Operation & Maintenance Manual
S70 Skid-Steer Loader

S/N A3W711001 & Above
OPERATOR SAFETY WARNINGS

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

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

Never exceed Rated Operating Capacity.

Never leave loader with engine running or with lift arms up.

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

Never carry riders.

Keep bystanders away from work area.


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

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.

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

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.


The Bobcat Loader must be equipped with safety items necessary for each job. Ask your dealer for information on the 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)

OSW03-0409
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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: ........................................................................
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.

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## 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.

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Directive 2000/14/EC: Noise Emission in the Environment by Equipment For Use Outdoors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bobcat Company</td>
<td></td>
</tr>
<tr>
<td>World Headquarters</td>
<td></td>
</tr>
<tr>
<td>250 East Beaton Drive</td>
<td></td>
</tr>
<tr>
<td>West Fargo, ND 58078-6000</td>
<td></td>
</tr>
<tr>
<td>UNITED STATES OF AMERICA</td>
<td></td>
</tr>
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<thead>
<tr>
<th>Notified Body</th>
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</tr>
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<tbody>
<tr>
<td>Technical and Test Institute for Construction</td>
<td></td>
</tr>
<tr>
<td>Prague, Czech Republic</td>
<td></td>
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<tr>
<td>Notified Body Number: 1020</td>
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<table>
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<tr>
<th>EC Certificate No.</th>
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<tr>
<td>1020-090-022395</td>
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<td>2000/14/EC, Annex VIII, Full Quality Assurance</td>
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<tr>
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<tr>
<td>Measured Sound Power</td>
<td>96 dBA</td>
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<tr>
<td>Guaranteed Sound Power</td>
<td>101 dBA</td>
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<thead>
<tr>
<th>Description of Equipment</th>
<th>Equipment conforms to CE Directive(s) Listed Below</th>
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<tbody>
<tr>
<td>Type of Equipment: Wheeled Loader</td>
<td>2000/42/EC: Machinery Directive</td>
</tr>
<tr>
<td>Model Code: A3W7</td>
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</table>

<table>
<thead>
<tr>
<th>Engine Manufacturer</th>
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</tr>
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<tr>
<td>Kubota</td>
<td></td>
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<table>
<thead>
<tr>
<th>Engine Model</th>
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<tr>
<td>V1005-E3B-BC-3</td>
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<table>
<thead>
<tr>
<th>Engine Power</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>17,2 kW @ 3000 RPM</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Declaration of Conformance</th>
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<tbody>
<tr>
<td>This equipment conforms to the requirements specified in all the EC Directives listed in this declaration.</td>
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<thead>
<tr>
<th>Effective From:</th>
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<tbody>
<tr>
<td>29 December 2009</td>
<td></td>
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</table>
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 and Bismarck, North Dakota (U.S.A.), Pontchateau (France), Dobris (Czech Republic) and the Bobcat corporate offices (Gwinner, Bismarck & West Fargo) in North Dakota. Only certified assessors, like BSI, 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

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Part Number(s)</th>
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<tbody>
<tr>
<td>ENGINE OIL FILTER (6 Pack)</td>
<td>6657635</td>
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<tr>
<td>BREATHER CAP</td>
<td>6684923</td>
</tr>
<tr>
<td>FUEL FILTER</td>
<td>6667352</td>
</tr>
<tr>
<td>BATTERY</td>
<td>6674687</td>
</tr>
<tr>
<td>AIR FILTER, Outer</td>
<td>6672467</td>
</tr>
<tr>
<td>HYDROSTATIC FILTER</td>
<td>6677652</td>
</tr>
<tr>
<td>AIR FILTER, Inner</td>
<td>6672468</td>
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NOTE: Always verify Part Numbers with your Bobcat dealer.
# LUBRICANTS AND FLUIDS

## BRAKE FLUID

<table>
<thead>
<tr>
<th>Type</th>
<th>Part Number</th>
<th>Packaging</th>
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</thead>
<tbody>
<tr>
<td>Bobcat Brake Fluid (T65 TL5 only)</td>
<td>6997662A</td>
<td>5L Can</td>
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<tr>
<td>Bobcat Brake Fluid</td>
<td>6997667B</td>
<td>5L Can</td>
</tr>
<tr>
<td>Bobcat Brake Fluid</td>
<td>6997667C</td>
<td>5L Can</td>
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<tr>
<td>Bobcat Brake Fluid</td>
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## ASSE / TRANSMISSION OIL

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<tr>
<th>Type</th>
<th>Part Number</th>
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</thead>
<tbody>
<tr>
<td>Bobcat Drive / Transmission Oil 10W-40</td>
<td>6987022A</td>
<td>5L Can</td>
</tr>
<tr>
<td>Bobcat Drive / Transmission Oil 10W-40</td>
<td>6987022B</td>
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<tr>
<td>Bobcat Drive / Transmission Oil 10W-40</td>
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<tr>
<td>Bobcat Drive / Transmission Oil 10W-40</td>
<td>6987022D</td>
<td>5L Can</td>
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## ENGINE / LOADER TRANSMISSION OIL

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<td>Bobcat Engine Oil SAE 15W-40</td>
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<td>5L Can</td>
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<td>Bobcat Engine Oil SAE 15W-40</td>
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<td>5L Can</td>
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## HYDRAULIC / HYDROSTATIC

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<tr>
<td>Bobcat Hydraulic Oil EP CastrolSynthetic</td>
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## ANTIFREEZE COOLANT

<table>
<thead>
<tr>
<th>Type</th>
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<td>5L Can</td>
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<tr>
<td>Bobcat Antifreeze Coolant Concentrated</td>
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<tr>
<td>Bobcat Antifreeze Coolant Concentrated</td>
<td>6987594D</td>
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## All Bobcat Equipment

<table>
<thead>
<tr>
<th>Type</th>
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<tbody>
<tr>
<td>Bobcat Multi-Purpose Grease</td>
<td>6904822A</td>
<td>400 g Tube</td>
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<tr>
<td>Bobcat Supreme HD Grease</td>
<td>6687884A</td>
<td>400 g Tube</td>
</tr>
<tr>
<td>Bobcat Extreme HP Grease</td>
<td>6687885A</td>
<td>400 g Tube</td>
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</table>

## SPECIFICATIONS

- **SAE 0W/30**
- **SAE 15W/40**
- **SAE 10W/40**
- **SAE 40**
- **SAE 5W/30**
SERIAL NUMBER LOCATIONS

Always use the serial number of the loader when requesting service information or when ordering parts. Early or later models (identification made by serial number) may use different parts, or it may be necessary to use a different procedure in doing a specific service operation.

Figure 1

Loader Serial Number

The loader serial number plate (Item 1) [Figure 1] is located inside the cab on the right-hand side.

Figure 2

<table>
<thead>
<tr>
<th>XXXX</th>
<th>XXXXX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Module 2 - Production Sequence (Series)</td>
<td></td>
</tr>
<tr>
<td>Module 1 - Model / Engine Combination</td>
<td></td>
</tr>
</tbody>
</table>

Explanation of loader Serial Number [Figure 2]:

1. The four digit Model / Engine Combination Module number identifies the model number and engine combination.

2. The five digit Production Sequence Number identifies the order which the loader is produced.

Engine Serial Number

Figure 3

The engine serial number is located on top of the engine (Item 1) [Figure 3].

DELIVERY REPORT

Figure 4

The delivery report [Figure 4] must be completed by the dealer and signed by the owner or operator when the Bobcat Loader is delivered. An explanation of the form must be given to the owner.
LOADER IDENTIFICATION

- **OPERATION & MAINTENANCE MANUAL and OPERATOR'S HANDBOOK**
- **FRONT LIGHTS**
- **GRAB HANDLES**
- **OPERATOR SEAT with SEAT BELT and SEAT BAR**
- **STEERING LEVER**
- **TILT CYLINDER**
- **↑BUCKET**
- **SAFETY TREAD**
- **BUCKET STEPS**
- **FRONT AUXILIARY HYDRAULIC QUICK COUPLERS**
- **OPERATOR CAB (ROPS and FOPS)**
- **REAR LIGHT**
- **REAR WINDOW**
- **LIFT ARM SUPPORT DEVICE**
- **LIFT ARMS**
- **LIFT CYLINDER**
- **TYRES**

- **↑BUCKET**
- **TAIL LIGHT**
- **REAR DOOR**
- **BACK-UP ALARM**

- **OPTIONAL OR FIELD ACCESSORY (Not Standard Equipment).**
  - TYRES: Bobcats are base-equipped with standard tyres.
  - BUCKET: Several different buckets and other attachments are available for the Bobcat Loader.
  - ROPS, FOPS: Roll Over Protective Structure, per ISO 3471, and Falling Object Protective Structure per ISO 3449, Level I.
FEATURES, ACCESSORIES AND ATTACHMENTS

Standard Items

Model S70 Bobcat Loaders are equipped with the following standard items:

- Adjustable Suspension Seat
- Auxiliary Hydraulics, Front
- Bobcat Interlock Control System (BICS™)
- Bob-Tach™
- CE Certification
- Engine / Hydraulic Systems Shutdown
- Front Horn
- Instrumentation: Hourmeter, Engine Temperature and Warning Lights
- Lift Arm Support Device
- Lights, Front and Rear
- Operator Cab (ROPS and FOPS Approved)
- Parking Brake
- Rear Window
- Seat Bar
- Seat Belt
- Sound Reduction Kit (Reduces noise at operator ear)
- Spark Arrester Exhaust System
- Tool Container
- Tyres (Bobcat Standard Duty, 23 x 5.70 - 12, 4 Ply Rating)
- Work Lights - Rear

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, accessories and attachments.

- Attachment Control Kit
- Back-up Alarm
- Cab Door
- Cab Enclosure
- Cab Heater
- Catalytic Exhaust Purifier
- Engine Heater
- Fire Extinguisher
- Hydraulic Bucket Positioning (Includes On/Off Selection)
- Keyless Start
- Lift Kit (For lifting entire loader)
- Locking Fuel Cap and Cover
- Rear Stabiliser Kit
- Road Kit
- Rotating Beacon
- Seat Belt - 3 in. Wide
- Special Applications Kit
- Strobe Light
- Tyres:
  - Bobcat Heavy Duty, 23 x 8.50 - 12, 6 Ply Rating
  - Vinyl Cab Enclosure
- Warning Lights: Four-Way Flasher (Includes Direction Signals)
- Windows
  - Externally Removable Rear Window
  - Polycarbonate Rear Window
  - Side Windows
  - Top Window

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 multi-job 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 & Industry, Low profile, Fertilizer 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
- Blades
  - Utility Blade
  - V-Blade
- Buckets
- Combination Bucket
- Cutter Crusher
- Digger
- Dumping Hopper
- Grapple, Utility
- Hydraulic Breaker
- Landplane
- Pallet Fork
- Scraper
- Snowblower
- Soil Conditioner
- Stump Grinder
- Sweeper
- Tiller
- Trencher
- Utility Forks
- X-Change™ Frame
Features, Accessories and Attachments (Cont’d)

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 to provide added operator protection in these applications.

Special Applications Kit Inspection and Maintenance

- Inspect for cracks or damage. Replace if required.
- Pre-rinse 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.

Special Applications Kit

Figure 5

Available for special applications to restrict material from entering cab openings. Kit includes 12.7 mm (0.5 in) thick polycarbonate front door, 6.4 mm (0.25 in) thick polycarbonate top and rear windows [Figure 5].

See your Bobcat dealer for availability.
## SAFETY & TRAINING RESOURCES

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SAFETY INSTRUCTIONS

Before Operation

Carefully follow the operating and maintenance instructions in this manual.

The Bobcat loader is highly maneuverable 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 (decalis) 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.

SI SSL EMEA-1009
SAFETY INSTRUCTIONS (CONT’D)

Safe Operation Is The Operator’s Responsibility

⚠️ Safety Alert Symbol

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

⚠️ WARNING

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

I-2019-0284

IMPORTANT

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

D-1002-1107

⚠️ DANGER

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.

⚠️ WARNING

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.

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

- 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.
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.
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.

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.
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.
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.
MACHINE SIGNS (DECALS) (CONT’D)

No-Text 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 familiarized with all safety signs installed on the machine / attachment.

**Vertical Configuration**

- Hazard panel(s): Hazard panels depict a potential hazard enclosed in a safety alert triangle.
- Avoidance panel(s): 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.

**Horizontal Configuration**

**NOTE:** See the numbered MACHINE SIGNS (DECALS) on Page 24 and MACHINE SIGNS (DECALS) (CONT’D) on Page 25 for the machine location of each correspondingly numbered no-text decal.

1. Crush Hazard (6713507)

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

   **WARNING**

   Keep away from the operating machine to avoid serious injury or death.

   W-2520-0106
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 web site at www.training.bobcat.com or www.bobcat.com.

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

Complete maintenance instructions for your Bobcat loader.

Gives basic operation instructions and safety warnings.
# Operating Instructions

## Instrument Panel Identification
- Left And Right Panels
- Standard Key Panel
- Keyless Start Panel
- Option And Field Accessory Panel
- Cab Heater Panel

## Control Identification
- Standard Controls

## Seat Bar Restraint System
- Operation

## Bobcat Interlock Control System (BICS™)
- Operation

## Lift Arm Bypass Control
- Operation

## Parking Brake
- Operation

## Traction Lock Override
- Operation

## Emergency Exit
- Rear Window
- Front Door

## Back-Up Alarm System
- Description
- Operation

## Engine Speed Control
- Operation

## Driving And Steering The Loader
- Operation

## Stopping The Loader
- Using The Control Levers

## Hydraulic Controls
- Description
- Hydraulic Bucket Positioning
- Auxiliary Hydraulic Control Lockout
- Front Auxiliary Hydraulics Operation
- Quick Couplers
- Relieve Auxiliary Hydraulic Pressure (Loader And Attachment)
The table below shows the DESCRIPTION and FUNCTION / OPERATION for each of the instrument panel components.

<table>
<thead>
<tr>
<th>REF.</th>
<th>DESCRIPTION</th>
<th>FUNCTION / OPERATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TRACTION LOCK OVERRIDE BUTTON</td>
<td><em>(Functions Only When The Seat Bar Is Raised, the Parking Brake Switch is OFF and the Engine Is Running.)</em> Allows you to use the steering levers to move the loader forward or backward when using the backhoe attachment. <em>(See TRACTION LOCK OVERRIDE in this manual.)</em> Engages auxiliary hydraulics.</td>
</tr>
<tr>
<td>2</td>
<td>PRESS TO OPERATE LOADER BUTTON</td>
<td><em>(Functions Only When The Seat Bar Is Down.)</em> Activates BICS™ when the Seat Bar is down and operator is seated in the operating position. Engages auxiliary hydraulics.</td>
</tr>
<tr>
<td>3</td>
<td>KEY SWITCH</td>
<td>For starting and stopping the engine. <em>(See Standard Key Panel in this manual.)</em></td>
</tr>
<tr>
<td>4</td>
<td>PARKING BRAKE</td>
<td>Press the left side of switch to engage; press right side to disengage.</td>
</tr>
<tr>
<td>5</td>
<td>LIGHT SWITCH</td>
<td>For FRONT work lights, “red” rear light, and REAR work light: Press the switch fully to the right to turn all lights OFF. Press the switch to the centre position to turn on the FRONT work lights and “red” rear light. Press the switch fully to the left to turn off the FRONT work lights and REAR work light.</td>
</tr>
<tr>
<td>6</td>
<td>PREHEAT SWITCH</td>
<td>Press and hold to preheat the glow plugs to aid in cold temperature starting. <em>(Earlier Models)</em></td>
</tr>
<tr>
<td>7</td>
<td>NOT USED</td>
<td>- - -</td>
</tr>
<tr>
<td>8</td>
<td>ENGINE WARNING LIGHT</td>
<td>Light is ON when engine oil pressure is low or coolant temperature is high. Stop the engine if the light comes ON.</td>
</tr>
<tr>
<td>9</td>
<td>TRANSMISSION WARNING LIGHT</td>
<td>Light is ON when transmission charge pressure is low, hydraulic filter needs replacement or fluid temperature is high. Stop the engine if the light comes ON.</td>
</tr>
<tr>
<td>10</td>
<td>POWER PLUG</td>
<td>Used to power 12 volt accessories.</td>
</tr>
<tr>
<td>11</td>
<td>KEYLESS PANEL</td>
<td>Optional Keyless Panel Kit. <em>(See Keyless Start Panel in this manual.)</em></td>
</tr>
<tr>
<td>12</td>
<td>HOURMETER</td>
<td>Records the total operating hours of the loader.</td>
</tr>
<tr>
<td>13</td>
<td>VOLTOMETER</td>
<td>Shows the condition of the battery and the rate of charge.</td>
</tr>
<tr>
<td>14</td>
<td>ENGINE TEMPERATURE GAUGE</td>
<td>Shows the engine coolant temperature.</td>
</tr>
<tr>
<td>15</td>
<td>SEAT BELT INDICATOR LIGHT</td>
<td>Light stays on for 45 seconds to remind operator to fasten seat belt.</td>
</tr>
<tr>
<td>16</td>
<td>SEAT BAR LIGHT</td>
<td>Light is ON when the seat bar is raised.</td>
</tr>
<tr>
<td>17</td>
<td>LIFT &amp; TILT VALVE LIGHT</td>
<td>Light is ON when the lift and tilt functions can NOT be operated. Light is OFF when the seat bar is down, the key switch is in the ON position and the PRESS TO OPERATE LOADER Button is pressed. The lift and tilt functions can be operated when the light is OFF.</td>
</tr>
<tr>
<td>18</td>
<td>PARKING BRAKE LIGHT</td>
<td>Light is ON when the Parking Brake is engaged.</td>
</tr>
</tbody>
</table>
INSTRUMENT PANEL IDENTIFICATION (CONT’D)

Standard Key Panel

Figure 8

The functions of the key switch [Figure 8] are:

1. ENGINE PREHEAT: Hold the key in this position to activate the glow plugs. (Earlier model loaders have a separate preheat switch and do not have this position.) (See Left And Right Panels on Page 31.)

2. STOP: Stop the engine and turn the loader electrical system OFF.

3. RUN: Turn the loader electrical system ON.

4. START: Hold the key in this position to start the engine; release when engine starts.

Keyless Start Panel

Figure 9

The functions of the Keyless Start Panel [Figure 9] are:

1. KEYPAD (Keys 1 through 0): Used to enter a number code (password) to allow starting the engine.

2. RUN LIGHT: Light will be ON after the password has been correctly entered.

3. ERROR LIGHT: Light will be ON when an incorrect user / master password is entered. Three consecutive incorrect passwords will cause an error condition and a delay of one minute will be required before another start sequence can be attempted.

4. START Button: Press the start button until the engine starts.

5. AUX. RELIEF / PREHEAT Button: Press and hold to activate the glow plugs after the password has been entered.

6. STOP Button: Used to stop the engine and shut down the loader electrical system.

NOTE: When a Keyless Start Panel Kit is installed, the kit will be supplied with an Owner Password. Change the password to one that you will easily remember to prevent unauthorised use of your loader. Keep your password in a safe place for future needs. (The instructions included with the Keyless Start Panel will describe how to change the password. Keep this instruction for future reference.)
**INSTRUMENT PANEL IDENTIFICATION (CONT’D)**

Option And Field Accessory Panel

Figure 10

The side accessory panel is shown in [Figure 10].

<table>
<thead>
<tr>
<th>REF. NO.</th>
<th>DESCRIPTION</th>
<th>FUNCTION / OPERATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ROTATING BEACON (Option) OR STROBE LIGHT (Option)</td>
<td>Press the top of the switch to turn ON; press bottom to turn OFF.</td>
</tr>
<tr>
<td>2</td>
<td>HAZARD LIGHTS (Option)</td>
<td>Press the top of the switch to turn the Hazard Lights ON; press bottom to turn OFF.</td>
</tr>
<tr>
<td>3</td>
<td>FRONT WINDSHIELD WIPER (Option)</td>
<td>Move the switch to the centre position to turn ON; press bottom to turn OFF. Press and hold the top of switch for washer fluid.</td>
</tr>
<tr>
<td>4</td>
<td>HYDRAULIC BUCKET POSITIONING (Option)</td>
<td>The Bucket Positioning function will keep the bucket in approximately the same position as the lift arms are raised. Press the top of the switch to engage the Bucket Position function; press the bottom to disengage.</td>
</tr>
<tr>
<td>5</td>
<td>TRAVEL LOCK</td>
<td>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.</td>
</tr>
<tr>
<td>6</td>
<td>CAB LIGHT</td>
<td>Press the switch to turn ON, press again to turn OFF.</td>
</tr>
</tbody>
</table>

---

**Cab Heater Panel**

This machine may be equipped with a Cab Heater.

Figure 11

The cab heater panel is shown in [Figure 11].

<table>
<thead>
<tr>
<th>REF. NO.</th>
<th>DESCRIPTION</th>
<th>FUNCTION / OPERATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>FAN MOTOR (Option)</td>
<td>Turn clockwise to increase fan speed; anticlockwise to decrease. There are three positions; OFF-1-2.</td>
</tr>
<tr>
<td>2</td>
<td>TEMPERATURE CONTROL (Option)</td>
<td>Turn clockwise to increase the temperature; anticlockwise to decrease.</td>
</tr>
</tbody>
</table>
### CONTROL IDENTIFICATION

#### Standard Controls

**Figure 12**

* Press the front switch to sound the front horn if equipped with deluxe hand grips.

<table>
<thead>
<tr>
<th>REF. NO.</th>
<th>DESCRIPTION</th>
<th>FUNCTION / OPERATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>* 1</td>
<td>FRONT HORN</td>
<td>Press the button to sound the front horn.</td>
</tr>
<tr>
<td>2</td>
<td>STEERING LEVERS</td>
<td>See DRIVING AND STEERING THE LOADER in this manual.</td>
</tr>
<tr>
<td>3</td>
<td>AUXILIARY HYDRAULICS CONTROL</td>
<td>See HYDRAULIC CONTROLS in this manual.</td>
</tr>
<tr>
<td>4</td>
<td>LIFT ARM PEDAL</td>
<td>See HYDRAULIC CONTROLS in this manual.</td>
</tr>
<tr>
<td>5</td>
<td>TILT PEDAL</td>
<td>See HYDRAULIC CONTROLS in this manual.</td>
</tr>
<tr>
<td>6</td>
<td>ENGINE SPEED CONTROL</td>
<td>See ENGINE SPEED CONTROL in this manual.</td>
</tr>
<tr>
<td>7</td>
<td>LIFT ARM BYPASS CONTROL</td>
<td>See LIFT ARM BYPASS CONTROL in this manual.</td>
</tr>
</tbody>
</table>

* Press the front switch to sound the front horn if equipped with deluxe hand grips.
SEAT BAR RESTRAINT SYSTEM

Operation

Figure 13

The seat bar restraint system has a pivoting seat bar with armrests (Item 1) [Figure 13].

![Image of seat bar restraint system]

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 and hands on steering levers.

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

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

When the seat bar is up, the lift, tilt and traction drive functions are deactivated. Both foot pedals will be locked when returned to the neutral position.

Before you leave the operator’s seat:
- Lower the lift arms, put the attachment flat on the ground.
- Stop the engine.
- Engage the parking brake.
- Raise the seat bar, move pedals until both lock.
- Move auxiliary hydraulic control lever out of detent position.

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P-81995
BOBCAT INTERLOCK CONTROL SYSTEM (BICS™)

Operation

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.

Figure 14

The Bobcat Interlock Control System (BICS™) has a pivoting seat bar with armrests (Item 1) [Figure 14]. The operator controls the use of the seat bar.

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 functions can be operated. The seat belt must be fastened any time you operate the machine.

Figure 15

There are three display lights (Items 1, 2 and 3) [Figure 15] located on the right 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.

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 and hands on steering levers.

Figure 15
LIFT ARM BYPASS CONTROL

Operation

Figure 16

The lift arm bypass control (Item 1) [Figure 16] is used to lower the lift arms if the lift arms cannot be lowered during normal operations.

1. Sit in the operator seat.
2. Fasten the seat belt and lower the seat bar.
3. Turn the lift arm bypass knob (Item 1) [Figure 16] clockwise 1/4 turn.
4. Pull out and hold the knob until the lift arms lower.

PARKING BRAKE

Operation

Figure 17

Press the left side of the switch (Item 1) [Figure 17] to engage the parking brake. The red light in the switch will turn on. The traction drive system will be locked.

Press the right side of the switch (Item 1) [Figure 17] to disengage the parking brake. The red light in the switch will turn off. The traction drive system will be unlocked.

NOTE: If the loader will not move when operator is in the operating position with the seat bar down and the parking brake disengaged and after the PRESS TO OPERATE LOADER button is pressed, move the steering levers either forward or backward a small amount to unlock the traction drive.

Figure 18

NOTE: The PARKING BRAKE LIGHT (Item 1) [Figure 18] on the right 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

Operation

Figure 19

(Functions only when the seat bar is raised, the parking brake switch is OFF, and the engine is running.) There is a TRACTION LOCK OVERRIDE button (Item 1) [Figure 19] on the left instrument panel which will allow you to use the steering levers to move the loader forward and backward when using the backhoe attachment.

- Press the TRACTION LOCK OVERRIDE button once to unlock the brakes. The PARKING BRAKE light (Item 1) [Figure 20] will be OFF.

- Press the button a second time to lock the traction drive. The PARKING BRAKE light (Item 1) [Figure 20] will be ON.

Figure 20
EMERGENCY EXIT

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

Rear Window

Figure 21

Pull the tag on the top of the rear window [Figure 21] to remove the rubber cord.

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

Figure 22

Exit through the rear of the operator cab [Figure 22].

Front Door

This machine may be equipped with a Front Door.

NOTE: When an Operator Cab Enclosure Kit is installed, the window of the front door can be used as an emergency exit [Figure 23].

NOTE: If the loader has a Special Application Door Kit installed, the window of the front door is NOT an emergency exit.

Figure 23

Pull the plastic loop (Item 1) [Figure 23] at the top of the window in the front door to remove the rubber cord.

Figure 24

Push the window out with your foot at any corner of the window (Item 1) [Figure 24].

Exit through the front door.
BACK-UP ALARM SYSTEM

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

Description

Figure 25

The back-up alarm (Item 1) [Figure 25] 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 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 always look in the direction of travel.
- The back-up alarm must sound when operating the machine in the reverse direction.

W-2783-0409

The back-up alarm will sound when the operator moves both steering levers 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 83.)
ENGINE SPEED CONTROL

Operation

Figure 26

The engine speed control lever is to the left of the operator seat (Item 1) [Figure 26].

Move the lever forward to increase engine speed. Move backward to decrease engine speed.
DRIVING AND STEERING THE LOADER

Operation

Figure 27

The control levers (Item 1) [Figure 27] are on the left and right side in front of the seat.

Move the levers smoothly. Avoid sudden starting and stopping.

![Image](image_url)

**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 and hands on steering levers.

The levers control forward and backward travel and turning the loader [Figure 28].

**Forward Travel** - Push both levers forward.

**Backward Travel** - Pull both levers backward.

**Normal Turning** - Move one lever farther forward than the other.

**Fast Turning** - Push one lever forward and pull the other lever backward.

STOPPING THE LOADER

Using The Control Levers

When the steering levers are moved to the neutral position, the hydrostatic transmission will act as a service brake to stop the loader.
HYDRAULIC CONTROLS

Description

Two foot pedals control the hydraulic cylinders for the lift and tilt functions.

Put your feet on the pedals and KEEP THEM THERE any time you operate the loader.

**Figure 29**

**Lift Arm Operation (Left Pedal)**

Push the heel (Item 1) [Figure 29] of the pedal to raise the lift arms.

Push the toe (Item 2) [Figure 29] of the pedal to lower the lift arms.

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

Push the toe (Item 2) [Figure 29] of the pedal all the way forward until it locks into the float position.

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

Raise the lift arms to disengage the float position.

**Figure 30**

**Tilt Operation - (Right Pedal)**

Push the heel (Item 1) [Figure 30] of the pedal to tilt the bucket backward.

Push the toe (Item 2) [Figure 30] of the pedal to tilt the bucket forward.

Hydraulic Bucket Positioning

This machine may be equipped with Hydraulic Bucket Positioning.

The function of hydraulic bucket positioning is to keep the bucket in the same approximate position it is in before you begin raising the lift arms.

**Figure 31**

Press the top of the BUCKET POSITIONING switch (Item 1) [Figure 31] to engage the bucket positioning function. Press the bottom of the switch to disengage this function.

Bucket positioning functions only during upward lift cycle.

Auxiliary Hydraulic Control Lockout

**Figure 32**

Raise the operator cab. (See OPERATOR CAB on Page 85.)

Remove the auxiliary hydraulic control lockout bolt and nut (Item 1) [Figure 32] before using the auxiliary control for the first time.

Lower the operator cab. (See OPERATOR CAB on Page 85.)
HYDRAULIC CONTROLS (CONT’D)

Front Auxiliary Hydraulics Operation

Figure 33

Variable Flow

Variable Flow allows for slow-to-fast movement of auxiliary hydraulic functions.

The right steering lever (Item 1) [Figure 33] is also the control lever for the front auxiliary hydraulics (Auxiliary Hydraulic Control Lever).

Enter the loader, lower the seat bar, fasten seat belt, engage the parking brake and start the engine. Press the PRESS TO OPERATE LOADER button which will also engage the auxiliary hydraulics.

Figure 34

Continuous Flow

Continuous Flow allows for fast movement of auxiliary hydraulic functions.

Move the Auxiliary Hydraulic Control Lever fully to the right to put it into continuous flow (detent) position. This will allow continuous auxiliary hydraulic oil flow to the female coupler. Move the lever to the neutral position to stop auxiliary hydraulic oil flow.

Move the lever out of the continuous flow (detent) position before leaving the operator’s seat.

NOTE: When the operator is seated and raises the seat bar, the Auxiliary Hydraulic System will deactivate.

Move the Auxiliary Hydraulic Control Lever (Item 1) [Figure 33] to the right for auxiliary hydraulic oil flow to the front male coupler (Item 1) [Figure 34]. Hydraulic oil flow increases to the coupler as the lever is moved to the right.

Move the Auxiliary Hydraulic Control Lever (Item 1) [Figure 33] to the left for auxiliary hydraulic oil flow to the front female coupler (Item 2) [Figure 34]. Hydraulic oil flow increases to the coupler as the lever is moved to the left.
HYDRAULIC CONTROLS (CONT’D)

Quick Couplers

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.

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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

To Connect:

Remove dirt or debris from the surface of both the male (Item 1) and female couplers (Item 2) [Figure 35], and from the outside diameter of the male coupler. Visually check the couplers for corroding, cracking, damage or excessive wear. If any of these conditions exist, the coupler(s) must be replaced.

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

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

Relieve Auxiliary Hydraulic Pressure (Loader And Attachment)

Hydraulic pressure in the auxiliary hydraulic system can make it difficult to engage quick couplers to an attachment.

Loader:

1. Turn the key to the ON position or press RUN button but do not start the engine. Press the PRESS TO OPERATE LOADER Button.

Attachments:

1. Follow procedure above to release pressure in the loader.

2. Connect male coupler from attachment to female coupler of the loader then repeat procedure above. This will release pressure in the attachment.

3. Connect the female coupler from the attachment to the male coupler of the loader.

Figure 35

Figure 36
ATTACHMENT CONTROL DEVICE (ACD)

This machine may be equipped with an Attachment Control Device.

Description

Figure 37

Connect the attachment electrical harness to the attachment control device (Item 1) [Figure 37].

Figure 38

Additional switches (Item 1) [Figure 38] on the left steering lever handle are used to control some attachment functions through the attachment control device.

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

Figure 39

WARNING

AVOID INJURY OR DEATH

Keep door closed except for service.

Keep clear of rotating machinery.

Keep body, loose objects, and clothing away from electrical and hydraulic components.

Do not use flammable or explosive fluids.

Battery generates flammable hydrogen gas.

Exhaust gases can cause death. Always utilize exhaust gases.

Wear personal protective equipment: gloves, safety glasses, and hearing protection.

For jump start, connect negative battery cable to the engine last (move to negative terminal)

For jump start, connect negative battery cable to the engine last (move to negative terminal)

For jump start, connect negative battery cable to the engine last (move to negative terminal)

For jump start, connect negative battery cable to the engine last (move to negative terminal)
DAILY INSPECTION (CONT’D)

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 Schedule [Figure 39] is a guide for correct maintenance of the Bobcat Loader. It is located inside the rear door of the loader.

- Engine oil level.
- Hydraulic / hydrostatic fluid level.
- Engine Air Filter - Check Air System for Damage or Leaks.
- Engine coolant system - check system for damage or leaks.
- 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, Bob-Tach, Cylinders, Bob-Tach Wedges).
- Tyres - Check for Wear, Damage, Correct Air Pressure.
- Fuel Filter - Remove Trapped Water.
- 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.
- Indicators and Lights.
- Clean Foot Pedal Area.
- Monitor Instrument Panel for fuel level, coolant temperature and air cleaner condition.

WARNING

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

NOTE: Fluids such as engine oil, hydraulic fluid, coolant, etc. 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 bylaws for correct disposal.

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.
PRE-STARTING PROCEDURE

Entering The Loader

Figure 40

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 [Figure 40]. 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 the safety treads clean and replace them when damaged. Replacement treads are available from your Bobcat dealer.

Operation & Maintenance Manual And Operator’s Handbook Locations

Figure 41

Read and understand the Operation & Maintenance Manual (Item 1) and the Operator’s Handbook (Item 2) [Figure 41] before operating the loader.

The Operation & Maintenance Manual and other manuals can be kept in a container (Item 1) [Figure 41] provided on the right side of 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-2003-5807
PRE-STARTING PROCEDURE (CONT'D)

Seat Adjustment

Use the lever (Item 1) and knob (Item 2) [Figure 42] to adjust the position of the seat for comfortable operation of the loader controls.

The lever (Item 1) sets the seat cushion for the weight of the operator. The knob (Item 2) [Figure 42] sets the angle of the seat back.

The lever (Item 3) [Figure 42] adjusts the fore / aft position of the seat.
PRE-STARTING PROCEDURE (CONT’D)

Seat Belt Adjustment

⚠️ 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 and hands on steering levers.

Figure 43

Squeeze both seat belt adjusters to release and lengthen each half of the seat belt [Figure 43].

Fasten the seat belt.

Pull the ends of the belt through the belt adjusters so that the seat belt is snug and the buckle is centred between your hips [Figure 43].

Seat Bar

Figure 44

Lower the seat bar (Item 1) and engage the parking brake (Item 2) [Figure 44].

Put the foot pedals and steering levers in neutral position.

NOTE: Keep your hands on the steering levers and your feet on the foot pedals 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 and hands on steering levers.
STARTING THE ENGINE

Standard Key Panel

WARNING
AVOID INJURY OR DEATH

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

Perform the PRE-STARTING PROCEDURE. (See PRE-STARTING PROCEDURE on Page 49.)

Figure 45

Move the engine speed control lever (Item 1) to the mid position.

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.

Figure 46

Earlier Models With Preheat Switch (Item 1)

If the temperature is cold, turn the key switch to the RUN position (Item 2) but do not start the engine. Press and hold the top of the preheat switch (Item 1). Release the switch to stop engine preheat. A decal in the operator cab and the table below show suggested preheat times.

<table>
<thead>
<tr>
<th>AMBIENT AIR TEMPERATURE</th>
<th>PREHEAT TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>21°C and Above (70°F and Above)</td>
<td>None Required</td>
</tr>
<tr>
<td>10 - 21°C (50 - 70°F)</td>
<td>5 Seconds</td>
</tr>
<tr>
<td>-18 - 10°C (0 - 50°F)</td>
<td>15 Seconds</td>
</tr>
<tr>
<td>-18°C and Below (0°F and Below)</td>
<td>25 Seconds</td>
</tr>
</tbody>
</table>

NOTE: You can hold the preheat switch for up to 25 seconds at a time while cranking.

Turn the key switch to the START position (Item 3) and continue to crank for up to one minute or until the engine starts.

Release the key when the engine starts. It will return to the RUN position (Item 2).
**STARTING THE ENGINE (CONT’D)**

**Standard Key Panel (Cont’d)**

**Figure 47**

Later Models Without Preheat Switch (Item 1)

If the temperature is cold, turn the key switch to the PREHEAT position (Item 2) [Figure 47]. Release the key switch to stop engine preheat. A decal in the operator cab and the table below show suggested preheat times.

<table>
<thead>
<tr>
<th>AMBIENT AIR TEMPERATURE</th>
<th>PREHEAT TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>21°C and Above</td>
<td>None Required</td>
</tr>
<tr>
<td>(70°F and Above)</td>
<td></td>
</tr>
<tr>
<td>10 - 21°C</td>
<td>5 Seconds</td>
</tr>
<tr>
<td>(50 - 70°F)</td>
<td></td>
</tr>
<tr>
<td>-18 - 10°C</td>
<td>15 Seconds</td>
</tr>
<tr>
<td>(0 - 50°F)</td>
<td></td>
</tr>
<tr>
<td>-18°C and Below</td>
<td>25 Seconds</td>
</tr>
<tr>
<td>(0°F and Below)</td>
<td></td>
</tr>
</tbody>
</table>

Turn the key switch to the START position (Item 4) [Figure 47] and continue to crank for up to one minute or until the engine starts.

Release the key when the engine starts. It will return to the RUN position (Item 3) [Figure 47].

**All Models**

**Figure 48**

Press the PRESS TO OPERATE LOADER button (Item 1) [Figure 48] to activate the BICS™ and to perform hydraulic and loader functions. The Lift & Tilt Valve light (Item 1) [Figure 49] will be OFF when the BICS™ is active.

**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)

Keyless Start Panel

WARNING

AVOID INJURY OR DEATH

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

Perform the PRE-STARTING PROCEDURE. (See PRE-STARTING PROCEDURE on Page 49.)

Figure 50

Move the engine speed control lever (Item 1) [Figure 50] to the mid position.

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.

Earlier Models With Preheat Switch (Item 1)

Enter the password / user code on the keypad (Item 2), the RUN light (Item 3) [Figure 51] will illuminate.

If the temperature is cold, press and hold the top of the preheat switch (Item 1) [Figure 51]. Release the switch to stop engine preheat.

A decal in the operator cab and the table below show suggested preheat times.

<table>
<thead>
<tr>
<th>AMBIENT AIR TEMPERATURE</th>
<th>PREHEAT TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>21°C and Above (70°F and Above)</td>
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<td>-18 - 10°C (0 - 50°F)</td>
<td>15 Seconds</td>
</tr>
<tr>
<td>-18°C and Below (0°F and Below)</td>
<td>25 Seconds</td>
</tr>
</tbody>
</table>

NOTE: You can hold the preheat switch for up to 25 seconds at a time while cranking.

Press the start button (Item 4) [Figure 51] and continue to crank for up to one minute or until the engine starts.

Release the start button when the engine starts.
STARTING THE ENGINE (CONT’D)

Keyless Start Panel (Cont’d)

Figure 52

Later Models Without Preheat Switch (Item 1)

Enter the password / user code on the keypad (Item 2), the RUN light (Item 3) [Figure 52] will illuminate.

If the temperature is cold, press and hold the AUX. RELIEF / Preheat button (Item 5) [Figure 52]. Release the button to stop engine preheat.

A decal in the operator cab and the table below show suggested preheat times.

<table>
<thead>
<tr>
<th>AMBIENT AIR TEMPERATURE</th>
<th>PREHEAT TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>21°C and Above (70°F and Above)</td>
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</tr>
<tr>
<td>-18°C and Below (0°F and Below)</td>
<td>25 Seconds</td>
</tr>
</tbody>
</table>

NOTE: You can hold the AUX. RELIEF / Preheat button for up to 25 seconds at a time while cranking.

Press the start button (Item 4) [Figure 52] and continue to crank for up to one minute or until the engine starts.

Release the start button when the engine starts.

All Models

Figure 53

Figure 54

Press the PRESS TO OPERATE LOADER button (Item 1) [Figure 53] to activate the BICS™ and to perform hydraulic and loader functions. The Lift & Tilt Valve light (Item 1) [Figure 54] will be OFF when the BICS™ is active.

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)

Cold Temperature Starting

⚠️ WARNING

AVOID INJURY OR DEATH
Do not use ether with glow plug (preheat) systems. Explosion can result which can cause injury, death, or severe engine damage.

W-2071-0907

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 93.)

- Make sure the battery is fully charged.

- Install an engine heater, available from your local Bobcat dealer.

Warming The Hydraulic / Hydrostatic System

IMPORTANT

When the temperature is below -30°C (-20°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°C (0°F) if possible.

I-2007-0910

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

MONITORING THE DISPLAY PANELS

Right Panel

Figure 55

Frequently monitor the temperature gauge and BICS™ lights [Figure 55]. All BICS™ lights must be off to operate the loader. (See BOBCAT INTERLOCK CONTROL SYSTEM (BICS™) on Page 77.)
STOPPING THE ENGINE AND LEAVING THE LOADER

Procedure

Stop the Bobcat Loader on level ground.

Lower the lift arms fully and put the attachment flat on the ground.

**Figure 56**

Pull the engine speed control lever (Item 1) [Figure 56] fully backward to decrease the engine speed.

**Figure 57**

Turn the key switch to the OFF position (Item 2) or press the STOP button (Item 3) [Figure 57].

Engage the parking brake by pressing the left side of the parking brake switch (Item 1) [Figure 57].

Raise the seat bar and make sure the lift and tilt functions are deactivated. Move the pedals until they both lock.

Move auxiliary hydraulic control lever out of detent position.

Unbuckle the seat belt.

Remove the key from the switch to prevent operation of the loader by unauthorised personnel. (Standard Key Panel only.)

**Figure 58**

Exit the loader using grab handles, safety tread and steps (maintaining a 3-point contact) [Figure 58].

**WARNING**

Before you leave the operator’s seat:
- Lower the lift arms, put the attachment flat on the ground.
- Stop the engine.
- Engage the parking brake.
- Raise the seat bar, move pedals until both lock.
- Move auxiliary hydraulic control lever out of detent position.

W-2164-0108
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.

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 122.)

The ROC is determined by using a standard 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 very dense material is loaded, the volume must be reduced to prevent overloading.

Figure 59

Exceeding the ROC [Figure 59] 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 Forks

Figure 60

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 60].

See your Bobcat dealer for more information about pallet fork inspection, maintenance and replacement. See your Bobcat Loader dealer for ROC when using a pallet fork and for other available attachments.
ATTACHMENTS (CONT'D)

Installing And Removing The Attachment

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 61

Pull the Bob-Tach levers all the way up [Figure 61].

Enter the loader and perform the PRE-STARTING PROCEDURE. (See PRE-STARTING PROCEDURE on Page 49.) Start the engine.

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

Figure 62

Disengage the parking brake and drive the loader forward until the top edge of the Bob-Tach is completely under the top flange of the bucket [Figure 62] (or other attachment).

NOTE: Make sure the Bob-Tach levers do not hit the bucket (or other attachment).

Figure 63

Tilt the Bob-Tach backward until the cutting edge of the bucket (or other attachment) is slightly off the ground [Figure 63]. This will cause the bucket frame to fit up against the front of the Bob-Tach.

WARNING

Before you leave the operator's seat:

- Lower the lift arms, put the attachment flat on the ground.
- Stop the engine.
- Engage the parking brake.
- Raise the seat bar, move pedals until both lock.
- Move auxiliary hydraulic control lever out of detent position.

Stop the engine, engage the parking brake, raise the seat bar, unfasten the seat belt and exit the loader.
ATTACHMENTS (CONT'D)

Installing And Removing The Attachment (Cont’d)

Installing (Cont’d)

Figure 64

Push down on the Bob-Tach levers until they are fully engaged in the locked position [Figure 64].

Figure 65

The levers must contact the frame at the shaded areas (Item 1) [Figure 65] (wedges fully extended).

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

Figure 66

The wedges must extend through the holes in the mounting frame of the bucket (or attachment) and touch the lower edge of these holes, securely fastening the bucket to the Bob-Tach [Figure 66].

**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

If the attachment is hydraulically controlled, connect the hydraulic hoses of the attachment to the loader (See Quick Couplers on Page 45.) You may need to release hydraulic pressure before connecting the quick couplers. (See Relieve Auxiliary Hydraulic Pressure (Loader And Attachment) on Page 45.)
ATTACHMENTS (CONT’D)

Installing And Removing The Attachment (Cont’d)

Removing

• Lower the lift arms, put the attachment flat on the ground and lower or close the hydraulic equipment.

• If the attachment is hydraulically controlled (Combination bucket, backhoe, etc.): stop the engine and relieve hydraulic pressure in the auxiliary circuit (See Relieve Auxiliary Hydraulic Pressure (Loader and Attachment) on Page 45.)

• Stop the engine, engage the parking brake, raise the seat bar, unfasten the seat belt and exit the loader.

• Disconnect the hydraulic hoses from the attachment.

WARNING

Before you leave the operator’s seat:

• Lower the lift arms, put the attachment flat on the ground.

• Stop the engine.

• Engage the parking brake.

• Raise the seat bar, move pedals until both lock.

• Move auxiliary hydraulic control lever out of detent position.

Enter the loader and perform the PRE-STARTING PROCEDURE. (See PRE-STARTING PROCEDURE on Page 49.) Start the engine and disengage the parking brake.

Figure 68

Tilt the Bob-Tach forward while backing the loader away from the bucket or attachment [Figure 68].

NOTE: In muddy conditions or to prevent the attachment from freezing to the ground, put the attachment on planks or blocks before removing it from the machine.

WARNING

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

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

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

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 ROLL OVER 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.

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 Option kits are available 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 69

WITH BUCKET FULL

Going Up Slope

Figure 70

WITH BUCKET FULL

Going Down Slope

Operating With An Empty Bucket

Figure 71

WITH BUCKET EMPTY

Going Down Slope

Figure 72

WITH BUCKET EMPTY

Going Up Slope

With a full bucket, go up or down the slope with the bucket (heavy end) toward the top of the slope [Figure 69] and [Figure 70].

With an empty bucket, go up or down the slope with the back of the loader (heavy end) toward the top of the slope [Figure 71] and [Figure 72].

Raise the bucket only high enough to avoid obstructions on rough ground.
OPERATING PROCEDURE (CONT’D)

Filling And Emptying The Bucket

Filling

Figure 73

Lower the lift arms all the way by pushing the toe of the left pedal (Item 1) [Figure 73]. Tilt the bucket forward by pushing the toe of the right pedal (Item 2) [Figure 73] until the cutting edge of the bucket is on the ground.

Drive slowly forward into the material. Tilt the bucket backward all the way by pushing the heel of the right pedal (Item 1) [Figure 74] when the bucket is full.

Drive backward away from the material.

Figure 74

Emptying

Figure 75

Keep the bucket low when moving to the area where you want to empty the bucket.

Level the bucket by pushing the toe of the right pedal (Item 1) while raising the lift arms to help prevent material from falling off the back of the bucket. Raise the lift arms by pushing the heel of the left pedal (Item 2) [Figure 75].

Drive forward slowly until the bucket is over the top of the truck box or bin [Figure 75].

Empty the bucket by pushing the toe of the right pedal (Item 1) [Figure 75]. If all the material is near the side of the truck or bin, use the bucket tilt to move it to the other side.

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

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 roll over and cause injury or death.

W-2056-0903
OPERATING PROCEDURE (CONT’D)

Leveling The Ground Using Float

Figure 76

Put the lift arms in float position by pushing the toe of the left pedal (Item 1) [Figure 76] until it is locked in the forward position.

Tilt the bucket forward by pushing the toe of the right pedal (Item 2) [Figure 76] to change the position of the cutting edge of the bucket.

With the bucket tilted farther forward, there is more force on the cutting edge and more loose material can be moved.

Drive backward to level loose material [Figure 76].

Push the heel of the left pedal (Item 3) [Figure 76] to unlock the float position.

IMPORTANT

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

I-2005-1285

Digging And Filling A Hole

Digging

Figure 77

Lower the lift arms all the way by pushing the toe of the left pedal (Item 1) [Figure 77]. Put the cutting edge of the bucket on the ground by pushing the toe of the right pedal (Item 2) [Figure 77].

Drive forward slowly and continue to tilt the bucket down (Item 2) [Figure 77] until it enters the ground.

Raise the cutting edge a small amount by pushing the heel of the right pedal (Item 3) [Figure 77] to increase traction and keep an even digging depth. Continue to drive forward until the bucket is full. When the ground is hard, raise and lower the cutting edge of the bucket (Items 2 and 3) [Figure 77] while driving forward slowly.

Figure 78

Tilt the bucket backward by pushing the heel of the right pedal (Item 1) [Figure 78] as far as it will go when the bucket is full.
OPERATING PROCEDURE (CONT’D)

Digging And Filling (Cont’d)

Filling

Figure 79

Lower the lift arms by pushing the toe of the left pedal (Item 1) [Figure 79]. Put the cutting edge of the bucket on the ground by pushing the toe of the right pedal (Item 2) [Figure 79]. Drive forward to the edge of the hole to push the material into the hole.

Tilt the bucket farther forward (Item 2) [Figure 79] as soon as it is past the edge of the hole.

If necessary, raise the lift arms to empty the bucket.

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 wheels will not turn.) There might 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 122.)
LIFTING THE LOADER
Single-Point Lift

**WARNING**

**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.

The loader can be lifted with the Single-Point Lift which 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 roll over and falling object protection features of the operator cab.

**Figure 80**

Attach lift to lift eye [Figure 80].

**NOTE:** Be sure the lifting equipment is of adequate size and capacity for the weight of the loader. (See Performance on Page 122.)

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.

Be sure the transport and towing vehicles are of adequate size and capacity for the weight of the loader. (See Performance on Page 122.)

**Figure 81**

A loader with an empty bucket or no attachment must be loaded backward onto the transport vehicle [Figure 81].

The rear of the trailer must be blocked or supported (item 1) [Figure 81] when loading or unloading the loader to prevent the front end of the trailer from raising up.
TRANSPORTING THE LOADER ON A TRAILER (CONT’D)

Fastening

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 82].

- Lower the bucket or attachment to the floor.
- Stop the engine.
- Engage the parking brake.
- Install chains at the front tie down positions [Figure 82].
- Fasten each end of the chain to the transport vehicle.

- Install chains at the rear tie down positions [Figure 83].
- Fasten each end of the chain to the transport vehicle.
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MAINTENANCE SAFETY

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.
- Have good ventilation when welding or grinding painted parts.
- Avoid exhaust fume leaks which can kill without warning. Exhaust system must be tightly sealed.
- Stop, cool and clean engine of flammable materials before checking fluids.
- Keep body, jewelry and clothing away from moving parts, electrical contact, hot parts and exhaust.
- 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.
SERVICE SCHEDULE

Chart

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.

![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.

<table>
<thead>
<tr>
<th>SERVICE SCHEDULE</th>
<th>HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ITEM</strong></td>
<td><strong>SERVICE REQUIRED</strong></td>
</tr>
<tr>
<td>Engine Oil</td>
<td>Check the oil level and add as needed. Do not overfill.</td>
</tr>
<tr>
<td>Engine Air Filter and Air System</td>
<td>Check condition indicator. Service only when required. Check for leaks and damaged components.</td>
</tr>
<tr>
<td>Engine Cooling System</td>
<td>Clean debris from oil cooler, radiator and grille. Check coolant level COLD and add premixed coolant as needed.</td>
</tr>
<tr>
<td>Fuel Filter</td>
<td>Remove the trapped water.</td>
</tr>
<tr>
<td>Lift Arms, Cylinders, Bob-Tach Pivot Pins and Wedges</td>
<td>Lubricate with multipurpose lithium based grease.</td>
</tr>
<tr>
<td>Tires</td>
<td>Check for damaged tires and correct air pressure. Initiate to MAXIMUM pressure shown on sidewall of tire.</td>
</tr>
<tr>
<td>Seat Bar, Control Interlocks, Seat Belt</td>
<td>Check the condition of seat belt. Check the seat bar and control interlocks for correct operation. Clean dirt and debris from moving parts.</td>
</tr>
<tr>
<td>Front Horn</td>
<td>Check for proper function.</td>
</tr>
<tr>
<td>Bobcat Interlock Control Systems (BICS™)</td>
<td>Check for correct function: Lift and Tilt functions MUST NOT operate with seat bar raised. See details in this Manual.</td>
</tr>
<tr>
<td>Safety Signs and Safety Treads</td>
<td>Check for damaged signs (decals) and safety treads. Replace any signs or safety treads that are damaged or worn.</td>
</tr>
<tr>
<td>Operator Cab</td>
<td>Check the fastening bolts, washers and nuts. Check the condition of the cab.</td>
</tr>
<tr>
<td>Indicators and Lights</td>
<td>Check for correct operation of all indicators and lights.</td>
</tr>
<tr>
<td>Heater Filter (If Equipped)</td>
<td>Clean or replace filter as needed.</td>
</tr>
<tr>
<td>Hydraulic Fluid, Hoses and Tubelines</td>
<td>Check fluid level and add as needed. Check for damage and leaks. Repair or replace as needed.</td>
</tr>
<tr>
<td>Final Drive Trans. (Chaincase)</td>
<td>Check oil level and add oil as needed.</td>
</tr>
<tr>
<td>Parking Brake, Foot Pedals and Steering Levers</td>
<td>Check for correct operation. Repair or adjust as needed.</td>
</tr>
<tr>
<td>Wheel Nuts</td>
<td>Check for loose wheel nuts and tighten to correct torque. (See TYRE MAINTENANCE in this manual.)</td>
</tr>
<tr>
<td>Battery</td>
<td>Check cables, connections and electrolyte level. Add distilled water as needed.</td>
</tr>
<tr>
<td>Spark Arrester Muffler</td>
<td>Empty Spark Chamber.</td>
</tr>
<tr>
<td>Engine Oil and Filter</td>
<td>Replace oil and filter.</td>
</tr>
<tr>
<td>Alternator Belt</td>
<td>Check tension and adjust as needed.</td>
</tr>
<tr>
<td>Fuel Filter</td>
<td>Replace filter element.</td>
</tr>
<tr>
<td>Steering Shaft</td>
<td>Grease fittings.</td>
</tr>
<tr>
<td>Engine / Hydro. Drive Belt</td>
<td>Check for wear or damage. Adjust or replace as needed.</td>
</tr>
<tr>
<td>Bobcat Interlock Control System (BICS™)</td>
<td>Check the function of the lift arm bypass control.</td>
</tr>
<tr>
<td>Hydraulic Reservoir Breather Cap</td>
<td>Replace the reservoir breather cap.</td>
</tr>
<tr>
<td>Hyd/Hydro. Filter</td>
<td>Replace the filter element.</td>
</tr>
<tr>
<td>Final Drive Trans. (Chaincase)</td>
<td>Replace the fluid.</td>
</tr>
<tr>
<td>Hydraulic Reservoir</td>
<td>Replace the fluid.</td>
</tr>
<tr>
<td>Coolant</td>
<td>Replace the coolant Every 2 years</td>
</tr>
</tbody>
</table>

- Check every 8-10 hours for the first 50 hours, then as scheduled.
- First oil and filter change must occur at 50 hours, then as scheduled.
- Inspect new belt after first 50 hours, then as scheduled.
- Replace the hydraulic / hydrostatic filter element after the first 50 hours; thereafter when the transmission warning light comes ON while operating or as scheduled.
- Or every 12 months.

NOTE: The Inspection Checkbook can be ordered for you by your local dealer. Part number 4420300.
SERVICE SCHEDULE (CONT’D)

Inspection Checkbook

Regularly scheduled maintenance is essential to continuous operation and operating safety. The life expectancy of your machine depends on proper and meticulous care.

The Inspection Checkbook contains the following information:

- Doosan Benelux S.A. Warranty Conditions
- Protection Plus Extended Warranty Conditions
- General Parts Policy
- General Information
- First Inspection
- Scheduled Services
- Identification
- Authorised Identification
- Lubricants and Fluids Table
- Service Parts Chart

Your local dealer can order the Inspection Checkbook. Part number: 4420300.
BOBCAT INTERLOCK CONTROL SYSTEM (BICS™)

Perform the procedures on flat level ground and make sure the area is clear of bystanders.

Inspecting The BICS™ (Engine STOPPED - Key ON)

Figure 84

1. Sit in the operator’s seat, fasten the seat belt, turn the key ON (Keyless Start Panel - enter the password / user code on the keypad), lower the seat bar and disengage the parking brake. Press the PRESS TO OPERATE LOADER button (Item 1). The three BICS™ lights (Items 2, 3 and 4) on the right instrument panel must be OFF (SEAT BAR, LIFT & TILT VALVE, and PARKING BRAKE) [Figure 84].

2. Raise the seat bar fully. The three BICS™ lights (Items 2, 3 and 4) [Figure 84] on the right instrument panel must be ON (SEAT BAR, LIFT & TILT VALVE, and PARKING BRAKE).

NOTE: Record what lights are blinking (if any) and the number of light flashes.

Inspecting The Seat Bar Sensor (Engine RUNNING)

3. Fasten the seat belt, lower the seat bar and make sure the parking brake is engaged.

4. Start the 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 (Engine RUNNING)

5. Fasten seat belt, lower the seat bar, disengage the parking brake and press the PRESS TO OPERATE LOADER button. Raise the seat bar fully and move the steering levers slowly forward and backward. The traction drive system will be locked.

6. Fasten seat belt, lower the seat bar and press the PRESS TO OPERATE LOADER button. Engage the parking brake and move the steering levers slowly forward and backward. The traction drive system will be locked.

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

7. Raise the lift arms 2 m (6 ft) off the ground. Stop the engine. Turn the lift arm bypass control knob clockwise 1/4 turn. Pull out and hold the knob until the lift arms slowly lower.

WARNING

AVOID INJURY OR DEATH

The Bobcat Interlock Control System (BICS) must deactivate the lift, tilt, traction drive and front auxiliary hydraulic functions. If it does not, contact your dealer for service. DO NOT modify the system.
BOBCAT INTERLOCK CONTROL SYSTEM (BICS™) (CONT'D)

Inspecting Deactivation Of The Auxiliary Hydraulics System

Perform the procedures on flat level ground and make sure the area is clear of bystanders.

Figure 85

Engine Starting

8. Install an attachment with hydraulic connections. (See Installing And Removing The Attachment on Page 59.) Perform the pre-starting procedure. (See PRE-STARTING PROCEDURE on Page 49.) Fasten the seat belt, lower the seat bar and make sure the parking brake is engaged. Start the engine. Press the PRESS TO OPERATE LOADER button (Item 1) [Figure 85]. Move the Auxiliary Hydraulic Control Lever to the left or the right. The auxiliary hydraulic oil will flow to the attachment. (See Front Auxiliary Hydraulics Operation on Page 44.). There will not be hydraulic oil flow to the attachment.

Press the PRESS TO OPERATE LOADER button (Item 1) [Figure 85] and then engage the auxiliary hydraulics. The auxiliary hydraulic oil will flow to the attachment.

Engine Running

9. Install an attachment with hydraulic connections. (See Installing And Removing The Attachment on Page 59.) Perform the pre-starting procedure. (See PRE-STARTING PROCEDURE on Page 49.) Fasten the seat belt, lower the seat bar and make sure the parking brake is engaged. Start the engine. Press the PRESS TO OPERATE LOADER button (Item 1) [Figure 85]. Move the Auxiliary Hydraulic Control Lever to the left or the right. The auxiliary hydraulic oil will flow to the attachment. (See Front Auxiliary Hydraulics Operation on Page 44.) Raise the seat bar. The auxiliary hydraulic oil flow to the attachment will STOP.

WARNING

AVOID INJURY OR DEATH
The Bobcat Interlock Control System (BICS) must deactivate the lift, tilt, traction drive and front auxiliary hydraulic functions. If it does not, contact your dealer for service. DO NOT modify the system.

W-2689-1007
SEAT BAR RESTRAINT SYSTEM

Description

The seat bar restraint system has a pivoting seat bar with armrests.

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

The foot pedals have mechanical interlocks for the lift and tilt functions. The mechanical interlocks require the operator to lower the seat bar in order to operate the foot pedal controls.

When the seat bar is down, the PRESS TO OPERATE LOADER button is activated and the engine is running, 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.

Inspecting

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 both the lift and tilt functions operate correctly. Raise the lift arms until the attachment is about 600 mm (2 ft) off the ground.

Raise the seat bar. Move the hydraulic controls. Pedals must be firmly locked in the NEUTRAL position. 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, 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 to be sure they are firmly locked in the NEUTRAL position.

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.

Maintaining

See the service schedule for correct service interval. (See SERVICE SCHEDULE on Page 75.)

Figure 86

Use compressed air to clean any debris or dirt from the pivot parts (Item 1) [Figure 86] and [Figure 87]. Do not lubricate. Inspect all mounting hardware. The correct bolt torque is 34 - 38 Nm (25 - 28 ft-lb) for the seat bar pivot (Item 2) [Figure 86].

If the seat bar system does not function correctly, check for free movement of each linkage part. Check for excessive wear. Adjust pedal control linkage. Replace parts that are worn or damaged. Use only genuine Bobcat replacement parts.
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.

Check the seat belt daily for correct function.

Inspect the seat belt system thoroughly yearly or more often if the machine is exposed to severe environmental conditions or applications.

The seat belt system should be repaired or replaced if it shows cuts, fraying, extreme or unusual wear, significant discolorations due to ultraviolet (UV) rays from the sun, dusty/dirty conditions, abrasion to the seat belt webbing, or damage to the buckle, latch plate, retractor (if equipped), or hardware.

The items below are referenced in [Figure 88].

1. Check the seat belt 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 proper function. Make sure latch plate is not excessively worn, deformed or buckle is not damaged.

3. Check the retractor web storage device (if equipped) by extending the seat belt webbing to determine if it extends and retracts the 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 weakened.

See your Bobcat dealer for approved seat belt system replacement parts for your machine.
LIFT ARM SUPPORT DEVICE

Installing

Maintenance and service work can be done with the lift arms lowered. If the lift arms are raised, use the following procedures to engage and disengage an approved lift arm support device.

**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.

**DANGER**

Avoid death

- Disconnecting or loosening any hydraulic tubing, 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.

Remove the attachment from the loader. (See Installing And Removing The Attachment on Page 59.)

**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.

---

Figure 89

Put jackstands under the rear corners of the loader frame (Inset) [Figure 89].

Disconnect the spring (Item 1) from the lift arm support device retaining pin, Support the lift arm support device (Item 2) with your hand and remove the retaining pin (Item 3) [Figure 89].

Figure 90

Lower the lift arm support device to the top of the lift cylinder. Hook the free end of the spring (Item 1) [Figure 90] to the lift arms support device so there will be no interference with the support device engagement.
LIFT ARM SUPPORT DEVICE (CONT'D)

Installing (Cont'd)

With the operator in the seat, seat belt fastened and seat bar lowered, start the engine, press the PRESS TO OPERATE LOADER Button.

Figure 91

Raise the lift arms until the lift arm support device drops onto the lift cylinder rod (Item 1) [Figure 91].

Lower the lift arms slowly until the support device is held between the lift arm and the lift cylinder.

Stop the engine. Raise the seat bar and move both pedals until both pedals lock.

Install pin (Item 2) [Figure 91] into the rear of the lift arm support device below the cylinder rod.

Removing

Figure 92

Remove the retaining pin (Item 1) [Figure 92] from the lift arm support device.

Figure 93

Connect the spring from the lift arm support device to the tubeline bracket (Item 1) [Figure 93] on the lift arms.

With the operator in the seat, seat belt fastened and seat bar lowered, start the engine, press the PRESS TO OPERATE button.

Raise the lift arms a small amount. The spring will lift the support device off the lift cylinder rod.

Lower the lift arms and stop the engine.

Raise the seat bar, disconnect the seat belt and move the pedals until both pedals lock.

Disconnect the spring from the bracket.

Figure 94

Raise the support device into storage position and insert the pin through the lift arm support device and bracket (Item 1) [Figure 94].

Connect the spring to the pin [Figure 94]

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 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.

Inspecting

Figure 95

Inspect for damaged or missing back-up alarm decal (Item 1) [Figure 95]. 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 into the reverse position. The back-up alarm must sound when all wheels are moving in reverse.

The back-up alarm is located on the inside of the rear door.

Figure 96

Inspect the back-up alarm electrical connections (Item 1) [Figure 96], wire harness (Item 2) [Figure 96] and back-up alarm switches (Item 1) [Figure 97] or [Figure 97] for tightness and damage. Repair or replace any damaged components.

If the back-up alarm switches require adjustment, (See Adjusting Switch Position on Page 84.)
BACK-UP ALARM SYSTEM (CONT’D)

Adjusting Switch Position

Stop the engine and exit the loader. (See STOPPING THE ENGINE AND LEAVING THE LOADER on Page 57.)

Raise the operator cab. (See OPERATOR CAB on Page 85.)

Earlier Models

Place the steering levers in the neutral position.

![Figure 97](image)

Loosen the screws (Item 2) securing the back-up alarm switches (Item 1) [Figure 97].

Position the back-up alarm switch rollers so that they just make contact with the beveled edge of the switch guides without compressing the switch springs. Torque the screws (Item 2) [Figure 97] securing the switches to the bracket to 1.6 - 2.1 Nm (14 - 19 in-lb).

Later Models

![Figure 98](image)

The back-up alarm switches (Item 1) [Figure 98] are located on the hydrostatic pump controls.

NOTE: The back-up alarm switches on later model loaders do not require adjustment. See your Bobcat dealer for service if your back-up alarm does not sound.

All Models

Lower the operator cab. (See Lowering on Page 86.)

Inspect back-up alarm system for proper function. (See Inspecting on Page 83.)
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 ROPS / FOPS cab, mounting and hardware for damage. Never modify the ROPS / FOPS cab. Replace the cab and hardware if damaged. See your Bobcat dealer for parts.

ROPS / FOPS - Roll Over Protective Structure per ISO 3471, and Falling Object Protective Structure per ISO 3449, Level I.

Level I - Protection from falling bricks, small concrete blocks, and hand tools encountered in operations such as motorway maintenance, landscaping, and other construction sites.

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.

Raising

Always stop the engine before raising or lowering the cab.

Stop the loader on a level surface and 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 81.)

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.

DANGER

AVOID DEATH

- Disconnecting or loosening any hydraulic tubing, 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.
OPERATOR CAB (CONT’D)

Raising (Cont’d)

Figure 99

Install jackstands (Item 1) [Figure 99] under the rear corners of the loader frame.

Figure 100

Remove the nut and plate (Items 1 and 2) [Figure 100] on the inside front corner of the cab (both sides).

Figure 101

Lift on the grab handle and bottom of the operator cab slowly until the cab is all the way up and the latching mechanism engages [Figure 101].

Lowering

WARNING

AVOID INJURY OR DEATH
The cab must be held to prevent falling while hand is in access hole.

Always stop the engine before raising or lowering the cab.

Figure 102

Hold the operator cab. Release the locking mechanism by pushing the lever (Item 1) in from the locked position (Item 2) and turning the lever until it stays in the unlocked position (Item 3) [Figure 102].
OPERATOR CAB (CONT'D)

Lowering (Cont'd)

REMOVE YOUR HAND FROM THE HOLE BEFORE LOWERING THE OPERATOR CAB.

Stand on the ground and pull the cab down. Avoid slippery surfaces. Use both hands to lower the cab all the way down.

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

NOTE: Always use the grab handles (once you can reach them) to lower the cab.

Figure 103

Install the plates and nuts (Items 1 and 2) [Figure 103] (both sides).

Tighten the nuts to 54 - 61 Nm (40 - 45 ft-lb) torque.

If equipped with a heater, do the following:

Earlier Model Heater

NOTE: The heater hose connectors will disconnect when the cab is raised. The heater hose connectors must be reconnected for the heater to work after the cab is lowered and secured.

Move the seat as far forward as needed to access the heater hose connectors that are located at the rear of the cab.

Later Model Heater

The heater hoses are routed through the rear wall of the cab behind the heater and will remain connected while raising and lowering the cab.

From behind the operator's seat, push the two heater quick connectors (Item 1) [Figure 104] into the heater couplers.
REAR DOOR (TAILGATE)
Opening And Closing

WARNING
AVOID INJURY OR DEATH
Never service or adjust the machine when the engine is running unless instructed to do so in the manual.

Figure 105

Remove the latch pin (Item 1) [Figure 105] and pull the rear door open.

Open the rear door for engine service.

WARNING
Keep the rear door closed when operating the machine. Failure to do so could seriously injure a bystander.

Close the rear door before operating the loader.
AIR CLEANER SERVICE

Replacing Filter Elements

Figure 106

Replace the large (outer) filter element only when the red ring shows in the window of the condition indicator (Item 1) [Figure 106].

NOTE: Before replacing the filter element, push the button on the condition indicator (Item 2) [Figure 106]. Start the engine. If the red ring does not show, do not replace the filter element.

Outer Filter

Open the evacuator valve (Item 3) [Figure 106] to get rid of large particles of dust and dirt.

Remove the dust cover by lifting the latches (Item 4) [Figure 106].

Figure 107

Pull the element straight out (Item 1) [Figure 107].

Install a new outer element.

Install the dust cover [Figure 106].

Inner Filter

Replace the inner filter every third time the outer filter is replaced or when the red ring still shows in the indicator window after the outer filter has been replaced.

Figure 108

Remove the inner filter (Item 1) [Figure 108].

NOTE: Make sure all sealing surfaces are free of dirt and debris.

Install a new inner element.

Install the outer element.

Install the dust cover [Figure 106].

Check the air intake hose and the air cleaner housing for damage. Make sure all connections are tight.
FUEL SYSTEM

Fuel Specifications

Use only clean, high quality diesel fuel, Grade No. 2 or Grade No. 1.

The following is one suggested blending guideline which should prevent fuel gelling during cold temperatures:

<table>
<thead>
<tr>
<th>TEMPERATURE C° (F°)</th>
<th>NO. 2</th>
<th>NO. 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>-9° (+15°)</td>
<td>100%</td>
<td>0%</td>
</tr>
<tr>
<td>Down to -29° (-20°)</td>
<td>50%</td>
<td>50%</td>
</tr>
<tr>
<td>Below -29° (-20°)</td>
<td>0%</td>
<td>100%</td>
</tr>
</tbody>
</table>

At a minimum, low sulfur diesel fuel must be used in this machine. Low sulfur is defined as 500 mg/kg (500 ppm) sulfur maximum.

The following fuels may also be used in this machine:

- Ultra low sulfur diesel fuel. Ultra low sulfur is defined as 15 mg/kg (15 ppm) sulfur maximum.
- Biodiesel blend fuel - Must contain no more than five percent biodiesel mixed with low sulfur or ultra low sulfur petroleum based diesel. This is commonly marketed as B5 blended diesel fuel. B5 blended diesel fuel must meet ASTM D975 (US Standard) or EN590 (EU Standard) 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 which 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 vehicle storage; drain the fuel tank, refill with 100% petroleum diesel fuel, add fuel stabiliser and run 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 three 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.

![Figure 109](image)

The fuel gauge (Item 1) [Figure 109] is located on the right side of the loader.

![Figure 110](image)

Remove the fill cap (Item 1) [Figure 110].

**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.

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 111].

Install and tighten the fuel fill cap (Item 1) [Figure 110].
FUEL SYSTEM (CONT’D)

Fuel Filter

For the service interval for removing water from, or replacing the fuel filter (See SERVICE SCHEDULE on Page 75.)

Removing Water

Figure 112

Loosen the drain (Item 1) [Figure 112] at the bottom of the filter element to remove water from the filter.

Replacing Element

Remove the filter element (Item 2) [Figure 112].

Clean the area around the filter housing. Put clean oil on the seal of the new filter element. Install the fuel filter, and hand tighten.

Remove air from the fuel system. (See Removing Air From The Fuel System on Page 92.)

Removing Air From The Fuel System

After replacing the filter element or when the fuel tank has run out of fuel, the air must be removed from the fuel system before starting the engine.

Open the vent (Item 3) [Figure 112] on the fuel filter housing.

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.

Squeeze the hand pump (priming bulb) (Item 4) [Figure 112] until there are no air bubbles exiting the vent.

Close the vent (Item 3) [Figure 112] on the fuel filter housing.

With the operator in the seat, seat belt fastened, seat bar lowered and parking brake engaged, start the engine.

NOTE: If the engine fails to start, remove air from the fuel injection pump as follows.

Put jackstands under rear of the frame and raise operator cab. (See Raising on Page 85.)

Figure 113

Open the valve (Item 1) [Figure 113] on the injector pump and squeeze the hand pump (Item 4) [Figure 112] several times until fuel comes from the valve.

Close the valve.

Lower the operator cab. (See Lowering on Page 86.)

Remove jackstands.
ENGINE LUBRICATION SYSTEM

Checking And Adding Engine Oil

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

**Figure 114**

Park the machine on level ground. Open the rear door and remove the dipstick (Item 1) [Figure 114]. Keep the oil level between the marks on the dipstick. Do not overfill.

Engine Oil Chart

**Figure 115**

<table>
<thead>
<tr>
<th>TEMPERATURE RANGE ANTIPIATED BEFORE NEXT OIL CHANGE (DIESEL ENGINES MUST USE API CLASSIFICATION CI-4 OR BETTER)</th>
</tr>
</thead>
<tbody>
<tr>
<td>[1] Synthetic Oil - Use recommendation from Synthetic Oil Manufacturer.</td>
</tr>
</tbody>
</table>

Use good quality engine oil that meets API Service Classification of CI-4 or better [Figure 115].

Removing And Replacing Oil And Filter

For the service interval for replacing the engine oil and filter (See SERVICE SCHEDULE on Page 75.)

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

Open the rear door and remove the drain hose (Item 2) [Figure 114] from its storage position.

**Figure 116**

Remove the oil drain cap (Item 1) [Figure 116] and drain the oil into a container. Recycle or dispose of used oil in an environmentally safe manner.

Remove the oil filter (Item 2) [Figure 116] and clean the filter housing surface.

Use genuine Bobcat filter only. Put oil on the new filter gasket, install the filter and hand tighten.

Install and tighten the oil drain cap and return the drain hose to the stored position.

Remove the fill cap and put oil in the engine. For the correct quantity (See Capacities on Page 124.) Do not overfill.

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

Add oil as needed if it 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
ENGINE COOLING SYSTEM

Check the cooling system every day to prevent overheating, loss of performance or engine damage.

Cleaning

Open the rear door.

Figure 117

WARNING

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.

Use low air pressure or water pressure to clean the top of the radiator (Item 1) [Figure 117].

Check the cooling system for leaks.

Close the rear door.

Checking Level

Open the rear door.

WARNING

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.

Figure 118

Remove the coolant fill cap (Item 1) [Figure 118]. Check the coolant level. The level markers are on the tank. Coolant must be at the bottom marker when the engine is cold and on the top marker when hot.

Use a refractometer to check the condition of propylene glycol in your cooling system.

Close the rear door before operating the loader.

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.
ENGINE COOLING SYSTEM (CONT’D)

Removing And Replacing Coolant

Open the rear door.

Figure 119

Remove the coolant fill cap (Item 1) [Figure 119].

Figure 120

Connect a hose to the engine block drain valve (Item 1) [Figure 120] (located below the starter). Open the drain valve and drain the coolant into a container.

After all the coolant is removed, close the drain valve and remove the hose.

NOTE: Fluids such as engine oil, hydraulic fluid, coolant, etc. 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 bylaws for correct disposal.

Mix new coolant in a separate container. (See Capacities on Page 124.)

NOTE: The loader is factory filled with propylene glycol coolant (purple colour). DO NOT mix propylene glycol with ethylene glycol.

Remove the radiator cap (Item 2) [Figure 119] and fill the radiator with premixed coolant, 47% water and 53% propylene glycol. Reinstall the radiator cap.

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.

Fill the recovery tank with premixed coolant until it is at the lower marker on the tank.

Use a refractometer to check the condition of propylene glycol in your cooling system and replace the coolant fill cap (Item 1) [Figure 119].

Run the engine until it is at operating temperature. After stopping the engine, let it cool down and check the coolant level again. Add coolant as needed.

Close the rear door.

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.
ELECTRICAL SYSTEM

Description

The loader has a 12 volt, negative earth alternator charging system. The electrical system is protected by fuses located 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 121

The electrical system is protected from overload by fuses and relays under the fuse panel cover (Item 1) [Figure 121]. A decal is inside the cover to show location and amperage ratings.

Figure 122

Remove the cover to check or replace the fuses [Figure 122].

There is a decal [Figure 123] inside the fuse panel cover which shows location and size of fuses. Description and amperage ratings (or relays) are also shown below.

<table>
<thead>
<tr>
<th>REF.</th>
<th>DESCRIPTION</th>
<th>AMPS</th>
<th>REF.</th>
<th>DESCRIPTION</th>
<th>AMPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fan</td>
<td>20</td>
<td>10</td>
<td>Fuel Solenoid</td>
<td>R</td>
</tr>
<tr>
<td>2</td>
<td>Fan</td>
<td>20</td>
<td>11</td>
<td>Switched Power</td>
<td>R</td>
</tr>
<tr>
<td>3</td>
<td>BICS/Brakes/Remote Start</td>
<td>25</td>
<td>12</td>
<td>Glow Plug</td>
<td>R</td>
</tr>
<tr>
<td>4</td>
<td>Accessory Back-up Alarm</td>
<td>25</td>
<td>13</td>
<td>Fan</td>
<td>R</td>
</tr>
<tr>
<td>5</td>
<td>Controller</td>
<td>25</td>
<td>14</td>
<td>Traction Lock</td>
<td>R</td>
</tr>
<tr>
<td>6</td>
<td>Glow Plug</td>
<td>40</td>
<td>15</td>
<td>Starter</td>
<td>R</td>
</tr>
<tr>
<td>7</td>
<td>Traction Lock</td>
<td>25</td>
<td>16</td>
<td>Lights</td>
<td>25</td>
</tr>
<tr>
<td>8</td>
<td>Gauge/Fan Relay</td>
<td>10</td>
<td>17</td>
<td>Power Point</td>
<td>10</td>
</tr>
<tr>
<td>9</td>
<td>Not Used</td>
<td>R</td>
<td>18</td>
<td>Engine/Horn</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>19</td>
<td>Fuel Solenoid</td>
<td>25</td>
</tr>
</tbody>
</table>

R = Relay
ELECTRICAL SYSTEM (CONT’D)

Battery Maintenance

Figure 124

The battery cables must be clean and tight [Figure 124]. Check electrolyte level in the battery. Add distilled water as needed. Remove acid or corrosion from battery and cables with sodium bicarbonate (baking soda) and water solution.

Put Battery Saver (6988074) or grease on the battery terminals and cable ends to prevent corrosion.

![Figure 124](image)

**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

Using A Booster Battery (Jump Starting)

If it is necessary to use a booster battery to start the engine, BE CAREFUL! There must be one person in the operator’s seat and one person to connect and disconnect the battery cables.

Figure 125

The key switch (Item 1) must be in the OFF position or the STOP button (Item 2) [Figure 125] must be pressed. The booster battery must be 12 volt.

The key switch (Item 1) must be in the OFF position or the STOP button (Item 2) [Figure 125] must be pressed. The booster battery must be 12 volt.

**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
Using A Booster Battery (Jump Starting) (Cont’d)

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.

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.

Figure 126

Connect the end of the first cable to the positive (+) terminal (Item 1) of the booster battery. Connect the other end of the same cable to the positive terminal (Item 2) [Figure 126] on the loader starter.

Connect the end of the second cable to the negative (-) terminal (Item 3) of the booster battery. Connect the other end of the same cable (Item 4) [Figure 126] to the engine.

NOTE: Keep cables away from moving parts.

Start the engine. (See STARTING THE ENGINE on Page 52.)

After the engine has started, remove the negative (-) cable (Item 4) [Figure 126] first.
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.

Open the rear door.

**Figure 127**

Disconnect the negative (-) battery cable (Item 1) [Figure 127].

Remove the battery hold down clamp (Item 2) [Figure 127].

Disconnect the positive (+) cable (Item 3) [Figure 127] from the battery.

Remove the battery from the loader.

NOTE: When removing or installing the battery in the loader, do not touch any metal parts with the battery terminals.

Always clean the battery terminals and cable ends when installing a new or used battery [Figure 128].

**Figure 128**

NOTE: Always connect the negative (-) cable last and remove it first to prevent sparks.

Connect the positive (+) battery cable.

Install and tighten the battery hold down clamp.

Connect the negative (-) battery cable.

Close the rear door before operating the loader.
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 tilt the Bob-Tach fully back.

Stop the engine and exit the loader. (See STOPPING THE ENGINE AND LEAVING THE LOADER on Page 57.)

Figure 129

Remove the dipstick (Item 1) and allow the oil level to stabilise for 10 - 15 seconds. Install the dipstick and remove to check the fluid level.

NOTE: Hydraulic oil level in the dipstick tube must be allowed to stabilise before it is checked or the dipstick may incorrectly indicate a low fluid condition.

If fluid is needed, add fluid through the dipstick / fill tube.

Hydraulic / Hydrostatic Fluid Chart

Figure 130

<table>
<thead>
<tr>
<th>ISO Viscosity Grade (VG)</th>
<th>Viscosity Index (VI)</th>
<th>Temperature Range Anticipated During Machine Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>VG 100</td>
<td>Minimum VI 130</td>
<td>[1] VG 100; Minimum VI 130</td>
</tr>
<tr>
<td>VG 46</td>
<td>Minimum VI 150</td>
<td>[2] VG 46; Minimum VI 150</td>
</tr>
<tr>
<td>BOBCAT Biodegradable Hydraulic / Hydrostatic Fluid</td>
<td>[5] BOBCAT Biodegradable Hydraulic / Hydrostatic Fluid</td>
<td>(Unlike biodegradable fluids that are vegetable based, Bobcat biodegradable fluid is formulated to prevent oxidation and thermal breakdown at operating temperatures.)</td>
</tr>
</tbody>
</table>

Use only recommended fluid in the hydraulic system [Figure 130].
HYDRAULIC / HYDROSTATIC SYSTEM (CONT’D)

Removing And Replacing Hydraulic Fluid

For the correct service interval (See SERVICE SCHEDULE on Page 75.)

Replace the fluid if it becomes contaminated or after major repair.

Always replace the hydraulic / hydrostatic filter whenever the hydraulic fluid is replaced. (See Removing And Replacing Hydraulic / Hydrostatic Filter on Page 102.)

Figure 131

Remove the bolt (Item 1) [Figure 131] from the dipstick / fill tube mounting bracket.

Figure 132

Remove the dipstick from the hydraulic fill tube and rotate the tube down into a container [Figure 132] to drain the reservoir.

NOTE: Fluids such as engine oil, hydraulic fluid, coolant, etc. 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 bylaws for correct disposal.

After the hydraulic fluid is completely drained, rotate the hydraulic fill tube back to the original position and reinstall the bolt (Item 1) [Figure 131] to the fill tube mounting bracket.

Fill the hydraulic system with the correct amount and type of hydraulic fluid. (See Hydraulic / Hydrostatic Fluid Chart on Page 100.) and (See Capacities on Page 124.)
HYDRAULIC / HYDROSTATIC SYSTEM (CONT’D)

Removing And Replacing Hydraulic / Hydrostatic Filter

For the correct service interval (See SERVICE SCHEDULE on Page 75.)

Stop the engine and exit the loader. (See STOPPING THE ENGINE AND LEAVING THE LOADER on Page 57.)

Raise the operator cab. (See Raising on Page 85.)

Figure 133

Remove the filter (Item 1) [Figure 133].

Clean the surface of the filter housing where the filter seal contacts the housing.

Put clean oil on the seal of the new filter element. Install and hand tighten the filter element.

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.

Lower the operator cab. (See Lowering on Page 86.)

Start the engine and operate the loader hydraulic controls.

Stop the engine and exit the loader. (See STOPPING THE ENGINE AND LEAVING THE LOADER on Page 57.)

Check for leaks at the filter.

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

Check fluid level and add as needed. (See Checking And Adding Fluid on Page 100.)

Breather Cap

Replace the breather cap at the correct service interval. (See SERVICE SCHEDULE on Page 75.)

Raise the cab. (See Raising on Page 85.)

Figure 134

Thoroughly clean the area around the breather cap.

Remove the breather cap (Item 1) [Figure 134] and discard.

Install new breather cap.

Lower the cab. (See Lowering on Page 86.)
SPARK ARRESTER MUFFLER

Cleaning Procedure

See the SERVICE SCHEDULE for service interval for cleaning the spark arrester muffler. (See SERVICE SCHEDULE on Page 75.)

Do not operate the loader with a defective exhaust system.

IMPORTANT

This machine is factory equipped with a spark arrester exhaust system.

The spark arrester muffler, if equipped, must be cleaned to keep it in working condition. The spark arrester muffler must be serviced by dumping the spark chamber every 100 hours of operation.

On some models, the turbocharger functions as the spark arrester and must operate correctly for proper spark arrester function.

If this machine is operated on flammable forest, brush, or grass covered 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.

Start the engine and run for about 10 seconds while a second person, wearing safety goggles, holds a piece of wood over the outlet of the muffler. This will force contaminants out through the cleanout hole.

Stop the engine and exit the loader. (See STOPPING THE ENGINE AND LEAVING THE LOADER on Page 57.)

Install and tighten the plug.

WARNING

When the engine is running during service, the driving and steering controls must be in neutral and the parking brake engaged. Failure to do so can cause injury or death.

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.

WARNING

Stop engine and allow the muffler to cool before cleaning the spark chamber. Wear safety goggles. Failure to obey can cause serious injury.

WARNING

Never use machine in atmosphere with explosive dust or gases or where exhaust can contact flammable material. Failure to obey warnings can cause injury or death.

Figure 135

Remove the plug (Item 1) [Figure 135] from the bottom of the muffler.
TYRE MAINTENANCE

Wheel Nuts

Figure 136

See the SERVICE SCHEDULE for the service interval to check the wheel nuts [Figure 136]. (See SERVICE SCHEDULE on Page 75.)

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 over-tightening.

Rotating

Check the tyres regularly for wear, damage and pressure. Inflate tyres to the maximum pressure shown on the sidewall of the tyre.

Figure 137

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 137].

It is important to keep all tyres the same size. If different sizes are used, each tyre will be turning 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 and loss of stability and handling capability. Check for the correct pressure before operating the loader.

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 which can rupture the tyre and cause serious injury or death.

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

A 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.

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.
FINAL DRIVE TRANSMISSION (CHAINCASE)

Checking And Adding Oil

The chaincase contains the final drive sprockets and chains. Use the same type of oil as the hydraulic / hydrostatic system.

Park the loader on a level surface.

Stop the engine and exit the loader. (See STOPPING THE ENGINE AND LEAVING THE LOADER on Page 57.)

Install jackstands under the rear corners of the loader frame.

Enter the loader and raise the loader lift arms. Install the Lift Arm Support Device. (See LIFT ARM SUPPORT DEVICE on Page 81.)

Stop the engine and exit the loader. (See STOPPING THE ENGINE AND LEAVING THE LOADER on Page 57.)

Figure 138

Remove the check plug (Item 1) [Figure 138] from the front of the chaincase housing.

If oil can be reached with the tip of your finger through the hole, the oil level is correct.

If the level is low, add lubricant through the check plug hole until the oil flows from the hole.

Install and tighten the plug.

Lower the lift arms. (See LIFT ARM SUPPORT DEVICE on Page 81.)

Remove jackstands.

Removing And Replacing Oil

Park the loader on a level surface.

Stop the engine and exit the loader. (See STOPPING THE ENGINE AND LEAVING THE LOADER on Page 57.)

Install jackstands under the rear corners of the loader frame.

Enter the loader and raise the loader lift arms. Install the Lift Arm Support Device. (See LIFT ARM SUPPORT DEVICE on Page 81.)

Stop the engine and exit the loader. (See STOPPING THE ENGINE AND LEAVING THE LOADER on Page 57.)

Remove the check plug (Item 1) [Figure 138] from the front of the chaincase housing.

Figure 139

Use a pump to suction the oil from the chaincase [Figure 139].

Recycle or dispose of the used oil in an environmentally safe manner.

Add new oil until the oil flows from the hole.

Install and tighten the plug.

Lower the lift arms. (See LIFT ARM SUPPORT DEVICE on Page 81.)

Remove jackstands.
ALTERNATOR BELT

Belt Adjustment

Stop the engine and exit the loader. (See STOPPING THE ENGINE AND LEAVING THE LOADER on Page 57.)

Open the rear door. (See REAR DOOR (TAILGATE) on Page 88.)

Figure 140

Loosen the alternator mounting bolt (Item 1) [Figure 140].

Loosen the adjustment bolt (Item 2) [Figure 140].

The tension is correct with 6 mm (1/4 in) belt movement at mid span when 67 N (15 lb) force is applied to the belt.

Tighten the adjustment bolt and mounting bolt.

Close the rear door.

Belt Replacement

Stop the engine and exit the loader. (See STOPPING THE ENGINE AND LEAVING THE LOADER on Page 57.)

Open the rear door. (See REAR DOOR (TAILGATE) on Page 88.)

Loosen the alternator mounting and adjustment bolts (Items 1 and 2) [Figure 140] and loosen the belt all the way.

Remove the belt and install a new belt.

The tension is correct with 6 mm (1/4 in) belt movement at mid span when 67 N (15 lb) force is applied to the belt.

Tighten the adjustment bolt and mounting bolt.

Close the rear door.
DRIVE BELT

Belt Adjustment

The drive belt does not need adjustment. The belt has a spring loaded idler which is constantly adjusted.

Belt Replacement

Stop the engine and exit the loader. (See STOPPING THE ENGINE AND LEAVING THE LOADER on Page 57.)

Open the rear door and disconnect the negative (-) cable from the battery.

Figure 141

Use a socket wrench (without socket) to move the spring loaded belt tensioner (Item 1) [Figure 141] upward.

While holding the spring loaded belt tensioner up, you can remove the drive belt (Item 2) [Figure 141].

Carefully lower the spring loaded belt tensioner to its stop.

Install a new drive belt by reversing the above procedure.
LUBRICATING THE LOADER

Lubrication Locations

Lubricate the loader as specified for the best performance of the loader. (See SERVICE SCHEDULE on Page 75.)

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.

Lubricate the following locations on the loader:

1. Base End Lift Cylinder (Both Sides) [Figure 142].

2. Rod End Lift Cylinder (Both Sides) [Figure 143].

3. Lift Arm Pivot Pin (Both Sides) [Figure 144].

4. Rod End Tilt Cylinder [Figure 145].
LUBRICATING THE LOADER (CONT’D)

Lubrication Locations (Cont’d)

Figure 146

5. Base End Tilt Cylinder [Figure 146].

Figure 147

6. Bob-Tach Pivot Pin (Both Sides) [Figure 147].

7. Bob-Tach Wedge (Both Sides) [Figure 147].

8. 250 Hours: Steering shaft pivot bearings (Both Sides) [Figure 148].
PIVOT PINS

Inspection And Maintenance

Figure 149

All lift arm and cylinder pivots have a large pin held in position with a retainer bolt and lock nut (Item 1) [Figure 149] and [Figure 150].

Tighten to 24 - 27 N•m (18 - 20 ft-lb) torque.

Do not over tighten.

Figure 150

Check the following pivot pins (Items 1 - 6) [Figure 151] and [Figure 152].

Repeat for (Items 1 - 5) [Figure 151] on the opposite side of the loader.
BOB-TACH

Inspection And Maintenance

Figure 153

Move the Bob-Tach levers down to engage the wedges [Figure 153].

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.

Figure 154

The wedges (Item 1) must extend through the holes in the attachment mounting frame (Item 2) [Figure 154].

The spring loaded wedge (Item 1) [Figure 154] must contact the lower edge of the hole in the attachment (Item 2).

If the wedge does not contact the lower edge of the hole [Figure 154], the attachment will be loose and can come off the Bob-Tach.

Figure 155

Inspect the mounting frame on the attachment and Bob-Tach, linkages and wedges for excessive wear or damage [Figure 155]. 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 75.) and (See LUBRICATING THE LOADER on Page 108.)
LOADER STORAGE AND RETURN TO SERVICE

Storage

Sometimes it may be necessary to store your Bobcat Loader for an extended period of time. Below is a list of items to perform before 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 in the fuel tank and run the engine a few minutes to circulate the stabiliser to the pump and fuel injectors.
• Drain and flush the cooling system. Refill with premixed coolant.
• Replace all fluids and filters (engine, hyd./hydro.).
• Replace air cleaner, heater and air conditioning filters.
• Put all controls in neutral position.
• Remove the battery. Be sure the electrolyte level is correct then charge the battery. Store it in a cool dry place above freezing temperatures and charge it periodically during storage.
• Cover the exhaust pipe opening.
• Tag the machine to indicate that it is in storage condition.

Return To Service

After the Bobcat Loader has been in storage, it is necessary to follow a list of items to return the loader to service.

• Check the engine and hydraulic oil 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 place.
• Lubricate the loader.
• Check tyre inflation and remove blocks from under frame.
• Remove cover from exhaust pipe opening.
• Start the engine and let run 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.
<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>TROUBLESHOOTING</td>
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<tr>
<td>Troubleshooting The Engine</td>
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<tr>
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<td>117</td>
</tr>
</tbody>
</table>
## Troubleshooting

The following information identifies loader problems which can occur most often. Service procedures for correcting loader problems can be found in this manual on the pages indicated. Some procedures are marked DS (Dealer Service) and must be performed only by qualified Bobcat service personnel.

### 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.

### Troubleshooting The Engine

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>CAUSE</th>
<th>CORRECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine will not turn over with starter.</td>
<td>Battery has low charge.</td>
<td>Charge battery and find cause for loss of charge.</td>
</tr>
<tr>
<td></td>
<td>Cables loose or dirty.</td>
<td>Clean and tighten battery cables.</td>
</tr>
<tr>
<td></td>
<td>Damaged starter, solenoid or wiring</td>
<td>Check the starting circuit.</td>
</tr>
<tr>
<td>Engine turns with starter, but is difficult to start.</td>
<td>Wrong starting procedure.</td>
<td>Use correct starting procedure.</td>
</tr>
<tr>
<td></td>
<td>No fuel in tank.</td>
<td>Add fuel.</td>
</tr>
<tr>
<td></td>
<td>Dirt or water in fuel system.</td>
<td>Perform maintenance as needed.</td>
</tr>
<tr>
<td></td>
<td>Damaged fuel pump.</td>
<td>Make repairs as needed.</td>
</tr>
<tr>
<td></td>
<td>Fuel filter is dirty.</td>
<td>Install new filter.</td>
</tr>
<tr>
<td></td>
<td>Hole in fuel line.</td>
<td>Make repairs as needed.</td>
</tr>
<tr>
<td></td>
<td>Wrong oil in engine.</td>
<td>See Oil Specification</td>
</tr>
<tr>
<td></td>
<td>Engine has lost compression.</td>
<td>Recondition the engine.</td>
</tr>
<tr>
<td></td>
<td>Engine has overheated.</td>
<td>Check cooling system.</td>
</tr>
<tr>
<td></td>
<td>Poor fuel quality.</td>
<td>Use fresh, good quality fuel.</td>
</tr>
<tr>
<td>Engine has little power or runs rough.</td>
<td>Dirt, water or air in fuel system.</td>
<td>Clean and repair as needed.</td>
</tr>
<tr>
<td></td>
<td>Engine has overheated.</td>
<td>Check cooling system.</td>
</tr>
<tr>
<td></td>
<td>Governor adjustment is wrong.</td>
<td>Check and make adjustment if needed.</td>
</tr>
<tr>
<td></td>
<td>Dirty air cleaner filter.</td>
<td>Check air cleaner, replace filter as needed.</td>
</tr>
<tr>
<td></td>
<td>Engine has lost compression</td>
<td>Recondition the engine.</td>
</tr>
<tr>
<td>Engine overheats.</td>
<td>Cooling system is dirty, Air flow restricted.</td>
<td>Clean cooling system</td>
</tr>
<tr>
<td></td>
<td>Engine shrouding damaged or missing.</td>
<td>Repair or replace.</td>
</tr>
<tr>
<td></td>
<td>Engine is overloaded.</td>
<td>Run at full rpm.</td>
</tr>
</tbody>
</table>
## Troubleshooting (Cont'd)

### Troubleshooting The Hydraulic System

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>CAUSE</th>
<th>CORRECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>No hydraulic action.</td>
<td>No hydraulic fluid.</td>
<td>Check fluid level and add as needed.</td>
</tr>
<tr>
<td></td>
<td>Pedals are disconnected.</td>
<td>Check linkage. Repair as needed.</td>
</tr>
<tr>
<td></td>
<td>Relief valve is damaged.</td>
<td>Replace the relief valve.</td>
</tr>
<tr>
<td></td>
<td>Hydraulic pump is damaged.</td>
<td>Check pump and replace as needed.</td>
</tr>
<tr>
<td></td>
<td>Hydraulic fluid is too thick. (cold temperature)</td>
<td>Let engine run to warm the hydraulic fluid.</td>
</tr>
<tr>
<td>Hydraulic action is rough.</td>
<td>Hydraulic fluid level is low.</td>
<td>Check fluid level and add as needed.</td>
</tr>
<tr>
<td>Hydraulic action is slow.</td>
<td>Pedal is hitting floor or debris under pedal.</td>
<td>Check adjustment. Remove dirt.</td>
</tr>
<tr>
<td></td>
<td>Cylinders leak internally.</td>
<td>Check condition of cylinders and repair as needed.</td>
</tr>
<tr>
<td></td>
<td>Hydraulic pump is damaged.</td>
<td>Check pump and replace as needed.</td>
</tr>
<tr>
<td></td>
<td>Control valve is damaged</td>
<td>Check valve and repair as needed.</td>
</tr>
<tr>
<td></td>
<td>Hydraulic fluid is too thick. (cold temperature)</td>
<td>Let engine run to warm the hydraulic fluid.</td>
</tr>
<tr>
<td>Hydraulic cylinders leak fluid.</td>
<td>Damage to cylinder rods or seals.</td>
<td>Repair cylinders.</td>
</tr>
<tr>
<td>No hydraulic flow to the front auxiliary hydraulic couplers.</td>
<td>Auxiliary hydraulic interlock valve closed.</td>
<td>Check auxiliary hydraulic interlock valve and solenoid for proper function. Repair or replace as needed.</td>
</tr>
</tbody>
</table>

### Troubleshooting The Hydrostatic System

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>CAUSE</th>
<th>CORRECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>No drive on both sides.</td>
<td>Hydraulic fluid is low.</td>
<td>Check fluid level. Add as needed.</td>
</tr>
<tr>
<td></td>
<td>T0 Micon filter is damaged.</td>
<td>Replace filter.</td>
</tr>
<tr>
<td></td>
<td>Damaged gear pump.</td>
<td>Check condition of gear pump and replace if bad.</td>
</tr>
<tr>
<td>No drive on one side.</td>
<td>Hydrostatic system is damaged.</td>
<td>Check hydrostatic system.</td>
</tr>
<tr>
<td></td>
<td>Control linkage is disconnected.</td>
<td>Repair linkage.</td>
</tr>
<tr>
<td>Machine pulls to one side.</td>
<td>Wrong tyre pressure.</td>
<td>Check all tyres</td>
</tr>
<tr>
<td></td>
<td>Steering linkage interference.</td>
<td>Check steering linkage</td>
</tr>
<tr>
<td></td>
<td>Damaged hydrostatic pump / motor.</td>
<td>Check system.</td>
</tr>
<tr>
<td>Machine moves when levers are in neutral.</td>
<td>Steering linkage out of adjustment.</td>
<td>Adjust steering linkage</td>
</tr>
<tr>
<td>System is overheating.</td>
<td>Hydraulic fluid level is low.</td>
<td>Check fluid level.</td>
</tr>
<tr>
<td></td>
<td>Plugged filter.</td>
<td>Install new filter element.</td>
</tr>
<tr>
<td></td>
<td>Low charge pressure.</td>
<td>Check by-pass valve.</td>
</tr>
<tr>
<td></td>
<td>Bobcat is overloaded.</td>
<td>Use correct size attachment and run engine at full rpm.</td>
</tr>
<tr>
<td></td>
<td>Hydrostatic transmission damaged.</td>
<td>Check hydrostatic system.</td>
</tr>
</tbody>
</table>
BOBCAT INTERLOCK CONTROL SYSTEM (BICS™)

Troubleshooting

The following list shows the probable causes when the BICS™ lights are off or flashing and the associated service codes. (See TROUBLESHOOTING on Page 115.)

<table>
<thead>
<tr>
<th>Indicator Light</th>
<th>LED Function</th>
<th>Effect on Operation of Loader when Light is ON</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong></td>
<td>Seat Bar is up.</td>
<td>Lift and tilt functions will not operate.</td>
</tr>
<tr>
<td></td>
<td>Seat Bar is down.</td>
<td></td>
</tr>
<tr>
<td><strong>2</strong></td>
<td>Control valve cannot be used.</td>
<td>Lift and tilt functions will not operate.</td>
</tr>
<tr>
<td></td>
<td>Control valve can be used.</td>
<td></td>
</tr>
<tr>
<td><strong>3</strong></td>
<td>Loader cannot be moved forward and backward.</td>
<td>Loader cannot be moved forward and backward.</td>
</tr>
<tr>
<td></td>
<td>Loader can be moved forward and backward.</td>
<td></td>
</tr>
</tbody>
</table>

Viewing Diagnostic Service Codes

The Seat Bar Light (Item 1), Valve Light (Item 2) and Parking Brake Light (Item 3) will flash to indicate SERVICE CODES. These lights may flash while the engine is running or with the engine OFF and the key ON.

**NOTE:** Multiple SERVICE CODES and/or abnormal symptoms can be caused by a corroded or loose earth. Check earths and both battery connections.

The list below contains SERVICE CODES. These codes help analyze monitored functions of your Bobcat loader. Some service procedures must be performed ONLY BY QUALIFIED BOBCAT SERVICE PERSONNEL.

<table>
<thead>
<tr>
<th>Indicator Light</th>
<th>LED Function</th>
<th>Failure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong></td>
<td>Seat Bar - 2 Flashes</td>
<td>Seat Sensor Out of Range Low</td>
</tr>
<tr>
<td></td>
<td>8 Volt Sensor Supply Out of Range Low</td>
<td></td>
</tr>
<tr>
<td><strong>1</strong></td>
<td>Seat Bar - 3 Flashes</td>
<td>Seat Sensor Out of Range High</td>
</tr>
<tr>
<td></td>
<td>8 Volt Sensor Supply Out of Range High</td>
<td></td>
</tr>
<tr>
<td><strong>2</strong></td>
<td>Valve - 2 Flashes</td>
<td>Hydraulic Lock Valve Solenoid Short to Battery</td>
</tr>
<tr>
<td><strong>2</strong></td>
<td>Valve - 3 Flashes</td>
<td>Hydraulic Lock Valve Solenoid Short to Earth</td>
</tr>
<tr>
<td><strong>2</strong></td>
<td>Valve - 4 Flashes</td>
<td>Hydraulic Lock Valve Solenoid Open Circuit</td>
</tr>
<tr>
<td><strong>3</strong></td>
<td>Parking Brake - 1 Flash</td>
<td>Traction Lock Hold Solenoid Open Circuit</td>
</tr>
<tr>
<td><strong>3</strong></td>
<td>Parking Brake - 2 Flashes</td>
<td>Traction Lock Hold Solenoid Short to Battery</td>
</tr>
<tr>
<td><strong>3</strong></td>
<td>Parking Brake - 3 Flashes</td>
<td>Traction Lock Hold Solenoid Short to Earth</td>
</tr>
<tr>
<td><strong>3</strong></td>
<td>Parking Brake - 4 Flashes</td>
<td>Traction Lock Pull Output Open Circuit</td>
</tr>
<tr>
<td><strong>3</strong></td>
<td>Parking Brake - 5 Flashes</td>
<td>Traction Lock Pull Output Error On</td>
</tr>
<tr>
<td><strong>3</strong></td>
<td>Parking Brake - 6 Flashes</td>
<td>Traction Lock Pull Output Error Off</td>
</tr>
<tr>
<td></td>
<td>Traction Pull Relay Error Off</td>
<td></td>
</tr>
</tbody>
</table>
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(S70) LOADER SPECIFICATIONS

Machine Dimensions

- Dimensions are given for loader equipped with standard tyres and 36 in. dirt bucket and may vary with other bucket types. All dimensions are shown in millimeters. Respective imperial dimensions are given in inches enclosed by parentheses.
- Where applicable, specification conform to SAE or ISO standards and are subject to change without notice.

Changes of structure or weight distribution of the loader can cause changes in control and steering response and can cause failure of the loader parts.
### (S70) LOADER SPECIFICATIONS (CONT'D)

#### Performance

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated Operating Capacity (ISO)</td>
<td>318 kg (700 lb)</td>
</tr>
<tr>
<td>Tipping Load (ISO Rating)</td>
<td>686 kg (1512 lb)</td>
</tr>
<tr>
<td>Operating Weight</td>
<td>1268 kg (2795 lb)</td>
</tr>
<tr>
<td>SAE Breakout Force - Lift</td>
<td>8607 N (1935 lb)</td>
</tr>
<tr>
<td></td>
<td>8674 N (1950 lb)</td>
</tr>
<tr>
<td>Travel Speed</td>
<td>0 - 9.8 km/h (0 - 6.1 MPH)</td>
</tr>
<tr>
<td>Push Force</td>
<td>9519 N (2140 lb)</td>
</tr>
</tbody>
</table>

#### Engine

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Make / Model</td>
<td>Kubota / D1005-E3B-BC-3 Tier 4</td>
</tr>
<tr>
<td>Fuel / Cooling</td>
<td>Diesel / Liquid</td>
</tr>
<tr>
<td>Horsepower (SAE Net)</td>
<td>16.8 kW (22.5 hp) @ 3000 rpm</td>
</tr>
<tr>
<td>Torque (SAE Net)</td>
<td>62.8 N·m (45.6 ft·lb) @ 2200 rpm</td>
</tr>
<tr>
<td>Number of Cylinders</td>
<td>Three</td>
</tr>
<tr>
<td>Displacement</td>
<td>1.0 L (61.08 in³)</td>
</tr>
<tr>
<td>Bore / Stroke</td>
<td>76.0 mm / 73.6 mm (2.99 in / 2.90 in)</td>
</tr>
<tr>
<td>Lubrication</td>
<td>Gear Pump Pressure System with Filter</td>
</tr>
<tr>
<td>Crankcase Ventilation</td>
<td>Closed Breathing</td>
</tr>
<tr>
<td>Air Cleaner</td>
<td>Dry replaceable paper cartridge with separate safety element</td>
</tr>
<tr>
<td>Ignition</td>
<td>Diesel Compression</td>
</tr>
<tr>
<td>Air Induction</td>
<td>Naturally Aspirated</td>
</tr>
<tr>
<td>Low Idle</td>
<td>1125 - 1175 rpm</td>
</tr>
<tr>
<td>High Idle</td>
<td>3125 - 3175 rpm</td>
</tr>
</tbody>
</table>

#### Controls

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle Steering</td>
<td>Direction and speed controlled by two hand operated steering levers.</td>
</tr>
<tr>
<td>Loader Hydraulics - Lift and Tilt</td>
<td>Controlled by separate foot pedals.</td>
</tr>
<tr>
<td>- Front Auxiliary Hydraulics (Std.)</td>
<td>Controlled by lateral movement of the right hand steering lever.</td>
</tr>
<tr>
<td>Engine</td>
<td>Hand lever speed control, key type start switch or optional keyless start and function error shutdown.</td>
</tr>
<tr>
<td>Starting Aid</td>
<td>Glow Plug - Automatically activated by Key Switch or Keyless instrumentation.</td>
</tr>
<tr>
<td>Service Brake</td>
<td>Two independent hydrostatic systems controlled by two hand operated steering levers.</td>
</tr>
<tr>
<td>Secondary Brake</td>
<td>One of the hydrostatic transmissions.</td>
</tr>
<tr>
<td>Parking Brake (Standard)</td>
<td>Mechanical disc, manually operated switch on front instrument panel.</td>
</tr>
</tbody>
</table>
(S70) LOADER SPECIFICATIONS (CONT’D)

### Drive System

<table>
<thead>
<tr>
<th>Main Drive</th>
<th>Hydrostatic 4 wheel drive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transmission</td>
<td>Infinitely variable tandem hydrostatic piston pumps, driving two fully reversing hydrostatic motors.</td>
</tr>
<tr>
<td>Final Drive</td>
<td>Pre-stressed #60 HS 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</td>
</tr>
<tr>
<td>Total Engine to Wheel Reduction</td>
<td>31.25:1</td>
</tr>
<tr>
<td>Axle Size</td>
<td>37.6 mm (1.50 in), Heat treated</td>
</tr>
<tr>
<td>Wheel Bolts</td>
<td>Five - 9/16 in. Wheel bolts fixed to axle hubs</td>
</tr>
</tbody>
</table>

### Hydraulic System

<table>
<thead>
<tr>
<th>Pump Type</th>
<th>Engine driven gear type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pump Capacity</td>
<td>33.7 L/min (8.9 U.S. gpm) @ 3150 engine rpm</td>
</tr>
<tr>
<td>Filters</td>
<td>Full flow replaceable, 10 micron synthetic media element</td>
</tr>
<tr>
<td>System Relief at Quick Couplers</td>
<td>20.7 MPa (297 bar) (3000 psi)</td>
</tr>
<tr>
<td>Hydraulic Cylinders</td>
<td>Double acting; Tilt cylinder has cushioning feature on dump and rollback</td>
</tr>
<tr>
<td>Bore Diameter:</td>
<td>50.8 mm (2.00 in)</td>
</tr>
<tr>
<td>Lift Cylinder (2)</td>
<td>76.2 mm (3.00 in)</td>
</tr>
<tr>
<td>Tilt Cylinder (1)</td>
<td>31.8 mm (1.25 in)</td>
</tr>
<tr>
<td>Rod Diameter:</td>
<td>31.8 mm (1.25 in)</td>
</tr>
<tr>
<td>Lift Cylinder (2)</td>
<td>31.8 mm (1.25 in)</td>
</tr>
<tr>
<td>Tilt Cylinder (1)</td>
<td>555.5 mm (21.87 in)</td>
</tr>
<tr>
<td>Stroke:</td>
<td>268.2 mm (10.56 in)</td>
</tr>
<tr>
<td>Control Valve</td>
<td>3-Spool, open centre type with spring detent for lift float and detent auxiliary hydraulic spool</td>
</tr>
<tr>
<td>Fluid Lines</td>
<td>SAE standard tubelines, hoses and fittings.</td>
</tr>
<tr>
<td>Hydraulic Function Time:</td>
<td></td>
</tr>
<tr>
<td>Raise Lift Arms</td>
<td>3.6 Seconds</td>
</tr>
<tr>
<td>Lower Lift Arms</td>
<td>2.7 Seconds</td>
</tr>
<tr>
<td>Bucket Dump</td>
<td>2.1 Seconds</td>
</tr>
<tr>
<td>Bucket Rollback</td>
<td>1.7 Seconds</td>
</tr>
</tbody>
</table>
(S70) LOADER SPECIFICATIONS (CONT’D)

Electrical

<table>
<thead>
<tr>
<th>Alternator</th>
<th>Belt driven, 65 amperes ventilated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery</td>
<td>12 volts, 600 cold cranking amperes @ -18°C (0°F)</td>
</tr>
<tr>
<td></td>
<td>115 minute reserve capacity at 25 amperes</td>
</tr>
<tr>
<td>Starter</td>
<td>12 volts, gear type, 2.7 kW (3.62 hp)</td>
</tr>
</tbody>
</table>

Instrumentation

Gauges: Hourmeter, temperature gauge, voltmeter, fuel gauge (on tank).
Warning lights: Engine Oil Pressure, Hydrostatic Charge Pressure, Hydraulic Oil Temperature.
Other: BICS™ Functions (on BICS™ Controller).

Capacities

<table>
<thead>
<tr>
<th>Engine Cooling System</th>
<th>5.7 L (6.0 qt)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel</td>
<td>24.6 L (6.5 U.S. gal)</td>
</tr>
<tr>
<td>Engine Lubrication with Filter</td>
<td>4.7 L (5.0 qt)</td>
</tr>
<tr>
<td>Hydraulic / Hydrostatic Reservoir</td>
<td>5 L (5.3 qt)</td>
</tr>
<tr>
<td>Hydraulic / Hydrostatic System</td>
<td>15.1 L (4.0 U.S. gal)</td>
</tr>
<tr>
<td>Chaincase Reservoir</td>
<td>11.4 L (3.0 U.S. gal)</td>
</tr>
</tbody>
</table>

Tyres

<table>
<thead>
<tr>
<th>Standard Duty (Standard)</th>
<th>23 x 5.70 - 12, 4 Ply Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heavy Duty (Option)</td>
<td>23 x 8.50 - 12, 6 Ply Rating</td>
</tr>
<tr>
<td>Recommended Pressure</td>
<td>Inflate tyres to MAXIMUM pressure shown on the side wall of the tyre. DO NOT mix brands of tyres used on the same loader.</td>
</tr>
</tbody>
</table>

Fuel Consumption

<table>
<thead>
<tr>
<th>Engine Load</th>
<th>Full - 100%</th>
<th>High - 70%</th>
<th>Medium - 50%</th>
<th>Low - 30%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel Consumption Rate Per Hour</td>
<td>5.56 L (1.47 U.S. gal)</td>
<td>3.71 L (0.98 U.S. gal)</td>
<td>3.03 L (0.8 U.S. gal)</td>
<td>2.65 L (0.7 U.S. gal)</td>
</tr>
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NOTE: The engine fuel consumption chart is to be used as a guideline only. The actual results may vary.

Environmental

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<th>Uncertainties (If Applicable)</th>
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<td>Noise level LpA (EU Directive 2000/14/EC)</td>
<td>97 dB(A) - - -</td>
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<tr>
<td>Operator position noise level (ISO 6396)</td>
<td>87.6 dB(A) - - -</td>
</tr>
<tr>
<td>Whole body vibration (ISO 2631-1) (limit 0.5 m/s²)</td>
<td>0.227 m/s² - - -</td>
</tr>
<tr>
<td>Hand-arm vibration (ISO 5349-1) (limit 2.5 m/s²)</td>
<td>1.426 m/s² - - -</td>
</tr>
</tbody>
</table>

Temperature Range

| Operation and storage                  | -21 - +43°C (-5.8 - +109.4°F) |

<table>
<thead>
<tr>
<th>Engine Load</th>
<th>Full - 100%</th>
<th>High - 70%</th>
<th>Medium - 50%</th>
<th>Low - 30%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel Consumption Rate Per Hour</td>
<td>5.56 L (1.47 U.S. gal)</td>
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WARRANTY
WARRANTY

BOBCAT LOADERS

DOOSAN BENELUX S.A. warrants to its authorised dealers who in turn warrant to the end-user / owner that each new Bobcat loader will be free from proven defects in material and workmanship for twelve months from the date of delivery to the end-user / owner or 2000 hours of machine usage, whichever occurs first.

During the warranty period, the authorised selling Bobcat dealer shall repair or replace, at DOOSAN BENELUX S.A.’s option, without charge for parts, labour and travel time of mechanics, any part of the Bobcat product which fails because of defects in material and workmanship. The end-user / owner shall provide the authorised Bobcat dealer with prompt written notice of the defect and allow reasonable time for replacement or repair. DOOSAN BENELUX S.A. may, at its option, request failed parts to be returned to the factory. Transportation of the Bobcat product to the authorised Bobcat dealer for warranty work is the responsibility of the end-user / owner.

Service schedules must be adhered to, documented and genuine parts / lubricants must be used. The warranty does not cover oils and lubricants, coolant fluids, filter elements, tune-up parts, bulbs, fuses, ignition system parts (glow plugs, fuel injection pumps, injectors), alternator fan belts, drive belts and other high-wear items. Pins and bushings are considered to be normal consumable items and are not warranted.

The warranty does not apply to tyres or other trade accessories not manufactured by Bobcat. The owner shall rely solely on the warranty, if any, of the respective manufacturers thereof. The warranty does not cover damages resulting from abuse, accidents, alterations, use of the Bobcat product with any bucket or attachment not approved by Bobcat, air flow obstructions, or failure to maintain or use the Bobcat product according to the instructions applicable to it.

DOOSAN BENELUX S.A. 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.

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