EN

Bobcat®

Operation & Maintenance Manual

E35Z

Compact Excavator

S/N B3Y411001 & Above

7323256enGB (03-24) (G)

Printed in Belgium
Original Instructions

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EMEA S5-K

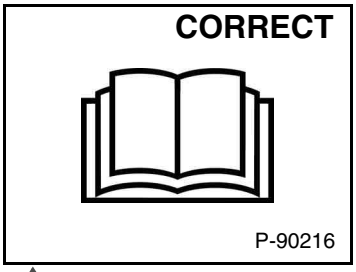
OPERATOR SAFETY WARNING

WARNING

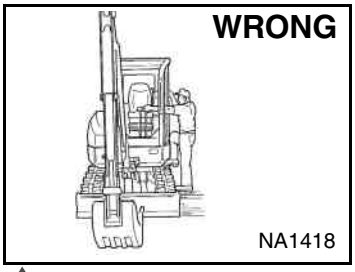
Operator must have instructions before operating the machine. Untrained operators can cause injury or death.

W-2001-0502

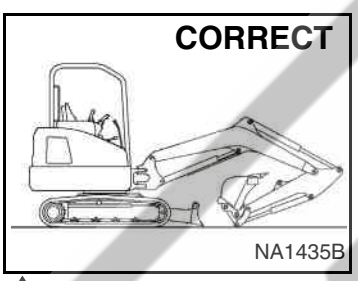
Safety Alert Symbol: **This symbol with a warning statement, means: "Warning, be alert! Your safety is involved!" Carefully read the message that follows.**



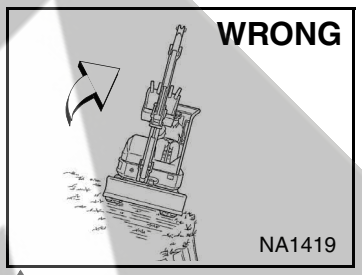
- **Never operate without instructions.**
- **Read machine signs, and Operation & Maintenance Manual, and Operator's Handbook.**



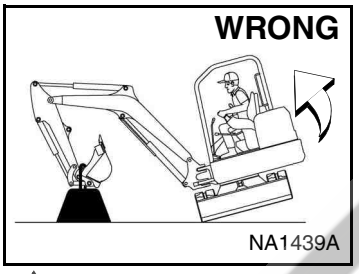
- **Do not grasp control handles when entering cab / canopy.**
- **Be sure controls are in neutral before starting.**
- **Sound horn and check behind machine before starting.**



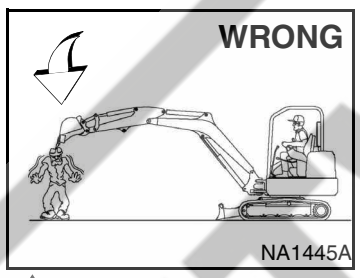
- **Never operate without approved cab / canopy.**
- **Never modify equipment.**
- **Never use attachments not approved by Bobcat Company.**



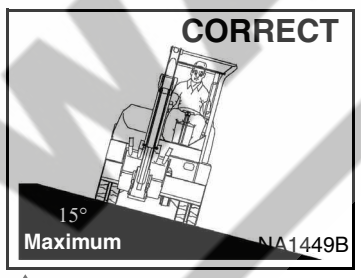
- **Avoid steep areas or banks that could break away.**



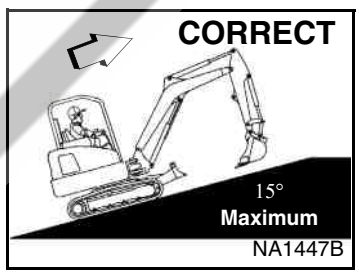
- **Use caution to avoid tipping - do not swing heavy load over side of track.**
- **Operate on flat, level ground.**



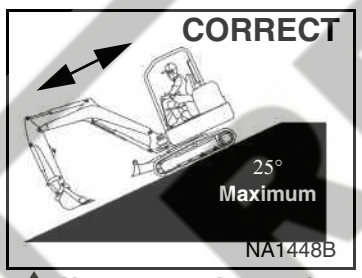
- **Keep bystanders out of maximum reach area.**
- **Do not travel or turn with bucket extended.**
- **Never carry riders.**



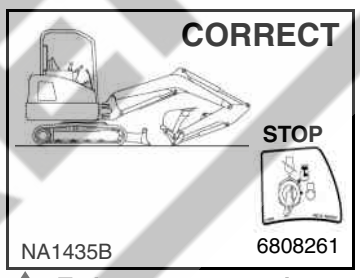
- **Never exceed a 15° slope to the side.**



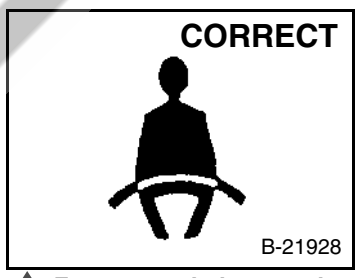
- **Never travel up a slope that exceeds 15°.**



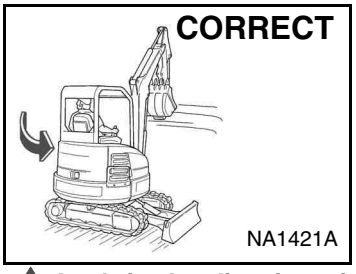
- **Never exceed 25° when going down or backing up a slope.**



- **To leave excavator, lower the work equipment and the blade to the ground.**
- **Stop the engine.**



- **Fasten seat belt securely.**
- **Operate controls only from operator's seat.**



- **Look in the direction of rotation and make sure no bystanders are in the work area.**

SAFETY EQUIPMENT

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

1. **SEAT BELT: Check belt fasteners and check for damaged webbing or buckle.**
2. **OPERATOR CAB / CANOPY (ROPS and TOPS): Check condition and mounting hardware.**
3. **OPERATOR'S HANDBOOK: Must be in the cab / canopy.**
4. **LEFT HAND CONSOLE: When raised must deactivate the travel and hydraulic functions.**
5. **SAFETY SIGNS (DECALS): Replace if damaged.**
6. **GRAB HANDLES: Replace if damaged.**
7. **INTEGRATED SLEW LOCK BRAKE.**
8. **SAFETY TREAD.: Replace if damaged.**

OSW66-EN-0117

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REFERENCE INFORMATION

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

Excavator Serial Number _____

Engine Serial Number _____

NOTES:

_____

_____

_____

_____

YOUR BOBCAT DEALER:

_____

ADDRESS:

_____

PHONE:

_____

Bobcat Company
250 E. Beaton Drive
West Fargo, ND 58078
UNITED STATES OF AMERICA

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

RENTWAY

FOREWORD

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

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DECLARATION OF CONFORMITY

For Model E35z

Contents of EC Declaration of Conformity

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

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

Manufacturer

Bobcat

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

Technical Documentation
Homologation Manager
Doosan Bobcat EMEA s.r.o.
U Kodetky 1810
263 12 Dobříš
CZECH REPUBLIC

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

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

EC Certificate No.
1020-090-022395

Conformity Assessment Procedure(s)
2000/14/EC, Annex VIII, Full Quality Assurance

Sound Power Levels [Lw(A)]

Measured Sound Power	**92 dB(A)**
Guaranteed Sound Power	**94 dB(A)**

Description of Equipment
Type of Equipment: Excavator
Model Name: E35z
Model Code: B3Y4

Engine Manufacturer: Kubota
Engine Model: D1703-M-DI-EF03
Engine Power: 18,2 kW @ 2200 RPM

Equipment conforms to CE Directive(s) Listed Below
2006/42/EC: Machinery Directive
2014/30/EU: Electromagnetic Compatibility Directive

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

Effective From:

16 October 2018

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

www.doosanbobcat.com

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

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

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

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

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

Miguel Mallo Marcos

27th March, 2019

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Contents of UK Declaration of Conformity

This information is provided in the operator's manual to comply with clause 1.7.4.2(c) of Schedule 2, Part 1 of The Supply of Machinery (Safety) Regulations 2008.

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

Manufacturer

Bobcat

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

Technical Documentation
Homologation Manager
Doosan Bobcat EMEA s.r.o.
U Kodetky 1810
26312 Dobříš
CZECH REPUBLIC

Noise Emission in the Environment by Equipment for Use Outdoors Regulations 2001

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

EC Certificate No.
1020-090-022395

Conformity Assessment Procedure(s)
2000/14/EC, Annex VIII, Full Quality Assurance

Sound Power Levels [Lw(A)]

Measured Sound Power	**92.3 dBA**
Guaranteed Sound Power	**94 dBA**

Description of Equipment
Type of Equipment: Excavator
Model Name: E35Z
Model Code: B3Y4

Engine Manufacturer: Kubota
Engine Model: D1703-M-DI-EF03
Engine Power: 18.2 kW @ 2200 RPM

Equipment conforms to UK Regulations(s) Listed Below

Supply of Machinery (Safety) Regulations 2008
Electromagnetic Compatibility Regulations 2016

Declaration of Conformance

This equipment conforms to the requirements specified in all the UK Regulations listed in this declaration.

Effective From:

30 August 2022

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BOBCAT COMPANY IS ISO 9001 CERTIFIED

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

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

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

REGULAR MAINTENANCE ITEMS

	ENGINE OIL FILTER (6 Pack) 6675517		BATTERY 7269858
	FUEL FILTER 6667352		HYDRAULIC FILL / BREATHER CAP 6692836
	FUEL PRE-FILTER 7247169		RADIATOR CAP 6673313
 	AIR FILTER, Outer 6672467 AIR FILTER, Inner 6672468		PRIMARY HYDRAULIC FILTER 6668819 CASE DRAIN HYDRAULIC FILTER 7009365
	HVAC AIR FILTER (IF EQUIPPED) Fresh Air 7176099 Recirculation 7222791		

NOTE: Always verify Part Numbers with your Bobcat dealer.

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REGULAR MAINTENANCE ITEMS (CONT'D)

Fluids, Lubricants, And Fuel

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

Read and understand the preventive maintenance required before adding or replacing any fluids or lubricants.

ENGINE SYSTEMS				
Machine Components	**Fluids And Lubricants**	**T° Range**	**Packaging****	**Part Number**
Engine	- Bobcat Engine Power SAE 10W30 CJ4 / ACEA E9	-25°C – +30°C	A, B, C, D	6987818*
	- Bobcat Engine Power SAE 15W40 CJ4 / ACEA E9	-20°C – +40°C	A, B, C, D	6987819
Cooling Circuit	- Bobcat PG Coolant Concentrated	-36°C	B, C, D	6987803*
	- Bobcat PG Coolant 4 Seasons	-36°C	A, B, C, D	6987793
Fuel Tank	- High-quality diesel fuel that meets EN590	-	-	*

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

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

(*) Factory Filled Fluids And Lubricants

(**) Packaging Available:

A = 5 L Can

B = 25 L Container

C = 209 L Drum

D = 1000 L Tank

E = 400 g Tube

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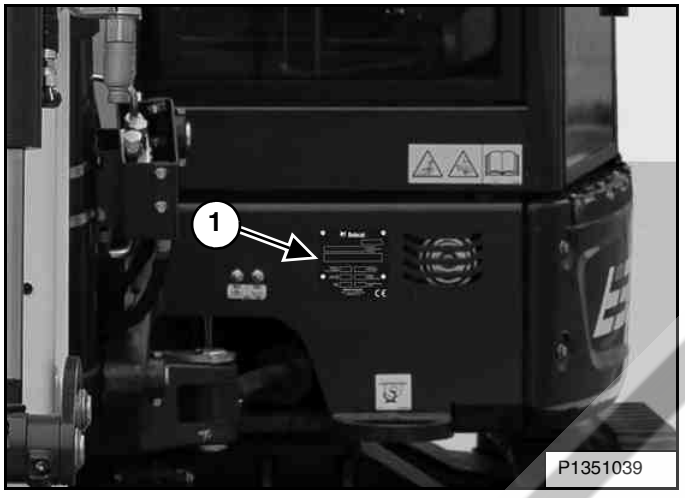
SERIAL NUMBER LOCATIONS

Always use the serial number of the excavator when requesting service information or when ordering parts. Earlier 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

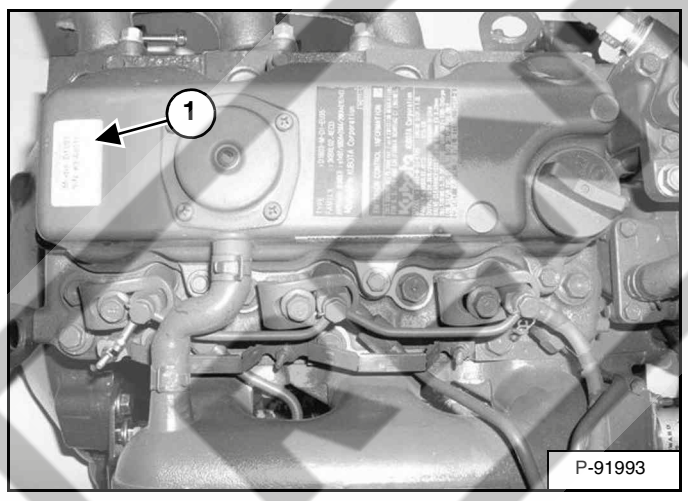
Excavator Serial Number

Figure 1



The excavator serial number plate (Item 1) **[Figure 1]** is located on the frame of the machine in the location shown.

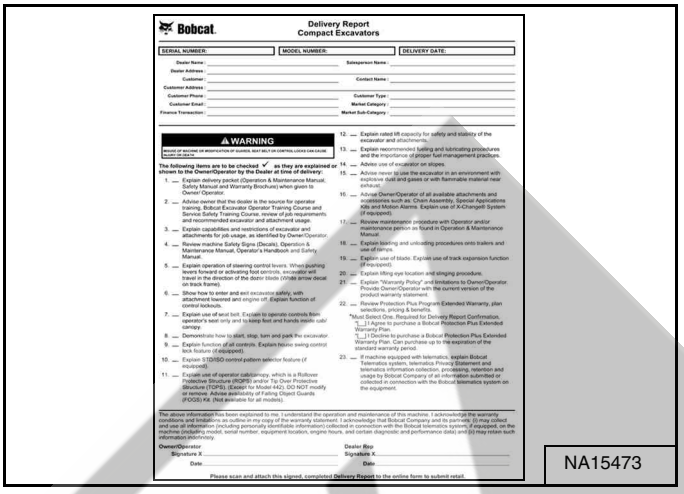
Figure 2



The engine serial number (Item 1) **[Figure 2]** is located on the top cover.

DELIVERY REPORT

Figure 3


Bobcat
Delivery Report
Compact Excavators

SERIAL NUMBER: | MODEL NUMBER: | DELIVERY DATE:

Dealer Name : Salesperson Name :
Dealer Address : Contact Name :
Customer : Customer Address :
Customer Phone : Customer Type :
Customer Email : Market Category :
Finance Transaction : Market Sub-Category :

WARNING
INSURE OF MACHINE OR MODIFICATION OF GUARDS, SEAT BELT OR CONTROL LOCKS CAN CAUSE INJURY OR DEATH.

The following items are to be checked ✓ as they are explained or shown to the Owner/Operator by the Dealer at time of delivery:

1. ___ Explain delivery packet (Operation & Maintenance Manual, Safety Manual and Warranty Brochure) when given to Owner/ Operator.
2. ___ Advise owner that the dealer is the source for operator training. Bobcat Excavator Operator Training Course and Service Safety Training Course, review of job requirements, and recommended excavator and attachment usage.
3. ___ Explain capabilities and restrictions of excavator and attachments for job usage, as identified by Owner/Operator.
4. ___ Review machine Safety Signs (Decals), Operation & Maintenance Manual, Operator's Handbook and Safety Manual.
5. ___ Explain operation of steering control levers. When pushing levers forward or activating foot controls, excavator will travel in the direction of the dozer blade (White arrow decal on track frame).
6. ___ Show how to enter and exit excavator safely, with attachment lowered and engine off. Explain function of control lockouts.
7. ___ Explain use of seat belt. Explain to operate controls from operator's seat only and to keep feet and hands inside cab/ canopy.
8. ___ Demonstrate how to start, stop, turn and park the excavator.
9. ___ Explain function of all controls. Explain hoose swing control lock feature (if equipped).
10. ___ Explain STD/ISO control pattern selector feature (if equipped).
11. ___ Explain use of operator cab/canopy, which is a Rollover Protective Structure (ROPS) and/or Tip Over Protective Structure (TOPS). (Except for Model 442). DO NOT modify or remove. Advise availability of Falling Object Guards (FOGS) Kit. (Not available for all models).
12. ___ Explain rated lift capacity for safety and stability of the excavator and attachments.
13. ___ Explain recommended fueling and lubricating procedures and the importance of proper fuel management practices.
14. ___ Advise use of excavator on slopes.
15. ___ Advise never to use the excavator in an environment with explosive dust and gases or with flammable material near exhaust.
16. ___ Advise Owner/Operator of all available attachments and accessories such as: Chain Assembly, Special Applications Kits and Motion Alarms. Explain use of X-Change® System (if equipped).
17. ___ Review maintenance procedure with Operator and/or maintenance person as found in Operation & Maintenance Manual.
18. ___ Explain loading and unloading procedures onto trailers and use of ramps.
19. ___ Explain use of blade. Explain use of track expansion function (if equipped).
20. ___ Explain lifting eye location and slinging procedure.
21. ___ Explain "Warranty Policy" and limitations to Owner/Operator. Provide Owner/Operator with the current version of the product warranty statement.
22. ___ Review Protection Plus Program Extended Warranty, plan selections, pricing & benefits.
*Must Select One. Required for Delivery Report Confirmation.
*(___) Agree to purchase a Bobcat Protection Plus Extended Warranty Plan.
*(___) Decline to purchase a Bobcat Protection Plus Extended Warranty Plan. Can purchase up to the expiration of the standard warranty period.
23. ___ If machine equipped with telematics, explain Bobcat Telematics system, telematics Privacy Statement and telematics information collection, processing, retention and usage by Bobcat Company of all information submitted or collected in connection with the Bobcat telematics system on the equipment.

The above information has been explained to me. I understand the operation and maintenance of this machine. I acknowledge the warranty conditions and limitations (as stated in the "Warranty Policy" of the warranty statement). I acknowledge that Bobcat Company and its partners: (i) may collect and use all information (including personally identifiable information) collected in connection with the Bobcat telematics system, if equipped, on the machine (including model, serial number, equipment location, engine hours, and certain diagnostic and performance data) and (ii) may retain such information indefinitely.

Owner/Operator Signature X ___ Date ___
Dealer Rep Signature X ___ Date ___

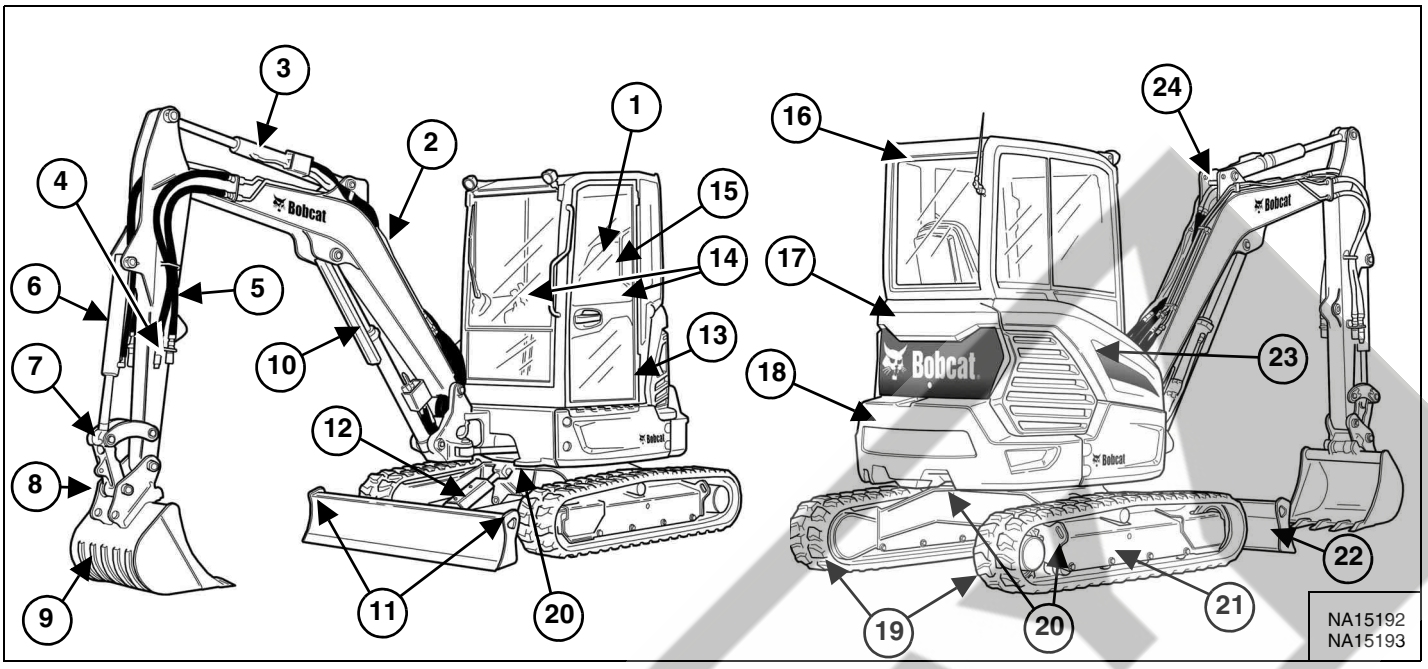
Please scan and attach this signed, completed Delivery Report to the online form to submit retail.

NA15473

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

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

EXCAVATOR IDENTIFICATION



ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	Operation & Maintenance Manual and Operator's Handbook	16	Canopy / Cab (ROPS / TOPS / FOPS) **[3]**
2	Boom	17	Rear Cover
3	Arm Cylinder	18	Counterweight
4	Auxiliary Quick Couplers	19	Tracks **[4]**
5	Arm	20	Tie-Downs (Both Sides)
6	Bucket Cylinder	21	Track Frames
7	Bucket Link	22	Blade
8	Attachment Quick Coupler (if equipped) **[1]**	23	Right Side Cover
9	Bucket **[2]**	24	Lift Point
10	Boom Cylinder		
11	Tie-Downs / Lift Points		
12	Blade Cylinder		
13	Upperstructure		
14	Joysticks		
15	Operator's Seat with Seat Belt		

[1] Attachment Coupler - Optional attachment couplers are available.
[2] Bucket - Several different buckets and other attachments are available from the Bobcat Excavator.
[3] ROPS, TOPS - (Roll-Over Protective Structure / Tip-Over Protective Structure) per ISO 12117-2 and ISO 12117. FOPS (Falling Object Protective Structure) per ISO 10262 - Level 1.
[4] Tracks - Optional tracks are available.

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FEATURES, ACCESSORIES, AND ATTACHMENTS

Standard Items

Model E35z Bobcat excavators are equipped with the following standard items:

- 1750 mm (68.9 in) Dozer Blade
- Canopy with ROPS / TOPS / FOPS Approval
- 300 mm (11.8 in) Rubber Tracks
- Standard Instrument Panel
- Two-Speed Travel
- Auto Shift Drive Motors
- Auxiliary Hydraulics (With Selectable Auxiliary Hydraulic Flow)
- Hydraulic and Travel Control Lockouts
- Engine Speed Control Lever
- Blade Float
- Standard Arm
- Boom and Frame Mounted Work Lights
- Engine And Hydraulic System Monitor With Shut Down
- Horn
- Hydraulic Joystick Controls
- Basic Seat
- Retractable Seat Belt
- Advanced Diagnostics
- Counterweight

Options And Accessories

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

- Enclosed Cab With Heater (ROPS / TOPS / FOPS)
- Enclosed Cab With Heater and A/C (ROPS / TOPS / FOPS)
- Cloth / Vinyl Suspension Seat
- Deluxe Instrument Panel
- Primary, Secondary, Third, and Fourth Auxiliary Hydraulics
- Radio
- Depth Check
- Travel Motion Alarm
- Keyless Start
- Canopy / Cab Mounted Lights
- Engine Speed Control Dial With Auto Idle Feature
- Spark Arrester Muffler
- Attachment Quick Coupler, Klac™ System
- Attachment Quick Coupler, German Style Quick Coupler
- Attachment Quick Coupler, Bobcat Hydraulic Quick Coupler
- Attachment Quick Coupler, Mechanical Pin Grabber Quick Coupler
- Pin-On X-Change™
- Front Guard Kit
- Steel Tracks
- Long Arm
- Load Hold - Boom / Arm
- Hydraulic Track Tension
- Lifting Device
- Direct to Tank Auxiliary Hydraulics
- Counterweight (Additional)
- Suspension Seat
- Coupler Block Kit
- Case Drain
- Arm Mounted Auxiliary Hydraulic Couplers
- HEPA HVAC Fresh Air Filter
- Fire Extinguisher
- Beacon
- Strobe Light
- Shoe Pad Kit
- Sediment Bowl Kit
- Engine Block Heater Kit
- Antenna And Speakers Kit
- Muffler Purifier Kit

Attachments

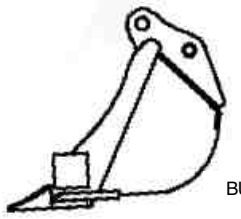
These and other attachments are approved for use on this model Bobcat excavator. Do not use unapproved attachments. Attachments not manufactured by Bobcat may not be approved.

The versatile Bobcat excavator quickly turns into a multi-job machine with a variety of attachments.

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

- Auger
- Breaker
- Flail Mower
- Hydraulic Clamp
- Pro Clamp™ System
- Rotary Grinder

Buckets Available



BUCKET

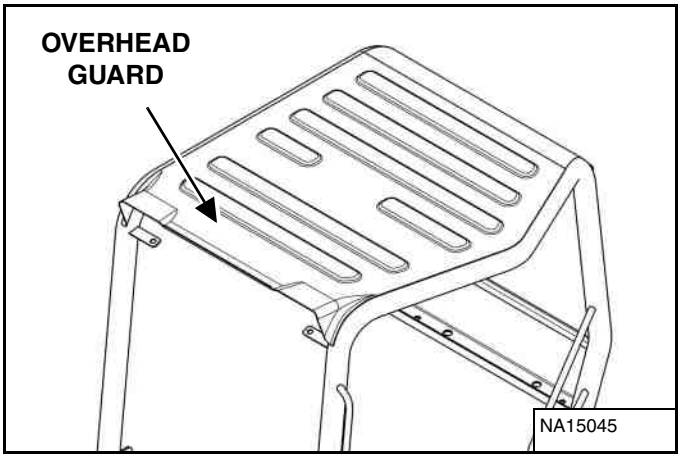
Many bucket styles, widths and different capacities are available for a variety of different applications. They include Trenching, Digging, Grading, and Tilt, to name a few. See your Bobcat dealer for the correct bucket for your Bobcat excavator and application.

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

RENTWAY

Falling-Object Protective Structure (FOPS) (Canopy Model)

Figure 4



The excavator canopy is qualified as a Falling Object Protective Structure (FOPS) that meets the top guard requirements in ISO 10262 - Level 1 **[Figure 4]**.

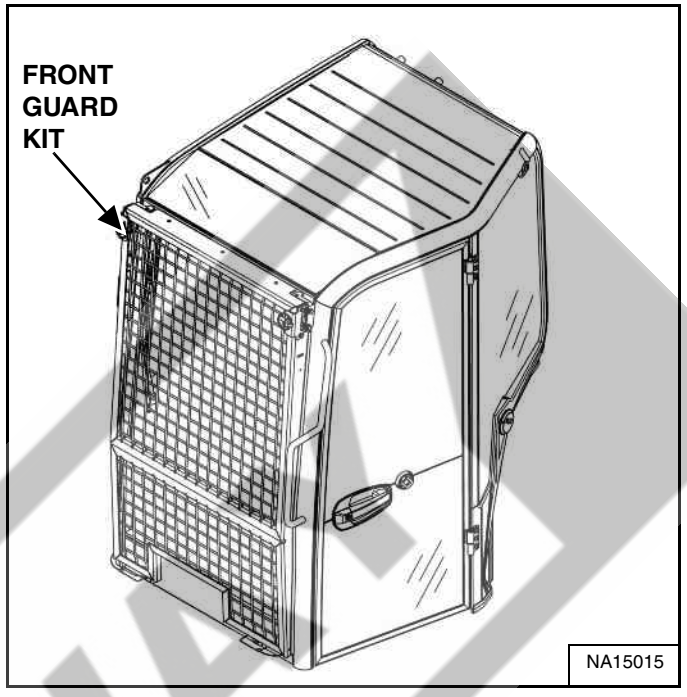
Falling-Object Protective Structure (FOPS) (Cab Model)

Figure 5

The excavator cab top window is qualified as a Falling-Object Protective Structure (FOPS) that meets the top guard requirements in ISO 10262 - Level 1 (Item 1) **[Figure 5]**.

Front Guard Kit

Figure 6



Available for applications that require protection from objects entering the front of the excavator.

The excavator must have the Front Guard Kit installed to meet the front guard requirements in ISO 10262 - Level 1.

Kit includes an upper and lower screen guard.

See your Bobcat dealer for more information.

Front Guard Kit Inspection And Maintenance

The Front Guard Kit must be regularly inspected and maintained. Inspect the screen for damage. Replace parts as necessary.

RETIRED

SAFETY AND TRAINING RESOURCES

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RENTWAY

SAFETY INSTRUCTIONS

Before Operation

Carefully follow the operating and maintenance instructions in this manual.

The Bobcat excavator 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 excavator usage.

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

The dealer explains the capabilities and restrictions of the Bobcat excavator 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 Lift Capacity. They are designed for secure fastening to the Bobcat excavator. The user must check with the dealer, or Bobcat literature, to determine safe loads of materials of specified densities for the machine - attachment combination.

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

- The Delivery Report is used to assure that complete instructions have been given to the new owner and that the machine and attachment is in safe operating condition.

- The Operation & Maintenance Manual delivered with the machine or attachment gives operating information as well as routine maintenance and service procedures. It is a part of the machine and can be stored in a container provided on the machine. Replacement Operation & Maintenance Manuals can be ordered from your Bobcat dealer.

- Machine signs (decals) instruct on the safe operation and care of your Bobcat machine or attachment. The signs and their locations are shown in the Operation & Maintenance Manual. Replacement signs are available from your Bobcat dealer.

- An Operator's Handbook is fastened to the operator cab of the excavator. 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.

RENTWAY

SI EXC EMEA-0913

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.

W-2001-0502

IMPORTANT

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

I-2019-0284

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.

D-1002-1107

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.

W-2044-1107

The Bobcat excavator 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 co-ordination while working. An operator who is taking prescription drugs must get medical advice to determine if he or she can safely operate a machine.

A Qualified Operator Must Do The Following:

Understand the Written Instructions, Rules and Regulations

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

Have Training with Actual Operation

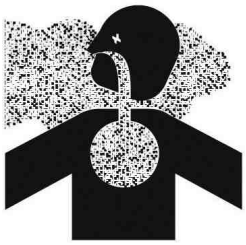
- Operator training must consist of a demonstration and verbal instruction. This training is given by your Bobcat dealer before the product is delivered.
- The new operator must start in an area without bystanders and use all the controls until he or she can operate the machine and attachment safely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

Know the Work Conditions

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

SI EXC EMEA-0913

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.

RENTWAY

Hydraulic System

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

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

Fueling

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

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

Starting

Do not use ether or starting fluids on any engine that has glow plugs. 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

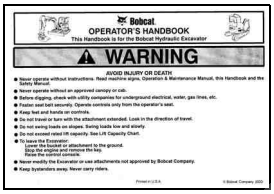
Know where fire extinguishers and first aid kits are located and how to use them. Inspect the fire extinguisher and service the fire extinguisher regularly. Obey the recommendations on the instructions plate.

RENTWAY

PUBLICATIONS AND TRAINING RESOURCES

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

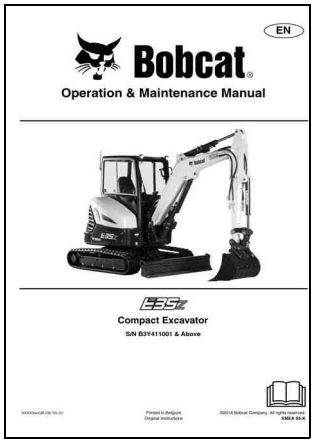
For the latest information on Bobcat products and the Bobcat Company, visit our website at **Bobcat.com/training** or **Bobcat.com**.



OPERATOR'S HANDBOOK

7350243enGB

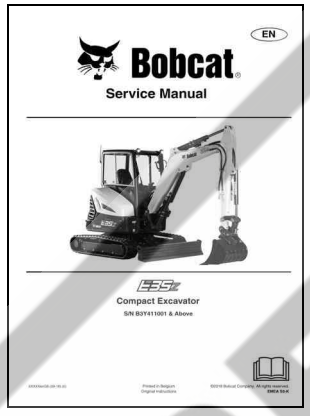
Gives basic operation instructions and safety warnings.



OPERATION & MAINTENANCE MANUAL

7323256enGB

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



SERVICE MANUAL

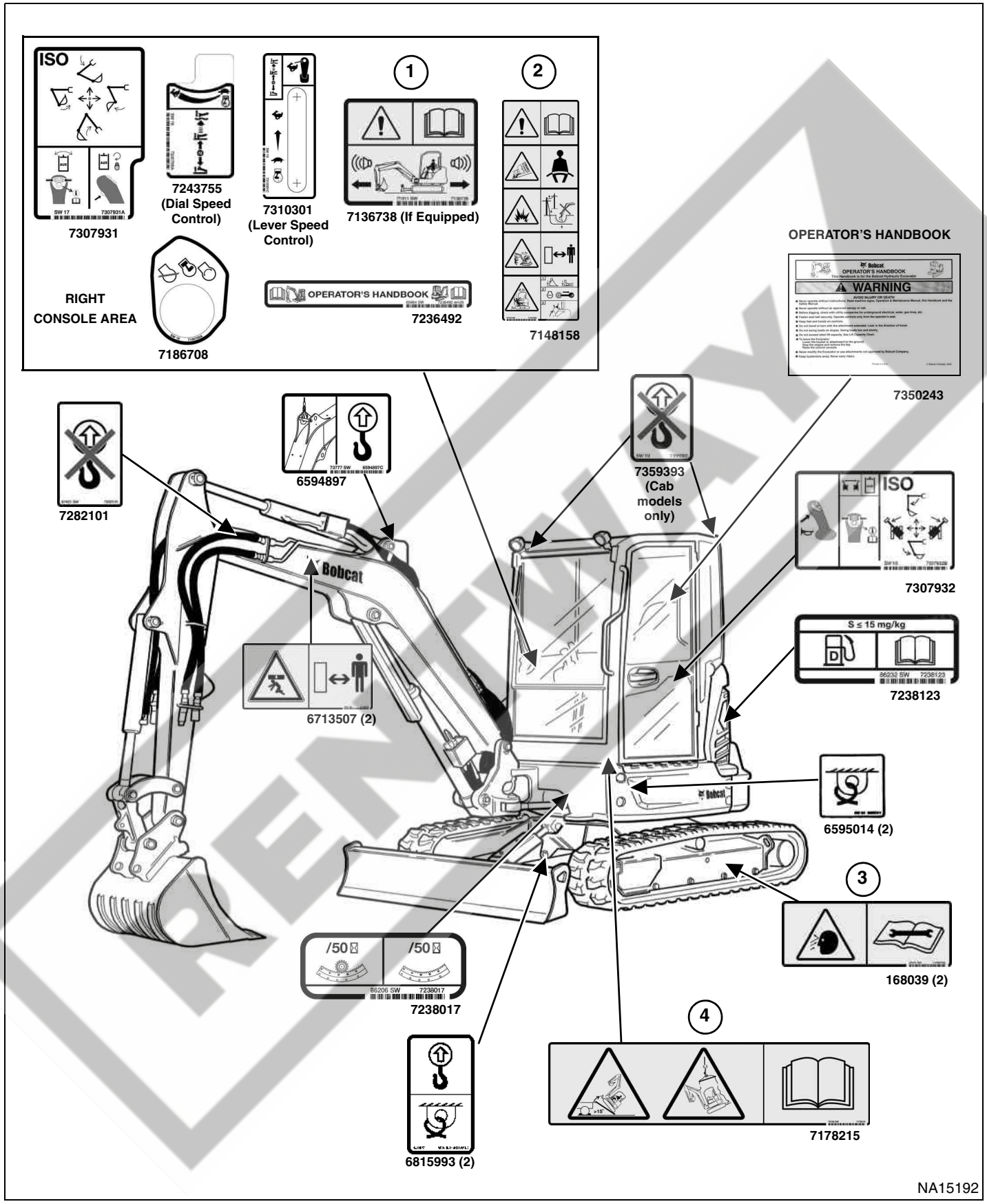
7362448enUS

Complete maintenance instructions for the Bobcat excavator.

RENTWAY

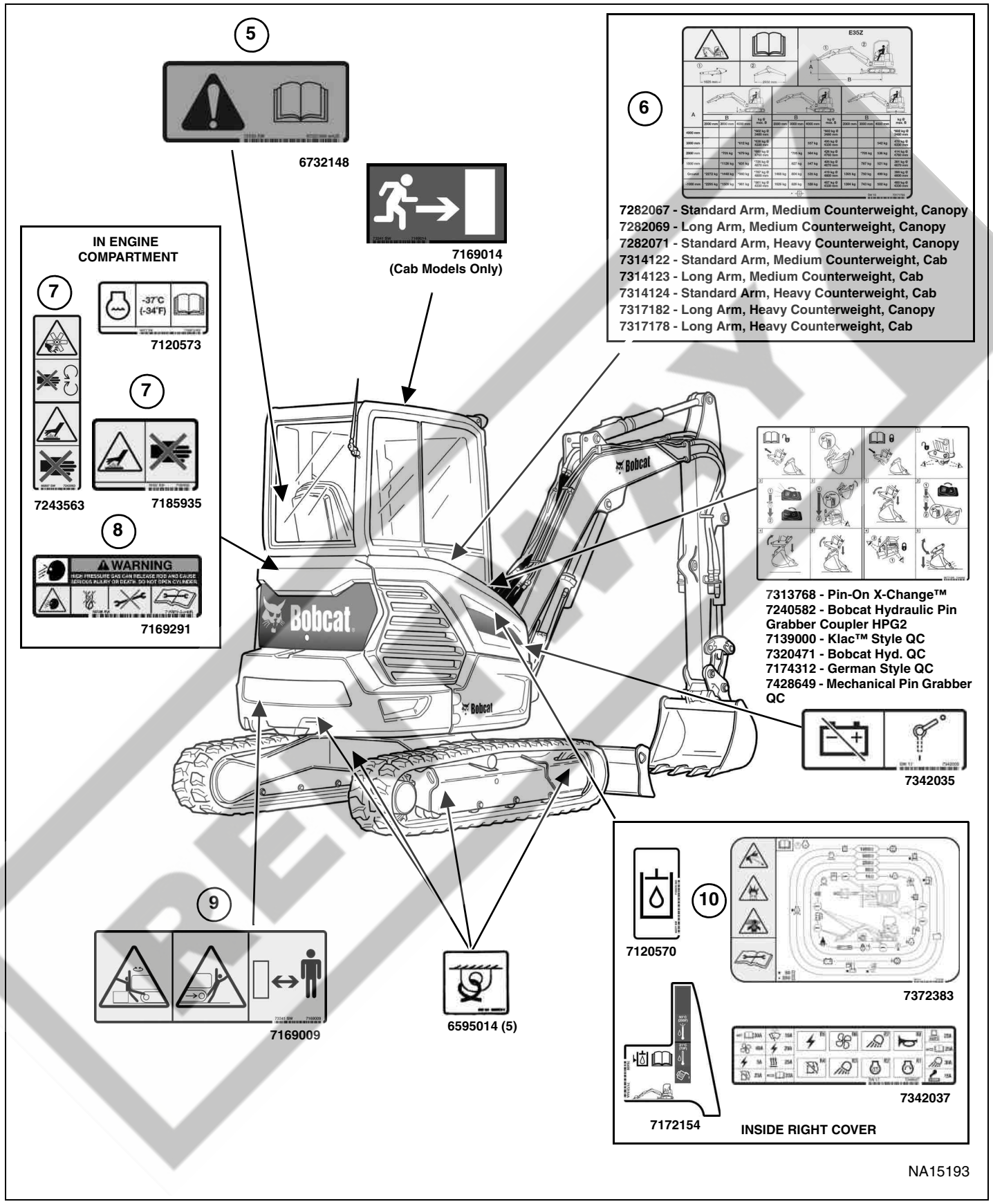
MACHINE SIGNS (DECALS)

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



MACHINE SIGNS (DECALS) (CONT'D)

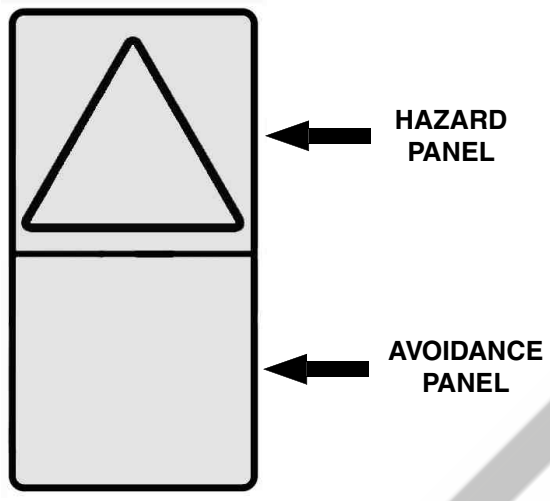
Follow the instructions on all the Machine Signs (Decals) that are on the excavator. Replace any damaged machine signs and be sure they are in the correct locations. Machine signs are available from your Bobcat excavator dealer.



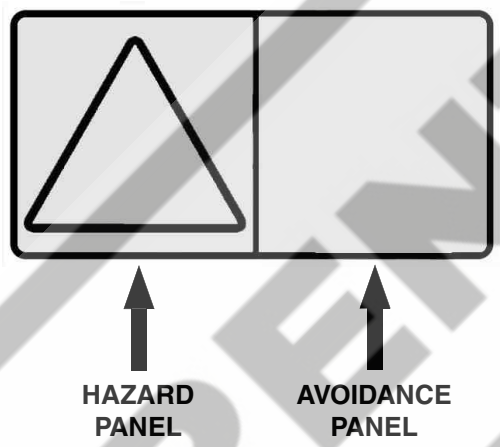
Pictorial Only Safety Signs

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

Vertical Configuration



Horizontal Configuration



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

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

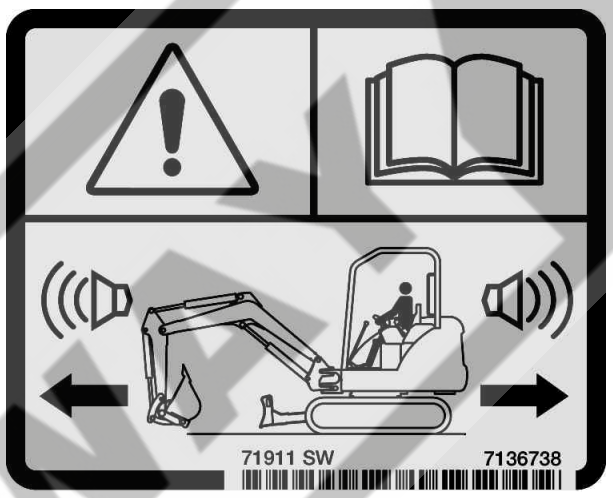
Avoidance panels depict actions required to avoid the hazards.

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

NOTE: See the numbered MACHINE SIGNS (DECALS) on Page 18 and MACHINE SIGNS (DECALS) (Cont'd) on Page 19 for the machine location of each corresponding numbered pictorial only decals as shown below.

1. Motion Alarm (7136738) (If Equipped)

This safety sign is on the ceiling of canopy models and on the right window of cab models.



WARNING

This machine is equipped with a motion alarm.
ALARM MUST SOUND!
when operating forward or backward.

Failure to maintain a clear view in the direction of travel could result in serious injury or death.

The operator is responsible for the safe operation of this machine.

W-2786-0309

RENTWAY

Pictorial Only Safety Signs (Cont'd)

2. General Hazard (7148158)

This safety sign is located inside the operator's area on the right side near the floor.

WARNING

Failure to obey warning signs and instructions can cause serious injury or death. Never use excavator without instructions. Read and understand the Operation & Maintenance Manual and Handbook.

Keep away from dropoffs, steep areas or banks that could break away.

Explosion or electrocution can occur if machine contacts utility lines or pipes. Check for overhead or underground lines before operating.

Keep bystanders away. No riders. Check location of blade for direction of travel before moving steering controls.

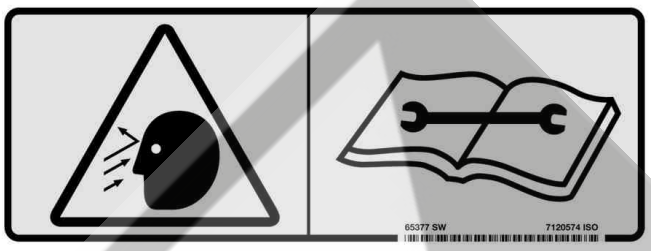
Failure to operate machine from the operator's position can cause serious injury or death.

To Leave Excavator:
1. Lower attachment and blade to ground.
2. Stop engine and remove the key (if equipped).
3. Raise control console.

W-2518-0110

3. Thrown or Flying Objects (7168039)

This safety sign is located on the outside of both tracks.



WARNING

HIGH PRESSURE GREASE CAN CAUSE SERIOUS INJURY

- **Do not loosen the track tension fitting more than 1 - 1/2 turns.**

W-2994-0515

4. Transporting And Lifting (7178215)

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

WARNING

Improper loading, transporting and lifting procedures can cause serious injury or death. Read and understand the Operation & Maintenance Manual prior to transporting or lifting the machine.

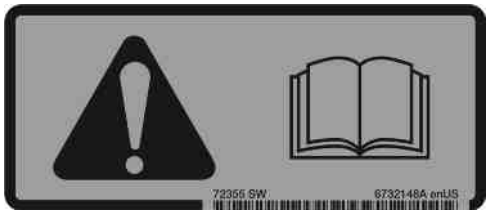
W-2517-0110

RETIRWAY

Pictorial Only Safety Signs (Cont'd)

5. Operation & Maintenance Manual (6732148)

This safety sign is located on the back of the operator's seat.



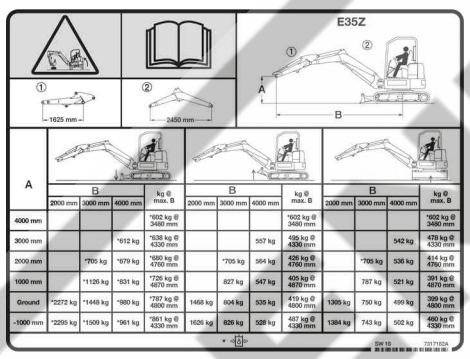
WARNING

AVOID INJURY OR DEATH
Read and understand the Operation & Maintenance Manual before operating the machine.

W-3021-0217

6. Lift Capacity (7282067, 7282069, 7282071, 7314122, 7314123, 7314124, 7317182, 7317178)

This safety sign is located on the ceiling of canopy models and on the right window of cab models.



WARNING

Overload can tip the excavator and cause serious injury or death.

- **Do not lift or hold any load that exceeds these ratings at their specific load radii and height.**
- **Total rated load is shown. The weight of all lifting devices must be deducted to determine the net load that can be lifted.**

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

W-2519-0110

7. Hot Surfaces and Rotating Fan (7185935, 7243563)

These safety signs are located inside the engine compartment.

WARNING

Rotating fan blade can cause serious injury or death. Keep away from fan and moving parts. Do not operate with guard removed.

Hot surfaces can cause injury. Do not touch. Allow to cool before servicing.

W-2521-0106

RENTWAY

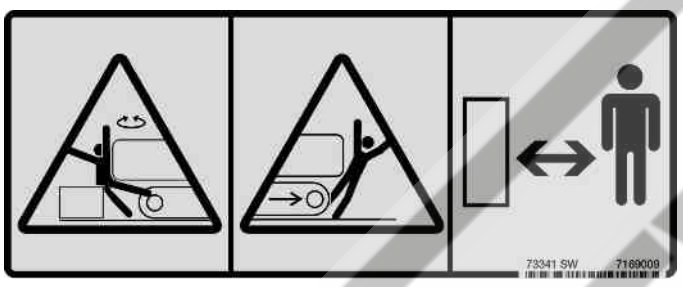
Pictorial Only Safety Signs (Cont'd)

8. Thrown or Flying Objects (7169291)

This safety sign is located on the gas springs under the rear cover and inside the right cover.

9. Stay Away (7169009)

This safety sign is located on the rear of the upperstructure below the tailgate.



WARNING

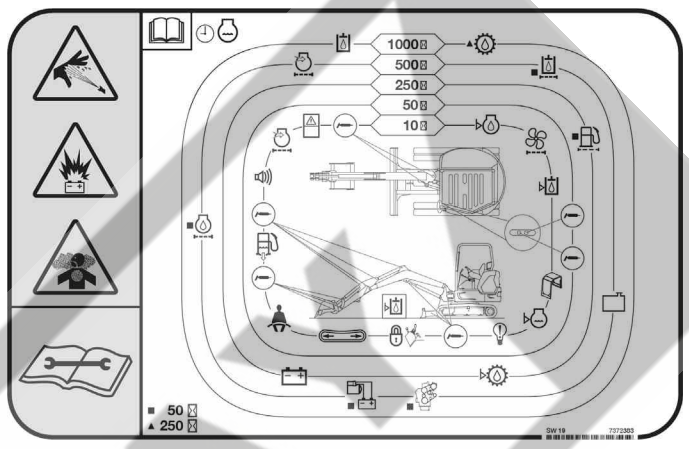
AVOID INJURY OR DEATH

- **Keep out of swing area or travel path.**
- **Always look in the direction of travel.**
- **Make sure swing area is clear of bystanders and objects.**

W-2775-1208

10. High Pressure, Battery, Rotating Fan, Exhaust Gases and Service Schedule (7372383)

This safety sign is located inside the right cover. (See SERVICE SCHEDULE on Page 153.)



WARNING

Leaking fluids under pressure can enter the skin and cause serious injury or death. Immediate medical attention is required. Wear goggles. Use cardboard to check for leaks.

Battery makes flammable and explosive gas. Keep arcs, sparks, flames and lighted tobacco away. Keep away from electrical contacts

Rotating fan can cause serious injury. Keep away from fan and moving parts. Do not operate with guard removed.

All exhaust gases can kill. Always ventilate.

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

W-2522-0110

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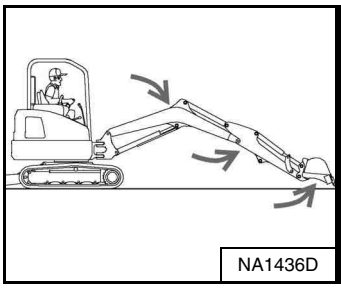
INTENDED USE

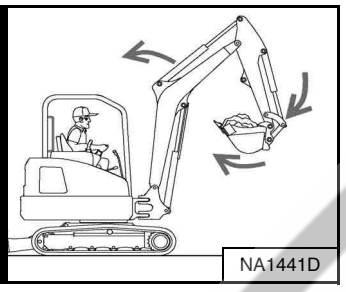
This machine is classified as a Compact Excavator as defined in ISO 6165. This machine has wheels or tracks and commonly a mounted bucket for the principle intended functions of excavating, loading and backfilling loose materials such as earth, gravel, or crushed rock.

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

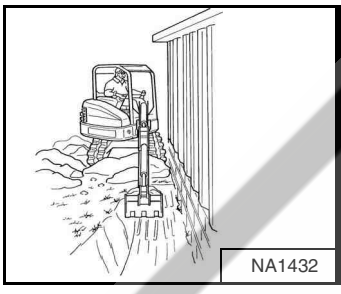
Examples of intended use include:

Excavating

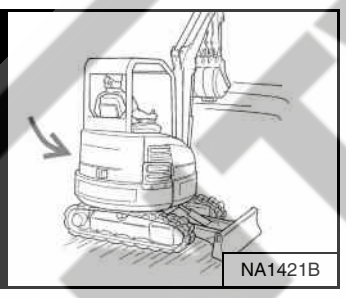




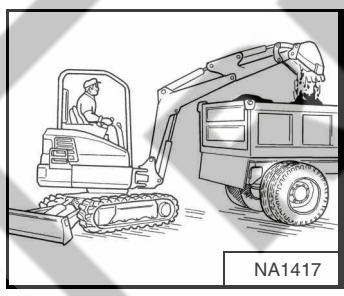
Boom Swing



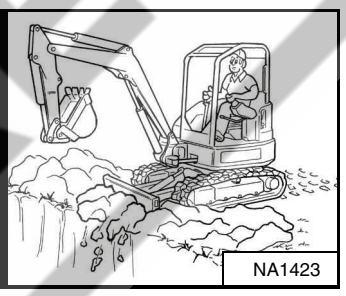
Rotating the Upperstructure



Loading Material



Backfilling



⚠ WARNING

AVOID INJURY OR DEATH

Do not exceed rated lift capacity. Excessive load can cause tipping or loss of control.

W-2374-0500

⚠ WARNING

AVOID INJURY OR DEATH

Check area to be excavated for overhead or underground electrical power lines. Keep a safe distance from electrical power lines.

VOLTAGE	MINIMUM DISTANCE
up to 50 kV	3 m (10 ft)
beyond 50 kV	5 m (17 ft)

W-2757-EN-0513

⚠ WARNING

Keep all bystanders 6 m (20 ft) away from equipment when operating. Contact with moving parts, a trench cave-in or flying objects can cause injury or death.

W-2119-0910

IMPORTANT

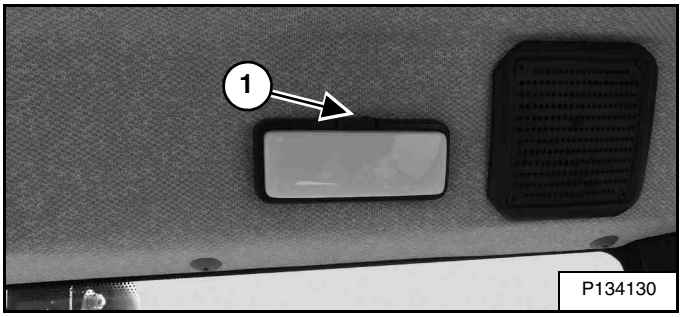
Avoid impacting objects with the blade. Damage to blade and undercarriage components may occur.

I-2256-0507

INSTRUMENTS AND CONSOLES

Cab Interior Light (If Equipped)

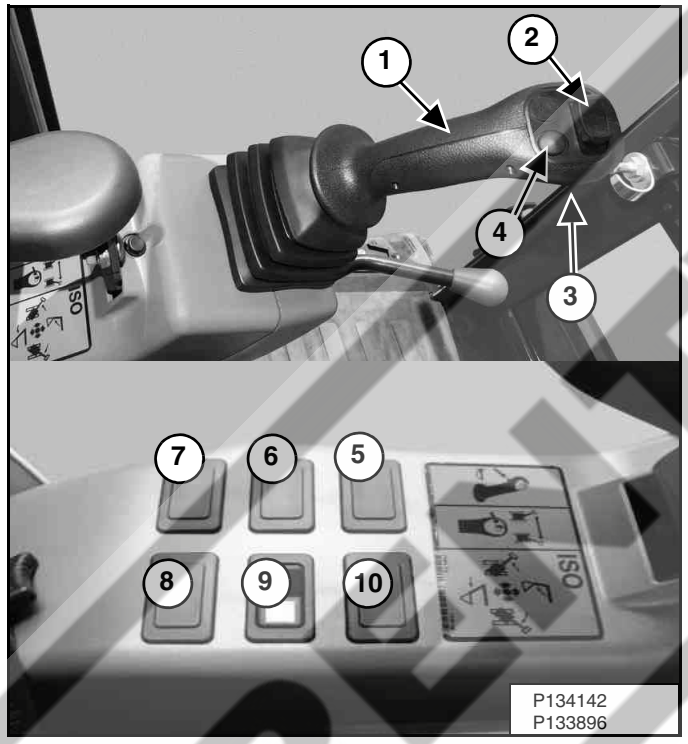
Figure 7



Press the rocker switch on top of the light (Item 1) **[Figure 7]** to turn the light ON and OFF.

Left Console

Figure 8



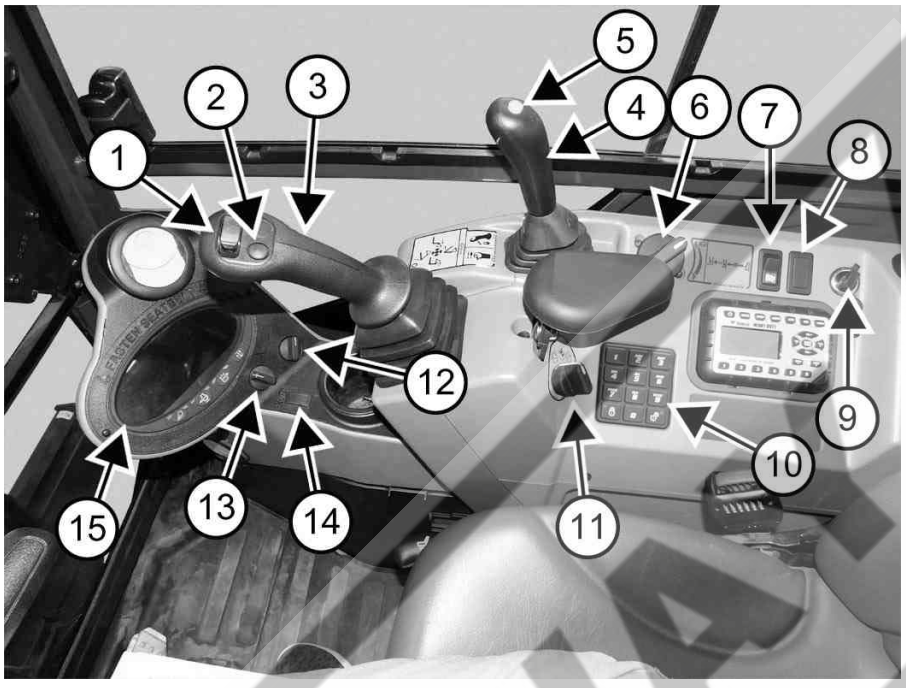
Left Console **[Figure 8]**

REF. NO	DESCRIPTION	FUNCTION / OPERATION
1	Left Joystick	(See HYDRAULIC CONTROLS on Page 49.)
2	Boom Swing / Secondary Auxiliary Hydraulic Switch	(See BOOM SWING on Page 64.) (See HYDRAULIC CONTROLS on Page 49.)
3	Horn	Press the switch on the bottom of the left joystick to sound the horn.
4	Left Joystick Button	Push the button to toggle between boom swing and optional auxiliary hydraulics (if equipped).
5	Wiper / Washer Switch (If Equipped)	Press the switch to the left to turn wiper ON. Press and hold switch to the left to activate window washer. Press the switch to the right to turn wiper OFF.
6	Hydraulic Quick Coupler ON / OFF Switch (if equipped)	Press switch to the left to turn the quick coupler ON. Press the switch to the right to turn OFF. (See Installing And Removing The Attachment (Bobcat Hydraulic Quick Coupler) on Page 92.)
7	Beacon / Strobe Light (If Equipped)	Press switch to the left to turn ON the beacon / Strobe light. Press the switch to the right to turn OFF.
8	Hydraulic Quick Coupler INTENT Switch (if equipped)	Press switch to the left to initiate the quick coupler install or remove mode. (See Installing And Removing The Attachment (Bobcat Hydraulic Quick Coupler) on Page 92.)
9	Overload Warning Device Switch (if equipped)	Press the switch to the left to activate the Overload Warning Device. Press the switch to the right to deactivate the system. (See OVERLOAD WARNING DEVICE on Page 62.)
10	Boom Swing Switch (if equipped)	Push to select boom swing offset for either the left or right joystick. (See Operating Attachments With Primary, Secondary, Or Fourth Auxiliary Hydraulics (Software Version 88.03 Or Above) on Page 58.)

REFERENCE

Right Console

Figure 9



C217542B

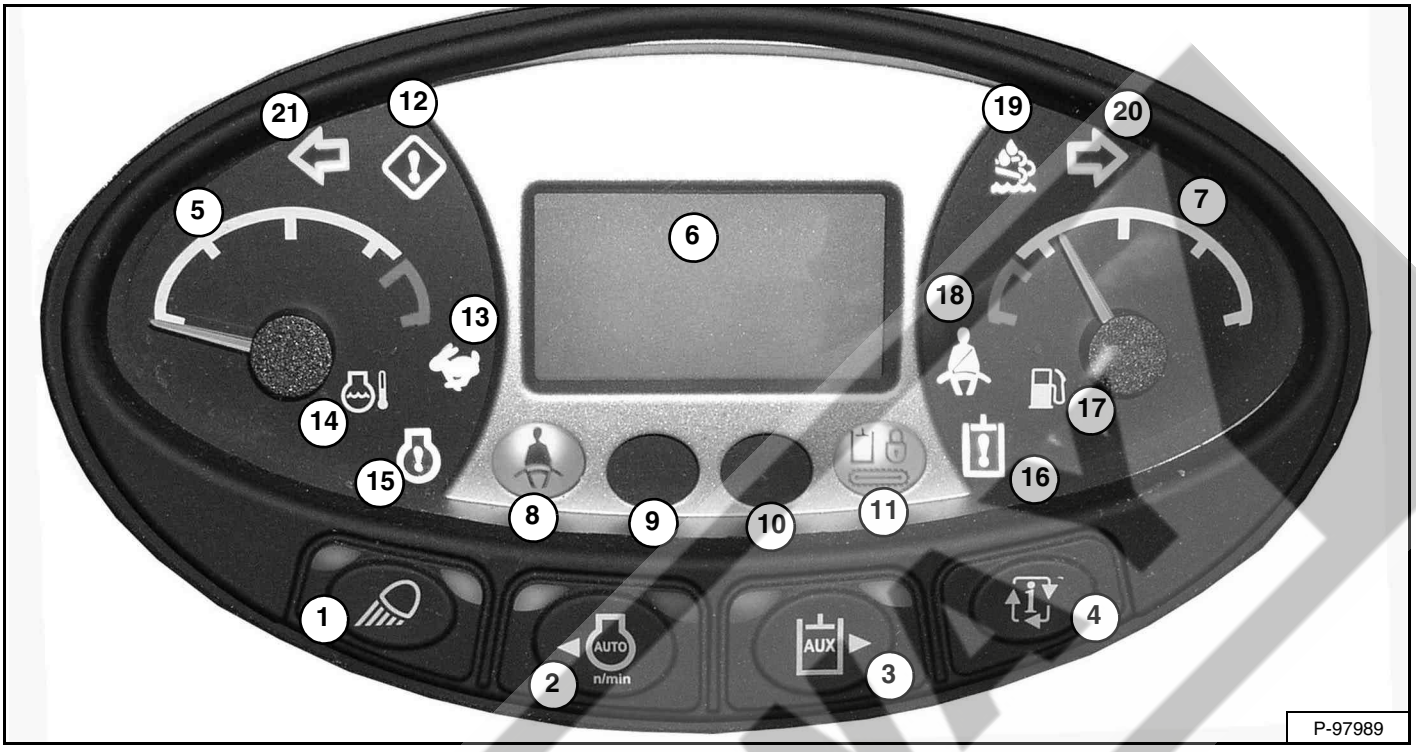
REF	DESCRIPTION	FUNCTION / OPERATION
1	Auxiliary Hydraulic Switch (if equipped)	(See HYDRAULIC CONTROLS on Page 49.)
2	Right Joystick Button	Push the button to toggle between auxiliary hydraulics (if equipped).
3	Right Joystick	(See HYDRAULIC CONTROLS on Page 49.)
4	Blade Control Lever	Controls raising and lowering the blade. Push all the way forward to put blade in float position. (See BLADE CONTROL LEVER on Page 63.)
5	Two-Speed Button	Engages and disengages High Range Travel Speed. (See Two-Speed Travel on Page 38.)
6	Engine Speed Control Lever or Engine Speed Control Dial	Controls rpm of the engine. (See ENGINE SPEED CONTROL on Page 63.)
7	Motion Alarm Cancel Switch	Temporarily disables the motion alarm. (See MOTION ALARM SYSTEM on Page 46.)
8	Direct to Tank Switch (if equipped)	Press switch to direct auxiliary return flow to the hydraulic oil reservoir. (See Direct To Tank Switch on Page 62.)
9	Auxiliary Power Outlet	12 volt receptacle for accessories.
10	Keypad (if equipped)	Enter the password to start the engine (See Standard Instrument Panel - Keyless Start on Page 74.) (See Deluxe Instrument Panel - Keyless Start on Page 75.)
11	Key Switch or Keyless Start Switch	Always perform the PRE-STARTING PROCEDURE *(See PRE-STARTING PROCEDURE on Page 71.)* before starting the engine. (See STARTING THE ENGINE on Page 73.)
12	Temperature Control (if equipped)	Turn clockwise to increase temperature; anticlockwise to decrease.
13	Fan Motor Switch (if equipped)	Turn clockwise to increase fan speed; anticlockwise to decrease.
14	Air Conditioning Switch (if equipped)	Press top of switch to turn air conditioner ON (light in switch will be ON). Press bottom of switch to turn OFF.
15	Instrument Panel	(See Instrument Panel - Standard (Early Models) on Page 30.) (See Instrument Panel - Deluxe on Page 35.)

NOTE: Always turn key switch and all accessories to OFF position when the engine is stopped, the battery will discharge if the key is left ON.

PRELIMINARY

Instrument Panel - Standard (Early Models)

Figure 10



REF. NO.	DESCRIPTION	FUNCTION / OPERATION
1	Lights	Press once for work lights. (Left green LED illuminates.) Press again to turn all lights off. (Left green LED off.)
		Press and hold 5 seconds to display software version in display screen.
2	Auto Idle Feature	Press once to turn Auto Idle Feature ON. (Left green LED illuminates.) Press a second time to turn OFF. (Left and right green LEDs off.) (See Auto Idle Feature on Page 39.)
3	Auxiliary Hydraulic Button	Press once to enable auxiliary hydraulic function. (Left green LED illuminates.) Continue to press and release to scroll through the selectable auxiliary hydraulic setting (3-2-1-OFF). Press and hold (minimum of one second) to enable the continuous flow auxiliary hydraulic feature. (Right green LED illuminates.) Continue to press and release to scroll through the continuous flow selectable auxiliary hydraulic settings (3-2-1-OFF). (See Activating Primary Auxiliary Hydraulics With Standard Instrument Panel on Page 51.)
4	Information	Cycles through (after each button press) (The following information is displayed in the Data Display Screen, Item 6): • Hourmeter (On startup) • Job Clock (1 and 2) (Press and hold 7 seconds when displayed to reset the job clock.) • Engine rpm • Battery voltage • Maintenance clock (Press and hold 7 seconds when displayed to reset the maintenance clock.) • Service codes*
5	Engine Temperature Gauge	Shows the engine coolant temperature.

RENTAL

Instrument Panel - Standard (Cont'd)

REF. NO.	DESCRIPTION	FUNCTION / OPERATION
6	Data Display Screen	The data display screen shows the Hourmeter at start up and then changes to engine rpm during normal operation of the excavator. When preheat is activated, the display screen will show the remaining preheat time. Can also be used to display Job Clock, Engine rpm, Boom Offset / Second Auxiliary and Selectable Auxiliary Hydraulic Flow.
7	Fuel Gauge	Shows the amount of fuel in the tank.
8	Seat Belt	Fasten Seat Belt Reminder - Light stays on for 45 seconds to remind operator to fasten seat belt.
9		Not used for this model.
10		Not used for this model.
11	Left Console Lockout	Icon ON when left console is raised. Icon OFF when left console is lowered.
12	General Warning **	Malfunction with one or more machine functions. (See Service Codes in this manual.)
13	High Range Engaged ***	Icon is illuminated when two-speed travel is enabled.
14	Engine Coolant Temperature **	Engine coolant temperature high or sensor error.
15	Engine Malfunction **	Engine malfunction or failure.
16	Hydraulic System Malfunction **	Hydraulic system malfunction or failure.
17	Fuel	Fuel level low or sensor error. (Icon is ON when fuel level is low, Icon flashes when fuel sensor fault is activated.)
18		Not used for this model.
19		Not used for this model.
20		Not used for this model.
21		Not used for this model.

* See SYSTEM SETUP AND ANALYSIS for Service Code Description. (See DIAGNOSTIC SERVICE CODES on Page 203.)

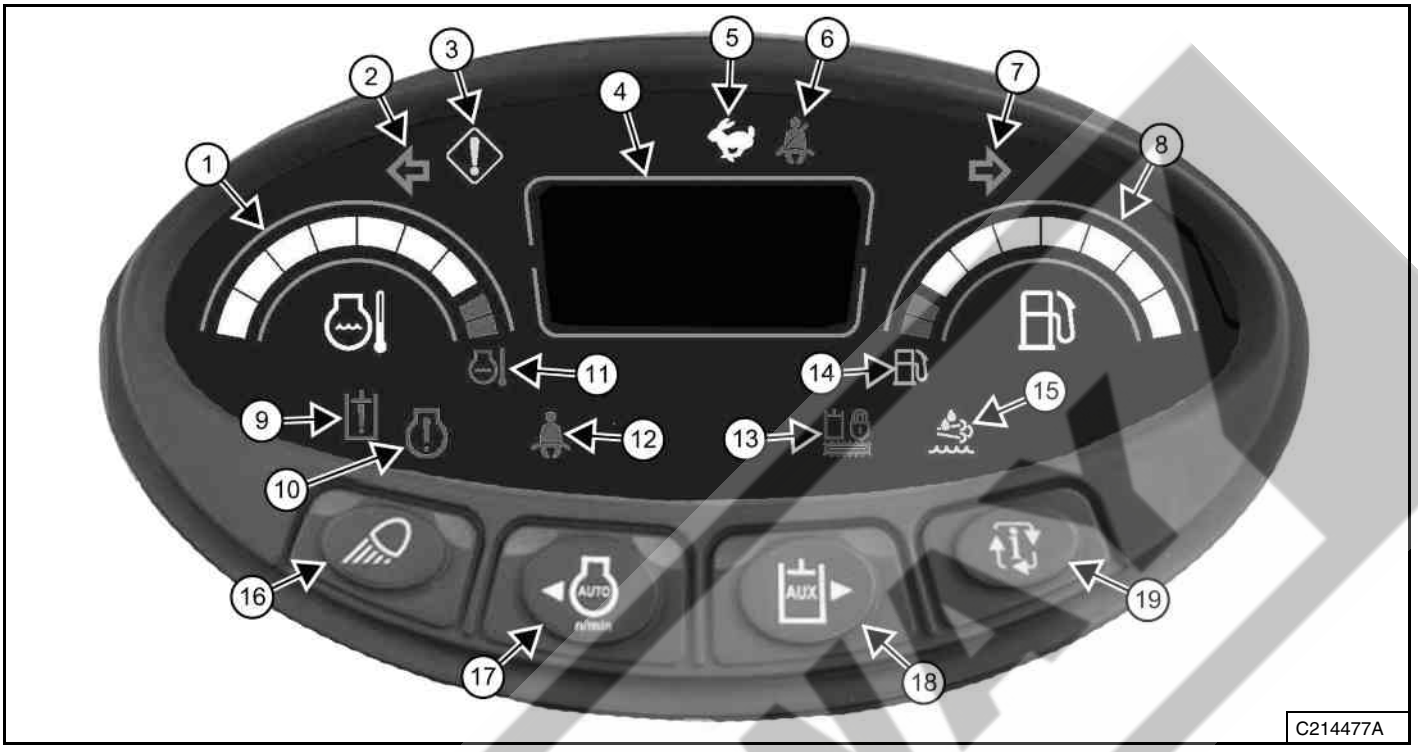
** Icons will be ON or flashing when diagnostic system indicates a problem. (See DIAGNOSTIC SERVICE CODES on Page 203.)

*** Icons will be flashing when diagnostic system indicates a problem. (See DIAGNOSTIC SERVICE CODES on Page 203.)

RENTWAY

Instrument Panel - Standard (Later Models)

Figure 11



REF.	DESCRIPTION	FUNCTION / OPERATION
1	Engine Temperature Gauge	Shows the engine coolant temperature.
2		Not used for this model.
3	General Warning	Turns on or flashes to indicate machine malfunction or failure. See "DIAGNOSTIC SERVICE CODES" on page 203.
4	Display Screen	Shows the hourmeter at startup and then changes to engine rpm. When preheat is activated, it shows the remaining preheat time.
5	High Range Engaged	Turns on when two-speed travel is enabled. Light flashes to indicate a problem. (See Two-Speed Travel on Page 38.)
6		Not used for this model.
7		Not used for this model.
8	Fuel Gauge	Shows the amount of fuel in the tank.
9	Hydraulic System Malfunction	Turns on or flashes to indicate hydraulic system malfunction or failure.
10	Engine Malfunction	Turns on or flashes to indicate engine malfunction or failure.
11	Engine Coolant Temperature Warning	Turns on or flashes to indicate engine coolant temperature is high or sensor error.
12	Seat Belt	Light stays on for 45 seconds as a reminder to fasten seat belt.
13	Left Console Lockout	Icon is on when left console is raised. Icon is off when left console is lowered. (See Raising And Lowering The Console on Page 38.)
14	Fuel Level Low	Turns on when fuel level is low, flashes to indicate fuel sensor error.
15		Not used for this model.

RENTWAY

Instrument Panel — Standard (Later Models) (Cont'd)

REF.	DESCRIPTION	FUNCTION / OPERATION
16	Lights	Controls work lights. The left green LED will illuminate when lights are turned on. Press and hold five seconds to display software version.
17	Auto Idle (If Equipped)	Engages auto idle.
18	Auxiliary Hydraulics (Used only with joystick switch – activated Auxiliary Hydraulics)	Turns on auxiliary hydraulics. (See Activating Primary Auxiliary Hydraulics With Standard Instrument Panel on Page 51.)
19	Information	Cycles through hourmeter, service codes, and auxiliary hydraulics.

NOTE: Always turn key switch and all accessories to off when the engine is stopped. The battery will discharge if the key is left on.

RENTWAY

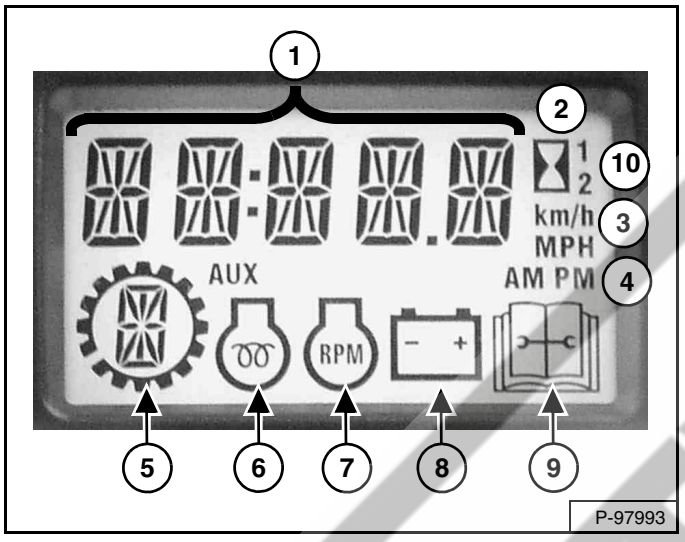
Instrument Panel - Standard (Cont'd)

Indicator Icons

The display screen can display the following information:

- Operating hours
- Job Clock (1 and 2)
- Engine rpm
- Battery voltage
- Maintenance clock countdown
- Second Auxiliaries
- Service codes

Figure 12



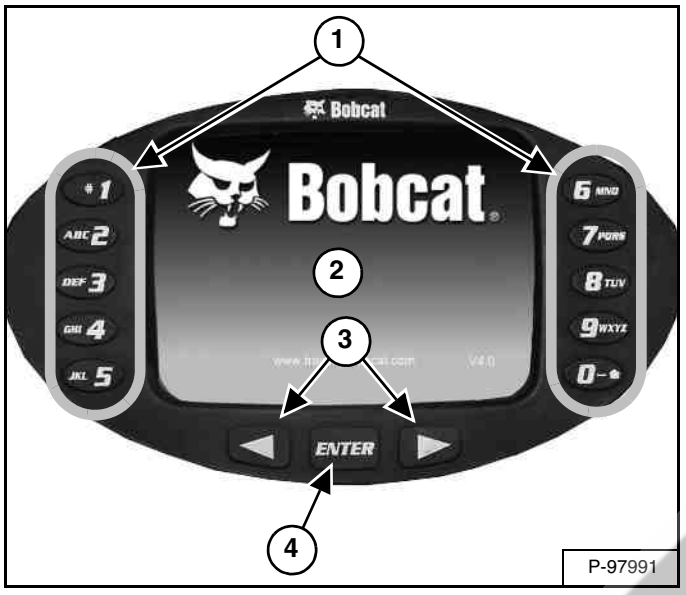
The display screen is shown in **[Figure 12]**. The data display will show operating hours upon startup.

1. **Data Display**
2. **Hourmeter**
3. **Metric / English (Not Used For This Model)**
4. **Clock (Not Used For This Model)**
5. **Selectable Auxiliary Flow (3 - 2 - 1)**
6. **Engine Preheat**
7. **Engine RPM**
8. **Battery / Charging Voltage**
9. **Service**
10. **Job Clock (1 and 2)**

RENTWAY

Instrument Panel - Deluxe

Figure 13



This machine may be equipped with a Deluxe Instrument Panel **[Figure 13]**.

1. **Keypad (1 through 0):** The keypad has two functions:

   - To enter a number code (password) to allow starting the engine.

   - To enter a number as directed for further use of the display screen.

2. **Display Screen:** The display screen is where all system setup, monitoring, and error conditions are displayed.

3. **Scroll Buttons:** Used to scroll through display screen choices.

4. **ENTER Button:** Used to make selections on the display screen.

Figure 14

Turn the start key to the ON position.

When this screen is on the display you can enter the password and start the engine **[Figure 14]**.

NOTE: Your excavator (with Deluxe Instrument Panel) will have an Owner Password. Your dealer will provide you with this password. Change the password to one that you will easily remember to prevent unauthorised use of your excavator. (See Changing The Owner Password on Page 215.) Keep your password in a safe location for future needs.

Enter The Password:

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

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

See CONTROL PANEL SETUP for further description of screens to set up the system for your use. (See CONTROL PANEL SETUP on Page 207.)

Lights

Press keypad [1] **[Figure 14]** once for FRONT work lights. Press a second time to turn all lights off.

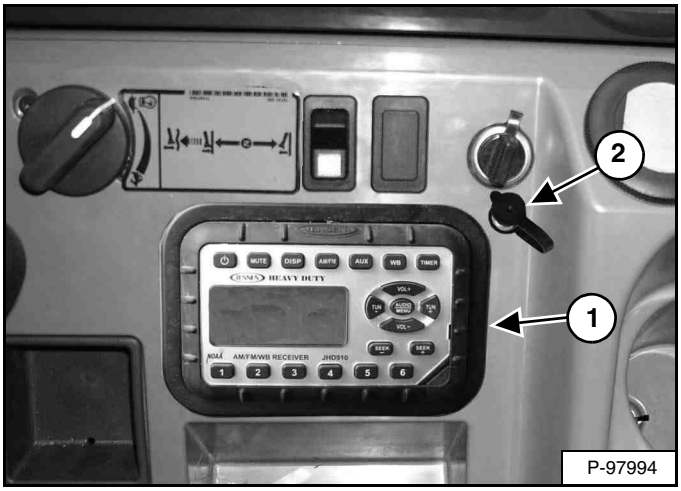
Change Language:

The language can be changed at any time. (See CONTROL PANEL SETUP on Page 207.)

RENTWAY

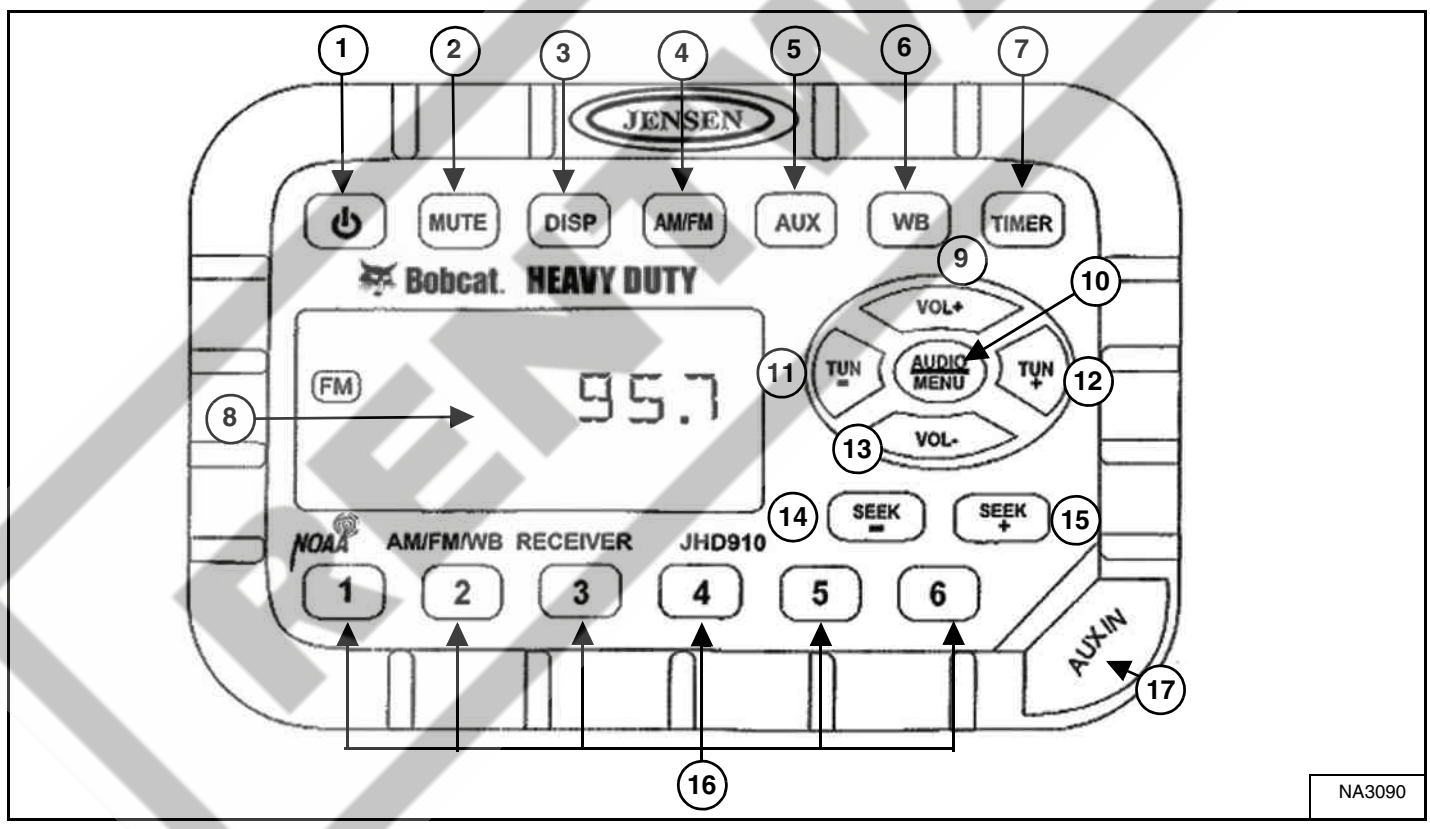
Radio Option

Figure 15



This excavator may be equipped with a radio (Item 1) and the headphone jack (Item 2) **[Figure 15]**.

Figure 16



NOTE: See DISPLAY (Item 3) in the following table for clock setting instructions.

Radio (Cont'd)

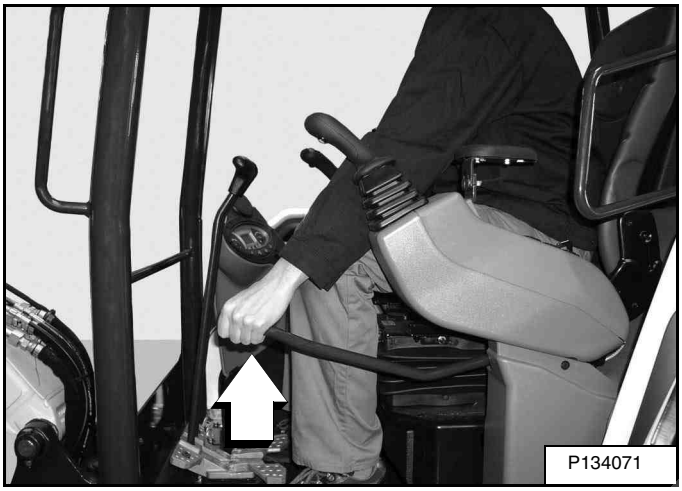
REF. NO.	DESCRIPTION	FUNCTION / OPERATION
1	POWER	Press to turn ON; press again to turn OFF.
2	MUTE	Press to mute audio output; **[MUTE]** will appear in display screen; press again to turn OFF.
3	DISPLAY	Press to toggle between function mode (showing tuner frequency, auxiliary input, weather band information, or timer) and clock mode.
		Press and hold to enter clock setting mode; use FREQUENCY DOWN (TUN -) button to adjust hours and FREQUENCY UP (TUN +) button to adjust minutes; normal operation will resume automatically.
4	BAND	Press to select tuner mode. Press to cycle through 2 AM (MW) bands and 3 FM bands.
5	AUXILIARY	Press to select Auxiliary Input mode. Portable audio device (MP3 player) must be attached to auxiliary input jack.
6	WEATHER BAND	Press to select weather band; use FREQUENCY UP (TUN +) and FREQUENCY DOWN (TUN -) buttons to adjust to the clearest station. The weather alert feature, if activated, will automatically switch from the current function to the weather band if a weather warning is received. See AUDIO / MENU ADJUSTMENT in this table.
7	TIMER	Press to access timer mode. Press to start the timer function; press again to stop timer; press again to resume timer or press and hold to reset timer and exit from timer mode.
8	DISPLAY SCREEN	Displays the time, frequency, and activated functions.
9	VOLUME UP	Adjusts volume up; current volume (0 - 40) will appear briefly in display screen.
10	AUDIO / MENU ADJUSTMENT	AUDIO ADJUSTMENT: Press to cycle through bass, treble, and balance settings; use VOLUME UP (VOL +) and VOLUME DOWN (VOL -) buttons to adjust when desired option is displayed; normal operation will resume automatically. MENU ADJUSTMENT: Press and hold for 3 seconds to enter menu adjustment settings; press to cycle through the following settings; use VOLUME UP (VOL +) and VOLUME DOWN (VOL -) buttons to adjust when desired option is displayed; normal operation will resume automatically. • Beep Confirm (On or Off) - Determines if beep will sound with each button press. • Operation Region (USA or Europe) - Selects the appropriate region. • Clock Display (12 or 24) - Selects a 12-hour or 24-hour clock display. • Display Brightness (Low, Medium, or High) - Determines brightness level of display screen. • Backlight Colour (Amber or Green) - Determines backlight colour of display screen. • Power On Volume (0 - 40) - Selects default volume setting when radio is turned on. • WB Alert (On or Off) - Determines if weather band alert feature is activated.
11	FREQUENCY DOWN	Press to manually tune the radio frequency down.
12	FREQUENCY UP	Press to manually tune the radio frequency up.
13	VOLUME DOWN	Adjusts volume down; current volume (0 - 40) will appear briefly in display screen.
14	SEEK FREQUENCY DOWN	Press to automatically tune frequency down to next strong station.
15	SEEK FREQUENCY UP	Press to automatically tune frequency up to next strong station.
16	PRESET STATIONS	Used to store and recall stations for each AM and FM band. Press and hold to store current station; press button to recall station.
17	AUXILIARY INPUT JACK	Connect line output of portable audio device (MP3 player) to 3,5 mm (1/8 in) jack and press AUXILIARY button.

PRETWAY

Raising And Lowering The Console

Raise the console before exiting the cab.

Figure 17



Pull up on the release handle **[Figure 17]**. The lift spring will assist in raising the console.

Lower the console before operating the excavator.

Push down on the lever **[Figure 17]** until the latch is engaged.

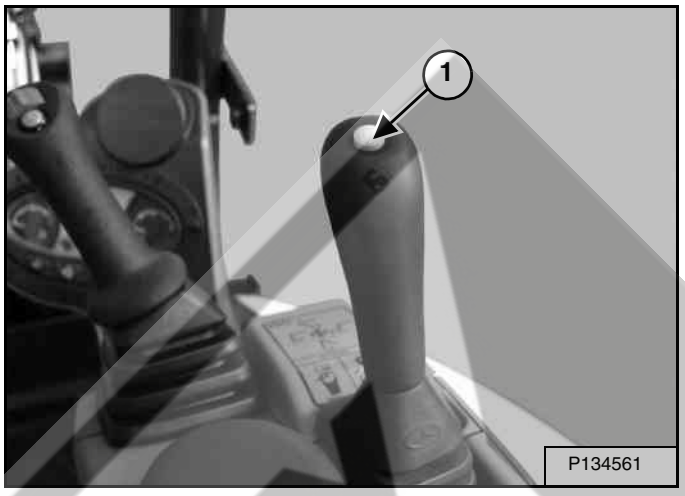
NOTE: When the console is raised, the hydraulic and traction system functions are locked and will not operate.

If the engine stops, the boom / bucket (attachments) can be lowered to the ground using hydraulic pressure in the accumulator.

The control console must be in the locked down position, and the key switch in the ON position.

Two-Speed Travel

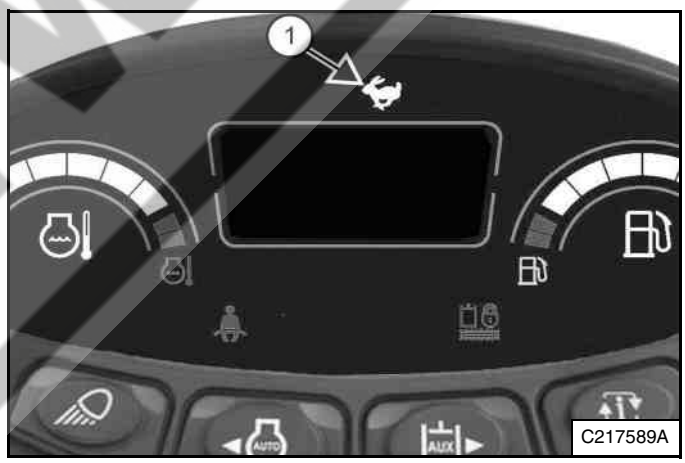
Figure 18



Press the button (Item 1) **[Figure 18]** to engage the high range. Press a second time to disengage.

NOTE: When engaging high range, two audible beeps will be heard. When engaging low range, one audible beep will be heard.

Figure 19



When high range is engaged, the two-speed travel icon (Item 1) **[Figure 19]** will illuminate.

Press the button (Item 1) **[Figure 18]** again to disengage.

Auto Shift Drive Motors

The travel motors are equipped with an auto shift feature that senses hydraulic pressure. When in high range, the travel motors will automatically shift to low range when more torque is required and return to high range when hydraulic pressure decreases.

NOTE: Always set the travel speed to low range when loading or unloading the excavator onto a transport vehicle.

RENTWAY

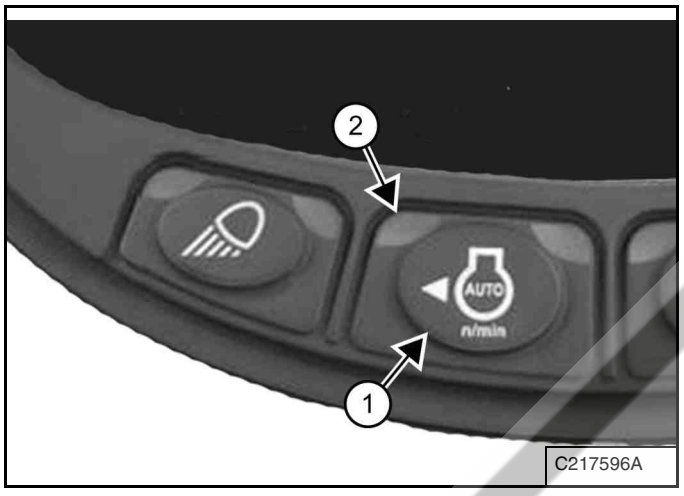
Auto Idle Feature

The auto idle feature (when engaged) will reduce the engine speed to low idle when the control levers (joystick, blade, travel, etc.) are in neutral and not used for approximately four seconds. The engine rpm will return to the set position as soon as any control lever is activated.

NOTE: Auto idle is only available on machines equipped with a dial throttle.

Standard Panel

Figure 20



The automatic idle switch (Item 1) **[Figure 20]** is used to engage or disengage the automatic idle feature.

Press the switch (Item 1) once to engage automatic idle and the LED (Item 2) will illuminate. Press the switch (Item 1) a second time to disengage automatic idle, the LED (Item 2) **[Figure 20]** will be OFF.

NOTE: Always disengage the auto idle feature when loading or unloading the excavator onto a transport vehicle.

Deluxe Panel

Figure 21

Press ENTER (Item 1) once to engage automatic idle. Press ENTER (Item 1) **[Figure 21]** again and auto idle will be OFF.

NOTE: Always disengage the auto idle feature when loading or unloading the excavator onto a transport vehicle.

NOTE: When equipped with the Deluxe Instrument Panel, the time delay for auto idle to activate can be adjusted. (See Auto Idle Time Delay on Page 209.)

RENTWA

OPERATOR CANOPY (ROPS / TOPS / FOPS)

Description

The Bobcat excavator has an operator canopy (ROPS / TOPS / FOPS) as standard equipment to protect the operator if the excavator is tipped over or from falling objects. The seat belt must be worn for ROPS / TOPS / FOPS protection.

Check the ROPS / TOPS / FOPS canopy, mounting, and hardware for damage. Never modify the ROPS / TOPS / FOPS canopy. Replace the canopy and hardware if damaged. See your Bobcat dealer for parts.

ROPS / TOPS - Roll-Over Protective Structure per ISO 12117-2, and Tip-Over Protective Structure per ISO 12117.

FOPS - Falling Objects Protective structure, Top Guard per ISO 10262 - Level 1.

WARNING

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

W-2069-0200

OPERATOR CAB (ROPS / TOPS / FOPS)

Description

The Bobcat excavator has an optional operator cab (ROPS / TOPS / FOPS) as standard equipment to protect the operator if the excavator is tipped over or from falling objects. The seat belt must be worn for ROPS / TOPS / FOPS protection.

Check the ROPS / TOPS / FOPS cab, mounting, and hardware for damage. Never modify the ROPS / TOPS / FOPS cab. Replace the cab and hardware if damaged. See your Bobcat dealer for parts.

ROPS / TOPS - Roll-Over Protective Structure per ISO 12117-2, and Tip-Over Protective Structure per ISO 12117.

FOPS - Falling Objects Protective structure, Top Guard per ISO 10262 - Level 1.

WARNING

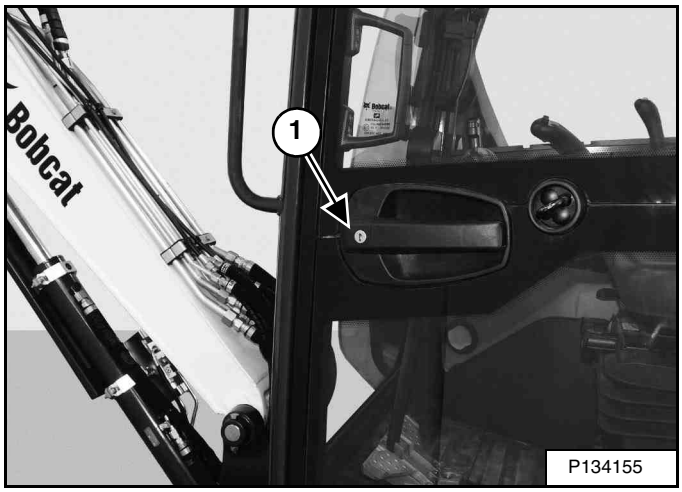
Never modify operator cab by welding, grinding, drilling holes or adding attachments unless instructed to do so by Bobcat Company. Changes to the cab can cause loss of operator protection from rollover and falling objects, and result in injury or death.

W-2069-0200

RENTWAY

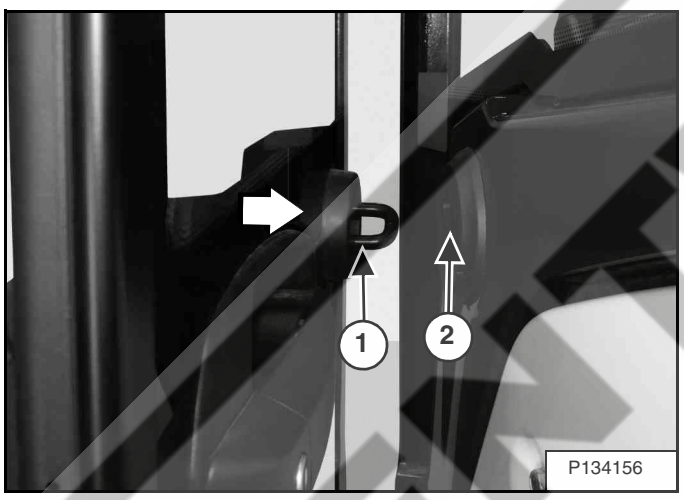
Cab Door

Figure 22



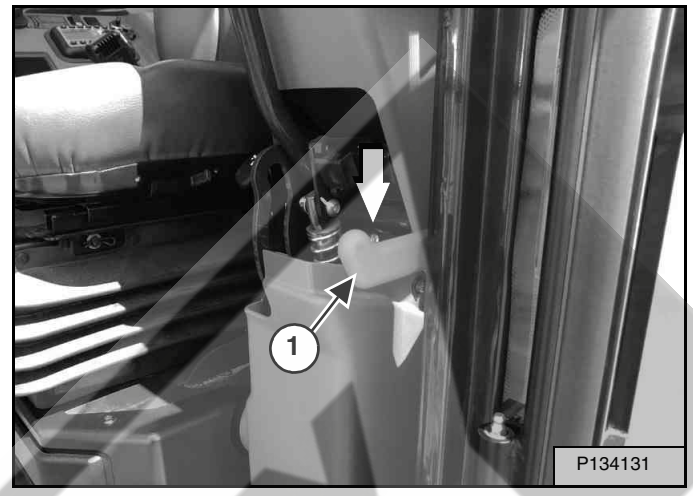
The cab door can be locked (Item 1) **[Figure 22]** with the same key as the starter switch.

Figure 23



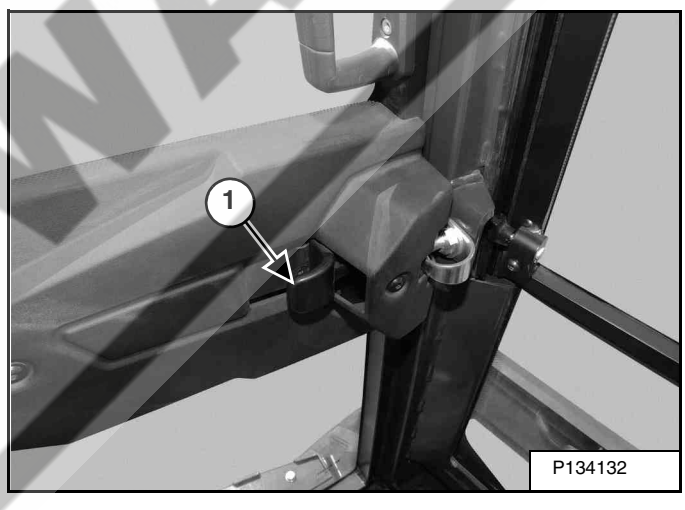
Push the door all the way open until the latch post (Item 1) engages in the latch (Item 2) **[Figure 23]** to hold the door in the open position.

Figure 24



When the door is in the open position, push down on the latch (Item 1) **[Figure 24]** to close the door.

Figure 25



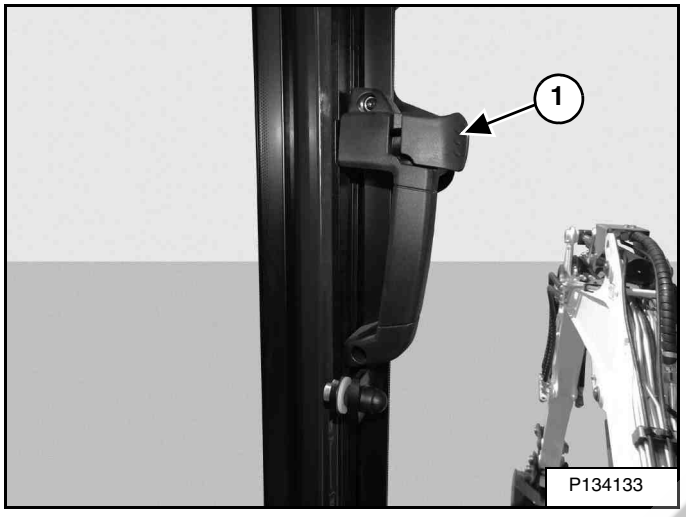
From inside the cab, open the door using the handle (Item 1) **[Figure 25]**.

RENTWAY

Front Window

Opening The Front Window

Figure 26



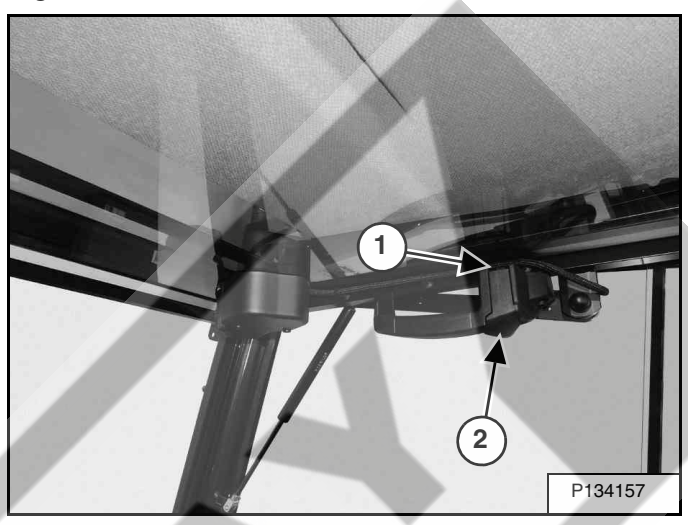
Push the window latch buttons (Item 1) **[Figure 26]** on both sides.

Figure 27

Use both window grab handles (Item 1) **[Figure 27]** to pull the top of the window in.

Continue moving the window in and up over the operator's head until the window is fully raised.

Figure 28



When the window is fully raised, the latch (Item 1) **[Figure 28]** (both sides) will close on the bracket in the latched position.

Pull down and forward slightly on the window to make sure it is fully latched.

Closing The Front Window

Use both window grab handles to support the window while pressing the window latch button (Item 2) **[Figure 28]** (both sides).

Use both window grab handles (Item 1) **[Figure 27]** to pull the window down fully.

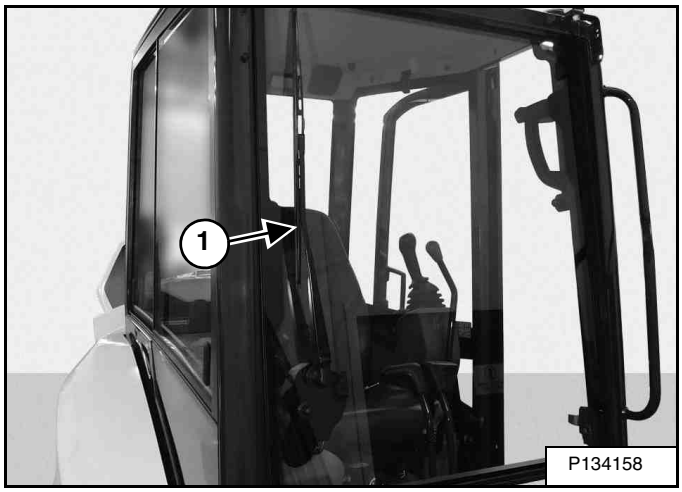
Press the top of the window in until the latch locks into the latched position (both sides) **[Figure 26]**.

Pull inward and upward slightly on the window to make sure it is fully latched in the closed position.

RETIRED

Front Wiper

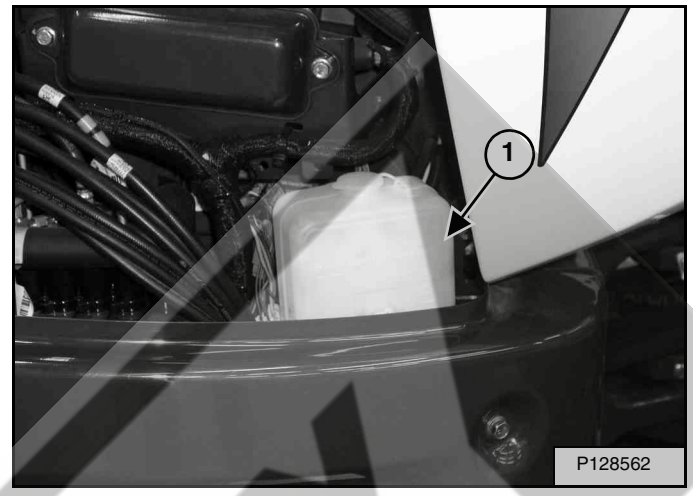
Figure 29



The front window is equipped with a wiper (Item 1) **[Figure 29]** and washer.

Window Washer Reservoir

Figure 30



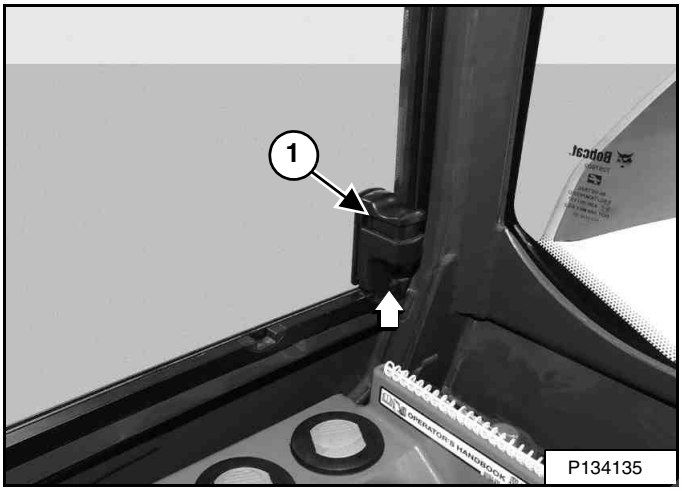
The window washer reservoir (Item 1) **[Figure 30]** is located under the right side cover.

RENTWAY

Right Side Windows

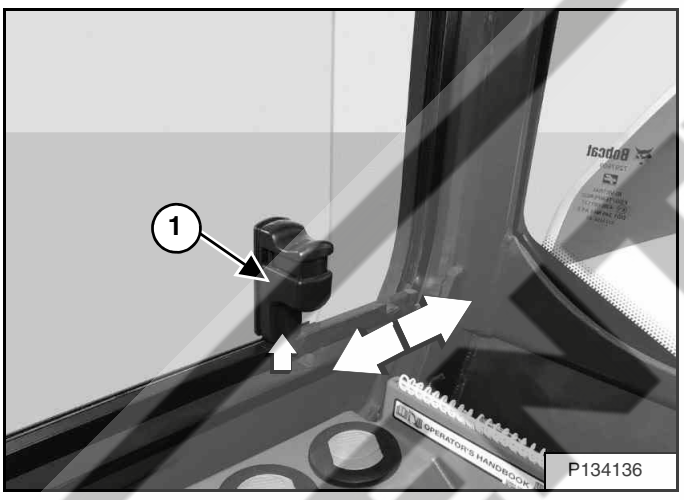
Opening The Right Rear Window

Figure 31



Pull up on the bottom latch (Item 1) **[Figure 31]**.

Figure 32



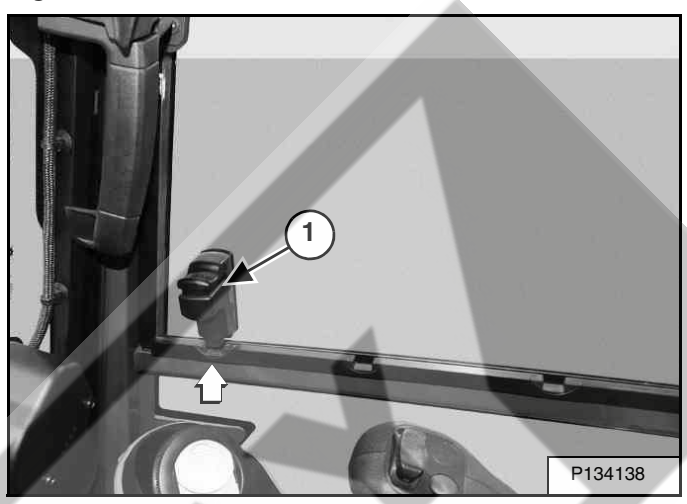
Pull the latch (Item 1) **[Figure 32]** forward to open the window until the desired stop. Release the bottom latch and snap the lock in place.

Closing The Right Rear Window

Pull up on the bottom latch (Item 1) **[Figure 31]** and push the latch back to close the window.

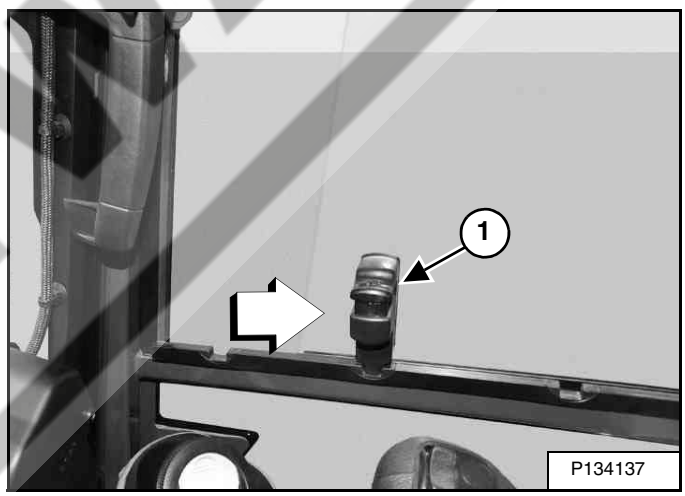
Opening The Right Front Window

Figure 33



Pull up on the bottom latch (Item 1) **[Figure 33]** located at the front of the front window.

Figure 34



Pull the latch (Item 1) **[Figure 34]** backward to open the window until the desired stop. Release the bottom latch and snap the lock in place.

Closing The Right Front Window

Pull up on the bottom latch (Item 1) **[Figure 33]** and push the latch forward to close the window.

OPERATOR CAB (ROPS / TOPS / FOPS) (CONT'D)

Heating And Ventilation Ducting

Figure 35

The louvres (Item 1) **[Figure 35]** can be positioned as needed to direct the air flow to various areas in the cab.

EMERGENCY EXIT

The door, the right side rear window and the front window provide exits.

Right Side Rear Window

Figure 36

Exit through the window **[Figure 36]**.

Front Window

Figure 37

Open the front window and exit **[Figure 37]**.

NOTE: If the excavator has a Front Guard Kit installed, the front window is NOT an emergency exit.

RENTWAY

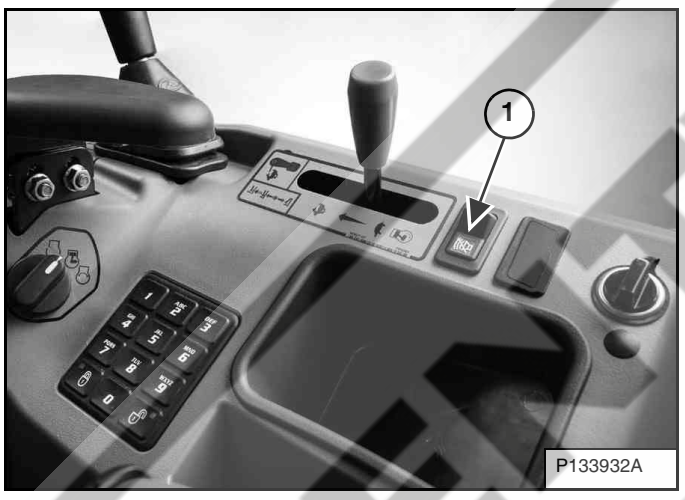
MOTION ALARM SYSTEM

Operation

Figure 38

This excavator can be equipped with a motion alarm system. The motion alarm is located underneath the rear of the excavator.

Figure 39



The motion alarm can be temporarily disabled by pressing the Motion Alarm switch (Item 1) **[Figure 39]** while the machine is moving. As soon as the travel levers are returned to the NEUTRAL position, the motion alarm will be enabled.

⚠ WARNING

This machine is equipped with a motion alarm.
ALARM MUST SOUND!
when operating forward or backward.

Failure to maintain a clear view in the direction of travel could result in serious injury or death.

The operator is responsible for the safe operation of this machine.

W-2786-0309

The motion alarm will sound when the operator moves the travel control levers (Item 1) **[Figure 40]** in either the forward or reverse direction.

If alarm does not sound or for adjustment instructions, see inspection and maintenance instructions for the motion alarm system in the preventive maintenance section of this manual. (See MOTION ALARM SYSTEM on Page 157.)

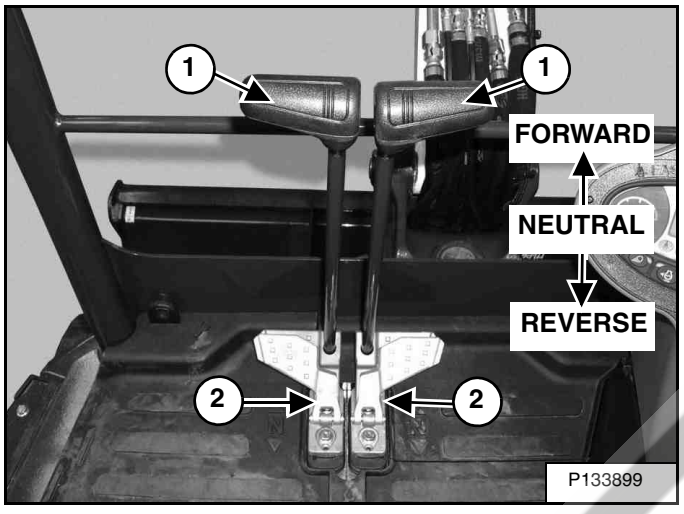
FREEWAY

TRAVEL CONTROLS

Forward And Reverse Travel

NOTE: The following procedures describe forward, reverse, left, and right as seated in the operator's seat.

Figure 40



Position the blade so it is at the front of the machine (as you sit in the operator's seat). Slowly move both steering levers* (Item 1) **[Figure 40]** forward for forward travel; backward for reverse travel.

* Travel can also be controlled with foot pedals (Item 2) **[Figure 40]**. Pivot the heel of the pedals forward for additional space on the floor.

WARNING

AVOID INJURY OR DEATH

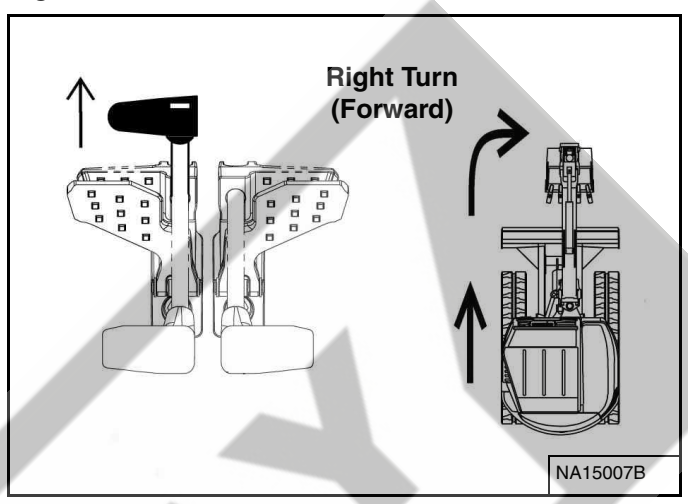
- **Check the blade location before travelling. When the blade is to the rear, operate the steering levers / foot pedals in the opposite direction to when the blade is in the front.**
- **Move the steering levers / foot pedals slowly. Abrupt lever motion will cause the machine to jerk.**

W-2235-EN-1009

Turning

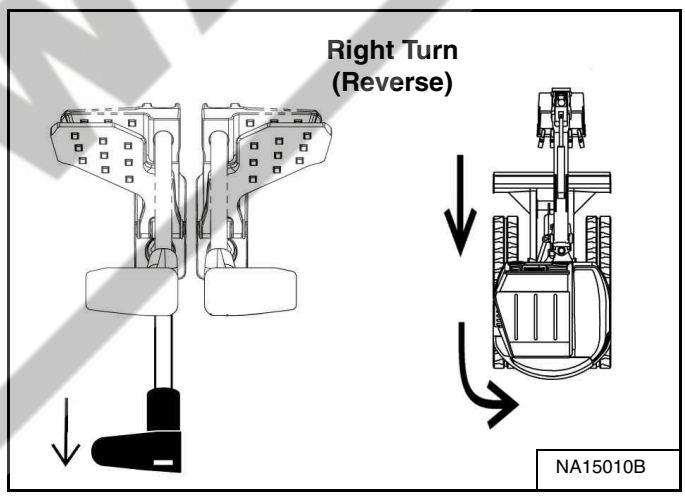
Right Turn

Figure 41



Push the left steering lever forward to turn right **[Figure 41]** while travelling forward.

Figure 42



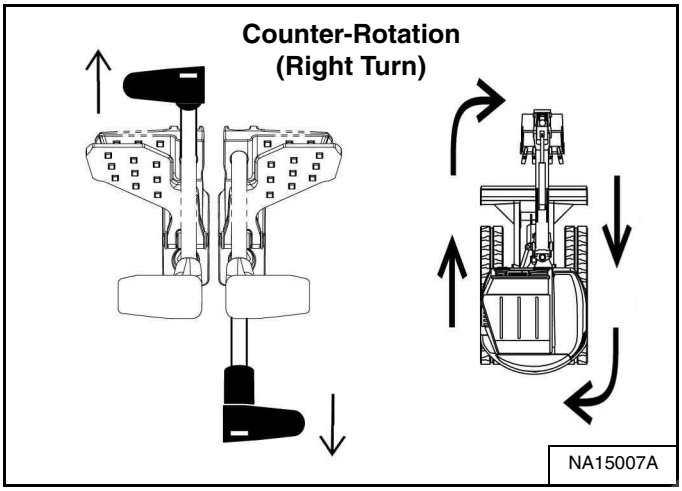
Pull the left steering lever backward to turn right while travelling backward **[Figure 42]**.

RENTWAY

Turning (Cont'd)

Counter-Rotation Right Turn

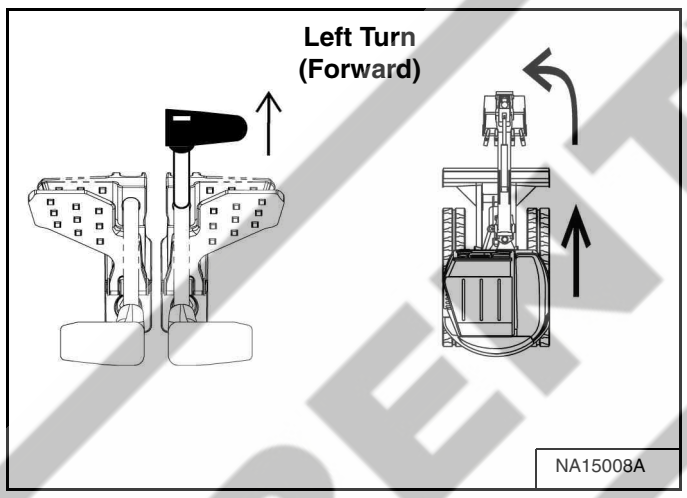
Figure 43



Push the left steering lever forward and pull the right steering lever backward **[Figure 43]**.

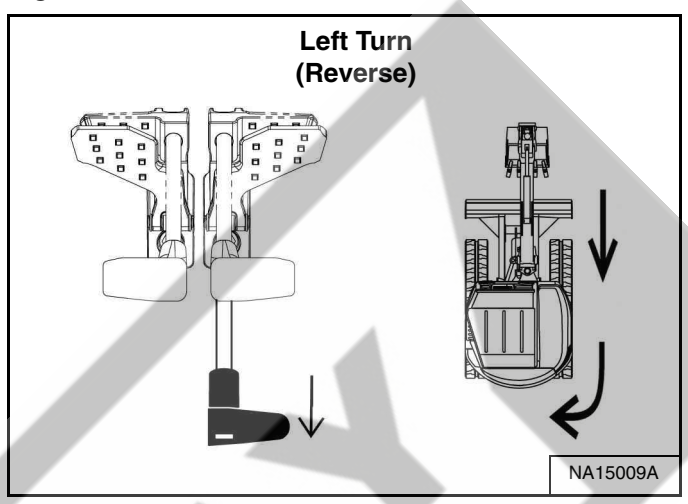
Left Turn

Figure 44



Push the right steering lever forward to turn left while travelling forward **[Figure 44]**.

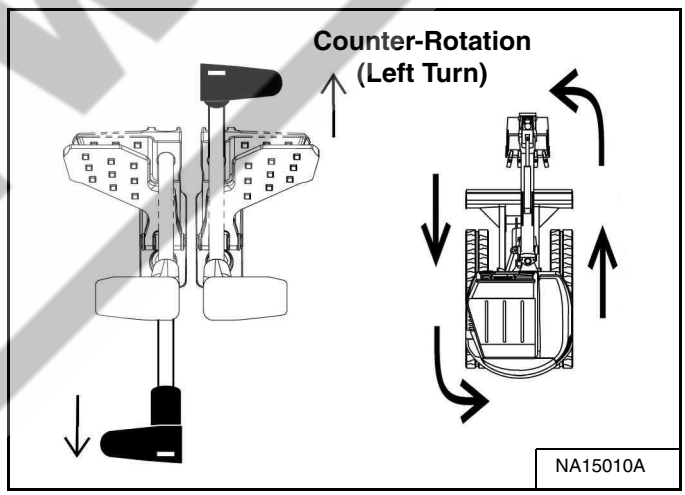
Figure 45



Pull the right steering lever backward to turn left while travelling backward **[Figure 45]**.

Counter-Rotation Left Turn

Figure 46



Push the right steering lever forward and pull the left steering lever backward **[Figure 46]**.

RENTWAY

HYDRAULIC CONTROLS

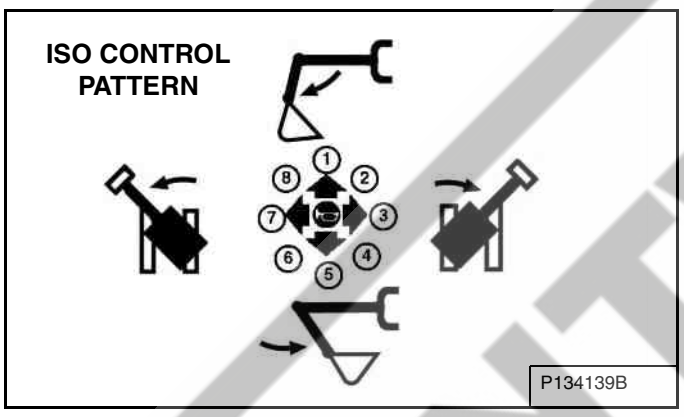
Description

Operate the work equipment (boom, arm, bucket, and upperstructure slew) with the left and right joysticks.

Left Joystick

Figure 47

Figure 48



The left lever (joystick) is used to operate the arm and slew the upperstructure **[Figure 47]**.

1. Arm out.
2. Arm out and slew right.
3. Slew right.
4. Arm in and slew right.
5. Arm in.
6. Arm in and slew left.
7. Slew left.
8. Arm out and slew left.

Right Joystick

Figure 49

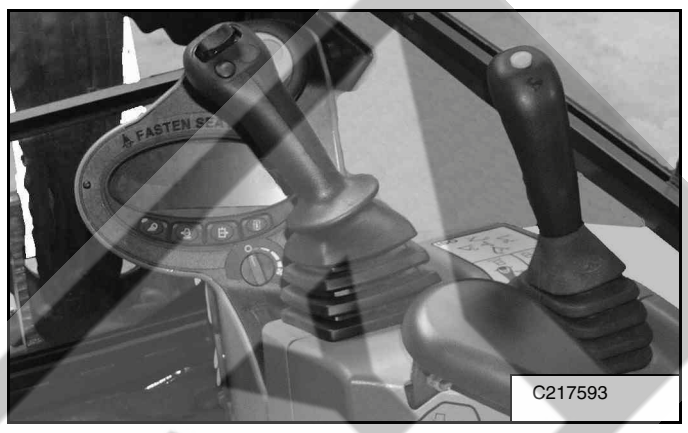
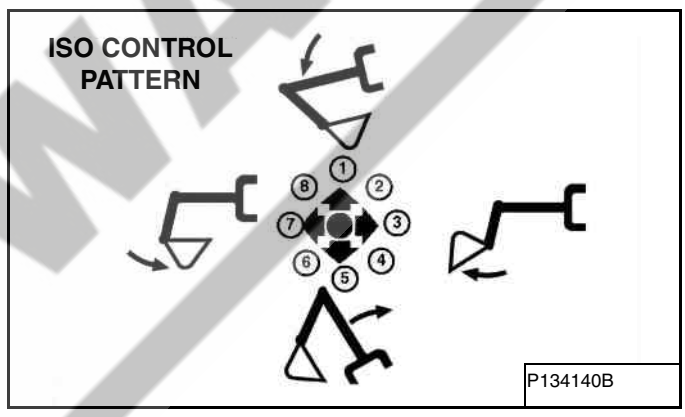


Figure 50



The right lever (joystick) is used to operate the boom and bucket **[Figure 49]**.

1. Boom lower.
2. Boom lower and bucket dump.
3. Bucket dump.
4. Boom raise and bucket dump.
5. Boom raise.
6. Boom raise and bucket curl.
7. Bucket curl.
8. Boom lower and bucket curl.

WARNING

AVOID INJURY OR DEATH

Before leaving the machine:

- **Lower the work equipment to the ground.**
- **Lower the blade to the ground.**
- **Stop the engine and remove the key.**
- **Raise the control console.**

W-2780-0109

RENTWAY

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.

W-2220-0396

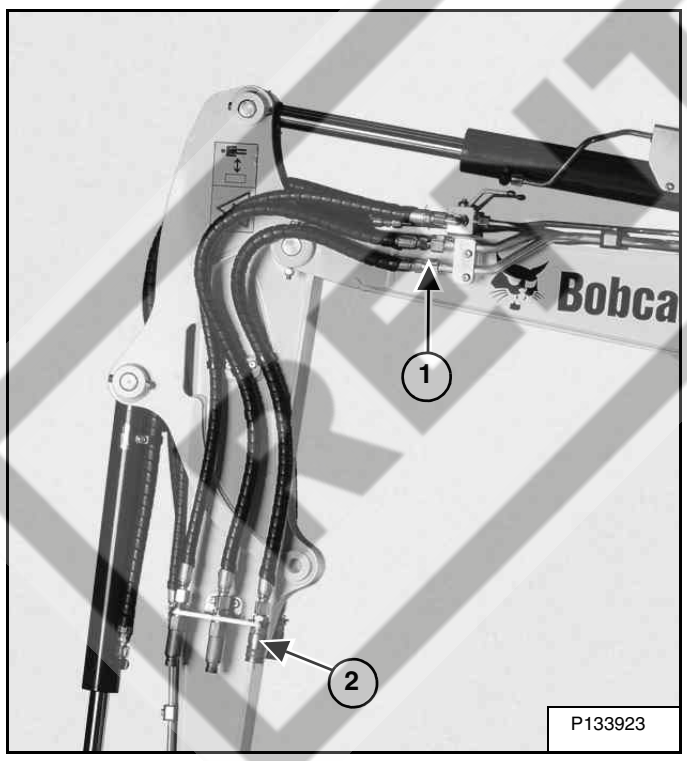
WARNING

AVOID INJURY OR DEATH

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

W-2072-0807

Figure 51



If equipped with auxiliary hydraulics, the excavator and attachments are supplied with flush faced couplers. The couplers can be mounted on the boom (Item 1) or on the arm (Item 2) **[Figure 51]**.

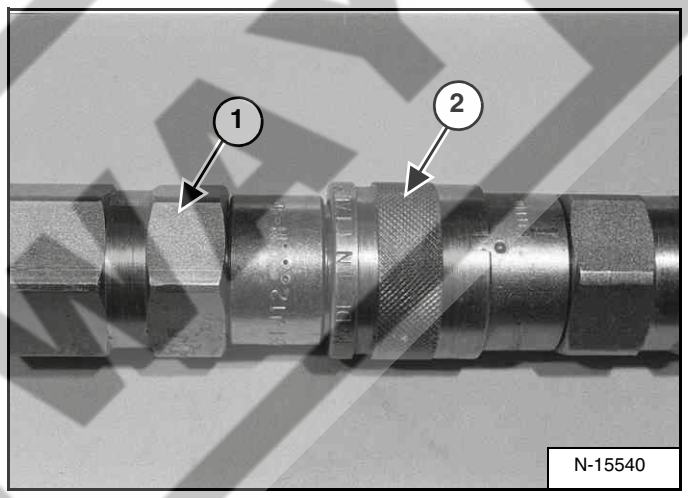
To Connect:

Remove any dirt or debris from the surface of both the male and female couplers, and from the outside diameter of the male coupler. Visually check the couplers for corroding, cracking, damage, or excessive wear, if any of these conditions exist, the coupler(s) (Item 1) **[Figure 51]** 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:

Figure 52



Hold the male coupler (Item 1). Retract the sleeve (Item 2) **[Figure 52]** on the female coupler until the couplers disconnect.

Selectable And Continuous Auxiliary Hydraulic Flow Description

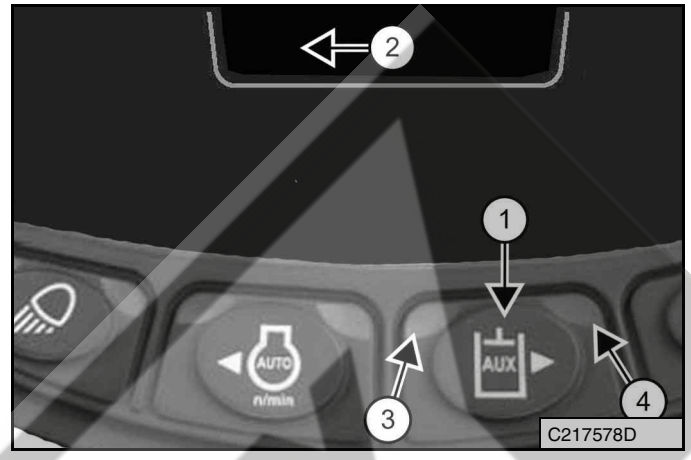
The primary auxiliary hydraulics have Selectable Auxiliary Hydraulic Flow or Continuous Auxiliary Hydraulic Flow. This allows the operator to select a hydraulic flow that matches the attachment's hydraulic requirements.

If the auxiliary hydraulics are enabled when the engine is turned OFF, they will stay enabled when the engine is restarted. If Continuous flow was enabled at engine OFF, it will reset to Selectable flow.

NOTE: Use only approved attachments for your model excavator. Attachments are approved for each model of excavator based on various factors. Using unapproved attachments could cause damage to the attachment or to the excavator.

Activating Primary Auxiliary Hydraulics With Standard Instrument Panel

Figure 53



Selectable Flow Auxiliary Hydraulics - Press the AUX Hydraulics button (Item 1) **[Figure 53]**. A beep will sound each time the auxiliary button is pressed. The last selected auxiliary hydraulic flow (Mode 3, Mode 2, or Mode 1) will appear in the data display (Item 2) **[Figure 53]**. The left LED (Item 3) **[Figure 53]** will illuminate.

Press the AUX Hydraulics button (Item 1) **[Figure 53]** to scroll through the flow settings (3, 2, 1). The setting will appear in the data display (Item 2) **[Figure 53]**. Once the setting is selected, it will stay at that setting until a different auxiliary flow is selected by the operator, even after engine restart.

Continuous Flow Auxiliary Hydraulics - Press and hold the AUX Hydraulics button (Item 1) **[Figure 53]** for more than one second. The right LED (Item 4) **[Figure 53]** will illuminate. Press the AUX Hydraulics button (Item 1) **[Figure 53]** again to scroll through the flow settings (3, 2, 1).

Selectable Auxiliary Hydraulic Flow Settings For Selected Attachments

The auxiliary hydraulics can be set to Mode 3 (shown on display as 3^{AUX}), Mode 2 (2^{AUX}), Mode 1 (1^{AUX}), or OFF. Mode 3 allows maximum hydraulic flow, Mode 2 allows medium hydraulic flow, and Mode 1 allows low hydraulic flow.

AUX FLOW SETTING	FLOW	ATTACHMENTS
Mode 3 (3^{AUX})	Maximum	Breaker, Vibratory Plate Compactor, Auger
Mode 2 (2^{AUX})	Medium	Clamp, Grapple
Mode 1 (1^{AUX})	Low	Power Tilt, Hydra Tilt

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Activating Primary Auxiliary Hydraulics With Deluxe Instrument Panel (Software Version 88.02 Or Below)

Figure 54

Selectable Flow Auxiliary Hydraulics - Press key 6 (Item 1) **[Figure 54]** to activate auxiliary hydraulics. Press key 6 (Item 1) **[Figure 54]** again to scroll through the flow settings (see table below).

Continuous Flow Auxiliary Hydraulics - Press and hold key 6 (Item 1) **[Figure 54]** for more than one second. The continuous flow icons below will illuminate. Press key 6 (Item 1) **[Figure 54]** to scroll through the flow settings (see table below).

ICON	DESCRIPTION
	Engine OFF - Auxiliary Hydraulics Pressure Release
	Engine Running - Auxiliary Hydraulics OFF
	Auxiliary Hydraulics - Maximum Flow - Continuous Flow Disabled
	Auxiliary Hydraulics - Medium Flow - Continuous Flow Disabled
	Auxiliary Hydraulics - Low Flow - Continuous Flow Disabled
	Auxiliary Hydraulics - Maximum Flow - Continuous Flow Enabled
	Auxiliary Hydraulics - Medium Flow - Continuous Flow Enabled
	Auxiliary Hydraulics - Low Flow - Continuous Flow Enabled

Activating Primary Auxiliary Hydraulics With Deluxe Instrument Panel (Software Version 88.03 Or Above)

Figure 55

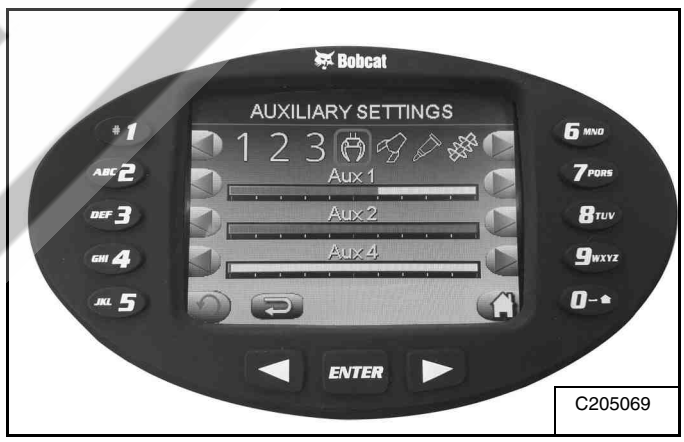
NOTE: Updated deluxe panels have the Aux icon (Item 3) [Figure 55] on the Gauges screen.

Selectable Flow Auxiliary Hydraulics - Press key 6 (Item 1) **[Figure 55]** to activate auxiliary hydraulics.

Continuous Flow Auxiliary Hydraulics - Press and hold key 6 (Item 1) **[Figure 55]** for more than one second. The continuous flow icon will illuminate.

Setting Auxiliary Hydraulic Flow Rate

Figure 56



Press key 7 (Item 2) **[Figure 55]** to open the AUXILIARY SETTINGS screen and set auxiliary flow rate.

On the AUXILIARY SETTINGS screen, press keys 1 or 6 to scroll through the settings **[Figure 56]**. See the table below for an explanation of the icons. Select the icon that corresponds to your attachment or select one of the Custom settings to save your own flow rates.

Activating Primary Auxiliary Hydraulics With Deluxe Instrument Panel (Software Version 88.03 Or Above) (Cont'd)

Adjust the flow rate percentages with keys 2 – 4 and 7 – 9. After changing a flow rate, press the save icon to save the setting.

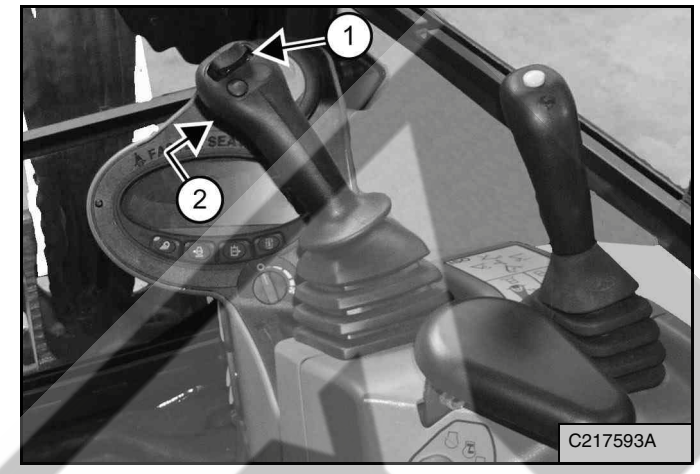
Press key 0 to return to the Gauge screen.

Press key 5 to return settings to the default setting.

ICON	DESCRIPTION
	Selectable Flow
	Continuous Flow
	Secondary Auxiliary
	Auger
	Cutter / Crusher
	Breaker
	Rotating Grapple
	Flail Mower
	Tilt Coupler
	Custom Setting 1
	Custom Setting 2
	Custom Setting 3

Operating Attachments With Primary Auxiliary Hydraulics

Figure 57



After activating auxiliary hydraulics and selecting Selectable or Continuous flow (See Activating Primary Auxiliary Hydraulics With Standard Instrument Panel on Page 51.), (See Activating Primary Auxiliary Hydraulics With Deluxe Instrument Panel (Software Version 88.02 Or Below) on Page 52.), or (See Activating Primary Auxiliary Hydraulics With Deluxe Instrument Panel (Software Version 88.03 Or Above) on Page 52.), operate the attachment as follows:

- Move the switch (Item 1) **[Figure 57]** on the right joystick to the right to supply hydraulic flow to the female coupler.
- Move the switch (Item 1) **[Figure 57]** to the left to supply hydraulic flow to the male coupler.
- Move the switch (Item 1) **[Figure 57]** halfway and the auxiliary functions will move at approximately one-half speed.
- Press the button (Item 2) **[Figure 57]** on the front of the handle to provide continuous flow to the female coupler.
- Press the switch (Item 1) to the left while pressing the button (Item 2) **[Figure 57]** on the front of the handle to provide continuous flow to the male coupler.
- Press the button (Item 2) **[Figure 57]** a second time to stop auxiliary flow to the quick couplers.

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

RENTWAY

Releasing Hydraulic Pressure In Excavator With Standard Instrument Panel

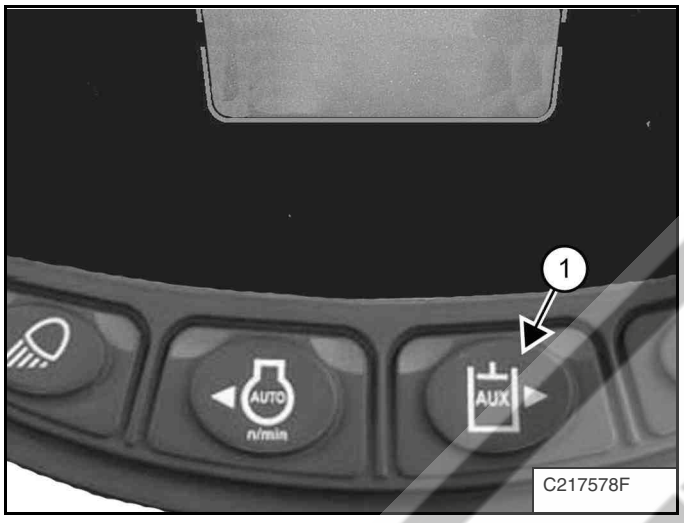
NOTE: Excavator engine must have recently been started to release hydraulic pressure.

Put the attachment flat on the ground.

Stop the engine and turn the key switch to ON.

NOTE: The left console must be fully lowered to release hydraulic pressure.

Figure 58



If the auxiliary hydraulics are disabled, press AUX Hydraulics button (Item 1) **[Figure 58]** and then move the switch (Item 1) **[Figure 57]** to the right and left several times.

If the auxiliary hydraulics are enabled, then move the switch (Item 1) **[Figure 57]** to the right and left several times.

Releasing Hydraulic Pressure In Excavator With Deluxe Instrument Panel

NOTE: Excavator engine must have recently been started to release hydraulic pressure.

Put the attachment flat on the ground.

Stop the engine and turn the start switch to ON.

NOTE: The left console must be fully lowered to release hydraulic pressure.

Figure 59

Press either Scroll button (Item 1) **[Figure 59]** until the above screen is visible.

Press key 6 **[Figure 59]** and the AUX PRESSURE RELEASE screen **[Figure 60]** will appear.

Figure 60

Press the ENTER button (Item 1) **[Figure 60]** to release auxiliary pressure in the excavator. An hour glass symbol will appear and when pressure is released, the screen will show *Auxiliary Hydraulic Pressure Release*.

RENTWA

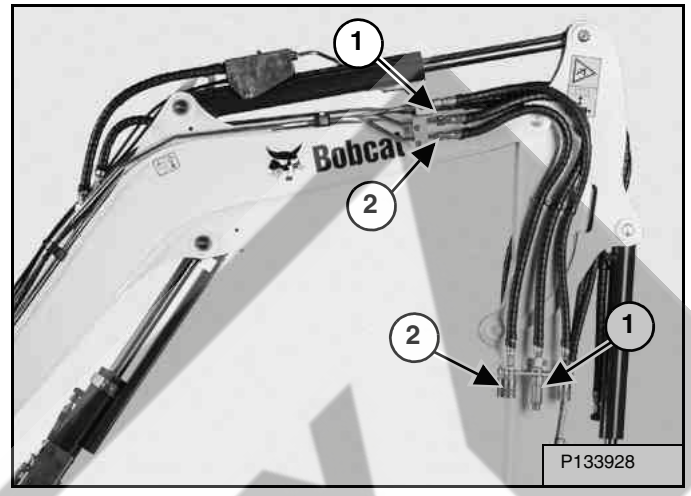
Releasing Hydraulic Pressure In Attachments

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

- Follow procedure to release hydraulic pressure in excavator.
- Connect male coupler from attachment to female coupler of excavator then repeat procedure above. This will release pressure in the attachment.
- Connect the female coupler from the attachment.

Secondary Auxiliary Hydraulics Location

Figure 61



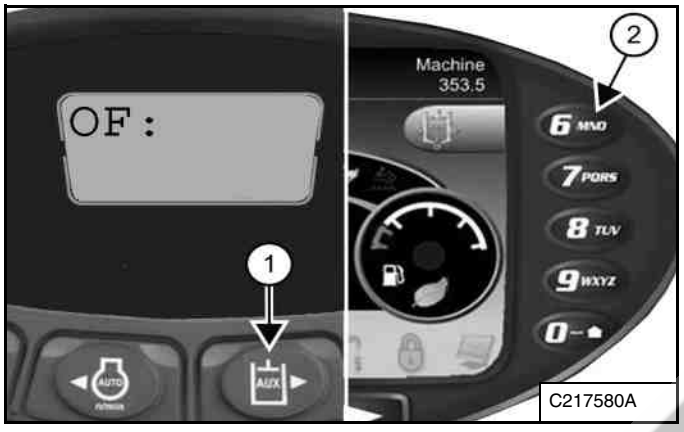
When machines are equipped with secondary auxiliary hydraulics, the second set of hydraulic couplers will be mounted on the right side of the arm or boom.

RENTWAY

Operating Attachments With Secondary Auxiliary Hydraulics (Software Version 88.02 Or Below)

If your machine's software has been updated, (See Operating Attachments With Primary, Secondary, Or Fourth Auxiliary Hydraulics (Software Version 88.03 Or Above) on Page 58.).

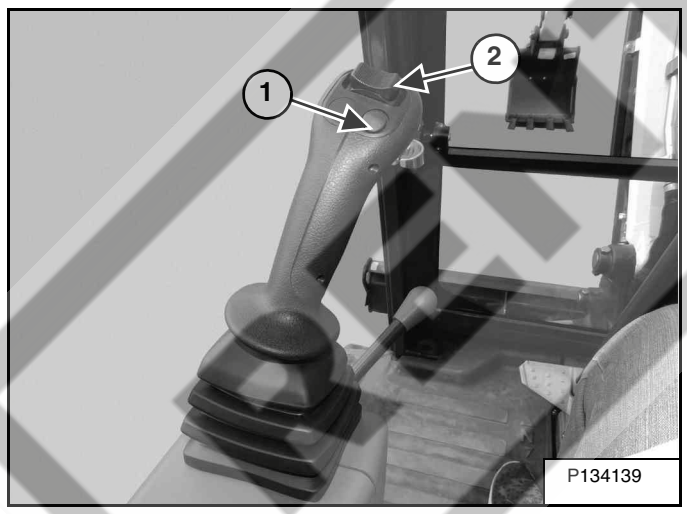
Figure 62



1. Activate auxiliary hydraulics.

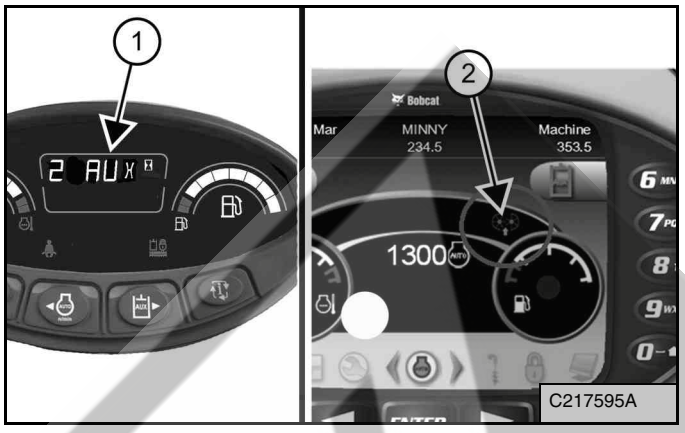
- *Standard Instrument Panel:* Press the AUX Hydraulics button (Item 1) **[Figure 67]**.
- *Deluxe Instrument Panel:* Press key 6 (Item 2) **[Figure 67]**.

Figure 63



2. Press and hold the button (Item 1) **[Figure 63]** on the left joystick until a beep is heard to switch between the boom swing function and the secondary auxiliary hydraulics.

Figure 64



- *Standard Instrument Panel:* The display (Item 1) **[Figure 64]** will show *2 AUX* when in the second auxiliary mode.
- *Deluxe Instrument Panel:* The icon (Item 2) **[Figure 64]** will be illuminated when in the second auxiliary mode.

3. Operate the attachment as follows.

- Move the switch (Item 2) **[Figure 63]** on the left control lever to the left to supply hydraulic flow to the female coupler.
- Move the switch (Item 2) **[Figure 63]** to the right to supply hydraulic flow to the male coupler.
- Move the switch (Item 2) **[Figure 63]** halfway and the auxiliary functions will move at approximately one-half speed.

Releasing Secondary Auxiliary Hydraulic Pressure In Excavator

NOTE: Excavator engine must have recently been started to release hydraulic pressure.

1. Put the attachment flat on the ground.
2. Stop the engine and turn the key to ON.
3. Make sure left console is fully lowered.
4. Activate auxiliary hydraulics. (See Operating Attachments With Secondary Auxiliary Hydraulics (Software Version 88.02 Or Below) on Page 56.) (See Operating Attachments With Primary, Secondary, Or Fourth Auxiliary Hydraulics (Software Version 88.03 Or Above) on Page 58.)
5. Activate secondary auxiliary hydraulics. (See Operating Attachments With Secondary Auxiliary Hydraulics (Software Version 88.02 Or Below) on Page 56.) (See Operating Attachments With Primary, Secondary, Or Fourth Auxiliary Hydraulics (Software Version 88.03 Or Above) on Page 58.)
6. Move the left joystick switch (Item 2) **[Figure 63]** to the right and left several times to release pressure.

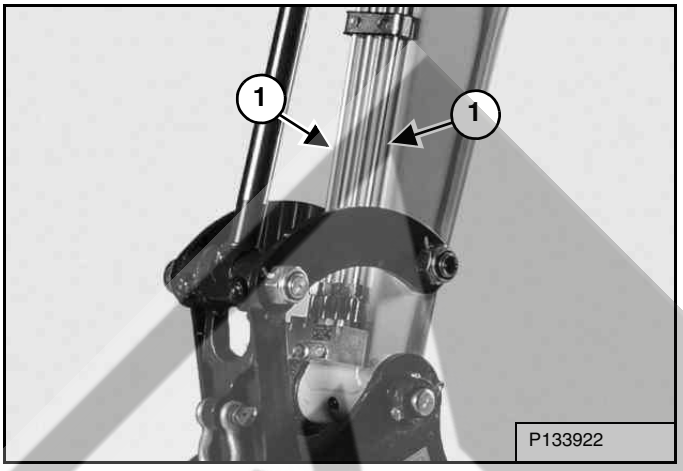
Releasing Secondary Auxiliary Hydraulic Pressure In Attachment

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

- Follow procedure above to release pressure in excavator.
- Connect male coupler from attachment to female coupler of excavator then repeat procedure above. This will release pressure in the attachment.
- Connect the female coupler from the attachment.

Fourth Auxiliary Hydraulics Location

Figure 65



When the excavator is equipped with fourth auxiliary hydraulics, the fourth auxiliary hydraulic tube lines will be mounted on top the arm in the outside position (Item 1) **[Figure 65]** and connect to the port block on the arm.

RENTWAY

Operating Attachments With Primary, Secondary, Or Fourth Auxiliary Hydraulics (Software Version 88.03 Or Above)

On machines equipped with primary, secondary, and fourth auxiliary hydraulics, you can toggle between OF (boom offset), Aux1, Aux2, and Aux4 to select the control configuration that best suits the attachment and operation.

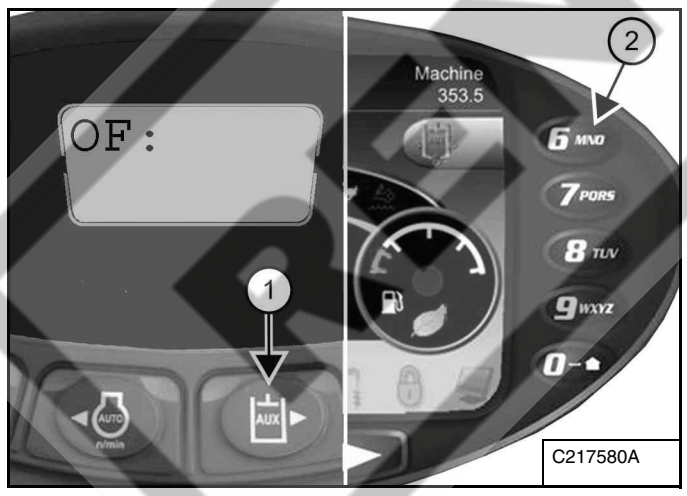
Figure 66

1. Push the Boom Swing switch (Item 1) **[Figure 66]** on the left console to the left to operate boom swing offset with the left joystick switch. This switch can later be pushed to the right to transfer boom swing control to the right joystick.

- *Standard Instrument Panel:* The display will show [OF] on the left side, indicating this joystick controls boom swing offset.

- *Deluxe Instrument Panel:* The Offset icon will illuminate on the left side of the display, indicating this joystick controls boom swing offset.

Figure 67

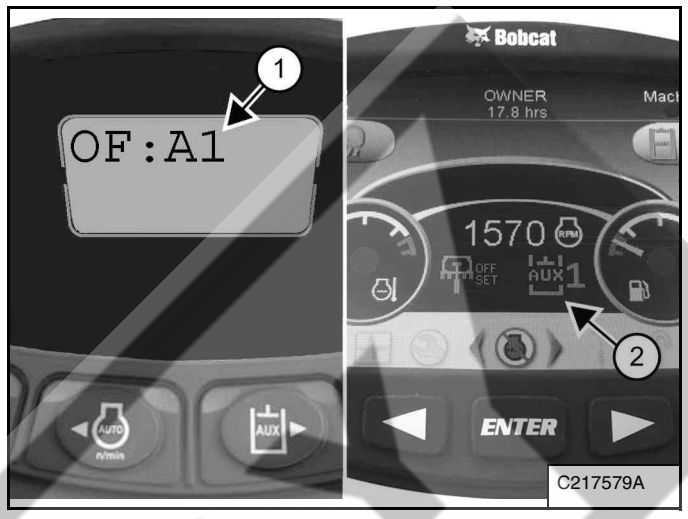


2. Activate auxiliary hydraulics.

- *Standard Instrument Panel:* Press the AUX Hydraulics button (Item 1) **[Figure 67]**.

- *Deluxe Instrument Panel:* Press key 6 (Item 2) **[Figure 67]**.

Figure 68



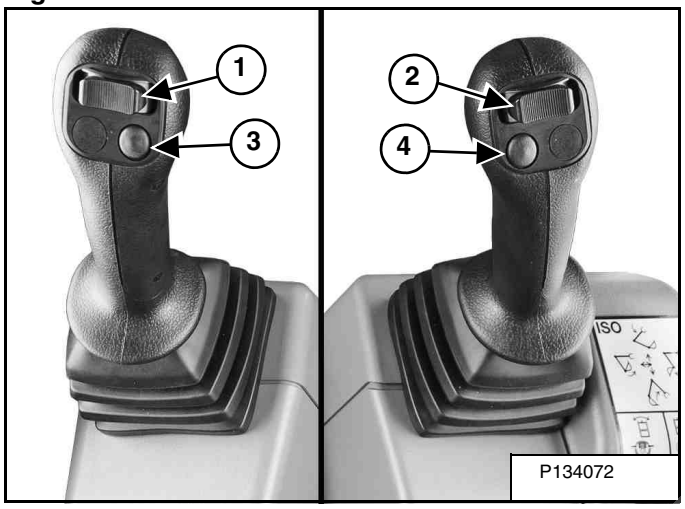
3. The display will indicate the left joystick controls boom swing offset and the right joystick controls auxiliary hydraulics.

- *Standard Instrument Panel:* The display will show [OF:A1] (Item 1) **[Figure 68]**.

- *Deluxe Instrument Panel:* The display will show Offset and Aux1 icons (Item 2) **[Figure 68]**.

Operating Attachments With Primary, Secondary, Or Fourth Auxiliary Hydraulics (Software Version 88.03 Or Above) (Cont'd)

Figure 69



4. Press the joystick buttons to toggle to the desired hydraulic setting.

- Press the left joystick button (Item 3) **[Figure 69]** until two beeps are heard to select OF, Aux2, or Aux4.

- Press the right joystick button (Item 4) **[Figure 69]** until two beeps are heard to select OF, Aux1, or Aux4.

NOTE: Boom swing offset (OF) will only be available for the joystick that is set with the Boom Swing switch (Item 1) [Figure 66]. Aux4 will be available only for the other joystick.

NOTE: The joystick switches must be in the neutral position before you press a joystick button to change to a different auxiliary.

5. Operate the attachment as follows:

- Use the left joystick switch (Item 1) **[Figure 69]** to control the hydraulics indicated on the left side of the display panel (OF, Aux2, or Aux4).

- Use the right joystick switch (Item 2) **[Figure 69]** to control the hydraulics indicated on the right side of the display panel (OF, Aux1, or Aux4).

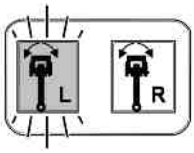
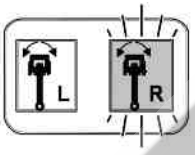
NOTE: After you push the Boom Swing switch (Item 1) [Figure 66], the auxiliary hydraulics will automatically deactivate. Press the AUX Hydraulics button (Item 1) [Figure 67] or key 6 (Item 2) [Figure 67] to reactivate auxiliary hydraulics.

To set auxiliary hydraulics flow rate, (See Setting Auxiliary Hydraulic Flow Rate on Page 52.).

See the following table for more information on switching between auxiliary hydraulic combinations.

RENTWAY

Operating Attachments With Primary, Secondary, Or Fourth Auxiliary Hydraulics (Software Version 88.03 Or Above) (Cont'd)

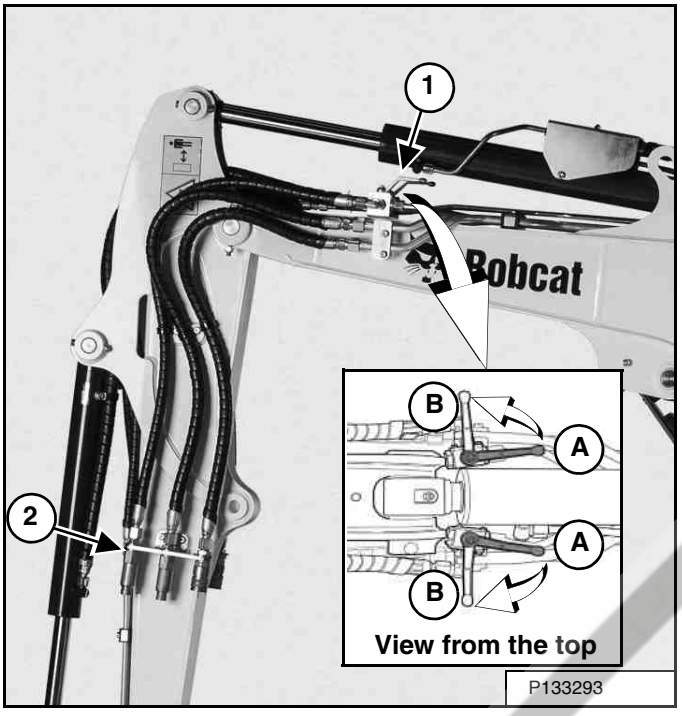
AUXILIARY HYDRAULICS SETTINGS SEQUENCE			
BOOM SWING SWITCH	**ACTION**	**STANDARD DISPLAY**	**DELUXE DISPLAY**
	1. Initial setting (Boom Swing switch set to left joystick).	OF:_	
	2. Activate auxiliary hydraulics.	OF:A1	
	3. Press right joystick button.	OF:A4	
	4. Press left joystick button.	A2:A4	
	5. Press right joystick button.	A2:A1	
	6. Press Boom Swing switch to right.	_:OF	
	7. Activate auxiliary hydraulics.	A4:OF	
	8. Press right joystick button.	A4:A1	
	9. Press left joystick button.	A2:A1	

NOTE: The combination A2:OF is not a possible setting.

RENTWAY

Third Auxiliary Hydraulics (A3)

Figure 70



When the excavator is equipped with third auxiliary hydraulics (A3), two manually operated diverter valves (Item 1) **[Figure 70]** will be installed into the bucket hydraulic circuit.

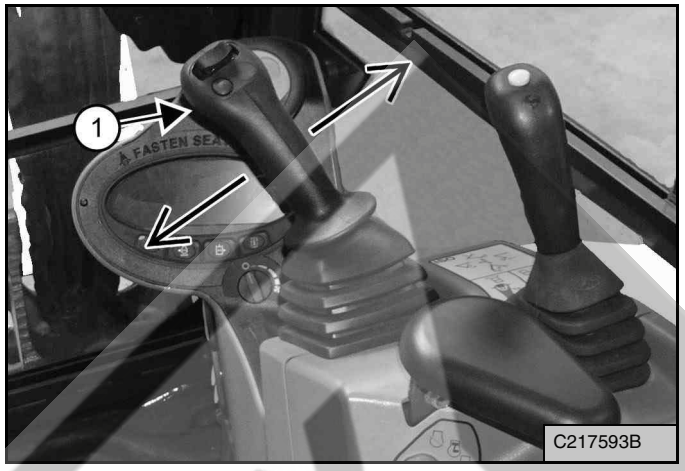
NOTE: Both levers (Item 1) must be fully rotated in either the bucket position (Item A) or the third auxiliary position (Item B) [Figure 70] for correct operation.

IMPORTANT

Attachments must be disconnected from the auxiliary hydraulic diverter valve quick couplers when the levers are in the A position. If left connected, hydraulic system pressure can cause unexpected attachment movement.

I-2389-0518

Figure 71



1. Release hydraulic pressure in the excavator. (See Releasing Hydraulic Pressure In Excavator With Standard Instrument Panel on Page 54.) (See Releasing Hydraulic Pressure In Excavator With Deluxe Instrument Panel on Page 54.)

2. Move both levers to the (B) position (Item 1) **[Figure 70]** to select third auxiliary hydraulics.

3. Connect the attachment to the third auxiliary quick couplers (Item 2) **[Figure 70]**.

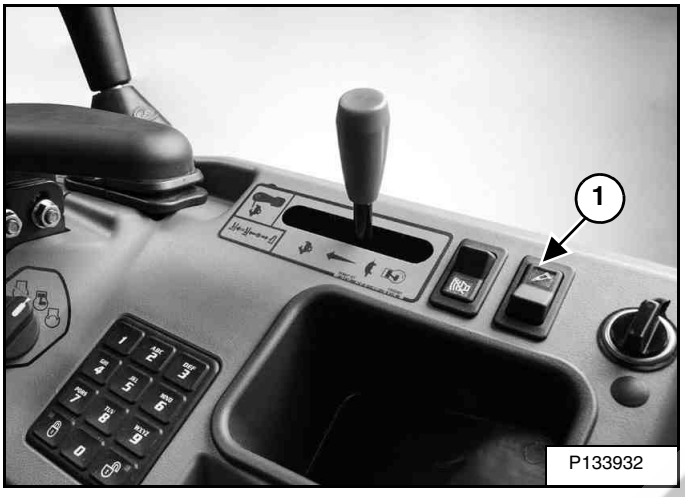
4. Move the right joystick (Item 1) **[Figure 71]** right and left to supply hydraulic flow to the third auxiliary ports (Item 2) **[Figure 70]**.

HYDRAULIC CONTROLS (CONT'D)

Direct To Tank Switch

The direct to tank switch (if equipped) is located on the right console.

Figure 72



Push the top of the switch (Item 1) **[Figure 72]** to direct auxiliary return flow to the hydraulic oil reservoir. The button will illuminate.

Push the bottom of the switch (Item 1) **[Figure 72]** to select two-way hydraulic auxiliary flow operation.

OVERLOAD WARNING DEVICE

Description

NOTE: The excavator must be equipped with the optional boom load holding valve to install the overload warning device.

The overload warning device (if equipped), senses hydraulic pressure in the boom lift circuit. When the hydraulic pressure in the boom lift circuit reaches a predetermined pressure setting, a buzzer will sound that indicates an overload condition.

If the buzzer sounds, immediately move the arm closer to the excavator and lower the boom. Reduce the size of the load before attempting to re-lift the load.

Operation

Figure 73

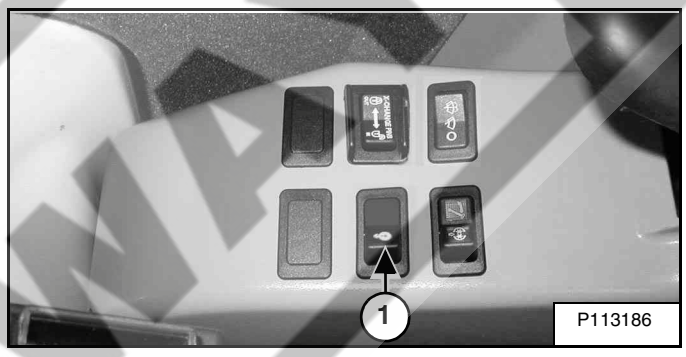


Figure 74

Press the switch (Item 1) **[Figure 73]** to the right to enable the Overload Warning Feature.

A buzzer will sound and the general warning icon (Item 1) **[Figure 74]** will illuminate when the boom is overloaded.

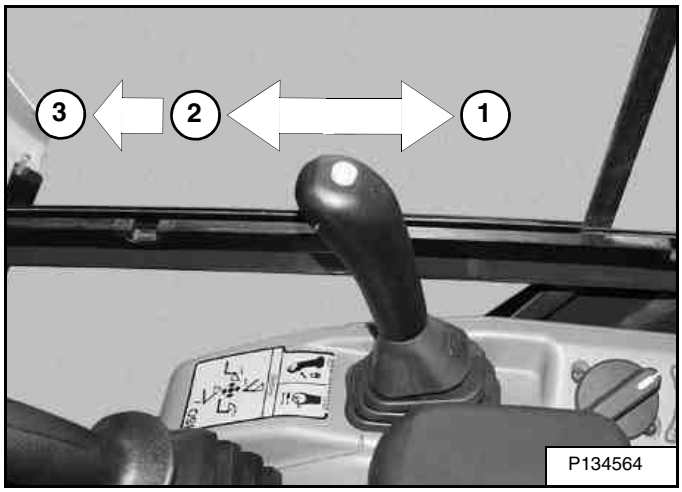
To disengage the overload warning feature, press the switch (Item 1) **[Figure 73]** to the left. The icon (Item 1) **[Figure 74]** will turn off when the overload warning feature is disabled.

RENTWAY

BLADE CONTROL LEVER

Raising And Lowering Blade

Figure 75



Pull the lever backward to raise the blade (Item 1) **[Figure 75]**.

Push the lever forward to lower the blade (Item 2) **[Figure 75]**.

Push the lever (Item 3) **[Figure 75]** forward until the lever is in the locked position to put the blade in the *float* position.

Pull the lever backward to unlock from the *float* position.

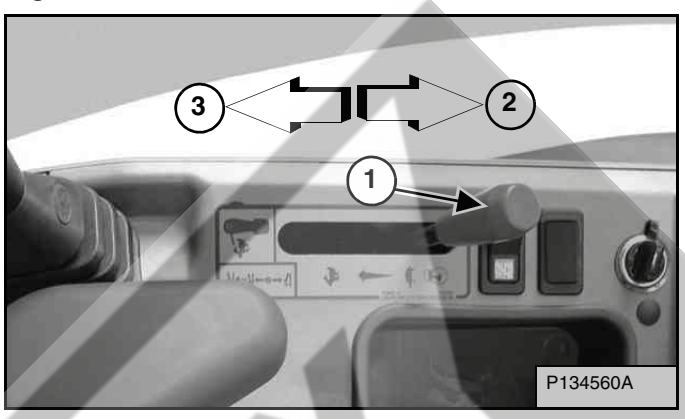
NOTE: Keep blade lowered for increased digging performance.

ENGINE SPEED CONTROL

Setting Engine Speed (RPM)

Engine Speed Control Lever (If Equipped)

Figure 76

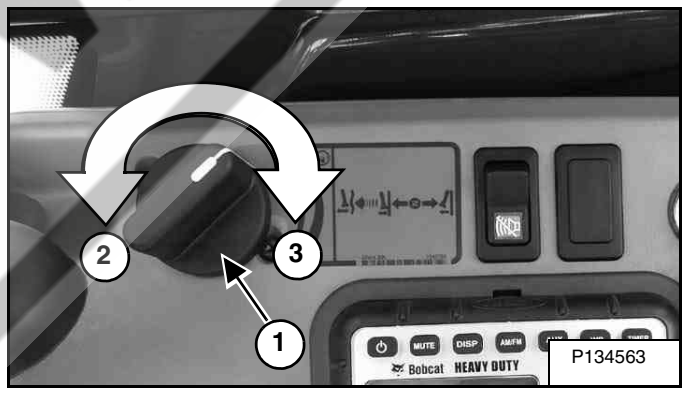


The engine speed control lever (Item 1) **[Figure 76]** controls engine rpm.

Pull the engine speed control lever back (Item 2) to reduce engine rpm. Push the engine speed control lever forward (Item 3) **[Figure 76]** to increase engine rpm.

Engine Speed Control Dial (If Equipped)

Figure 77



The engine speed control dial (Item 1) **[Figure 77]** controls engine rpm.

Rotate the engine speed control dial anticlockwise (Item 2) to reduce engine rpm. Rotate the engine speed control dial clockwise (Item 3) **[Figure 77]** to increase engine rpm.

NOTE: Auto idle feature is only available with the engine speed control dial (Item 1) [Figure 77]. (See Auto Idle Feature on Page 39.)

ECO Mode (With Deluxe Instrument Panel Only)

If the machine is equipped with the Deluxe Instrument Panel, ECO mode is available.

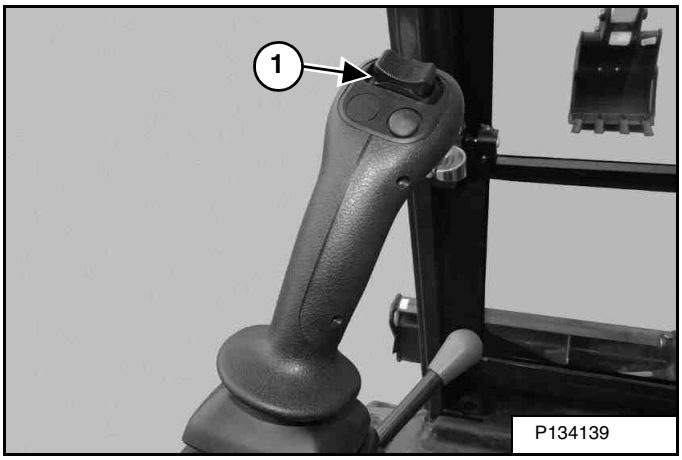
To enable ECO mode (See ECO MODE on Page 210.).

RENTWAY

BOOM SWING

Operation

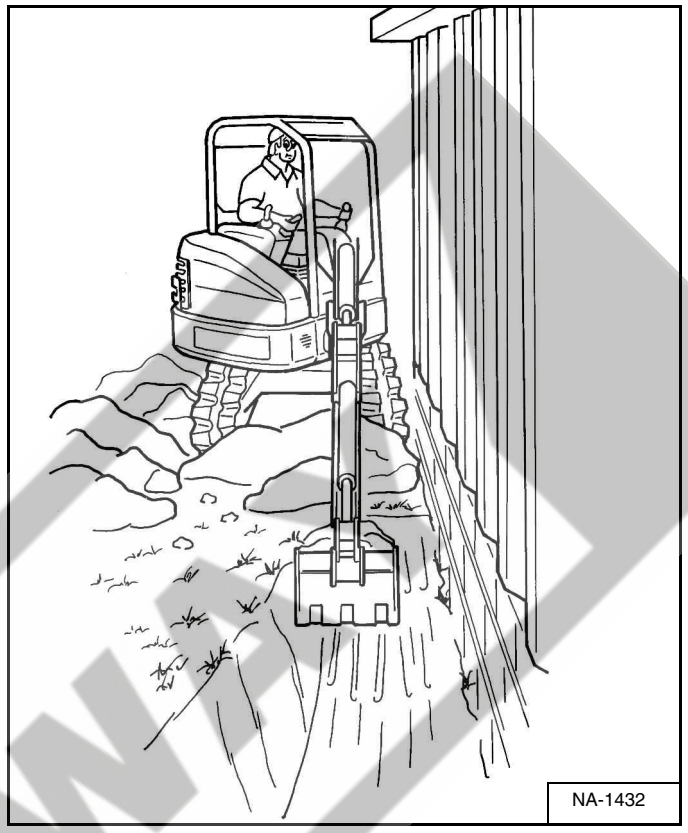
Figure 78



When no auxiliary hydraulics are enabled, control the boom swing with the left joystick switch (Item 1) **[Figure 78]**. Move the switch to the left to swing the boom to the left. Move the switch to the right to swing the boom to the right.

For instructions on operating the boom swing / auxiliary hydraulics (See Operating Attachments With Secondary Auxiliary Hydraulics (Software Version 88.02 Or Below) on Page 56.). (See Operating Attachments With Primary, Secondary, Or Fourth Auxiliary Hydraulics (Software Version 88.03 Or Above) on Page 58.)

Figure 79



NOTE: The purpose of the boom swing is to offset the boom with respect to the upperstructure for digging close to a structure [Figure 79].

RENTWA

BOOM LOAD HOLDING VALVE

Description

The boom load holding valve (if equipped) will hold the boom in its current position in the event of hydraulic pressure loss.

WARNING

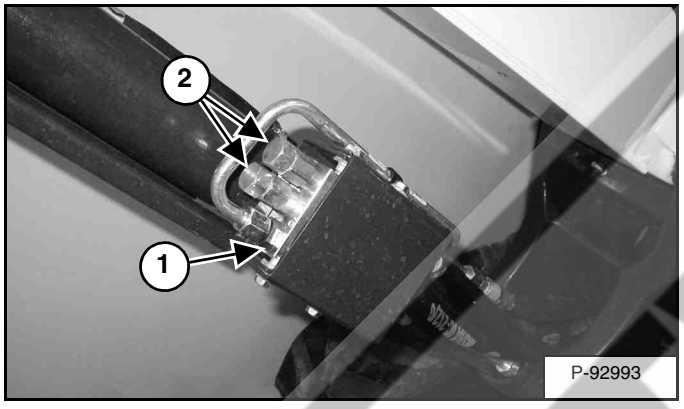
AVOID INJURY OR DEATH

Do Not work or stand under raised work equipment, attachment, or implement.

W-2793-0123

Lowering Boom With Load Holding Valve

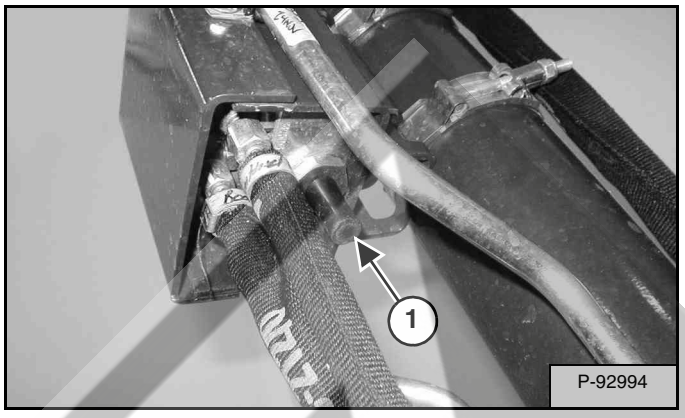
Figure 80



If the excavator is equipped with a boom load holding valve (Item 1) **[Figure 80]**, it will be attached to the boom cylinder at the base end.

NOTE: DO NOT remove or adjust the two port relief valves (Item 2) [Figure 80]. If the port relief valves have been tampered with, see your Bobcat dealer for service.

Figure 81



Remove the plastic protective cap (Item 1) **[Figure 81]** from the valve.

WARNING

AVOID BURNS

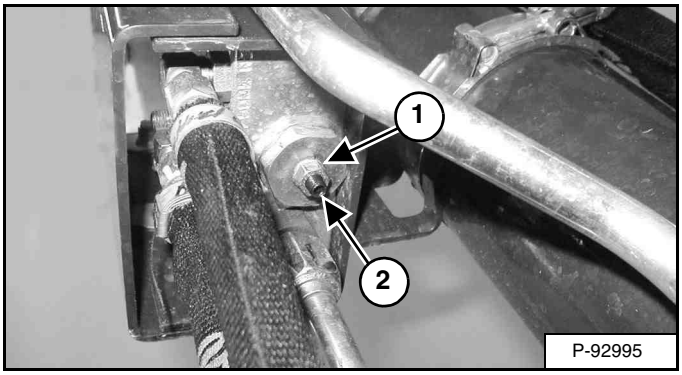
Hydraulic fluid, tubes, fittings and quick couplers can get hot when running machine and attachments. Be careful when connecting and disconnecting quick couplers.

W-2220-0396

RENTWAY

Lowering Boom With Load Holding Valve (Cont'd)

Figure 82



Lowering procedures:

With base end hose failure:

Loosen the locknut (Item 1). Install a hex wrench into the valve screw (Item 2) **[Figure 82]** and slowly rotate the screw clockwise 1/8 to 1/4 turn and allow the boom to lower to the ground.

After the boom is fully lowered, rotate the screw anticlockwise (Item 2) 1/8 to 1/4 turn and tighten the locknut (Item 1) **[Figure 82]**.

With rod end hose failure - with accumulator pressure:

Place a container under the valve and hose end to contain hydraulic fluid. Enter the excavator and turn the key to the ON position or press the ENTER CODE Button (Keyless Panel), but do not start the engine. Slowly move the joystick boom lower function and allow the boom to lower to the ground.

With rod end hose failure and NO accumulator pressure:

Remove the boom base end hose from the boom load holding valve. Place a container under the valve and base end hose to contain hydraulic fluid.

Loosen the locknut (Item 1). Install a hex wrench into the valve screw (Item 2) **[Figure 82]** and slowly rotate the screw clockwise 1/8 to 1/4 turn and allow the boom to lower to the ground.

After the boom is fully lowered, rotate the screw (Item 2) anticlockwise 1/8 to 1/4 turn and tighten the locknut (Item 1) **[Figure 82]**. Reinstall the base end hose.

Loss of hydraulic pressure:

Use the same procedure as: **With rod end hose failure and NO accumulator pressure**.

RENTWAY

ARM LOAD HOLDING VALVE

Description

The arm load holding valve (if equipped) will hold the arm in its current position in the event of hydraulic pressure loss.

WARNING

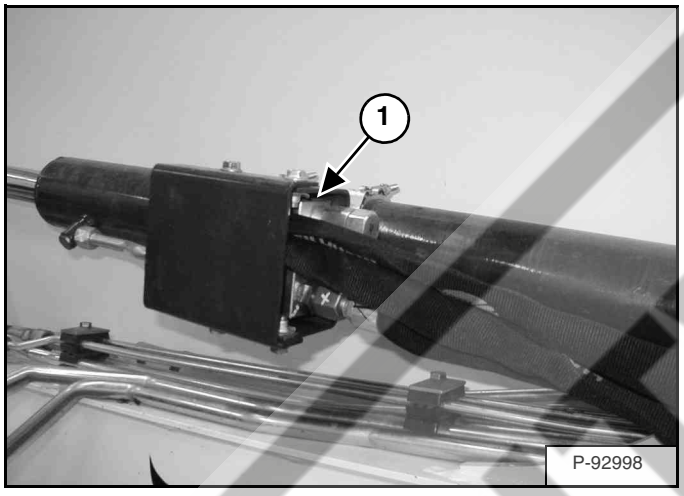
AVOID INJURY OR DEATH

Do Not work or stand under raised work equipment, attachment, or implement.

W-2793-0123

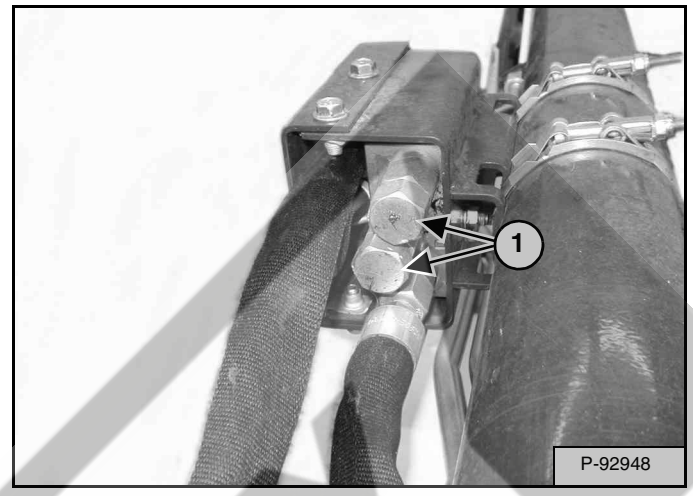
Lowering Arm With Load Holding Valve

Figure 83



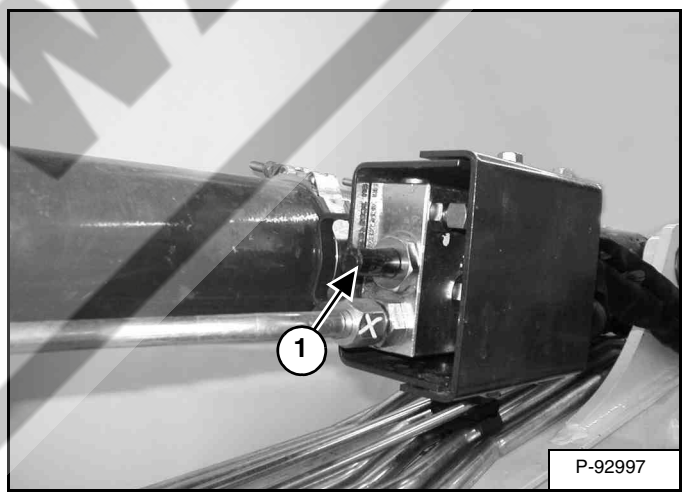
If the excavator is equipped with arm load holding valve (Item 1) **[Figure 83]**, it will be attached to the arm cylinder base end as shown.

Figure 84



NOTE: DO NOT remove or adjust the two port relief valves (Item 1) [Figure 84]. If the port relief valves have been tampered with, see your Bobcat dealer for service.

Figure 85



Remove the plastic protective cap (Item 1) **[Figure 85]** from the valve.

WARNING

AVOID BURNS

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

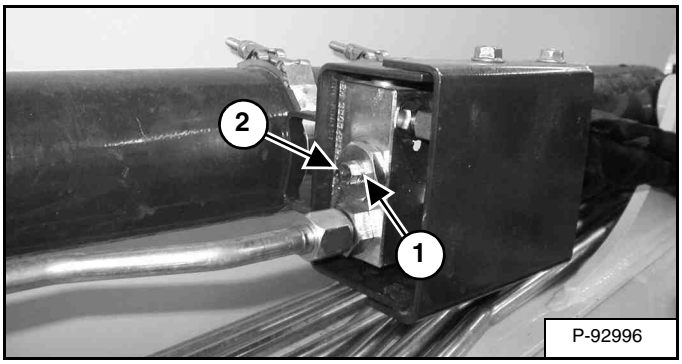
W-2220-0396

REFERENCE ONLY

ARM LOAD HOLDING VALVE (CONT'D)

Lowering Arm With Load Holding Valve (Cont'd)

Figure 86



Lowering procedures:

With base end hose failure:

Loosen the locknut (Item 1). Install a hex wrench into the valve screw (Item 2) **[Figure 86]** and slowly rotate the screw clockwise 1/8 to 1/4 turn and allow the arm to lower.

After the arm is lowered, rotate the screw anticlockwise (Item 2) the same 1/8 to 1/4 turn and tighten the locknut (Item 1) **[Figure 86]**.

With rod end hose failure - with accumulator pressure:

Place a container under the valve and hose end to contain hydraulic fluid. Enter the excavator and turn the key to the ON position or press the ENTER CODE Button (Keyless Panel), but do not start the engine. Move the joystick arm retract function to slowly lower the arm.

With rod end hose failure and NO accumulator pressure:

Remove the arm base end hose from the arm load holding valve. Place a container under the valve and base end hose to contain hydraulic fluid.

Loosen the locknut (Item 1). Install a hex wrench into the valve screw (Item 2) **[Figure 86]** and slowly rotate the screw clockwise 1/8 to 1/4 turn and allow the arm to lower.

After the arm is lowered, rotate the screw (Item 2) anticlockwise 1/8 to 1/4 turn and tighten the locknut (Item 1) **[Figure 86]**. Reinstall the base end hose.

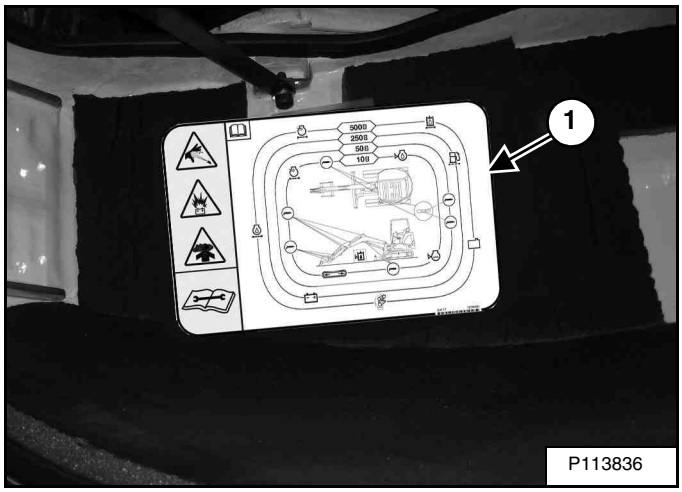
Loss of hydraulic pressure:

Use the same procedure as: **With rod end hose failure - with NO accumulator pressure** above.

RENTWAY

Daily Inspection And Maintenance

Figure 87



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 excavator. The decal (Item 1) **[Figure 87]** is located inside the right side cover. (See SERVICE SCHEDULE on Page 153.)

WARNING

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

W-2001-0502

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 regulations for correct disposal.

WARNING

AVOID INJURY OR DEATH

Instructions are necessary before operating or servicing machine. Read and understand the Operation & Maintenance Manual, Operator's Handbook and signs (decals) on machine. Follow warnings and instructions in the manuals when making repairs, adjustments or servicing. Check for correct function after adjustments, repairs or service. Untrained operators and failure to follow instructions can cause injury or death.

W-2003-0807

Check the following items before each day of operation:

- Operator Canopy or Cab (ROPS / TOPS / FOPS) and mounting hardware.
- Check seat belt and mounting hardware. Replace seat belt if damaged.
- Check for damaged decals, replace as needed.
- Check control console lockout.
- Check Attachment Mounting System (if equipped) for damaged or loose parts.
- Check air cleaner and intake hoses / clamps.
- Check engine oil level and engine for leaks.
- Drain water from fuel filter.
- Check engine coolant level in coolant recovery tank and in radiator and check system for leaks.
- Check engine area for flammable materials.
- Check hydraulic fluid level and system for leaks.
- Check indicator lights for correct operation.
- Grease all pivot points.
- Check cylinder and attachment pivot points.
- Check the track tension.
- Repair broken and loose parts.
- Clean cab heater filter (if equipped).
- Check front horn and motion alarm (if equipped) for proper function.

Daily Inspection and Maintenance (Cont'd)

⚠ WARNING

AVOID INJURY OR DEATH

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

W-2782-0409

IMPORTANT

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 center of the decal toward the edges.**

I-2226-0910

RENTWAY

Operation & Maintenance Manual And Operator's Handbook Locations

Figure 88

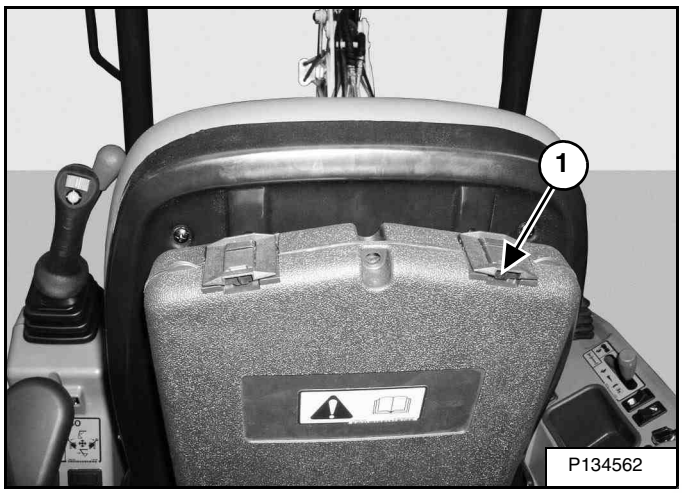
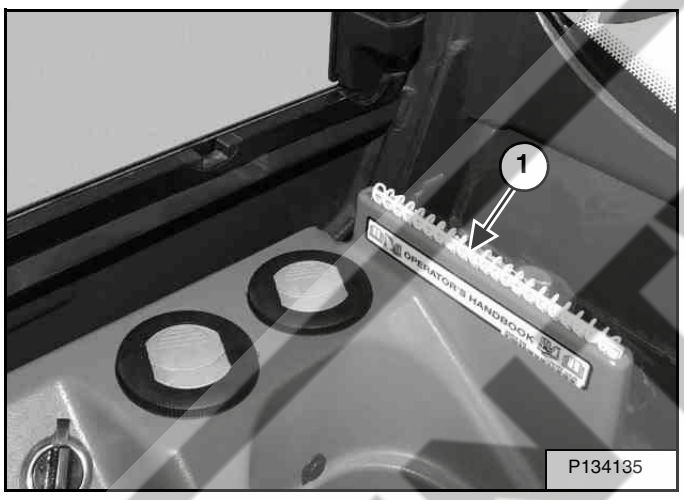


Figure 89



Read and understand the Operation & Maintenance Manual (Item 1) **[Figure 88]** (located inside the storage box on the back of the operator's seat) and the Operator's Handbook (Item 1) **[Figure 89]** before operating.

Entering The Excavator

Figure 90

Use the grab handles and tracks to enter the canopy / cab **[Figure 90]**.

WARNING

AVOID INJURY OR DEATH

Instructions are necessary before operating or servicing machine. Read and understand the Operation & Maintenance Manual, Operator's Handbook and signs (decals) on machine. Follow warnings and instructions in the manuals when making repairs, adjustments or servicing. Check for correct function after adjustments, repairs or service. Untrained operators and failure to follow instructions can cause injury or death.

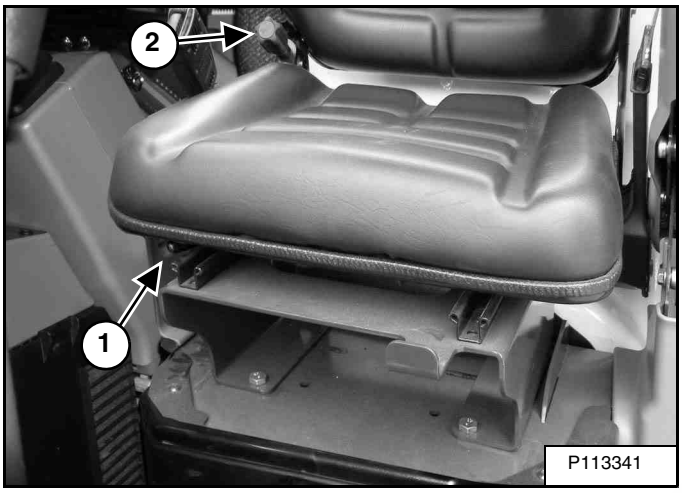
W-2003-0807

RENTWAY

Seat Adjustment

Standard Seat

Figure 91

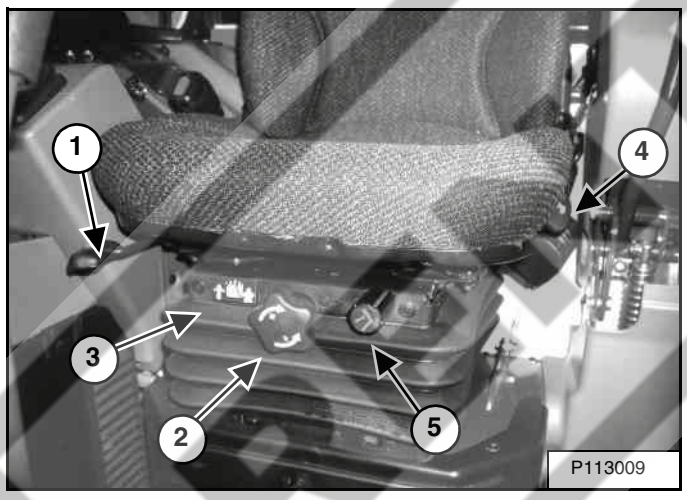


Release the seat lever (Item 1) **[Figure 91]** to adjust the seat forward or back.

Sit in the seat and turn the knob (Item 2) **[Figure 91]** to adjust the position of the back cushion.

Suspension Seat (If Equipped)

Figure 92



Release the seat lever (Item 1) **[Figure 92]** to adjust the seat forward or back.

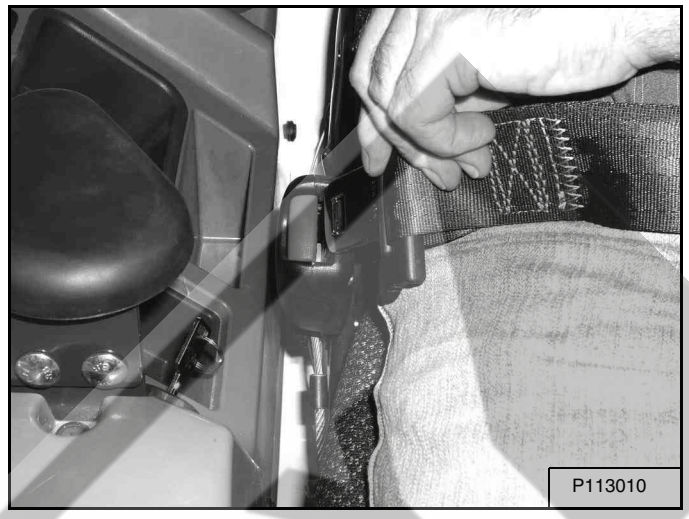
Turn the handle (Item 2) to change the adjustment for operator weight. Turn the handle until the operator's weight is shown in the window (Item 3) **[Figure 92]**.

Release the lever (Item 4) **[Figure 92]** to change the incline of the seat back.

Sit in the seat and turn the knob (Item 5) **[Figure 92]** to adjust the height of the seat.

Seat Belt

Figure 93



Fasten the seat belt **[Figure 93]**.

Standard Instrument Panel - Key Start

WARNING

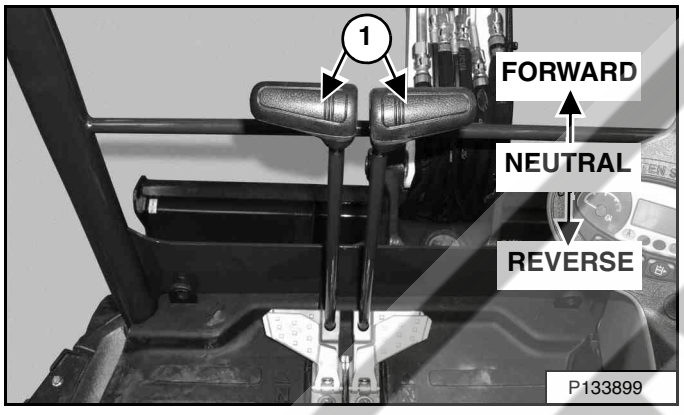
AVOID INJURY OR DEATH

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

W-2135-1108

Perform the PRE-STARTING PROCEDURE. (See PRE-STARTING PROCEDURE on Page 71.)

Figure 94



Put control levers (Item 1) **[Figure 94]** in the NEUTRAL position.

Figure 95

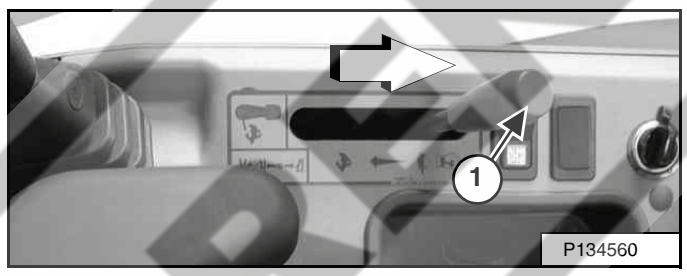
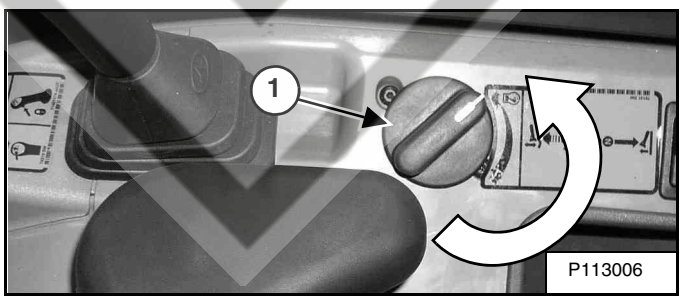


Figure 96



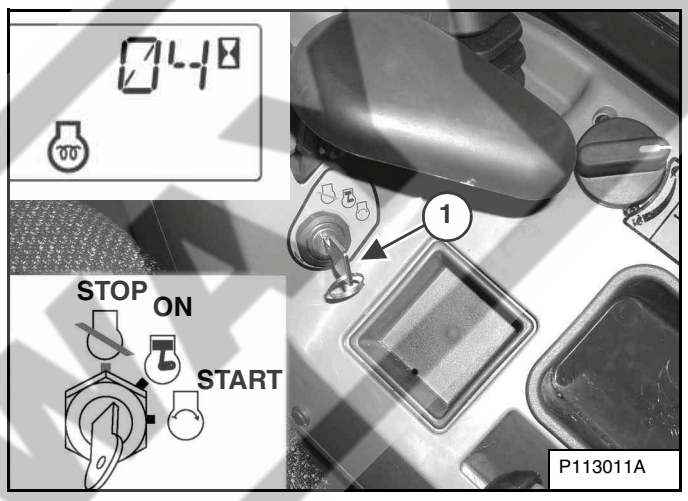
Move the engine speed control lever (Item 1) **[Figure 95]** back or turn the engine speed control dial (Item 1) **[Figure 96]** anticlockwise to low idle.

IMPORTANT

Do not engage the starter for longer than 15 seconds at a time. Longer use can damage the starter by overheating. Allow starter to cool for one minute before using starter again.

I-2034-0700

Figure 97



With the left console raised, turn the key (Item 1) **[Figure 97]** to the ON position. If preheating is required, the glow plugs will automatically cycle and the remaining preheat time (in seconds) will show in the data display screen (see inset). (Preheat icon will be ON).

Turn the key to START and release the key when the engine starts. It will return to the ON position **[Figure 97]**.

Stop the engine if the warning lights and alarm do not go OFF. Check for the cause before starting the engine again.

Turn the key switch OFF to stop the engine.

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

PRELIMINARY

Standard Instrument Panel - Keyless Start

WARNING

AVOID INJURY OR DEATH

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

W-2135-1108

Perform the PRE-STARTING PROCEDURE. (See PRE-STARTING PROCEDURE on Page 71.)

Figure 98

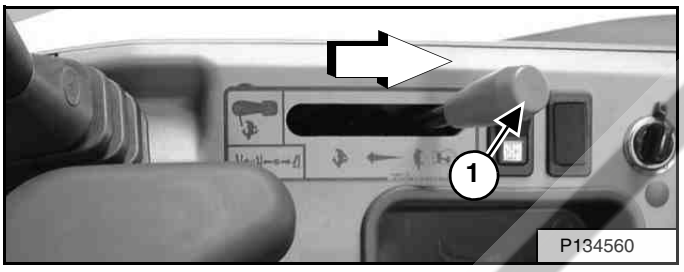
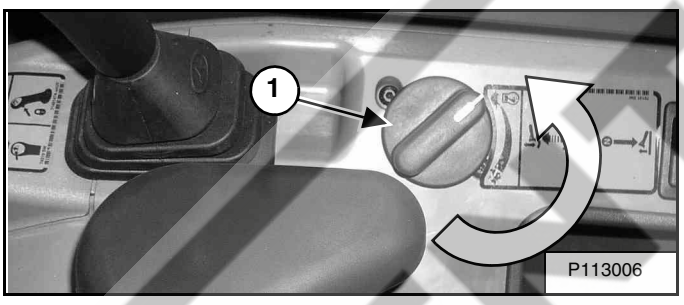
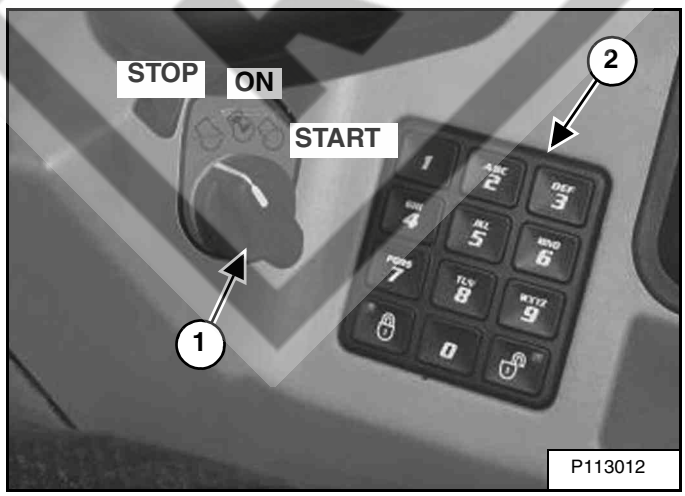


Figure 99



Move the engine speed control lever (Item 1) **[Figure 95]** back or turn the engine speed control dial (Item 1) **[Figure 96]** anticlockwise to low idle.

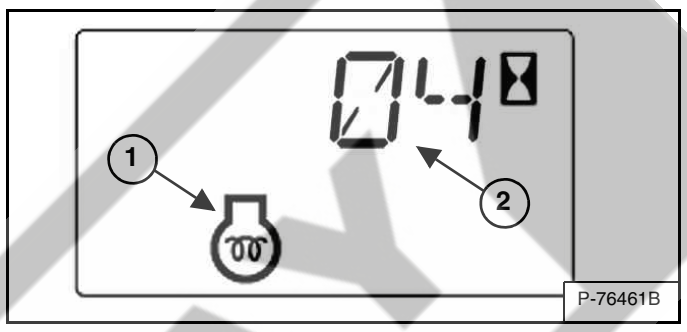
Figure 100



With the left console raised, turn the start switch (Item 1) **[Figure 100]** to ON. The indicator lights on the instrument panel will come ON briefly and the Instrument Panel / monitoring system will do a self test.

Use the keypad (Item 2) **[Figure 100]** to enter the password.

Figure 101



If preheating is required, the glow plugs will automatically cycle based on temperature. The engine preheat icon (Item 1) will be ON and the cycle time remaining (Item 2) **[Figure 101]** will be shown on the data display.

When the engine preheat icon goes OFF, turn the start switch (Item 1) **[Figure 100]** to START position and hold it until the engine starts. Release the switch and it will return to the ON position.

IMPORTANT

Do not engage the starter for longer than 15 seconds at a time. Longer use can damage the starter by overheating. Allow starter to cool for one minute before using starter again.

I-2034-0700

Turn the start switch (Item 1) **[Figure 100]** to the STOP position to stop the engine.

Stop the engine if the warning lights and alarm do not go OFF.

Check for the cause before starting the engine again.

Password Lockout Feature

See Password Lockout Feature. (See Password Lockout Feature on Page 214.)

Deluxe Instrument Panel - Keyless Start

WARNING

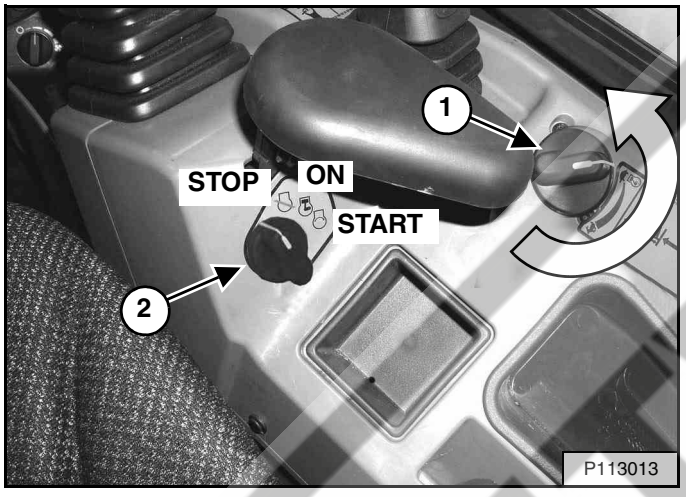
AVOID SERIOUS INJURY OR DEATH

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

W-2051-0212

Perform the PRE-STARTING PROCEDURE. (See PRE-STARTING PROCEDURE on Page 71.)

Figure 102

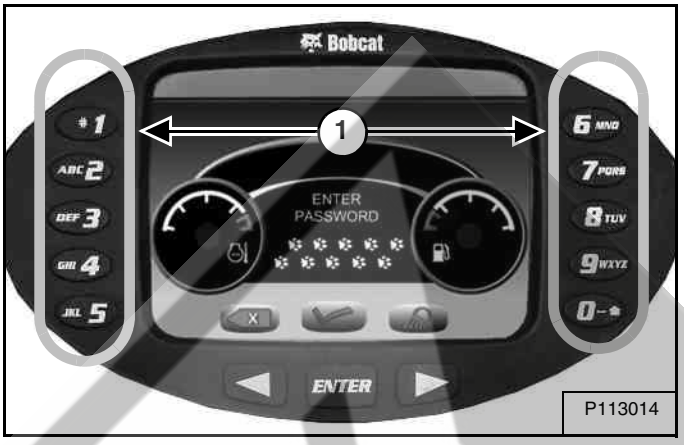


Set the engine speed control (Item 1) **[Figure 102]** to the low idle position.

NOTE: Excavators with a Deluxe Instrument Panel have a permanent, randomly generated Master Password set at the factory. Your excavator will also be assigned an Owner Password. Your dealer will provide you with this password. Change the owner password to one that you will easily remember to prevent unauthorised use of your excavator. (See Changing The Owner Password on Page 215.) Keep your password in a safe location for future needs.

NOTE: The Password Lockout feature can be used to allow starting of the excavator without a password. If unlocked, the start switch will start the machine without using a password. (See Password Lockout Feature on Page 216.)

Figure 103



With the left console raised, turn the start switch (Item 2) **[Figure 102]** to ON. The message **[ENTER PASSWORD]** will appear on the display screen if the Deluxe Instrument Panel is locked. (If not locked, use the start switch without a password to start the engine.)

Use the numeric keypad (Item 1) **[Figure 103]** to enter the password.

Figure 104

If preheating is required, the glow plugs will automatically cycle and the engine preheat icon (Item 1) **[Figure 104]** and will be shown in the data display.

When the engine preheat icon goes OFF, turn the key switch to START (Item 2). Release the switch when the engine starts and allow it to return to the ON position (Item 2) **[Figure 103]**.

Turn the start switch (Item 2) **[Figure 102]** to the STOP position to stop the engine.

Stop the engine if the warning lights and alarm do not go OFF.

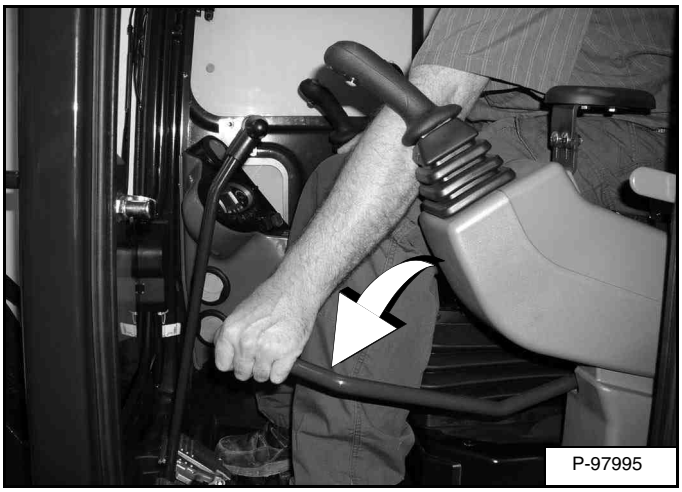
Check for the cause before starting the engine again.

Password Lockout Feature

See Password Lockout Feature. (See Password Lockout Feature on Page 214.)

Lowering The Control Console

Figure 105



Lower the control console **[Figure 105]**.

NOTE: There is a control lock sensor in the left console which deactivates the hydraulic control levers (joysticks) and the traction drive system when the control console is raised. The console must be in the locked down position for the hydraulic control levers (joysticks) and traction system to operate.

NOTE: If the control lock sensor does not deactivate the control levers and traction system when console is raised, see your Bobcat dealer for service.

Warming The Hydraulic 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 at least 5 minutes to warm the engine and hydraulic fluid before operating the excavator.

Cold Temperature Starting

WARNING

EXPLOSION CAN CAUSE SERIOUS INJURY, DEATH OR SEVERE ENGINE DAMAGE

DO NOT use ether or starting fluid with glow plug or air intake heater systems.

W-2071-0415

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

- Replace the engine oil with the correct type and viscosity for the anticipated starting temperature. (See Engine Oil Chart on Page 172.)
- Make sure the battery is fully charged.
- Install an engine heater.

NOTE: If the battery is discharged (but not frozen) a booster battery can be used to jump start the excavator. (See Using A Booster Battery (Jump Starting) on Page 182.)

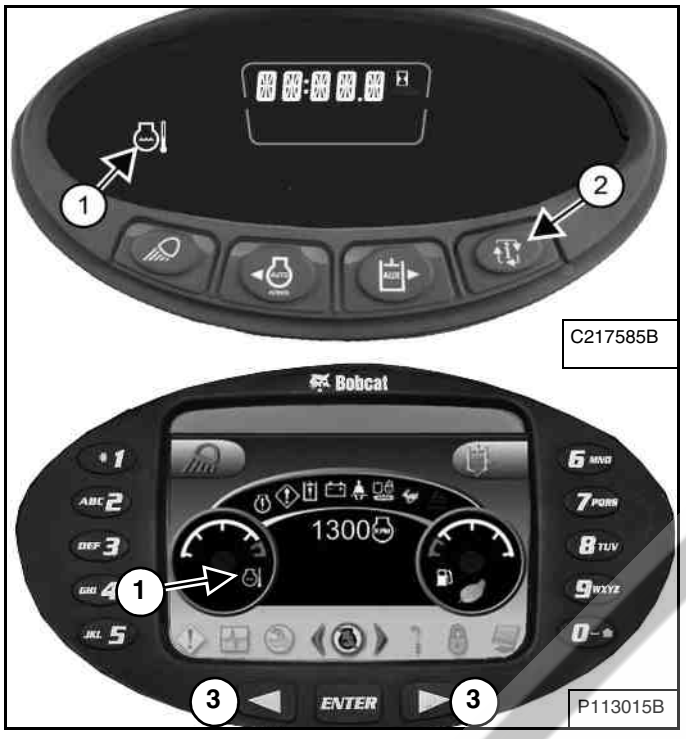
NOTE: The display screen on the instrument panel may not be at full intensity when the temperature is below -26°C (-15°F). The display screen may take 30 seconds to several minutes to warm up. All systems remain monitored even when the display screen is off.

RENTWAY

MONITORING THE DISPLAY PANELS

Instrument Panel

Figure 106



Frequently monitor the temperature and fuel gauges **[Figure 106]**.

After the engine is running, frequently monitor the instrument panel **[Figure 106]** for machine condition.

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

EXAMPLE: Engine Coolant Temperature is High.

The Engine Coolant Temperature icon (Item 1) **[Figure 106]** is ON.

Press the Information button (Item 2) (Standard Panel) or press a scroll button (Item 3) **[Figure 106]** (Deluxe Panel) repeatedly to cycle the data display until the service code screen is displayed. One of the following SERVICE CODES is displayed.

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

Find the cause of the service code and correct before operating the excavator again. (See DIAGNOSTIC SERVICE CODES on Page 203.)

NOTE: The optional Deluxe Instrumentation Panel offers an additional view of service codes that includes a brief description. (See DIAGNOSTIC SERVICE CODES on Page 203.)

Warning And Shutdown

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

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

The SHUTDOWN feature is associated with the following icons:

General Warning
Engine Malfunction
Engine Coolant Temperature
Hydraulic Fluid Temperature

RENTWAY

STOPPING THE ENGINE AND LEAVING THE EXCAVATOR

Procedure

Figure 107

Stop the machine on level ground. Lower the work equipment and the blade to the ground **[Figure 107]**.

Figure 108

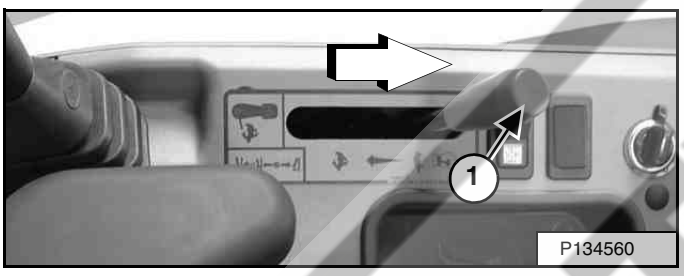
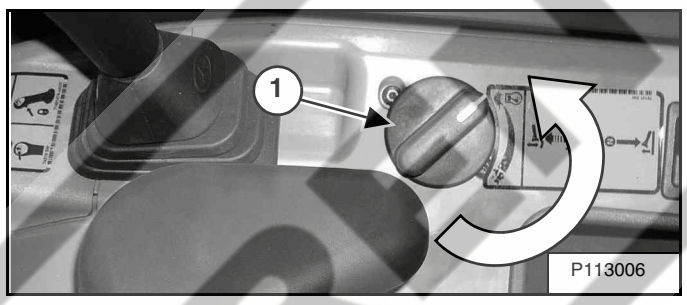


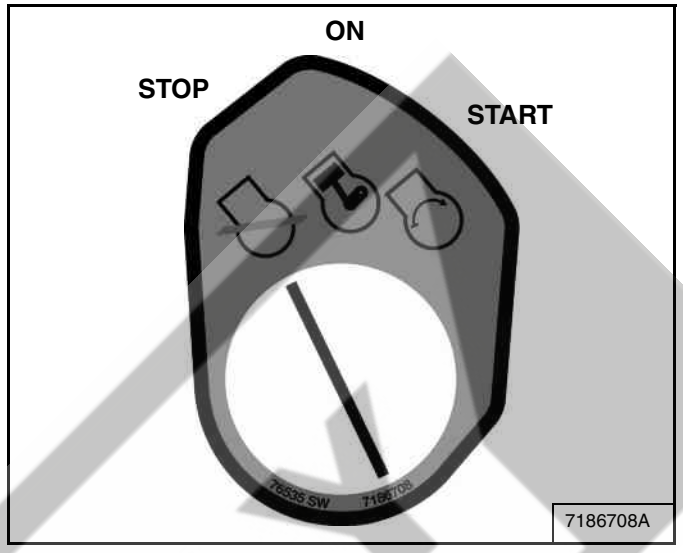
Figure 109



Move the engine speed control lever (Item 1) **[Figure 95]** back or turn the engine speed control dial (Item 1) **[Figure 96]** anticlockwise to low idle.

Run the engine at idle speed for about 5 minutes to allow it to cool.

Figure 110



Turn the start switch or key to STOP (Item 1) **[Figure 110]**.

Disconnect the seat belt. Remove the key from the switch to prevent operation of machine by unauthorised personnel. Raise the control console and exit the machine.

RETIRAT

Installing And Removing The Attachment (Pin-On Attachment)

Installation

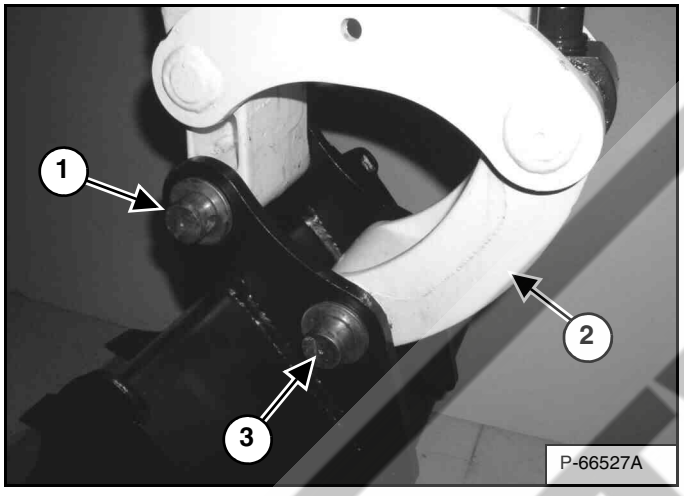
WARNING

AVOID INJURY OR DEATH

Stop the machine on a firm flat surface. When removing or installing attachments (such as a bucket), always have a second person in the operator's seat, give clear signals and work carefully.

W-2140-0189

Figure 111

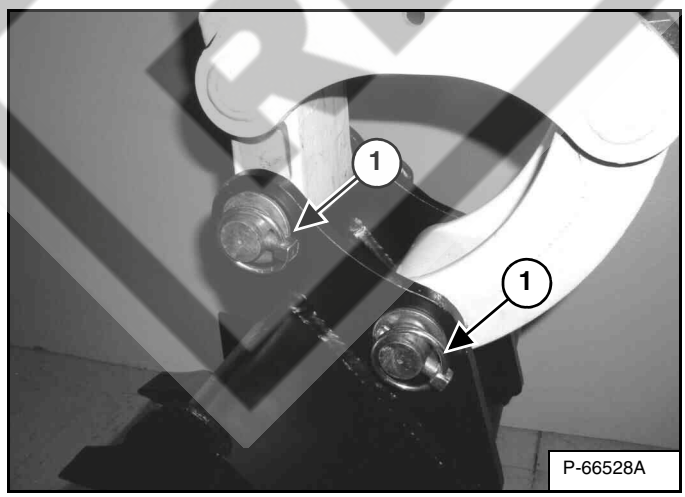


Install the arm into the bucket and align the mounting hole.

Install the pin (Item 1) **[Figure 111]** and washers.

Install the link (Item 2) in the bucket and align the mounting hole. Install the pin (Item 3) **[Figure 111]** and washers.

Figure 112



Install the two retainer pins (Item 1) **[Figure 112]**. Install grease in the grease fittings.

Removal

Park the excavator on a flat surface and lower the bucket fully.

Remove the two retainer pins (Item 1) **[Figure 112]**.

Remove the washers and pins (Items 1 and 3) **[Figure 111]**.

Do not damage the dust seals in the arm.

WARNING

AVOID INJURY OR DEATH

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

W-2052-0907

RENT WAY

Installing And Removing The Attachment (Quick Coupler, Klac™ System)

Installation

NOTE: Installation and removal of the bucket is shown. The procedure is the same for other attachments. Disconnect any hydraulic lines that are operated by hydraulic power before removing any attachments (breaker, auger, etc.).

WARNING

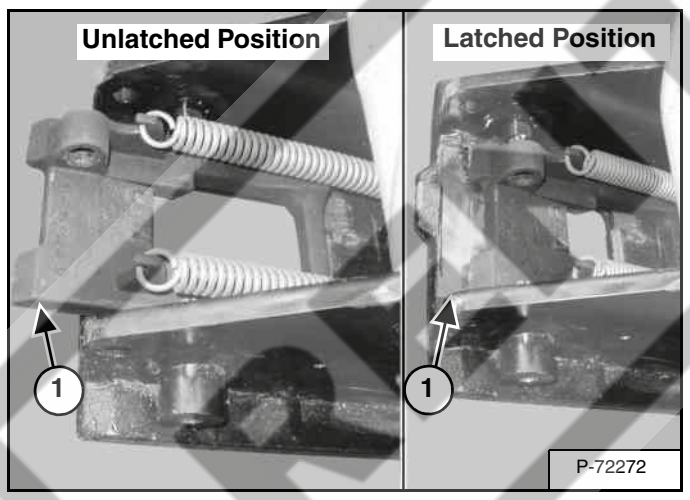
AVOID INJURY OR DEATH

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

W-2052-0907

NOTE: Coupler equipped with the lifting device can only be used on machines where the overload warning device and the boom and arm load holding valves are installed. See your Bobcat dealer for available kits.

Figure 113



Fully retract the bucket cylinder.

Stop the engine and exit the excavator.

Inspect the quick coupler to make sure the latch is in the unlatched position (Item 1) **[Figure 113]**.

If the latch is in the latched position, see **[Figure 114]** for additional information.

If the latch is in the unlatched position, proceed to **[Figure 115]**.

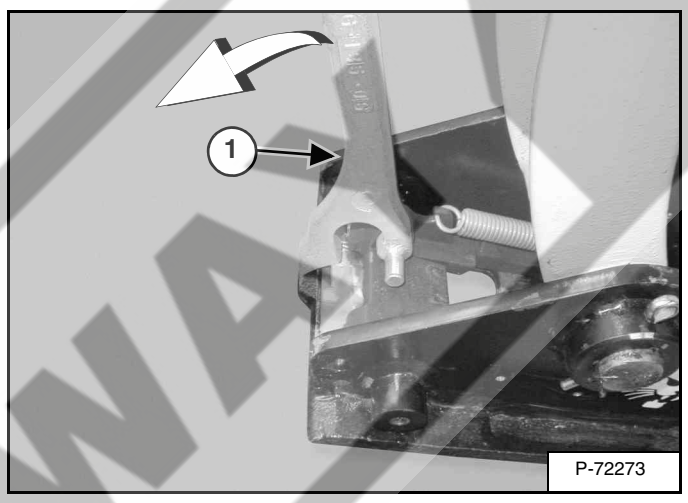
WARNING

AVOID INJURY

Keep fingers and hands out of pinch points when latching and unlatching the attachment quick coupler.

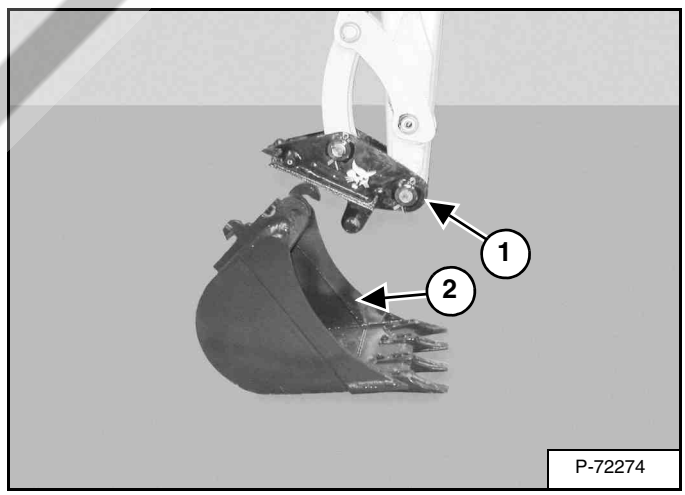
W-2541-1106

Figure 114



To unlatch the quick coupler, install the tool (Item 1) **[Figure 114]** and pull the handle. The latch will move completely forward. The latch will lock in the unlatched position.

Figure 115



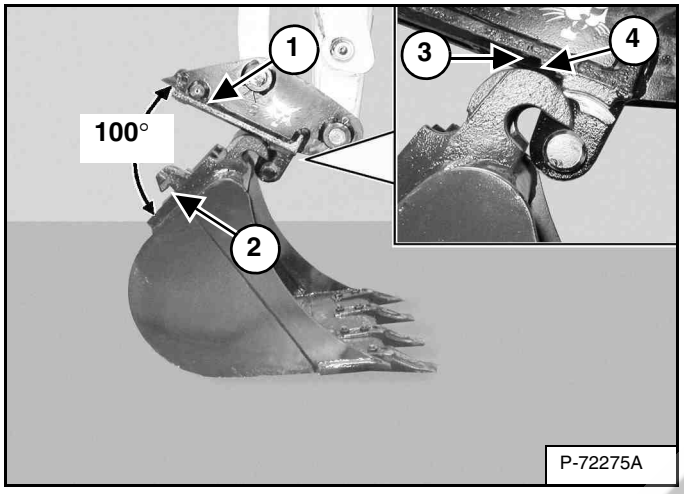
Enter the excavator, fasten the seat belt, and start the engine.

Position the quick coupler (Item 1) near the attachment (Item 2) as shown **[Figure 115]**.

Installing And Removing The Attachment (Quick Coupler, Klac™ System) (Cont'd)

Installation (Cont'd)

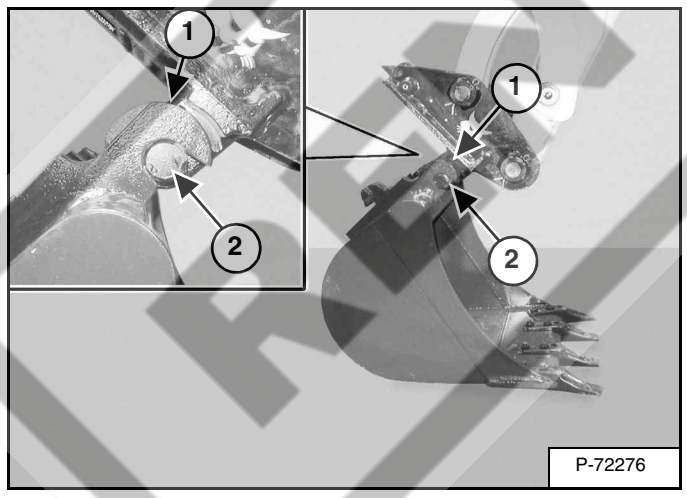
Figure 116



There must be at least 100° between the quick coupler surface (Item 1) and the attachment mounting surface (Item 2) **[Figure 116]**. Extend the arm out to get the required angle for proper installation.

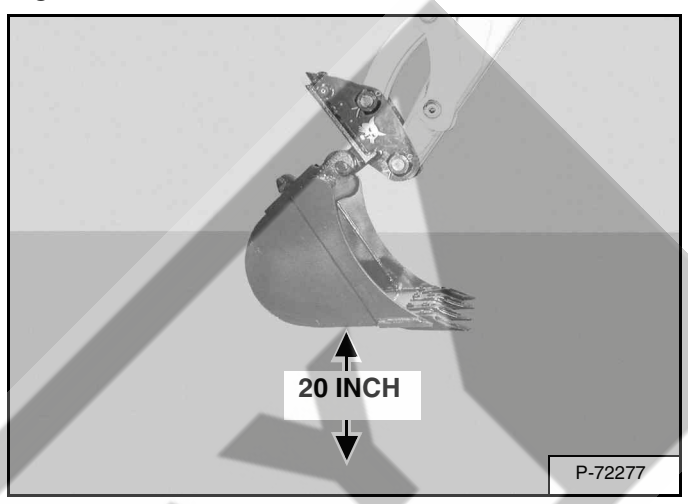
NOTE: There must be proper clearance (100° minimum) between the hook (Item 3) and the quick coupler (Item 4) [Figure 116]. Possible damage to the attachment hooks or the quick coupler could occur without proper clearance.

Figure 117



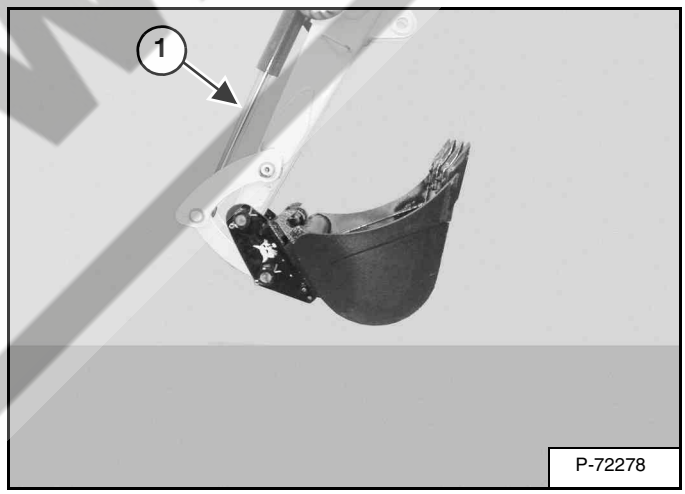
Raise the boom and extend the arm until the hooks of the attachment (Item 1) engage the pins (Item 2) of the quick coupler **[Figure 117]**.

Figure 118



Raise the boom until there is approximately 500 mm (20.0 in) of clearance between the bottom of the attachment and the ground **[Figure 118]**.

Figure 119



Extend the bucket cylinder (Item 1) **[Figure 119]** fully.

Lower the attachment until it is flat on the ground.

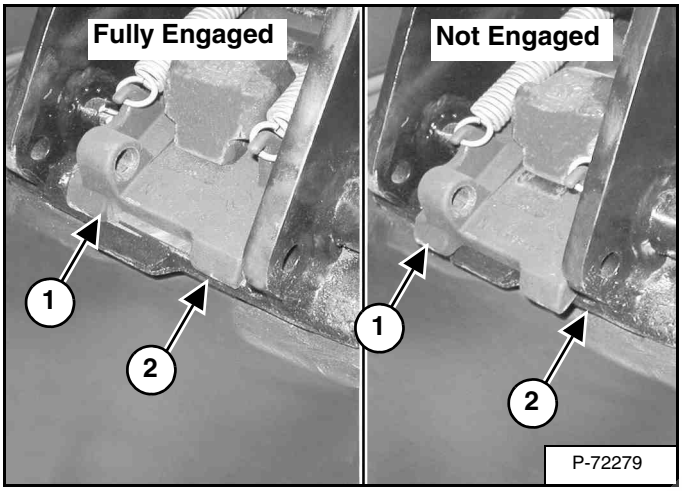
Stop the engine and exit the excavator.

REPLITWAY

Installing And Removing The Attachment (Quick Coupler, Klac™ System) (Cont'd)

Installation (Cont'd)

Figure 120



Visually inspect the quick coupler latch (Item 1) to the bucket mount (Item 2) **[Figure 120]**. The latch must be fully engaged.

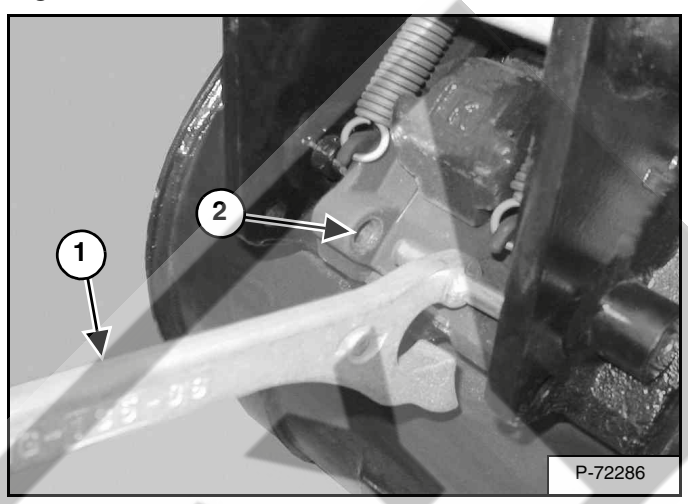
WARNING

AVOID INJURY

Keep fingers and hands out of pinch points when latching and unlatching the attachment quick coupler.

W-2541-1106

Figure 121



If the latch is not engaged, install the tool (Item 1) in the hole (Item 2) **[Figure 121]** of the quick coupler and push down to unlatch the quick coupler. Remove the tool. Enter the excavator, fasten the seat belt, and start the engine. Raise the attachment 500 mm (20.0 in) off of the ground and fully extend the bucket cylinder. Lower the attachment until it is flat on the ground. Stop the engine and exit the excavator.

Again, visually inspect the quick coupler to make sure the latch (Item 1) **[Figure 120]** is fully engaged. If it is not fully engaged, remove the attachment and inspect both the quick coupler and the attachment for damage or debris. (See Quick Coupler And Attachment Inspection And Maintenance on Page 196.)

RENTAL

Installing And Removing The Attachment (Quick Coupler, Klac™ System) (Cont'd)

Removal

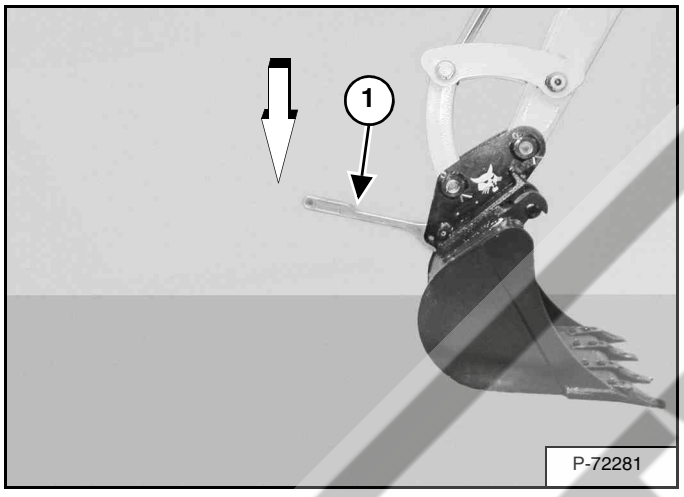
WARNING

AVOID INJURY

Keep fingers and hands out of pinch points when latching and unlatching the attachment quick coupler.

W-2541-1106

Figure 122



Position the attachment flat on the ground.

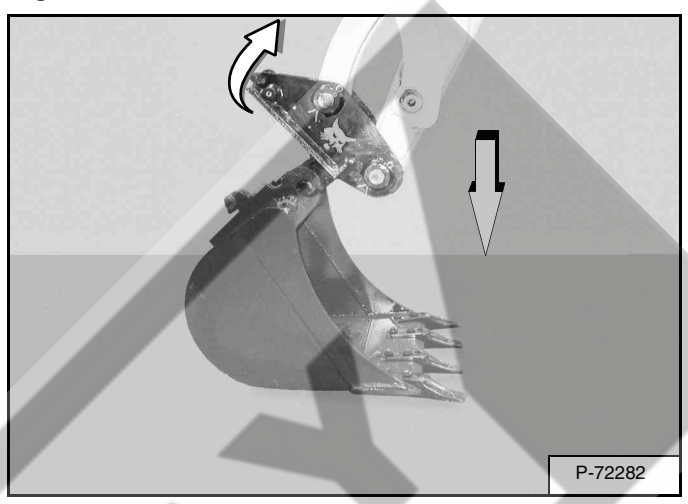
Install the quick coupler tool (Item 1) into the hole (Item 2) **[Figure 121]** in the quick coupler.

Push down on the tool (Item 1) **[Figure 122]** to unlock the latch.

Remove the tool.

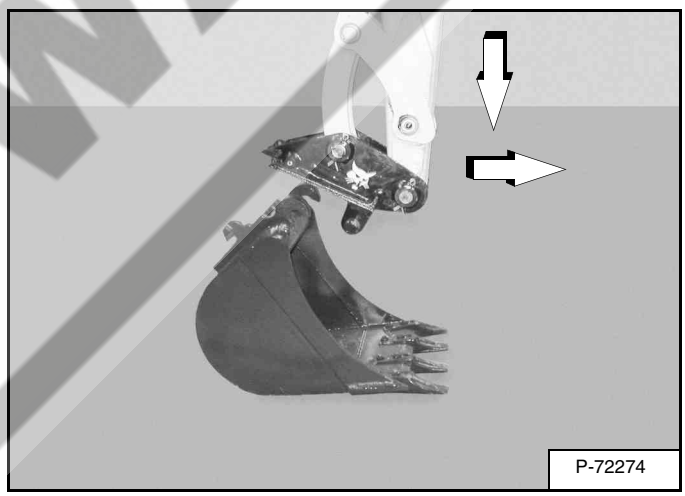
Enter the excavator, fasten the seat belt and start the engine.

Figure 123



Retract the bucket cylinder fully and lower the boom **[Figure 123]** until the attachment is on the ground.

Figure 124



Continue to lower the boom and move the arm towards the excavator until the quick coupler is clear of the attachment **[Figure 124]**.

RENTWAY

Installing And Removing The Attachment (German Style Coupler)

The type of quick coupler installed on the excavator may influence the excavator's rated lift capacity and the availability of attachments.

To determine the lift capacity changes, see the applicable lift capacity chart:

(See Rated Lift Capacity For Standard Arm, Medium Counterweight, And Canopy on Page 222.), (See Rated Lift Capacity For Long Arm, Medium Counterweight, And Canopy on Page 223.), (See Rated Lift Capacity For Standard Arm, Heavy Counterweight, And Canopy on Page 224.), (See Rated Lift Capacity For Standard Arm, Medium Counterweight, And Cab on Page 225.), (See Rated Lift Capacity For Long Arm, Medium Counterweight, And Cab on Page 226.), (See Rated Lift Capacity For Standard Arm, Heavy Counterweight, And Cab on Page 227.), (See Rated Lift Capacity For Long Arm, Heavy Counterweight, And Canopy on Page 228.), (See Rated Lift Capacity For Long Arm, Heavy Counterweight, And Cab on Page 229.).

See your Bobcat dealer for a list of approved attachments for the type of quick coupler installed on the machine.

NOTE: Coupler equipped with the lifting device can only be used on machines where the overload warning device and the boom and arm load holding valves are installed. See your Bobcat dealer for available kits.

Installation

NOTE: Installation and removal of the bucket is shown. The procedure is the same for other attachments. Disconnect any hydraulic lines that are operated by hydraulic power before removing any attachments (breaker, auger, etc.).

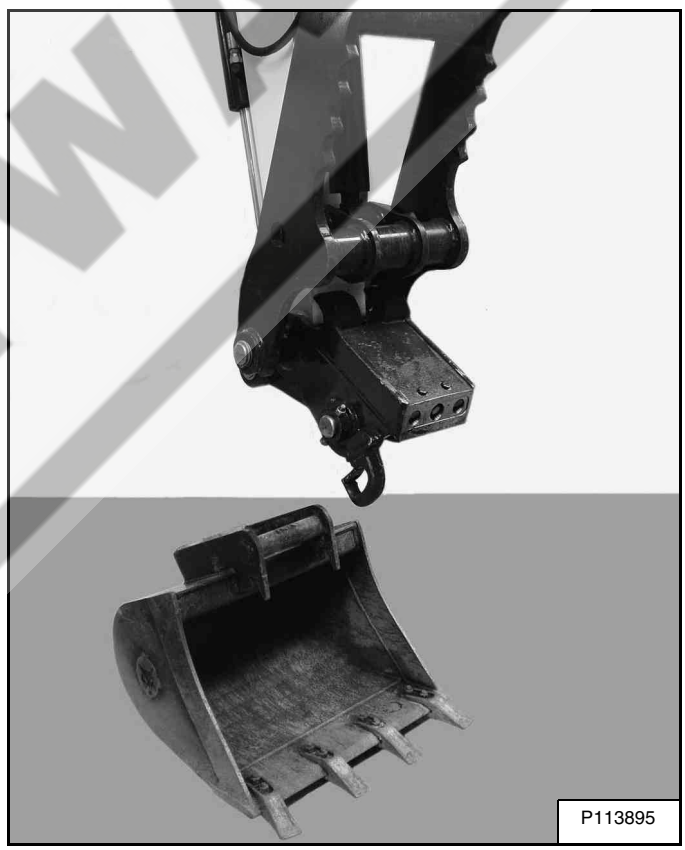
WARNING

AVOID INJURY OR DEATH

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

W-2052-0907

Figure 125



Position the arm and quick coupler to the attachment **[Figure 125]**.

NOTE: If equipped with a hydraulic clamp, fully retract the hydraulic clamp cylinder so the clamp is out of the way for installing the attachment.

RENTWAY

Installing And Removing The Attachment (German Style Coupler) (Cont'd)

Installation (Cont'd)

Figure 126

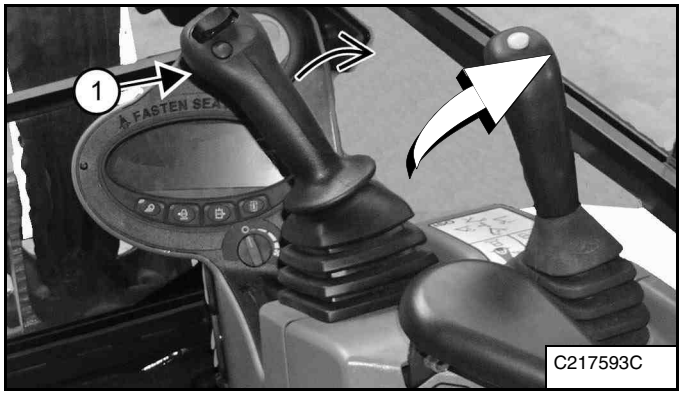
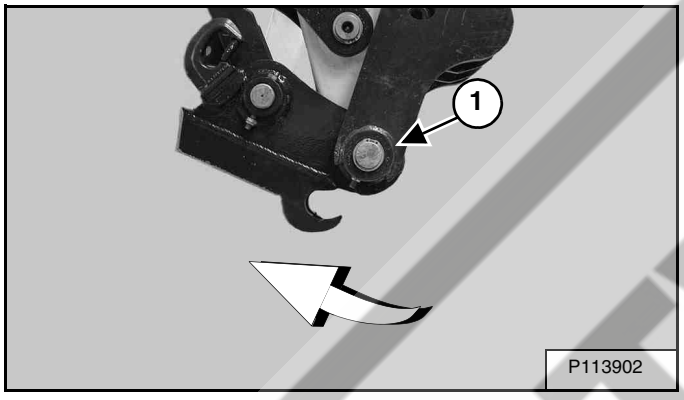


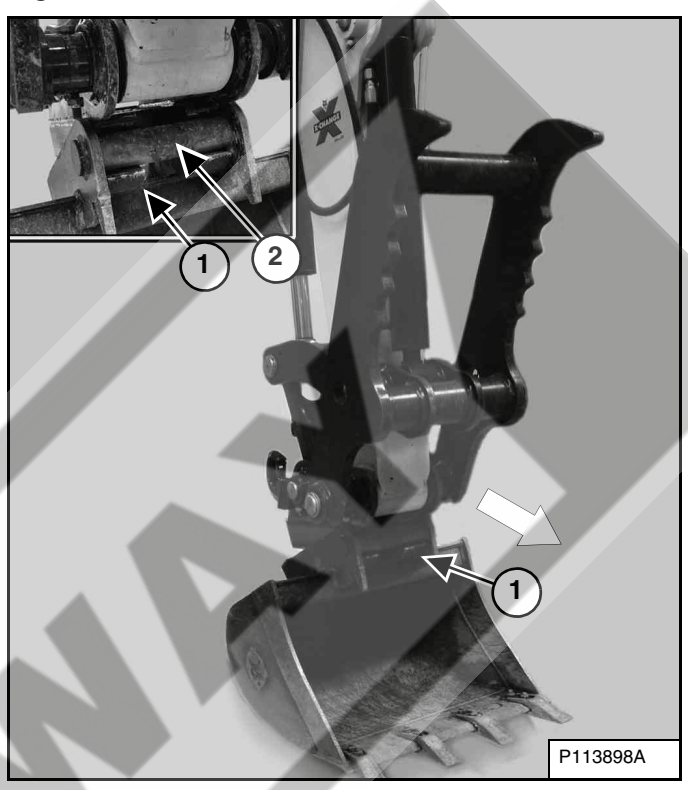
Figure 127



Move the right joystick (Item 1) **[Figure 126]** to the right (OUT) to curl the coupler (Item 1) **[Figure 127]** back, fully away from the cab.

Lower the coupler onto the attachment.

Figure 128



Engage the coupler hooks (Item 1) onto the attachment shaft (Item 2) **[Figure 128]**.

Figure 129

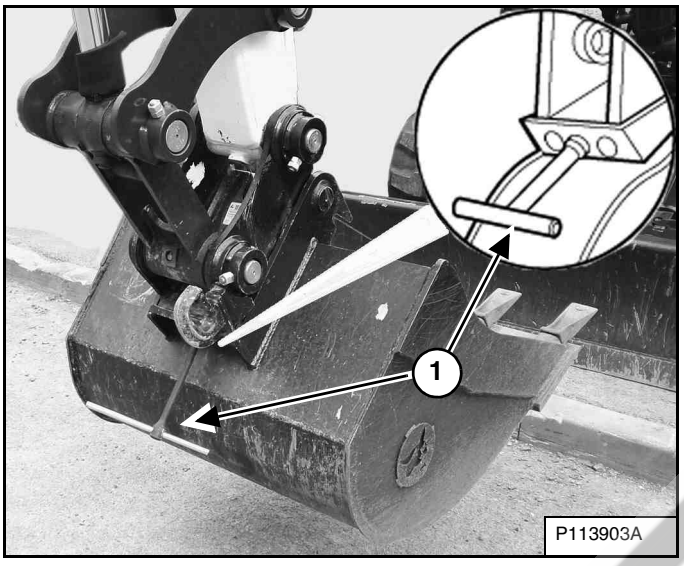
Move the right joystick (Item 1) **[Figure 126]** to the left (IN) and curl the coupler (Item 1) **[Figure 129]** toward the cab fully.

RENTWAY

Installing And Removing The Attachment (German Style Coupler) (Cont'd)

Installation (Cont'd)

Figure 130



Stop the engine and leave the machine. (See STOPPING THE ENGINE AND LEAVING THE EXCAVATOR on Page 78.)

Use the supplied wrench (Item 1) **[Figure 130]** and turn the wrench clockwise until the locking pins fully engaged.

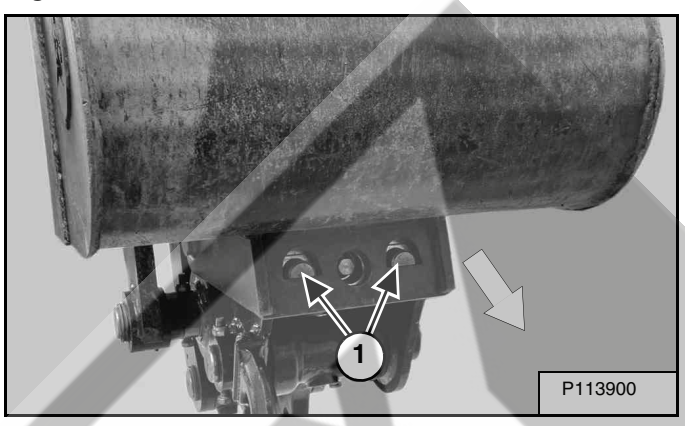
WARNING

AVOID INJURY OR DEATH

The quick coupler locking pins must be fully engaged and locked to the attachment pins. Failure to fully engage the locking pins can allow attachment to come off.

W-3023-0417

Figure 131



Visually check that the locking pins (Item 1) **[Figure 131]** are extended through the holes in the attachment mounting frame, securely fastening the attachment to the coupler.

If both locking pins do not engage in the locked position, see your Bobcat dealer for service.

WARNING

Keep all bystanders 6 m (20 ft) away from equipment when operating. Contact with moving parts, a trench cave-in or flying objects can cause injury or death.

W-2119-0910

Enter the excavator, fasten the seat belt and start the engine. (See PRE-STARTING PROCEDURE on Page 71.)

With the attachment as low to the ground as possible, curl the attachment out and in several times to ensure the attachment is secured to the coupler.

Lower the attachment flat to the ground.

Park the excavator on a level surface.

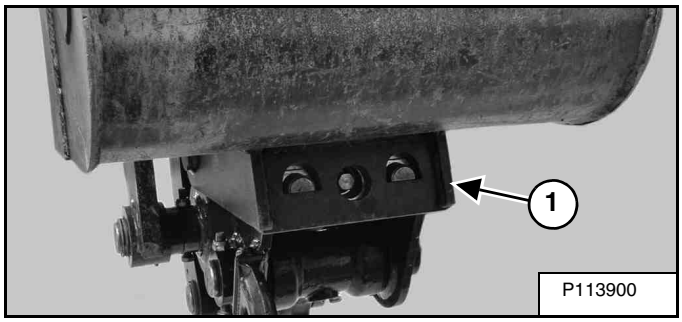
RENTWAY

Installing And Removing The Attachment (German Style Coupler) (Cont'd)

Removal

Enter the excavator, fasten the seat belt and start the engine. (See PRE-STARTING PROCEDURE on Page 71.)

Figure 132

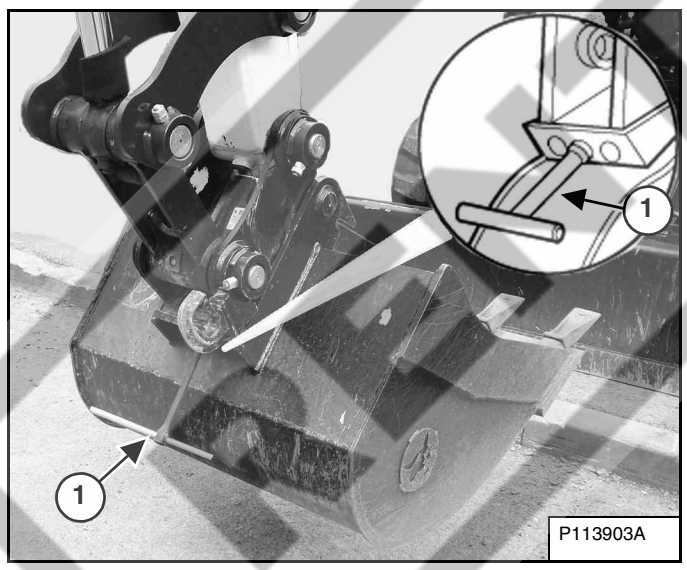


Raise the boom.

Move the right joystick (Item 1) **[Figure 126]** to the left (IN) and curl the coupler (Item 1) **[Figure 132]** toward the cab fully.

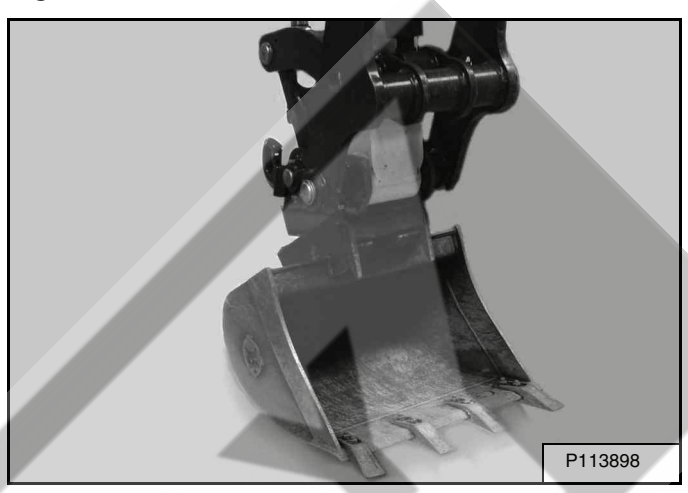
Stop the engine and exit the excavator. (See STOPPING THE ENGINE AND LEAVING THE EXCAVATOR on Page 78.)

Figure 133



Use the supplied wrench (Item 1) **[Figure 133]** and turn the wrench anticlockwise until the locking pins are fully disengaged.

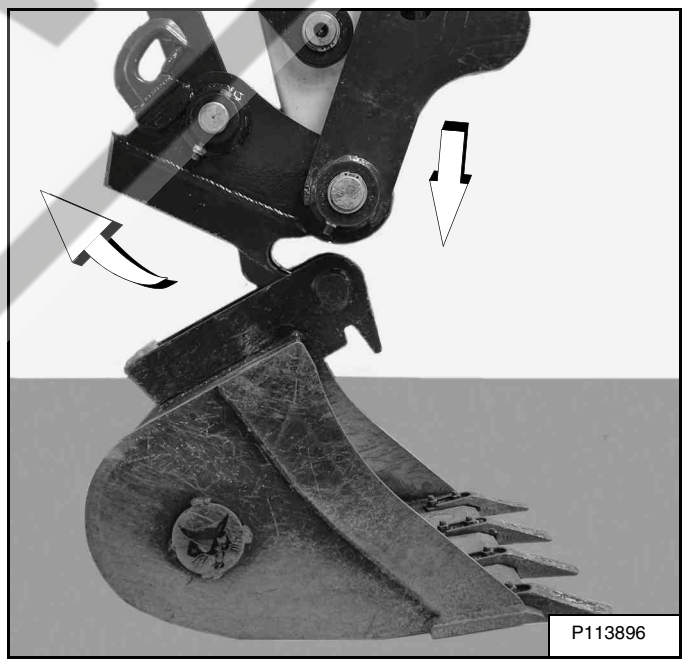
Figure 134



Enter the excavator, fasten the seat belt, and start the engine. (See PRE-STARTING PROCEDURE on Page 71.)

With the attachment slightly off of the ground, roll the quick coupler back until the coupler starts to disengage from the attachment **[Figure 134]**.

Figure 135



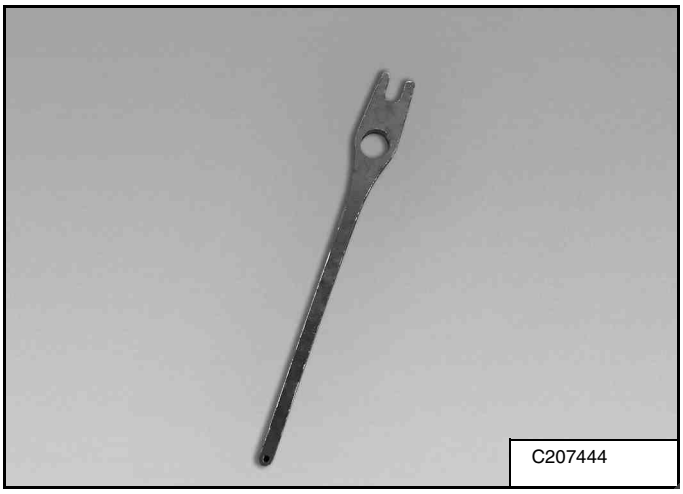
Roll the quick coupler back fully and lower the boom and arm until the attachment is on the ground and the quick coupler is disengaged from the attachment pins **[Figure 135]**.

Move the arm away from the attachment.

Installing And Removing The Attachment (Mechanical Pin Grabber Coupler)

Installation

Figure 136



You have been supplied with the release tool **[Figure 136]** that is required to disengage and engage the safety lock. Do not use alternative tools, as they may damage the coupler.

Installation of the bucket is shown. The procedure is the same for other attachments. Disconnect any hydraulic lines that are operated by hydraulic power before removing any attachments (breaker, auger, etc.).

WARNING

AVOID INJURY OR DEATH

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

W-2052-0907

WARNING

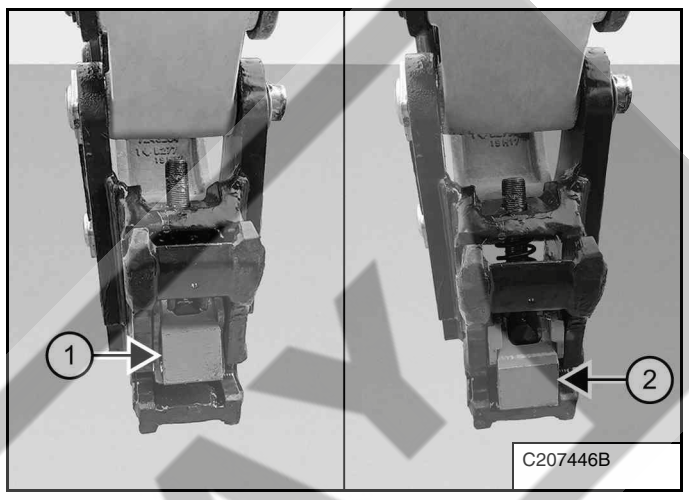
Keep all bystanders 6 m (20 ft) away from equipment when operating. Contact with moving parts, a trench cave-in or flying objects can cause injury or death.

W-2119-0910

A coupler equipped with the lifting device can only be used on machines on which the overload warning device and boom and arm load holding valves are installed. See your Bobcat dealer for available kits.

If your machine is equipped with a hydraulic clamp, fully retract the hydraulic clamp cylinder so the clamp is out of the way for installing the attachment.

Figure 137



Inspect the quick coupler. If the wedge and the trigger are in the primed position (Item 1) **[Figure 137]** proceed to **[Figure 139]**.

OR

If the wedge is in the engaged position (Item 2) **[Figure 137]**, proceed to **[Figure 138]**.

WARNING

AVOID INJURY

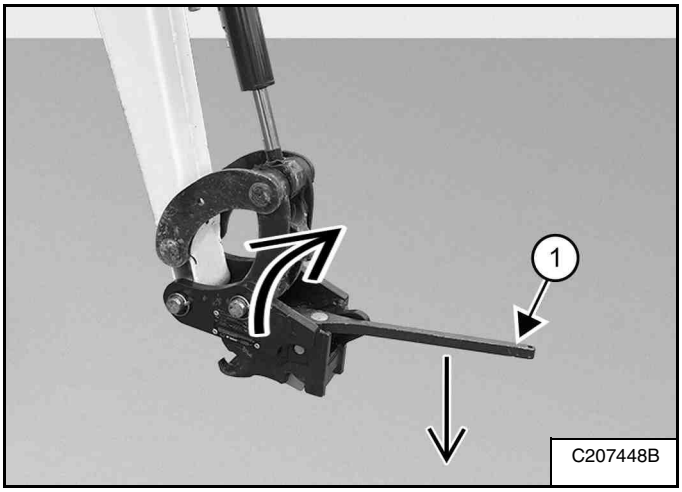
Keep fingers and hands out of pinch points when latching and unlatching the attachment quick coupler.

W-2541-1106

RENTWAY

Installing And Removing The Attachment (Mechanical Pin Grabber Coupler) (Cont'd)

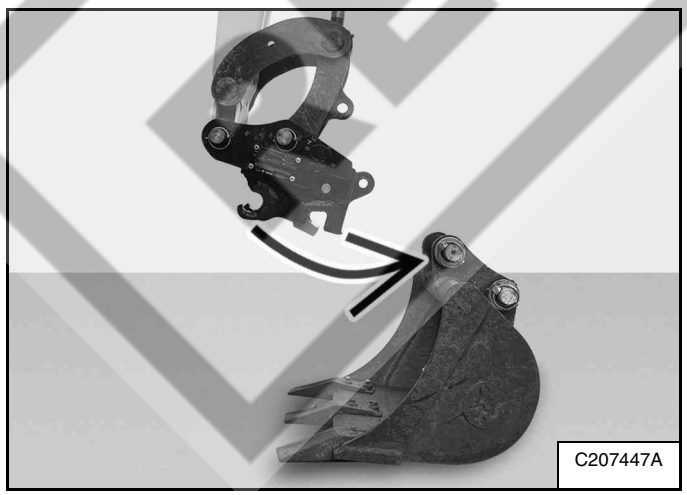
Figure 138



To prepare the quick coupler, do the following:

1. Stop the engine and exit the excavator.
2. Install the release tool (Item 1) **[Figure 138]**.
3. Rotate the release tool clockwise and hold **[Figure 138]**.
4. Push the release tool down **[Figure 138]**.
5. The bottom part of the wedge will withdraw from the rear pin slot and the trigger will drop down.
6. Remove the release tool and return it to a secure position.
7. Enter the excavator, fasten the seat belt, and start the engine.

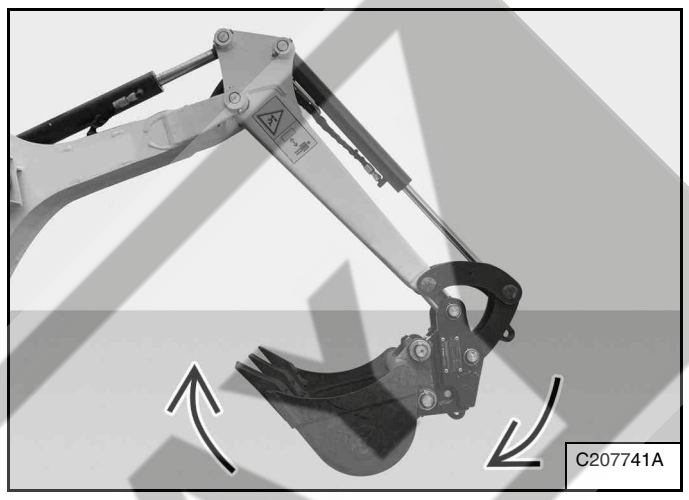
Figure 139



Guide the coupler front hooks onto the attachment front pin **[Figure 139]**.

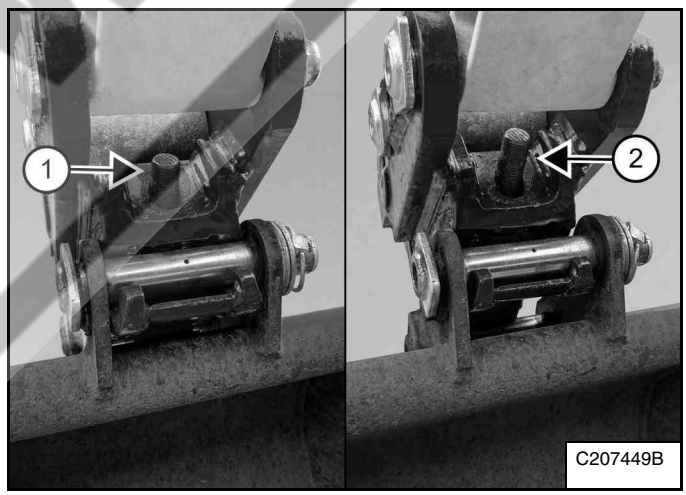
Raise the boom until there is approximately 500 mm (20 in) of clearance between the bottom of the attachment and the ground.

Figure 140



Extend the bucket cylinder and curl in the bucket **[Figure 140]** until you hear the wedge engage on the attachment back pin.

Figure 141



Visually inspect the indication bar to see if the coupler is fully engaged (Item 1) **[Figure 141]**.

If the visual indicator bar is not fully engaged (Item 2) **[Figure 141]**, the attachment must not be operated. Turn off the excavator and examine the coupler for dirt build up or damage. Refer to the service manual for further information.

Installing And Removing The Attachment (Mechanical Pin Grabber Coupler) (Cont'd)

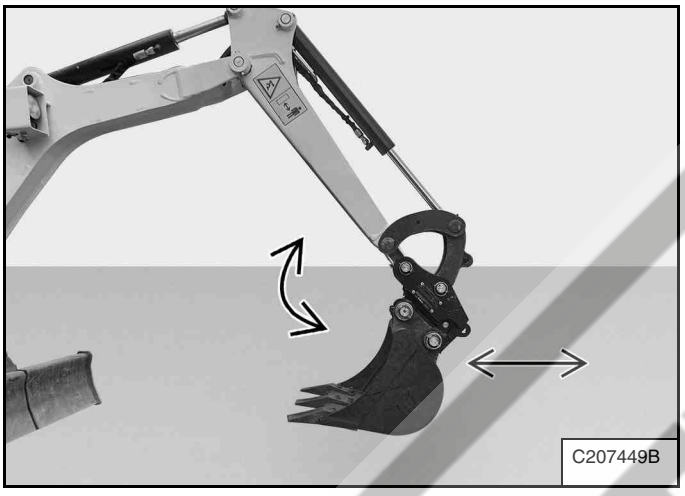
WARNING

AVOID INJURY OR DEATH

The quick coupler locking clasps / pins must be fully engaged and locked to the attachment pins. Failure to fully engage the locking clasps / pins can allow attachment to come off.

W-3024-0417

Figure 142



Shake the attachment vigorously and / or carry out a bump test to ensure the attachment is secured to the coupler **[Figure 142]**.

Removal

Removal of the bucket is shown. The procedure is the same for other attachments. Disconnect any hydraulic lines that are operated by hydraulic power before removing any attachments (breaker, auger, etc.).

WARNING

AVOID INJURY OR DEATH

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

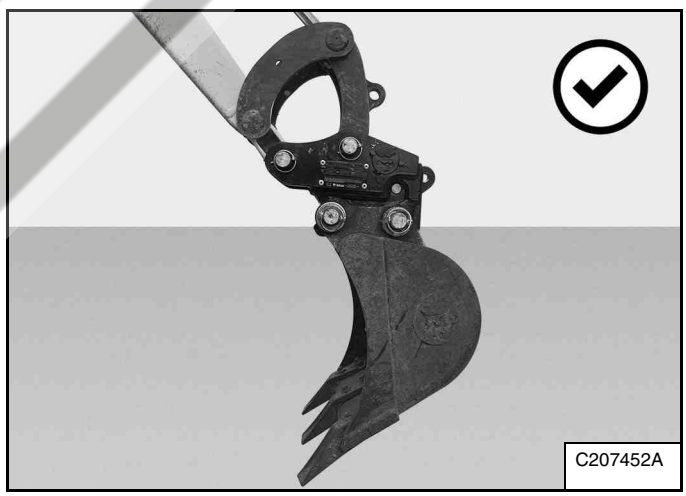
W-2052-0907

WARNING

Keep all bystanders 6 m (20 ft) away from equipment when operating. Contact with moving parts, a trench cave-in or flying objects can cause injury or death.

W-2119-0910

Figure 143



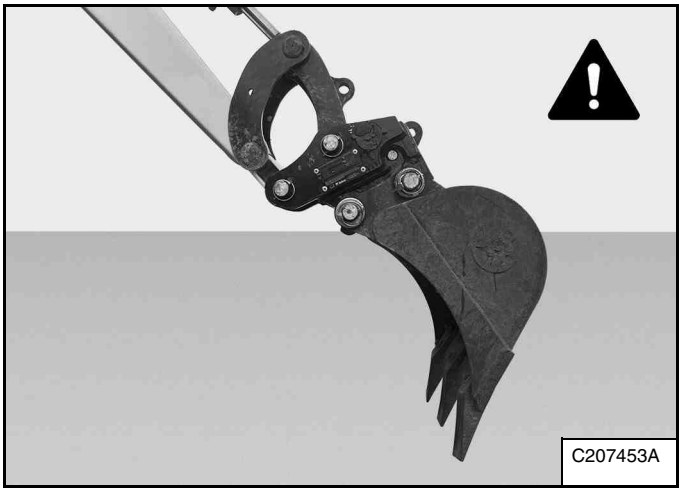
Position the attachment close to ground level at the angle shown **[Figure 143]**.

The bucket / attachment pins should be approximately parallel to the ground.

RENTAL

Installing And Removing The Attachment (Mechanical Pin Grabber Coupler) (Cont'd)

Figure 144



DO NOT RELEASE AN ATTACHMENT WITH THE COUPLER CURLED OPEN [Figure 144].

Stop the engine and exit the excavator.

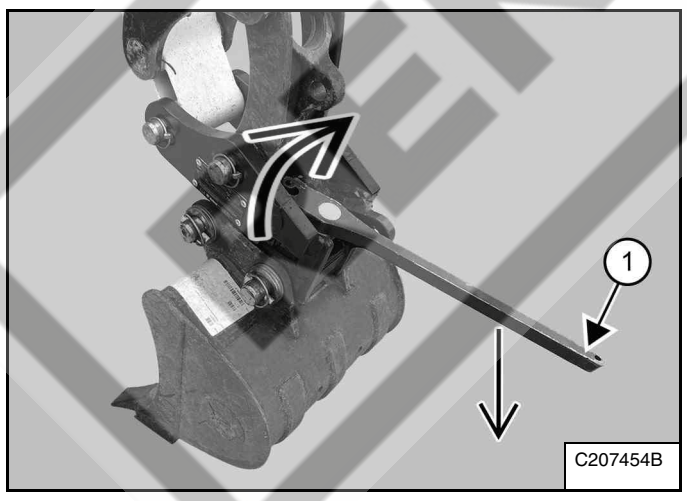
WARNING

AVOID INJURY

Keep fingers and hands out of pinch points when latching and unlatching the attachment quick coupler.

W-2541-1106

Figure 145



Firmly insert the release tool (Item 1) **[Figure 145]**.

WARNING

AVOID INJURY

Keep fingers and hands out of pinch points when latching and unlatching the attachment quick coupler.

W-2541-1106

Rotate the release tool clockwise and hold **[Figure 145]**.

Press the release tool down against the wedge to disengage the attachment back pin **[Figure 145]**.

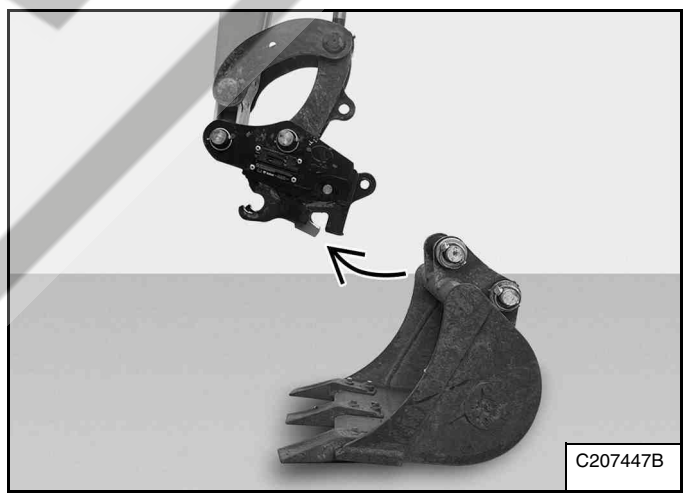
Remove the release tool and return it to a secure position.

Enter the excavator, fasten the seat belt, and start the engine.

Lower the attachment to the ground.

Roll the coupler back until the coupler disengages from the attachment.

Figure 146



Move the arm away from the attachment **[Figure 146]**.

Installing And Removing The Attachment (Bobcat Hydraulic Quick Coupler)

The type of quick coupler installed on the excavator may influence the excavator's rated lift capacity and the availability of attachments.

To determine the lift capacity changes, see the applicable lift capacity chart:

(See Rated Lift Capacity For Standard Arm, Medium Counterweight, And Canopy on Page 222.), (See Rated Lift Capacity For Long Arm, Medium Counterweight, And Canopy on Page 223.), (See Rated Lift Capacity For Standard Arm, Heavy Counterweight, And Canopy on Page 224.), (See Rated Lift Capacity For Standard Arm, Medium Counterweight, And Cab on Page 225.), (See Rated Lift Capacity For Long Arm, Medium Counterweight, And Cab on Page 226.), (See Rated Lift Capacity For Standard Arm, Heavy Counterweight, And Cab on Page 227.), (See Rated Lift Capacity For Long Arm, Heavy Counterweight, And Canopy on Page 228.), (See Rated Lift Capacity For Long Arm, Heavy Counterweight, And Cab on Page 229.)

See your Bobcat dealer for a list of approved attachments for the type of quick coupler installed on the machine.

NOTE: Coupler equipped with the lifting device can only be used on machines where the overload warning device and the boom and arm load holding valves are installed. See your Bobcat dealer for available kits.

Installation

NOTE: Installation and removal of the bucket is shown. The procedure is the same for other attachments. Disconnect any hydraulic lines that are operated by hydraulic power before removing any attachments (breaker, auger, etc.).

WARNING

AVOID INJURY OR DEATH

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

W-2052-0907

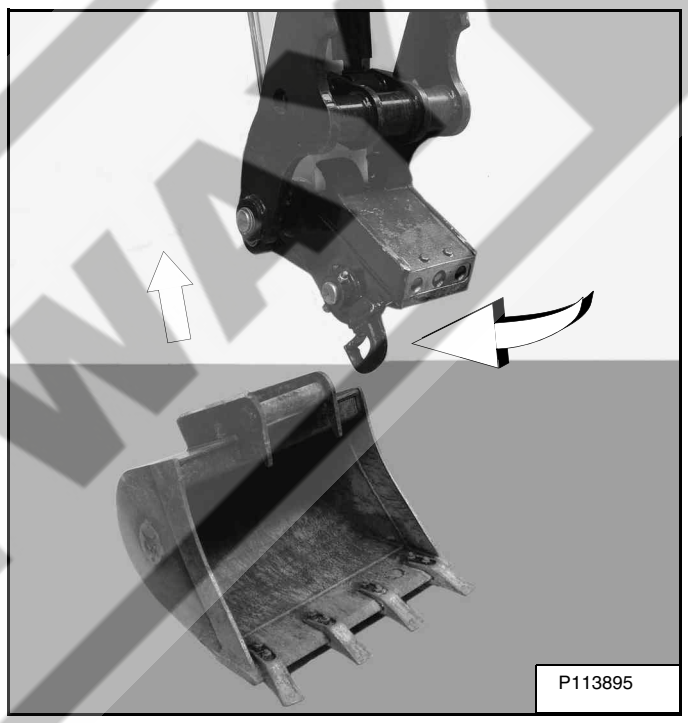
WARNING

Keep all bystanders 6 m (20 ft) away from equipment when operating. Contact with moving parts, a trench cave-in or flying objects can cause injury or death.

W-2119-0910

Start the engine. (See PRE-STARTING PROCEDURE on Page 71.)

Figure 147



Position the arm and quick coupler to the attachment **[Figure 147]**.

NOTE: If equipped with a hydraulic clamp, fully retract the hydraulic clamp cylinder so the clamp is out of the way for installing the attachment.

REPLITWAY

Installing And Removing The Attachment (Bobcat Hydraulic Quick Coupler) (Cont'd)

Installation (Cont'd)

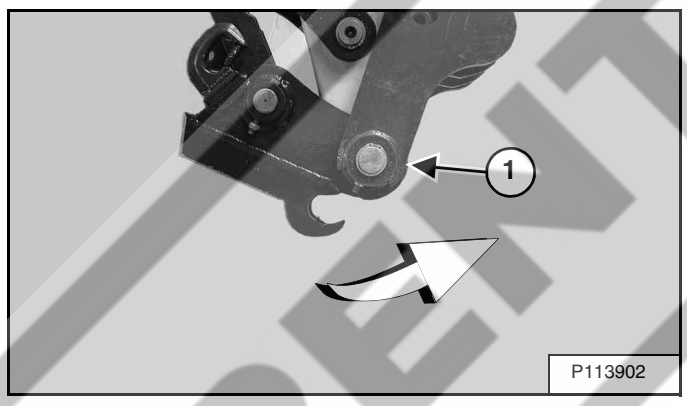
WARNING

Keep all bystanders 6 m (20 ft) away from equipment when operating. Contact with moving parts, a trench cave-in or flying objects can cause injury or death.

W-2119-0910

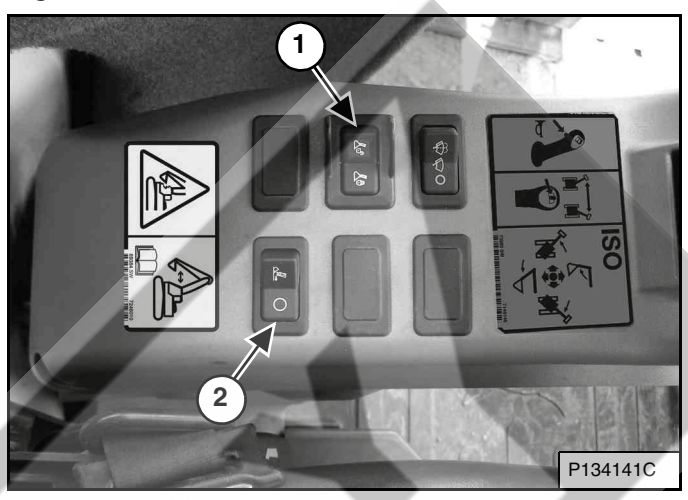
Figure 148

Figure 149



Move the right joystick (Item 1) **[Figure 148]** to the left (IN) to curl the coupler (Item 1) **[Figure 149]** fully in toward the cab.

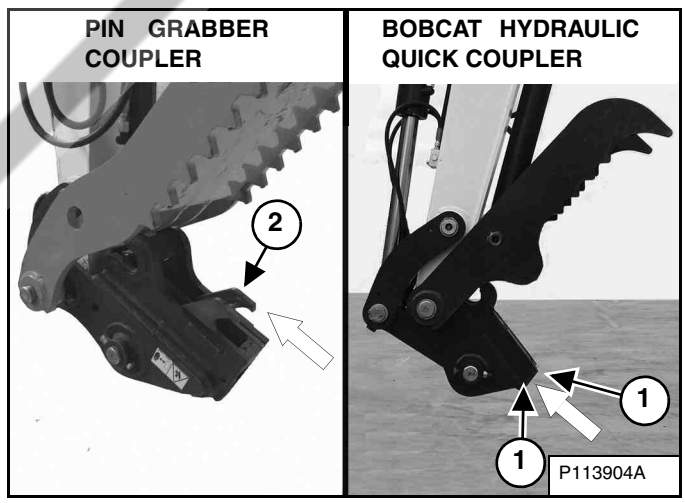
Figure 150



Press the coupler ON / OFF switch (Item 1) **[Figure 150]** to the left (ON) position to enable the quick coupler feature. The switch will illuminate when in the ON position and a buzzer will sound.

While holding the right joystick (Item 1) **[Figure 148]** to the left (IN), press and release the INTENT switch (Item 2) **[Figure 150]** within five seconds after pressing the ON / OFF switch (Item 1) **[Figure 150]**. (The buzzer will continue to sound and the light (Item 1) **[Figure 150]** will stay ON.)

Figure 151



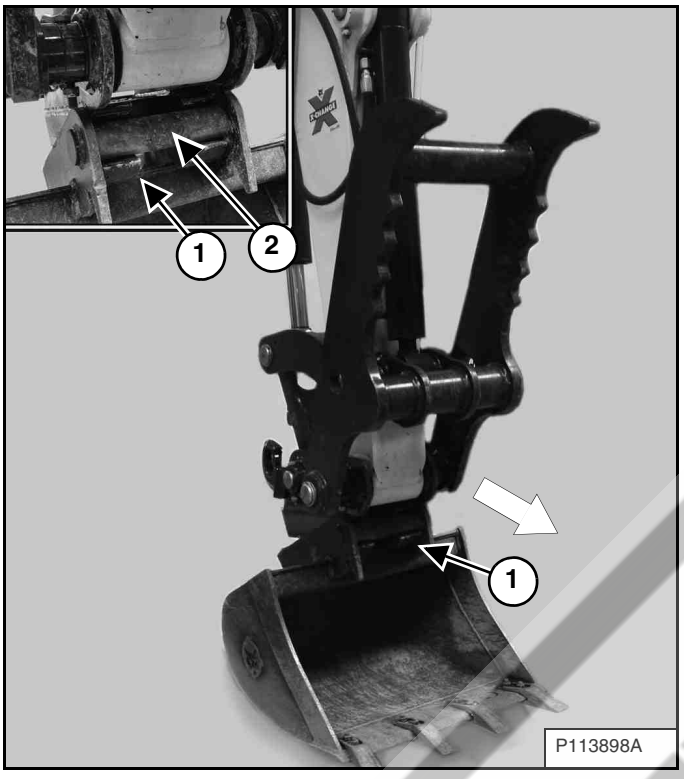
Continue holding the right joystick (Item 1) **[Figure 148]** to the left (IN) until the pins (Item 1) **[Figure 151]** are fully retracted or the locking clasp (Item 2) **[Figure 151]** is fully retracted.

RENTWAY

Installing And Removing The Attachment (Bobcat Hydraulic Quick Coupler) (Cont'd)

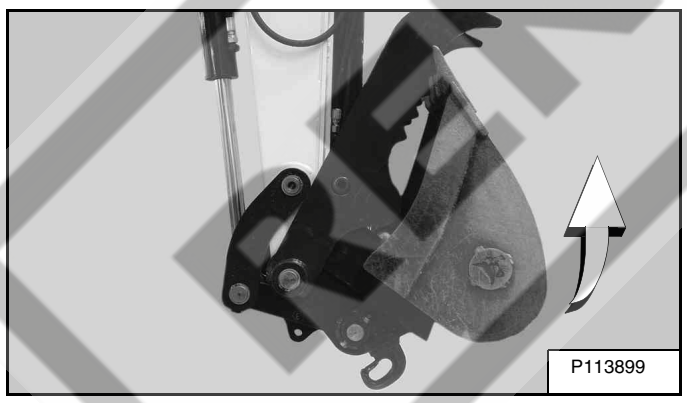
Installation (Cont'd)

Figure 152



Roll the coupler out. Move the arm toward the attachment. Reposition the boom, arm and coupler until the coupler (Item 1) is positioned over the attachment pin (Item 2) **[Figure 152]**. Raise the attachment up slightly.

Figure 153



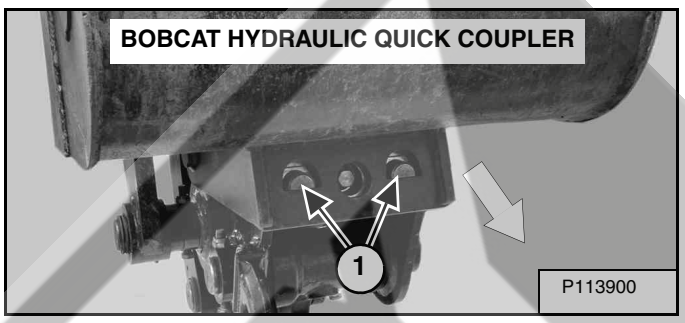
Curl the quick coupler in fully **[Figure 153]**.

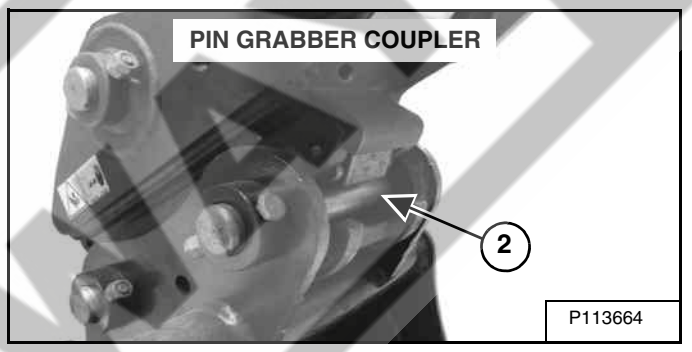
Press the coupler ON / OFF switch (Item 1) **[Figure 150]** to the right, (OFF) position. The switch light and buzzer will turn OFF.

For the Hydraulic German Style Coupler; The locking pins will extend and engage the attachment mount locking the attachment to the coupler.

For the Pin Grabber Coupler; Continue to curl the bucket in for an additional ten seconds to allow the locking clasp to move and lock to the bucket pins.

Figure 154





For the Hydraulic German Style Coupler; Visually check that the locking pins (Item 1) **[Figure 154]** are extended through the holes in the attachment mounting frame, securely fastening the attachment to the coupler.

If both locking pins do not engage in the locked position, see your Bobcat dealer for service.

For the Pin Grabber Quick Coupler; Visually check that the green locking clasp (Item 2) **[Figure 154]** is FULLY ENGAGED AND LOCKED, securely fastening the attachment to the coupler.

With the attachment as low to the ground as possible, curl the attachment out and in several times to ensure the attachment is secured to the coupler.

If the locking clasps do not engage in the locked position, see your Bobcat dealer for service.

Lower the attachment flat to the ground.

⚠ WARNING

AVOID INJURY OR DEATH

The quick coupler locking clasps / pins must be fully engaged and locked to the attachment pins. Failure to fully engage the locking clasps / pins can allow attachment to come off.

W-3024-0417

PRELIMINARY

Installing And Removing The Attachment (Bobcat Hydraulic Quick Coupler) (Cont'd)

Removal

NOTE: Removal and installation of the bucket is shown. The procedure is the same for other attachments. Disconnect any hydraulic lines that are operated by hydraulic power before removing any attachments (breaker, auger, etc.).

WARNING

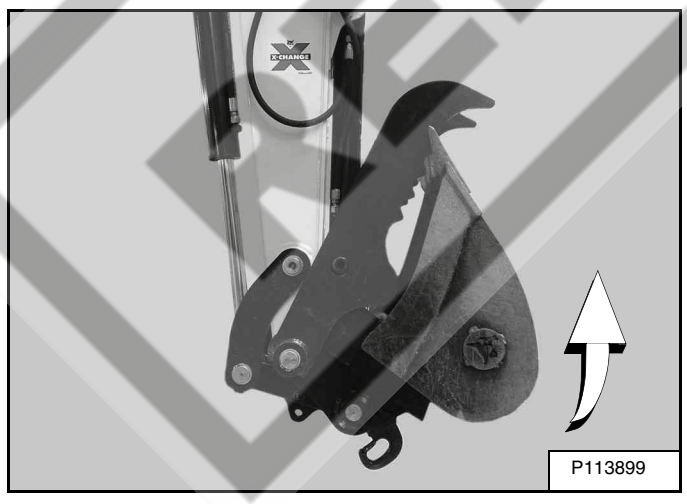
Keep all bystanders 6 m (20 ft) away from equipment when operating. Contact with moving parts, a trench cave-in or flying objects can cause injury or death.

W-2119-0910

Enter the excavator and start the engine. (See PRE-STARTING PROCEDURE on Page 71.)

Figure 155

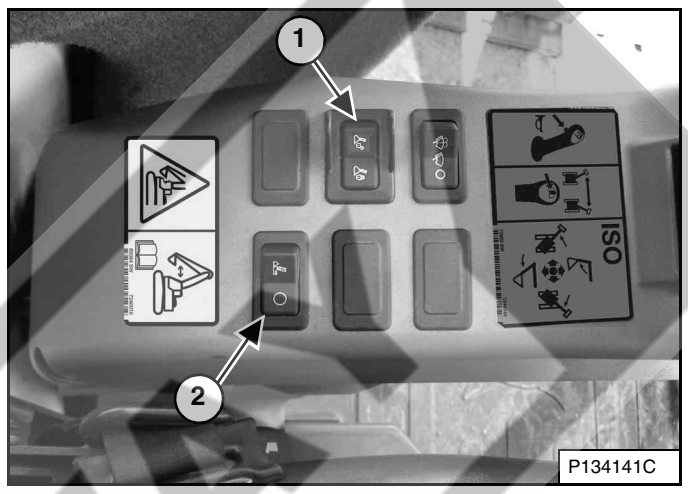
Figure 156



Raise the attachment slightly off of the ground.

Move the right joystick (Item 1) **[Figure 155]** to the left (IN) to curl the coupler (Item 1) **[Figure 156]** fully in toward the cab.

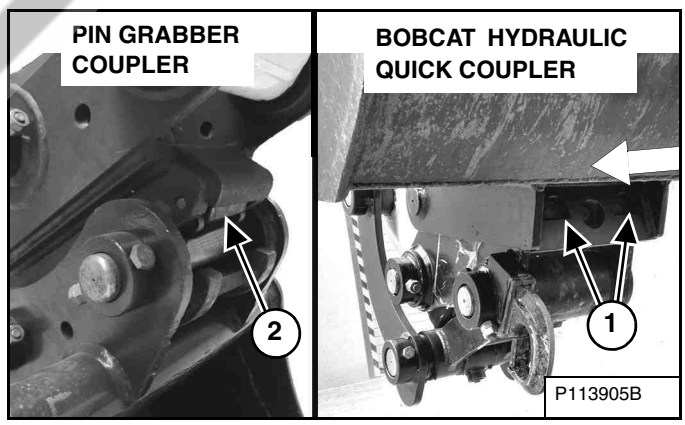
Figure 157



Press the coupler ON / OFF switch (Item 1) **[Figure 157]** to the left (ON) position to enable the quick coupler feature. The switch will illuminate when in the ON position and a buzzer will sound.

While holding the right joystick (Item 1) **[Figure 155]** to the left (IN), press and release the INTENT switch (Item 2) **[Figure 157]** within five seconds after pressing the ON / OFF switch (Item 1) **[Figure 157]**. (The buzzer will continue to sound and the light (Item 1) **[Figure 157]** will stay ON.)

Figure 158



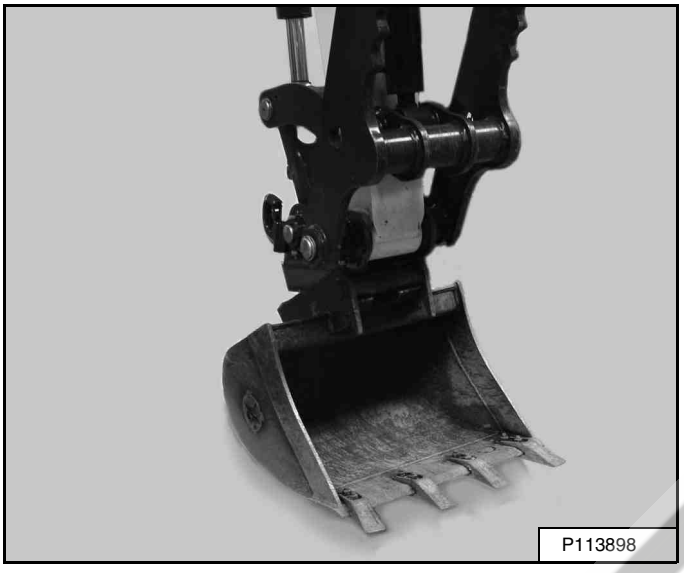
For the Hydraulic German Style Coupler; Continue holding the right joystick (Item 1) **[Figure 155]** to the left (IN) until the pins (Item 1) **[Figure 158]** are fully retracted to unlock the attachment from the quick coupler.

For the Pin Grabber Quick Coupler; Continue holding the right joystick (Item 1) **[Figure 155]** to the left (IN) until the green locking clasp (Item 2) **[Figure 155]** retracts and will unlock the attachment from the quick coupler.

Installing And Removing The Attachment (Bobcat Hydraulic Quick Coupler) (Cont'd)

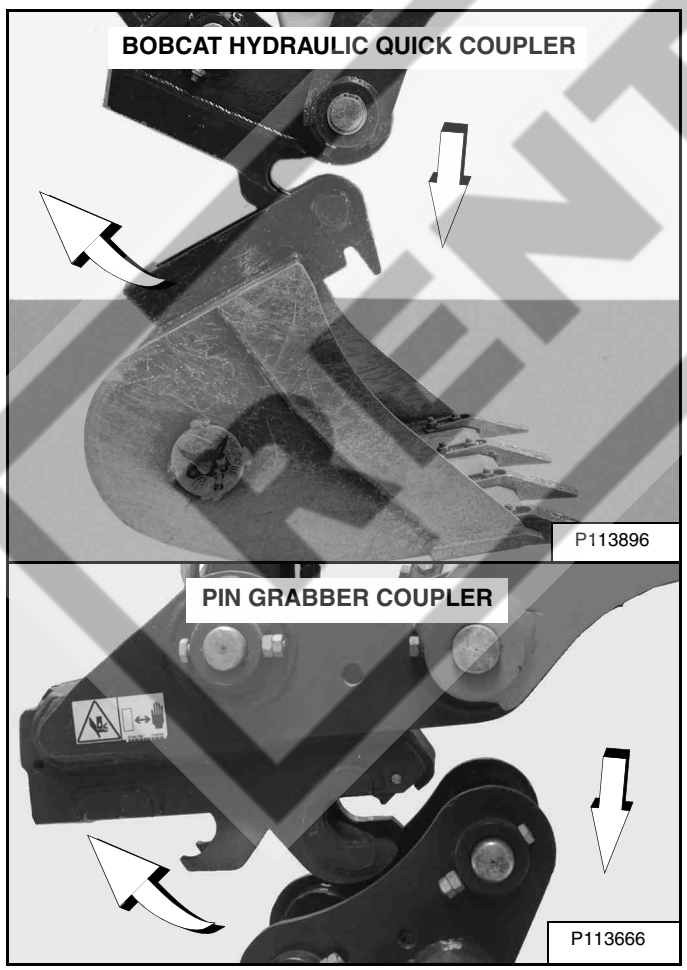
Removal (Cont'd)

Figure 159



With the attachment slightly off the ground, roll the quick coupler back until the coupler starts to disengage from the attachment **[Figure 159]**.

Figure 160

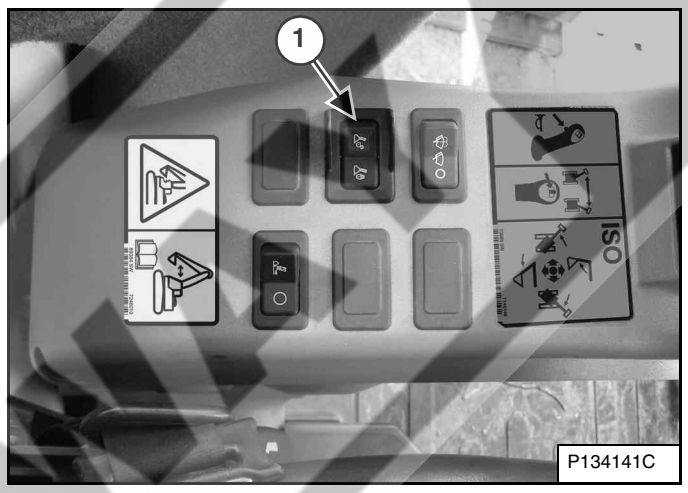


Roll the quick coupler back fully.

Lower the boom and arm until the attachment is on the ground and the quick coupler is disengaged from the attachment pins.

Move the arm away from the excavator until the quick coupler is clear of the attachment **[Figure 160]**.

Figure 161



Press the coupler ON / OFF switch (Item 1) **[Figure 161]** to the right, (OFF) position. The switch light and buzzer will turn OFF.

Installing And Removing The Attachment (Pin-On X-Change)

Installation

NOTE: Installation and removal of the bucket is shown. The procedure is the same for other attachments. Disconnect any hydraulic lines that are operated by hydraulic power before removing any attachments (breaker, auger, etc.).

WARNING

AVOID INJURY OR DEATH

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

W-2052-0907

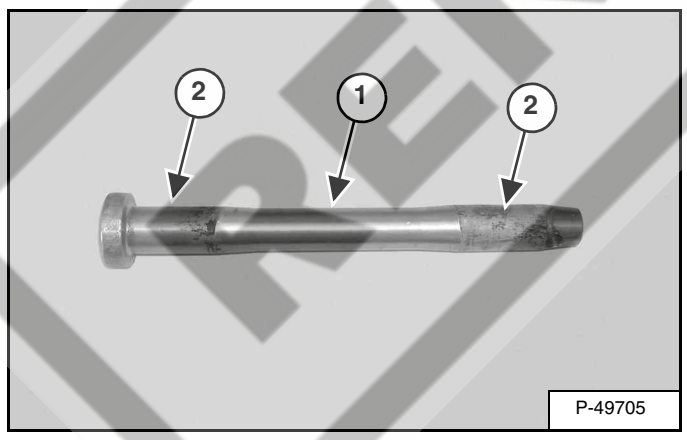
WARNING

AVOID INJURY OR DEATH

Both hydraulic pins must be fully extended through the attachment mounting holes. Failure to fully engage the hydraulic pins can allow attachment to come off.

W-2935-0512

Figure 162



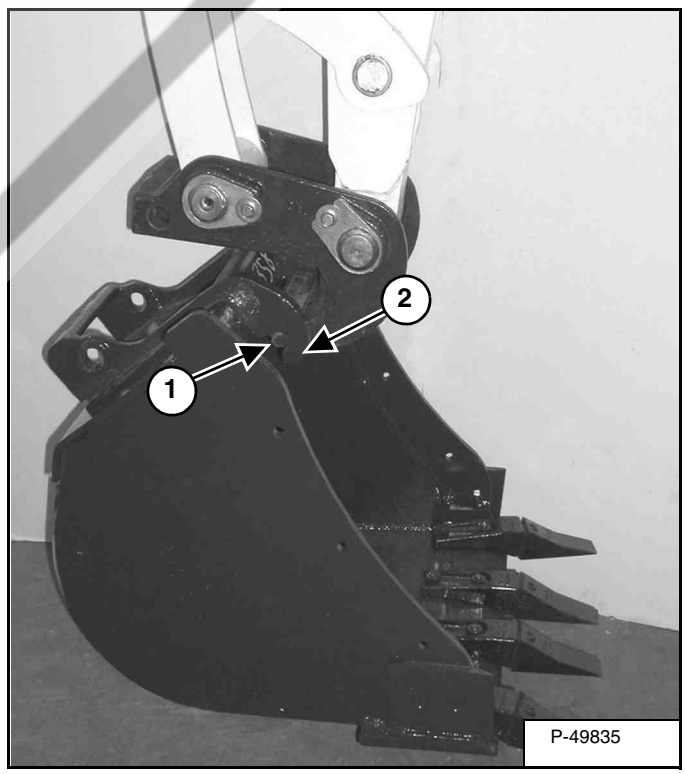
Inspect the pin (Item 1) **[Figure 162]** for wear or damage. Replace the pin as needed.

Apply a light coat of grease to the ends of the pin (Item 2) **[Figure 162]**.

Figure 163

Start the engine and move the arm towards the bucket **[Figure 163]**.

Figure 164



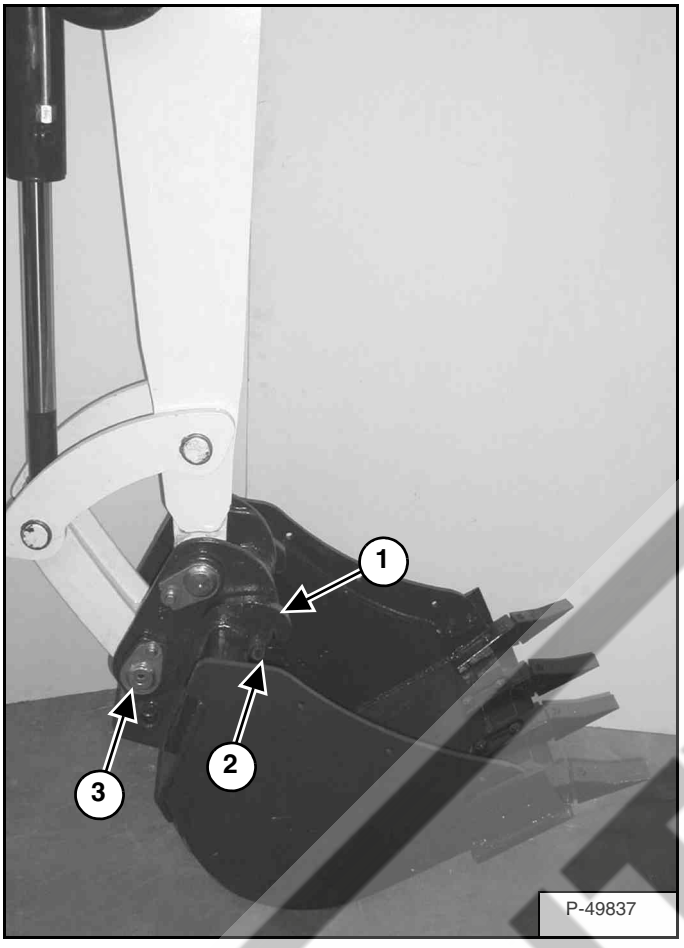
Raise the boom until the pins (Item 1) engage the hooks (Item 2) **[Figure 164]** on the bucket.

RENTWAY

Installing And Removing The Attachment (Pin-On X-Change) (Cont'd)

Installation (Cont'd)

Figure 165



Raise the boom and extend the bucket cylinder until the X-Change contacts the attachment back **[Figure 165]**.

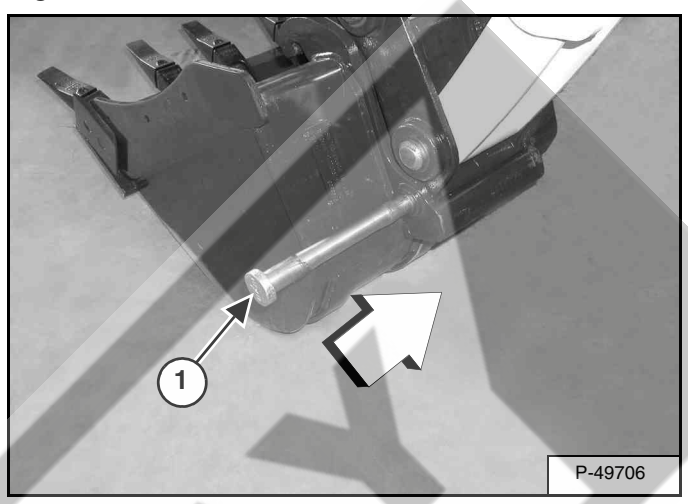
With the arm vertical, lower the boom until the hooks (Item 1) of the bucket disengage the pins (Item 2) of the X-Change and the plate (Item 3) **[Figure 165]** fully engages in the bucket crossmember.

WARNING

Keep all bystanders 6 m (20 ft) away from equipment when operating. Contact with moving parts, a trench cave-in or flying objects can cause injury or death.

W-2119-0910

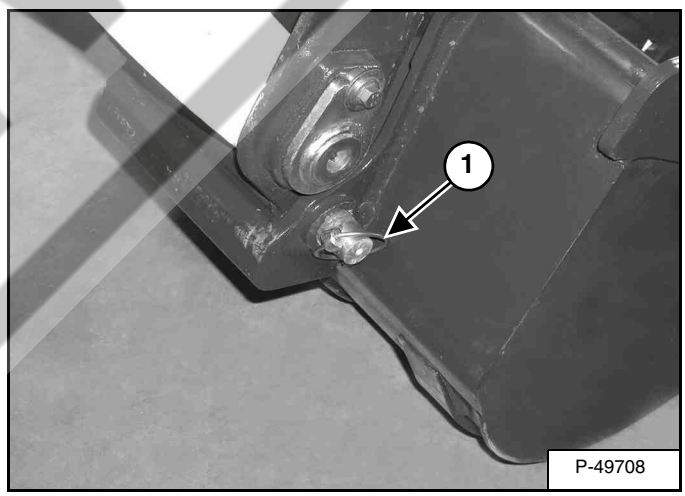
Figure 166



Stop the engine. Turn the start key to the ON position and move both hydraulic control levers to relieve hydraulic pressure.

Drive the pin (Item 1) **[Figure 166]** through the bucket mount and X-Change.

Figure 167



Install the retainer pin (Item 1) **[Figure 167]**.

Check for proper installation.

Lift the attachment and fully extend and retract the bucket cylinder.

BENTWAY

Installing And Removing The Attachment (Pin-On X-Change) (Cont'd)

Removal

Use the Pin-On X-Change when installing new attachments that are equipped with the Pin-On X-Change bracket.

NOTE: Removal and installation of the bucket is shown. The procedure is the same for other attachments. Disconnect any hydraulic lines that are operated by hydraulic power before removing any attachments (breaker, auger, etc.).

WARNING

AVOID INJURY OR DEATH

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

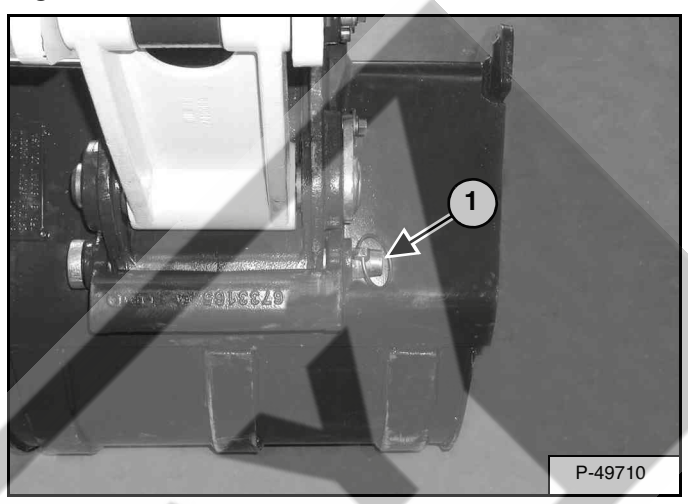
W-2052-0907

Figure 168

Park the excavator on a flat level surface. Put the bucket on the ground **[Figure 168]**.

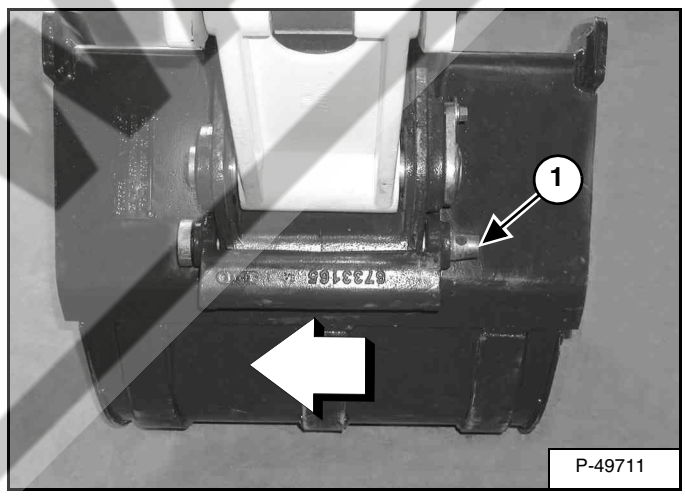
With the engine off, turn the start key to the ON position and move both hydraulic control levers to relieve hydraulic pressure.

Figure 169



Remove the retainer pin (Item 1) **[Figure 169]**.

Figure 170



Drive the pin (Item 1) **[Figure 170]** out of the bucket and X-Change mount.

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.**

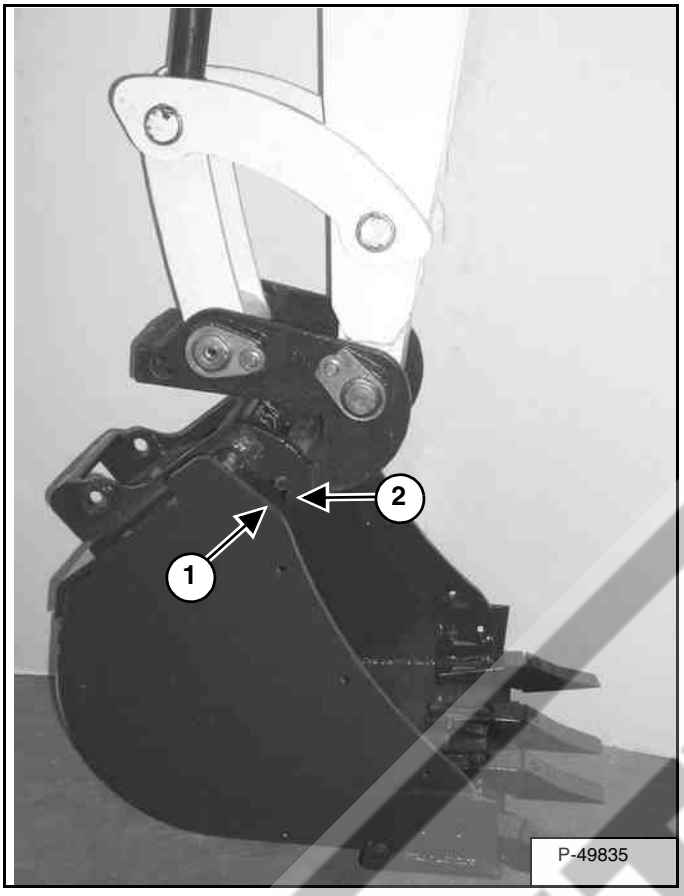
W-2019-0907

RENTWAY

Installing And Removing The Attachment (Pin-On X-Change) (Cont'd)

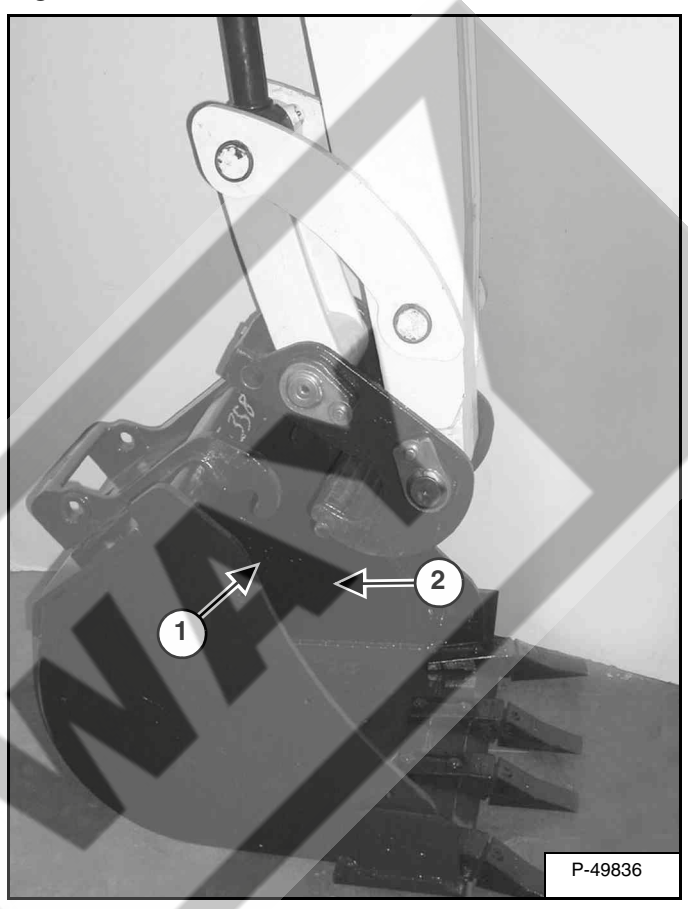
Removal (Cont'd)

Figure 171



Start the engine, raise the boom approximately one foot and retract the bucket cylinder until the X-Change pins (Item 1) engage the hooks (Item 2) **[Figure 171]** on the bucket.

Figure 172



Fully retract the bucket cylinder and lower the boom and arm until the bucket is on the ground, and the X-Change pins (Item 1) are disengaged from the hooks (Item 2) **[Figure 172]**.

Move the arm toward the excavator until the X-Change pins are clear of the bucket.

RENTWAY

Installing And Removing The Pro Clamp System Tool

Installation

WARNING

AVOID INJURY OR DEATH

Keep fingers and hands out of pinch points when installing and removing implement or attachment.

W-2571-1212

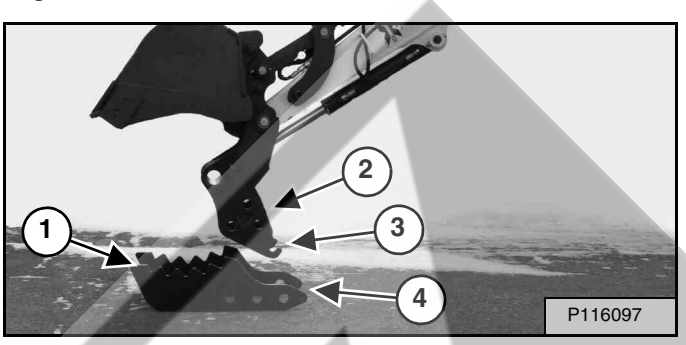
WARNING

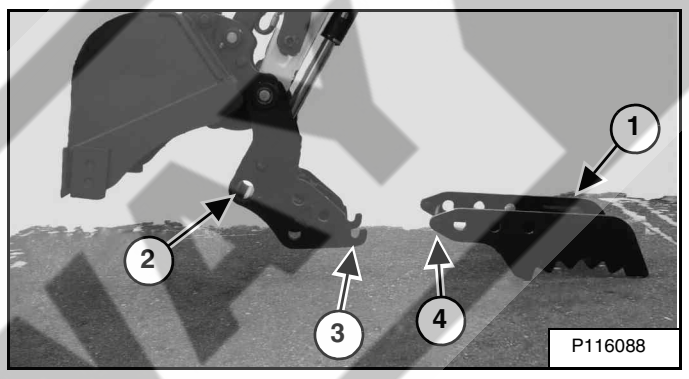
Keep all bystanders 6 m (20 ft) away from equipment when operating. Contact with moving parts, a trench cave-in or flying objects can cause injury or death.

W-2119-0910

Enter the excavator and start the engine. (See PRE-STARTING PROCEDURE on Page 71.)

Figure 173



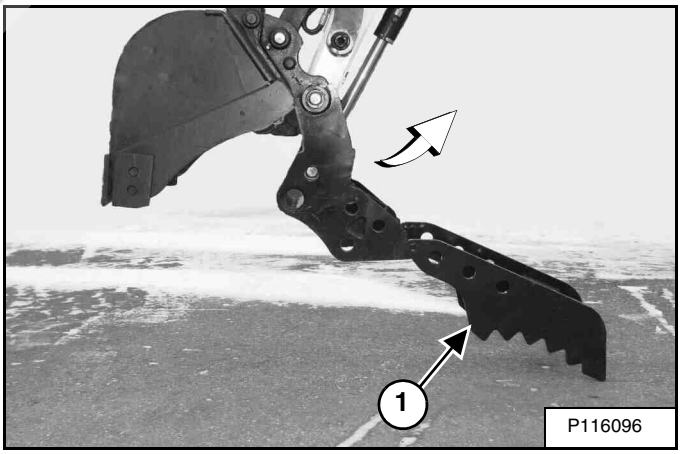


NOTE: To install the clamp tool (Item 1) onto the clamp base (Item 2), the clamp tool (Item 1) can be positioned in either configuration as shown in [Figure 173].

Move the arm towards the clamp tool.

Engage the clamp base hooks (Item 3) onto the clamp anchors (Item 4) **[Figure 173]**.

Figure 174



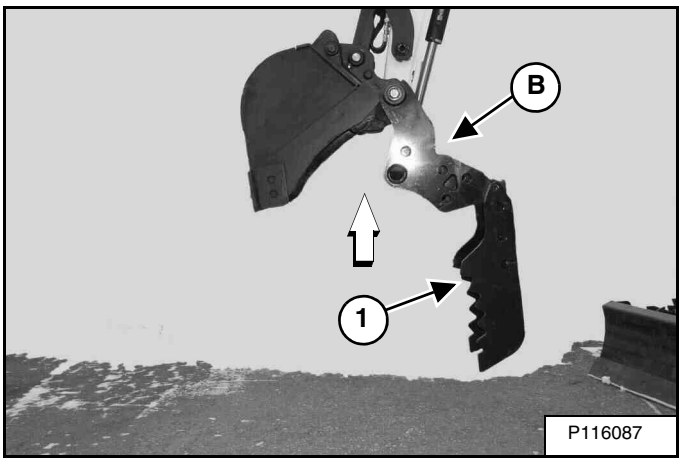
Retract the bucket cylinder (Item 1) **[Figure 174]** until the clamp tool is supported by the clamp hooks and the tool anchors.

RENTWAY

Installing And Removing The Pro Clamp System Tool (Cont'd)

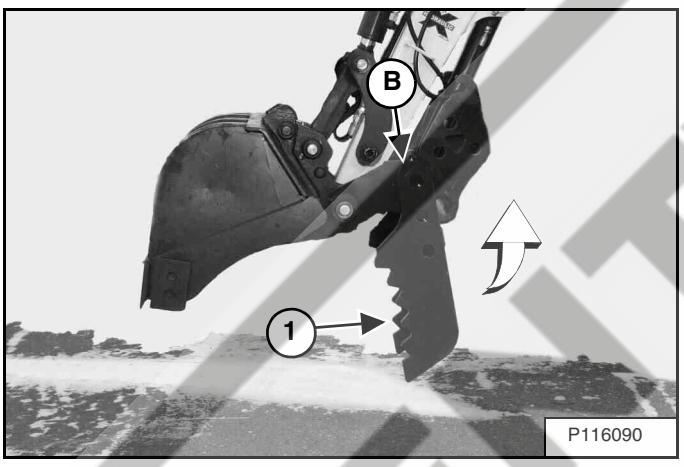
Installation (Cont'd)

Figure 175



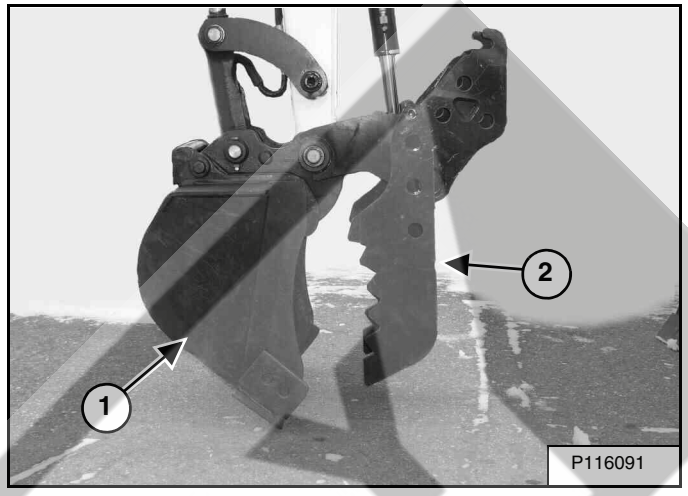
Raise the boom until the clamp tool (Item 1) **[Figure 175]** is slightly off the ground.

Figure 176



Continue to retract the bucket cylinder until the clamp tool (Item 1) **[Figure 176]** slides into the (index point B) **[Figure 175]** and **[Figure 176]**.

Figure 177



Rotate the bucket (Item 1) **[Figure 177]** down until it is in the position shown. Lower the boom until the bucket is fully on the ground.

The bottom of the clamp tool (Item 2) **[Figure 177]** must be slightly off the ground when the bucket is resting on the ground in order to rotate the tool to install the pins.

NOTE: The clamp tool can become unstable and fall off the clamp mount if the clamp tool (Item 2) [Figure 177] is allowed to contact the ground.

NOTE: The clamp tool (Item 2) can be positioned in multiple arrangements depending on which mounting holes are used. See [Figure 178] and [Figure 179] for the approved positions for the clamp tool.

Stop the engine and exit the excavator. (See STOPPING THE ENGINE AND LEAVING THE EXCAVATOR on Page 78.)

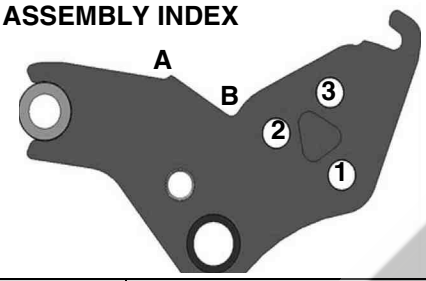
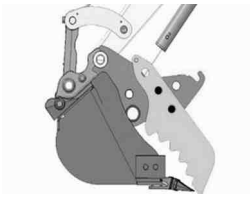
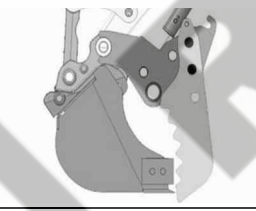
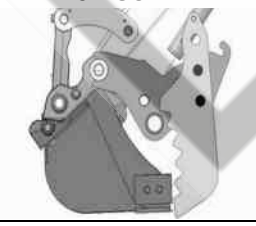
RETIRED

Installing And Removing The Pro Clamp System Tool (Cont'd)

Installation (Cont'd)

Material Tool Arrangements

Figure 178

PRO CLAMP 3 APPROVED TOOL ARRANGEMENTS								
USE CHECKED INDEX POINT WHEN INSTALLING TOOL. **INSTALL MOUNTING PINS IN CHECKED MOUNTING HOLES.**	**BASE ASSEMBLY INDEX**  					**MATERIAL TOOL INDEX*** 		
APPROVED TOOL POSITIONS	**INDEX POINT**		**MOUNTING HOLE**			**MOUNTING HOLE**		
	A	**B**	**1**	**2**	**3**	**1**	**2**	**3**
TOOTHED DIRT BUCKET 	X		X	X			X	X
TOOTHED DIRT BUCKET 		X	X		X	X	X	
TOOTHLESS DIRT BUCKET 	X		X	X			X	X
TOOTHLESS DIRT BUCKET 		X	X		X	X	X	
GRADING BUCKET 	X		X		X		X	X

*** Material Tool Weight: 27 kg (60 lb)**

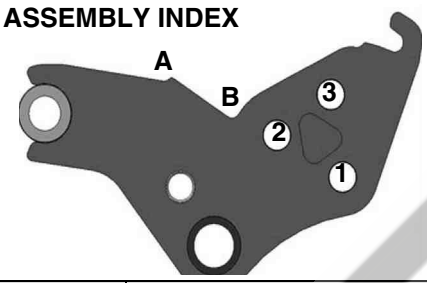
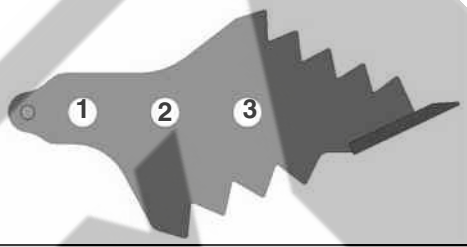
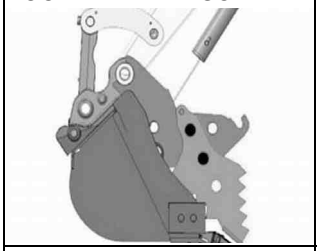
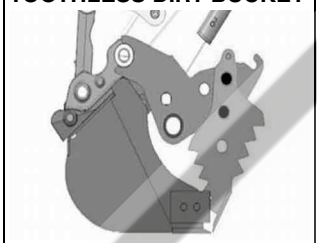
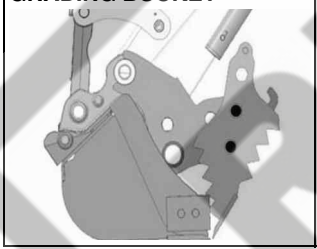
RENTWAY

Installing And Removing The Pro Clamp System Tool (Cont'd)

Installation (Cont'd)

Grading And Clamp Tool Arrangements

Figure 179

PRO CLAMP 3 APPROVED TOOL ARRANGEMENTS								
USE CHECKED INDEX POINT WHEN INSTALLING TOOL. INSTALL MOUNTING PINS IN CHECKED MOUNTING HOLES.	BASE ASSEMBLY INDEX  					GRADING & CLAMP TOOL INDEX*  		
APPROVED TOOL POSITIONS	INDEX POINT		MOUNTING HOLE			MOUNTING HOLE		
	A	B	1	2	3	1	2	3
TOOTHED DIRT BUCKET ** 		X	X	X		X	X	
TOOTHLESS DIRT BUCKET 		X	X		X	X	X	
GRADING BUCKET 	X		X		X		X	X

*** Grading And Clamp Tool Weight: 30 kg (65 lb)**

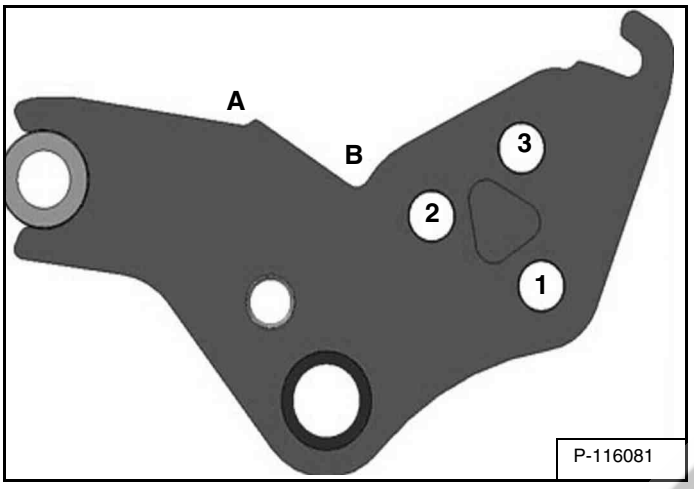
**** Note: See OPERATING PROCEDURE - Operating In The Grading Arrangement for correct procedures.**

RENTWAY

Installing And Removing The Pro Clamp System Tool (Cont'd)

Installation (Cont'd)

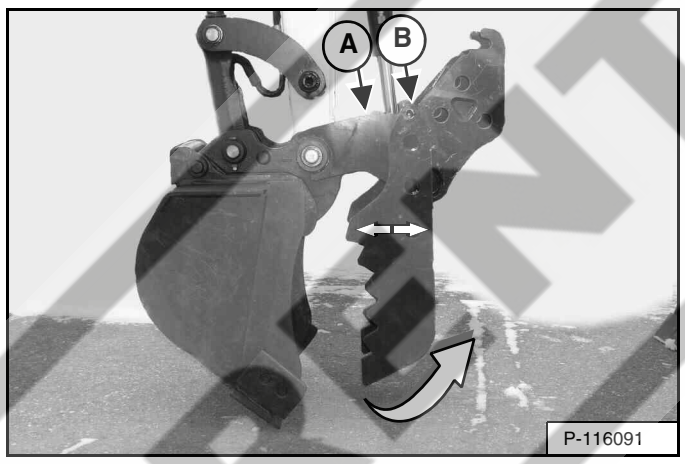
Figure 180



For aligning the clamp tool and base assembly, there are three mounting holes (Items 1, 2, and 3). For indexing the clamp tool, there are two indexing points on the base assembly (Items A and B) **[Figure 180]**.

Use **[Figure 178]** and **[Figure 179]** to determine which index point is used for the desired tool position.

Figure 181



Move the clamp tool along the base assembly to the desired indexing point (A or B) **[Figure 181]**.

NOTE: The clamp tool anchors must be located in one of the indexing points on the base assembly for the mounting holes to align. The base assembly hooks are for lifting the clamp tool only. The hooks cannot be used as an indexing point for mounting hole alignment.

Lifting the bottom of the clamp tool, use the anchors and indexing point as a hinge to align the mounting holes (Item 1) **[Figure 181]**.

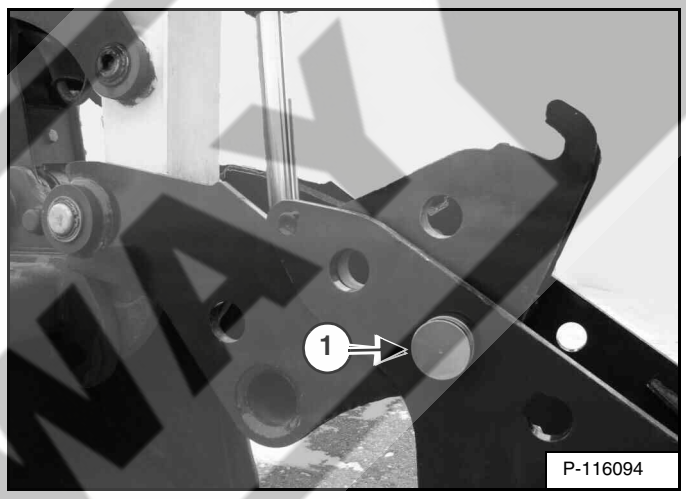
WARNING

AVOID INJURY OR DEATH

Keep fingers and hands out of pinch points when installing and removing implement or attachment.

W-2571-1212

Figure 182



Install a pin (Item 1) **[Figure 182]** in the mounting hole on each side. Install the lock pins (Item 1) **[Figure 185]**.

NOTE: When installing the clamp tool, always install the pins in the hole 1 [Figure 180] first. Hole 1 [Figure 180] will always be used for mounting the tools.

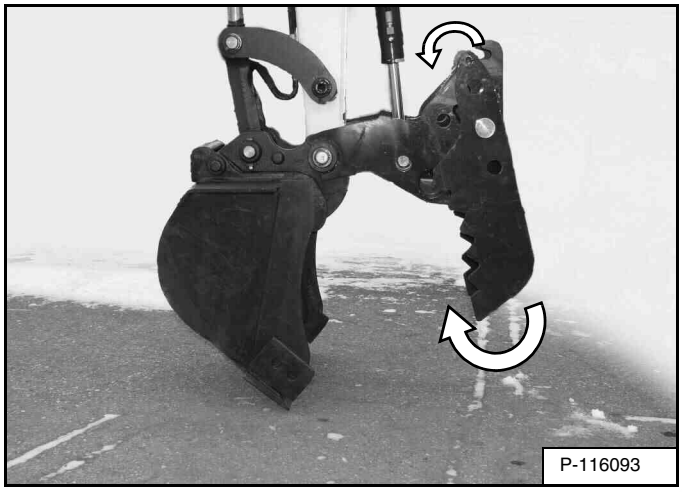
NOTE: When repositioning or removing the pro clamp tool, remove the pins from positions 2 or 3 first. The pin in location 1 should always be the last pin removed or the first pin installed [Figure 180].

RENTWAY

Installing And Removing The Pro Clamp System Tool (Cont'd)

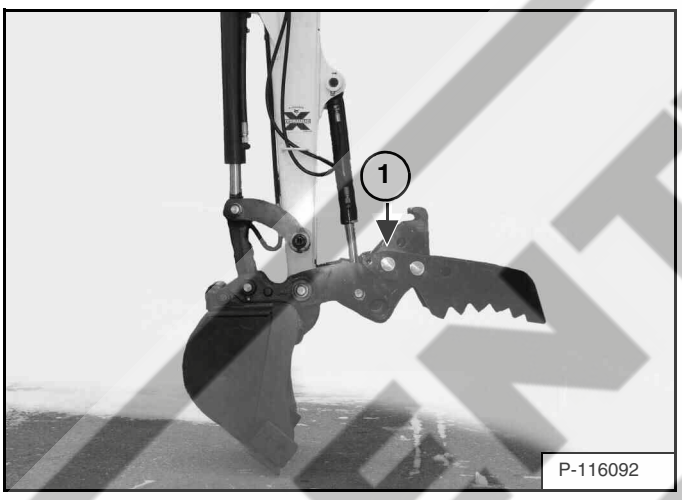
Installation (Cont'd)

Figure 183



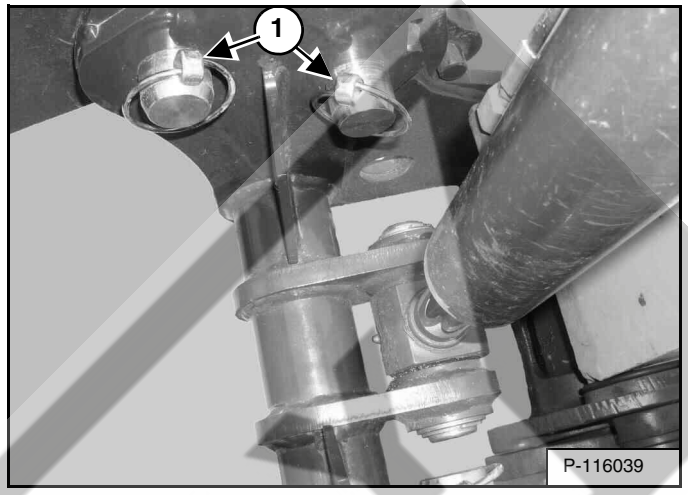
Rotate the clamp tool to the desired angle, aligning the other mounting holes **[Figure 183]**.

Figure 184



Install the pins (Item 1) **[Figure 184]**.

Figure 185



Install the retaining pins (Item 1) **[Figure 185]**.

NOTE: Always install ALL of the mounting pins and the retaining pins.

IMPORTANT

Always install all of the mounting pins and retainer pins. Failure to do so will cause structural damage.

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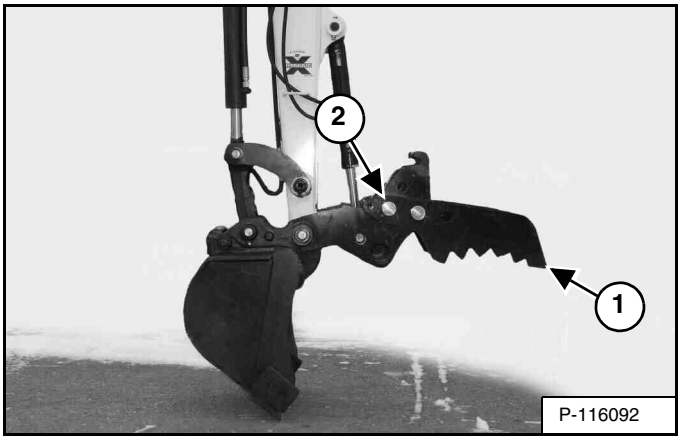
RENTWA

Installing And Removing The Pro Clamp System Tool (Cont'd)

Removal

Figure 186



Park the excavator on a flat and level surface. Position the bucket as shown in **[Figure 186]** and lower the boom until the bucket is fully on the ground.

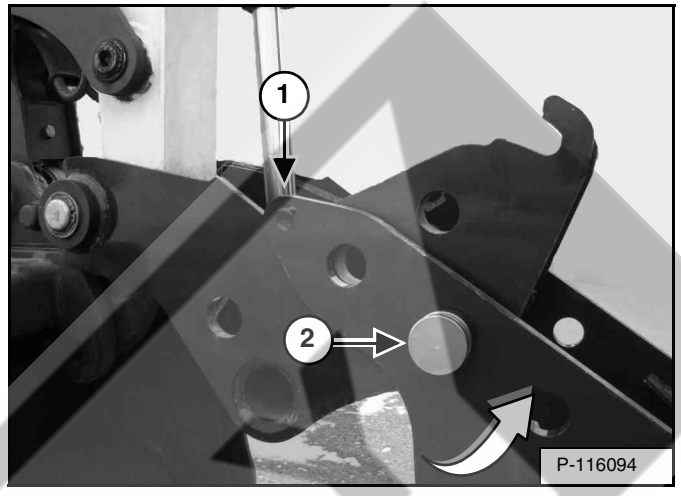
Stop the engine and exit the excavator.

Remove the retainer pins (Item 1) **[Figure 185]**.

NOTE: When repositioning or removing the pro clamp tool, remove the pins from positions 2 or 3 first. The pin in location 1 should always be the last pin removed or the first pin installed [Figure 180].

Hold the bottom of the clamp tool (Item 1) and remove the pin (Item 2) **[Figure 186]** from each side.

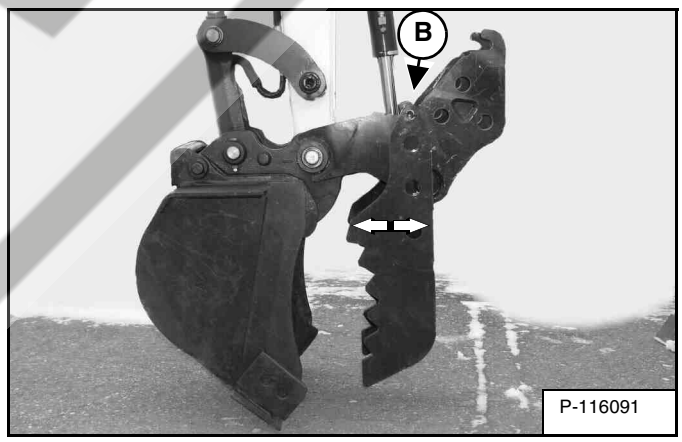
Figure 187



Rotate the clamp tool until the anchors (Item 1) **[Figure 187]** are contacting the indexing point.

Lift on the bottom of the clamp tool using the anchors as a fulcrum to take pressure off of the pins (Item 2) and remove pins (Item 2) **[Figure 187]** (both sides). Rotate the tool down until it hangs freely straight down.

Figure 188



Slide the clamp tool along the base assembly until the anchors on the clamp tool are positioned in index point B **[Figure 188]** on the base assembly.

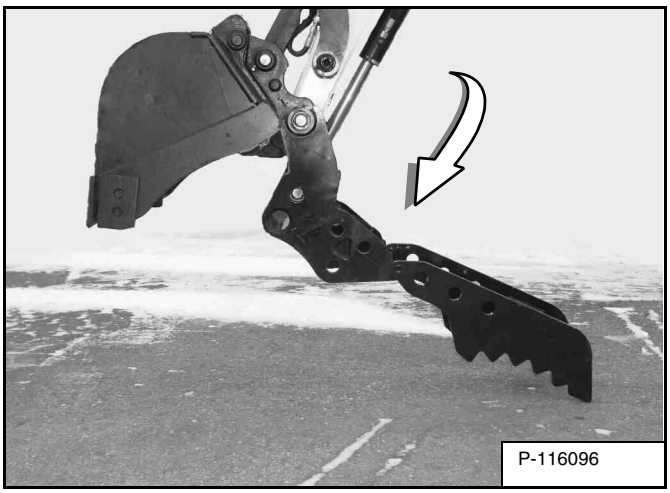
Enter the excavator and fasten the seat belt.

RENTWAY

Installing And Removing The Pro Clamp System Tool (Cont'd)

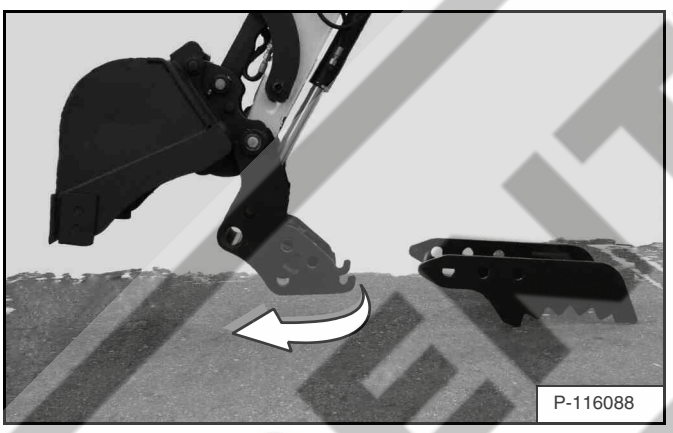
Removal (Cont'd)

Figure 189



Slightly raise the boom and retract the bucket cylinder fully. Lower the boom until the tip of the clamp tool is touching the ground. Extend the clamp cylinder and slightly lower the boom and rotate the clamp tool forward until the clamp tool is fully on the ground **[Figure 189]**.

Figure 190



Lower the boom and move the arm forward until the hooks of the clamp mount (Item 1) are disengaged from the clamp tool anchors (Item 2) **[Figure 190]**.

RENTWAY

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. Work slowly in areas of underground utilities.

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

Always check ground conditions before starting your work:

- Look 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

When operating on a public road or motorway, always follow local regulations. For example: A slow moving vehicle (SMV) sign, or direction signals may be required.

Run the engine at low idle speed to warm the engine and hydraulic system before operating the excavator.

IMPORTANT

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

I-2015-0284

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

Operating Near An Edge Or Water

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

Always move the excavator back at any indication the edge may be unstable.

Lowering The Work Equipment (Engine STOPPED)

The hydraulic control levers control the movement of the boom, arm, bucket and upperstructure slew functions.

The console must be in the locked down position, and the key switch in the ON position.

Use the control lever to lower the boom.

Figure 191

The joystick lock switch disengages the hydraulic control functions from the joysticks when the console are raised **[Figure 191]**.

NOTE: **If the engine stops, the boom / bucket (attachments) can be lowered to the ground using hydraulic pressure in the accumulator.**

The control console must be in the locked down position, and the key switch in the ON position.

Use the control lever to lower the boom.

Lower the control console to engage the hydraulic control functions of the joysticks **[Figure 191]**.

Object Handling With The Lifting Device

The excavator must be equipped with the optional lift eye (Item 1) **[Figure 192]**, the boom and arm load hold valves and the overload warning device option. See your Bobcat dealer for available Kits.

⚠ WARNING

AVOID INJURY OR DEATH

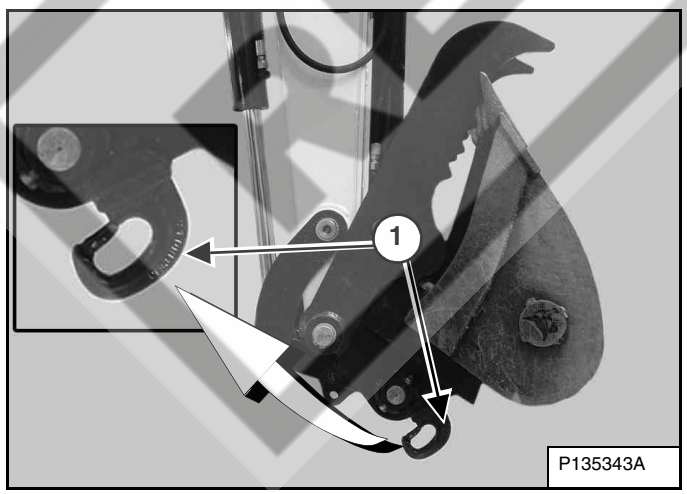
- **Do not exceed rated lift capacity.**
- **Excessive load can cause tipping or loss of control.**
- **Excessive load can cause failure of the lift eye and cause the load to drop.**

W-2991-0714

Do not exceed the machine's Rated Lift Capacity or the Rated Lift Load (RLL) of the lifting device (lift eye). (See Rated Lift Capacity For Standard Arm, Medium Counterweight, And Canopy on Page 222.), (See Rated Lift Capacity For Long Arm, Medium Counterweight, And Canopy on Page 223.), (See Rated Lift Capacity For Standard Arm, Heavy Counterweight, And Canopy on Page 224.), (See Rated Lift Capacity For Standard Arm, Medium Counterweight, And Cab on Page 225.), (See Rated Lift Capacity For Long Arm, Medium Counterweight, And Cab on Page 226.), (See Rated Lift Capacity For Standard Arm, Heavy Counterweight, And Cab on Page 227.), (See Rated Lift Capacity For Long Arm, Heavy Counterweight, And Canopy on Page 228.), (See Rated Lift Capacity For Long Arm, Heavy Counterweight, And Cab on Page 229.),

Make sure the secondary lifting system (chain) is of sufficient strength to lift the object.

Figure 192

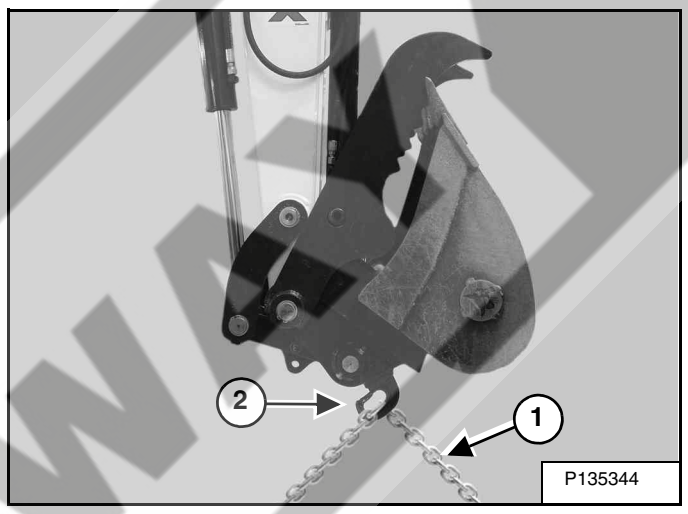


The maximum RLL is shown on the side of the lift eye (Item 1) **[Figure 192]**.

Extend the bucket cylinder completely and lower the boom to the ground. Stop the engine. Exit the excavator. (See STOPPING THE ENGINE AND LEAVING THE EXCAVATOR on Page 78.)

NOTE: Visually check the lift eye and the secondary lifting system (chain) for any damage. Replace any damaged components before lifting. See your Bobcat dealer for replacement parts.

Figure 193

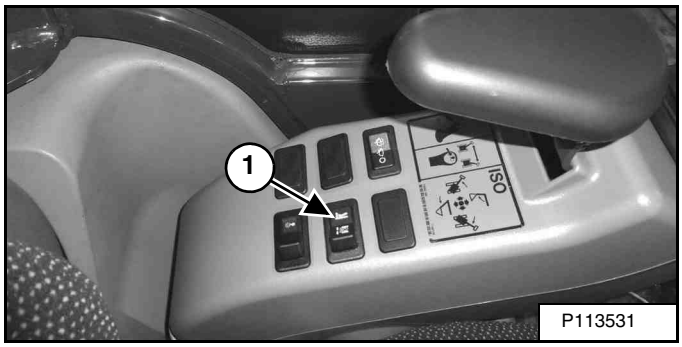


Install a lift chain (Item 1) (or other type of lifting device) through the lift eye (Item 2) **[Figure 193]** and connect to the object to be lifted.

NOTE: Always use chains or other types of lifting devices that are intended for this type of use and that are of adequate strength for the object being lifted.

Enter the excavator, fasten the seat belt, and start the engine. (See PRE-STARTING PROCEDURE on Page 71.)

Figure 194

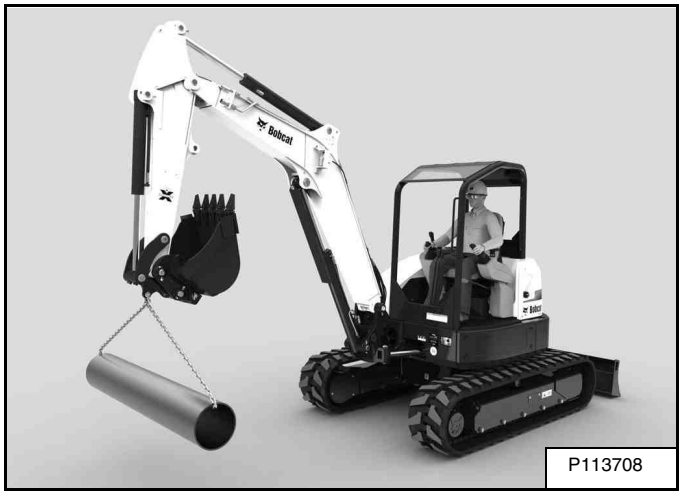


Press the switch (Item 1) **[Figure 194]** to the left to activate the overload warning device.

FREE WAY

Object Handling With The Lifting Device (Cont'd)

Figure 195



Make sure the load is evenly weighted and centred on the lifting chain (or other type of lifting device), and is secured to prevent the load from shifting **[Figure 195]**.

Operate the controls slowly and smoothly to avoid suddenly swinging the lifted load.

Lift and position the load. When the load is placed in a secured position and tension is removed from the lift chain, remove the chain from the load and from the lift eye.

RENTWAY

Lift Capacity

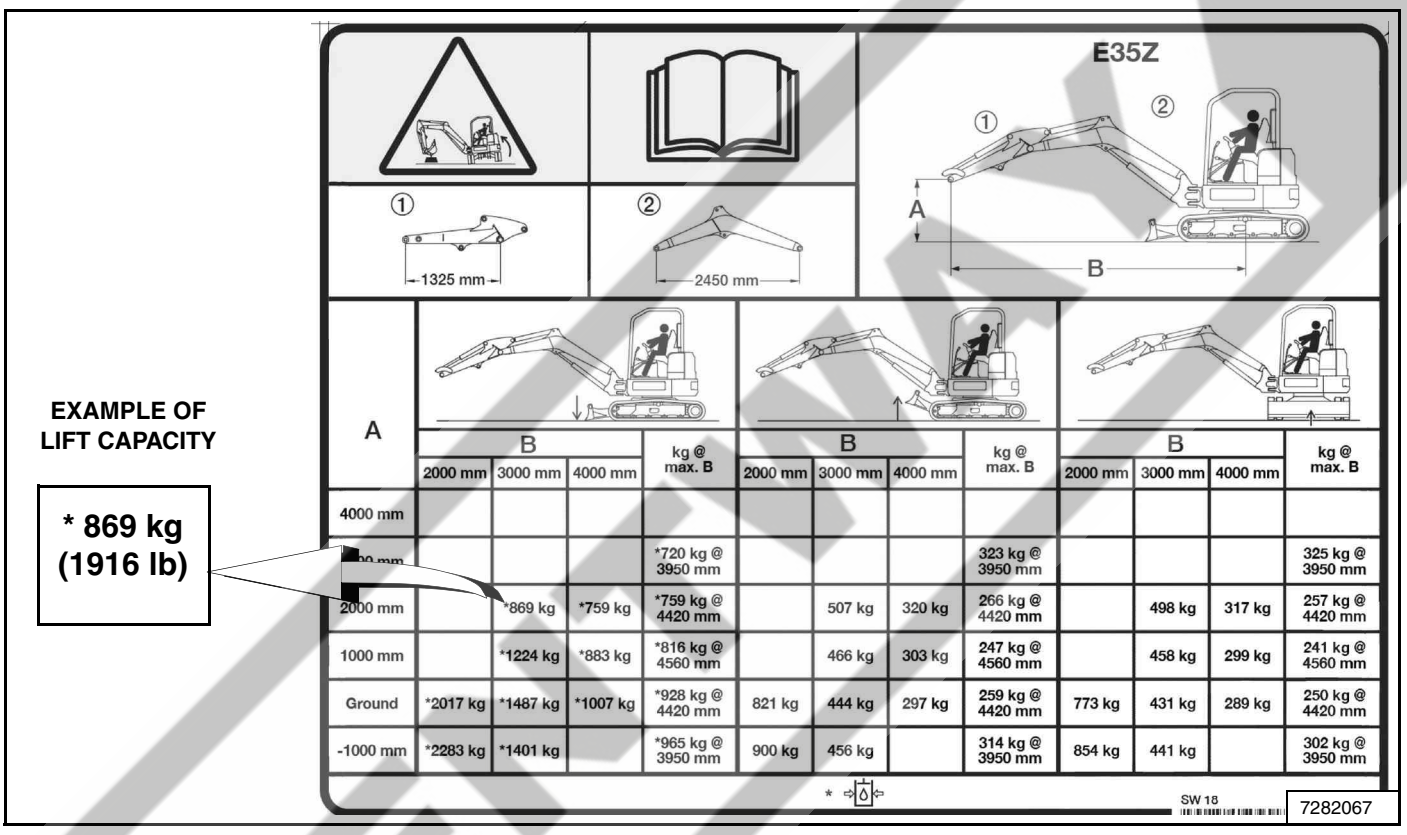
The lifting capacities were calculated with a standard configuration machine equipped with a Pin-On X-Change and no attachment. The weight of the attachment, the hydraulic clamp (if equipped), and a different interface (if equipped) must be subtracted from the lift capacity to obtain the actual lift capacity.

WARNING

AVOID INJURY OR DEATH
Do not exceed rated lift capacity. Excessive load can cause tipping or loss of control.

W-2374-0500

Figure 196



A	B 2000 mm	B 3000 mm	B 4000 mm	kg @ max. B	B 2000 mm	B 3000 mm	B 4000 mm	kg @ max. B	B 2000 mm	B 3000 mm	B 4000 mm	kg @ max. B
4000 mm												
[illegible]				*720 kg @ 3950 mm				323 kg @ 3950 mm				325 kg @ 3950 mm
2000 mm		*869 kg	*759 kg	*759 kg @ 4420 mm		507 kg	320 kg	266 kg @ 4420 mm		498 kg	317 kg	257 kg @ 4420 mm
1000 mm		*1224 kg	*883 kg	*816 kg @ 4560 mm		466 kg	303 kg	247 kg @ 4560 mm		458 kg	299 kg	241 kg @ 4560 mm
Ground	*2017 kg	*1487 kg	*1007 kg	*928 kg @ 4420 mm	821 kg	444 kg	297 kg	259 kg @ 4420 mm	773 kg	431 kg	289 kg	250 kg @ 4420 mm
-1000 mm	*2283 kg	*1401 kg		*965 kg @ 3950 mm	900 kg	456 kg		314 kg @ 3950 mm	854 kg	441 kg		302 kg @ 3950 mm

Detailed information about quick coupler and hydraulic clamp weights can be found in documentation including the serial number plate. The following lists examples of the optional quick coupler and hydraulic clamp weights:

- Pin-On X-Change = 27 kg (60 lb)
- Klac™ Quick Coupler = 24 kg (53 lb)
- German Style Coupler = 35 kg (77 lb)
- Mechanical Pin Grabber Quick Coupler = 37 kg (82 lb)
- Bobcat Hydraulic Coupler HPG2 = 35 kg (77 lb)
- Tilt Coupler (mechanical) = 83 kg (183 lb)
- Tilt Coupler (hydraulic) = 87 kg (192 lb)
- Hydraulic Clamp And Cylinder = 65 kg (143 lb)
- Hydraulic Pro-Clamp, Clamp Tool And Cylinder = 77 kg (170 lb)
- Optional Buckets and Attachments (See **NOTE** below)

NOTE: For bucket weights, see your Bobcat dealer. For attachment weights, see the attachment Operation & Maintenance Manual.

The following example will show how to calculate the lift capacity differences between the lift capacity charts with standard equipment and when using optional equipment.

Lift Capacity (Cont'd)

The following is an example for determining the lift capacity using the sample chart shown above **[Figure 196]**.

- Machine Position: Over Blade, Blade Down
- Lift Radius: 3000 mm (118 in)
- Lift Point Height: 2000 mm (78 in)
- Hydraulic Clamp and Cylinder
- Standard Bucket

1. Obtain Lift Capacity from Chart: 869 kg (1916 lb)

2. Obtain the weights of any optional equipment that reduces the lift capacity of the machine (coupling interface, hydraulic clamp, attachment)

Optional Equipment Weights: Hydraulic Clamp and Cylinder (65 kg (143 lb)) and Standard Bucket (42 kg (92 lb)).

3. Calculate the actual lift capacity by subtracting the weight of any optional equipment from the lift capacity of the standard configuration:

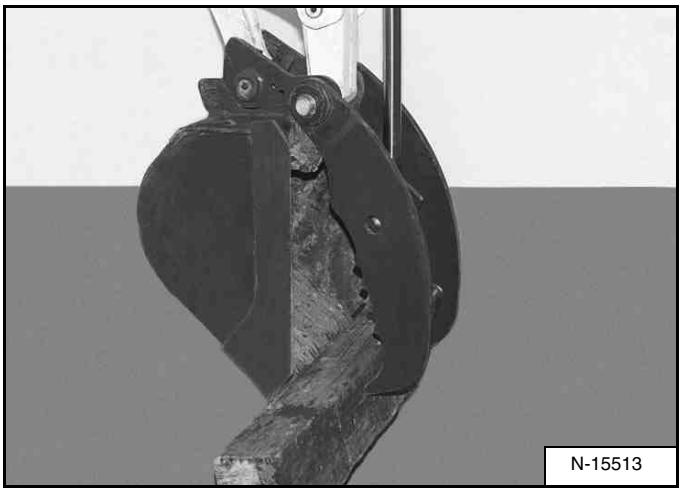
869 kg (1916 lb) (capacity of standard configuration) - 65 kg (143 lb) (hydraulic clamp and cylinder) - 42 kg (92 lb) (standard bucket) = 762 kg (1681 lb) (actual lift capacity)

** The lift capacity charts (decals) are based off ISO 10567: 2007. The lift capacities are defined as the lower value of 75% of the tipping load or 87% of the hydraulic lift capacity.*

RENTWAY

Using The Clamp

Figure 197



The optional lifting clamp attachment (if equipped) gives the excavator a wider range of use and mobility for debris removal **[Figure 197]**.

The lifting clamp cylinder must be fully retracted when the machine is being used for excavating.

The lift capacities are reduced by 45 kg (99 lb) if the excavator is equipped with the optional lifting clamp.

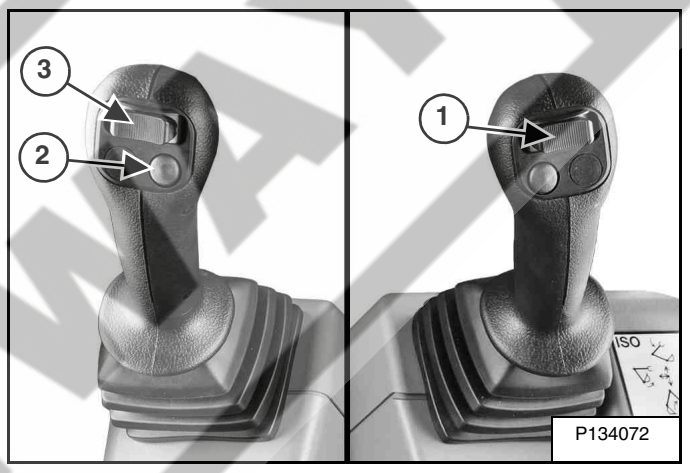
NOTE: Use care when operating the bucket and clamp functions on machines equipped with an X-Change and without a bucket or attachment installed. Cylinder damage can occur due to contact between the X-Change and the clamp when both cylinders are fully extended.

Using Primary Auxiliary Hydraulics To Activate Clamp

1. Engage the auxiliary hydraulics. (See Activating Primary Auxiliary Hydraulics With Standard Instrument Panel on Page 51.) (See Activating Primary Auxiliary Hydraulics With Deluxe Instrument Panel (Software Version 88.02 Or Below) on Page 52.) (See Activating Primary Auxiliary Hydraulics With Deluxe Instrument Panel (Software Version 88.03 Or Above) on Page 52.)

2. Set auxiliary flow rate to Mode 2 (standard instrument panel) or Medium Flow (deluxe instrument panel with old software) or 65 – 75% (deluxe instrument panel with new software).

Figure 198



3. Move the switch (Item 1) **[Figure 198]** on the right control lever to the right to open the clamp. Move the switch to the left to close the clamp.

Using Secondary Auxiliary Hydraulics To Activate Clamp

1. Engage the secondary auxiliary hydraulics. (See Operating Attachments With Secondary Auxiliary Hydraulics (Software Version 88.02 Or Below) on Page 56.) (See Operating Attachments With Primary, Secondary, Or Fourth Auxiliary Hydraulics (Software Version 88.03 Or Above) on Page 58.)

2. Press the button on the left joystick (Item 2) **[Figure 198]** to toggle to the secondary auxiliary hydraulics.

3. Move the switch (Item 3) **[Figure 198]** on the left joystick to the left open the clamp. Move the switch to the right to close the clamp.

RENTWAY

Using The Pro Clamp System

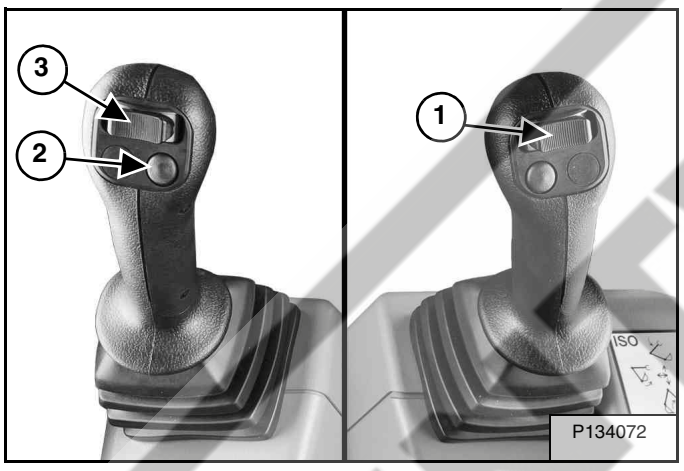
The lift capacities of the excavator will be reduced by 77 kg (170 lb) with the Pro Clamp installed (if equipped). (See Lift Capacity on Page 112.)

Using Primary Auxiliary Hydraulics To Activate Clamp

1. Engage the auxiliary hydraulics. (See Activating Primary Auxiliary Hydraulics With Standard Instrument Panel on Page 51.) (See Activating Primary Auxiliary Hydraulics With Deluxe Instrument Panel (Software Version 88.02 Or Below) on Page 52.) (See Activating Primary Auxiliary Hydraulics With Deluxe Instrument Panel (Software Version 88.03 Or Above) on Page 52.)

2. Set auxiliary flow rate to Mode 2 (standard instrument panel) or Medium Flow (deluxe instrument panel with old software) or 65 – 75% (deluxe instrument panel with new software).

Figure 199



3. Move the switch (Item 1) **[Figure 198]** on the right control lever to the right to open the clamp. Move the switch to the left to close the clamp.

Using Secondary Auxiliary Hydraulics To Activate Clamp

1. Engage the secondary auxiliary hydraulics. (See Operating Attachments With Secondary Auxiliary Hydraulics (Software Version 88.02 Or Below) on Page 56.) (See Operating Attachments With Primary, Secondary, Or Fourth Auxiliary Hydraulics (Software Version 88.03 Or Above) on Page 58.)

2. Press the button on the left joystick (Item 2) **[Figure 198]** to toggle to the secondary auxiliary hydraulics.

3. Move the switch (Item 3) **[Figure 198]** on the left joystick to the left open the clamp. Move the switch to the right to close the clamp.

For installing and removing the pro clamp tools, (See Installing And Removing The Pro Clamp System Tool on Page 101.)

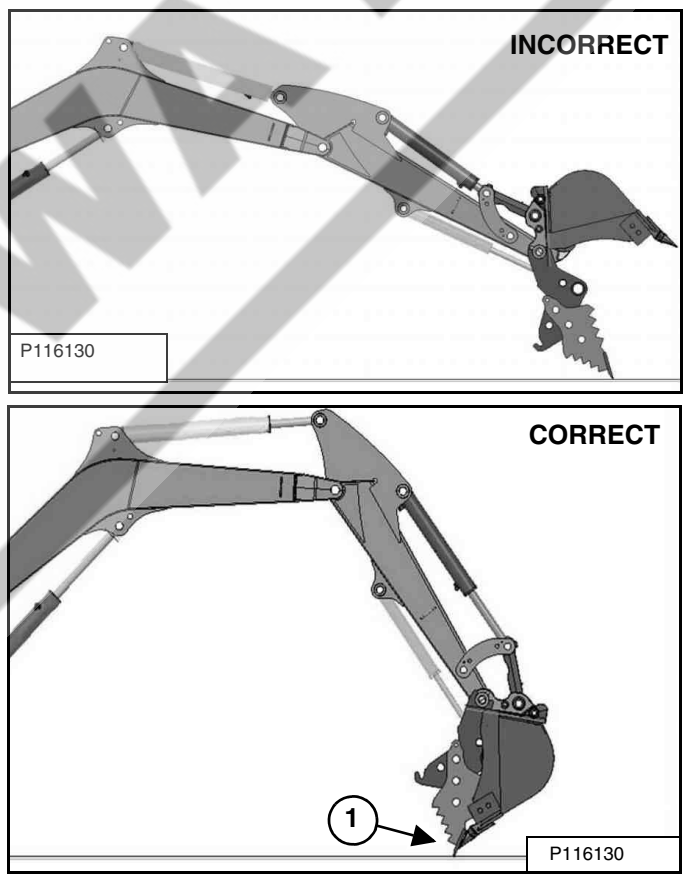
Operating With The Grading Tool

IMPORTANT

When using the Pro Clamp System with the Grading Tool, the Grading Tool must not be used with the cylinder fully extended and unsupported. It is necessary to support the Grading Tool with the bucket to avoid damaging the clamp cylinder.

I-2381-1015

Figure 200



When using the Pro Clamp with the Grading Tool, the Grading Tool must not be used with the cylinder fully extended and unsupported. It is necessary to support the Grading Tool with the bucket to avoid damaging the clamp cylinder. Position the bucket to the clamp grading tool as shown **[Figure 200]**.

NOTE: The clamp grading tool plate (Item 1) [Figure 200] must be in contact with the bucket or bucket teeth when using the tool for grading.

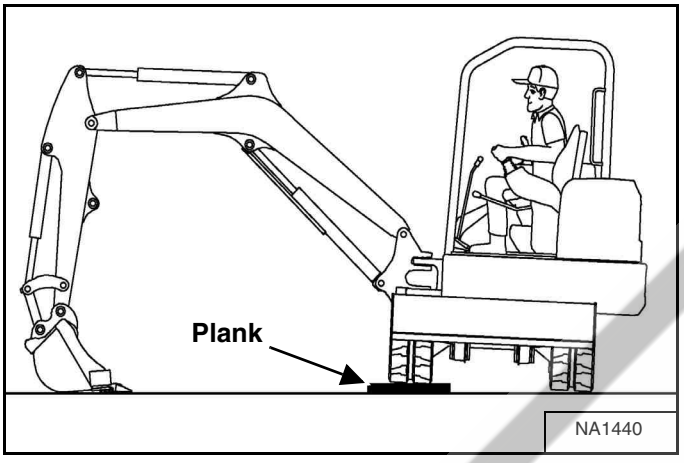
Driving The Excavator

When operating on uneven ground, operate as slow as possible and avoid sudden changes in direction.

Avoid travelling over objects such as rocks, trees, stumps, etc.

When working on wet or soft ground, put planks on the ground to provide a solid base to travel on and prevent the excavator from getting stuck.

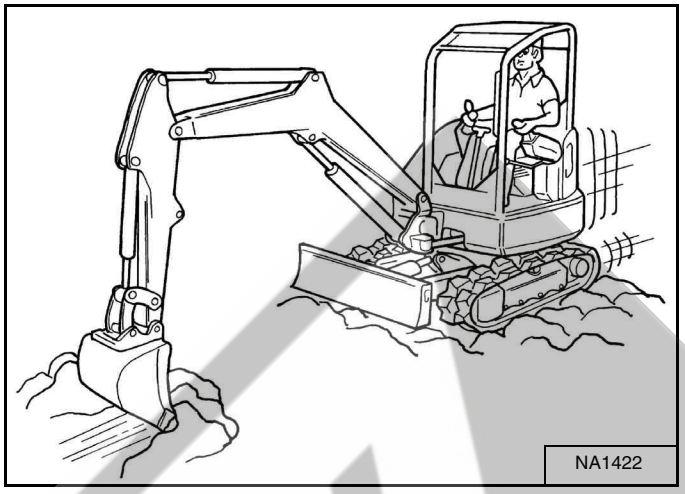
Figure 201



If one or both tracks have become stuck in soft or wet ground, raise one track at a time by turning the upperstructure and pushing the bucket against the ground **[Figure 201]**.

Put planks under the tracks and drive the excavator to dry ground.

Figure 202



The bucket may also be used to pull the excavator. Raise the blade, extend the arm and lower the boom. Operate the boom and arm in a digging manner **[Figure 202]**.

RENTWAY

Operating On Slopes

WARNING

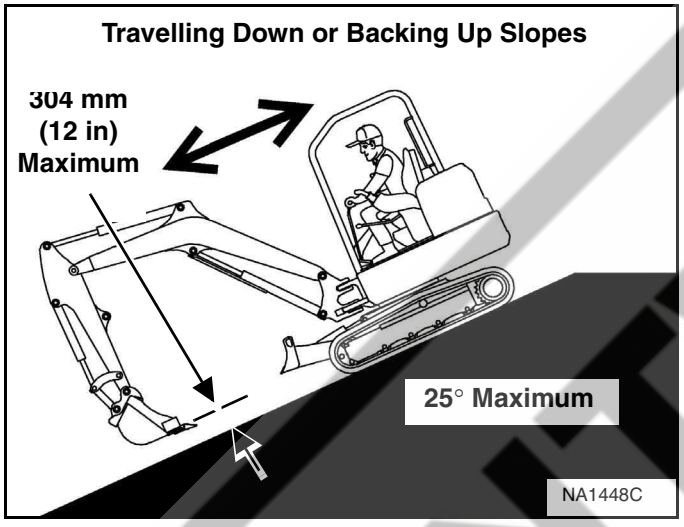
AVOID INJURY OR DEATH

- **Do not travel across or up slopes that are over 15 degrees.**
- **Do not travel down or back up slopes that exceed 25 degrees.**
- **Look in the direction of travel.**

W-2497-0304

When going down a slope, control the speed with the steering levers and the speed control lever.

Figure 203



When going down grades that exceed 15 degrees, put the machine in the position shown, and run the engine slowly **[Figure 203]**.

Operate as slow as possible and avoid sudden changes in lever direction.

Avoid travelling over objects such as rocks, trees, stumps, etc.

Stop the machine before moving the upper equipment controls. Never allow the blade to strike a solid object. Damage to the blade or hydraulic cylinder can result.

WARNING

AVOID INJURY OR DEATH

- **Avoid steep areas or banks that could break away.**
- **Keep boom centered and attachments as low as possible when traveling on slopes or in rough conditions. Look in the direction of travel.**
- **Always fasten seat belt.**

W-2498-0304

Figure 204

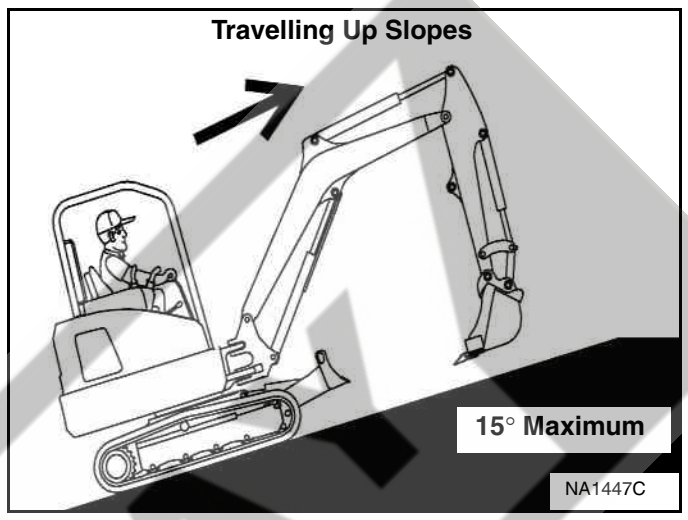
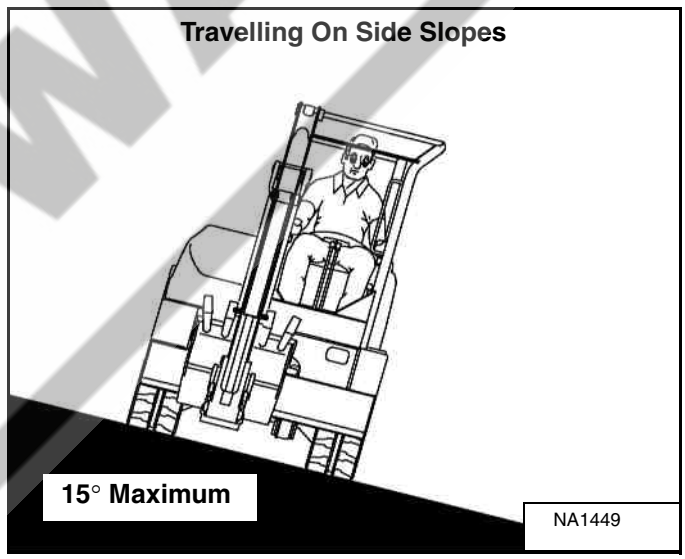


Figure 205

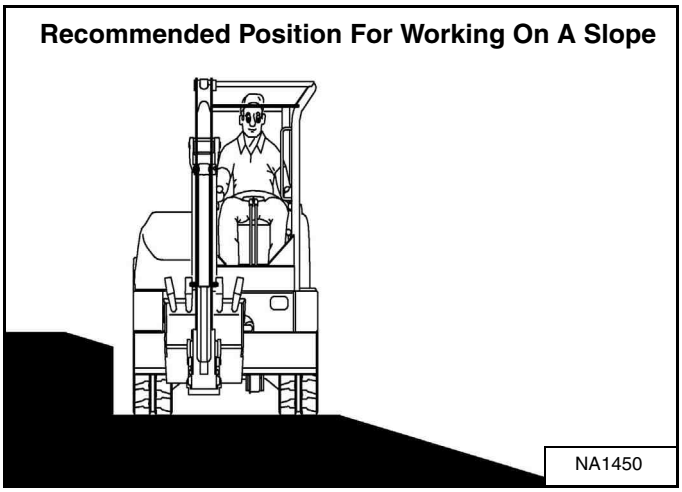


When travelling up slopes or on side slopes that are 15 degrees or less, position the machine as shown and run the engine slow **[Figure 204]** and **[Figure 205]**.

RENTWAY

Operating On Slopes (Cont'd)

Figure 206



When operating on a slope, level the work area before beginning **[Figure 206]**.

If this is not possible, the following procedures should be used:

Do not work on slopes which are over 15 degrees.

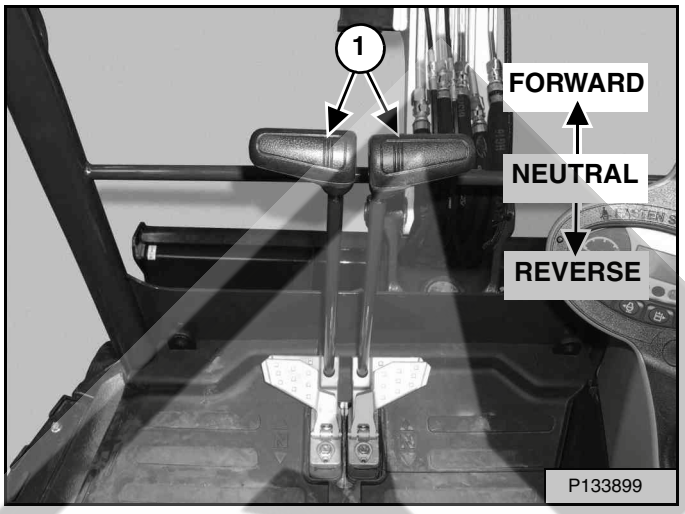
Use a slow work cycle.

Avoid working with the tracks across the slope. This will reduce stability and increase the tendency for the machine to slide. Position the excavator with the blade downhill and lowered.

Avoid swinging or extending the bucket more than necessary in a down hill direction. When you must swing the bucket downhill, keep the arm low and skid the bucket downhill.

When working with the bucket on the uphill side, keep the bucket as close to the ground as possible. Dump the spoil far enough away from the trench or hole to prevent the possibility of a cave in.

Figure 207



To brake the machine when going down a slope, move the steering levers (Item 1) **[Figure 207]** to the NEUTRAL position. This will engage the hydrostatic braking.

When the engine stops on a slope, move the steering levers to the NEUTRAL position. Lower the boom / bucket to the ground.

NOTE: If the engine stops, the boom / bucket (attachments) can be lowered to the ground using hydraulic pressure which is stored in the accumulator.

The console must be in the locked down position, and the key switch in the ON position.

Use the control lever to lower the boom.

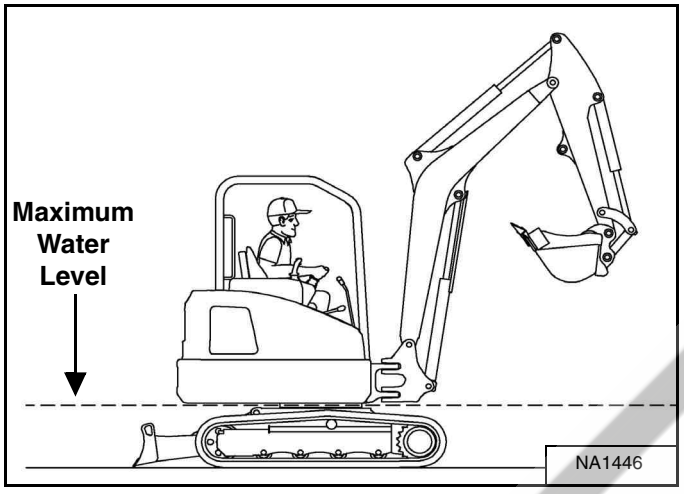
Start the engine and resume operation.

RENTWAY

Operating In Water

Mud and water should be removed from the machine before parking. In freezing temperatures, park the machine on boards or concrete to prevent the track or undercarriage from freezing to the ground and preventing machine movement.

Figure 208



Do not operate or immerse the excavator in water higher than the bottom of the swing bearing **[Figure 208]**.

Grease the excavator when it has been operated or immersed in water for a period of time. Greasing forces the water out of the lubrication areas.

Water must be removed from the cylinder rods. If water freezes to the cylinder rod, the cylinder seals can be damaged when the rod is retracted.

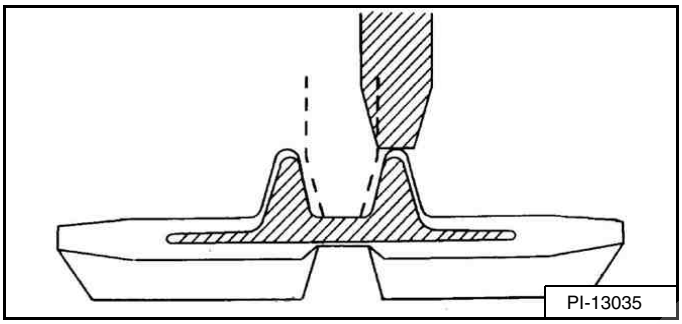
RENTWAY

Avoiding Track Damage

Mud and water should be removed from the machine before parking. In freezing temperatures, park the machine on boards or concrete to prevent the track or undercarriage from freezing to the ground and preventing machine movement.

Some Cause Of Track Damage:

Figure 209

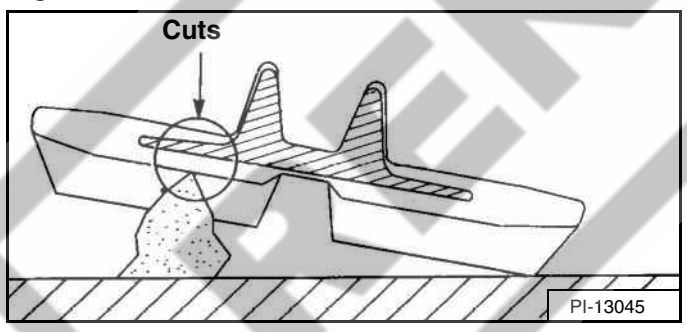


Incorrect track tension: When the rubber track is detracting, the idler or sprocket rides on the projections of the embedded metal **[Figure 209]** causing the embedded metal to be exposed to corrosion. (See TRACK TENSION on Page 190.)

If rubber track is clogged with stones or foreign objects, these can get wedged between the sprocket / rollers and cause detracting and track stress.

When moisture invades through cuts on the track, the embedded steel cords will corrode. The deterioration of the design strength may lead to the breaking of the steel cords.

Figure 210

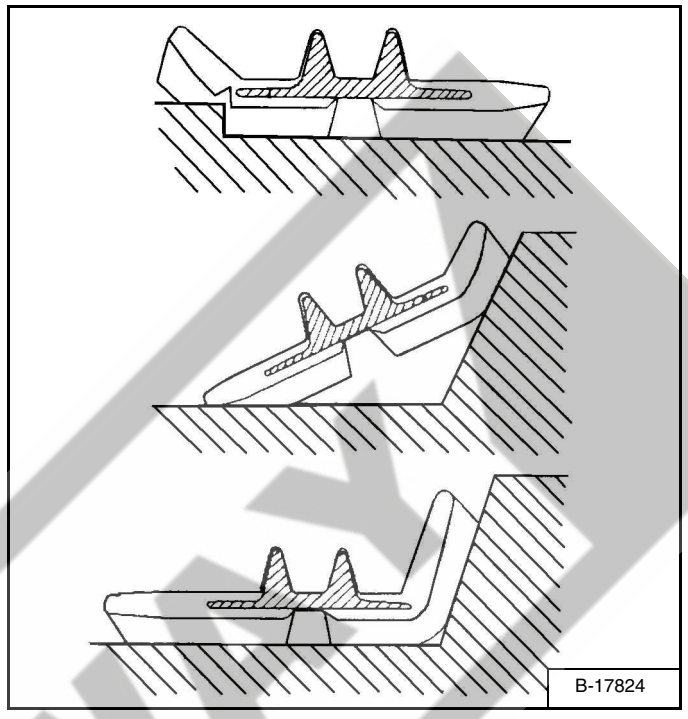


When rubber tracks drive over projections or sharp objects in the field, the concentrated forces applied cause cuts on the lug side rubber surface **[Figure 210]**. In case of making turns on projections, the lug side rubber surface will have an even higher chance to be cut. If the cuts run through the embedded steel cords, it might result in the steel cords' breakage due to their corrosion.

Avoid quick turns on bumpy and rocky fields.

Driving over sharp objects should be avoided. If this is impossible, do not make turns while driving over sharp objects.

Figure 211



When rubber tracks drive over sharp projections, intensive stress is applied to the lug side rubber surface, especially at the edges of embedded metals, causing cracks and cuts in the area around the embedded metals **[Figure 211]**.

Avoid extensive stress applied to the lug root where metals are embedded. Operators should try to avoid driving over stumps and ridges.

DEPTH CHECK

Setup / Calibration

NOTE: The machine shown in the photos may be different than your machine and this manual but the procedure is the same for all models.

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

NOTE: When the Depth Check kit was initially installed, the machine should have had the setup / calibration procedure performed. But with usage of any attachment, components and the cutting surfaces wear. The accuracy of the Depth Check system is affected by the wear of these components. If loss of accuracy is noticed, re-calibrate the attachment to reset the dimensions needed for the Depth Check system to operate correctly.

Move the machine to an open area where the boom and arm can be repositioned and there is fresh air as the engine will need to be operating during this procedure.

Park the machine on a flat level surface.

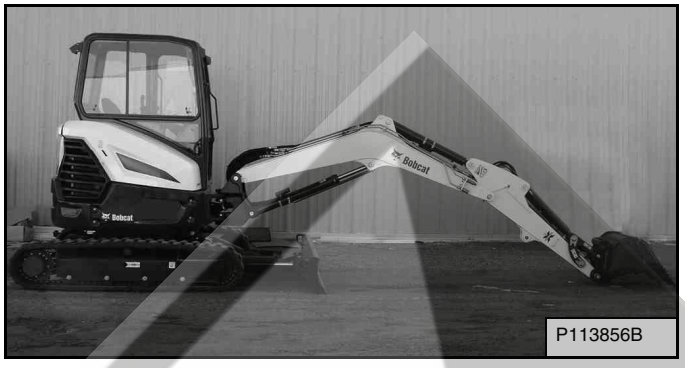
The calibration procedure is a two person operation. One person must remain in the cab to enter data into the deluxe display panel while a second person takes measurements from outside the machine. Make sure the second person is away from the machine when moving any of the work group components (boom, arm, bucket, etc.).

WARNING

Keep all bystanders 6 m (20 ft) away from equipment when operating.

W-2268-0910

Figure 212

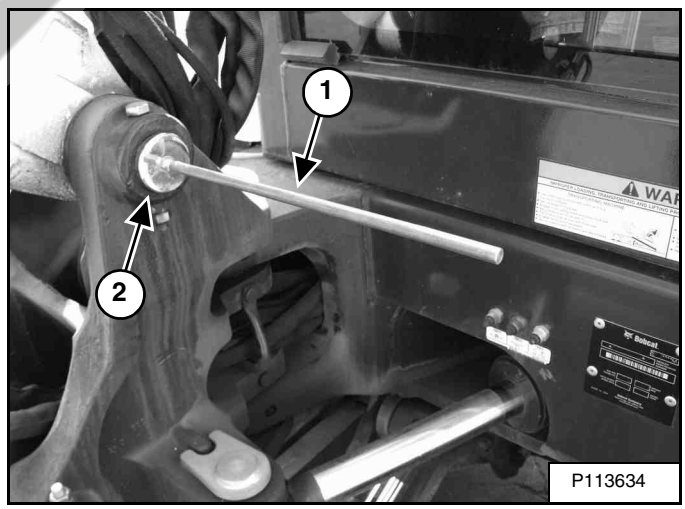


Position the excavator **[Figure 212]** as shown so the second person can install the magnetic tools, the plumb bob and do measurements for calibrating the system.

Two magnetic mounted tools are included with the kit for positioning the boom, arm and bucket for calibration. These magnetic tools need to be kept with the machine as the Depth Check system should be re-calibrated on a yearly bases or sooner if slight changes in accuracy are noticed.

The Depth Check system sensors are designed for high angle stability and temperature ranges. However, with the use of any mechanical components (boom, arm, bucket, etc.), there is wear on the components with normal usage and this will affect the accuracy of the Depth Check system over time. Also, if any structural changes are made, components replaced or a new attachment is installed on the excavator, will require the setup / calibration procedure to be performed.

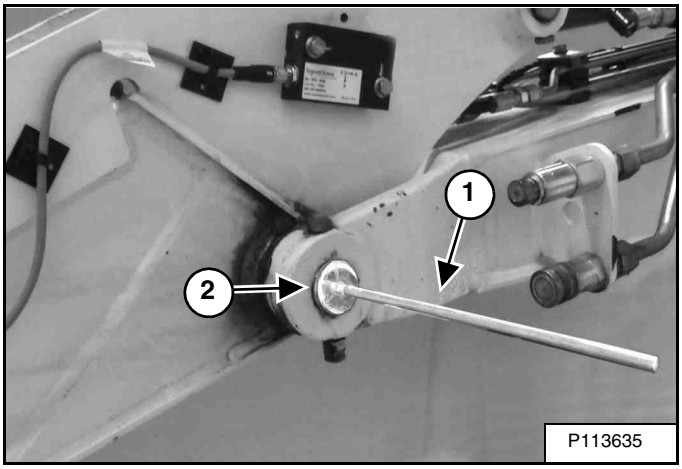
Figure 213



Install one of the magnetic tools (Item 1) on the boom pivot pin (Item 2) **[Figure 213]**. centre the magnetic tool as close as possible to the centre of the boom pin.

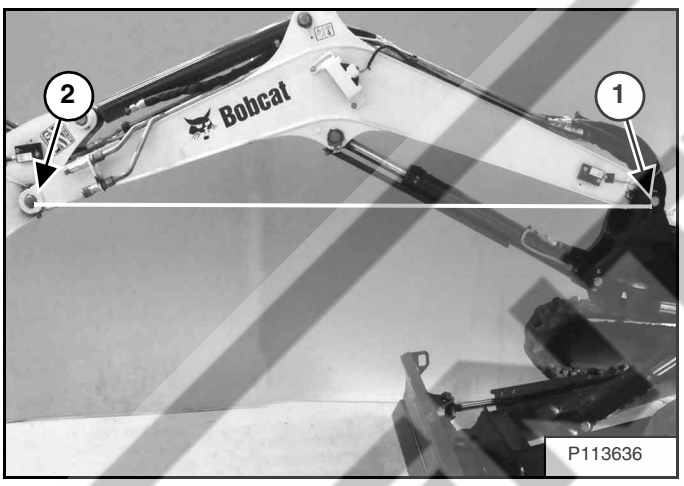
Setup / Calibration (Cont'd)

Figure 214



Install the second magnetic tool (Item 1) on the arm pivot pin (Item 2) **[Figure 214]**. centre the magnetic tool as close as possible to the centre of the arm pin.

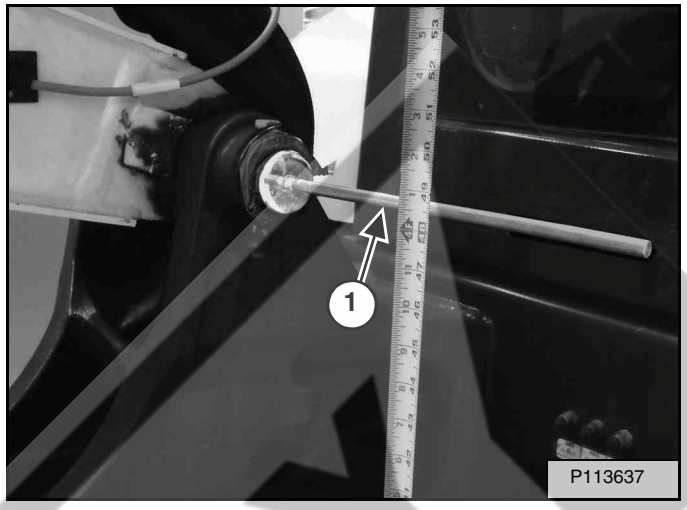
Figure 215



Position the excavator with the bucket fully rolled out and the arm fully extended. Position the work group so the distance from the ground to the two magnetic sensors (Item 1 and 2) **[Figure 215]** is identical.

NOTE: It may be necessary on some machines to lower the blade to raise the front of the excavator up slightly to position the boom pivot pin so that the boom and arm pivot points will be parallel to the ground when calibrating.

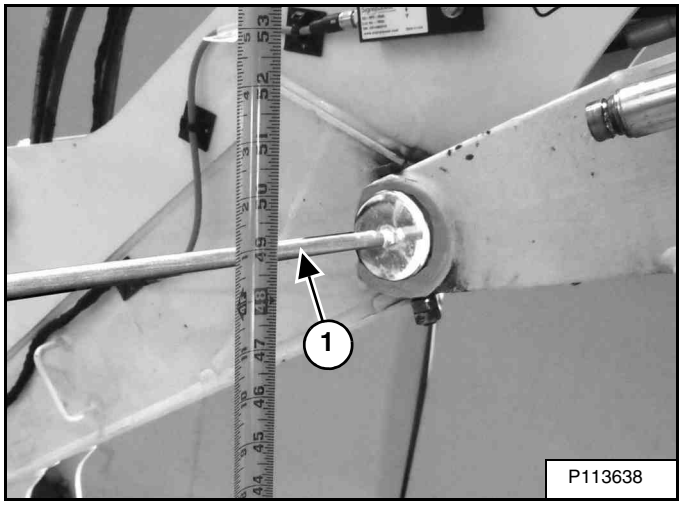
Figure 216



Measure the distance from the centre of the boom magnetic tool (Item 1) **[Figure 216]** to the ground. Measure as close to the boom as possible without interference from components between the boom and the ground. The closer to the boom the measurement is taken, the more accurate the measurement should be. (A laser level can also be used for locating the centerlines of the magnetic tools as this will eliminate an possible variation in the measurements to the ground.)

Setup / Calibration (Cont'd)

Figure 217

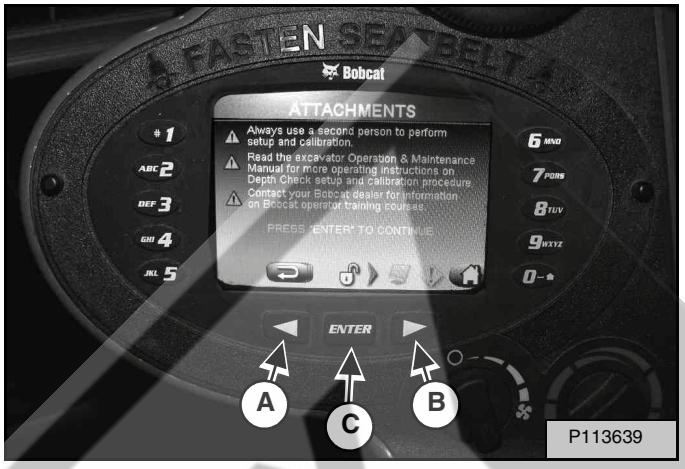


Measure the distance from the centre of the arm magnetic tool (Item 1) **[Figure 217]** to the ground and make sure both measurements are the same. Adjust the boom up or down as needed and remeasure until both dimensions are the same between **[Figure 216]** and **[Figure 217]**.

Once the dimensions are identical, the second person in the cab will need to enter the setup / calibration information into the dash panel. *(The accuracy of these dimensions affect the accuracy of the Depth Check.)*

NOTE: Make sure there is no cylinder drift that could affect the calibration accuracy. The second person needs to enter the information into the display panel in a timely manner.

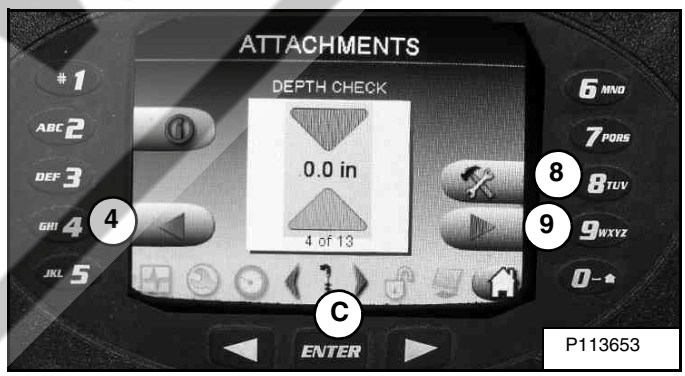
Figure 218



Scroll through the dash panel by pressing the left arrow (Item A) or the right arrow (Item B) until the ATTACHMENTS screen is displayed. Press the ENTER button (Item C) **[Figure 218]**

NOTE: If the Depth Check settings have been locked, enter the owner password to access the setup / calibration procedure.

Figure 219

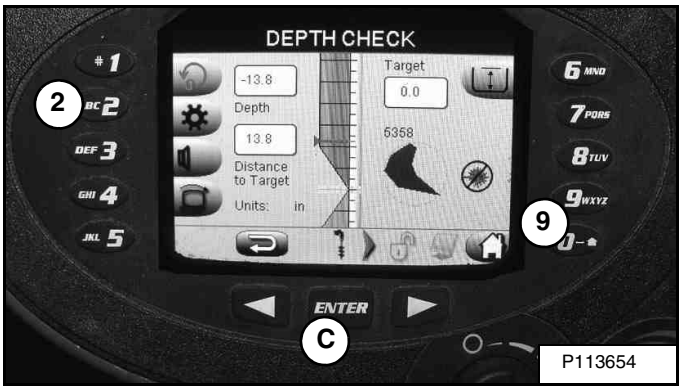


On the ATTACHMENTS screen, use the left arrow button (Item 4) or the right arrow button (Item 9) and scroll to the Attachment Depth Check screen shown here. Press the ENTER button (Item C) or button (Item 8) **[Figure 219]** to access the Depth Check SETUP screen.

RENTWAY

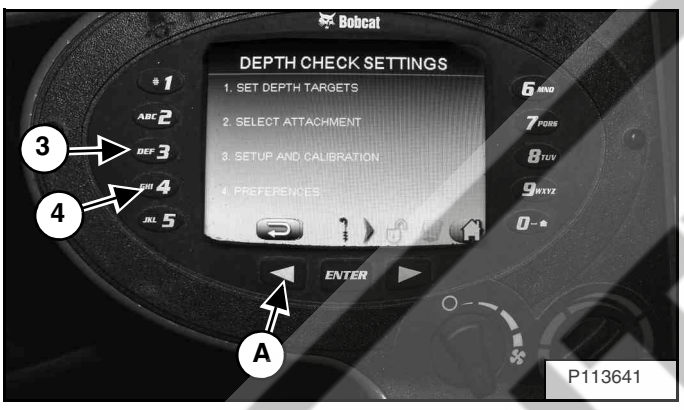
Setup / Calibration (Cont'd)

Figure 220



One of three different screens can appear. Which ever screen appears, press button (Item 2) **[Figure 220]** to access the Depth Check SETUP screen.

Figure 221

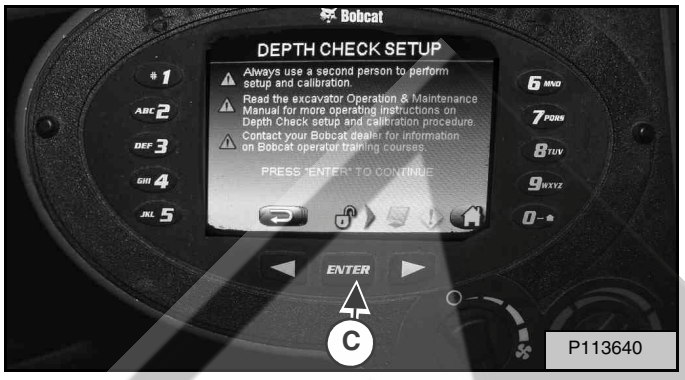


NOTE: The units of measure can be set in either millimeters or inches. Press button (Item 4) to enter the Preferences screen and select meters, millimeters, feet, or inches, then press the arrow button (Item A) [Figure 221] to go back to the above screen.

NOTE: If the Depth Check settings have been locked, enter the owner password to access the setup / calibration procedure.

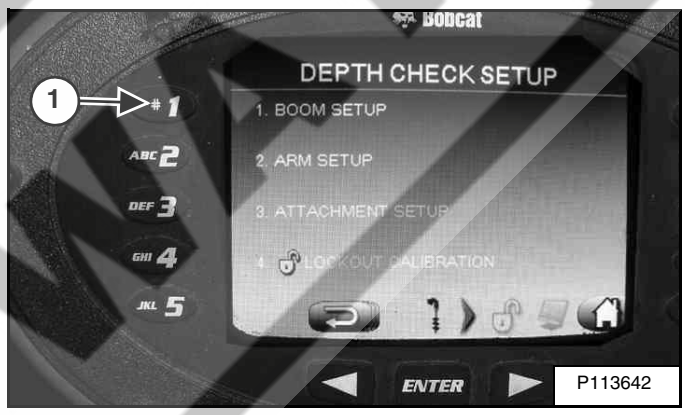
Press the button (Item 3) **[Figure 221]** for setup / calibration mode.

Figure 222



Read the message on the screen and press the ENTER button (Item C) **[Figure 222]** to continue.

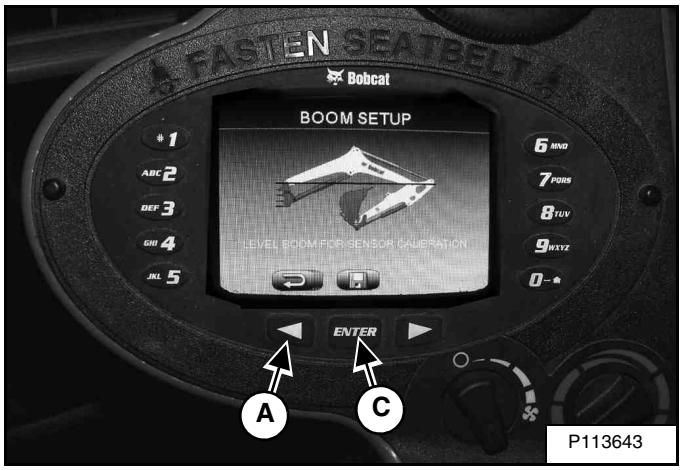
Figure 223



Press Boom Setup (Item 1) **[Figure 223]**.

Setup / Calibration (Cont'd)

Figure 224

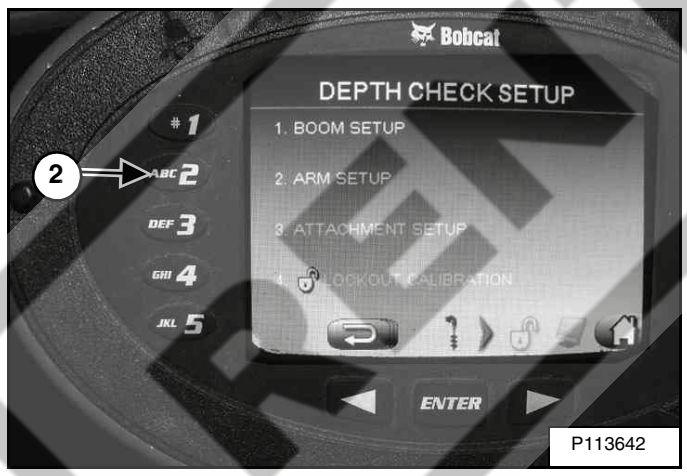


With the boom leveled **[Figure 216]** and **[Figure 217]**, press the ENTER button (Item C) **[Figure 224]** to store this information into the setup / calibration settings.

The next setup / calibration step will be for Arm Setup. This will require a plumb bob to make sure the arm is in the correct vertical position.

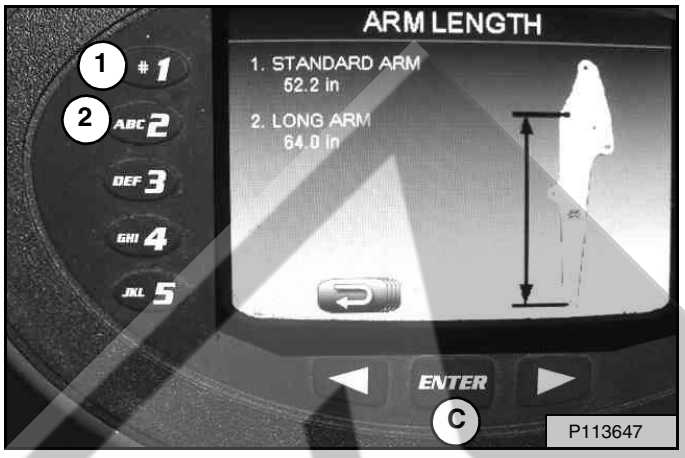
NOTE: If a plumb bob is not available, fishing line or a string with a heavy nut or two tied on one end of the string can be used in place of a plumb bob.

Figure 225



Have the second person in the cab and press the Arm Setup (Item 2) **[Figure 225]**.

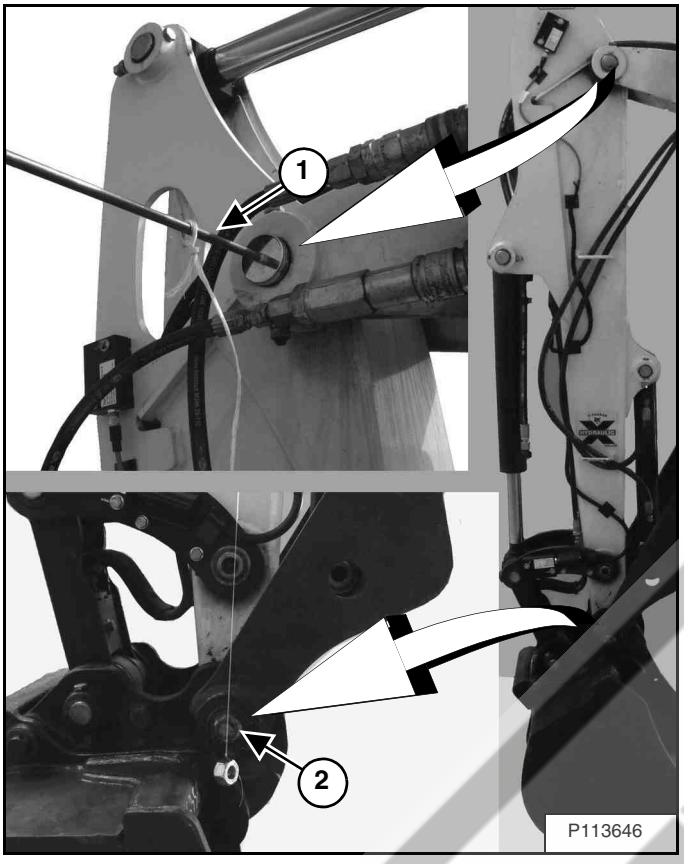
Figure 226



The system needs to know if the machine is equipped with a standard arm or the long arm option. The excavator ECU knows the machine model so the dimensions for the two arms is shown on the screen. For the Standard Arm, press (Item 1), for Long Arm, press (Item 2). Press the ENTER button (Item C) **[Figure 226]** to store this information into the setup / calibration settings.

Setup / Calibration (Cont'd)

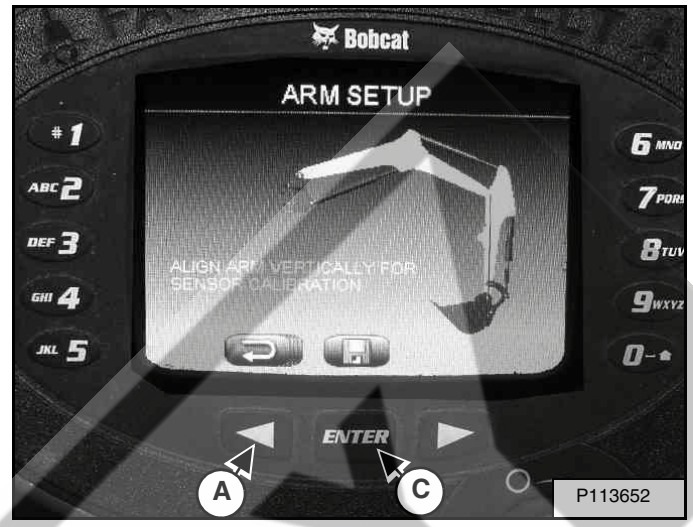
Figure 227



Place the plumb bob (Item 1) **[Figure 227]** on the magnetic tool that is installed on the arm pin. Raise the boom and move the arm until the arm is vertical.

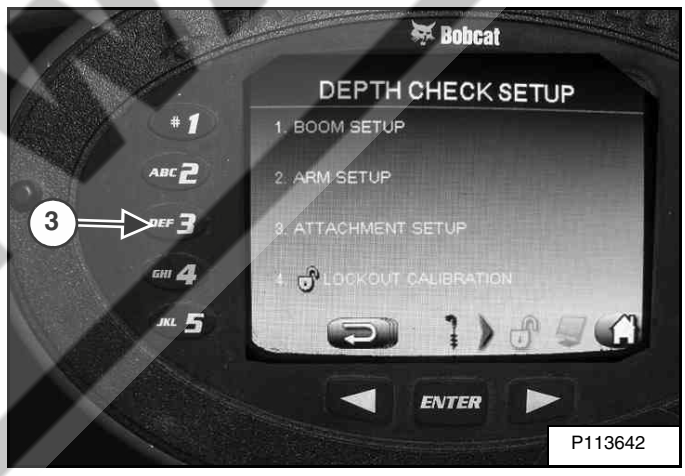
Move the arm until the plumb bob line is centred on the bucket pin (Item 2) **[Figure 227]**. *(The accuracy of the arm being vertical affects the accuracy of the Depth Check.)*

Figure 228



With the arm vertical **[Figure 227]**, press the ENTER button (Item C) **[Figure 228]** to store this information into the setup / calibration settings.

Figure 229

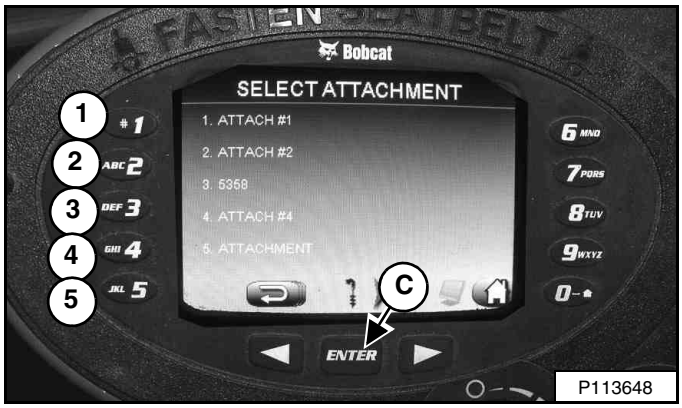


Press the Attachment Setup button (Item 3) **[Figure 229]**.

RETIRED

Setup / Calibration (Cont'd)

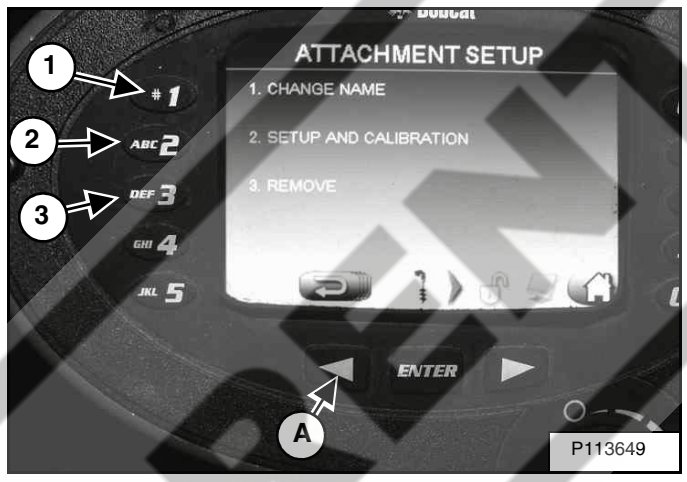
Figure 230



Select one of the attachments (Items 1 - 5) **[Figure 230]** from the list.

NOTE: Up to five different attachments can be named, setup / calibrated and stored or removed to make room for a new attachment. When switching between attachments, just select the desired attachment and as long as it was correctly setup, the Depth Check system will have the information needed for that attachment.

Figure 231



On the ATTACHMENT SETUP screen, you can select Change Name (Item 1), Setup And Calibration (Item 2), or Remove (Item 3) **[Figure 231]** the attachment from the saved list.

Select Change Name (Item 1) **[Figure 231]** to open the attachment name screen.

Name Examples: 24" bucket, 30" bucket, Auger, etc.

Figure 232

Use the keypads (Items 1 through 0) and enter a name or number for the attachment being setup. Press the ENTER button (Item C) **[Figure 232]** to save the name. (To add the name, press the keypad multiple times until the correct letter or number appears on the screen for the attachment name.)

If setting up additional attachments, select (Items 2 through Item 5) **[Figure 230]** and add the additional attachment names.

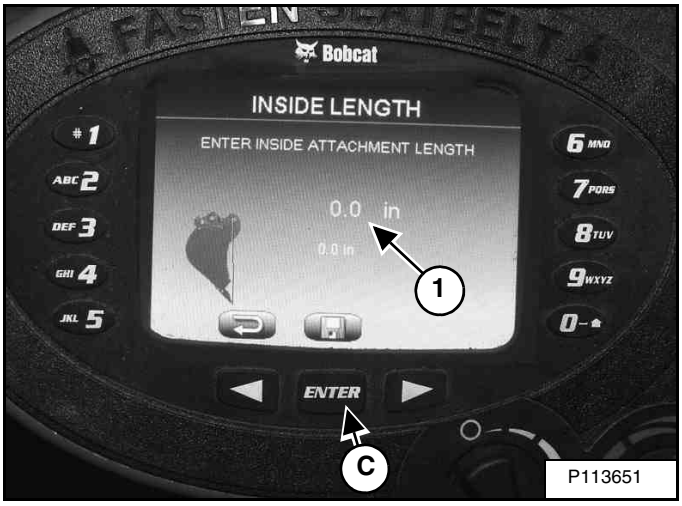
If setting up and calibrating multiple attachments at the same time, add all the attachment names into the system before doing the measurements. It will be more convenient when it comes time to add the dimensions.

Press the arrow button (Item A) **[Figure 231]** and go back to the Attachment Setup screen.

Press the Setup And Calibration button (Item 2) **[Figure 231]**.

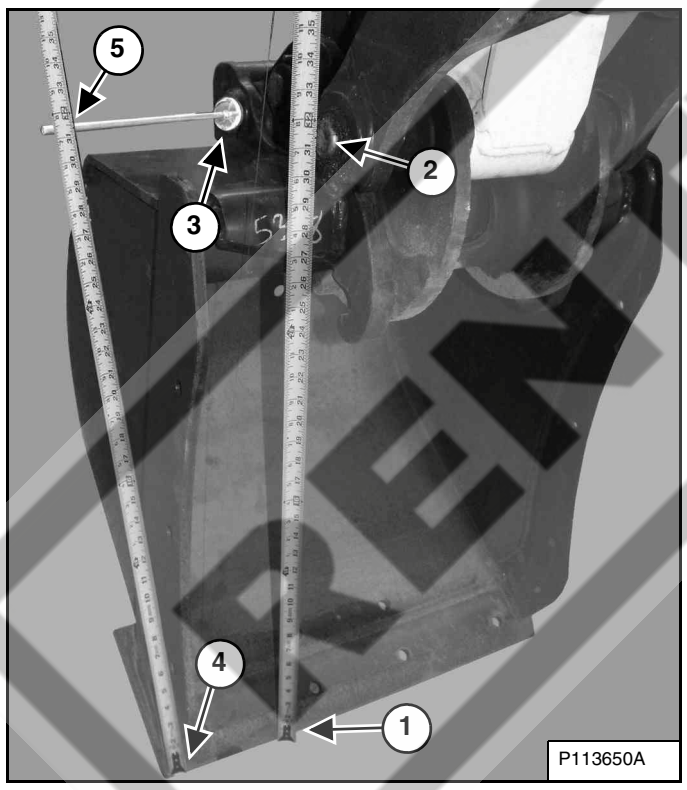
Setup / Calibration (Cont'd)

Figure 233



The INSIDE LENGTH screen (Item 1) **[Figure 233]** is where the first attachment dimensions will be added from the information determined in step **[Figure 234]**.

Figure 234



This two-part step will measure the distance between the bucket pin (Item 2) **[Figure 234]** or the furthest point away from the bucket pin on any attachment used with the Depth Check system. We will be using a bucket as an example, but all attachments will be similar for this setup. (*The accuracy of these dimensions affect the accuracy of the Depth Check.)*

Position the bucket vertical. Use the plumb bob to locate the furtherest vertical cutting point (Item 1) from the centre of the bucket pin (Item 2) **[Figure 234]**.

Set the tip of the bucket (Item 1) on the ground ensuring that everything is still vertical. Using a tape measure, measure the distance between the cutting edge (Item 4) and the centre of the bucket pin (Item 3) **[Figure 234]**.

NOTE: With usage of any attachment, the cutting surfaces wear. Example: The cutting edge (Item 1) [Figure 234] wears with the use of the bucket. The accuracy of the Depth Check system is affected by the wear of these components. If loss of accuracy is noticed, re-calibrate the attachment to reset the dimensions needed for the Depth Check system to operate correctly.

The INSIDE LENGTH screen (Item 1) **[Figure 233]** is where the attachment dimensions will be added from the information determined in step **[Figure 234]**.

Using the keypad (Item 1 through 0) **[Figure 233]**, enter this dimension. After the measurement is entered and verified, press the ENTER button (Item C) **[Figure 233]**. As soon as the ENTER button is pressed, the OUTSIDE LENGTH **[Figure 235]** screen will be activated.

Setup / Calibration (Cont'd)

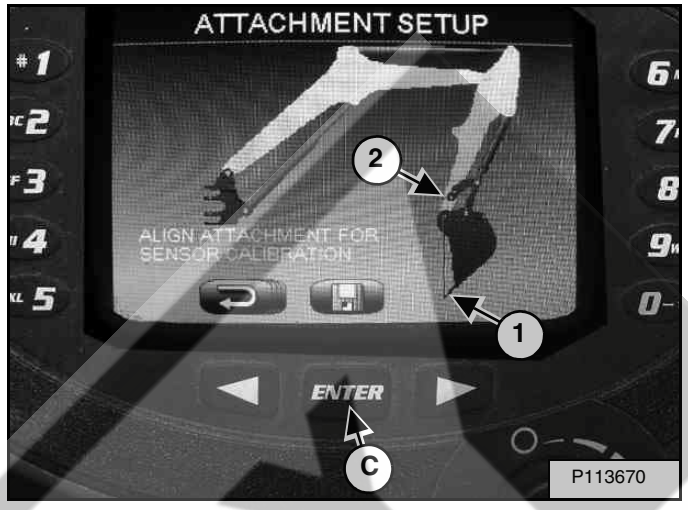
Figure 235

Install a magnetic pin on the second bucket pin (Item 3) **[Figure 234]**.

The next measurement is from the cutting edge (Item 4) to the centre of the magnetic pin (Item 5) **[Figure 234]** for the outside length dimension.

Using the keypad (Item 1 through 0) **[Figure 235]** enter this dimension. After the measurement is entered and verified, press the ENTER button (Item C) **[Figure 235]**. As soon as the ENTER button is pressed, the screen will change to the ATTACHMENT SETUP screen **[Figure 236]**.

Figure 236



Make sure the bucket is still vertical to the bucket pin (Item 2) and the cutting edge (or bucket teeth) (Item 1) and press the ENTER button (Item C) **[Figure 236]** to store the calibration information.

NOTE: If more than one attachment is being setup, the attachments can be changed on the arm and the additional attachment dimensions can also be entered. Always measure to the cutting / work tip on the attachment when measuring the dimensions to add to the inside and outside length screens for each new attachment. The Depth Check system uses these dimension along with the other setup points to calculate the tip position for Depth Check.

NOTE: When using an auger, it will not be as accurate as solid mounted attachments because all components are not rigidly mounted (auger bit has extra movement and rotation where the system is designed for fixed positions). When using the auger with the Depth Check system, enter zero for both attachment dimensions. When using the auger, try to keep the X-Change horizontal to the ground during the dig cycle and monitor the screen depth. Using this setup should give fairly accurate Depth Check information for auger applications.

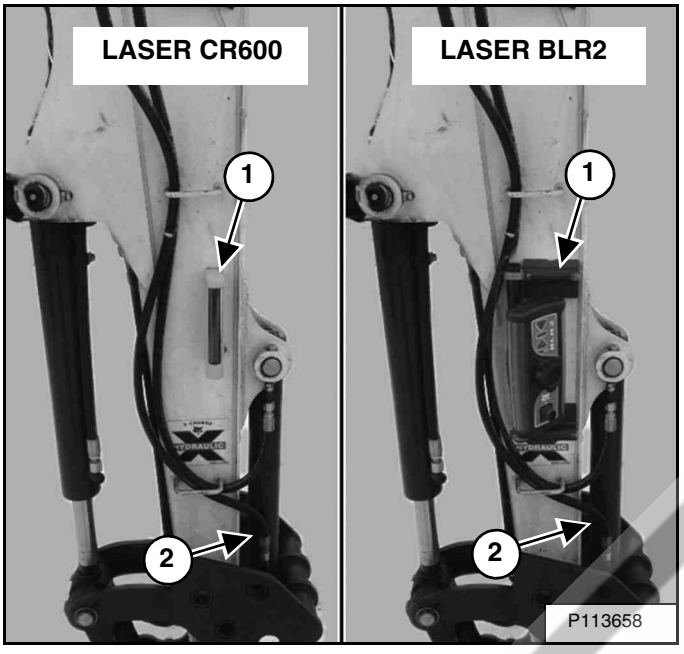
This finishes the SETUP / CALIBRATION procedure except if also installing a laser. (See If Using A Laser With Depth Check on Page 130.)

RENTWAY

Setup / Calibration (Cont'd)

If Using A Laser With Depth Check

Figure 237



FOR model E32 with the standard arm ONLY; If using either of the laser receivers (Item 1) on machines that have the standard arm and a hydraulic clamp installed, you will need to check the length of the hydraulic clamp rod end hose (Item 2) **[Figure 237]** to make sure the existing hose does not interfere with the laser.

Measure the length of the hose (Item 2) **[Figure 237]**.

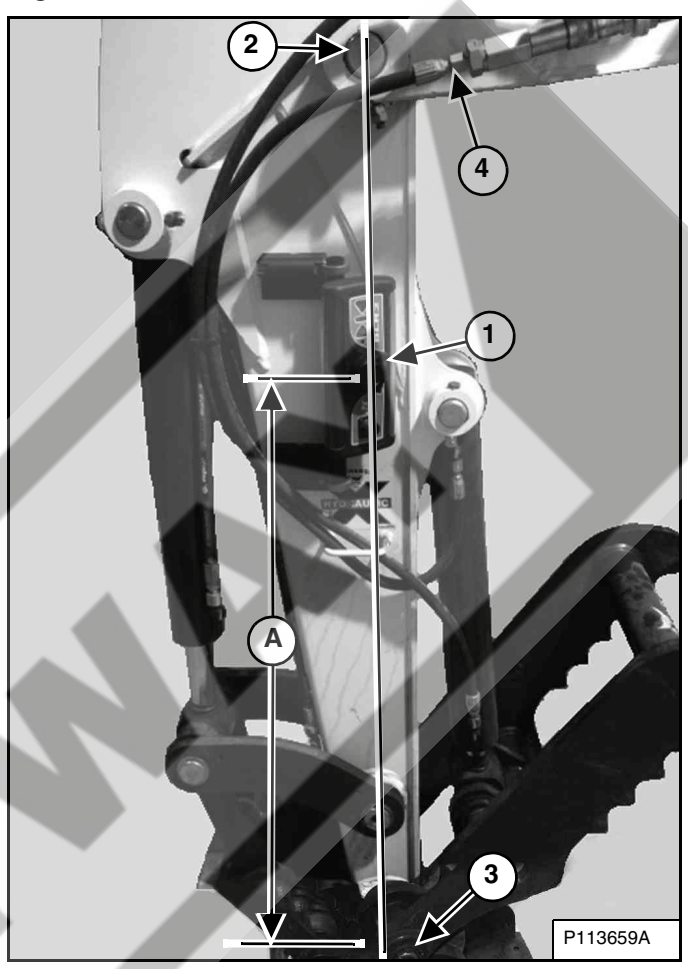
Measure the hose from the rod end of the clamp cylinder (Item 2) **[Figure 237]** to the end of the hose at the coupler (Item 4) **[Figure 238]**.

The hose length must be 1245 mm (49.0 in) or a new hose (P/N 7250478) must be ordered and installed.

If the hose is incorrect, it may interfere with the laser when the hydraulic clamp is operated and possibly knock the laser receiver off of the arm. OR, the laser can be mounted on the opposite side of the arm, then the hose will not interfere with the laser.

NOTE: For excavator equipped with a clamp, (or other options or configurations added to the arm that may interfere with the laser), make sure there is no hose to laser interference. Fully curl the arm and bucket and make sure the hoses do not interfere with the laser receiver during any arm and bucket movement. Adjust the position of the laser receiver if necessary to avoid any contact with the hoses.

Figure 238



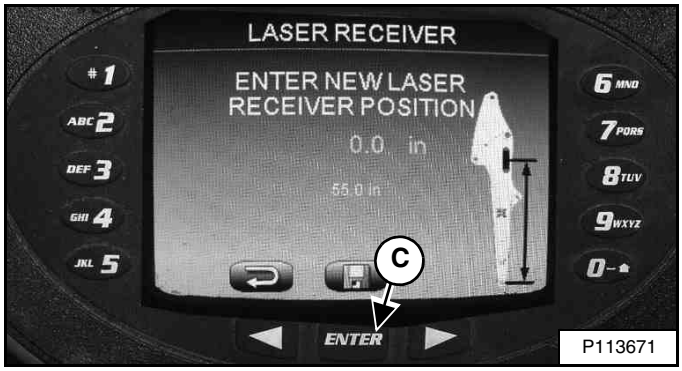
For both standard and long arm models; When installing the laser receiver (Item 1), it should be installed as close as possible in line with the arm pin (Item 2) and the bucket pivot pin (Item 3) **[Figure 238]**.

Position the laser (Item 1) approximately as shown. The dimension (Item A) will need to be added to the display screen. Measure from the centre of the bucket pin (Item 3) up to the centre of the laser receiver (Item 1) **[Figure 238]**.

Setup / Calibration (Cont'd)

If Using A Laser With Depth Check (Cont'd)

Figure 239



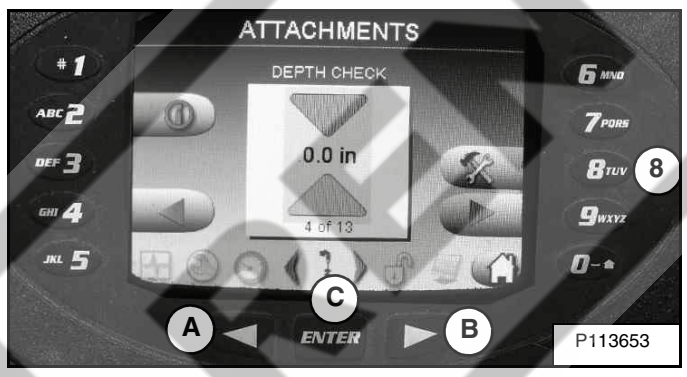
Add the dimension (Item A) **[Figure 238]** to the LASER RECEIVER screen, press the ENTER button (Item C) **[Figure 239]** to store the information. See **[Figure 255]** through **[Figure 257]** for additional information for setting the laser receiver dimensions.

Initial Setup

The initial setup will describe adding and changing the Depth Check target settings, grade zone setting, warning zone setting, laser receiver, preferences (changing unit of measurement settings), and describe how the Depth Check system functions.

Depth Check Settings

Figure 240



Using the left / right arrow buttons (Item A and B), toggle to the Attachment Depth Check screen **[Figure 240]**.

Press the tool button (Item 8) or the ENTER button (Item C) **[Figure 240]** to go to the DEPTH CHECK screen **[Figure 241]** and **[Figure 242]**.

Figure 241

The DEPTH CHECK screen **[Figure 241]** shows the following information. Press the numbered keypad to access each screen for setting the system:

(1) Re-bench: Used for setting the attachment start point to zero. (Example: Use surveyors elevation pin for the known depth to set zero.)

(2) Setup: Opens screen for selecting the following screens; Set Target Depth, Select Attachment, Setup and Calibration, and Preferences.

(3) Alarm: Sets the depth alarm to ON or OFF.

(4) Change Screens: Toggles through various depth screens; Depth Check, distance to target or grade check.

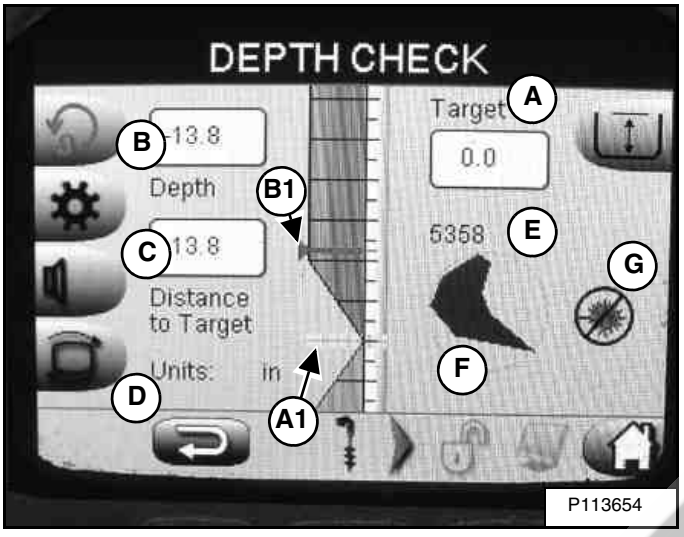
(6) Target Depth: Shows the depths for up to five preset depth settings.

(0) Home Screen: Press 0 to go back to the home screen on the display panel.

Initial Setup (Cont'd)

Depth Check Settings (Cont'd)

Figure 242



The DEPTH CHECK screen **[Figure 242]** shows the following information:

(A) Target (Dimension): The target is the depth to dig from an established starting point set by the operator. (Example: Desired dig depth from a surveyors elevation pin.)

(A1) Target (Bar Graph): The bar graph line shows where the target is at in relationship to the attachment position (Item B1).

(B) Depth (Dimension): This is the current depth of the attachment cutting edge.

(B1) Depth (Bar Graph): The bar graph line moves up and down and shows the position of attachment to the target (Item A1). (When the attachment gets close to the selected target depth, an audible alarm will start beeping. The closer the attachment gets to the target, the faster the beeps. When the alarm is continuous, you have reach the target depth. The alarm can be set ON or OFF by pressing the keypad number 3 **[Figure 241]**).

(C) Distance To Target (Dimension): The distance the attachment needs to travel to reach the selected target depth.

(D) Units: Shows the current selected unit of measure. (The units of measure can be set to meters, millimeters, feet, or inches.)

(E) Name of attachment selected: Shows the name or the number of the selected attachment. (The attachment must be selected so that the Depth Check system knows what attachment is currently used for proper depth calculations.)

(F) Attachment: The screen uses a bucket to represent the attachment. The bucket will rotate to represent the position of the bucket (attachment) as the attachment is curled out or curled in. When the attachment is calibrated, it sets the position of bucket icon (F).

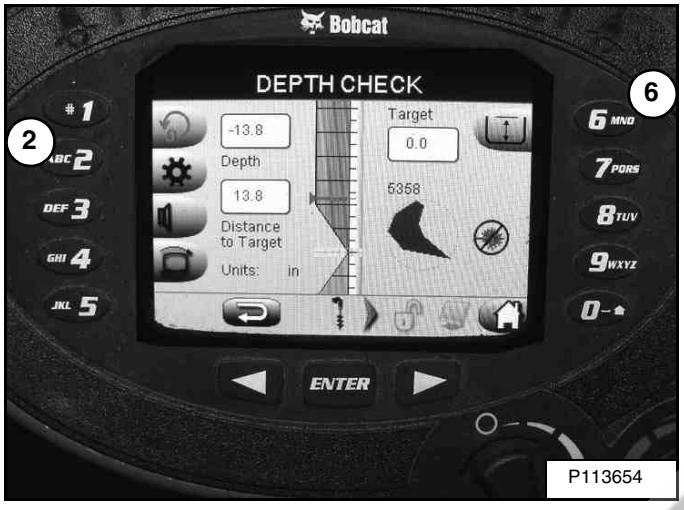
(G) Laser: The laser icon (Item G) will show if the laser is set to ON or OFF. (The laser as shown in **[Figure 242]** with the circle with the line through it represents the OFF position.)

RENTWAY

Initial Setup (Cont'd)

Depth Check Settings (Cont'd)

Figure 243



Press button (Item 6) **[Figure 243]** to go to the SELECT DEPTH TARGET screen **[Figure 244]**.

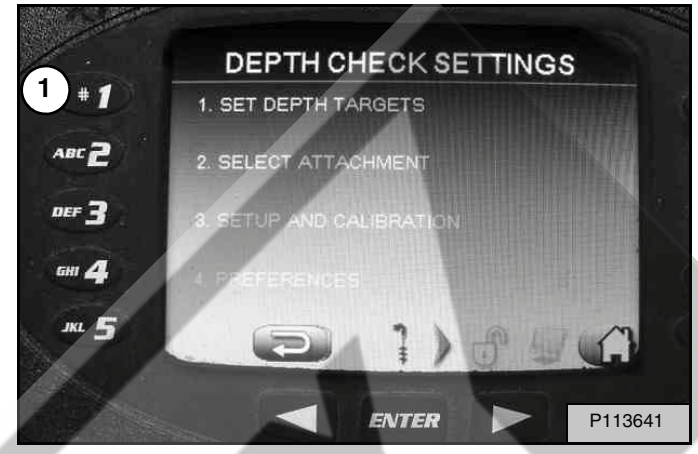
Figure 244

Five different depths can be preset and stored in the system.

Select (Item 1 through Item 5) **[Figure 244]** to select one of the existing depths.

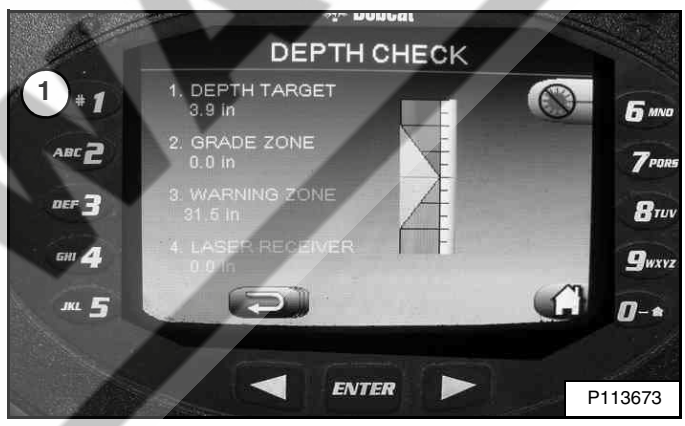
Or, if a different depth is needed, press the return button (Item A) **[Figure 244]** to go back one screen, then press button (Item 2) **[Figure 243]** to go to the DEPTH CHECK SETTINGS screen **[Figure 245]**.

Figure 245



Press (Item 1) **[Figure 245]** to Set Depth Targets.

Figure 246



Press (Item 1) **[Figure 246]** to select Depth Target.

Figure 247

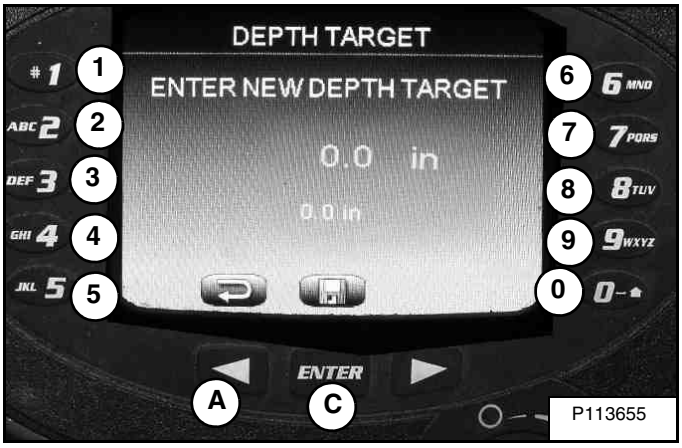
Select (Items 1 through 5) **[Figure 247]** to select one of the five possible stored depth settings.

PREVIEW

Initial Setup (Cont'd)

Depth Check Settings (Cont'd)

Figure 248



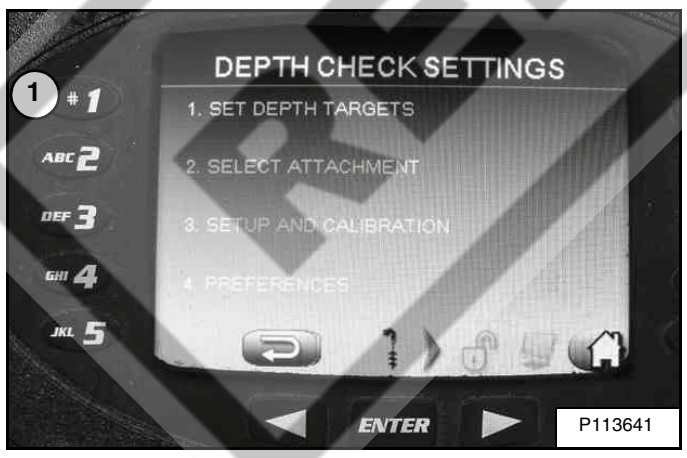
Use the keypads (Items 1 through 0) and enter the new target dimension. If the dimension entered is incorrect, press the arrow button (Item A) **[Figure 248]** to backspace the dimension.

Press the ENTER button (Item C) **[Figure 248]** to save the depth dimension. (Dimensions shown in inches but can be set to feet, meters, or millimeters. See **[Figure 260]**.)

Grade Zone

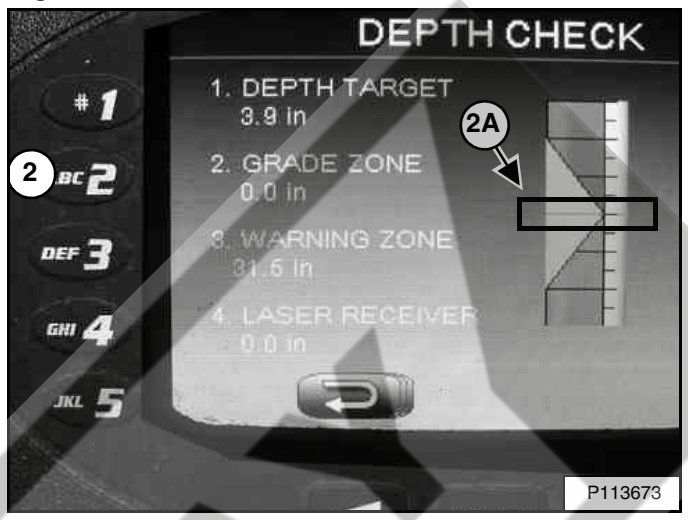
The Grade Zone sets the distance up or down from the target depth for when the warning alarm will start to be a continuous alarm. This will also increase the YELLOW highlighted area on the screen where the target zone is shown.

Figure 249



Press Set Depth Targets (Item 1) **[Figure 249]** to change to the next screen **[Figure 250]**.

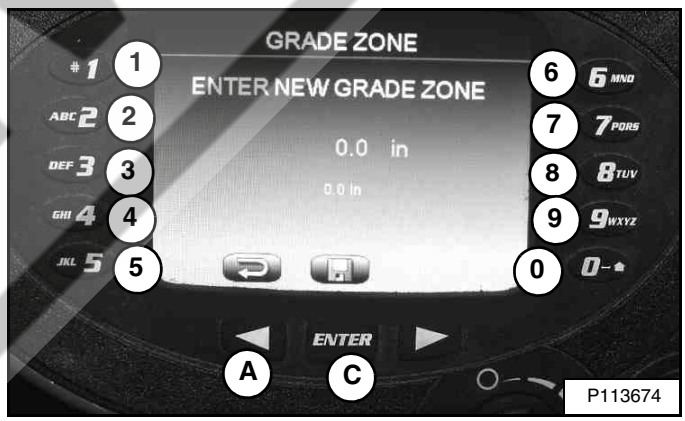
Figure 250



Press Grade Zone (Item 2) **[Figure 250]**.

Grade zone area (Item 2A) **[Figure 250]** (in yellow on the display screen) is the area that will change with the dimensions as set in **[Figure 251]**.

Figure 251



Use the keypads (Items 1 through 0) and enter the new grade zone dimension. If the dimension entered is incorrect, press the arrow button (Item A) **[Figure 251]** to backspace the dimension.

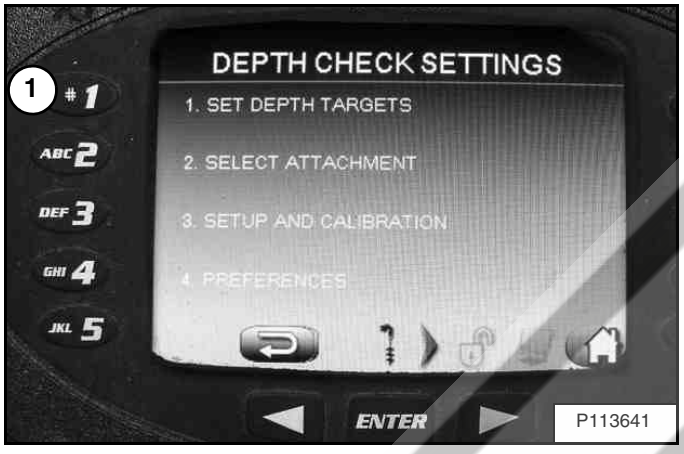
Press the ENTER button (Item C) **[Figure 251]** to save the grade zone dimension. (Dimensions shown in inches but can be set to feet, meters, or millimeters. See **[Figure 260]**.)

Initial Setup (Cont'd)

Warning Zone

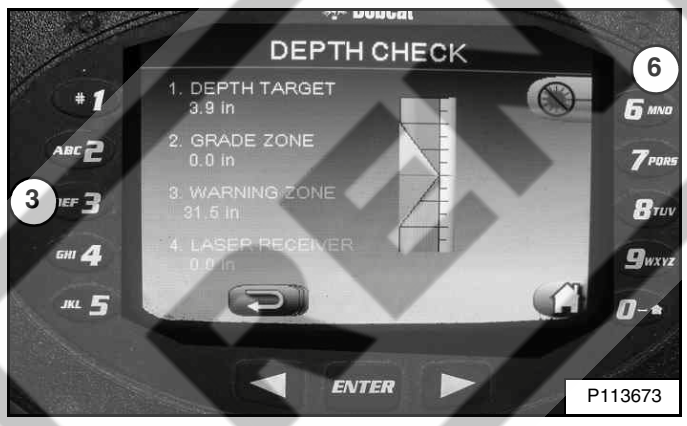
The Warning Zone sets the upper distance from the target depth when the warning alarm will start to beep. (The alarm will start beeping when getting close to the selected target depth. The closer to the target, the faster beeps until you reach the target depth, then it will be a continuous sound. If the bucket goes below the selected target depth, the beeps will be very fast until the bucket is raised above the target depth.)

Figure 252



Press Set Depth Targets (Item 1) **[Figure 252]** to change to the next screen **[Figure 253]**.

Figure 253



Press Warning Zone (Item 3) **[Figure 253]**.

Press (Item 6) **[Figure 253]** to turn the laser ON or OFF.

Figure 254

Use the keypads (Items 1 through 0) and enter the new warning zone dimension. If the dimension entered is incorrect, press the arrow button (Item A) **[Figure 254]** to backspace the dimension.

Press the ENTER button (Item C) **[Figure 254]** to save the warning zone dimension. (Dimensions shown in inches but can be set to feet, meters, or millimeters. See **[Figure 260]**.)

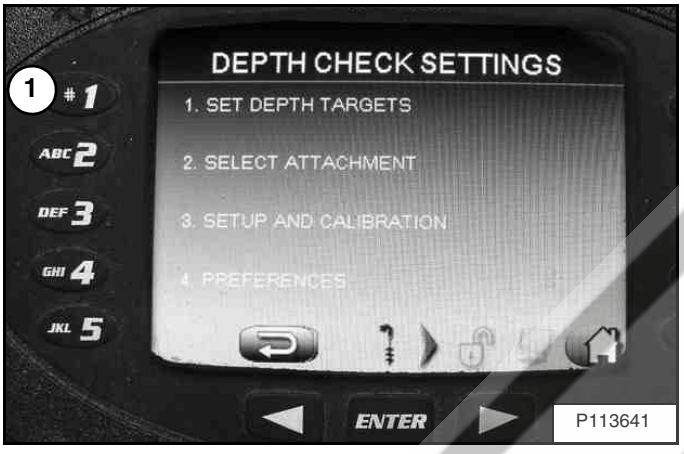
Initial Setup (Cont'd)

Laser Receiver Position On Arm

The Depth Check system needs to know the location of laser receiver mounted on the arm. This dimension is used along with the target depth to set the Depth Check position.

Activate the laser on the dash panel by pressing button (Item 6) **[Figure 256]**. Press once, laser ON. Press a second time, laser OFF.

Figure 255



Press Set Depth Targets (Item 1) **[Figure 255]** to change to the next screen **[Figure 256]**.

Figure 256

Press Laser Receiver (Item 4) **[Figure 256]**.

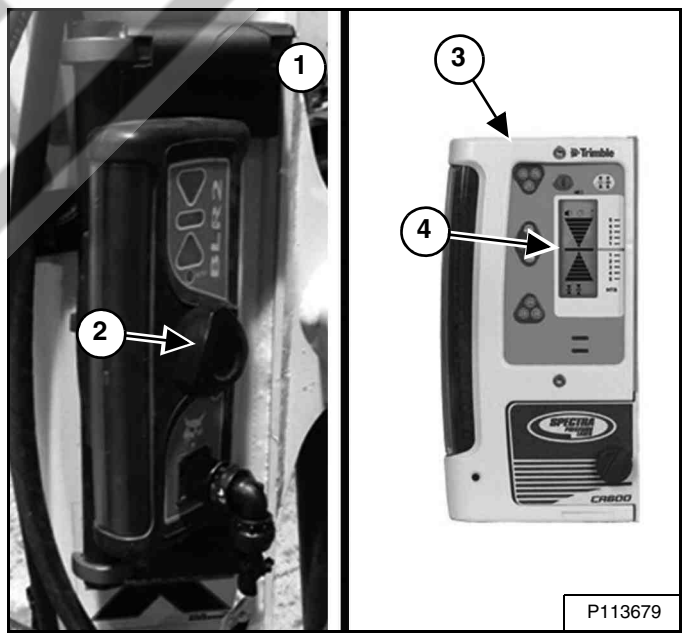
Figure 257

Use the keypads (Items 1 through 0) and enter the new laser receive position on the arm dimension. If the dimension entered is incorrect, press the arrow button (Item A) **[Figure 257]** to backspace the dimension. See **[Figure 239]** for additional information of the laser receiver.

Press the ENTER button (Item C) **[Figure 257]** to save the warning zone dimension. (Dimensions shown in inches but can be set to feet, meters, or millimeters. See **[Figure 260]**.)

Measuring The Laser Location

Figure 258



For the model BLR2 (Item 1), measure to the centre of the knob (Item 2) **[Figure 258]**.

For the model CR600 (Item 3), measure to the centre of the red line (Item 4) **[Figure 258]**.

DEPTH CHECK (CONT'D)

Initial Setup (Cont'd)

Preferences

The Preferences screen is used to set two features;

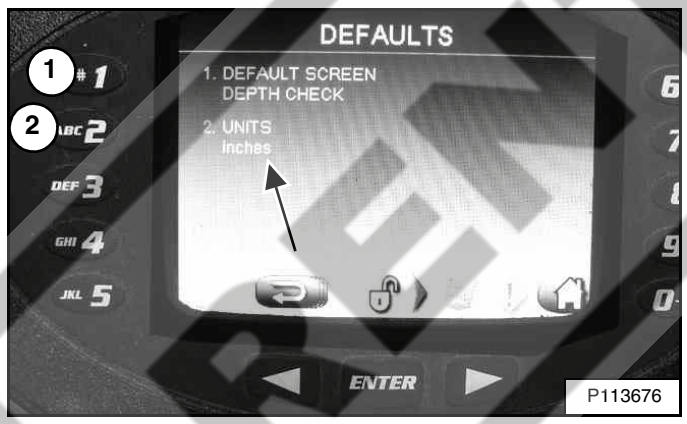
1. To set the screen preference for; Distance to Target, Depth Check or Grade Check.

2. To set units of measure (screen can be set to display; millimeters, meters, feet, or inches).

Figure 259

Press Preferences (Item 4) **[Figure 259]** to change to the DEFAULTS screen **[Figure 260]**.

Figure 260



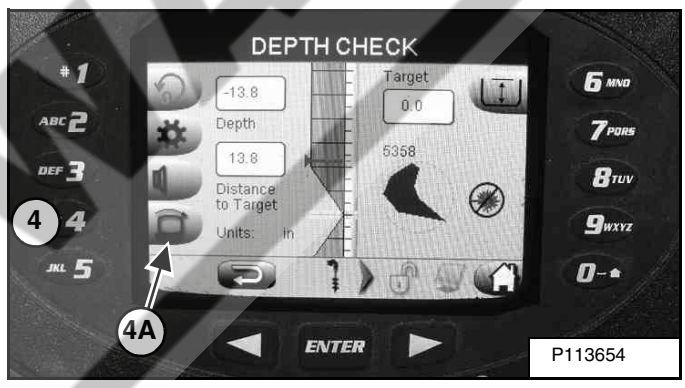
Press Default Screen button (Item 1) **[Figure 260]** to toggle the Preference screen between the following screens; Distance to Target **[Figure 261]**, Depth Check **[Figure 262]** or Grade Check **[Figure 263]**.

Press the UNITS button (Item 2) to toggle between meters, millimeters, feet or inches. This sets how you will record and enter ALL dimensions into the Depth Check system. The selected units will be displayed under the word UNITS (Item 3) **[Figure 260]** and will be visible on all Depth Check screens that show dimensions.

Figure 261

Distance to Target **[Figure 261]** screen.

Figure 262

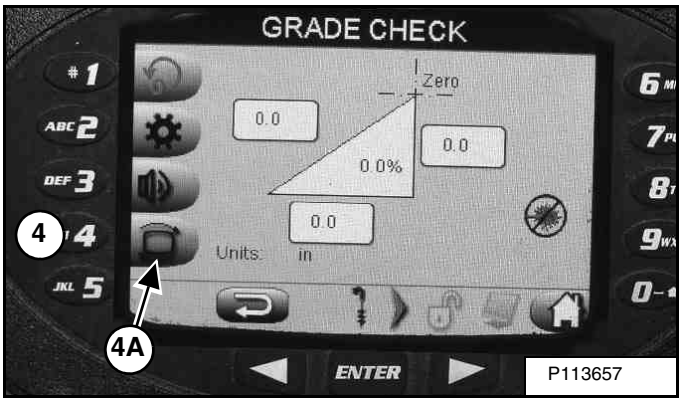


Depth Check **[Figure 262]** screen.

Initial Setup (Cont'd)

Preferences (Cont'd)

Figure 263



Grade Check **[Figure 263]** screen.

NOTE: You can also press button (Item 4) [Figure 261], [Figure 262] or [Figure 263] to toggle between these three screens any time that the icon (Item 4A) is visible on any Depth Check screen.

Operation

The following will give some basic operation information for:

WARNING

AVOID INJURY OR DEATH

Check area to be excavated for overhead or underground lines such as electrical, gas, oil, water, etc. Consult local utilities before digging. Extreme caution must be used in areas where utility lines are present.

W-2774-1208

IMPORTANT

When digging in an area with underground utilities, do not depend on the Depth Check system for digging close to known utilities. The Depth Check system accuracy is dependent on the accuracy of the calibration, slope of the ground and other unknown variables. The current depth of utility lines varies and may not be to the same depth as when the utility was buried due to soil erosion, grading and many other factors. Some laws require non-mechanical (hand) digging in the area of marked underground utilities. Make sure you follow all local rules and regulations regarding digging in the area of underground utilities.

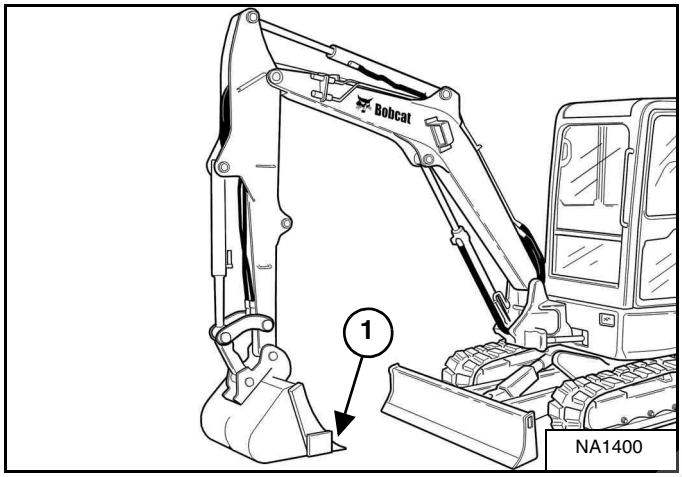
I-2383-1214

RENTWAY

Operation (Cont'd)

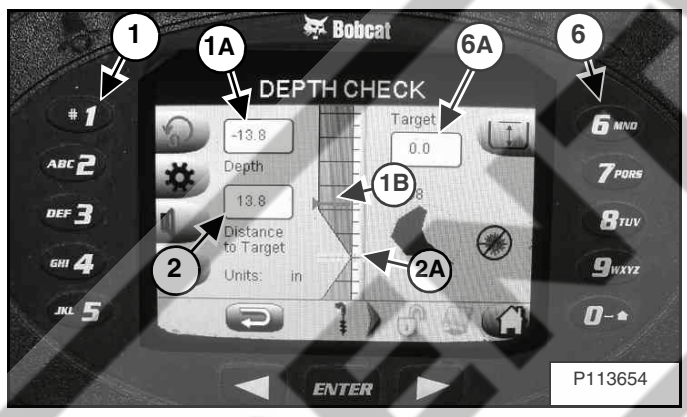
Digging A Hole To A Predetermined Depth

Figure 264



The first step is to set the position the bucket (Item 1) **[Figure 264]** at the ground surface you are going to start the dig or on the surveyor mark to establish the starting ground position. Lower the bucket until it is on the ground or on the surveyor mark. This is called re-benching.

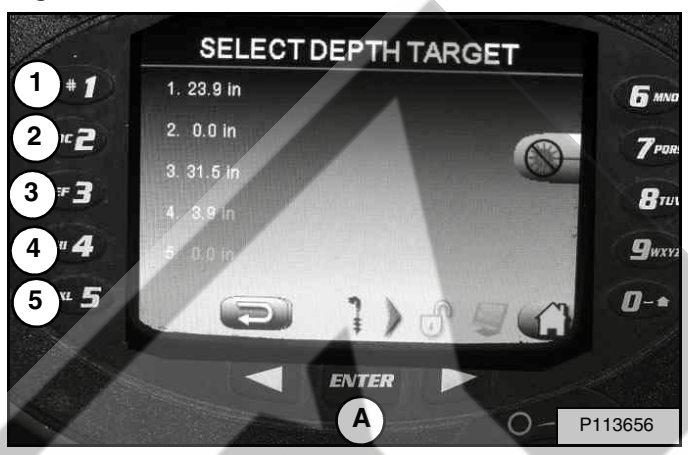
Figure 265



To set the cutting edge position (re-benching) to zero, access the Depth Check screen, and press the re-benching button (Item 1). After the button is pressed, the dimensions on the screen for depth (Item 1A) will be set to 0.0. (As the bucket is raised or lowered, the screen at (Item 1A) **[Figure 265]** will show the bucket position dimension moving.)

Press button (Item 6) **[Figure 265]** to change to the SELECT TARGET DEPTH screen **[Figure 266]**.

Figure 266



Select the target depth by pressing button (Item 1 through Item 5) **[Figure 266]** for selecting an existing depth. (To add a new target depth or to change an existing target depth, see information shown with steps **[Figure 243]** through **[Figure 248]**.)

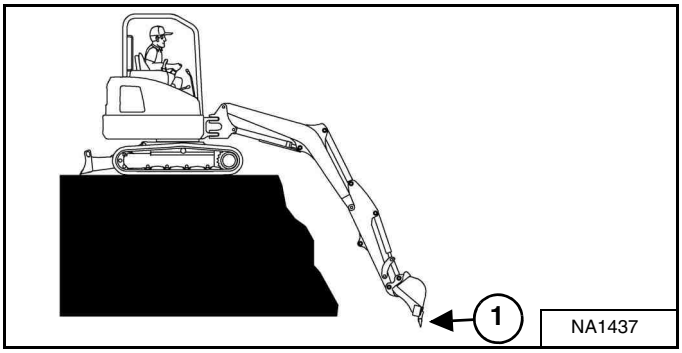
The selected target depth will now appear on the screen at (Item 6A) **[Figure 265]**.

NOTE: If the excavator is at an angle (side slope) when re-benching, the system will only be accurate on the same plane (location) that it was re-benched at.

Operation (Cont'd)

Digging A Hole To A Predetermined Depth (Cont'd)

Figure 267



As the hole is being dug, the position of the bucket (Item 1) **[Figure 267]** is dimensionally shown (Item 1A) **[Figure 265]** and shown on the bar graph at (Item 1B) **[Figure 265]**. The distance to target depth is dimensionally shown in (Item 2) **[Figure 265]** and shown on the bar graph (Item 2A) **[Figure 265]**.

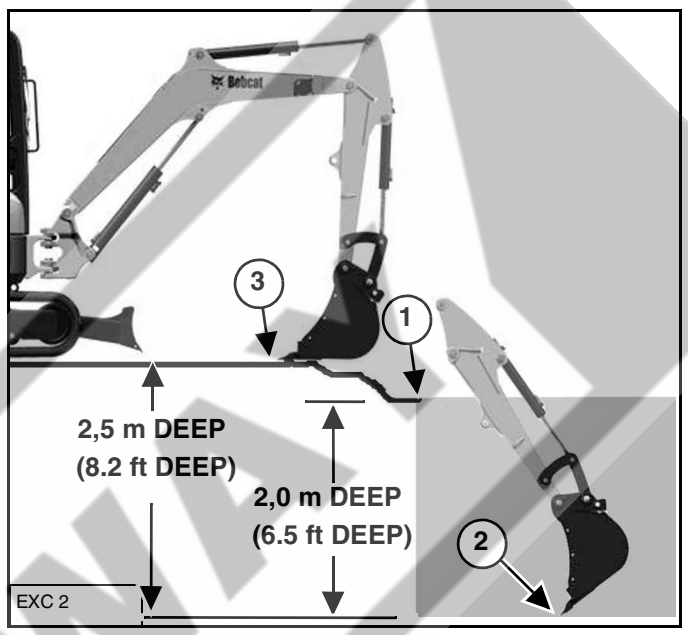
When the bucket is getting close to the target depth, a warning buzzer (if activated) will start to slowly beep. The beeps will increase in frequency the closer the bucket gets to the target depth. When the target depth is reached, the buzzer will sound continuously.

EXAMPLE: The target depth is 2 meters (6.5 ft) (Item 6A) and the position of the bucket (Item 1A) is at 1.5 meter (4.9 ft), the distance to target (Item 2) **[Figure 265]** will be 0.5 m (1.6 ft). [2 m - 1.5 m = 0.5 m (6.5 ft - 4.9 ft = 1.6 ft).]

NOTE: The distance from the target depth to when the when the alarm starts to beep can be set using the *Warning Zone* information. (See Warning Zone on Page 135.)

To reposition the excavator to continue digging the hole at the original depth:

Figure 268



If possible, reposition the excavator so the bucket can be re-benched off of the original starting point (Item 1) **[Figure 268]**.

Or, If that is not possible, position the excavator so the bucket will reach to the bottom of the hole (Item 2) **[Figure 268]** at an area that is know to be the correct depth. (When re-benched at the bottom of the trench, set the target depth to zero to continue digging at the original depth.)

Or, With the bucket on the ground next to the excavator (Item 3) **[Figure 268]**, re-bench the bucket to zero. Now reach into the existing hole until the bucket is touching the bottom of the hole (Item 2) **[Figure 268]** in an area you know is the correct depth. Example: The dimension shown in (Item 1A) **[Figure 265]** is now 2.5 m (8.2 ft). You now need to reset the target depth to 2.5 m (8.2 ft) to continue digging the hole at the original target depth.

Or, If you want to just continue digging with the hole parallel to the ground, no re-benching is necessary but the hole will not be horizontal, it will be at the same plane as the ground surface the machine is on.

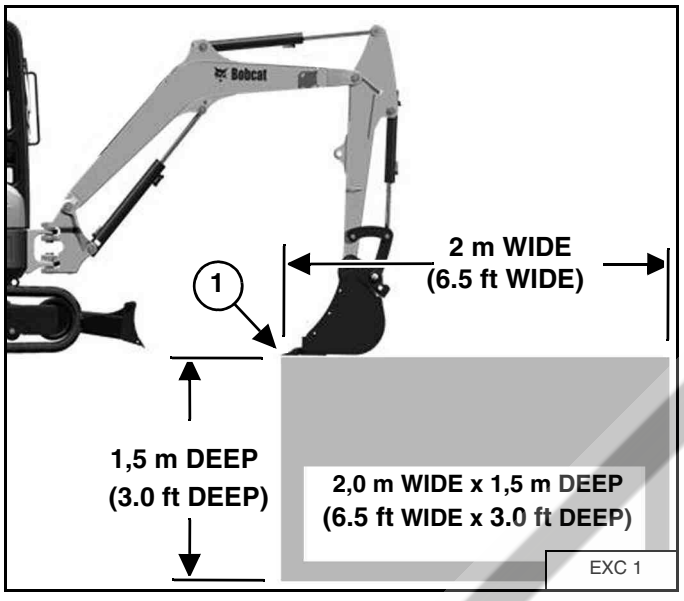
RETIRED

Operation (Cont'd)

Digging A Hole To A Predetermined Width And Depth

EXAMPLE: Digging a 2.0 meter wide x 1.5 meter deep (6.5 ft wide x 3 ft deep) hole.

Figure 269

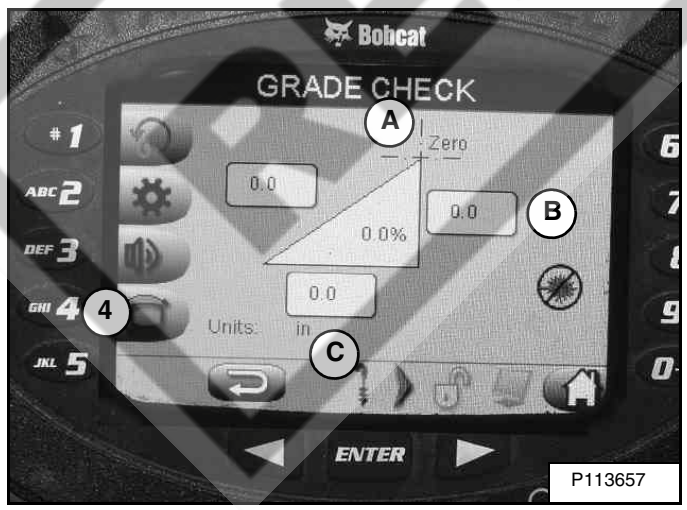


Follow the same procedure as for digging a hole except as follows. (See Digging A Hole To A Predetermined Depth on Page 139.)

When re-benching the bucket for setting to 0.0, position the bucket (Item 1) **[Figure 269]** at the starting point of the side of the hole that the excavator is positioned on.

This will allow the Depth Check to know the starting position of the hole for the depth and width of the hole.

Figure 270



Press (Item 4) **[Figure 270]** to scroll to the GRADE CHECK screen on the display panel. For additional information. (See Preferences on Page 137.)

The ZERO (Item A) is the re-benching starting point. (Item B) shows the target depth. (Item C) **[Figure 270]** shows the reach (distance away from the zero mark starting point (Item 1) **[Figure 269]**.

NOTE: The warning buzzer (if activated) will start to beep when getting close to the target depth and progressively beeps faster until the target depth is reach and then the buzzer will sound continuously. The buzzer only activates on the depth, not for the reach (width of hole). That will need to be monitored visually using (Item C) [Figure 270].

WARNING

AVOID INJURY OR DEATH

Check area to be excavated for overhead or underground lines such as electrical, gas, oil, water, etc. Consult local utilities before digging. Extreme caution must be used in areas where utility lines are present.

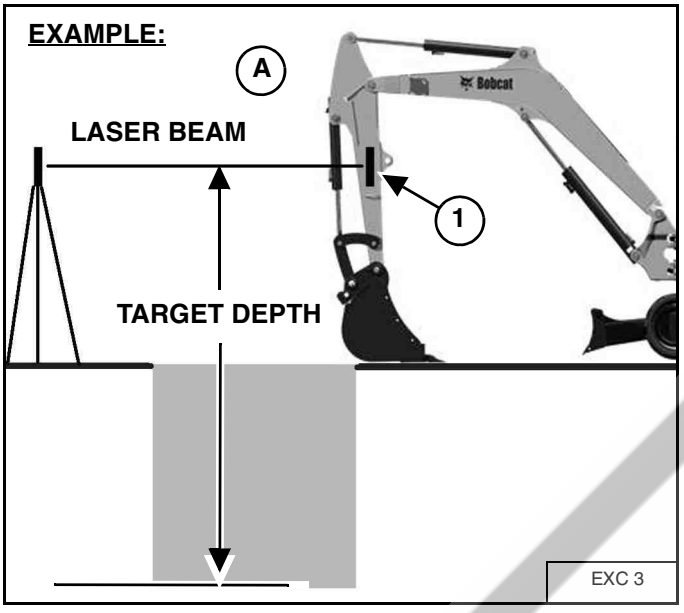
W-2774-1208

Operation (Cont'd)

Digging A Hole Using A Laser

Read and understand the information supplied with the laser for correctly setting up the laser system.

Figure 271

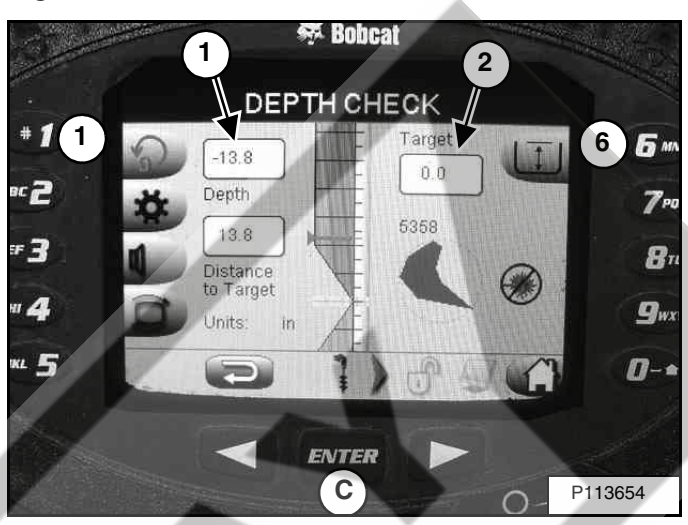


NOTE: Make sure the laser receiver dimensional location on the arm has been added into the Depth Check. For additional information. (See Laser Receiver Position On Arm on Page 136.)

With the arm vertical, raise or lower the boom and arm as needed until the laser (Item 1) strikes the receiver (Item 2) **[Figure 271]**. (If needed, curl the bucket fully for increased bucket ground clearance or a hole may need to be dug so that the bucket can be lowered to allow the laser to strike the receiver with the arm vertical.)

NOTE: If the arm is not vertical and you try to re-bench, a screen will tell you to make the arm vertical before it will allow the re-bench.

Figure 272



With the laser striking the receiver, press (Item 1) **[Figure 272]** to set the laser position.

Press (Item 6) to access the Preset Target Depth screen or go to figure **[Figure 244]** to add or change the target depth. When the correct target depth is entered, press the ENTER button (Item C) **[Figure 272]** to save the setting.

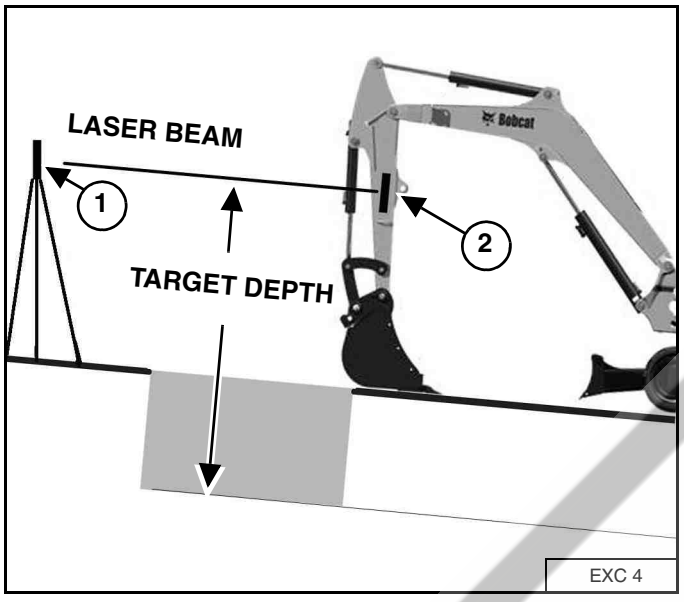
With the Depth Check system set-up, the excavator can now be repositioned and the dig depth will stay consistent to the set target depth.

Operation (Cont'd)

Digging A Trench With Slope Using A Laser

Read and understand the information supplied with the laser for correctly setting up the laser system.

Figure 273

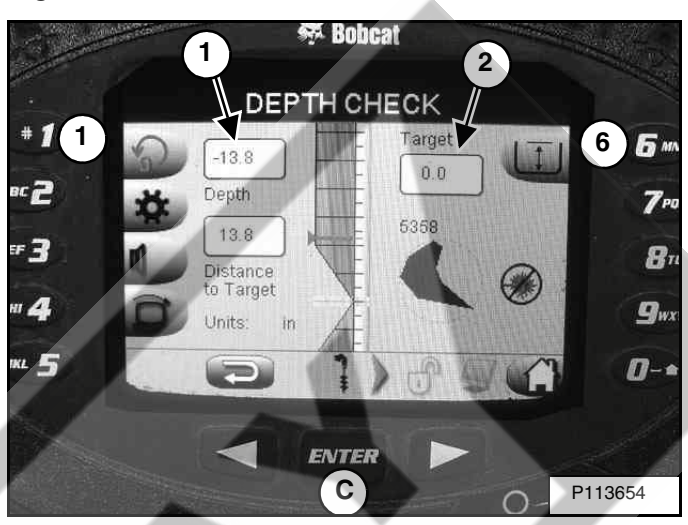


NOTE: Make sure the laser receiver dimensional location on the arm has been added into the Depth Check. For additional information. (See Laser Receiver Position On Arm on Page 136.)

With the arm vertical, raise or lower the boom and arm as needed until the laser (Item 1) strikes the receiver (Item 2) **[Figure 273]**. (If needed, curl the bucket fully for increased bucket ground clearance or a hole may need to be dug so that the bucket can be lowered to allow the laser to strike the receiver with the arm vertical.)

NOTE: If the arm is not vertical and you try to re-bench, a screen will tell you to make the arm vertical before it will allow the re-bench.

Figure 274



With the laser striking the receiver, press (Item 1) **[Figure 274]** to set the laser position.

Press (Item 6) to access the Preset Target Depth screen or go to figure **[Figure 244]** to add or change the target depth. When the correct target depth is entered, press the ENTER button (Item C) **[Figure 274]** to save the setting.

With the Depth Check system set-up, the excavator can now be repositioned and the dig depth will stay consistent to the set target depth and to the slope set with the laser.

RETIRED

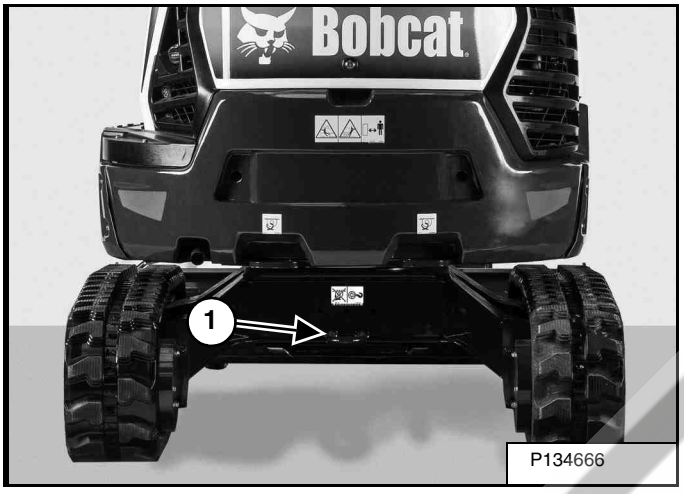
TOWING THE EXCAVATOR

Procedure

There is not a recommended towing procedure for the excavators.

The excavator can be lifted onto the transport vehicle. (See LIFTING THE EXCAVATOR on Page 145.)

Figure 275



The excavator can be skidded a short distance for service (for example, moving it onto a transport vehicle) without damaging the hydraulic system. (The tracks will not turn.) There might be slight wear to the tracks when the excavator is skidded.

Secure the towing chain to the loop located at the rear of the excavator (Item 1) **[Figure 275]**.

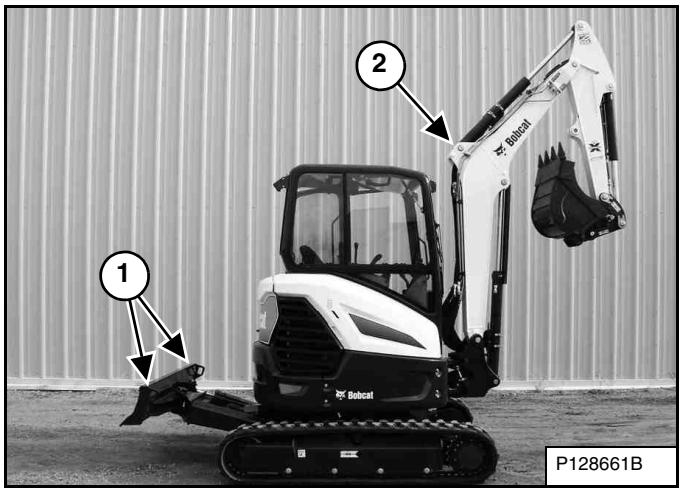
The towing chain (or cable) must be rated at 1.5 times the weight of the excavator. (See Performance on Page 230.)

RENTWAY

LIFTING THE EXCAVATOR

Procedure

Figure 276



Before lifting, fully extend the cylinders of the bucket, arm, and boom. Raise the blade fully. Turn the upperstructure so the boom and blade are at opposite ends of the excavator as shown **[Figure 276]**.

Put all the control levers in NEUTRAL and stop the machine.

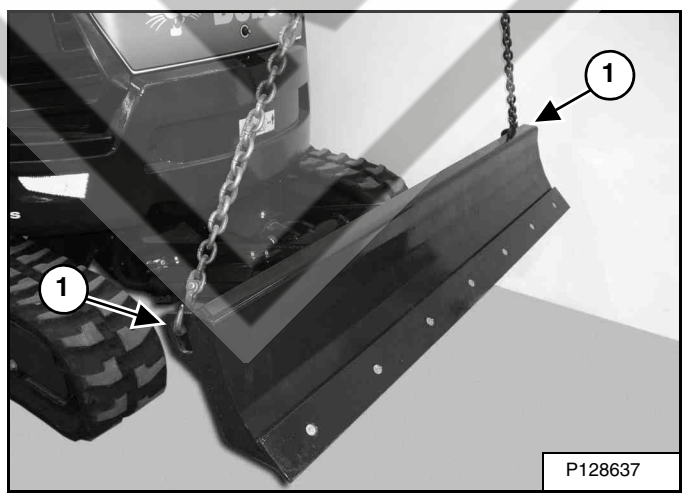
WARNING

AVOID INJURY OR DEATH

- **Use chains and lifting equipment with sufficient capacity for the weight of the excavator plus any added attachments.**
- **Maintain centre of gravity and balance when lifting.**
- **Do not swing boom or upperstructure.**
- **Never lift with operator on machine.**
- **Never lift with the blade angled (if equipped).**

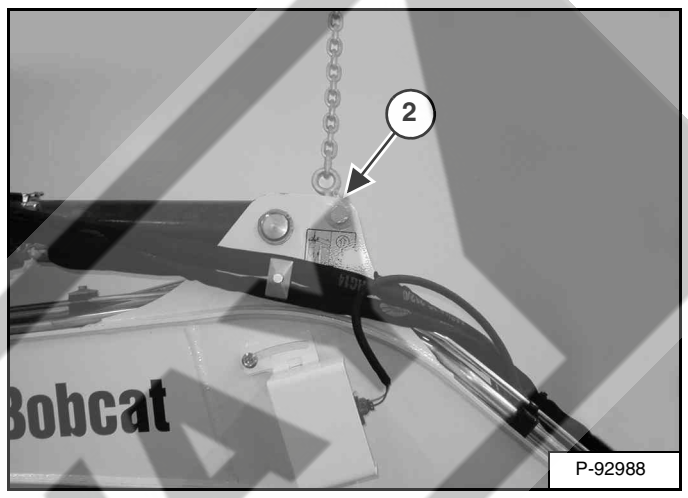
W-2800-EN-0210

Figure 277



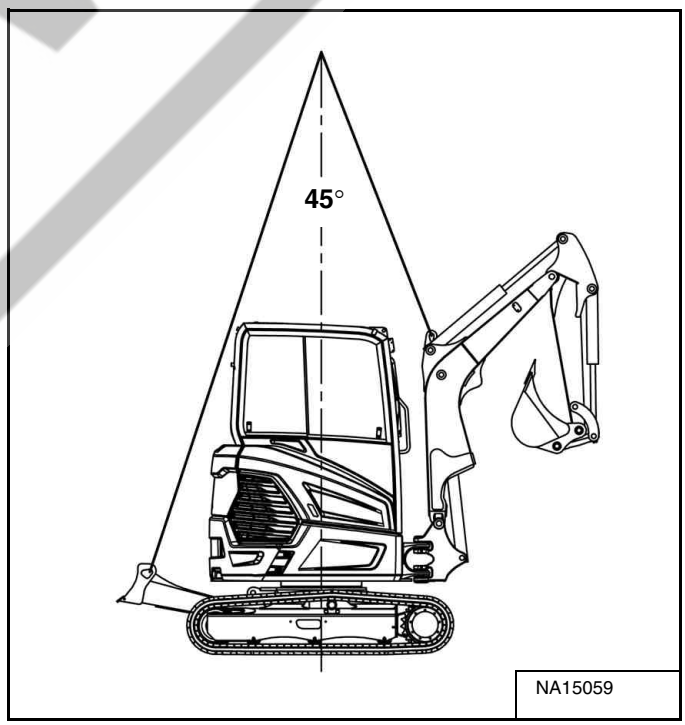
Fasten chains to the ends of the blade (Item 1) **[Figure 276]** and **[Figure 277]** and up to a lifting fixture above the canopy / cab. The lifting fixture must extend over the sides of the canopy / cab to prevent the chains from hitting the ROPS / TOPS.

Figure 278



Fasten a chain (Item 2) **[Figure 276]** and **[Figure 278]** from the rod to the lift fixture.

Figure 279



The excavator should remain as close to horizontal as possible while it is lifted. To prevent damage, the chains should not contact any part of the operator canopy / cab. The chains should be at an angle of 45 degrees **[Figure 279]**.

TRANSPORTING THE EXCAVATOR ON A TRAILER

Loading And Unloading

When transporting the machine, observe the rules, motor vehicle laws, and vehicle limit ordinances. Use a transport and towing vehicle of adequate length and capacity.

Secure the parking brakes and block the wheels of the transport vehicle.

Align the ramps with the centre of the transport vehicle. Secure the ramps to the truck bed and be sure ramp angle does not exceed 15 degrees.

Use metal loading ramps with a slip resistant surface.

Use ramps that are the correct length and width and can support the weight of the machine.

The rear of the trailer must be blocked or supported when loading or unloading the machine to prevent the front of the transport vehicle from raising.

Determine the direction of the track movement before moving the machine (blade forward).

Disengage the auto idle feature and move the two-speed travel to the low range position.

WARNING

AVOID SERIOUS INJURY OR DEATH

Adequately designed ramps of sufficient strength are needed to support the weight of the machine when loading onto a transport vehicle. Wood ramps can break and cause personal injury.

W-2058-0807

Figure 280

Move the machine forward onto the transport vehicle **[Figure 280]**.

Do not change direction of the machine while it is on the ramps.

Lower the boom, arm, bucket, and blade to the transport vehicle.

Stop the engine and remove the key (if equipped).

Put blocks at the front and rear of the tracks.

BRENTWAY

Fastening

Tie down the excavator to prevent it from moving when going up or down slopes or during sudden stops.

Front Tie-Down Locations

Figure 281

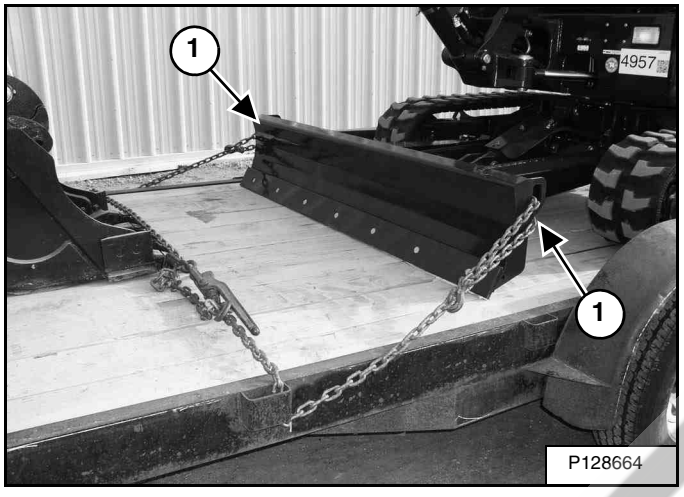
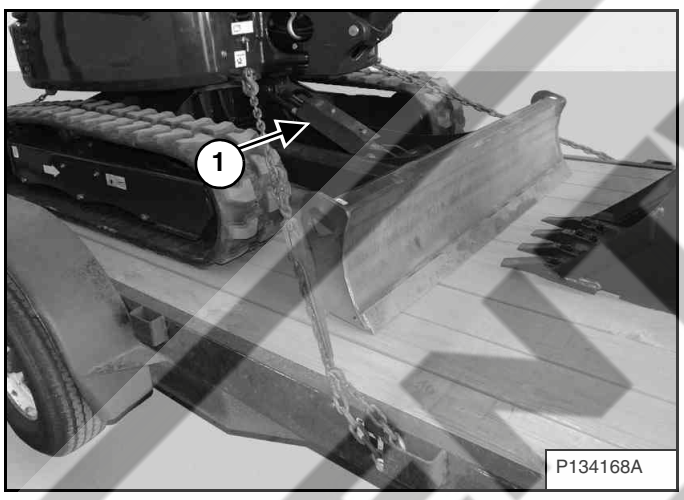


Figure 282



Fasten chains to the front corners of the blade (Item 1) **[Figure 281]** or to the tie-down loops at the front of the upperstructure (Item 1) **[Figure 283]**.

Rear Tie-Down Locations

Figure 283

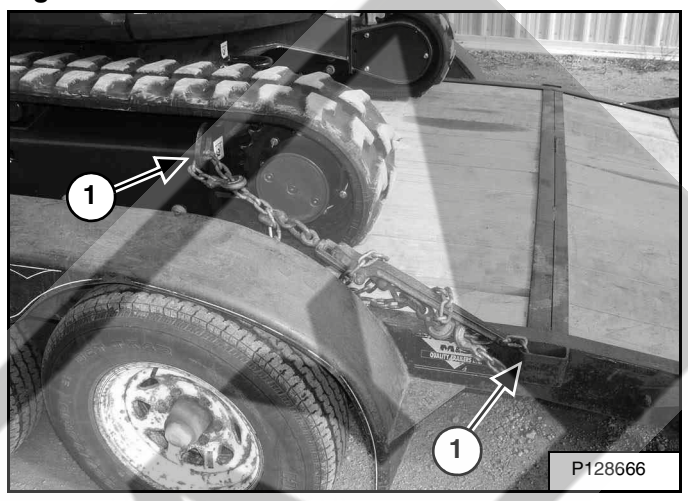
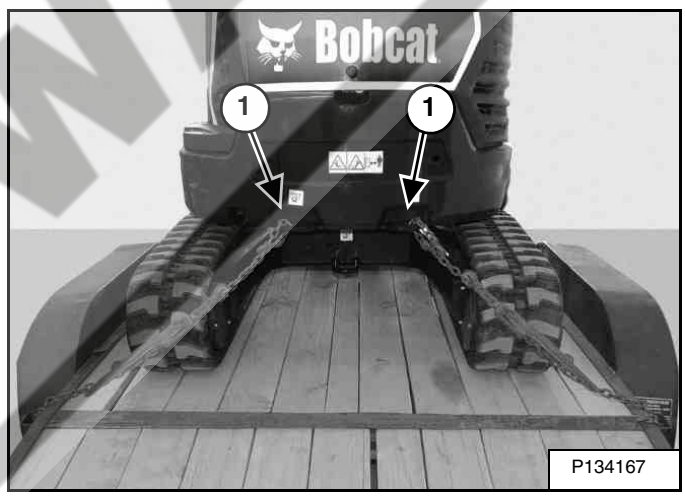


Figure 284



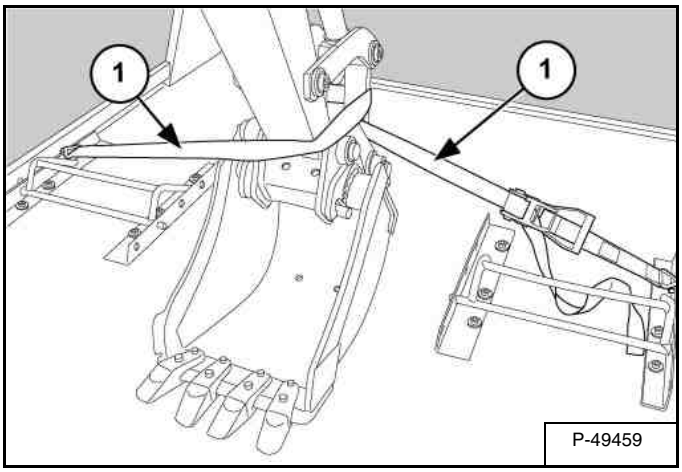
Fasten chains to the tie-down loops at the rear corners of the track frame (Item 1) **[Figure 283]** or to the tie-down loops at the rear of the upperstructure (Item 1) **[Figure 284]**.

Use chain binders to tighten the chains and then safely tie the chain binder levers to prevent loosening.

RENTWAY

Fastening (Cont'd)

Figure 285



Loop a chain (Item 1) **[Figure 285]** around the bucket link and to the trailer.

Use chain binders to tighten the chains and then safely tie the chain binder levers to prevent loosening.

RENTWAY

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MAINTENANCE SAFETY

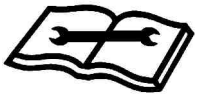
WARNING

Instructions are necessary before operating or servicing machine. Read and understand the Operation & Maintenance Manual, Operator's Handbook and signs (decals) on machine. Follow warnings and instructions in the manuals when making repairs, adjustments or servicing. Check for correct function after adjustments, repairs or service. Untrained operators and failure to follow instructions can cause injury or death.

W-2003-0807

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

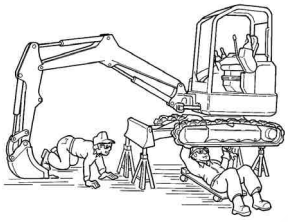
CORRECT



NA3047

Never service the Bobcat Compact Excavator without instructions.

CORRECT



NA1428

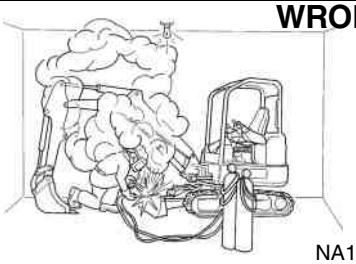
Use the correct procedure to lift and support the excavator.

CORRECT

NA1425

Cleaning and maintenance are required daily.

WRONG



NA1427

Have good ventilation when welding or grinding painted parts.

Wear dust mask when grinding painted parts. Toxic dust and gas can be produced.

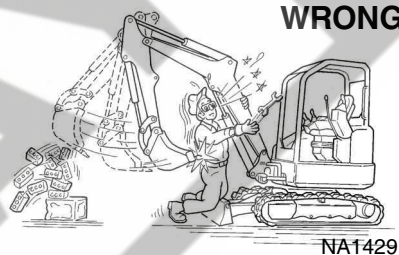
WRONG

NA1426

Vent exhaust to outside when engine must be run for service.

Exhaust system must be tightly sealed. Exhaust fumes can kill without warning.

WRONG

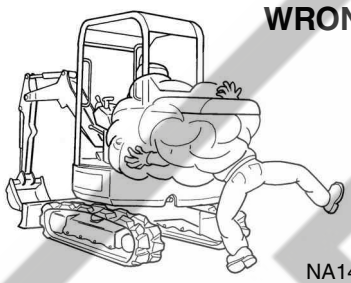


NA1429

Always lower the bucket and blade to the ground before doing any maintenance.

Never modify equipment or add attachments not approved by Bobcat Company.

WRONG



NA1430

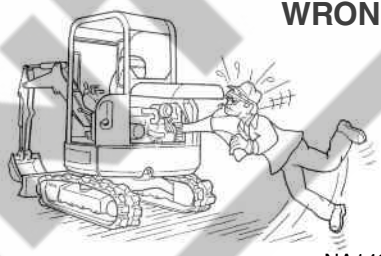
Stop, cool and clean engine of flammable materials before checking fluids.

Never service or adjust machine with the engine running unless instructed to do so in the manual.

Avoid contact with leaking hydraulic fluid or diesel fuel under pressure. It can penetrate the skin or eyes.

Never fill fuel tank with engine running, while smoking, or when near open flame.

WRONG



NA1431

Keep body, jewelry and clothing away from moving parts, electrical contact, hot parts and exhaust.

Wear eye protection to guard from battery acid, compressed springs, fluids under pressure and flying debris when engines are running or tools are used. Use eye protections approved for type of welding.

Keep tailgate closed except for service. Close and latch tailgate before operating the excavator.

WRONG

B-19798

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.

MSW38-0421

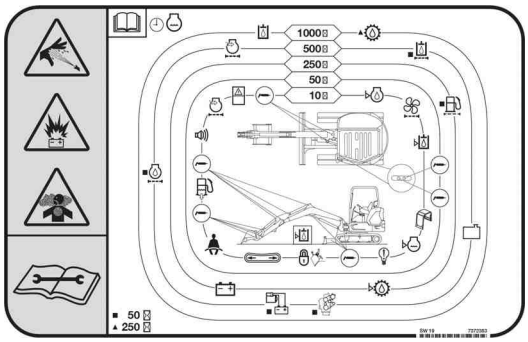
FREE SAMPLE

SERVICE SCHEDULE

Maintenance Intervals

Maintenance work must be done at regular intervals. Failure to do so will result in excessive wear and early failures.

The service schedule is a guide for correct maintenance of the Bobcat excavator.



See inside page of the back cover for symbols and identification.

WARNING

AVOID INJURY OR DEATH

Instructions are necessary before operating or servicing machine. Read and understand the Operation & Maintenance Manual, Operator's Handbook and signs (decals) on machine. Follow warnings and instructions in the manuals when making repairs, adjustments or servicing. Check for correct function after adjustments, repairs or service. Untrained operators and failure to follow instructions can cause injury or death.

W-2003-0807

Every 10 Hours (Before Starting The Excavator)

- **Engine Oil** - Check level and add as needed. (See Page 172.)
- **Engine Air Filters and Air System** - Check the condition indicator. Service only when required. Check for leaks and damaged components. (See Page 162.)
- **Engine Cooling System** - Check coolant level COLD and add premixed coolant as needed. (See Page 174.) and (See Page 176.)
- **Seat Belt, Seat Belt Retractors, Seat Belt Mounting hardware** - Check the condition of seat belt and mounting hardware. Clean or replace seat belt retractors as needed. Clean dirt and debris from moving parts. (See Page 156.)
- **Control Console Lockout** - Check the control console lockout lever for proper operation. (See Page 155.)
- **Motion Alarm and Horn** - Check for proper function. (See Page 157.)
- **Operator Canopy / Cab** - Check the canopy / cab condition and mounting hardware. (See Page 40.)
- **Operator Cab and HVAC Filters** - Clean filters. (See Page 162.)
- **Indicators and Lights** - Check for correct operation of all indicators and lights. (See Page 28.)
- **Safety Signs** - Check for damaged signs (decals). Replace any signs that are damaged. (See Page 18.)
- **Hydraulic Fluid** - Check fluid level and add as needed. (See Page 184.)
- **Fuel Filter** - Drain water and sediment from filter. (See Page 170.)
- **Track Tension** - Check tension and adjust as needed. (See Page 190.)
- **Pivot Points** - Grease all machinery pivot points. Grease clamp (if equipped). (See Page 198.)
- **Attachment Coupler** - Check for damage or loose parts (if equipped). (See Page 196.)

First 50 Hours

- **Fuel Filter** - Replace filter. (See Page 170.)
- **Engine Oil and Filter** - Replace oil and filter. (See Page 173.)
- **Drive Belts (Alternator)** - Check condition. Replace as needed. (See Page 193.)
- **Hydraulic Filter and Case Drain Filter** - Replace hydraulic filter and case drain filter. (See Page 185.)
- **Alternator and Starter** - Check connections.

Every 50 Hours

- **Swing Bearing** - Grease swing bearing and swing pinion. Service every 10 hours when operating in water. (See Page 198.)

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RENTWAY

Maintenance Intervals (Cont'd)

Every 100 Hours

- **Spark Arrestor Muffler (If Equipped)** - Clean spark chamber. (See Page 188.)

First 250 Hours

- **Travel Motors (Final Drive)** - Replace fluid. (See Page 192.)

Every 250 Hours Or Every 12 Months

- **Battery** - Check cables, connections, and electrolyte level. (See Page 177.)
- **Fuel Filter** - Replace filter. (See Page 170.)
- **Travel Motors (Final Drive)** - Check fluid level and add as needed. (See Page 192.)

Every 500 Hours Or Every 12 Months

- **Engine Oil and Filter** - Replace oil and filter. (See Page 173.)
- **Engine Air Filters and Air System** - Check the condition indicator. Service only when required. Check for leaks and damaged components. (See Page 163.)
- **Engine Cooling System** - Clean debris from radiator, fuel cooler, hydraulic fluid cooler, air conditioning condenser (if equipped). (See Page 175.)
- **Drive Belts (Alternator) (Air Conditioning - If Equipped)** - Check condition. Replace as needed. (See Page 193.)
- **Hydraulic Filter, Case Drain Filter, and Hydraulic Reservoir Breather Cap** - Replace the hydraulic filter, case drain filter, and reservoir breather cap. (See Page 185.)
- **Alternator and Starter** - Check connections.
- **HVAC** - Check housing and coils.

Every 1000 Hours Or Every 12 Months

- **Engine Valves** - Adjust the engine valve clearance.
- **Travel Motors (Final Drive)** - Replace fluid. (See Page 192.)
- **Hydraulic Fluid and Filters** - Replace hydraulic fluid and filters. (See Page 185.)

Every 24 Months

- **Coolant** - Replace the coolant. (See Page 176.)

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Inspection Checkbook

Maintenance work must be done at regular intervals. Failure to do so will result in excessive wear and early failures

The service schedule is a guide for the correct maintenance of the Bobcat excavator.

The Inspection Checkbook contains the following information:

- Doosan Bobcat EMEA s.r.o. Warranty Policy

- Doosan Bobcat EMEA s.r.o. Extended Warranty Policy

The inspection checkbook has to be filled in by the Dealer for any maintenance and service work of your Bobcat machine. This book may be required anytime by an authorised dealer or by Bobcat Europe, should be a breakdown occur on the Bobcat equipment.

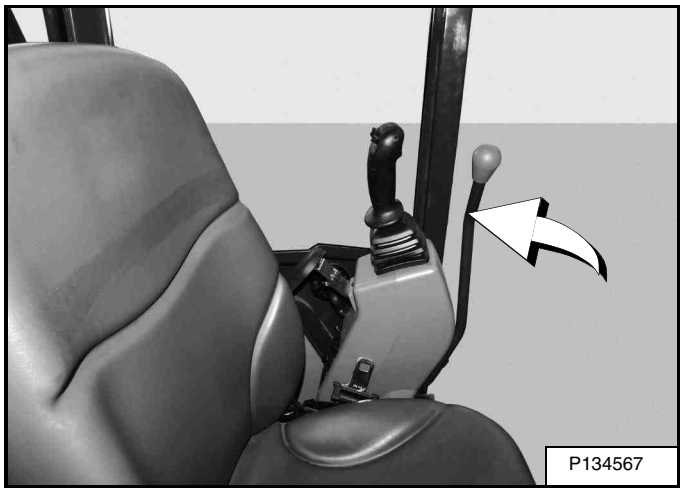
Your dealer can order the Inspection Checkbook.
Part Number: 7296478.

RENTWAY

CONTROL CONSOLE LOCKOUTS

Inspection And Maintenance

Figure 286



When the left console is raised **[Figure 286]**, the hydraulic control levers (joysticks) and traction system must not function.

Sit in the operator's seat, fasten the seat belt, and start the engine.

Keep the left console raised **[Figure 286]**.

Move the joystick control levers. There should be no movement of the boom, arm, slew, or bucket.

Move the steering control levers. There should be no movement of the excavator tracks.

Service the system if these controls do not deactivate when the left control console is raised. (See your Bobcat dealer for service.)

RENTWAY

SEAT BELT

Inspection And Maintenance

WARNING

Failure to properly inspect and maintain the seat belt can cause lack of operator restraint resulting in serious injury or death.

W-2466-0703

Check the seat belt daily for correct function.

Inspect the seat belt system thoroughly at least once each year or more often if the machine is exposed to severe environmental conditions or applications.

Any seat belt system that shows cuts, fraying, extreme or unusual wear, significant discolourations due to ultraviolet UV exposure, dusty / dirty conditions, abrasion to the seat belt webbing, or damage to the buckle, latch plate, retractor (if equipped), hardware or any other obvious problem should be replaced immediately.

The items below are referenced in **[Figure 287]**.

1. Check the webbing. If the system is equipped with a retractor, pull the webbing completely out and inspect the full length of the webbing. Look for cuts, wear, fraying, dirt, and stiffness.

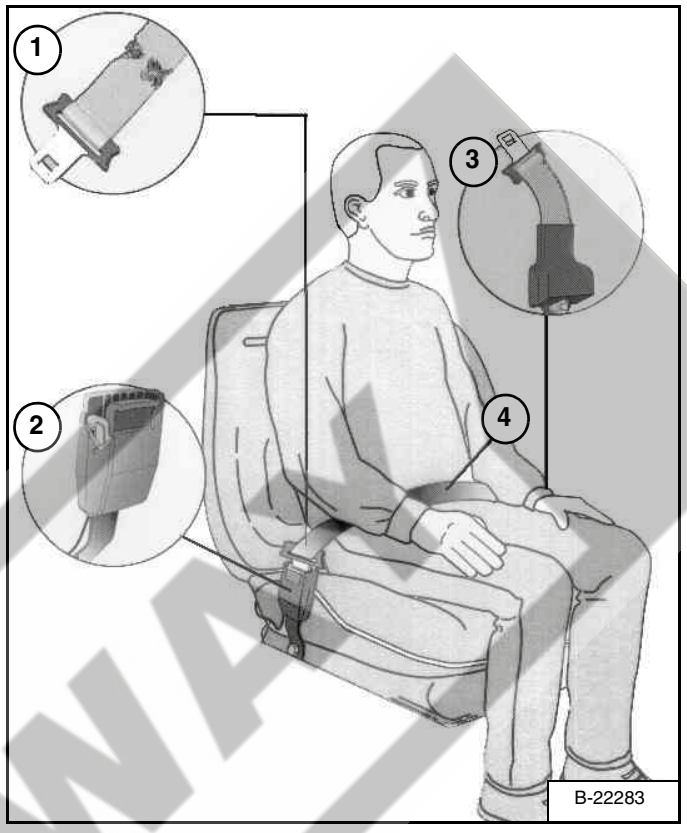
2. Check the buckle and latch for correct operation. Make sure latch plate is not excessively worn, deformed or buckle is not damaged or casing broken.

3. Check the retractor web storage device (if equipped) by extending webbing to determine if it looks correct and that it spools out and retracts webbing correctly.

4. Check webbing in areas exposed to ultraviolet (UV) rays from the sun or extreme dust or dirt. If the original colour of the webbing in these areas is extremely faded and / or the webbing is packed with dirt, the webbing strength may have deteriorated.

See your Bobcat dealer for seat belt system replacement parts for your machine.

Figure 287



RENTWAY

MOTION ALARM SYSTEM

Description

This excavator may be equipped with a motion alarm system. The motion alarm will sound when the operator moves the travel control levers in either the forward or reverse direction. Slight movement of the steering levers in either the forward or reverse direction is required with hydraulic components before the motion alarm will sound.

Inspecting

Figure 288

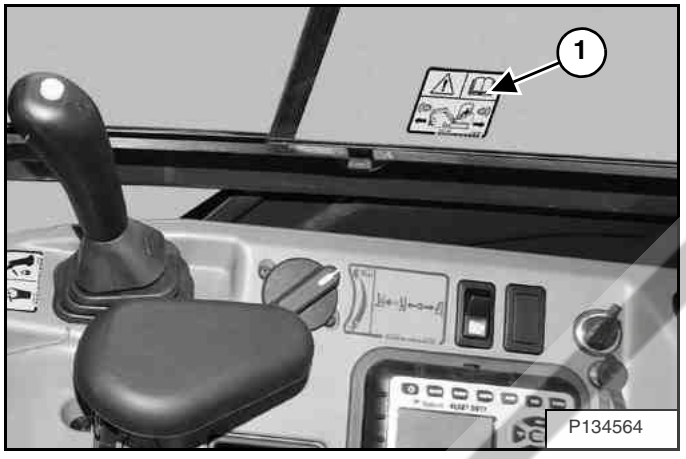
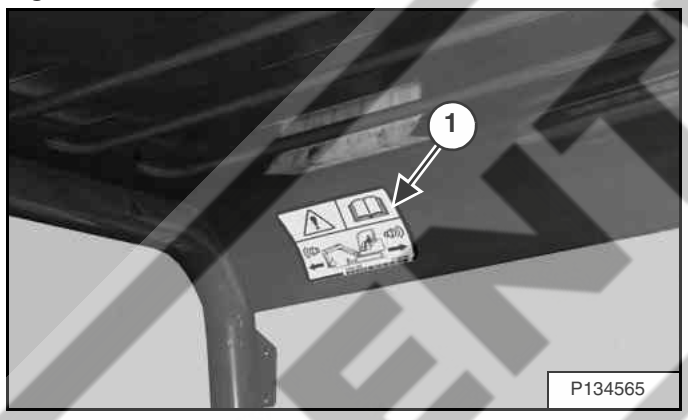


Figure 289



Inspect for damaged or missing motion alarm decal (Item 1) **[Figure 288]** (cab machine) or (Item 1) **[Figure 289]** (canopy machine). Replace if required.

NOTE: The excavator will need to be moved slightly in both the forward and reverse direction to test the motion alarm. Keep all bystanders away from machine during test.

⚠ WARNING

AVOID INJURY OR DEATH

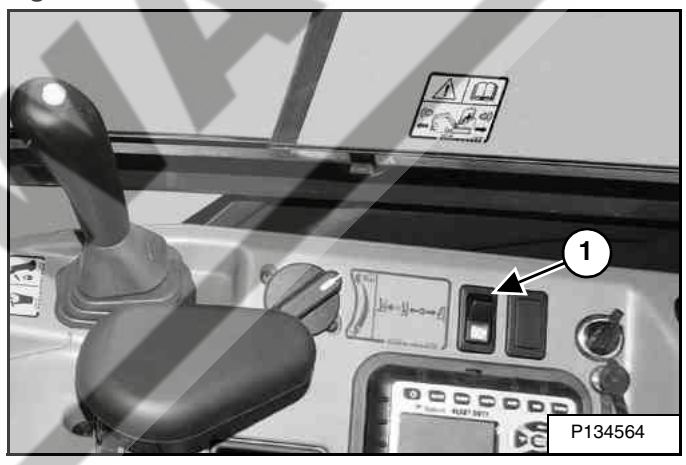
When an engine is running in an enclosed area, fresh air must be added to avoid concentration of exhaust fumes. If the engine is stationary, vent the exhaust outside. Exhaust fumes contain odorless, invisible gases which can kill without warning.

W-2050-0807

Sit in the operator's seat and fasten the seat belt. Start the engine. (See PRE-STARTING PROCEDURE on Page 71.)

Move the travel control levers (one lever at a time) in the forward direction. The motion alarm must sound. Move the travel control levers (one lever at a time) in the reverse direction. The motion alarm must sound.

Figure 290



Slightly move both travel control levers in the forward direction (until the machine is slowly moving forward) and then press the motion alarm cancel switch (Item 1) **[Figure 290]**. The motion alarm will shut off. With the machine still moving forward, move both of the levers to the neutral position, the motion alarm must sound.

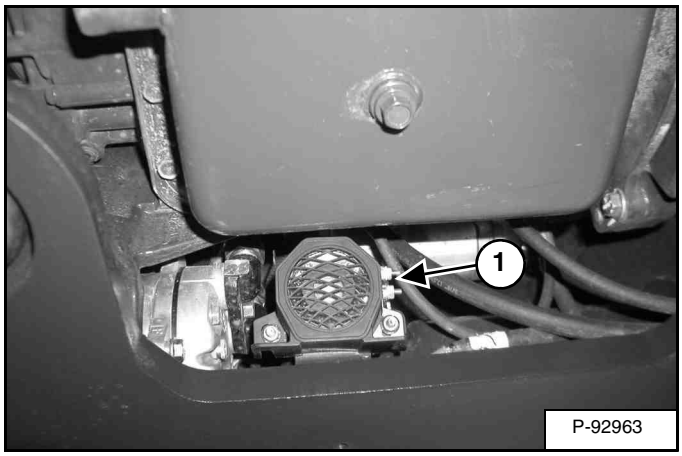
Slightly move both travel control levers in the reverse direction (until the machine is slowly moving backward) and then press the motion alarm cancel switch (Item 1) **[Figure 290]** (the switch icon will be illuminated when the motion alarm is deactivated). The motion alarm will shut off. With the machine still moving backward, move one of the levers to the NEUTRAL position, the motion alarm must sound.

Return both levers to NEUTRAL and turn excavator key to OFF position. Exit the excavator. (See STOPPING THE ENGINE AND LEAVING THE EXCAVATOR on Page 78.)

Inspecting (Cont'd)

The motion alarm is mounted to the bottom rear of the excavator. (To the front of the engine oil pan.)

Figure 291

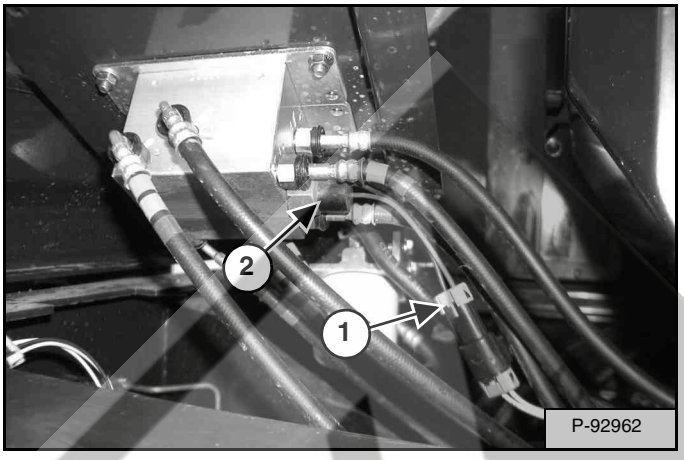


Inspect the motion alarm electrical connections and wire harness (Item 1) **[Figure 291]**, wire harness (Item 1) **[Figure 292]** and motion alarm switch (Item 2) **[Figure 292]** for tightness and damage. Repair or replace any damaged components.

If the motion alarm switch requires adjustment, see the following information.

Adjusting Switch Position

Figure 292



The motion alarm switch (Item 2) **[Figure 292]** is located in the travel control valve located under the floorplate. Remove the floor mat and the floorplate to access the switch.

The switch (Item 2) **[Figure 292]** is non-adjustable. It must be fully installed into the travel control valve housings and tightened. Tighten the switch to 18 – 20 N•m (13 – 15 ft-lb).

Inspect the motion alarm system for proper function after switch replacement.

WARNING

This machine is equipped with a motion alarm.
ALARM MUST SOUND!
when operating forward or backward.

Failure to maintain a clear view in the direction of travel could result in serious injury or death.

The operator is responsible for the safe operation of this machine.

W-2786-0309

RENTWAY

TAILGATE

Opening And Closing

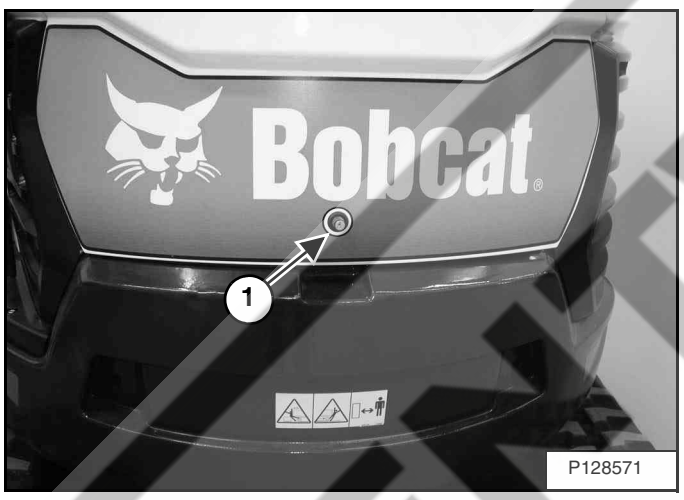
WARNING

AVOID INJURY OR DEATH
Never service or adjust the machine when the engine is running unless instructed to do so in the manual.
W-2012-0497

WARNING

Keep the rear door closed when operating the machine. Failure to do so could seriously injure a bystander.
W-2020-1285

Figure 293



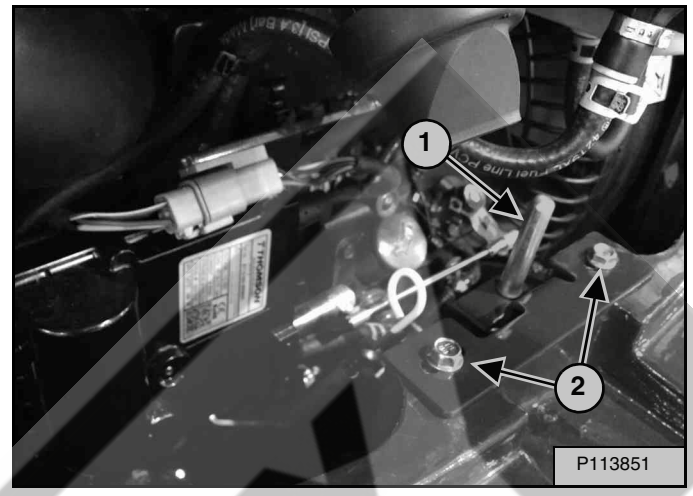
Push the button (Item 1) **[Figure 293]** to open the tailgate.

Push firmly to close the tailgate.

NOTE: The tailgate (Item 1) [Figure 293] can be locked using the start key.

Adjusting The Latch

Figure 294



The tailgate latch (Item 1) can be adjusted by loosening the two bolts (Item 2) **[Figure 294]**, moving the latch, and tightening the two bolts.

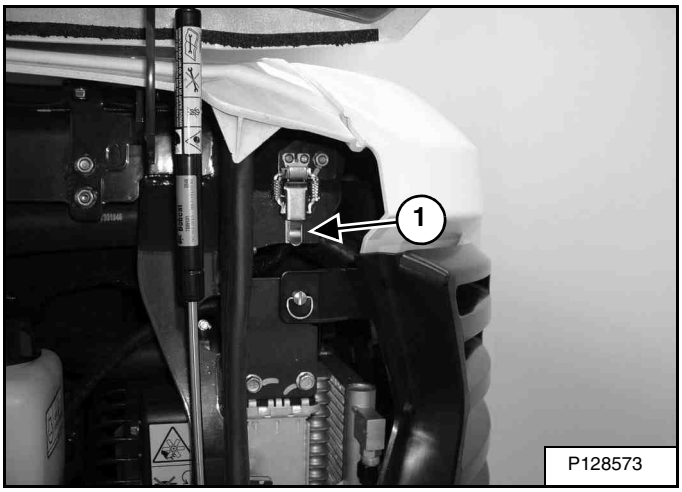
Close the tailgate before operating the excavator.

RENTWAY

RIGHT SIDE COVER

Opening And Closing

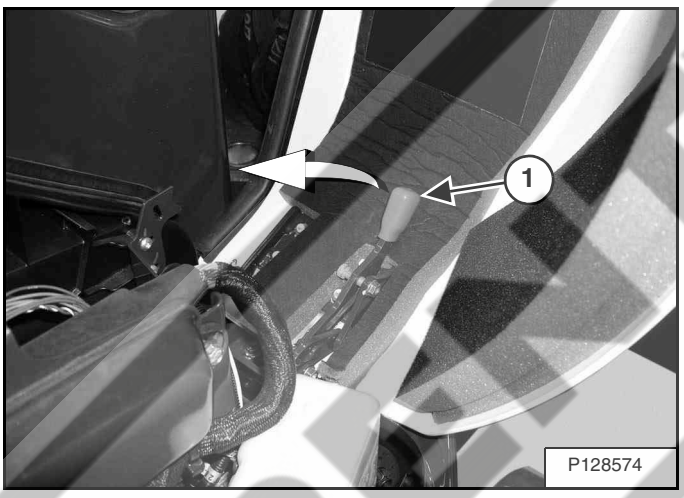
Figure 295



Open the tailgate to access the right side cover latch (Item 1) **[Figure 295]**.

Pull up on the latch (Item 1) **[Figure 295]** to release cover.

Figure 296



Raise the right side cover and rotate forward until it is held fully open.

To close the right side cover, pull back on the lever (Item 1) **[Figure 296]** while raising the right side cover. Rotate the cover back until it is in the fully closed position.

Close the cover fully and secure by lowering the latch (Item 1) **[Figure 295]** to lock the cover in the closed position.

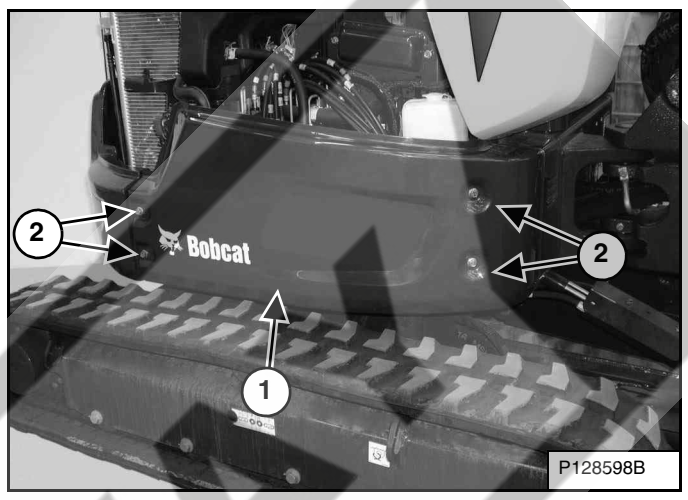
RIGHT SIDE PANEL

Removal And Installation

Open the right side cover. (See RIGHT SIDE COVER on Page 160.)

Removal

Figure 297



To remove the right side upperstructure cover (Item 1), remove the four bolts (Item 2) **[Figure 297]**.

Remove the cover (Item 1) **[Figure 297]**.

Installation

Position the cover (Item 1) **[Figure 297]** to the upperstructure.

Install the four bolts (Item 2) **[Figure 297]** and tighten.

CAB FILTERS

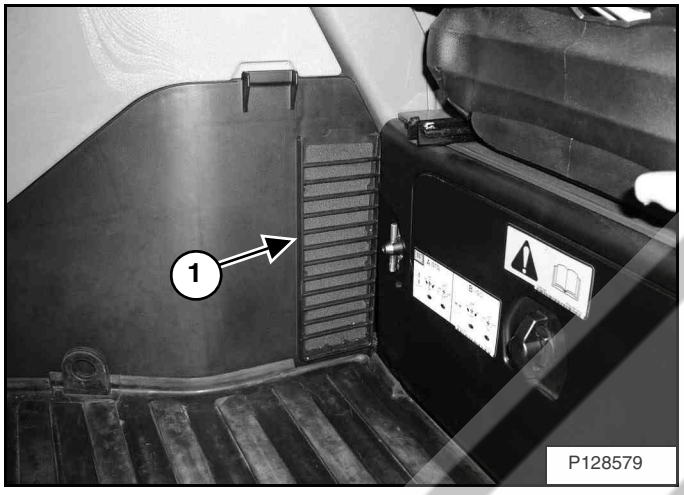
Cleaning And Maintenance

The recirculation filter and the fresh air filter must be cleaned regularly. (See SERVICE SCHEDULE on Page 153.)

The recirculation filter is located to the right of the operator seat and the fresh air filter is located under the right side cover.

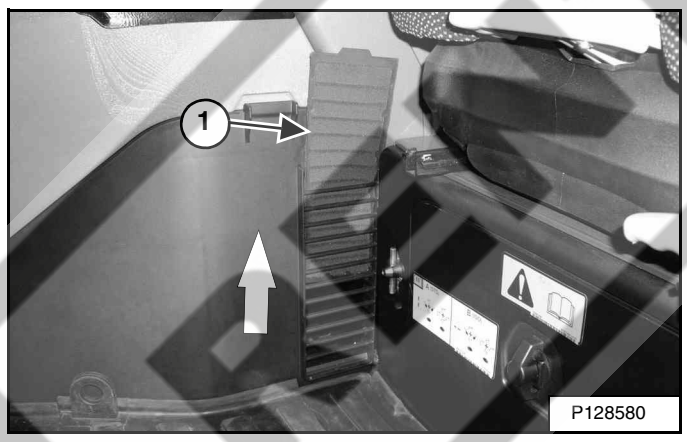
Recirculation Filter

Figure 298



The recirculation filter (Item 1) **[Figure 298]** is located to the right of the operator's seat.

Figure 299



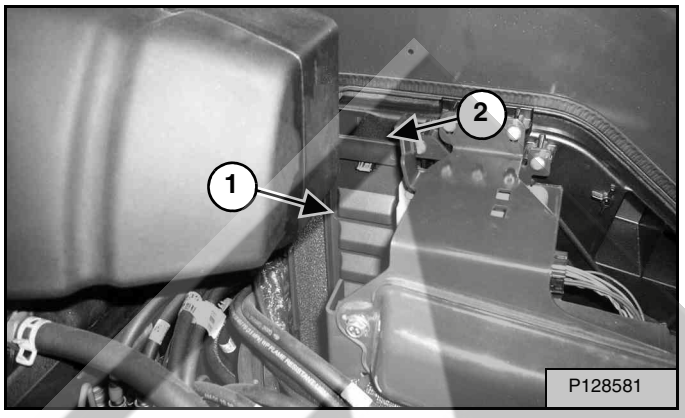
Pull up on the filter (Item 1) **[Figure 299]** until removed from the housing.

Shake the filter or use low pressure air to clean the filter. Replace the filter when very dirty or if damaged.

Installation: Position the bottom of the filter (Item 1) **[Figure 299]** into the housing and slowly push the filter down fully.

Fresh Air Filter

Figure 300

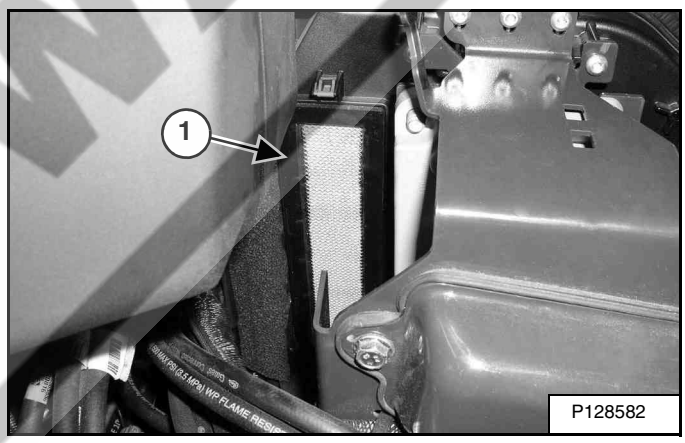


The fresh air filter is located under the right side cover.

Open the right side cover. (See RIGHT SIDE COVER on Page 160.)

Pull out on the tab (Item 1) and remove the cover (Item 2) **[Figure 300]**.

Figure 301



Pull the filter (Item 1) **[Figure 301]** out of the housing.

Shake the filter or use low pressure air to clean the filter. Do not use solvents. Replace the filter when very dirty or damaged.

Installation: Position the filter (Item 1) **[Figure 299]** into the housing and slowly push the filter in fully.

Place the bottom tabs of the filter cover (Item 2) into the frame and push the top in until the tab (Item 1) **[Figure 300]** locks to the frame.

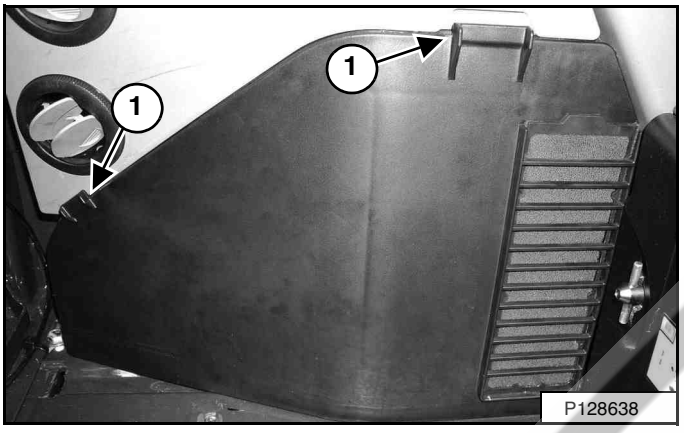
NOTE: Do not use a brush on the filter as it can push debris into the filter. Gently tap the sides of the filter and / or use low pressure compressed air from the back side of the filter to remove debris. If the filter is damaged, replace the filter.

Cleaning And Maintenance

The inside of the HVAC housing needs to be cleaned regularly. Dust will accumulate over time inside the housing. A dusty heater and evaporator coil will reduce heating and cooling efficiency. (See SERVICE SCHEDULE on Page 153.)

The HVAC housing is located to the right of the operator seat.

Figure 302

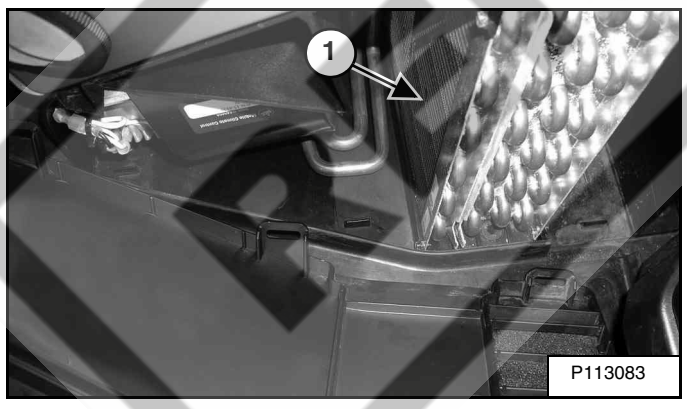


Remove the floor mat.

Pull back on the two latches (Item 1) **[Figure 302]** and remove the HVAC side cover.

To allow water to drain from the HVAC housing during the cleaning process, it is recommended to rotate the upperstructure 90° to the right. Then using the blade, raise the front of the excavator to allow water to run out of the housing. Use jackstands to support the front of the undercarriage.

Figure 303



Use a lower pressure air or a low pressure water stream to remove debris and to clean the coils (Item 1) **[Figure 303]**.

After the housing has been cleaned and flushed, remove the jackstands and raise the blade so the front of the excavator is flat on the ground. Stop the engine.

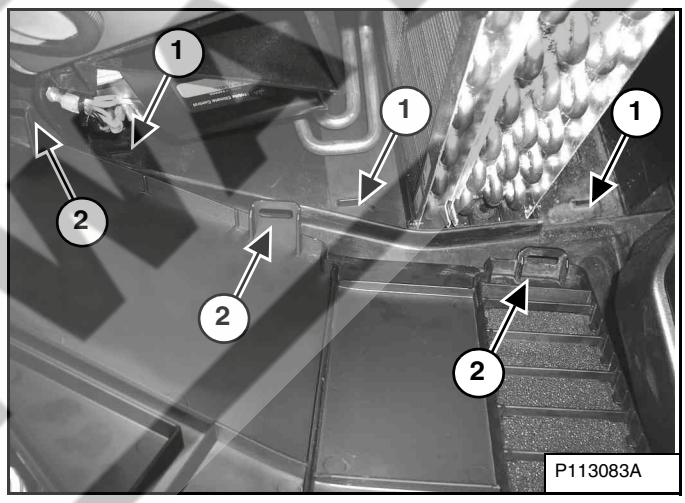
There are three rubber drain valves that allow condensation to drain from the housing during normal air conditioning usage. These drain valve can get clogged with dirt and should be cleaned at the same time the housing is cleaned.

Two of the drain valve can be accessed from the right side cover (the drain valves are located below the HVAC housing on the right side) and one of the valves is located below the left rear corner of the HVAC housing and will be accessed by removing the centre floorplate.

Pinch the three rubber drain valves on the flat sides to open the valves and allow dirt and moisture to exit from the end of the valves.

Reinstall the centre floorplate and close the right side cover.

Figure 304



NOTE: The floor mat needs to be removed to allow easier access for installing the HVAC side cover.

Three tabs (Item 1) are on the bottom of the HVAC housing that the side cover retainers (Item 2) **[Figure 304]** fit into.

Position the side cover on the tabs and starting with the front edge of the side cover, position it into the front of the HVAC housing. Press on the front of the cover to secure the front latch (Item 1) **[Figure 302]**. Then press in on the top edge of the side cover and work back to the rear of the cover and secure the rear latch.

Reinstall the floor mat.

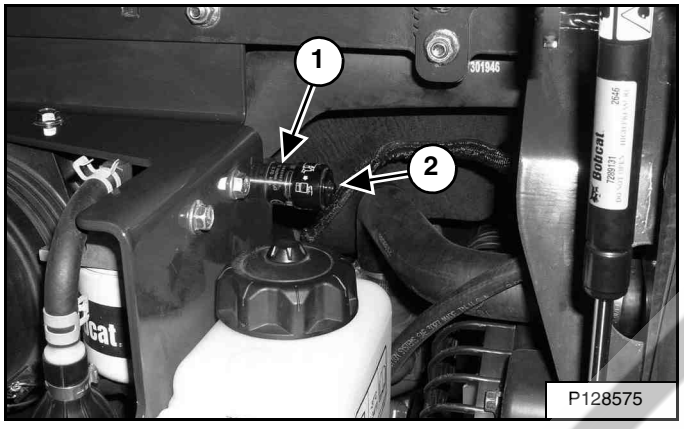
AIR CLEANER SERVICE

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 153.)

Daily Check

The air cleaner is located in the engine compartment. Open the tailgate to access the air cleaner for service. (See TAILGATE on Page 159.)

Figure 305



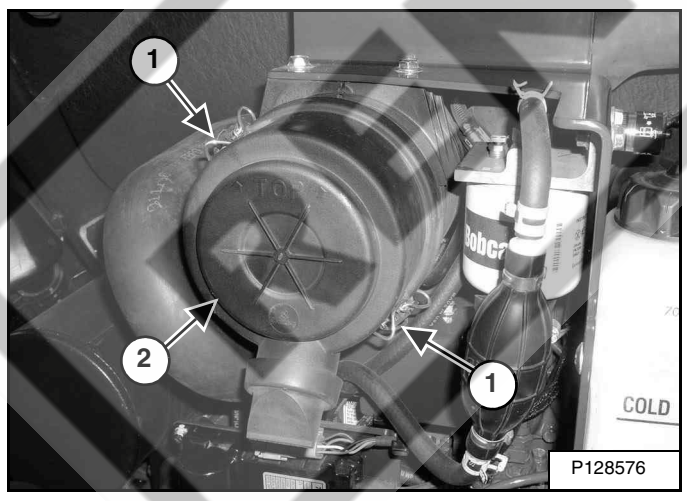
Check the condition indicator (Item 1) **[Figure 305]**. If the red ring shows in the condition indicator, the filter needs to be replaced.

Replace the inner filter every third time the outer filter is replaced or as indicated.

Replacing The Filter Elements

Outer Filter

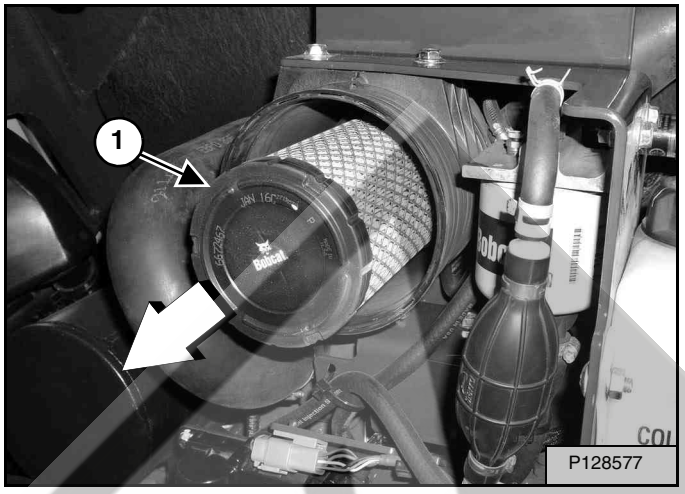
Figure 306



Release the two fasteners (Item 1) **[Figure 306]**.

Remove and clean the dust cup (Item 2) **[Figure 306]**.

Figure 307



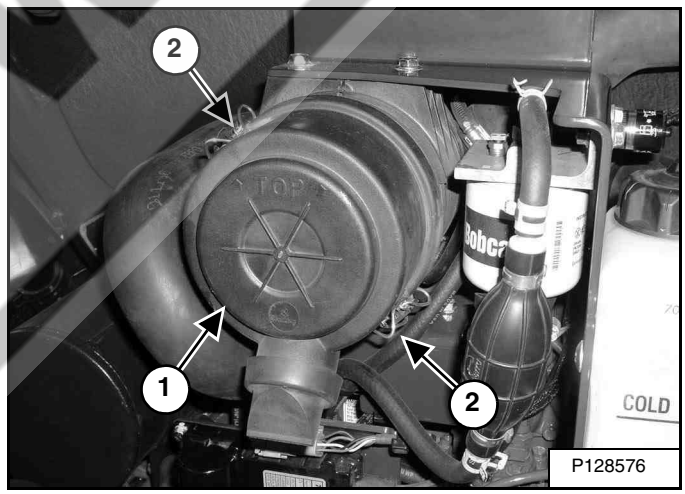
Pull the outer filter (Item 1) **[Figure 307]** from the air cleaner housing.

Check the housing for damage.

Clean the housing and the seal surface. DO NOT use compressed air.

Install a new filter.

Figure 308



Install the dust cup (Item 1) and engage the fasteners (Item 2) **[Figure 308]**.

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

After the outer filter has been replaced, press the button (Item 2) **[Figure 305]** on the end of the condition indicator and start the engine. Run at full rpm, then reduce engine speed and stop the engine. If the red ring (Item 1) **[Figure 305]** shows in the condition indicator, replace the inner filter.

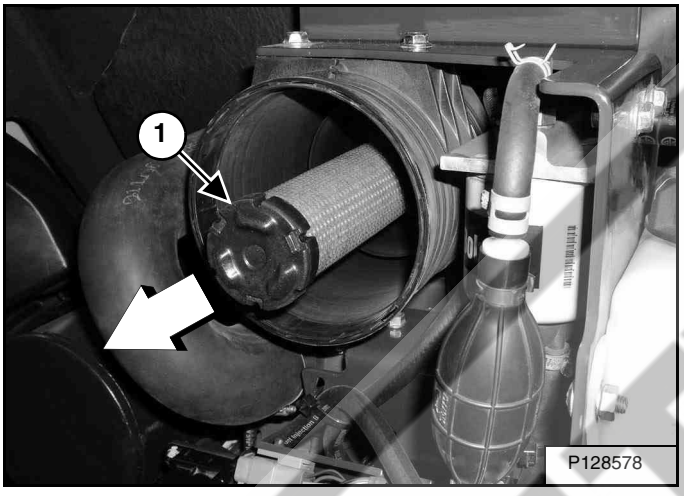
Replacing The Filter Elements (Cont'd)

Inner Filter

Only replace the inner filter under the following conditions:

- Replace the inner filter every *third* time the outer filter is replaced.
- After the outer filter has been replaced, press the button (Item 2) **[Figure 305]** on the end of the condition indicator. Start the engine. Run the engine at full rpm, then reduce engine speed. Stop the engine. If the red ring shows in the condition indicator, replace the inner filter.

Figure 309



Remove the dust cup, outer filter and inner filter (Item 1) **[Figure 309]**.

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

Install the new inner filter.

Install the outer filter and the dust cup.

Press the button on the condition indicator to remove the red ring.

RENTWAY

FUEL SYSTEM

Fuel Specifications

NOTE: Contact your local fuel supplier to receive recommendations for your region.

U.S. Standard (ASTM D975)

Use only clean, high quality diesel fuel, Grade Number 2-D or Grade Number 1-D.

Ultra low sulfur diesel fuel must be used in this machine. Ultra low sulfur is defined as 15 mg/kg (15 ppm) sulfur maximum.

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

TEMPERATURE	GRADE 2-D	GRADE 1-D
Above -9°C (+15°F)	100%	0%
Down to -21°C (-5°F)	50%	50%
Below -21°C (-5°F)	0%	100%

NOTE: Biodiesel blend fuel may also be used in this machine. Biodiesel blend fuel must contain no more than five percent biodiesel mixed with ultra low sulfur petroleum based diesel. This biodiesel blend fuel is commonly marketed as B5 blended diesel fuel. B5 blended diesel fuel must meet ASTM specifications.

E.U. Standard (EN590)

Use only clean, high quality diesel fuel that meets the EN590 specifications listed below:

- Ultra low sulfur diesel fuel defined as 10 mg/kg (10 ppm) sulfur maximum
- Diesel fuel with cetane number of 51.0 and above.

NOTE: Biodiesel blend fuel may also be used in this machine. Biodiesel blend fuel must contain no more than seven percent biodiesel mixed with ultra low sulfur petroleum based diesel. This biodiesel blend fuel is commonly marketed as B7 blended diesel fuel. B7 blended diesel fuel must meet EN590 specifications.

Biodiesel Blend Fuel

Biodiesel blend fuel has unique qualities that should be considered before using in this machine:

- Cold weather conditions can lead to plugged fuel system components and hard starting.
- Biodiesel blend fuel is an excellent medium for microbial growth and contamination 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.

RENTWAY

Filling The Fuel Tank

WARNING

AVOID INJURY OR DEATH

Stop and cool the engine before adding fuel. NO SMOKING! Failure to obey warnings can cause an explosion or fire.

W-2063-0807

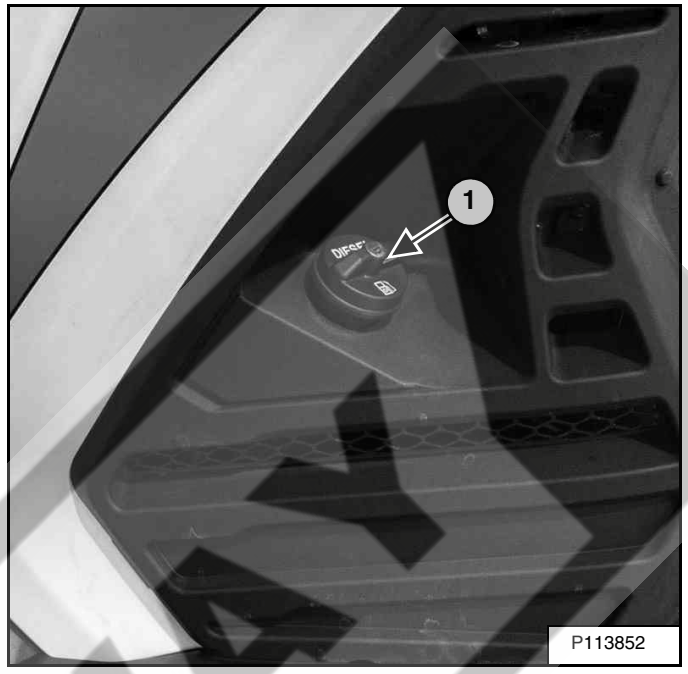
WARNING

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

Figure 310



Use the start key to unlock the fuel cap.

Remove the fuel fill cap (Item 1) **[Figure 310]**.

Use a clean, approved safety container to add fuel. Add fuel only in an area that has a free movement of air and no flames or sparks. **NO SMOKING!**

Install and tighten the fuel fill cap.

Clean up any spilled fuel.

See the SERVICE SCHEDULE for the service interval when to remove water from or replace the fuel filter. (See SERVICE SCHEDULE on Page 153.)

RENTWAY

Using The Fuel Fill Pump

WARNING

AVOID INJURY OR DEATH

Stop and cool the engine before adding fuel. NO SMOKING! Failure to obey warnings can cause an explosion or fire.

W-2063-0807

WARNING

AVOID INJURY OR DEATH

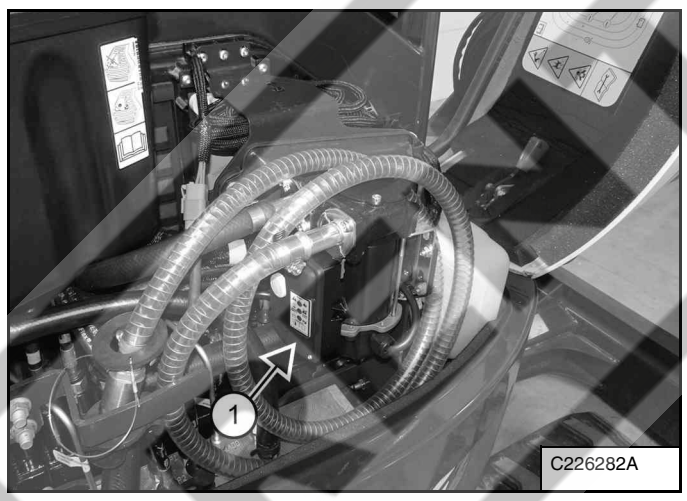
Always clean up spilled fuel or oil. Keep heat, flames, sparks or lighted tobacco away from fuel and oil. Failure to use care around combustibles can cause explosion or fire.

W-2103-0508

Park the machine on a flat, level surface for refueling.

Stop the engine and exit the machine.

Figure 311

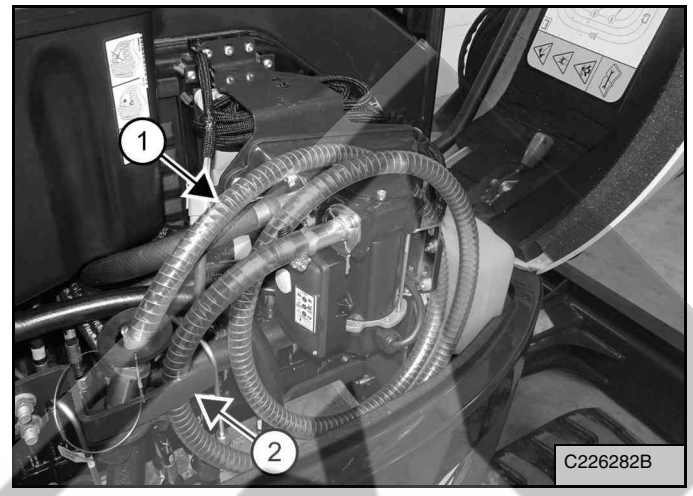


Your machine may be equipped with a battery-operated fuel fill pump (Item 1) **[]** located under the right side cover.

NOTE: Some images may appear different from your machine but the procedure is correct.

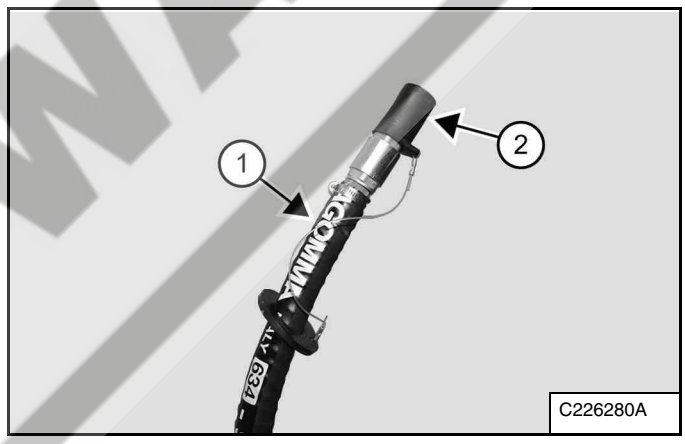
Open the right side cover. (See on Page 160.)

Figure 312



Remove the fill hose (Item 1) from the storage bracket (Item 2) **[Figure 312]**.

Figure 313

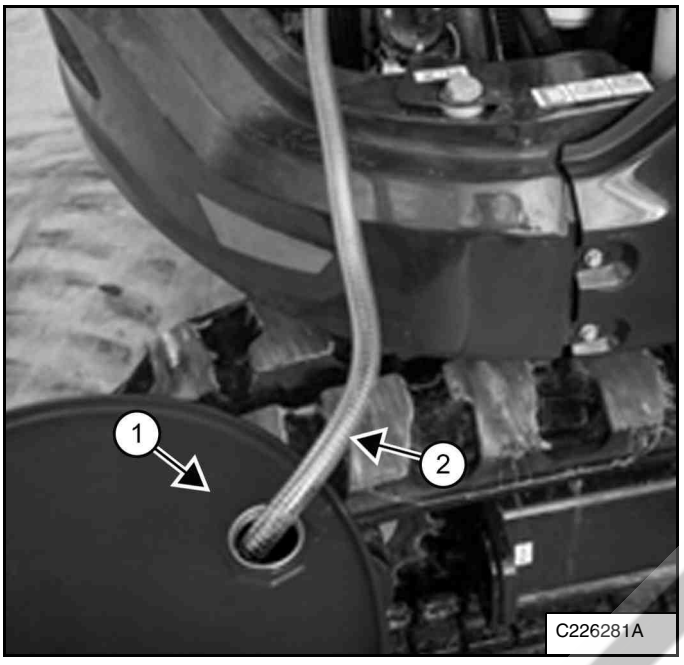


Clean the fuel hose (Item 1) **[Figure 313]** of any dirt or debris. Make sure the entire length of the hose that will be inserted into the fuel container has been cleaned.

Remove the hose cover (Item 2) **[Figure 313]**.

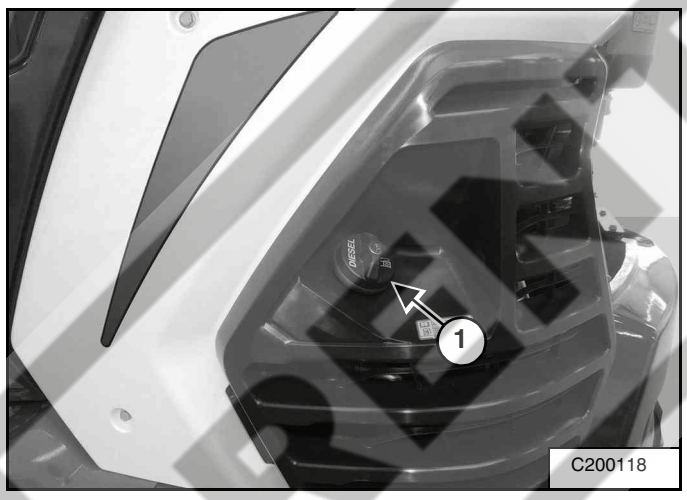
Using The Fuel Fill Pump (Cont'd)

Figure 314



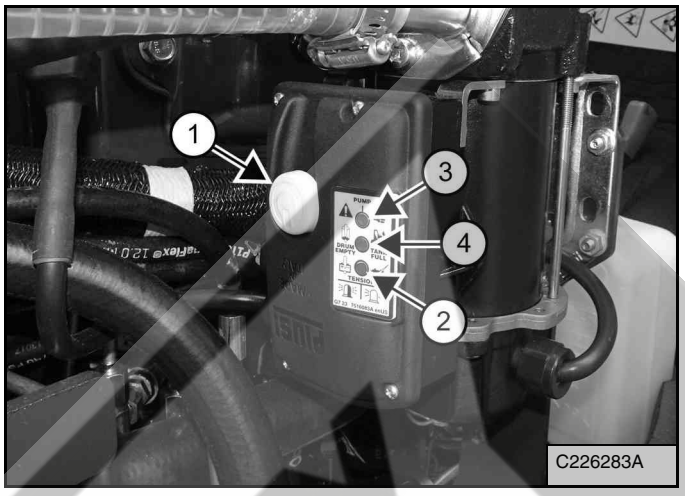
Clean the fuel container (Item 1) before removing the fuel container cap. Insert the end of fuel hose (Item 2) **[Figure 314]** into the fuel container.

Figure 315



Loosen the fuel cap (Item 1) **[Figure 315]** using the start key to allow air to escape while filling the fuel tank.

Figure 316



Briefly press the button (Item 1) **[Figure 316]** on the fuel pump to wake up the system from stand-by mode.

The green light (Item 2) **[Figure 316]** will turn on.

Press the button (Item 1) **[Figure 316]** on the fuel pump to start fuel transfer.

The red light (Item 3) **[Figure 316]** will turn on.

The yellow light (Item 4) **[Figure 316]** will turn on when the fuel tank is full and the transfer pump will stop automatically.

Or

Press the button (Item 1) **[Figure 316]** for several seconds to stop fuel transfer at any time.

NOTE: The system goes into standby mode by turning off the LEDs (Item 2, 3 and 4) [Figure 316] one minute after the end of the last operation.

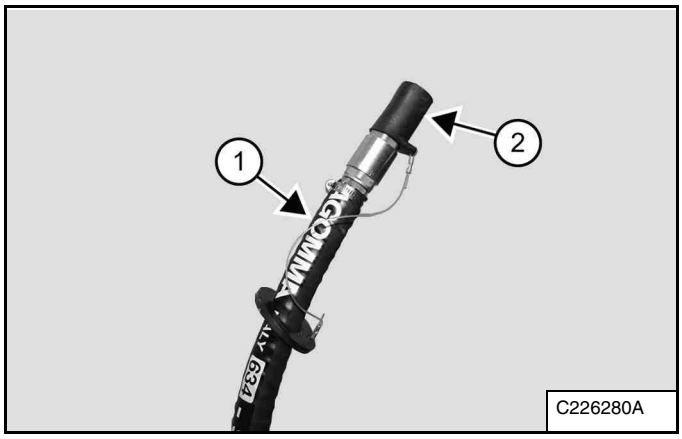
NOTE: Do not leave the machine while refueling. The fuel transfer pump is energized and under pressure.

REENTWAY

Using The Fuel Fill Pump (Cont'd)

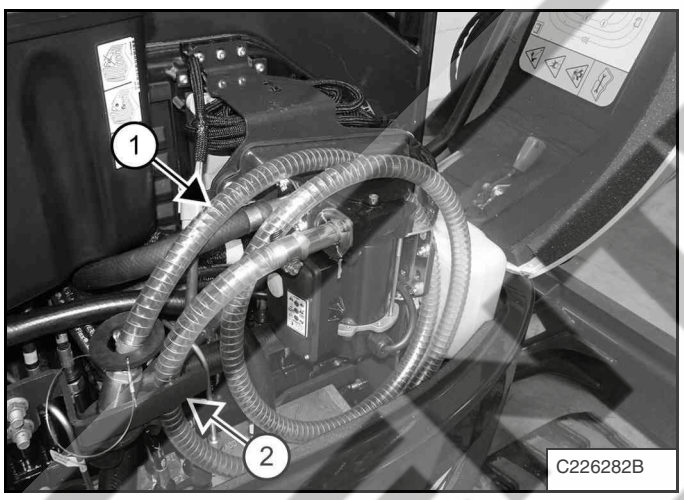
When fuel transfer is done, remove the hose (Item 2) from the fuel container (Item 1) **[Figure 314]**,

Figure 317



Clean the fuel hose (Item 1) of fuel residue. Reinstall the cover (Item 2) **[Figure 317]** on the hose.

Figure 318



Reinstall the fuel hose (Item 1) onto the storage bracket (Item 2) **[Figure 318]**.

Tighten the fuel tank cap (Item 1) **[Figure 315]**.

Close the right side cover. (See on Page 160.)

Troubleshooting The Fuel Fill Controller

STATUS OF LEDS			DESCRIPTION
GREEN	YELLOW	RED	
off	off	off	stand-by phase
flashing	off	off	insufficient voltage alarm
on	off	off	presence of abnormal power
on	off	on	pump activated
on	off	flashing fast	exceeds maximum current alarm
on	off	flashing slow	exceeds maximum temperature alarm
on	on	off	fuel level alarm
on	flashing	off	no priming at beginning of fuel delivery alarm (empty hose) or lack of fuel
flashing	flashing	off	abnormal pump condition, contact your dealer for service
off	flashing	flashing	

Troubleshooting The Fuel Fill System

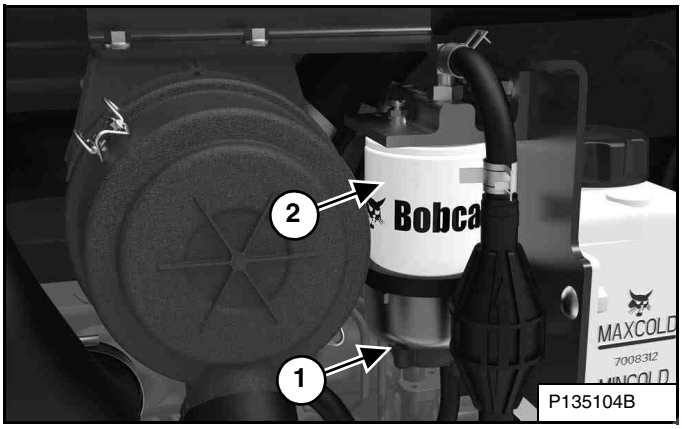
PROBLEM	POSSIBLE CAUSE	CORRCTIVE ACTION
motor not turning	lack of electrical power	check harness connections
	pump rotor jammed	check for damaged or obstructed rotor
	damaged motor	repair or replace
motor turns slow at startup	low voltage to motor	check battery voltage, charge battery if low
low or no fuel flow	insufficient fuel qty	refill fuel supply
	by-pass valve blocked	clean, repair or replace valve
	air entering pump	check fuel level in tank, check connection seals
	low rotation speed	check battery voltage
	suction hose at bottom of tank	raise hose
increased pump noise	pump cavitation	reduce suction pressure
	air in by-pass valve	allow air to be purge from valve
	air being drawn into hose	check fuel volume, and hose connections
fuel leakage at pump	damage pump seals	repair or replace

Fuel Filters

Removing Water

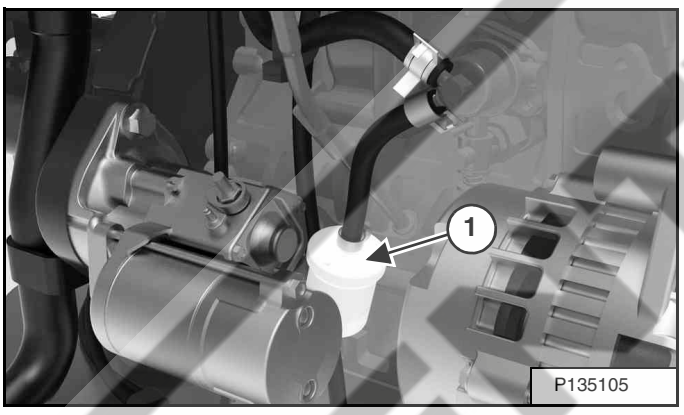
Open the tailgate. (See TAILGATE on Page 159.)

Figure 319



Loosen the drain (Item 1) **[Figure 319]** at the bottom of the fuel filter (Item 2) **[Figure 319]** to drain water from the filter into a container.

Figure 320



Inspect the fuel pre-filter (Item 1) **[Figure 320]** daily for moisture and contamination. Replace as necessary.

Clean up any spilled fuel.

Replacing Elements

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 153.)

Remove and replace the fuel pre-filter (Item 3) **[Figure 320]**.

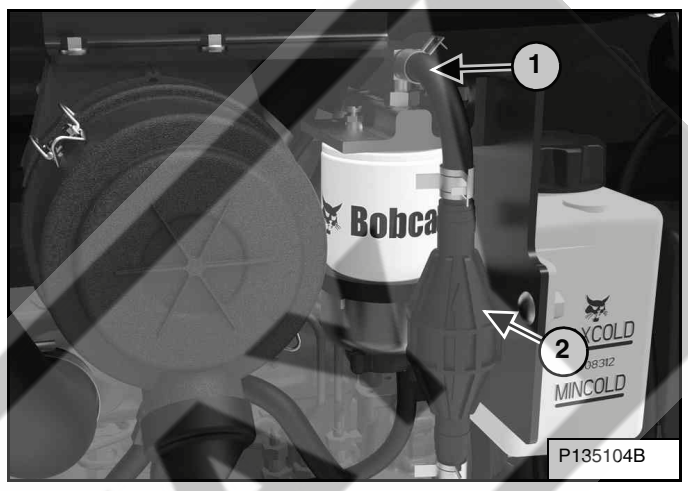
Remove the fuel filter (Item 2) **[Figure 319]**. Clean the area around the filter housing. Put clean oil on the seal of the new filter. Install the fuel filter and hand tighten.

Remove the air from the fuel system. (See Removing Air From The Fuel System on Page 171.)

Draining The Fuel Tank

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 153.)

Figure 321



Remove the hose (Item 1) **[Figure 321]** from the fuel filter. Route the hose to a container.

Squeeze the hand pump (priming bulb) (Item 2) **[Figure 321]** to start the fuel siphoning from the fuel tank.

Drain the fuel into the container.

Reuse, recycle or dispose of fuel in an environmentally safe manner.

Reinstall the hose (Item 1) **[Figure 321]** after the fuel is removed from fuel tank.

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 physician familiar with this injury.

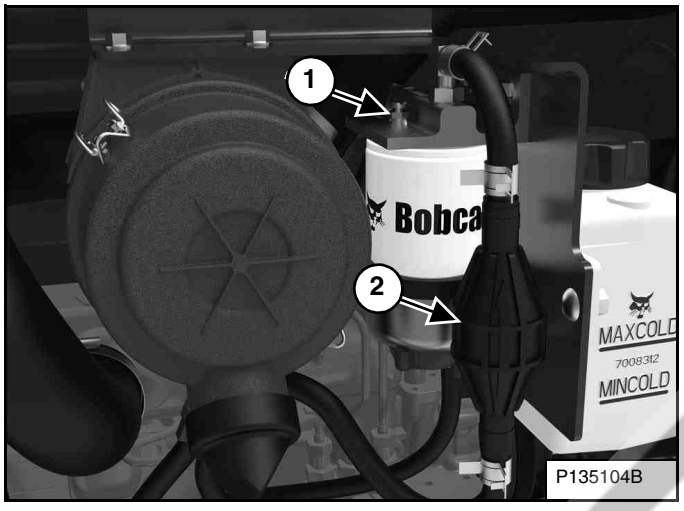
W-2072-0807

REFERENCE ONLY

Removing Air From The Fuel System

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

Figure 322

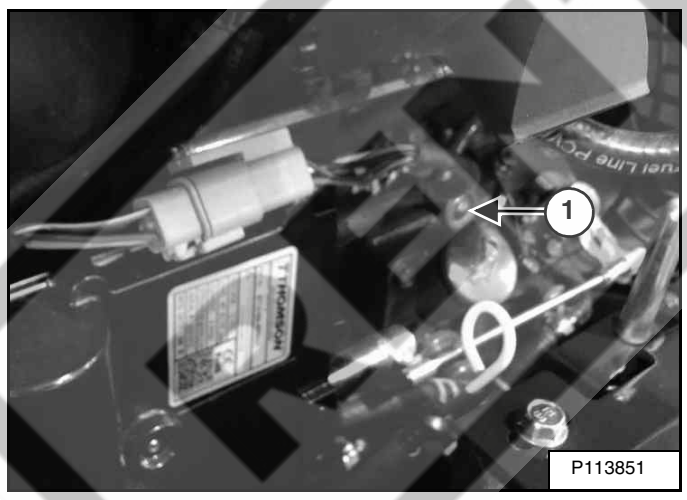


Open the tailgate. (See TAILGATE on Page 159.)

Open the fuel filter vent (Item 1) and operate the hand pump (priming bulb) (Item 2) **[Figure 322]** until the fuel flows from the vent with no air bubbles.

Close the vent (Item 1) **[Figure 322]**.

Figure 323



Start the engine. It may be necessary to open the vent (Item 1) **[Figure 323]** at the fuel injection pump briefly until the engine runs smoothly.

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

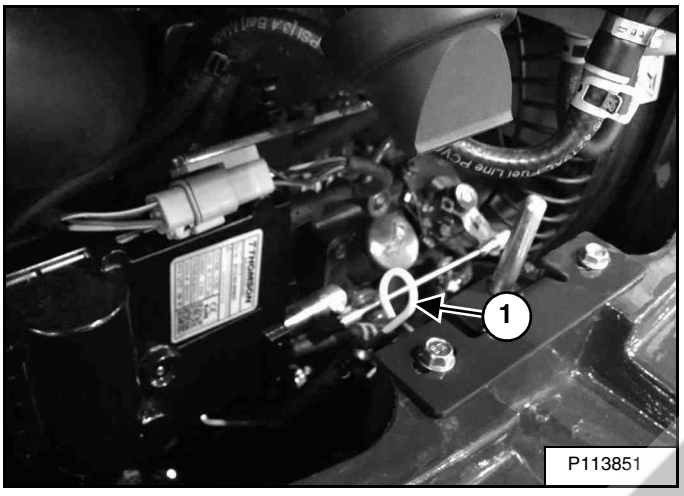
FLITWAY

ENGINE LUBRICATION SYSTEM

Checking And Adding Engine Oil

Check the engine oil after every 8 – 10 hours of operation and before starting the engine. (See SERVICE SCHEDULE on Page 153.)

Figure 324



Open the tailgate. (See TAILGATE on Page 159.)

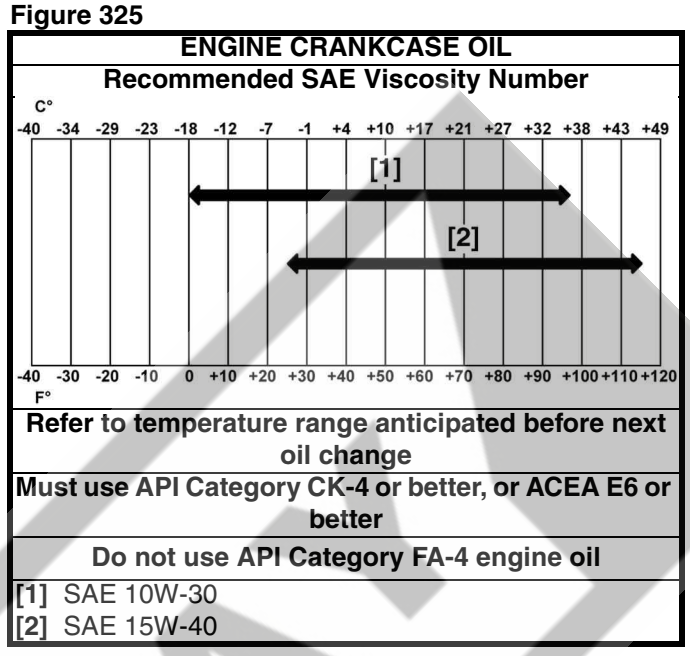
Remove the dipstick (Item 1) **[Figure 324]**.

Keep the oil level between the marks on the dipstick.

Use a good quality motor oil that meets the correct API Service Classification.

Engine Oil Chart

Figure 325



Bobcat engine oils are recommended for use in this machine. If Bobcat engine oil is not available, use a good quality engine oil that meets API Service Category of CK-4 or better, or ACEA E6 or better **[Figure 325]**.

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

RENTWAY

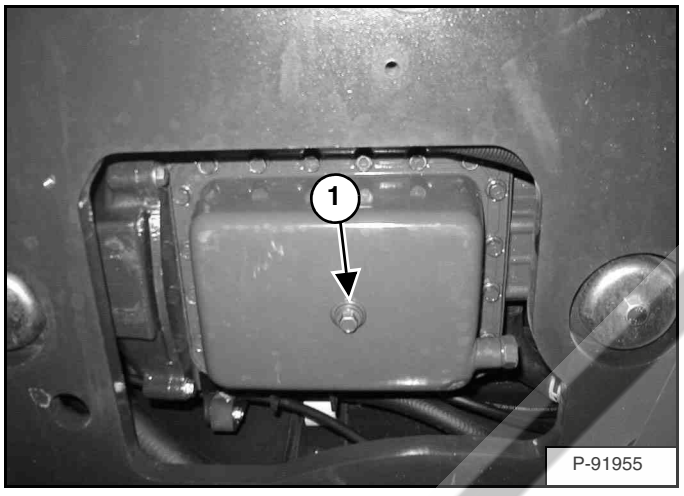
Removing And Replacing Oil And Filter

See the SERVICE SCHEDULE for the service interval for replacing the engine oil and filter. (See SERVICE SCHEDULE on Page 153.)

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

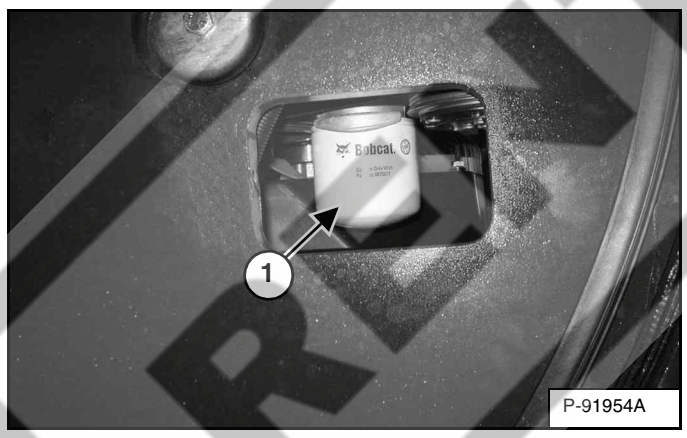
Open the tailgate. (See TAILGATE on Page 159.)

Figure 326



Place a container under the oil pan. Remove the drain plug (Item 1) **[Figure 326]** from the bottom of the engine oil pan.

Figure 327



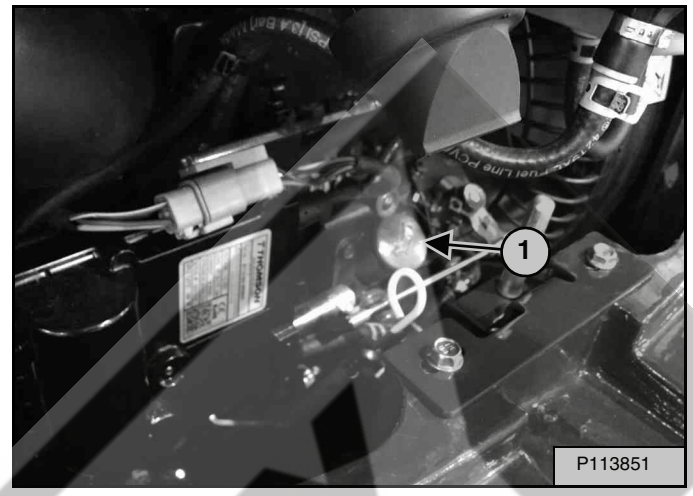
Remove the oil filter (Item 1) **[Figure 327]** and clean the filter housing surface.

Use a genuine Bobcat replacement filter. Put clean oil on the filter gasket. Install the filter and hand tighten.

Install and tighten the drain plug (Item 1) **[Figure 326]**.

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

Figure 328



Remove the fill cap (Item 1) **[Figure 328]**.

Put oil in the engine. (See Engine Oil Chart on Page 172.)

Install the fill cap (Item 1) **[Figure 328]**.

Start the engine and let it run for several minutes.

Stop the engine. Check for leaks at the oil filter. Check the oil level.

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

RENTWAY

ENGINE COOLING SYSTEM

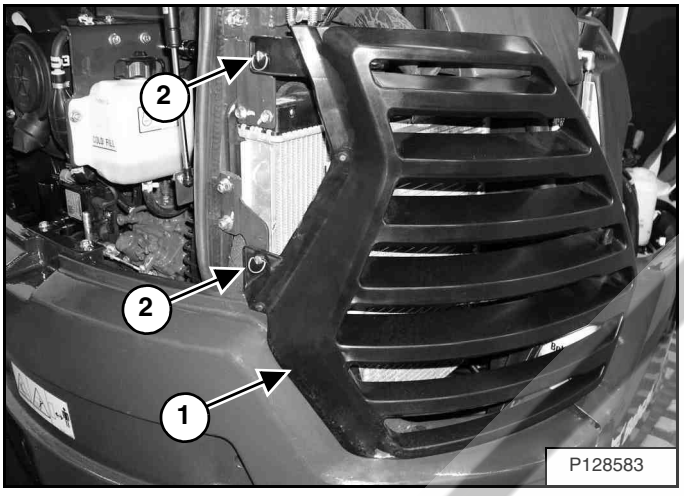
Check the cooling system every day to prevent over-heating, loss of performance or engine damage. (See SERVICE SCHEDULE on Page 153.)

Cleaning

Open the right side cover. (See RIGHT SIDE COVER on Page 160.)

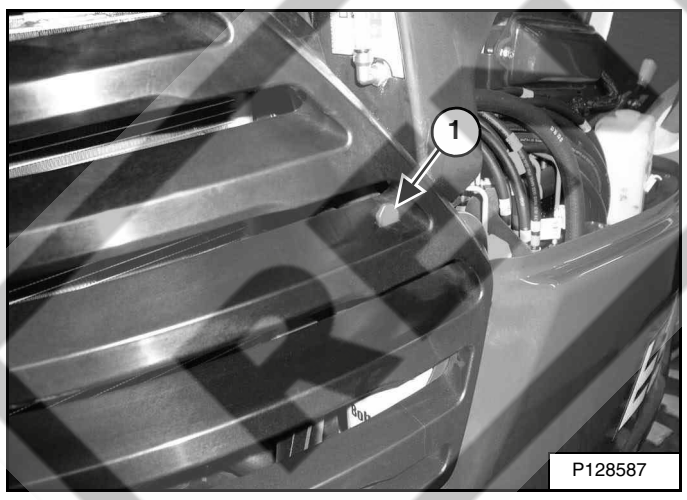
NOTE: Allow the cooling system and engine to cool before servicing or cleaning the cooling system.

Figure 329



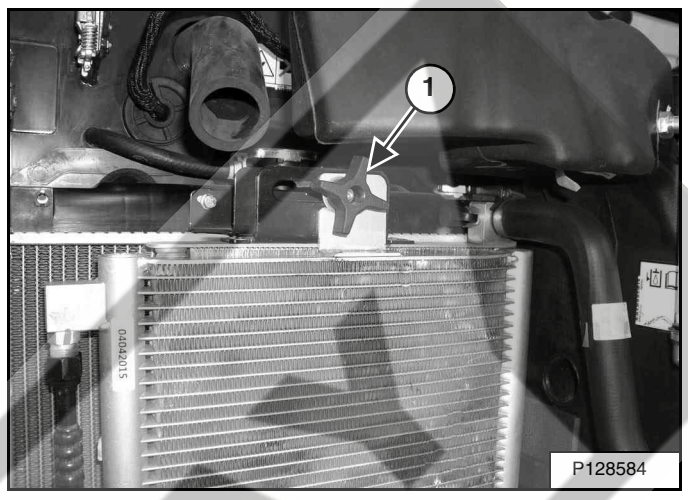
To remove the side grille (Item 1), turn the two fasteners (Item 2) **[Figure 331]** a quarter turn.

Figure 330



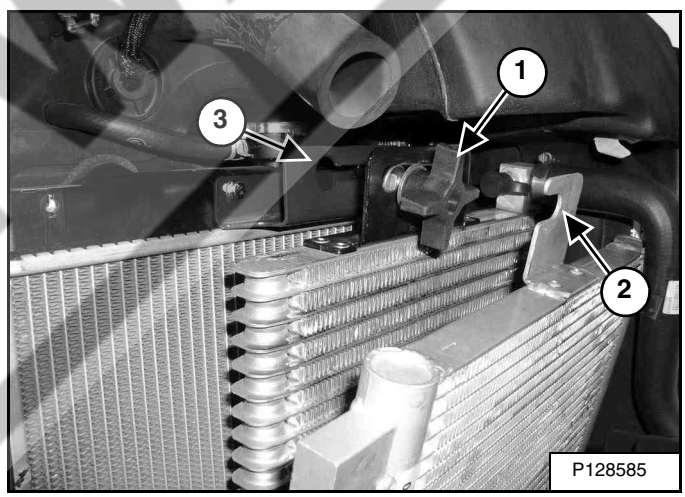
Pull out slightly on the rear of the grill and then lift up on the grille to remove from the post (Item 1) **[Figure 331]**. Remove the grille.

Figure 331



Loosen the knob (Item 1) **[Figure 331]**. Slide the knob toward the rear of the machine.

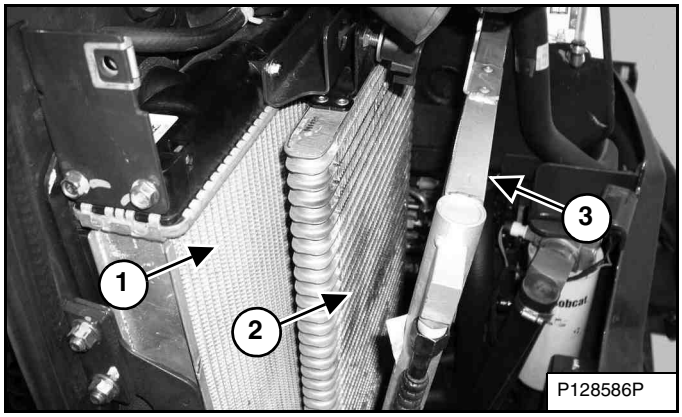
Figure 332



Slide the knob (Item 1) out of the condenser mount (Item 2) (if equipped) and the radiator mounting bracket (Item 3) **[Figure 332]**. Be careful not to damage fins.

Cleaning (Cont'd)

Figure 333



Use low air pressure or low water pressure to clean the radiator (Item 1), oil cooler (Item 2) and condenser (Item 3) **[Figure 333]** (if equipped). Be careful not to damage fins when cleaning.

Position the knob (Item 1) so it fits into the radiator mount (Item 3) and the condenser mount (Item 2) **[Figure 332]** (if equipped).

Slide the knob (Item 1) toward the front of the machine until it is fully seated in the slots of the mounting brackets. Tighten the knob (Item 1) **[Figure 331]**. Be careful not to damage fins.

Checking Level

WARNING

AVOID BURNS

Do not remove radiator cap when the engine is hot. You can be seriously burned.

W-2070-1203

WARNING

AVOID INJURY OR DEATH

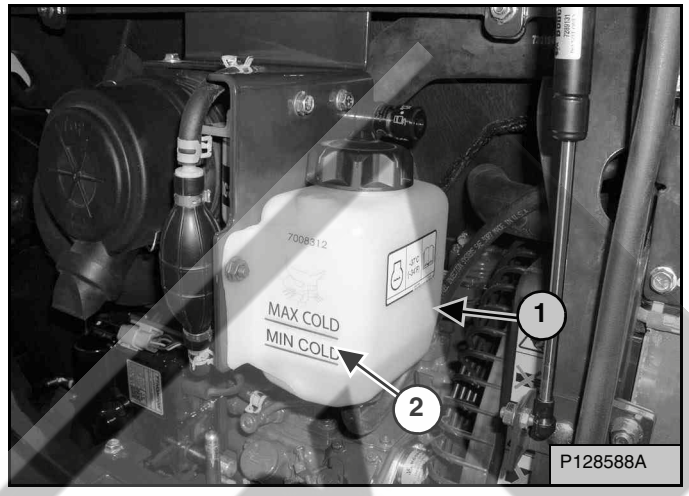
Wear safety glasses to prevent eye injury when any of the following conditions exist:

- **When fluids are under pressure.**
- **Flying debris or loose material is present.**
- **Engine is running.**
- **Tools are being used.**

W-2019-0907

Open the tailgate. (See TAILGATE on Page 159.)

Figure 334



Check the coolant level when the coolant is cold. Check the coolant level in the coolant recovery tank (Item 1). It must be between the "MAX COLD" and the "MIN COLD" level marks (Item 2) **[Figure 334]**. Add fluid as needed.

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

IMPORTANT

AVOID ENGINE DAMAGE

Always use the correct ratio of water to antifreeze.

Too much antifreeze reduces cooling system efficiency and may cause serious premature engine damage.

Too little antifreeze reduces the additives which protect the internal engine components; reduces the boiling point and freeze protection of the system.

Always add a premixed solution. Adding full strength concentrated coolant can cause serious premature engine damage.

I-2124-0497

Removing And Replacing Coolant

See the SERVICE SCHEDULE for correct service intervals. (See SERVICE SCHEDULE on Page 153.)

Stop the engine. Open the tailgate. (See TAILGATE on Page 159.)

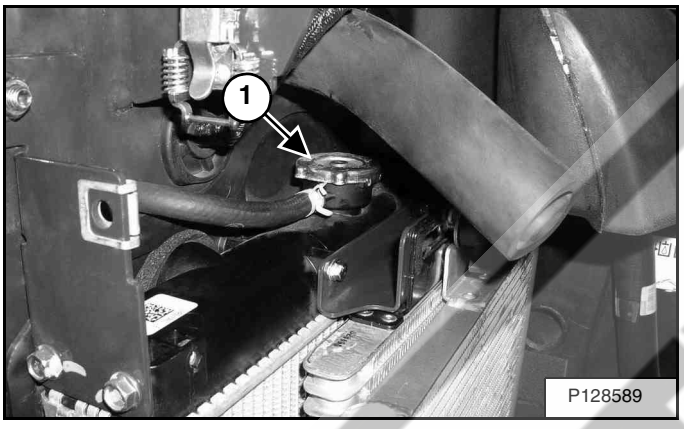
WARNING

AVOID BURNS

Do not remove radiator cap when the engine is hot. You can be seriously burned.

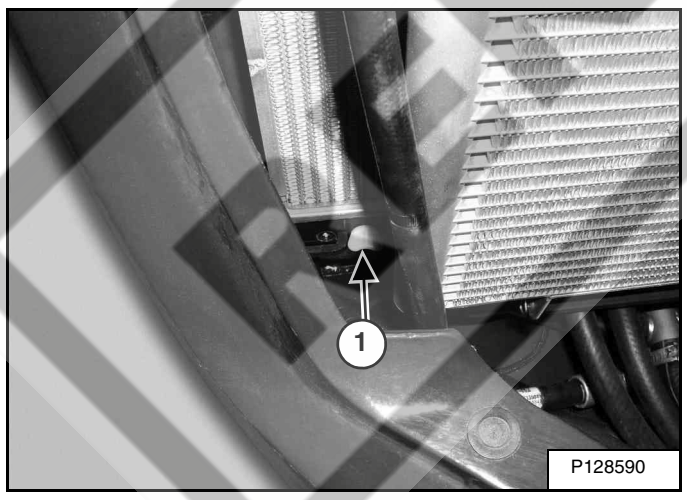
W-2070-1203

Figure 335



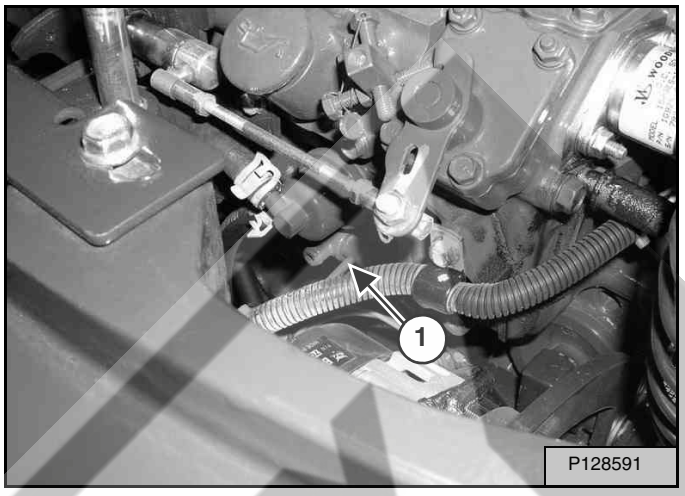
When the engine is cool, loosen and remove the radiator cap (Item 1) **[Figure 335]**.

Figure 336



Put a hose on the drain valve at the bottom of the radiator. Open the drain valve (Item 1) **[Figure 336]** and drain the coolant into a container.

Figure 337



Put a hose on the drain valve on the engine block. Open the drain valve (Item 1) **[Figure 337]** and drain the coolant into a container.

After all the coolant is removed, close both drain valves.

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

Mix the coolant in a separate container. (See Capacities on Page 233.)

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

The correct mixture of coolant to provide a -34°F (-37°C) 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.

Add premixed coolant, 47% water and 53% propylene glycol, to the recovery tank if the coolant level is low.

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

Add premixed coolant until the level is correct.

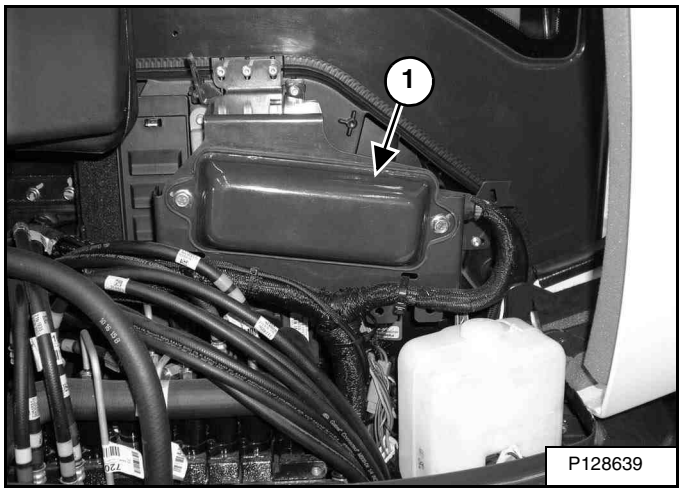
Run the engine until it is at operating temperature. Stop the engine. Check the coolant level and add as needed. Be sure the radiator cap is tight.

Add coolant to the recovery tank as needed.

Close the tailgate.

Description

Figure 338



The excavator has a 12 volt, negative earth electrical system. The electrical system is protected by fuses located under the right side cover of the excavator (Item 1) **[Figure 338]**. The fuses will protect the electrical system when there is an electrical overload. The reason for the overload must be found and corrected before starting the engine again.

The battery cables must be clean and tight. Check the electrolyte level in the battery. Add distilled water as needed. Remove acid or corrosion from the battery and cables with a sodium bicarbonate and water solution.

Put Battery Saver P/N 6664458 or grease on the battery terminals and cable ends to prevent corrosion.

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

Fuse And Relay Location / Identification

A decal is inside the fuse cover to show location and amp ratings.

Remove the cover to check or replace the fuses and relays.

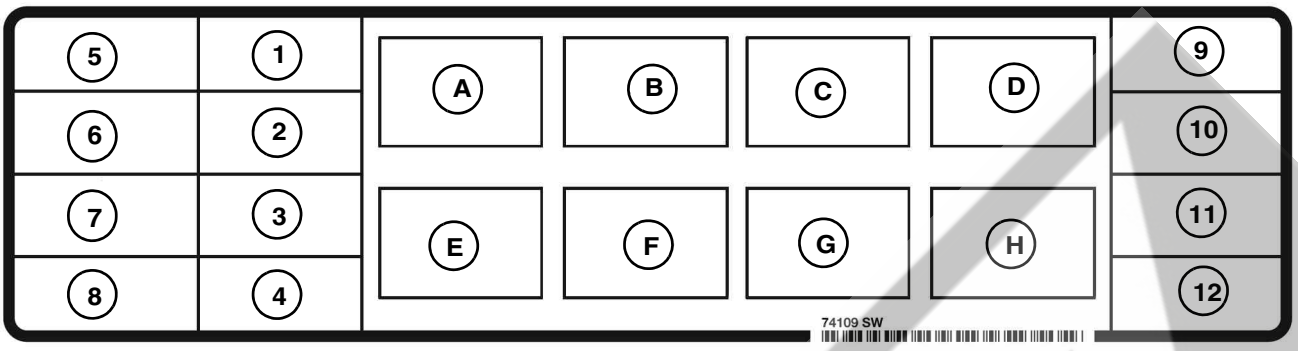
The location and sizes are shown in **[Figure 339]**.

Always replace fuses using the same type and capacity.

RENTWAY

Fuse And Relay Location / Identification (Cont'd)

Figure 339



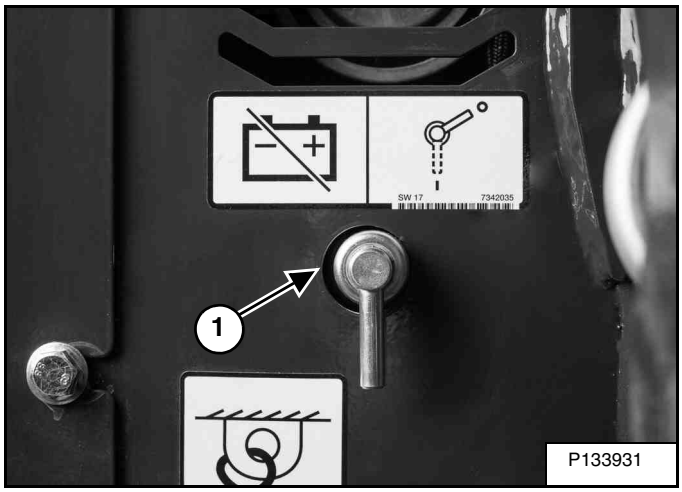
The location and sizes are shown in the table below and on the decal **[Figure 339]**. Relays are identified by the letter "R" in the AMP column.

REF	ICON	DESCRIPTION	AMP	REF	ICON	DESCRIPTION	AMP	REF	ICON	DESCRIPTION	AMP
1		Wiper / Washer	10	9		Panel / Display Controller	25	E		Fuel Shutoff	R
2		Switched Power	20	10		ACD Unswitched Power	25	F		Lights	R
3		Alternator Excite / Heater	25	11		Lights	30	G		Glow Plug	R
4		ACD Switched Power	25	12		Power Port	15	H		Starter	R
5		Auto Idle Controller (AIC) (if equipped)	20	A		Switched Power	R				
6		HVAC / Heater	40	B		Heater / HVAC	R				
7		Ignition	5	C		Lights	R				
8		Fuel Shutoff	25	D		Horn	R				

FREEWAY

Shut-Off Switch

Figure 340



The shut-off switch (Item 1) **[Figure 340]** is located on the right front of the excavator.

Rotate the switch (Item 1) anticlockwise to turn the switch to the OFF position, clockwise to turn to the ON position (shown here in the ON position) **[Figure 340]**.

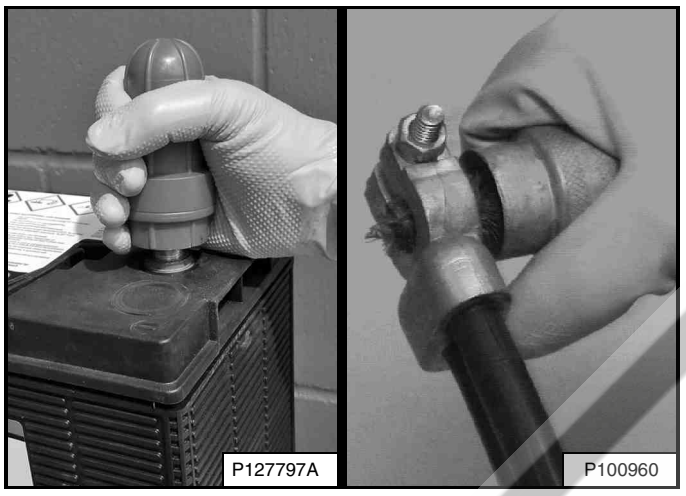
RENTWAY

Battery Maintenance

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 153.)

The Bobcat brand battery supplied with your machine is sealed and does not require watering. Proper charging and storage are important to maximize the life of all batteries.

Figure 341



Simple steps for reliability and long battery life:

- Keep battery posts and terminals clean **[Figure 341]**.
- Keep terminals tight.
- Remove corrosion from battery and terminals with sodium bicarbonate (baking soda) and water solution.
- Put Bobcat Battery Saver or grease on the battery terminals and cable ends to prevent corrosion.
- Operate the machine for at least 15 minutes to recover from the battery drain caused by engine start up whenever practical.
- Maintain the battery charge level. This is a key factor for long battery life.
- Charge a severely discharged battery with a battery charger instead of relying on the machine charging system. (See Battery Charging on Page 181.)
- Check the battery state of charge every 30 days on machines that are not frequently used. (See Battery Testing on Page 181.)

WARNING

AVOID INJURY OR DEATH

Batteries contain acid which burns eyes and skin on contact. Wear goggles, protective clothing and rubber gloves to keep acid off body.

In case of acid contact, wash immediately with water. In case of eye contact get prompt medical attention and wash eye with clean, cool water for at least 15 minutes.

If electrolyte is taken internally drink large quantities of water or milk! DO NOT induce vomiting. Get prompt medical attention.

W-2065-0807

Maintaining Battery Charge Level

All batteries will self-discharge over time. This machine has features that require battery power even when the machine is not being used. Use of a quality battery maintainer is highly recommended to ensure that your machine is ready to start when you need it and avoid costly battery replacement.

Battery Maintainers

Use a good quality battery maintainer to keep the battery above 12.4 volts for machines that are not frequently used. Batteries below 12.4 volts must first be charged using a battery charger. Solar maintainers should have a minimum capacity of 10 watts to be effective.

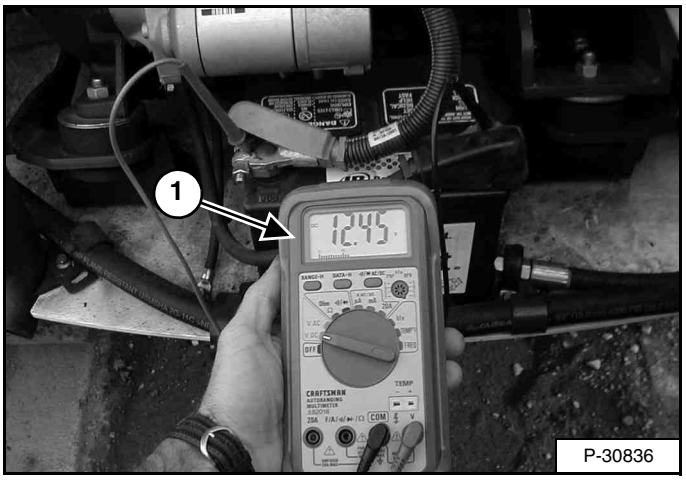
Battery Service During Machine Storage

Remove the battery if storing the machine for an extended period of time. Fully charge the battery. Store the battery in a cool dry place above freezing and boost charge periodically. If battery removal is not desired, a good quality battery maintainer must be used to compensate for battery self-discharge and parasitic loads from machine controllers, accessories, and features such as connected machine intelligence.

RENTWAY

Battery Testing

Figure 342



The simplest and most common check to determine battery state of charge is to use a digital multimeter or voltmeter (Item 1) **[Figure 342]**.

A battery found below 12.4 volts must be charged to 100% charge per the battery charger's recommendation. **Allow at least 60 minutes after operating the machine or charging the battery to get an accurate reading.**

If the reading is less than 12.4 volts after the battery has been charged for several hours, see your Bobcat dealer to have a more thorough battery test performed.

The freezing point of battery electrolyte is dependent on the battery state of charge. Keeping the battery voltage above 12.4 volts will help prevent batteries from freezing, even at extremely low temperatures.

If the battery freezes, the internal grid may be damaged and the case will be distorted or cracked. If this happens, dispose of the battery according to local regulations.

Battery Charging

A battery charger designed for 12 volt charging systems is recommended. Follow the battery charger manufacturer's instructions to charge the battery to 12.6 volts (100% charge). Batteries should be charged at room temperature to avoid an undercharge or overcharge condition. Never attempt to charge a frozen battery.

The following table can be used to identify the approximate amount of time required to charge a discharged battery. Allow at least 60 minutes after operating the machine or charging the battery to get an accurate reading.

BATTERY VOLTAGE	STATE OF CHARGE	CHARGER MAXIMUM RATE		
		30 Amps	20 Amps	10 Amps
12.6 V	100%	READY TO USE		
12.4 V	75%	0.9 hr.	1.3 hr.	2.5 hr.
12.2 V	50%	1.9 hr.	2.7 hr.	5.1 hr.
12.0 V	25%	2.9 hr.	4.3 hr.	7.8 hr.
11.8 V	0%	4.0 hr.	5.7 hr.	10.7 hr.

NOTE: Use a good quality automatic charger to avoid battery damage from overcharging.

WARNING

BATTERY GAS CAN EXPLODE AND CAUSE SERIOUS INJURY OR DEATH

Keep arcs, sparks, flames and lighted tobacco away from batteries. When *jumping* from booster battery make final connection (negative) at machine frame.

Do not jump start or charge a frozen or damaged battery. Warm battery to 16°C (60°F) before connecting to a charger. Unplug charger before connecting or disconnecting cables to battery. Never lean over battery while boosting, testing or charging.

W-2066-0910

RENTWAY

Using A Booster Battery (Jump Starting)

IMPORTANT

If jump starting the excavator from a second machine:

When jump starting the excavator from a battery installed in a second machine, make sure the engine is NOT running while using the glow plugs. High voltage spikes from a running machine can burn out the glow plugs.

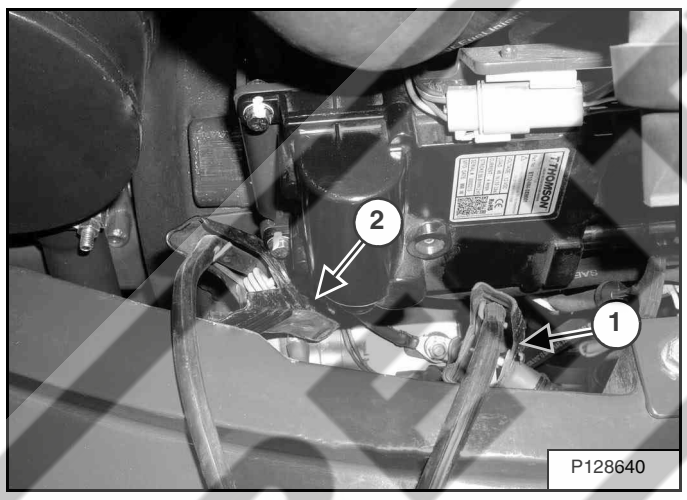
I-2060-0906

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.

Be sure the key switch is OFF. The booster battery must be 12 volt.

Open the tailgate. (See TAILGATE on Page 159.)

Figure 343



Connect one end of the first cable to the positive (+) terminal of the booster battery. Connect the other end of the same cable to the positive (+) terminal (Item 1) **[Figure 343]** of the excavator starter.

Connect one end of the second cable to the negative (-) terminal of the booster battery. Connect the other end of the same cable to the starter mounting bolt (Item 2) **[Figure 343]**.

Start the engine. After the engine has started, remove the earth (-) cable first (Item 2) **[Figure 343]**.

Disconnect the cable from the excavator starter (Item 1) **[Figure 343]**.

NOTE: (See Cold Temperature Starting on Page 76.)

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 excavator. (Remove both cables from the battery.)**
- **Extra battery cables (booster cables) are connected wrong.**

I-2223-0903

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.

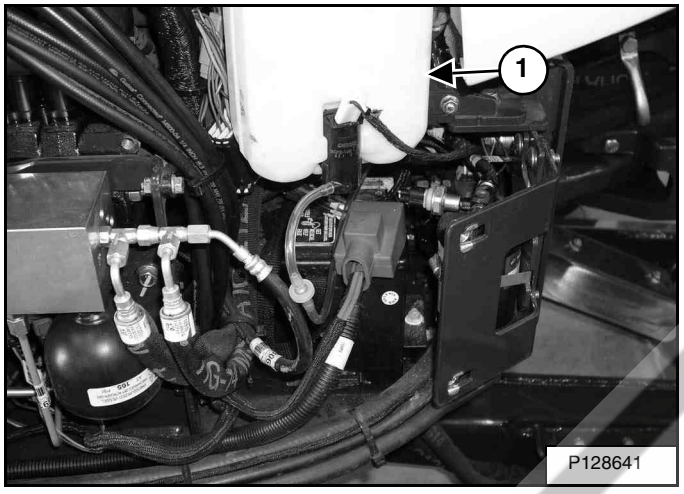
W-2065-0807

Removing And Installing The Battery

Open the right side cover. (See RIGHT SIDE COVER on Page 160.)

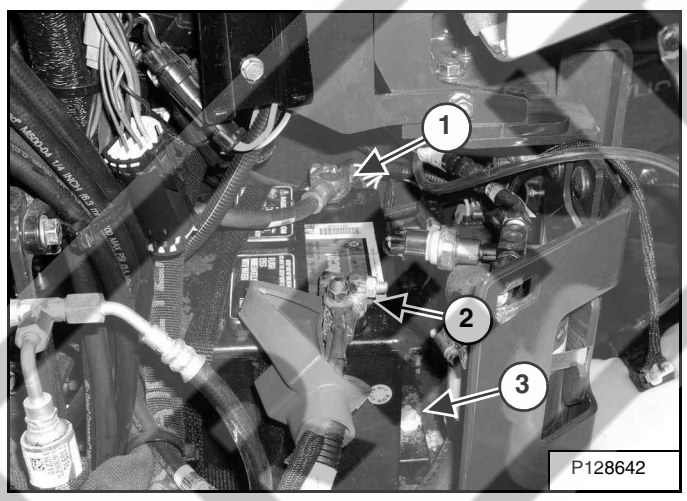
Remove the right side upperstructure cover. (See RIGHT SIDE PANEL on Page 160.)

Figure 344



Remove the washer bottle (item 1) **[Figure 344]** (if equipped) by lifting up on the bottle to remove from the retainer bracket. Set the bottle aside.

Figure 345



Disconnect the negative (-) cable (Item 1) **[Figure 345]** first.

Disconnect the positive (+) cable (Item 2) **[Figure 345]**.

Remove the bolt (Item 3) **[Figure 345]** and remove the hold-down clamp.

Remove the battery.

Always clean the terminals and the cable ends, even when installing a new battery.

Install the battery. Install the hold-down clamp and tighten the bolts.

Connect the battery cables. Connect the negative (-) cable (Item 1) **[Figure 345]** last to prevent sparks.

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.

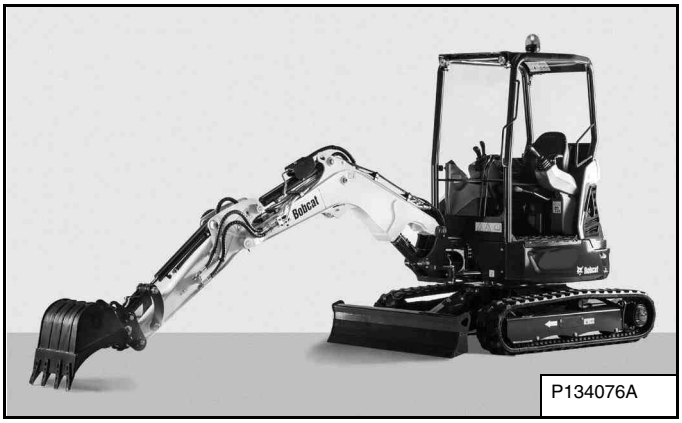
In case of acid contact, wash immediately with water. In case of eye contact get prompt medical attention and wash eye with clean, cool water for at least 15 minutes.

If electrolyte is taken internally drink large quantities of water or milk! DO NOT induce vomiting. Get prompt medical attention.

W-2065-0807

Checking And Adding Hydraulic Oil

Figure 346

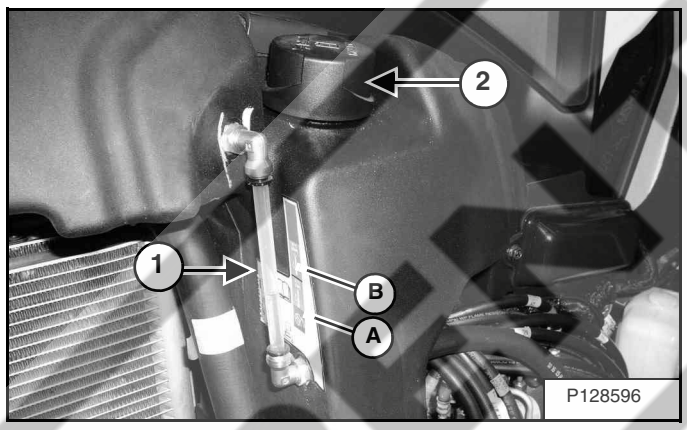


Park the machine on a flat level surface in the position shown **[Figure 346]**. (The preferred method is to check the hydraulic oil when it is cold.)

Retract the arm and bucket cylinders, put the bucket on the ground and lower the blade. Stop the engine.

Open the right side cover. (See RIGHT SIDE COVER on Page 160.)

Figure 347



Check the hydraulic oil level, it must be visible in the sight gauge (Item 1) **[Figure 347]**. The decal on the hydraulic tank shows the correct fill level.

A - Correct Oil Level COLD (Preferred)
B - Correct Oil Level HOT (Optional)

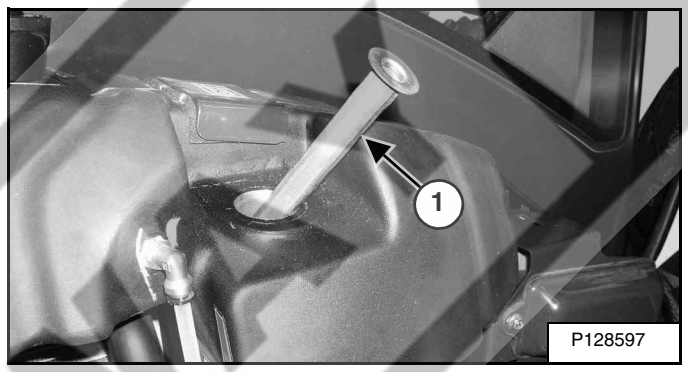
Clean the surface around the reservoir cap and remove the cap from the reservoir (Item 2) **[Figure 347]**.

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

Figure 348



Check the condition of the fill strainer screen (Item 1) **[Figure 348]**. Clean or replace as necessary.

Be sure the screen is installed before adding fluid.

Add the correct fluid to the reservoir until it is visible in the sight gauge. (See Hydraulic / Hydrostatic Fluid Chart on Page 186.)

Check the cap and clean as necessary. Replace the cap if damaged.

Install the cap.

Close the right side cover and tailgate.

Removing And Replacing The Hydraulic Filters

WARNING

AVOID INJURY OR DEATH

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

W-2103-0508

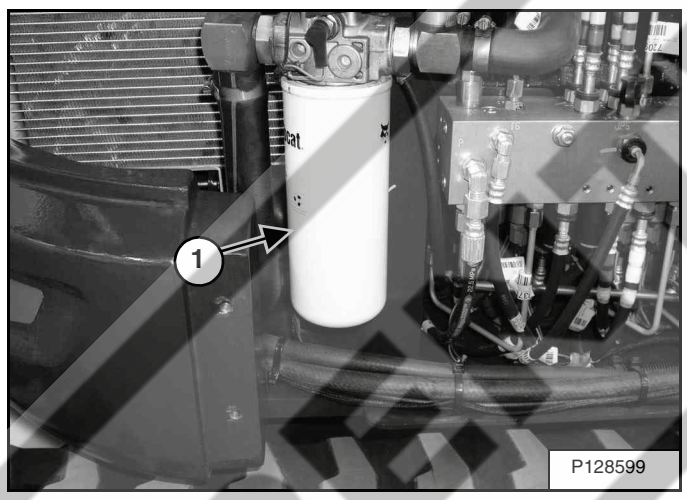
Hydraulic Filter

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 153.)

Remove the right side cover. (See RIGHT SIDE COVER on Page 160.)

For easier access to change the hydraulic filter, remove the lower right side panel. (See RIGHT SIDE PANEL on Page 160.)

Figure 349



Remove the hydraulic filter (Item 1) **[Figure 349]**.

Clean the housing where the filter gasket makes contact.

Put clean hydraulic fluid on the gasket. Install the new filter and hand tighten only. Use a genuine Bobcat replacement filter.

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

Case Drain Filter

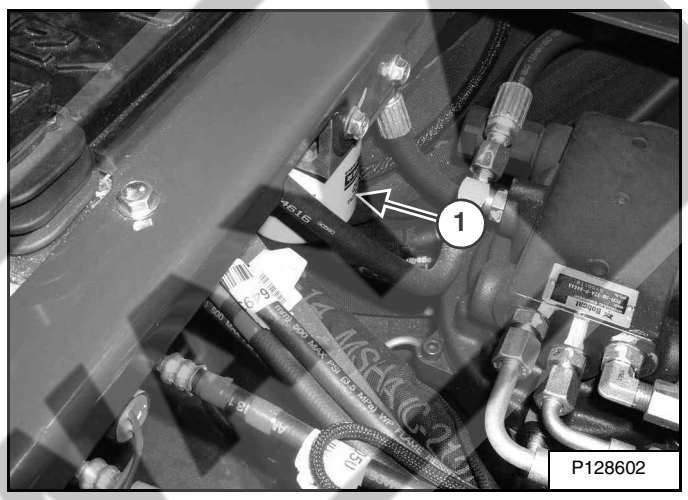
See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 153.)

The case drain filter is located below the floorplate.

Remove the floor mat.

Remove the floorplate.

Figure 350



Remove the case drain filter (Item 1) **[Figure 350]**.

Clean the housing where the filter gasket makes contact.

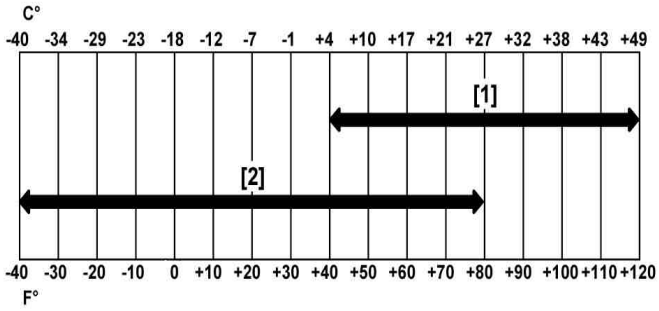
Put clean hydraulic fluid on the gasket. Install the new filter and hand tighten only.

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

Hydraulic / Hydrostatic Fluid Chart

Figure 351

HYDRAULIC / HYDROSTATIC FLUID RECOMMENDED ISO VISCOSITY GRADE (VG) AND VISCOSITY INDEX (VI)



TEMPERATURE RANGE ANTICIPATED DURING MACHINE USE

[1] VG 100; Minimum VI 130
[2] VG 46; Minimum VI 150

Removing And Replacing The Hydraulic Fluid

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 153.)

WARNING

AVOID INJURY OR DEATH

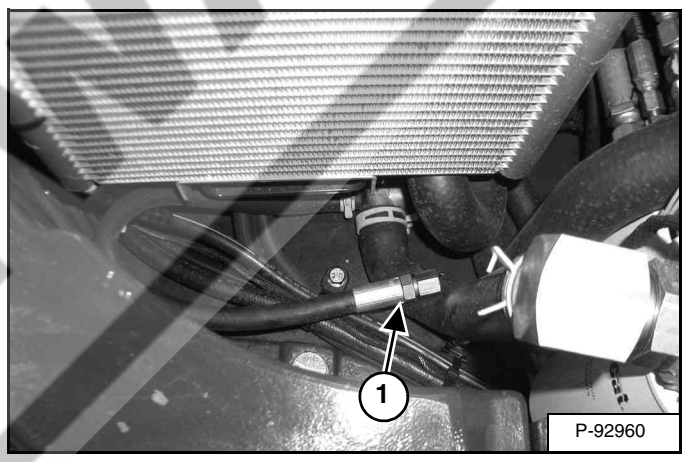
Diesel fuel or hydraulic fluid under pressure can penetrate skin or eyes, causing serious injury or death. Fluid leaks under pressure may not be visible. Use a piece of cardboard or wood to find leaks. Do not use your bare hand. Wear safety goggles. If fluid enters skin or eyes, get immediate medical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

W-2072-EN-0909

Retract the arm and bucket cylinders, lower the bucket to the ground. Stop the engine.

Open the tailgate. (See TAILGATE on Page 159.)

Figure 352

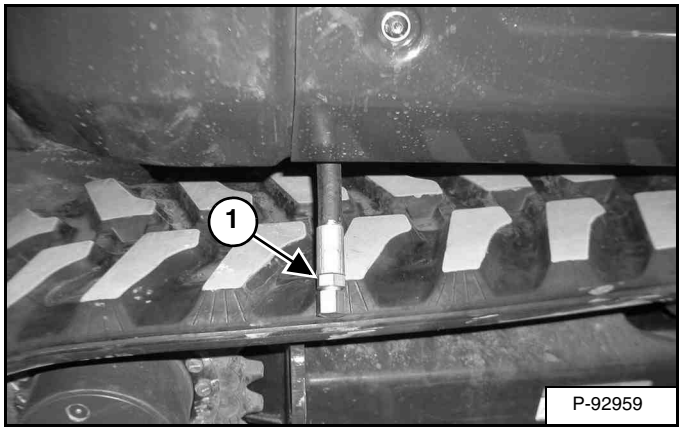


The hydraulic oil drain hose (Item 1) **[Figure 352]** is located below the oil cooler in the right rear corner of the upperstructure.

RENTMAX

Removing And Replacing The Hydraulic Fluid (Cont'd)

Figure 353



Reposition the drain hose out the bottom of the upperstructure and remove the cap (Item 1) **[Figure 353]**.

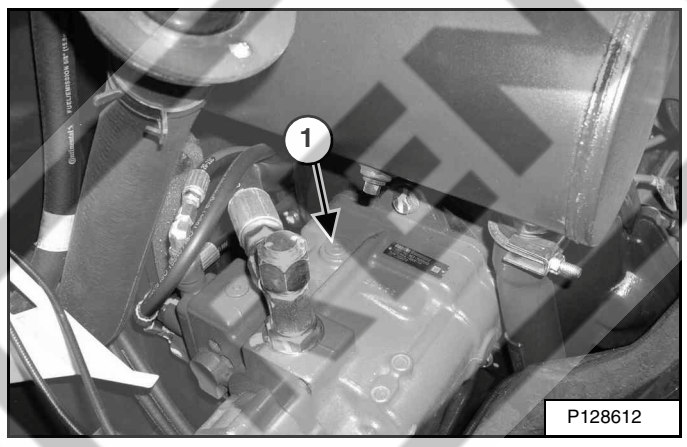
Drain the fluid into a container.

Recycle or dispose of the hydraulic fluid in an environmentally safe manner.

Install the cap (Item 1) **[Figure 353]** and position the drain hose back to the storage position (Item 1) **[Figure 352]**.

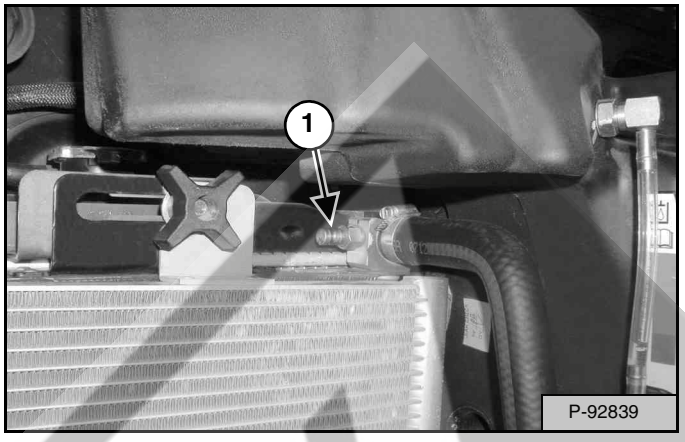
Add fluid to the reservoir. (See Hydraulic / Hydrostatic Fluid Chart on Page 186.)

Figure 354



With the engine OFF, loosen the plug (Item 1) **[Figure 354]** on the hydraulic pump. Tighten the plug after a steady stream of hydraulic fluid, free of any air bubbles, drains from the plug. **DO NOT RUN THE MACHINE WITH THE PLUG OPEN.**

Figure 355



There is also a port (Item 1) **[Figure 355]** on the hydraulic cooler for bleeding air. Install a diagnostic coupler and hose on this fitting and to allow air to be bled from the hydraulic system after the hydraulic fluid has been replaced.

Start the engine and operate the machine through the hydraulic functions. Stop the engine. Check the fluid level and add as needed.

SPARK ARRESTER MUFFLER

Cleaning Procedure

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 153.)

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

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.

I-2284-EN-0909

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.

W-2068-1285

WARNING

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

W-2011-1285

WARNING

When the engine is running during service, the steering levers must be in neutral.

Failure to do so can cause injury or death.

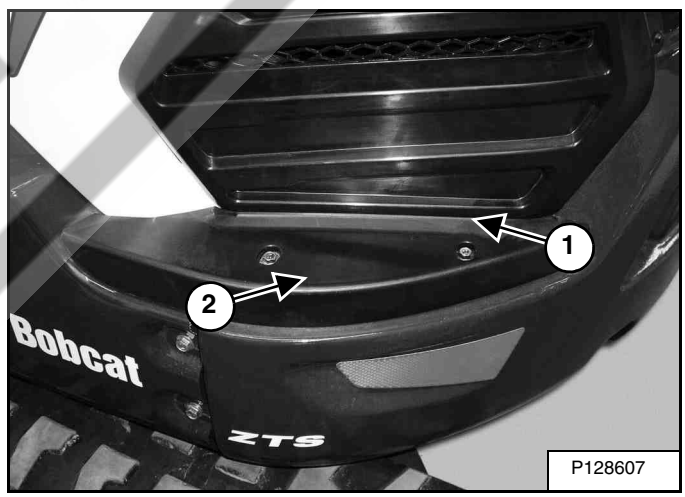
W-2203-0595

Do not operate the excavator with a defective exhaust system.

Stop the engine.

Remove the fuel cap.

Figure 356



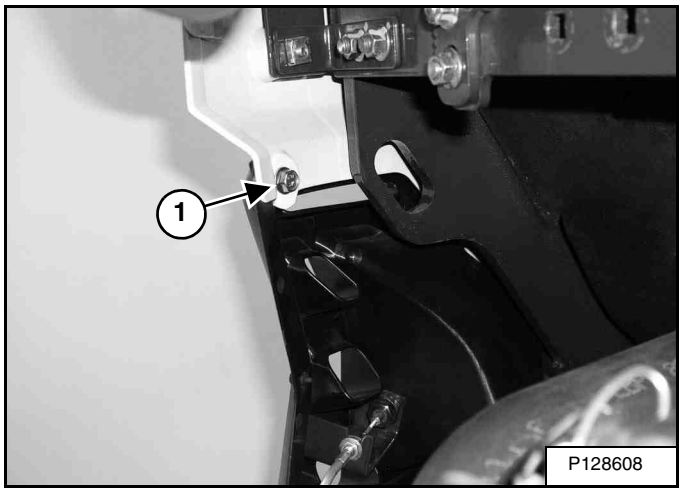
Remove the two bolts (Item 1) and remove the cover (Item 2) **[Figure 356]**.

Open the tailgate. (See TAILGATE on Page 159.)

RENTWAY

Cleaning Procedure (Cont'd)

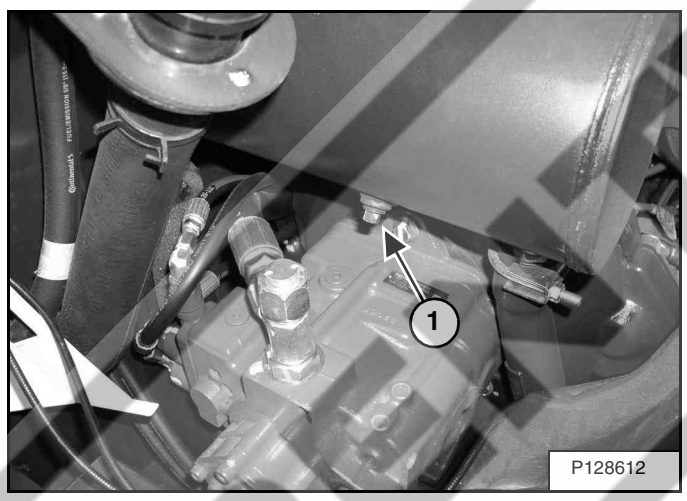
Figure 357



Remove the bolt (Item 1) **[Figure 357]** and position the left hand screen out of the way.

Reinstall the fuel cap to keep debris from entering the fuel tank.

Figure 358



Remove the plug (Item 1) **[Figure 358]** from the bottom of the muffler.

Start the engine and run for about 10 seconds while a second person, wearing safety glasses, holds a piece of wood over the outlet of the muffler. The carbon deposits will be forced out of the muffler plug hole (Item 1) **[Figure 358]**.

Stop the engine. Install and tighten the plug (Item 1) **[Figure 358]**.

Remove the fuel cap.

Reposition the left hand screen and reinstall the bolt (Item 1) **[Figure 357]**.

Reinstall the fuel cap.

Reinstall the cover (Item 2) and install the two bolts (Item 1) **[Figure 356]**.

Close the tailgate.

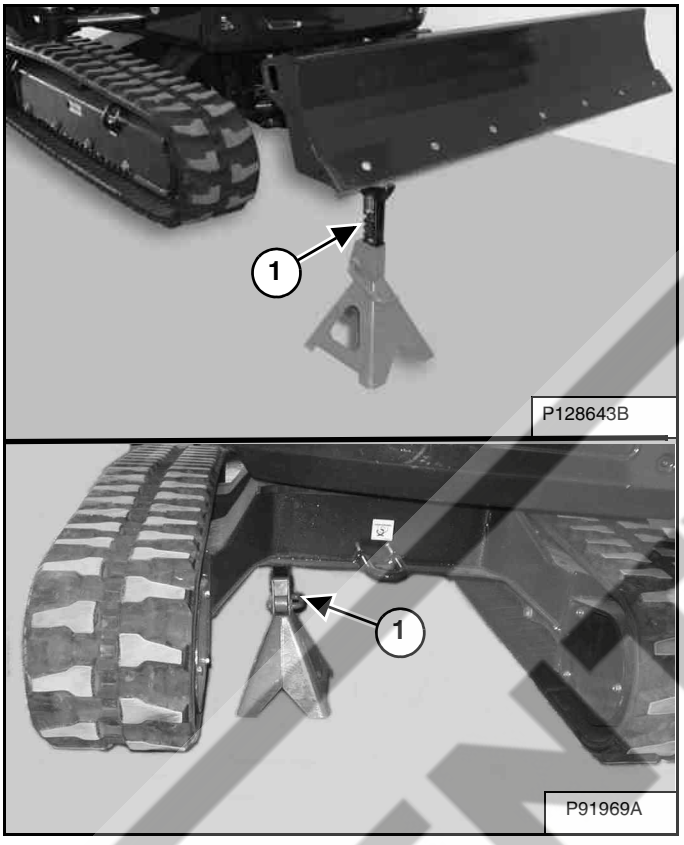
RENTWAY

TRACK TENSION

NOTE: The wear of the pins and bushings on the undercarriage vary with the working conditions and the different types of soil conditions. It is necessary to inspect track tension and maintain the correct tension. See SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 153.)

Adjusting

Figure 359



Raise one side of the machine (Approximately four inches) using the boom and arm.

Raise the blade fully and install jackstands under the blade and track frame (Item 1) **[Figure 359]**. Lower the boom until all machine weight is on the jackstands.

Stop the engine.

WARNING

AVOID INJURY

Keep fingers and hands out of pinch points when checking the track tension.

W-2142-0903

Rubber Track Clearance

Figure 360

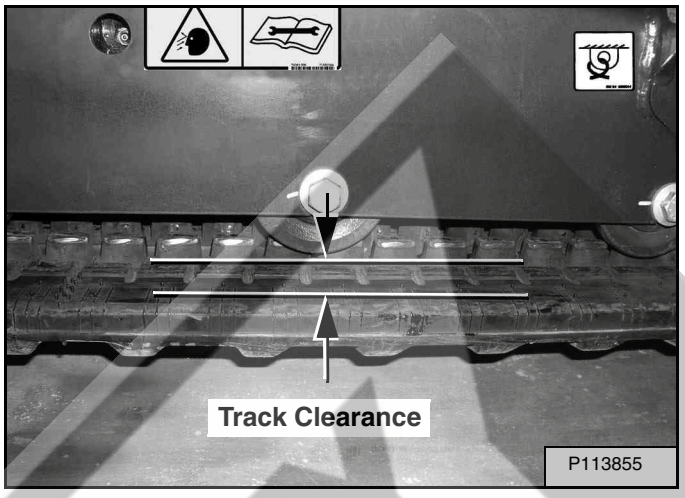
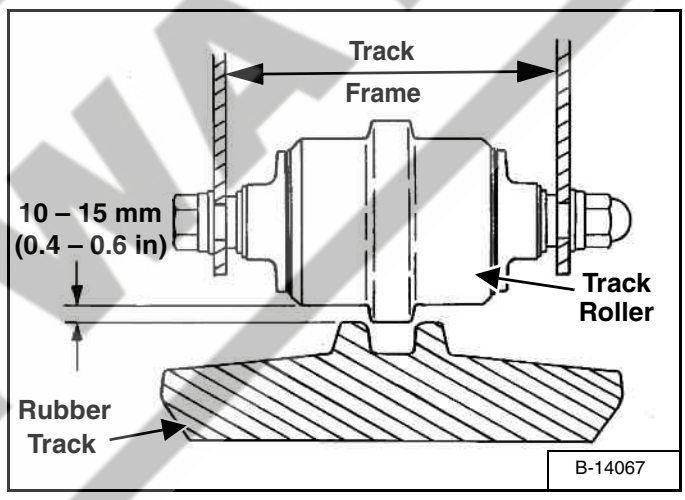


Figure 361



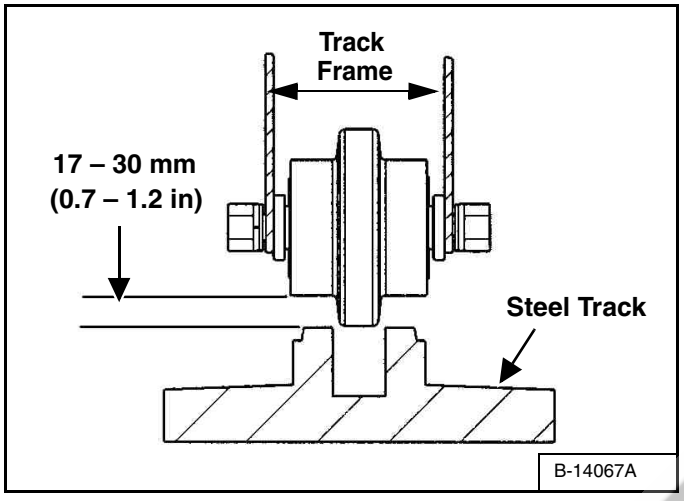
Measure the track clearance at the middle track roller. Do not get fingers into pinch points between the track and the track roller. Use a bolt or dowel of the appropriate size to check the gap between the contact edge of the roller and the top edge of the track guide **[Figure 360]** and **[Figure 361]**.

Rubber Track Clearance	10 – 15 mm (0.4 – 0.6 in)

Adjusting (Cont'd)

Steel Track Clearance

Figure 362



Measure the track clearance at the middle track roller. Do not get fingers into pinch points between the track and the track roller. Us a bolt or dowel of the appropriate size to check the gap between the contact edge of the roller and the top edge of the track guide **[Figure 362]**.

Steel Track Clearance	17 – 30 mm (0.7 – 1.2 in)

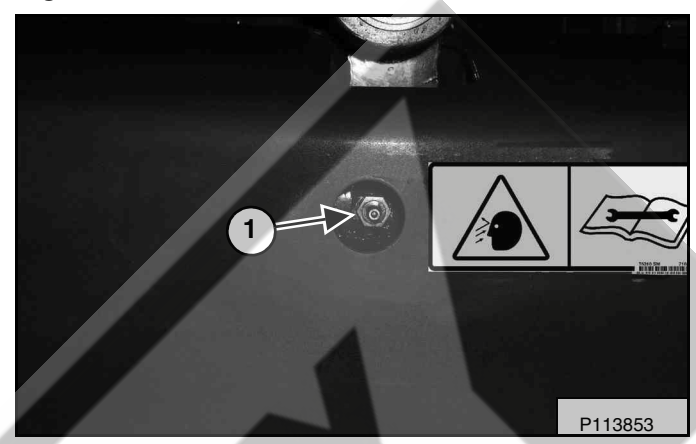
WARNING

HIGH PRESSURE GREASE CAN CAUSE SERIOUS INJURY

- **Do not loosen the track tension fitting more than 1 - 1/2 turns.**

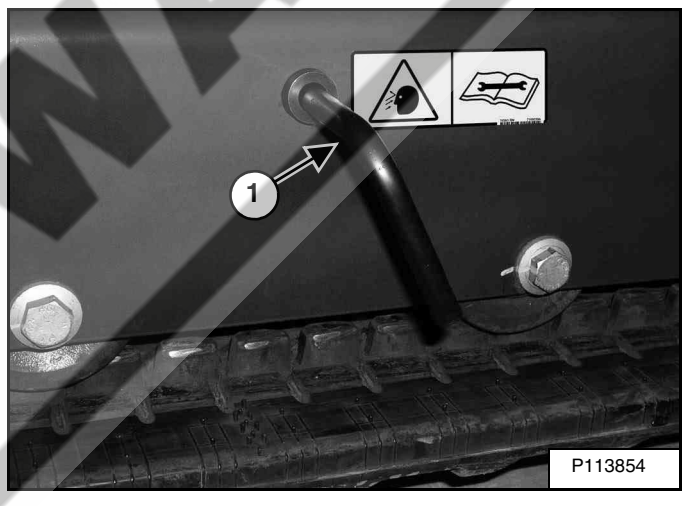
W-2994-0515

Figure 363



Add grease to the fitting (Item 1) **[Figure 363]** until the track tension is correct.

Figure 364



The tension removal tool (P/N 7277225) is available and recommended to direct the flow of grease to aid in cleanup. Always dispose of the grease in an environmentally friendly manner.

The tool is sized to fit the one piece track tension fitting (Item 1) **[Figure 363]**.

Use tool (P/N 7277225) (Item 1) **[Figure 364]** to loosen the tension fitting (Item 2) **[Figure 363]** to release tension from the track.

NOTE: Do not loosen the track tension fitting (Item 1) [Figure 363] more than 1-1/2 turns.

Installation: Tighten the track tension fitting to 23 N•m (17 ft-lb) torque.

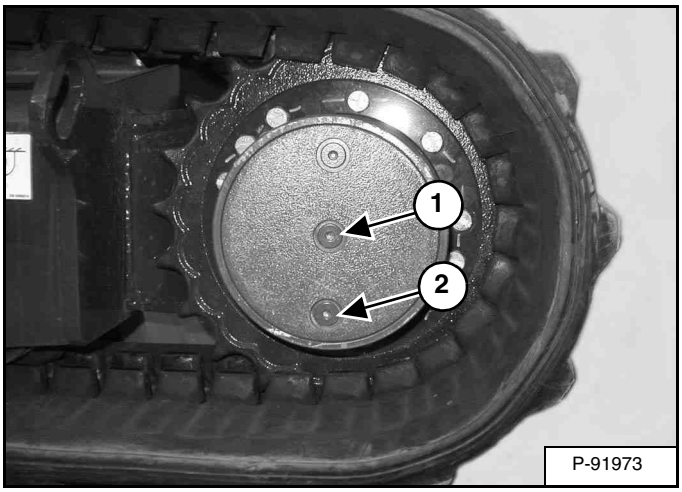
Repeat the procedure for the other side.

RENTWAY

TRAVEL MOTOR

Checking And Adding Oil

Figure 365



Park the excavator on a level surface with the plugs (Items 1 and 2) **[Figure 365]** in the vertical position as shown.

Remove the plug (Item 1) **[Figure 365]**. The lube level must be at the bottom edge of the hole.

Add lubricant (SAE 80W-90 API GL-5) through the hole if the lube level is low.

Removing And Replacing Oil

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 153.)

Park the excavator on a level surface with plugs (Items 1 and 2) **[Figure 365]** in the vertical position shown. Remove both plugs and drain the lubricant into a container.

WARNING

AVOID INJURY OR DEATH

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

W-2103-0508

Install the bottom plug (Item 2) **[Figure 365]**. Add lubricant through the centre plug hole until the lube level is at the bottom edge of the hole.

Add lubricant (SAE 80W-90 API GL-5) through the hole if the lube level is low.

Install the plug (Item 1) **[Figure 365]**.

RENTWAY

ALTERNATOR BELT

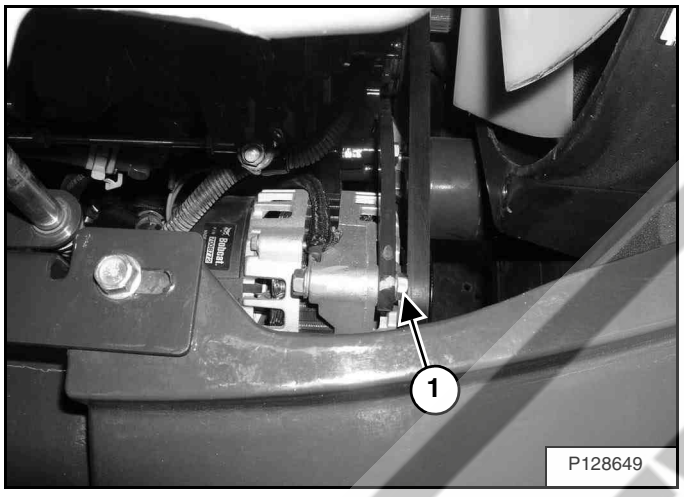
Belt Adjustment

The alternator belt is a special maintenance-free type that is pretensioned over the pulleys. This belt eliminates the need for a tensioning device and does not require periodic adjustment. Contact your Bobcat dealer for replacement parts.

Belt Replacement

Stop the engine and open the tailgate. (See TAILGATE on Page 159.)

Figure 366



Loosen the bolt (Item 1) **[Figure 366]** and the lower alternator mounting bolt and nut (not shown).

Use a pry bar to take the pressure off of the bolt (Item 1) **[Figure 366]** and remove the top bolt.

Remove and replace the alternator belt.

Use the pry bar to position the alternator and install the bolt (Item 1) **[Figure 366]**.

Tighten the top and bottom alternator mounting bolts.

Close the tailgate.

FAN BELT

Belt Adjustment

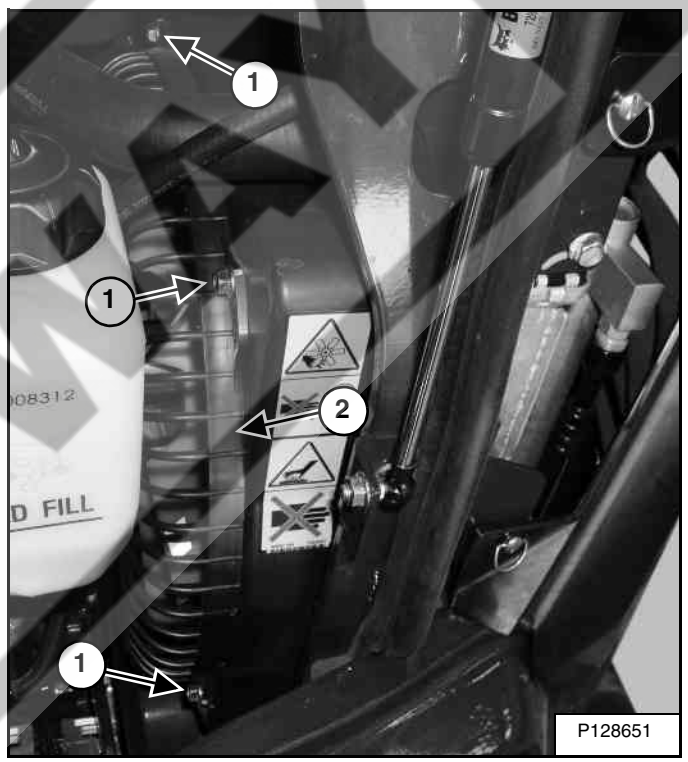
The fan belt is a special maintenance free type that is pretensioned over the pulleys. This belt eliminates the need for a tensioning device and does not require periodic adjustment. Contact your Bobcat dealer for replacement parts.

Belt Replacement

Stop the engine and open the tailgate. (See TAILGATE on Page 159.)

Remove the alternator belt. (See ALTERNATOR BELT on Page 193.)

Figure 367

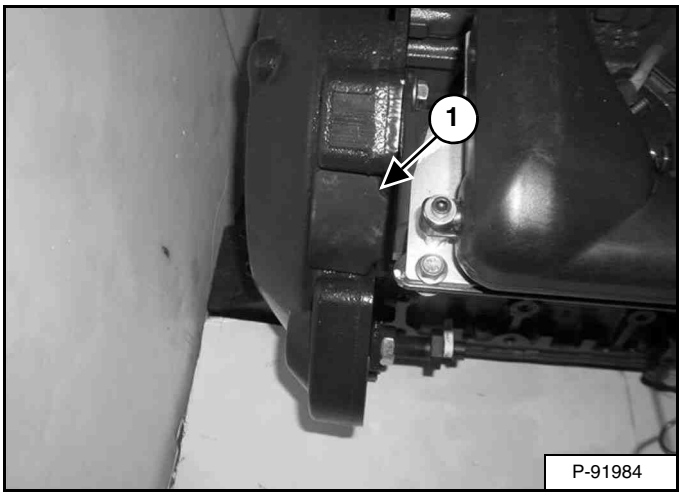


Remove the three bolts (Item 1) and the fan guard (Item 2) **[Figure 367]** for clearance for belt removal.

RENTWAY

Belt Replacement (Cont'd)

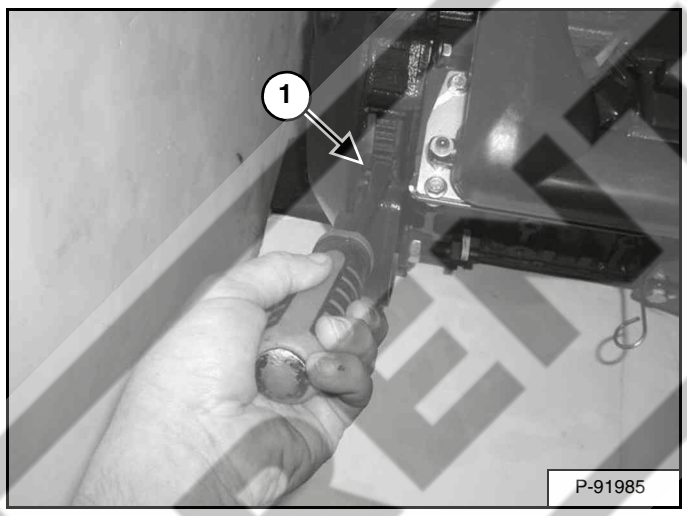
Figure 368



NOTE: The engine is removed from the machine for photo clarity only. This procedure can be performed with engine installed in machine.

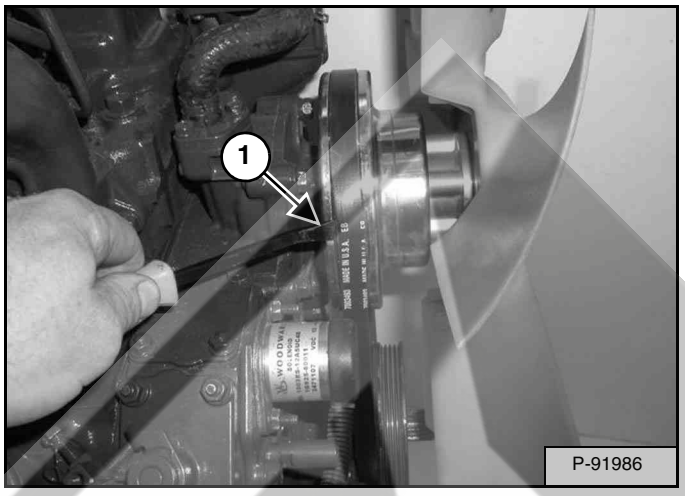
The engine will need to be rotated by hand to remove the fan belt. To access the flywheel, remove the plug (Item 1) **[Figure 368]** from the flywheel housing.

Figure 369



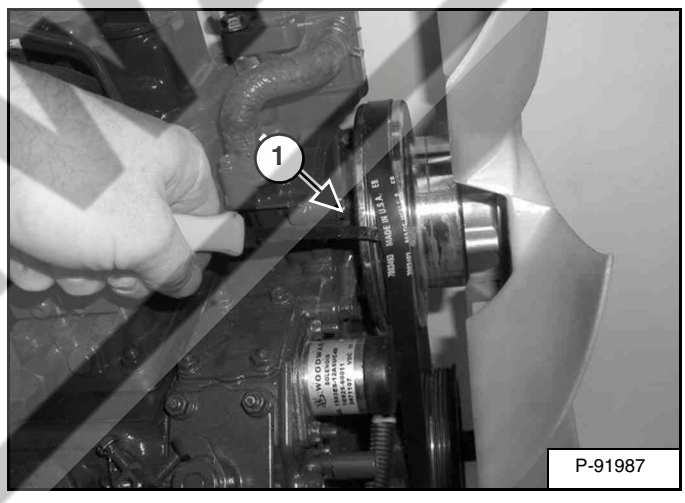
Install a pry bar (Item 1) **[Figure 369]** to the flywheel teeth.

Figure 370



Install a second pry bar (Item 1) **[Figure 370]** or flat blade screw driver between the belt and the water pump pulley.

Figure 371



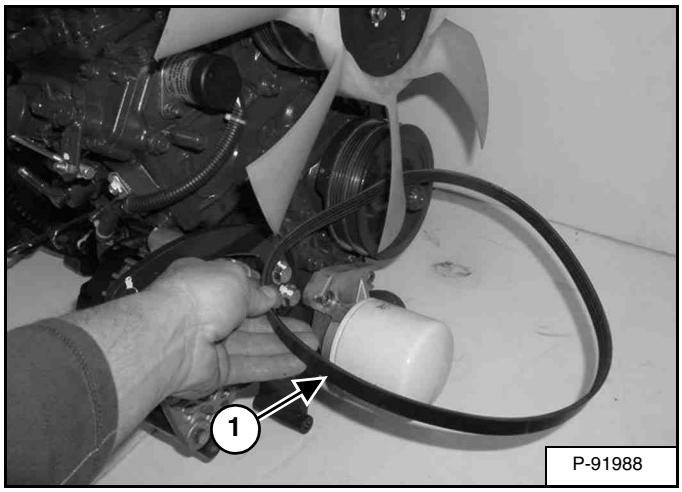
Using the pry bar (Item 1) **[Figure 369]** to rotate the engine, start to push the belt off of the pulley using the second pry bar (Item 1) **[Figure 371]**.

Continue to manually rotate the engine until the belt is off the pulley.

RENTWAY

Belt Replacement (Cont'd)

Figure 372

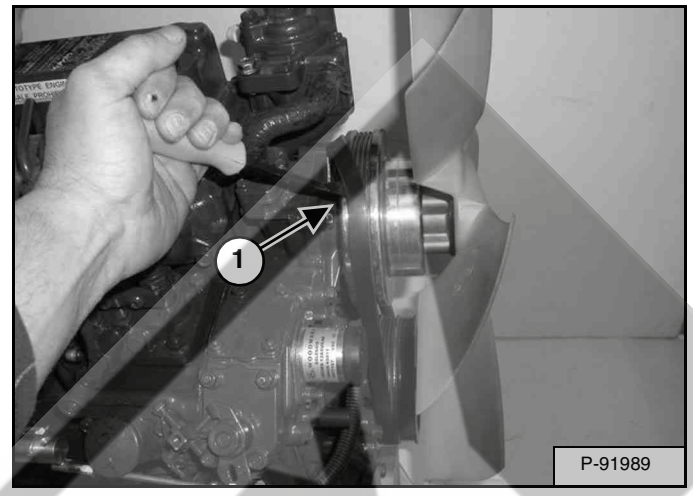


NOTE: Fan blades may be sharp, use care when removing the belt over the fan blades.

The belt (Item 1) **[Figure 372]** will need to be worked over the fan blades until it can be removed.

Install the new fan belt.

Figure 373



Position the belt over the water pump pulley and next to the engine block and align the lower part of the belt to the crankshaft pulley.

Using the pry bar (Item 1) **[Figure 369]** to rotate the engine and push the belt on the pulley using the second pry bar (Item 1) **[Figure 373]**.

Continue rotating the engine until the belt is fully installed.

Install the flywheel plug (Item 1) **[Figure 368]**.

Install the alternator belt. (See ALTERNATOR BELT on Page 193.)

Install the fan guard (Item 1) **[Figure 367]**.

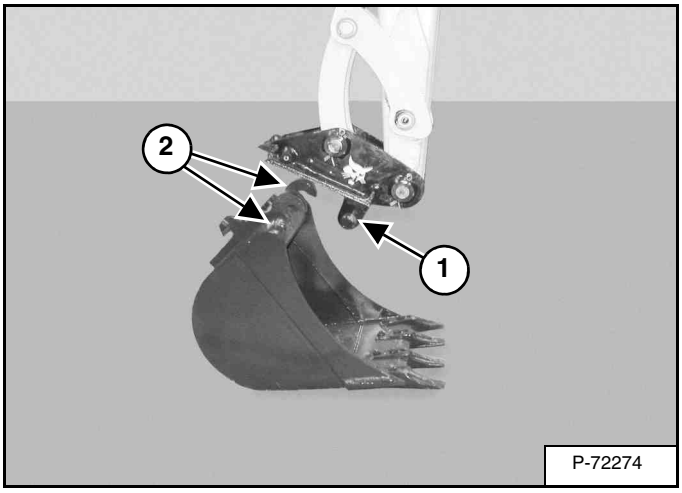
Close the tailgate.

RENTWAY

QUICK COUPLER

Quick Coupler And Attachment Inspection And Maintenance

Figure 374



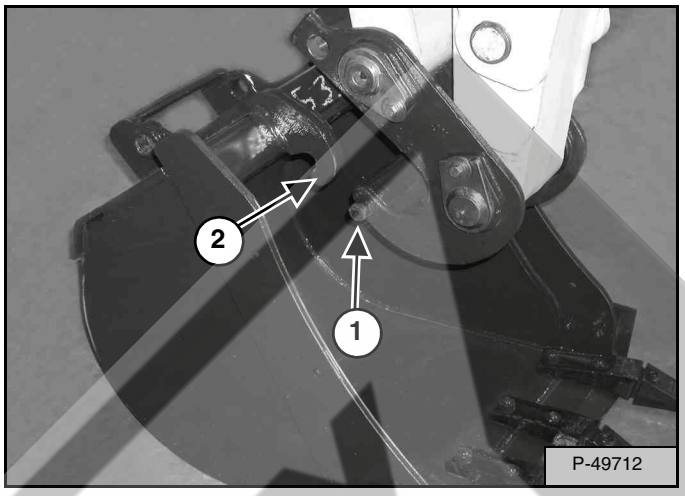
Inspect the quick coupler for wear or damage. Inspect the quick coupler pins (Item 1) and the hooks (Item 2) **[Figure 374]** (on the attachment) for wear or damage.

Repair or replace damaged parts.

X-CHANGE

Inspection And Maintenance

Figure 375



Inspect the X-Change for wear or damage. Inspect the X-Change pins (Item 1) and hooks (Item 2) **[Figure 375]** (on the attachment) for wear or damage.

Repair or replace damaged parts.

The track rollers and idlers require no maintenance. The bearings are a sealed design.

RENTWAY

Bucket Teeth Removal And Installation

WARNING

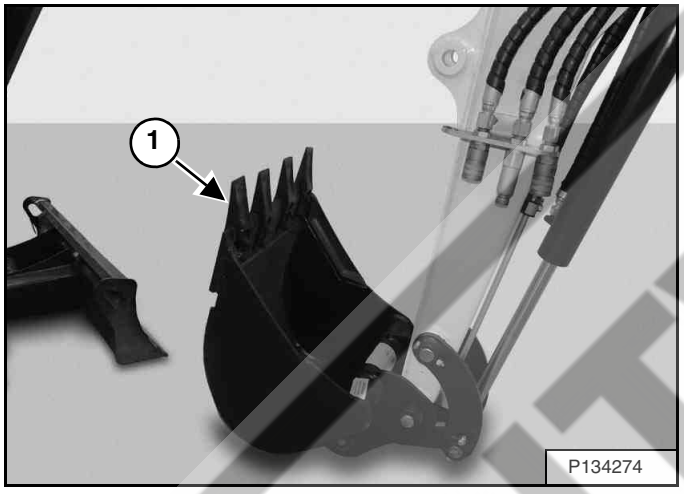
Wear safety glasses to prevent eye injury when any of the following conditions exist:

- **Pressurised fluids and springs or other stored energy components.**
- **Flying debris or loose material is present.**
- **Engine is running.**
- **Tools are being used.**

W-2505-EN-1009

Lower the boom until the bucket is fully on the ground.

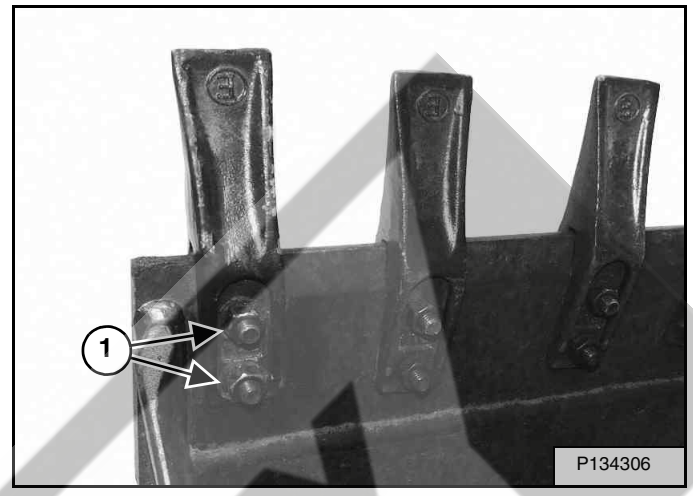
Figure 376



Position the bucket so the bucket teeth are pointed upwards at an angle convenient for accessing the teeth (Item 1) **[Figure 376]**.

Stop the engine and exit the excavator.

Figure 377



Removal: Remove a tooth point by removing the two bolts and nuts (Item 1) **[Figure 377]**.

Installation: Position the new tooth point on the bucket. Secure it with two bolts and nuts and tighten to 75 – 85 N•m (55 – 60 ft-lb).

TRACK ROLLER AND IDLER LUBRICATION

Procedure

The track rollers and idlers require no maintenance. The bearings are a sealed design.

RENTWAY

LUBRICATION OF THE HYDRAULIC EXCAVATOR

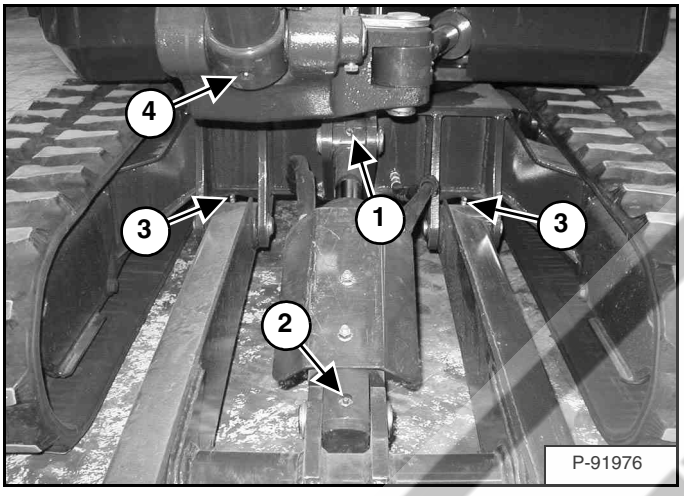
Lubrication Locations

Lubricate the excavator as specified in the SERVICE SCHEDULE for the best performance of the machine. (See SERVICE SCHEDULE on Page 153.)

Always use a good-quality, lithium-based multipurpose grease when lubricating the machine. Apply the lubricant until extra grease shows.

Lubricate the following locations on the excavator EVERY 8 – 10 HOURS:

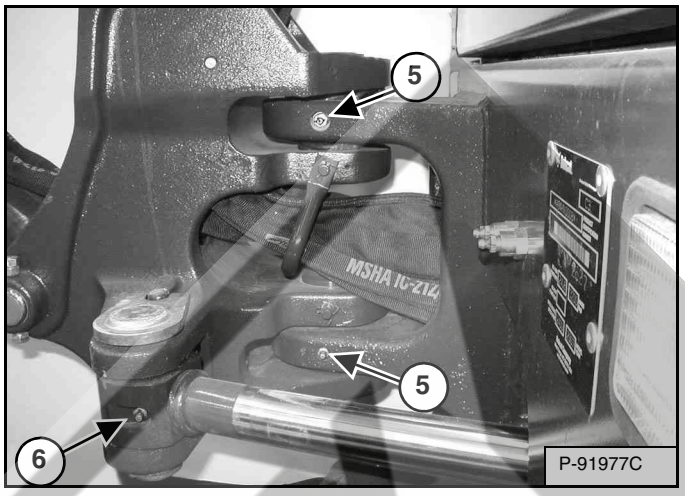
Figure 378



Ref Description (# of Fittings)

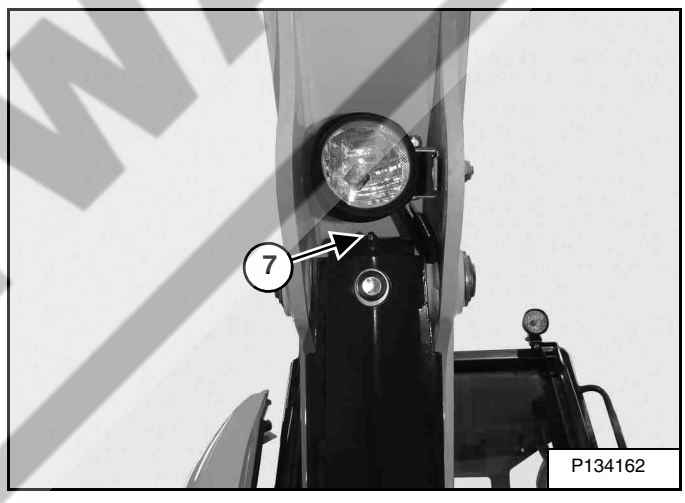
1. Blade Cylinder Rod End (1) **[Figure 378]**
2. Blade Cylinder Base End (1) **[Figure 378]**
3. Blade Pivots (2) **[Figure 378]**
4. Boom Cylinder Base End (1) **[Figure 378]**

Figure 379



5. Boom Swing Pivot (3) **[Figure 379]**
6. Boom Swing Cylinder Rod End (1) **[Figure 379]**

Figure 380

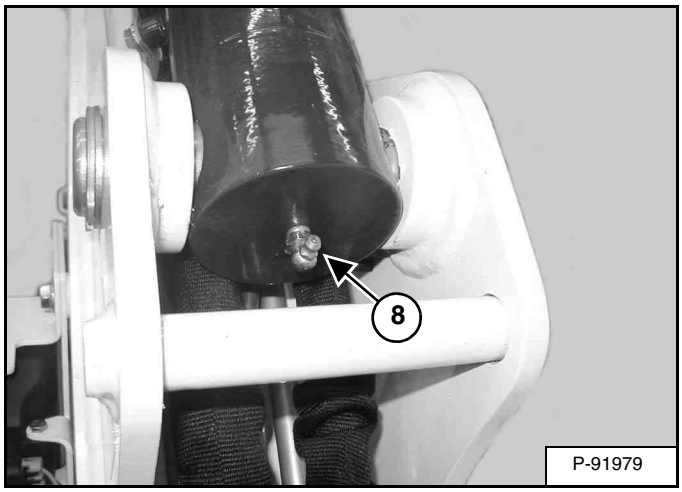


7. Boom Cylinder Rod End (1) **[Figure 380]**

RENTWAY

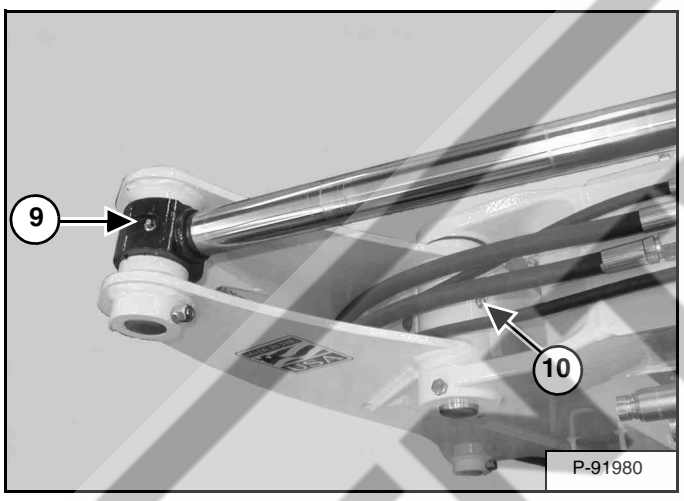
Lubrication Locations (Cont'd)

Figure 381



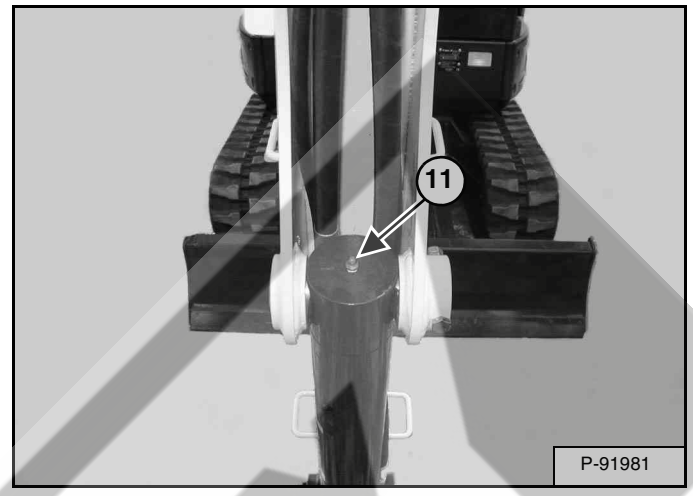
8. Arm Cylinder Base End (1) **[Figure 381]**

Figure 382



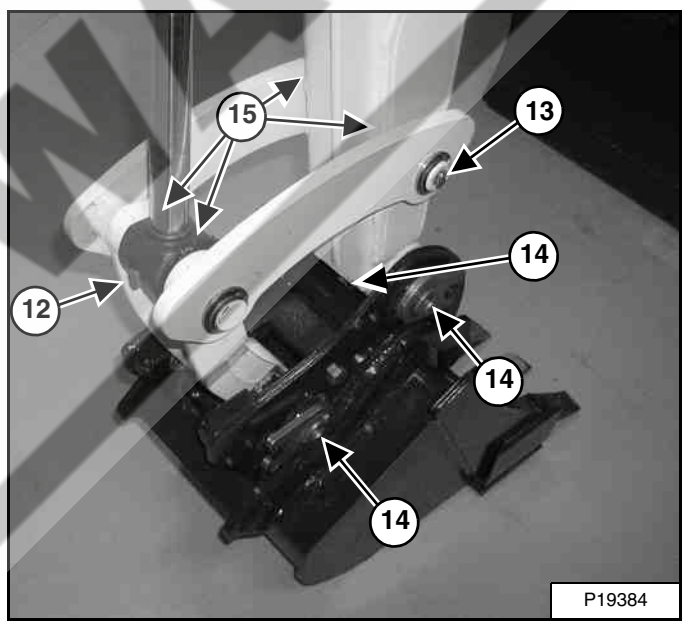
9. Arm Cylinder Rod End (1) **[Figure 382]**
10. Arm Pivot (1) **[Figure 382]**

Figure 383



11. Bucket Cylinder Base End (1) **[Figure 383]**

Figure 384



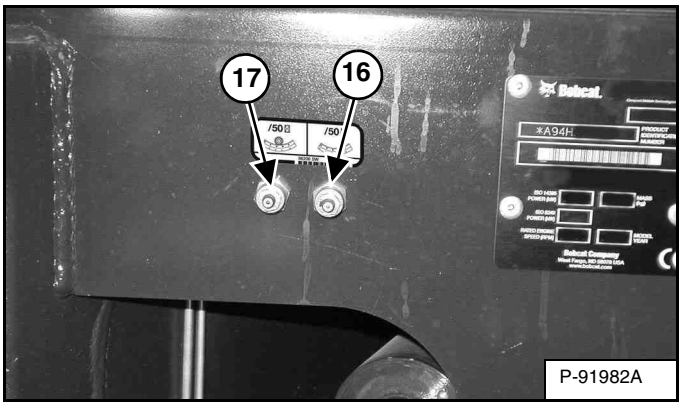
12. Bucket Cylinder Rod End (1) **[Figure 384]**
13. Bucket Link Pin (1) **[Figure 384]**
14. Bucket Pivot (3) **[Figure 384]**
15. Bucket Link - without extendable arm (2), with extendable arm (4) **[Figure 384]**

RENEWAY

LUBRICATION OF THE HYDRAULIC EXCAVATOR (CONT'D)

Lubrication Locations (Cont'd)

Figure 385

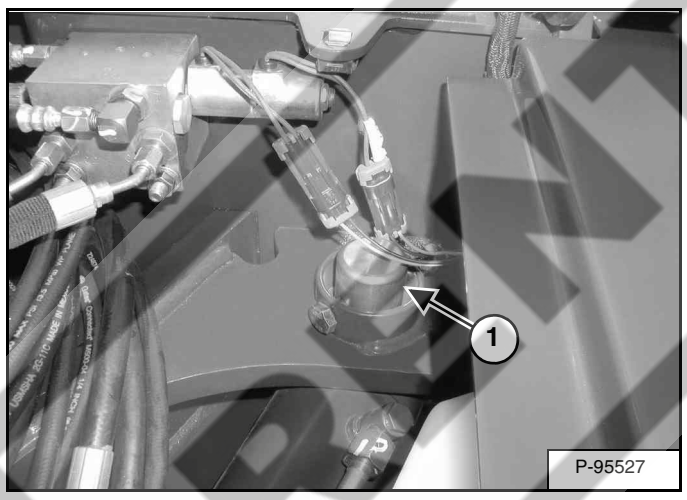


Lubricate the following locations on the hydraulic excavator **EVERY 50 HOURS**:

16. Swing Circle (1) **[Figure 385]**

17. Swing Pinion (1) **[Figure 385]**. (Install 3 to 4 pumps of grease then rotate the upperstructure 90°. Install 3 to 4 pumps of grease and again rotate the upperstructure 90°. Repeat this until the slew pinion has been greased at four positions.)

Figure 386



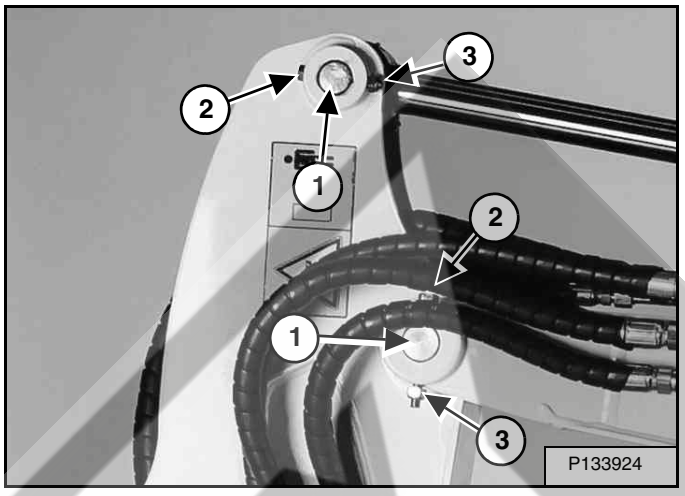
18. Boom Swing Cylinder Base End Pin (Item 1) **[Figure 386]**

NOTE: The boom swing cylinder base end does not have a grease fitting and uses a maintenance free bushing. No lubrication is required.

PIVOT PINS

Inspection And Maintenance

Figure 387



The pivots and cylinders (Item 1) have a large pin held in position with a bolt (Item 2) and a nut (Item 3) **[Figure 387]** securing the pin.

Installation: After the nut (Item 3) and bolt (Item 2) **[Figure 387]** are tightened together, the bolt should be free to spin.

RENTWAY

EXCAVATOR STORAGE AND RETURN TO SERVICE

Storage

Sometimes it may be necessary to store your Bobcat excavator for an extend period of time. Below is a list of items to perform before storage:

- Thoroughly clean the excavator including the engine compartment.
- Lubricate the excavator.
- Replace worn or damaged parts.
- Drive the excavator onto planks in a dry protected shelter.
- Lower the boom fully with the bucket flat on the ground.
- 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, hydraulic).
- Replace all filters (i.e., air cleaner, heater, etc.).
- 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 excavator has been in storage, it is necessary to follow a list of items to return the excavator 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 excavator.
- 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.
- Drive the excavator off of the planks.
- Operate machine, check for correct function.
- Stop the engine and check for leaks. Repair as needed.

RENTWAY

SYSTEM SETUP AND ANALYSIS

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PASSWORD SETUP (DELUXE INSTRUMENT PANEL) 215
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RENTWAY

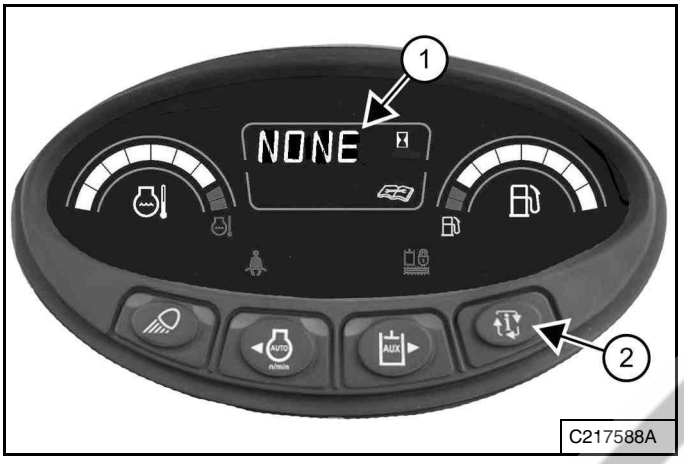
DIAGNOSTIC SERVICE CODES

Viewing Service Codes

The Service Codes will aid your dealer in diagnosing conditions that can damage your machine.

Standard Instrument Panel

Figure 388



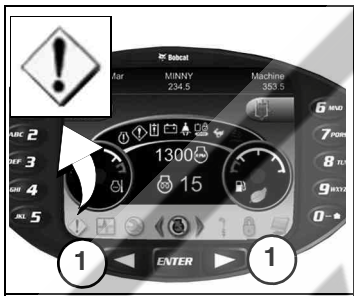
Press the Information button (Item 2) to cycle the data display (Item 1) **[Figure 388]** until the service code screen is displayed. If more than one service code is present, the codes will scroll on the data display.

When no service code is present, **[NONE]** is displayed **[Figure 388]**.

NOTE: Corroded or loose earths can cause multiple service codes and / or abnormal symptoms. All instrument panel lights flashing, alarm sounding, headlights and taillights flashing, can indicate a bad earth. The same symptoms can apply if the voltage is low, such as loose or corroded battery cables. If you observe these symptoms, check earths and positive leads first.

Deluxe Instrument Panel

The last 40 codes stored in history can also be viewed using the Deluxe Instrument Panel.

	Press a scroll button (Item 1) repeatedly until the Active Warnings screen icon (Inset) is highlighted.
	The ACTIVE WARNINGS screen displays active service codes. Press **[9]** to view the next service code if more than one is present. Press **[4]** to display a history of service codes.
	The WARNINGS HISTORY screen will list the Service Code Number **(CODE)**, Hourmeter reading when the error occurred **(HOUR)**, and the User **(USER)** who was logged in to operate the machine when the error occurred.
Press **[9]** to view the next eight service codes. A total of 40 codes can be stored. When more than 40 codes occur, the oldest code will disappear and the newest code will be in the number 1 position.	
	Press the list number next to the service code for more detail. Press the left scroll button to back up one screen.

Service Codes List

CODE	DESCRIPTION
H0104	Boom Angle Sensor No Communication
H0204	Arm Angle Sensor No Communication
H0304	Bucket Angle Sensor No Communication
H0405	Angle Sensor Supply Short To Battery
H0406	Angle Sensor Supply Short To Ground
H0407	Angle Sensor Supply Open Circuit
H0705	Aux 4 Base Short to Battery
H0706	Aux 4 Base Short to Ground
H0707	Aux 4 Base Open Circuit
H0732	Aux 4 Base Overcurrent
H0805	Aux 4 Rod Short to Battery
H0806	Aux 4 Rod Short to Ground
H0807	Aux 4 Rod Open Circuit
H0832	Aux 4 Rod Overcurrent
H2521	Angle Blade Control Switch Out Of Range High
H2522	Angle Blade Control Switch Out Of Range Low
H2524	Angle Blade Control Switch Out Of Neutral
H2605	Angle Blade Base Solenoid Short To Battery
H2606	Angle Blade Base Solenoid Short To Ground
H2607	Angle Blade Base Solenoid Open Circuit
H2632	Angle Blade Base Solenoid Overcurrent
H2705	Angle Blade Rod Solenoid Short To Battery
H2706	Angle Blade Rod Solenoid Short To Ground
H2707	Angle Blade Rod Solenoid Open Circuit
H2732	Angle Blade Rod Solenoid Overcurrent
H2805	Diverter Output Short To Battery
H2806	Diverter Output Short To Ground
H2807	Diverter Output Open Circuit
H2832	Diverter Output Overcurrent
H2848	Diverter Multiple Input
H3128	Interrupted Power Failure
H3904	Left Joystick In Error
H3912	Left Joystick Thumb Switch Not In Neutral
H3913	Left Joystick Grip No Communication
H3916	Left Joystick No Communication
H3928	Left Joystick Internal Failure
H3948	Left Joystick Multiple
H4423	Secondary Not Programmed
H4497	Secondary Controller Programmed
H4621	5 Volt Sensor Supply Out Of Range High
H4622	5 Volt Sensor Supply Out Of Range Low
H4721	8 Volt Sensor Supply Out Of Range High

CODE	DESCRIPTION
H4722	8 Volt Sensor Supply Out Of Range Low
H5705	Angle Blade Aux 4 Base Short to Battery
H5706	Angle Blade Aux 4 Base Short to Ground
H5707	Angle Blade Aux 4 Base Open Circuit
H5732	Angle Blade Aux 4 Base Overcurrent
H5805	Angle Blade Aux 4 Rod Short to Battery
H5806	Angle Blade Aux 4 Rod Short to Ground
H5807	Angle Blade Aux 4 Rod Open Circuit
H5832	Angle Blade Aux 4 Rod Overcurrent
H7404	Main Controller No Communication
H7604	Display No Communication
H7902	Door Unlock Error On
H7903	Door Unlock Error Off
H8002	Door Lock Error On
H8003	Door Lock Error Off
L0102	Lights Button Error On
L0202	High Flow Enable Button Error On
L0302	Auxiliary Enable Button Error On
L0402	Information Button Error On
L7404	Information Button Error On
L7672	Information Button Error On
LOWVLTG	Machine IQ Device Low Voltage
M0116	Air Filter Not Connected
M0117	Air Filter Plugged
M0144	Air Filter Derate Level 1
M0145	Air Filter Derate Level 2
M0216	Hydraulic/hydrostatic Filter Not Connected
M0217	Hydraulic/hydrostatic Filter Plugged
M0309	System Voltage Too Low
M0310	System Voltage Too High
M0311	System Voltage Extremely High
M0314	System Voltage Extremely Low
M0322	System Voltage Out Of Range Low
M0414	Engine Oil Pressure Extremely Low
M0415	Engine Oil Pressure In Shutdown
M0610	Engine Speed Too High
M0611	Engine Speed Extremely High
M0613	Engine Speed No Signal
M0615	Engine Speed In Shutdown
M0618	Engine Speed Out Of Range
M0710	Hydraulic Oil Temp Too High
M0711	Hydraulic Oil Temp Extremely High
M0715	Hydraulic Oil Temp In Shutdown

CODE	DESCRIPTION
M0721	Hydraulic Oil Temp Out Of Range High
M0722	Hydraulic Oil Temp Out Of Range Low
M0810	Engine Coolant Temp Too High
M0811	Engine Coolant Temp Extremely High
M0815	Engine Coolant Temp In Shutdown
M0821	Engine Coolant Temp Out Of Range High
M0822	Engine Coolant Temp Out Of Range Low
M0826	Engine Coolant Temp Out Of Range Low
M0909	Fuel Level Too Low
M0921	Fuel Level Out Of Range High
M0922	Fuel Level Out Of Range Low
M1121	Console Sensor Out Of Range High
M1122	Console Sensor Out Of Range Low
M1128	Console Sensor Failure
M1305	Fuel Hold Solenoid Short To Battery
M1306	Fuel Hold Solenoid Short To Ground
M1307	Fuel Hold Solenoid Open Circuit
M1402	Fuel Pull Solenoid Error On
M1403	Fuel Pull Solenoid Error Off
M1407	Fuel Pull Solenoid Open Circuit
M1428	Fuel Pull Solenoid Failure
M1605	Hydraulic Bypass Short to Battery
M1606	Hydraulic Bypass Short to Ground
M1607	Hydraulic Bypass Open Circuit
M1632	Hydraulic Bypass Overcurrent
M1705	Hydraulic Lock Valve Short To Battery
M1706	Hydraulic Lock Valve Short To Ground
M1707	Hydraulic Lock Valve Open Circuit
M1732	Hydraulic Lock Valve Overcurrent
M1802	Power Beyond Valve Output Error On
M1803	Power Beyond Valve Output Error Off
M1902	Power Beyond Valve Relay Error On
M1903	Power Beyond Valve Relay Error Off
M2005	Two Speed Primary Solenoid Short To Battery
M2006	Two Speed Primary Solenoid Short To Ground
M2007	Two Speed Primary Solenoid Open Circuit
M2102	Glow Plug Output Error On
M2103	Glow Plug Output Error Off
M2107	Glow Plug Output Open Circuit
M2128	Glow Plug Output Failure
M2202	Starter Output Error On
M2203	Starter Output Error Off
M2207	Starter Output Open Circuit
M2228	Starter Output Failure
M2302	Starter Relay Error On

CODE	DESCRIPTION
M2303	Starter Relay Error Off
M2402	Fuel Pull Relay Error On
M2403	Fuel Pull Relay Error Off
M2521	Load Sense Sensor Out Of Range High
M2522	Load Sense Sensor Out Of Range Low
M2602	Glow Plug Relay Error On
M2603	Glow Plug Relay Error Off
M2721	Throttle Primary Sensor Out Of Range High
M2722	Throttle Primary Sensor Out Of Range Low
M2805	Diverter Output Short To Battery
M2806	Diverter Output Short To Ground
M2807	Diverter Output Open Circuit
M3128	Interrupted Power Failure
M3204	Throttle Controller No Communication To Bobcat Controller
M3223	Throttle Controller Not Calibrated
M3228	Throttle Controller Failure
M3299	Throttle Controller Calibration In Process
M3304	Deluxe Panel No Communication
M3372	Display Software Incompatible
M3373	Display Software Outdated
M3702	HYD Exchange Output Error On
M3703	HYD Exchange Output Error Off
M3904	Jog Shuttle No Communication
M4028	Wrong ECU Detected
M4109	Alternator Voltage Too Low
M4110	Alternator Voltage High
M4204	Keyless Entry No Communication
M4304	Keyless Start Panel No Communication
M4404	Secondary No Communication
M4472	Secondary Controller Software Incompatible
M4473	Secondary Controller Software Outdated
M4621	5 Volt Sensor Supply Out Of Range High
M4622	5 Volt Sensor Supply Out Of Range Low
M4721	8 Volt Sensor Supply Out Of Range High
M4722	8 Volt Sensor Supply Out Of Range Low
M4802	Front Light Relay Error On
M4803	Front Light Relay Error Off
M5002	Front Light Output Error On
M5003	Front Light Output Error Off
M5205	Offset Base Solenoid Short To Battery
M5206	Offset Base Solenoid Short To Ground
M5207	Offset Base Solenoid Open Circuit
M5232	Offset Base Solenoid Overcurrent
M5305	Offset Rod Solenoid Error On

CODE	DESCRIPTION
M5306	Offset Rod Solenoid Short To Ground
M5307	Offset Rod Solenoid Open Circuit
M5332	Offset Rod Solenoid Overcurrent
M5421	Offset Control Switch Out Of Range High
M5422	Offset Control Switch Out Of Range Low
M5424	Offset Control Switch Out Of Neutral
M5505	Auxiliary Base Solenoid Short To Battery
M5506	Auxiliary Base Solenoid Short To Ground
M5507	Auxiliary Base Solenoid Open Circuit
M5532	Auxiliary Base Solenoid Overcurrent
M5605	Auxiliary Rod Solenoid Short To Battery
M5606	Auxiliary Rod Solenoid Short To Ground
M5607	Auxiliary Rod Solenoid Open Circuit
M5632	Auxiliary Rod Solenoid Overcurrent
M5721	Auxiliary Control Switch Out Of Range High
M5722	Auxiliary Control Switch Out Of Range Low
M5724	Auxiliary Control Switch Out Of Neutral
M5810	Fuel Temperature High
M5811	Fuel Temperature Extremely High
M5815	Fuel Temperature In Shutdown
M5826	Fuel Temperature In Shutdown
M6021	Left Control Switch Out of Range High
M6022	Left Control Switch Out of Range Low
M6024	Left Control Switch Out of Neutral
M6121	Right Control Switch Out of Range High
M6122	Right Control Switch Out of Range Low
M6124	Right Control Switch Out of Neutral
M6204	Load Moment Sensor In Error
M6221	Overload Warning Sensor Out of Range High
M6222	Overload Warning Sensor Out of Range Low
M6402	Switched Power Relay Error On
M6403	Switched Power Relay Error Off
M6505	ECU Power Short To Battery
M6506	ECU Power Short To Ground
M6507	ECU Power Open Circuit
M6604	ECU No Communication
M6702	HVAC Output Error On
M6703	HVAC Output Error Off
M6905	Dump Valve Short to Battery
M6906	Dump Valve Short to Ground
M6907	Dump Valve Open Circuit
M6932	Dump Valve Overcurrent
M7002	Switched Power Output Error On
M7003	Switched Power Output Error Off
M7007	Switched Power Output Open Circuit

CODE	DESCRIPTION
M7028	Switched Power Output Failure
M7423	Main Controller Not Programmed
M7472	Main Controller Software Incompatible
M7473	Main Controller Software Outdated
M7497	Main Controller Programmed
M7604	Standard Display Panel No Communication
M7748	Key Switch Multiple
M7839	Hourmeter Changed
M8004	Cooling Fan Controller No Communication
M8005	Cooling Fan Short To Battery
M8006	Cooling Fan Short To Ground
M8021	Cooling Fan Out Of Range High
M8022	Cooling Fan Out Of Range Low
M8025	Cooling Fan Unresponsive
M8027	Cooling Fan CAN Error
M8028	Cooling Fan Failure
M8029	Cooling Fan Wiring Fault
M8030	Cooling Fan Controller Fault
M8302	Wait to Start Lamp Error On
M8303	Wait to Start Lamp Error Off
M8615	Engine Speed Derate In Shutdown
M8625	Engine Speed Derate Unresponsive
M9111	Fuel Filter Extremely Plugged
M9117	Fuel Filter Plugged
M9144	Fuel Filter Derate Level 1
M9145	Fuel Filter Derate Level 2
M9202	Fuel Lift Pump Error On
M9203	Fuel Lift Pump Error Off
M9287	Fuel Pump Failure Time Exceeded
M9309	Fuel Pressure Low
M9314	Fuel Pressure Extremely Low
M9321	Fuel Pressure Out Of Range High
M9322	Fuel Pressure Out Of Range Low
M9344	Fuel Pressure Derate Level 1
M9701	Turbo Prime Sequence Active
R3327	Display CAN Error
R3334	Display CAN Error
R3335	Display CAN Error
R3904	Jog Shuttle No Communication
R7404	Main Controller No Communication
R7492	Main Controller Authentication Failed
R9604	Radio No Communication
VRLOW VLTG	Machine IQ Device Very Low Voltage

DRAFT

CONTROL PANEL SETUP

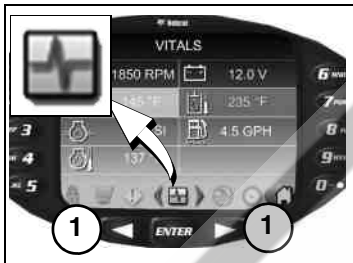
Deluxe Instrument Panel

Icon Identification

Figure 389

ICON	DESCRIPTION
Mon, 17 Mar 3:45 PM	DATE / TIME
MINNY 234.5	USER / USER HOURS
Machine 353.5	MACHINE HOURS (HOURMETER)
	ACTIVE WARNINGS screen icon
	VITALS screen icon
	SERVICE screen icon
	AUTO IDLE Status icon
	ATTACHMENTS screen icon
	MACHINE SETTINGS screen icon
	DISPLAY screen icon
	HOME icon (Return to MAIN screen)
	LEFT SCROLL button RIGHT SCROLL button
ENTER	ENTER button

Vitals

	Press a scroll button (Item 1) repeatedly until the Vitals screen icon (Inset) is highlighted.
	Displays select system operating levels.
You can monitor real-time displays of: **Engine Speed (RPM)** **Engine Coolant Temperature** **System Voltage** **Hydraulic Fluid Temperature**	

The Deluxe Instrument Panel is easy to use. Continue to set your own preferences for operating / monitoring your Bobcat excavator.

Deluxe Instrument Panel (Cont'd)

Date And Time

	Press a scroll button (Item 1) repeatedly until the Display screen icon (Inset) is highlighted.
	Select **[1. CLOCKS]**.
	Select **[1. TIME]**.
	Use the keypad to enter time. Select AM / PM / 24hr. Press **[ENTER]** to continue.
	Select **[2. DATE]**.
	Use the keypad to enter date. Press **[ENTER]** to continue.

Languages

	Press a scroll button (Item 1) repeatedly until the Display screen icon (Inset) is highlighted.
	Select **[2. LANGUAGES]**.
	Select the desired language.

English / Metric Display

	Press a scroll button (Item 1) repeatedly until the Display screen icon (Inset) is highlighted.
	Select **[4. DISPLAY SETTINGS]**. Press **[1]** to cycle between ENGLISH and METRIC.

Deluxe Instrument Panel (Cont'd)

Auto Idle Time Delay

	Press a scroll button (Item 1) repeatedly until the Security screen icon (Inset) is highlighted.
	Select **[3. MACHINE PERFORMANCE]**.
	Select **[1. AUTO IDLE DELAY TIME]**.
	Use the keypad to enter the desired delay time between 4 and 250 seconds. Press **[ENTER]** to save and continue. Press left scroll button to exit without saving.

Job Clock Reset

	Press a scroll button (Item 1) repeatedly until the Security screen icon (Inset) is highlighted.
	Select **[1. PASSWORDS / LOCKOUTS]**.
	Enter owner password and press **[ENTER]**.
	Select **[1. USER SETTINGS]**.
	Select user.
	Press **[9]** to reset job statistics. Press left scroll button or **[0]** to exit without saving.

RENTWA

Deluxe Instrument Panel (Cont'd)

Alarm Clock Reset

	Press a scroll button (Item 1) repeatedly until the Display screen icon (Inset) is highlighted.
	Select **[3. ALARM CLOCK]**.
	Select **[1. OFF ONCE]**, Select **[2. ON Daily]** or Select **[3. ON WEEKLY]**.
	Select **[1. OFF / ON]**, Select **[2. TIME]** or Select **[3. DAILY]**.
	Use keypad numbers to set time. Select **[7. AM]**, Select **[8. PM]** or Select **[9. 24 hr clock]**. Select **[ENTER]** to save. Press left scroll to back space numbers.
	Press **[4]** to set alarm to sleep. (When pressed, display will return to main screen.) Press **[9]** to shut off alarm. Alarm will still be active for the next day alarm setting. (When pressed, display will return to main screen.)

ECO MODE

	Press a scroll button (Item 1) repeatedly until the Security screen icon (Inset) is highlighted.
	Select **[3. MACHINE PERFORMANCE]**.
	Select **[2. ECO MODE]**. ECO Mode will set the maximum engine rpm to be at 85% of the high idle setting. Example: If the machine maximum engine speed is 2450 rpm, when ECO Mode is enabled, the maximum engine speed will be approximately 2080 rpm.

Deluxe Instrument Panel (Cont'd)

Machine History - Log In Information

	Press a scroll button (Item 1) repeatedly until the Security screen icon (Inset) is highlighted.
	MACHINE SETTINGS is visible on screen. Select **[2. MACHINE HISTORY]**.
	Select **[1. LOG-IN INFORMATION]**.
	View User Log hours and last time / dated used. Individual information can be viewed and reset back to zero. Select user **[KEYPAD 1 - 9]** to access individual user.

Machine History - User Job Statistics

	Press a scroll button (Item 1) repeatedly until the Security screen icon (Inset) is highlighted.
	MACHINE SETTINGS is visible on screen. Select **[2. MACHINE HISTORY]**.
	Select **[2. USER JOB STATISTICS]**.
	View Job Statistics (Job Hours / Idle Time. Information can be viewed and reset back to zero.

RENTKA

Deluxe Instrument Panel (Cont'd)

Machine History - Overall Job Statistics

	Press a scroll button (Item 1) repeatedly until the Security screen icon (Inset) is highlighted.
	MACHINE SETTINGS is visible on screen. Select **[2. MACHINE HISTORY]**.
	Select **[3. OVERALL JOB STATISTICS]**.

Attachments

	Press a scroll button (Item 1) repeatedly until the Attachment screen icon (Inset) is highlighted.
	ATTACHMENTS is visible on screen. Press **[ENTER]**.
	Press **[4]** or **[9]** repeatedly until the desired Attachment is visible in the display screen.
	Information about the attachment, recommended auxiliary hydraulic flow and tips about attachment operation will be displayed.

RENTAL

PASSWORD SETUP (KEYPAD PANEL)

Password Description

Master Password:

A permanent, randomly selected password set at the factory that cannot be changed. This password is used for service by the Bobcat dealer if the owner password is not known or to change the owner password.

Owner Password:

Allows for full use of the excavator. Must be used to change the owner password.

NOTE: By default, the owner password is the last five digits of the machine's serial number.

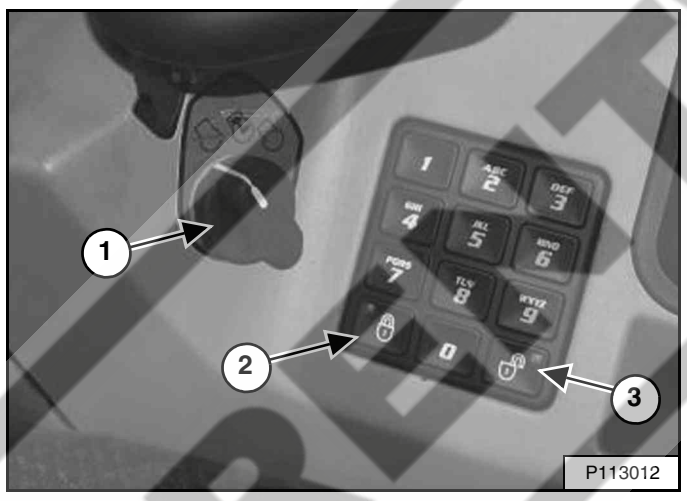
User 1 And User 2 Passwords:

By default, User 1 and User 2 passwords are not set.

NOTE: The User 1 and User 2 Password cannot be used to change a password or to switch between the Locked / Unlocked modes.

Changing The Owner, User 1, And User 2 Passwords

Figure 390



Turn the start switch (Item 1) **[Figure 390]** to the ON position to turn on the excavator's electrical system.

Press and hold the lock (Item 2) and unlock (Item 3) **[Figure 390]** keys for three seconds.

The display screen will show **[CODE]**.

Enter the five-digit owner password using the keypad if locked.

The display screen will show **[OWNER]** for two seconds. Press the unlock key (Item 3) **[Figure 390]** to navigate between **[OWNER]**, **[USER 1]** and **[USER 2]**.

After two seconds, the display screen will show **[ENTER]**.

NOTE: The lock key's (Item 2) red LED and the unlock key's (Item 3) [Figure 390] green LED will flash during the procedure.

Enter a new five-digit owner, User 1, or User 2 password using the keypad. An asterisk will show in the display screen for each key pressed.

The display screen will show **[AGAIN]**.

Enter the new five-digit password again.

The display screen will show **[STORE]** if the password has been changed.

The display screen will show **[ERROR]** if:

- The second five-digit password is different from the first one.

  OR

- No number key was pressed for more than 20 seconds.

  OR

- "00000" was entered as the password.

NOTE: "00000" is not an acceptable owner, User 1, or User 2 password.

The system returns to its previous state. Either the lock key's (Item 2) red LED or the unlock key's (Item 2) **[Figure 390]** green LED will become solid.

RETWAY

PASSWORD SETUP (KEYPAD PANEL) (CONT'D)

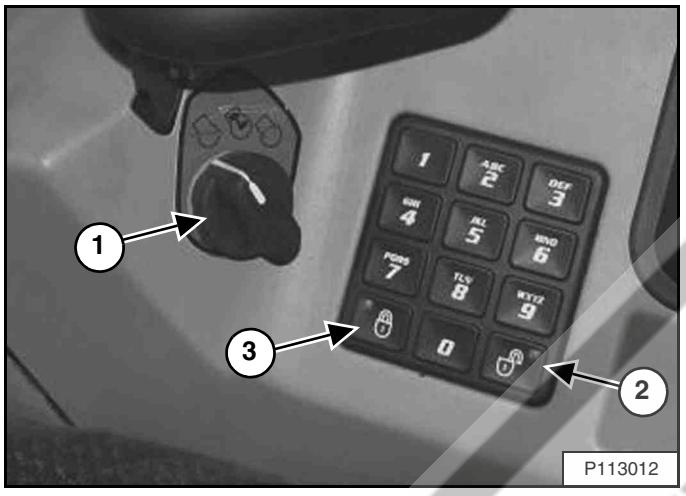
Password Lockout Feature

This feature allows the owner to unlock the password feature so that a password does not need to be used every time the engine is started.

Turn the start switch (Item 1) **[Figure 391]** to the ON position to turn on the excavator's electrical system.

Enter the five-digit owner password using the number keypad.

Figure 391



Press the unlock key (Item 2) **[Figure 391]**.

The left panel display screen will show **[CODE]**.

Enter the five-digit owner password using the keypad. The unlock key's green light will flash, then become solid.

The excavator can now be started without using a password.

NOTE: Use the following procedure to reset the machine lock so that the excavator requires a password to start the engine.

Turn the start switch to the ON position to turn on the excavator's electrical system.

Press the lock key (Item 3) **[Figure 391]**.

The lock key's red light will flash and the left panel display screen will show **[CODE]**.

Enter the five-digit owner password using the keypad. The unlock key's green light will flash, then the lock key's red light will become solid.

You must now enter the password every time to start the excavator.

RENTWAY

PASSWORD SETUP (DELUXE INSTRUMENT PANEL)

Password Setup is available on machines with a Deluxe Instrument Panel.

Password Description

All new machines with a Deluxe Instrument Panel arrive at Bobcat dealerships with the keypad in locked mode. Locked mode means that a password must be used to start the engine.

For security purposes, your dealer may change the password and set the keypad in the locked mode. Your dealer will provide you with the password.

Master Password:

A permanent, randomly selected password set at the factory that cannot be changed. This password is used for service by the Bobcat dealer if the owner password is not known or to change the owner password.

Owner Password:

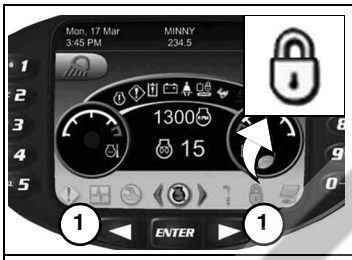
Allows for full use of the excavator and to set up the Deluxe Instrument Panel. There is only one owner password. The owner password must be used to change the owner or user passwords. The owner should change the password as soon as possible for the security of the excavator.

User Password:

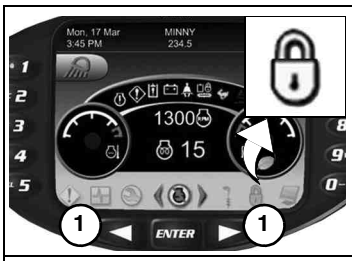
Allows starting and operating the excavator; cannot be used to change a password or any of the other setup features.

For the procedures to change passwords: (See Changing The Owner Password on Page 215.) and (See Changing The User Passwords on Page 216.)

Changing The Owner Password

	Press a scroll button (Item 1) repeatedly until the Security screen icon (Inset) is highlighted.
	Select **[1. PASSWORDS / LOCKOUTS]**.
	Enter owner password and press **[ENTER]**.
	Select **[1. USER SETTINGS]**.
	Select **[1. OWNER]**.
	Select **[2. CHANGE PASSWORD]**.
	Enter new owner password and press **[ENTER]**. You will be prompted to reenter the new owner password.

Changing The User Passwords

	Press a scroll button (Item 1) repeatedly until the Security screen icon (Inset) is highlighted.
	Select **[1. PASSWORDS / LOCKOUTS]**.
	Enter owner password and press **[ENTER]**.
	Select **[1. USER SETTINGS]**.
	Select user.
	Select **[2. CHANGE PASSWORD]**.
	Enter new user password and press **[ENTER]**.

Password Lockout Feature

This feature allows the owner to unlock the password feature so that a password does not need to be used every time the engine is started.

	Press a scroll button (Item 1) repeatedly until the Security screen icon (Inset) is highlighted.
	Select **[1. PASSWORDS / LOCKOUTS]**.
	Enter owner password and press **[ENTER]**.
	Select **[2. MACHINE LOCK]**.

NOTE: The procedure above can be followed to reset the machine lock so that the machine requires a password to start the engine.

NOTE: When the password is in UNLOCKED, no password is needed. The start switch is used to start the machine.

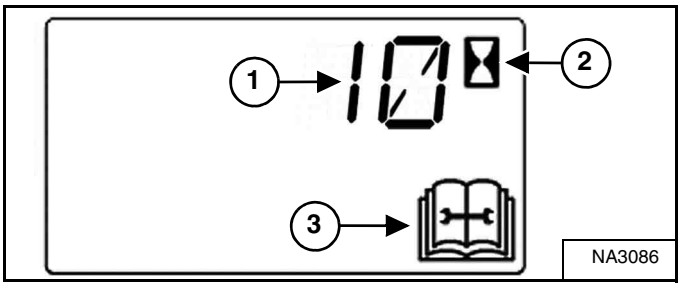
MAINTENANCE CLOCK

Description

The Maintenance Clock alerts the operator when the next service interval is due. *EXAMPLE:* The maintenance clock can be set to a 500 hour interval as a reminder for the next 500 hour planned maintenance.

Standard Instrument Panel

Figure 392



During machine operation, a two-beep alarm will sound when there are less than 10 hours until the next planned maintenance.

The remaining hours before maintenance is required (Item 1) will appear in the data display for 5 seconds while the service icon (Item 3) and the hourmeter icon (Item 2) **[Figure 392]** flash.

NOTE: The display will show negative numbers after counting down to zero.

The display will revert to the previous display and will appear for 5 seconds every time the machine is started until the maintenance clock is reset.

Setup

See your Bobcat dealer about installation of this feature.

Reset

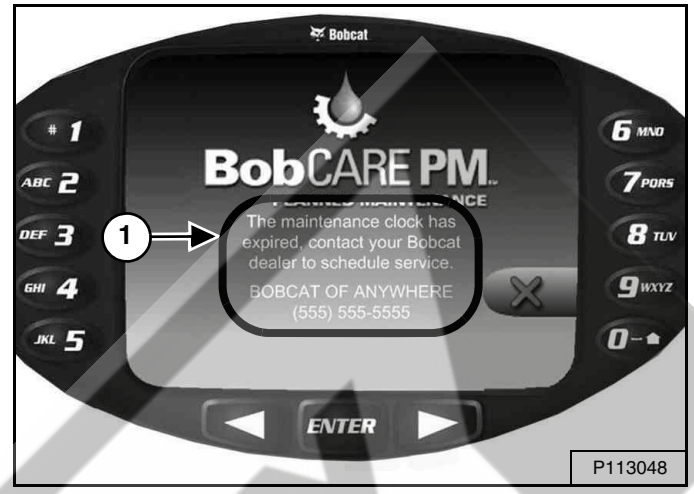
Figure 393

Press the Information button (Item 2) **[Figure 393]** until the display screen shows the maintenance clock.

Press and hold the Information button (Item 2) for 7 seconds until **[RESET]** (Item 1) **[Figure 393]** appears in the display screen.

Deluxe Instrument Panel

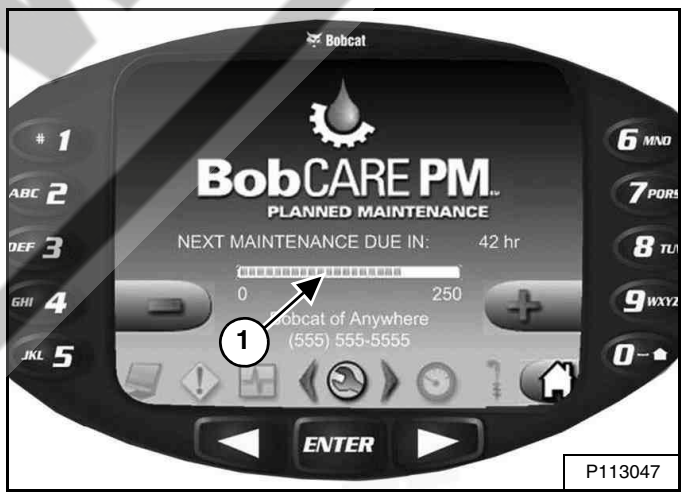
Figure 394



The Deluxe Instrument Panel (if equipped) will display a message (Item 1) **[Figure 394]** alerting the operator to service the machine.

This message will remain for 10 seconds and will appear for 10 seconds every time the machine is started until the maintenance clock is reset.

Figure 395



The Deluxe Instrument Panel (if equipped) will display a bar (Item 1) **[Figure 395]** showing the time remaining until next service. This bar will turn red when service is past due. NEXT MAINTENANCE DUE will change to MAINTENANCE PAST DUE and display the number of hours past due.

Keys **[4]** and **[9]** can be used to adjust the service interval when the owner is logged in **[Figure 395]**.

To reset the service clock after servicing the machine, press and hold key [1] **[Figure 395]** (when the owner is logged in) until the bar graph resets to 0 **[Figure 394]**.

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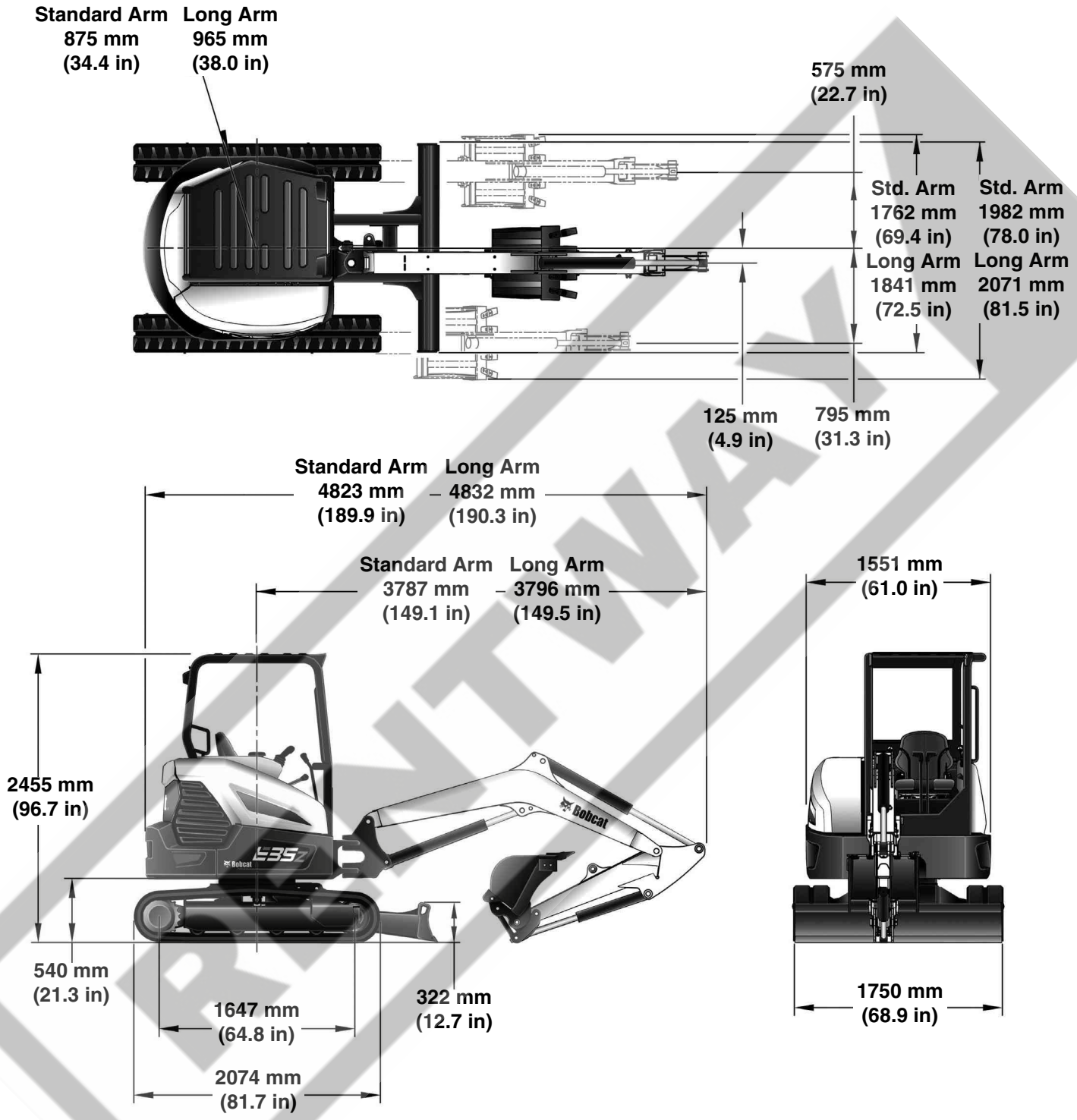
Certain specification(s) are based on engineering calculations and are not actual measurements. Specification(s) are provided for comparison purposes only and are subject to change without notice. Specification(s) for your individual Bobcat equipment will vary based on normal variations in design, manufacturing, operating conditions, and other factors.

RENTWAY

EXCAVATOR SPECIFICATIONS

Excavator Machine Dimensions

- Where applicable, specification conform to SAE or ISO standards and are subject to change without notice.

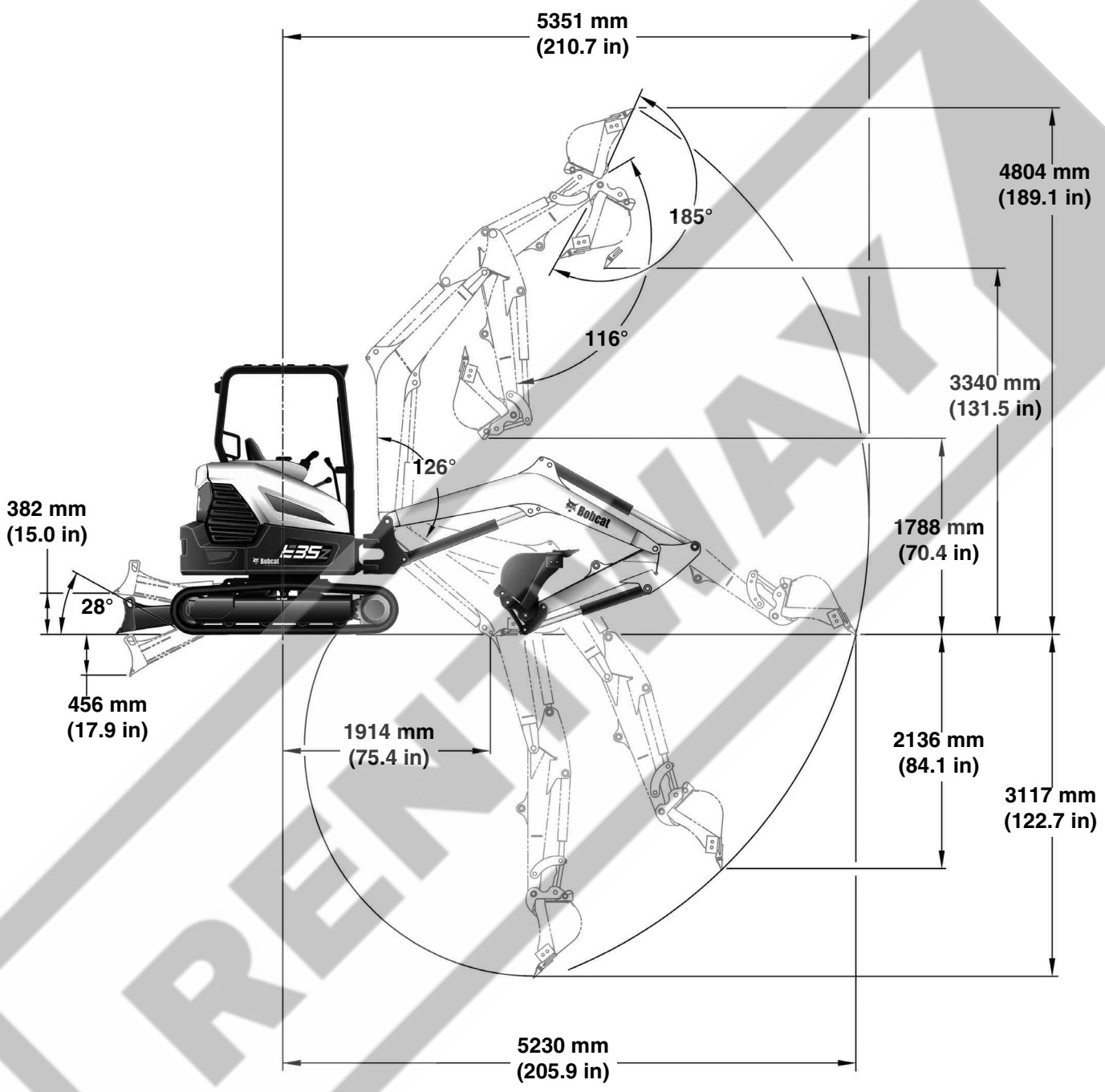


NA15186

RENTWAY

Excavator Machine Dimensions - Standard Arm

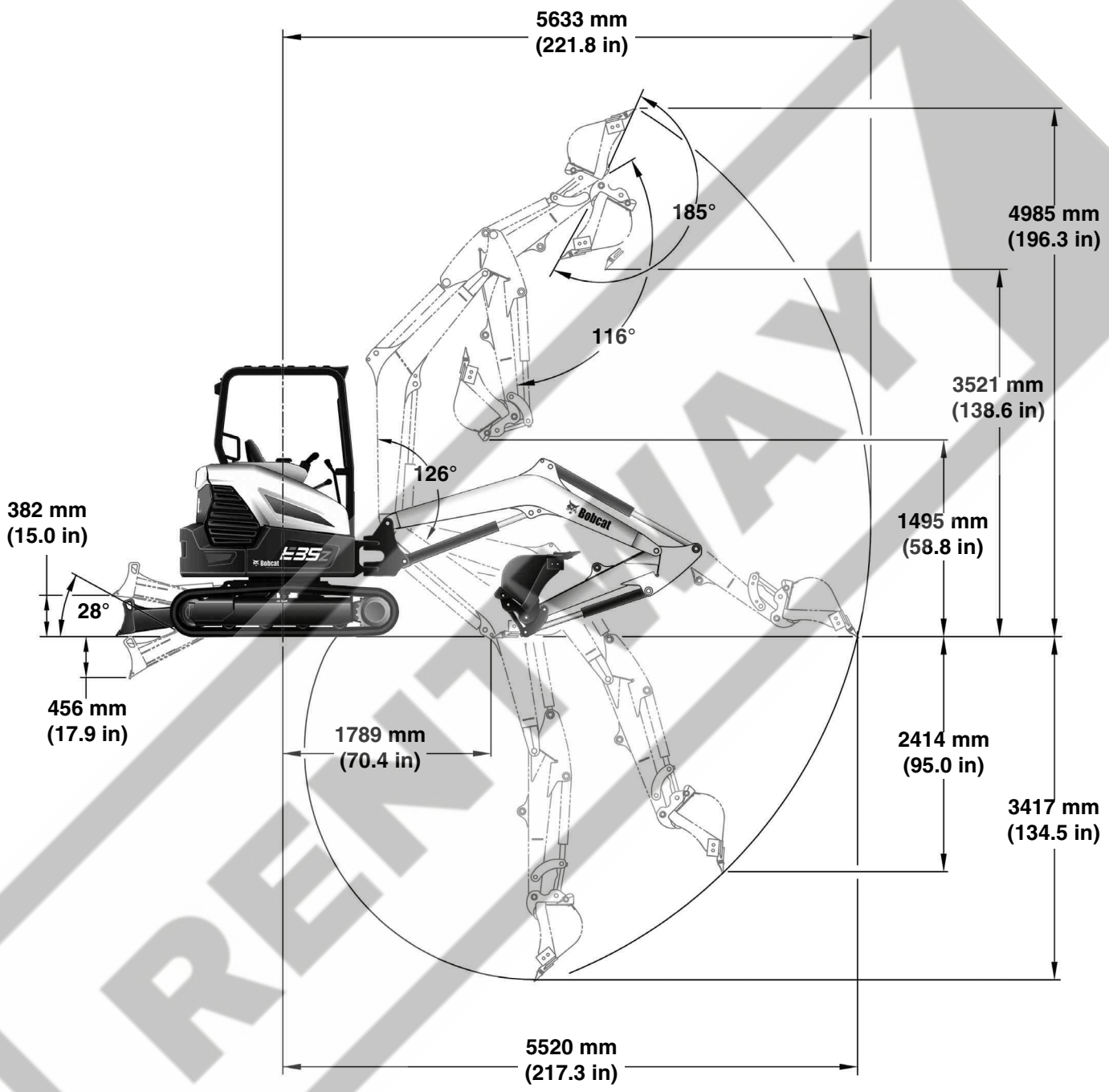
- Where applicable, specification conform to SAE or ISO standards and are subject to change without notice.



NA15189

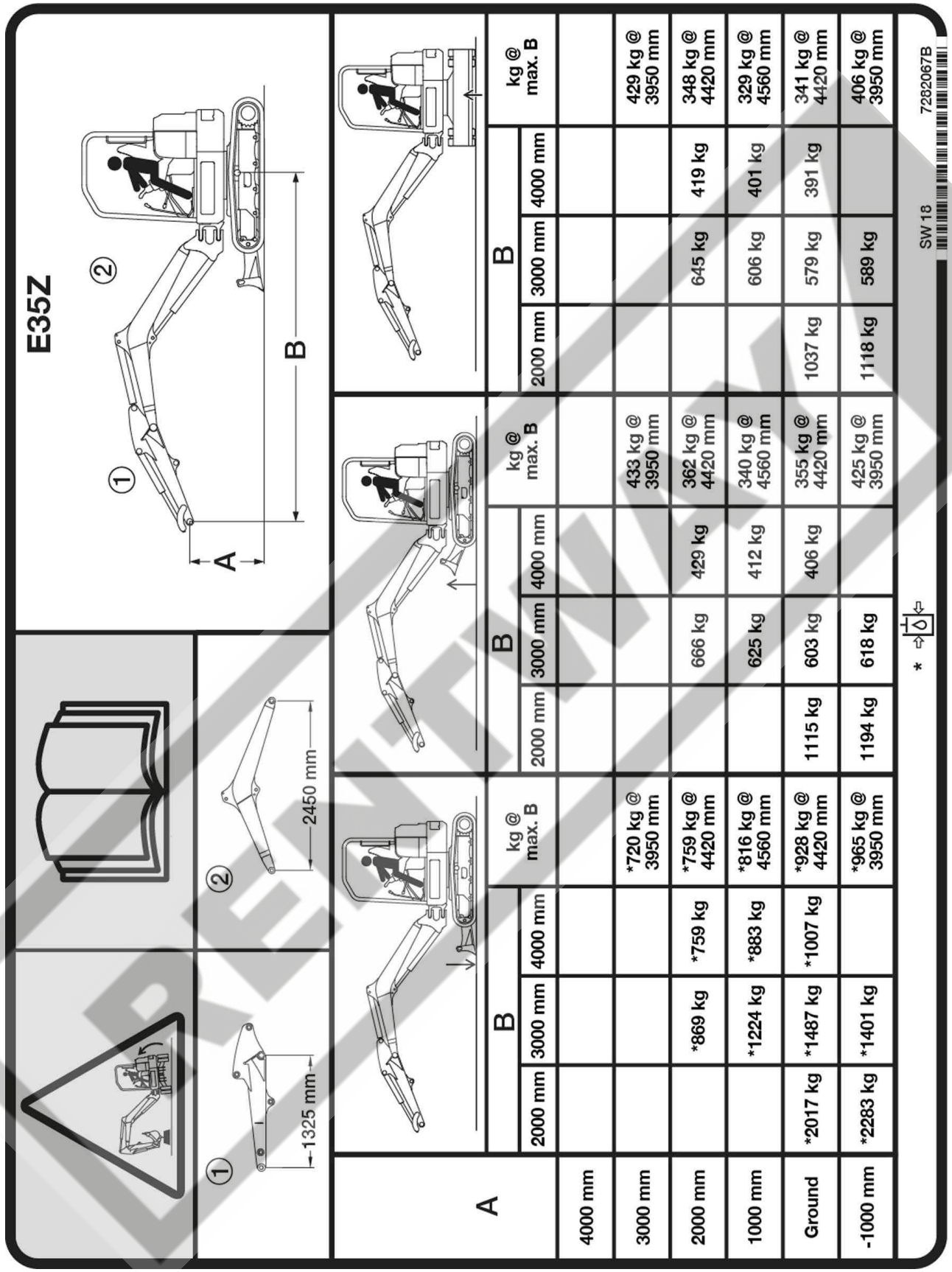
Excavator Machine Dimensions - Long Arm

- Where applicable, specification conform to SAE or ISO standards and are subject to change without notice.



NA15189

Rated Lift Capacity For Standard Arm, Medium Counterweight, And Canopy



A	B 2000 mm	B 3000 mm	B 4000 mm	kg @ max. B	B 2000 mm	B 3000 mm	B 4000 mm	kg @ max. B	B 2000 mm	B 3000 mm	B 4000 mm	kg @ max. B
4000 mm												
3000 mm				*720 kg @ 3950 mm				433 kg @ 3950 mm				429 kg @ 3950 mm
2000 mm		*869 kg	*759 kg	*759 kg @ 4420 mm		666 kg	429 kg	362 kg @ 4420 mm		645 kg	419 kg	348 kg @ 4420 mm
1000 mm		*1224 kg	*883 kg	*816 kg @ 4560 mm		625 kg	412 kg	340 kg @ 4560 mm		606 kg	401 kg	329 kg @ 4560 mm
Ground	*2017 kg	*1487 kg	*1007 kg	*928 kg @ 4420 mm	1115 kg	603 kg	406 kg	355 kg @ 4420 mm	1037 kg	579 kg	391 kg	341 kg @ 4420 mm
-1000 mm	*2283 kg	*1401 kg		*965 kg @ 3950 mm	1194 kg	618 kg		425 kg @ 3950 mm	1118 kg	589 kg		406 kg @ 3950 mm

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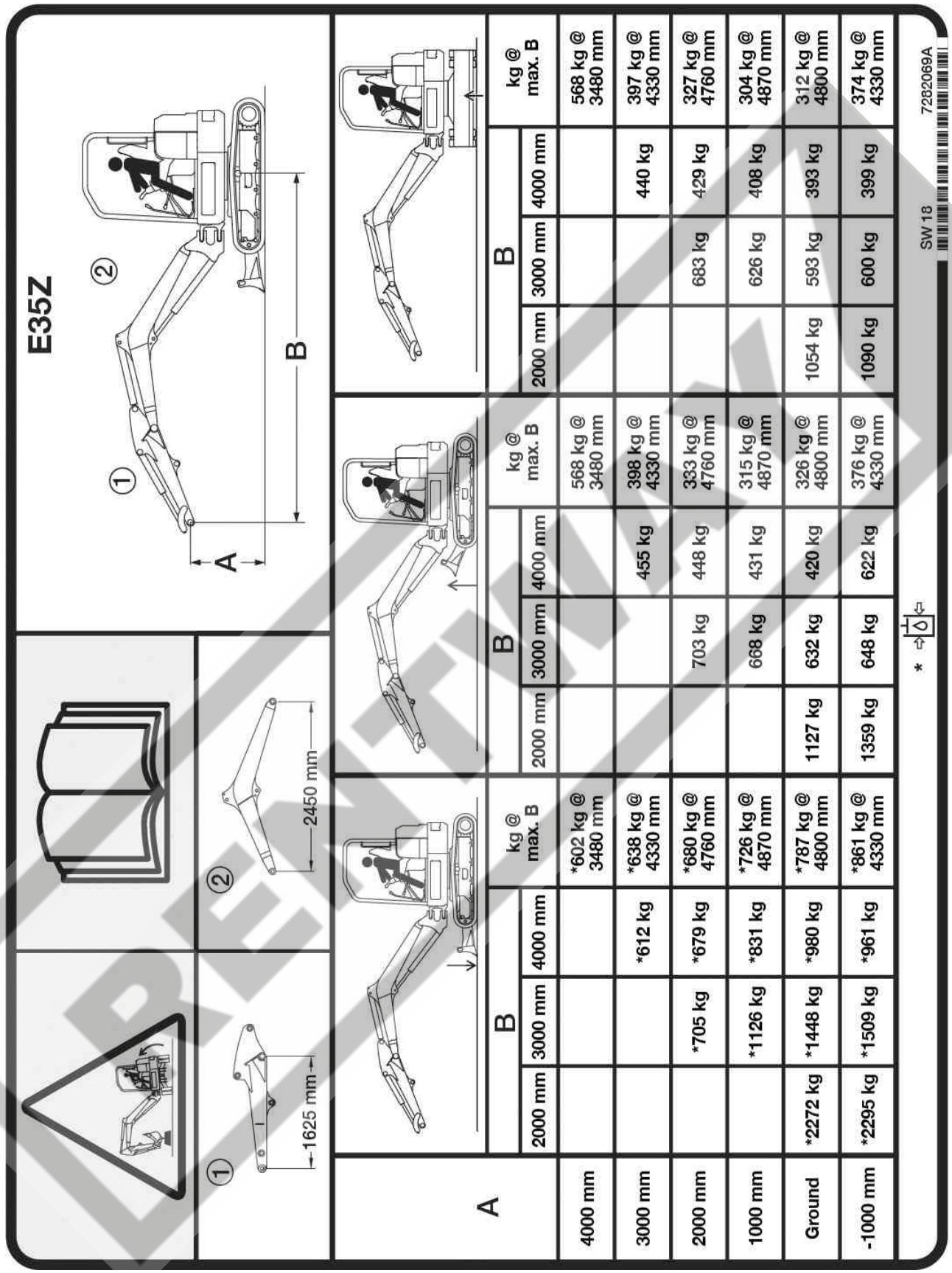
7282067

Rated Lift Capacity For Long Arm, Medium Counterweight, And Canopy

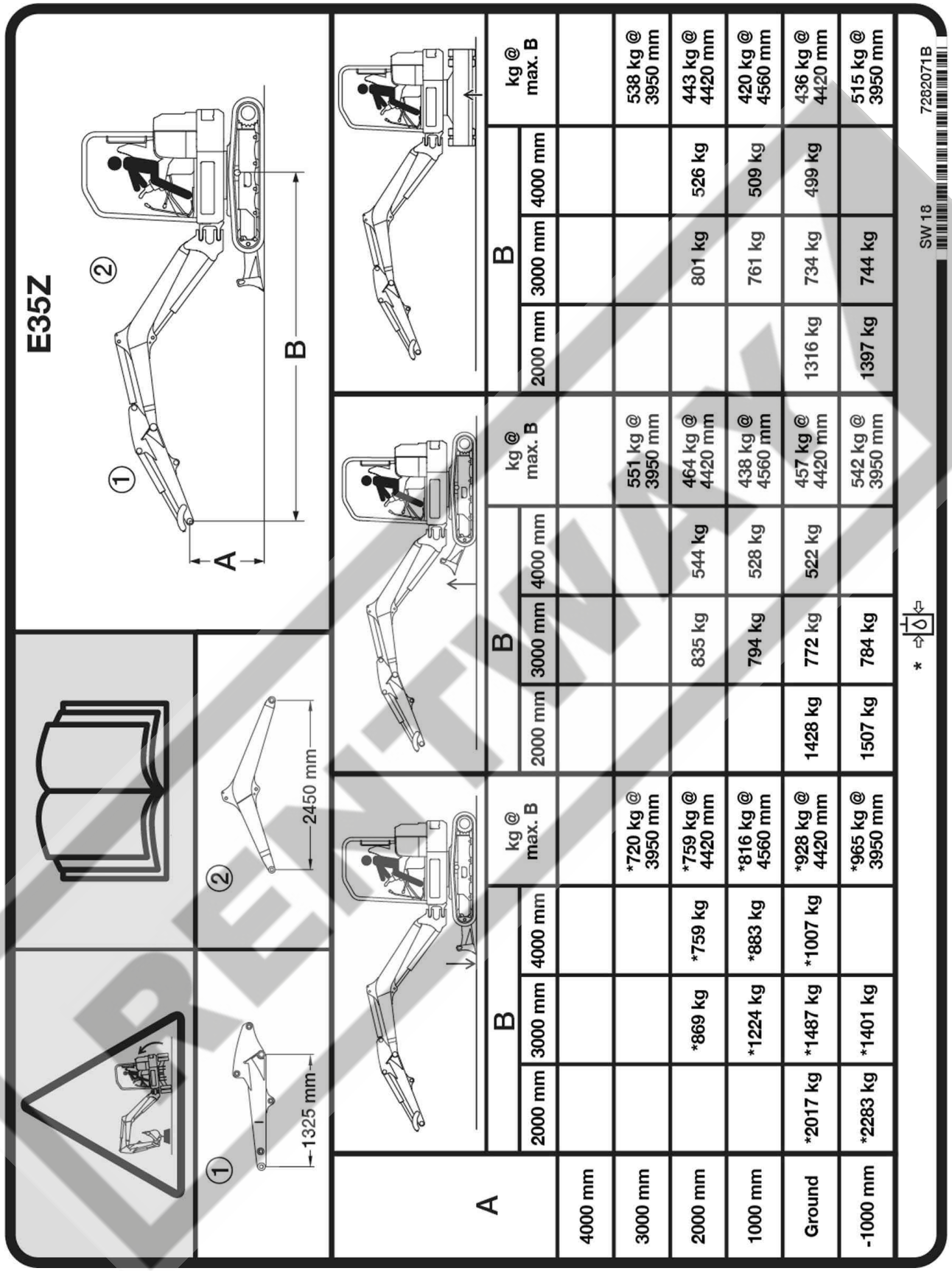


A	B 2000 mm	B 3000 mm	B 4000 mm	kg @ max. B	B 2000 mm	B 3000 mm	B 4000 mm	kg @ max. B	B 2000 mm	B 3000 mm	B 4000 mm	kg @ max. B
4000 mm				*602 kg @ 3480 mm				568 kg @ 3480 mm				568 kg @ 3480 mm
3000 mm			*612 kg	*638 kg @ 4330 mm			455 kg	398 kg @ 4330 mm			440 kg	397 kg @ 4330 mm
2000 mm		*705 kg	*679 kg	*680 kg @ 4760 mm		703 kg	448 kg	333 kg @ 4760 mm		683 kg	429 kg	327 kg @ 4760 mm
1000 mm		*1126 kg	*831 kg	*726 kg @ 4870 mm		668 kg	431 kg	315 kg @ 4870 mm		626 kg	408 kg	304 kg @ 4870 mm
Ground	*2272 kg	*1448 kg	*980 kg	*787 kg @ 4800 mm	1127 kg	632 kg	420 kg	326 kg @ 4800 mm	1054 kg	593 kg	393 kg	312 kg @ 4800 mm
-1000 mm	*2295 kg	*1509 kg	*961 kg	*861 kg @ 4330 mm	1359 kg	648 kg	622 kg	376 kg @ 4330 mm	1090 kg	600 kg	399 kg	374 kg @ 4330 mm

7282069

EXCAVATOR SPECIFICATIONS (CONT'D)

Rated Lift Capacity For Standard Arm, Heavy Counterweight, And Canopy



A	B 2000 mm	B 3000 mm	B 4000 mm	kg @ max. B
4000 mm				
3000 mm				538 kg @ 3950 mm
2000 mm		*869 kg	*759 kg	*759 kg @ 4420 mm
1000 mm		*1224 kg	*883 kg	*816 kg @ 4560 mm
Ground	*2017 kg	*1487 kg	*1007 kg	*928 kg @ 4420 mm
-1000 mm	*2283 kg	*1401 kg		*965 kg @ 3950 mm

A	B 2000 mm	B 3000 mm	B 4000 mm	kg @ max. B
4000 mm				
3000 mm				551 kg @ 3950 mm
2000 mm		835 kg	544 kg	464 kg @ 4420 mm
1000 mm		794 kg	528 kg	438 kg @ 4560 mm
Ground	1428 kg	772 kg	522 kg	457 kg @ 4420 mm
-1000 mm	1507 kg	784 kg		542 kg @ 3950 mm

A	B 2000 mm	B 3000 mm	B 4000 mm	kg @ max. B
4000 mm				
3000 mm				538 kg @ 3950 mm
2000 mm		801 kg	526 kg	443 kg @ 4420 mm
1000 mm		761 kg	509 kg	420 kg @ 4560 mm
Ground	1316 kg	734 kg	499 kg	436 kg @ 4420 mm
-1000 mm	1397 kg	744 kg		515 kg @ 3950 mm

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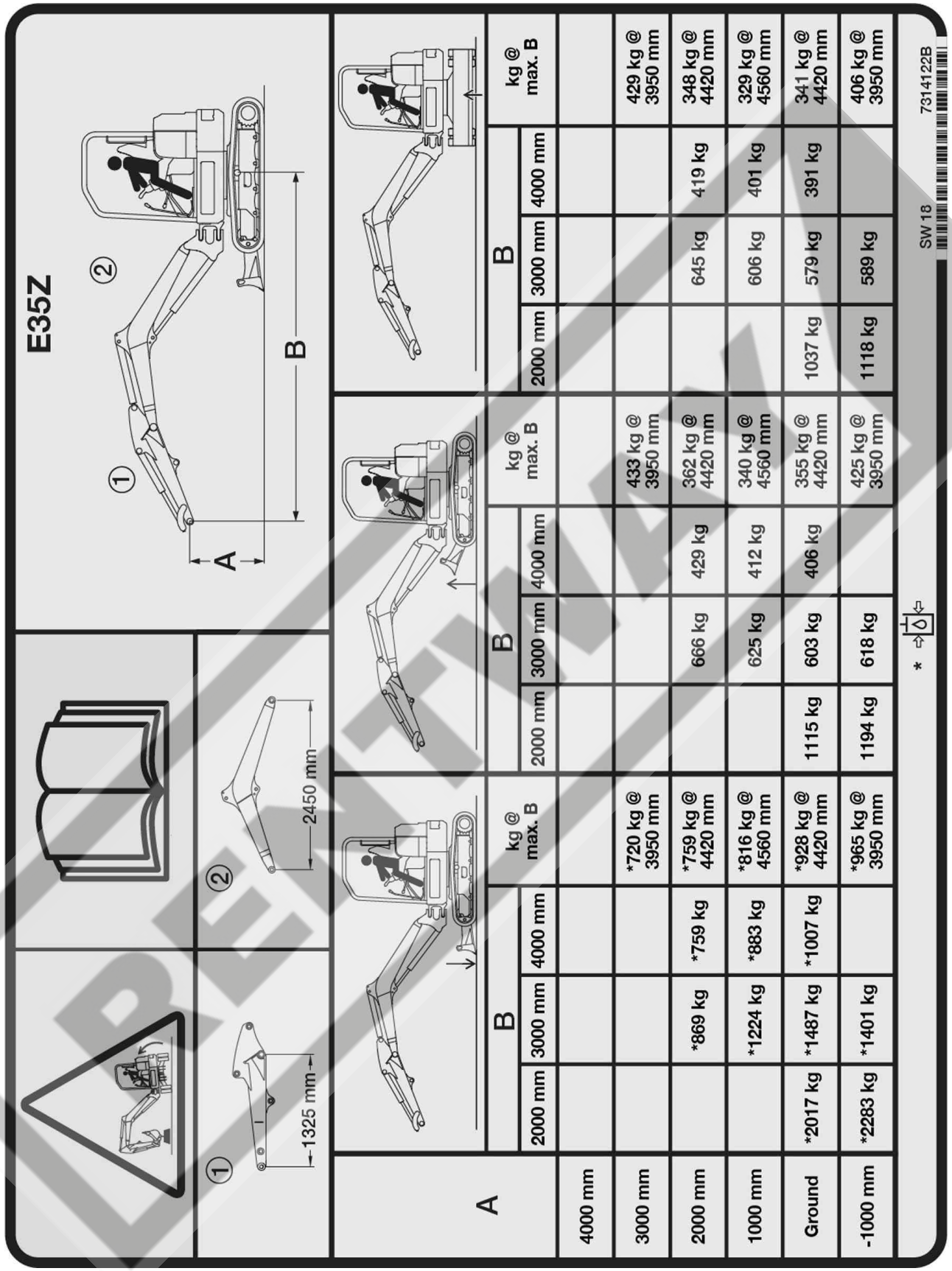
7282071

Rated Lift Capacity For Standard Arm, Medium Counterweight, And Cab



A	B 2000 mm	B 3000 mm	B 4000 mm	kg @ max. B	B 2000 mm	B 3000 mm	B 4000 mm	kg @ max. B	B 2000 mm	B 3000 mm	B 4000 mm	kg @ max. B
4000 mm												
3000 mm				*720 kg @ 3950 mm				433 kg @ 3950 mm				429 kg @ 3950 mm
2000 mm		*869 kg	*759 kg	*759 kg @ 4420 mm		666 kg	429 kg	362 kg @ 4420 mm		645 kg	419 kg	348 kg @ 4420 mm
1000 mm		*1224 kg	*883 kg	*816 kg @ 4560 mm		625 kg	412 kg	340 kg @ 4560 mm		606 kg	401 kg	329 kg @ 4560 mm
Ground	*2017 kg	*1487 kg	*1007 kg	*928 kg @ 4420 mm	1115 kg	603 kg	406 kg	355 kg @ 4420 mm	1037 kg	579 kg	391 kg	341 kg @ 4420 mm
-1000 mm	*2283 kg	*1401 kg		*965 kg @ 3950 mm	1194 kg	618 kg		425 kg @ 3950 mm	1118 kg	589 kg		406 kg @ 3950 mm

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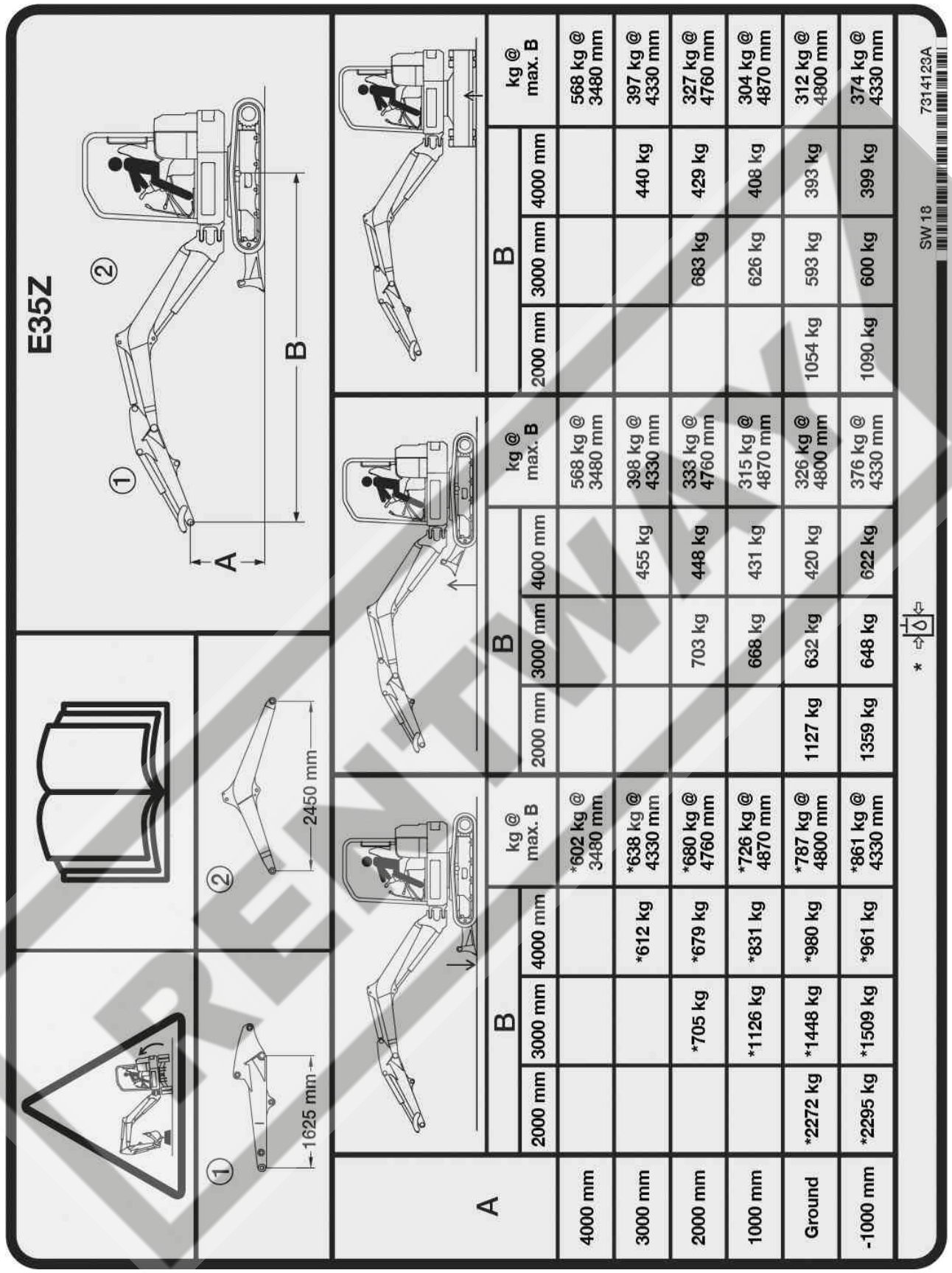
7314122

REMTYMAX

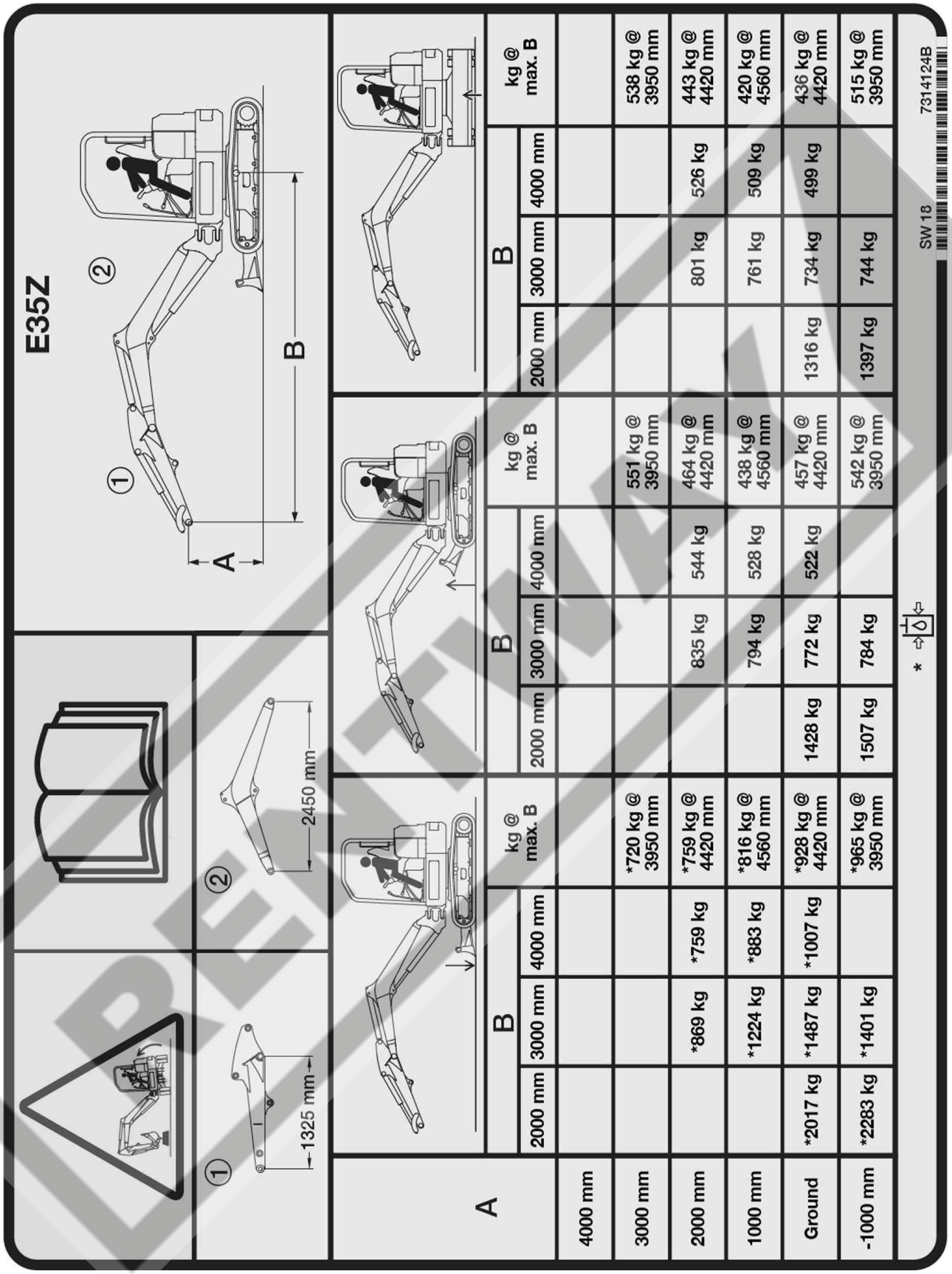
Rated Lift Capacity For Long Arm, Medium Counterweight, And Cab



A	B 2000 mm	B 3000 mm	B 4000 mm	kg @ max. B	B 2000 mm	B 3000 mm	B 4000 mm	kg @ max. B	B 2000 mm	B 3000 mm	B 4000 mm	kg @ max. B
4000 mm				*602 kg @ 3480 mm				568 kg @ 3480 mm				568 kg @ 3480 mm
3000 mm			*612 kg	*638 kg @ 4330 mm			455 kg	398 kg @ 4330 mm			440 kg	397 kg @ 4330 mm
2000 mm		*705 kg	*679 kg	*680 kg @ 4760 mm		703 kg	448 kg	333 kg @ 4760 mm		683 kg	429 kg	327 kg @ 4760 mm
1000 mm		*1126 kg	*831 kg	*726 kg @ 4870 mm		668 kg	431 kg	315 kg @ 4870 mm		626 kg	408 kg	304 kg @ 4870 mm
Ground	*2272 kg	*1448 kg	*980 kg	*787 kg @ 4800 mm	1127 kg	632 kg	420 kg	326 kg @ 4800 mm	1054 kg	593 kg	393 kg	312 kg @ 4800 mm
-1000 mm	*2295 kg	*1509 kg	*961 kg	*861 kg @ 4330 mm	1359 kg	648 kg	622 kg	376 kg @ 4330 mm	1090 kg	600 kg	399 kg	374 kg @ 4330 mm

7314123

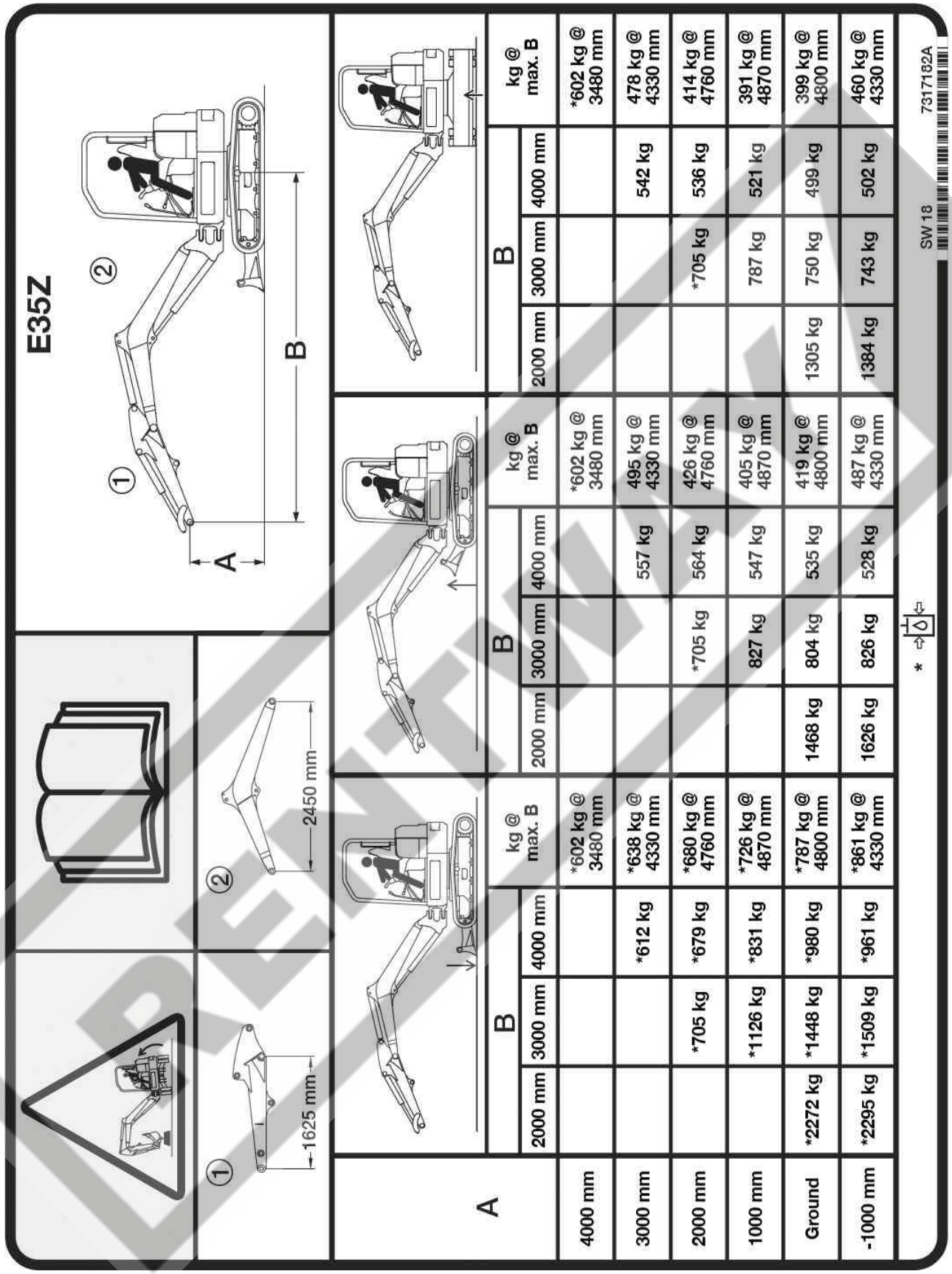
Rated Lift Capacity For Standard Arm, Heavy Counterweight, And Cab



A	B 2000 mm	B 3000 mm	B 4000 mm	kg @ max. B	B 2000 mm	B 3000 mm	B 4000 mm	kg @ max. B	B 2000 mm	B 3000 mm	B 4000 mm	kg @ max. B
4000 mm												
3000 mm				*720 kg @ 3950 mm				551 kg @ 3950 mm				538 kg @ 3950 mm
2000 mm		*869 kg	*759 kg	*759 kg @ 4420 mm		835 kg	544 kg	464 kg @ 4420 mm		801 kg	526 kg	443 kg @ 4420 mm
1000 mm		*1224 kg	*883 kg	*816 kg @ 4560 mm		794 kg	528 kg	438 kg @ 4560 mm		761 kg	509 kg	420 kg @ 4560 mm
Ground	*2017 kg	*1487 kg	*1007 kg	*928 kg @ 4420 mm	1428 kg	772 kg	522 kg	457 kg @ 4420 mm	1316 kg	734 kg	499 kg	436 kg @ 4420 mm
-1000 mm	*2283 kg	*1401 kg		*965 kg @ 3950 mm	1507 kg	784 kg		542 kg @ 3950 mm	1397 kg	744 kg		515 kg @ 3950 mm

7314124

Rated Lift Capacity For Long Arm, Heavy Counterweight, And Canopy



A	B 2000 mm	B 3000 mm	B 4000 mm	kg @ max. B	B 2000 mm	B 3000 mm	B 4000 mm	kg @ max. B	B 2000 mm	B 3000 mm	B 4000 mm	kg @ max. B
4000 mm				*602 kg @ 3480 mm				*602 kg @ 3480 mm				*602 kg @ 3480 mm
3000 mm			*612 kg	*638 kg @ 4330 mm			557 kg	495 kg @ 4330 mm			542 kg	478 kg @ 4330 mm
2000 mm		*705 kg	*679 kg	*680 kg @ 4760 mm		*705 kg	564 kg	426 kg @ 4760 mm		*705 kg	536 kg	414 kg @ 4760 mm
1000 mm		*1126 kg	*831 kg	*726 kg @ 4870 mm		827 kg	547 kg	405 kg @ 4870 mm		787 kg	521 kg	391 kg @ 4870 mm
Ground	*2272 kg	*1448 kg	*980 kg	*787 kg @ 4800 mm	1468 kg	804 kg	535 kg	419 kg @ 4800 mm	1305 kg	750 kg	499 kg	399 kg @ 4800 mm
-1000 mm	*2295 kg	*1509 kg	*961 kg	*861 kg @ 4330 mm	1626 kg	826 kg	528 kg	487 kg @ 4330 mm	1384 kg	743 kg	502 kg	460 kg @ 4330 mm

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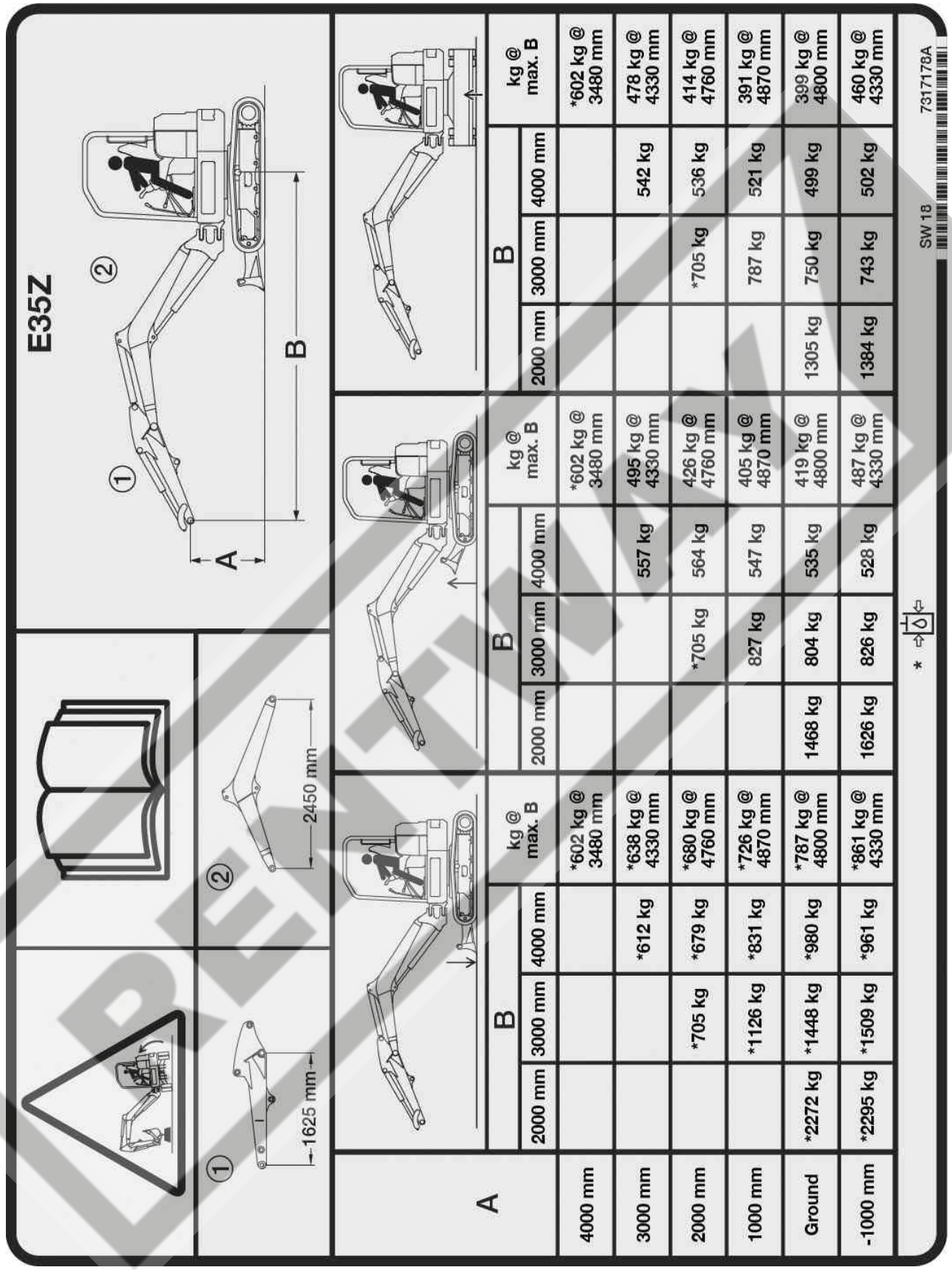
7317182

Rated Lift Capacity For Long Arm, Heavy Counterweight, And Cab



A	B 2000 mm	B 3000 mm	B 4000 mm	kg @ max. B	B 2000 mm	B 3000 mm	B 4000 mm	kg @ max. B	B 2000 mm	B 3000 mm	B 4000 mm	kg @ max. B
4000 mm				*602 kg @ 3480 mm				*602 kg @ 3480 mm				*602 kg @ 3480 mm
3000 mm			*612 kg	*638 kg @ 4330 mm			557 kg	495 kg @ 4330 mm			542 kg	478 kg @ 4330 mm
2000 mm		*705 kg	*679 kg	*680 kg @ 4760 mm		*705 kg	564 kg	426 kg @ 4760 mm		*705 kg	536 kg	414 kg @ 4760 mm
1000 mm		*1126 kg	*831 kg	*726 kg @ 4870 mm		827 kg	547 kg	405 kg @ 4870 mm		787 kg	521 kg	391 kg @ 4870 mm
Ground	*2272 kg	*1448 kg	*980 kg	*787 kg @ 4800 mm	1468 kg	804 kg	535 kg	419 kg @ 4800 mm	1305 kg	750 kg	499 kg	399 kg @ 4800 mm
-1000 mm	*2295 kg	*1509 kg	*961 kg	*861 kg @ 4330 mm	1626 kg	826 kg	528 kg	487 kg @ 4330 mm	1384 kg	743 kg	502 kg	460 kg @ 4330 mm

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7317178

EXCAVATOR SPECIFICATIONS (CONT'D)

Performance

E35z	
Operating weight (cab with HVAC, standard arm, rubber tracks, medium counterweight, standard bucket and 75 kg operator)	3499 kg (7714 lb)
If equipped with the following:	Cab w/Heater, subtract 19 kg (42 lb); Canopy, subtract 137 kg (302 lb); Steel Tracks, add 129 kg (284 lb); Long Arm (with additional counterweight), add 303 kg (668 lb); Additional Counterweight, add 291 kg (642 lb)
Travel Speed (Low / High)	2,6 km/h / 4,7 km/h (1.6 mph / 2.9 mph)
Digging Force (per ISO 6015)	
With Standard Arm	Arm - 20790 N (4674 lbf) Bucket - 33430 N (7515 lbf)
With Long Arm	Arm - 18010 N (4049 lbf) Bucket - 33430 N (7515 lbf)

Controls

Steering	Two hand levers (optional foot pedals)
Hydraulics	Two hand operated levers (joysticks) control boom, bucket, arm and upperstructure slew
Blade	Hand lever
Two-Speed	Switch on blade lever
Boom Switch	Electric switch in left joystick
Auxiliary Hydraulics	Electric switch in right joystick
Auxiliary Pressure Release	Electric switch in right joystick
Engine	Engine speed control dial with auto idle feature, key type start switch
Starting Aid	Glow Plugs - activated by key switch
Brakes Travel Service & Parking Swing Service Holding	 Hydraulic lock in motor circuit Hydraulic lock on motor Spring applied - hydraulic release

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EXCAVATOR SPECIFICATIONS (CONT'D)

Engine

Make / Model	Kubota D1703-M-D1-E4B-BC-2 Stage 5
Fuel / Cooling	Diesel / Liquid
Horsepower: – Gross power (ISO 14396) – Gross power (SAE J1995) – Net power (SAE J1349)	 18,2 kW (24.4 hp) @ 2200 rpm 18,5 kW (24.8 hp) @ 2200 rpm 17,9 kW (24.1 hp) @ 2200 rpm
Torque: – Gross torque (SAE J1995) – Net torque (SAE J1349)	 97,4 N•m (71.8 lb-ft) @ 1500 rpm 94,6 N•m (69.7 lb-ft) @ 1600 rpm
Number Of Cylinders	3
Displacement	1,642 L (100.2 in^3)
Bore / Stroke	87,0 x 92,4 mm (3.43 x 3.64 in)
Lubrication	Pressure System with Filter
Crankcase Ventilation	Closed Breathing
Air Cleaner	Dry replaceable paper dual cartridge
Ignition	Diesel-Compression
Low Idle Speed	1200 – 1350 rpm
High Idle Speed	2350 – 2450 rpm
Engine Coolant	Propylene Glycol / water mixture (53% PG / 47% water)

Hydraulic System

Pump Type	Engine driven, single outlet, variable displacement, load sensing, torque limited, piston pump
Pump Capacity Piston Pump Gear Pump - Pilot	 92,4 L/min (24.4 U.S. gpm) 8,8 L/min (2.3 U.S. gpm)
Auxiliary Flow (Aux3)	63,9 L/min (16.9 U.S. gpm)
Auxiliary Flow - 2nd Aux (Female coupler) (Male Coupler)	 20,3 L/min (5.4 U.S. gpm) 15,0 L/min (4.0 U.S. gpm)
Hydraulic Filter	Full flow replaceable, 3 micron synthetic media element
Control Valve	9 spool closed centre individually compensated
Fluid Type	Bobcat Fluid, Hydraulic / Hydrostatic 6903117 - (2.5 U.S. gal) 6903118 - (5 U.S. gal) 6903119 - (55 U.S. gal)
System Relief Pressure Slew Circuit Boom, Boom Swing Bucket, Arm, Auxiliary Blade Joystick Control Pressure	 24100 kPa (241 bar) (3495 psi) 24500 kPa (245 bar) (3550 psi) 24500 kPa (245 bar) (3550 psi) 24500 kPa (245 bar) (3550 psi) 3000 kPa (30 bar) (428 psi)
Auxiliary Relief	20600 kPa (206 bar) (2987 psi)
Arm Port Relief, Base End And Rod End	27000 kPa (270 bar) (3916 psi)
Boom Port Relief, Base End	29000 kPa (290 bar) (4206 psi)
Boom Port Relief, Rod End	27000 kPa (270 bar) (3916 psi)
Bucket Port Relief Base End And Rod End	27000 kPa (270 bar) (3916 psi)
Blade Port Relief Base End	27000 kPa (270 bar) (3916 psi)
Main Hydraulic Filter Bypass	340 kPa (3,4 bar) (50 psi)
Case Drain Filter Bypass	120 – 160 kPa (1,2 –1,6 bar) (18 – 23 psi)

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Hydraulic Cycle Times

Bucket Curl	2,7 Seconds
Bucket Dump	1,9 Seconds
Arm Retract	2,9 Seconds
Arm Extend	2,4 Seconds
Boom Raise	4,4 Seconds
Boom Lower	5,1 Seconds
Boom Swing Left	7,0 Seconds
Boom Swing Right	7,2 Seconds
Blade Raise	3,6 Seconds
Blade Lower	4,0 Seconds

Hydraulic Cylinders

Cylinder	Bore	Rod	Stroke
Boom (cushion up)	76,2 mm (3.00 in)	44,5 mm (1.75 in)	670 mm (26.38 in)
Arm (cushion retract / extend)	76,2 mm (3.00 in)	44,5 mm (1.75 in)	607 mm (23.90 in)
Bucket	69,9 mm (2.75 in)	44,5 mm (1.75 in)	466,3 mm (18.36 in)
Boom Swing	82,6 mm (3.25 in)	44,5 mm (1.75 in)	459,9 mm (18.11 in)
Blade	88,9 mm (3.50 in)	44,5 mm (1.75 in)	184 mm (7.25 in)

Drive System

Final Drive	Each track is driven by hydrostatic axial piston motor
Type of Reduction	48.6:1 two stage planetary

Slew System

Slew Motor	Axle piston connected to a planetary drive
Slew Circle	Single row shear type ball bearing with internal gear
Slew Speed	8.6 rpm

Undercarriage

Crawler Track Design	Sealed track rollers with boxed section track roller frame, grease type track adjuster with shock absorbing recoil spring
Width of crawler	1550 mm (61.0 in)

RENTWAY

Electrical

Starting Aid	Glow Plugs
Alternator	12 volt, 90 Amp open frame w / internal regulator
Battery	12 volt - 500 CCA @ -18°C (0°F)
Starter	2.0 kW (12 volt; gear reduction 2.7 hp)
Lights	37.5 watt (2)
Instrumentation	**Gauges:** Engine Coolant Temperature, Fuel Level. **Warning lights:** Fuel Level, Seat Belt, Engine Coolant Temperature, Engine Malfunction, Hydraulic System Malfunction, General Warning. **Indicators:** Two-Speed, Engine Preheat. **Data Display:** Operating Hours, Engine rpm, Maintenance Clock Countdown, Battery Voltage, Service Codes, Engine Preheat. **Other:** Audible Alarm, Lights. **Optional Deluxe Instrumentation Panel:** *Additional displays for: Engine rpm, Coolant Temperature and Oil Pressure; System Voltage and Hydraulic Oil Temperature. *Additional Features Included: Keyless Start, Digital Clock, Job Clock, Password Lockout, Multi-language Display, Help Screens, Diagnostic Capability and Engine / Hydraulic Systems Shutdown Function.

Capacities

Fuel Tank	52,0 L (13.7 U.S. gal)
Hydraulic Reservoir Only (Centre of Sight Glass)	Tank Cap. 8,3 L (2.2 U.S. gal)
Hydraulic System (with Reservoir)	39,7 L (10.5 U.S. gal)
Cooling System	8,0 L (2.1 U.S. gal)
Engine Oil and Filter	5,2 L (5.5 qt)
Final Drive (each)	0,5 L (0.55 qt)

RENTWAY

EXCAVATOR SPECIFICATIONS (CONT'D)

Tracks

Type	Rubber	Steel
Width	300 mm (11.8 in)	300 mm (11.8 in)
Number Of Shoes	Single Assembly	41
Number of Track Rollers (per side)	3	3

Ground Pressure

Rubber Tracks - Standard Arm Long Arm	31,84 kPa (0,3184 bar) (4.62 psi) 31,91 kPa (0,3191 bar) (4.63 psi)
Steel Tracks - Standard Arm Long Arm	32,71 kPa (0,3271 bar) (4.74 psi) 32,78 kPa (0,3278 bar) (4.75 psi)

Environmental

DECLARED SINGLE-NUMBER NOISE EMISSION VALUES In accordance with ISO 4871	
Noise level per Directive 2000/14/EC - L_{wA}	94 dB(A)
Operator noise level per Directive 2006/42/EC - L_{pA} (Cab)	77 dB(A)
Operator noise level per Directive 2006/42/EC - L_{pA} (Canopy)	81 dB(A)

DECLARED VIBRATION EMISSION VALUES In accordance with EN 12096		
		Uncertainty
Whole-body vibration per ISO 2631-1	0,11 m/s^2 (0.36 ft/s^2)	--
Hand-arm vibration per ISO 5349-1	0,34 m/s^2 (1.12 ft/s^2)	--

Machines equipped with optional HVAC (air conditioning) contain fluorinated greenhouse gas (F-gas)	
F-gas type	HFC-134a
F-gas mass (kg)	0,77
CO_2 equivalent (t)	1,10
GWP	1430

ENGINE CO_2 EMISSION VALUES	
CO_2 emission	938,3 g/kWh
This CO_2 measurement results from testing over a fixed test cycle under laboratory conditions a(n) (parent) engine representative of the engine type (engine family) and shall not imply or express any guarantee of the performance of a particular engine.	

Temperature Range

Operation and storage	-17° – +43°C (-1.3° – +109.4°F)

RENTWAY

WARRANTY

WARRANTY 236

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WARRANTY

A statement explaining the terms and conditions of the warranty coverage that applies to your machine was provided in the documentation kit shipped with the machine. If this warranty statement is lost or damaged, contact your dealer or visit Bobcat.com to obtain a new copy.

RENTWAY

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PRELIMINARY

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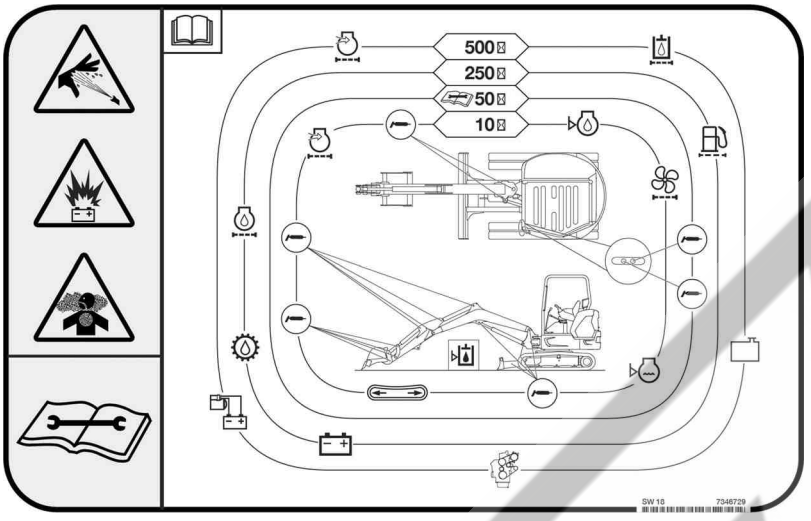
SERVICE SCHEDULE SYMBOLS



	Check Engine Oil		Check Gear Box and / or Travel Motor Fluid
	Change Engine Oil and Filter		Change Gear Box and / or Travel Motor Fluid
	Check Engine Coolant		Check Track Tension, Adjust As Needed
	Change Engine Coolant		Check Belt Tension, Adjust Or Replace As Needed
	Check Engine Air Filter, Change As Necessary		Lubricate Grease Fittings
	Drain Contaminants From Fuel Filter		Check Seat Belt
	Drain Contaminants From Fuel Tank		Check Cab / Canopy
	Change Fuel Filter		Empty Spark Arrestor Muffler
	Check Hydraulic Fluid		Check Motion Alarm
	Change Hydraulic Fluid and Filter(s)		Check Cab and Heater Filters
	Check Battery Cables and Connections		Check Indicators and Lights

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