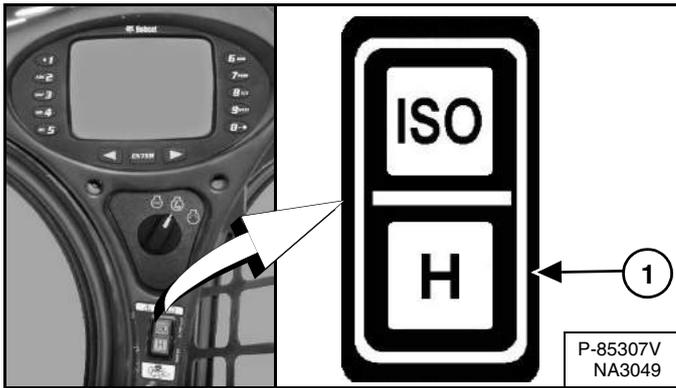
*Left Joystick Functions (Drive And Steering) [Figure 76]:*

1. **Forward Travel** – Move joystick forward.
2. **Backward Travel** – Move joystick backward.
3. **Forward Left Turn** – Move joystick forward and to the left.
4. **Forward Right Turn** – Move joystick forward and to the right.
5. **Backward Left Turn** – Move joystick backward and to the right.
6. **Backward Right Turn** – Move joystick backward and to the left.
7. **Left Fast Turn** – Move joystick to the left.
8. **Right Fast Turn** – Move joystick to the right.

## DRIVING AND STEERING THE LOADER (CONT'D)

### Operation (SJC) In 'H' Control Pattern

Figure 77



Select the 'H' control pattern by pressing the bottom of the switch (Item 1) [Figure 77].

## WARNING

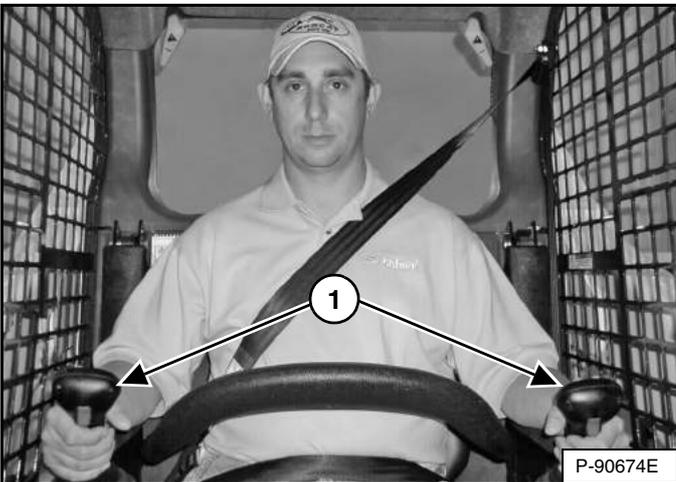
### AVOID INJURY OR DEATH

When operating the machine:

- Keep the seat belt fastened snugly.
- The seat bar must be lowered.
- Keep your feet on the foot rests and hands on control levers.

W-2399-0501

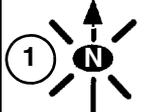
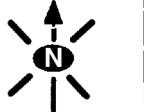
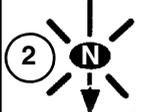
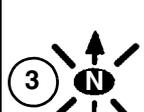
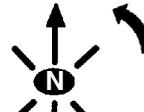
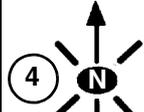
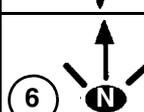
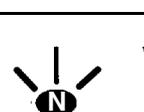
Figure 78



Both joysticks control drive and steering and are located on the left and right side in front of the seat (Item 1) [Figure 78].

Move the joysticks smoothly. Avoid sudden starting and stopping.

Figure 79

Left Joystick	Right Joystick	SJC in 'H' Control Pattern
		 ↑ <b>FORWARD</b>
		 ↓ <b>BACKWARD</b>
		 ↶ <b>LEFT TURN</b>
		 ↷ <b>RIGHT TURN</b>
		 ↶ <b>LEFT FAST TURN</b>
		 ↷ <b>RIGHT FAST TURN</b>

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### Joystick Functions (Drive And Steering) [Figure 79]:

1. **Forward Travel** – Move both joysticks forward.
2. **Backward Travel** – Move both joysticks backward.
3. **Forward Left Turn** – Move the right joystick farther forward than the left joystick.
4. **Forward Right Turn** – Move the left joystick farther forward than the right joystick.
5. **Left Fast Turn** – Move the left joystick backward and the right joystick forward.
6. **Right Fast Turn** – Move the left joystick forward and the right joystick backward.

## **STOPPING THE LOADER**

### **Using The Control Levers Or Joysticks**

When the steering levers or joysticks are moved to the NEUTRAL position, the hydrostatic transmission will act as a *service brake* to stop the loader.

## TWO-SPEED CONTROL

### Description

Two-speed is available on SJC equipped machines. High range allows you to reduce cycle times when there is a long travel distance between the dig site and the dump site. You can also use the high range when travelling from one jobsite to another at faster speeds.



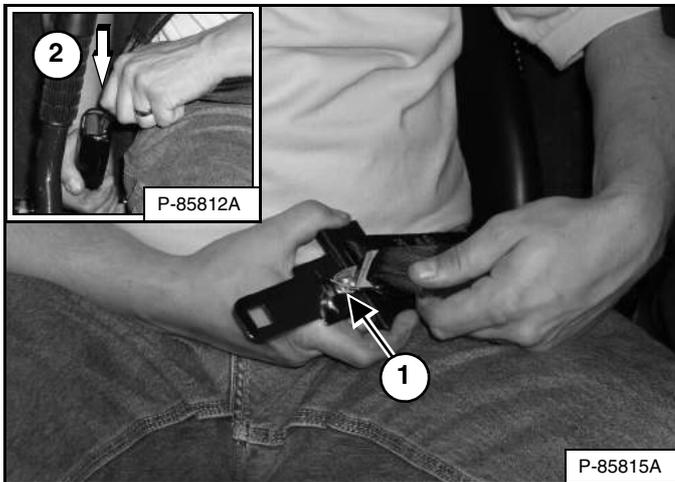
# WARNING

**HITTING OBSTRUCTIONS AT HIGH RANGE SPEEDS  
CAN CAUSE SERIOUS INJURY OR DEATH**

**Fasten shoulder belt for additional restraint when  
operating at high range speeds.**

W-2754-0908

Figure 80



**NOTE:** The 3-point restraint must be used when selecting high range operation [Figure 80].

Connect the shoulder belt to the lap belt (Item 1). Pull the lap belt across to the right side of the seat and fasten (Item 2) [Figure 80].

The shoulder belt must be positioned over your left shoulder and lap belt over your lower hips.

### Operation



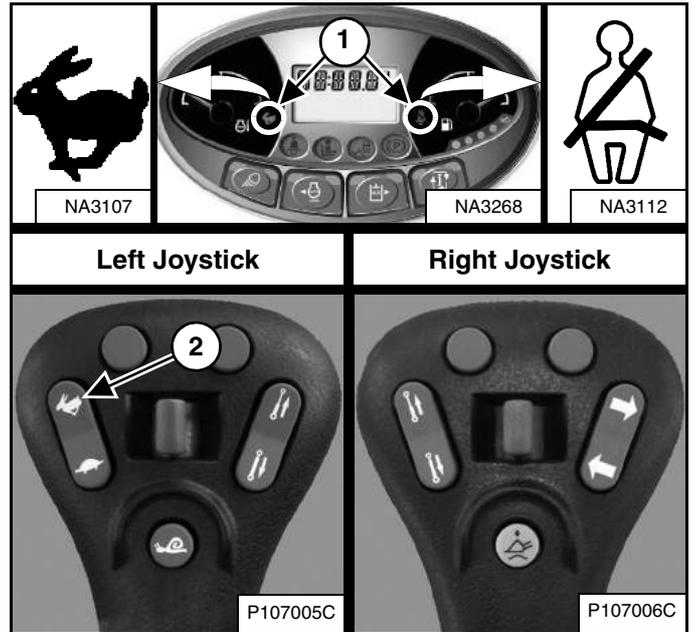
# WARNING

**HITTING OBSTRUCTIONS AT HIGH RANGE SPEEDS  
CAN CAUSE SERIOUS INJURY OR DEATH**

**Fasten shoulder belt for additional restraint when  
operating at high range speeds.**

W-2754-0908

Figure 81



**NOTE:** You must disengage Speed Management before you can select high range.

Press the top of the switch (Item 2) on the left joystick for high range. The two-speed and shoulder belt icons located on the left instrument panel (Item 1) [Figure 81] will light.

Press the bottom of the switch for low range.

## SPEED MANAGEMENT

Speed Management is available on SJC equipped machines.

### Description

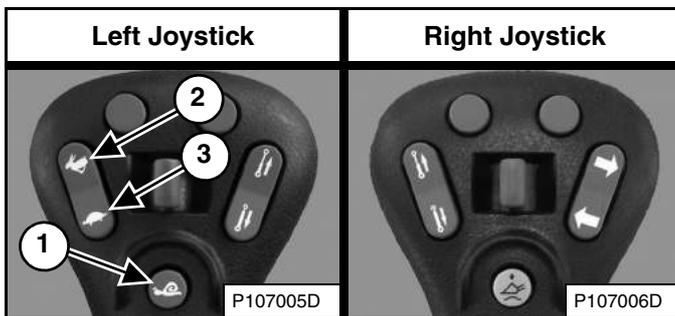
Speed Management allows the loader to be manoeuvred at a slower travel speed, even during maximum movement of the joystick(s).

This feature can be useful when installing attachments, loading or unloading, and certain applications. (EXAMPLES: Landscaping, tilling, trenching)

### Operation

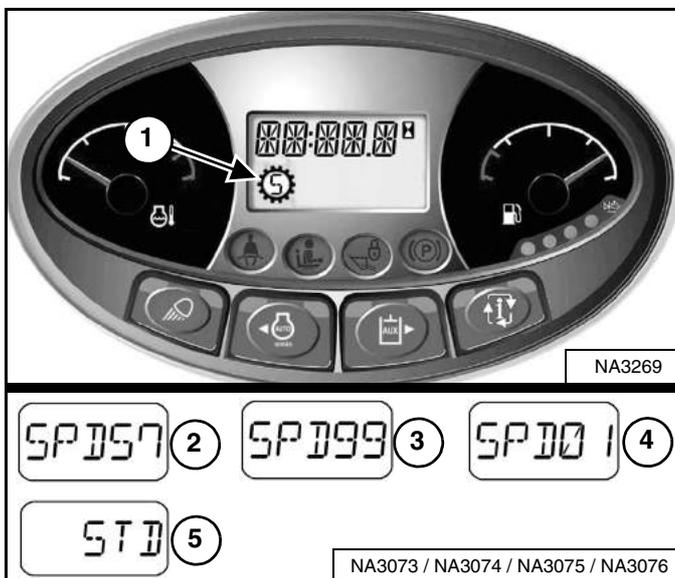
**NOTE: Two-Speed Loaders Only – You must select low range speed to engage Speed Management.**

Figure 82



Press the button (Item 1) [Figure 82] on the left joystick once to engage Speed Management.

Figure 83



The Speed Management icon (Item 1) [Figure 83] will appear in the display and remain on until the Speed Management button is pressed again or the machine is turned off.

When Speed Management is engaged, the machine will travel at the factory default setting of 57% of Standard Travel Speed and the percentage [SPD57] will appear in the display (Item 2) [Figure 83].

**NOTE: The factory default setting can be changed by the operator. (See Changing The Factory Default Setting on Page 74.)**

While Speed Management is engaged, press the top of the Speed Control switch (Item 2) [Figure 82] to increase the speed up to 99% [SPD99] or the bottom of the switch (Item 3) [Figure 82] to decrease the speed down to 1% [SPD01]. The percentages will appear in the display (Items 2, 3, and 4) [Figure 83].

Press button (Item 1) [Figure 82] again to disengage Speed Management and return to Standard Travel Speed. [STD] (Item 5) [Figure 83] will appear in the display.

The system will retain the speed percentage as long as the loader remains ON.

**EXAMPLE: You can be using the machine at 40%, then disengage Speed Management to reposition the loader, and then reengage Speed Management. The speed percentage will still be at 40%.**

**EXAMPLE: Turning the key switch to STOP will return the Speed Management setting to default. The next time you start the engine and engage Speed Management, the speed is set at 57% (factory default setting) or the last default setting saved by the operator. (See Changing The Factory Default Setting on Page 74.)**

**NOTE: Two-Speed Loaders Only – You must disengage Speed Management before you can select high range.**

## SPEED MANAGEMENT (CONT'D)

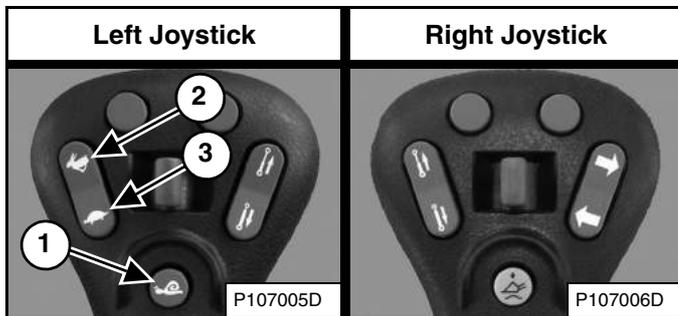
### Changing The Factory Default Setting

The Speed Management factory default setting can be changed by the operator to save adjustment time.

**EXAMPLE:** Your machine is often used for trenching and you prefer a Speed Management setting of 28% of Standard Travel Speed for that application. The Speed Management default setting can be changed to 28% of Standard Travel Speed instead of the factory default setting of 57%. Each time you start the machine and first select Speed Management, the machine will default to 28% of Standard Travel Speed.

Engage Speed Management. (See Operation on Page 73.)

**Figure 84**



Adjust the speed percentage higher (Item 2) or lower (Item 3) [Figure 84] by pressing the Speed Control switch until the desired default setting is displayed.

Press and hold the button (Item 1) [Figure 84] on the left joystick to save the default setting.

**Figure 85**



The alarm will beep once, display [SET ##] [Figure 85] (## will indicate the percentage you selected) and remain in Speed Management mode.

Pressing the button (Item 1) [Figure 84] on the left joystick or turning the machine off will disengage Speed Management and return the loader to Standard Travel Speed.

When Speed Management is first selected each time the machine is started, the percentage you selected is the default setting. Speed Management can still be adjusted from 1% to 99% of Standard Travel Speed.

The default setting can be changed any time the operator chooses.

## DRIVE RESPONSE

Drive Response is available on SJC equipped machines.

### Description

Drive Response changes how responsive (more or less) the loaders drive and steering systems are when the operator moves the joystick(s).

Drive Response can be changed by the operator for different drive response preferences, various job conditions, and attachment use.

**NOTE: Changes to drive response do not affect braking or stopping the loader.**

There are three drive response settings:

- **[DR-1]** provides a smooth responsive reaction to joystick movement. (Drive only)
- **[DR-2]** is the default setting and provides a normal responsive reaction to joystick movement. (Drive only)
- **[DR-3]** provides a quick responsive reaction to joystick movement. (Drive only)

### Operation

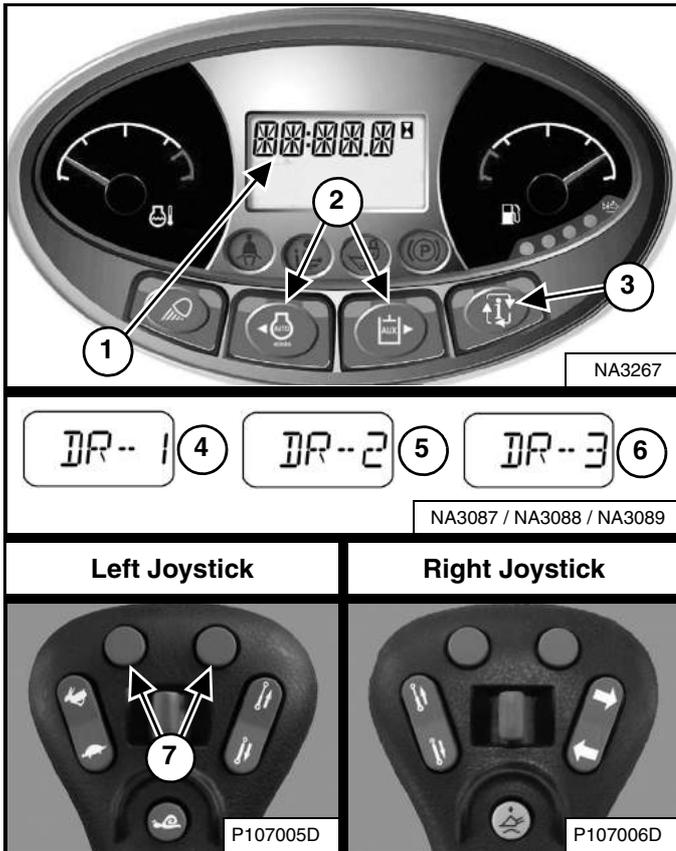
Perform PRE-STARTING PROCEDURE and STARTING THE ENGINE procedures:

1. Fasten seat belt.
2. Lower seat bar.
3. Put joysticks in NEUTRAL position.
4. Start the engine.
5. Press the PRESS TO OPERATE LOADER button.
6. Current drive response setting is displayed briefly in the data display.

## DRIVE RESPONSE (CONT'D)

### Operation (Cont'd)

Figure 86



Press the Information button (Item 3) to cycle the data display until the drive response menu is displayed. The current drive response setting will appear in the data display (Item 1) [Figure 86].

Press the left or right scroll button (Item 2) [Figure 86] on the left panel to adjust the setting. Adjustments to the drive response are effective immediately.

### OR

Press the left or right button (Item 7) [Figure 86] on the left joystick to adjust the setting. Adjustments to the drive response are effective immediately.

Press the left scroll button on the left panel or the left button on the left joystick to scroll down through the three drive response settings (Items 4, 5, and 6). Press the right scroll button on the left panel or the right button of the left joystick to scroll up through the three drive response settings (Items 4, 5, and 6) [Figure 86].

### Saving The Drive Response Setting:

The current drive response setting can be saved by pressing the Information button (Item 3) [Figure 86] to exit from the drive response adjustment menu.

### OR

If no buttons are pressed for 10 seconds, the drive response setting will be saved and the display screen will change to the hourmeter.

**NOTE:** The drive response setting is saved for each user. Example: If user 1 saves the setting [DR-2], the machine will be in [DR-2] the next time user 1 password is entered.

## STEERING DRIFT COMPENSATION

Steering Drift Compensation is available on SJC equipped machines.

### Description

Steering Drift Compensation can be used to reduce steering drift to maintain a desired travel path in forward and reverse directions.

Examples of applications where this feature can be used:

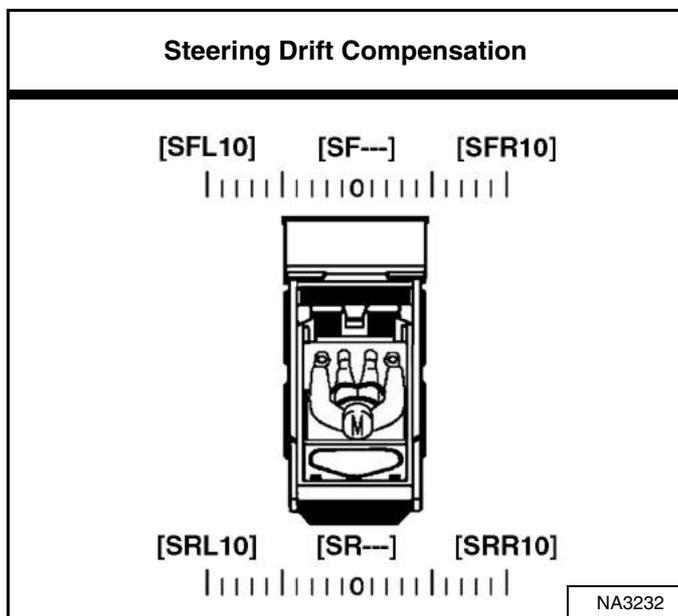
- To compensate for normal variations such as tyre inflation pressure, track tension, tyre wear, and track wear.
- Using side shift attachments such as trenchers, planers, and silt fence installers.
- Driving on uneven terrain such as crowned road surfaces.

### Operation

Perform PRE-STARTING PROCEDURE and STARTING THE ENGINE procedures:

1. Fasten seat belt.
2. Lower seat bar.
3. Put joysticks in NEUTRAL position.
4. Start the engine.
5. Press the PRESS TO OPERATE LOADER button.
6. Current drive response setting is displayed briefly in the data display.

Figure 87



Steering drift compensation contains a total of 21 settings. Steering drift compensation can be set to any point from NEUTRAL to [SFL10] or [SRL10] left, and from NEUTRAL to [SFR10] or [SRR10] right. [SF---] or [SR---] is displayed when set for NEUTRAL [Figure 87].

## STEERING DRIFT COMPENSATION (CONT'D)

### Operation (Cont'd)

Figure 88



Press the Information button (Item 3) to cycle the data display until the steering drift compensation menu is displayed. The current steering drift compensation setting will appear in the data display (Item 1) [Figure 88].

Press the left or right scroll button (Item 2) [Figure 88] on the left panel to adjust the setting. Adjustments to steering drift compensation are effective immediately and saved automatically.

**OR**

Press the left or right button (Item 7) [Figure 88] on the left control to adjust the setting. Adjustments to the steering drift compensation are effective immediately and saved automatically.

Press the left scroll button on the left panel or the left button on the left control to adjust the machine left. [SFL01] (Item 4) through a maximum of [SFL10] will appear in the data display (Item 1) [Figure 88]. The number will increase by one each time you press the button. The higher the number, the greater the amount of steering drift compensation to the left.

Press the right scroll button on the left panel or the right button on the left control to adjust the machine back toward centre. The display will decrease down to NEUTRAL displayed as [SF---] (Item 5). Another press of the upper right button will cause [SFR01] (Item 6) to appear in the data display (Item 1) [Figure 88]. The number will increase by one each time you press the button up to a maximum of [SFR10]. The higher the number, the greater the amount of steering drift compensation to the right.

Forward steering drift compensation setting can be adjusted with the steering controls in NEUTRAL or during forward travel. Reverse steering drift compensation setting can be adjusted during reverse travel. The letter [R] will appear in place of the letter [F] in the data display when setting reverse steering drift compensation. (EXAMPLES: [SRL01], [SRR01], and [SR---]).

*Exiting The Steering Drift Compensation Menu:*

Press the Information button (Item 3) [Figure 88] to exit from the steering drift compensation adjustment menu.

**OR**

If no buttons are pressed for 10 seconds, the display screen will change to the hourmeter.

## LIFT AND TILT COMPENSATION

Lift and Tilt Compensation is available on SJC equipped machines.

### Description

Lift and Tilt Compensation can be used to adjust the lift and tilt control sensitivity. This enables the operator to increase or decrease the amount of control movement before lift up, lift down, tilt back, and tilt out begins. The operator can change each setting to their preference.

**EXAMPLE: Your machine is being used with a mower attachment. The mower slowly lowers because you move the controls slightly when passing over extremely rough ground. Adjusting the lift down control to a low setting will provide an increased NEUTRAL band and allow for more control movement before the lift arms move.**

The procedure that follows provides a starting point for the lift and tilt control compensation. Operators can adjust the settings to account for attachment weight, engine rpm and application.

### Operation

**NOTE: Lift and Tilt Compensation should be performed when the machine has been warmed to operating temperature and any attachment has been removed.**

Perform PRE-STARTING PROCEDURE and STARTING THE ENGINE procedures:

1. Fasten seat belt.
2. Lower seat bar and engage the parking brake.
3. Put handles or joysticks in NEUTRAL position.
4. Start the engine.
5. Select 'H' control pattern.
6. Press the PRESS TO OPERATE LOADER button.
7. Raise the lift arms approximately 1 m (3 ft) off the ground and tilt the Bob-Tach frame forward approximately 300 mm (1 ft).
8. Raise and lower the seat bar to engage the interlocks and enable the procedure to be performed.
9. Increase engine speed to high idle.

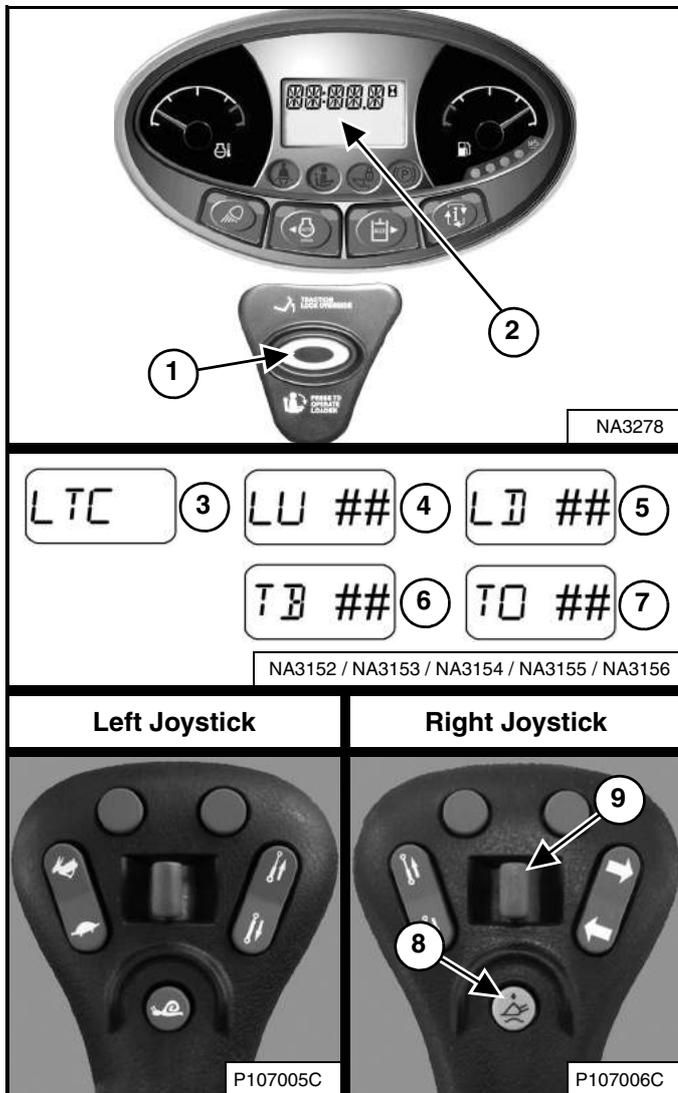
**NOTE: When the procedure has begun, raising the seat bar will cause the machine to disengage from lift and tilt compensation. Changes made to the lift and tilt compensation settings will NOT be saved.**

## LIFT AND TILT COMPENSATION (CONT'D)

### Operation (Cont'd)

This procedure is described using the 'H' control pattern. The procedure can be performed using the 'ISO' control pattern on SJC equipped loaders.

Figure 89



LTC – Lift and Tilt Compensation  
LU – Lift Up  
LD – Lift Down  
TB – Tilt Back  
TO – Tilt Out

1. Press and hold the float button (Item 8). Press the PRESS TO OPERATE LOADER button (Item 1). Release both buttons. This will open the lift and tilt compensation menu. [LTC] (Item 3) will appear in the data display (Item 2) [Figure 89].

2. Move the left joystick outward and hold. [LU ##] (Item 4) will appear in the data display. (## will indicate the current setting.) Move the switch (Item 9) [Figure 89] to the right repeatedly until a slight upward movement of the lift arms is noticed. The setting will increase by one each time the switch is moved. The available range of adjustment is -25 to 35.

**NOTE:** If the lift arms begin to move immediately, move the switch (Item 9) [Figure 89] to the left repeatedly until lift arm movement stops, then move the switch to the right repeatedly until a slight upward movement of the lift arms is noticed. (This procedure also applies to the next three steps.)

3. Move the left joystick inward and hold. [LD ##] (Item 5) will appear in the data display. Move the switch (Item 9) [Figure 89] to the right repeatedly until a slight downward movement of the lift arms is noticed.
4. Move the right joystick inward and hold. [TB ##] (Item 6) will appear in the data display. Move the switch (Item 9) [Figure 89] to the right repeatedly until a slight backward tilt movement of the Bob-Tach frame is noticed.
5. Move the right joystick outward and hold. [TO ##] (Item 7) will appear in the data display. Move the switch (Item 9) [Figure 89] to the right repeatedly until a slight forward tilt movement of the Bob-Tach frame is noticed.

#### Exiting The Lift And Tilt Compensation Menu:

The current lift and tilt compensation setting can be saved by pressing the PRESS TO OPERATE LOADER button (Item 1) [Figure 89]. The machine will exit from the lift and tilt compensation menu.

#### OR

Raise and lower the seat bar to exit from the lift and tilt compensation menu without saving. This will cancel all changes made. Press the PRESS TO OPERATE LOADER button (Item 1) [Figure 89] to continue machine operation.

Perform several lift and tilt functions to determine if the settings match your preferences. Repeat procedure if desired.

## HYDRAULIC CONTROLS

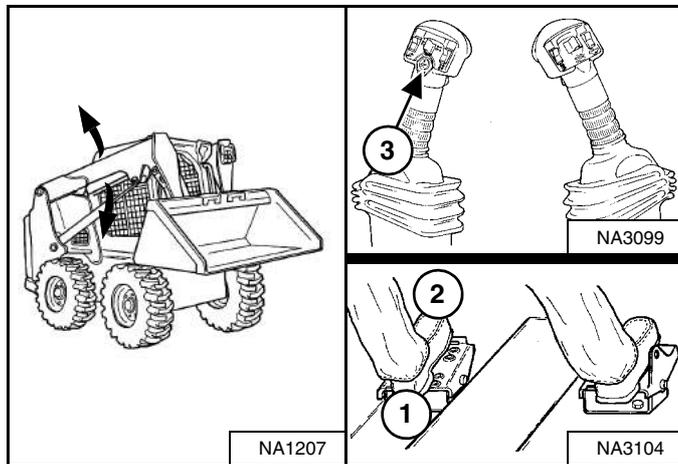
### Description

Two foot pedals (or optional joysticks) control the hydraulic cylinders for the lift and tilt functions.

Put your feet on the pedals (or footrests) and **KEEP THEM THERE** any time you operate the loader.

### Standard Controls

**Figure 90**



#### *Lift Arm Operation – (Left Pedal)*

Push the heel (Item 1) [Figure 90] of the pedal to raise the lift arms.

Push the toe (Item 2) [Figure 90] of the pedal to lower the lift arms.

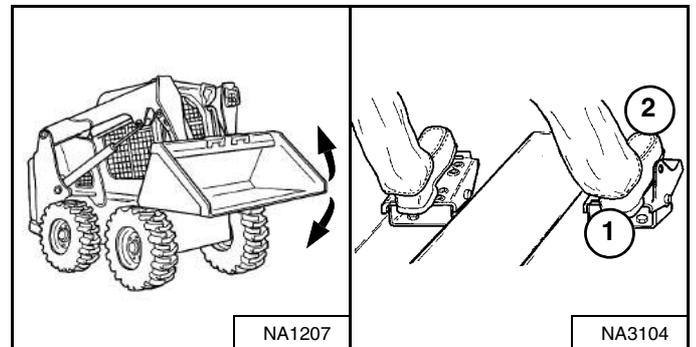
#### *Lift Arm Float Position – (Left Pedal)*

Push the toe of the pedal (Item 2) [Figure 90] all the way forward until the pedal locks into the float position.

Raise the lift arms (Item 1) [Figure 90] to disengage.

Use the float position of the lift arms to level loose material while driving backward.

**Figure 91**



#### *Tilt Operation – (Right Pedal)*

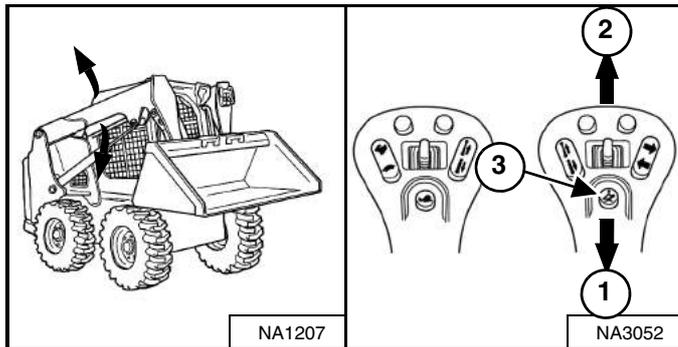
Push the heel of the pedal (Item 1) [Figure 91] to tilt the bucket backward.

Push the toe of the pedal (Item 2) [Figure 91] to tilt the bucket forward.

## HYDRAULIC CONTROLS (CONT'D)

### Selectable Joystick Controls (SJC) In 'ISO' Control Pattern

Figure 92



#### Lift Arm Operation – (Right Hand Joystick)

Move the joystick backward (Item 1) [Figure 92] to raise the lift arms.

Move the joystick forward (Item 2) [Figure 92] to lower the lift arms.

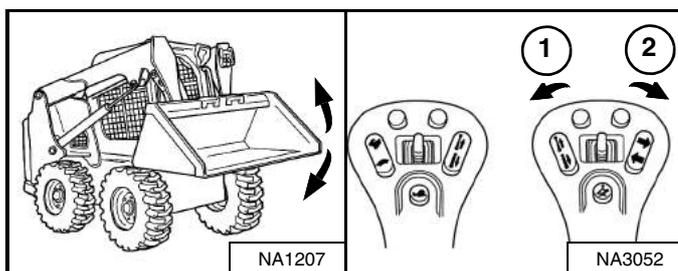
#### Lift Arm Float Position – (Right Hand Joystick)

Press and hold the Float button (Item 3) while the joystick is in NEUTRAL. Move the joystick to lift arm down position (Item 2) [Figure 92], then release the button.

Press Float button (Item 3) again or move the joystick to lift arm up position (Item 1) [Figure 92] to disengage.

Use the float position of the lift arms to level loose material while driving backward.

Figure 93



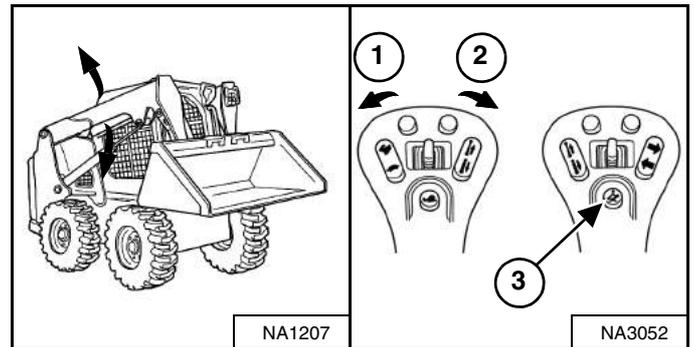
#### Tilt Operation – (Right Hand Joystick)

Move the joystick inward (Item 1) [Figure 93] to tilt the bucket backward.

Move the joystick outward (Item 2) [Figure 93] to tilt the bucket forward.

### Selectable Joystick Controls (SJC) In 'H' Control Pattern

Figure 94



#### Lift Arm Operation – (Left Hand Joystick)

Move the joystick outward (Item 1) [Figure 94] to raise the lift arms.

Move the joystick inward (Item 2) [Figure 94] to lower the lift arms.

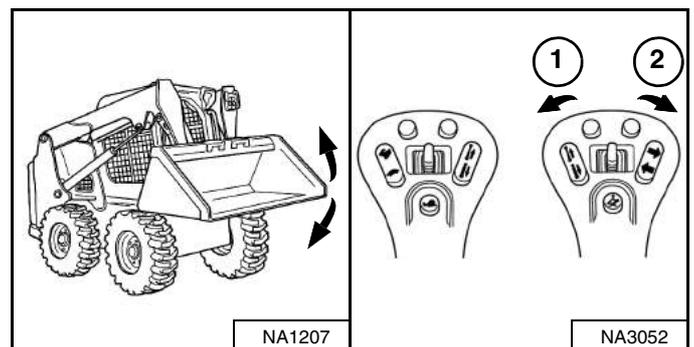
#### Lift Arm Float Position – (Left And Right Hand Joysticks)

Press and hold the Float button (Item 3) while the joysticks are in NEUTRAL. Move the left joystick to lift arm down position (Item 2) [Figure 94], then release the button.

Press Float button (Item 3) again or move the left joystick to lift arm up position (Item 1) [Figure 94] to disengage.

Use the float position of the lift arms to level loose material while driving backward.

Figure 95



#### Tilt Operation – (Right Hand Joystick)

Move the joystick inward (Item 1) [Figure 95] to tilt the bucket backward.

Move the joystick outward (Item 2) [Figure 95] to tilt the bucket forward.

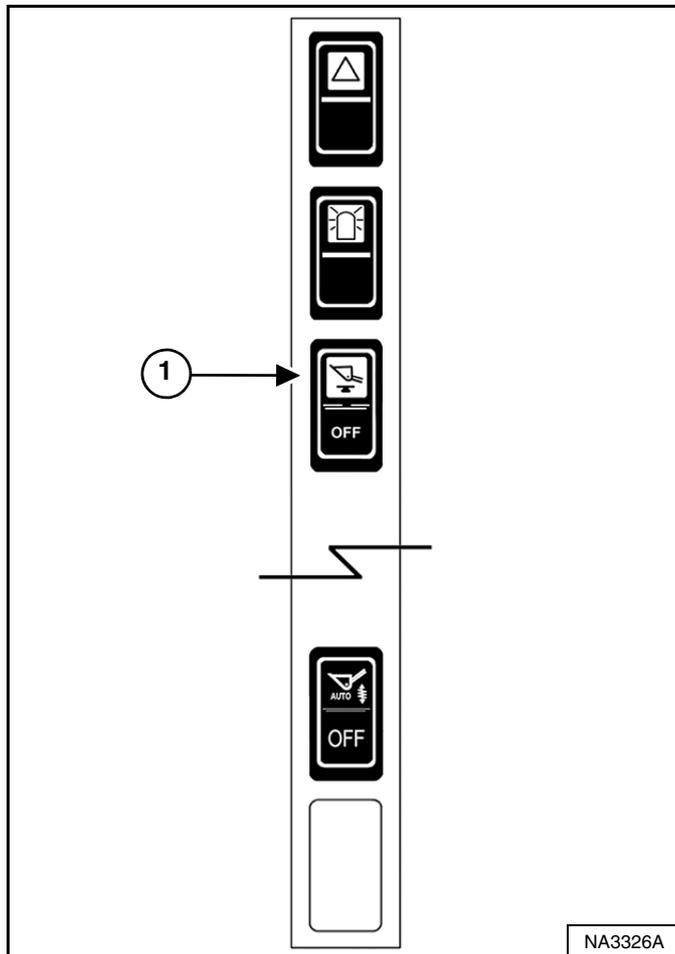
## HYDRAULIC CONTROLS (CONT'D)

### Hydraulic Bucket Positioning

This machine may be equipped with Hydraulic Bucket Positioning.

The function of hydraulic bucket positioning is to keep the bucket at the same approximate angle as the lift arms are raised.

**Figure 96**



Press the top of the Bucket Positioning switch (Item 1) **[Figure 96]** on the left switch panel to engage the bucket positioning function. The amber light in the switch will turn ON.

Press the bottom of the switch to disengage. The amber light will turn OFF.

Bucket positioning functions only during upward lift cycle.

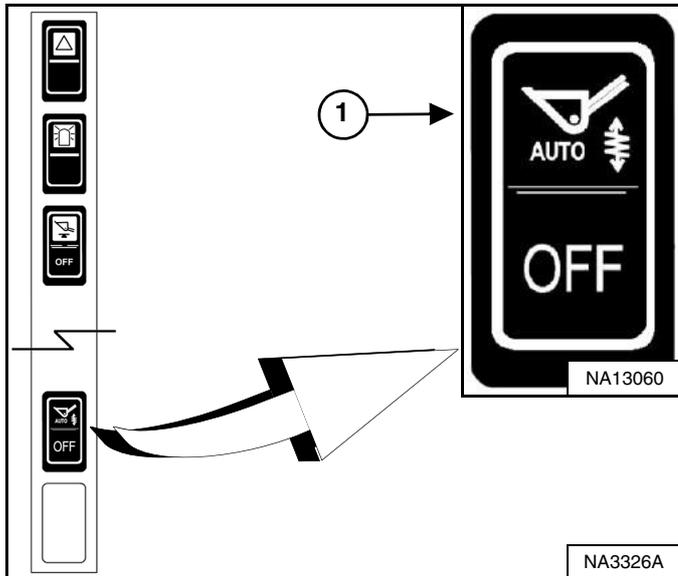
## HYDRAULIC CONTROLS (CONT'D)

### Automatic Ride Control

This machine may be equipped with Automatic Ride Control.

Automatic ride control provides a smoother ride, reduced load spillage, and improved machine control when travelling over uneven ground with heavy loads or in heavy digging applications.

Figure 97



Press the top of the Automatic Ride Control switch (Item 1) [Figure 97] on the left switch panel to engage the automatic ride control function.

The loader software will engage and disengage ride control automatically based on lift arm load and operation.

The automatic ride control system uses an accumulator that requires occasional service. (See AUTOMATIC RIDE CONTROL ACCUMULATOR on Page 179.)

Press the bottom of the switch to disengage.

**NOTE: Certain applications will not benefit from using automatic ride control. Turn OFF when using certain attachments for better performance.**

## **WARNING**

### **AVOID UNEXPECTED LIFT ARM MOVEMENT**

Operating with the Automatic Ride Control switch in the AUTO position may result in the lift arms slowly raising during certain conditions when the operator moves the hydraulic controls in a specific manner:

1. A small or no load on the lift arms. **EXAMPLE:** Empty bucket or no attachment installed.

**WITH**

2. High hydraulic pressure in the tilt or auxiliary hydraulic system. **EXAMPLE:** Holding the tilt control forward or backward after it stops moving **OR** when an attachment hydraulic motor is stalled.

**AND**

3. While moving the lift control to raise or lower the lift arms.

**NOTE:** The slow upward movement of the lift arms will continue briefly even after the operator moves the hydraulic controls back to **NEUTRAL** under the conditions and operation described above.

**Disengage the automatic ride control functions for applications where precise lift arm control is required or whenever unexpected lift arm movement is not desired.**

W-3017-0816

## HYDRAULIC CONTROLS (CONT'D)

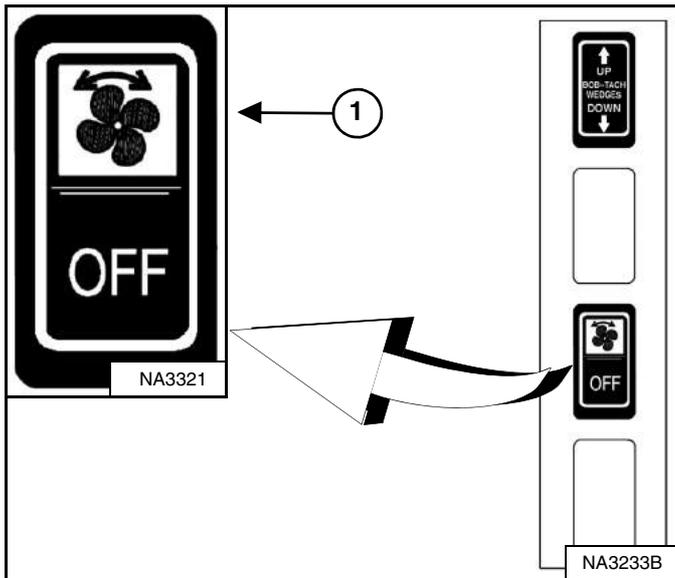
### Reversing Fan

This machine may be equipped with a Reversing Fan.

The function of the reversing fan is to clear dust and debris from the rear grille. This is accomplished by reversing the direction of the cooling fan for several seconds.

The operator can select automatic or manual operation of the reversing fan.

**Figure 98**



#### *Automatic:*

- Press the top of the Reversing Fan switch (Item 1) [Figure 98] on the right switch panel to put the switch into the middle position.
- The machine will reverse the fan automatically based on fluid temperature as long as automatic operation is selected.

#### *Manual:*

- Fully press the top of the Reversing Fan switch (Item 1) [Figure 98] on the right switch panel to perform one reversing cycle.
- The switch will return to automatic operation when released.

The top of the switch will light in the Automatic and Manual positions.

Press the bottom of the switch to disengage.

**NOTE:** To protect vital systems, the fan will not reverse when fluid temperatures approach overheating conditions. Cleaning or servicing the cooling system may be required to continue operation. (See Cleaning on Page 152.)

**Figure 99**



Reversing fan is disabled when the engine coolant or hydraulic fluid temperature is too high or too low.

Selecting manual operation of the reversing fan when disabled will cause the following indications:

1. The alarm will beep once.
2. Service code [RFOFF] will appear in the data display [Figure 99] for several seconds.

## HYDRAULIC CONTROLS (CONT'D)

### FRONT Auxiliary Hydraulics Operation

Figure 100

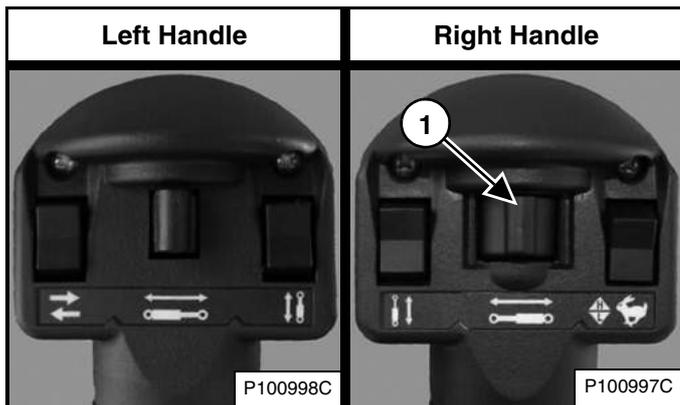


Press the Auxiliary Hydraulics button (Item 2) [Figure 100] once to activate the auxiliary hydraulics.

The light (Item 1) [Figure 100] is ON.

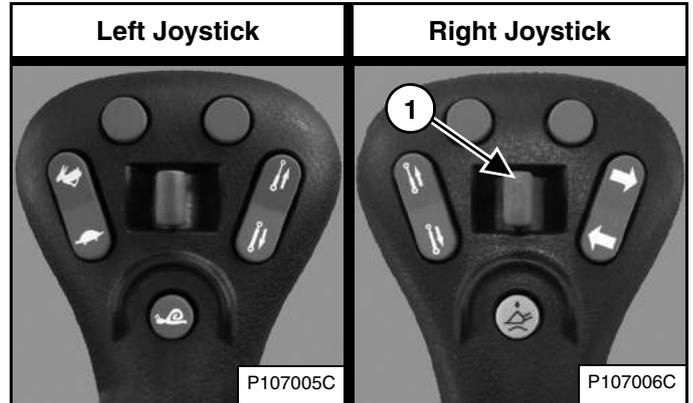
*Standard (If Equipped)*

Figure 101



*SJC (If Equipped)*

Figure 102



Move the Front Auxiliary Hydraulic switch (Item 1) [Figure 101] or [Figure 102] to the right or left to change direction of the auxiliary hydraulic fluid flow to the front quick couplers. If you move the switch halfway, the auxiliary functions move at approximately one-half speed. (EXAMPLE: Open and close grapple teeth.)

Release the Front Auxiliary Hydraulic switch to stop hydraulic fluid flow to the front quick couplers.

To deactivate the auxiliary hydraulics, press the Auxiliary Hydraulics button (Item 2) [Figure 100] again.

The light (Item 1) [Figure 100] is OFF.

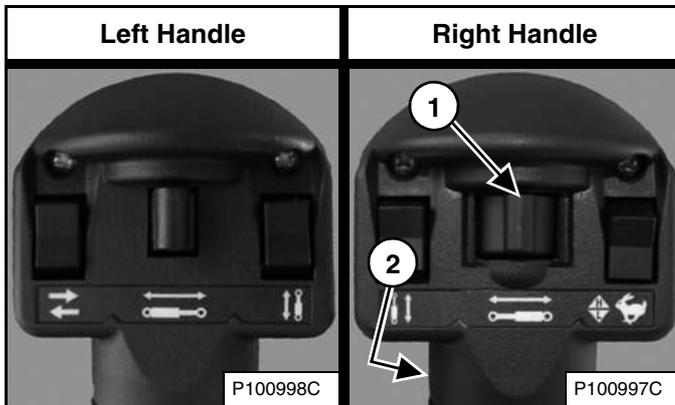
**NOTE: When the operator is seated and raises the seat bar, the Auxiliary Hydraulic System (Front and Rear) will deactivate.**

## HYDRAULIC CONTROLS (CONT'D)

### FRONT Auxiliary Hydraulics Operation (CONTINUOUS FLOW)

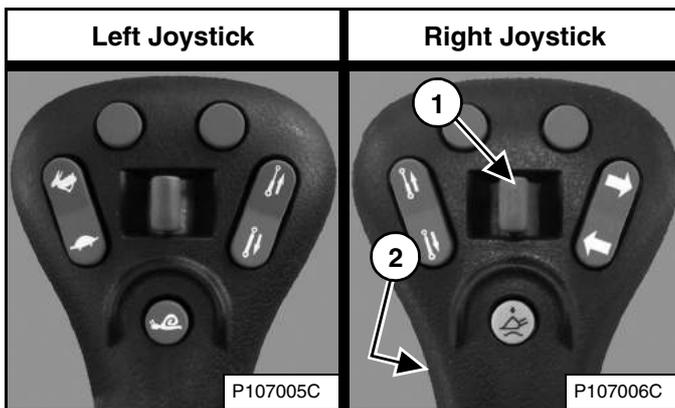
Standard (If Equipped)

Figure 103



SJC (If Equipped)

Figure 104



After activating the auxiliary hydraulics, press the Continuous Flow Control switch (Item 2) [Figure 103] or [Figure 104] to allow constant auxiliary hydraulic fluid flow to the front female coupler (female coupler is pressurised). (EXAMPLE: Operate a backhoe.)

To stop continuous auxiliary hydraulic fluid flow, press the Continuous Flow Control switch (Item 2) [Figure 103] or [Figure 104] a second time.

**NOTE: When the operator is seated and raises the seat bar, the Auxiliary Hydraulic System (Front and Rear) will deactivate.**

### FRONT Auxiliary Hydraulics Operation (REVERSE CONTINUOUS FLOW)

To allow constant auxiliary hydraulic fluid flow to the front male coupler (male coupler is pressurised):

1. Activate the auxiliary hydraulics.
2. Move the Front Auxiliary Hydraulic switch (Item 1) [Figure 103] or [Figure 104] to the left and hold.
3. Press the Continuous Flow Control switch (Item 2) [Figure 103] or [Figure 104].
4. Release the Front Auxiliary Hydraulic switch.

**NOTE: Reverse flow can cause damage to some attachments. Use reverse flow with your attachment only if approved. See your attachment Operation & Maintenance Manual for detailed information.**

To stop reverse continuous auxiliary hydraulic fluid flow, press the Continuous Flow Control switch (Item 2) [Figure 103] or [Figure 104] a second time.

**NOTE: When the operator is seated and raises the seat bar, the Auxiliary Hydraulic System (Front and Rear) will deactivate.**

## HYDRAULIC CONTROLS (CONT'D)

### REAR Auxiliary Hydraulics Operation

This machine may be equipped with rear auxiliary hydraulics.

**Figure 105**

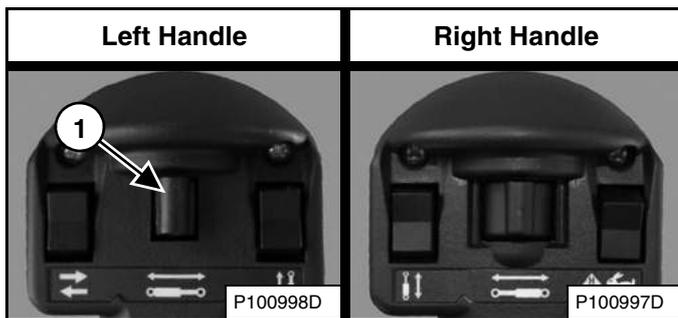


Press the Auxiliary Hydraulics button (Item 2) [Figure 105] once to activate the auxiliary hydraulics.

The light (Item 1) [Figure 105] is ON.

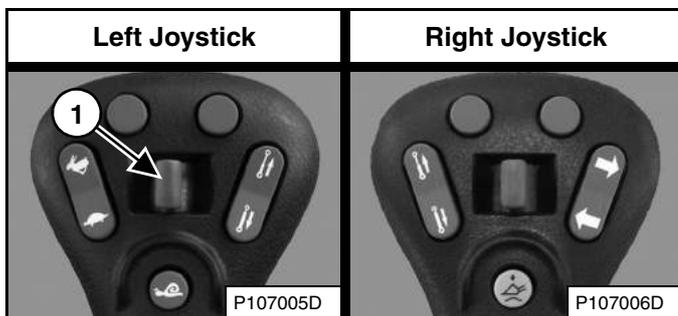
*Standard (If Equipped)*

**Figure 106**



*SJC (If Equipped)*

**Figure 107**



**Figure 108**



Move the Rear Auxiliary Hydraulic switch (Item 1) [Figure 106] or [Figure 107] to the right or left to change direction of the auxiliary hydraulic fluid flow to the rear quick couplers [Figure 108]. (Left side shown.) (EXAMPLE: Raise and lower rear stabilisers.) Release the switch to stop fluid flow.

To deactivate the auxiliary hydraulics, press the Auxiliary Hydraulics button (Item 2) [Figure 105] again.

The light (Item 1) [Figure 105] is OFF.

**NOTE:** When the operator is seated and raises the seat bar, the Auxiliary Hydraulic System (Front and Rear) will deactivate.

## HYDRAULIC CONTROLS (CONT'D)

### Quick Couplers

# ! WARNING

### AVOID INJURY OR DEATH

Diesel fuel or hydraulic fluid under pressure can penetrate skin or eyes, causing serious injury or death. Fluid leaks under pressure may not be visible. Use a piece of cardboard or wood to find leaks. Do not use your bare hand. Wear safety goggles. If fluid enters skin or eyes, get immediate medical attention from a doctor familiar with this injury.

W-2072-EN-0909

# ! WARNING

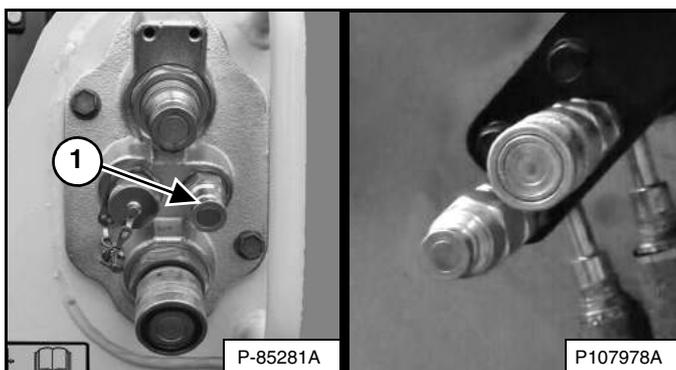
### AVOID BURNS

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

**NOTE:** Follow attachment hose routing instructions in the attachment Operation & Maintenance Manual.

Figure 109



#### To Connect:

Remove dirt or debris from the surface of the male and female couplers, and from the outside diameter of the male couplers. Visually check the couplers for corroding, cracking, damage, or excessive wear. If any of these conditions exist, the coupler(s) [Figure 109] must be replaced.

Install the male couplers into the female couplers. Full connection is made when the ball release sleeves slide forward on the female couplers.

Some attachments have a case drain that needs to be connected to the small quick coupler (Item 1) [Figure 109].

#### To Disconnect:

Hold the male couplers. Retract the sleeves on the female couplers until couplers disconnect.

### Quick Coupler Troubleshooting

Dirty couplers are often thought to be faulty and are unnecessarily replaced instead of simply being cleaned. Keep quick couplers clean to provide reliable service. Always clean coupler faces before connecting. Allowing dirt and other contaminants to remain can cause premature wear to internal seals and sealing surfaces.

#### Leaking Couplers

- Leaks are often caused by contaminants that prevent proper sealing of the couplers or that dislocate internal seals.
- Repeatedly connect and disconnect leaking couplers to dislodge contaminants.

#### Couplers Stuck In Open Position

- A gritty feel when moving the outer sleeve of female couplers or a coupler that remains open when disconnected is evidence of contamination.
- Retract the sleeves on the female couplers and clean thoroughly while rotating the sleeve until all contamination has been removed.
- Immediately clean a coupler stuck in the open position to prevent further contamination and leaks.

#### Difficult To Connect And Disconnect Couplers

- Attachment hoses that are out of alignment with the loader couplers can cause abnormal wear and make it difficult to connect and disconnect couplers.
- Ensure attachment hoses are routed exactly as shown in the attachment Operation & Maintenance Manual to prevent permanent coupler damage.

## HYDRAULIC CONTROLS (CONT'D)

### Relieve Auxiliary Hydraulic Pressure (Loader And Attachment)

# ! 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.

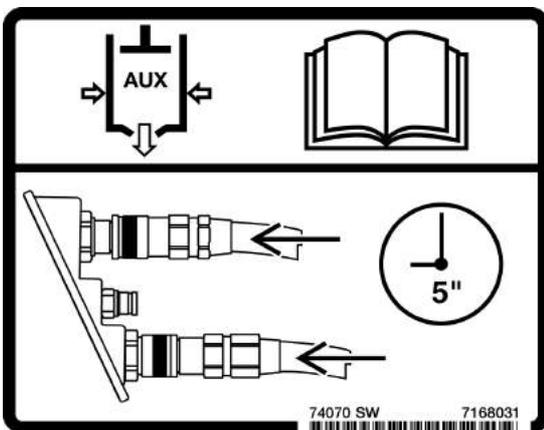
W-2220-0396

# ! WARNING

#### AVOID INJURY OR DEATH

Diesel fuel or hydraulic fluid under pressure can penetrate skin or eyes, causing serious injury or death. Fluid leaks under pressure may not be visible. Use a piece of cardboard or wood to find leaks. Do not use your bare hand. Wear safety goggles. If fluid enters skin or eyes, get immediate medical attention from a doctor familiar with this injury.

W-2072-EN-0909



#### Front Auxiliary Quick Couplers

**When Connecting:** Push the quick couplers tightly together and hold for 5 seconds; the pressure is automatically relieved as the couplers are installed.

**When Disconnecting:** Push the quick couplers tightly together and hold for 5 seconds; then retract the sleeves until the couplers disconnect.

#### Rear Auxiliary Quick Couplers

Put the attachment flat on the ground. Stop the engine and turn the key switch to RUN.

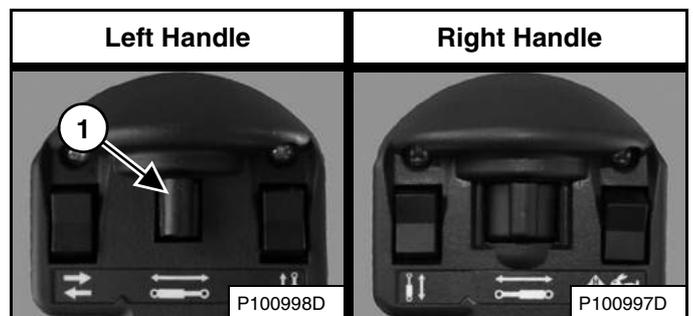
Figure 110



Press the Auxiliary Hydraulics button (Item 1) [Figure 110].

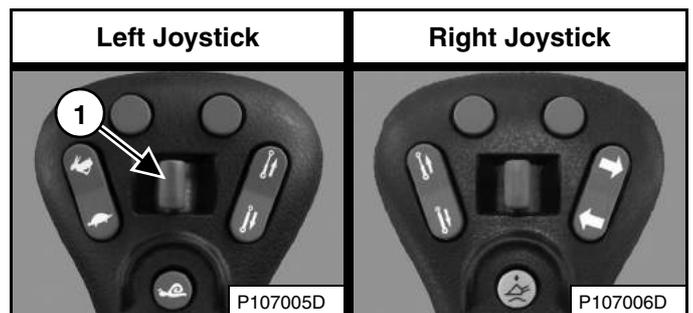
*Standard (If Equipped)*

Figure 111



*SJC (If Equipped)*

Figure 112



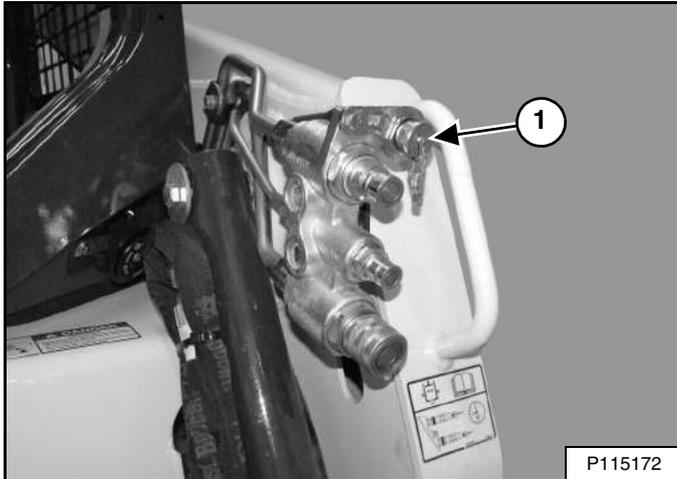
Move the Rear Auxiliary Hydraulic switch (Item 1) [Figure 111] or [Figure 112] to the left and right several times. Turn the key switch to STOP.

## ATTACHMENT CONTROL DEVICE (ACD)

This machine may be equipped with an Attachment Control Device.

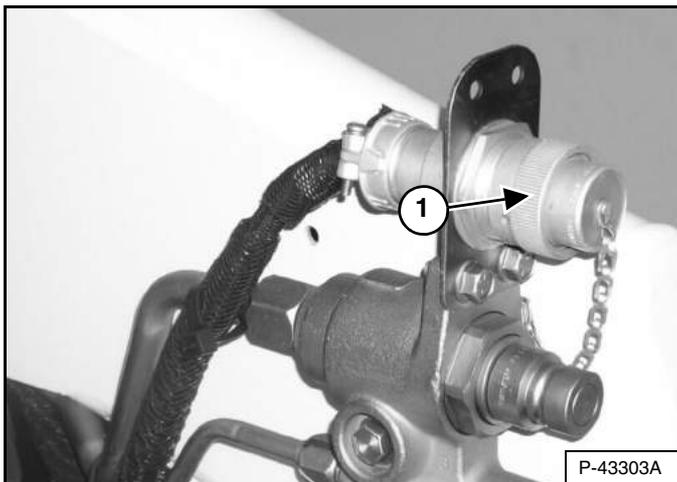
### Description

**Figure 113**



Connect the attachment electrical harness to the attachment control device (Item 1) [Figure 113].

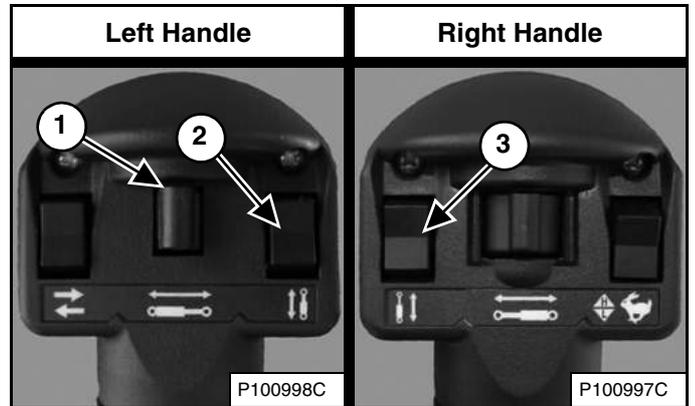
**Figure 114**



You will need the 14-Pin Attachment Control Device kit (Item 1) [Figure 114] to operate earlier model attachments. See your Bobcat loader dealer.

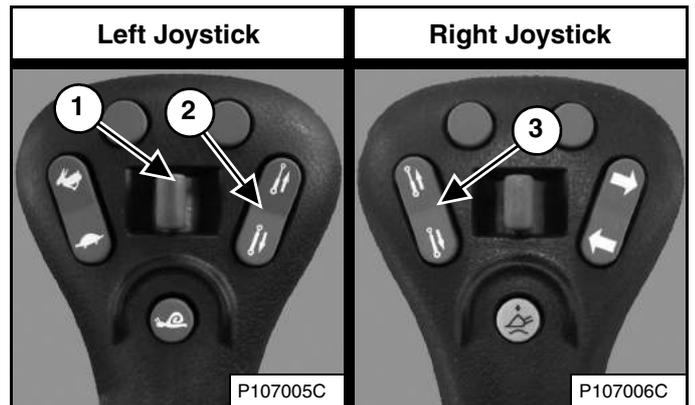
*Standard (If Equipped)*

**Figure 115**



*SJC (If Equipped)*

**Figure 116**



Additional switches (Items 1, 2, and 3) [Figure 115] or [Figure 116] are used to control some attachment functions through the attachment control device.

**NOTE:** ACD takes over the function of the Rear Auxiliary Hydraulic switch (Item 1) [Figure 115] or [Figure 116] from rear auxiliary hydraulics when an attachment electrical harness is attached to the ACD.

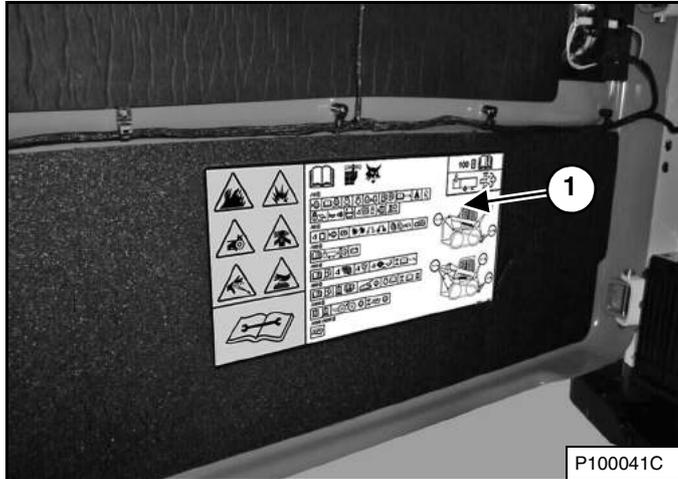
See the appropriate attachment Operation & Maintenance Manual for control details.

## DAILY INSPECTION

### Daily Inspection And Maintenance

Maintenance work must be done at regular intervals. Failure to do so will result in excessive wear and early failures. The Service Checklist And Schedule is a guide for correct maintenance of the Bobcat loader.

Figure 117



The Service Checklist And Schedule (Item 1) [Figure 117] is located inside the rear door of the loader.

A complete list of scheduled maintenance tasks is also located in the Preventive Maintenance section of this manual. (See SERVICE SCHEDULE on Page 121.)

## WARNING

### AVOID INJURY OR DEATH

- Keep door / cover closed except for service.
- Keep engine clean of flammable material.
- Keep body, loose objects and clothing away from electrical contacts, moving parts, hot parts and exhaust.
- Do not use the machine in space with explosive dusts or gases or with flammable material near exhaust.
- Never use ether or starting fluid on diesel engine with glow plugs or air intake heater. Use only starting aids as approved by engine manufacturer.
- Leaking fluids under pressure can enter skin and cause serious injury.
- Battery acid causes severe burns; wear goggles. If acid contacts eyes, skin, or clothing, flush with water. For contact with eyes, flush and get medical attention.
- Battery makes flammable and explosive gas. Keep arcs, sparks, flames and lighted tobacco away.
- For jump start, connect negative cable to the machine engine last (never at the battery). After jump start, remove negative connection at the engine first.
- Exhaust gases can kill. Always ventilate.

W-2782-0409

**NOTE:** Fluids such as engine oil, hydraulic fluid, and coolant must be disposed of in an environmentally safe manner. Some regulations require that certain spills and leaks on the ground must be cleaned in a specific manner. See local regulations for correct disposal.

## WARNING

Operator must have instructions before operating the machine. Untrained operators can cause injury or death.

W-2001-0502

## DAILY INSPECTION (CONT'D)

### Daily Inspection And Maintenance (Cont'd)

The following list of items must be checked daily:

- Engine Oil Level
- Hydraulic Fluid Level
- Engine Air Cleaner – Check System for Damage or Leaks
- Engine Cooling System – Check System for Damage or Leaks, Check Coolant Level, Clean Hydraulic Fluid Cooler and Radiator Assembly, Fuel Cooler, and Rear Grille
- Operator Cab and Cab Mounting Hardware
- Seat Belt
- Seat Bar and Control Interlocks
- Bobcat Interlock Control System (BICS™)
- Front Horn – Check for Proper Function
- Grease Pivot Pins (Lift Arms, Lift Links, Bob-Tach, Cylinders, Bob-Tach Wedges)
- Tyres – Check for Wear, Damage, Correct Air Pressure
- Loose or Broken Parts – Repair or Replace as Necessary
- Safety Treads and Safety Signs (Decals) – Replace as Necessary
- Lift Arm Support Device – Replace if Damaged

## IMPORTANT

This machine is factory equipped with a spark arrester exhaust system that must be maintained for proper function.

- **WITH MUFFLER**  
The muffler chamber must be emptied every 100 hours of operation to keep it in working condition.
- **WITH SELECTIVE CATALYST REDUCTION (SCR) AND / OR DIESEL OXIDATION CATALYST (DOC)**  
Do not remove or modify the DOC or SCR.

The SCR must be maintained according to the instructions in the Operation & Maintenance Manual for proper function.

- **WITH DIESEL PARTICULATE FILTER (DPF)**  
The DPF must be maintained according to the instructions in the Operation & Maintenance Manual for proper function.

(If this machine is operated on flammable forest, brush or grass cover land, a spark arrester attached to the exhaust system may be required and must be maintained in working order. Refer to local laws and regulations for spark arrester requirements.)

I-2350-EN-1114

## IMPORTANT

### PRESSURE WASHING DECALS

- Never direct the stream at a low angle toward the decal that could damage the decal causing it to peel from the surface.
- Direct the stream at a 90 degree angle and at least 300 mm (12 in) from the decal. Wash from the centre of the decal toward the edges.

I-2226-EN-0910

## PRE-STARTING PROCEDURE

### Entering The Loader

Figure 118



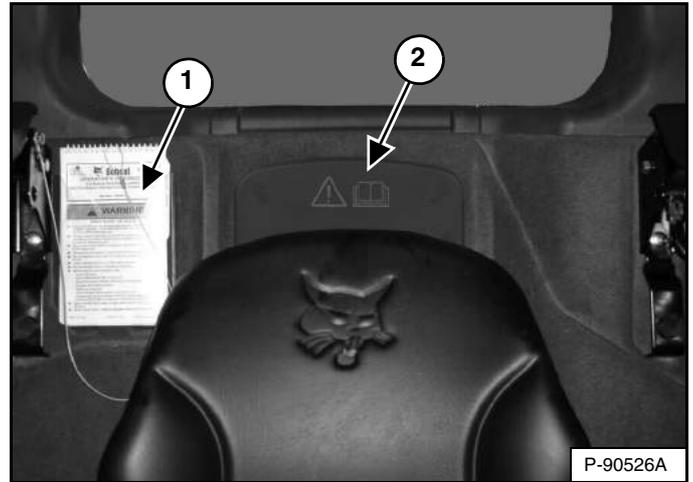
Use the bucket or attachment steps, grab handles, and safety treads (on the loader lift arms and frame) to get on and off the loader, maintaining a three-point contact at all times [Figure 118]. Do not jump.

Safety treads are installed on the Bobcat loader to provide a slip resistant surface for getting on and off the loader.

Keep safety treads clean and replace when damaged. Replacement treads are available from your Bobcat dealer.

### Operation & Maintenance Manual And Operator's Handbook Locations

Figure 119



Read and understand the Operation & Maintenance Manual and the Operator's Handbook (Item 1) [Figure 119] before operating the loader.

The Operation & Maintenance Manual and other manuals can be kept in a container (Item 2) [Figure 119] provided behind the operator seat.

## **WARNING**

### **AVOID INJURY OR DEATH**

**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.**

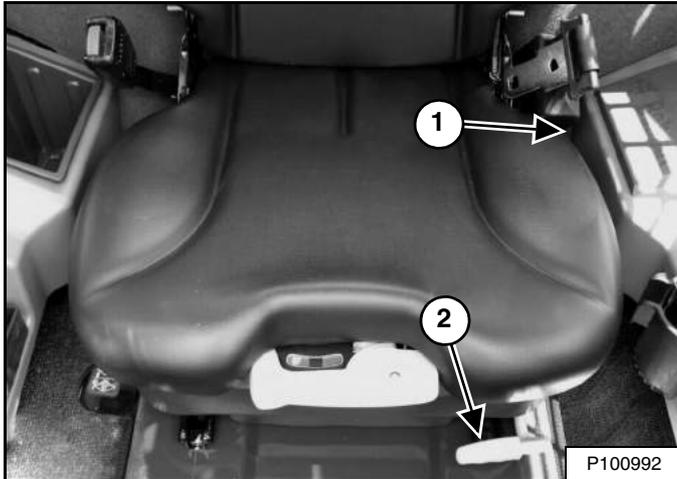
W-2003-0807

## PRE-STARTING PROCEDURE (CONT'D)

### Seat Adjustment

#### *Suspension Seat (Standard)*

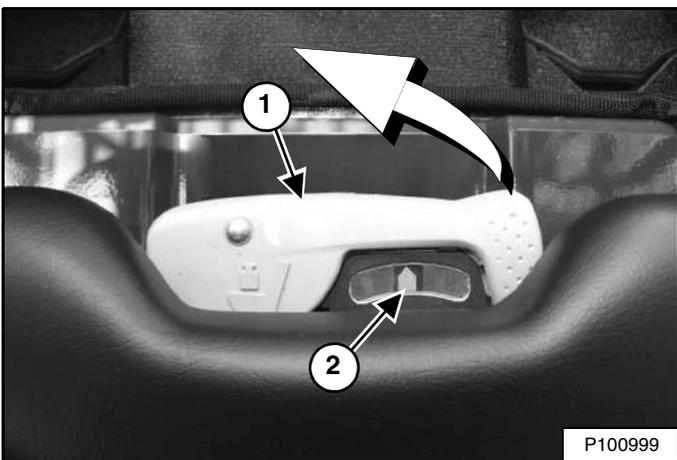
**Figure 120**



Pull the lever (Item 1) **[Figure 120]** up to adjust the angle of the seat back.

Pull the lever (Item 2) **[Figure 120]** up to adjust the seat position for comfortable operation of the loader controls.

**Figure 121**



The lever (Item 1) is used to adjust the suspension response of the seat depending on the operator's weight. The optimum setting is achieved with the needle (Item 2) **[Figure 121]** centred in the gauge with the operator normally seated.

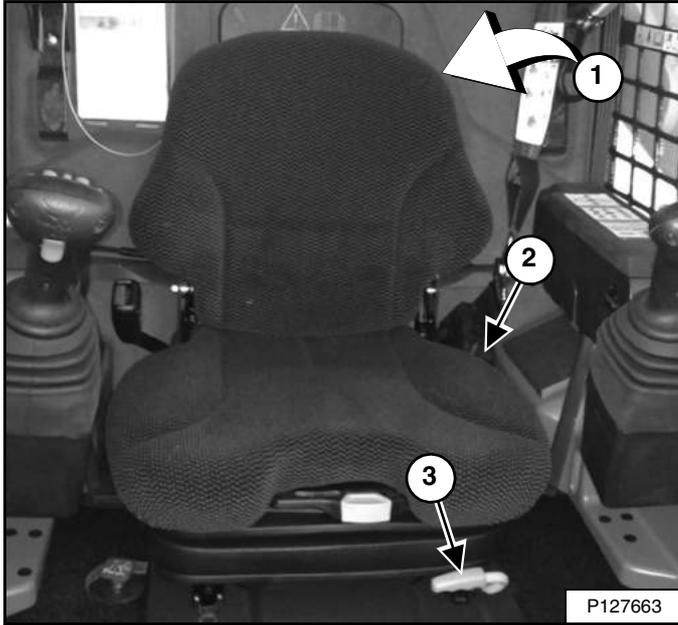
Pivot the lever out fully to adjust the setting. Pump lever between middle and upper positions to move the needle to the right. Pump lever between middle and lower positions to move the needle to the left. Return lever to the middle position and pivot lever back fully to lock in setting.

## PRE-STARTING PROCEDURE (CONT'D)

### Seat Adjustment (Cont'd)

*Heated Cloth Air Ride Suspension Seat (Option)*

**Figure 122**

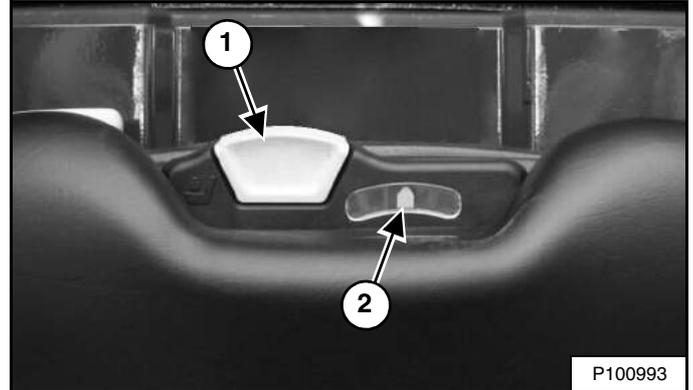


The switch (Item 1) [Figure 122] to turn the heated seat ON or OFF is located behind the seat back on the left side.

Pull the lever (Item 2) [Figure 122] up to adjust the angle of the seat back.

Pull the lever (Item 3) [Figure 122] up to adjust the seat position for comfortable operation of the loader controls.

**Figure 123**



The lever (Item 1) is used to adjust the suspension response of the seat depending on the operator's weight. The optimum setting is achieved with the needle (Item 2) [Figure 123] centred in the gauge with the operator normally seated.

Pull the lever (Item 1) [Figure 123] up and hold to increase the amount of air in the seat suspension. Push the lever down and hold to decrease the amount of air in the seat suspension.

**NOTE: The loader electrical system must be turned ON to increase the amount of air in the seat suspension.**

## PRE-STARTING PROCEDURE (CONT'D)

### Seat Belt Adjustment

#### Retractable Seat Belt

Figure 124



Pull the lap belt across to the right side of the seat and fasten [Figure 124].

The lap belt must be positioned over your lower hips.

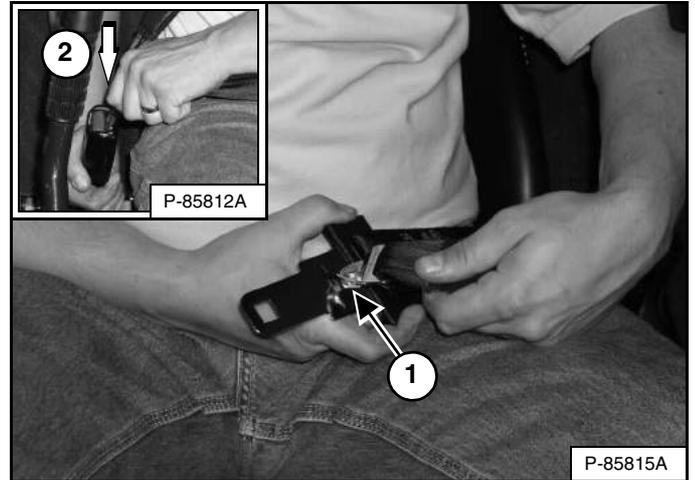
## IMPORTANT

Check the seat belt retractor for correct operation.  
Keep retractor clean and replace as necessary.

I-2252-0707

#### 3-Point Restraint (Option And Loaders Equipped With Two-Speed)

Figure 125



Connect the shoulder belt to the lap belt (Item 1). Pull the lap belt across to the right side of the seat and fasten (Item 2) [Figure 125].

The shoulder belt must be positioned over your left shoulder and lap belt over your lower hips.

## IMPORTANT

Check the seat belt and shoulder belt retractors for correct operation.

Keep retractors clean and replace as necessary.

I-2199-0200

## PRE-STARTING PROCEDURE (CONT'D)

### Seat Bar

Figure 126



Lower the seat bar and engage the parking brake [Figure 126].

Put the foot pedals or hand controls in NEUTRAL position.

**NOTE: Keep your hands on the steering levers and your feet on the foot pedals (or footrests) while operating the loader.**

## **WARNING**

### AVOID INJURY OR DEATH

When operating the machine:

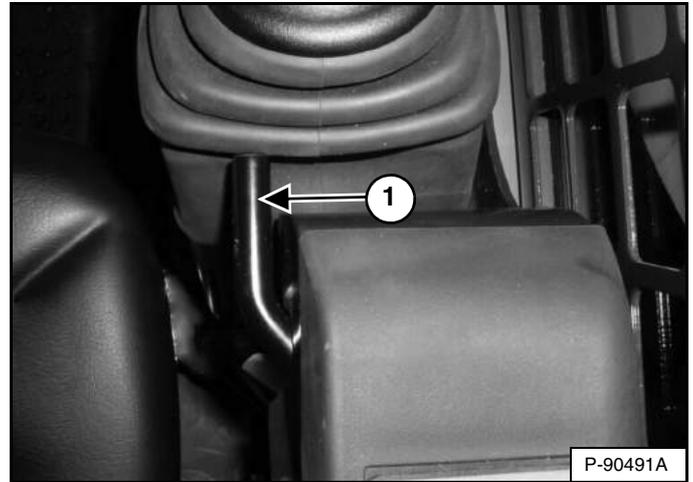
- Keep the seat belt fastened snugly.
- The seat bar must be lowered.
- Keep your feet on the pedal controls or footrests and hands on the controls.

W-2261-0909

### Joystick Position Adjustment

Joystick Position Adjustment is available on SJC equipped machines.

Figure 127



Pull the joystick adjustment lever (Item 1) [Figure 127] up to slide the loader joystick forward or backward to adjust for comfortable operation. (Right side shown.)

## STARTING THE ENGINE

### Deluxe Instrumentation Panel

# ! WARNING

### AVOID SERIOUS INJURY OR DEATH

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

W-2051-0212

Perform the PRE-STARTING PROCEDURE. (See PRE-STARTING PROCEDURE on Page 94.)

Figure 128

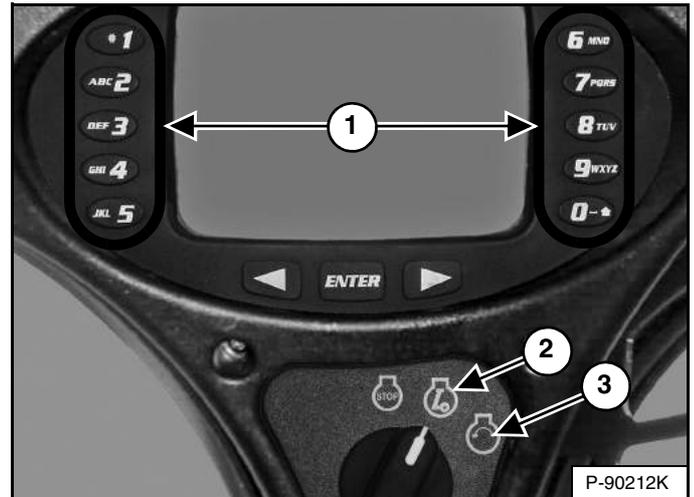


Set the engine speed control to the low idle position [Figure 128].

**NOTE:** Loaders have a permanent, randomly generated Master Password set at the factory. Your loader will also be assigned an Owner Password. Your dealer will provide you with this password. Change the owner password to one that you will easily remember to prevent unauthorised use of your loader. (See Changing The Owner Password on Page 206.) Keep your password in a safe location for future needs.

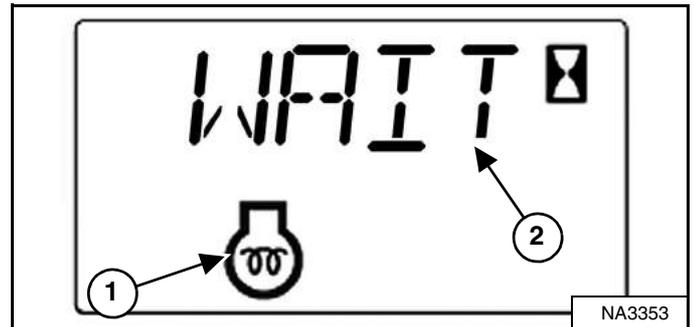
**NOTE:** The Password Lockout feature can be used to allow starting of the loader without a password. (See Password Lockout Feature on Page 207.)

Figure 129



Turn the key switch to RUN (Item 2). The indicator lights on the left instrument panel will come ON briefly and the instrument panel / monitoring system will perform a self test. Use the numeric keypad (Item 1) [Figure 129] to enter the password.

Figure 130



The machine will cycle the glow plugs automatically based on temperature. The engine preheat icon (Item 1) and the cycle time remaining or [WAIT] (Item 2) [Figure 130] are displayed in the data display.

**NOTE:** The Deluxe Instrumentation Panel display screen will also display an engine preheat icon and [WAIT TO START].

**NOTE:** It is recommended in cold weather to cycle the glow plugs twice before attempting to start the engine. This will allow for additional heating time for cold weather starting.

When the engine preheat icon goes OFF, turn the key switch to START (Item 3). Release the switch when the engine starts and allow the switch to return to the RUN position (Item 2) [Figure 129].

## STARTING THE ENGINE (CONT'D)

### Deluxe Instrumentation Panel (Cont'd)

**NOTE:** Make sure both joysticks (SJC) are in the NEUTRAL position before starting the engine. Do not move the levers or joysticks from the NEUTRAL position when turning the key switch to RUN or START with the BICS™ activated.

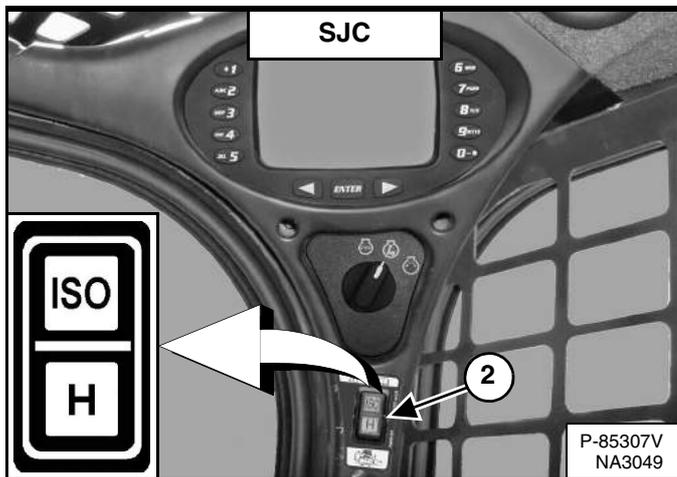
## WARNING

### AVOID INJURY OR DEATH

- Fasten seat belt, start and operate only from the operator's seat.
- Never wear loose clothing when working near machine.

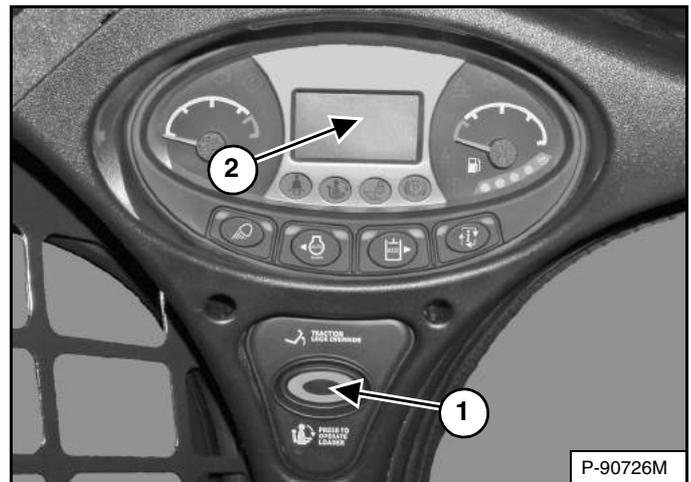
W-2135-1108

Figure 131



(SJC) Select 'ISO' or 'H' Control Pattern (Item 2) [Figure 131] if equipped with SJC.

Figure 132



Press the PRESS TO OPERATE LOADER button (Item 1) [Figure 132] to activate the BICS™ and to perform hydraulic and loader functions.

(SJC) The current drive response setting is displayed briefly in the data display (Item 2) each time the PRESS TO OPERATE LOADER button (Item 1) [Figure 132] is pressed.

**NOTE:** (SJC) The light of the current switch position (ISO or H) will flash, which indicates PRESS TO OPERATE LOADER is required. The light will flash when the key switch is in the RUN position and continue to flash until the PRESS TO OPERATE LOADER button is pressed, then the light will become solid. If the mode (ISO / H) is changed while driving, the active mode light will remain solid and the pending mode light will flash. When operation of the machine is returned to NEUTRAL, the active mode light will turn off and the pending mode light will continue to flash until the PRESS TO OPERATE LOADER button is pressed.

## WARNING

### AVOID INJURY OR DEATH

When an engine is running in an enclosed area, fresh air must be added to avoid concentration of exhaust fumes. If the engine is stationary, vent the exhaust outside. Exhaust fumes contain odorless, invisible gases which can kill without warning.

W-2050-0807

## STARTING THE ENGINE (CONT'D)

### Warming The Hydraulic / Hydrostatic System

Let the engine operate for a minimum of 5 minutes to warm the engine and hydrostatic transmission fluid before operating the loader.

**NOTE:** The full range of the engine speed control will not be available until the engine controller determines the engine is adequately warmed.

## IMPORTANT

When the temperature is below  $-30^{\circ}\text{C}$  ( $-20^{\circ}\text{F}$ ), hydrostatic oil must be warmed before starting. The hydrostatic system will not get enough oil at low temperatures and will be damaged. Park the machine in an area where the temperature will be above  $-18^{\circ}\text{C}$  ( $0^{\circ}\text{F}$ ) if possible.

I-2007-0910

### Cold Temperature Starting



## WARNING

**EXPLOSION CAN CAUSE SERIOUS INJURY, DEATH OR SEVERE ENGINE DAMAGE**  
**DO NOT** use ether or starting fluid with glow plug or air intake heater systems.

W-2071-0415

If the temperature is below freezing, perform the following to make starting the engine easier:

- Replace the engine oil with the correct type and viscosity for the anticipated starting temperature. (See Engine Oil Chart on Page 149.)
- Make sure the battery is fully charged.
- Install an engine heater, available from your Bobcat loader dealer.

**NOTE:** The display screen of the Deluxe Instrumentation Panel may not be at full intensity when the temperature is below  $-26^{\circ}\text{C}$  ( $-15^{\circ}\text{F}$ ). The display screen may take 30 seconds to several minutes to warm up. All systems remain monitored even when the display screen is off.

## MONITORING THE DISPLAY PANELS

### Left Panel

Figure 133



Frequently monitor the temperature and fuel gauges and BICS™ lights (all BICS™ lights must be OFF to operate loader) [Figure 133].

After the engine is running, frequently monitor the left instrument panel [Figure 133] for machine condition.

The associated icon is displayed if there is an error condition.

**EXAMPLE:** Engine Coolant Temperature is High.

The Engine Coolant Temperature icon (Item 1) [Figure 133] is ON.

Press the Information button (Item 2) [Figure 133] to cycle the data display until the service code screen is displayed. One of the following SERVICE CODES is displayed.

- [M0810] Engine Coolant Temperature Too High
- [M0811] Engine Coolant Temperature Extremely High

Find the cause of the service code and correct before operating the loader again. (See Service Codes List on Page 188.)

**NOTE:** The right panel offers an additional view of service codes that includes a brief description. (See Viewing Service Codes on Page 187.)

### Warning And Shutdown

When a WARNING condition exists; the associated icon light is ON and the alarm sounds 3 beeps. If this condition is allowed to continue, there may be damage to the engine or loader hydraulic systems.

When a SHUTDOWN condition exists; the associated icon light is ON and the alarm sounds continuously. The monitoring system will automatically stop the engine in 15 seconds. The engine can be restarted to move or relocate the loader.

The SHUTDOWN feature is associated with the following icons:

- General Warning
- Engine Malfunction
- Engine Coolant Temperature
- Hydraulic System Malfunction

## STOPPING THE ENGINE AND LEAVING THE LOADER

### Procedure

Stop the loader on level ground.

Fully lower the lift arms and put the attachment flat on the ground.

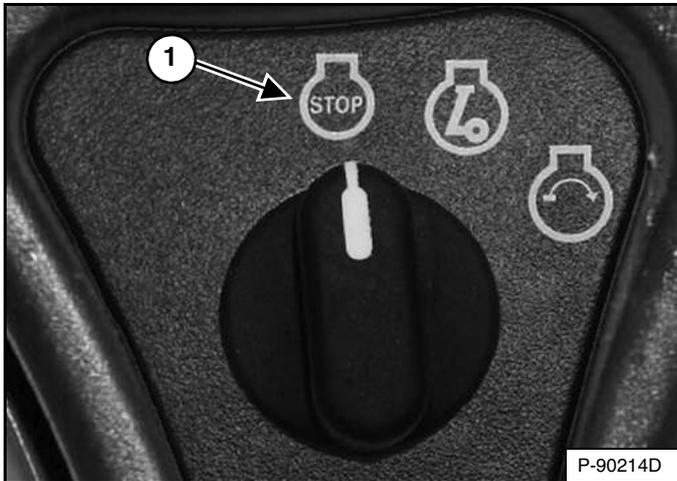
Figure 134



Set the engine speed control to the low idle position [Figure 134].

Engage the parking brake.

Figure 135



Turn the key switch to the STOP position (Item 1) [Figure 135].

**NOTE: If the loader lights are ON, they will remain ON for approximately 90 seconds after turning the loader OFF.**

Raise the seat bar and make sure the lift and tilt functions are deactivated.

Unbuckle the seat belt.

**NOTE: Activating the Password Lockout Feature allows operation of the loader without using a password. (See Password Lockout Feature on Page 207.)**

Figure 136



Exit the loader using grab handles, safety tread, and steps (maintaining a three-point contact) [Figure 136].

## WARNING

### AVOID INJURY OR DEATH

Before you leave the operator's seat:

- Lower the lift arms and put the attachment flat on the ground.
- Stop the engine.
- Engage the parking brake.
- Raise the seat bar.
- Move all controls to the NEUTRAL / LOCKED position to make sure the lift, tilt and traction drive functions are deactivated.

The seat bar system must deactivate these functions when the seat bar is up. See your Bobcat dealer for service if controls do not deactivate.

W-2463-1110

## COUNTERWEIGHTS

### Description

Counterweights can be installed on the loader. See your Bobcat dealer for information about approved loader counterweights and configurations for your job application and attachment.

### Effect On The Loader And Loader Operation

Proper operation of the loader and attachment does not change if counterweights are installed on this loader. Always follow the instructions provided in this manual when operating your loader with counterweights installed.

Counterweights installed on your loader can affect the loader and its operation in some applications. Some examples are:

- Increased machine weight.
- Increased Rated Operating Capacity (ROC).
- Harder steering.
- Accelerated or uneven tyre wear.
- Increased power consumption.

### When To Consider Using Counterweights

Install counterweights to increase the loaders Rated Operating Capacity (ROC) which could improve attachment performance in some applications. Some examples are:

- Using pallet fork with palletised loads.
- Using grapples or bale fork.
- Using buckets to handle loose material without digging.

### When To Consider Removing Counterweights

Remove counterweights to increase the downward force of the attachment for better attachment performance in some applications. Some examples are:

- Digging with buckets.
- Using Hydraulic Breakers, Scrapers, or Landplanes.

### Accessories That Affect Machine Weight

If your loader is already equipped with accessories like Over Tyre Steel Tracks, Water Tanks, or Rear Stabilisers; installing counterweights may not be necessary.

**NOTE: Front axle weight kit is required when installing rear stabilisers on this model loader. See your Bobcat dealer.**

See your Bobcat dealer for more information about the proper use of counterweights with approved attachments and accessories for your loader.

## ATTACHMENTS

### Choosing The Correct Bucket

# WARNING

## AVOID INJURY OR DEATH

Never use attachments or buckets which are not approved by Bobcat Company. Buckets and attachments for safe loads of specified densities are approved for each model. Unapproved attachments can cause injury or death.

W-2052-0907

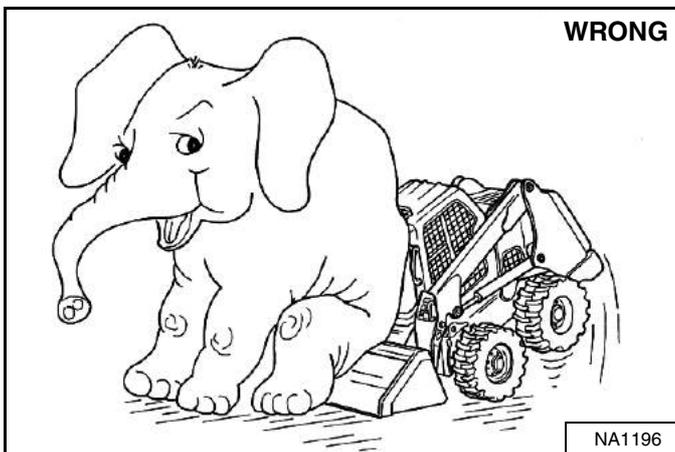
**NOTE: Warranty is void if non-approved attachments are used on the Bobcat loader.**

The dealer can identify, for each model loader, the attachments and buckets approved by Bobcat. The buckets and attachments are approved for Rated Operating Capacity (ROC) and for secure fastening to the Bob-Tach.

The ROC for this loader is shown on a decal in the operator cab. (See Performance on Page 212.)

The ROC is determined by using a bucket and material of normal density, such as dirt or dry gravel. If longer buckets are used, the load centre moves forward and reduces the ROC. If extremely dense material is loaded, the volume must be reduced to prevent overloading.

Figure 137



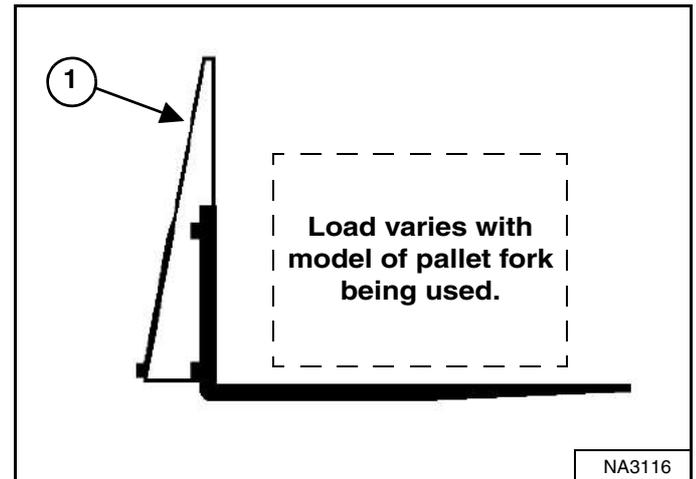
Exceeding the ROC [Figure 137] can cause the following problems:

- Steering the loader may be difficult.
- Tyres will wear faster.
- There will be a loss of stability.
- The life of the Bobcat loader will be reduced.

Use the correct bucket size for the type and density of material being handled. For safe handling of materials and avoiding machine damage, the attachment (or bucket) should handle a full load without going over the ROC for the loader. Partial loads make steering more difficult.

### Pallet Fork

Figure 138



The maximum load to be carried when using a pallet fork is shown on a decal located on the pallet fork frame (Item 1) [Figure 138].

See your Bobcat dealer for more information about pallet fork inspection, maintenance, and replacement. See your Bobcat dealer for ROC when using a pallet fork and for other available attachments.

# WARNING

## AVOID INJURY OR DEATH

Do not exceed Rated Operating Capacity (ROC). Excessive load can cause tipping or loss of control.

W-2053-0903

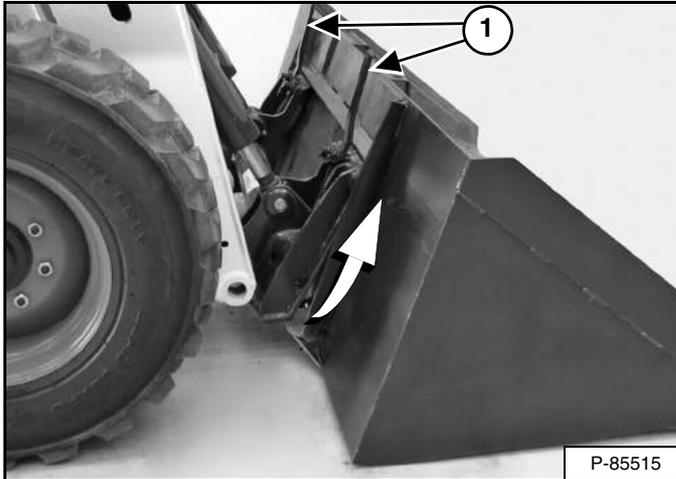
## ATTACHMENTS (CONT'D)

### Installing And Removing The Attachment (Hand Lever Bob-Tach)

The Bob-Tach is used for fast changing of buckets and attachments. See the appropriate attachment Operation & Maintenance Manual to install other attachments.

#### Installing

Figure 139



Pull the Bob-Tach levers up until they are fully raised (wedges fully raised) (Item 1) [Figure 139].

Enter the loader and perform the PRE-STARTING PROCEDURE. (See PRE-STARTING PROCEDURE on Page 94.)

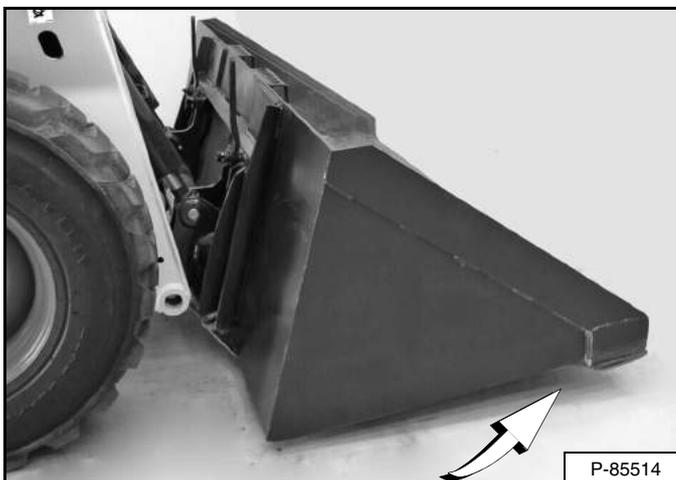
Start the engine, press the PRESS TO OPERATE LOADER button, and release the parking brake.

Lower the lift arms and tilt the Bob-Tach forward.

Drive the loader slowly forward until the top edge of the Bob-Tach is completely under the top flange of the bucket mounting frame [Figure 139] (or other attachment).

**NOTE: Be sure the Bob-Tach levers do not hit the attachment.**

Figure 140



Tilt the Bob-Tach backward until the cutting edge of the bucket (or other attachment) is slightly off the ground [Figure 140]. This procedure will cause the bucket mounting frame to fit up against the front of the Bob-Tach.

Stop the engine and exit the loader. (See STOPPING THE ENGINE AND LEAVING THE LOADER on Page 103.)

## **WARNING**

### AVOID INJURY OR DEATH

Before you leave the operator's seat:

- Lower the lift arms and put the attachment flat on the ground.
- Stop the engine.
- Engage the parking brake.
- Raise the seat bar.
- Move all controls to the NEUTRAL / LOCKED position to make sure the lift, tilt and traction drive functions are deactivated.

The seat bar system must deactivate these functions when the seat bar is up. See your Bobcat dealer for service if controls do not deactivate.

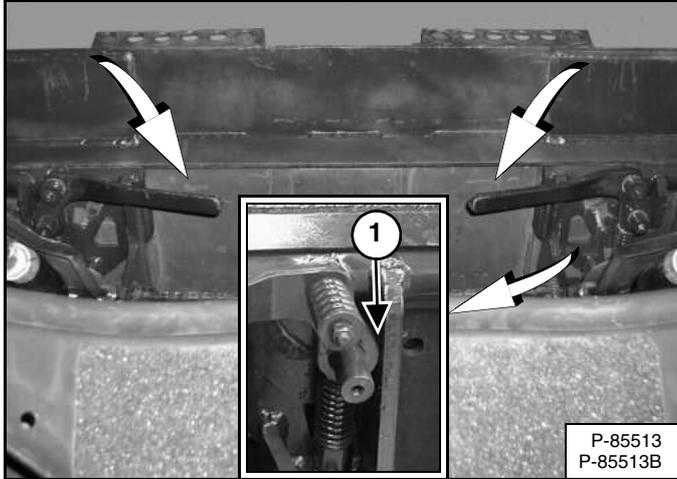
W-2463-1110

## ATTACHMENTS (CONT'D)

### Installing And Removing The Attachment (Hand Lever Bob-Tach) (Cont'd)

*Installing (Cont'd)*

**Figure 141**

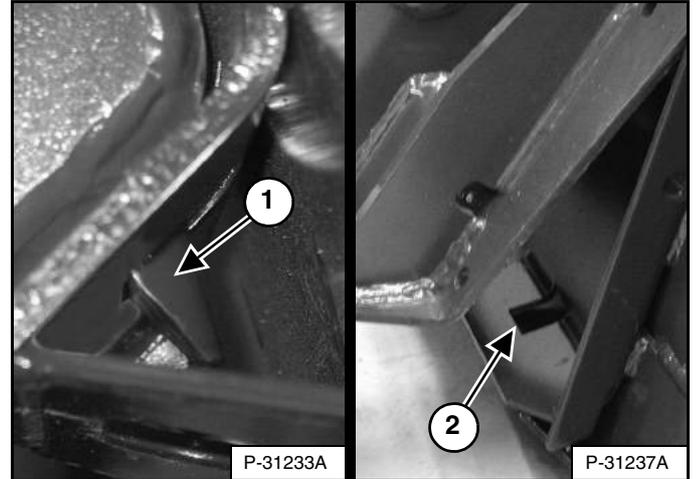


Push down on the Bob-Tach levers until they are fully engaged in the locked position **[Figure 141]** (wedges fully extended through the attachment mounting frame holes).

Both levers must contact the frame as shown when locked (Item 1) **[Figure 141]**.

If both levers do not engage in the locked position, see your Bobcat dealer for maintenance.

**Figure 142**



The wedges (Item 1) must extend through the holes (Item 2) **[Figure 142]** in the mounting frame of the bucket (or other attachment), securely fastening the bucket to the Bob-Tach.

**! WARNING**

#### **AVOID INJURY OR DEATH**

**The Bob-Tach wedges must extend through the holes in the attachment mounting frame. Levers must be fully down and locked. Failure to secure wedges can allow attachment to come off.**

W-2715-0208

## ATTACHMENTS (CONT'D)

### Installing And Removing The Attachment (Hand Lever Bob-Tach) (Cont'd)

#### Removing

Lower the lift arms and put the attachment flat on the ground. Lower or close any hydraulic equipment, if applicable.

Stop the engine and exit the loader. (See STOPPING THE ENGINE AND LEAVING THE LOADER on Page 103.)

## WARNING

### AVOID INJURY OR DEATH

Before you leave the operator's seat:

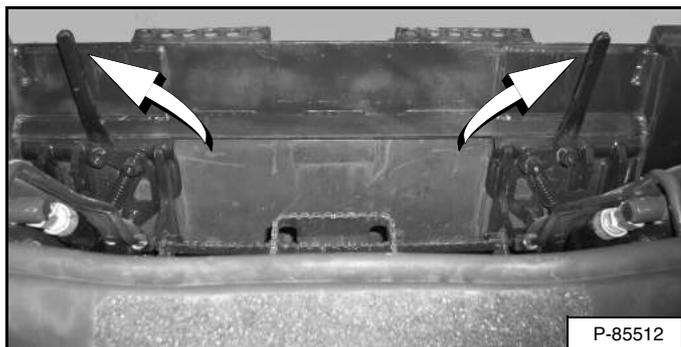
- Lower the lift arms and put the attachment flat on the ground.
- Stop the engine.
- Engage the parking brake.
- Raise the seat bar.
- Move all controls to the NEUTRAL / LOCKED position to make sure the lift, tilt and traction drive functions are deactivated.

The seat bar system must deactivate these functions when the seat bar is up. See your Bobcat dealer for service if controls do not deactivate.

W-2463-1110

Disconnect attachment electrical harness and water or hydraulic lines, if applicable, from the loader. (See Relieve Auxiliary Hydraulic Pressure (Loader And Attachment) on Page 90.)

Figure 143



Pull the Bob-Tach levers up [Figure 143] until they are fully raised (wedges fully raised).

## WARNING

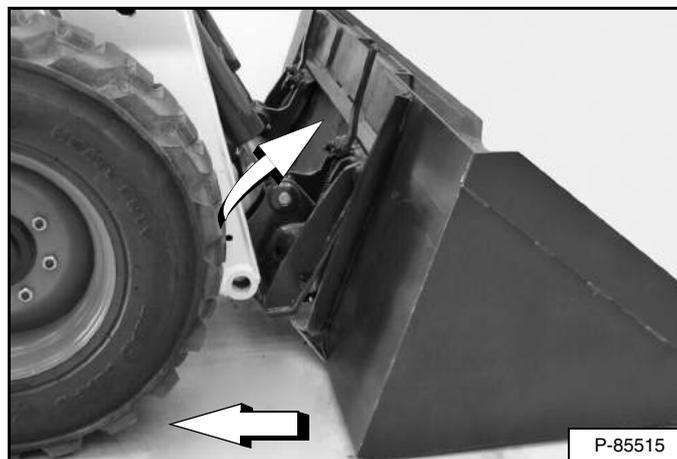
Bob-Tach levers have spring tension. Hold lever tightly and release slowly. Failure to obey warning can cause injury.

W-2054-1285

Enter the loader and perform the PRE-STARTING PROCEDURE. (See PRE-STARTING PROCEDURE on Page 94.)

Start the engine, press the PRESS TO OPERATE LOADER button, and release the parking brake.

Figure 144



Tilt the Bob-Tach forward and drive the loader backward, away from the bucket or attachment [Figure 144].

## ATTACHMENTS (CONT'D)

### Installing And Removing The Attachment (Power Bob-Tach)

This machine may be equipped with a Power Bob-Tach.

The Power Bob-Tach is used for fast changing of buckets and attachments. See the appropriate attachment Operation & Maintenance Manual to install other attachments.

#### Installing

Enter the loader and perform the PRE-STARTING PROCEDURE. (See PRE-STARTING PROCEDURE on Page 94.)

Start the engine, press the PRESS TO OPERATE LOADER button, and release the parking brake.

Lower the lift arms and tilt the Bob-Tach forward.

Figure 145

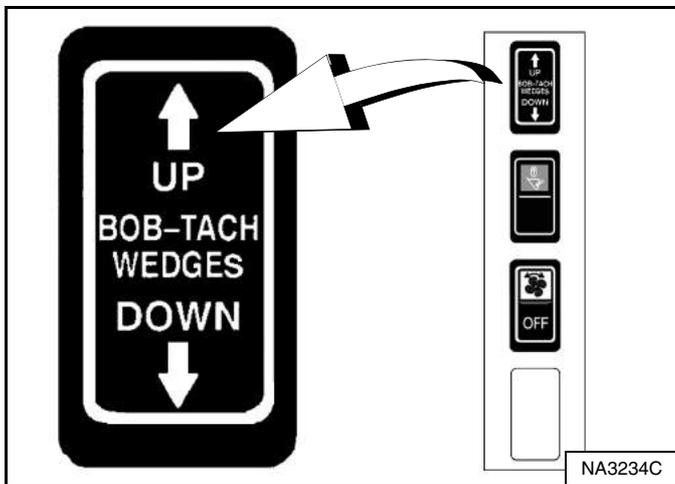
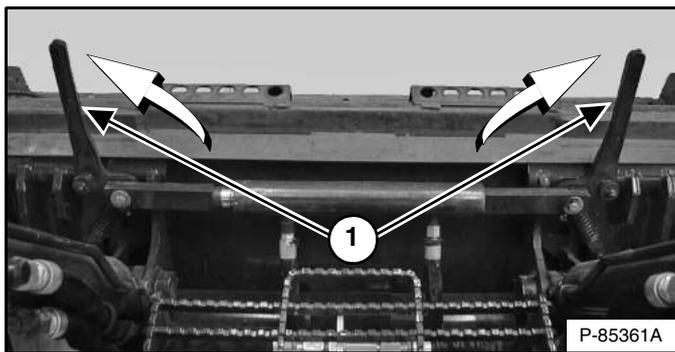


Figure 146



Push and hold BOB-TACH WEDGES “UP” switch (Right Switch Panel) [Figure 145] until levers (Item 1) [Figure 146] are fully raised (wedges fully raised).

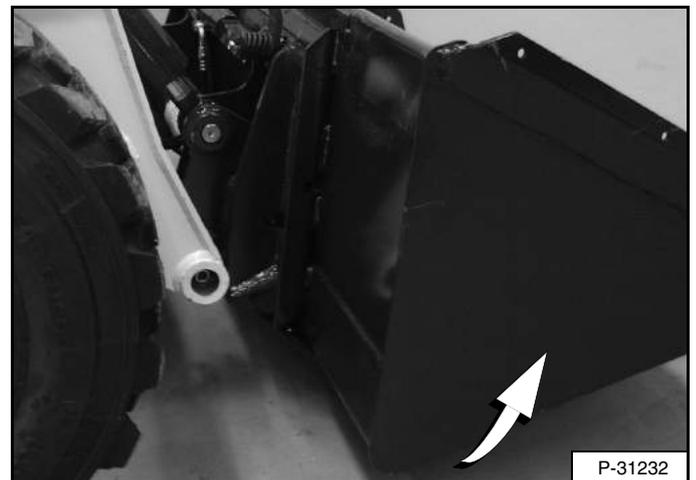
Figure 147



Drive the loader slowly forward until the top edge of the Bob-Tach is completely under the top flange of the bucket mounting frame [Figure 147] (or other attachment).

**NOTE:** Be sure the Bob-Tach levers do not hit the attachment.

Figure 148



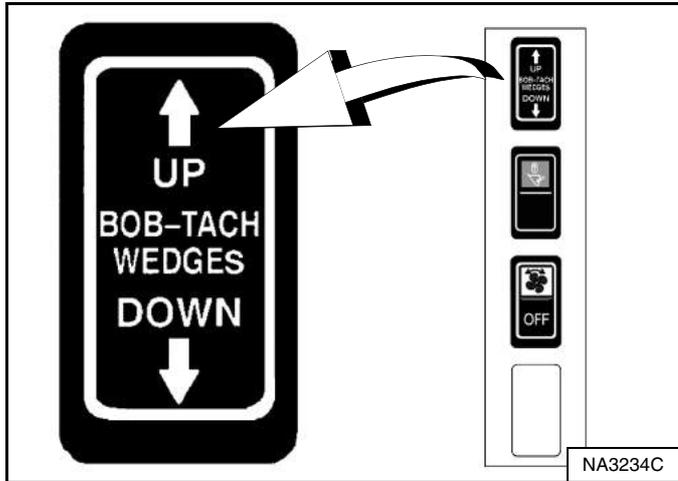
Tilt the Bob-Tach backward until the cutting edge of the bucket (or other attachment) is slightly off the ground [Figure 148]. This procedure will cause the bucket mounting frame to fit up against the front of the Bob-Tach.

## ATTACHMENTS (CONT'D)

### Installing And Removing The Attachment (Power Bob-Tach) (Cont'd)

Installing (Cont'd)

Figure 149



Push and hold BOB-TACH WEDGES “UP” switch (Right Switch Panel) [Figure 149] to make sure the levers are fully raised (wedges fully raised).

**NOTE:** The Power Bob-Tach system uses continuously pressurised hydraulic fluid to keep the wedges in the engaged position and prevent attachment disengagement. Because the wedges can slowly lower, the operator may need to reactivate the switch (BOB-TACH WEDGES “UP”) to be sure both wedges are fully raised before installing the attachment.

Figure 150

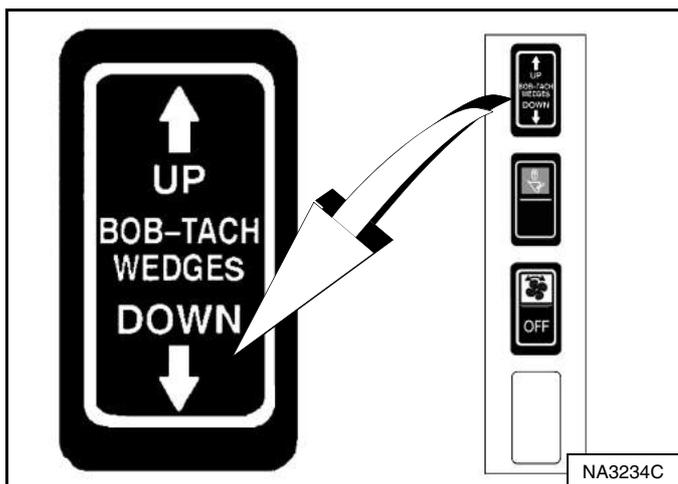
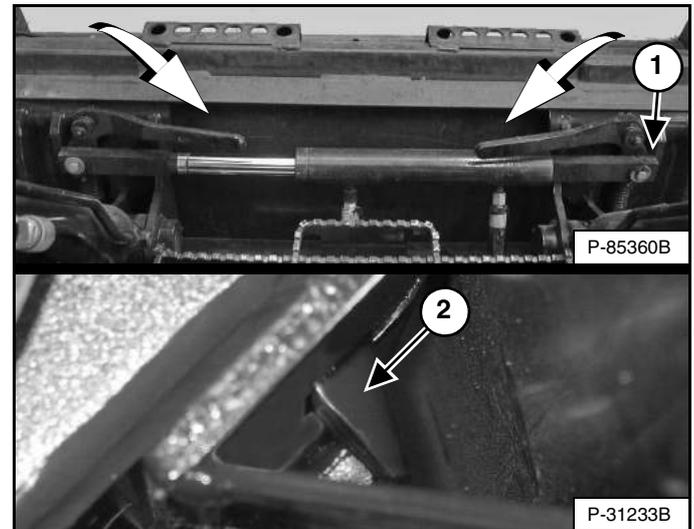


Figure 151



Push and hold BOB-TACH WEDGES “DOWN” switch (Right Switch Panel) [Figure 150] until levers are fully engaged in the locked position [Figure 151] (wedges fully extended through the attachment mounting frame holes).

Both levers must contact the frame as shown when locked (Item 1) [Figure 151].

If both levers do not engage in the locked position, see your Bobcat dealer for maintenance.

The wedges (Item 2) [Figure 151] must extend through the holes in the mounting frame of the bucket (or other attachment), securely fastening the bucket to the Bob-Tach.

**! WARNING**

**AVOID INJURY OR DEATH**

The Bob-Tach wedges must extend through the holes in the attachment mounting frame. Levers must be fully down and locked. Failure to secure wedges can allow attachment to come off.

W-2715-0208

## ATTACHMENTS (CONT'D)

### Installing And Removing The Attachment (Power Bob-Tach) (Cont'd)

#### Removing

Lower the lift arms and put the attachment flat on the ground. Lower or close any hydraulic equipment, if applicable.

If the attachment has electrical, water, or hydraulic connections to the loader:

1. Stop the engine and exit the loader. (See STOPPING THE ENGINE AND LEAVING THE LOADER on Page 103.)



#### AVOID INJURY OR DEATH

Before you leave the operator's seat:

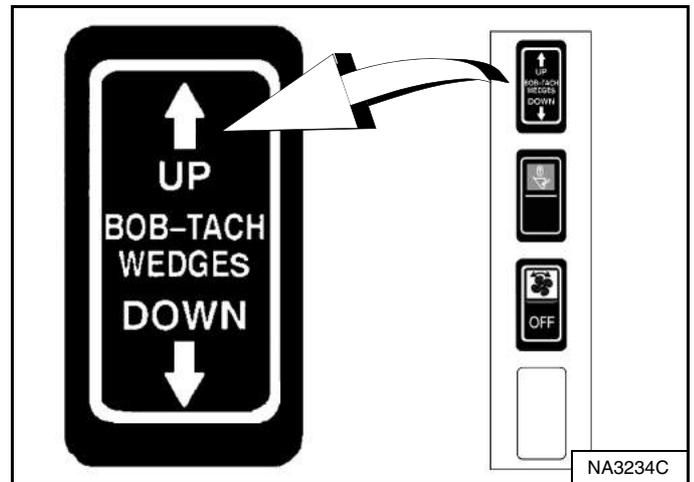
- Lower the lift arms and put the attachment flat on the ground.
- Stop the engine.
- Engage the parking brake.
- Raise the seat bar.
- Move all controls to the NEUTRAL / LOCKED position to make sure the lift, tilt and traction drive functions are deactivated.

The seat bar system must deactivate these functions when the seat bar is up. See your Bobcat dealer for service if controls do not deactivate.

W-2463-1110

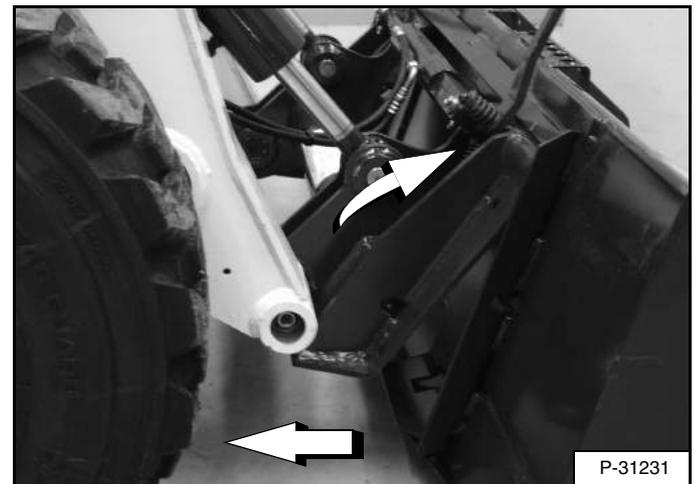
2. Disconnect attachment electrical harness and water or hydraulic lines, if applicable, from the loader. (See Relieve Auxiliary Hydraulic Pressure (Loader And Attachment) on Page 90.)
3. Enter the loader and perform the PRE-STARTING PROCEDURE. (See PRE-STARTING PROCEDURE on Page 94.)
4. Start the engine, press the PRESS TO OPERATE LOADER button, and release the parking brake.

Figure 152



Push and hold BOB-TACH WEDGES "UP" switch (Right Switch Panel) [Figure 152] until levers are fully raised (wedges fully raised).

Figure 153



Tilt the Bob-Tach forward and drive the loader backward, away from the bucket or attachment [Figure 153].

**NOTE:** The Power Bob-Tach system uses continuously pressurised hydraulic fluid to keep the wedges in the engaged position and prevent attachment disengagement. Because the wedges can slowly lower, the operator may need to reactivate the switch (BOB-TACH WEDGES "UP") when removing an attachment to be sure both wedges are fully raised.

## OPERATING PROCEDURE

### Inspect The Work Area

Before beginning operation, inspect the work area for unsafe conditions.

Look for sharp drop-offs or rough terrain. Have underground utility lines (gas, electrical, water, sewer, irrigation, etc.) located and marked.

Remove objects or other construction material that could damage the loader or cause personal injury.

Always check ground conditions before starting your work:

- Inspect for signs of instability such as cracks or settlement.
- Be aware of weather conditions that can affect ground stability.
- Check for adequate traction if working on a slope.

### Basic Operating Instructions

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.**

I-2015-0284

Operate the loader with engine at full speed for maximum horsepower. Move the steering controls 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.

### Operating Near An Edge Or Water

Keep the loader as far back from the edge as possible and the loader wheels perpendicular to the edge so that if part of the edge collapses, the loader can be moved back.

Always move the loader back at any indication the edge may be unstable.

## WARNING

### **MACHINE TIPPING OR ROLLOVER CAN CAUSE SERIOUS INJURY OR DEATH**

- **Keep the lift arms as low as possible.**
- **Do not travel or turn with the lift arms up.**
- **Turn on level ground. Slow down when turning.**
- **Go up and down slopes, not across them.**
- **Keep the heavy end of the machine uphill.**
- **Do not overload the machine.**
- **Check for adequate traction.**

W-2018-1112

### Driving On Public Roads

When operating on a public road or motorway, always follow local regulations. For example: Slow Moving Vehicle Sign or direction signals may be required.

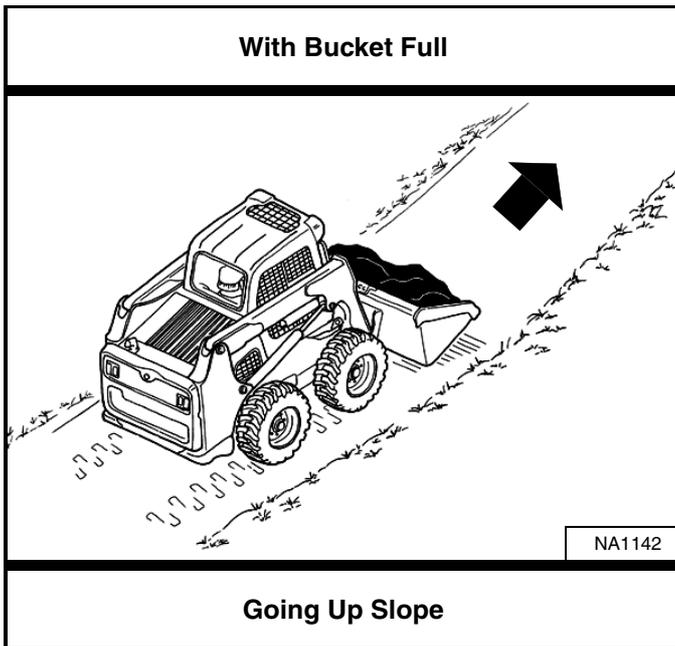
**NOTE: Road kits are available as an option from the factory or as a kit from your Bobcat dealer to equip your machine for driving on public roads in European Union (EU) countries.**

**Always follow local regulations. For more information, contact your local Bobcat dealer.**

## OPERATING PROCEDURE (CONT'D)

### Operating With A Full Bucket

Figure 154



### Operating With An Empty Bucket

Figure 156

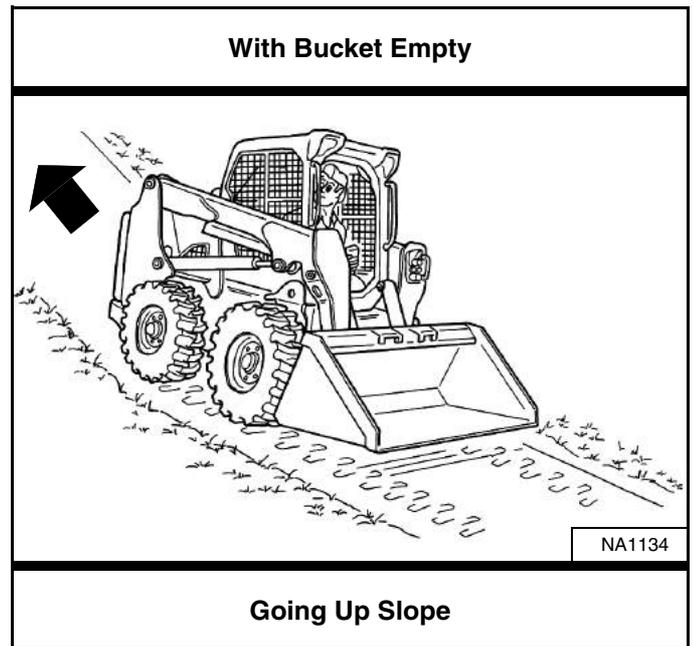


Figure 155

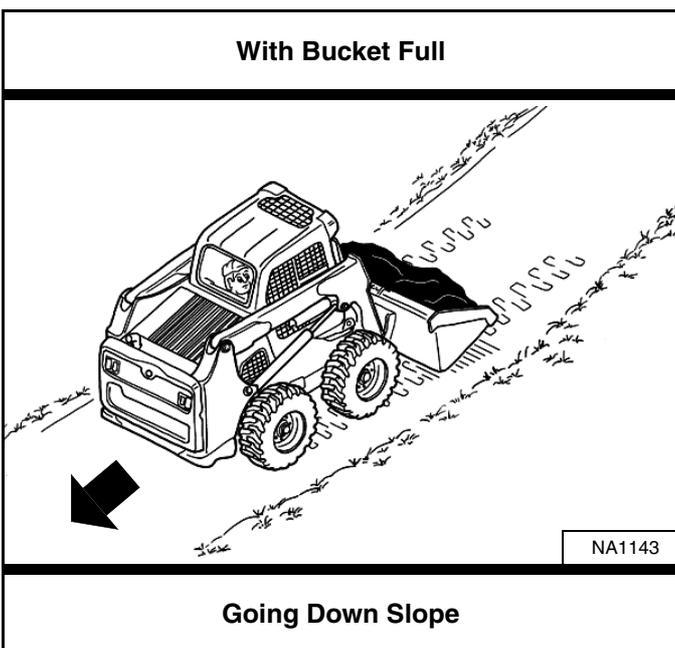
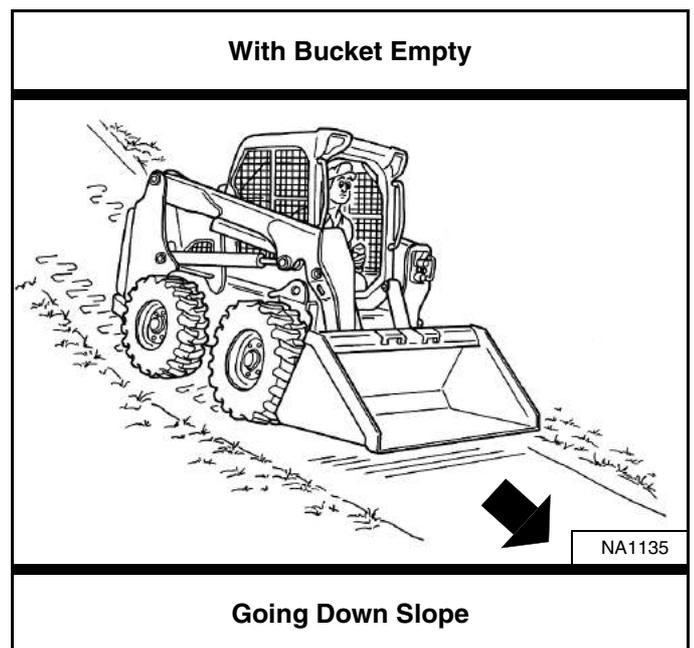


Figure 157



With a full bucket, go up or down the slope with the heavy end toward the top of the slope [Figure 154] and [Figure 155].

Raise the bucket only high enough to avoid obstructions on rough ground.

With an empty bucket, go up or down the slope with the heavy end toward the top of the slope [Figure 156] and [Figure 157].

Raise the bucket only high enough to avoid obstructions on rough ground.

## TOWING THE LOADER

### Procedure

Because of the design of the loader, there is not a recommended towing procedure.

- The loader can be lifted onto a transport vehicle.
- The loader can be skidded a short distance to move for service (EXAMPLE: Move onto a transport vehicle.) without damage to the hydrostatic system. (The tyres will not turn.) There may be slight wear to the tyres when the loader is skidded.

The towing chain (or cable) must be rated at 1.5 times the weight of the loader. (See Performance on Page 212.)

## LIFTING THE LOADER

### Single-Point Lift



#### AVOID INJURY OR DEATH

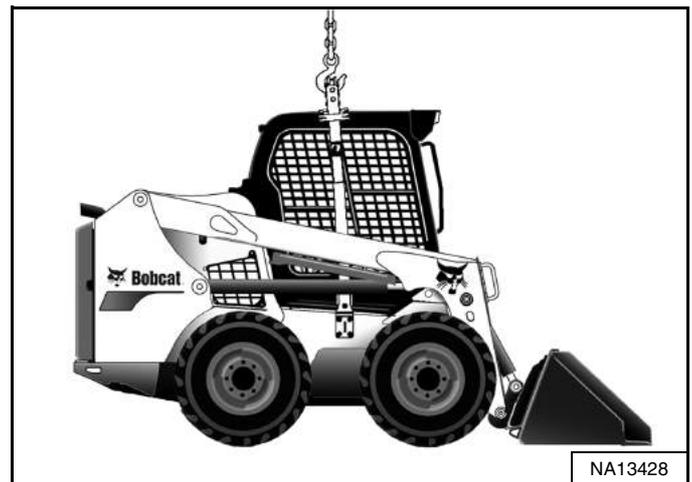
- Before lifting, check fasteners on single point lift and operator cab.
- Assemble front cab fasteners as shown in this manual.
- Never allow riders in the cab or bystanders within 5 m (15 ft) while lifting the machine.

W-2007-0910

The loader can be lifted with the Single-Point Lift that is available as a kit from your Bobcat loader dealer.

The Single-Point Lift, supplied by Bobcat, is designed to lift and support the Bobcat loader without affecting rollover and falling object protection features of the operator cab.

Figure 158



Attach lift to lift eye [Figure 158].

**NOTE:** Be sure the lifting equipment is of adequate size and capacity for the weight of the loader. (See Performance on Page 212.)

LIFTING THE LOADER (CONT'D)

Four-Point Lift



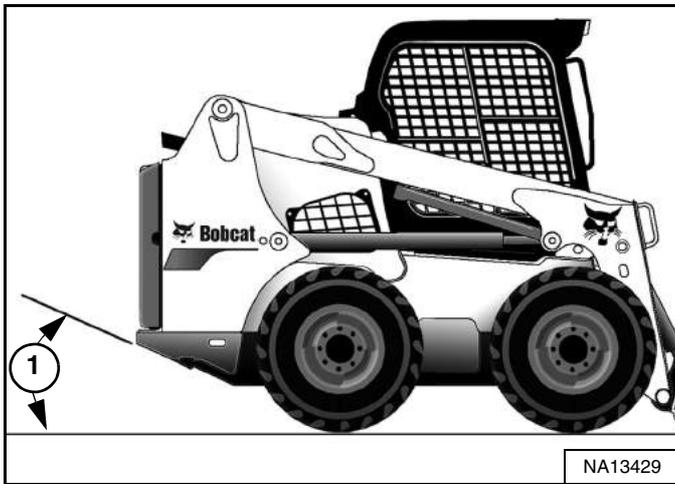
**AVOID INJURY OR DEATH**

- Before lifting, check fasteners on four point lift.
- Never allow riders in the cab or bystanders within 5 m (15 ft) while lifting the machine.

W-2160-0910

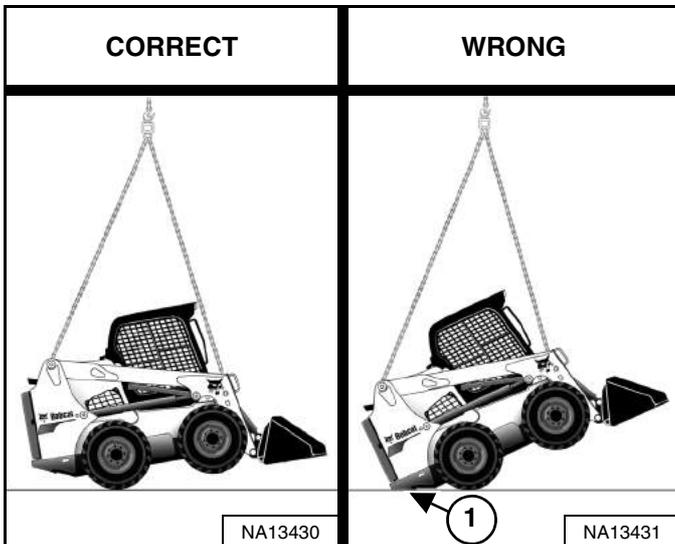
The loader can be lifted with the Four-Point Lift that is available as a kit from your Bobcat loader dealer.

Figure 159



**NOTE:** The loader should be lifted as close to horizontal as possible, but at no time should the angle of the suspended loader exceed the departure angle (Item 1) [Figure 159] provided in the specifications section. (See Machine Dimensions on Page 211.)

Figure 160



Attach cables or chains to lift eyes [Figure 160].

**NOTE:** Sling legs should not contact any part of the operator cab or lift arms to prevent damage.

**NOTE:** The required length of front and rear sling legs may or may not be equal depending on loader configuration. Departure angle (Item 1) [Figure 160] in this view has been exceeded, sling leg length must be adjusted to prevent this situation.

**NOTE:** Be sure the lifting equipment is of adequate size and capacity for the weight of the loader. (See Performance on Page 212.)

## TRANSPORTING THE LOADER ON A TRAILER

### Loading And Unloading

# ! WARNING

### AVOID SERIOUS INJURY OR DEATH

Adequately designed ramps of sufficient strength are needed to support the weight of the machine when loading onto a transport vehicle. Wood ramps can break and cause personal injury.

W-2058-0807

Be sure the transport and towing vehicles are of adequate size and capacity for weight of loader. (See Performance on Page 212.)

**NOTE:** Always disengage the auto idle feature when loading or unloading the loader on a trailer. (See AUTO IDLE on Page 62.)

Figure 161

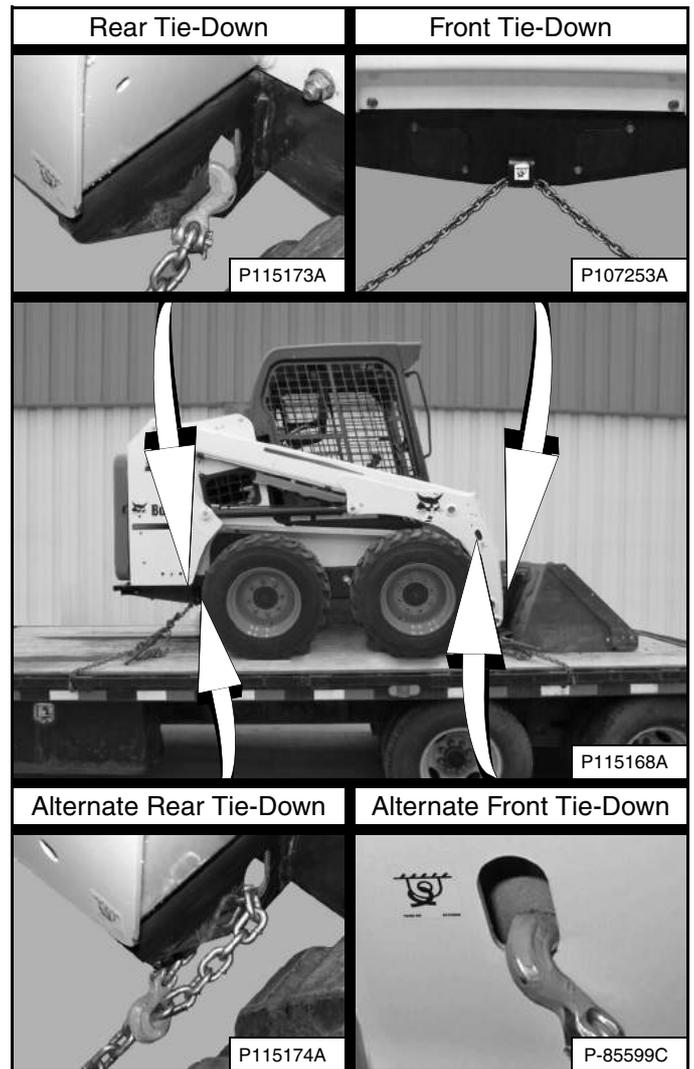


A loader with an empty bucket or no attachment must be loaded backward onto the transport vehicle [Figure 161].

The rear of the trailer must be blocked or supported (Item 1) [Figure 161] when loading or unloading the loader to prevent the front end of the trailer from raising up.

### Fastening

Figure 162



Use the following procedure to fasten the Bobcat loader to the transport vehicle to prevent the loader from moving during sudden stops, or when going up or down slopes [Figure 162].

1. Lower the bucket or attachment to the floor.
2. Stop the engine.
3. Engage the parking brake.
4. Install chains at the front and rear loader tie-down positions [Figure 162]. (Lift arms shown raised for visual clarity.)
5. Fasten each end of the chain to the transport vehicle.
6. Use chain binders to tighten the chains.

## PREVENTIVE MAINTENANCE

MAINTENANCE SAFETY .....	120
SERVICE SCHEDULE .....	121
Maintenance Intervals .....	121
Inspection Checkbook .....	123
BOBCAT INTERLOCK CONTROL SYSTEM (BICS™) .....	124
Inspecting The BICS™ (Engine STOPPED – Key ON) .....	124
Inspecting Deactivation Of The Auxiliary Hydraulics System (Engine STOPPED – Key ON) .....	124
Inspecting The Seat Bar Sensor (Engine RUNNING) .....	124
Inspecting The Traction Lock And Parking Brake (Engine RUNNING) .....	124
Inspecting The Lift Arm Bypass Control .....	124
Inspecting Deactivation Of Lift And Tilt Functions (SJC) .....	124
SEAT BAR RESTRAINT SYSTEM .....	125
Description .....	125
Inspection And Maintenance .....	126
SEAT BELT .....	127
Inspection And Maintenance .....	127
LIFT ARM SUPPORT DEVICE .....	128
Description .....	128
Installing .....	129
Removing .....	130
BACK-UP ALARM SYSTEM .....	131
Description .....	131
Inspection .....	131
Adjusting Switch Position .....	132
OPERATOR CAB .....	133
Description .....	133
Cab Door Sensor .....	133
Raising .....	134
Lowering .....	135
REAR DOOR (TAILGATE) .....	136
Opening And Closing .....	136
Adjusting Latch .....	136
REAR GRILLE .....	137
Removing .....	137
Installing .....	137

HEATING, VENTILATION, AND AIR CONDITIONING (HVAC) SYSTEM	138
Filters	138
Air Conditioning Evaporator / Heater Coil	139
Air Conditioning Condenser	140
Air Conditioning Lubrication	140
Troubleshooting	140
ENGINE AIR CLEANER	141
Replacing Filters	141
FUEL SYSTEM	143
Fuel Specifications	143
Biodiesel Blend Fuel	143
Filling The Fuel Tank	144
Removing Water From Main Fuel Filter	145
Replacing Fuel Pre-Filter	146
Replacing Main Fuel Filter	147
ENGINE LUBRICATION SYSTEM	149
Checking And Adding Engine Oil	149
Engine Oil Chart	149
Removing And Replacing Oil And Filter	150
ENGINE COOLING SYSTEM	152
Maintenance Platform	152
Cleaning	152
Checking And Adding Coolant	155
Removing And Replacing Coolant	156
ELECTRICAL SYSTEM	158
Description	158
Fuse And Relay Location / Identification	158
Battery Maintenance	161
Maintaining Battery Charge Level	161
Battery Service During Machine Storage	161
Battery Testing	162
Battery Charging	162
Using A Booster Battery (Jump Starting)	163
Removing And Installing Battery	164
HYDRAULIC / HYDROSTATIC SYSTEM	165
Checking And Adding Fluid	165
Hydraulic / Hydrostatic Fluid Chart	165
Removing And Replacing Hydraulic Fluid	166
Removing And Replacing Hydraulic / Hydrostatic Filter	168
Removing And Replacing Hydraulic Charge Filter	169
Replacing Reservoir Breather Cap	170
DIESEL PARTICULATE FILTER (DPF) SYSTEM	171
Description	171
Service Regeneration	171
DPF Cleaning	171

TYRE MAINTENANCE .....	172
Wheel Nuts .....	172
Rotating .....	172
Mounting .....	172
FINAL DRIVE TRANSMISSION (CHAINCASE) .....	173
Checking And Adding Fluid .....	173
Removing And Replacing Fluid .....	173
ALTERNATOR BELT .....	174
Belt Adjustment .....	174
Belt Replacement .....	174
AIR CONDITIONING BELT .....	175
Belt Adjustment .....	175
Belt Replacement .....	175
DRIVE BELT .....	177
Belt Adjustment .....	177
Belt Replacement .....	177
AUTOMATIC RIDE CONTROL ACCUMULATOR .....	179
Checking Accumulator Charge .....	179
LUBRICATING THE LOADER .....	180
Lubrication Locations .....	180
PIVOT PINS .....	182
Inspection And Maintenance .....	182
BOB-TACH (HAND LEVER) .....	183
Inspection And Maintenance .....	183
BOB-TACH (POWER) .....	184
Inspection And Maintenance .....	184
LOADER STORAGE AND RETURN TO SERVICE .....	185
Storage .....	185
Return To Service .....	185

# MAINTENANCE SAFETY

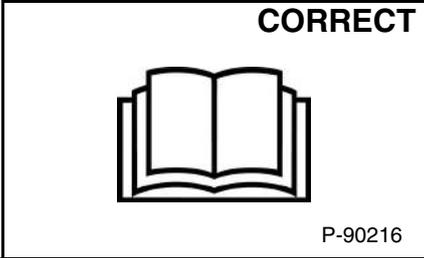


## WARNING

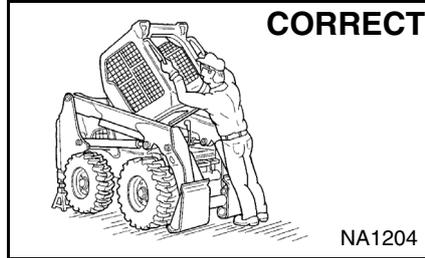
Instructions are necessary before operating or servicing machine. Read and understand the Operation & Maintenance Manual, Operator's Handbook and signs (decals) on machine. Follow warnings and instructions in the manuals when making repairs, adjustments or servicing. Check for correct function after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

W-2003-0807

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



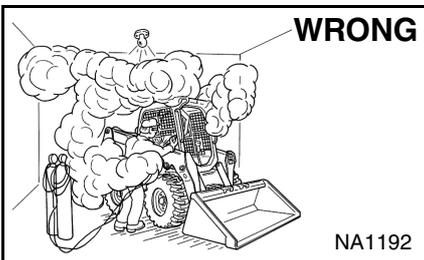
**!** Never service the Bobcat Skid-Steer Loader without instructions.



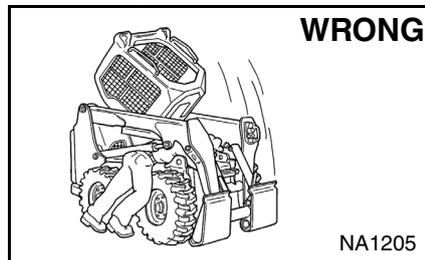
**!** Use the correct procedure to lift or lower operator cab.



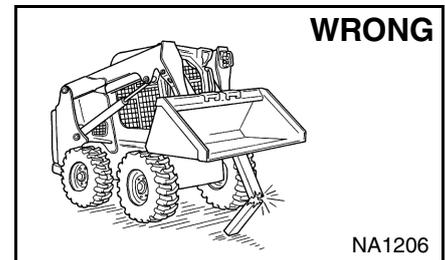
**!** Cleaning and maintenance are required daily.



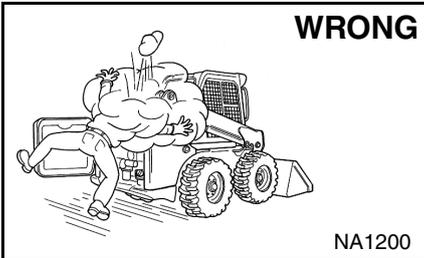
- !** Have good ventilation when welding or grinding painted parts.
- !** Wear dust mask when grinding painted parts. Toxic dust and gas can be produced.
- !** Avoid exhaust fume leaks which can kill without warning. Exhaust system must be tightly sealed.



**!** 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.

MSW35-0409

## SERVICE SCHEDULE

### Maintenance Intervals

Maintenance work must be done at regular intervals. Failure to do so will result in excessive wear and early failures.

The service schedule is a guide for correct maintenance of the Bobcat loader.



#### AVOID INJURY OR DEATH

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-2003-0807

#### *Every 10 Hours (Before Starting The Loader)*

- **Engine Oil** – Check level and add as needed. (See Page 149.)
- **Engine Air Filters and Air System** – Check display panel. Service only when required. Check for leaks and damaged components. (See Page 141.)
- **Engine Cooling System** – Clean debris from hydraulic fluid cooler and radiator assembly, fuel cooler, air conditioning condenser (if equipped), and rear grille. Check coolant level COLD and add premixed coolant as needed. (See Page 152.) and (See Page 155.)
- **Fuel Filter** – Check the display panel. Remove the trapped water when required. (See Page 145.)
- **Lift Arms, Lift Links, Cylinders, Bob-Tach, Pivot Pins, Wedges** – Lubricate with multipurpose lithium based grease. (See Page 180.)
- **Seat Belt, Seat Belt Retractors, Seat Bar, Control Interlocks** – Check the condition of seat belt. Clean or replace seat belt retractors as needed. Check the seat bar and control interlocks for correct operation. Clean dirt and debris from moving parts. (See Page 125.) and (See Page 127.)
- **Bobcat Interlock Control Systems (BICS™)** – Check for correct function. Lift and Tilt functions MUST NOT operate with seat bar raised. (See Page 124.)
- **Front Horn** – Check for proper function. (See Page 49.)
- **Tyres** – Check for damaged tyres and correct air pressure. Inflate to MAXIMUM pressure shown on the sidewall of the tyre. (See Page 172.)
- **Operator Cab** – Check the fastening bolts, washers, and nuts. Check the condition of the cab. (See Page 133.)
- **Indicators and Lights** – Check for correct operation of all indicators and lights. (See Page 38.)
- **Wheel Nuts** – Perform every 10 hours or daily for the first 30 hours, then as scheduled. Check for loose wheel nuts and tighten to correct torque. (See Page 172.)
- **Safety Signs and Safety Treads** – Check for damaged signs (decals) and safety treads. Replace any signs or safety treads that are damaged or worn. (See Page 19.) and (See Page 94.)
- **Hydraulic Fluid** – Check fluid level and add as needed. (See Page 165.)
- **Heater and Air Conditioning Filters** (if equipped) – Clean or replace filters as needed. (See Page 138.)

## SERVICE SCHEDULE (CONT'D)

### Maintenance Intervals (Cont'd)

#### *Every 50 Hours*

- **Hydraulic Hoses and Tubelines** – Check for damage and leaks. Repair or replace as needed.
- **Final Drive Transmission (Chaincase)** – Check fluid level and add as needed. (See Page 173.)
- **Parking Brake, Foot Pedals, Hand Controls and Steering Levers, or Joysticks** – Check for correct operation. Repair or adjust as needed.
- **Wheel Nuts** – Check for loose wheel nuts and tighten to correct torque. (See Page 172.)
- **Engine / Hydrostatic Drive Belt** – Perform at first 50 hours, then as scheduled. Check for wear or damage. Replace as needed. (See Page 177.)

#### *Every 100 Hours*

- **Battery** – Check cables and connections. (See Page 161.)
- **Engine Oil and Filter** – Perform every 100 hours when operating under severe conditions. Replace oil and filter. (See Page 150.)

#### *Every 250 Hours or Every 12 Months*

- **Engine / Hydrostatic Drive Belt** – Check for wear or damage. Replace as needed. (See Page 177.)
- **Drive Belts (Alternator, air conditioning, water pump)** – Check condition. Replace as needed. (See Page 174.) and (See Page 175.)
- **Bobcat Interlock Control System (BICS™)** – Check the function of the lift arm bypass control. (See Page 124.)

#### *Every 500 Hours or Every 12 Months*

- **Fuel Filter** – Replace main fuel filter element. (See Page 147.)
- **Hydraulic Charge Filter, Hydraulic Reservoir Breather Cap** – Replace the charge filter and the reservoir breather cap. (See Page 169.) and (See Page 170.)
- **Engine Oil and Filter** – Replace oil and filter. (See Page 150.)
- **Heater Coil and Air Conditioning Evaporator** (if equipped) - Clean the heater coil and air conditioning evaporator. Clean the plenum drains. (See Page 139.)

#### *Every 1000 Hours or Every 12 Months*

- **Hydraulic / Hydrostatic Filter** – Replace the hydraulic / hydrostatic filter. (See Page 168.)
- **Hydraulic Reservoir** – Replace the fluid. (See Page 166.)
- **Fuel Filter** – Replace fuel pre-filter. (See Page 146.)
- **Final Drive Transmission (Chaincase)** – Replace the fluid. (See Page 173.)

#### *Every 1500 Hours or Every 24 Months*

- **Coolant** – Replace the coolant. (See Page 156.)

**NOTE: The Inspection Checkbook can be ordered for you by your local dealer. Part number 7296478.**

## **SERVICE SCHEDULE (CONT'D)**

### **Inspection Checkbook**

Maintenance work must be done at regular intervals. Failure to do so will result in excessive wear and early failures.

The service schedule is a guide for correct maintenance of the Bobcat loader.

The Inspection Checkbook contains the following information:

- Doosan Bobcat EMEA s.r.o. Warranty Policy
- Doosan Bobcat EMEA s.r.o. Extended Warranty Policy

The Inspection Checkbook has to be filled in by the Dealer for any maintenance and service work of your Bobcat machine. This book may be required anytime by an authorised dealer or by Bobcat Europe, should a breakdown occur on the Bobcat equipment.

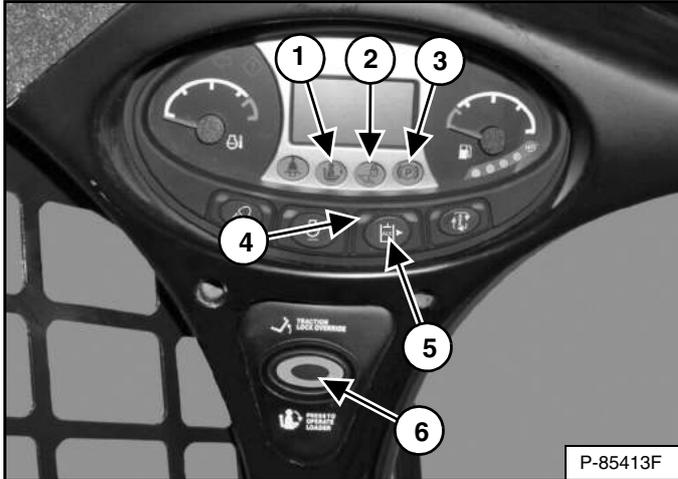
Your local dealer can order the Inspection Checkbook. Part number: 7296478.

## BOBCAT INTERLOCK CONTROL SYSTEM (BICS™)

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 121.)

### Inspecting The BICS™ (Engine STOPPED – Key ON)

Figure 163



1. Sit in operator's seat. Turn key switch to RUN. Lower seat bar and disengage parking brake. Press the PRESS TO OPERATE LOADER button (Item 6). Two BICS™ lights (Items 1 and 2) [Figure 163] [SEAT BAR and LIFT AND TILT VALVE] on left instrument panel must be OFF. The PRESS TO OPERATE LOADER button will light.
2. Raise seat bar fully. All three BICS™ lights (Items 1, 2, and 3) [Figure 163] [SEAT BAR, LIFT AND TILT VALVE, and PARKING BRAKE] on left instrument panel must be ON. The PRESS TO OPERATE LOADER button light will turn OFF.

### Inspecting Deactivation Of The Auxiliary Hydraulics System (Engine STOPPED – Key ON)

3. Sit in operator's seat, lower seat bar, and press the PRESS TO OPERATE LOADER button (Item 6). Press the Auxiliary Hydraulics button (Item 5). The auxiliary hydraulics light will turn ON (Item 4) [Figure 163]. Raise the seat bar. The light will turn OFF.

### Inspecting The Seat Bar Sensor (Engine RUNNING)

4. Sit in operator's seat, lower seat bar, engage parking brake, and fasten seat belt.
5. Start engine and operate at low idle. Press the PRESS TO OPERATE LOADER button. While raising the lift arms, raise the seat bar fully. The lift arms must stop. Repeat using the tilt function.

### Inspecting The Traction Lock And Parking Brake (Engine RUNNING)

6. Fasten seat belt, disengage parking brake, press the PRESS TO OPERATE LOADER button, and raise seat bar fully. Move steering levers or joystick(s) slowly forward and backward. The TRACTION lock must be engaged. Lower the seat bar. Press the PRESS TO OPERATE LOADER button.
7. Engage parking brake and move steering levers or joystick(s) slowly forward and backward. The TRACTION lock must be engaged. See your Bobcat dealer for service if loader fails to stop.

**NOTE:** The PARKING BRAKE light on the left instrument panel will remain ON until the engine is started, the PRESS TO OPERATE LOADER button is pressed, and the parking brake is disengaged.

### Inspecting The Lift Arm Bypass Control

8. Raise the lift arms 2 m (6 ft) off the ground. Stop engine. Turn lift arm bypass control knob 90° clockwise. Pull up and hold lift arm bypass control knob until lift arms slowly lower.

### Inspecting Deactivation Of Lift And Tilt Functions (SJC)

9. Sit in operator's seat and fasten seat belt. Lower seat bar, start engine, and press the PRESS TO OPERATE LOADER button.
10. Raise lift arms approximately 2 m (6 ft) off the ground.
11. Turn key switch to STOP and wait for the engine to come to a complete stop.
12. Turn key switch to RUN. Press the PRESS TO OPERATE LOADER button, move the control (foot pedal, hand control, or joystick) to lower the lift arms. Lift arms must not lower.
13. Move the control (foot pedal, hand control, or joystick) to tilt the bucket (or attachment) forward. The bucket (or attachment) must not tilt forward.

**! WARNING**

**AVOID INJURY OR DEATH**

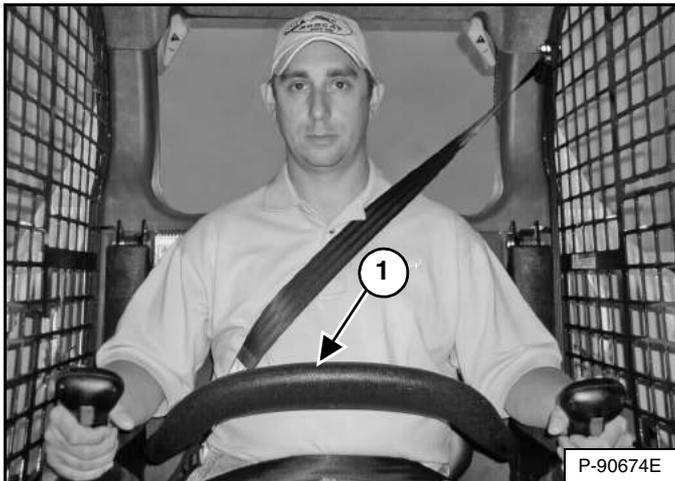
The Bobcat Interlock Control System (BICS™) must deactivate the lift, tilt and traction drive functions. If it does not, contact your dealer for service. DO NOT modify the system.

W-2151-1111

## SEAT BAR RESTRAINT SYSTEM

### Description

Figure 164



The seat bar restraint system has a pivoting seat bar with armrests (Item 1) [Figure 164].

The operator controls the use of the seat bar. The seat bar in the down position helps to keep the operator in the seat.

***Models with Standard Controls*** have hydraulic valve spool interlocks for the lift and tilt functions. The spool interlocks require the operator to lower the seat bar in order to operate the foot pedal controls.

When the seat bar is down, the engine is running, the PRESS TO OPERATE LOADER button is activated, and the brake is released; the lift, tilt, and traction drive functions can be operated.

When the seat bar is up, the lift and tilt control pedals are locked when returned to the NEUTRAL position.

***Models with Selectable Joystick Controls (SJC)*** have electrical deactivation of lift and tilt functions. Activation of functions require the operator to lower the seat bar.

When the seat bar is down, the engine is running, the PRESS TO OPERATE LOADER button is activated, and the brake is released; the lift, tilt, and traction drive functions can be operated.

When the seat bar is up, the lift and tilt functions are deactivated even though the joysticks do not mechanically lock.

## SEAT BAR RESTRAINT SYSTEM (CONT'D)

### Inspection And Maintenance

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 121.)

Sit in the seat and fasten the seat belt. Engage the parking brake. Pull the seat bar all the way down. Start the engine. Press the PRESS TO OPERATE LOADER button.

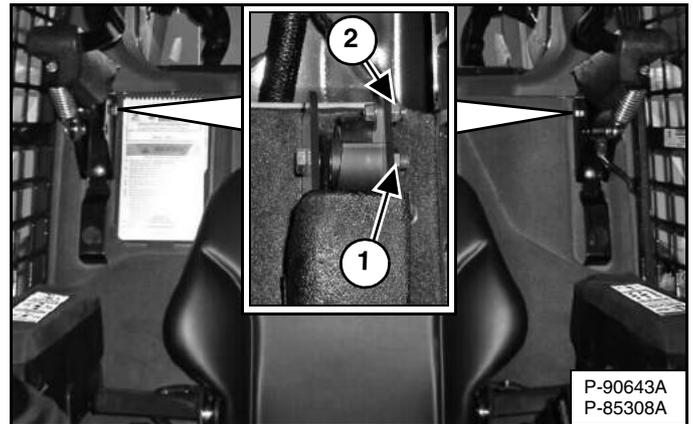
Operate the hydraulic controls to check that the lift and tilt functions operate correctly. Raise the lift arms until the attachment is approximately 600 mm (2 ft) off the ground.

Raise the seat bar. Move the hydraulic controls. Pedals and handles (if equipped) must be firmly locked in the NEUTRAL position (except joysticks). There must be no motion of the lift arms or tilt (attachment) when the controls are moved.

Lower the seat bar, press the PRESS TO OPERATE LOADER button, and lower the lift arms. Operate the lift control. While the lift arms are going up, raise the seat bar. The lift arms must stop.

Lower the seat bar, press the PRESS TO OPERATE LOADER button, lower the lift arms, and put the attachment flat on the ground. Stop the engine. Raise the seat bar. Operate the foot pedals and handles (if equipped) to be sure they are firmly locked in the NEUTRAL position (except joysticks).

Figure 165



Use compressed air to clean any debris or dirt from the pivot parts. Do not lubricate. Inspect all mounting hardware. The correct hinge nut (both sides) (Item 1) torque is 34 – 38 N•m (25 – 28 ft-lb). The seat bar sensor nut (left side only) (Item 2) [Figure 165] torque is 6 – 8 N•m (50 – 70 in-lb).

If the seat bar system does not function correctly, replace parts that are worn or damaged. Use only genuine Bobcat replacement parts.

## WARNING

The seat bar system must deactivate the lift and tilt control functions when the seat bar is up. See your Bobcat dealer for service if hydraulic controls do not deactivate.

W-2465-0111

## SEAT BELT

### Inspection And Maintenance

# WARNING

Failure to properly inspect and maintain the seat belt can cause lack of operator restraint resulting in serious injury or death.

W-2466-0703

Check the seat belt daily for correct function.

Inspect the seat belt system thoroughly at least once each year, or more often if the machine is exposed to severe environmental conditions or applications.

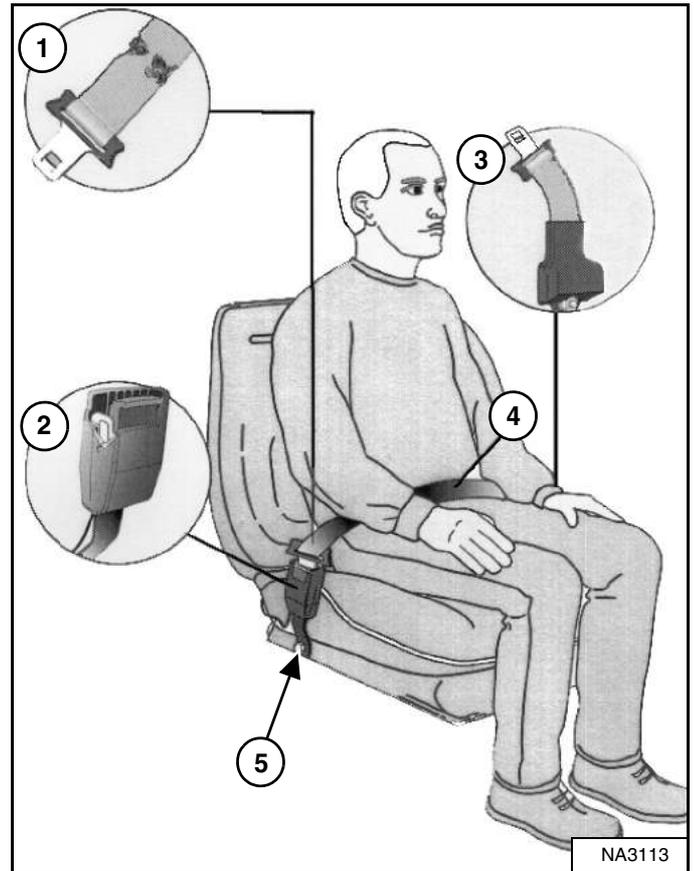
Any seat belt system that shows cuts, fraying, extreme or unusual wear, significant discolourations due to ultraviolet UV exposure, dusty / dirty conditions, abrasion to the seat belt webbing, or damage to the buckle, latch plate, retractor (if equipped), hardware, or any other obvious problem should be replaced immediately.

The items below are referenced in **[Figure 166]**.

1. Check the webbing. If the system is equipped with a retractor, pull the webbing completely out and inspect the full length of the webbing. Look for cuts, wear, fraying, dirt, and stiffness.
2. Check the buckle and latch for correct operation. Make sure latch plate is not excessively worn or deformed and buckle is not damaged or casing broken.
3. Check the retractor web storage device (if equipped) by extending webbing to determine if it looks correct, and that it spools out and retracts webbing correctly.
4. Check webbing in areas exposed to ultraviolet (UV) rays from the sun, or extreme dust or dirt. If the original colour of the webbing in these areas is extremely faded and / or the webbing is packed with dirt, the webbing strength may have deteriorated.
5. Check the hardware on both sides of the seat. Hardware should be tight. Hardware must not be missing, rusted, corroded, or damaged.

See your Bobcat dealer for seat belt system replacement parts for your machine.

Figure 166



## LIFT ARM SUPPORT DEVICE

### Description

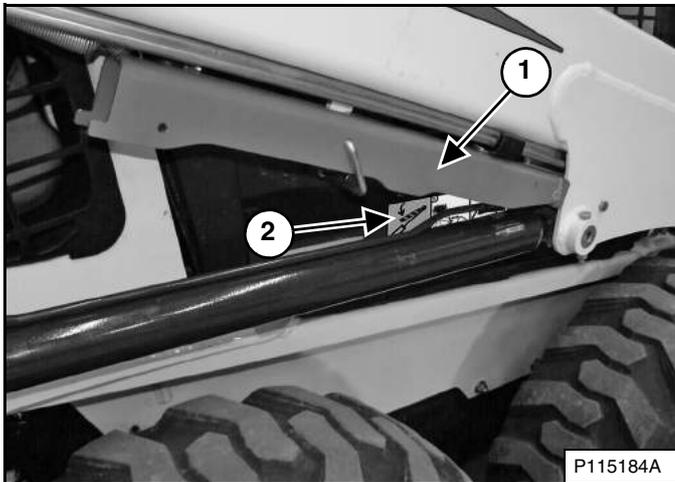
# WARNING

Never work on a machine with the lift arms up unless the lift arms are secured by an approved lift arm support device. Failure to use an approved lift arm support device can allow the lift arms or attachment to fall and cause injury or death.

Service lift arm support device if damaged or if parts are missing. Using a damaged lift arm support or with missing parts can cause lift arms to drop causing injury or death.

W-2572-0407

Figure 167



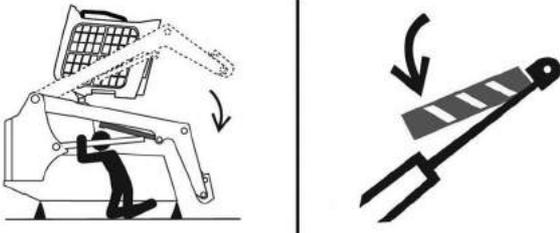
The lift arm support device (Item 1) [Figure 167] is used to support the lift arms while working on a machine with the lift arms up.

A decal (Item 2) [Figure 167] located on the right side of the operator cab provides instructions for installing and removing the lift arm support device.

The procedures are described in more detail on the following pages. (See Installing on Page 129.) and (See Removing on Page 130.)

## LIFT ARM SUPPORT DEVICE (CONT'D)

### Installing



P-90328

#### AVOID DEATH

- Disconnecting or loosening any hydraulic tubeline, hose, fitting, component or a part failure can cause lift arms to drop.
- Keep out of this area when lift arms are raised unless supported by an approved lift arm support. Replace if damaged.

D-1009-0409

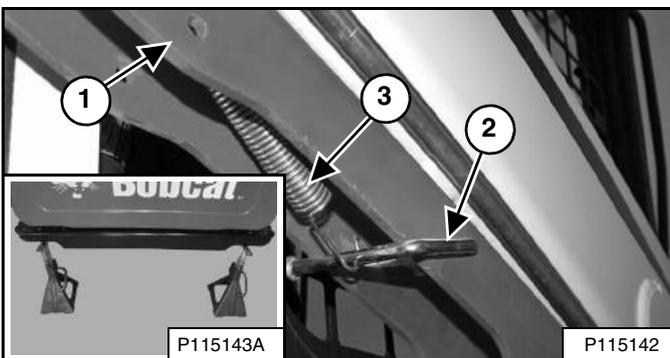
Remove attachment from the loader. (See Installing And Removing The Attachment (Hand Lever Bob-Tach) on Page 106.) **OR** (See Installing And Removing The Attachment (Power Bob-Tach) on Page 109.)



Before the cab or the lift arms are raised for service, jackstands must be put under the rear corners of the frame. Failure to use jackstands can allow the machine to tip backward causing injury or death.

W-2014-0895

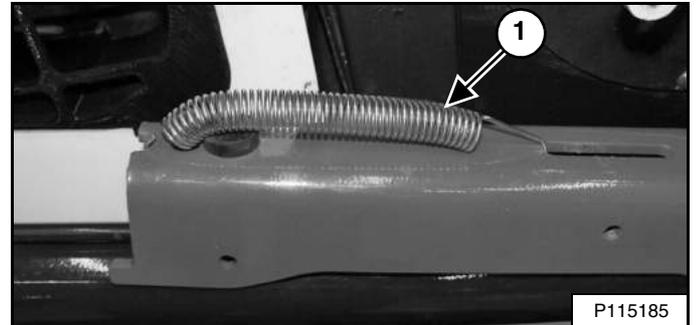
Figure 168



Put jackstands under the rear corners of the loader frame (Inset) [Figure 168].

Disconnect the spring (Item 3) from the lift arm support device retaining pin (Item 2). Support the lift arm support device (Item 1) [Figure 168] with your hand and remove the retaining pin.

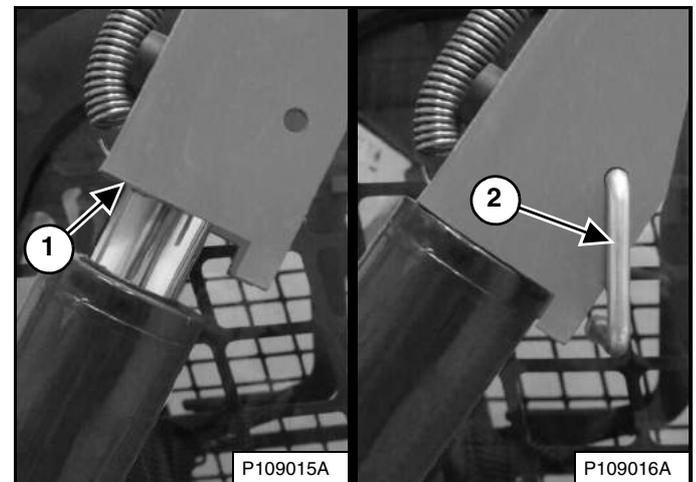
Figure 169



Lower the lift arm support device to the top of the lift cylinder. Hook the free end of the spring (Item 1) [Figure 169] to the lift arm support device to prevent interference with lift arm support device engagement.

Sit in the operator's seat, fasten the seat belt, and lower the seat bar. Start the engine.

Figure 170



Raise the lift arms until the lift arm support device drops onto the lift cylinder rod (Item 1) [Figure 170].

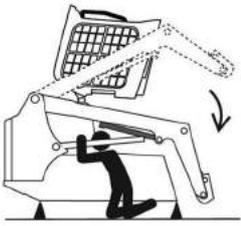
Lower the lift arms slowly until the lift arm support device is held between the lift arms and the lift cylinder.

Stop the engine, raise the seat bar, unbuckle the seat belt, and make sure lift and tilt functions are deactivated.

Install the retaining pin (Item 2) [Figure 170] into the rear of the lift arm support device below the lift cylinder rod.

## LIFT ARM SUPPORT DEVICE (CONT'D)

### Removing



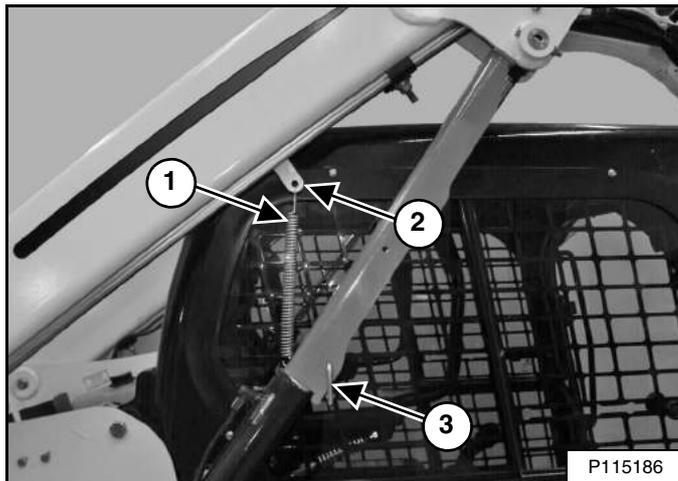
P-90328

#### AVOID DEATH

- Disconnecting or loosening any hydraulic tubeline, hose, fitting, component or a part failure can cause lift arms to drop.
- Keep out of this area when lift arms are raised unless supported by an approved lift arm support. Replace if damaged.

D-1009-0409

Figure 171



P115186

Remove the retaining pin (Item 3) [Figure 171] from the lift arm support device.

Connect the spring (Item 1) from the lift arm support device to the bracket (Item 2) [Figure 171] on the bottom of the lift arm.

Sit in the operator's seat, fasten the seat belt, and lower the seat bar. Start the engine.

Figure 172



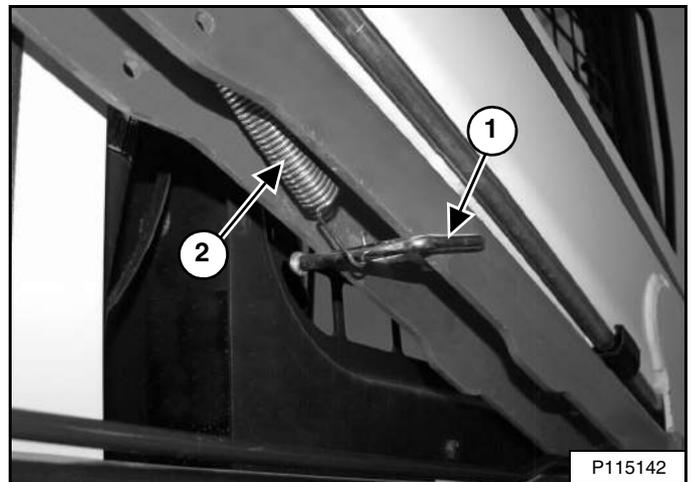
P115197

Raise the lift arms a small amount. The spring will lift the lift arm support device off the lift cylinder rod [Figure 172]. Fully lower the lift arms.

Stop the engine, raise the seat bar, unbuckle the seat belt, and make sure lift and tilt functions are deactivated.

Disconnect the spring from the bracket.

Figure 173



P115142

Raise the lift arm support device into the storage position and insert the retaining pin (Item 1) through the lift arm support device and the bracket. Hook the spring (Item 2) [Figure 173] to the retaining pin.

Remove the jackstands.

## BACK-UP ALARM SYSTEM

This machine may be equipped with a Back-up Alarm.

### Description

The back-up alarm will sound when the operator moves both steering levers or joystick(s) into the reverse position. Slight movement of the controls into the reverse position is required with hydrostatic transmissions, before the back-up alarm will sound.

### Inspection

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 121.)

**Figure 174**



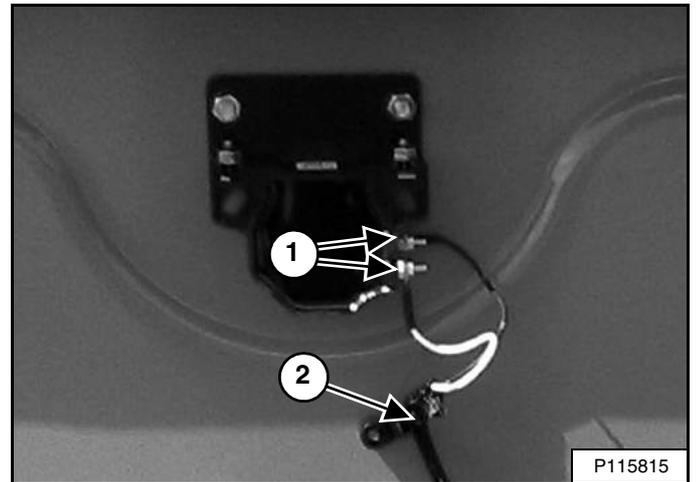
Inspect for damaged or missing back-up alarm decal (Item 1) [Figure 174]. Replace if required.

Sit in the seat and fasten the seat belt. Engage the parking brake. Pull the seat bar all the way down. Start the engine. Press the PRESS TO OPERATE LOADER button. Disengage the parking brake.

Move both steering levers or joystick(s) into the reverse position. The back-up alarm must sound when all wheels or both tracks are moving in reverse.

The back-up alarm is located on the inside of the rear door.

**Figure 175**



Inspect the back-up alarm electrical connections (Item 1) [Figure 175], wire harness (Item 2) [Figure 175], and back-up alarm switches (if equipped) (Item 1) [Figure 176] for tightness and damage. Repair or replace any damaged components.

If the back-up alarm switches require adjustment, (See Adjusting Switch Position on Page 132.)

## BACK-UP ALARM SYSTEM (CONT'D)

### Adjusting Switch Position

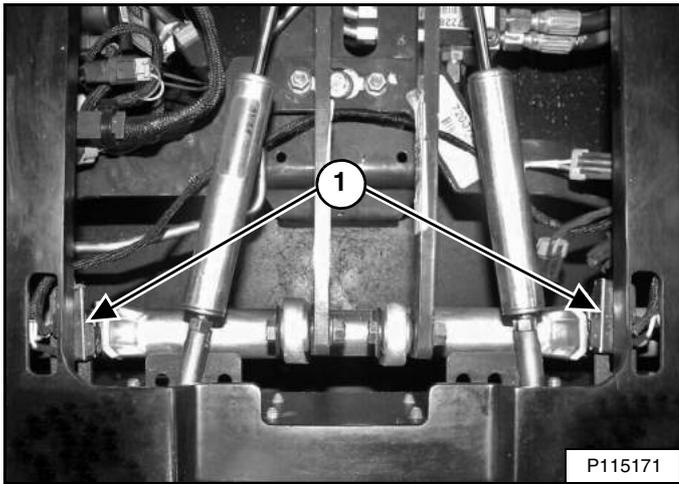
**NOTE:** Joystick equipped machines do not have back-up alarm switches and cannot be adjusted. See your Bobcat dealer for service if your back-up alarm does not sound.

#### *Standard Controls (If Equipped)*

Stop the engine and raise the operator cab. (See Raising on Page 134.)

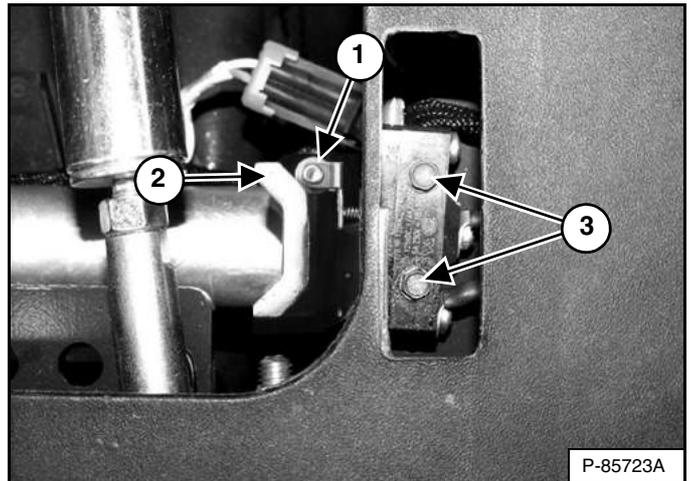
Put the steering levers into the NEUTRAL position.

**Figure 176**



The back-up alarm switches (Item 1) [Figure 176] are located alongside the steering bellcranks. Both switches must be adjusted properly for the back-up alarm to operate correctly.

**Figure 177**



Loosen the screws (Item 3) [Figure 177] securing the back-up alarm switch. (Left side shown)

Position the back-up alarm switch so that the roller (Item 1) just makes contact with the bellcrank (Item 2) [Figure 177] without compressing the switch spring.

Torque the screws (Item 3) [Figure 177] securing the switch to the bracket to 1,0 – 1,4 N•m (9 – 12 in-lb).

Repeat adjustment procedure for the other switch.

Lower the operator cab. (See Lowering on Page 135.)

Inspect back-up alarm system for proper function. (See Inspection on Page 131.)

## OPERATOR CAB

### Description

The Bobcat loader has an operator cab (ROPS and FOPS) as standard equipment to protect the operator from rollover and falling objects. The seat belt must be worn for rollover protection.

Check the cab, mounting, and hardware for damage. Never modify the cab. Replace the cab and hardware if damaged. See your Bobcat dealer for parts.

ROPS – Roll-Over Protective Structure per ISO 3471 and FOPS – Falling-Object Protective Structure per ISO 3449, Level I. Level II is available.

#### Level I

Protection from falling bricks, small concrete blocks, and hand tools encountered in operations, such as: motorway maintenance, landscaping, and other construction sites.

#### Level II

Protection from falling trees, rocks: for machines involved in site clearing, overhead demolition, or forestry.



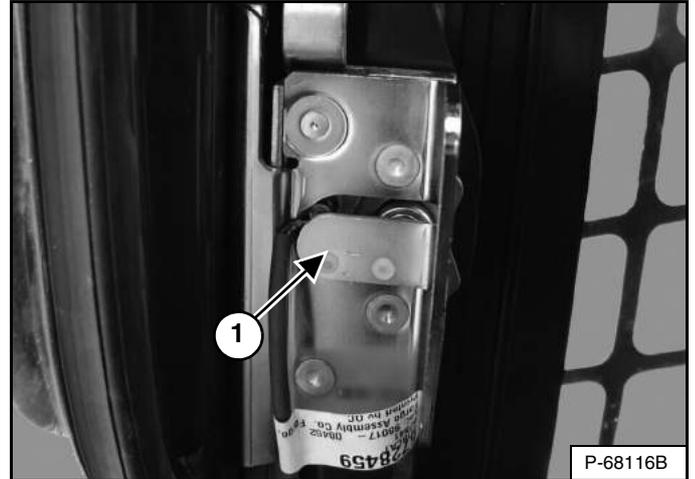
**Never modify operator cab by welding, grinding, drilling holes or adding attachments unless instructed to do so by Bobcat Company. Changes to the cab can cause loss of operator protection from rollover and falling objects, and result in injury or death.**

W-2069-0200

### Cab Door Sensor

This machine may be equipped with a Cab Door Sensor.

**Figure 178**



The cab door has a sensor (Item 1) [Figure 178] installed that deactivates the lift and tilt valves when the door is open.

**Figure 179**



The LIFT AND TILT VALVE light (Item 1) [Figure 179] is OFF when the door is closed, the key switch is turned to RUN, the seat bar is lowered, and the PRESS TO OPERATE LOADER button is pressed.

The LIFT AND TILT VALVE light (Item 1) [Figure 179] is ON when the door is open, the key switch is turned to RUN, the seat bar is lowered, and the PRESS TO OPERATE LOADER button is pressed.

[DOOR] will appear in the data display (Item 2) [Figure 179] when the door is open, the key switch is turned to RUN, the seat bar is lowered, and the PRESS TO OPERATE LOADER button is pressed.

## OPERATOR CAB (CONT'D)

### Raising

Always stop the engine before raising or lowering the operator cab.

Stop the loader on a level surface. Lower the lift arms. If the lift arms must be up while raising the operator cab, install the lift arm support device. (See LIFT ARM SUPPORT DEVICE on Page 128.)

## WARNING

Before the cab or the lift arms are raised for service, jackstands must be put under the rear corners of the frame. Failure to use jackstands can allow the machine to tip backward causing injury or death.

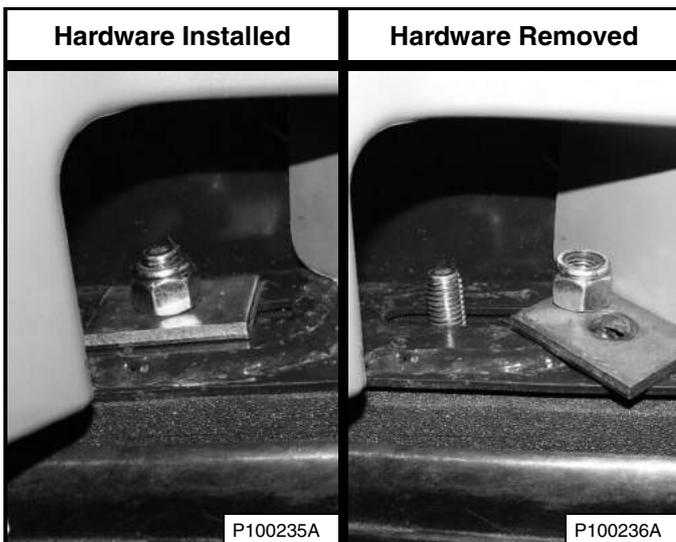
W-2014-0895

Figure 180



Install jackstands under the rear of the loader frame [Figure 180].

Figure 181



Remove the nuts and washers [Figure 181] (both sides) at the front corners of the operator cab.

## WARNING

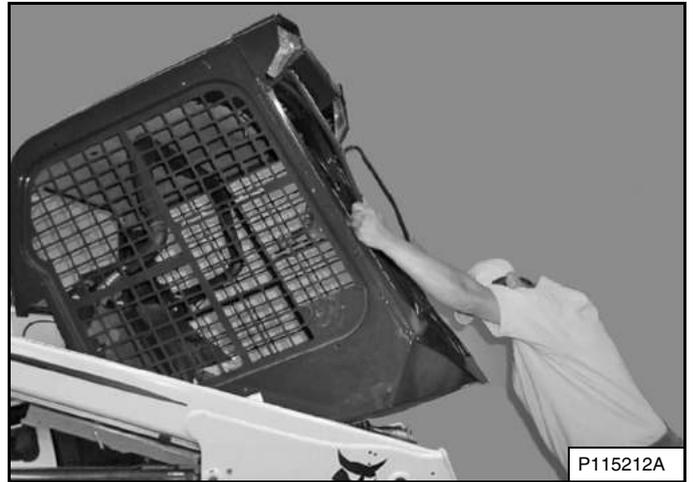
**UNEXPECTED LOADER, LIFT ARM OR ATTACHMENT MOVEMENT CAUSED BY CAB CONTACT WITH CONTROLS CAN CAUSE SERIOUS INJURY OR DEATH**

- **STOP ENGINE** before raising or lowering cab.

W-2758-0908

**NOTE:** On some machines, the operator cab frame can contact the steering levers while raising or lowering the operator cab. The engine **MUST** be stopped before raising or lowering the operator cab.

Figure 182



Lift on the grab handles and bottom of the operator cab [Figure 182] slowly until the operator cab is all the way up and the latching mechanism engages.

## OPERATOR CAB (CONT'D)

### Lowering

Always stop the engine before raising or lowering the operator cab.

**NOTE:** Always use the grab handles to lower the operator cab.

Figure 183



Pull down on the bottom of the operator cab until stopped by the latching mechanism [Figure 183].

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



**UNEXPECTED LOADER, LIFT ARM OR ATTACHMENT MOVEMENT CAUSED BY CAB CONTACT WITH CONTROLS CAN CAUSE SERIOUS INJURY OR DEATH**

- **STOP ENGINE** before raising or lowering cab.

W-2758-0908

**NOTE:** On some machines, the operator cab frame can contact the steering levers while raising or lowering the operator cab. The engine **MUST** be stopped before raising or lowering the operator cab.

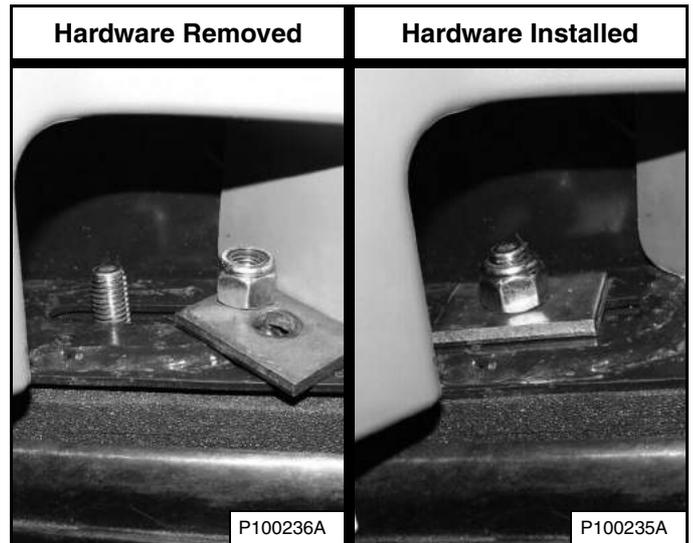
Support the operator cab and release the latching mechanism (Inset) [Figure 183]. Remove your hand from the latch mechanism when the operator cab is past the latch stop. Use both hands to lower the operator cab all the way down.



**PINCH POINT CAN CAUSE INJURY**  
Remove your hand from the latching mechanism when the cab is past the latch stop.

W-2469-0803

Figure 184



Install the washers and nuts (both sides) [Figure 184].

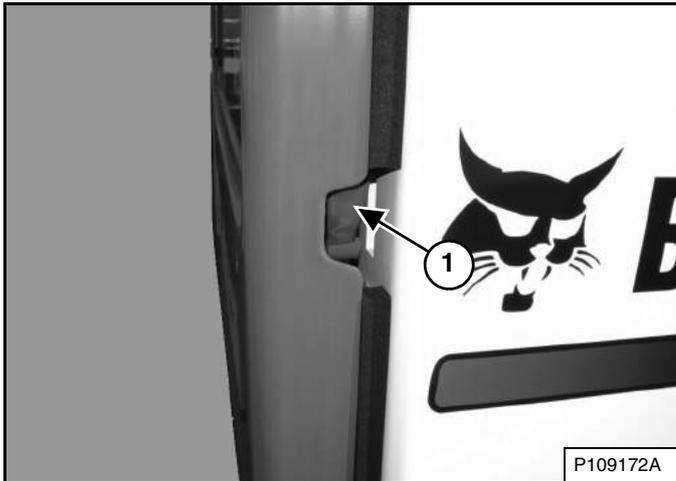
Tighten the nuts to 54 – 61 N•m (40 – 45 ft-lb) torque.

Remove the jackstands.

## REAR DOOR (TAILGATE)

### Opening And Closing

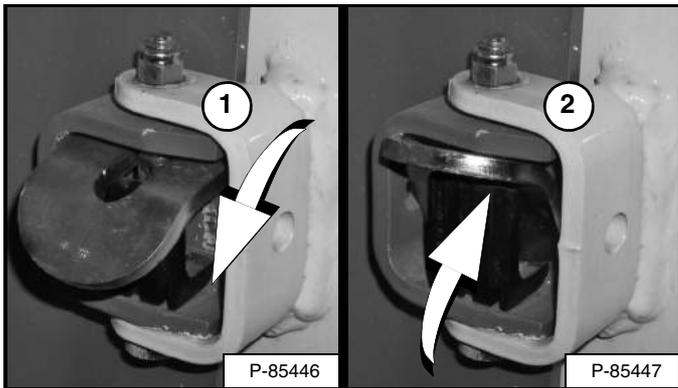
Figure 185



Reach into the slot on the right side of the rear door and pull the latch handle (Item 1) [Figure 185]. Pull the rear door open.

The rear door is equipped with a door stop feature on the top hinge.

Figure 186



Move the door stop into the engaged position (Item 1) to hold the door open. Move the door stop up (Item 2) [Figure 186] to allow the door to close.

## **WARNING**

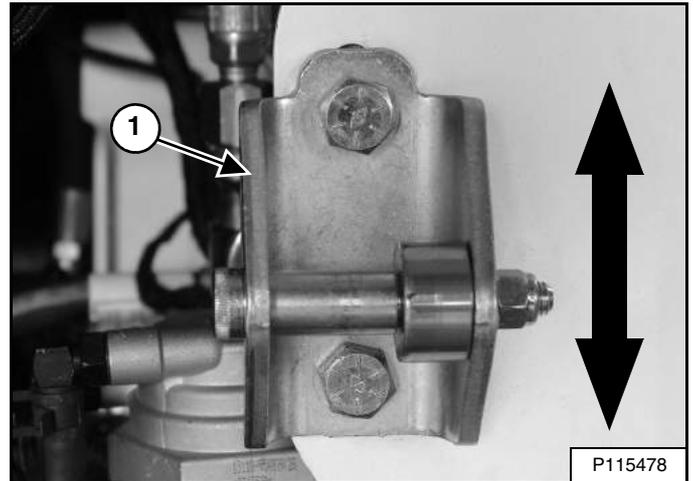
Keep the rear door closed when operating the machine. Failure to do so could seriously injure a bystander.

W-2020-1285

Close the rear door.

### Adjusting Latch

Figure 187



The door latch striker (Item 1) [Figure 187] can be adjusted up or down for alignment with the door latch.

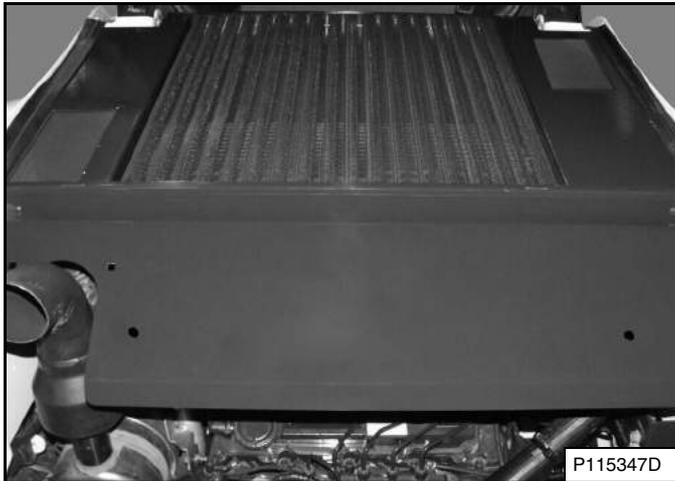
Close the rear door before operating the loader.

## REAR GRILLE

### Removing

Stop the engine and open the rear door.

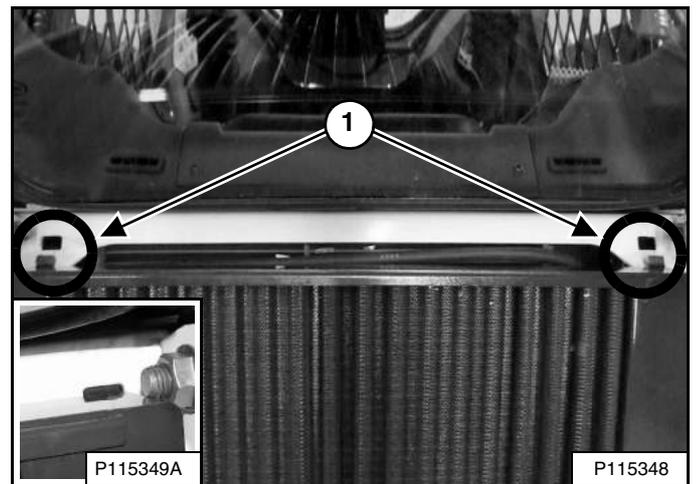
**Figure 188**



Lift and pull the rear grille backward to remove from the loader [**Figure 188**].

### Installing

**Figure 189**



The front edge of the rear grille has two tabs that fit into slots in the loader frame (Item 1) [**Figure 189**]. Insert the tabs into the slots and lower the rear grille.

This tab is properly installed into the loader frame slot (Right Side Shown) (Inset) [**Figure 189**].

Close the rear door.

## HEATING, VENTILATION, AND AIR CONDITIONING (HVAC) SYSTEM

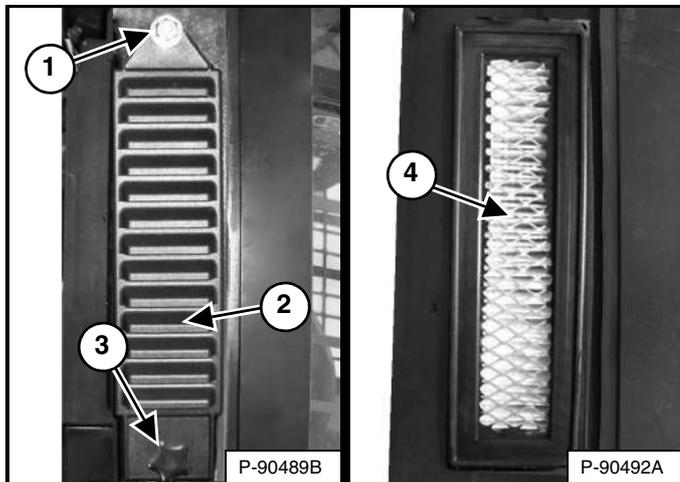
This machine may be equipped with a cab heater or HVAC system.

### Filters

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 121.)

#### Fresh Air Filters

Figure 190



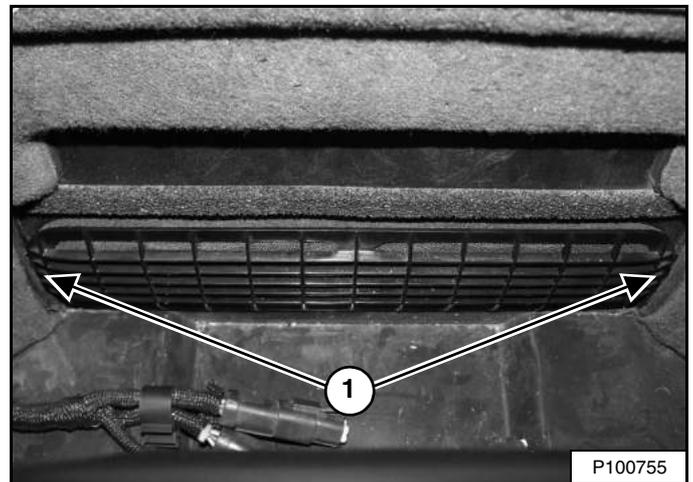
The fresh air filters are located behind the side windows outside the operator cab. (Right side shown) Remove the retaining screw (Item 3) and the filter cover (Item 2) [Figure 190]. (Lift arms shown raised for visual clarity.)

**NOTE: Loosen the upper filter cover bolt (Item 1) [Figure 190] to allow removal and installation of the cover if equipped with the High-Efficiency Particulate Air (HEPA) filter kit.**

Shake the filter (Item 4) [Figure 190] or use low pressure air to remove dirt. This procedure can be done several times before replacement is required. Install the filter, the filter cover, and the retaining screw.

#### Recirculation Filter

Figure 191



The recirculation filter is located behind the operator's seat inside the operator cab. The filter cover is held in position with three clips. Pull the cover at each end (Item 1) [Figure 191] to remove.

Rinse the filter with water or use a vacuum cleaner to clean. Do not use solvents.

Line up the clips on the filter cover with the slots provided and push the cover into position.

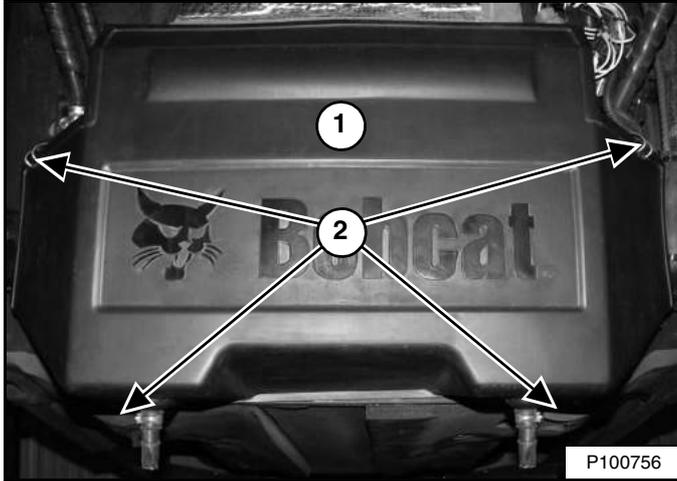
## HEATING, VENTILATION, AND AIR CONDITIONING (HVAC) SYSTEM (CONT'D)

### Air Conditioning Evaporator / Heater Coil

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 121.)

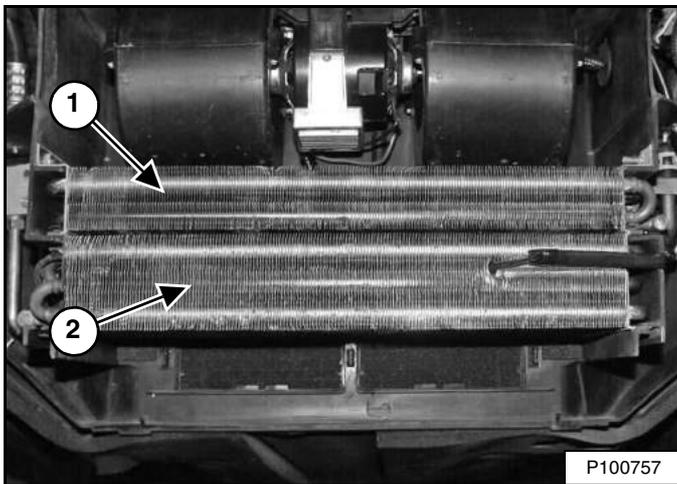
Stop the engine and raise the operator cab. (See Raising on Page 134.)

**Figure 192**



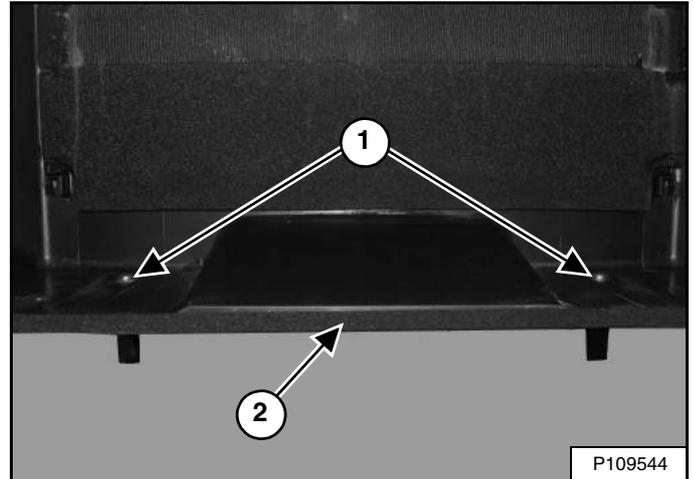
Unhook the cover latches (Item 2) and remove the cover (Item 1) [Figure 192].

**Figure 193**



Use low pressure air or water to remove debris from the heater coil (Item 1) and evaporator (Item 2) [Figure 193].

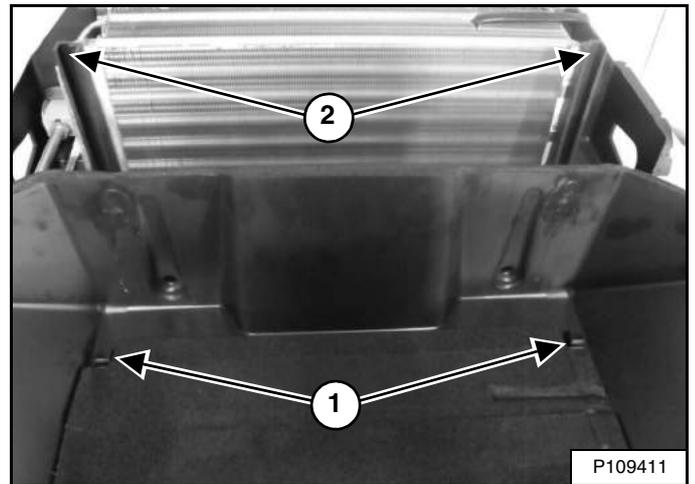
**Figure 194**



Clean the plenum drains (Item 1) [Figure 194] to ensure they are not plugged by debris.

Inspect the cover seal (Item 2) [Figure 194] for breaks and tears. Ensure the seal is firmly attached all around the cover. See your Bobcat dealer for a replacement seal.

**Figure 195**



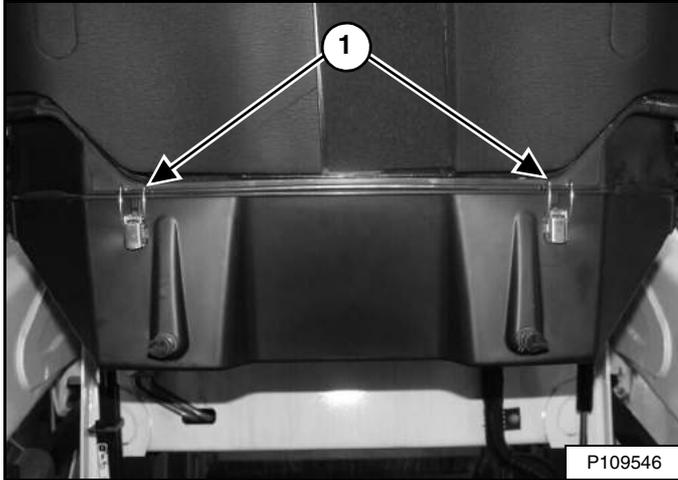
**NOTE:** The bosses (Item 1) fit inside the core supports (Item 2) [Figure 195] when the cover is installed. Deformity of the cover indicates they are out of position.

## HEATING, VENTILATION, AND AIR CONDITIONING (HVAC) SYSTEM (CONT'D)

### Air Conditioning Evaporator / Heater Coil (Cont'd)

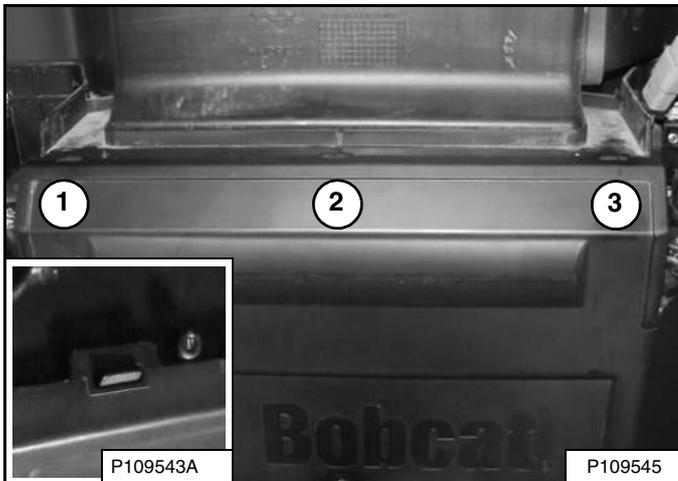
**NOTE:** Improper cover installation can damage the seal, which may lead to HVAC component failure. Perform the following steps in the order given to prevent cover seal damage.

Figure 196



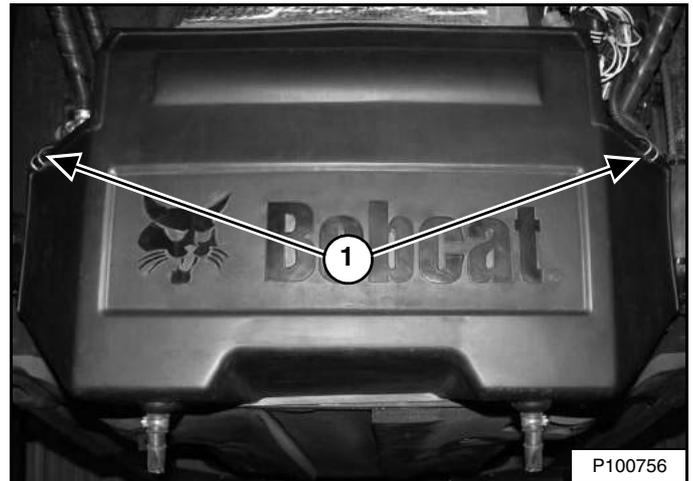
1. Hold the cover in place and fasten two latches (Item 1) [Figure 196].

Figure 197



2. Push the cover up in three places (Items 1, 2, and 3) until the slots snap into place on the tabs. This slot (Inset) [Figure 197] is correctly fastened.

Figure 198



3. Fasten the two remaining latches (Item 1) [Figure 198].

**NOTE:** Perform a thorough visual check to ensure that the cover and the cover seal are not deformed. The cover should seal tightly all around without any gaps.

Lower the operator cab. (See Lowering on Page 135.)

### Air Conditioning Condenser

The condenser should be cleaned with the hydraulic fluid cooler and radiator assembly. (See Cleaning on Page 152.)

### Air Conditioning Lubrication

Operate the air conditioning for approximately 5 minutes every week to lubricate the internal components.

### Troubleshooting

If the fan does not operate or the air conditioning does not turn on, check the fuse. (See Fuse And Relay Location / Identification on Page 158.) The refrigerant may need to be recharged if the air conditioning system circulates warm air.

## ENGINE AIR CLEANER

### Replacing Filters

Figure 199



Replace the air filters only when necessary. The service indicator (Item 1) will FLASH. Press the Information button (Item 3) until the display screen shows the service codes. Service code [AIRF] (Replace Engine Air Filter) or [M0117] (Air Filter Plugged) will show in the display screen (Item 2) [Figure 199] when air filter replacement is necessary.

**NOTE: Prolonged operation with an active [AIRF] or [M0117] code can cause severe engine component damage.**

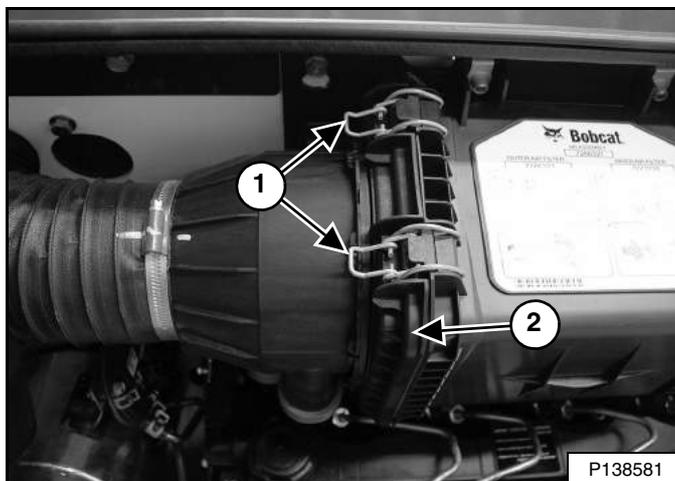
**Prolonged operation with an active [AIRF] code will cause the engine to derate (torque and rpm reduction).**

Replace the inner filter every second time the outer filter is replaced or as indicated.

#### Outer Filter

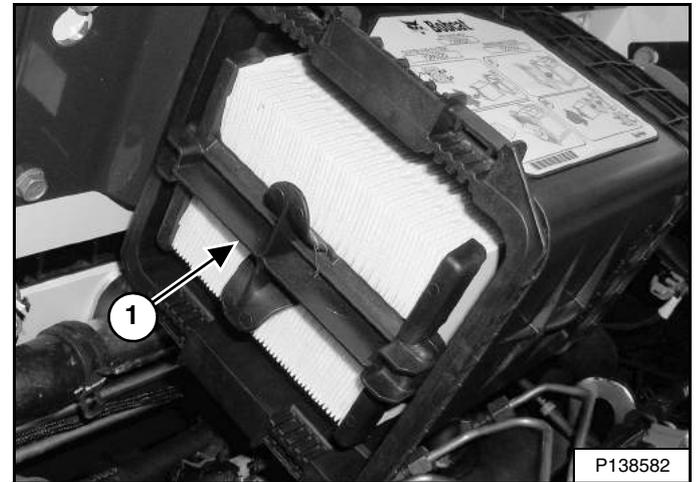
Stop the engine, open the rear door, and remove the rear grille. (See REAR GRILLE on Page 137.)

Figure 200



Open four latches (Item 1) and move the cover (Item 2) [Figure 200] out of the way. (Two latches are not visible in the photo.)

Figure 201



Remove the outer filter (Item 1) [Figure 201] and discard.

**NOTE: Make sure the filter housing is free of dirt and debris. Verify that sealing surfaces are clean. DO NOT use compressed air.**

Install new outer filter. Push in until the filter contacts the base of the housing.

Install the cover and secure four latches [Figure 200].

Install the rear grille and close the rear door.

## ENGINE AIR CLEANER (CONT'D)

### Replacing Filters (Cont'd)

#### Inner Filter

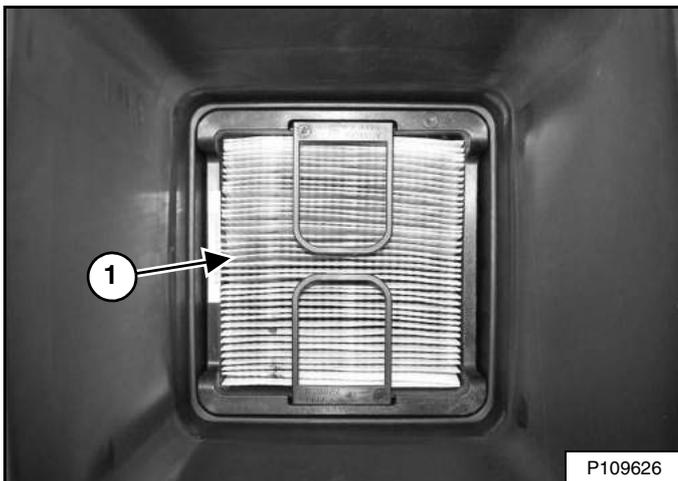
Replace the inner filter only under the following conditions:

- Replace the inner filter every *second* time the outer filter is replaced.
- After the outer filter has been replaced, start the engine and operate at full rpm. If service code **[AIRF]** (Replace Engine Air Filter) or **[M0117]** (Air Filter Plugged) is still displayed in the data display, replace the inner filter.

Stop the engine, open the rear door, and remove the rear grille. (See REAR GRILLE on Page 137.)

Remove the cover **[Figure 200]** and the outer filter **[Figure 201]**.

**Figure 202**



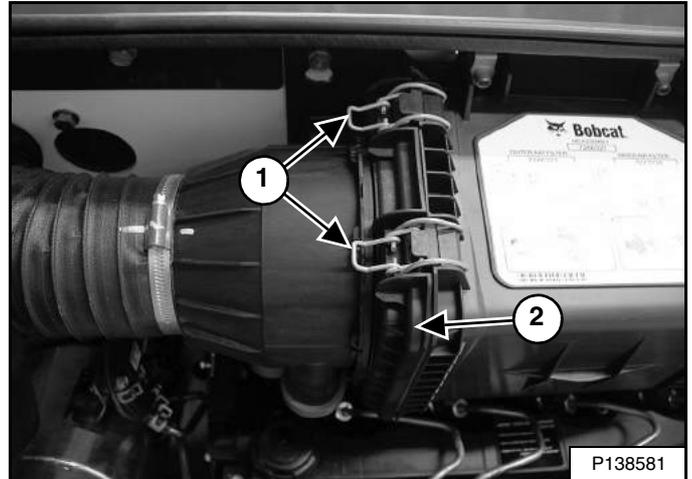
Remove the inner filter (Item 1) **[Figure 202]**.

**NOTE: Make sure the filter housing is free of dirt and debris. Verify that sealing surfaces are clean. DO NOT use compressed air.**

Install new inner filter. Push in until the filter contacts the base of the housing.

Install the outer filter **[Figure 201]**.

**Figure 203**



Install the cover (Item 2) and secure four latches (Item 1) **[Figure 203]**. (One latch is not visible in the photo.)

Install the rear grille and close the rear door.

## FUEL SYSTEM

### Fuel Specifications

**NOTE: Contact your local fuel supplier to receive recommendations for your region.**

*U.S. Standard (ASTM D975)*

Use only clean, high quality diesel fuel, Grade Number 2-D or Grade Number 1-D.

Ultra low sulfur diesel fuel must be used in this machine. Ultra low sulfur is defined as 15 mg/kg (15 ppm) sulfur maximum.

The following is one suggested blending guideline that should prevent fuel gelling during cold temperatures:

TEMPERATURE	GRADE 2-D	GRADE 1-D
Above -9°C (+15°F)	100%	0%
Down to -21°C (-5°F)	50%	50%
Below -21°C (-5°F)	0%	100%

**NOTE: Biodiesel blend fuel may also be used in this machine. Biodiesel blend fuel must contain no more than five percent biodiesel mixed with ultra low sulfur petroleum based diesel. This biodiesel blend fuel is commonly marketed as B5 blended diesel fuel. B5 blended diesel fuel must meet ASTM specifications.**

*E.U. Standard (EN590)*

Use only clean, high quality diesel fuel that meets the EN590 specifications listed below:

- Ultra low sulfur diesel fuel defined as 10 mg/kg (10 ppm) sulfur maximum
- Diesel fuel with cetane number of 51.0 and above.

**NOTE: Biodiesel blend fuel may also be used in this machine. Biodiesel blend fuel must contain no more than seven percent biodiesel mixed with ultra low sulfur petroleum based diesel. This biodiesel blend fuel is commonly marketed as B7 blended diesel fuel. B7 blended diesel fuel must meet EN590 specifications.**

### Biodiesel Blend Fuel

Biodiesel blend fuel has unique qualities that should be considered before using in this machine:

- Cold weather conditions can lead to plugged fuel system components and hard starting.
- Biodiesel blend fuel is an excellent medium for microbial growth and contamination that can cause corrosion and plugging of fuel system components.
- Use of biodiesel blend fuel may result in premature failure of fuel system components, such as: plugged fuel filters and deteriorated fuel lines.
- Shorter maintenance intervals may be required, such as: cleaning the fuel system and replacing fuel filters and fuel lines.
- Using biodiesel blended fuels containing more than five percent biodiesel can affect engine life and cause deterioration of hoses, tubelines, injectors, injector pump, and seals.

Apply the following guidelines if biodiesel blend fuel is used:

- Ensure the fuel tank is as full as possible at all times to prevent moisture from collecting in the fuel tank.
- Ensure that the fuel tank cap is securely tightened.
- Biodiesel blend fuel can damage painted surfaces, remove all spilled fuel from painted surfaces immediately.
- Drain all water from the fuel filter daily before operating the machine.
- Do not exceed engine oil change interval. Extended oil change intervals can cause engine damage.
- Before machine storage; drain the fuel tank, refill with 100% petroleum diesel fuel, add fuel stabiliser, and operate the engine for at least 30 minutes.

**NOTE: Biodiesel blend fuel does not have long term stability and should not be stored for more than 3 months.**

## FUEL SYSTEM (CONT'D)

### Filling The Fuel Tank

# ! WARNING

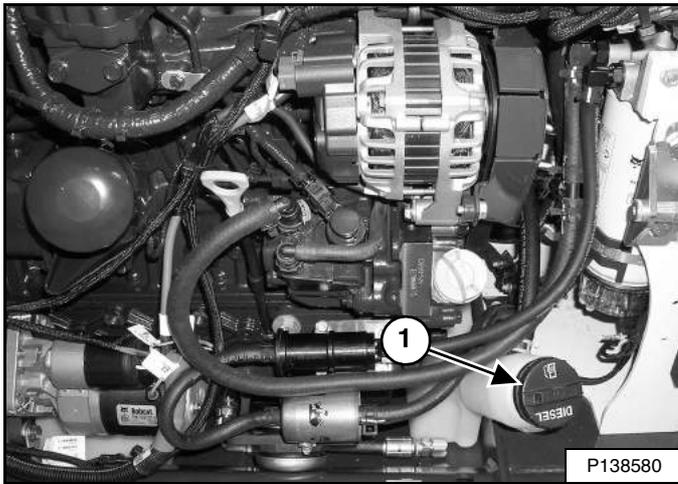
### AVOID INJURY OR DEATH

Stop and cool the engine before adding fuel. **NO SMOKING!** Failure to obey warnings can cause an explosion or fire.

W-2063-0807

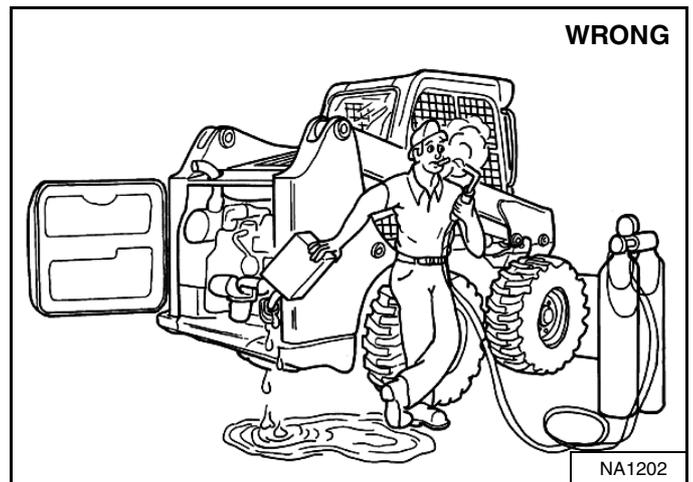
Stop the engine and open the rear door.

Figure 204



Remove the fuel fill cap (Item 1) [Figure 204].

Figure 205



Use a clean, approved safety container to add fuel of the correct specification. Add fuel only in an area that has free movement of air and no open flames or sparks. **NO SMOKING** [Figure 205].

Install and tighten the fuel fill cap (Item 1) [Figure 204].

**NOTE:** The fuel fill cap must be tightened until the cap clicks.

Close the rear door.

# ! WARNING

### AVOID INJURY OR DEATH

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.

W-2103-0508

## FUEL SYSTEM (CONT'D)

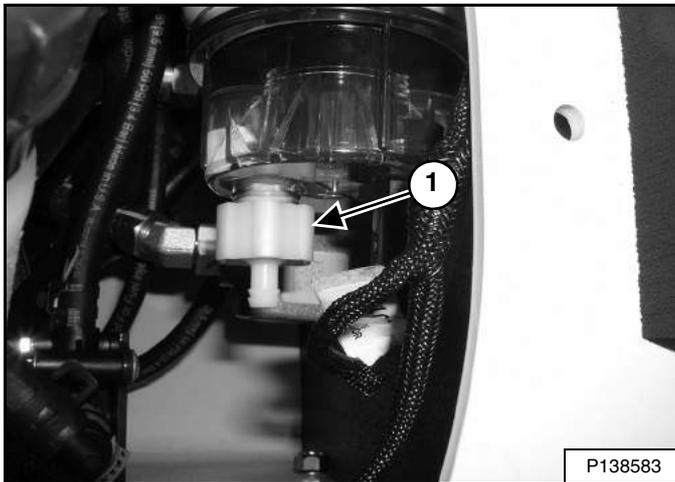
### Removing Water From Main Fuel Filter

**NOTE:** This procedure requires the use of a spare 9 mm (3/8 in) hose approximately 300 mm (12 in) long.

Remove water from the main fuel filter only when notified.

Stop the engine and open the rear door.

**Figure 206**



Attach a 9 mm (3/8 in) hose to the drain (Item 1) [Figure 206] at the bottom of the main fuel filter. Route the other end of the hose to a container.

Loosen the drain to remove trapped water from the fuel water separator.

Tighten the drain and remove the hose.

## **WARNING**

### **AVOID INJURY OR DEATH**

**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.**

W-2103-0508

Close the rear door.

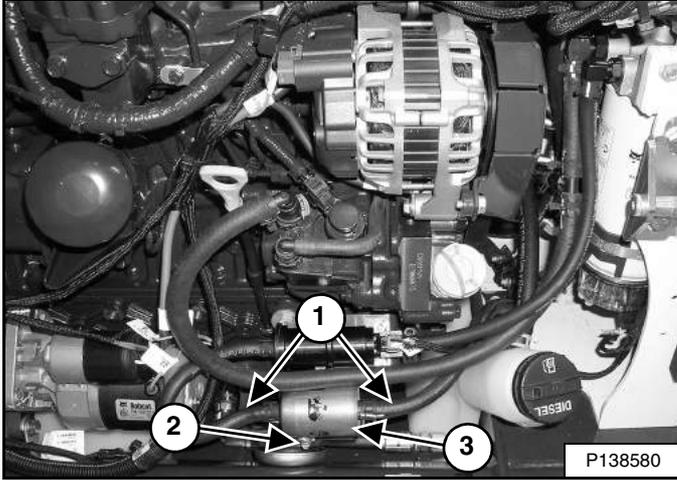
## FUEL SYSTEM (CONT'D)

### Replacing Fuel Pre-Filter

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 121.)

Stop the engine and open the rear door.

Figure 207



Pinch off the two hoses (Item 1) to prevent spilled fuel while the hoses are disconnected from the pre-filter (Item 3) [Figure 207].

Loosen the hose clamps and remove the hoses from the pre-filter.

Loosen the clamp (Item 2). Remove the pre-filter (Item 3) [Figure 207] and discard.

Install new pre-filter and tighten clamp. Install fuel hoses and remove tools used to pinch off hoses.

## WARNING

### AVOID INJURY OR DEATH

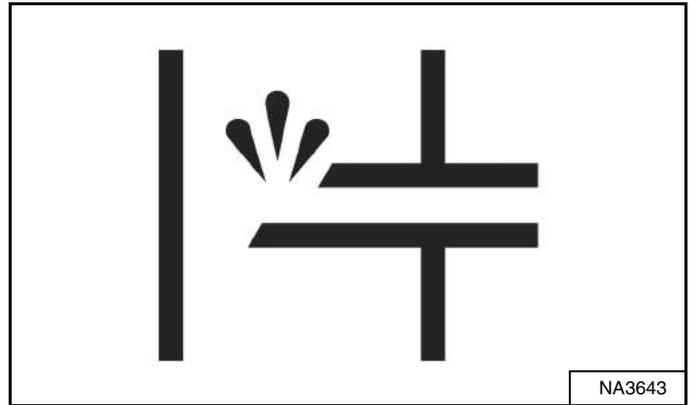
Always clean up spilled fuel or oil. Keep heat, flames, sparks or lighted tobacco away from fuel and oil. Failure to use care around combustibles can cause explosion or fire.

W-2103-0508

Close the rear door.

Turn the key switch to RUN.

Figure 208



Wait for the fuel priming in process icon [Figure 208] on the right panel to turn off.

Start the engine and allow to operate for one minute.

## WARNING

### AVOID INJURY OR DEATH

Diesel fuel or hydraulic fluid under pressure can penetrate skin or eyes, causing serious injury or death. Fluid leaks under pressure may not be visible. Use a piece of cardboard or wood to find leaks. Do not use your bare hand. Wear safety goggles. If fluid enters skin or eyes, get immediate medical attention from a doctor familiar with this injury.

W-2072-EN-0909

Stop the engine and check for leaks at the filter.

## FUEL SYSTEM (CONT'D)

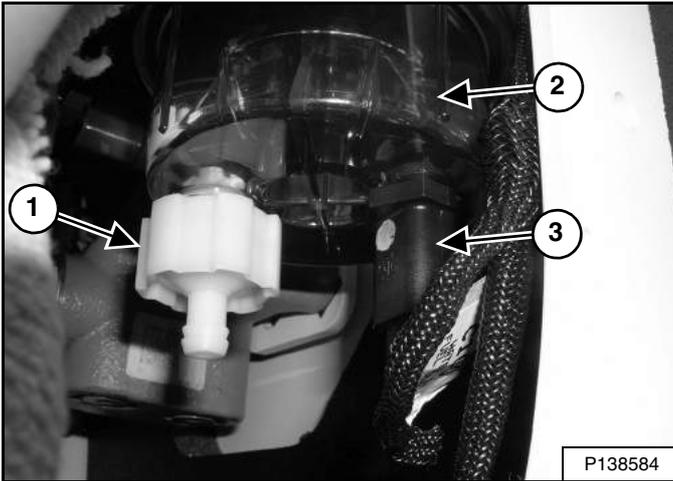
### Replacing Main Fuel Filter

**NOTE:** This procedure requires the use of a spare 9 mm (3/8 in) hose approximately 300 mm (12 in) long.

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 121.)

Stop the engine and open the rear door.

**Figure 209**



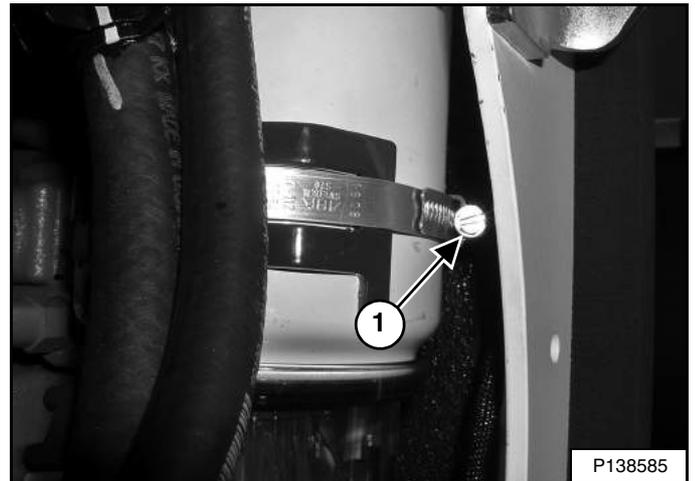
Attach a 9 mm (3/8 in) hose to the drain (Item 1) [Figure 209] at the bottom of the main fuel filter. Route the other end of the hose to a container.

Loosen the drain to empty the filter. Tighten the drain and remove the hose.

Disconnect the electrical connector (Item 3) [Figure 209].

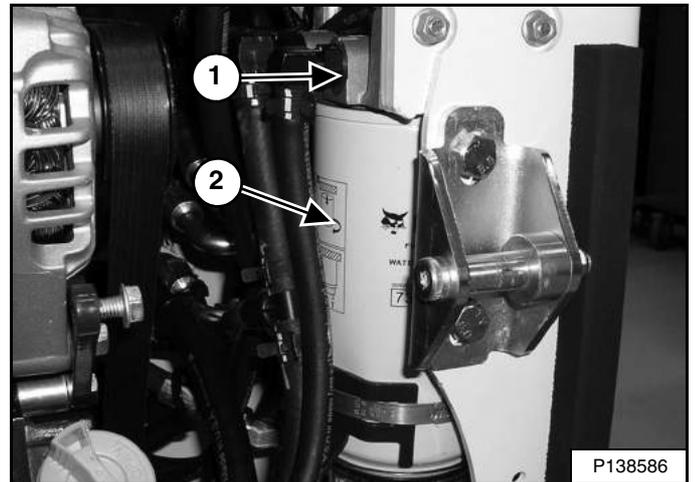
Remove the fuel water separator (Item 2) [Figure 209] from the fuel filter element.

**Figure 210**



Loosen the clamp (Item 1) [Figure 210].

**Figure 211**



Remove the fuel filter element (Item 2) from the fuel filter head (Item 1) [Figure 211].

**NOTE:** Do NOT fill the new fuel filter element with fuel at this time.

## FUEL SYSTEM (CONT'D)

### Replacing Main Fuel Filter (Cont'd)

Put clean oil on the two new fuel filter element O-rings. Install the fuel water separator onto new fuel filter element. Tighten three-quarters of a turn after the O-ring makes contact.

Install assembly onto fuel filter head [Figure 211]. Tighten three-fourths of a turn after the O-ring makes contact.

Tighten the clamp [Figure 210].

Connect the electrical connector [Figure 209].

Verify the drain is fully closed [Figure 209].

## WARNING

### AVOID INJURY OR DEATH

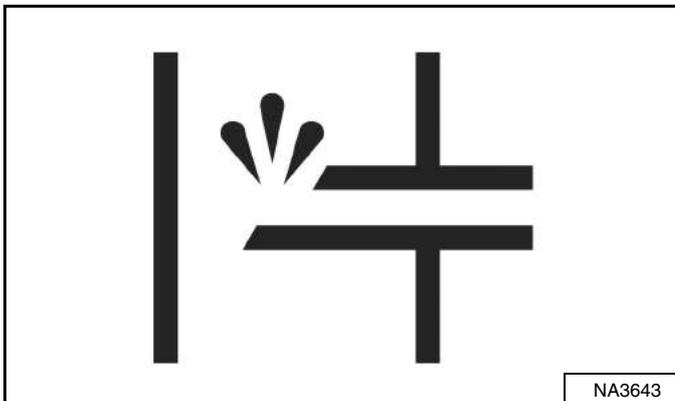
Always clean up spilled fuel or oil. Keep heat, flames, sparks or lighted tobacco away from fuel and oil. Failure to use care around combustibles can cause explosion or fire.

W-2103-0508

Close the rear door.

Turn the key switch to RUN.

Figure 212



Wait for the fuel priming in process icon [Figure 212] on the right panel to turn off.

Start the engine and allow to operate for one minute.

## WARNING

### AVOID INJURY OR DEATH

Diesel fuel or hydraulic fluid under pressure can penetrate skin or eyes, causing serious injury or death. Fluid leaks under pressure may not be visible. Use a piece of cardboard or wood to find leaks. Do not use your bare hand. Wear safety goggles. If fluid enters skin or eyes, get immediate medical attention from a doctor familiar with this injury.

W-2072-EN-0909

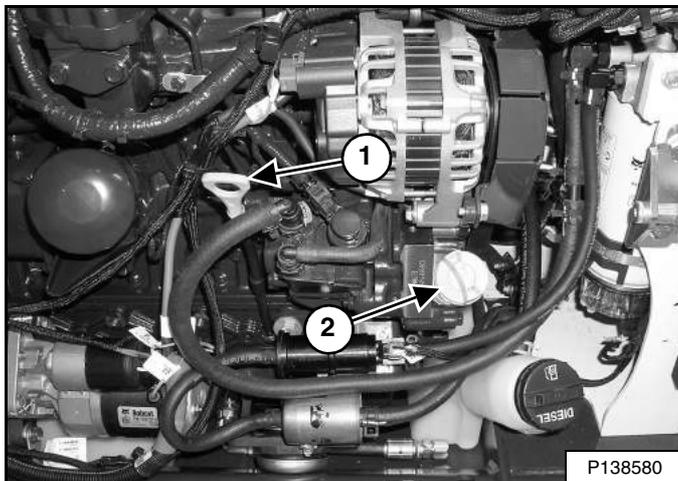
Stop the engine and check for leaks at the filter.

## ENGINE LUBRICATION SYSTEM

### Checking And Adding Engine Oil

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

Figure 213



Park the loader on a level surface. Stop the engine. Open the rear door and remove the dipstick (Item 1) [Figure 213].

Keep the oil level between the marks on the dipstick. Do not overfill.

Remove the oil fill cap (Item 2) [Figure 213] to add engine oil.



#### AVOID INJURY OR DEATH

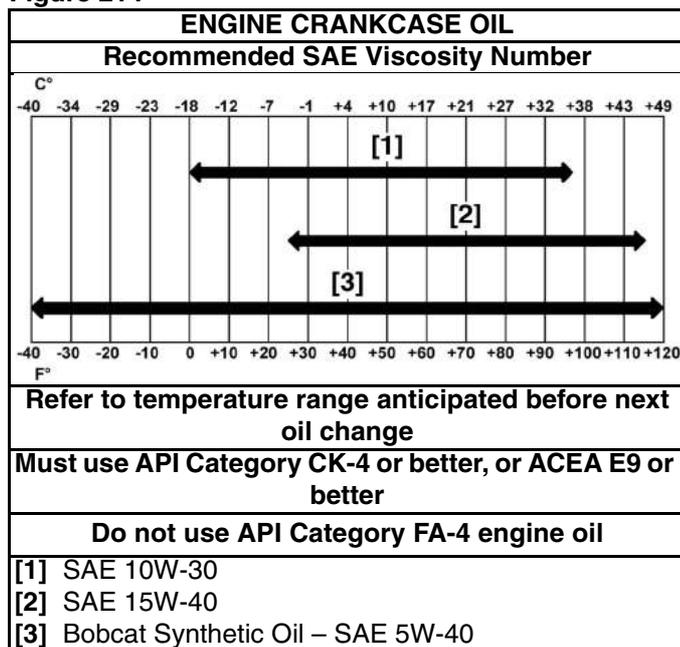
Always clean up spilled fuel or oil. Keep heat, flames, sparks or lighted tobacco away from fuel and oil. Failure to use care around combustibles can cause explosion or fire.

W-2103-0508

Close the rear door.

### Engine Oil Chart

Figure 214



Bobcat engine oils are recommended for use in this machine. If Bobcat engine oil is not available, use a good quality engine oil that meets API Service Category of CK-4 or better, or ACEA E9 or better [Figure 214].



#### AVOID ENGINE DAMAGE

Use of API Service Category FA-4 engine oil is not approved and may cause irreversible damage to the engine.

I-2384-0916

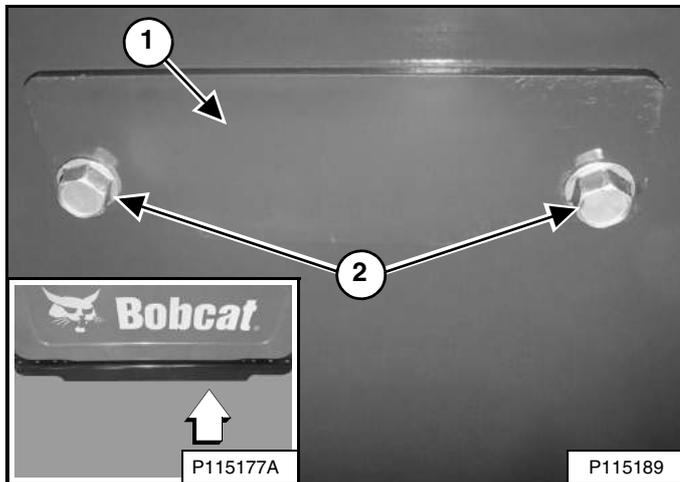
## ENGINE LUBRICATION SYSTEM (CONT'D)

### Removing And Replacing Oil And Filter

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 121.)

Operate the engine until coolant reaches normal operating temperature. Stop the engine.

**Figure 215**

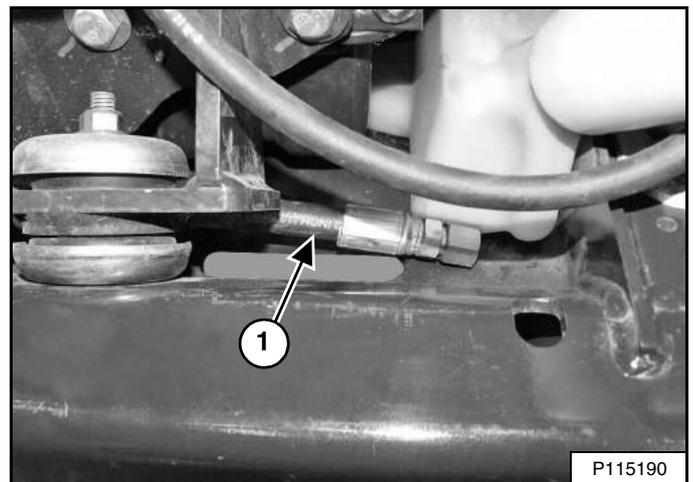


The oil drain hose is located behind a cover (Item 1) under the rear of the loader (Inset) [Figure 215].

Loosen one cover mounting bolt and remove the other bolt (Item 2) [Figure 215] to allow the cover to swing open.

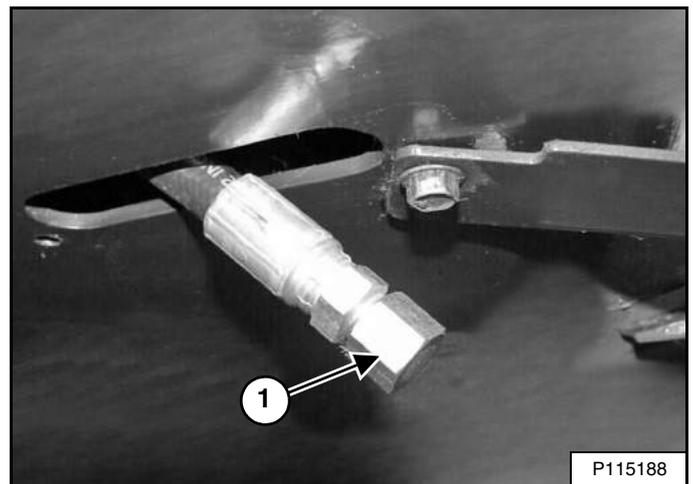
Open the rear door.

**Figure 216**



The oil drain hose (Item 1) [Figure 216] storage location is near the fuel tank fill. Route the oil drain hose through the opening.

**Figure 217**



Remove the oil drain cap (Item 1) [Figure 217] from the oil drain hose and drain the oil into a container. Recycle or dispose of used oil in an environmentally safe manner.

Install and tighten the oil drain cap [Figure 217].

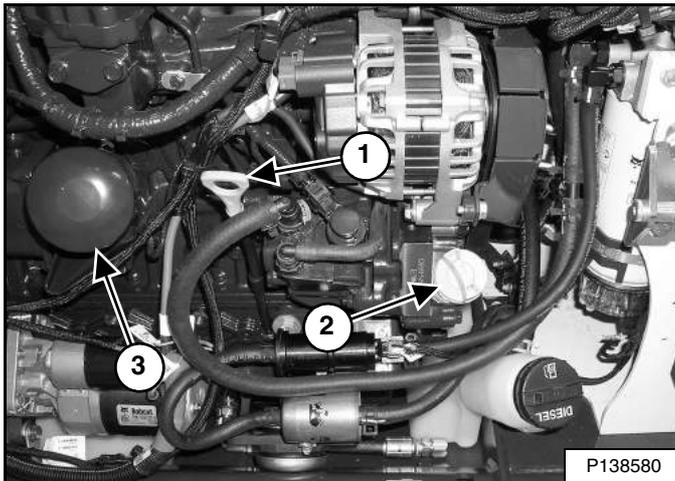
Return the oil drain hose to the storage location [Figure 216].

Close the cover and install the cover mounting bolt [Figure 215]. Tighten both bolts.

## ENGINE LUBRICATION SYSTEM (CONT'D)

### Removing And Replacing Oil And Filter (Cont'd)

Figure 218



Remove the oil filter (Item 3) [Figure 218] and clean the filter base.

Put clean oil on the new filter gasket, install the new filter, and hand tighten. Use genuine Bobcat filter only.

Remove the oil fill cap (Item 2) [Figure 218].

Put oil into the engine and replace the oil fill cap. (See Capacities on Page 215.) Do not overfill.

Start the engine and allow to operate for several minutes.

Stop the engine and check for leaks at the filter.

Remove the dipstick (Item 1) [Figure 218] and check the oil level.

Add oil as needed if oil level is not at the top mark on the dipstick. Install the dipstick and close the rear door.

**! WARNING**

#### AVOID INJURY OR DEATH

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.

W-2103-0508

**! WARNING**

#### AVOID INJURY OR DEATH

Diesel fuel or hydraulic fluid under pressure can penetrate skin or eyes, causing serious injury or death. Fluid leaks under pressure may not be visible. Use a piece of cardboard or wood to find leaks. Do not use your bare hand. Wear safety goggles. If fluid enters skin or eyes, get immediate medical attention from a doctor familiar with this injury.

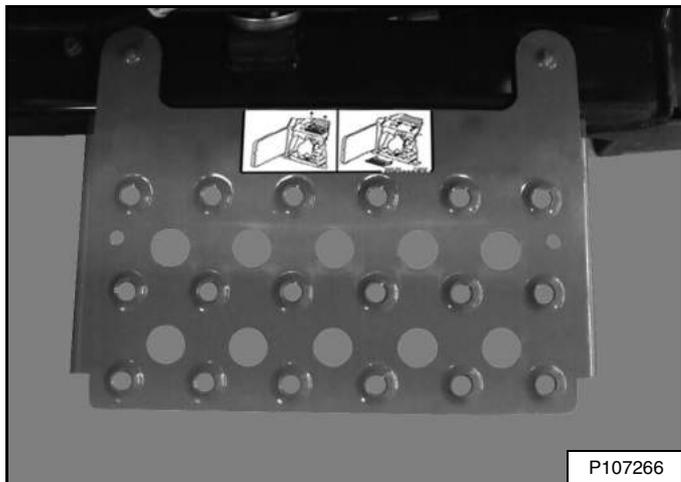
W-2072-EN-0909

## ENGINE COOLING SYSTEM

Check the cooling system every day to prevent overheating, loss of performance, or engine damage.

### Maintenance Platform

**Figure 219**



A maintenance platform [Figure 219] is available from your Bobcat dealer to facilitate access when cleaning the engine cooling system.

### Cleaning

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 121.)

Stop the engine, open the rear door, and remove the rear grille. (See REAR GRILLE on Page 137.)



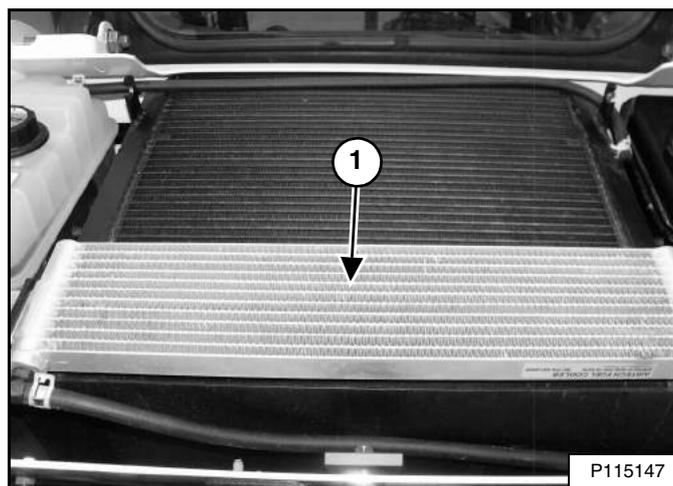
#### AVOID INJURY OR DEATH

Wear safety glasses to prevent eye injury when any of the following conditions exist:

- When fluids are under pressure.
- Flying debris or loose material is present.
- Engine is running.
- Tools are being used.

W-2019-0907

**Figure 220**



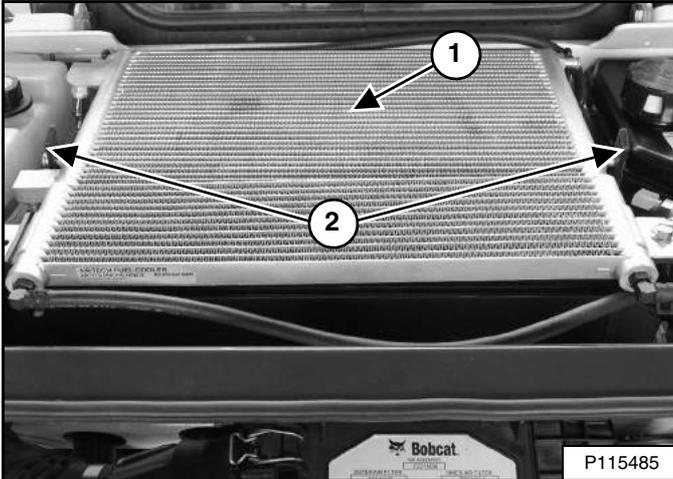
Use low air pressure or water pressure to clean the top of the fuel cooler (Item 1) [Figure 220].

## ENGINE COOLING SYSTEM (CONT'D)

### Cleaning (Cont'd)

#### Loaders With Air Conditioning

Figure 221

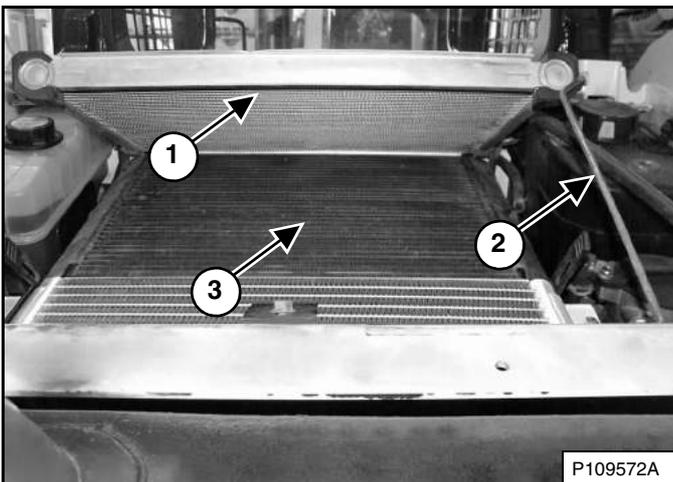


Use low air pressure or water pressure to clean the top of the air conditioning condenser (Item 1) [Figure 221].

Unhook the two rubber straps (Item 2) [Figure 221].

**NOTE:** The air conditioning condenser fits into two slotted brackets mounted on the hydraulic fluid cooler and radiator assembly. Ensure the air conditioning condenser remains connected to the brackets when raising and lowering.

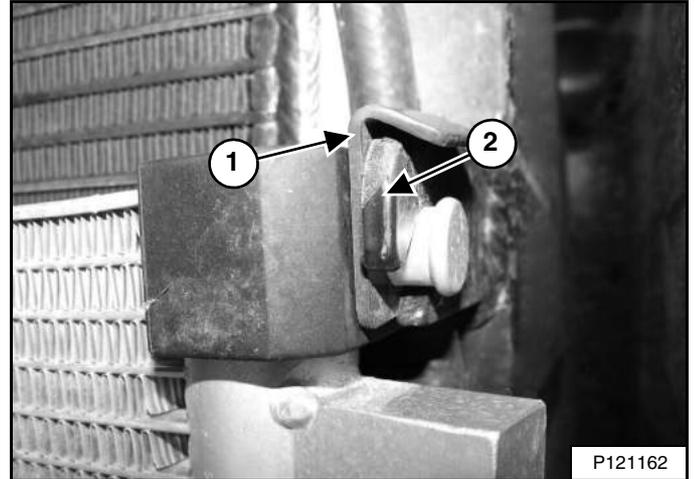
Figure 222



Pivot the air conditioning condenser (Item 1) up and rotate the support bar (Item 2) into position. Use low air pressure or water pressure to clean the top of the hydraulic fluid cooler and radiator assembly (Item 3) [Figure 222].

Return the support bar to storage position and lower the air conditioning condenser.

Figure 223



Ensure the air conditioning condenser is installed into the two slotted brackets (Item 2) [Figure 223]. (Right side shown.)

Ensure the clips (Item 1) are properly installed over the two slotted brackets (Item 2) [Figure 223]. (Right side shown.)

Fasten the two rubber straps [Figure 221].

**NOTE:** The air conditioning condenser can be lifted out of the two slotted brackets by removing the clips. This allows greater access to clean the hydraulic fluid cooler and radiator assembly.

**NOTE:** Be careful when removing and installing the air conditioning condenser so that the air conditioning condenser does not fall on the hydraulic fluid cooler and radiator assembly and damage the fins.

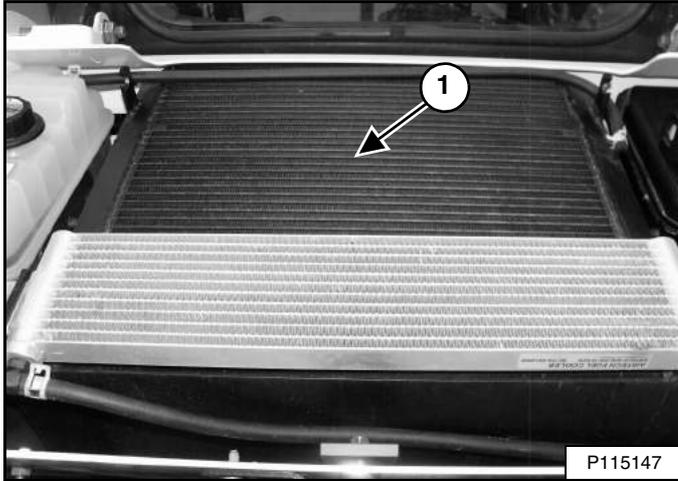
Skip ahead to *All Loaders*. (See *All Loaders* on Page 154.)

## ENGINE COOLING SYSTEM (CONT'D)

### Cleaning (Cont'd)

*Loaders Without Air Conditioning*

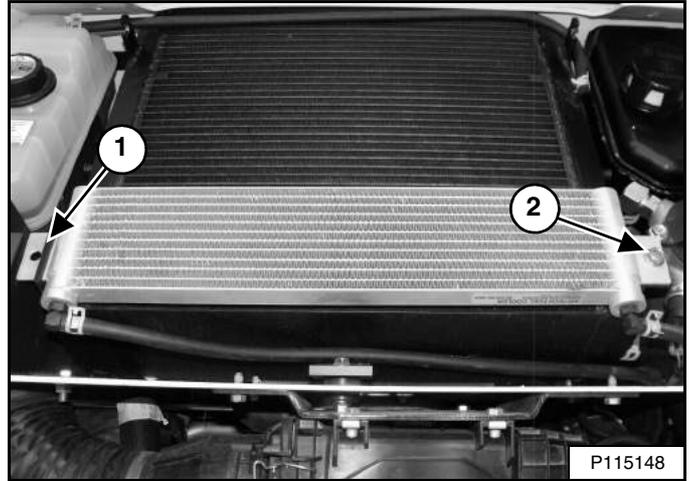
**Figure 224**



Use low air pressure or water pressure to clean the top of the hydraulic fluid cooler and radiator assembly (Item 1) [Figure 224].

*All Loaders*

**Figure 225**



The area between the fuel cooler and the hydraulic fluid cooler and radiator assembly will require occasional cleaning. Remove the bolt (Item 2) and lift the fuel cooler up while sliding out of the bracket (Item 1) [Figure 225].

**NOTE: Be careful when removing and installing the fuel cooler so that the fuel cooler does not fall on the hydraulic fluid cooler and radiator assembly and damage the fins.**

Install the fuel cooler into the bracket. Install and tighten the bolt [Figure 225].

Check the cooling system for leaks.

Install the rear grille and close the rear door.

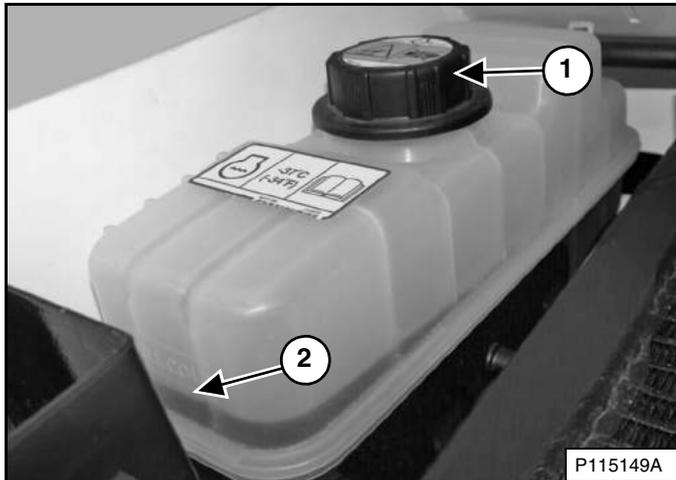
## ENGINE COOLING SYSTEM (CONT'D)

### Checking And Adding Coolant

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

Stop the engine, open the rear door, and remove the rear grille. (See REAR GRILLE on Page 137.)

Figure 226



Coolant must be between the top and bottom level markers (Item 2) [Figure 226] when the engine is cold.

**NOTE: The loader is factory filled with propylene glycol coolant (purple colour). DO NOT mix propylene glycol with ethylene glycol.**

Use a refractometer to check the condition of propylene glycol in your cooling system.

## **WARNING**

### **AVOID INJURY**

**Stop the engine and allow to cool before adding coolant or you can be burned.**

W-2106-0907

Remove the coolant fill cap (Item 1) [Figure 226] to add coolant.

The correct mixture of coolant to provide a -37°C (-34°F) freeze protection is 5 L propylene glycol mixed with 4,4 L of water **OR** 1 U.S. gal propylene glycol mixed with 3.5 qt of water.

## **IMPORTANT**

### **AVOID ENGINE DAMAGE**

**Always use the correct ratio of water to antifreeze.**

**Too much antifreeze reduces cooling system efficiency and may cause serious premature engine damage.**

**Too little antifreeze reduces the additives which protect the internal engine components; reduces the boiling point and freeze protection of the system.**

**Always add a premixed solution. Adding full strength concentrated coolant can cause serious premature engine damage.**

I-2124-0497

Add premixed coolant, 47% water and 53% propylene glycol to the coolant tank until the coolant level reaches the upper level marker on the tank [Figure 226].

Install the coolant fill cap [Figure 226].

**NOTE: The coolant fill cap must be tightened until the cap clicks.**

Install the rear grille and close the rear door.

## ENGINE COOLING SYSTEM (CONT'D)

### Removing And Replacing Coolant

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 121.)

Stop the engine, open the rear door, and remove the rear grille. (See REAR GRILLE on Page 137.)

# WARNING

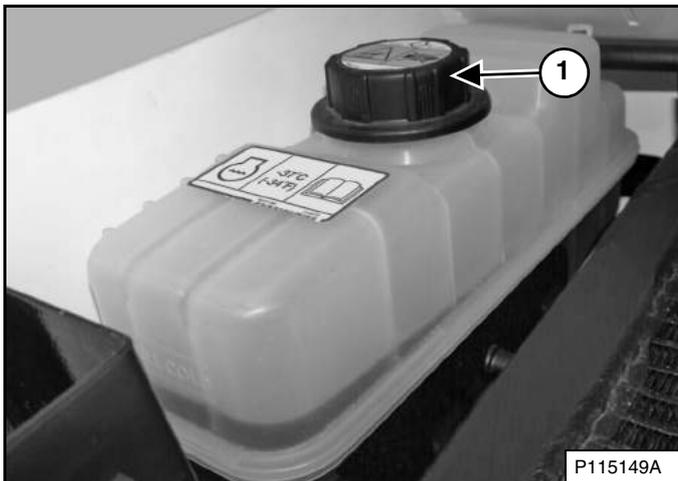
## AVOID INJURY

Do not remove engine coolant cap when the engine is hot. You can be seriously burned.

W-2607-0804

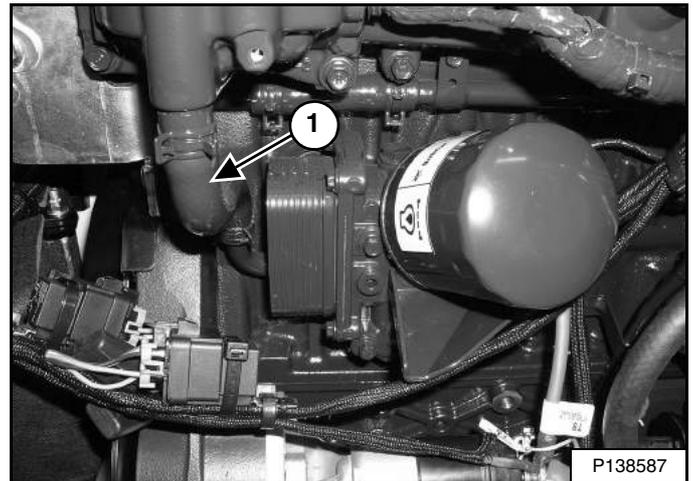
**NOTE:** This procedure requires the use of a spare 0.75 in. coolant hose approximately 600 mm (24 in) long.

Figure 227



Remove the coolant fill cap (Item 1) [Figure 227].

Figure 228



Pinch off the coolant hose attached to the engine oil cooler using a locking hose pinching plier or similar tool (Item 1) [Figure 228].

Install the coolant fill cap [Figure 227].

Remove the clamp and disconnect the hose from the engine oil cooler fitting [Figure 228].

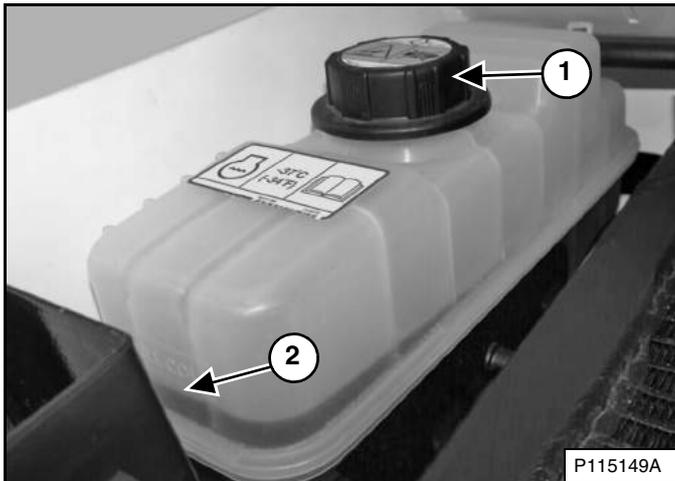
Quickly install the spare 0.75 in. coolant hose onto the engine oil cooler fitting.

Drain the coolant into a container.

## ENGINE COOLING SYSTEM (CONT'D)

### Removing And Replacing Coolant (Cont'd)

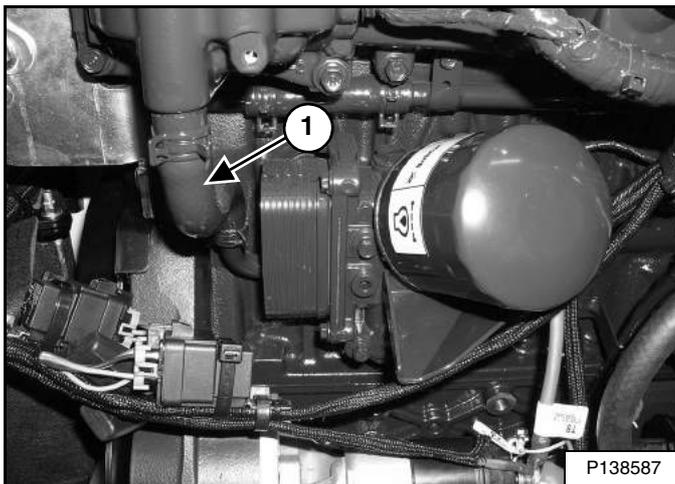
Figure 229



Remove the coolant fill cap (Item 1) [Figure 229] to drain the coolant faster.

Remove the spare 0.75 in. coolant hose from the engine oil cooler fitting when the coolant has drained.

Figure 230



Install the coolant hose (Item 1) [Figure 230] onto the engine oil cooler fitting and install the clamp.

Remove the tool used to pinch off the coolant hose.

Recycle or dispose of used coolant in an environmentally safe manner.

Mix new coolant in a separate container. (See Capacities on Page 215.)

The correct mixture of coolant to provide a -37°C (-34°F) freeze protection is 5 L propylene glycol mixed with 4,4 L of water **OR** 1 U.S. gal propylene glycol mixed with 3.5 qt of water.

# IMPORTANT

## AVOID ENGINE DAMAGE

Always use the correct ratio of water to antifreeze.

Too much antifreeze reduces cooling system efficiency and may cause serious premature engine damage.

Too little antifreeze reduces the additives which protect the internal engine components; reduces the boiling point and freeze protection of the system.

Always add a premixed solution. Adding full strength concentrated coolant can cause serious premature engine damage.

I-2124-0497

Add premixed coolant, 47% water and 53% propylene glycol to the coolant tank until the coolant level reaches the lower level marker on the tank (Item 2) [Figure 229].

Install the coolant fill cap (Item 1) [Figure 229].

**NOTE: The coolant fill cap must be tightened until the cap clicks.**

Install the rear grille and close the rear door.

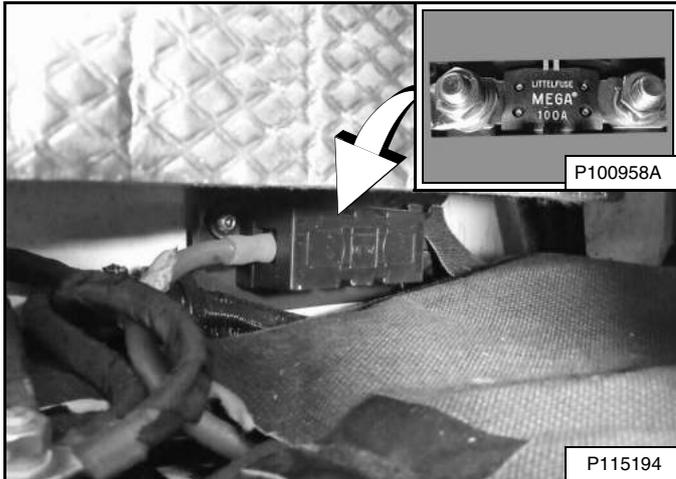
Operate the engine until coolant reaches normal operating temperature. Stop the engine.

Check the coolant level when cool. Add coolant as needed. (See Checking And Adding Coolant on Page 155.)

## ELECTRICAL SYSTEM

### Description

**Figure 231**



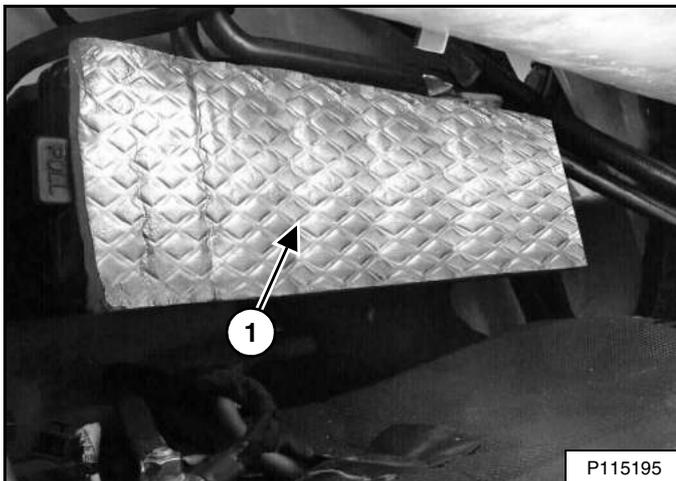
The loader has a 12 volt, negative earth, alternator charging system.

The electrical system is protected by fuses inside a panel and a 100 ampere master fuse (Inset) [Figure 231] located above the battery in the engine compartment.

The fuses will protect the electrical system when there is an electrical overload. The reason for the overload must be found before starting the engine again.

### Fuse And Relay Location / Identification

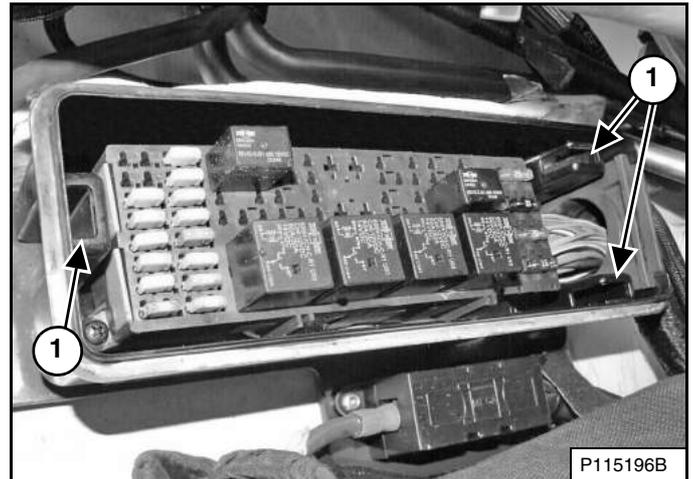
**Figure 232**



The electrical system is protected from overload by fuses located under the fuse panel cover (Item 1) [Figure 232]. Remove the fuse panel cover by pulling at each end.

A decal located inside the fuse panel cover indicates fuse and relay location and fuse amperage ratings.

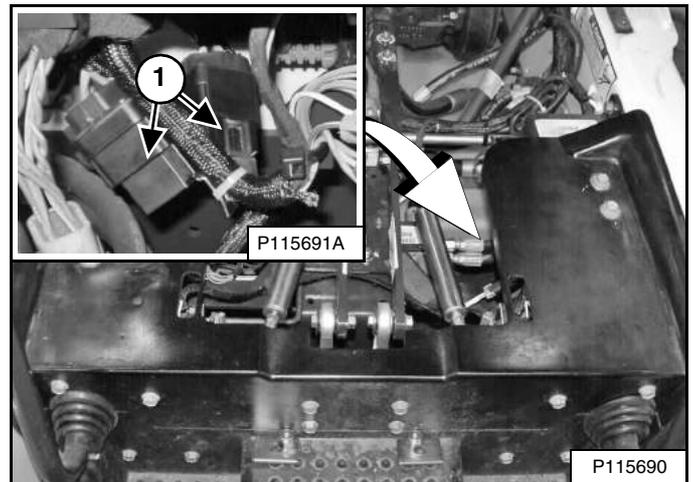
**Figure 233**



Line up the clips on the back of the fuse panel cover with the slots (Item 1) [Figure 233] in the fuse panel and push the cover into position when finished.

A Standard controls table and an SJC table are provided with details on amperage ratings and the circuits affected by each fuse and relay. (See Figure 235 on Page 159.) and (See Figure 236 on Page 160.)

**Figure 234**

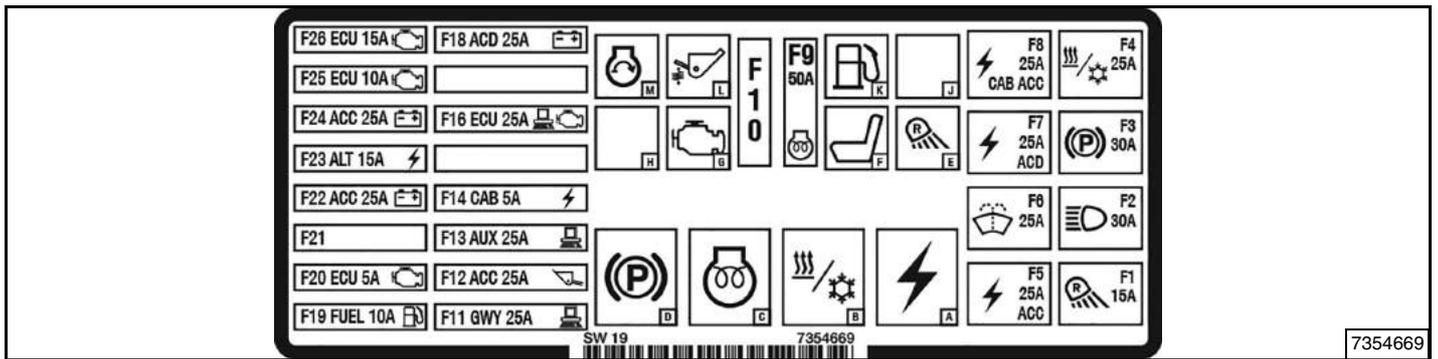


Two relays (Item 1) [Figure 234] for the loader lights are located under the operator cab on the left side of the loader. Stop the engine and raise the operator cab to access the relays. (See Raising on Page 134.)

# ELECTRICAL SYSTEM (CONT'D)

## Fuse And Relay Location / Identification (Cont'd)

Figure 235



**Standard Controls** - Fuse location and amperage ratings are shown in the table below and on the decal [Figure 235]. Relays are identified by the letter “R” in the AMP column.

ITEM	ICON	DESCRIPTION	AMP	ITEM	ICON	DESCRIPTION	AMP	ITEM	ICON	DESCRIPTION	AMP
F1		Rear Lights	15	F14		Cab Switched Power	5	A		Switched Power	R
F2		Front Lights	30	F15		Not Used	--	B		Heater / HVAC	R
F3		Traction	30	F16		Engine Controller	25	C		Glow Plugs	R
F4		Heater / HVAC	25	F17		Not Used	--	D		Traction	R
F5		Switched Power Back-up Alarm	25	F18		Attachments	25	E		Rear Lights	R
F6		Wiper / Washer	25	F19		Fuel	10	F		Heated Seat	R
F7		Switched Power	25	F20		Engine Controller	5	G		Engine Controller	R
F8		Cab Switched Power	25	F21		Not Used	--	H		Not Used	--
F9		Glow Plugs	50	F22		Accessories and Front Horn	25	J		Not Used	--
F10		Not Used	--	F23		Alternator	15	K		Fuel	R
F11		Bobcat Controller	25	F24		Cab Accessories Power Port	25	L		Automatic Ride Control	R
F12		Bucket Position	25	F25		Engine Controller	10	M		Starter	R
F13		Auxiliary Controller	25	F26		Engine Controller	15				

## ELECTRICAL SYSTEM (CONT'D)

### Fuse And Relay Location / Identification (Cont'd)

Figure 236



**SJC** - Fuse location and amperage ratings are shown in the table below and on the decal [Figure 236]. Relays are identified by the letter "R" in the AMP column.

ITEM	ICON	DESCRIPTION	AMP	ITEM	ICON	DESCRIPTION	AMP	ITEM	ICON	DESCRIPTION	AMP
F1		Rear Lights	15	F14		Cab Switched Power	5	A		Switched Power	R
F2		Front Lights	30	F15		ACS Controller	25	B		Heater / HVAC	R
F3		Traction	30	F16		Engine Controller	25	C		Glow Plugs	R
F4		Heater / HVAC	25	F17		Drive Controller Back-up Alarm	25	D		Traction	R
F5		Switched Power Back-up Alarm	25	F18		Attachments	25	E		Rear Lights	R
F6		Wiper / Washer	25	F19		Fuel	10	F		Heated Seat	R
F7		Switched Power	25	F20		Engine Controller	5	G		Engine Controller	R
F8		Cab Switched Power	25	F21		Not Used	--	H		Not Used	--
F9		Glow Plugs	50	F22		Accessories and Front Horn	25	J		Not Used	--
F10		Not Used	--	F23		Alternator	15	K		Fuel	R
F11		Bobcat Controller	25	F24		Cab Accessories Power Port	25	L		Automatic Ride Control	R
F12		Bucket Position	25	F25		Engine Controller	10	M		Starter	R
F13		Auxiliary Controller	25	F26		Engine Controller	15				

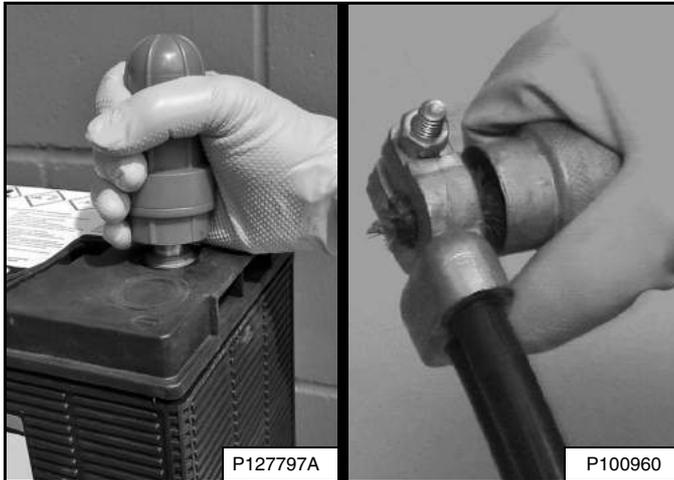
## ELECTRICAL SYSTEM (CONT'D)

### Battery Maintenance

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 121.)

The Bobcat brand battery supplied with your machine is sealed and does not require watering. Proper charging and storage are important to maximize the life of all batteries.

Figure 237



Simple steps for reliability and long battery life:

- Keep battery posts and terminals clean [Figure 237].
- Keep terminals tight.
- Remove corrosion from battery and terminals with sodium bicarbonate (baking soda) and water solution.
- Put Bobcat Battery Saver or grease on the battery terminals and cable ends to prevent corrosion.
- Operate the machine for at least 15 minutes to recover from the battery drain caused by engine start up whenever practical.
- Maintain the battery charge level. This is a key factor for long battery life.
- Charge a severely discharged battery with a battery charger instead of relying on the machine charging system. (See Battery Charging on Page 162.)
- Check the battery state of charge every 30 days on machines that are not frequently used. (See Battery Testing on Page 162.)



## WARNING

### AVOID INJURY OR DEATH

**Batteries contain acid which burns eyes and skin on contact. Wear goggles, protective clothing and rubber gloves to keep acid off body.**

**In case of acid contact, wash immediately with water. In case of eye contact get prompt medical attention and wash eye with clean, cool water for at least 15 minutes.**

**If electrolyte is taken internally drink large quantities of water or milk! DO NOT induce vomiting. Get prompt medical attention.**

W-2065-0807

### Maintaining Battery Charge Level

All batteries will self-discharge over time. This machine has features that require battery power even when the machine is not being used. Use of a quality battery maintainer is highly recommended to ensure that your machine is ready to start when you need it and avoid costly battery replacement.

#### *Battery Maintainers*

Use a good quality battery maintainer to keep the battery above 12.4 volts for machines that are not frequently used. Batteries below 12.4 volts must first be charged using a battery charger. Solar maintainers should have a minimum capacity of 10 watts to be effective.

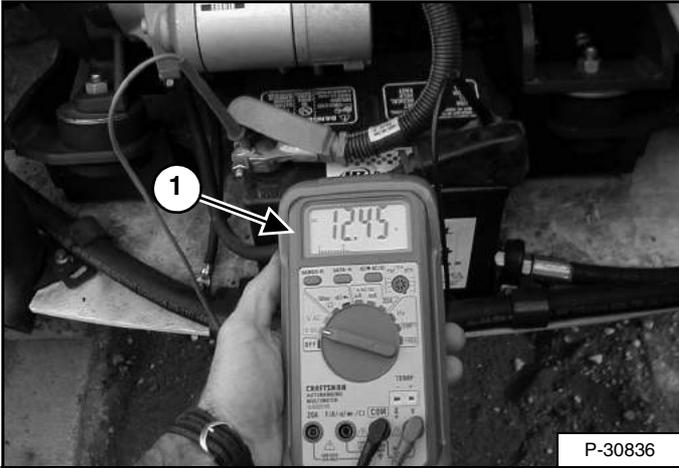
### Battery Service During Machine Storage

Remove the battery if storing the machine for an extended period of time. Fully charge the battery. Store the battery in a cool dry place above freezing and boost charge periodically. If battery removal is not desired, a good quality battery maintainer must be used to compensate for battery self-discharge and parasitic loads from machine controllers, accessories, and features such as connected machine intelligence.

## ELECTRICAL SYSTEM (CONT'D)

### Battery Testing

Figure 238



The simplest and most common check to determine battery state of charge is to use a digital multimeter or voltmeter (Item 1) [Figure 238].

A battery found below 12.4 volts must be charged to 100% charge per the battery charger's recommendation. **Allow at least 60 minutes after operating the machine or charging the battery to get an accurate reading.**

If the reading is less than 12.4 volts after the battery has been charged for several hours, see your Bobcat dealer to have a more thorough battery test performed.

The freezing point of battery electrolyte is dependent on the battery state of charge. Keeping the battery voltage above 12.4 volts will help prevent batteries from freezing, even at extremely low temperatures.

If the battery freezes, the internal grid may be damaged and the case will be distorted or cracked. If this happens, dispose of the battery according to local regulations.

### Battery Charging

A battery charger designed for 12 volt charging systems is recommended. Follow the battery charger manufacturer's instructions to charge the battery to 12.6 volts (100% charge). Batteries should be charged at room temperature to avoid an undercharge or overcharge condition. Never attempt to charge a frozen battery.

The following table can be used to identify the approximate amount of time required to charge a discharged battery. Allow at least 60 minutes after operating the machine or charging the battery to get an accurate reading.

BATTERY VOLTAGE	STATE OF CHARGE	CHARGER MAXIMUM RATE		
		30 Amps	20 Amps	10 Amps
12.6 V	100%	READY TO USE		
12.4 V	75%	0.9 hr.	1.3 hr.	2.5 hr.
12.2 V	50%	1.9 hr.	2.7 hr.	5.1 hr.
12.0 V	25%	2.9 hr.	4.3 hr.	7.8 hr.
11.8 V	0%	4.0 hr.	5.7 hr.	10.7 hr.

**NOTE: Use a good quality automatic charger to avoid battery damage from overcharging.**

## **WARNING**

### **BATTERY GAS CAN EXPLODE AND CAUSE SERIOUS INJURY OR DEATH**

**Keep arcs, sparks, flames and lighted tobacco away from batteries. When *jumping* from booster battery make final connection (negative) at machine frame.**

**Do not jump start or charge a frozen or damaged battery. Warm battery to 16°C (60°F) before connecting to a charger. Unplug charger before connecting or disconnecting cables to battery. Never lean over battery while boosting, testing or charging.**

W-2066-0910

## ELECTRICAL SYSTEM (CONT'D)

### Using A Booster Battery (Jump Starting)

If the engine will not start without using a booster battery, BE CAREFUL! There must be one person in the operator's seat and one person to connect and disconnect the battery cables.

The key switch must be in the STOP position. The booster battery must be 12 volt.

After the engine has started, remove the negative (-) cable (Item 4) first. Remove the cable from the positive (+) terminal (Item 2) [Figure 239].

Remove the cables from the booster battery.

Close the rear door.

## WARNING

### BATTERY GAS CAN EXPLODE AND CAUSE SERIOUS INJURY OR DEATH

Keep arcs, sparks, flames and lighted tobacco away from batteries. When *jumping* from booster battery make final connection (negative) at machine frame.

Do not jump start or charge a frozen or damaged battery. Warm battery to 16°C (60°F) before connecting to a charger. Unplug charger before connecting or disconnecting cables to battery. Never lean over battery while boosting, testing or charging.

W-2066-0910

## IMPORTANT

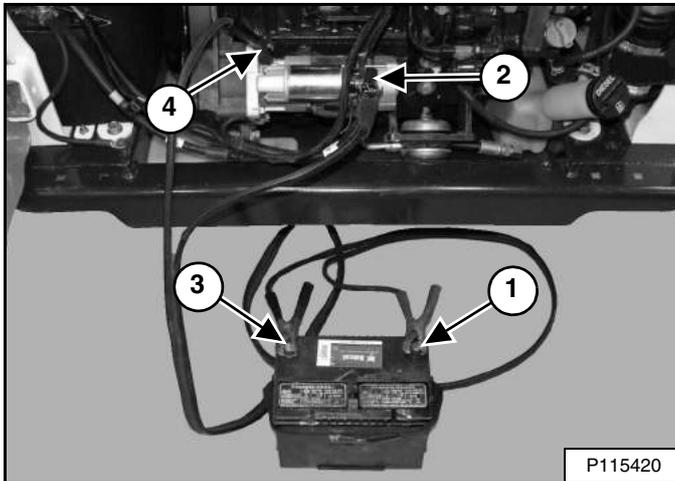
Damage to the alternator can occur if:

- Engine is operated with battery cables disconnected.
- Battery cables are connected when using a fast charger or when welding on the loader. (Remove both cables from the battery.)
- Extra battery cables (booster cables) are connected wrong.

I-2023-1285

Open the rear door.

Figure 239



Connect the end of the first cable (Item 1) to the positive (+) terminal of the booster battery. Connect the other end of the same cable (Item 2) [Figure 239] to the positive (+) terminal on the engine starter.

Connect the end of the second cable (Item 3) to the negative (-) terminal of the booster battery. Connect the other end of the same cable (Item 4) [Figure 239] to the engine.

Keep cables away from moving parts. Start the engine. (See STARTING THE ENGINE on Page 99.)

## ELECTRICAL SYSTEM (CONT'D)

### Removing And Installing Battery

# ! WARNING

#### AVOID INJURY OR DEATH

Batteries contain acid which burns eyes and skin on contact. Wear goggles, protective clothing and rubber gloves to keep acid off body.

In case of acid contact, wash immediately with water. In case of eye contact get prompt medical attention and wash eye with clean, cool water for at least 15 minutes.

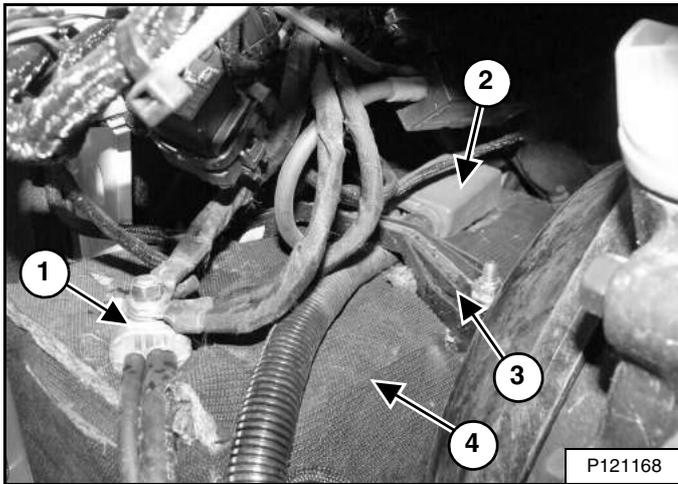
If electrolyte is taken internally drink large quantities of water or milk! DO NOT induce vomiting. Get prompt medical attention.

W-2065-0807

Stop the engine and open the rear door.

When removing the battery from the loader, do not touch any metal parts with the battery terminals.

Figure 240



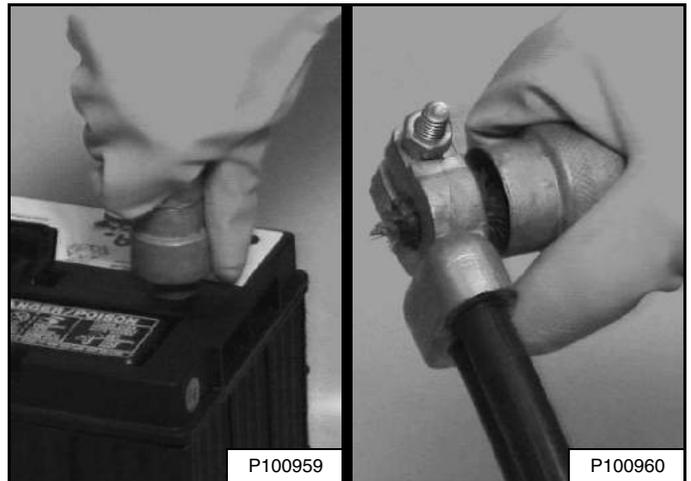
Disconnect the negative (-) cable (Item 1) [Figure 240].

Remove the battery hold-down clamp (Item 3) [Figure 240].

Disconnect the positive (+) cable (Item 2) [Figure 240] from the battery.

Remove the battery wrap (Item 4) [Figure 240] and the battery from the loader.

Figure 241



Always clean the battery terminals and cable ends when installing a new or used battery [Figure 241].

When installing the battery into the loader, do not touch any metal parts with the battery terminals.

Adjust battery wrap for proper fit.

Connect the negative (-) cable last to prevent sparks.

Connect and tighten the battery cables.

Install and tighten the battery hold-down clamp.

Put Bobcat Battery Saver or grease on the battery terminals and cable ends to prevent corrosion.

Close the rear door.

# ! WARNING

#### BATTERY GAS CAN EXPLODE AND CAUSE SERIOUS INJURY OR DEATH

Keep arcs, sparks, flames and lighted tobacco away from batteries. When *jumping* from booster battery make final connection (negative) at machine frame.

Do not jump start or charge a frozen or damaged battery. Warm battery to 16°C (60°F) before connecting to a charger. Unplug charger before connecting or disconnecting cables to battery. Never lean over battery while boosting, testing or charging.

W-2066-0910

## HYDRAULIC / HYDROSTATIC SYSTEM

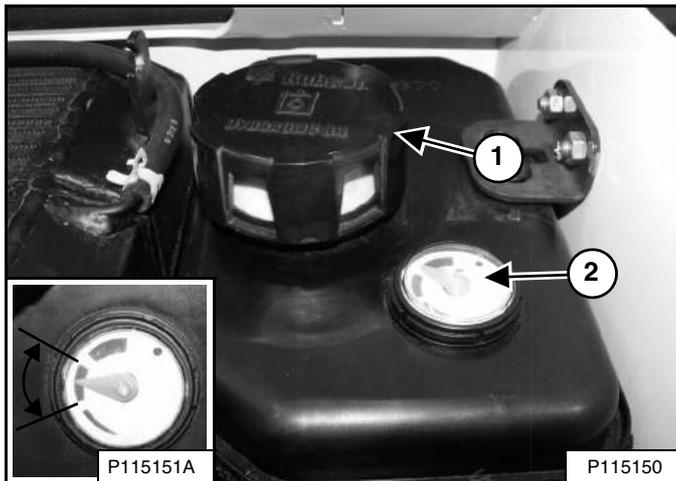
### Checking And Adding Fluid

Check the hydraulic / hydrostatic fluid level every day before starting the work shift.

Park the loader on a level surface, lower the lift arms, and put the attachment flat on the ground or tilt the Bob-Tach fully back if no attachment is installed.

Open the rear door and remove the rear grille. (See REAR GRILLE on Page 137.)

**Figure 242**



Check the fluid level in the sight gauge (Item 2). Keep the fluid level within the operating range (Inset) [Figure 242].

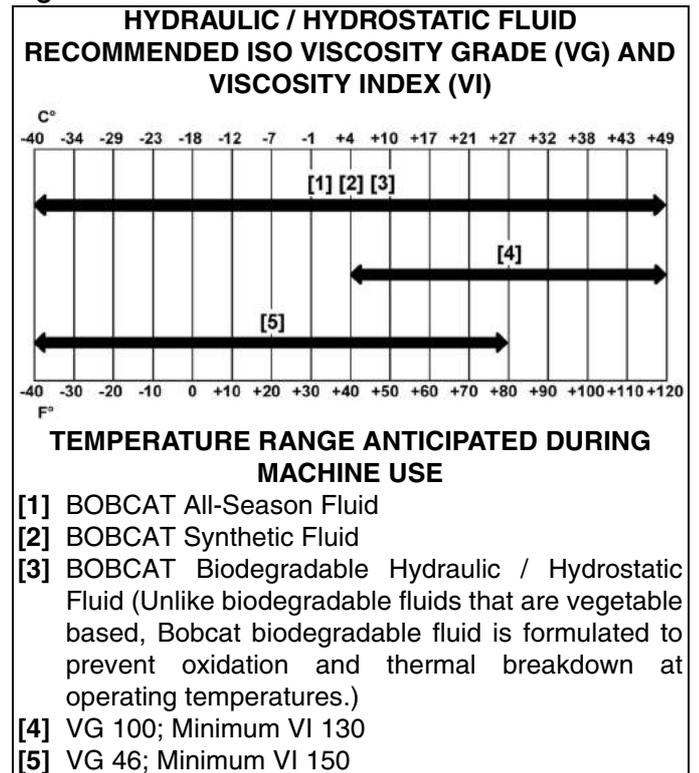
Remove the fill cap (Item 1) [Figure 242].

Add fluid as needed to bring the level within the operating range in the sight gauge.

Install the fill cap, install the rear grille, and close the rear door.

### Hydraulic / Hydrostatic Fluid Chart

**Figure 243**



Bobcat hydraulic fluids are recommended for use in this machine. If Bobcat hydraulic fluid is not available, use a good quality hydraulic fluid meeting the viscosity grade and viscosity index shown in the chart [Figure 243].

**! WARNING**

**AVOID INJURY OR DEATH**

**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.**

W-2103-0508

## HYDRAULIC / HYDROSTATIC SYSTEM (CONT'D)

### Removing And Replacing Hydraulic Fluid

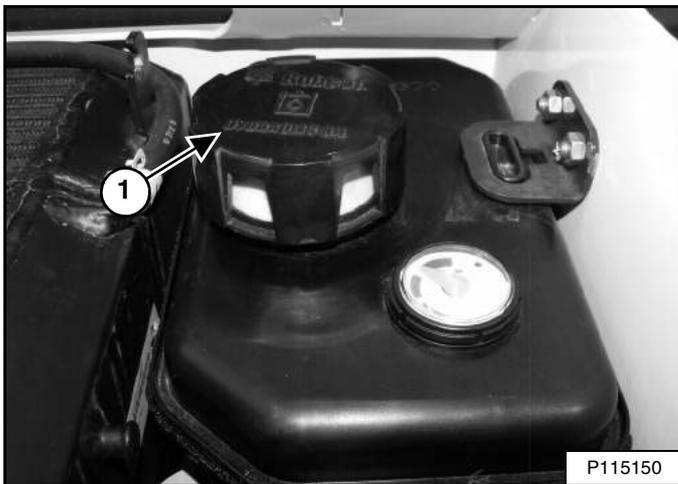
See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 121.)

Replace the fluid if contaminated or after major repair.

Always replace the hydraulic / hydrostatic filter and the hydraulic charge filter whenever the hydraulic fluid is replaced. (See Removing And Replacing Hydraulic / Hydrostatic Filter on Page 168.) and (See Removing And Replacing Hydraulic Charge Filter on Page 169.)

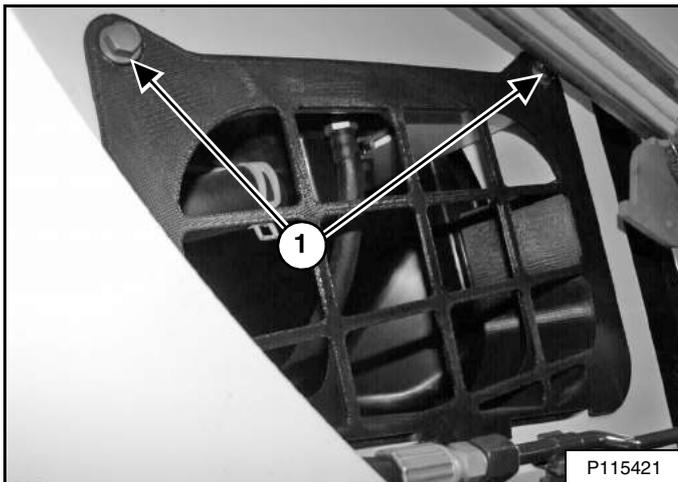
Stop the engine, open the rear door, and remove the rear grille. (See REAR GRILLE on Page 137.)

**Figure 244**



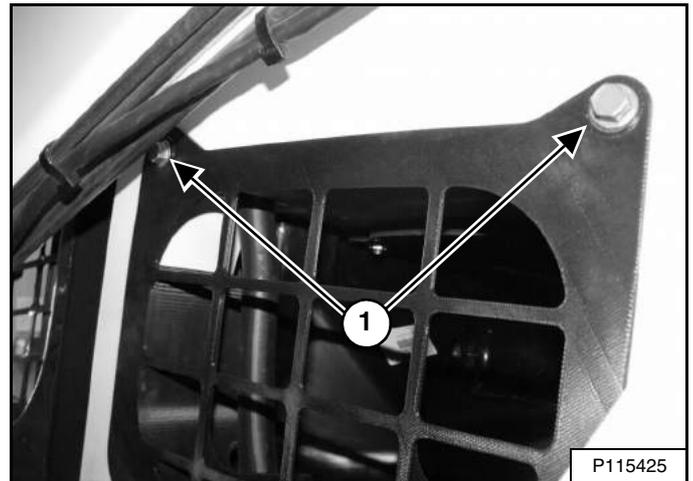
Remove the hydraulic fill cap (Item 1) [Figure 244].

**Figure 245**



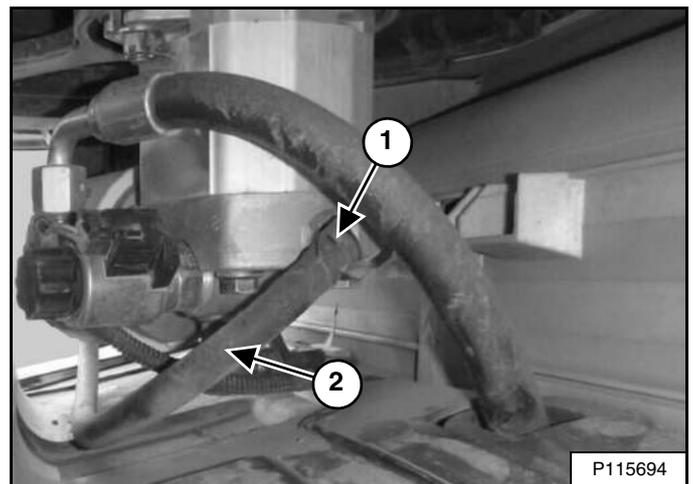
Remove the right side access cover bolts (Item 1) [Figure 245] and remove the access cover.

**Figure 246**



Remove the left side access cover bolts (Item 1) [Figure 246] and remove the access cover.

**Figure 247**



Remove the clamp (Item 1). Pinch off the hose (Item 2) [Figure 247] near the fitting and disconnect hose from the fitting.

## HYDRAULIC / HYDROSTATIC SYSTEM (CONT'D)

### Removing And Replacing Hydraulic Fluid (Cont'd)

Route the hose out the right side of the loader and drain the fluid into a container.

Connect the hose to the fitting when the fluid stops draining. Install the clamp.

Recycle or dispose of used fluid in an environmentally safe manner.

## WARNING

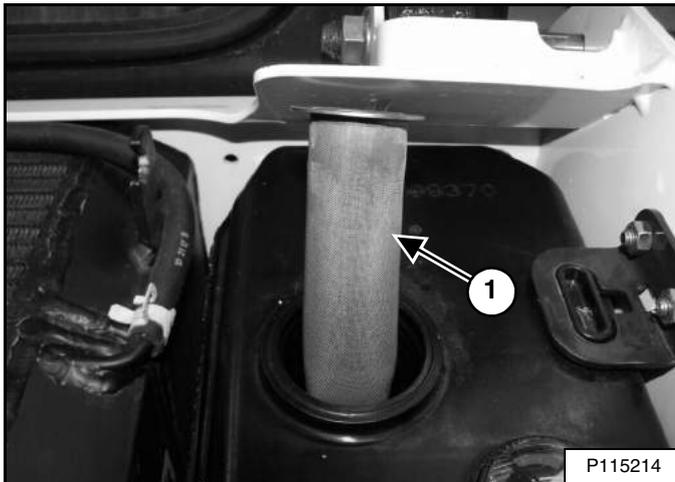
### AVOID INJURY OR DEATH

**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.**

W-2103-0508

Install the side access covers and bolts [Figure 245] and [Figure 246].

Figure 248



Remove and clean the hydraulic fill screen (Item 1) [Figure 248]. Use low air pressure to dry the screen.

Install hydraulic fill screen and add the correct fluid to the reservoir until the fluid level is within the operating range of the sight gauge. (See Capacities on Page 215.) and (See Checking And Adding Fluid on Page 165.)

Install the hydraulic fill cap [Figure 244].

Install the rear grille and close the rear door.

Start the engine and operate the loader hydraulic controls.

## WARNING

### AVOID INJURY OR DEATH

**Diesel fuel or hydraulic fluid under pressure can penetrate skin or eyes, causing serious injury or death. Fluid leaks under pressure may not be visible. Use a piece of cardboard or wood to find leaks. Do not use your bare hand. Wear safety goggles. If fluid enters skin or eyes, get immediate medical attention from a doctor familiar with this injury.**

W-2072-EN-0909

Stop the engine and check for leaks.

Check the fluid level in the reservoir and add as needed. (See Checking And Adding Fluid on Page 165.)

## HYDRAULIC / HYDROSTATIC SYSTEM (CONT'D)

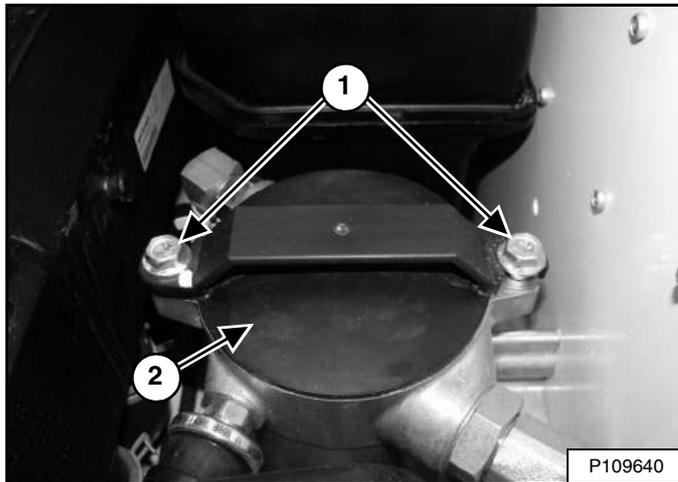
### Removing And Replacing Hydraulic / Hydrostatic Filter

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 121.)

Stop the engine, open the rear door, and remove the rear grille. (See REAR GRILLE on Page 137.)

Clean the top of the filter housing.

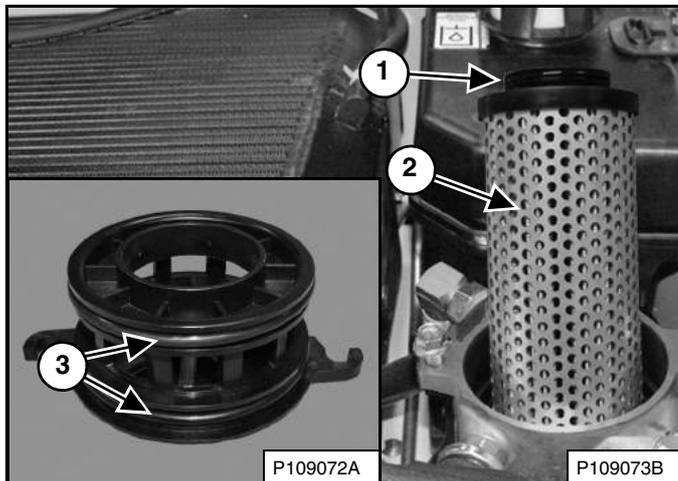
**Figure 249**



Loosen the bolts (Item 1) and rotate the filter cap (Item 2) [Figure 249] anticlockwise until the cap clears the bolts.

Slowly pry the filter cap off the housing by hand.

**Figure 250**



Remove the filter (Item 2) [Figure 250] and discard.

Lubricate the O-ring (Item 1) [Figure 250] on new filter with clean oil.

Install new filter ensuring that filter is fully seated in the housing.

Remove the filter cap O-rings (Item 3) [Figure 250] and discard.

Install new filter cap O-rings and lubricate with clean oil.

**NOTE: The filter cap O-rings are not the same size. Take care to install each O-ring in the correct location.**

Install the filter cap and rotate clockwise to engage the bolts [Figure 249]. Alternate tightening the bolts to draw the cap down evenly. Tighten the bolts to 27 – 41 N•m (20 – 30 ft-lb) torque.

## **WARNING**

### **AVOID INJURY OR DEATH**

**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.**

W-2103-0508

Install the rear grille and close the rear door.

Start the engine and operate the loader hydraulic controls.

## **WARNING**

### **AVOID INJURY OR DEATH**

**Diesel fuel or hydraulic fluid under pressure can penetrate skin or eyes, causing serious injury or death. Fluid leaks under pressure may not be visible. Use a piece of cardboard or wood to find leaks. Do not use your bare hand. Wear safety goggles. If fluid enters skin or eyes, get immediate medical attention from a doctor familiar with this injury.**

W-2072-EN-0909

Stop the engine and check for leaks at the filter.

Check the fluid level in the reservoir and add as needed. (See Checking And Adding Fluid on Page 165.)

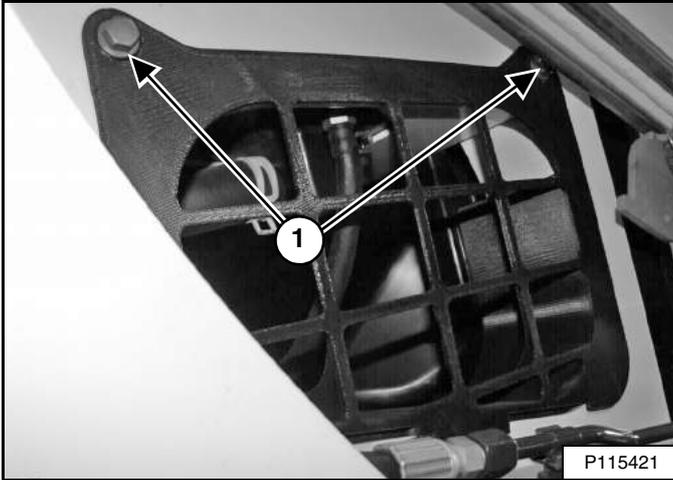
## HYDRAULIC / HYDROSTATIC SYSTEM (CONT'D)

### Removing And Replacing Hydraulic Charge Filter

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 121.)

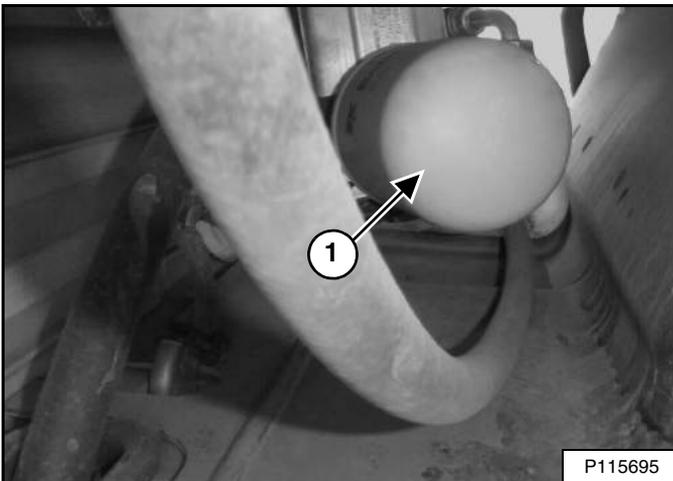
Stop the engine.

Figure 251



Remove the right side access cover bolts (Item 1) [Figure 251] and remove the access cover.

Figure 252



Put a suitable container below the filter, remove the filter (Item 1) [Figure 252], and clean the filter base.

Put clean oil on the new filter gasket, install the new filter, and tighten the filter to 37 – 45 N•m (27 – 33 ft-lb) torque.

Recycle or dispose of used fluid in an environmentally safe manner.

## WARNING

### AVOID INJURY OR DEATH

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.

W-2103-0508

Install the side access cover and bolts [Figure 251].

Start the engine and operate the loader hydraulic controls.

## WARNING

### AVOID INJURY OR DEATH

Diesel fuel or hydraulic fluid under pressure can penetrate skin or eyes, causing serious injury or death. Fluid leaks under pressure may not be visible. Use a piece of cardboard or wood to find leaks. Do not use your bare hand. Wear safety goggles. If fluid enters skin or eyes, get immediate medical attention from a doctor familiar with this injury.

W-2072-EN-0909

Stop the engine and check for leaks at the filter.

Check the fluid level in the reservoir and add as needed. (See Checking And Adding Fluid on Page 165.)

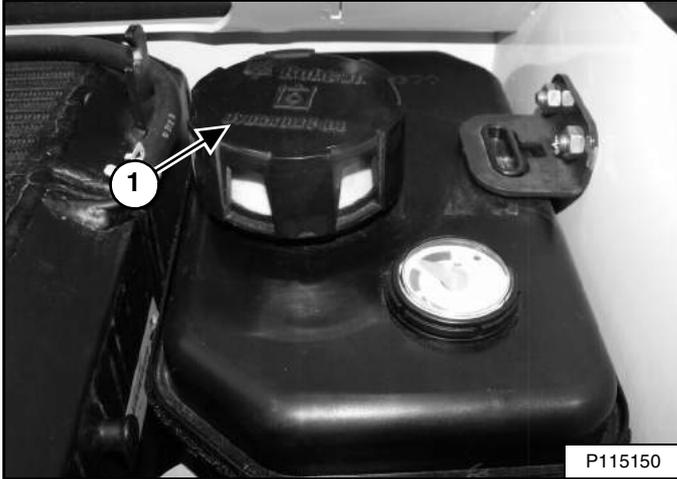
## HYDRAULIC / HYDROSTATIC SYSTEM (CONT'D)

### Replacing Reservoir Breather Cap

See the SERVICE SCHEDULE for the correct replacement interval. (See SERVICE SCHEDULE on Page 121.)

Stop the engine, open the rear door, and remove the rear grille. (See REAR GRILLE on Page 137.)

**Figure 253**



Remove the breather cap (Item 1) [Figure 253] and discard.

Install new breather cap.

Install the rear grille and close the rear door.

## DIESEL PARTICULATE FILTER (DPF) SYSTEM

### Description

The engine exhaust system is equipped with a diesel particulate filter (DPF). The DPF is an emissions reduction device that removes diesel particulate matter (soot) from the exhaust gases of the diesel engine. The DPF will trap and collect the soot until it is burned off. The process of burning off the collected soot is called regeneration.

A service regeneration cycle may be required if too much soot is allowed to accumulate in the DPF. This can occur in the following situations:

- The loader is often operated for brief periods (less than 30 minutes) that do not allow sufficient time for the DPF to complete an automatic or operator activated forced regeneration cycle.
- The inhibit mode is used for an extended period of time. This will inhibit the DPF from actively regenerating and burning off the collected soot.

Ash residue will remain after the regeneration process is complete. The ash must be periodically removed from the DPF.

### Service Regeneration

Figure 254



The machine will alert the operator when DPF service is required [Figure 254].

Service code [P24A3] (DPF soot mass too high) will be accompanied by a severe torque reduction.

Service regeneration requires the use of specialized equipment. See your Bobcat dealer for service regeneration.

### DPF Cleaning

Contact your Bobcat dealer to arrange the cleaning of the DPF when indicated.

Service code [P242F] (DPF Ash Loading High Fault) will show in the display screen when DPF cleaning is necessary.

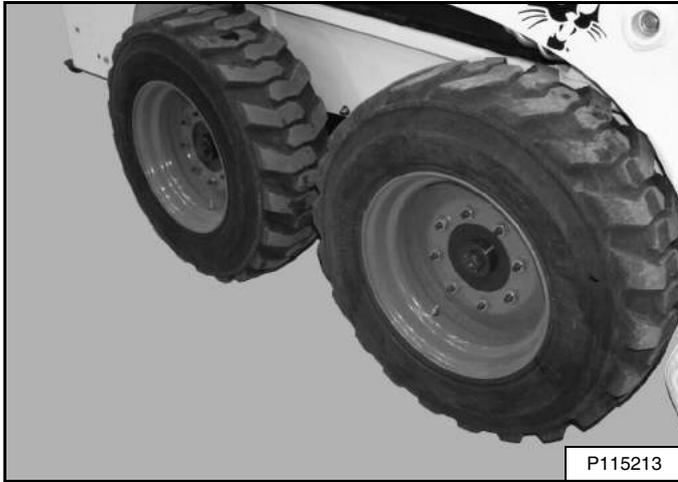
The DPF is a critical component of the engine exhaust system and must be properly maintained. Specialized equipment is required to clean the ash from the DPF. See your Bobcat dealer for DPF cleaning.

## TYRE MAINTENANCE

### Wheel Nuts

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 121.)

Figure 255



Follow the torques specified below for the wheel nuts [Figure 255]:

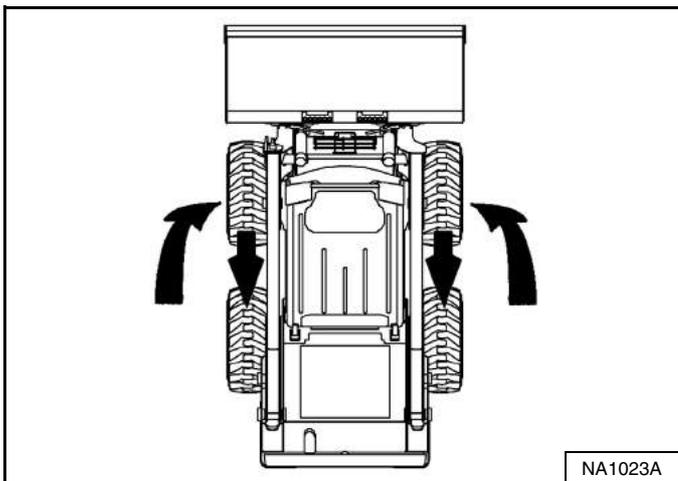
When *installing* wheel nuts, tighten to 217 N•m (160 ft-lb) torque.

When *checking* wheel nut torque, set the torque wrench to 190 N•m (140 ft-lb) to prevent overtightening.

### Rotating

Check the tyres regularly for wear, damage, and pressure.

Figure 256



Rear tyres usually wear faster than front tyres. To keep tyre wear even, move the front tyres to the rear and rear tyres to the front [Figure 256].

The same size tyres must be used on each side of the loader. If different sizes are used, each tyre will turn at a different rate and cause excessive wear. The tread bars of all the tyres must face the same direction.

Recommended tyre pressure must be maintained to avoid excessive tyre wear, loss of stability, and loss of handling capability. Check for correct pressure before operating the loader. (See Tyres on Page 216.)

### Mounting

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

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

The rim flange must be cleaned and free of rust.

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

Avoid excessive pressure that can rupture the tyre and cause serious injury or death.

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

**! WARNING**

### AVOID INJURY OR DEATH

Do not inflate tyres above specified pressure. Failure to use correct tyre mounting procedure can cause an explosion which can result in injury or death.

W-2078-EN-0909

**IMPORTANT**

Inflate tyres to the MAXIMUM pressure shown on the sidewall of the tyre. DO NOT mix brands of tyres used on the same machine.

I-2057-EN-1010

## FINAL DRIVE TRANSMISSION (CHAINCASE)

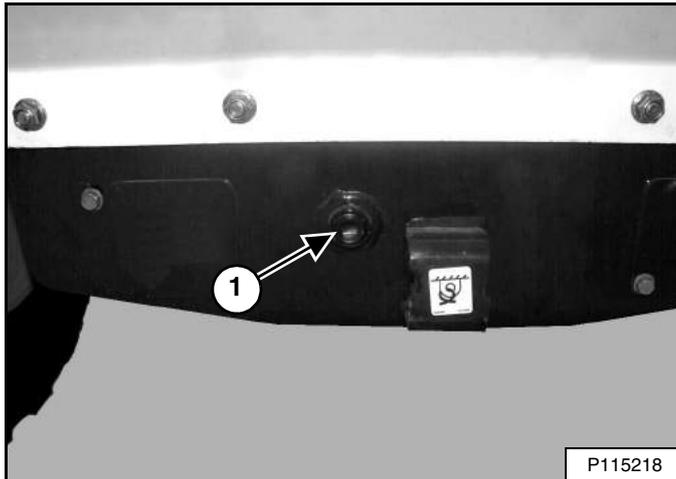
### Checking And Adding Fluid

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 121.)

The chaincase contains the final drive sprockets and chains, and uses the same type fluid as the hydraulic / hydrostatic system. (See Hydraulic / Hydrostatic Fluid Chart on Page 165.)

Park the loader on a level surface and stop the engine.

**Figure 257**



Remove the check plug (Item 1) [Figure 257] from the front of the chaincase housing. (Lift arms shown raised for visual clarity.)

If fluid can be reached with the tip of your finger through the hole, the fluid level is correct.

If the level is low, add fluid through the check plug hole until fluid flows from the hole.

Install and tighten the plug [Figure 257].



#### AVOID INJURY OR DEATH

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.

W-2103-0508

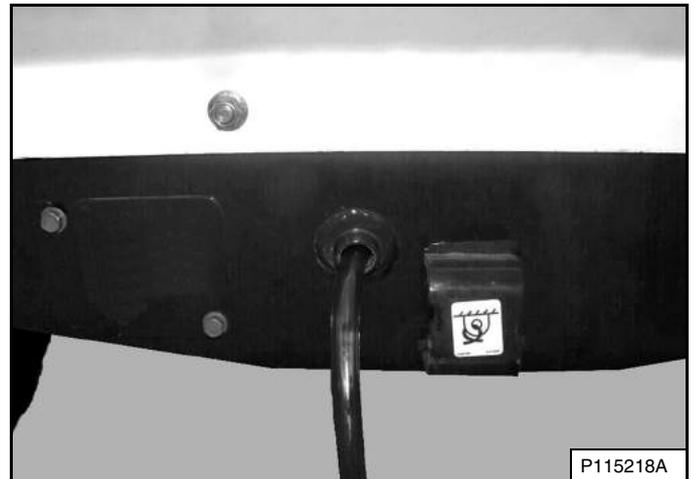
### Removing And Replacing Fluid

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 121.)

Park the loader on a level surface and stop the engine.

Remove the check plug (Item 1) [Figure 257] from the front of the chaincase housing.

**Figure 258**



Pump the fluid out of the chaincase [Figure 258]. (Lift arms shown raised for visual clarity.)

Recycle or dispose of used fluid in an environmentally safe manner.

Add fluid through the check plug hole until fluid flows from the hole. (See Capacities on Page 215.)

Install and tighten the plug [Figure 257].



#### AVOID INJURY OR DEATH

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.

W-2103-0508

## ALTERNATOR BELT

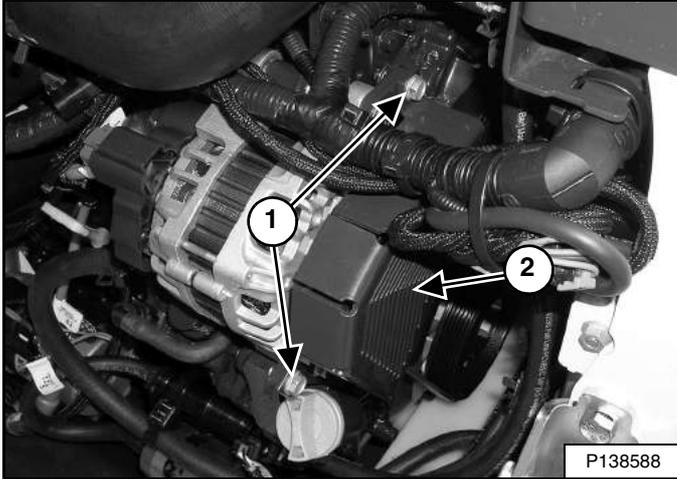
### Belt Adjustment

The alternator belt is a special maintenance free type that is pretensioned over the pulleys. This belt eliminates the need for a tensioning device and does not require periodic adjustment. Contact your Bobcat dealer for replacement parts.

### Belt Replacement

Stop the engine and open the rear door.

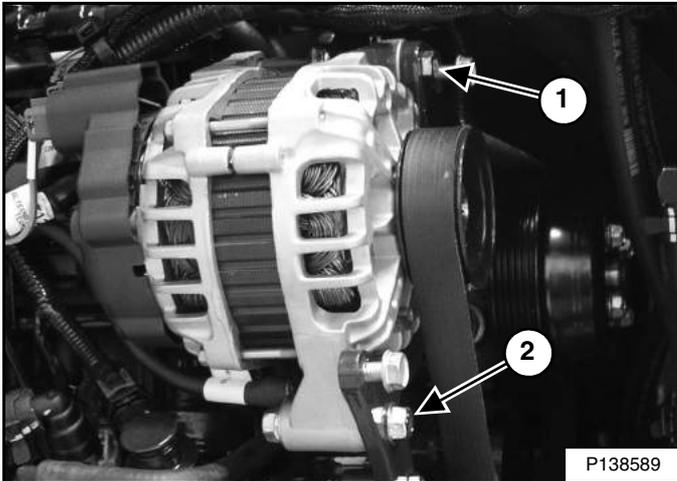
**Figure 259**



Remove the alternator belt shield mounting bolts (Item 1) [Figure 259].

Remove the alternator belt shield (Item 2) [Figure 259].

**Figure 260**



Loosen the top alternator mounting bolt (Item 1). Remove the bottom alternator mounting bolt (Item 2) [Figure 260].

Move the alternator toward the engine fully and remove the belt from the pulleys.

Inspect the pulleys for wear.

Install new belt.

Carefully pry the alternator back until the bottom alternator mounting bolt (Item 1) [Figure 260] can be installed.

Tighten the top alternator mounting bolt and the bottom alternator mounting bolt [Figure 260].

Install the alternator belt shield and mounting bolts [Figure 259].

Close the rear door.

## AIR CONDITIONING BELT

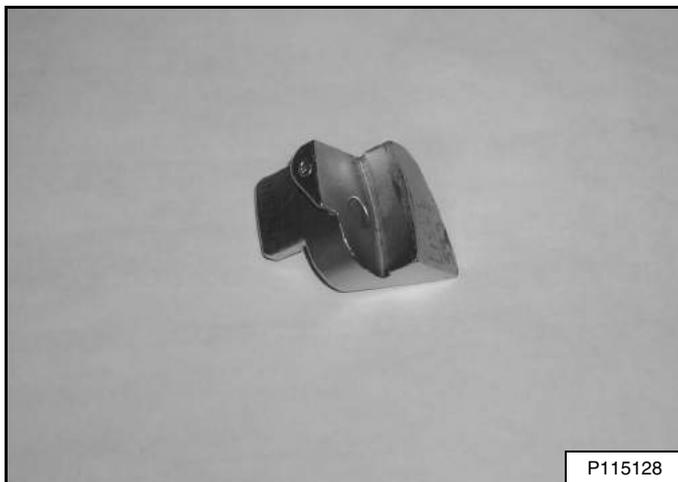
This machine may be equipped with air conditioning.

### Belt Adjustment

The air conditioning belt is a special maintenance free type that is pretensioned over the pulleys. This belt eliminates the need for a tensioning device and does not require periodic adjustment.

### Belt Replacement

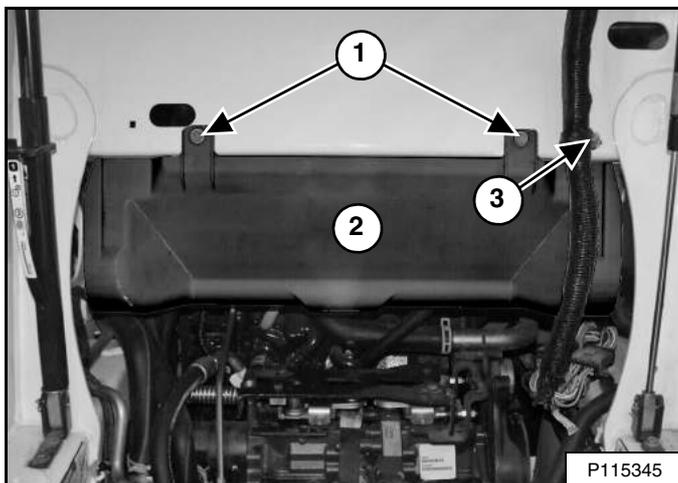
Figure 261



A belt tool [Figure 261] is required to install the new air conditioning belt. See your Bobcat dealer.

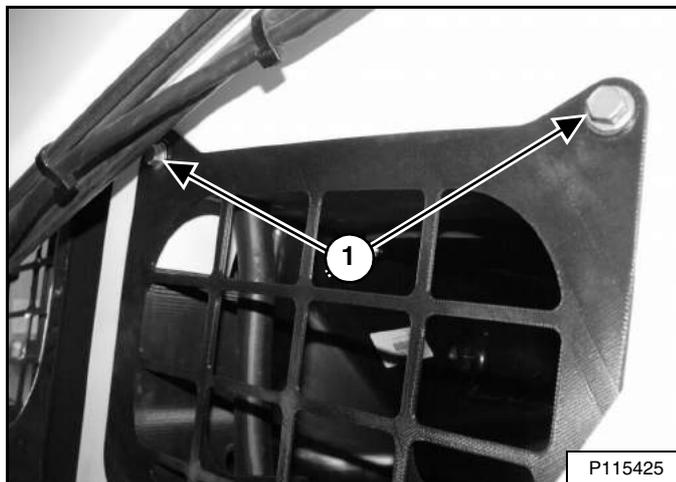
Stop the engine, open the rear door, and raise the operator cab. (See Raising on Page 134.)

Figure 262



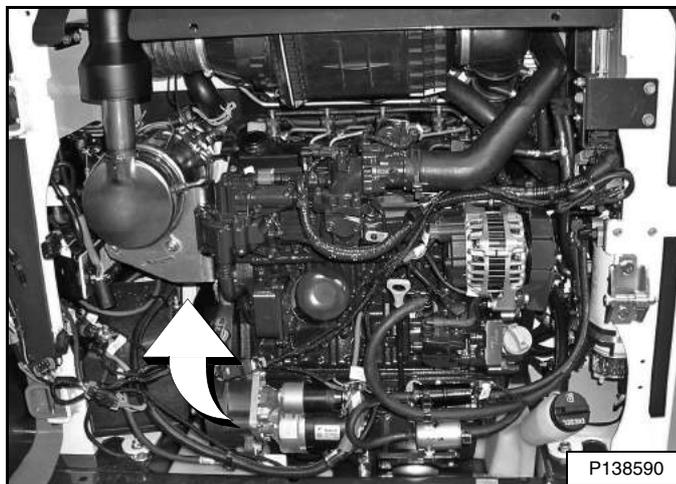
Remove the nut (Item 3) holding the operator cab electrical harness clamp and move the harness toward the front of the loader. Remove the bolts (Item 1) and remove the lower fan duct (Item 2) [Figure 262].

Figure 263



Remove the left side access cover bolts (Item 1) [Figure 263] and remove the access cover.

Figure 264

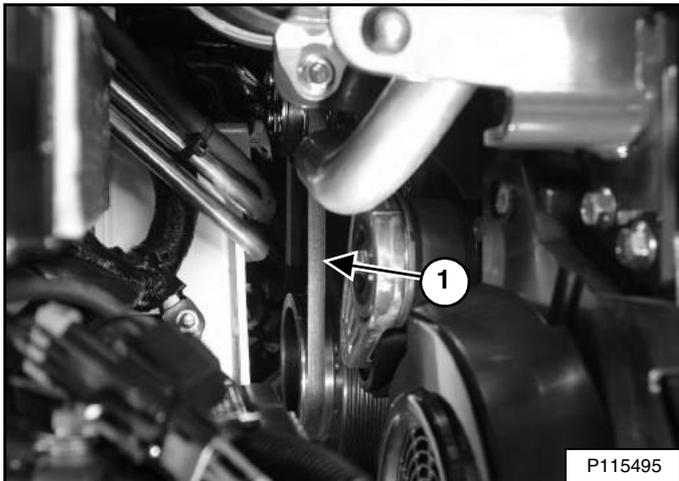


The air conditioning compressor is located behind the engine on the left side of the loader [Figure 264].

## AIR CONDITIONING BELT (CONT'D)

### Belt Replacement Cont'd)

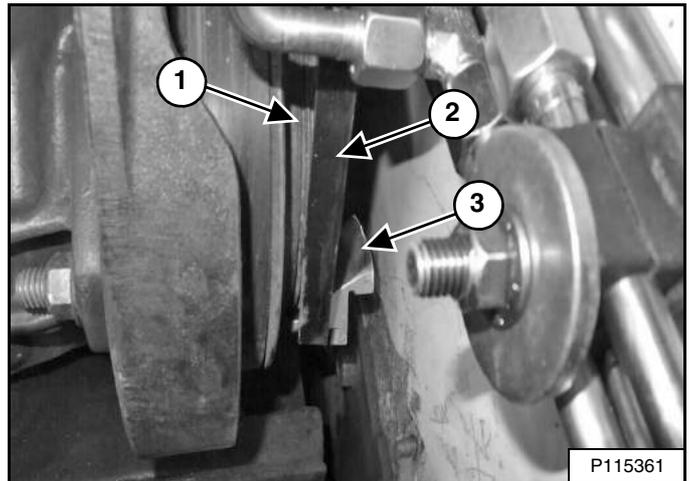
Figure 265



Cut the old belt (Item 1) [Figure 265] and remove the belt from the pulleys. Inspect the pulleys for wear.

**NOTE:** This view [Figure 265] is from the rear door. The air conditioning belt can also be accessed through the left side access cover or under the operator cab.

Figure 266



Install the belt on the air conditioning compressor pulley and start the belt (Item 2) and the belt tool (Item 3) on the front side of the hydraulic pump pulley (Item 1) [Figure 266].

**NOTE:** This view [Figure 266] is under the operator cab on the left side of the loader.

Rotate the engine clockwise using the crankshaft pulley bolt. Do not use the hydraulic pump pulley nut or the flywheel bolts.

Ensure that the belt is fully installed on both pulleys. Repeat the procedure if necessary.

Remove the belt tool.

Install the lower fan duct, bolts, electrical harness clamp, and nut [Figure 262].

**NOTE:** Failure to install the lower fan duct correctly may result in decreased cooling.

Install the left side access cover and bolts [Figure 263].

Lower the operator cab. (See Lowering on Page 135.)

Close the rear door.

## DRIVE BELT

### Belt Adjustment

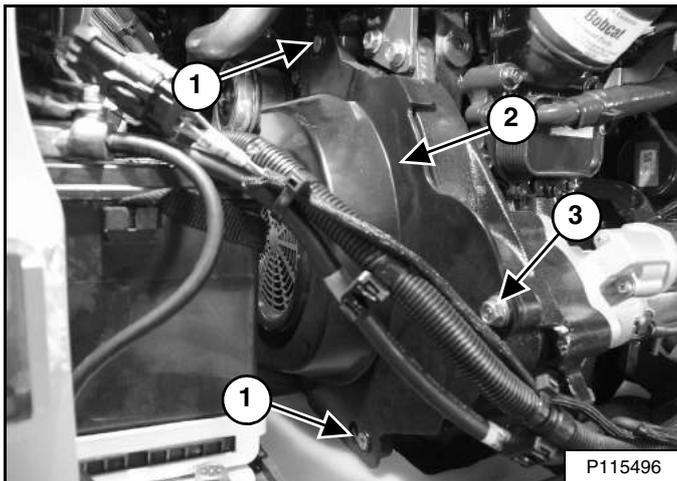
The drive belt does not need adjustment. The belt has a spring loaded idler that constantly maintains the correct belt tension.

### Belt Replacement

Stop the engine and open the rear door.

Remove the air conditioning belt. (See AIR CONDITIONING BELT on Page 175.)

**Figure 267**

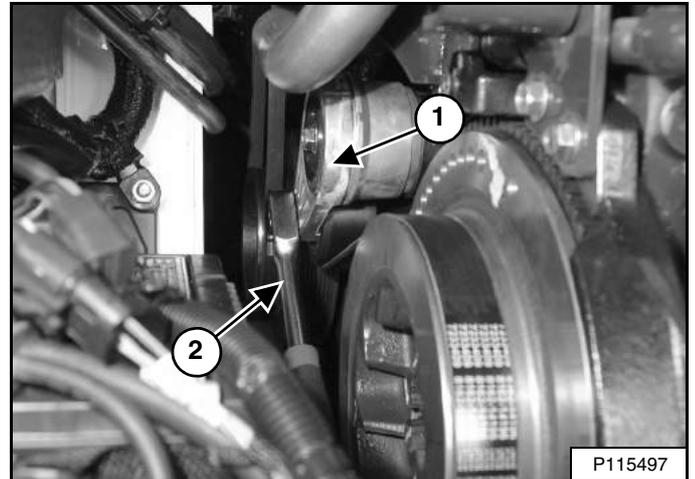


Remove the drive belt shield bolt (Item 3) [Figure 267].

Do **NOT** loosen the drive belt shield mounting bolts (Item 1). Slide the drive belt shield (Item 2) [Figure 267] toward the back of the loader to unseat the shield from the top and bottom drive belt shield mounting bolts.

Remove the drive belt shield (Item 2) [Figure 267].

**Figure 268**



Insert a breaker bar (Item 2) into the square hole provided in the idler assembly (Item 1) [Figure 268] as shown and push the breaker bar down to release tension on the drive belt.

Remove the drive belt from the hydrostatic pump pulley and flywheel pulley.

Inspect the pulleys for wear.

Install new drive belt.

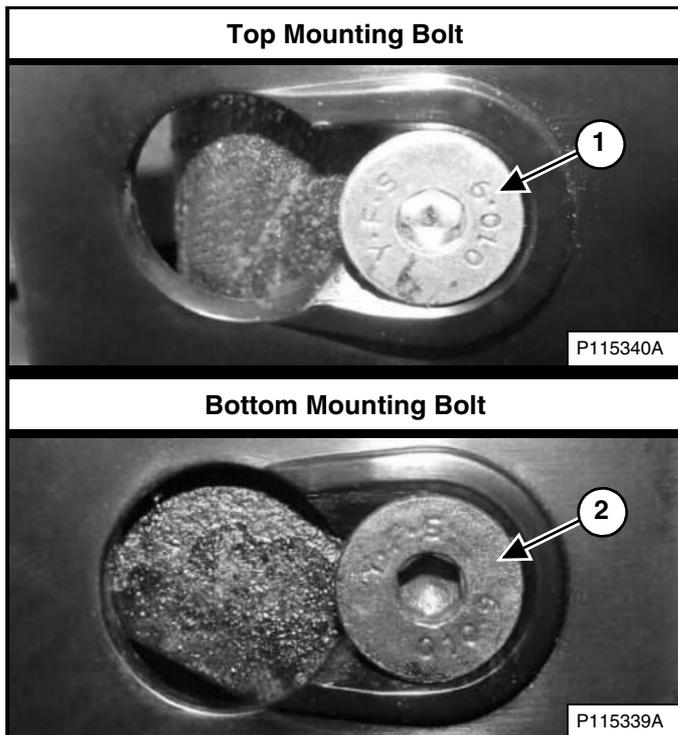
Ensure the drive belt is positioned correctly on both pulleys and idler assembly.

Remove the breaker bar.

## DRIVE BELT (CONT'D)

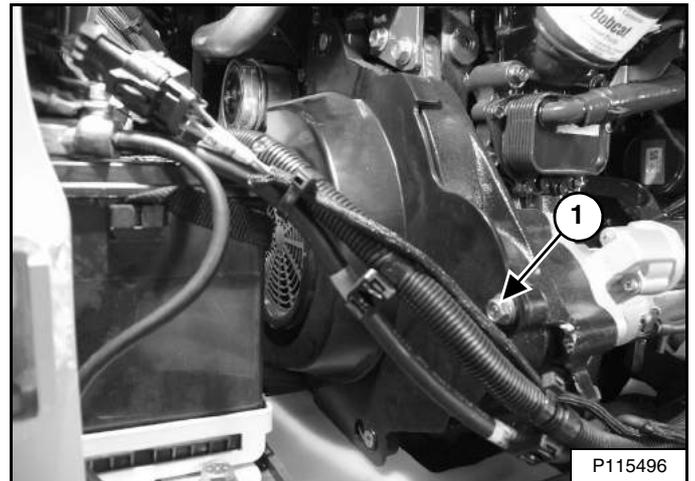
### Belt Replacement (Cont'd)

Figure 269



Position the drive belt shield over the drive belt shield mounting bolts. Slide the drive belt shield toward the front of the loader to fully seat the shield onto the top and bottom mounting bolts (Items 1 and 2) [Figure 269].

Figure 270



Install the drive belt shield bolt (Item 1) [Figure 270].

Install the air conditioning belt. (See AIR CONDITIONING BELT on Page 175.)

Close the rear door.

## AUTOMATIC RIDE CONTROL ACCUMULATOR

### Checking Accumulator Charge

This machine may be equipped with Automatic Ride Control.

The nitrogen charge in your accumulator will decrease over time. This will result in decreased effectiveness of the automatic ride control benefits.

**NOTE: The signs of a low accumulator charge include: excessive lift arm movement, reduced ride control performance, or loss of ride control function.**

Special tools and equipment are required to check and service the nitrogen charge in the accumulator.



**RIDE CONTROL ACCUMULATOR INSTALLED  
PRESSURISED FLUID CAN CAUSE SERIOUS INJURY**  
After fully lowering the lift arms or installing an approved lift arm support device, use lift arm bypass control for 5 seconds to release pressure from lift circuit before servicing.  
See Operation & Maintenance Manual or Service Manual for lift arm bypass control instructions.

W-3015-EN-0816

See your Bobcat dealer for service if you believe that your automatic ride control accumulator charge is low.

## LUBRICATING THE LOADER

### Lubrication Locations

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 121.)

Record the operating hours each time you lubricate the Bobcat loader.

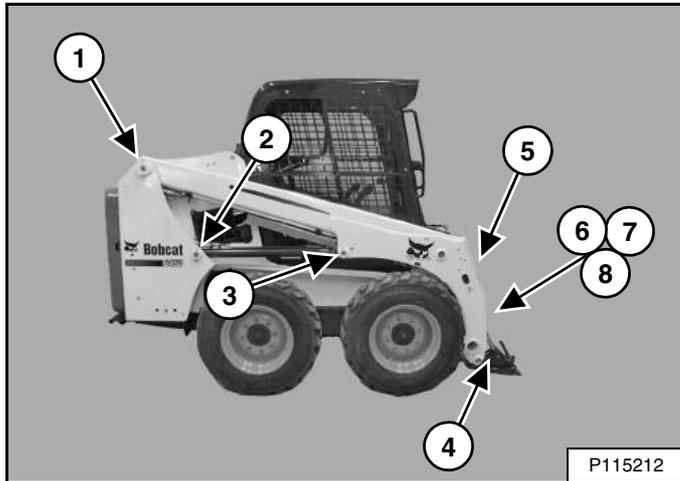
Always use a good quality lithium based multipurpose grease when you lubricate the loader. Apply the lubricant until extra grease shows.

Remove attachment from the loader. (See Installing And Removing The Attachment (Hand Lever Bob-Tach) on Page 106.) **OR** (See Installing And Removing The Attachment (Power Bob-Tach) on Page 109.)

Tilt the Bob-Tach forward until it contacts the ground.

Stop the engine.

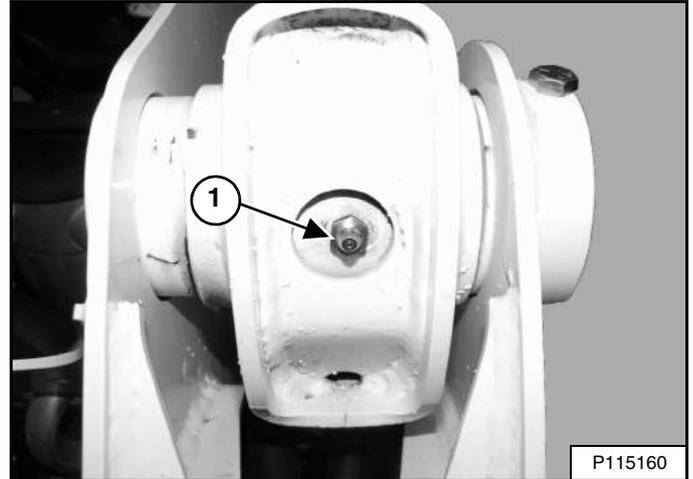
**Figure 271**



The grease fitting locations [Figure 271] are shown in more detail in the following figures.

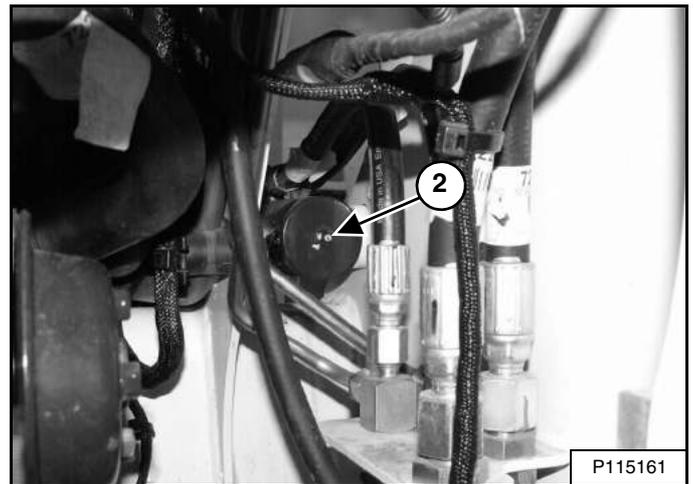
Lubricate the following:

**Figure 272**



1. Lift Arm Pivot Pin (Both Sides) (2) [Figure 272].

**Figure 273**



Open the rear door.

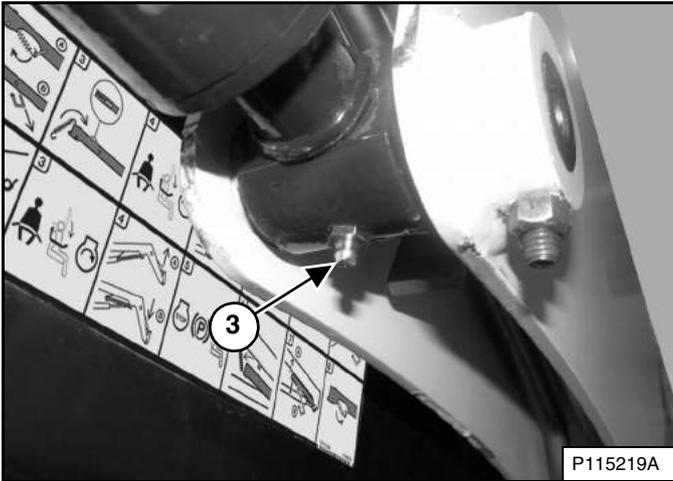
2. Base End Lift Cylinder (Both Sides) (2) [Figure 273].

Close the rear door.

## LUBRICATING THE LOADER (CONT'D)

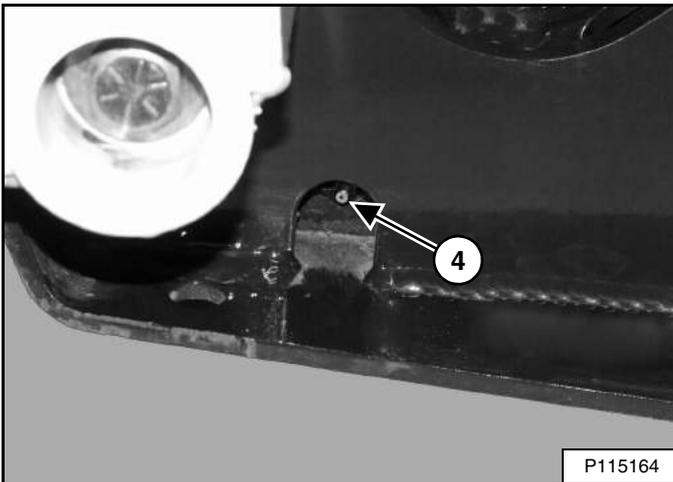
### Lubrication Locations (Cont'd)

Figure 274



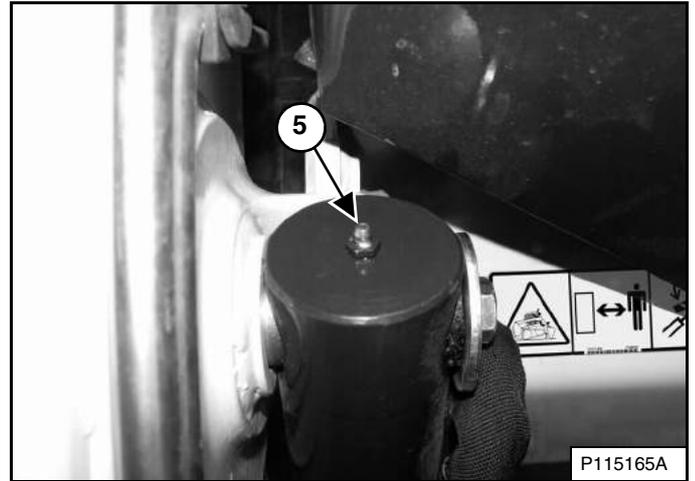
3. Rod End Lift Cylinder (Both Sides) (2) [Figure 274].

Figure 275



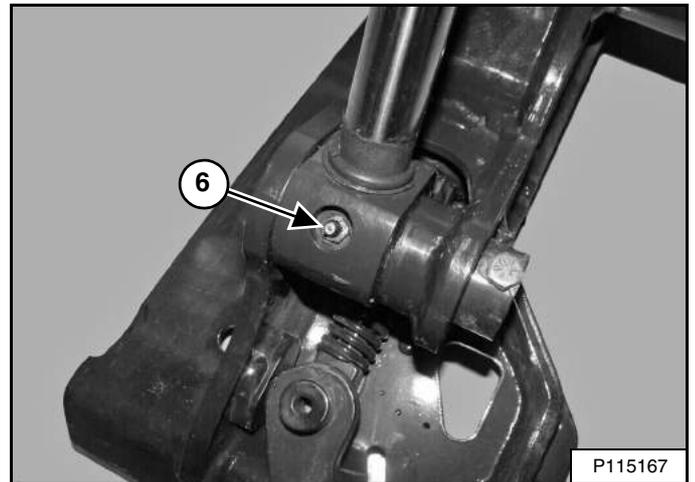
4. Bob-Tach Wedge (Both Sides) (2) [Figure 275].

Figure 276



5. Base End Tilt Cylinder (Both Sides) (2) [Figure 276].

Figure 277

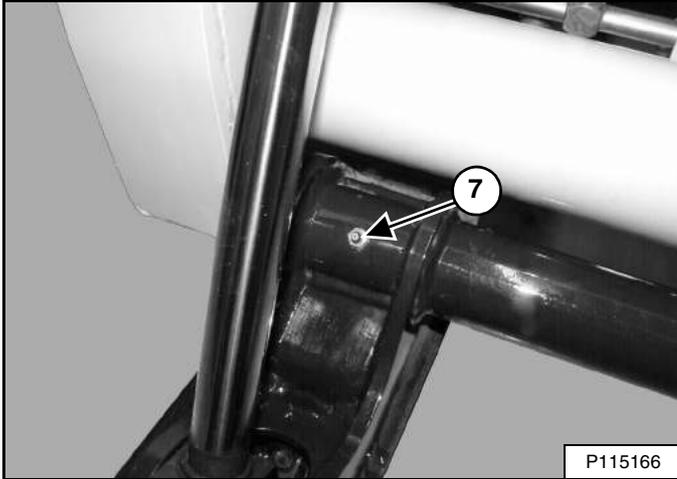


6. Rod End Tilt Cylinder (Both Sides) (2) [Figure 277].

## LUBRICATING THE LOADER (CONT'D)

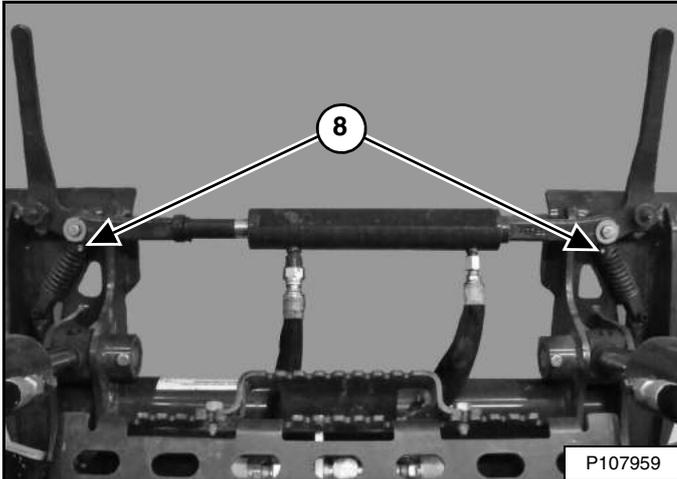
### Lubrication Locations (Cont'd)

Figure 278



7. Bob-Tach Pivot Pin (Both Sides) (2) [Figure 278].

Figure 279

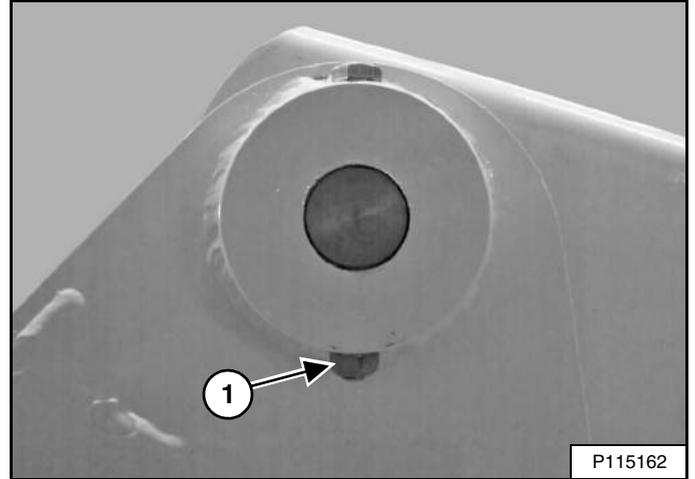


8. Power Bob-Tach Hydraulic Cylinder (if equipped) (2) [Figure 279].

## PIVOT PINS

### Inspection And Maintenance

Figure 280



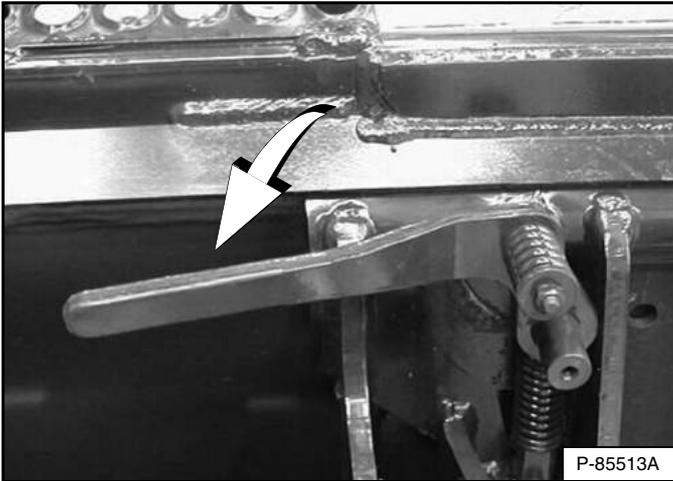
All lift arm and cylinder pivots have a large pin held in position with a retainer bolt and locknut (Item 1) [Figure 280].

Check that the locknuts are tightened to 48 – 54 N•m (35 – 40 ft-lb) torque.

## BOB-TACH (HAND LEVER)

### Inspection And Maintenance

Figure 281



Move the Bob-Tach levers down to engage the wedges [Figure 281].

The levers and wedges must move freely.

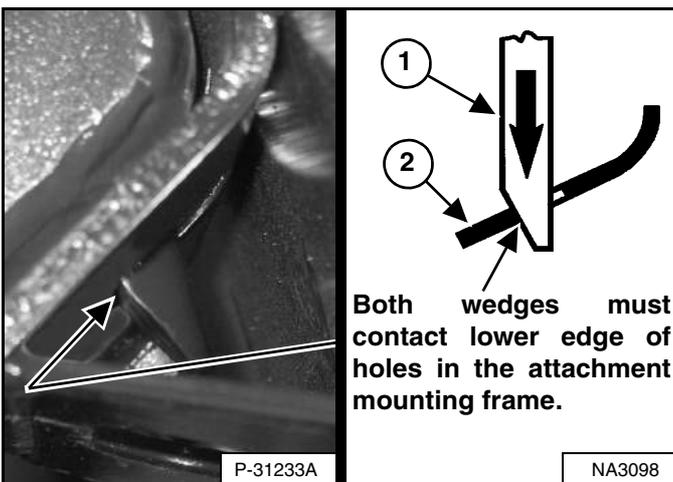


#### AVOID INJURY OR DEATH

The Bob-Tach wedges must extend through the holes in the attachment mounting frame. Levers must be fully down and locked. Failure to secure wedges can allow attachment to come off.

W-2715-0208

Figure 282

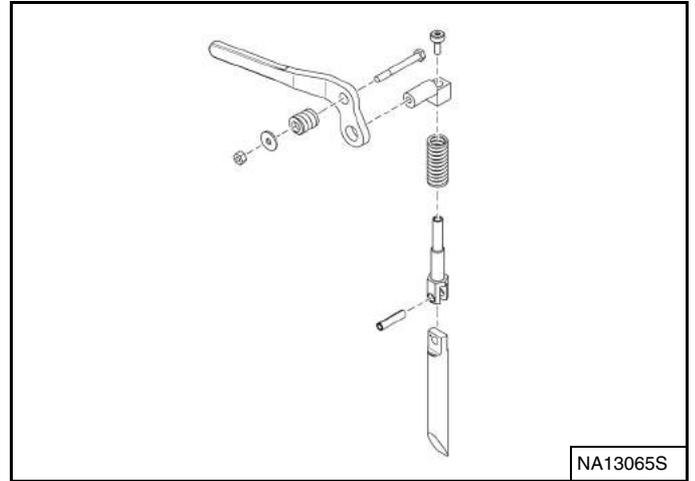


The wedges (Item 1) [Figure 282] must extend through the holes in the attachment mounting frame.

The spring loaded wedges (Item 1) must contact the lower edge of the holes in the attachment mounting frame (Item 2) [Figure 282].

If the wedges do not contact the lower edge of the holes [Figure 282], the attachment will be loose and can come off the Bob-Tach.

Figure 283



Inspect the mounting frame on the attachment and Bob-Tach, linkages, and wedges for excessive wear or damage [Figure 283]. Replace any parts that are damaged, bent, or missing. Keep all fasteners tight.

Look for cracked welds. Contact your Bobcat dealer for repair or replacement parts.

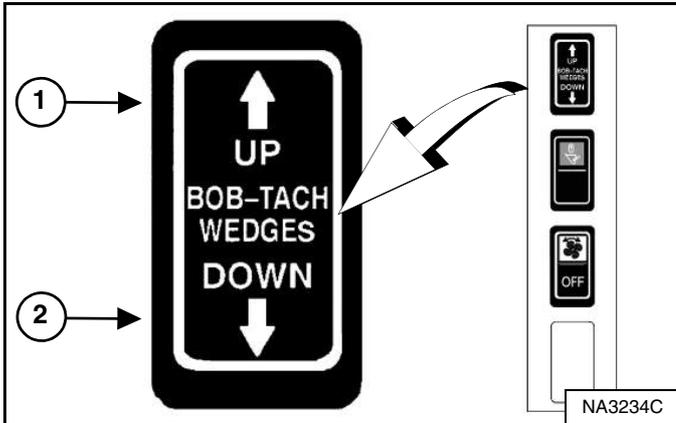
Lubricate the wedges. (See SERVICE SCHEDULE on Page 121.) and (See LUBRICATING THE LOADER on Page 180.)

## BOB-TACH (POWER)

This machine may be equipped with a Power Bob-Tach.

### Inspection And Maintenance

Figure 284



Push and hold the BOB-TACH WEDGES “UP” switch (Item 1) until wedges are fully raised. Push and hold the BOB-TACH WEDGES “DOWN” switch (Item 2) [Figure 284] until the wedges are fully down.

The levers and wedges must move freely.

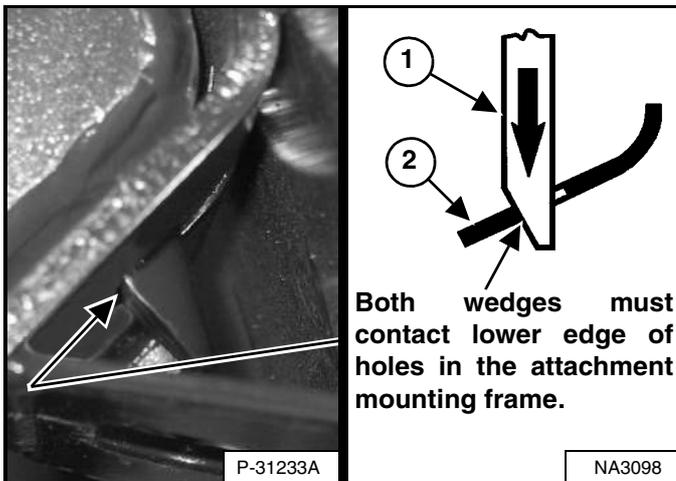
## WARNING

### AVOID INJURY OR DEATH

The Bob-Tach wedges must extend through the holes in the attachment mounting frame. Levers must be fully down and locked. Failure to secure wedges can allow attachment to come off.

W-2715-0208

Figure 285

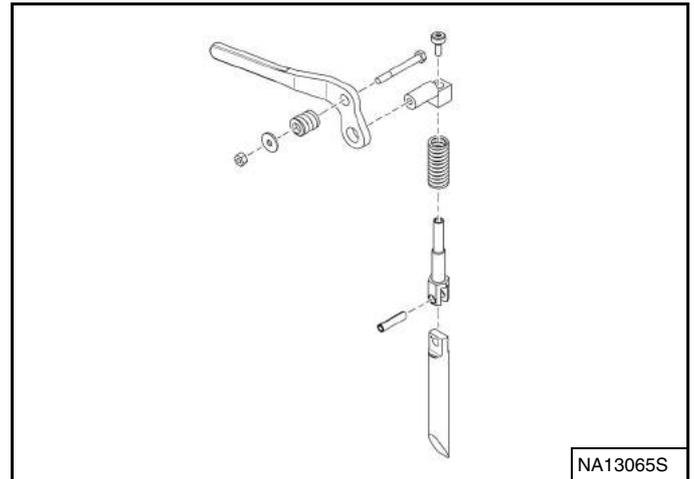


The wedges (Item 1) [Figure 285] must extend through the holes in the attachment mounting frame.

The spring loaded wedges (Item 1) must contact the lower edge of the holes in the attachment mounting frame (Item 2) [Figure 285].

If the wedges do not contact the lower edge of the holes [Figure 285], the attachment will be loose and can come off the Bob-Tach.

Figure 286



Inspect the mounting frame on the attachment and Bob-Tach, linkages, and wedges for excessive wear or damage [Figure 286]. Replace any parts that are damaged, bent, or missing. Keep all fasteners tight.

Look for cracked welds. Contact your Bobcat dealer for repair or replacement parts.

Lubricate the wedges. (See SERVICE SCHEDULE on Page 121.) and (See LUBRICATING THE LOADER on Page 180.)

## LOADER STORAGE AND RETURN TO SERVICE

### Storage

You may decide to store your Bobcat loader for an extended period of time. Perform the procedures below for storage:

- Thoroughly clean the loader including the engine compartment.
- Lubricate the loader.
- Replace worn or damaged parts.
- Park the loader in a dry protected shelter.
- Lower the lift arms all the way and put the bucket flat on the ground.
- Put blocks under the frame to remove weight from the tyres.
- Put grease on any exposed cylinder rods.
- Put fuel stabiliser into the fuel tank and operate the engine a few minutes to circulate the stabiliser to the pump and fuel injectors.

*If biodiesel blend fuel has been used, perform the following:*

Drain the fuel tank, refill with 100% petroleum diesel fuel, add fuel stabiliser, and operate the engine for at least 30 minutes.

- Drain and flush the cooling system. Refill with premixed coolant.
- Replace all fluids and filters (engine, hydraulic / hydrostatic).
- Replace air cleaner, heater, and air conditioning filters.
- Put all controls into the NEUTRAL position.
- Remove the battery. Be sure the electrolyte level is correct, then charge the battery. Store the battery in a cool dry location above freezing temperatures and charge the battery periodically during storage.
- Cover the exhaust pipe opening.
- Tag the machine to indicate that the machine is in storage condition.

### Return To Service

After the Bobcat loader has been in storage, perform the procedures below to return the loader to service:

- Check the engine oil and hydraulic fluid levels; check coolant level.
- Install a fully charged battery.
- Remove grease from exposed cylinder rods.
- Check all belt tensions.
- Be sure all shields and guards are in position.
- Lubricate the loader.
- Check tyre inflation and remove blocks from under frame.
- Remove cover from exhaust pipe opening.
- Start the engine and operate for a few minutes while observing the instrument panels and systems for correct operation.
- Operate machine, check for correct function.
- Stop the engine and check for leaks. Repair as needed.

## SYSTEM SETUP AND ANALYSIS

DIAGNOSTIC SERVICE CODES .....	187
Viewing Service Codes .....	187
Service Codes List .....	188
CONTROL PANEL SETUP .....	202
Right Panel Setup (Deluxe Instrumentation Panel) .....	202
PASSWORD SETUP (DELUXE INSTRUMENTATION PANEL) .....	206
Password Description .....	206
Changing The Owner Password .....	206
Changing The User Passwords .....	207
Password Lockout Feature .....	207
MAINTENANCE CLOCK .....	208
Description .....	208
Setup .....	209
Reset .....	209

## DIAGNOSTIC SERVICE CODES

### Viewing Service Codes

The Service Codes will aid your dealer in diagnosing conditions that can damage your machine.

#### Left Panel

**Figure 287**



Press the Information button (Item 2) to cycle the data display (Item 1) [Figure 287] until the service code screen is displayed. If more than one service code is present, the codes will scroll on the data display.

When no service code is present, [NONE] is displayed [Figure 287].

**NOTE: Corroded or loose grounds can cause multiple service codes and / or abnormal symptoms. All instrument panel lights flashing, alarm sounding, headlights and taillights flashing, can indicate a bad earth. The same symptoms can apply if the voltage is low, such as loose or corroded battery cables. If you observe these symptoms, check grounds and positive leads first.**

#### Deluxe Instrumentation Panel

The Deluxe Instrumentation Panel offers an additional view of service codes that includes a brief description.

The last 40 codes stored in history can also be viewed using the Deluxe Instrumentation Panel.

<p>The image shows the Deluxe Instrumentation Panel. The central display shows 'ACTIVE WARNINGS' with a list of codes. A white circle with the number '1' points to the left scroll button. An inset in the top left corner shows a warning icon (exclamation mark in a triangle).</p>	<p>Press a scroll button (Item 1) repeatedly until the Active Warnings screen icon (Inset) is highlighted.</p>
<p>The image shows the Deluxe Instrumentation Panel. The central display shows 'ACTIVE WARNINGS' with a list of codes. The first code is 'R7404' with the description 'MAN CONTROLLER NO COMMUNICATION'.</p>	<p>The ACTIVE WARNINGS screen displays active service codes. Press [9] to view the next service code if more than one is present. Press [4] to display a history of service codes.</p>
<p>The image shows the Deluxe Instrumentation Panel. The central display shows 'WARNINGS HISTORY' with a list of codes and user information. The list includes columns for CODE, HOUR, and USER.</p>	<p>The WARNINGS HISTORY screen will list the Service Code Number (CODE), Hourmeter reading when the error occurred (HOUR), and the User (USER) who was logged in to operate the machine when the error occurred.</p>
<p>Press [9] to view the next eight service codes.</p> <p>A total of 40 codes can be stored. When more than 40 codes occur, the oldest code will disappear and the newest code will be in the number 1 position.</p>	
<p>The image shows the Deluxe Instrumentation Panel. The central display shows 'WARNING HISTORY' with a list of codes. The first code is 'M0613' with the description 'ENGINE SPEED NO SIGNAL'.</p>	<p>Press the list number next to the service code for more detail.</p> <p>Press the left scroll button to back up one screen.</p>

## DIAGNOSTIC SERVICE CODES (CONT'D)

### Service Codes List

Figure 288



Service codes can be either letters (Item 1) or numbers (Item 2) [Figure 288].

The following letter codes may be displayed:

- [AIRF] Replace engine air filter. (See ENGINE AIR CLEANER on Page 141.)
- [CODE] The controller is asking for a password.
- [DOOR] Operator cab door is open. (Lift and Tilt functions will not operate.)
- [ERROR] The wrong password was entered.
- [FUEL] The fuel level is low.
- [REPLY] One or both instrument panel(s) not communicating with the controller.
- [RFOFF] Reversing fan is disabled. (See Reversing Fan on Page 85.)
- [SHTDN] A shutdown condition exists.
- [WAIT] The glow plugs are preheating, wait to start.

## DIAGNOSTIC SERVICE CODES (CONT'D)

### Service Codes List (Cont'd)

CODE	DESCRIPTION	CODE	DESCRIPTION
A0618	Wheel speed out of range	A8602	ACD output 'G' error ON
A3623	ACD not programmed	A8603	ACD output 'G' error OFF
A4621	5 volt sensor supply out of range high	A8605	ACD output 'G' short to battery
A4622	5 volt sensor supply out of range low	A8606	ACD output 'G' short to earth
A4721	8 volt sensor supply out of range high	A8607	ACD output 'G' open circuit
A4722	8 volt sensor supply out of range low	A8702	ACD output 'H' error ON
A7701	Machine key active	A8703	ACD output 'H' error OFF
A7901	E-Stop active	A8705	ACD output 'H' short to battery
A8002	ACD output 'A' error ON	A8706	ACD output 'H' short to earth
A8003	ACD output 'A' error OFF	A8707	ACD output 'H' open circuit
A8005	ACD output 'A' short to battery	A8802	Reversing solenoid error ON
A8006	ACD output 'A' short to earth	A8803	Reversing solenoid error OFF
A8007	ACD output 'A' open circuit		
A8032	ACD output 'A' overcurrent	D3905	Left joystick X-axis not in NEUTRAL
A8102	ACD output 'B' error ON	D3907	Left joystick Y-axis not in NEUTRAL
A8103	ACD output 'B' error OFF	D4007	Right joystick Y-axis not in NEUTRAL
A8105	ACD output 'B' short to battery	D7501	Drive CAN joystick information error
A8106	ACD output 'B' short to earth	D7502	Drive controller needs programming
A8107	ACD output 'B' open circuit	D7504	Drive no communication from drive controller
A8132	ACD output 'B' overcurrent	D7505	Drive left joystick X-axis not in NEUTRAL
A8202	ACD output 'C' error ON	D7506	Drive steering valve cartridge stuck
A8203	ACD output 'C' error OFF	D7507	Drive left joystick Y-axis not in NEUTRAL
A8205	ACD output 'C' short to battery	D7508	Drive right joystick Y-axis not in NEUTRAL
A8206	ACD output 'C' short to earth	D7509	Drive operating mode switch short to earth or battery
A8207	ACD output 'C' open circuit	D7510	Drive improper joysticks installed
A8232	ACD output 'C' overcurrent	D7511	Drive left speed sensor not connected
A8302	ACD output 'D' error ON	D7512	Drive right speed sensor not connected
A8303	ACD output 'D' error OFF	D7513	Drive right front wheel angle sensor stuck
A8305	ACD output 'D' short to battery	D7514	Drive left front wheel angle sensor stuck
A8306	ACD output 'D' short to earth	D7515	Drive right rear wheel angle sensor stuck
A8307	ACD output 'D' open circuit	D7516	Drive left rear wheel angle sensor stuck
A8332	ACD output 'D' overcurrent	D7517	Drive left swash plate not in NEUTRAL
A8402	ACD output 'E' error ON	D7518	Drive right swash plate not in NEUTRAL
A8403	ACD output 'E' error OFF	D7519	Drive left joystick X-axis out of range high
A8405	ACD output 'E' short to battery	D7521	Drive left joystick Y-axis out of range high
A8406	ACD output 'E' short to earth	D7522	Drive right joystick Y-axis out of range high
A8407	ACD output 'E' open circuit	D7523	Drive right front wheel angle sensor out of range high
A8432	ACD output 'E' overcurrent	D7524	Drive left front wheel angle sensor out of range high
A8502	ACD output 'F' error ON	D7525	Drive right rear wheel angle sensor out of range high
A8503	ACD output 'F' error OFF	D7526	Drive left rear wheel angle sensor out of range high
A8505	ACD output 'F' short to battery	D7527	Drive left swash plate out of position
A8506	ACD output 'F' short to earth	D7528	Drive right swash plate out of position
A8507	ACD output 'F' open circuit	D7529	Drive left joystick X-axis out of range low
A8532	ACD output 'F' overcurrent	D7531	Drive left joystick Y-axis out of range low

## DIAGNOSTIC SERVICE CODES (CONT'D)

### Service Codes List (Cont'd)

CODE	DESCRIPTION	CODE	DESCRIPTION
D7532	Drive right joystick Y-axis out of range low	D7573	Drive operating mode switch flipped while operating
D7533	Drive right front wheel angle sensor out of range low	D7574	Drive right wheel speed uncommanded motion
D7534	Drive left front wheel angle sensor out of range low	D7575	Drive left wheel speed uncommanded motion
D7535	Drive right rear wheel angle sensor out of range low	D7576	Drive no communication from ACS controller
D7536	Drive left rear wheel angle sensor out of range low	D7577	Drive left speed sensor out of range high
D7537	Drive 5 volt sensor supply 1 out of range low	D7578	Drive right speed sensor out of range high
D7538	Drive 5 volt sensor supply 2 out of range low	D7579	Drive left speed sensor out of range low
D7539	Drive left swash plate sensor out of range high	D7580	Drive right speed sensor out of range low
D7540	Drive left swash plate sensor out of range low	D7581	Drive right front steer retract short to battery
D7541	Drive right swash plate sensor out of range high	D7582	Drive left front steer retract short to battery
D7542	Drive right swash plate sensor out of range low	D7583	Drive right rear steer retract short to battery
D7543	Drive left forward drive solenoid error ON	D7584	Drive left rear steer retract short to battery
D7544	Drive left reverse drive solenoid error ON	D7585	Drive 5 volt sensor supply 1 out of range high
D7545	Drive right forward drive solenoid error ON	D7586	Drive 5 volt sensor supply 2 out of range high
D7546	Drive right reverse drive solenoid error ON	D7587	Drive software update required
D7547	Drive right front steer extend short to battery	D7588	Drive switched power stuck ON
D7548	Drive left front steer extend short to battery	D7589	Drive switched power error OFF
D7549	Drive right rear steer extend short to battery	D7590	Drive calibration performed
D7550	Drive left rear steer extend short to battery	D7591	Drive left swash plate sensor reversed
D7551	Drive steer pressure short to battery	D7592	Drive right swash plate sensor reversed
D7552	Drive back-up alarm error ON	D7593	Drive unresponsive right speed sensor
D7553	Drive left forward drive solenoid error OFF	D7594	Drive unresponsive left speed sensor
D7554	Drive left reverse drive solenoid error OFF	D7595	Drive left speed sensor reverse direction
D7555	Drive right forward drive solenoid error OFF	D7596	Drive right speed sensor reverse direction
D7556	Drive right reverse drive solenoid error OFF	D7597	Drive controller programmed
D7557	Drive right front steer extend short to earth	D7598	Drive controller in calibration mode
D7558	Drive right front steer retract short to earth	D7599	Drive AWS controller in wheel position calibration mode
D7559	Drive left front steer extend short to earth		
D7560	Drive left front steer retract short to earth	H1221	Right thumb switch out of range high
D7561	Drive right rear steer extend short to earth	H1222	Right thumb switch out of range low
D7562	Drive right rear steer retract short to earth	H1224	Right thumb switch not in NEUTRAL
D7563	Drive left rear steer extend short to earth	H1321	Left thumb switch out of range high
D7564	Drive left rear steer retract short to earth	H1322	Left thumb switch out of range low
D7565	Drive steer pressure short to earth	H1324	Left thumb switch not in NEUTRAL
D7566	Drive back-up alarm error OFF	H1421	Lift base pressure out of range high
D7567	Drive no communication from Bobcat controller	H1422	Lift base pressure out of range low
D7568	Drive angle sensors not calibrated	H1502	Ride control output error ON
D7569	Drive battery voltage out of range high	H1503	Ride control output error OFF
D7570	Drive interrupted power (also occurs after software updates)	H1507	Ride control output open circuit
D7571	Drive battery voltage out of range low	H1528	Ride control output failure
D7572	Drive pump not calibrated	H1602	Ride control relay error ON

## DIAGNOSTIC SERVICE CODES (CONT'D)

### Service Codes List (Cont'd)

CODE	DESCRIPTION	CODE	DESCRIPTION
H1603	Ride control relay error OFF	H4012	Right joystick thumb switch not in NEUTRAL
H1607	Ride control output open circuit	H4013	Right joystick grip no communication
H1628	Ride control output failure	H4016	Right joystick no communication
H2105	Reverse fan solenoid short to battery	H4028	Right joystick internal failure
H2106	Reverse fan solenoid short to earth	H4048	Right joystick multiple
H2107	Reverse fan solenoid open circuit	H4302	Horn error ON
H2132	Reverse fan solenoid overcurrent	H4303	Horn error OFF
H2305	Rear base output short to battery	H4423	Auxiliary not programmed
H2306	Rear base output short to earth	H4497	Auxiliary controller programmed
H2307	Rear base output open circuit	H4502	Right blinker error ON
H2332	Rear base output overcurrent	H4503	Right blinker error OFF
H2405	Rear rod output short to battery	H4602	Left blinker error ON
H2406	Rear rod output short to earth	H4603	Left blinker error OFF
H2407	Rear rod output open circuit	H4721	8 volt sensor supply out of range high
H2432	Rear rod output overcurrent	H4722	8 volt sensor supply out of range low
H2505	Diverter #2 short to battery	H4821	5 volt sensor supply out of range high
H2506	Diverter #2 short to earth	H4822	5 volt sensor supply out of range low
H2507	Diverter #2 open circuit	H7404	Main controller no communication
H2605	Front base output short to battery	H7604	Left hand panel no communication
H2606	Front base output short to earth	H8002	ACD output A error ON
H2607	Front base output open circuit	H8003	ACD output A error OFF
H2632	Front base output overcurrent	H8102	ACD output B error ON
H2705	Front rod output short to battery	H8103	ACD output B error OFF
H2706	Front rod output short to earth	H8202	ACD output C error ON
H2707	Front rod output open circuit	H8203	ACD output C error OFF
H2732	Front rod output overcurrent	H8302	ACD output D error ON
H2805	Diverter short to battery	H8303	ACD output D error OFF
H2806	Diverter short to earth	H8402	ACD output E error ON
H2807	Diverter open circuit	H8403	ACD output E error OFF
H2905	High-flow short to battery	H8502	ACD output F error ON
H2906	High-flow short to earth	H8503	ACD output F error OFF
H2907	High-flow open circuit	H8602	ACD output G error ON
H2932	High-flow overcurrent	H8603	ACD output G error OFF
H3028	Controller memory failure	H8702	ACD output H error ON
H3128	Interrupted power failure	H8703	ACD output H error OFF
H3648	Multiple ACD conflict error	H9004	Press to operate loader keypad no communication
H3702	Power Bob-Tach up solenoid error ON	H9109	Fuel pressure at filter inlet too low
H3904	Left joystick in error	H9110	Fuel pressure at filter inlet too high
H3912	Left joystick thumb switch not in NEUTRAL	H9111	Fuel pressure at filter inlet extremely high
H3913	Left joystick grip no communication	H9121	Fuel pressure sensor at filter inlet out of range high
H3916	Left joystick no communication	H9122	Fuel pressure sensor at filter inlet out of range low
H3928	Left joystick internal failure	H9144	Fuel filter derate level 1
H3948	Left joystick multiple	H9145	Fuel filter derate level 2
H4004	Right joystick in error	H9202	Fuel lift pump output error On

## DIAGNOSTIC SERVICE CODES (CONT'D)

### Service Codes List (Cont'd)

CODE	DESCRIPTION	CODE	DESCRIPTION
H9203	Fuel lift pump output error Off	M0715	Hydraulic fluid temperature in shutdown
H9287	Fuel lift pump failure time exceeded	M0721	Hydraulic fluid temperature out of range high
H9309	Fuel pressure too low	M0722	Hydraulic fluid temperature out of range low
H9314	Fuel pressure extremely low	M0810	Engine coolant temperature too high
H9321	Fuel pressure sensor out of range high	M0811	Engine coolant temperature extremely high
H9322	Fuel pressure sensor out of range low	M0815	Engine coolant temperature in shutdown
H9344	Fuel pressure derate level 1	M0821	Engine coolant temperature out of range high
		M0822	Engine coolant temperature out of range low
L0102	Lights button error ON	M0826	Engine coolant temperature pre-shutdown
L0202	High-flow enable / auto idle enable button error ON	M0909	Fuel level too low
L0302	Auxiliary enable button error ON	M0921	Fuel level out of range high
L0402	Information button error ON	M0922	Fuel level out of range low
L7404	Main controller no communication	M1016	Hydraulic charge filter not connected
L7672	Left display panel needs programming	M1017	Hydraulic charge filter plugged
		M1121	Seat bar sensor out of range high
M0116	Air filter not connected	M1122	Seat bar sensor out of range low
M0117	Air filter plugged	M1128	Seat bar sensor failure
M0144	Air filter derate level 1	M1210	Air inlet temperature high
M0145	Air filter derate level 2	M1211	Air inlet temperature extremely high
M0216	Hydraulic / Hydrostatic filter not connected	M1305	Fuel hold solenoid short to battery
M0217	Hydraulic / Hydrostatic filter plugged	M1306	Fuel hold solenoid short to earth
M0309	System voltage too low	M1307	Fuel hold solenoid open circuit
M0310	System voltage too high	M1402	Fuel pull solenoid error ON
M0311	System voltage extremely high	M1403	Fuel pull solenoid error OFF
M0314	System voltage extremely low	M1407	Fuel pull solenoid open circuit
M0322	System voltage out of range low	M1428	Fuel pull solenoid failure
M0409	Engine oil pressure too low	M1502	Traction lock pull output error ON
M0414	Engine oil pressure extremely low	M1503	Traction lock pull output error OFF
M0415	Engine oil pressure in shutdown	M1507	Traction lock pull output open circuit
M0421	Engine oil pressure out of range high	M1528	Traction lock pull output failure
M0422	Engine oil pressure out of range low	M1605	Traction lock hold solenoid short to battery
M0509	Hydraulic charge pressure too low	M1606	Traction lock hold solenoid short to earth
M0510	Hydraulic charge pressure too high	M1607	Traction lock hold solenoid open circuit
M0511	Hydraulic charge pressure extremely high	M1705	Hydraulic lock valve short to battery
M0514	Hydraulic charge pressure extremely low	M1706	Hydraulic lock valve short to earth
M0515	Hydraulic charge pressure in shutdown	M1707	Hydraulic lock valve open circuit
M0521	Hydraulic charge pressure out of range high	M1732	Hydraulic lock valve overcurrent
M0522	Hydraulic charge pressure out of range low	M1805	Lift spool lock output short to battery
M0610	Engine speed too high	M1806	Lift spool lock output short to earth
M0611	Engine speed extremely high	M1807	Lift spool lock output open circuit
M0613	Engine speed no signal	M1832	Lift spool lock output overcurrent
M0615	Engine speed in shutdown	M1910	Engine ambient temperature high
M0618	Engine speed out of range	M1911	Engine ambient temperature extremely high
M0634	Engine speed invalid information from ECU	M1921	Engine ambient temperature out of range high
M0710	Hydraulic fluid temperature too high	M1922	Engine ambient temperature out of range low
M0711	Hydraulic fluid temperature extremely high	M2005	Two-speed primary solenoid short to battery

## DIAGNOSTIC SERVICE CODES (CONT'D)

### Service Codes List (Cont'd)

CODE	DESCRIPTION	CODE	DESCRIPTION
M2006	Two-speed primary solenoid short to earth	M4304	Keyless panel no communication
M2007	Two-speed primary solenoid open circuit	M4404	Auxiliary no communication
M2032	Two-speed primary solenoid overcurrent	M4510	Water in fuel sensor too high
M2102	Glow plug output error ON	M4511	Water in fuel sensor extremely high
M2103	Glow plug output error OFF	M4521	Water in fuel sensor out of range high
M2107	Glow plug output open circuit	M4522	Water in fuel sensor out of range low
M2128	Glow plug output failure	M4530	Water in fuel sensor fault
M2202	Starter output error ON	M4621	5 volt sensor supply out of range high
M2203	Starter output error OFF	M4622	5 volt sensor supply out of range low
M2207	Starter output open circuit	M4721	8 volt sensor supply out of range high
M2228	Starter output failure	M4722	8 volt sensor supply out of range low
M2302	Starter relay error ON	M4802	Front light relay error ON
M2303	Starter relay error OFF	M4803	Front light relay error OFF
M2402	Fuel pull relay error ON	M4902	Rear light relay error ON
M2403	Fuel pull relay error OFF	M4903	Rear light relay error OFF
M2502	Traction pull relay error ON	M5002	Front light output error ON
M2503	Traction pull relay error OFF	M5003	Front light output error OFF
M2602	Glow plug relay error ON	M5007	Front light output open circuit
M2603	Glow plug relay error OFF	M5028	Front light output failure
M2721	Throttle primary sensor out of range high	M5102	Rear light output error ON
M2722	Throttle primary sensor out of range low	M5103	Rear light output error OFF
M2821	Throttle secondary sensor out of range high	M5107	Rear light output open circuit
M2822	Throttle secondary sensor out of range low	M5128	Rear light output failure
M2899	Throttle secondary sensor not calibrated	M5202	Press to operate button error ON
M3028	Controller memory failure	M5221	Press to operate button out of range high
M3128	Interrupted power failure	M5222	Press to operate button out of range low
M3204	ACS (AHC) no communication to Bobcat controller	M5305	Press to operate light short to battery
M3304	Deluxe panel no communication	M5306	Press to operate light short to earth
M3404	Deluxe panel in error	M5405	Tilt spool lock short to battery
M3505	Hydraulic fan short to battery	M5406	Tilt spool lock short to earth
M3506	Hydraulic fan short to earth	M5407	Tilt spool lock open circuit
M3507	Hydraulic fan open circuit	M5432	Tilt spool lock overcurrent
M3532	Hydraulic fan overcurrent	M5810	Fuel temperature too high
M3705	Two-speed second output short to battery	M5811	Fuel temperature extremely high
M3706	Two-speed second output short to earth	M5815	Fuel temperature in shutdown
M3707	Two-speed second output open circuit	M5826	Fuel temperature pre-shutdown
M3732	Two-speed second output overcurrent	M5902	DPF regeneration switch error ON
M3805	Auxiliary hydraulic lock short to battery	M6002	DPF inhibit regeneration switch error ON
M3806	Auxiliary hydraulic lock short to earth	M6102	Remote parked regeneration switch error ON
M3807	Auxiliary hydraulic lock open circuit	M6202	Tailgate fan 1 error ON
M3832	Auxiliary hydraulic lock overcurrent	M6203	Tailgate fan 1 error OFF
M4028	Wrong ECU detected	M6228	Tailgate fan 1 error failure
M4109	Alternator voltage too low	M6302	Tailgate fan 2 error ON
M4110	Alternator voltage high	M6303	Tailgate fan 2 error OFF
M4111	Alternator voltage extremely high	M6328	Tailgate fan 2 error failure
M4228	Wrong DCU detected	M6402	Switched power relay error ON

## DIAGNOSTIC SERVICE CODES (CONT'D)

### Service Codes List (Cont'd)

CODE	DESCRIPTION	CODE	DESCRIPTION
M6403	Switched power relay error OFF	M8551	DPF regeneration needed – inhibit active
M6505	ECU power short to battery	M8552	DPF regeneration needed – inhibit active (Operate machine under load)
M6506	ECU power short to earth	M8553	DPF remote parked regeneration required (Remote regeneration kit required)
M6507	ECU power open circuit	M8554	DPF service regeneration required (Contact Bobcat dealer)
M6604	ECU no communication	M8555	DPF service required
M6702	HVAC output error ON	M8560	DPF service regeneration active
M6703	HVAC output error OFF	M8561	DPF service regeneration active
M6707	HVAC output open circuit	M8562	DPF service regeneration active
M6728	HVAC output failure	M8563	DPF service regeneration active
M6802	HVAC relay error ON	M8564	DPF service regeneration active
M6803	HVAC relay error OFF	M8615	Engine speed derate in shutdown
M6904	DCU no communication	M8625	Engine speed derate unresponsive
M7002	Switched power output error ON	M8715	Torque derate shutdown
M7003	Switched power output error OFF	M8725	Torque derate unresponsive
M7007	Switched power output open circuit	M8804	Telematics not connected
M7028	Switched power output failure	M9004	Press to operate loader keypad no communication
M7102	Electric fan output error ON	M9701	Turbo prime sequence active
M7103	Electric fan output error OFF		
M7107	Electric fan output error open circuit	P0002	Fuel Rail Pressure Fault
M7202	Electric fan relay error ON	P0003	Fuel Rail Pressure Fault
M7203	Electric fan relay error OFF	P0004	Fuel Rail Pressure Fault
M7304	Remote control no communication	P000F	Fuel Rail Pressure High - Over Relief
M7316	Remote control no communication to transmitter	P0072	Engine Compartment Temperature Sensor Out of Range Low
M7423	Main controller not programmed	P0073	Engine Compartment Temperature Sensor Out of Range High
M7472	Main controller needs programming	P007C	Inlet Air Temperature Sensor Out of Range Low
M7497	Main controller programmed	P007D	Inlet Air Temperature Sensor Out of Range High
M7504	Drive no communication	P0087	Fuel Rail Pressure Fault
M7604	Left display panel no communication	P009B	Common Rail Pressure Relief Valve Open Count Exceeds Limit
M7748	Key switch multiple	P009C	Common Rail Pressure Relief Valve Opened
M7839	Hourmeter changed	P009D	Common Rail Pressure Relief Valve Opened
M7902	Forestry door closed	P009F	High Rail Pressure
M7974	Door open	P00AC	Intake Manifold Temperature Sensor Out of Range Low
M8228	AdBlue / DEF sensor mismatch	P00AD	Intake Manifold Temperature Sensor Out of Range High
M8402	DESOX service requested	P00BC	Low Manifold Absolute Pressure (Low boost)
M8450	DESOX required but inhibited	P00BE	Air Flow Fault (MAF / MAP agreement)
M8541	DPF automatic regeneration active	P0100	Mass Air Flow Sensor Short to Battery or Open Circuit
M8542	DPF automatic regeneration active (Operate machine under load)	P0101	Mass Air Flow Sensor Electrical Fault
M8543	DPF regeneration required	P0102	Mass Air Flow Sensor Out of Range Low

## DIAGNOSTIC SERVICE CODES (CONT'D)

### Service Codes List (Cont'd)

CODE	DESCRIPTION	CODE	DESCRIPTION
P0103	Mass Air Flow Sensor Out of Range High	P025C	Fuel Metering Unit Short to Ground
P0107	Manifold Absolute Pressure Sensor Out of Range Low	P025D	Fuel Metering Unit Short to Battery
P0108	Manifold Absolute Pressure Sensor Out of Range High	P028A	Fan PWM Open Circuit
P0117	Coolant Temperature Sensor Out of Range Low	P028D	Fan PWM Short to Ground
P0118	Coolant Temperature Sensor Out of Range High	P028E	Fan PWM Short to Battery
P011E	Coolant Temperature Low Fault	P02E0	Air Control Valve H-Bridge Drive Open Circuit
P0121	Engine Speed Control Signal Fault	P02E2	Air Control Valve H-Bridge Drive Short to Ground
P0122	Engine Speed Control Signal Fault	P02E3	Air Control Valve H-Bridge Drive Short to Battery
P0123	Engine Speed Control Signal Fault	P02E4	Air Control Valve Position Fault
P0124	Engine Speed Control Signal Fault	P02E5	Air Control Valve Position Fault
P0182	Fuel Temperature Sensor Out of Range Low	P02E7	Air Control Valve Close Position Fault
P0183	Fuel Temperature Sensor Out of Range High	P02E8	Air Control Valve Sensor Out of Range Low
P018C	Low Fuel Filter Pressure	P02E9	Air Control Valve Sensor Out of Range High
P018D	High Fuel Filter Pressure	P02EA	Air Control Valve Close Position Fault
P018F	Common Rail Pressure Relief Valve Open Time Exceeds Limit	P02EB	Air Control Valve Close Position Fault
P0192	Rail Pressure Sensor Out of Range Low	P02EE	Injector #1 Short Circuit
P0193	Rail Pressure Sensor Out of Range High	P02EF	Injector #2 Short Circuit
P0196	Oil Level/Temp Sensor Fault	P02F0	Injector #3 Short Circuit
P01C2	Fuel Filter Pressure Sensor Out of Range Low	P02F1	Injector #4 Short Circuit
P01C4	Low Fuel Filter Pressure Warning	P0340	Cam Sensor Signal Fault
P01C5	Low Fuel Filter Pressure - Derate	P0342	Cam Sensor Signal Fault
P01C6	Fuel Filter Pressure Sensor Out of Range High	P0344	Cam Sensor Signal Fault
P0201	Injector #1 Open Circuit	P0372	Crank Sensor Signal Fault
P0202	Injector #2 Open Circuit	P0374	Crank Sensor Signal Fault
P0203	Injector #3 Open Circuit	P0380	Glow Plug Relay Open Circuit
P0204	Injector #4 Open Circuit	P0381	Glow Plug Lamp Open Circuit
P0215	Engine Shutoff Request Signal Detected	P0383	Glow Plug Relay Short to Ground
P0218	CAN Communication Fault - Transmission Oil Temperature	P0384	Glow Plug Relay Short to Battery
P0219	Engine Overspeed Detected	P0406	EGR Position Sensor Out of Range High
P0221	Engine Speed Control Signal Fault	P0407	EGR Position Sensor Out of Range Low
P0222	Engine Speed Control Signal Fault	P0408	EGR Flow Rate Error
P0223	Engine Speed Control Signal Fault	P0421	DOC Efficiency Fault (During Regen)
P0224	Engine Speed Control Signal Fault	P042E	EGR Control Position Fault
P0252	Low Fuel Rail Pressure	P042F	EGR Control Position Fault
P0254	Fuel Rail Pressure Control Fault	P049B	EGR Flow Rate Error
P025A	Fuel Metering Unit Open Circuit	P0512	Engine Start Switch Stuck On
P025B	Fuel Metering Unit Fault	P0522	Engine Oil Pressure Sensor Out of Range Low

## DIAGNOSTIC SERVICE CODES (CONT'D)

### Service Codes List (Cont'd)

CODE	DESCRIPTION	CODE	DESCRIPTION
P0523	Engine Oil Pressure Sensor Out of Range High	P06F0	DEF Supply Module Fault
P0527	Fan Speed Timeout Fault	P06F1	DEF Supply Module Fault
P0528	Cooling Fan Overspeed	P0C17	EGR Closed Position Fault
P0529	Cooling Fan Underspeed	P0C18	EGR Closed Position Fault
P0544	Turbine Inlet Temperature Fault	P0C19	EGR Closed Position Fault
P0545	Turbine Inlet Temperature Sensor Out of Range Low	P1013	Engine Speed Fault
P0546	Turbine Inlet Temperature Sensor Out of Range High	P101A	ECU Internal Fault
P055B	Oil Pressure Warning Lamp Open Circuit	P1033	High DPF Inlet Temperature
P055C	Oil Pressure Warning Lamp Short to Ground	P1044	DEF Tank Temperature Sensor Error Low
P055D	Oil Pressure Warning Lamp Short to Battery	P1045	DEF Tank Temperature Sensor Error High
P0562	ECU Battery Voltage Extremely Low	P106C	Low DEF Quality
P0563	ECU Battery Voltage Extremely High	P106D	High DEF Quality
P056D	DEF Supply Module Communication Fault	P1073	High Engine Compartment Temperature
P0591	PTO Lamp Open Circuit	P107D	High Inlet Air Temperature
P0592	PTO Lamp Short to Ground	P108A	DEF Supply Pump Motor Speed Fault
P0593	PTO Lamp Short to Battery	P108B	DEF Supply Pump Motor Speed Fault
P05ED	DEF Heater Line Short to Battery	P108C	DEF Supply Pump Motor Fault
P060B	ECU Calculation Error	P10AD	High Intake Manifold Temperature
P060C	ECU Communication Fault	P1118	High Engine Coolant Temp
P0615	Starter Relay Open Circuit	P1183	High Fuel Temperature
P0616	Starter Relay Short to Ground	P1227	Low DEF Tank Temperature Fault
P0617	Starter Relay Short to Battery	P1230	DEF Tank Level Signal Error
P062D	Injector Bank Short Circuit 1	P12E5	EGR Fault - Level 1 Inducement
P062E	Injector Bank Short Circuit 2	P12E6	EGR Fault - Level 2 Inducement
P062F	ECU Data Read Fault	P12E7	EGR Fault - Level 3 Inducement
P0630	ECU Data Write Fault	P12E8	EGR Fault - Warning
P0641	ECU 5V Sensor Supply Voltage Out of Range High	P12E9	SCR Dosing Interrupted - Level 1 Inducement
P0642	ECU 5V Sensor Supply Voltage Out of Range Low	P12EA	SCR Dosing Interrupted - Level 2 Inducement
P0657	ECU Sensor Supply 1 Short to Ground	P12EB	SCR Dosing Interrupted - Level 3 Inducement
P0658	ECU Sensor Supply 1 Voltage Low	P12EC	SCR Dosing Interrupted - Warning
P0659	ECU Sensor 1 Voltage High	P12F2	DEF Quality - Level 1 Inducement
P0669	High ECU Temperature	P12F3	DEF Quality - Level 2 Inducement
P0685	ECU Main Relay Fault	P12F4	DEF Quality - Level 3 Inducement
P068A	ECU Main Relay Fault	P12F5	DEF Quality - Warning
P06AD	ECU Temperature Sensor Short to Ground	P12F6	SCR Tampering - Level 1 Inducement
P06AE	ECU Temperature Sensor Short to Battery	P12F7	SCR Tampering - Level 2 Inducement

## DIAGNOSTIC SERVICE CODES (CONT'D)

### Service Codes List (Cont'd)

CODE	DESCRIPTION	CODE	DESCRIPTION
P12F8	SCR Tampering - Level 3 Inducement	P1684	ECU Sensor Supply 3 Voltage Fault
P12F9	SCR Tampering - Warning	P1893	DEF Backflow Line Pressure Fault
P1303	SCR Fault Repeat Offense - Level 1 Inducement	P1904	Glow Plug Lamp Short to Ground
P1304	SCR Fault Repeat Offense - Level 2 Inducement	P1906	DPF Regeneration Switch Inhibit Lamp Open Circuit
P1305	SCR Fault Repeat Offense - Level 3 Inducement	P1907	DPF Regeneration Switch Inhibit Lamp Short to Ground
P1450	High DEF Pump Pressure	P1908	DPF Regeneration Switch Inhibit Lamp Short to Battery
P1451	Low DEF Pump Pressure	P190B	High Fuel Rail Pressure
P1452	High DEF Pump Pressure	P190C	Low Fuel Rail Pressure
P1453	DEF Pump Pressure Stabilization Fault	P192E	Check Engine Lamp Open Circuit
P1454	Low DPF Differential Pressure	P192F	Check Engine Lamp Short to Ground
P1457	Low DEF Pump Pressure	P1931	Check Engine Lamp Short to Battery
P1459	DEF Pressure Reduction Fault	P1934	Pressure Relief Valve Fault
P1460	DEF Afterrun Error	P202D	DEF Leakage Fault
P1461	DEF Reverting Valve Pressure Fault	P202E	DEF Dosing Valve Error
P1522	Low Engine Oil Pressure	P2032	DPF Inlet Temperature Sensor Out of Range Low
P1546	High Turbine Inlet Temperature	P2033	DPF Inlet Temperature Sensor Out of Range High
P1562	ECU Battery Voltage Low	P2034	DPF Inlet Temperature Fault
P1563	ECU Battery Voltage High	P203A	DEF Level Sensor Open Circuit
P1564	ECU Battery Voltage Extremely High	P203F	DEF Tank Empty
P1565	ECU Battery Voltage Extremely Low	P2041	DEF Level Sensor Short Circuit
P160B	ECU Internal Fault	P2043	DEF Temperature Sensor Open Circuit
P160C	ECU Internal Fault	P2046	DEF Temperature Sensor Short Circuit
P160D	ECU Internal Fault	P2047	DEF Dosing Valve Short to Battery
P160E	ECU Internal Fault	P2048	DEF Dosing Valve Short to Ground
P160F	ECU Memory Fault	P2049	DEF Dosing Valve Open Circuit
P1610	ECU Internal Fault	P204A	DEF Pressure Fault
P1611	ECU Internal Fault	P204C	DEF Supply Pump Pressure Sensor Out of Range Low
P1612	ECU Internal Fault	P204D	DEF Supply Pump Pressure Sensor Out of Range High
P1613	ECU Internal Fault	P2050	DEF Dosing Valve Short to Battery
P1614	ECU Internal Fault	P2051	DEF Dosing Valve Short to Ground
P1615	ECU Internal Fault	P205E	High DEF Tank Temperature
P1616	ECU Internal Fault	P208A	DEF Supply Pump Motor Open Circuit
P1617	ECU Internal Fault	P208B	DEF Supply Pump Motor Signal Error
P1618	ECU Internal Fault	P208C	DEF Supply Pump Motor Short to Ground
P1619	ECU Internal Fault	P208D	DEF Supply Pump Motor Short to Battery
P1657	ECU Sensor Supply 1 Voltage Fault	P208E	DEF Dosing Valve Blocked
P1669	ECU Sensor Supply 2 Voltage Fault	P20A0	DEF Reverting Valve Open Circuit

**DIAGNOSTIC SERVICE CODES (CONT'D)****Service Codes List (Cont'd)**

<b>CODE</b>	<b>DESCRIPTION</b>	<b>CODE</b>	<b>DESCRIPTION</b>
P20A1	High DEF Reverting Valve Temperature	P2143	EGR H-Bridge Driver Open Circuit
P20A2	DEF Reverting Valve Short to Ground	P2144	EGR H-Bridge Driver Short to Ground
P20A3	DEF Reverting Valve Short to Battery	P2145	EGR H-Bridge Driver Short to Battery
P20A5	DEF Reverting Valve Pressure Fault	P214F	DEF Supply Module Heater Open Circuit
P20AC	DEF Supply Module Heater Fault	P215E	DEF Suction Line Heater SC/STG Fault
P20AD	DEF Supply Module Heater Fault	P215F	DEF Suction Line Heater Open Circuit
P20B0	DEF Supply Module Temperature Fault	P21C2	DEF Main Heater Relay Open Circuit
P20B1	DEF Tank Heater Valve Open Circuit	P21C3	DEF Main Heater Relay Short to Ground
P20B3	DEF Tank Heater Valve Short to Ground	P21C4	DEF Main Heater Relay Short to Battery
P20B4	DEF Tank Heating/Coolant Valve Short to Battery	P21C7	SCR System Main Relay Fault
P20B9	DEF Supply Module Heater Relay Open Circuit	P21C8	SCR System Main Relay Short to Ground
P20BA	DEF Supply Module Heater Fault	P21C9	SCR System Main Relay Short to Battery
P20BB	DEF Supply Module Heater Relay Short to Ground	P21DD	DEF Supply Module Heater Short to Ground
P20BC	DEF Supply Module Heater Relay Short to Battery	P2202	Upstream NOx Sensor Short Circuit
P20BD	DEF Pressure Line Heater Relay Open Circuit	P2203	Upstream NOx Sensor Open Circuit
P20BE	DEF Pressure Line Heater Fault	P2215	Downstream NOx Sensor Short Circuit
P20BF	DEF Pressure Line Heater Relay Short to Ground	P2216	Downstream NOx Sensor Open Circuit
P20C0	DEF Pressure Line Heater Relay Short to Battery	P221C	DEF Pressure Line Heater Electrical Fault
P20C1	DEF Backflow Line Heater Relay Open Circuit	P221D	DEF Pressure Line Heater Open Circuit
P20C2	DEF Backflow Line Heater Fault	P221E	DEF Backflow Line Heater Electrical Fault
P20C3	DEF Backflow Line Heater Relay Short to Ground	P221F	DEF Backflow Line Heater Open Circuit
P20C4	DEF Backflow Line Heater Relay Short to Battery	P2228	Atmospheric Pressure Low Fault
P20C5	DEF Suction Line Heater Relay Open Circuit	P2229	Atmospheric Pressure High Fault
P20C6	DEF Suction Line Heater Fault	P225D	Low Upstream NOx Concentration
P20C7	DEF Suction Line Heater Relay Short to Ground	P2265	Water in Fuel Detected - Derate
P20C8	DEF Suction Line Heater Relay Short to Battery	P2266	Water in Fuel Sensor Out of Range Low
P20EE	SCR Efficiency Low	P2267	Water in Fuel Sensor Out of Range High
P20FF	DEF Supply Module Communication Timeout	P2269	Water in Fuel Detected
P2135	Engine Speed Control Signal Fault	P2381	Glow Plug Lamp Short to Battery
P2136	Engine Speed Control Signal Fault	P2383	Upstream NOx Sensor Installation Fault
P213E	ECU Internal Shutdown	P2384	Downstream NOx Sensor Installation Fault

## DIAGNOSTIC SERVICE CODES (CONT'D)

### Service Codes List (Cont'd)

CODE	DESCRIPTION	CODE	DESCRIPTION
P2397	Upstream NOx Concentration Low	P260F	DPF Regeneration Enable Switch Lamp Short to Ground
P2398	Downstream NOx Concentration Low	P2611	DPF Regeneration Enable Switch Lamp Short to Battery
P23B2	DEF Supply Module Heater Fault	P2632	Fuel Feed Pump Open Circuit
P23B3	DEF Supply Module Heater Temperature Fault	P2633	Fuel Feed Pump Short to Ground
P23B4	DEF Supply Module Heater Temperature Fault	P2634	Fuel Feed Pump Short to Battery
P23B5	DEF Supply Module Temperature Fault	P2635	Fuel Feed Pump Fault
P23B6	DEF Supply Module Temperature Fault	P263D	DEF Pressure Line Heating Fault
P242F	High DPF Ash Content - Ash Cleaning Needed	P2669	ECU Sensor Supply 2 Short to Ground
P2454	DPF Differential Pressure Sensor Out of Range Low	P2670	ECU Sensor Supply 2 Out of Range Low
P2455	DPF Differential Pressure Sensor Out of Range High	P2671	ECU Sensor Supply 2 Out of Range High
P2463	High DPF Soot Mass - Regen Required	P2684	ECU Sensor Supply 3 Short to Ground
P246B	DPF Regeneration Failure	P2685	ECU Sensor Supply 3 Out of Range Low
P246C	High DPF Differential Pressure - DPF Plugged	P2686	ECU Sensor 3 Out of Range High
P24A3	Very High DPF Soot Mass - Service Regen Required	P268C	Injector #1 IQA Code Missing
P2505	High ECU Temperature	P268D	Injector #2 IQA Code Missing
P2506	ECU Software Reset	P268E	Injector #3 IQA Code Missing
P2507	ECU Internal Fault	P268F	Injector #4 IQA Code Missing
P2508	ECU Internal Fault	P273F	High Transmission Oil Temperature (CAN)
P2509	ECU Internal Fault	P274F	High Transmission Oil Temperature (H/W Switch)
P250A	Oil Level/Temp Sensor Open Circuit	P2C11	DEF Dosing Valve Fault
P250C	Oil Level/Temp Sensor Short to Ground	P304C	Low DEF Supply Pump Pressure
P250D	Oil Level/Temp Sensor Short to Battery	P304D	High DEF Supply Pump Pressure
P250F	Very Low Engine Oil Level	P3052	DPF Differential Pressure Sensor Fault
P2511	ECU Internal Fault	P30B1	High DEF Tank Heating/Coolant Valve Fault
P2546	Multi-Torque Switch Out of Range Low	P30B9	High DEF Supply Module Heater Relay Fault
P2547	Multi-Torque Switch Out of Range High	P30BD	High DEF Pressure Line Heater Relay Fault
P25BA	DPF Regeneration Inhibit and Enable Switch Fault	P30C1	High DEF Backflow Line Heater Relay Fault
P25BB	DPF Regeneration Enable Switch Short to Battery	P30C5	High DEF Suction Line Heater Relay Fault
P25BC	DPF Regeneration Inhibit Switch Short to Battery	P31C5	High DEF Main Heater Relay Fault
P260E	DPF Regeneration Enable Switch Lamp Open Circuit	P32EE	Injector #1 Short Circuit

## DIAGNOSTIC SERVICE CODES (CONT'D)

### Service Codes List (Cont'd)

CODE	DESCRIPTION	CODE	DESCRIPTION
P32EF	Injector #2 Short Circuit	U029D	ECU CAN Communication Fault - Upstream NOx Sensor
P32F0	Injector #3 Short Circuit	U029E	ECU CAN Communication Fault - Downstream NOx Sensor
P32F1	Injector #4 Short Circuit	U02A2	ECU CAN Communication Fault - DEF Tank
P350D	Oil Level/Temp Sensor Communication Fault	U030D	Upstream NOx Sensor Heating Fault
P350E	Oil Level/Temp Sensor Fault	U030E	Downstream NOx Sensor Heating Fault
P350F	Low Engine Oil Level	U043D	ECU CAN Communication Fault - Engine Speed Control
P360E	DPF Regeneration Active Lamp Open Circuit	U0606	ECU CAN Communication Fault - Engine Speed Control
P360F	DPF Regeneration Active Lamp Short to Ground	U0607	ECU CAN Communication Fault
P3611	DPF Regeneration Active Lamp Short to Battery	U0608	ECU CAN Communication Fault - Engine Speed Control
		U0619	ECU CAN Communication Fault - DEF Sensor
R3327	IQ touch CAN error	U0632	ECU CAN Communication Fault - Cooling Fan Control
R3334	IQ touch CAN RX error	U1001	CAN Communication Fault - Hydraulic Oil Temperature
R3335	IQ touch CAN TX error	U1003	ECU Received Engine Shutdown Request from Machine Controller
R7404	Main controller no communication	U1028	DEF Quality Sensor Open Circuit
		U1030	DEF Quality Sensor Short Circuit
T9002	Service tool output 'C' error ON	U1031	ECU CAN Communication Fault
T9003	Service tool output 'C' error OFF	U1032	ECU CAN Communication Fault - PTO
T9102	Service tool output 'D' error ON	U1033	ECU CAN Communication Fault - Starter Relay
T9103	Service tool output 'D' error OFF		
T9202	Service tool output 'E' error ON	W0176	Input selection flipped while operating
T9203	Service tool output 'E' error OFF	W0321	Battery voltage out of range high
T9302	Service tool output 'F' error ON	W0322	Battery voltage out of range Low
T9303	Service tool output 'F' error OFF	W0521	Lift spool position sensor out of range high
		W0522	Lift spool position sensor out of range low
U0028	ECU CAN Communication Fault	W0524	Lift spool position sensor not in neutral
U0029	ECU CAN Communication Fault	W0525	Lift spool position sensor unresponsive
U010F	ECU CAN Communication Fault	W0595	Lift spool position sensor inverted movement
U013C	ECU CAN Communication Fault - Engine Speed	W0621	Tilt spool position sensor out of range high
U01B7	ECU CAN Communication Fault - Regeneration Switch	W0622	Tilt spool position sensor out of range low
U01B8	ECU CAN Communication Fault - Multiple Torque Switch	W0624	Tilt spool position sensor not in neutral

## DIAGNOSTIC SERVICE CODES (CONT'D)

### Service Codes List (Cont'd)

CODE	DESCRIPTION	CODE	DESCRIPTION
W0625	Tilt spool position sensor unresponsive	W3239	ACS (AHC) lift actuator not in NEUTRAL
W0695	Tilt spool position sensor inverted movement	W3240	ACS (AHC) lift handle / pedal not in NEUTRAL
W1005	Lift base solenoid short to battery	W3241	ACS (AHC) no communication
W1006	Lift base solenoid short to ground	W3249	ACS (AHC) lift actuator short to earth
W1007	Lift base solenoid open circuit	W3250	ACS (AHC) tilt actuator short to earth
W1032	Lift base solenoid overcurrent	W3251	ACS (AHC) lift actuator short to battery
W1105	Lift rod solenoid short to battery	W3252	ACS (AHC) tilt actuator short to battery
W1106	Lift rod solenoid short to ground	W3253	ACS (AHC) lift handle / pedal short to earth
W1107	Lift rod solenoid open circuit	W3254	ACS (AHC) tilt handle / pedal short to earth
W1132	Lift rod solenoid overcurrent	W3255	ACS (AHC) lift handle / pedal short to battery
W1205	Tilt base solenoid short to battery	W3256	ACS (AHC) tilt handle / pedal short to battery
W1206	Tilt base solenoid short to ground	W3257	ACS (AHC) lift actuator reduced performance
W1207	Tilt base solenoid open circuit	W3258	ACS (AHC) tilt actuator reduced performance
W1232	Tilt base solenoid overcurrent	W3259	ACS (AHC) lift actuator wrong direction
W1305	Tilt rod solenoid short to battery	W3260	ACS (AHC) tilt actuator wrong direction
W1306	Tilt rod solenoid short to ground	W3261	ACS (AHC) handle lock short to earth
W1307	Tilt rod solenoid open circuit	W3262	ACS (AHC) handle lock short to battery
W1332	Tilt rod solenoid overcurrent	W3263	ACS (AHC) pedal lock short to earth
W1505	Pedal lock short to battery	W3264	ACS (AHC) pedal lock short to battery
W1506	Pedal lock short to ground	W3265	ACS (AHC) sensor supply voltage out of range
W1507	Pedal lock open circuit	W3266	ACS (AHC) battery voltage out of range
W1605	Handle lock short to battery	W3267	ACS (AHC) switch flipped while operating
W1606	Handle lock short to ground	W3268	ACS (AHC) lift handle information error
W1607	Handle lock open circuit	W3269	ACS (AHC) control mode toggle switched while operating
W2021	Lift handle sensor out of range high	W3270	ACS (AHC) right drive handle short to earth
W2022	Lift handle sensor out of range low	W3271	ACS (AHC) right drive handle short to battery
W2121	Lift pedal sensor out of range high	W3274	ACS (AHC) left joystick X-axis out of range
W2122	Lift pedal sensor out of range low	W3275	ACS (AHC) interrupted unswitched power
W2221	Tilt handle sensor out of range high	W3276	ACS (AHC) CAN joystick information error
W2222	Tilt handle sensor out of range low	W3277	ACS (AHC) remote control information error
W2321	Tilt pedal sensor out of range high	W3295	Workgroup calibration passed
W2322	Tilt pedal sensor out of range low	W3296	Workgroup calibration failed
W2824	Lift input not in NEUTRAL	W3297	ACS (AHC) controller programmed
W2924	Tilt input not in NEUTRAL	W3298	Workgroup in calibration mode
W3128	Interrupted power failure	W3299	Workgroup calibration required
W3204	ACS (AHC) no communication to Bobcat controller	W3304	Main controller no communication
W3223	ACS (AHC) calibration required	W3904	Left joystick no communication
W3224	ACS (AHC) calibration performed	W3905	Left joystick X-axis not in NEUTRAL
W3225	ACS (AHC) actuator calibration failed	W4004	Right joystick no communication
W3231	ACS (AHC) tilt actuator	W4005	Right joystick X-axis not in NEUTRAL
W3232	ACS (AHC) tilt actuator wiring	W4007	Right joystick Y-axis not in NEUTRAL
W3233	ACS (AHC) tilt handle wiring	W4721	Sensor supply out of range high
W3234	ACS (AHC) tilt actuator not in NEUTRAL	W4722	Sensor supply out of range low
W3235	ACS (AHC) tilt handle / pedal not in NEUTRAL	W5004	Lift float failed to maintain float
W3236	ACS (AHC) lift actuator	W7304	Remote control no communication
W3237	ACS (AHC) lift actuator wiring	W7504	Drive controller no communication
W3238	ACS (AHC) lift handle wiring		

## CONTROL PANEL SETUP

### Right Panel Setup (Deluxe Instrumentation Panel)

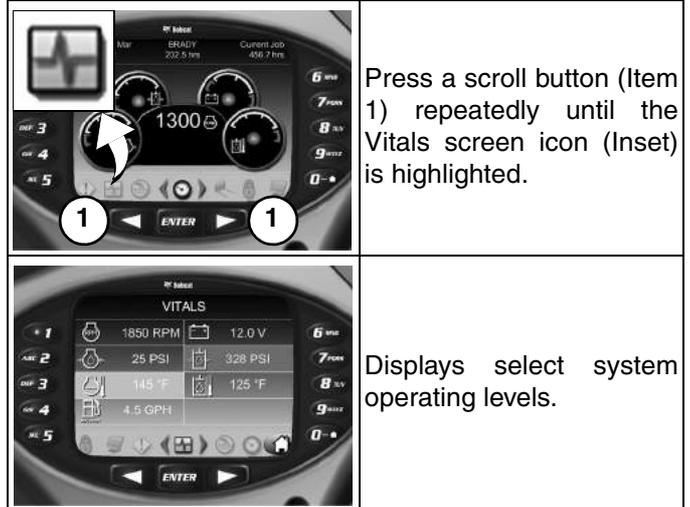
#### Icon Identification

Figure 289



ICON	DESCRIPTION
	DATE / TIME
	USER / HOURMETER
	CURRENT JOB HOURS
	ACTIVE WARNINGS screen icon
	VITALS screen icon
	SERVICE screen icon
	MAIN screen icon
	ATTACHMENTS screen icon
	MACHINE SETTINGS screen icon
	DISPLAY screen icon
	HOME icon (Return to MAIN screen)
	LEFT SCROLL button
	RIGHT SCROLL button
	ENTER button

#### Vitals



Press a scroll button (Item 1) repeatedly until the Vitals screen icon (Inset) is highlighted.

Displays select system operating levels.

You can monitor real-time displays of:

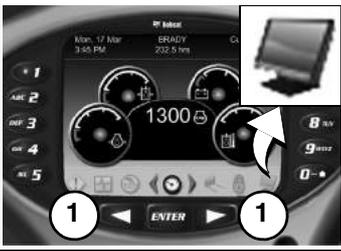
- Engine Speed
- Engine Oil Pressure
- Engine Coolant Temperature
- Fuel Consumption
- System Voltage
- Hydraulic Charge Pressure
- Hydraulic Fluid Temperature

The Deluxe Instrumentation Panel is easy to use. Continue to set your own preferences for operating / monitoring your Bobcat loader.

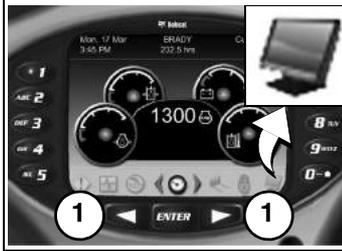
## CONTROL PANEL SETUP (CONT'D)

### Right Panel Setup (Deluxe Instrumentation Panel) (Cont'd)

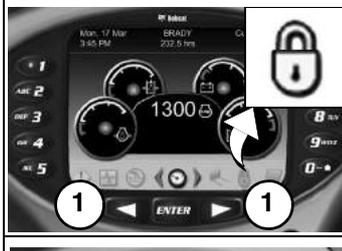
#### Date And Time

	<p>Press a scroll button (Item 1) repeatedly until the Display screen icon (Inset) is highlighted.</p>
	<p>Select <b>[1. CLOCKS]</b>.</p>
	<p>Select <b>[1. TIME]</b>.</p>
	<p>Use the keypad to enter time. Select AM / PM / 24hr. Press <b>[ENTER]</b> to continue.</p>
	<p>Select <b>[2. DATE]</b>.</p>
	<p>Use the keypad to enter date. Press <b>[ENTER]</b> to continue.</p>

#### English / Metric Display

	<p>Press a scroll button (Item 1) repeatedly until the Display screen icon (Inset) is highlighted.</p>
	<p>Select <b>[4. DISPLAY SETTINGS]</b>.</p>
	<p>Press <b>[1]</b> to cycle between ENGLISH and METRIC.</p>

#### Auto Idle Time Delay

	<p>Press a scroll button (Item 1) repeatedly until the Machine Settings screen icon (Inset) is highlighted.</p>
	<p>Select <b>[3. ENGINE SETTINGS]</b>.</p>
	<p>Use the keypad to enter the desired delay time between 4 and 250 seconds. Press <b>[ENTER]</b> to save and continue. Press left scroll button to exit without saving.</p>

## CONTROL PANEL SETUP (CONT'D)

### Right Panel Setup (Deluxe Instrumentation Panel) (Cont'd)

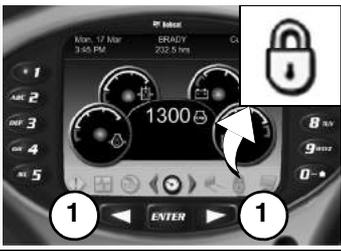
#### Job Clock Reset

	<p>Press a scroll button (Item 1) repeatedly until the Machine Settings screen icon (Inset) is highlighted.</p>
	<p>Select <b>[1. PASSWORDS / LOCKOUTS]</b>.</p>
	<p>Enter owner password and press <b>[ENTER]</b>.</p>
	<p>Select <b>[1. USER SETTINGS]</b>.</p>
	<p>Select user.</p>
	<p>Select <b>[3. RESET JOB STATISTICS]</b>.</p>
	<p>Press <b>[9]</b> to reset job statistics.</p> <p>Press left scroll button or <b>[0]</b> to exit without saving.</p>

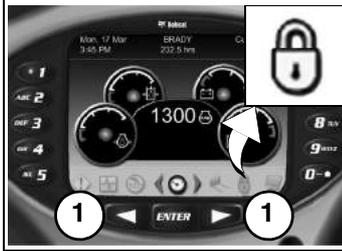
## CONTROL PANEL SETUP (CONT'D)

### Right Panel Setup (Deluxe Instrumentation Panel) (Cont'd)

#### Machine Lockouts (High Flow And Two-Speed)

	<p>Press a scroll button (Item 1) repeatedly until the Machine Settings screen icon (Inset) is highlighted.</p>
	<p>Select [1. PASSWORDS / LOCKOUTS].</p>
	<p>Enter owner password and press [ENTER].</p>
	<p>Select [3. HIGH FLOW]. <b>OR</b> Select [4. TWO-SPEED].</p>
	<p><b>HIGH FLOW</b></p> <p>Press user number to cycle between LOCKED and UNLOCKED.</p>
	<p><b>TWO-SPEED</b></p> <p>Press user number to cycle between LOCKED and UNLOCKED.</p>

#### Machine Lockouts (Travel Speed) (SJC Only)

	<p>Press a scroll button (Item 1) repeatedly until the Machine Settings screen icon (Inset) is highlighted.</p>
	<p>Select [1. PASSWORDS / LOCKOUTS].</p>
	<p>Enter owner password and press [ENTER].</p>
	<p>Select [5. TRAVEL SPEED].</p>
	<p><b>TRAVEL SPEED</b></p> <p>Select user.</p>
	<p><b>FORWARD / REVERSE TRAVEL SPEED LIMIT</b></p> <p>Enter forward travel speed limit as a percentage and press [ENTER] to save.</p> <p>Enter reverse travel speed limit as a percentage and press [ENTER] to save.</p>

**NOTE:** High-Flow and Two-Speed lockouts for the owner are active even if the Password Lockout feature is unlocked.

## PASSWORD SETUP (DELUXE INSTRUMENTATION PANEL)

### Password Description

All new machines arrive at Bobcat dealerships with the Deluxe Instrumentation Panel keypad in locked mode. Locked mode means that a password must be used to start the engine.

For security purposes, your dealer may change the password and set the keypad in the locked mode. Your dealer will provide you with the password.

#### Master Password:

A permanent, randomly selected password set at the factory that cannot be changed. This password is used for service by the Bobcat dealer if the owner password is not known or to change the owner password.

#### Owner Password:

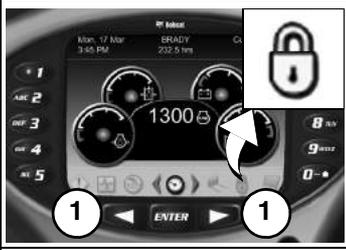
Allows for full use of the loader and to set up the Deluxe Instrumentation Panel. There is only one owner password. The owner password must be used to change the owner or user passwords. Owner should change the password as soon as possible for security of the loader.

#### User Password:

Allows starting and operating the loader; cannot change passwords or lockout features.

For the procedures to change passwords: (See Changing The Owner Password on Page 206.) and (See Changing The User Passwords on Page 207.)

### Changing The Owner Password

	<p>Press a scroll button (Item 1) repeatedly until the Machine Settings screen icon (Inset) is highlighted.</p>
	<p>Select <b>[1. PASSWORDS / LOCKOUTS]</b>.</p>
	<p>Enter owner password and press <b>[ENTER]</b>.</p>
	<p>Select <b>[1. USER SETTINGS]</b>.</p>
	<p>Select <b>[1. OWNER]</b>.</p>
	<p>Select <b>[2. CHANGE PASSWORD]</b>.</p>
	<p>Enter new owner password and press <b>[ENTER]</b>.</p> <p>You will be prompted to reenter the new owner password.</p>

# PASSWORD SETUP (DELUXE INSTRUMENTATION PANEL) (CONT'D)

## Changing The User Passwords

	<p>Press a scroll button (Item 1) repeatedly until the Machine Settings screen icon (Inset) is highlighted.</p>																														
	<p>Select <b>[1. PASSWORDS / LOCKOUTS]</b>.</p>																														
	<p>Enter owner password and press <b>[ENTER]</b>.</p>																														
	<p>Select <b>[1. USER SETTINGS]</b>.</p>																														
 <table border="1" data-bbox="100 1218 443 1464"> <thead> <tr> <th>NAME</th> <th>PASSWOERD</th> <th>JOB CLOCK</th> </tr> </thead> <tbody> <tr> <td>1. SPENCER</td> <td>DWNGR1</td> <td>2.3</td> </tr> <tr> <td>2. TONY</td> <td>0123456789</td> <td>9999.9</td> </tr> <tr> <td>3. BRADY</td> <td>22222</td> <td>123.3</td> </tr> <tr> <td>4. BART</td> <td>456789</td> <td>0.0</td> </tr> <tr> <td>5. AL</td> <td>35533</td> <td>452.5</td> </tr> <tr> <td>6. ELEAN</td> <td>12345</td> <td>789.2</td> </tr> <tr> <td>7. MICHAL</td> <td>55555</td> <td>-38.2</td> </tr> <tr> <td>8. JOHN</td> <td>84201</td> <td>6.0</td> </tr> <tr> <td>9. EMPTY</td> <td></td> <td>9.0</td> </tr> </tbody> </table>	NAME	PASSWOERD	JOB CLOCK	1. SPENCER	DWNGR1	2.3	2. TONY	0123456789	9999.9	3. BRADY	22222	123.3	4. BART	456789	0.0	5. AL	35533	452.5	6. ELEAN	12345	789.2	7. MICHAL	55555	-38.2	8. JOHN	84201	6.0	9. EMPTY		9.0	<p>Select user.</p>
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1. SPENCER	DWNGR1	2.3																													
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	<p>Select <b>[2. CHANGE PASSWORD]</b>.</p>																														
	<p>Enter new user password and press <b>[ENTER]</b>.</p>																														

## Password Lockout Feature

This feature allows the owner to unlock the password feature so that a password does not need to be used every time the engine is started.

	<p>Press a scroll button (Item 1) repeatedly until the Machine Settings screen icon (Inset) is highlighted.</p>
	<p>Select <b>[1. PASSWORDS / LOCKOUTS]</b>.</p>
	<p>Enter owner password and press <b>[ENTER]</b>.</p>
	<p>Select <b>[2. MACHINE LOCK]</b>.</p>

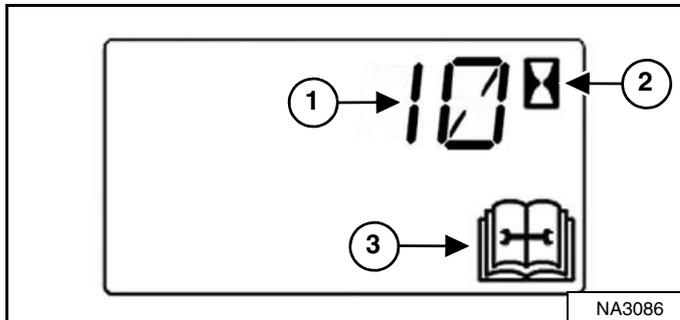
**NOTE:** The procedure above can be followed to reset the machine lock so that the machine requires a password to start the engine.

## MAINTENANCE CLOCK

### Description

The Maintenance Clock alerts the operator when the next service interval is due. *EXAMPLE:* The maintenance clock can be set to a 500 hour interval as a reminder for the next 500 hour planned maintenance.

Figure 290



During machine operation, a 2 beep alarm will sound when there are less than 10 hours until the next planned maintenance.

The remaining hours before maintenance is required (Item 1) will appear in the data display for 5 seconds while the service icon (Item 3) and the hourmeter icon (Item 2) [Figure 290] flash.

**NOTE: The display will show negative numbers after counting down to zero.**

The display will revert to the previous display and will appear for 5 seconds every time the machine is started until the maintenance clock is reset.

Figure 291



The Deluxe Instrumentation Panel will display a message (Item 1) [Figure 291] alerting the operator to service the machine.

This message will appear for 10 seconds every time the machine is started until the maintenance clock is reset.

Figure 292



The Deluxe Instrumentation Panel will display a bar (Item 1) [Figure 292] showing the time remaining until next service. This bar will turn red when service is past due. [NEXT MAINTENANCE DUE] will change to [MAINTENANCE PAST DUE] and display the number of hours past due.

Keys [4] and [9] can be used to adjust the service interval when the owner is logged in [Figure 292].

## **MAINTENANCE CLOCK (CONT'D)**

### **Setup**

See your Bobcat dealer about installation of this feature.

### **Reset**

See your Bobcat dealer to reset the maintenance clock.

## SPECIFICATIONS

LOADER SPECIFICATIONS .....	.211
Machine Dimensions .....	.211
Performance .....	.212
Engine .....	.212
Drive System .....	.213
Controls .....	.213
Hydraulic System .....	.214
Electrical System .....	.215
Capacities .....	.215
Tyres .....	.216
Environmental .....	.216
Temperature Range .....	.216

Certain specification(s) are based on engineering calculations and are not actual measurements. Specification(s) are provided for comparison purposes only and are subject to change without notice. Specification(s) for your individual Bobcat equipment will vary based on normal variations in design, manufacturing, operating conditions, and other factors.



## LOADER SPECIFICATIONS (CONT'D)

### Performance

Rated Operating Capacity (ISO 14397-1)	654 kg (1442 lb)
Tipping Load (ISO 14397-1)	1308 kg (2884 lb)
Operating Weight	2436 kg (5370 lb)
Breakout Force – Lift	1386 kg (3056 lb)
Breakout Force – Tilt	1777 kg (3918 lb)
Travel Speed:	
– Single Speed Loader	0 – 12,3 km/h (0 – 7.6 mph)
– Two-Speed Loader (Option):	
Low Range	0 – 10,5 km/h (0 – 6.5 mph)
High Range	0 – 14,8 km/h (0 – 9.2 mph)

### Engine

Make / Model	Bobcat Engine / 2,4L Bobcat Engine Stage V
Fuel / Cooling	Diesel / Liquid
Horsepower:	
– ISO 9249 EEC / SAE J1349 Net	34,7 kW (46.5 hp) @ 2600 rpm
– ISO 14396 Gross	36,5 kW (49.0 hp) @ 2600 rpm
– SAE J1995 Gross	37,0 kW (49.7 hp) @ 2600 rpm
– Rated Power	36,5 kW (49.0 hp) @ 2600 rpm
Torque:	
– ISO 9249 EEC / SAE J1349 Net	172,1 N•m (126.9 ft-lb) @ 1800 rpm
– ISO 14396 Gross	182,2 N•m (134.3 ft-lb) @ 1800 rpm
– SAE J1995 Gross	184,5 N•m (136.1 ft-lb) @ 1800 rpm
– Rated Torque	182,0 N•m (134.2 ft-lb) @ 1800 rpm
Low Idle rpm	1125 – 1175
High Idle rpm	2575 – 2625
Number of Cylinders	4
Displacement	2393 cm <sup>3</sup> (146 in <sup>3</sup> )
Bore / Stroke	90 mm / 94 mm (3.54 in / 3.70 in)
Lubrication	Gear Pump Pressure System with Filter
Crankcase Ventilation	Closed Breathing
Air Cleaner	Dry replaceable paper cartridge with separate safety element
Ignition	Diesel – Compression
Air Induction	Turbo-Charged and Intercooled
Engine Coolant	Propylene Glycol / Water Mixture
Starting Aid	Glow plugs automatically activated as needed in RUN position

## LOADER SPECIFICATIONS (CONT'D)

### Drive System

Main Drive	Fully hydrostatic, 4-wheel drive
Transmission	Infinitely variable tandem hydrostatic piston pumps, driving two fully reversing hydrostatic motors
Final Drive	Prestressed #80 endless roller chain (no master link) and sprockets in sealed chaincase with oil lubrication (Chains do not require periodic adjustments) Two chains per side with no idler sprocket
Axle Size	50,29 mm (1.98 in), heat treated
Wheel Bolts	Eight – 9/16 in. wheel bolts fixed to axle hubs

### Controls

Machine Steering	Direction and speed controlled by two hand operated steering levers or optional joystick(s)
Loader Hydraulics: – Lift and Tilt – Front Auxiliary – Rear Auxiliary (Option)	Controlled by separate foot pedals or optional joystick(s) Controlled by electrical switch on Right Hand steering lever or joystick Controlled by electrical switch on Left Hand steering lever or joystick
Auxiliary Pressure Release	Pressure relieved through quick couplers; Push couplers in, hold for 5 seconds
Engine	Hand operated speed control, additional foot operated speed control pedal with SJC option; key-type start switch with Deluxe Instrumentation Panel and function error shutdown
Service Brake	Two independent hydrostatic systems controlled by two hand operated steering levers or optional joystick(s)
Secondary Brake	One of the hydrostatic transmissions
Parking Brake	Mechanical disc activated by manually operated switch on left instrument panel

## LOADER SPECIFICATIONS (CONT'D)

### Hydraulic System

Pump Type	Engine driven, gear type
Pump Capacity	63,2 L/min (16.7 U.S. gpm)
System Relief at Quick Couplers	22,4 – 23,1 MPa (224 – 231 bar) (3250 – 3350 psi)
Filter (Hydraulic / Hydrostatic)	Replaceable beta 10 micron = 200, drop in element
Filter (Charge)	Replaceable beta 10 micron = 200, spin-on element
Hydraulic Cylinders:	Double-acting; lift cylinders have cushioning feature on lower, tilt cylinders have cushioning feature on dump and rollback
Lift Cylinder (2):	
Bore Diameter	50,8 mm (2.00 in)
Rod Diameter	31,8 mm (1.25 in)
Stroke	665,2 mm (26.19 in)
Tilt Cylinder (2):	
Bore Diameter	60,4 mm (2.38 in)
Rod Diameter	31,8 mm (1.25 in)
Stroke	353,8 mm (13.93 in)
Control Valve – Standard	3-Spool, open centre, manually operated with spring detent for lift float; Electrically controlled auxiliary spool
Control Valve – SJC	3-Spool, open centre with electric actuator controlled lift with float and tilt; Electrically controlled auxiliary spool
Fluid Lines	SAE Standard tubelines, hoses, and fittings
Hydraulic Function Time:	
Raise Lift Arms	2.5 seconds
Lower Lift Arms	2.0 seconds
Bucket Dump	1.8 seconds
Bucket Rollback	1.5 seconds

## LOADER SPECIFICATIONS (CONT'D)

### Electrical System

Alternator	Belt driven, 90 amperes, open frame
Battery	12 volt, 700 cold cranking amperes @ -18°C (0°F), 110 minute reserve capacity @ 25 amperes
Starter	12 volt, gear type, 3,2 kW (4.29 hp)
Instrumentation	<p style="text-align: center;"><b>Gauges:</b></p> <p style="text-align: center;">Engine Coolant Temperature and Fuel Level</p> <p style="text-align: center;"><b>Warning lights:</b></p> <p style="text-align: center;">Fuel Level, Seat Belt, Engine Coolant Temperature, Engine Malfunction, Hydraulic System Malfunction, and General Warning</p> <p style="text-align: center;"><b>Indicators:</b></p> <p style="text-align: center;">BICS™ Functions, Two-Speed, 3-Point Restraint, and Turn Signals</p> <p style="text-align: center;"><b>Data Display:</b></p> <p style="text-align: center;">Operating Hours, Engine rpm, Speed Management Setting, Maintenance Clock Countdown, Battery Voltage, Service Codes, Engine Preheat Countdown, Lift and Tilt Compensation Setting, Steering Drift Compensation Setting, and Drive Response Setting</p> <p style="text-align: center;"><b>Other:</b></p> <p style="text-align: center;">Audible Alarm, Lights, and Option / Accessory Switches</p> <p style="text-align: center;"><b>Deluxe Instrumentation Panel:</b></p> <p style="text-align: center;">Additional display for: Engine rpm, Engine Coolant Temperature, Engine Oil Pressure, System Voltage, Hydraulic Fluid Temperature, Hydrostatic Charge Pressure, Hot Exhaust System Temperature (HEST), and DPF Soot Load</p> <p style="text-align: center;">*Additional Features Included: Keyless Start, Digital Clock, Job Clock, Password Lockout, Multiple-Language Display, Help Screens, Diagnostic Capability, Engine / Hydraulic Systems Shutdown Function, and DPF Management</p>

### Capacities

Fuel	53,8 L (14.2 U.S. gal)
Engine Oil with Filter Change	8,6 L (9.1 qt)
Engine Cooling System with Heater	12,3 L (3.2 U.S. gal)
Engine Cooling System without Heater	11,3 L (3.0 U.S. gal)
Hydraulic / Hydrostatic Reservoir	5,3 L (1.4 U.S. gal)
Hydraulic / Hydrostatic System	21,0 L (5.5 U.S. gal)
Chaincase Reservoir	21,0 L (5.5 U.S. gal)
Air Conditioning Refrigerant (R-134a)	0,68 kg (1.5 lb)

## LOADER SPECIFICATIONS (CONT'D)

### Tyres

Heavy Duty (Standard)	10.00 – 16.5, 10 Ply Rating
Heavy Duty Offset (Option)	7.00 – 15, 8 Ply Rating
Industrial Flex (Option)	31 x 10 – 20
Severe Duty (Option)	10.00 – 16.5, 10 Ply Rating
Solidflex (Option)	31 x 6 x 10
Standard Duty (Option)	10.00 – 16.5, 8 Ply Rating
Versatile Duty (Option)	10.00 – 16.5, 10 Ply Rating
Recommended Pressure	Inflate tyres to MAXIMUM pressure shown on the sidewall of the tyre; DO NOT mix brands of tyres used on the same loader

### Environmental

DECLARED SINGLE-NUMBER NOISE EMISSION VALUES In accordance with ISO 4871	
Noise level per Directive 2000/14/EC - $L_{WA}$	99 dB(A)
Operator noise level per Directive 2006/42/EC — $L_{pA}$	86 dB(A)

DECLARED VIBRATION EMISSION VALUES In accordance with EN 12096		
	Value	Uncertainty
Whole-body vibration per ISO 2631-1	0,78 m/s <sup>2</sup>	0,39 m/s <sup>2</sup>
Hand-arm vibration per ISO 5349-1	1,29 m/s <sup>2</sup>	- - -

Machine equipped with optional HVAC (air condition) contains fluorinated greenhouse gas (F-gas)	
F-gas type	HFC-134a
F-gas mass (kg)	0.68
CO2 equivalent (t)	0.97
GWP	1430

### Temperature Range

Operation and storage	-26 – +43°C (-15 – +110°F)
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**WARRANTY**

WARRANTY ..... 218

# WARRANTY

## BOBCAT® LOADERS

Doosan Bobcat EMEA s.r.o. ("Doosan") warrants to its authorized dealers who in turn warrants to the customer that each new Bobcat® Loader retailed after 1st January 2020 will be free from defects in material and workmanship for twenty four (24) months from the date of delivery to the customer or 2000 hours of machine usage, whichever occurs first. During the warranty period, the authorized Doosan dealer shall repair or replace, at Doosan's option, without charge for parts, labour and travel of technicians, any part of the Doosan product which fails because of defects in material or workmanship. The customer shall provide the authorized Doosan dealer with prompt written notice of the defect and allow reasonable time for replacement or repair. Doosan may, at its option, request failed parts to be returned to the factory or to any other designated location. Transportation of the Doosan product to the authorized Doosan dealer for warranty work is not the responsibility of Doosan. Service schedules must adhere to prescribed intervals and Bobcat® genuine parts/lubricants must be used. The warranty does not apply to tyres, tracks or other accessories not manufactured by Doosan. For coverage on engines, consult with your Bobcat® Dealer. For these non-covered items, the customer shall refer solely to the warranty, if any, of the respective manufacturers thereof, in accordance with the respective manufacturers warranty statement. Some Doosan parts are covered pro-rata depending on the expected life-time of the part. Coverage for air-conditioning refill and couplers is limited as failures generally originate from factors not under Doosan's control such as, but not limited to, prolonged storage or abuse. Reduced coverage is, depending on the component, limited from 50 to 500 operating hours. The warranty does not cover: (i) Oils and lubricants, coolant fluids, filter elements, brake linings, tune-up parts, bulbs, fuses, alternator fan belts, drive belts, pins, bushings and other high-wear items. (ii) Damages resulting from abuse, accidents, alterations, use of the product with any bucket or attachment not approved by Doosan, air flow obstructions, or failure to maintain or use the Doosan product according to the instructions applicable to it. (iii) Ground engaging parts such as bucket teeth and cutting edges. (iv) Fuel or hydraulic system cleaning, engine tune-up, brake inspection or adjustment. (v) Adjustments or slight defects which generally do not affect the stability or reliability of the machine.

DOOSAN EXCLUDES OTHER CONDITIONS, WARRANTIES OR REPRESENTATIONS OF ALL KINDS, EXPRESSED OR IMPLIED, STATUTORY OR OTHERWISE (EXCEPT THAT OF TITLE) INCLUDING ALL IMPLIED WARRANTIES AND CONDITIONS RELATING TO MERCHANTABILITY, SATISFACTORY QUALITY AND FITNESS FOR A PARTICULAR PURPOSE. CORRECTIONS BY DOOSAN OF NONCONFORMITIES WHETHER PATENT OR LATENT, IN THE MANNER AND FOR THE TIME PERIOD PROVIDED ABOVE, SHALL CONSTITUTE FULFILLMENT OF ALL LIABILITIES OF DOOSAN FOR SUCH NONCONFORMITIES, WHETHER BASED ON CONTRACT, WARRANTY, TORT, NEGLIGENCE, INDEMNITY, STRICT LIABILITY OR OTHERWISE WITH RESPECT TO OR ARISING OUT OF SUCH PRODUCT. THE REMEDIES OF THE END-USER/OWNER SET FORTH UNDER THE PROVISIONS OF THE WARRANTY OUTLINED ABOVE ARE EXCLUSIVE AND THE TOTAL LIABILITY OF DOOSAN INCLUDING ANY HOLDING, SUBSIDIARY, ASSOCIATED OR AFFILIATED COMPANY OR DISTRIBUTOR WITH RESPECT TO THIS SALE OR THE PRODUCT AND SERVICE FURNISHED HEREUNDER IN CONNECTION WITH THE PERFORMANCE OR BREACH THEREOF, OR FROM DELIVERY, INSTALLATION, REPAIR OR TECHNICAL DIRECTION COVERED BY OR FURNISHED UNDER THIS SALE, WHETHER BASED ON CONTRACT, WARRANTY, TORT, NEGLIGENCE, INDEMNITY, STRICT LIABILITY OR OTHERWISE SHALL NOT EXCEED THE PURCHASE PRICE OF THE PRODUCT UPON WHICH SUCH LIABILITY IS BASED. DOOSAN INCLUDING ANY HOLDING, SUBSIDIARY, ASSOCIATED OR AFFILIATED COMPANY AND DISTRIBUTOR SHALL IN NO EVENT BE LIABLE TO THE END-USER/OWNER, ANY SUCCESSORS IN INTEREST OR ANY BENEFICIARY OR ASSIGNEE RELATING TO THIS SALE FOR ANY CONSEQUENTIAL, INCIDENTAL, INDIRECT, SPECIAL OR PUNITIVE DAMAGES ARISING OUT OF THIS SALE OR BY ANY BREACH THEREOF, OR ANY DEFECT IN, OR FAILURE OF, OR MALFUNCTION OF THE PRODUCT UNDER THIS SALE, WHETHER BASED UPON LOSS OF USE, LOST PROFITS OR REVENUE, INTEREST, LOST GOODWILL, WORK STOPPAGE, IMPAIRMENT OF OTHER GOODS, LOSS BY REASON OF SHUTDOWN OR NON-OPERATION, INCREASED EXPENSES OF OPERATION OR CLAIMS OF USER OR CUSTOMERS OF THE USER FOR SERVICE INTERRUPTION WHETHER OR NOT SUCH LOSS OR DAMAGE IS BASED ON CONTRACT, WARRANTY, TORT, NEGLIGENCE, INDEMNITY, STRICT LIABILITY OR OTHERWISE.



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## ALPHABETICAL INDEX

AIR CONDITIONING BELT .....	175	INSTRUMENT PANEL IDENTIFICATION ..	37
ALTERNATOR BELT .....	174	INTENDED USE .....	36
ATTACHMENT CONTROL DEVICE (ACD) .	91	LIFT AND TILT COMPENSATION .....	79
ATTACHMENTS .....	105	LIFT ARM BYPASS CONTROL .....	63
AUTO IDLE .....	62	LIFT ARM SUPPORT DEVICE .....	128
AUTOMATIC RIDE CONTROL ACCUMULATOR .....	179	LIFTING THE LOADER .....	114
BACK-UP ALARM SYSTEM .....	131	LOADER IDENTIFICATION .....	8
BACK-UP ALARM SYSTEM .....	67	LOADER SPECIFICATIONS .....	211
BOBCAT COMPANY IS ISO 9001 CERTIFIED .....	5	LOADER STORAGE AND RETURN TO SERVICE .....	185
BOBCAT INTERLOCK CONTROL SYSTEM (BICS™) .....	124	LUBRICATING THE LOADER .....	180
BOBCAT INTERLOCK CONTROL SYSTEM (BICS™) .....	53	MACHINE SIGNS (DECALS) .....	19
BOB-TACH (HAND LEVER) .....	183	MAINTENANCE CLOCK .....	208
BOB-TACH (POWER) .....	184	MAINTENANCE SAFETY .....	120
CONTROL IDENTIFICATION .....	49	MONITORING THE DISPLAY PANELS ...	102
CONTROL PANEL SETUP .....	202	OPERATING PROCEDURE .....	112
COUNTERWEIGHTS .....	104	OPERATOR CAB .....	133
DAILY INSPECTION .....	92	OPERATOR CAB .....	51
DECLARATION OF CONFORMITY .....	3	OPERATOR SAFETY WARNINGS .....	1
DELIVERY REPORT .....	7	PARKING BRAKE .....	61
DIAGNOSTIC SERVICE CODES .....	187	PASSWORD SETUP (DELUXE INSTRUMENTATION PANEL) .....	206
DIESEL PARTICULATE FILTER (DPF) SYSTEM .....	171	PIVOT PINS .....	182
DIESEL PARTICULATE FILTER (DPF) SYSTEM .....	55	PRE-STARTING PROCEDURE .....	94
DRIVE BELT .....	177	PUBLICATIONS AND TRAINING RESOURCES .....	18
DRIVE RESPONSE .....	75	REAR DOOR (TAILGATE) .....	136
DRIVING AND STEERING THE LOADER .	68	REAR GRILLE .....	137
ELECTRICAL SYSTEM .....	158	REGULAR MAINTENANCE ITEMS .....	5
EMERGENCY EXIT .....	64	SAFETY INSTRUCTIONS .....	14
ENGINE AIR CLEANER .....	141	SEAT BAR RESTRAINT SYSTEM .....	125
ENGINE COOLING SYSTEM .....	152	SEAT BAR RESTRAINT SYSTEM .....	54
ENGINE LUBRICATION SYSTEM .....	149	SEAT BELT .....	127
ENGINE SPEED CONTROL .....	62	SERIAL NUMBER LOCATIONS .....	7
FEATURES, ACCESSORIES, AND ATTACHMENTS .....	9	SERVICE SCHEDULE .....	121
FINAL DRIVE TRANSMISSION (CHAINCASE) .....	173	SPEED MANAGEMENT .....	73
FIRE PREVENTION .....	16	STARTING THE ENGINE .....	99
FUEL SYSTEM .....	143	STEERING DRIFT COMPENSATION .....	77
HEATING, VENTILATION, AND AIR CONDITIONING (HVAC) SYSTEM .....	138	STOPPING THE ENGINE AND LEAVING THE LOADER .....	103
HYDRAULIC / HYDROSTATIC SYSTEM .	165	STOPPING THE LOADER .....	71
HYDRAULIC CONTROLS .....	81	TOWING THE LOADER .....	114
		TRACTION LOCK OVERRIDE .....	61
		TRANSPORTING THE LOADER ON A TRAILER .....	116
		TWO-SPEED CONTROL .....	72

TYRE MAINTENANCE .....	172
WARRANTY .....	218



