LOFTNESS

Battle Ax

Excavator Mulching Head

40 Series

Owner's Manual and Parts Book
(Originating w/Serial Number 102-179)

Model Number: _____
Serial Number: _____
Date of Purchase: _____

202932 Rev. C

05.28.25


LOFTNESS

LOFTNESS SPECIALIZED EQUIPMENT, INC.
LIMITED WARRANTY POLICY

The limited warranty policy begins upon delivery of the unit to the original customers.

The following Loftness products have a two (2) year limited warranty;

XLB10 Grain Bag Loader, Battle Ax L-series Skid Steer, Battle Ax S-series Skid Steer, Battle Ax H-series Skid Steer, Battle Ax Excavator 20-series, Battle Ax Excavator 30-series, Battle Ax Excavator 40-series, Battle Ax Excavator 50-series, Battle Ax Extreme, Bad Ax Skid Steer, Timber Ax Skid Steer, Stump Ax, BT20, Kwik Cut.

All other Loftness products have a one (1) year limited warranty.

If any Loftness product is used as rental or leased equipment the limited warranty period is for only 30 days from the delivery date to the original customers.

Loftness Specialized Equipment, hereinafter referred to as LOFTNESS, a manufacturer of quality machinery since 1956, warrants new LOFTNESS machinery and/or attachments at the time of delivery to the original purchaser, to be free from defects in material and workmanship when properly set up and operated in accordance with the recommendations set forth in the LOFTNESS Operator's Manual.

LOFTNESS' liability for any defect with respect to accepted goods shall be limited to repairing the goods at an authorized dealer or other LOFTNESS designated location, or replacing them as LOFTNESS shall elect. The above shall be in accordance with LOFTNESS warranty adjustment policies.

WARRANTY REQUIREMENTS

Warranty registration form must be filled out and returned to Loftness Specialized Equipment to validate all warranty claims. To receive a warranty claim, a return authorization from LOFTNESS must be obtained. The failed part may then be returned in an untampered status. This warranty does not include freight or delivery charges incurred when returning machinery for servicing. Dealer mileage, service calls and pick-up/delivery charges are the customer's responsibility.

LIMITATIONS OF WARRANTY

LOFTNESS products are designed to provide years of dependable service when proper use and maintenance is adhered to. The potential for misuse in many applications exists; therefore, a limited warranty is provided as follows.

This warranty shall not apply to any machine or attachment which shall have been repaired or altered outside the LOFTNESS factory or authorized LOFTNESS dealership or in any way so as in LOFTNESS' judgment, to affect its stability or reliability, nor which has been subject to misuse, negligence or accident, nor to any machine or attachment which shall not have been operated in accordance with LOFTNESS' printed instructions or beyond the company recommended machine rated capacity. LOFTNESS may elect to have an area representative evaluate the condition of the machine before warranty is considered.

In addition, this limited warranty provides no coverage for general wear or maintenance items, misuse, environmental conditions and/or contamination for which they were not designed or not intended, including but not limited to the following items;

Use of machine beyond its rated capacity, Conveyors, Improper knife replacement, Auger wear, Missing knives, Saw blades, Striking foreign objects, Brakes and brake pads, Lack of lubrication, Tires, Failures caused by running in an "out-of-balance" condition, Hydraulic hoses damaged by being caught in "pinch points" or by moving parts, and Damage caused by excessive force from the power unit.

EXCLUSIONS OF WARRANTY

Except as otherwise expressly stated herein, LOFTNESS makes no representation or warranty of any kind, expressed or implied. **The implied warranty of merchantability and fitness for a particular purpose are excluded from this limited warranty.** The remedies set forth in this warranty are the only remedies available to any person under this warranty. LOFTNESS shall have no liability to any person for incidental, consequential or special damages of any description, whether arising out of express or implied warranty or any other contract, negligence, or other tort or otherwise. This exclusion of consequential, incidental and special damages is independent from and shall survive any finding that the exclusive remedy failed of its essential purpose. Upon purchase, the buyer assumes all liability, all personal injury and property damage resulting from the handling, possession or use of the goods by the buyer.

No agent, employee or representative of LOFTNESS has any authority to bind LOFTNESS to any affirmation, representation or warranty concerning its machinery and/or attachments except as specifically set forth herein. (August 2023)


LOFTNESS

To the Dealer:

In order to ensure compatibility / performance of the Loftness attachment and the customer's power unit, it is IMPERATIVE that this Pre-Delivery Inspection ("PDI") be completed using the customer's actual power unit.

PRE-DELIVERY INSPECTION

Dealer: By initialing each line I understand and promise that I have completed the following:

____ Verified the attachment is set up properly for customers power unit. (check model code with manual)

____ Greased all grease zerks till grease purges out of bearing.

____ Removed all shipping brackets.

_____Adjusted push bar out of shipping position. (if equipped) (full forward position recommended)

____ Installed head on customer's unit that will be running the attachment and set hydraulic flow per power unit manufacturer owner's manual for preferred flow.

____ Recorded the Serial Number / Make / Model of the power unit.

Power unit. S/N _____ Make _____ Model _____

____ Recorded the Serial Number and Model of the Loftness attachment. S/N _____ Model_____

____ Verified power unit manufacturer outlined Auxiliary coupler orientation for pressure, return & case drain line.

____ Verified/recorded rotor RPM at full throttle per model & chart in Loftness owner's manual. RPM _____

____ Performed an Auxiliary system pressure stall check on the power unit only and verified that max pressure rating is achieved per power unit manufacturer specifications. Recorded pressure observed _____ PSI

PDI completed by: _____ Print

_____ Signed/Date

Contact Loftness factory if any of the tests are not within power unit or Loftness specifications.

DELIVERY

____ Showed customer all grease zerks.

____ Showed customer adjustable push bar options. (if equipped)

____ Showed customer how to properly engage hydraulics to operate attachment.

____ Reviewed owner's manual, all on-product warnings and instructions, and safe operation with customer.

____ Assisted customer with completing / submitting Warranty Registration Form to Loftness by one of the below options.
Dealer also needs to submit a copy of this completed PDI to Loftness and maintain the copy in owner's manual for unit.

Mail to:
Loftness Specialized Equipment
PO Box 337
Hector, MN 55342

Delivered to Customer by: _____Print

_____Signed/Date

Email to: registration@loftness.com

LOFTNESS COPY

To the Dealer:

In order to ensure compatibility / performance of the Loftness attachment and the customer's power unit, it is IMPERATIVE that this Pre-Delivery Inspection ("PDI") be completed using the customer's actual power unit.

PRE-DELIVERY INSPECTION

Dealer: By initialing each line I understand and promise that I have completed the following:

____ Verified the attachment is set up properly for customers power unit. (check model code with manual)

____ Greased all grease zerks till grease purges out of bearing.

____ Removed all shipping brackets.

_____Adjusted push bar out of shipping position. (if equipped) (full forward position recommended)

____ Installed head on customer's unit that will be running the attachment and set hydraulic flow per power unit manufacturer owner's manual for preferred flow.

____ Recorded the Serial Number / Make / Model of the power unit.

Power unit. S/N _____ Make _____ Model _____

____ Recorded the Serial Number and Model of the Loftness attachment. S/N _____ Model_____

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CUSTOMER COPY


LOFTNESS

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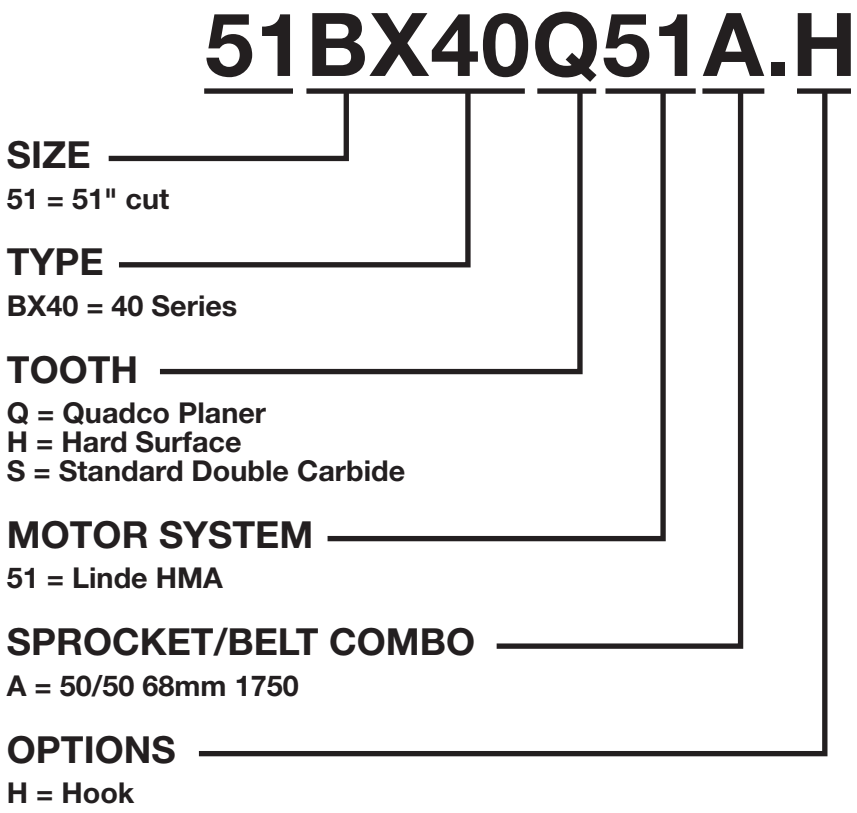
Ordering Code

Battle Ax 40 Series (Example)

The ordering code will consist of two numbers (machine size), two letters and two numbers (machine type), one letter (cutter type), two numbers (motor system), one letter (sheave/belt combo), and one letter (options). An example for a Battle Ax 40 series of this type would be as shown below.




LOFTNESS

Owner Information

Thank you for your decision to purchase a Battle Ax 40 Series Excavator Mulching Head from Loftness. To ensure maximum performance of your machine, it is mandatory that you thoroughly study the owner's manual and follow its recommendations. Proper operation and maintenance are essential to prevent injury or damage and to maximize machine life.

The Loftness Battle Ax is an effective, reliable machine used for maintaining grass, weeds, brush and trees. For best results, operate the machine as low to the ground as possible without the teeth striking ground or other obstructions. Lifting or tilting the Battle Ax increases the risk of flying debris. Because of the high speed of the teeth, the life of the teeth will be reduced if it is operated in rocky terrain or in areas where many obstacles are present. Areas to be mowed should be free of debris such as rocks, bottles, large branches etc. The teeth cut and pulverize the grass, weeds and brush. The Battle Ax deposits cut material over the entire width-of cut, which eliminates bunching or windrowing behind the machine.

Operate and maintain this machine in a safe manner and in accordance with all applicable local, state, and federal codes, regulations and/or laws, and in compliance with on-product labeling and these instructions.

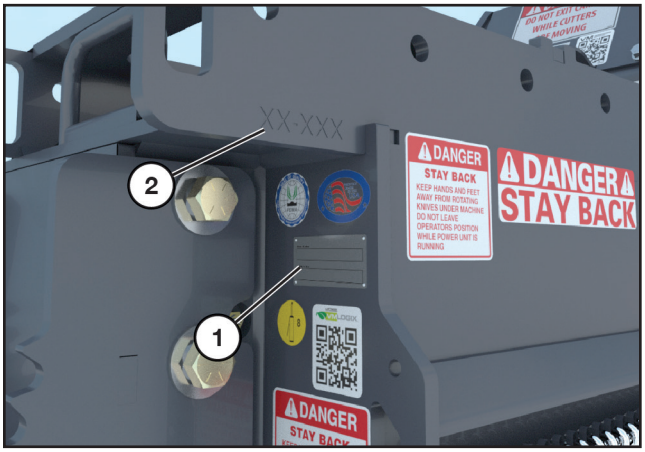
Make sure that all personnel have read this owner's manual and thoroughly understand safe and correct operating, installation and maintenance procedures.

Continuous improvement and advancement of Loftness products may result in changes to your equipment that may not be reflected in this publication. Loftness reserves the right to make product improvements to the machine at any time. Although great care has been taken to ensure the accuracy of this publication, Loftness does not assume any liability for errors or omissions.

Warranty Policy

Be sure to read and understand the Warranty Policy at the beginning of this manual. It is also important that you fill out the Warranty Registration form(s) completely with your dealer so as not to void the warranty.

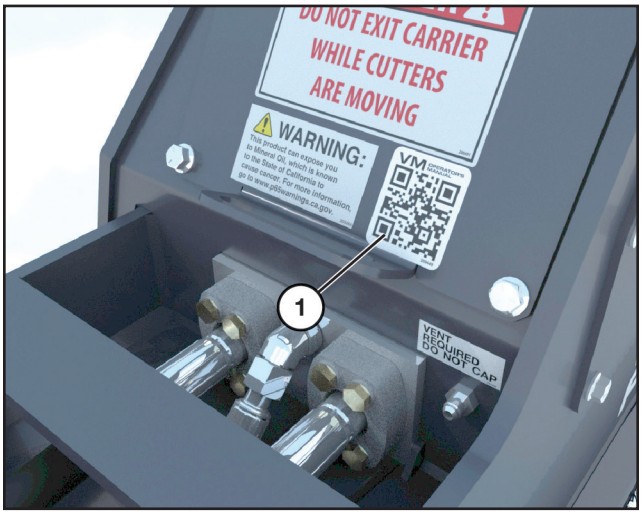
Serial Number Location



The machine serial number is shown in the tag (1), and is also stamped into the machine frame (2).

Always use your model and serial number when requesting information or when ordering parts.

Owner's Manual Access



The Battle Ax is shipped with a printed owner's manual. The manual must be available for all operators. Keep in a safe, dry location.

To access a digital owner's manual, use a smart phone to scan the QR Code (1) located on the motor cover. This code will link to the Battle Ax owner's manual on the Loftness website.

Introduction

Battle Ax Features

- Hydraulic Driven.
- 68 mm Synchronous Belt.
- Built-in Depth Gauges - *controls cutting depth.*
- Two-stage Cutting Chamber - *uses 2 shear bars, producing a finer mulch with less passes.*
- Double Carbide, Quadco Planer (sharpenable), or Quadco Planer Hard Surfaced Teeth (sharpenable).
- Adjustable Displacement Piston Motor - *135cc, Manually Adjustable.*
- Power Requirement - 25-75 GPM up to 6000 PSI - *80-210 hydraulic horsepower.*
- Standard Spade Hook.
- Pin Mount or Quick Attach Mount.
- 17 in. (43.1 cm) Diameter Rotor.
- Efficient Staggered/Spiral Tooth Pattern.
- 2-1/2 in. (63.5 mm) Piloted Double Taper Roller Bearings.
- Anti Wrap Bearing Protection.
- Rotor Speed 1700-2100 RPM.
- Premium Strength Steel Housing.
- Steel Deflector Chains.
- Taper-Lock Sheaves.
- Skid Shoes.
- Adjustable Shear Bar.

Safety First

Safety Alert Symbol

This message alert symbol identifies important safety messages on the machine and in the owner's manual. When you see this symbol, be alert to the possibility of personal injury and carefully read the message that follows.

In the owner's manual and on decals used on the machine the words **DANGER, WARNING, CAUTION, IMPORTANT, and NOTE** are used to indicate the following:

DANGER: This word warns of immediate hazards which, if not avoided, will result in severe personal injury or death. The color associated with Danger is RED.

WARNING: This word refers to a potentially hazardous situation which, if not avoided, could result in severe personal injury or death. The color associated with Warning is ORANGE.

CAUTION: This word refers to a potentially hazardous or unsafe situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices. The color associated with Caution is YELLOW.

IMPORTANT: Highlights information that must be heeded.

NOTE: A reminder of other related information that needs to be considered.

If Safety Decals on this machine are ISO two panel pictorial, decals are defined as follows:

- The first panel indicates the nature of the hazard.
- The second panel indicates the appropriate avoidance of the hazard.
- Background color is YELLOW.
- Prohibition symbols such as and if used, are RED.

Be certain all machine operators are aware of the dangers indicated by safety decals applied to the machine, and be certain they follow all safety decal instructions. Contact Loftness for safety decal replacement.

Loftness cannot anticipate every possible circumstance that may involve a potential hazard. The warnings in this owner's manual are not all inclusive.

Owner's Responsibility

Because of the potential safety hazard to eyes from hydraulic leaks and/or flying debris, "**USE OF PROTECTIVE EYEWEAR IS ABSOLUTELY MANDATORY"** for operator and others in the work area.

Due to the possible danger of flying debris, it is **"ABSOLUTELY MANDATORY** that **IMPACT-RESISTANT SHIELDING"** be provided on the power unit to protect the operator. The owner is responsible for providing the operator protection devices on the power unit.

Flying debris can gather on the excavator and needs to be cleaned off, especially around the radiator and oil cooler screens, engine compartment and exhaust areas. Periodic cleaning will help prevent the possibility of fire.

It is **ABSOLUTELY MANDATORY** that all personnel read and follow all safety precautions before operating the machine and attachment.

Make sure that all personnel have read this owner's manual, and thoroughly understand safe and correct installation, operation, and maintenance procedures.

Operate and maintain this machine in a safe manner and in accordance with all applicable local, state, and federal codes, regulations and/or laws; and in compliance with on-product labeling and this owner's manual instructions.

Make sure that all personnel know how to stop the machine and attachment by disengaging all controls. See "Mandatory Shut-Down Procedure" on page 6.

Make sure the attachment is installed on the machine correctly before being placed in service. At regular intervals thereafter, the attachment should be serviced in accordance with procedures outlined in this owner's manual.

Mandatory Shut-Down Procedure

- Stop the machine and attachment on a level surface and lower the attachment to the ground.
- Move throttle to idle position.
- Disengage all power to the attachment.
- Shut off engine and remove the key.

Wait until the rotor has stopped completely before inspecting the attachment.

Safety Rules

These are general safety considerations. Additional precautions may be necessary to operate your machine in a safe manner. Be certain you are operating your machine in accordance with all safety codes, OSHA rules and regulations, insurance requirements and local, state, and federal laws.

- Read and observe all warnings decals on the machine before attempting to operate the attachment. Do not attempt to operate this attachment unless all factory devices and decals are in place. Keep safety decals clean of dirt and grime. Keep all guards, shields and decals in place.
- Remove from area of operation all foreign objects such as bottles, rocks, wire, etc., that might become tangled in the rotor, causing damage to the machine or be thrown striking other objects.
- Do not allow any people and animals within 300 feet of the machine and attachment during operation.
- Do not allow anyone to operate the attachment until he or she has read the owner's manual and is completely familiar with all safety precautions. Keep the work area clear of all unauthorized personnel.
- Do not allow persons under the influence of alcohol, medications, or other drugs that can impair judgment or cause drowsiness to operate or maintain the machine.
- Always use an approved roll bar and seat belt for safe operation. Overturning a machine without a roll bar and seat belt can result in injury or death.
- Use the handholds and step plates when getting on and off the machine to prevent falls. Keep steps and platform cleared of mud and debris.
- Always have an operator in the machine while the attachment is in operation. Never leave the machine and attachment running and unattended.
- Operate the attachment only from the operator's seat.
- Keep your feet on the pedals (floor plates), seat belt fastened tightly, and seat bar lowered (if equipped), when operating the attachment.
- Never attempt to make any adjustments while the attachment is running or the key is in the "ON" position in the machine. Before leaving the operator's position, disengage power to the attachment, shut off engine and remove ignition key.
- Disengage auxiliary hydraulics and place all machine controls in neutral and engage the parking brake before starting the engine.
- Become familiar with and know how to operate all safety devices and controls on the machine and attachment before attempting to operate. Know how to stop the machine and attachment before starting it.
- Repeated impact of the knives with hard objects can cause excessive wear and damage to the power unit or attachment. Be sure to maintain recommended ground clearance as specified in this manual.
- Should excessive vibration occur, disengage the auxiliary hydraulics immediately and shut off engine. Do not continue to operate the attachment until the problem has been determined and corrected.
- Do not start, operate, or work on this attachment until you have carefully read and thoroughly understand the contents of this manual and the operator's manual for your machine.
- Keep children, bystanders and other workers off and away from the machine and attachment during operation. No riders allowed.
- Before inspecting, cleaning, lubricating, adjusting or servicing any part of the attachment, always exercise the Mandatory Shut-Down Procedure. See "Mandatory Shut-Down Procedure" on page 6. After service has been performed, be sure to restore all guards, shields and covers to their original position.

Safety Rules (Cont'd)

- Make sure the operator's area is clear of any distracting objects. Keep work areas clean and free of grease and oil to avoid slipping or falling.
- Make sure all controls, (levers, pedals and switches), are in NEUTRAL position before starting the engine.
- Before leaving the operator's position for ANY reason or allowing anyone to approach the machine and attachment, always perform the mandatory shutdown procedure.
- Do not wear loose hanging clothes, neckties or jewelry around rotating parts. Long hair is to be placed under a cap or hat. These precautions will help prevent you from becoming caught in any moving parts on the machine and attachment.
- Before working under the attachment, be certain it is securely blocked!
- Do wear safety glasses, ear protection, respirators, gloves, hard hats, safety shoes and other protective clothing when required.
- Periodically check all guards, shields and structural members. Replace or repair anything that could cause a potential hazard.
- Do not replace components or parts with other than factory-recommended service parts. To do so may decrease the effectiveness of the machine.
- It is the operator's responsibility to be aware of machine and attachment operation and work area hazards at all times.
- Never operate the attachment without adequate light and visibility.
- Keep hands and feet clear! Never step over or climb over the attachment while the rotor is engaged or the engine is running; entanglement could occur.
- Operators are responsible to know the location and function of all guards and shields including but not limited to belt drives and rotor. Operators are responsible to make certain that all guards are in place when operating the machine and attachment.
- Operators are responsible to be aware of safety hazard areas and follow instructions on warning, caution, or danger decals applied to the machine.
- Know the area before operating the machine. Be aware of power lines or other equipment.
- Do not lubricate parts while the machine is running.
- Do not smoke while servicing the machine.

Hydraulic Safety

- The hydraulic system is under high pressure. Make sure all lines and fittings are tight and in good condition. These fluids escaping under high pressure can have sufficient force to penetrate skin and cause serious injury.
- Never check for leaks by using any part of your body to feel for escaping fluid.

WARNING: *Contact with high pressure fluids may cause fluid penetration and burn hazards. Fluid that is under pressure can penetrate body tissue. Fluid penetration can cause serious injury and possible death. If fluid is injected into the skin, seek medical attention immediately!*

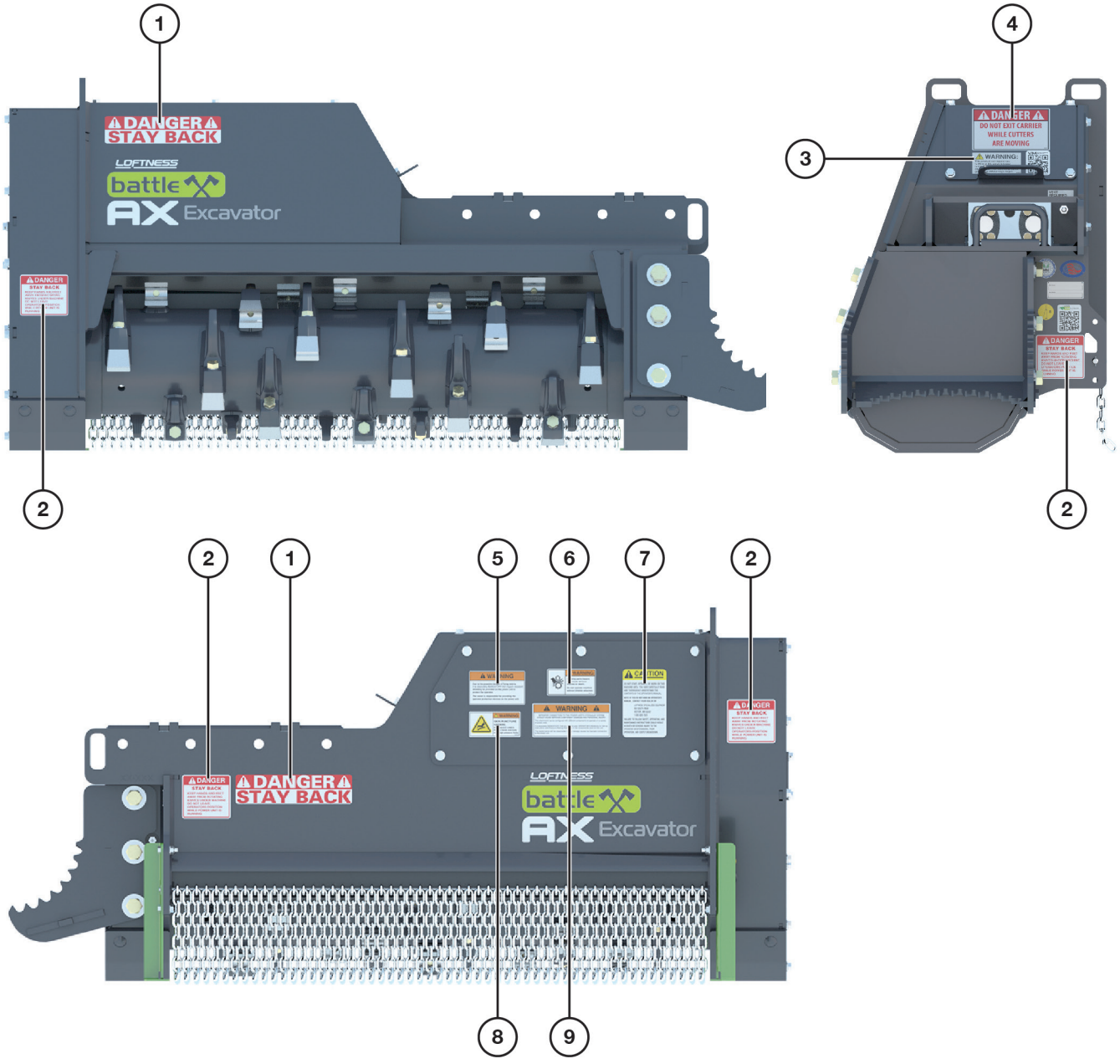
California Proposition 65 Warning

WARNING: *This product can expose you to Mineral Oil, which is known to the State of California to cause cancer. For more information, go to www.p65warnings.ca.gov.*

A decal with this warning statement is adhered to the machine. If the decal should become worn or missing, replace immediately.

Safety Decal Locations

Check and replace any worn, torn, hard to read or missing safety decals on your machine.



See the following page for detailed images of the safety decals called out above.

Safety Decal Locations (Cont'd)

1

Part No. 4334

2

Part No. N28386

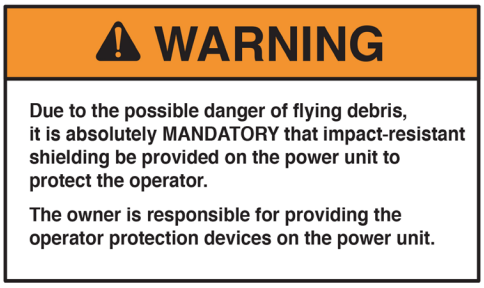
3

Part No. 203264

4

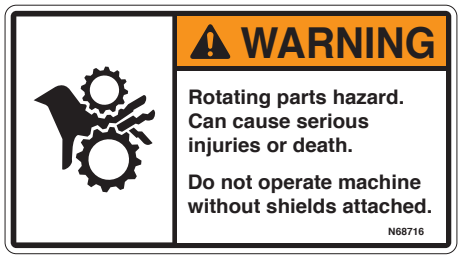
Part No. 200491

5



Part No. N17013

6



Part No. N68716

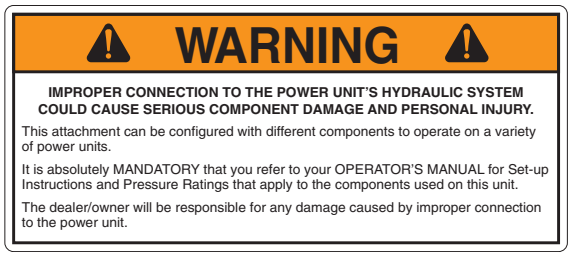
7

Part No. 4256

8

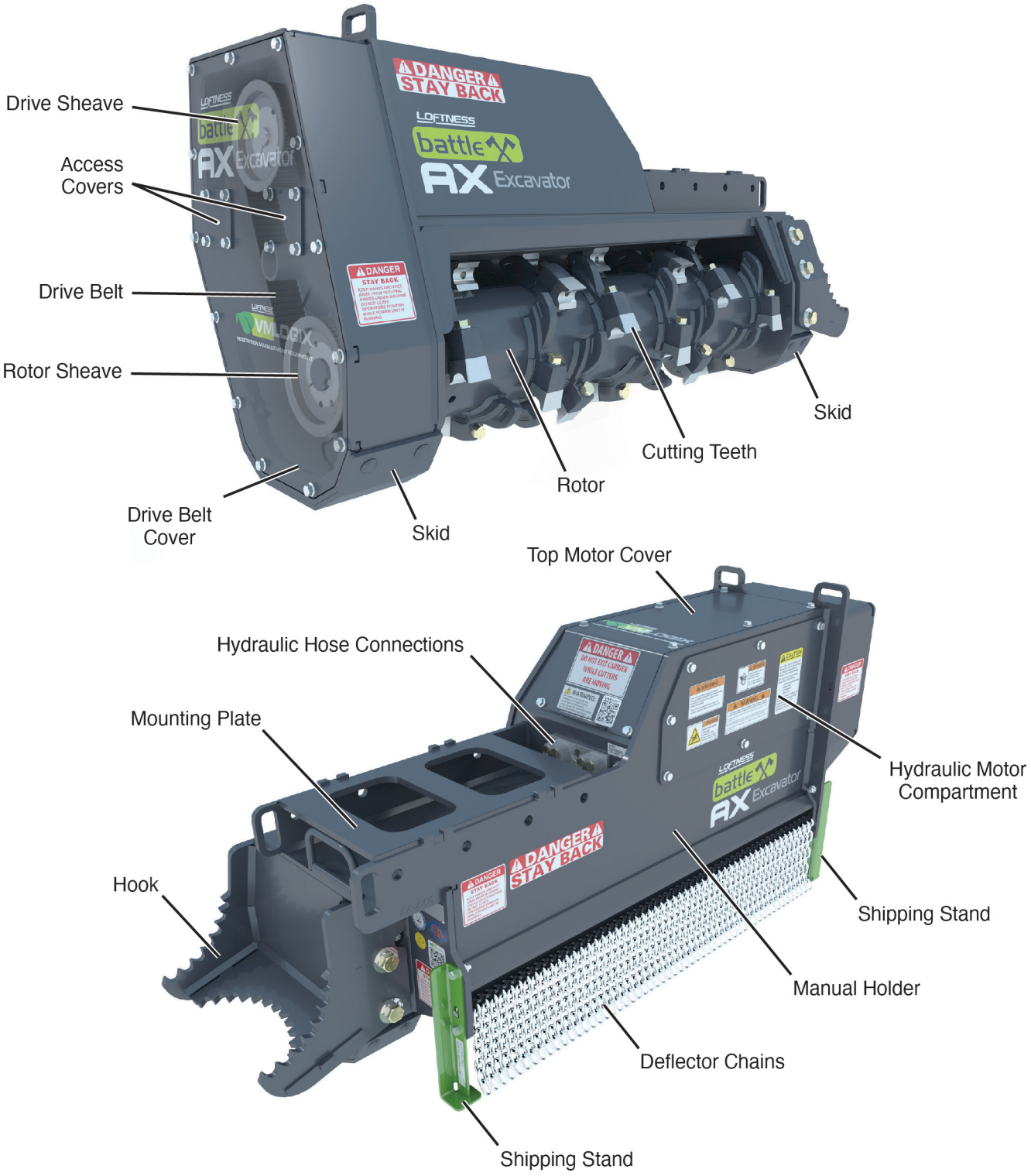
Part No. N23506

9

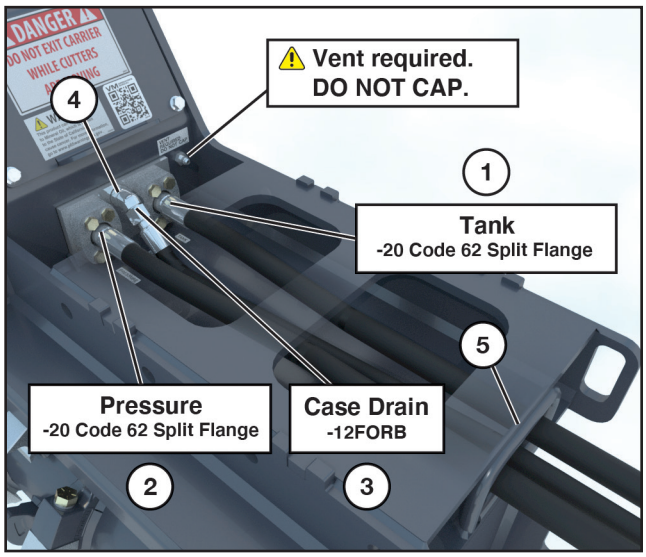


Part No. N28385

Battle Ax Identification



Hydraulic Connections



Connect hydraulics hoses (not included with the Battle Ax) from the excavator to the Battle Ax. See below for hose requirements.

1. **Tank**; *-20 Code 62 Split Flange*
2. **Pressure**; *-20 Code 62 Split Flange*
3. **Case Drain**; *-12FORB*
4. **Fitting** (if needed); *45° Elbow, - 12MJIC - 12MOR*

NOTE: *Route houses through ring (5) on frame.*

IMPORTANT: *Minimum case drain hose size is 3/4 in. It is recommended that the hose connects directly to the hydraulic reservoir.*

⚠	**WARNING:** *Hydraulic Lines. Protect hands and body from high pressure fluids. Pressurized fluids can penetrate the skin. Disconnect and lock out power source before disconnecting and/or connecting hydraulic hoses.*

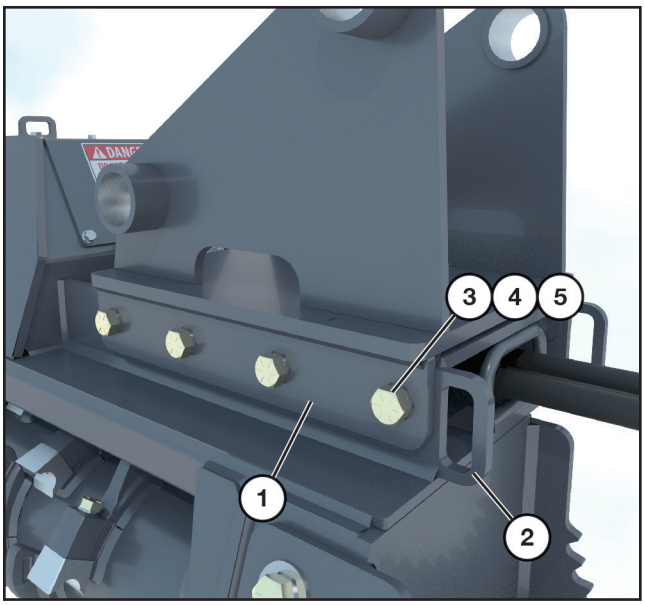
NOTE: *Use hoses that are the same diameter size as those used on the hydraulic motor. Using smaller diameter hoses will decrease hydraulic efficiency.*

IMPORTANT: *It is the owner's responsibility to assure that the hydraulic hoses from the power unit to the attachment are not caught in pinch points, or in any way damaged by moving parts. Make sure hoses are secured closely to the excavator's boom to avoid getting caught in tree branches.*

Mounting the Battle Ax to the Excavator

For a mounting bracket specific to your model of excavator, contact Loftness.

NOTE: *Make sure hydraulic hoses are connected to the Battle Ax before installing the mounting bracket.*

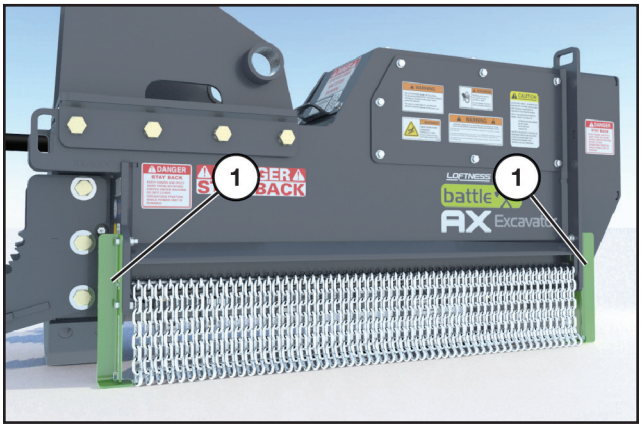


Bolt the base mount (1) to the mounting plate (2) using the ten bolts (3) and securing with the washers (4) and nuts (5) (set of four on each side). Tighten.

Align excavator boom and connect to the mounting bracket.

Verify connection from excavator to mounting bracket is secure.

Remove Shipping Stands

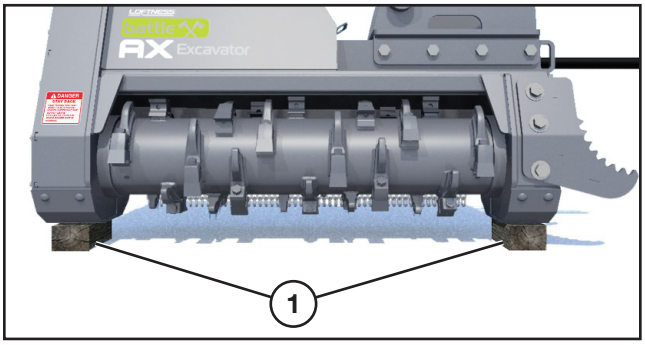


Stands (1) are secured to the Battle Ax to keep it stable during shipping. These can be removed after the unit is initially mounted to the excavator.

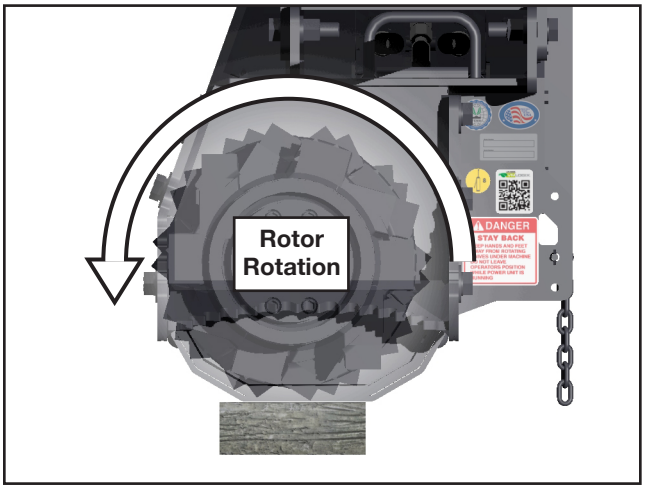
NOTE: *Do not discard the shipping stands. They are used to stablize the Battle Ax during storage. Keep in a secure location until ready to store.*

Checking Rotor Rotation

⚠	**DANGER:** *Keep hands, feet, and clothing clear of rotor and bearings while excavator is running.*



Raise the Battle Ax off the ground and place blocks (1) underneath the skids. Lower the Battle Ax down on the blocks.



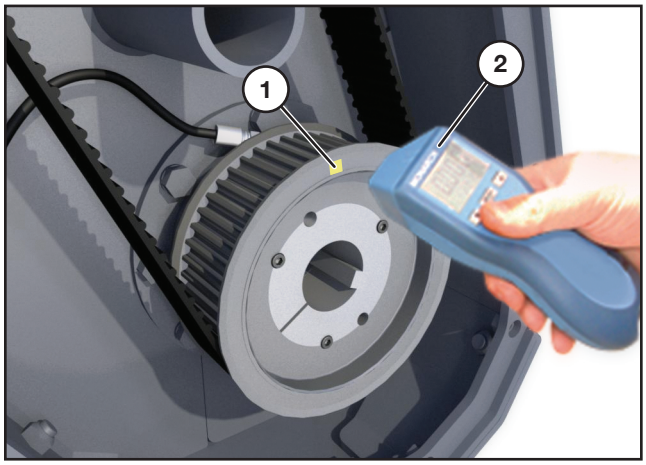
Engage the excavator auxiliary hydraulics, the rotor should start rotating in a forward direction as shown above.

NOTE: *If the rotor is rotating backward, shut down the excavator. Switch the TANK and PRESSURE connections. Once connected, restart the excavator, engage the excavator auxiliary hydraulics and test for correct rotor rotation.*

Checking Rotor Speed

⚠	**DANGER:** *Shut down power from the excavator before removing the bearing cover and applying reflective tape to rotor shaft end. Keep the Battle Ax skids on blocks for this procedure.*

Remove the belt cover. See “Removing Belt Cover and Access Covers” on page 18 for instructions.



Apply a small piece of reflective tape (1) to the outer edge of the lower sprocket.

Start the excavator and engage the excavator auxiliary hydraulics.

⚠	**DANGER:** *Keep hands, feet, and clothing clear of rotor and bearings while excavator is running.*

Point an electronic (photo) tachometer (2) towards the edge of the sprocket to check the rotor speed.

NOTE: *The tachometer shown is not supplied with the Battle Ax.*

Test the rotor RPM with excavator engine at full throttle.

Shut down the excavator when done.

If adjustments are necessary, refer to “Adjusting Rotor RPM” on page 13 to increase or decrease the RPM.

If RPM adjustments are not necessary, make sure power from the excavator is turned off, then return the belt cover to its position, securing with all bolts.

Adjusting Rotor RPM

NOTE: *Motor is preset at the factory to maximum displacement. Motor displacement must be adjusted on the cutter head to achieve the recommended speed of 2100 RPM.*

Rotor RPM can be fine-tuned for different applications.

- *A higher speed (up to 2100 RPM maximum) may be desirable for lighter brush and trees.*
- *A lower speed (down to 1700 RPM minimum) will provide more torque which can be helpful in heavier brush and trees.*

⚠	**DANGER:** *Shut down power from the excavator before removing the motor cover to gain access to the motor.*

Remove top motor cover. See “Removing Top and Rear Motor Covers” on page 19 for location and removal instructions.

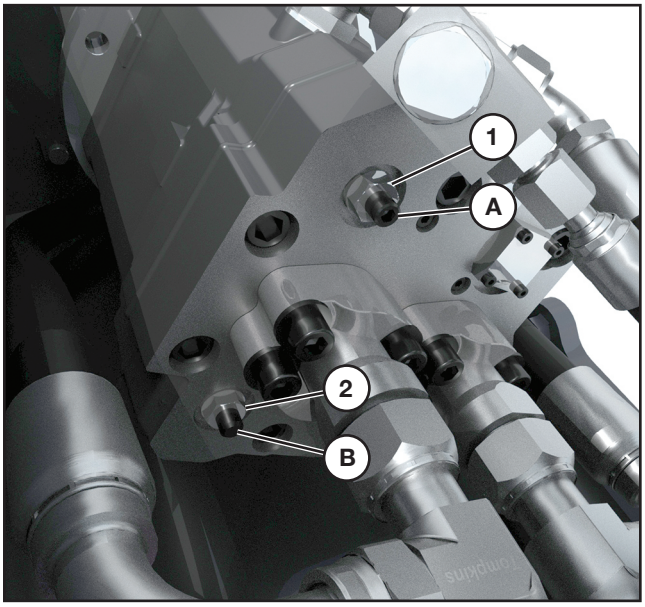
Start the excavator and engage the excavator auxiliary hydraulics.

⚠	**DANGER:** *DO NOT make adjustments while the machine is running!*

⚠	**DANGER:** *Keep hands, feet, and clothing clear of rotor while excavator is running.*

(Procedure continued on following page.)

Adjusting Rotor RPM (Cont'd)



NOTE: *Motor adjustments need to be done with auxiliary hydraulics disengaged.*

To INCREASE ROTOR RPM:

- Loosen jam nuts (1 and 2) using a 19 mm offset box end wrench while holding the adjustment screw stationary with a 6mm Allen wrench. Next, hold jam nut (1) stationary while turning adjustment screw (A) **OUT**. Then, hold jam nut (2) stationary while turning adjustment screw (B) **IN** until resistance is felt. DO NOT FORCE.

To DECREASE ROTOR RPM:

- Loosen jam nuts (1 and 2) using a 19 mm offset box end wrench while holding the adjustment screw stationary with a 6mm Allen wrench. Next, hold jam nut (2) stationary while turning adjustment screw (B) **OUT**. Then, hold jam nut (1) stationary while turning adjustment screw (A) **IN** until resistance is felt. DO NOT FORCE.

When final adjustments have been made, hold each adjustment screw stationary with the 6 mm Allen wrench and tighten the jam nut with the 19 mm offset box end wrench. The proper torque for the jam nut is 60 N-m (44 ft-lbs).

Turn power off from the excavator and return the covers to their positions, securing with all hardware.

Getting Started

Visually inspect the unit before starting the machine up. Check for loose or missing parts. Check all bolts for tightness.

For best results, the areas to be mowed should be free of debris such as bottles, metal objects, rocks, wire, etc.

For first-time users, start the machine in a clear, open area and become familiar with the controls. Run throttle at half speed and travel at a low speed. Raise the mulching head only slightly until comfortable with the machine.

⚠	**WARNING:** *Due to the potential danger of flying debris, it is the owner's responsibility and is "ABSOLUTELY MANDATORY that IMPACT-RESISTANT SHIELDING" be installed on the machine to protect the operator.*

⚠	**WARNING:** *Lifting or tilting the Battle Ax increases the risk of flying debris.*

⚠	**DANGER:** *Keep hands and feet out! Do not step on or climb over the unit while machine is in operation, or engine is running. Do not carry passengers.*

⚠	**WARNING:** *Do not operate the attachment above the rated RPM. Check with your Loftness dealer to be sure your attachment is set-up with the correct hydraulic motor to match the hydraulic flow GPM (Gallons Per Minute) of your machine.*

⚠	**WARNING:** *Flying debris can gather on the excavator and needs to be cleaned off, especially around the radiator and oil cooler screens, engine compartment and exhaust areas. Periodic cleaning will help prevent the possibility of fire.*

⚠	**DANGER:** *DO NOT allow ANY people or animals within 300 feet of the work area while operating this machine.*

Operation

⚠	**WARNING:** *Always stop engine and remove key before leaving operators seat.*

Lower mulching head so skids are on ground.

Set engine speed to one-third throttle and engage the mulching head.

Slowly increase engine speed to high idle.

NOTE: *Always position head to discharge away from power unit and operator.*

Operating Tips

To reduce rotor jams, approach brush and trees at a slow speed.

When operating the mulching head near the ground, keep as low to the ground as possible without the teeth striking ground or other obstructions.

NOTE: *Because of the high speed of the rotor, the life of the teeth will be reduced if it is operated in rocky terrain or in areas where many obstacles are present.*

For tall brush, raise the mulching head and start mulching the top, then proceed lower and work down to the ground. Raise the mulching head, then move forward and repeat.

When mulching large trees, work from the top down.

In wet conditions, operate at a slower speed and periodically inspect the mulching head for caking and clogging in the rotor area.

Clearing Jams

If the rotor stalls, or gets jammed with debris, stop rotor and turn rotor backwards by rolling on ground or stump. Start rotor again to free debris.

⚠	**WARNING:** *Do not attempt to dislodge jams by hand while the excavator is running. Shut down and lock out power from the excavator before attempting to remove debris by hand.*

Detaching Battle Ax

Park excavator on a dry level surface. Turn power off to the Battle Ax and install shipping stands. See “Remove Shipping Stands” on page 12 for reference.

Lower the Battle Ax to the ground.

Shut off engine and remove key.

Disconnect hydraulic hoses.

Detach excavator boom from the mounting bracket.

⚠	**WARNING:** *Do not attempt to detach the Battle Ax or add the shipping stands while the excavator is running. Shut down and lock out power from the excavator before detaching.*

General Maintenance

To ensure efficient operation, you should inspect, lubricate, and make necessary adjustments and repairs at regular intervals. Parts that are starting to show wear should be ordered ahead of time, before a costly breakdown occurs and you have to wait for replacement parts. Keep good maintenance records, and adequately clean your Battle Ax after each use.

Proper lubrication is important. Too little lubricant will cause premature failure of a bearing. Too much lubrication usually causes high operating temperature and early failure of seals. Follow all lubrication instructions and schedules included in this section.

Maintenance Schedule

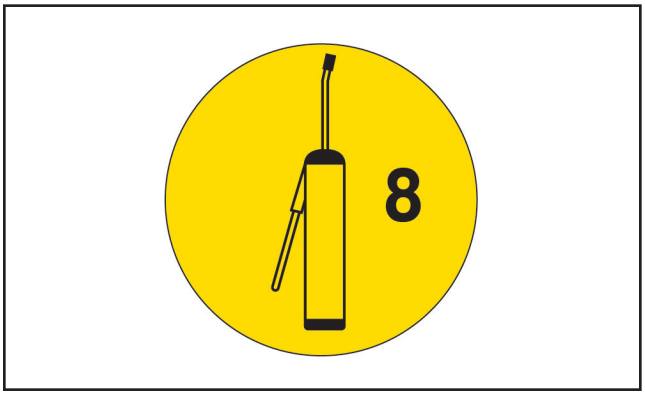
HOURS	SERVICE POINTS	SERVICE REQUIRED					
		CHECK	CLEAN	CHANGE	GREASE	ADJUST	OIL
Every 8	Machine		X				
	Loose Bolts					X	
	Hoses and Wiring	X					
	Oil Leaks	X					
	Rotor Bearing				X		
	Carbide Teeth	X					
Every 100	Safety Labels	X					
Every 500	Overhung Load Adapter	X					X

Lubrication

Grease Points Location

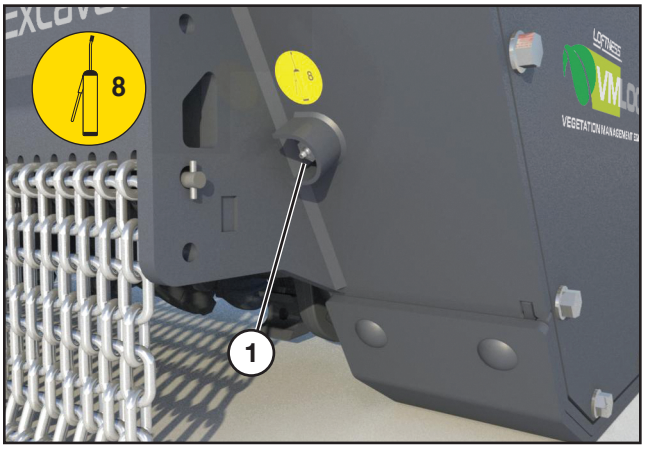
Use a #2 general purpose lithium based grease unless noted otherwise.

NOTE: *Replace any broken or missing grease fittings. Be sure to clean fittings before greasing.*



NOTE: *Lubricate the grease point every "X" hours indicated on the decal adjacent to the grease point.*

See "Battle Ax Identification" on page 10 for component location and identification.



Location: Belt end rotor bearing (1).
Interval: Every 8 hours of operation.

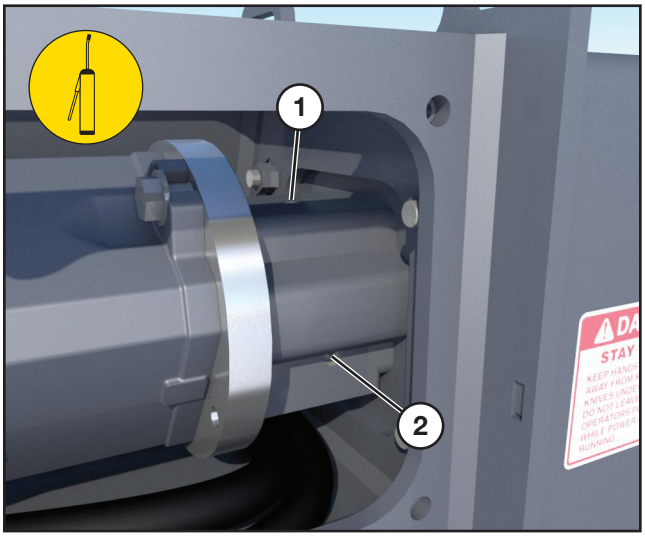
Lubrication (Cont'd)

Grease Points Location (Cont'd)

Location: Hook end rotor bearing (2).
Interval: Every 8 hours of operation.

Overhung Load Adapter

The top and rear motor covers must be removed to access the lubrication points on the overhung load adapter. Refer to "Removing Top and Rear Motor Covers" on page 19 for instructions.



Remove the plug from the upper port (1) located on top of the overhung load adapter. Place a catch container below the plug for the lower port (2) located on the back side of the OHLA and unscrew the plug.

Using a funnel, add hydraulic oil into the upper port (approximately 6 oz.).

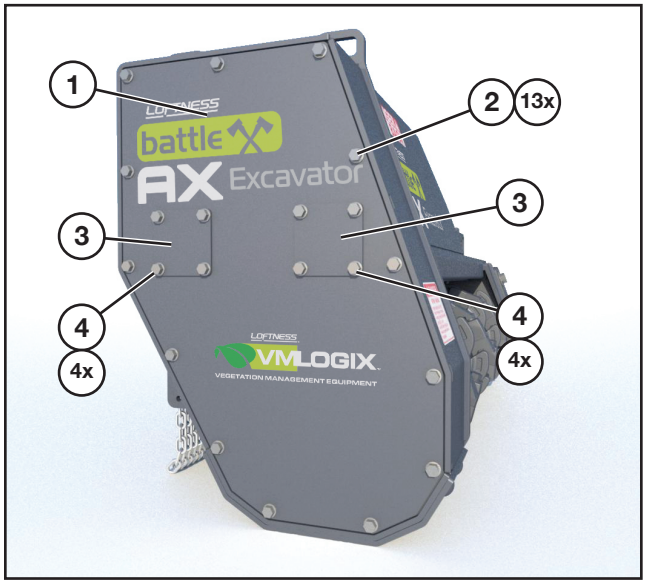
Reinsert the plug back into the lower port and tighten.

Return the remaining plug back into the upper port and tighten.

NOTE: *If replacing bearings or seals in the overhung load adapter, be certain to refill with hydraulic fluid after reassembly.*

Removing Belt Cover and Access Covers

⚠	**DANGER:** *Shut down and lock out power from the excavator before removing the belt cover or access covers. Failure to do so could result in serious injury or death.*



To remove the belt cover (1), unscrew the thirteen bolts (2) and lift the cover off of the frame.

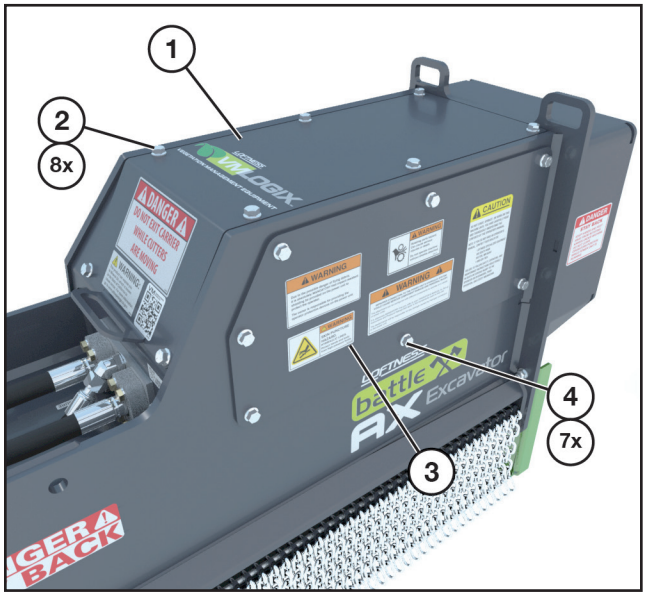
⚠	**CAUTION:** *The belt cover is heavy. Support the cover when removing.*

To remove only the small access covers (3), unscrew the four bolts (4) on each cover.

When maintenance/repairs are complete, return the covers back into position and tighten and secure all bolts.

Removing Top and Rear Motor Covers

⚠	**DANGER:** *Shut down and lock out power from the excavator before removing the top and/or rear motor cover. Failure to do so could result in serious injury or death.*



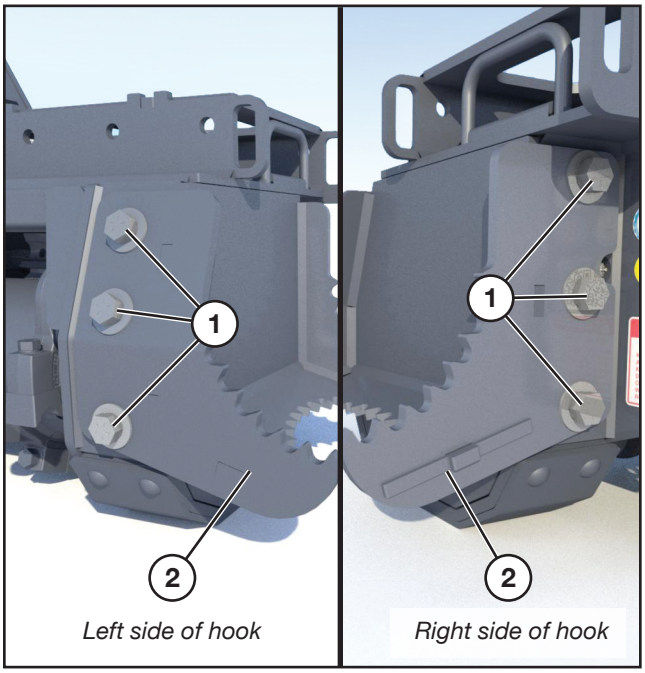
To remove the top motor cover (1), unscrew the eight bolts (2) and lift the cover off of the frame.

To remove the rear motor cover (3), unscrew the seven bolt (4) and lift the cover off of the frame.

When maintenance/repairs are complete, return the cover back into position and tighten and secure all bolts.

Removing Hook

⚠	**DANGER:** *Shut down and lock out power from the excavator before removing the hook. Failure to do so could result in serious injury or death.*



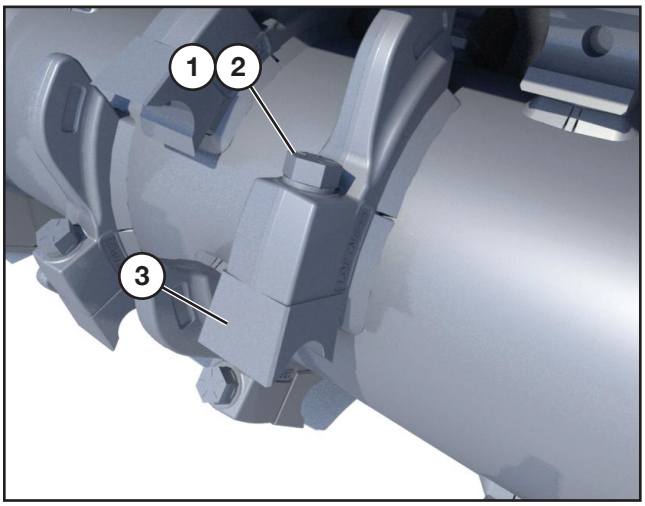
Left side of hook *Right side of hook*

Remove the six bolts (1) - [three on each side] and lift the hook (2) off of the frame.

⚠	**CAUTION:** *The hook is heavy. Support the hook when removing.*

Tooth Removal and Installation

⚠	**DANGER:** *Shut down and lock out power from the excavator before removing and installing any cutting teeth. Failure to do so could result in serious injury or death.*



Remove the bolt (1), washer (2), and tooth (3).

Use copper based anti-seize when reinstalling the bolts. Torque to 240 ft.-lbs.

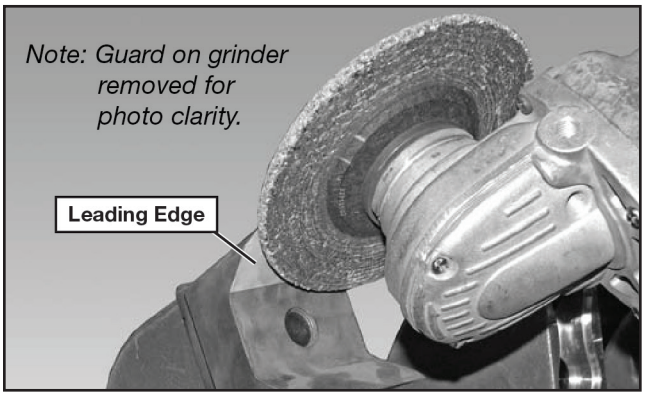
IMPORTANT: *When a damaged tooth is replaced, the tooth directly opposite (180 degrees) must be replaced at the same time to retain balance.*

Tooth Sharpening (Quadco)

NOTE: *The teeth need to be kept sharp to maintain the most effective operation of the attachment. Daily inspection and touch up is recommended.*

NOTE: *The teeth can either be removed from the attachment or remain installed for sharpening.*

⚠	**WARNING:** *Rotor must be stabilized to prevent accidental rotation any time the rotor is exposed for service work.*

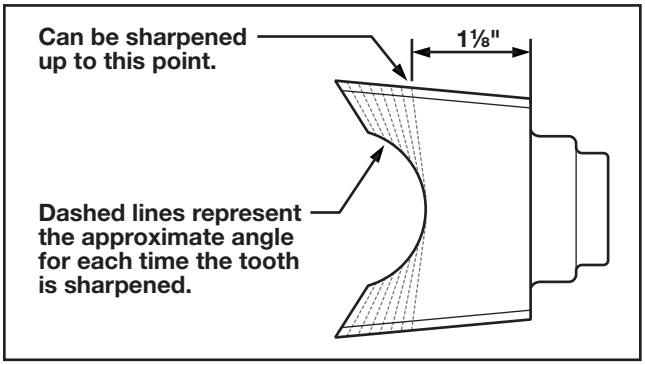


NOTE: *The Quadco cutter teeth have been heat treated to a specific hardness. Care must be taken to avoid overheating the leading edge of the tooth while sharpening. If the coloring in the tooth changes to either a blue or brown during the sharpening, you have removed the temper and the tooth will not hold it's cutting edge.*

NOTE: *When re-sharpening teeth using machine shop equipment, avoid overheating the teeth by using a flood coolant system.*

NOTE: *When re-sharpening teeth using a hand grinder, avoid overheating the tooth by lightly grinding each tooth, moving across the entire row of teeth before returning to the first tooth to repeat the procedure.*

NOTE: *Sharpen each tooth equally to maintain rotor balance. Always return tooth to it's original location if it is removed from the rotor for sharpening.*

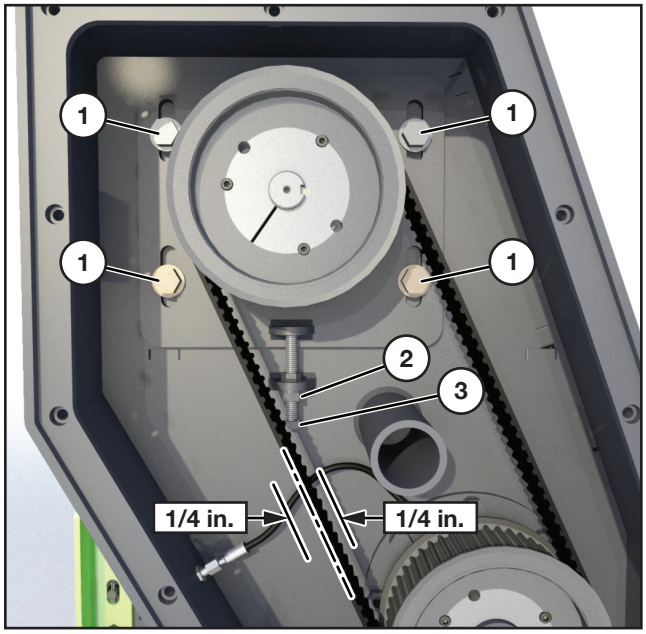


NOTE: *It is not necessary to match the factory angle on the underside of the cutting edge when re-sharpening. Sharpen each tooth at a slight angle for each successive sharpening (represented by the dashed lines shown in the illustration above). When the cutting edge of the tooth is 1-1/8 in. from the back side of the tooth, the tooth must be replaced.*

Belt Tension Adjustment

> **WARNING:** *Shut down and lock out power from the excavator before adjusting the drive belt. Failure to do so could result in serious injury or death.*

Remove the belt cover. Refer to "Removing Belt Cover and Access Covers" on page 18 for instructions.



Loosen the four overhung load adapter support bolts (1) on the motor mount bracket.

Loosen the jam nut (2).

Turn the bolt (3) to either increase or decrease belt tension. Tighten the jam nut to lock

Belt should move no more than 1/4 in. (6.35 mm) to the left, and no more than 1/4 in. (6.35 mm) to the right when pressure applied at the midpoint.

Retighten overhung load adapter support bolts.

Replacing Belt

To replace the belt, follow the procedures for "Belt Tension Adjustment" preceding this subsection and decrease the belt tension additionally to allow the belt to slide over the top sprocket.

NOTE: *When replacing or installing a new belt, align the grooves in the belt with the upper and lower pulleys.*

Install the belt and adjust the tension accordingly. Refer again to the "Belt Tension Adjustment" procedure and follow the instructions completely.

Sprocket Removal

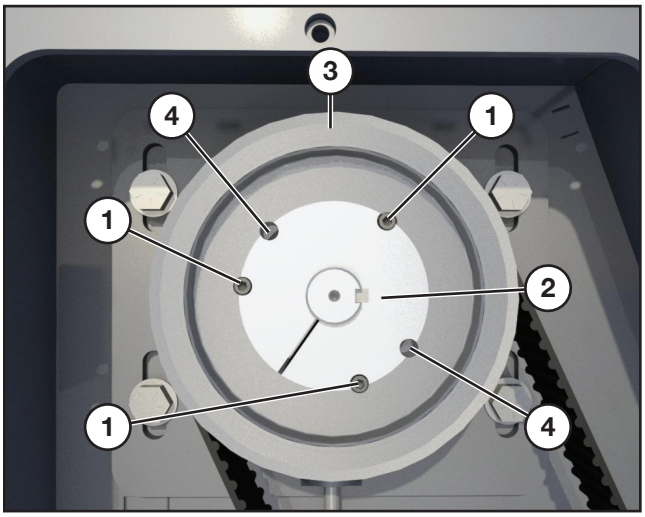
The steps to remove either the upper or lower sprocket are identical. For this procedure the upper sprocket is discussed. Follow the same procedure to remove the lower sprocket.

NOTE: *See page 34 for an exploded view and parts listing for the belt/sprocket combination.*

1. Disconnect or turn off all power to the Battle Ax.

> **DANGER:** *Shut down and lock out power from the excavator before removing sprockets. Failure to do so could result in serious injury or death.*

Remove the drive belt by following the instructions in "Belt Tension Adjustment" and "Replacing Belt" on page 21.



2. Remove the three screws (1) from the taper lock bushing (2) of the sprocket (3).
3. Insert two of the screws into the threaded holes (4).

(Procedure continued on following page.)

Sprocket Removal (Cont'd)

4. Tighten the two screws until bushing grip is released. (If excessively tight, lightly hammer face of sprocket using drift pin or sleeve).

NOTE: *Never hit sprocket directly with hammer.*

5. Replace the sprocket by cleaning the shaft, bore of bushing, outside of bushing and hub bore of all oil, paint and dirt. File away any burrs.
6. Insert bushing into hub. Match the hole pattern, not threaded holes (each complete hole will be threaded on one side only).
7. Apply a thread-locking compound to screws and thread into the three opposing holes.
8. Position assembly on shaft and alternately torque screws to 35 ft.-lbs.
9. To increase gripping force, hammer face of bushing using drift or sleeve.

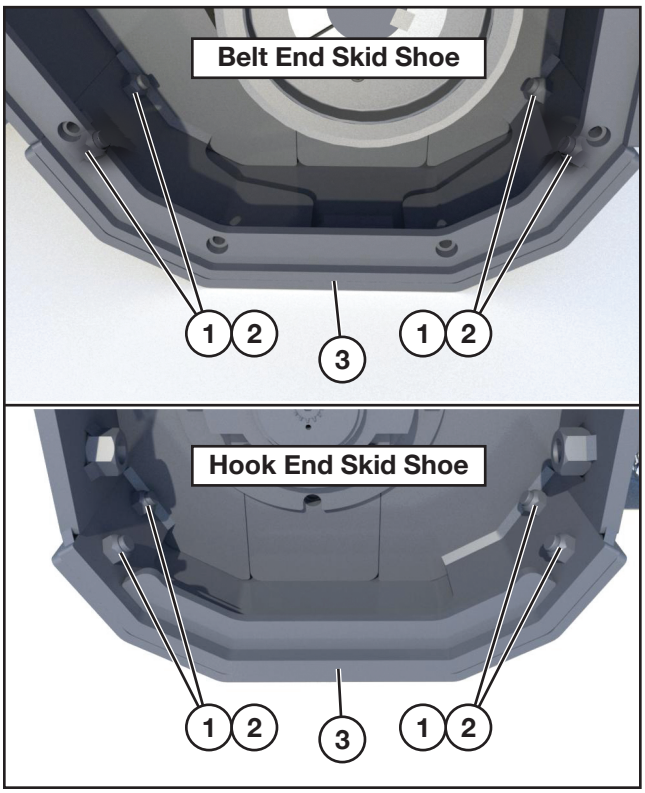
NOTE: *Do not hit bushing directly with hammer.*

10. Re-torque screws after hammering.
11. Recheck screw torque after initial run-in, and periodically thereafter, repeat steps 4, 5 & 6 if loose.
12. Check alignment of the sprocket. Repeat sprocket removal and assembly procedures if necessary.

Skid Removal/Replacement

⚠	**WARNING:** *Shut down and lock out power from the excavator before removing skids.*

Lift the Battle Ax off of the ground about 6 inches. Place blocks under the rotor (not under teeth) to support the shredder when lowered. DO NOT place blocks under the skids.



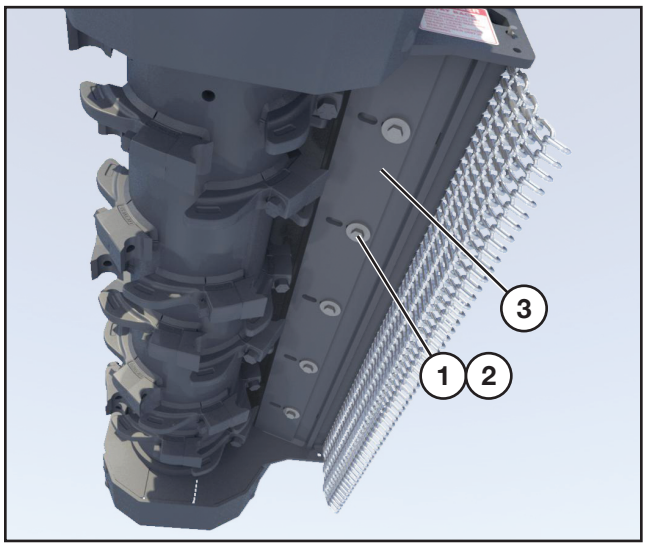
For belt end skid shoe, first remove the belt cover. Refer to "Removing Belt Cover and Access Covers" on page 18 for instructions.

For hook end skid shoe, first remove the hook. Refer to "Removing Hook" on page 19 for instructions.

Remove nuts (1) and slide carriage bolts (2) out. Lower the skid (3) and remove.

To install new or repaired skid shoe, align holes in skid shoe with holes on frame. Re-install the bolts, add the nuts and tighten securely.

Cutter Bar Adjustment



NOTE: *The cutter bar can be adjusted back or forward to increase or decrease the distance between the bar and the rotor.*

Most operators find the best performance is achieved by adjusting the cutter bar as close as the slots will allow (approximately a 1/4" gap from knife to cutter bar). A wider gap generally increases finished partical size and horsepower requirements.

WARNING: *Shut down and disconnect the hydraulic hoses from the excavator before adjusting the cutter bar.*

Loosen the series of bolts (1) with washers (2) securing the cutter bar (3) to the frame. Move the cutter bar either forward or back making sure the distance moved is consistent through the entire length of the cutter bar. Retighten bolts.

Over time, the cutter bar edge will become worn and rounded from use. There are a total of 4 wear edges available by removing and flipping the bar, side to side and front to back.

CAUTION: *If adjusting the cutter bar after the machine has been used, the cutter bar should be completely removed to clear any debris away from contact surfaces before assembly and tightening. FAILURE TO DO SO COULD RESULT IN SEVERE DAMAGE TO THE MACHINE!*

Storage

End of Season

- Clean entire Battle Ax thoroughly.
- Lubricate all parts of the machine. See “Lubrication” on page 17.
- Make a list of all worn or damaged parts and replace them.
- Paint all parts that are worn or rusted.
- Store Battle Ax in a clean, dry area.
- Review the Battle Ax operator’s manual.

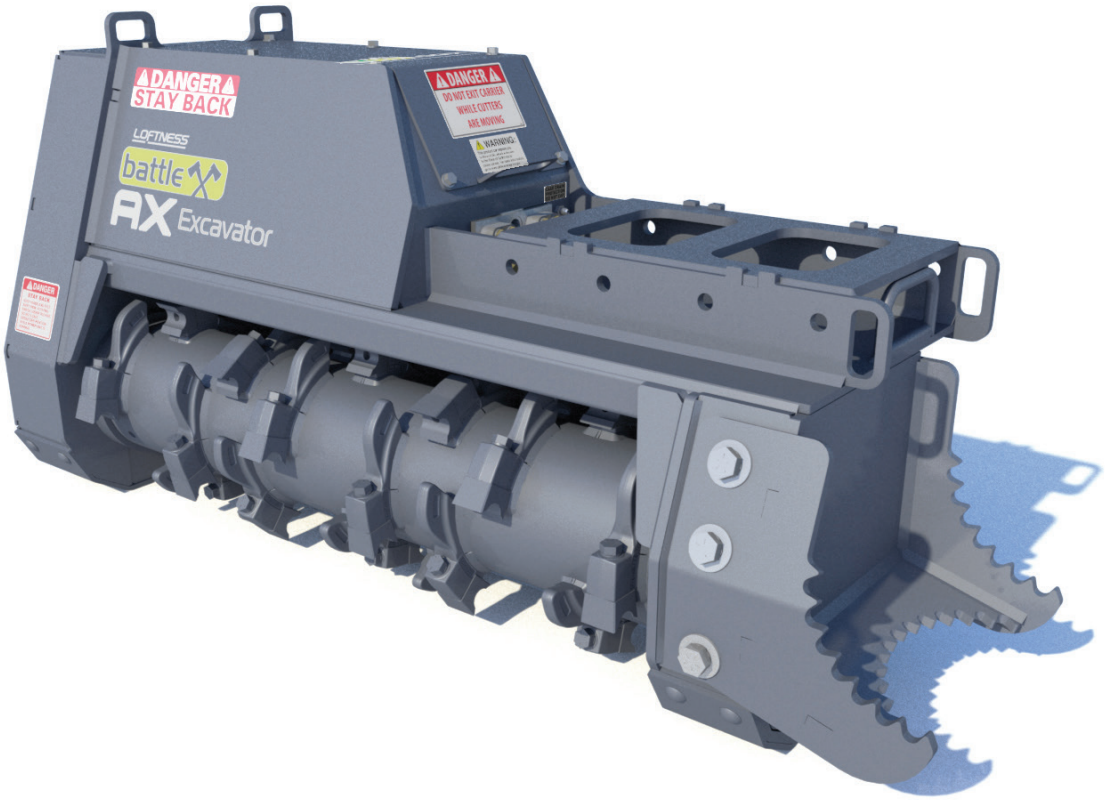
Beginning of the Season

- Review the Battle Ax operator’s manual.
- Lubricate all parts of the machine. See “Lubrication” on page 17.
- Tighten all bolts, nuts, and set screws. See “Torque Specifications” on page 45.
- Replace all damaged, worn or missing decals.
- Install the Battle Ax on a excavator and test for proper operation.

WARNING: *DO NOT allow ANY people or animals within 300 feet of the work area while operating this machine.*

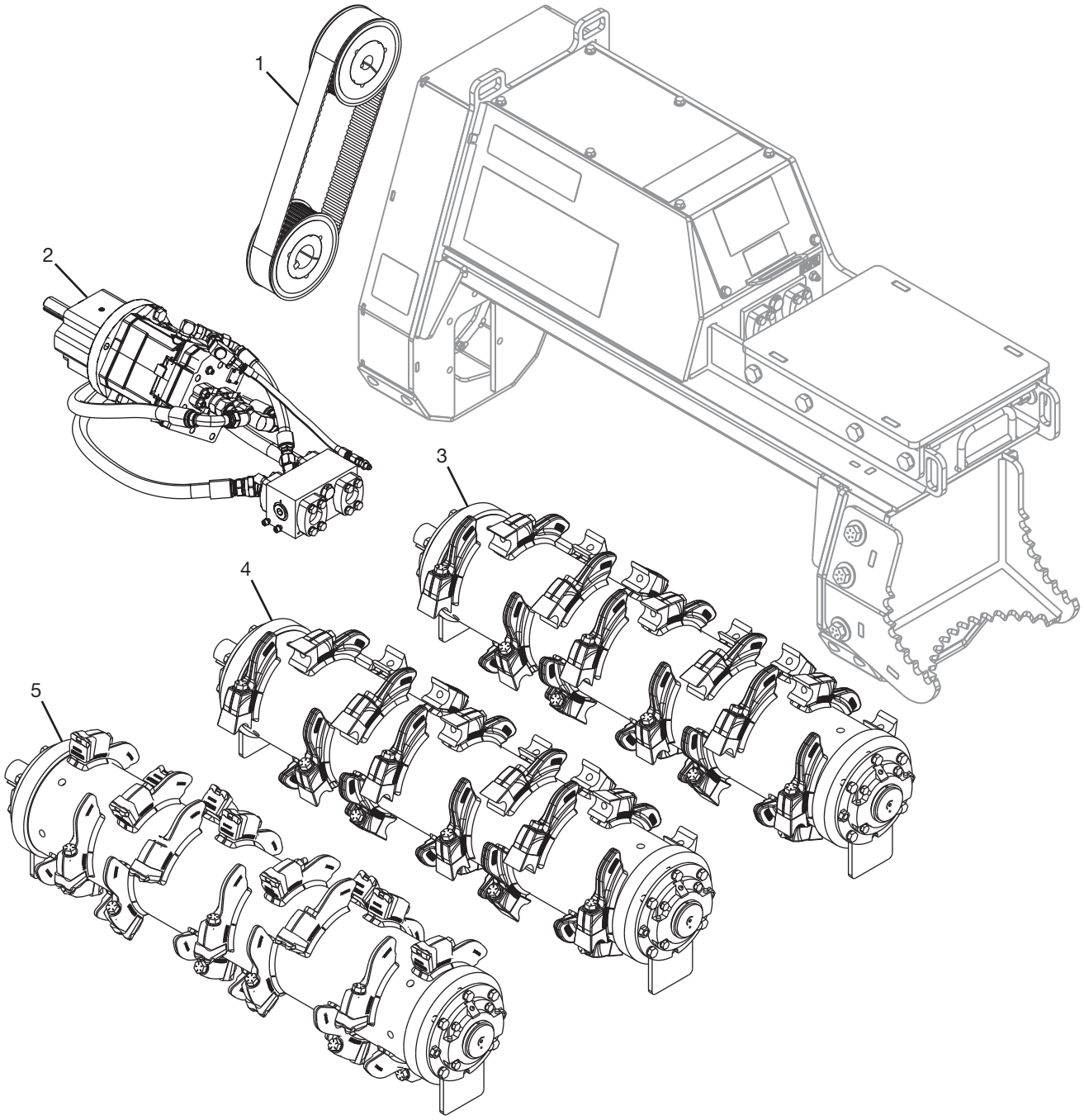
Troubleshooting

PROBLEM	CAUSE	SOLUTION
Excessive vibration.	Broken or missing teeth.	Replace teeth.
	Mud and/or debris wrapped around the rotor.	Clean the Battle Ax.
	Faulty rotor bearing.	Replace bearing(s).
	Damage to rotor (includes bent end of shafts, missing balance weights, or actual rotor deformity from striking rocks, etc.)	Consult factory.
Uneven cutting.	Teeth dull or worn excessively.	Replace teeth.
	Engine RPM too slow.	Adjust machine RPM to full throttle.
	Travel speed too fast.	Reduce travel speed.
Rotor will not turn, or turns slowly.	Low oil.	Check oil level in excavator. Add if necessary.
	Low oil flow.	Check flow control on excavator.
	Oil filter plugged.	Replace excavator oil filter.
	Faulty rotor bearing.	Replace bearing(s).
	Rotor jammed.	Remove material from rotor. See “Clearing Jams” on page 15.



PARTS IDENTIFICATION

Battle Ax 40 Series, Complete



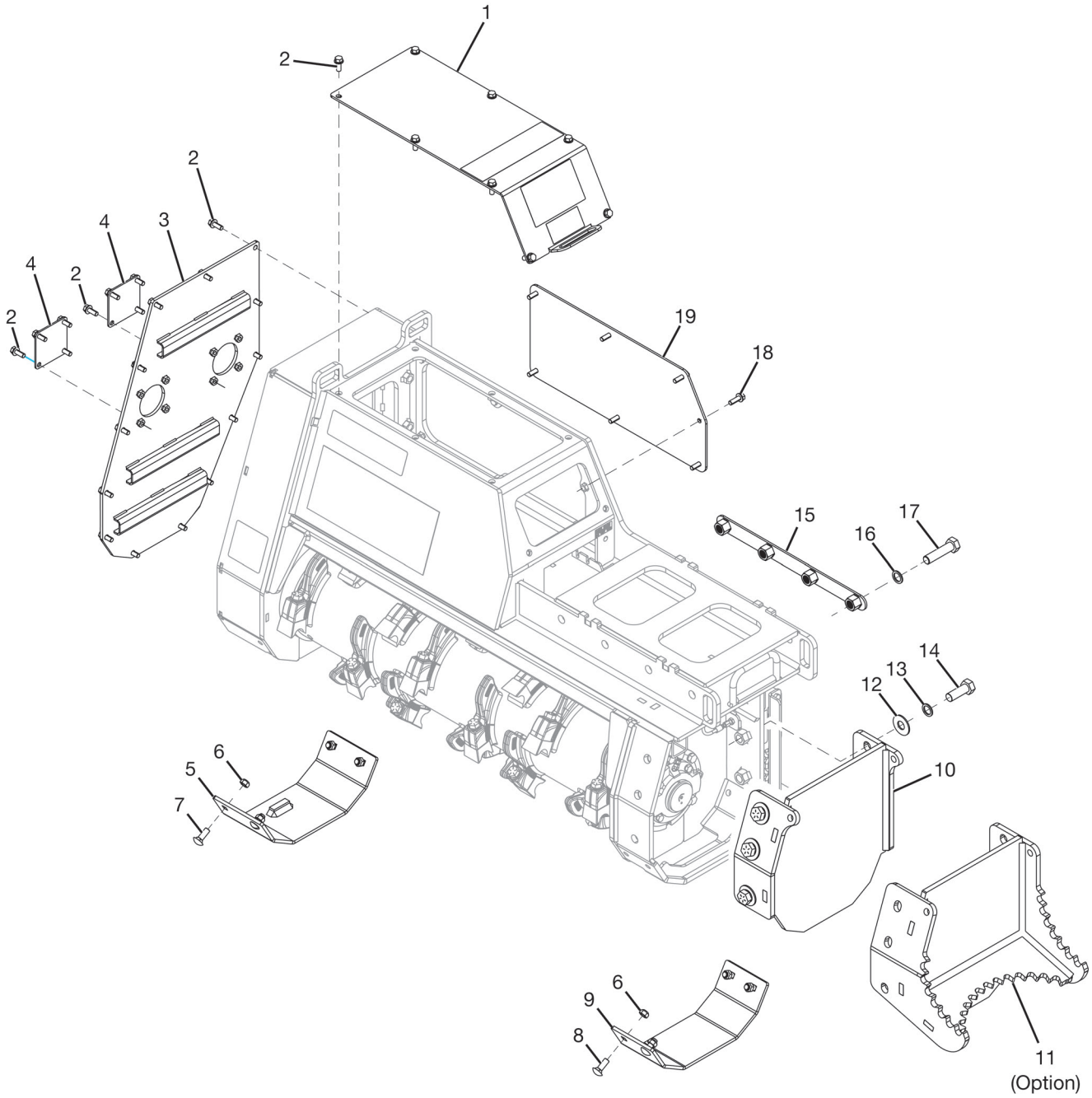
Detailed parts breakdowns of the assemblies above (items) are listed on the following pages:

Item 1 - Belt Assembly (202965) - See page 34.
Item 2 - Motor Assembly (206347)- See page 36.
Item 3 - Rotor Assembly w/Quadco Planer (202956) - See page 32
Item 4 - Rotor Assembly w/Quadco Hard Surface Planer (202958) - See page 32
Item 5 - Rotor Assembly w/Betek Carbide (202960) - See page 32

Battle Ax 40 Series, Complete

#	QTY.	PART #	DESCRIPTION
1	1	202965	BELT ASSY, 68MM 1750
2	1	206347	MOTOR ASM, LINDE 135CC HMA 51
3	1	202956	ROTOR, 51" BA40 ASSY QUADCO PLANER
4	1	202958	ROTOR, 51" BA40 ASSY QUADCO HARD SURFACE PLANER
5	1	202960	ROTOR, 51" BA40 ASSY BETEK CARBIDE

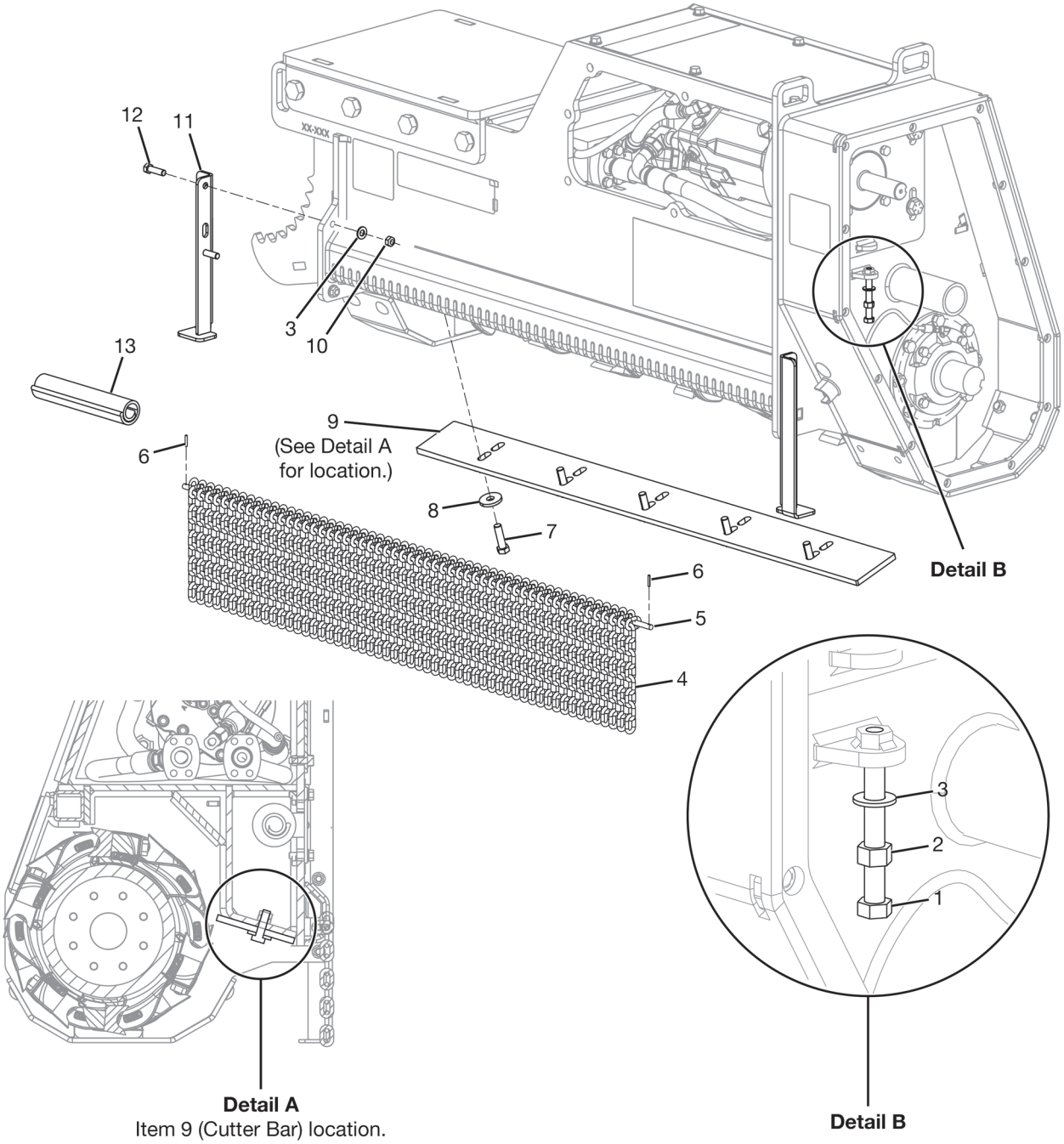
Covers, Skid Shoes, Hook, and Hitch Mount



Covers, Skid Shoes, Hook, and Hitch Mount

#	QTY.	PART #	DESCRIPTION
1	1	202968	COVER, TOP MOTOR W/ DECALS
2	29	N18360	BOLT, 1/2-13 X 1-1/4 SER FLG
3	1	206386	COVER, BELT W/STIFFENER
4	2	N21261	PLATE, COVER LIFT/INSPECTION
5	1	202943	SKID, WITH BRACE
6	8	4055	NUT, LOCK 5/8" TOP
7	4	4386	BOLT, CARRIAGE 5/8" X 1-1/2"
8	4	4383	BOLT, CARRAIGE, 5/8" X 1-3/4"
9	1	202950	PLATE, SKID SHOE B
10	1	206851	COVER, 40 SERIES BEARING
11	1	202906	HOOK, 40 SERIES (OPTION)
12	6	4356	WASHER, 1" FLAT
13	6	203587	WASHER, NORD-LOCK 1
14	6	N36221	BOLT, 1" X 2-3/4" FN TH GR 8
15	2	206384	PLATE, MOUNT NUTS
16	8	209022	WASHER, NORDLOCK 1 SP
17	8	N64492	BOLT, 1-14 X 4" GR. 8 FN. THR
18	7	202579	BOLT, 1/2-13 X 1-1/4 SER FLG
19	1	202967	COVER, BACK W/ DECALS

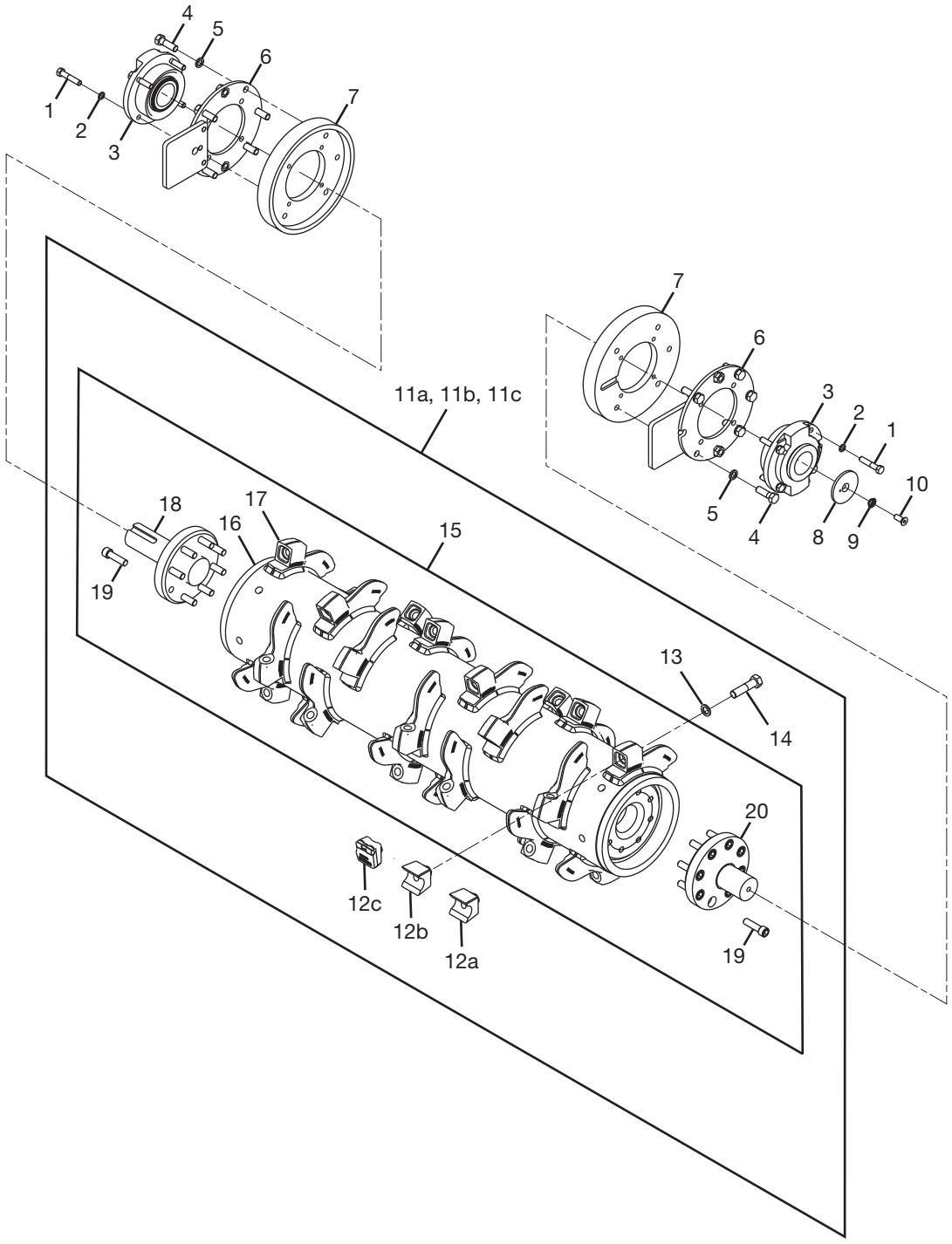
Cutter Bar, Deflector Chains, Motor Tension Hardware, and Manual Holder



Cutter Bar, Deflector Chains, Motor Tension Hardware, and Manual Holder

#	QTY.	PART #	DESCRIPTION
1	1	201968	BOLT, 1/2" X 4" GR 5 FULL THRD
2	1	4250	NUT, STANDARD 1/2
3	5	4068	WASHER, 1/2" SAE FLAT
4	55	202879	CHAIN, 5/16 DEFLECTOR 9 LINK
5	1	202951	ROD, CARBIDE 51" CHAIN
6	2	4375	PIN, ROLL 3/16" X 1"
7	5	4494	BOLT, 5/8-18 X 2-1/4 GR 8
8	5	4062	WASHER, 2"0D X 11/16"ID X 1/4T
9	1	N49272	PLATE, RECUTTER 51"
10	4	4054	NUT, LOCK 1/2" TOP
11	2	202962	STAND, SHIPPING W/ DECAL
12	4	4014	BOLT, 1/2" X 1-3/4" GRADE 5
13	1	202932	MANUAL, BAH

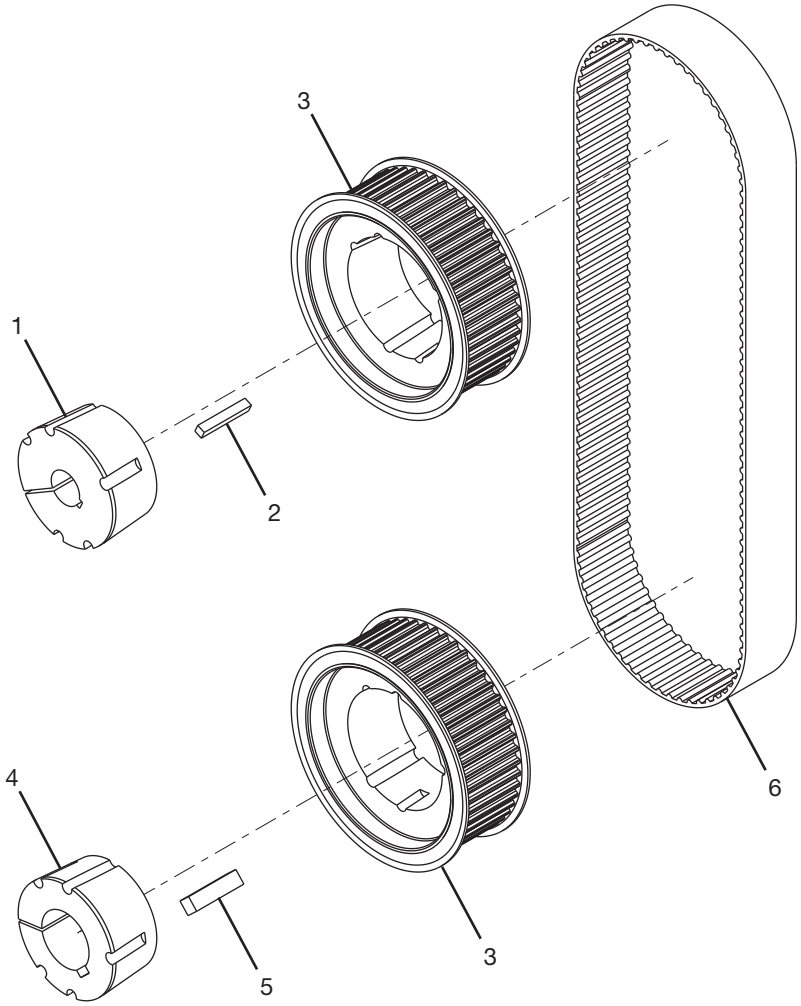
Rotor Assembly, 51" Battle Ax with Quadco Planer (202956)
Rotor Assembly, 51" Battle Ax with Quadco Hard Surface Planer (202958)
Rotor Assembly, 51" Battle Ax with Betek Carbide (202960)



Rotor Assembly, 51" Battle Ax with Quadco Planer (202956)
Rotor Assembly, 51" Battle Ax with Quadco Hard Surface Planer (202958)
Rotor Assembly, 51" Battle Ax with Betek Carbide (202960)

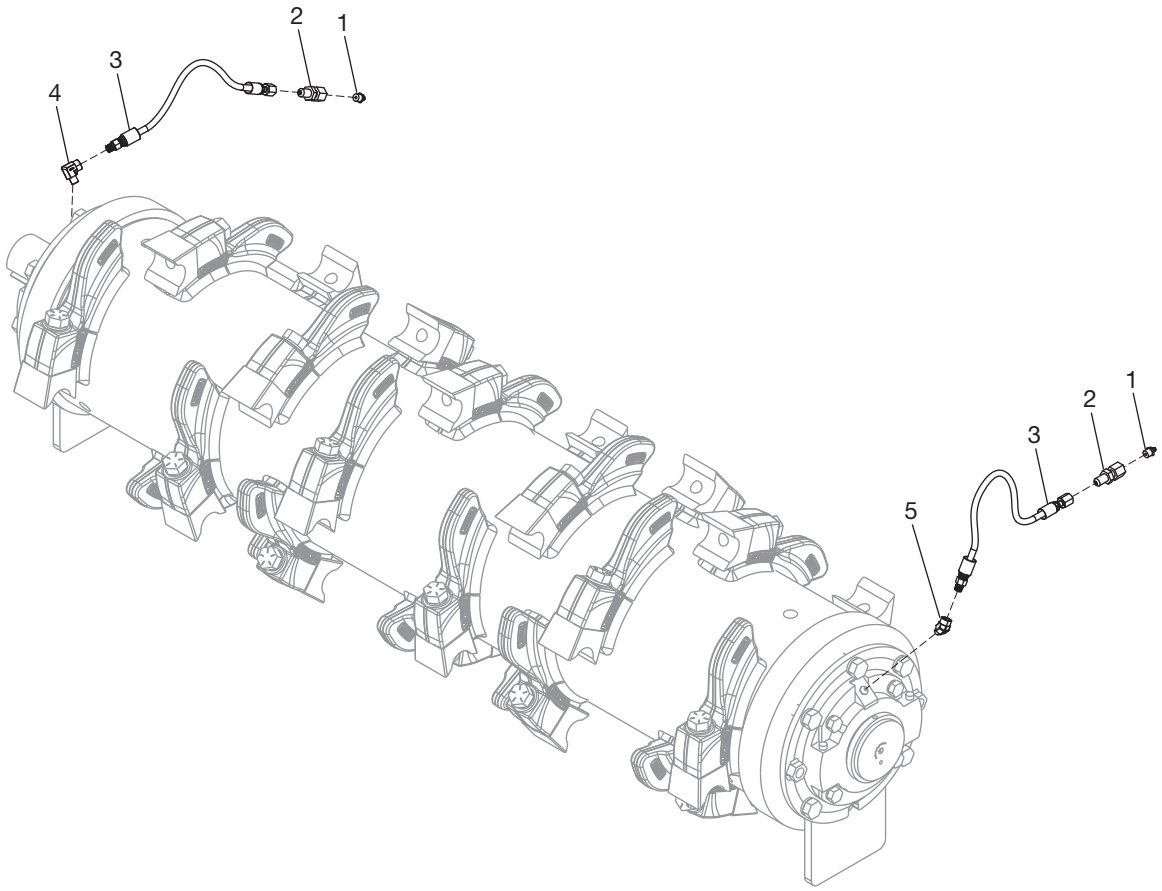
#	QTY.	PART #	DESCRIPTION
1	8	206359	BOLT, 1/2" X 2-1/2" FN TD GR 8
2	8	N16472	WASHER, 1/2 NORDLOCK
3	2	207180	BEARING, 2-1/2
4	10	4042	BOLT, 5/8" X 2"FINE THRD.GR.8
5	10	N16473	WASHER, 5/8 NORDLOCK
6	2	202904	MOUNT, 2-1/2 BEAR WELD 40 SER
7	2	207183	ANTIWRAP, CARBIDE 11, 2.5 BRG"
8	1	N21464	WASHER, 3 1/2"OD BRNG RET.
9	1	4076	WASHER, 1/2" EXT CNTSK LOCK
10	1	4468	BOLT, 1/2-20UNF X 1-1/4 FL HD
11a	1	202955	ROTOR, 51" BA40 W/ CUT - QUADCO PLANER
11b	1	202957	ROTOR, 51" BA40 W/ CUTTERS - QUADCO HARD SURFACE PLANER
11c	1	202959	ROTOR, 51" BA40 W/ CUTTERS - BETEK CARBIDE
12a	26	N49366	TOOTH, BA QUADCO PLANER (INCLUDED ONLY WITH ITEM 11a, 202955)
12b	26	203014	TOOTH, BA QUADCO HS PLANER - QUADCO HARD SURFACE PLANER (INCLUDED ONLY WITH ITEM 11b, 202957)
12c	26	N49090	TOOTH, BATTLE AX CARBIDE - BETEK CARBIDE (INCLUDED ONLY WITH ITEM 11c, 202959)
13	26	N16474	WASHER, 3/4 NORDLOCK
14	26	N21308	BOLT, 3/4" X 3" FN THRD GR 8
15	1	202961	ROTOR, 51" BA40 W/O CUTTERS
16	1	203434	ROTOR, 51" BAH W/O CUTTER
17	26	203315	HOLDER, BATTLE AX BETEK (INCLUDED WITH ITEM 16)
18	1	202949	WASHER, DRIVE 2.500 BOLT-ON
19	16	N38265	BOLT, SHCS 5/8 X 2-1/4 FN GR 8
20	1	207156	WASHER, DRIVEN 2.500 BOLT-ON

Belt Assembly, 50T 50B 68MM 1750 (202965)



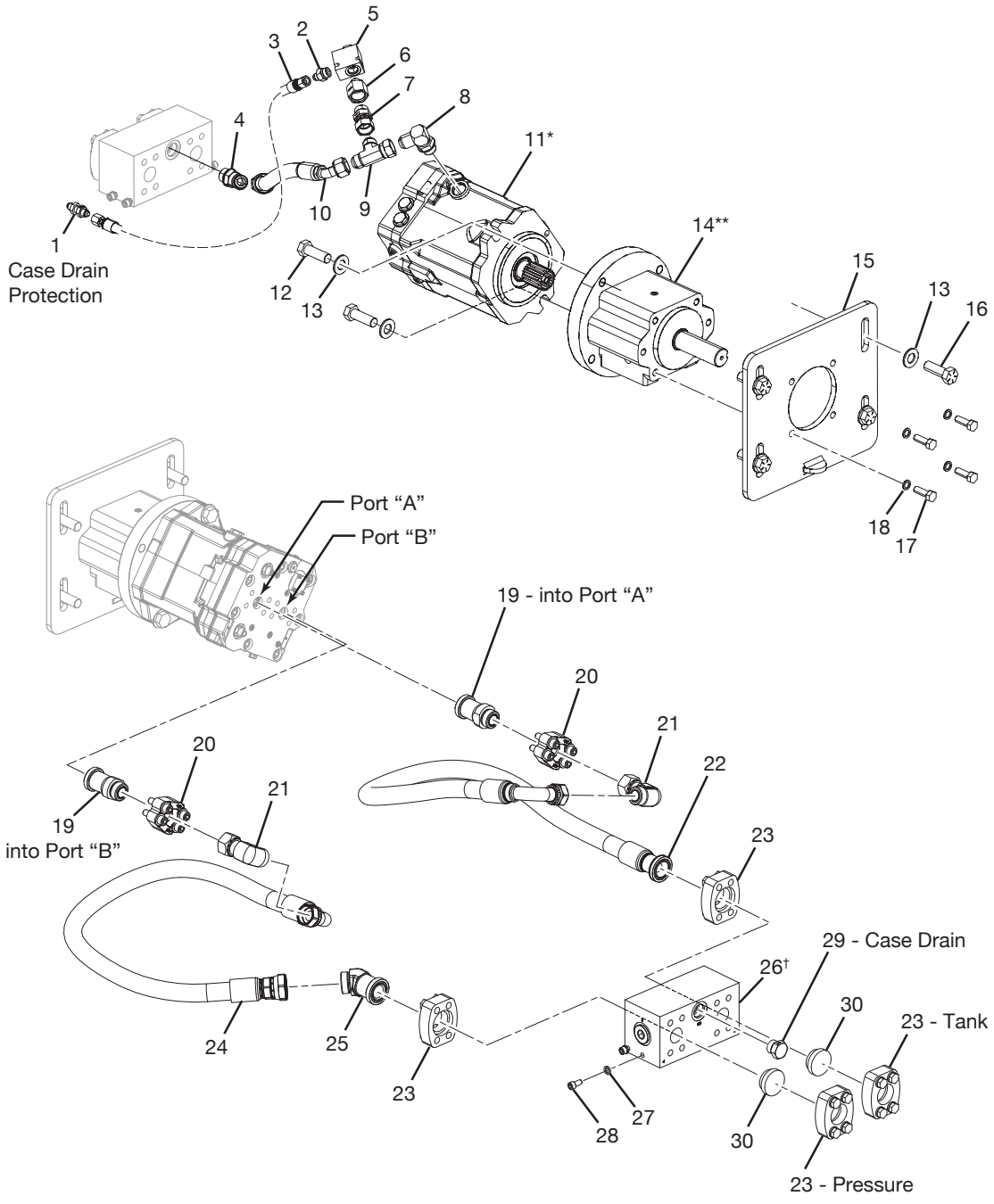
#	QTY.	PART #	DESCRIPTION
1	1	200385	BUSHING, 1.50 3525
2	1	7121-07	KEY, 3/8" X 2-1/2"
3	2	200293	SPROCKET, 68MM 50 TOOTH
4	1	202945	BUSHING, TAPERLOCK 2.50 3525
5	1	202953	KEY, 5/8" X 2-1/2"
6	1	202964	BELT, POLY CHAIN 14MM 1750 X 68

Lubrication



#	QTY.	PART #	DESCRIPTION
1	2	N17007	GREASEZERK, 1/8" NPT
2	2	4304-10	BULKHEAD, FITTING-GREASE HOSE
3	2	4304	HOSE, GREASE 1/8" x 15" W/FITTINGS
4	1	4472	ELBOW, 1/8" 90 DEG.STREET
5	1	4471	ELBOW, 1/8" 45 DEG.STREET

Motor Assembly, Linde 135cc (206347)

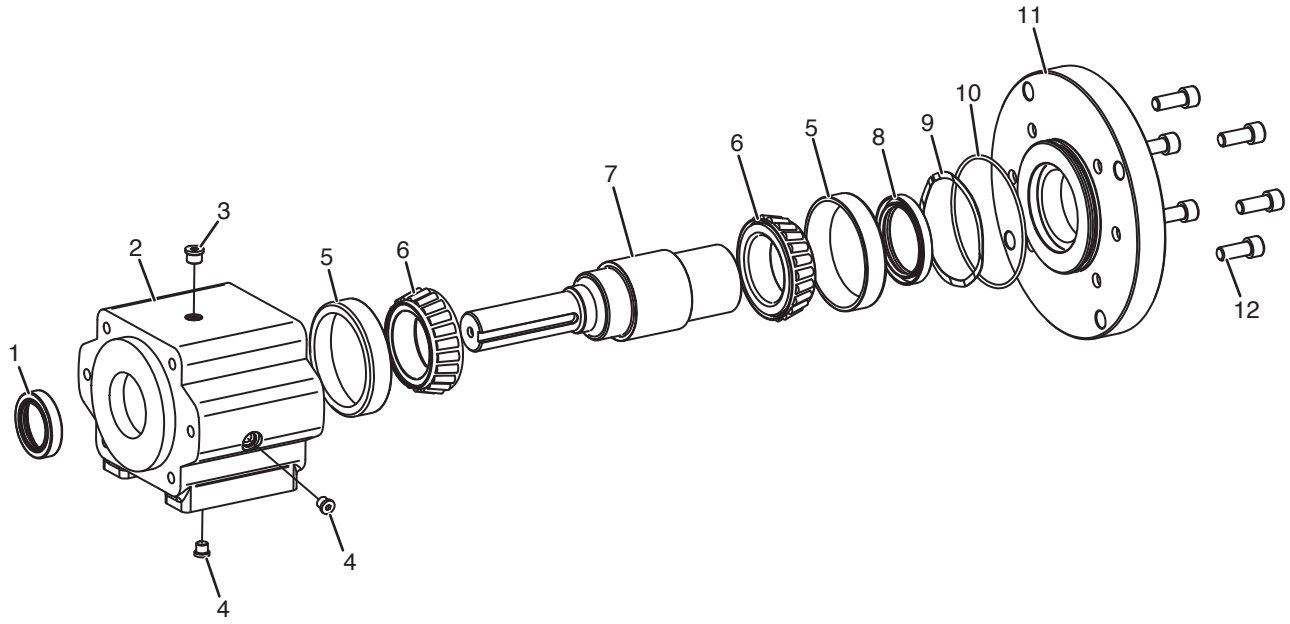


*** For parts breakdown of item 11, Motor (202887), see page 39.**
**** For parts breakdown of item 14, Overhung Load Adapter (N51193), see page 38.**
† For parts breakdown of item 26, Manifold (207575), see page 39.

Motor Assembly, Linde 135cc (206347)

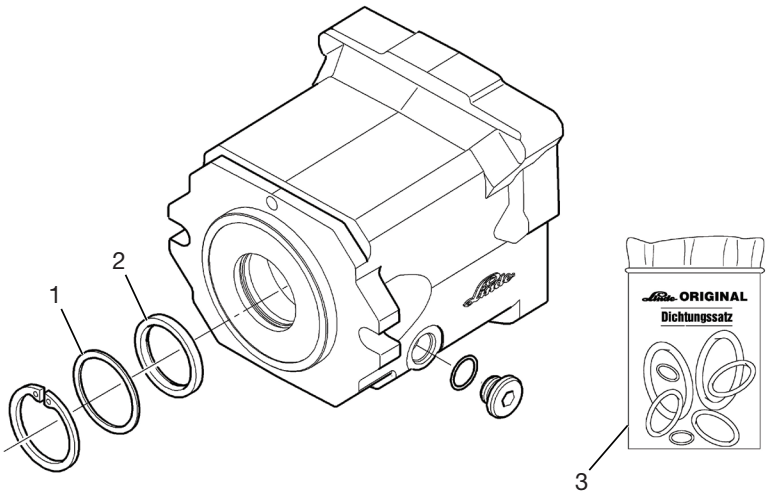
#	QTY.	PART #	DESCRIPTION
1	1	N24775	ADAPTER, BULKHEAD - 6MJIC-6MJIC
2	1	N17022	ADAPTER, 6MJIC - 8MOR
3	1	200851	HOSE, 3/8 X 16 -6FJIC-6FJIC
4	1	N25883	ELBOW, 45 DEG - 12MJC - 12MOR
5	1	N157054	VALVE, RELIEF 100PSI
6	1	N34024	ADAPTER, 8MORB -12FOR
7	1	N25882	ADAPTER, 12MOR - 12FJIC
8	1	200473	ELBOW, 90 -12MJIC - 27X2.0
9	1	N19306	TEE, 12MJIC-12FJIC-12MJIC SWVL
10	1	206344	HOSE, 3/4 X 15.75-12FJIC-12FJIC45
11	1	202887	MOTOR, 135CC HMA LINDE
12	2	4475	BOLT, 3/4" X 2-1/4" GRADE 5
13	6	N28567	WASHER, 3/4 NORDLOCK SP
14	1	N51193	OHLA, 900 W C TO D ADAPTER
15	1	202935	MOUNT, 40 SERIES MOTOR
16	4	4343	BOLT, 3/4" X 2-1/4" FN TH GR 8
17	4	4466	BOLT, 1/2IN X 1-1/2IN GR 8
18	4	N16472	WASHER, 1/2 NORDLOCK
19	2	202992	ADAPTER, 16ORFS - 16 CODE 62
20	2	207691	KIT, SPLIT FLNG-16 CD62 MET
21	2	N34060	ELBOW, 90DEG 16MORFS - 16FORFS
22	1	206366	HOSE, 1X57.25-16FORFS90M-20 CODE 62
23	4	N21312	KIT, SPLIT FLANGE SFXK-20
24	1	206364	HOSE, 1X53.5-16FORFS-20FORFSM
25	1	N24331	ELBOW, 45DEG 20MORFS-20 CODE 62
26	1	207575	MANIFOLD, CHECK 132GPM 6000PSI
27	4	N16470	WASHER, 3/8 NORDLOCK
28	4	206388	BOLT, SHCS 3/8 X 3/4 UNC GR 5
29	1	N23460	PLUG, 12MOR
30	2	207458	PLUG, -20 CODE 62

Overhung Load Adapter (N51193)



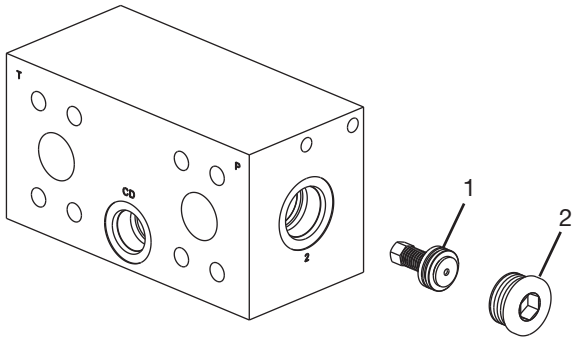
#	QTY.	PART #	DESCRIPTION
1	1	N28447	FRONT SEAL
2	1	N/A	HOUSING 900
3	1	N14118	PLUG #6 BOSS
4	2	N16578	PLUG #4 BOSS
5	2	N34130	BEARING CUP
6	2	N34131	BEARING CONE
7	1	N/A	SHAFT 915-13S
8	1	N38542	REAR SEAL
9	1	N38541	WAVE SPRING SSB-0433
10	1	N38543	O-RING 2-248
11	1	N/A	REAR ADAPTER PLATE
12	6	N28529	SCREW SHCS 0.500-13 X 1.25 LG

Motor, 135cc Adjustable, Linde (202887)



#	QTY.	PART #	DESCRIPTION
*	1	206841	KIT, SEAL LINDE MOTOR 135HMA (Includes items 1, 2 and 3)
1	1	–	SHIM 56X72X1
2	1	206842	SEAL, SHAFT LINDE 135HMA & HMR
3	1	–	O-RINGS

Manifold, Check 132GPM 6000PSI (207575)



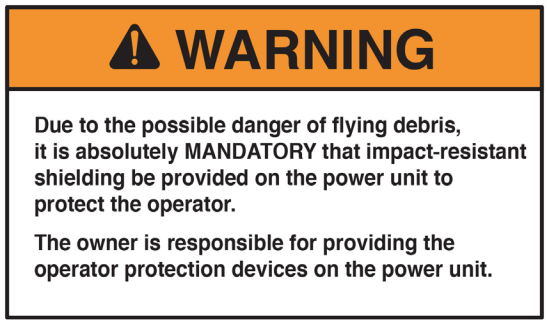
#	QTY.	PART #	DESCRIPTION
1	1	207577	CHECK, 132GPM
2	1	N28284	PLUG, 16MOR HOLLOW HEX

Machine Decals and Signs

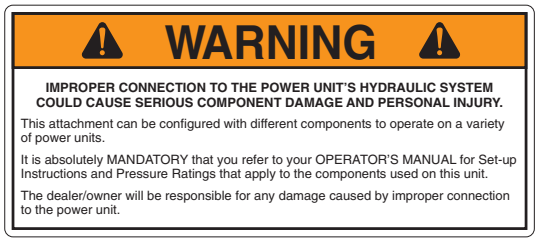
NOTE: *All safety related decals are also shown in the Safety Instructions Section along with their location on the machine. See "Safety Decal Locations" on page 8.*

Check and replace any worn, torn, hard to read or missing decals on your machine.

Part No. N17013



Part No. N28385



Part No. 4334

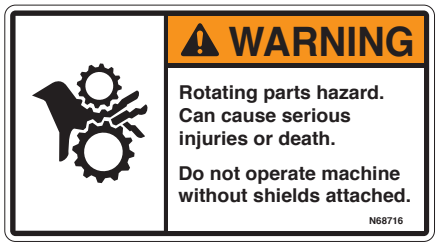
Part No. N23506

Part No. N28386

Part No. 200491

Part No. 4256

Part No. N68716



Machine Decals and Signs (Cont'd)

Part No. 203264

WARNING:
This product can expose you to Mineral Oil, which is known to the State of California to cause cancer. For more information, go to www.p65warnings.ca.gov.
203264

Part No. 214427

CASE DRAIN
214427

Part No. 214428

VENT REQUIRED DO NOT CAP
214428

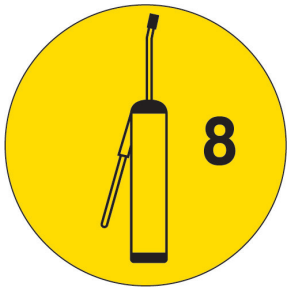
Part No. 214429

PRESSURE
214429

Part No. 214430

TANK
214430

Part No. N28010



Part No. N13721

Part No. N49280 - (Large)

LOFTNESS
battle AX Excavator

Part No. N28576 - (Large)

LOFTNESS
VMLOGIX
VEGETATION MANAGEMENT EQUIPMENT

Part No. N13517

Part No. 4138

Part No. N33105

Part No. 209449

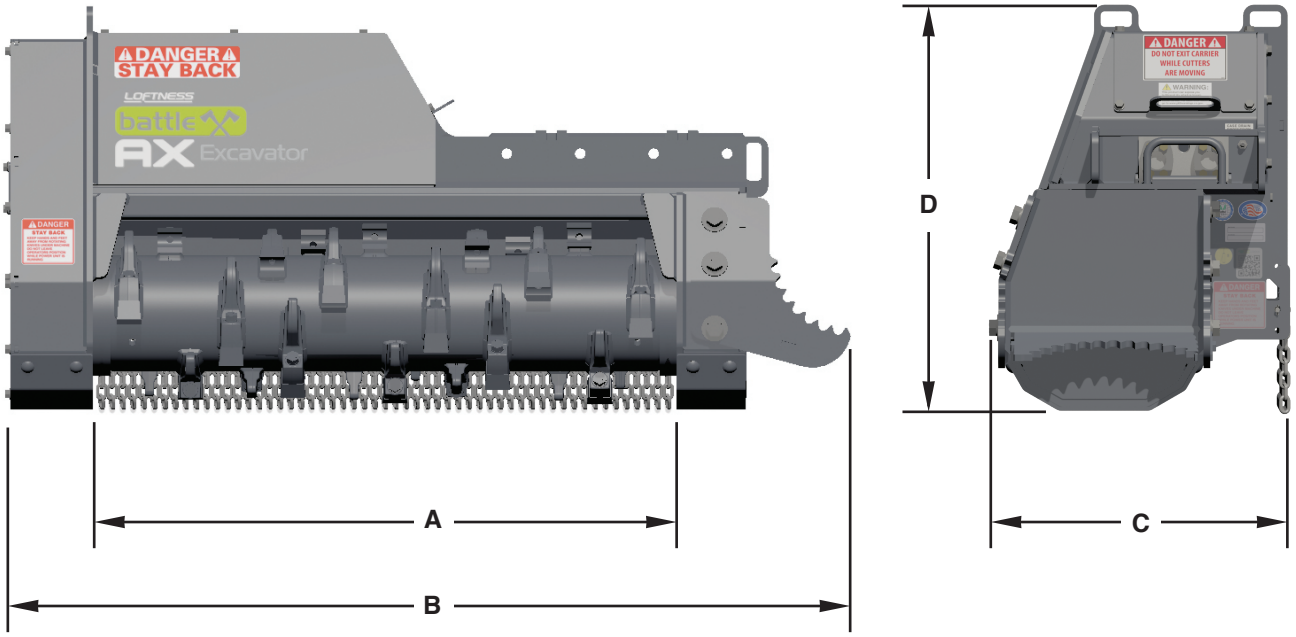

LOFTNESS

Specifications

DESCRIPTION	BATTLE AX
Cutting Width	51 in. (129.5 cm)
Motor	Adjustable Displacement Piston Motor 135cc
Rotor Bearing	2.5 in. Piloted Double Taper
Rotor Tip Diameter	17 in. (43.1 cm)
Sprockets	Taperlock
Belt	68 mm Synchronous Belt
Mount	Excavator Make/Model Specific
Shear Bar	Standard
Cutters	Double Carbide, Planer or Planer Hard Surfaced Teeth
Deflector	Steel Chain
Anti-Wrap Protection	Bearing

Appendix

Dimensions



DESCRIPTION	BATTLE AX
Cutting Path (A)	51 in. (129.5 cm)
Overall Length (B)	80.6 in. (204.7 cm)
Overall Width (C)	28.1 in. (71.4 cm)
Overall Height (D)	38.5 in. (97.8 cm)
Number Of Teeth	26
Weight (without mount)	2,890 lbs. (1,310.9 kg)
Crated Weight	3,040 lbs. (1,378.9 kg)

Torque Specifications

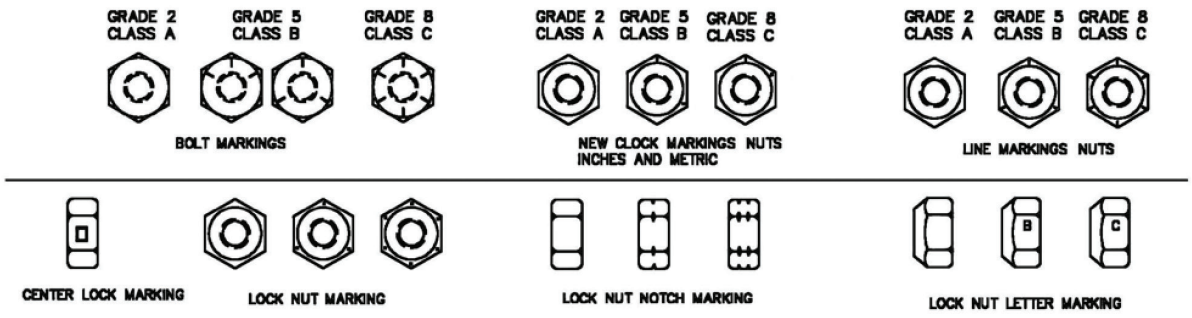
Inches Hardware and Lock Nuts

TORQUE CHARTS

Minimum Hardware Tightening Torques

Normal Assembly Applications
(Standard Hardware and Lock Nuts)

SAE Gr. 2	SAE Grade 5		SAE Grade 8		LOCK NUTS			
Nominal Size	Unplated or Plated Silver	Plated W / ZnCr Gold	Unplated or Plated Silver	Plated W / ZnCr Gold	Unplated or Plated Silver	Plated W / ZnCr Gold	Grade W / Gr. 5 Bolt	Grade W / Gr. 8 Bolt
1/4	55 in.-lb. (6.2 N•m)	72 in.-lb. (8.1 N•m)	86 in.-lb. (9.7 N•m)	112 in.-lb. (12.6 N•m)	121 in.-lb. (13.6 N•m)	157 in.-lb. (17.7 N•m)	61 in.-lb. (6.9 N•m)	86 in.-lb. (9.8 N•m)
5/16	115 in.-lb. (13 N•m)	149 in.-lb. (17 N•m)	178 in.-lb. (20 N•m)	229 in.-lb. (26 N•m)	250 in.-lb. (28 N•m)	324 in.-lb. (37 N•m)	125 in.-lb. (14 N•m)	176 in.-lb. (20 N•m)
3/8	17 ft.-lb. (23 N•m)	22 ft.-lb. (30 N•m)	26 ft.-lb. (35 N•m)	34 ft.-lb. (46 N•m)	37 ft.-lb. (50 N•m)	48 ft.-lb. (65 N•m)	19 ft.-lb. (26 N•m)	26 ft.-lb. (35 N•m)
7/16	27 ft.-lb. (37 N•m)	35 ft.-lb. (47 N•m)	42 ft.-lb. (57 N•m)	54 ft.-lb. (73 N•m)	59 ft.-lb. (80 N•m)	77 ft.-lb. (104 N•m)	30 ft.-lb. (41 N•m)	42 ft.-lb. (57 N•m)
1/2	42 ft.-lb. (57 N•m)	54 ft.-lb. (73 N•m)	64 ft.-lb. (87 N•m)	83 ft.-lb. (113 N•m)	91 ft.-lb. (123 N•m)	117 ft.-lb. (159 N•m)	45 ft.-lb. (61 N•m)	64 ft.-lb. (88 N•m)
9/16	60 ft.-lb. (81 N•m)	77 ft.-lb. (104 N•m)	92 ft.-lb. (125 N•m)	120 ft.-lb. (163 N•m)	130 ft.-lb. (176) N•m	169 ft.-lb. (229 N•m)	65 ft.-lb. (88 N•m)	92 ft.-lb. (125 N•m)
5/8	83 ft.-lb. (112 N•m)	107 ft.-lb. (145 N•m)	128 ft.-lb. (174 N•m)	165 ft.-lb. (224 N•m)	180 ft.-lb. (244) N•m	233 ft.-lb. (316 N•m)	90 ft.-lb. (122 N•m)	127 ft.-lb. (172 N•m)
3/4	146 ft.-lb. (198 N•m)	189 ft.-lb. (256 N•m)	226 ft.-lb. (306 N•m)	293 ft.-lb. (397 N•m)	319 ft.-lb. (432 N•m)	413 ft.-lb. (560 N•m)	160 ft.-lb. (217 N•m)	226 ft.-lb. (306 N•m)
7/8	142 ft.-lb. (193 N•m)	183 ft.-lb. (248 N•m)	365 ft.-lb. (495 N•m)	473 ft.-lb. (641 N•m)	515 ft.-lb. (698 N•m)	667 ft.-lb. (904 N•m)	258 ft.-lb. (350 N•m)	364 ft.-lb. (494 N•m)
1	213 ft.-lb. (289 N•m)	275 ft.-lb. (373 N•m)	547 ft.-lb. (742 N•m)	708 ft.-lb. (960 N•m)	773 ft.-lb. (1048 N•m)	1000 ft.-lb. (1356 N•m)	386 ft.-lb. (523 N•m)	545 ft.-lb. (739 N•m)



Torque Specifications (Cont'd)

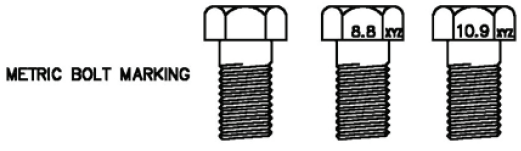
Metric Hardware and Lock Nuts

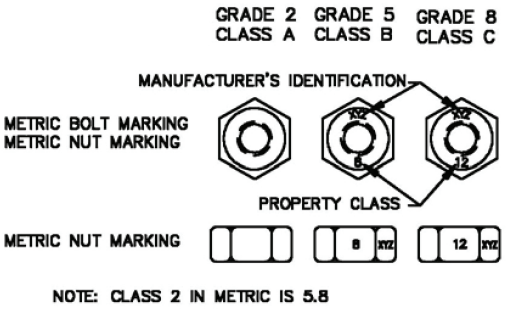
TORQUE CHARTS

Minimum Hardware Tightening Torques

Normal Assembly Applications
(Metric Hardware and Lock Nuts)

	Class 5,8		Class 8,8		Class 10,9		Lock nuts
Nominal Size	**Unplated or Plated Silver**	**Plated W / ZnCr Gold**	**Unplated or Plated Silver**	**Plated W / ZnCr Gold**	**Unplated or Plated Silver**	**Plated W / ZnCr Gold**	**Class 8 W / CL. 8,8 Bolt**
M4	1.7 N•m (15 in.-lb.)	2.2 N•m (19 in.-lb.)	2.6 N•m (23 in.-lb.)	3.4 N•m (30 in.-lb.)	3.7 N•m (33 in.-lb.)	4.8 N•m (42 in.-lb.)	1.8 N•m (16 in.-lb.)
M6	5.8 N•m (51 in.-lb.)	7.6 N•m (67 in.-lb.)	8.9 N•m (79 in.-lb.)	12 N•m (102 in.-lb.)	13 N•m (115 in.-lb.)	17 N•m (150 in.-lb.)	6.3 N•m (56 in.-lb.)
M8	14 N•m (124 in.-lb.)	18 N•m (159 in.-lb.)	22 N•m (195 in.-lb.)	28 N•m (248 in.-lb.)	31 N•m (274 in.-lb.)	40 N•m (354 in.-lb.)	15 N•m (133 in.-lb.)
M10	28 N•m (21 ft.-lb.)	36 N•m (27 ft.-lb.)	43 N•m (32 ft.-lb.)	56 N•m (41 ft.-lb.)	61 N•m (45 ft.-lb.)	79 N•m (58 ft.-lb.)	30 N•m (22 ft.-lb.)
M12	49 N•m (36 ft.-lb.)	63 N•m (46 ft.-lb.)	75 N•m (55 ft.-lb.)	97 N•m (72 ft.-lb.)	107 N•m (79 ft.-lb.)	138 N•m (102 ft.-lb.)	53 N•m (39 ft.-lb.)
M16	121 N•m (89 ft.-lb.)	158 N•m (117 ft.-lb.)	186 N•m (137 ft.-lb.)	240 N•m (177 ft.-lb.)	266 N•m (196 ft.-lb.)	344 N•m (254 ft.-lb.)	131N•m (97 ft.-lb.)
M20	237 N•m (175 ft.-lb.)	307 N•m (226 ft.-lb.)	375 N•m (277 ft.-lb.)	485 N•m (358 ft.-lb.)	519 N•m (383 ft.-lb.)	671 N•m (495 ft.-lb.)	265 N•m (195 ft.-lb.)
M24	411 N•m (303 ft.-lb.)	531 N•m (392 ft.-lb.)	648 N•m (478 ft.-lb.)	839 N•m (619 ft.-lb.)	897 N•m (662 ft.-lb.)	1160 N•m (855 ft.-lb.)	458 N•m (338 ft.-lb.)





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