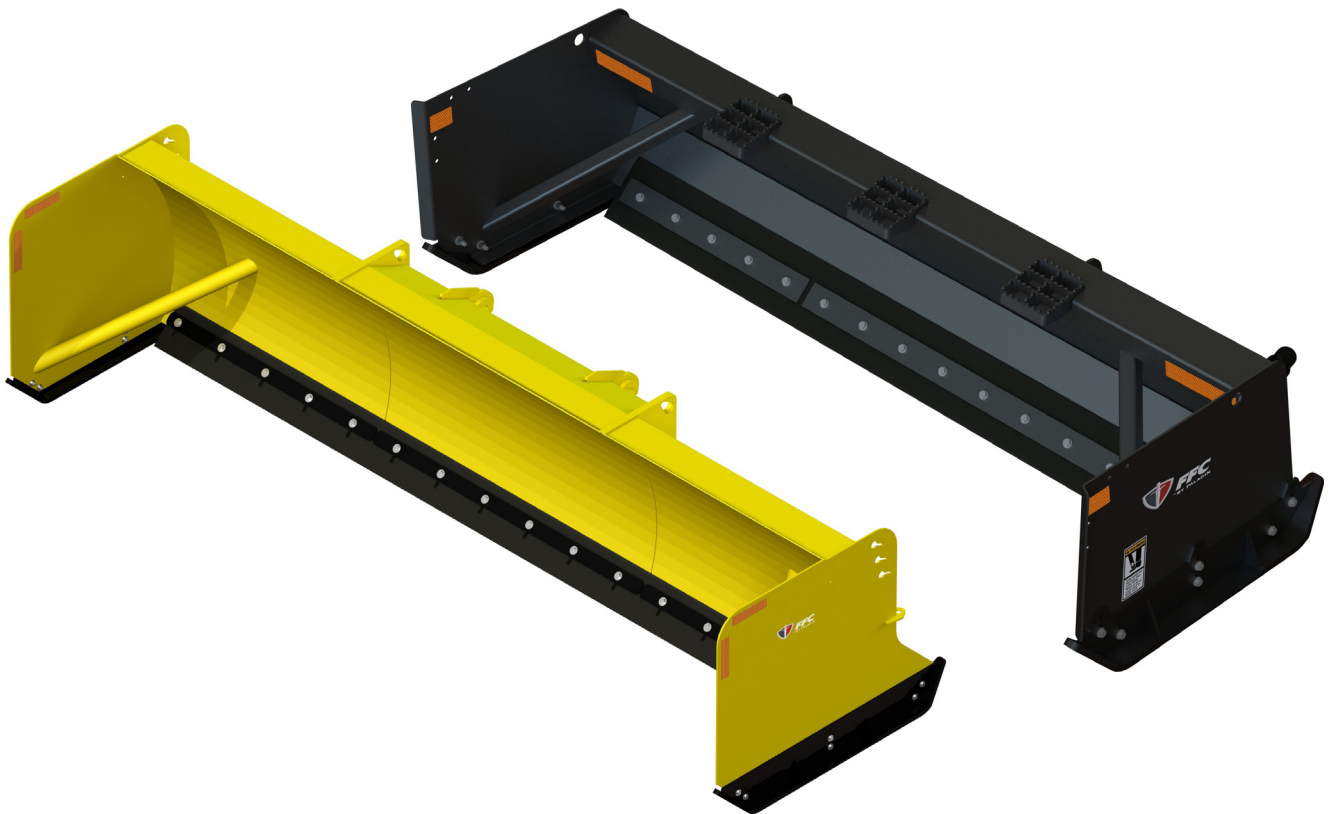




OPERATOR'S MANUAL

SNOW PUSH 232/233/228 Series



SERIAL NUMBER: _____

MODEL NUMBER: _____

Manual Number: 51-4649

Part Number: 23272, 23284, 23296,
23220, 23396, 23320,
23344, 23368, 22812,
22814, 22816, 22820

Release Date: August 2018

Rev. 2

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PREFACE

GENERAL COMMENTS

Congratulations on the purchase of your new 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 forward.

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>.

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.

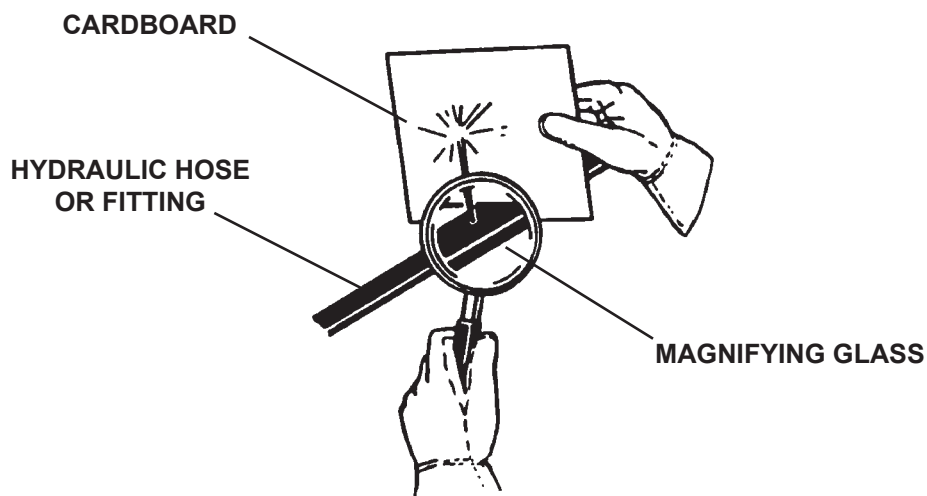
WARNING!



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 ATTACHMENT

- Do not exceed the capacity of your prime mover when pushing loads or objects.
- Operate only from the operator's station. Do not operate the snow push when standing beside the machine.
- Prime mover may feel heavy in the front with the added weight of the attachment. Stability and handling may be affected.
- 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.
- Before exiting the prime mover, lower the attachment to the ground, apply the brakes, turn off the prime mover's engine, and remove the key.

EQUIPMENT SAFETY PRECAUTIONS



TRANSPORTING THE ATTACHMENT

- Allow for the added width and length when transporting so as not to catch unit on obstacles.
- Carry the attachment low when transporting to lower its center of gravity. 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.
- When transporting on a trailer: Secure the attachment at recommended tie down locations using tie down accessories that are capable of maintaining attachment stability.



MAINTAINING THE ATTACHMENT

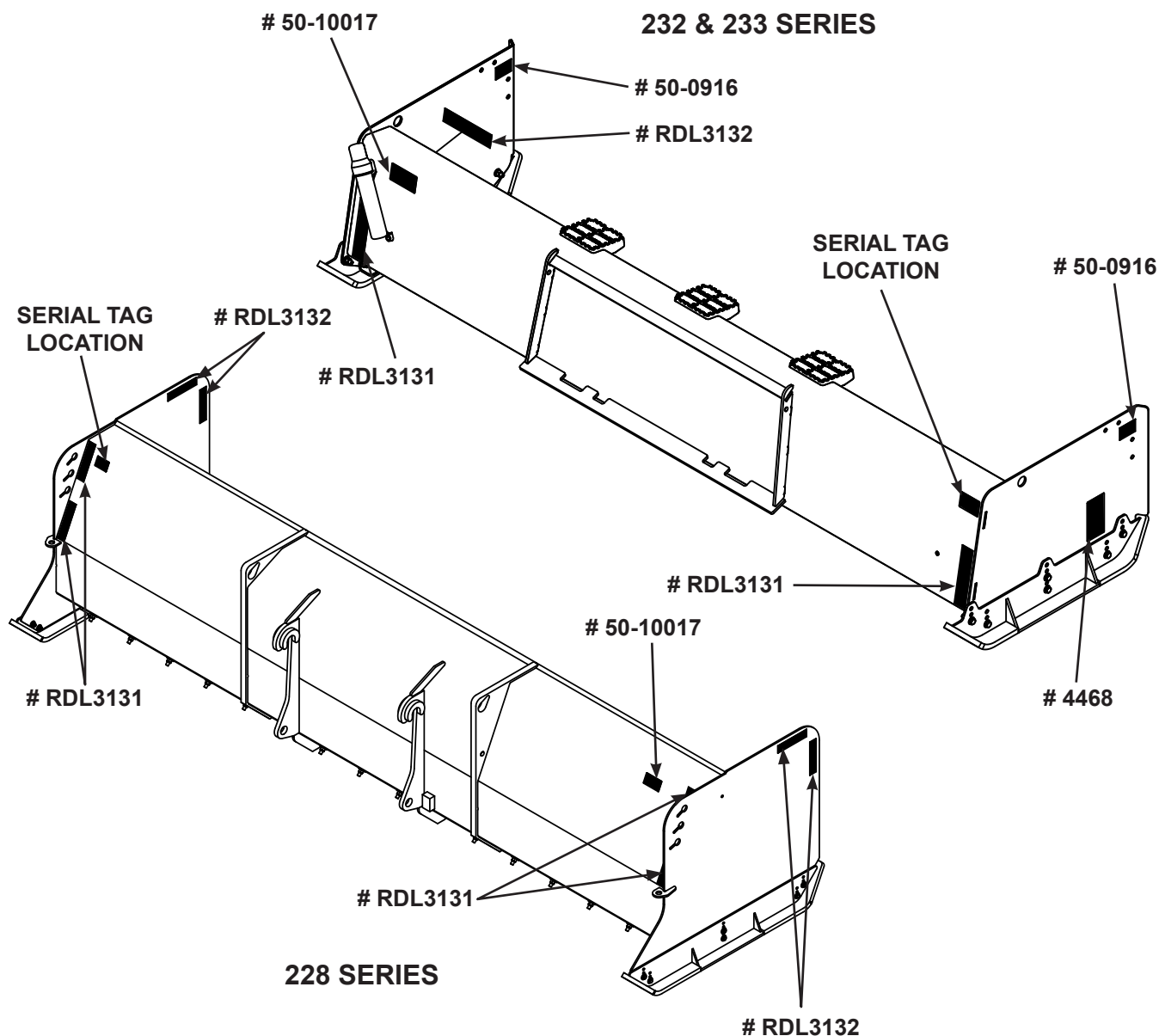
- Before performing maintenance, lower the attachment to the ground, apply brakes, turn off the engine, and remove the key.
- Never perform any work on the attachment unless you are authorized and qualified to do so. Always read the operator service manuals before any repair is made. After completing 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 Paladin.
- Never work under a raised attachment.

DECALS

DECAL PLACEMENT

GENERAL INFORMATION

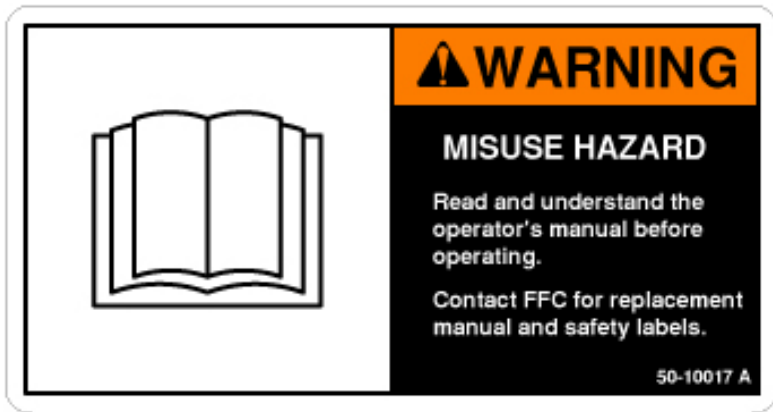
The diagram on this page shows the location of the decals used on your attachment. The decals are identified by their part numbers, with reductions of the actual decals located on the following page. Use this information to order replacements for lost or damaged decals. Be sure to read all decals before operating the attachment. They contain information you need to know for both safety and product 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. Safety decals are available, free of charge, from your local dealer or Paladin.

REPLACING SAFETY DECALS: Clean the area of application with nonflammable solvent, then wash the same area with soap and water. Allow the surface to fully 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



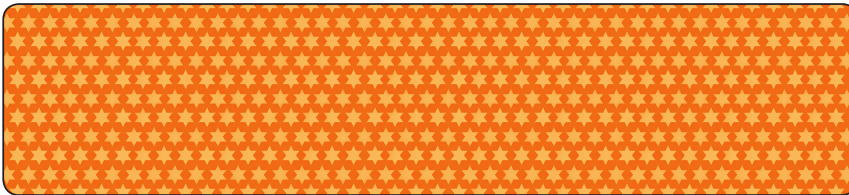
50-10017 WARNING! AVOID SERIOUS INJURY



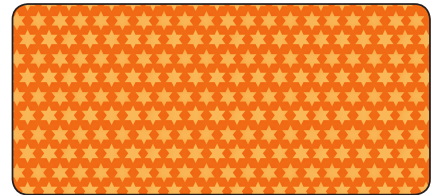
RDL3131 - REFLECTIVE TAPE - RED



4468 WARNING!
FOOT CRUSH



RDL3132 - REFLECTIVE TAPE - AMBER



50-0916 - REFLECTIVE
TAPE - AMBER

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

INSTALLATION

GENERAL INFORMATION

The snow pushes are designed for capturing and removing snow. This manual contains information for the 232, 233, & 228 series snow pushes. Refer to the information in this manual for specifications, parts, assemblies, and adjustments.

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

INSTALLATION - STANDARD MOUNT

1. Remove any attachment from the front of the prime mover.
2. Following all standard safety practices and the instructions for installing an attachment in your prime mover operator's manual, install the attachment onto your prime mover.

WARNING! To avoid serious personal injury, make sure the attachment is securely latched to the attachment mechanism of your unit. Failure to do so could result in separation of the attachment from the prime mover.



3. Attachment installation is complete.

INSTALLATION - BUCKET-LIP MOUNT (233 SERIES ONLY)

1. Place this product on a firm, level surface that is large enough to safely accommodate this product, your prime mover and all workers involved in the mounting process.

NOTICE! Lifting this product before completing mounting CAN result in damage to this product and WILL void all Paladin warranties.

2. Carefully raise the loader arms and slowly drive forward inserting the edge of your bucket between the rectangular tubings on the snow push.
3. Slowly roll the bucket downward (dumping) until the bucket edge is touching the lower tubes and the top of the bucket floor is touching the upper tubes, keeping the bucket edge as close to the back of the snow push as possible. This will make the distance between the chain links on the snow push and the chain loops on your bucket as close as possible.
4. Before exiting the prime mover, lower the attachment to the ground, apply the brakes, turn off the prime mover's engine, and remove the key.
5. Insert each of the center chains through the chain loop on the bucket and attach back to itself, keeping the chains as tight as possible.
6. Connect the outer two chains if bucket is over 80" (203cm) wide.
7. Re-start your prime mover. Carefully raise the loader and cycle the rollback cylinders to verify that all mounting procedures have been successfully completed.

INSTALLATION

INSTALLATION - BUCKET-LIP MOUNT (228 SERIES ONLY)

1. Place the snow push on a firm, level surface that is large enough to safely accommodate the snow push, your prime mover and all workers involved in the mounting process.
2. Carefully raise the loader arms and slowly drive forward inserting the edge of your bucket between the cutout slots in the snow push mounting ears.
3. Slowly roll the bucket downward (dumping) until the bucket edge is touching the bottom edges of the cutouts and the top of the bucket floor is touching the upper tubes, keeping the bucket edge as close to the back of the snow push as possible. This will make the distance between the chain links on the snow push and the grab hooks on your bucket as close as possible.
4. Attach chains from the bucket to the snow push and tighten. If you are using the binder kit option, follow Installing the Binder Kit Installation instructions.
5. Attachment installation is complete.

WARNING!  **VERIFY THAT ALL MOUNTING ACCESSORIES (CHAINS, SLINGS, ROPES, SHACKLES AND ETC.) ARE CAPABLE OF MAINTAINING ATTACHMENT STABILITY DURING OPERATION 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.**

DETACHING

1. Before exiting the prime mover, lower the attachment to the ground, apply the brakes, turn off the prime mover's engine, and remove the key.
2. If your unit is equipped with a bucket-lip mounting or optional binding kit, remove the chains and/or ratchet bindings going from the snow push to the bucket.
3. Follow your prime mover operator's manual for detaching (removing) an attachment.

OPTIONAL PULLBACK INSTALLATION (FIELD INSTALL)



**232 SERIES WITH
PULL BACK**

INSTALLATION

1. Before exiting the prime mover, lower the attachment to the ground, apply the brakes, turn off the prime mover's engine, and remove the key.
2. Place the pullback in position
3. Secure each end plate of the pullback to the corresponding end plate of your Snow Push with hardware provided. Tighten the nuts to 150 ft. lbs. (203N-m).

OPTIONAL BINDER KIT INSTALLATION (228 SERIES ONLY)

1. Before exiting the prime mover, lower the attachment to the ground, apply the brakes, turn off the prime mover's engine, and remove the key.
2. Grab hooks are to be welded to the side or back corners of the prime mover's bucket. The location should be chosen so the chains will be parallel to the ground when attached. This allows for easy centering of the snow push on the bucket.

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.

3. Attach one end of .38" (.96 cm) transport chain sections to the right and left end of the snow push using .44" (1.12 cm) shackles. Drop the opposite ends into the grab hooks on the bucket leaving enough slack to attach ratchet binders and allow for centering of the snow push. Tighten ratchet binders.
4. Re-start your prime mover. Carefully raise the loader and cycle the rollback cylinders to verify that all mounting procedures have been successfully completed. If the snow push is off center repeat installation and adjust slack in chains to center the snow push. Retighten ratchet binders and verify mounting procedures have been successfully completed.

OPERATION

INTENDED USE

This snow push is designed to push loose material only. With the optional pull back attachment, loose material may also be pulled while backing with your prime mover. Use in any other way is considered contrary to the intended use. Compliance with and strict adherence to operation, service and repair conditions as specified by the manufacturer, are also essential elements of the intended use.



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.

STORAGE:

NOTICE: Do not store the snow push with weight on the rubber edge. Weight will deform the edge, destroying the scraping effectiveness. To avoid this problem, place the snow push on blocks or use storage legs.

Do not store rubber edge in direct sunlight. The material can deteriorate and crumble before the edge is worn out. Keep rubber material away from intense heat or flame.

- Clean the unit thoroughly, removing all snow, dirt and grease.
- Inspect for visible signs of wear, breakage or damage. Order any parts required and make the necessary repairs to avoid delays upon removal from storage.
- Tighten loose nuts, and capscrews.
- Lubricate grease fittings (228 Series Binder Kit).
- Replace decals that are damaged or in unreadable condition.
- Store unit in a dry and protected place. Leaving the unit outside will materially shorten its life.

Additional Precautions for Long Term Storage:

- Touch up all unpainted surfaces with paint to avoid rust.

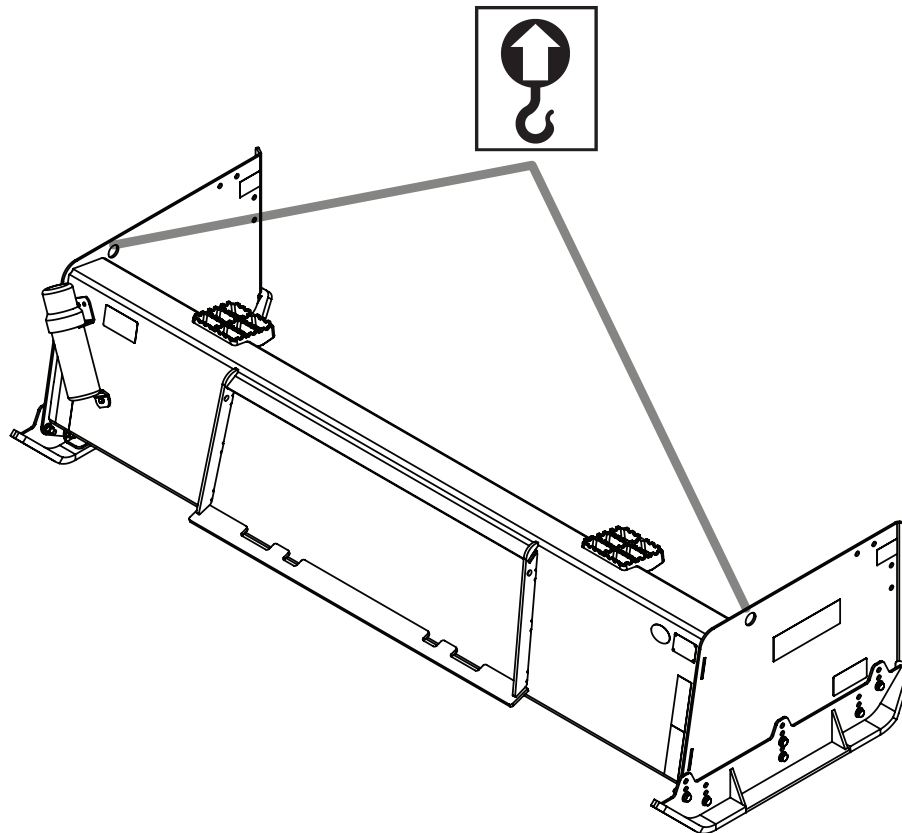
REMOVAL FROM STORAGE:

- Wash unit and replace any damage and/or missing parts.
- Lubricate grease fittings (228 Series Binder Kit).

LIFT POINTS

Lifting points are identified by 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:

OPERATION



232 SERIES SHOWN

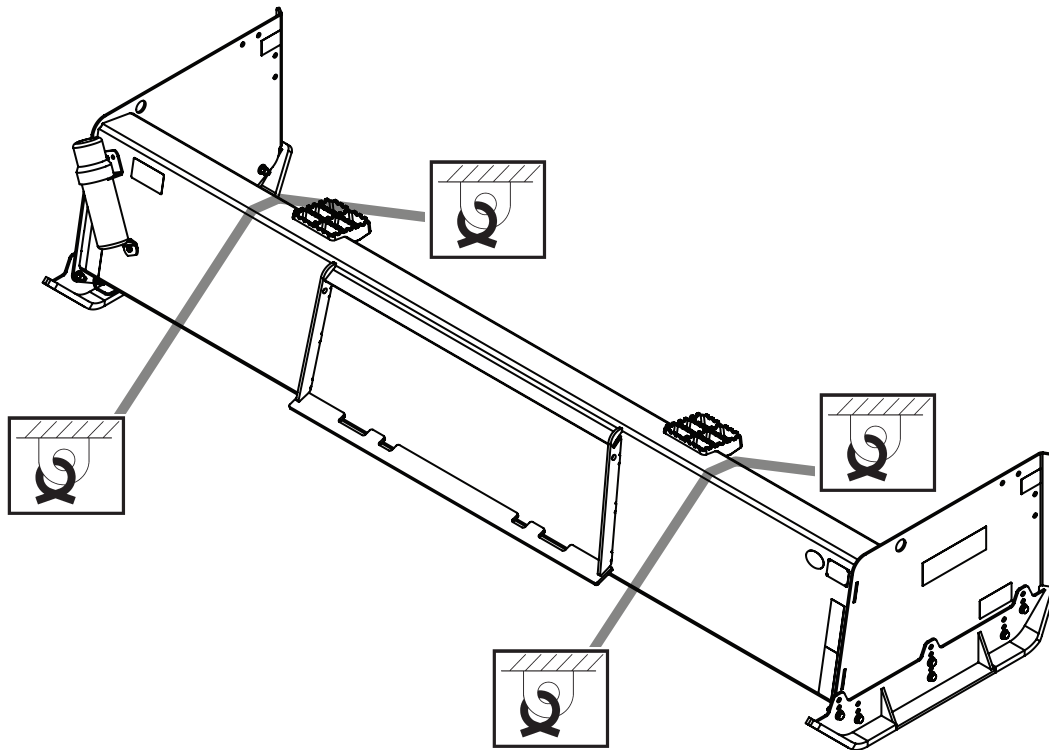
- Attach lifting accessories to unit at recommended lifting points.
- Bring lifting accessories together to a central lifting point.
- Lift gradually, maintaining the equilibrium of the unit.

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:

OPERATION



232 SERIES SHOWN

- 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.

TRANSPORTING

“Follow all local government regulations that may apply along with recommended tie down points and any equipment safety precautions at the front of this manual when transporting your attachment.”

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.

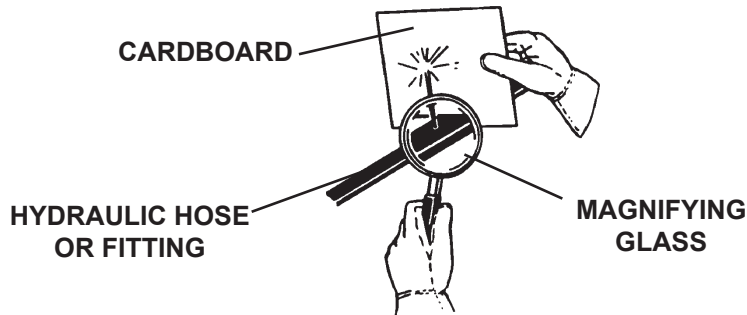
PROCEDURE	DAILY (EVERY 8 HOURS)
Check for missing or loose hardware. Replace or tighten as necessary. See Bolt Torque Specifications	✓
Check for missing or damaged safety decals and replace as necessary.	✓

WARNING! Escaping hydraulic / diesel fluid under pressure can penetrate the skin causing serious 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.

Stop the engine and relieve pressure before connecting or disconnecting lines. Tighten all connections before starting engine or pressurizing lines.



WARNING! DO NOT MODIFY MACHINE OR ATTACHMENTS



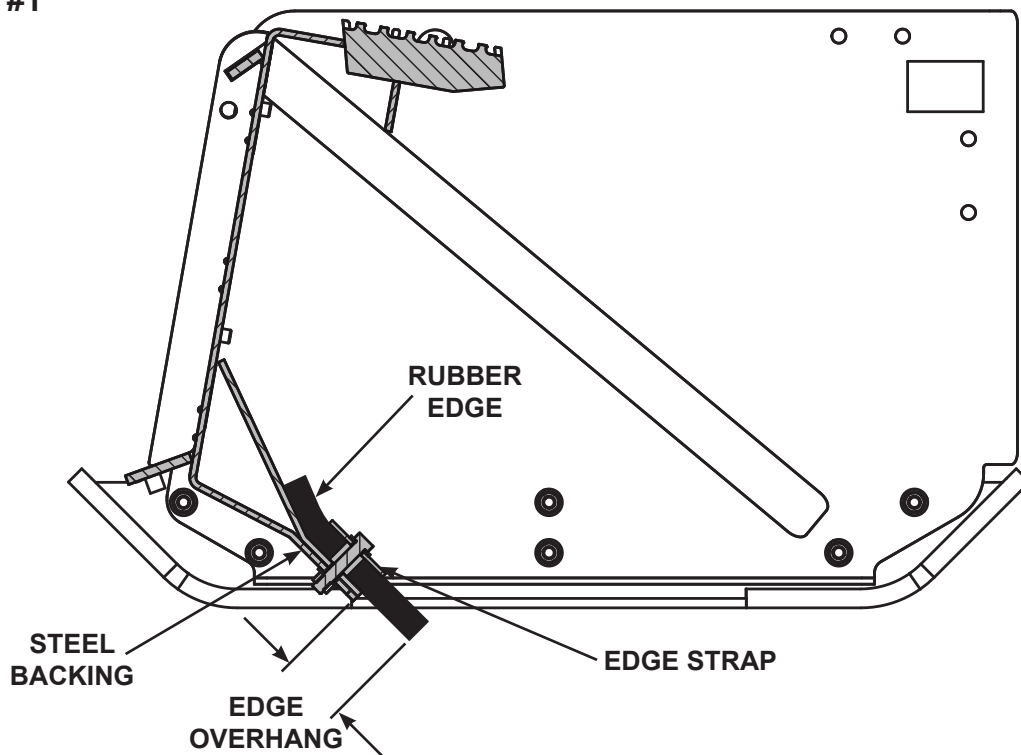
Modifications may weaken the integrity of the attachment and may impair the function, safety, life, and performance of the attachment. When making repairs, use only the manufacturer's genuine parts, following authorized instructions. Other parts may be substandard in fit and quality. Never modify any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

MAINTENANCE

RUBBER EDGE ADJUSTMENT OR REPLACEMENT

1. Park your prime mover on a level surface with the snow push properly attached.
2. Place your prime mover's transmission in "Park" and engage the parking brake.
3. Place a solid object of 1" (2.54 cm) thickness or more under the skid shoes to raise the snow push off the ground.
4. Lower your Snow Push down on to the blocking.
5. Shut off your prime mover's engine, remove the starter key, wait for all moving parts to come to a stop.
6. Loosen the nuts that secure the rubber edge and:
 - a. **If replacing the rubber edge:** remove the edge strap and the old rubber edge.
 - i. Dispose of the old rubber edge in an environmentally suitable manner.
 - ii. Lay the new rubber edge on top of the steel backing.
 - iii. Lay the edge strap on top of the new rubber edge and loosely secure both to the steel plate using existing hardware.
 - iv. Adjust the rubber edge by following step 6b below.
 - b. **If adjusting the rubber edge:** Move the rubber edge so that the rubber is exposed beyond the steel backing, determined by the size of the rubber edge. For 1" (2.54 cm) rubber edge, expose 2.50" (6.35 cm); 1.50" (3.81 cm) expose 3.50" (8.89 cm). See Figure #1
7. Retighten the nuts to 75 ft. lbs. (102N-m) on the 232 and 233 series and 150 ft lbs. (203N-m) on the 228 series.

FIGURE #1

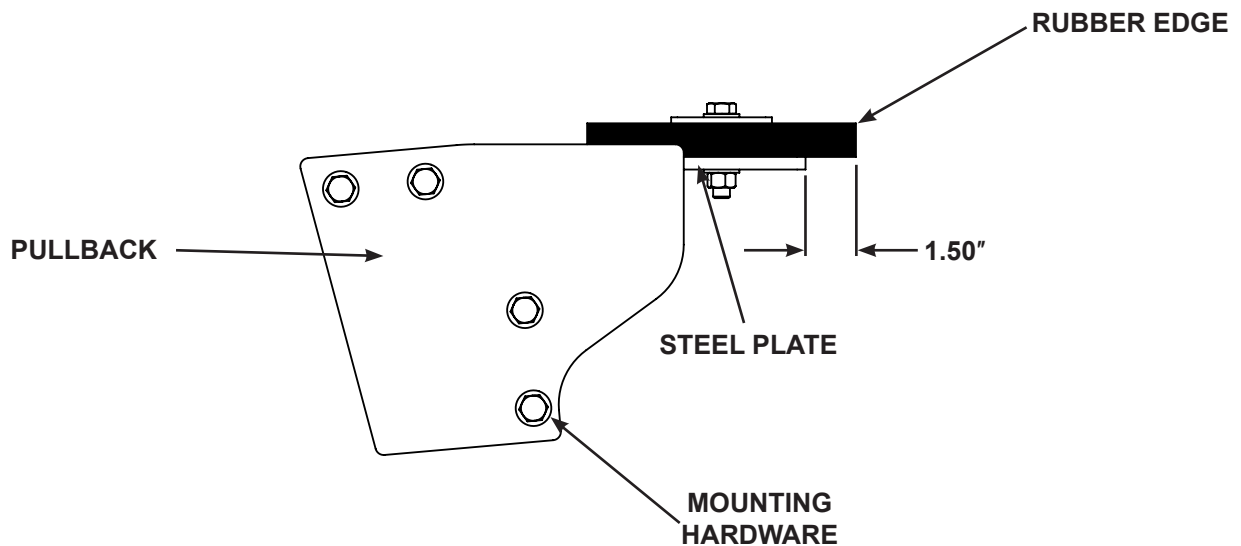


MAINTENANCE

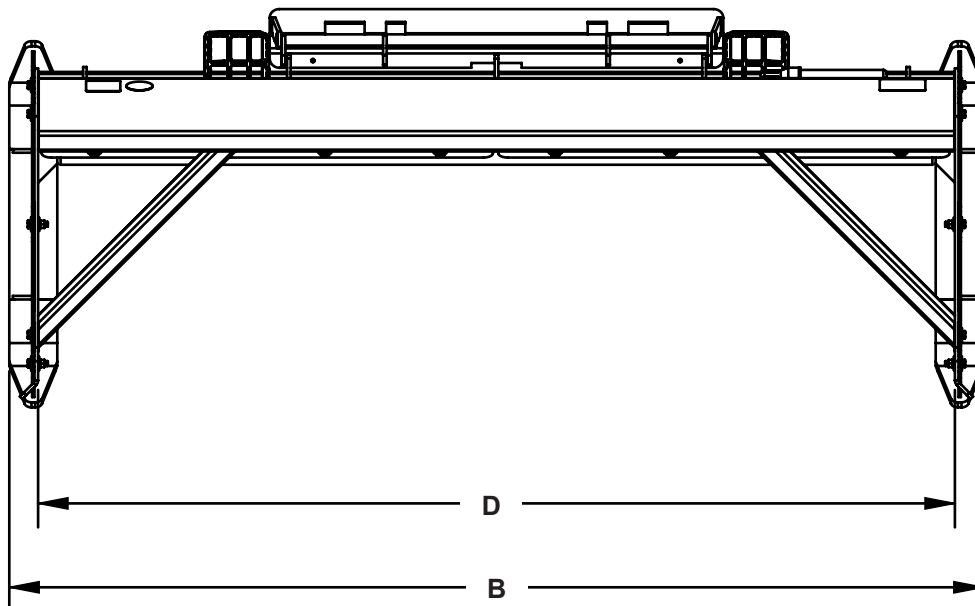
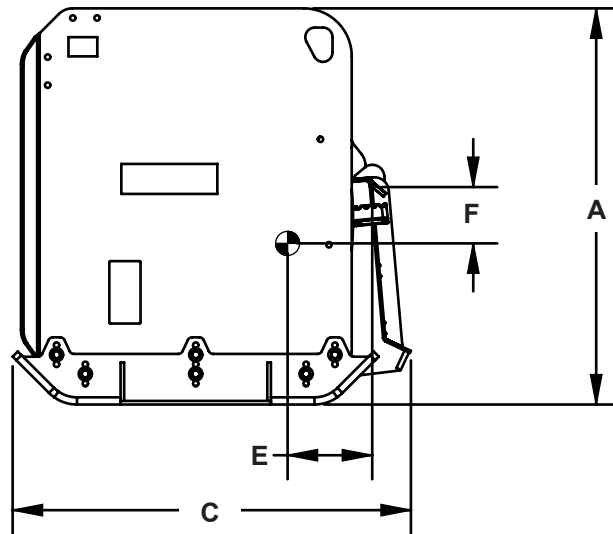
PULLBACK RUBBER EDGE INSTALLATION

1. Before exiting the prime mover, lower the attachment to the ground, apply the brakes, turn off the prime mover's engine, and remove the key.
2. Place the rubber edge on top of the pullback.
3. Place the rubber edge strap on top of the rubber edge and loosely secure both to the pullback with hardware shown in parts list.
4. Adjust the rubber edge so that a maximum of 1.50" (3.81 cm) of the rubber edge is exposed in front of the steel plate on the pullback. See Figure #1
5. Tighten the hardware to 75 ft. lbs (102N-m).

FIGURE #1



SPECIFICATIONS



**SPECIFICATIONS AND DESIGN ARE
SUBJECT TO CHANGE WITHOUT NOTICE
AND WITHOUT LIABILITY THEREFOR.**

SPECIFICATIONS

232 SERIES

DESCRIPTION	23272	23284	23296	23220
A. Overall Height w/ Skid Shoe at Top	22.69"	22.69"	22.69"	22.69"
A. Overall Height w/ Skid Shoe at Bottom	24.69"	24.69"	24.69"	24.69"
B. Overall Width	77.25"	89.25"	101.25"	125.25"
C. Overall Length	38.14"	38.14"	38.14"	38.14"
D. Cutting Width	71.50"	83.50"	95.50"	119.50"
E. Center of Gravity (Horizontal)	5.70"	5.30"	5.00"	4.50"
F. Center of Gravity (Vertical)	12.40"	12.40"	12.30"	12.20"
Weight (lbs)	525#	570#	615#	705#

233 SERIES

DESCRIPTION	23396	23320	23344	23368
A. Overall Height w/ Skid Shoe at Top	40.30"	40.30"	40.30"	40.30"
A. Overall Height w/ Skid Shoe at Bottom	42.30"	42.30"	42.30"	42.30"
B. Overall Width	101.50"	125.50"	149.50"	173.50"
C. Overall Length (normal mount)	41.50"	41.50"	41.50"	41.50"
C. Overall Length (bucket lip mount)	55.90"	55.90"	55.90"	55.90"
D. Cutting Width	95.50"	119.50"	143.50"	167.50"
E. Center of Gravity (Horizontal)	10.30"	9.90"	9.50"	9.20"
F. Center of Gravity (Vertical)	6.10"	6.10"	5.90"	5.90"
Weight (lbs)	1100#	1230#	1375#	1505#

228 SERIES

DESCRIPTION	22812	22814	22816	22820
A. Overall Height w/ Skid Shoe at Top	46.80"	46.80"	46.80"	46.80"
A. Overall Height w/ Skid Shoe at Bottom	48.80"	48.80"	48.80"	48.80"
B. Overall Width	149.70"	173.70"	197.70"	245.70"
C. Overall Length (normal mount)	62.30"	62.30"	62.30"	62.30"
C. Overall Length (bucket lip mount)	71.60"	71.60"	71.60"	71.60"
D. Cutting Width	142.50"	166.50"	190.50"	238.50"
E. Center of Gravity (Horizontal)	13.23"	13.23"	13.23"	13.23"
F. Center of Gravity (Vertical)	22.60"	22.60"	22.60"	22.60"
Weight (lbs)	2322#	2496#	2671#	3018#

PRIME MOVER REQUIREMENTS

DESCRIPTION	232 SERIES	233 SERIES	228 SERIES
Weight without attachment (lbs)	11,500#	20,000#	32,000#
Lift Capacity (lbs)	9,500#	11,000#	11,000#
Minimum Bucket Capacity	N/A	N/A	2.5 cu. yd.

BOLT TORQUE SPECIFICATION

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
		Ft-lbs		Newton-Meter		Ft-lbs		Newton-Meter		
Inches	mm	UNC	UNF	UNC	UNF	UNC	UNF	UNC	UNF	
1/4	6,35	8	9	11	12	10	13	14	18	Grade 2  Grade 5  Grade 8 
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	

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.		
		

Bolt Size	Grade No.	Pitch (mm)	Ft-lbs	Newton-Meter	Pitch (mm)	Ft-lbs	Newton-Meter
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 C/N) 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, 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.