



OPERATOR'S AND PARTS MANUAL

36", 42" & 48" SCRAP GRAPPLES
&
42", 48" & 54" BRUSH GRAPPLES



PALADIN LIGHT CONSTRUCTION



SERIAL NUMBER: _____

MODEL NUMBER: _____

Manual Number: OM706

Part Number: 75606

Rev.

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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.

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

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

To facilitate parts ordering, record the model and serial number of your unit in the space provided on the cover of this manual. This information may be obtained from the identification plate located on the product.

The parts department needs this information to insure that you receive the correct parts for your specific model.

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 IS USED WHERE SERIOUS INJURY OR DEATH WILL RESULT IF THE INSTRUCTIONS ARE NOT FOLLOWED PROPERLY.



WARNING

THIS SIGNAL WORD IS USED WHERE SERIOUS INJURY OR DEATH COULD RESULT IF THE INSTRUCTIONS ARE NOT FOLLOWED PROPERLY.



CAUTION

THIS SIGNAL WORD IS USED WHERE MINOR INJURY COULD RESULT IF THE INSTRUCTIONS ARE NOT FOLLOWED PROPERLY.

NOTICE

NOTICE INDICATES A PROPERTY DAMAGE MESSAGE.

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.

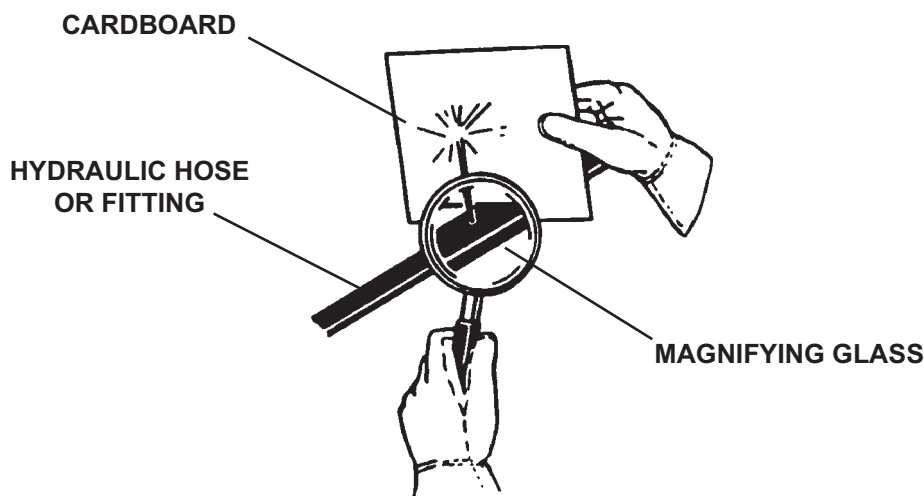
WARNING!



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 Protection 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.

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.



OPERATING THE GRAPPLE BUCKET

- Do not exceed the lifting capacity of your prime mover.
- Operate only from the operator's station.
- 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.
- 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.
- Never heap load heavy material where the combined weight of the bucket and material could exceed the rated lifting capacity of the loader.
- Be sure the load does not stick out too far in front of the bucket. A light load sticking out too far can have the same tipping effect as a heavy load carried in close.
- When using the grapple, lift the load slightly and make sure that the load is secure. If the load appears to be unstable, lower the load, open the grapple and reposition the load to attain full stability.



TRANSPORTING THE GRAPPLE BUCKET

- 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 gas tank for expansion. Wipe up any spilled fuel. Secure cap tightly when done.



MAINTAINING THE GRAPPLE BUCKET

- 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 manual's 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 BRADCO.
- Never make hydraulic repairs while the system is under pressure. Serious personal injury or death could result.
- Never work under a raised attachment.

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DECALS

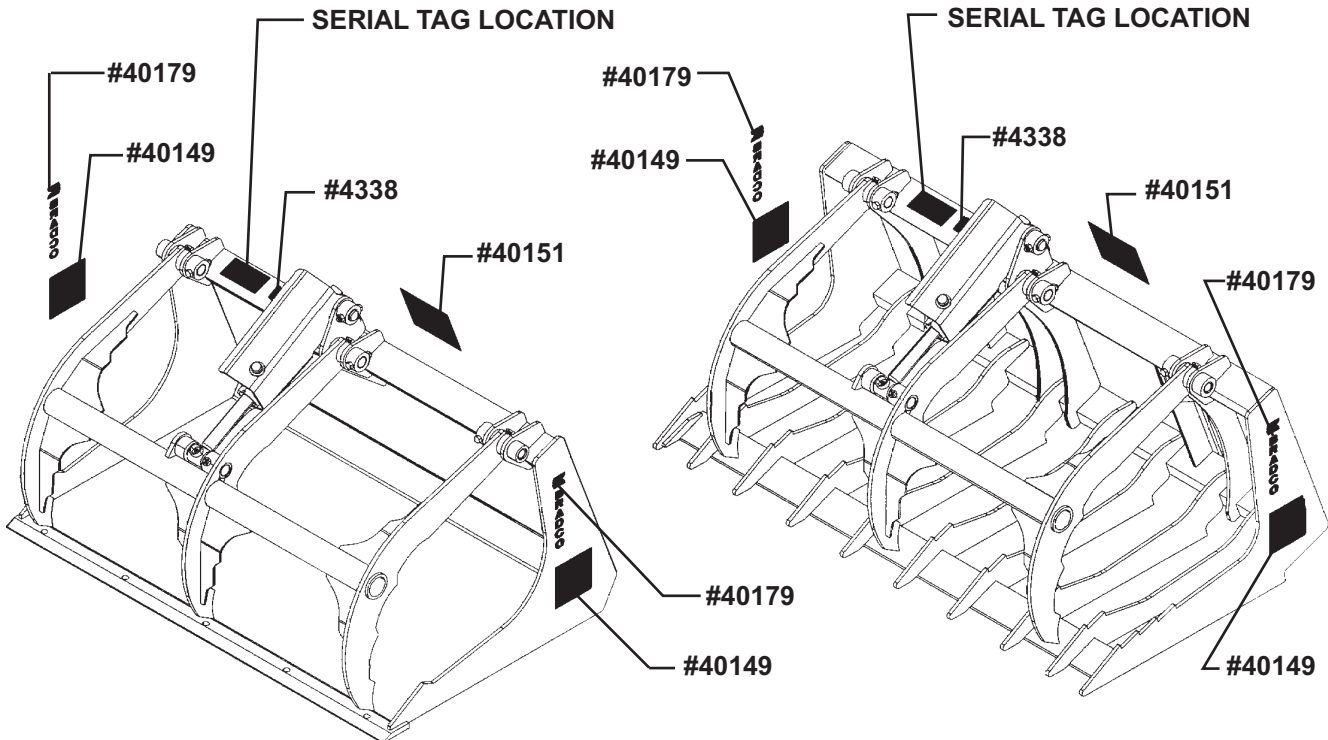
DECAL PLACEMENT

GENERAL INFORMATION

The diagrams on this page shows the location of the decals used on the BRADCO Scrap Grapples and Brush Grapples. 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.

SCRAP GRAPPLE BUCKET

BRUSH GRAPPLE BUCKET



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

REPLACING SAFETY SIGNS: 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 sign, exposing the adhesive surface. Apply the safety sign to the position shown in the diagram above and smooth out any bubbles.

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DECALS



PART #40149
DANGER! PINCH POINT



PART #40152
WARNING! HIGH PRESSURE FLUID



PART #40179
BRADCO LOGO - VERTICAL



PART #4338
MADE IN U.S.A.

INSTALLATION AND OPERATION

INSTALLATION

Your Grapple Bucket was shipped complete with the appropriate mounting for your specific unit, and with the hydraulic hoses and couplers installed.

Install the grapple bucket by following your power unit operator's manual for installing an attachment.

WARNING! To Avoid Serious Personal Injury, make sure the grapple bucket is securely latched to the attachment mechanism of your unit. Failure to do so could result in separation of the attachment from the unit.



Connect the hydraulic quick couplers to the auxiliary hydraulics, and route the hoses in such a fashion as to prevent chafing and pinching.

Start engine and slowly cycle the cylinder several times to purge system of air and check for proper hydraulic connection, hose routing, and hose length.

Check the attachment for proper assembly, installation and hydraulic leaks.

DETACHING

On firm level ground, close the grapple and lower the boom arms completely down on the frame until the attachment is level and approximately 2" off the ground.

Turn off the engine. Move the control levers back and forth to relieve pressure in line. Disconnect couplers.

NOTE: Connect couplers together or install caps to prevent contaminants from entering the hydraulic system.

Follow your power unit operator's manual for detaching (removing) an attachment.

NOTE: Frequent lubrication of grease fittings at the end of the cylinder and pivot points with a multi-purpose grease will greatly increase life of the product.

OPERATION

All scrap grapple and brush grapple buckets are designed to pick up bulky, unusually shaped, or long materials that would not stay in an ordinary bucket.

1. Approach the load in such a fashion that the weight will be centered on the floor of the bucket. The heaviest side should be closest to the back of the bucket and not near the bucket edge.
2. Before lifting, make certain the bucket is completely under the load and the bucket floor is level.
3. Close the grapples to their fullest extent possible and lift the bucket slightly to be certain that the load is secure.

NOTE: If the load appears to be unstable, lower the bucket to the ground, open the grapples and reposition the load to attain full stability. Repeat until full stability is achieved.

When using the grapples as a rake to drag materials into position for pick up, **THE GRAPPLES MUST BE COMPLETELY OPEN.**

INSTALLATION AND OPERATION

NOTICE Applying a raking-type force to partially open grapples will greatly magnify the fluid pressure in the hydraulic hoses, fittings, and cylinders and may cause component failure.



Never heap load heavy material where the combined weight of the bucket and material could exceed the rated lifting capacity of the loader.

Be sure the load does not stick out too far in front of the bucket. A light load sticking out too far can have the same tipping effect as a heavy load carried in close.

Operate the attachment only when properly seated at the operator's station.

Do not exceed the lift capacity of your loader. See loader specifications.

When using the grapple, lift the load slightly and make sure that the load is secure. If the load appears to be unstable, lower the load, open the grapple and reposition the load to attain full stability.

Reduce speed when driving over rough terrain, on a slope, or turning, to avoid overturning the vehicle.

Avoid side slope travel whenever possible. Drive up the slope to pick up a load and then down in reverse. Carry loads as close to the ground as possible.

Before exiting the prime mover, lower the bucket to the ground, turn off the prime mover's engine, remove the key and apply the brakes.

STORAGE

1. Clean the unit thoroughly, removing all mud, dirt, and grease.
2. Inspect for visible signs of wear, breakage, or damage. Order any parts required, and make the necessary repairs to avoid delays when starting next season.
3. Tighten loose nuts, capscrews, and hydraulic connections.
4. Cap hydraulic couplers to protect against contaminants.
5. Touch up all unpainted surfaces with paint, to prevent rust.
6. Coat the exposed portions of the cylinder rod with grease.
7. Store the unit in a dry and protected place. Leaving the unit outside will materially shorten its life.

MAINTENANCE AND SERVICE

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.

LUBRICATION

Lubricate all grease fittings with a multi-purpose grease.

DAILY

Physically check all pins, bushings, cotter pins, nuts, etc., for signs of wear or loose fit. Tighten as required, replace where necessary.
Clean equipment of all dirt, oil, and excess grease.
Check for missing or illegible Safety / Warning Decals.
Check all fittings and hydraulic hoses for leaks.

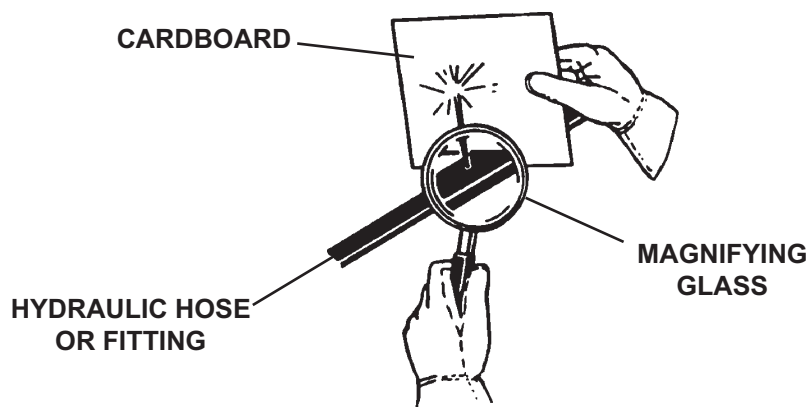
WARNING! Escaping hydraulic / diesel fluid under pressure can penetrate the skin causing serious injury. Fluid escaping from a very small hole can be almost invisible. Use a piece of cardboard or wood, rather than hands to search for suspected leaks.



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.



MAINTENANCE AND SERVICE

CYLINDER SEAL REPLACEMENT

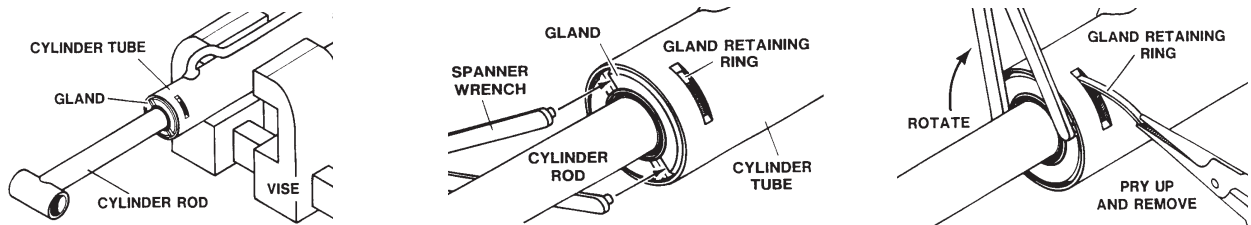
The following information is provided to assist you in the event you should need to repair or rebuild a hydraulic cylinder. When working on hydraulic cylinders, make sure that the work area and tools are clean and free of dirt to prevent contamination of the hydraulic system and damage to the hydraulic cylinders. Always protect the active part of the cylinder rod (the chrome section). Nicks or scratches on the surface of the rod could result in cylinder failure. Clean all parts thoroughly with a cleaning solvent before reassembly.

DISASSEMBLY PROCEDURE

IMPORTANT: Do not contact the active surface of the cylinder rod with the vise. Damage to the rod could result.

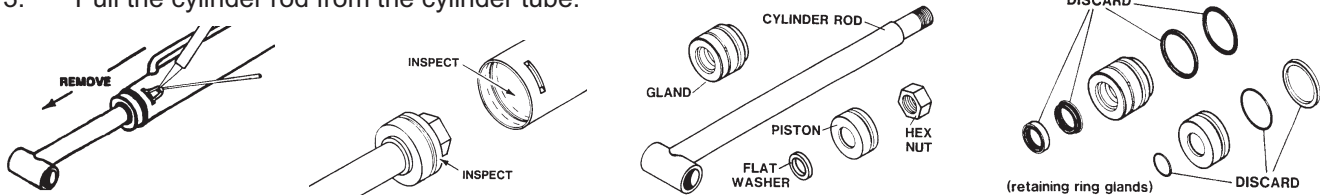
RETAINING RING TYPE GLAND

1. Mount the cylinder tube securely in a vise. **NOTICE: Do not clamp too tight and distort the tube.**
2. Rotate the gland with a spanner wrench (available from your dealer), until the gland retaining ring appears in the milled slot.



Pry up the end of the gland retaining ring with a pointed tool. Rotate the gland with a spanner wrench while removing the retaining ring. **NOTE: The gland and piston seal(s) can be pulled out and cut as they appear in the milled slot during disassembly. After cutting, pull them on out through the milled slot.**

3. Pull the cylinder rod from the cylinder tube.

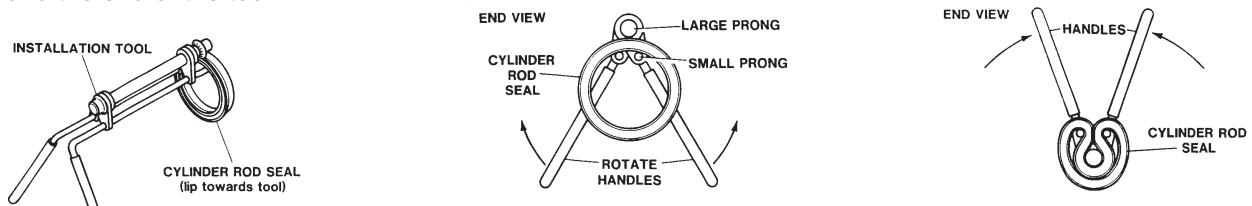


4. Inspect the piston and the bore of the cylinder tube for deep scratches or galling. If damaged, the piston and cylinder tube must be replaced.
5. Remove the hex nut, piston, flat washer or spacer tube (if so equipped), and gland from the cylinder rod. If the cylinder rod is rusty, scratched, or bent, it must be replaced.
6. Remove and discard all old seals.

ASSEMBLY PROCEDURE

IMPORTANT: Replace all seals even if they do not appear to be damaged. Failure to replace all seals may result in premature cylinder failure.

1. Install the cylinder rod seal in the gland first. Be careful not to damage the seal in the process as it is somewhat difficult to install. A special installation tool is available to help with installing the seal. Simply fit the end of the tool over the seal so that the large prong of the tool is on the outside of the seal, and the two smaller prongs on the inside. The lip of the seal should be facing towards the tool. Rotate the handles on the tool around to wrap the seal around the end of the tool.



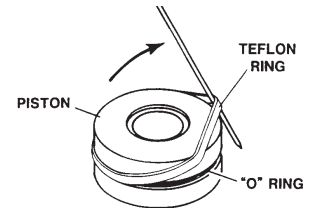
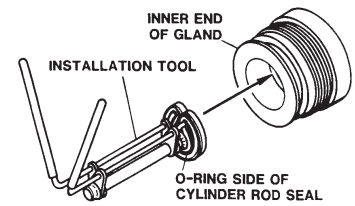
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MAINTENANCE AND SERVICE

Now insert the seal into the gland from the inner end. Position the seal in its groove, and release and remove the tool. Press the seal into its seat the rest of the way by hand.

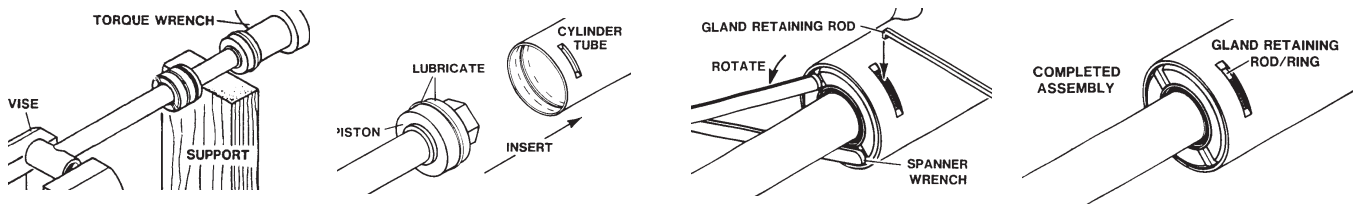
NOTE: Threaded gland is shown in diagram for reference only.

2. Install the new piston ring, rod wiper, O-rings, and backup washers, if applicable, on the piston. Be careful not to damage the seals. Caution must be used when installing the piston ring. The ring must be stretched carefully over the piston with a smooth, round, pointed tool.
2. Slide the gland onto the cylinder rod being careful not to damage the rod wiper. Then install the spacer, or flat washer (if so equipped), small O-ring, piston, and hex nut onto the end of the cylinder rod.
3. Secure the cylinder rod (mounting end) in a vise, with a support at its center. Torque the nut to the amount shown on the chart for the thread diameter of the cylinder rod. (see chart)



| Thread Diameter | POUNDS - FEET |
|-----------------|---------------|
| 7/8" | 150-200 |
| *1" | 230-325 |
| 1-1/8" | 350-480 |
| 1-1/4" | 490-670 |
| 1-3/8" | 670-900 |

*** 1" Thread Diameter WITH 1.25" Rod Diameter**
Min. 230 ft. lbs. Max. 250 ft. lbs.



IMPORTANT: Do not contact the active surface of the cylinder rod with the vise. Damage to the rod could result.

IMPORTANT: Ensure that the piston ring fits squarely into the cylinder tube and piston groove, otherwise the ring may be damaged and a leak will occur.

4. Apply a lubricant (such as Lubriplate #105) to the piston and teflon ring. Insert the cylinder rod assembly into the cylinder tube.
5. Rotate the gland with a spanner wrench until the hole (drilled into the retaining slot of the gland) appears in the milled slot of the cylinder tube. Insert the hooked end of the gland retaining rod into the hole.

Rotate the gland until the gland retaining rod forms a ring between the gland and the cylinder tube. When complete, the bent end of the gland retainer ring should be hidden (not turned so it is exposed in the slot) to prevent it from popping out.

WARNING! Cylinders serviced in the field are to be tested for leakage prior to the attachment being placed in work. Failure to test rebuilt cylinders could result in damage to the cylinder and/or the attachment, cause severe personal injury or even death.






BOLT TORQUE

BOLT TORQUE SPECIFICATIONS

GENERAL TORQUE SPECIFICATION TABLE

Use the following torques when special torques are not given. These values apply to fasteners as received from suppliers, dry, or when lubricated with normal engine oil. They do not apply if special graphited or moly disulphide greases or other extreme pressure lubricants are used. This applies to both UNF and UNC threads. Remember to always use grade five or better when replacing bolts.

IMPORTANT: On all PLATED GRADE 8 bolts, reduce torque 15% from listed bolt torque specification.

| SAE Grade No. | | 2 | | | | 5 | | | | 8* | | | |
|---|-------------|---|------|---------------|------|--|------|---------------|------|---|------|---------------|------|
| Bolt head identification marks as per grade. NOTE: Manufacturing Marks Will Vary | |  | | | |  | | | |  | | | |
| | | TORQUE | | TORQUE | | TORQUE | | TORQUE | | TORQUE | | TORQUE | |
| Bolt Size | | Pounds Feet | | Newton-Meters | | Pounds Feet | | Newton-Meters | | Pounds Feet | | Newton-Meters | |
| Inches | Millimeters | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. |
| 1/4 | 6.35 | 5 | 6 | 7 | 8 | 9 | 11 | 12 | 15 | 12 | 15 | 16 | 20 |
| 5/16 | 7.94 | 10 | 12 | 14 | 16 | 17 | 20.5 | 23 | 28 | 24 | 29 | 33 | 39 |
| 3/8 | 9.53 | 20 | 23 | 27 | 31 | 35 | 42 | 48 | 57 | 45 | 54 | 61 | 73 |
| 7/16 | 11.11 | 30 | 35 | 41 | 47 | 54 | 64 | 73 | 87 | 70 | 84 | 95 | 114 |
| 1/2 | 12.70 | 45 | 52 | 61 | 70 | 80 | 96 | 109 | 130 | 110 | 132 | 149 | 179 |
| 9/16 | 14.29 | 65 | 75 | 88 | 102 | 110 | 132 | 149 | 179 | 160 | 192 | 217 | 260 |
| 5/8 | 15.88 | 95 | 105 | 129 | 142 | 150 | 180 | 203 | 244 | 220 | 264 | 298 | 358 |
| 3/4 | 19.05 | 150 | 185 | 203 | 251 | 270 | 324 | 366 | 439 | 380 | 456 | 515 | 618 |
| 7/8 | 22.23 | 160 | 200 | 217 | 271 | 400 | 480 | 542 | 651 | 600 | 720 | 814 | 976 |
| 1 | 25.40 | 250 | 300 | 339 | 406 | 580 | 696 | 787 | 944 | 900 | 1080 | 1220 | 1464 |
| 1-1/8 | 25.58 | - | - | - | - | 800 | 880 | 1085 | 1193 | 1280 | 1440 | 1736 | 1953 |
| 1-1/4 | 31.75 | - | - | - | - | 1120 | 1240 | 1519 | 1681 | 1820 | 2000 | 2468 | 2712 |
| 1-3/8 | 34.93 | - | - | - | - | 1460 | 1680 | 1980 | 2278 | 2380 | 2720 | 3227 | 3688 |
| 1-1/2 | 38.10 | - | - | - | - | 1940 | 2200 | 2631 | 2983 | 3160 | 3560 | 4285 | 4827 |

* Thick Nuts must be used with Grade 8 bolts

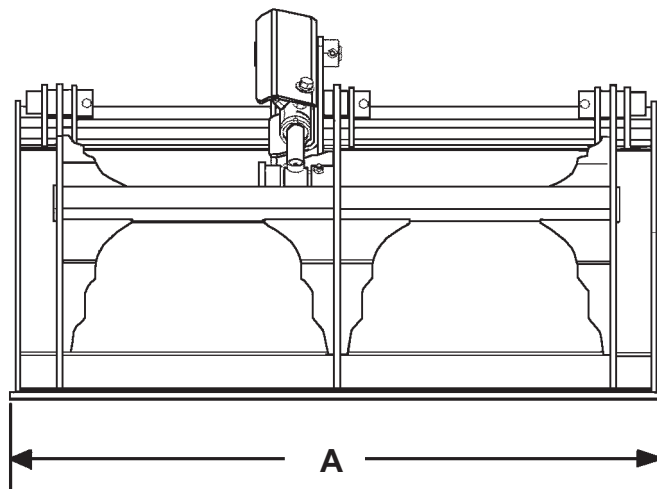
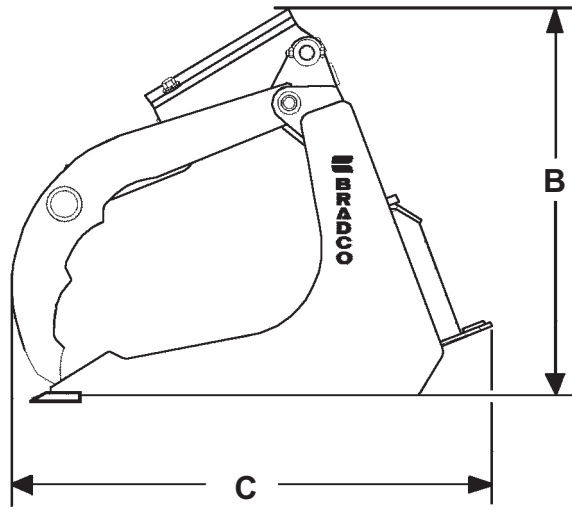
METRIC BOLT TORQUE SPECIFICATIONS

| Size of Screw | Grade No. | Coarse Thread | | | Fine Thread | | |
|---------------|-----------|---------------|-------------|---------------|-------------|-------------|---------------|
| | | Ptich (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 |

10360 6-8-95-2

SPECIFICATIONS

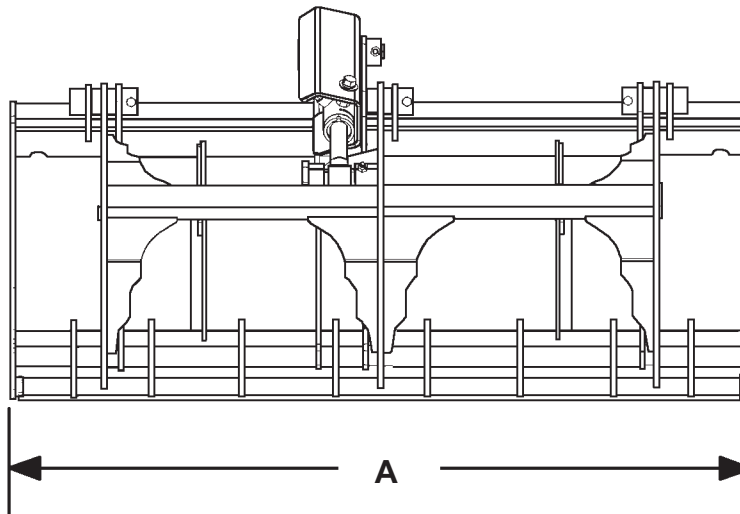
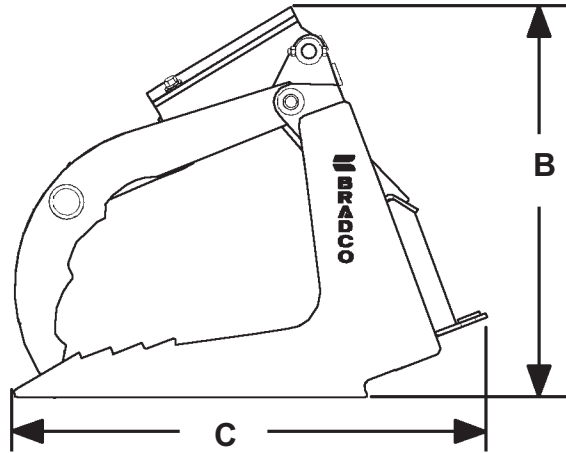
36", 42" & 48" SCRAP GRAPPLES



| DESCRIPTION | 36" | 42" | 48" HD |
|---|-----------|-----------|-----------|
| A. Overall Width | 36.00" | 42.00" | 48.00" |
| B. Overall Height | 25.00" | 25.00" | 25.00" |
| C. Overall Length | 31.00" | 31.00" | 31.00" |
| Grapple Opening | 29.00" | 29.00" | 29.00" |
| Operating Pressure (PSI) | 1500-2500 | 1500-2500 | 1500-2500 |
| Weight (lbs) | 260# | 280# | 380# |
| Cylinder Specifications | | | |
| Bore | 1.62" | 1.62" | 2.00" |
| Stroke | 4.50" | 4.50" | 4.50" |
| Rod Diameter | 1.12" | 1.12" | 1.25" |
| SPECIFICATIONS AND DESIGN ARE SUBJECT TO CHANGE WITHOUT NOTICE AND WITHOUT LIABILITY THEREFOR. | | | |

SPECIFICATIONS

42", 48" & 54" BRUSH GRAPPLES



| DESCRIPTION | 42" | 48" | 54" |
|---|-----------|-----------|-----------|
| A. Overall Width | 42.00" | 48.00" | 54.00" |
| B. Overall Height | 25.50" | 25.50" | 25.50" |
| C. Overall Length | 31.25" | 31.25" | 31.25" |
| Grapple Opening | 29.00" | 29.00" | 29.00" |
| Operating Pressure (PSI) | 1500-2500 | 1500-2500 | 1500-2500 |
| Weight (lbs) | 270# | 287# | 295# |
| Cylinder Specifications | | | |
| Bore | 1.62" | 1.62" | 1.62" |
| Stroke | 4.50" | 4.50" | 4.50" |
| Rod Diameter | 1.12" | 1.12" | 1.12" |
| SPECIFICATIONS AND DESIGN ARE SUBJECT TO CHANGE WITHOUT NOTICE AND WITHOUT LIABILITY THEREFOR. | | | |

LIMITED WARRANTY

All new Bradco products are warranted to be free from defects in materials or workmanship which may cause failure under normal usage and service when used for the purpose intended.

In the event of failure within twelve (12) months from initial retail sale, lease or rental date (excluding cable, ground engaging parts such as sprockets, digging chain, bearings, teeth, tamping and demolition heads, blade cutting edges, pilot bits, auger teeth, auger heads & broom bristles), if after examination, Bradco determines failure was due to defective material and/or workmanship, parts will be repaired or replaced. Bradco may request defective part or parts be returned prepaid to them for inspection at their place of business at Delhi, Iowa, or to a location specified by Bradco.

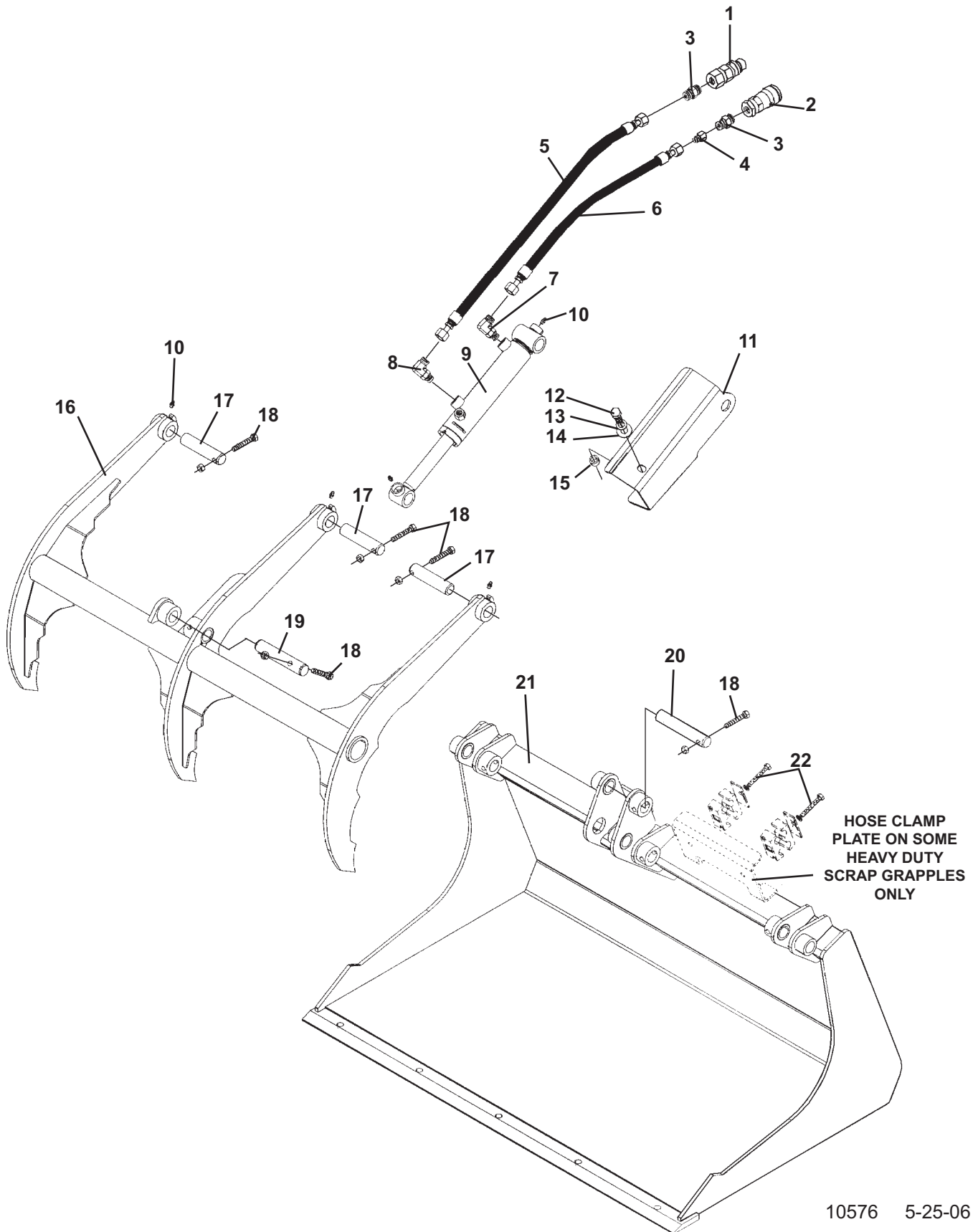
Any claims under this warranty must be made within fifteen (15) days after the Buyer learns of the facts upon which such claim is based. All claims not made in writing and received by Bradco within the time period specified above shall be deemed waived.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED AND THERE ARE NO WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL BRADCO BE LIABLE FOR CONSEQUENTIAL OR SPECIAL DAMAGE.

BRADCO'S LIABILITY FOR ANY AND ALL LOSSES AND DAMAGES TO BUYER, RESULTING FROM ANY CAUSE WHATSOEVER, INCLUDING BRADCO'S NEGLIGENCE, IRRESPECTIVE OF WHETHER SUCH DEFECTS ARE DISCOVERABLE OR LATENT, SHALL IN NO EVENT EXCEED THE PURCHASE PRICE OF THE PARTICULAR PRODUCTS WITH RESPECT TO WHICH LOSSES OR DAMAGES ARE CLAIMED, OR, AT THE ELECTION OF BRADCO, THE REPAIR OR REPLACEMENT OF DEFECTIVE OR DAMAGED PRODUCTS.

SCRAP GRAPPLE ASSEMBLY

36", 42" & 48" SCRAP GRAPPLE ASSEMBLIES



10576 5-25-06

SCRAP GRAPPLE ASSEMBLY

36", 42" & 48" SCRAP GRAPPLE ASSEMBLIES

| <u>ITEM</u> | <u>REQ'D</u> | <u>PART NO.</u> | <u>DESCRIPTION</u> |
|-------------|--------------|-----------------|---|
| 1 | 1 | * | Male Coupler |
| 2 | 1 | * | Female Coupler |
| 3 | 2 | 30324 | Straight Connector 6MFS-8MBo (36" & 42" Grapple Assembly) |
| | 2 | 3269 | Straight Connector 6MJ-8MBo (48" HD Grapple Assembly) |
| 4 | 1 | 30383 | Straight Connector 6MJ-6FJ (48" HD Grapple Assembly Only) |
| 5 | 1 | 38448 | Hose .25" X 54" 6FFS-6FFS (36" & 42" Grapple Assembly) |
| | 1 | 38374 | Hose .25" X 70" 6FFS-6FFS (Specific 42" Grapple Assembly) |
| | 1 | 38409 | Hose .25" X 80" 6FJX-6FJX (48" HD Grapple Assembly Only) |
| 6 | 1 | 38132 | Hose .25" X 48" 6FFS-6FFS (36" & 42" Grapple Assembly) |
| | 1 | 38374 | Hose .25" X 70" 6FFS-6FFS (Specific 42" Grapple Assembly) |
| | 1 | 38409 | Hose .25" X 80" 6FJX-6FJX (48" HD Grapple Assembly Only) |
| 7 | 1 | 30323 | 90° Elbow 6MBo-6MFS with .060 Orifice (36" & 42" Grapple Assembly) |
| 8 | 1 | 30204 | 90° Elbow 6MBo-6MFS (36" & 42" Grapple Assembly) |
| 9 | 1 | 107174 | Cylinder Assembly (36" & 42" Grapple Assembly) |
| | 1 | 106808 | Cylinder Assembly (48" HD Grapple Assembly with 90° Fittings) |
| 10 | 5 | 6616 | Grease Fitting |
| 11 | 1 | 106828 | Cylinder Guard |
| 12 | 1 | 1339 | .50" UNF X 1.25" Hex Capscrew (36" & 42" Grapple Assembly) |
| | | 1338 | .50" UNF X 1.00" Hex Capscrew (48" HD Grapple Assembly) |
| 13 | 1 | 1505 | .50" Lock Washer |
| 14 | 1 | 1516 | .50" Flat Washer |
| 15 | 1 | 107181 | Spacer Tube (36" & 42" Grapple Assembly) |
| 16 | 1 | 107166 | Grapple Fork (36" Grapple Assembly) |
| | 1 | 106810 | Grapple Fork (42" & 48" Grapple Assembly) |
| 17 | 3 | 2005471 | Pivot Pin 1.00" x 4.25" |
| 18 | 5 | 1048 | .38" UNC X 2.25" Hex Capscrew |
| | 5 | 1837 | .38" UNC Deformed Lock Nut |
| 19 | 1 | 106814 | Pivot Pin 1.00" X 5.13" |
| 20 | 1 | 2005476 | Pivot Pin 1.00" X 5.50" |
| 21 | 1 | * | Bucket with Mounting |
| 22 | 2 | 1027 | .31"UNC X 2.25" Hex Capscrew (If equipped with hose clamp plate) |
| | 2 | 1502 | .31" Lock Washer (If equipped with hose clamp plate) |
| | 2 | 103184 | Top Clamp Plate (If equipped with hose clamp plate) |
| | 2 | 103181 | Hose Clamp (If equipped with hose clamp plate) |

*** Bucket with mounting and hydraulic quick couplers are specific to your loader application. Contact Factory or your local BRADCO dealer to order these items.**

10577 5-25-06

BRUSH GRAPPLE ASSEMBLY

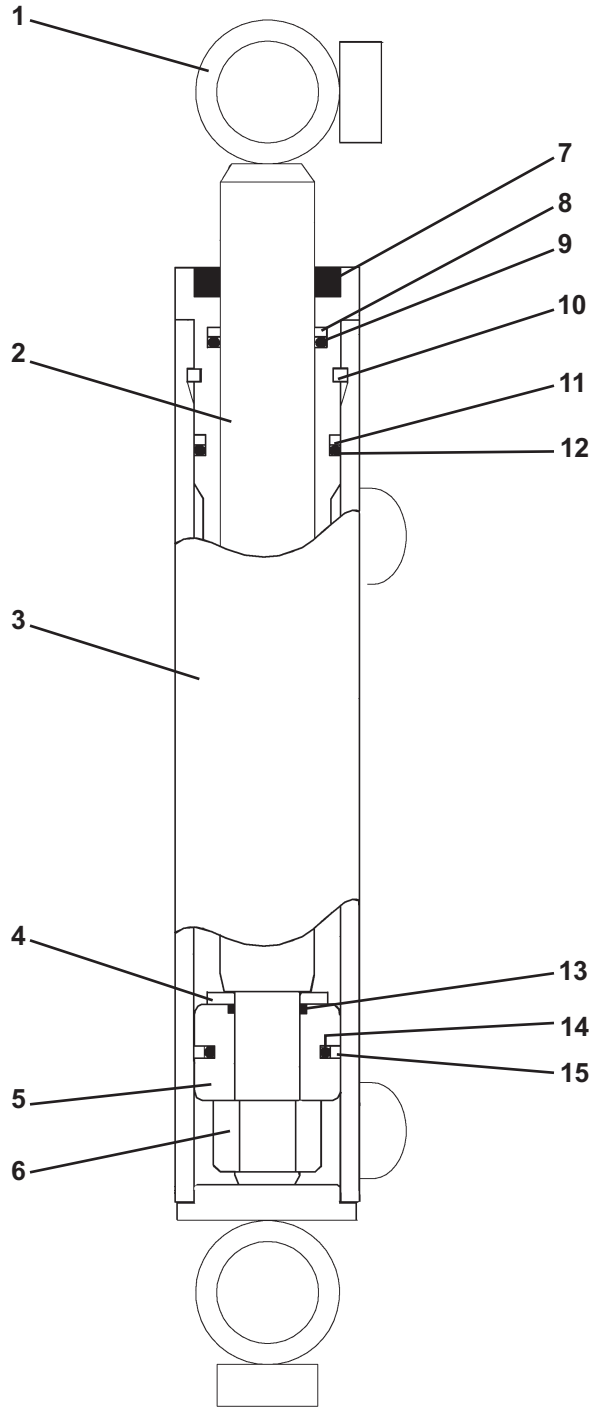
42", 48" & 54" BRUSH GRAPPLE ASSEMBLIES

| <u>ITEM</u> | <u>REQ'D</u> | <u>PART NO.</u> | <u>DESCRIPTION</u> |
|-------------|--------------|-----------------|---|
| 1 | 1 | * | Male Coupler |
| 2 | 1 | * | Female Coupler |
| 3 | 2 | 30324 | Straight Connector 6MFS-8MBo |
| 4 | 1 | 38448 | Hose .25" X 54" 6FFS-6FFS |
| | 1 | 38374 | Hose .25" X 70" 6FFS-6FFS (Specific Grapple Assemblies) |
| 5 | 1 | 38132 | Hose .25" X 48" 6FFS-6FFS |
| | 1 | 38374 | Hose .25" X 70" 6FFS-6FFS (Specific Grapple Assemblies) |
| 6 | 1 | 30323 | 90° Elbow 6MBo-6MFS with .060 Orifice |
| 7 | 1 | 30204 | 90° Elbow 6MBo-6MFS |
| 8 | 1 | 107174 | Cylinder Assembly |
| 9 | 5 | 6616 | Grease Fitting |
| 10 | 1 | 106828 | Cylinder Guard |
| 11 | 1 | 1339 | .50" UNF X 1.25" Hex Capscrew |
| 12 | 1 | 1505 | .50" Lock Washer |
| 13 | 1 | 1516 | .50" Flat Washer |
| 14 | 1 | 107181 | Spacer Tube |
| 15 | 1 | 106810 | Grapple Fork |
| 16 | 3 | 2005471 | Pivot Pin 1.00" x 4.25" |
| 17 | 5 | 1048 | .38" UNC X 2.25" Hex Capscrew |
| | 5 | 1837 | .38" UNC Deformed Lock Nut |
| 18 | 1 | 106814 | Pivot Pin 1.00" X 5.13" |
| 19 | 1 | 2005476 | Pivot Pin 1.00" X 5.50" |
| 20 | 1 | * | Bucket with Mounting |

*** Bucket with mounting and hydraulic quick couplers are specific to your loader application. Contact Factory or your local BRADCO dealer to order these items.**

CYLINDER ASSEMBLY

ASSEMBLY #107174



CYLINDER ASSEMBLY

ASSEMBLY #107174

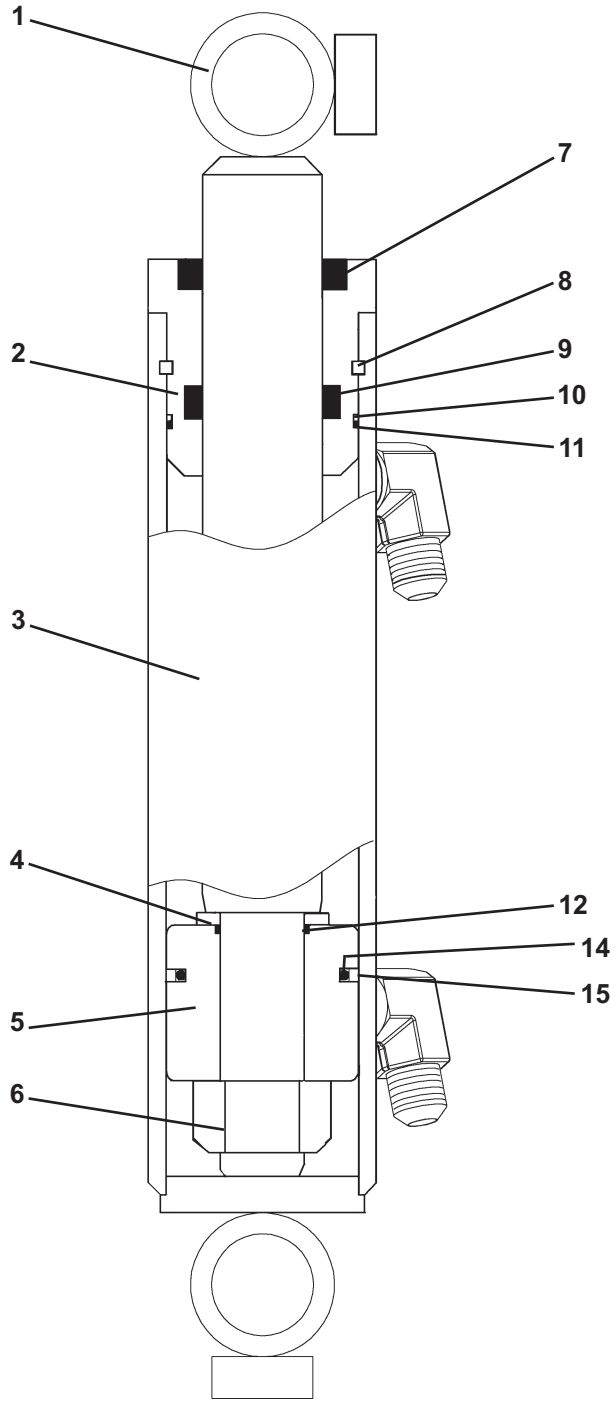
| <u>ITEM</u> | <u>REQ'D</u> | <u>PART NO.</u> | <u>DESCRIPTION</u> |
|-------------|--------------|-----------------|--------------------------------------|
| 1 | 1 | 107176 | Cylinder Rod |
| 2 | 1 | 50547 | Cylinder Gland |
| 3 | 1 | 107175 | Cylinder Tube |
| 4 | 1 | 52644 | Washer |
| 5 | 1 | 50546 | Piston |
| 6 | 1 | 1482 | Hex Nut (Torque to 150-200 ft. lbs.) |
| 7 | 1 | 4981* | Rod Wiper |
| 8 | 1 | 4579* | Back-Up Washer |
| 9 | 1 | 4580* | O'Ring |
| 10 | 1 | 8177* | Cylinder Gland Retaining Ring |
| 11 | 1 | 4988* | Back-Up Washer |
| 12 | 1 | 4987* | O'Ring |
| 13 | 1 | 4635* | O'Ring |
| 14 | 1 | 4985* | O'Ring |
| 15 | 1 | 4984* | Piston Ring |

NOTE: All parts marked with an asterisk(*) are included in Seal Kit #4990. Parts are not sold separately.

10583 5-30-06

CYLINDER ASSEMBLY

ASSEMBLY #106808



CYLINDER ASSEMBLY

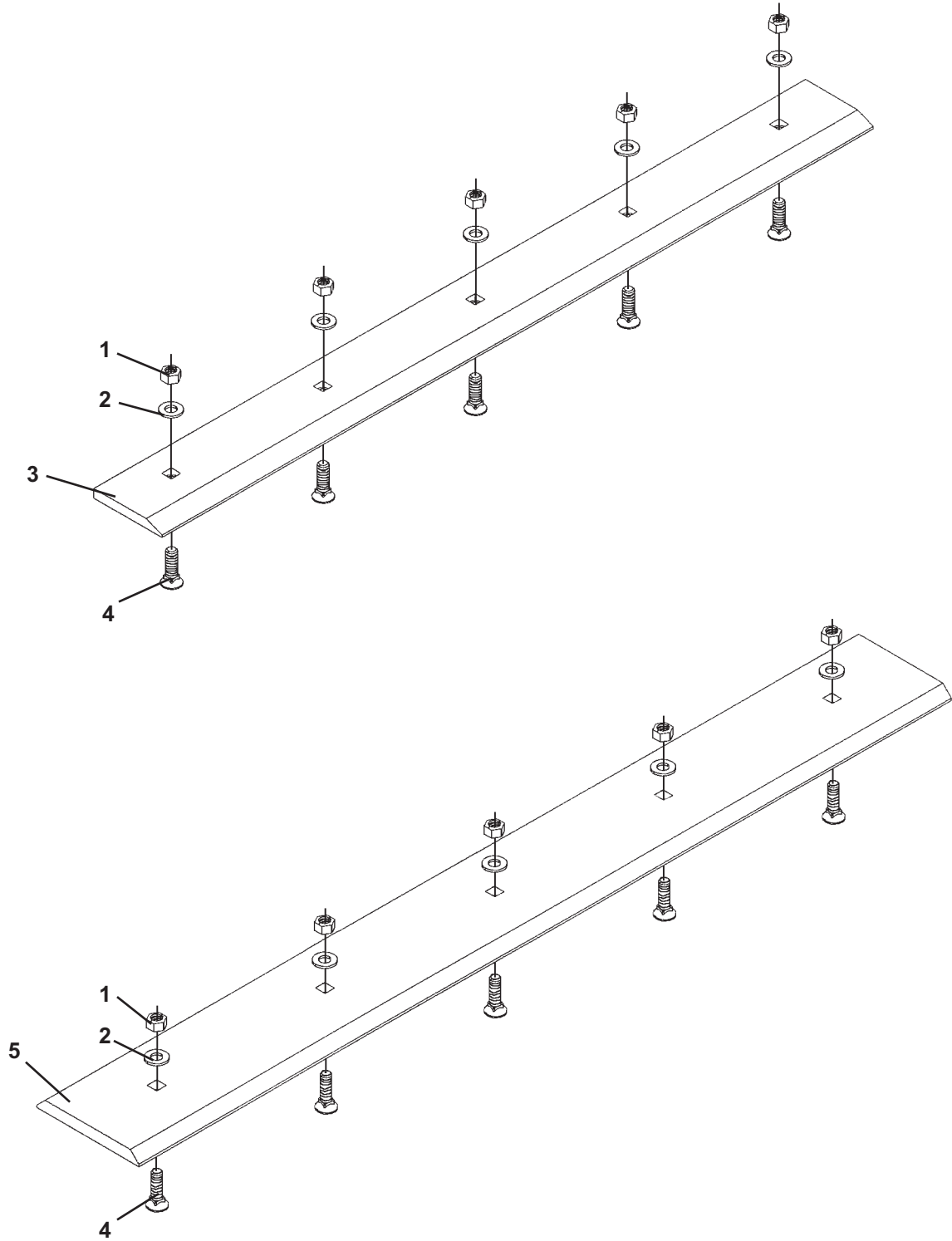
ASSEMBLY #106808

| <u>ITEM</u> | <u>REQ'D</u> | <u>PART NO.</u> | <u>DESCRIPTION</u> |
|-------------|--------------|-----------------|--------------------------------------|
| 1 | 1 | 106812 | Cylinder Rod |
| 2 | 1 | 57330 | Cylinder Gland |
| 3 | 1 | 106811 | Cylinder Tube |
| 4 | 1 | 52644 | Washer |
| 5 | 1 | 88431 | Piston |
| 6 | 1 | 1482 | Hex Nut (Torque to 150-200 ft. lbs.) |
| 7 | 1 | 4974* | Rod Wiper |
| 8 | 1 | 7164* | Cylinder Gland Retaining Ring |
| 9 | 1 | 45219 | Poly Pak Seal |
| 10 | 1 | 4634 * | Back-Up Washer |
| 11 | 1 | 4633* | O'Ring |
| 12 | 1 | 4635* | O'Ring |
| 13 | 1 | 4637* | O'Ring |
| 14 | 1 | 4636* | Piston Ring |

NOTE: All parts marked with an asterisk(*) are included in Seal Kit #45136. Parts are not sold separately.

10585 5-30-06

OPTIONAL CUTTING EDGE ASSEMBLIES



OPTIONAL CUTTING EDGE ASSEMBLIES

36" BOLT-ON CUTTING EDGE ASSEMBLY #107156

| <u>ITEM</u> | <u>REQ'D</u> | <u>PART NO.</u> | <u>DESCRIPTION</u> |
|-------------|--------------|-----------------|---------------------------------|
| 1 | 4 | 1841 | .50" UNC Deformed Oval Lock Nut |
| 2 | 4 | 1646 | .50" Hard Flat Washer |
| 3 | 1 | 107179 | 36" Cutting Edge - Single Bevel |
| 4 | 4 | 10120 | .50" UNC X 1.75" Plow Bolt |

42" BOLT-ON CUTTING EDGE ASSEMBLY #107157

| <u>ITEM</u> | <u>REQ'D</u> | <u>PART NO.</u> | <u>DESCRIPTION</u> |
|-------------|--------------|-----------------|---------------------------------|
| 1 | 5 | 1841 | .50" UNC Deformed Oval Lock Nut |
| 2 | 5 | 1646 | .50" Hard Flat Washer |
| 3 | 1 | 107180 | 42" Cutting Edge - Single Bevel |
| 4 | 5 | 10120 | .50" UNC X 1.75" Plow Bolt |

48" BOLT-ON CUTTING EDGE ASSEMBLY #107158

| <u>ITEM</u> | <u>REQ'D</u> | <u>PART NO.</u> | <u>DESCRIPTION</u> |
|-------------|--------------|-----------------|---------------------------------|
| 1 | 5 | 1841 | .50" UNC Deformed Oval Lock Nut |
| 2 | 5 | 1646 | .50" Hard Flat Washer |
| 3 | 1 | 106813 | 48" Cutting Edge - Single Bevel |
| 4 | 5 | 10120 | .50" UNC X 1.75" Plow Bolt |

48" BOLT-ON CUTTING EDGE ASSEMBLY #105866

| <u>ITEM</u> | <u>REQ'D</u> | <u>PART NO.</u> | <u>DESCRIPTION</u> |
|-------------|--------------|-----------------|---------------------------------|
| 1 | 5 | 1841 | .50" UNC Deformed Oval Lock Nut |
| 2 | 5 | 1646 | .50" Hard Flat Washer |
| 4 | 5 | 10120 | .50" UNC X 1.75" Plow Bolt |
| 5 | 1 | 105857 | 48" Cutting Edge - Double Bevel |