



OPERATOR'S MANUAL

STUMP GRINDER SG15



SERIAL NUMBER: _____

MODEL NUMBER: _____

Manual Number: OM683
Part Number: 75583
Rev. 5

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PREFACE

GENERAL COMMENTS

Congratulations on the purchase of your new BRADCO product! This product was carefully designed and manufactured to give you many years of dependable service. Only minor maintenance (such as cleaning and lubricating) is required to keep it in top working condition. Be sure to observe all maintenance procedures and safety precautions in this manual and on any safety decals located on the product and on any equipment on which the attachment is mounted.

This manual has been designed to help you do a better, safer job. Read this manual carefully and become familiar with its contents.

WARNING! Never let anyone operate this unit without reading the "Safety Precautions" and "Operating Instructions" sections of this manual.



Always choose hard, level ground to park the vehicle on and set the brake so the unit cannot roll.

Unless noted otherwise, right and left sides are determined from the operator's control position when facing the attachment.

NOTE: The illustrations and data used in this manual were current (according to the information available to us) at the time of printing, however, we reserve the right to redesign and change the attachment as may be necessary without notification.

BEFORE OPERATION

The primary responsibility for safety with this equipment falls to the operator. Make sure the equipment is operated only by trained individuals that have read and understand this manual. If there is any portion of this manual or function you do not understand, contact your local authorized dealer or the manufacturer to obtain further assistance. Keep this manual available for reference. Provide the manual to any new owners and/or operators.

SAFETY ALERT SYMBOL



This is the "Safety Alert Symbol" used by this industry. This symbol is used to warn of possible injury. Be sure to read all warnings carefully. They are included for your safety and for the safety of others working with you.

SERVICE

Use only manufacturer replacement parts. Substitute parts may not meet the required standards.

Record the model and serial number of your unit on the cover of this manual. The parts department needs this information to insure that you receive the correct parts.

SOUND AND VIBRATION

Sound pressure levels and vibration data for this attachment are influenced by many different parameters: some items are listed below (not inclusive):

- prime mover type, age, condition, with or without cab enclosure and configuration
- operator training, behavior, stress level
- job site organization, working material condition, environment

Based on the uncertainty of the prime mover, operator, and job site, it is not possible to get precise machine and operator sound pressure levels or vibration levels for this attachment.

NOTE: A list of all Paladin Patents can be found at <http://www.paladinattachments.com/patents.asp>.

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SAFETY STATEMENTS



THIS SYMBOL BY ITSELF OR WITH A WARNING WORD THROUGHOUT THIS MANUAL IS USED TO CALL YOUR ATTENTION TO INSTRUCTIONS INVOLVING YOUR PERSONAL SAFETY OR THE SAFETY OF OTHERS. FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN INJURY OR DEATH.



DANGER

THIS SIGNAL WORD INDICATES A HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, WILL RESULT IN DEATH OR SERIOUS INJURY.



WARNING

THIS SIGNAL WORD INDICATES A HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, COULD RESULT IN DEATH OR SERIOUS INJURY.



CAUTION

THIS SIGNAL WORD INDICATES A HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, COULD RESULT IN MINOR OR MODERATE INJURY.

NOTICE

NOTICE IS USED TO ADDRESS PRACTICES NOT RELATED TO PHYSICAL INJURY.

GENERAL SAFETY PRECAUTIONS

WARNING!



READ MANUAL PRIOR TO INSTALLATION

Improper installation, operation, or maintenance of this equipment could result in serious injury or death. Operators and maintenance personnel should read this manual, as well as all manuals related to this equipment and the prime mover thoroughly before beginning installation, operation, or maintenance. **FOLLOW ALL SAFETY INSTRUCTIONS IN THIS MANUAL AND THE PRIME MOVER'S MANUAL(S).**



READ AND UNDERSTAND ALL SAFETY STATEMENTS

Read all safety decals and safety statements in all manuals prior to operating or working on this equipment. Know and obey all OSHA regulations, local laws, and other professional guidelines for your operation. Know and follow good work practices when assembling, maintaining, repairing, mounting, removing, or operating this equipment.



KNOW YOUR EQUIPMENT

Know your equipment's capabilities, dimensions, and operations before operating. Visually inspect your equipment before you start, and never operate equipment that is not in proper working order with all safety devices intact. Check all hardware to ensure it is tight. Make certain that all locking pins, latches, and connection devices are properly installed and secured. Remove and replace any damaged, fatigued, or excessively worn parts. Make certain all safety decals are in place and are legible. Keep decals clean, and replace them if they become worn or hard to read.

GENERAL SAFETY PRECAUTIONS

WARNING!



PROTECT AGAINST FLYING DEBRIS

Always wear proper safety glasses, goggles, or a face shield when driving pins in or out, or when any operation causes dust, flying debris, or any other hazardous material.

WARNING!



LOWER OR SUPPORT RAISED EQUIPMENT

Do not work under raised booms without supporting them. Do not use support material made of concrete blocks, logs, buckets, barrels, or any other material that could suddenly collapse or shift positions. Make sure support material is solid, not decayed, warped, twisted, or tapered. Lower booms to ground level or on blocks. Lower booms and attachments to the ground before leaving the cab or operator's station.

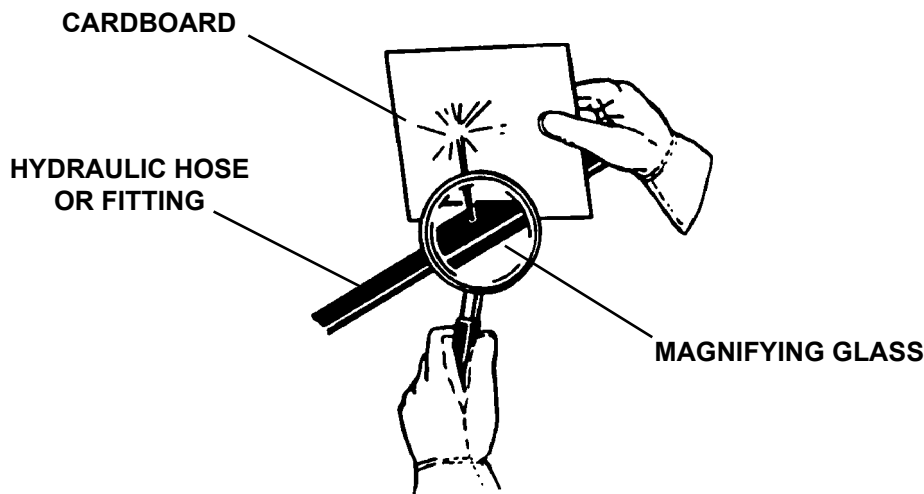
WARNING!



USE CARE WITH HYDRAULIC FLUID PRESSURE

Hydraulic fluid under pressure can penetrate the skin and cause serious injury or death. Hydraulic leaks under pressure may not be visible. Before connecting or disconnecting hydraulic hoses, read your prime mover's operator's manual for detailed instructions on connecting and disconnecting hydraulic hoses or fittings.

- Keep unprotected body parts, such as face, eyes, and arms as far away as possible from a suspected leak. Flesh injected with hydraulic fluid may develop gangrene or other permanent disabilities.
- If injured by injected fluid, see a doctor at once. If your doctor is not familiar with this type of injury, ask him to research it immediately to determine proper treatment.
- Wear safety glasses, protective clothing, and use a piece of cardboard or wood when searching for hydraulic leaks. **DO NOT USE YOUR HANDS!** **SEE ILLUSTRATION.**



GENERAL SAFETY PRECAUTIONS

WARNING!



DO NOT MODIFY MACHINE OR ATTACHMENTS

Modifications may weaken the integrity of the attachment and may impair the function, safety, life, and performance of the attachment. When making repairs, use only the manufacturer's genuine parts, following authorized instructions. Other parts may be substandard in fit and quality. Never modify any ROPS (Roll Over Protective Structure) or FOPS (Falling Object Protective Structure) equipment or device. Any modifications must be authorized in writing by the manufacturer.

WARNING!



SAFELY MAINTAIN AND REPAIR EQUIPMENT

- Do not wear loose clothing or any accessories that can catch in moving parts. If you have long hair, cover or secure it so that it does not become entangled in the equipment.
- Work on a level surface in a well-lit area.
- Use properly grounded electrical outlets and tools.
- Use the correct tools for the job at hand. Make sure they are in good condition for the task required.
- Wear the protective equipment specified by the tool manufacturer.



SAFELY OPERATE EQUIPMENT

Do not operate equipment until you are completely trained by a qualified operator in how to use the controls, know its capabilities, dimensions, and all safety requirements. See your machine's manual for these instructions.

- Keep all step plates, grab bars, pedals, and controls free of dirt, grease, debris, and oil.
- Never allow anyone to be around the equipment when it is operating.
- Do not allow riders on the attachment or the prime mover.
- Do not operate the equipment from anywhere other than the correct operator's position.
- Never leave equipment unattended with the engine running, or with this attachment in a raised position.
- Do not alter or remove any safety feature from the prime mover or this attachment.
- Know your work site safety rules as well as traffic rules and flow. When in doubt on any safety issue, contact your supervisor or safety coordinator for an explanation.

WARNING!



CALIFORNIA PROPOSITION 65 WARNING

This product may contain a chemical known to the state of California to cause cancer, or birth defects or other reproductive harm. www.P65Warnings.ca.gov

EQUIPMENT SAFETY PRECAUTIONS

WARNING!



KNOW WHERE UTILITIES ARE

Observe overhead electrical and other utility lines. Be sure equipment will clear them. When digging, call your local utilities for location of buried utility lines, gas, water, and sewer, as well as any other hazard you may encounter.

WARNING!



EXPOSURE TO RESPIRABLE CRYSTALLINE SILICA DUST ALONG WITH OTHER HAZARDOUS DUSTS MAY CAUSE SERIOUS OR FATAL RESPIRATORY DISEASE.

It is recommended to use dust suppression, dust collection and if necessary personal protective equipment during the operation of any attachment that may cause high levels of dust.

WARNING!



REMOVE PAINT BEFORE WELDING OR HEATING

Hazardous fumes/dust can be generated when paint is heated by welding, soldering or using a torch. Do all work outside or in a well ventilated area and dispose of paint and solvent properly. Remove paint before welding or heating.

When sanding or grinding paint, avoid breathing the dust. Wear an approved respirator. If you use solvent or paint stripper, remove stripper with soap and water before welding. Remove solvent or paint stripper containers and other flammable material from area. Allow fumes to disperse at least 15 minutes before welding or heating.

WARNING!



END OF LIFE DISPOSAL

At the completion of the useful life of the unit, drain all fluids and dismantle by separating the different materials (rubber, steel, plastic, etc.). Follow all federal, state and local regulations for recycling and disposal of the fluid and components.



OPERATING THE STUMP GRINDER

- Do not operate a standard flow stump grinder on high flow hydraulic systems. Severe injury could occur due to increased RPM.
- Do not exceed the lifting capacity of your prime mover.
- Operate only from the operator's station.
- Never operate near bystanders, traffic, pets, livestock or buildings. Be sure others know when and where you will be working. Never direct discharge towards people, animals or property. Never allow anyone to approach this attachment when in operation.
- Inspect jobsite and remove loose chunks of wood, stones, wire and/or other debris from around the stump(s).
- Do not raise the attachment when the grinding wheel is rotating.
- Keep hands, feet, hair and clothing away from equipment with engine running. Stay clear of all moving parts.
- Do not operate without covers or rubber guards installed.
- Always carry attachment as close to the ground as possible.
- Make sure grinding wheel is completely stopped and engine shut off before making any adjustments on the attachment.
- Before exiting the prime mover, lower the attachment to the ground, turn off the prime mover's engine, remove the key and apply the brakes.

EQUIPMENT SAFETY PRECAUTIONS



OPERATING THE STUMP GRINDER (continued)

- When operating on slopes, drive up and down, not across. Avoid steep hillside operation, which could cause the prime mover to overturn.
- Reduce speed when driving over rough terrain, on a slope, or turning, to avoid overturning the vehicle.
- An operator must not use drugs or alcohol, which can change his or her alertness or coordination. An operator taking prescription or over-the-counter drugs should seek medical advice on whether or not he or she can safely operate equipment.
- Adjust grinder angle using the handle only. Do not grab the wheel guard when adjusting the angle.
- Do not use this attachment for felling trees or to remove limbs from standing trees.
- Follow all prime mover guarding recommendations for operating an attachment that creates flying objects.
- This attachment should not be used as a parking brake to immobilize your prime mover. Follow the instructions in your prime mover operator's manual before leaving the operator's station.



TRANSPORTING THE STUMP GRINDER

- Travel only with the attachment in a safe transport position to prevent uncontrolled movement. Drive slowly over rough ground and on slopes.
- When driving on public roads use safety lights, reflectors, Slow Moving Vehicle signs etc., to prevent accidents. Check local government regulations that may affect you.
- Do not drive close to ditches, excavations, etc., cave in could result.
- Do not smoke when refueling the prime mover. Allow room in the fuel tank for expansion. Wipe up any spilled fuel. Secure cap tightly when done.
- Use extra care when loading or unloading the machine onto a truck or trailer. Disconnect hydraulic couplers during transportation.



MAINTAINING THE STUMP GRINDER

- Before performing maintenance, lower the attachment to the ground, turn off the engine, remove the key and apply the brakes.
- Never perform any work on the attachment unless you are authorized and qualified to do so. Always read the operator service manuals before any repair is made. After completing maintenance or repair, check for correct functioning of the attachment. If not functioning properly, always tag "DO NOT OPERATE" until all problems are corrected.
- Worn, damaged, or illegible safety decals must be replaced. New safety decals can be ordered from your nearest dealer.
- Never make hydraulic repairs while the system is under pressure. Serious personal injury or death could result.
- Never work under a raised attachment.

PREOPERATION

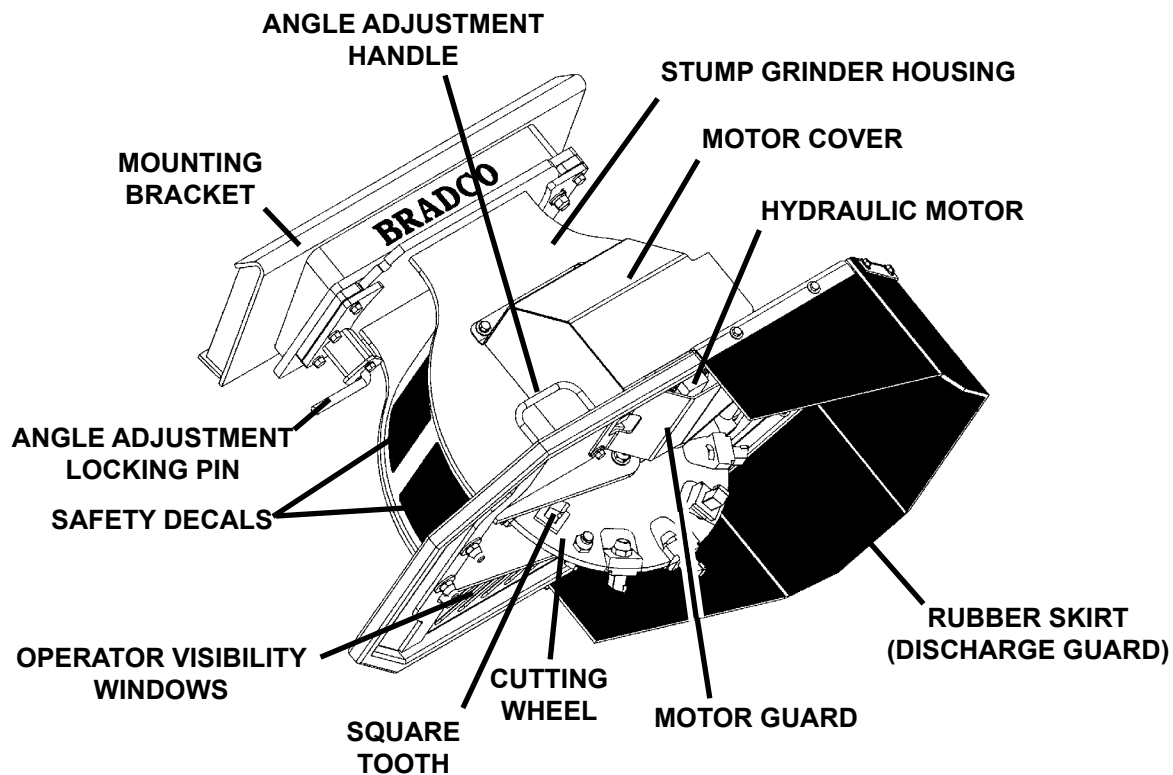
STUMP GRINDER

GENERAL INFORMATION

The BRADCO Stump Grinders were designed to be easy to use and maintain. They are operated by the skid steer auxiliary hydraulics and mount to the toolbar / quick attach mechanism for easy operator hook-up.

NOMENCLATURE

The purpose of this diagram is to acquaint you with the various names of the stump grinder components. This knowledge will be helpful when reading through this manual or when ordering service parts.

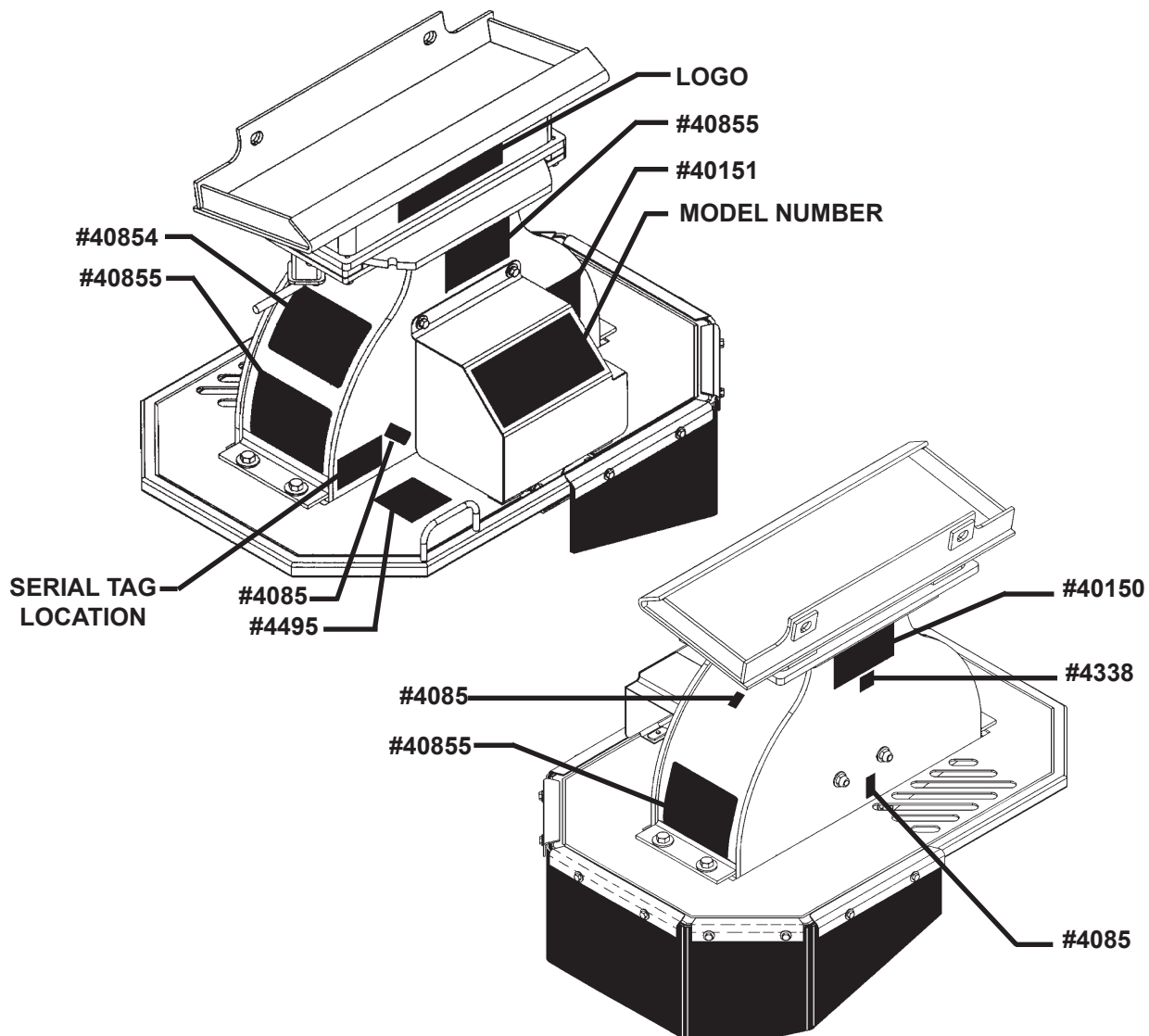


DECALS

DECAL PLACEMENT

GENERAL INFORMATION

The diagram on this page shows the location of the decals used on your attachment. The decals are identified by their part numbers, with reductions of the actual decals located on the following pages. Use this information to order replacements for lost or damaged decals. Be sure to read all decals before operating the stump grinder. They contain information you need to know for both safety and attachment longevity.



IMPORTANT: Keep all safety decals clean and legible. Replace all missing, illegible or damaged safety decals. When replacing parts with safety decals attached, the safety decals must also be replaced.

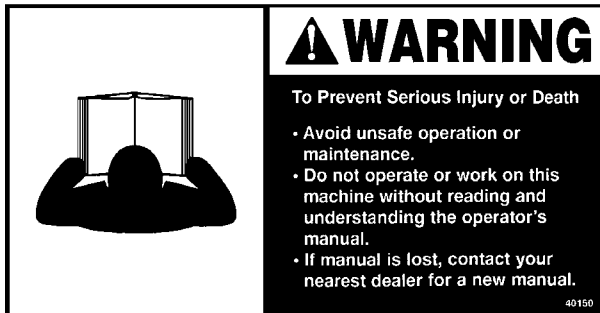
REPLACING SAFETY DECALS: Clean the area of application with a nonflammable solvent, then wash the same area with soap and water. Allow the surface to dry. Remove the backing from the safety decal, exposing the adhesive surface. Apply the safety decal to the position shown in the diagram above and smooth out any bubbles.

DECALS

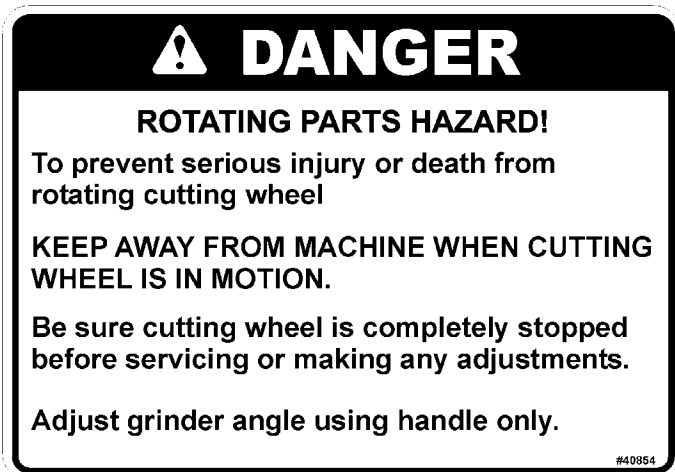
DECALS



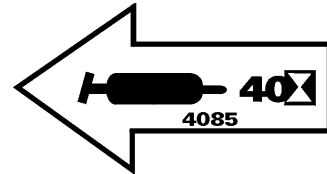
DANGER! FLYING DEBRIS
PART #40855



WARNING! READ OPERATOR'S MANUAL
PART #40150



DANGER! ROTATING PARTS
PART #40854



GREASE 40 HOURS
PART #4085



MADE IN U.S.A.
PART #4338



WARNING! HIGH PRESSURE FLUID
PART #40151



WARNING! GUARD REMOVED
PART #4495

NOTE: CONTACT YOUR LOCAL DEALER FOR MODEL NUMBER AND LOGO DECALS.

INSTALLATION INSTRUCTIONS

GENERAL INFORMATION

The following instructions will help you to mount your stump grinder onto your skid steer loader. The stump grinder uses the quick-attach system for ease of installation. Therefore, if you know how to attach your bucket, attaching the stump grinder should prove no problem.

Remember to read all safety warning, decals and operation instructions before operating the attachment. If there is any portion of this manual that you do not understand, contact your dealer.

IMPORTANT! OPERATING THE STUMP GRINDER WITH THE INCORRECT MOTOR FOR YOUR SKID STEER WILL GREATLY REDUCE THE EFFICIENCY OF THE UNIT. MATCH THE HYDRAULIC FLOW (GPM) OF THE SKID STEER WITH THE HYDRAULIC FLOW (GPM) OF THE MOTOR IN THE STUMP GRINDER DRIVE ASSEMBLY.

INSTALLATION INSTRUCTIONS

1. Remove any shipping banding from around the stump grinder and skid.
2. Remove any attachment from the front of the loader.
3. Following all standard safety practices and the instructions for installing an attachment in your skid steer operator's manual, install the stump grinder onto your skid steer.

NOTE: IT IS IMPORTANT TO MAKE SURE THE LOCKING MECHANISM ON YOUR QUICK ATTACH IS ENGAGED, THEREFORE LOCKING THE ATTACHMENT ONTO THE SKID STEER.

4. Lower the unit to the ground and remove the key.
5. Relieve any pressure from the auxiliary hydraulic system and after making sure that there is not any foreign matter on the hydraulic couplers, connect the couplers to the auxiliary hydraulic system of your skid steer loader.

DISCONNECT INSTRUCTIONS

1. With the stump grinder extended out, lower the unit onto its side. NOTE: Since the teeth will be exposed to bystanders, it is recommended to place the unit towards the wall or in such a location to avoid inadvertent contact with the cutting wheel.
2. Following Safety Shut Down Procedures; stop the engine and set the parking brake, and relieve any pressure in the hydraulic lines.
3. Disconnect the power and return hoses from the auxiliary hydraulics.
4. Following all standard safety practices and the instructions for disconnecting an attachment in your skid steer operator's manual, disconnect the stump grinder from your skid steer.
5. Connect the hydraulic couplers on the attachment together to prevent contaminants from entering the hydraulic system and store hoses off the ground.

OPERATION

STUMP GRINDER

INTENDED USE: This unit is designed for grinding stumps up to 12" (30.5 cm) high. Use in any other way is considered contrary to the intended use. Do not use this attachment for felling trees or to remove limbs from standing trees.

WARNING! To prevent serious injury or death, this attachment should not be used as a parking brake to immobilize your prime mover. Follow the instructions in your prime mover operator's manual before leaving the operator's station.



STUMP GRINDING OPERATION

WARNING! CHECK THE WORK AREA AND KNOW WHERE ALL UTILITY LINES ARE BEFORE OPERATING THE STUMP GRINDER.



REMOVE ALL LOOSE CHUNKS OF WOOD, STONES, WIRE AND/OR OTHER DEBRIS FROM AROUND THE STUMP(S).

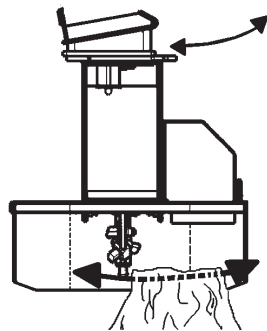
1. Set the speed selector on the skid steer to slow, if so equipped. Start the engine and position the grinder on the nearest side of the stump and to the left.
2. Lower the unit so you are grinding at a depth of 1/4" to 2".

NOTE: The cutting depth of each pass will be determined by the type of tree. Certain varieties of trees will allow for a deeper cut than trees containing a lot of sap.

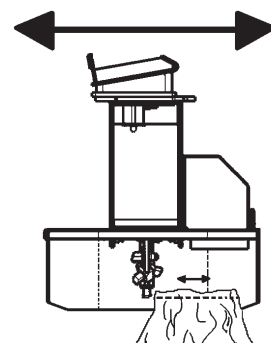
NOTE: It is recommended that the cutting wheel be perpendicular to the stump or as close to perpendicular as possible for the best performance of the unit.

3. Activate the auxiliary hydraulics to the stump grinder and increase the engine to full RPM. **NOTE: It is recommended to always use full throttle (maximum engine speed) when cutting with the stump grinder.**
4. There are two methods of grinding, depending on the stump size and operator preference. The skid steer can be driven back and forth across the stump, or the operator can swing the grinder using the skid steer controls. See Figure #1. **NOTE: If you take too deep of a cut, the grinder will stall. Raise slightly and try again.** Continue grinding until you have ground down a few inches.

FIGURE #1



GRINDING BY OPERATING THE Skid steer CONTROLS (BUCKET CYLINDER).



GRINDING BY DRIVING THE Skid steer BACK AND FORTH.

OPERATION

STUMP GRINDER

5. Raise the loader arms to the original height, and move the grinder to the right. Repeat steps #2 through #4 until you reach the right side of the stump.
6. Return the grinder to the left of the stump, lower and repeat steps #2 through #5 until you have ground the stump into the ground.
7. Stop the grinder by de-activating the auxiliary hydraulics.

NOTE: It is recommended that the grinder be angled when grinding roots, and that you grind along the length of the root by moving the skid steer over the root.

NOTE: Some operators prefer to operate the grinder at an angle for either spoil placement or to increase productivity in tight spaces.

STORAGE

1. Clean the unit thoroughly, removing all mud, dirt, grease and wood chips.
2. Replace any worn or chipped teeth. Replace any teeth that are missing the carbide tip.
3. Inspect the unit for visible signs of wear, breakage, or damage. Order any parts required, and make the necessary repairs to avoid delays when starting next season.
4. Tighten all loose nuts, capscrews and hydraulic connections.
5. Seal hydraulic system from contaminants (connect the hydraulic couplers together) and secure all hydraulic hoses off the ground to help prevent damage.
6. Replace decals if damaged or in unreadable condition.
7. Grease all grease fittings.
8. Store the unit in a dry and protected place. Leaving the unit outside will materially shorten its life.

NOTE: Purchase only approved parts from your authorized dealer.

Additional Precautions for Long Term Storage:

1. Touch up all unpainted and exposed areas with paint to prevent rust.

REMOVING FROM STORAGE

1. Remove all protective coverings.
2. Check hydraulic hoses for deterioration and replace if necessary.
3. Check all nuts and bolts for tightness, especially those securing the motor, gearbox and teeth.

TRANSPORTING

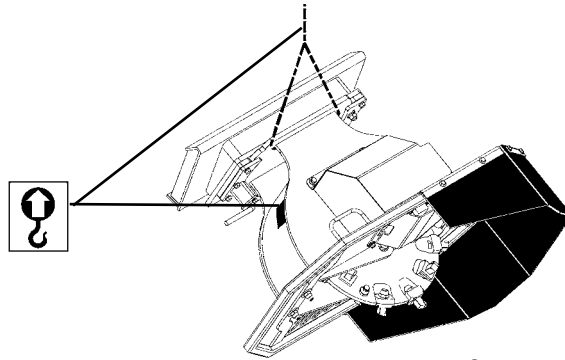
1. Follow all federal, state and local regulations when transporting on public roads.
2. Follow recommended tie down points and any equipment safety precautions in the front of this manual when transporting your attachment.
3. Use extra care when loading or unloading onto a trailer or truck.

OPERATION

STUMP GRINDER

LIFT POINTS

Lifting points are identified by a lifting decals where required. Lifting at other points is unsafe and can damage attachment. Do not attach lifting accessories around cylinders or in any way that may damage hoses or hydraulic components. See Diagram



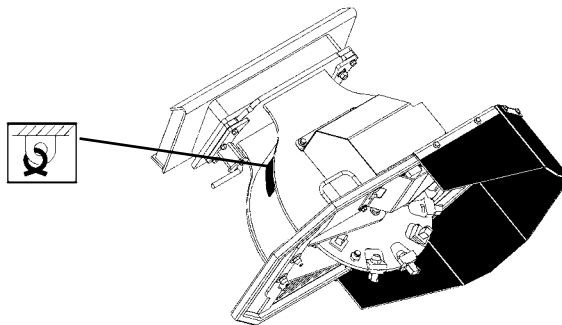
- Attach lifting accessories to unit at recommended lifting points.
- Bring lifting accessories together to a central lifting point.
- Lift gradually, maintaining the equilibrium of the unit.

WARNING! Use lifting accessories (chains, slings, ropes, shackles and etc.) that are capable of supporting the size and weight of your attachment. Secure all lifting accessories in such a way to prevent unintended disengagement. Failure to do so could result in the attachment falling and causing serious personal injury or death.



TIE DOWN POINTS

Tie down points are identified by tie down decals where required. Securing to trailer at other points is unsafe and can damage attachment. Do not attach tie down accessories around cylinders or in any way that may damage hoses or hydraulic components. See Diagram



- Attach tie down accessories to unit as recommended.
- Check unit stability before transporting.

WARNING! Verify that all tie down accessories (chains, slings, ropes, shackles and etc.) are capable of maintaining attachment stability during transporting and are attached in such a way to prevent unintended disengagement or shifting of the unit. Failure to do so could result in serious personal injury or death.



MAINTENANCE

GENERAL INFORMATION

Regular maintenance is the key to long equipment life and safe operation. Maintenance requirements have been reduced to an absolute minimum. However, it is very important that these maintenance functions be performed as described below.

WARNING! Avoid serious injury. Lower the stump grinder to the ground, set the parking brake, stop the engine and remove the key before leaving the operator's seat. If unit must be left raised for maintenance block the unit securely to prevent accidental release of the lifting mechanism. Disconnect the hydraulic couplers.



Procedure	Daily	Every 40 Hours
Check mounting hardware on teeth and torque to 150- 180 ft. lbs (203-244 N·m).	✓	
Check all other hardware and tighten if necessary. (See Bolt Torque Specifications)	✓	
Check hydraulic system for hydraulic oil leaks.	✓	
Check teeth for damage and replace as needed.	✓	
Check all Safety Guards and Devices are installed correctly.	✓	
Check for missing or illegible Safety / Warning Decals. Replace as necessary.	✓	
Lubricate all grease fittings. (One on each flange bearing and one on center pivot.)		✓

WARNING! Escaping fluid under pressure can have sufficient force to penetrate the skin causing serious personal injury. Fluid escaping from a very small hole can be almost invisible. Use a piece of cardboard or wood, rather than hands to search for suspected leaks.



Keep unprotected body parts, such as face, eyes, and arms as far away as possible from a suspected leak. Flesh injected with hydraulic fluid may develop gangrene or other permanent disabilities.

If injured by injected fluid, see a doctor at once. If your doctor is not familiar with this type of injury, ask him to research it immediately to determine proper treatment.

IMPORTANT: When replacing parts, use only factory approved replacement parts. Manufacturer will not claim responsibility for use of unapproved parts or accessories, and/or other damages as a result of their use.

MAINTENANCE

STUMP GRINDERS

WARNING! Avoid serious injury. Lower the stump grinder to the ground, set the parking brake, stop the skid steer engine and remove the key before leaving the operator's seat. If unit must be left raised for maintenance block the unit securely to prevent accidental release of the lifting mechanism. Disconnect the hydraulic couplers.



REPLACING TEETH

When replacing the teeth the unit must be placed on its side or blocked securely off the ground to allow the wheel to rotate.

The teeth should be inspected regularly (every 8 hours) for tightness and to ensure they are not worn or that the carbide tip is not missing or chipped. Tighten and replace as necessary.

Replacing Square Teeth:

1. With unit securely blocked off the ground and hydraulic couplers disconnected, remove lock nuts on teeth being replaced.
2. Position new teeth and replace existing lock nut with new one provided.
3. Torque to specification. (See Bolt Torque Specifications)

Replacing Bolt-On Teeth:

1. With unit securely blocked off the ground and hydraulic couplers disconnected, remove the two sockethead capscrews securing the tooth to the wheel.
2. Position the new tooth on one side while retaining the existing tooth on the other side and secure in place with the existing sockethead capscrews.

NOTE: Be sure to maintain the existing tooth pattern when replacing any bolt-on teeth.

3. Torque to specification. (See Bolt Torque Specifications)

REPLACING HYDRAULIC MOTOR

When replacing the hydraulic motor the unit should be either securely blocked off the ground or attached to a hoist with the hydraulic couplers disconnected.

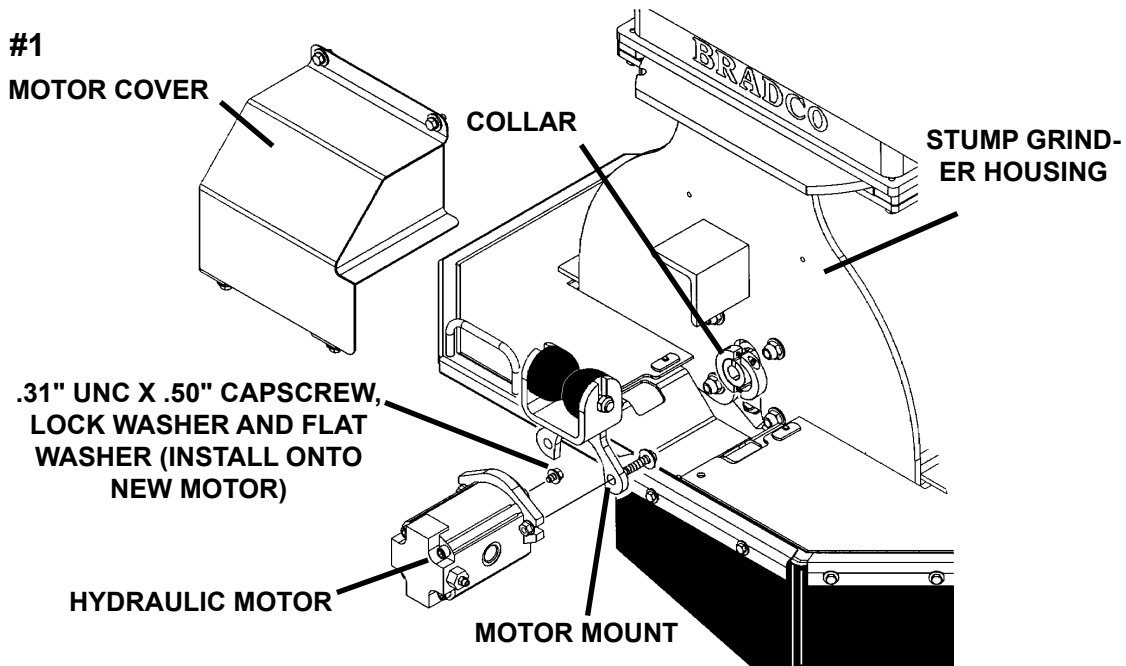
NOTE: Field replacement of the internal motor seals voids warranty.

1. With unit securely positioned and the motor cover removed, disconnect the hydraulic couplers and then tag and disconnect the hydraulic fittings and hoses from the hydraulic motor. Note the hose routing for re-installation.
2. Loosen the two sockethead capscrews on the collar. See Figure #1

MAINTENANCE

STUMP GRINDERS

FIGURE #1



3. Slide the motor, with motor mounting still attached, out of the wheel shaft. Remove the two .38" capscrows holding the motor to the motor mount and remove the motor. See Figure #1
4. Remove the .31" capcrew, lock washer and flat washer from the motor shaft and install onto the new motor.
5. Reinstall the motor mount onto the new motor using the existing hardware. Slide the motor with the mounting plate into the cutting wheel shaft while positioning the rubber bumpers and retighten the sockethead capscrows on the collar.
6. Torque all hardware to specification. See Bolt Torque Specifications
7. Re-connect the hydraulic hoses and fittings to the new motor.
8. Check for leaks and tighten as required.
9. Install motor cover using the existing hardware.

WARNING! Avoid serious injury. Lower the stump grinder to the ground, set the parking brake, stop the engine and remove the key before leaving the operator's seat. If unit must be left raised for maintenance block the unit securely to prevent accidental release of the lifting mechanism. Disconnect the hydraulic couplers.



REPLACING FLANGE BEARINGS AND/OR CUTTING WHEEL

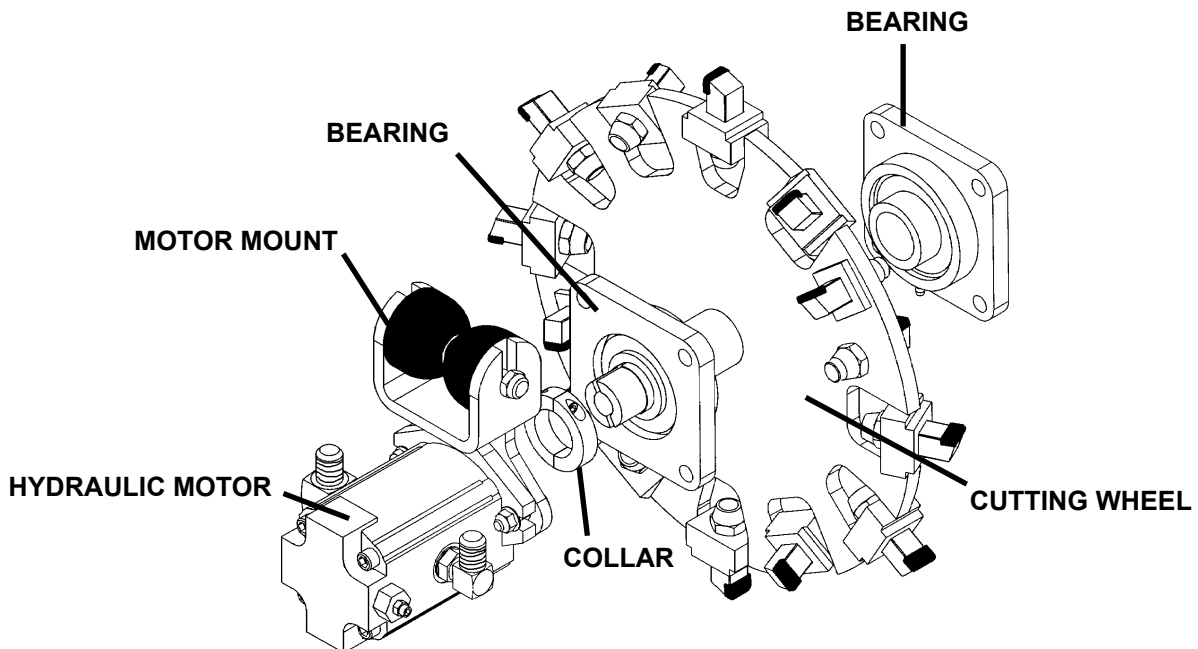
When replacing the coupler the unit should be either securely blocked up off the ground or attached to a hoist with the hydraulic couplers disconnected.

MAINTENANCE

STUMP GRINDERS

1. With unit securely positioned and hydraulic couplers disconnected, remove the motor cover and the motor guard.
2. Remove the four capscrews, flat washers and lock nuts securing each bearing to the stump grinder housing. The cutting wheel and drive assembly should slide down out of the housing. See Figure #2

FIGURE #2
CUTTING WHEEL AND DRIVE ASSEMBLY



3. Remove the hydraulic motor from the cutting wheel shaft to gain access to the left bearing. (See Replacing Hydraulic Motor instructions.)
4. If replacing the bearings only; remove the set screw securing the bearings to the cutting wheel and replace the old bearings with the new ones.
5. If replacing the cutting wheel only; remove the bearings from the existing cutting wheel and reinstall onto the new cutting wheel.
6. Reinstall the hydraulic motor with the motor mount onto the cutting wheel shaft. Tighten capscrews on the collar.
7. Slide the cutting wheel and drive assembly back into place in the stump grinder housing. Reinstall existing capscrews, flat washers and lock nuts securing the bearings to the housing.
8. Reinstall the motor cover and motor guard.
9. Torque to specification. See Bolt Torque Specifications

TROUBLESHOOTING

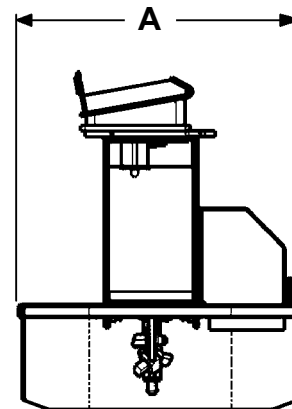
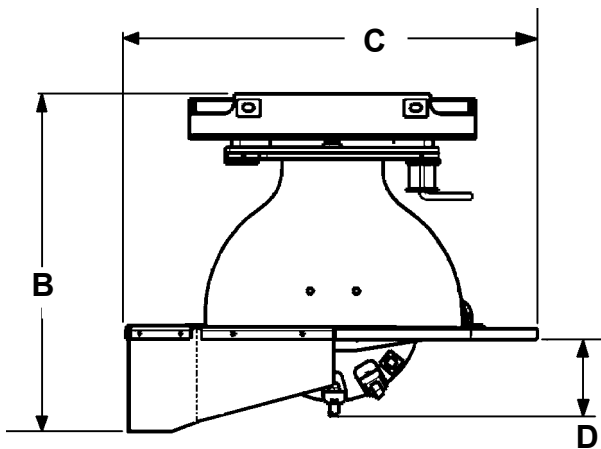
<u>PROBLEM</u>	<u>POSSIBLE CAUSE</u>	<u>POSSIBLE SOLUTION</u>
Motor will not operate.	Auxiliary hoses not hooked up to the skid steer.	Engage Couplers.
	Obstruction in hydraulic lines.	Remove obstruction, and replace if necessary.
	Skid steer auxiliary valve not engaged.	Engage auxiliary valve.
Wheel rotates sluggishly.	Insufficient hydraulic flow from the skid steer.	Refer to skid steer's owners manual.
	Damaged quick coupler.	Replace if necessary.
	Oil filter on skid steer is dirty.	Refer to skid steer's owners manual.
	Internal motor leakage.	Call Bradco service department.
	Incorrect hydraulic motor.	Check motor GPM, and match motor to skid steer hydraulic flow.
Leaking Oil.	Loose or damaged hydraulic line.	Tighten or replace.
	O-Rings on fittings damaged.	Replace, if necessary.
	Fittings loose or damaged.	Tighten or replace.
	Motor seals damaged.	Call Bradco Service Department.
Insufficient power.	Insufficient hydraulic flow from the skid steer.	Refer to skid steer's owners manual.
	Relief valve setting adjusted too low.	Refer to skid steer's owners manual.
	Oil filter on skid steer is dirty.	Refer to skid-steer's owners manual.
Excessive Vibration	Broken, damaged, or missing teeth.	Replace, as necessary.
	Bent wheel shaft.	Replace Cutting Wheel.
	Bearings loose.	Check bolts for tightness.
	Bearings damaged.	Replace, if necessary.
	Collar loose or damaged.	Replace or tighten, as necessary

TROUBLESHOOTING

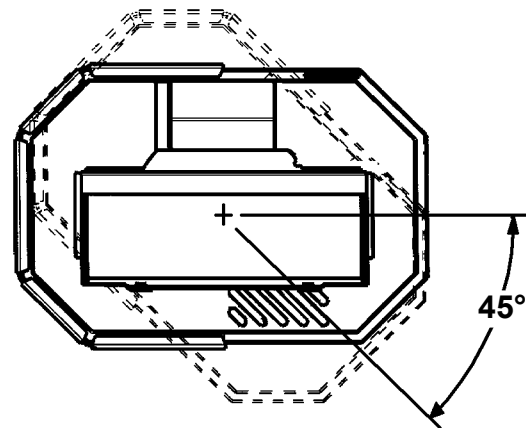
<u>PROBLEM</u>	<u>POSSIBLE CAUSE</u>	<u>POSSIBLE SOLUTION</u>
Excessive oil temperature.	Hydraulic oil level too low.	Refer to skid steer's owners manual.
	Excessive stalling of cutting wheel.	Decrease cutting depth.
	Obstruction in hydraulic lines.	Remove obstruction and replace if necessary.
	Hydraulic oil or oil filter in skid steer is dirty.	Refer to skid steer's owners manual.
	Relief valve setting adjusted too low.	Refer to skid steer's owners manual.
	Couplers not engaged.	Engage couplers.
<hr/>		
Wheel rotates in the wrong direction.	Hoses are switched at the motor.	Switch motor hoses.

SPECIFICATIONS

STUMP GRINDER



**SPECIFICATION AND DESIGN ARE
SUBJECT TO CHANGE WITHOUT
NOTICE AND WITHOUT LIABILITY
THEREFORE.**



DESCRIPTION	SPECIFICATION
A. Overall Width	24.67"
B. Overall Height	29.31"
C. Overall Length	35.60"
D. Below Ground Depth	6.69"
E. Angle.....	45°
Number of Cutting Teeth - Bolt-On.....	24
Number of Cutting Teeth - Square	14
Wheel Diameter	18.00"
Hydraulic Flow Requirement.....	8-11 GPM or 10-14 GPM
Weight (lbs) (With Universal Mount and Square Teeth).....	#325

BOLT TORQUE SPECIFICATIONS

GENERAL TORQUE SPECIFICATION TABLES


Use the following charts when determining bolt torque specifications when special torques are not given. Always use grade 5 or better when replacing bolts.

SAE BOLT TORQUE SPECIFICATIONS



NOTE: The following torque values are for use with extreme pressure lubricants, plating or hard washer applications. Increase torque 15% when using hardware that is unplated and either dry or lubricated with engine oil.

Bolt Size		SAE GRADE 5 TORQUE				SAE GRADE 8 TORQUE				Bolt head identification marks as per grade. NOTE: Manufacturing Marks Will Vary
		Pounds Feet		Newton-Meters		Pounds Feet		Newton-Meters		
Inches	Millimeters	UNC	UNF	UNC	UNF	UNC	UNF	UNC	UNF	
1/4	6.35	8	9	11	12	10	13	14	18	
5/16	7.94	14	17	19	23	20	25	27	34	
3/8	9.53	30	36	41	49	38	46	52	62	
7/16	11.11	46	54	62	73	60	71	81	96	
1/2	12.70	68	82	92	111	94	112	127	152	
9/16	14.29	94	112	127	152	136	163	184	221	
5/8	15.88	128	153	174	207	187	224	254	304	
3/4	19.05	230	275	312	373	323	395	438	536	
7/8	22.23	340	408	461	553	510	612	691	830	
1	25.40	493	592	668	803	765	918	1037	1245	
1-1/8	25.58	680	748	922	1014	1088	1224	1475	1660	
1-1/4	31.75	952	1054	1291	1429	1547	1700	2097	2305	
1-3/8	34.93	1241	1428	1683	1936	2023	2312	2743	3135	
1-1/2	38.10	1649	1870	2236	2535	2686	3026	3642	4103	



GRADE 2



GRADE 5






GRADE 8



METRIC BOLT TORQUE SPECIFICATIONS

NOTE: The following torque values are for use with metric hardware that is unplated and either dry or lubricated with engine oil. Reduce torque 15% when using hardware that has extreme pressure lubricants, plating or hard washer applications.

Bolt head identification marks as per grade.		
		

Size of Bolt	Grade No.	Pitch (mm)	Pounds Feet	Newton-Meters	Pitch (mm)	Pounds Feet	Newton-Meters
M6	5.6	1.0	3.6-5.8	4.9-7.9	-	-	-
	8.8		5.8-4	7.9-12.7		-	-
	10.9		7.2-10	9.8-13.6		-	-
M8	5.6	1.25	7.2-14	9.8-19	1.0	12-17	16.3-23
	8.8		17-22	23-29.8		19-27	25.7-36.6
	10.9		20-26	27.1-35.2		22-31	29.8-42
M10	5.6	1.5	20-25	27.1-33.9	1.25	20-29	27.1-39.3
	8.8		34-40	46.1-54.2		35-47	47.4-63.7
	10.9		38-46	51.5-62.3		40-52	54.2-70.5
M12	5.6	1.75	28-34	37.9-46.1	1.25	31-41	42-55.6
	8.8		51-59	69.1-79.9		56-68	75.9-92.1
	10.9		57-66	77.2-89.4		62-75	84-101.6
M14	5.6	2.0	49-56	66.4-75.9	1.5	52-64	70.5-86.7
	8.8		81-93	109.8-126		90-106	122-143.6
	10.9		96-109	130.1-147.7		107-124	145-168
M16	5.6	2.0	67-77	90.8-104.3	1.5	69-83	93.5-112.5
	8.8		116-130	157.2-176.2		120-138	162.6-187
	10.9		129-145	174.8-196.5		140-158	189.7-214.1
M18	5.6	2.0	88-100	119.2-136	1.5	100-117	136-158.5
	8.8		150-168	203.3-227.6		177-199	239.8-269.6
	10.9		175-194	237.1-262.9		202-231	273.7-313
M20	5.6	2.5	108-130	146.3-176.2	1.5	132-150	178.9-203.3
	8.8		186-205	252-277.8		206-242	279.1-327.9
	10.9		213-249	288.6-337.4		246-289	333.3-391.6

PARTS

In order to provide you with the most UP-TO-DATE part information, all parts for this attachment have been moved to our website at www.paladinattachments.com/Manuals. Please use these diagrams and parts lists to locate replacement parts.

When servicing your attachment, remember to use only original manufacturer replacement parts. Substitute parts may not meet the standards required for safe, dependable operation.

To facilitate parts ordering when contacting the factory, please have the product control number (PCN) or model and serial number of your product ready to ensure that you receive the correct parts for your specific attachment.

The product control number (PCN), model and serial number for your attachment should be recorded in the space provided on the cover of this manual. This information may be obtained from the serial number identification plate located on your attachment.

NOTE: Most daily and emergency parts orders (in stock) received by 10:30 A.M. (Eastern Standard Time) will be shipped UPS Ground the same day received. UPS Next Day orders must be received by 1:30 PM (Eastern Standard Time.)

SERVICE DEPARTMENT

(734) 996-9116

(800) 456-7100

For Fax and E-mail Orders

PLC_Sales@paladinattachments.com

(734) 996-9014

WARRANTY

In order to provide you with the most UP-TO-DATE Warranty information, Paladin Warranty Statement and Warranty Procedures along with Warranty Registration and Claim Forms have been moved to our website at www.paladinattachments.com.

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