



# OPERATOR'S AND PARTS MANUAL

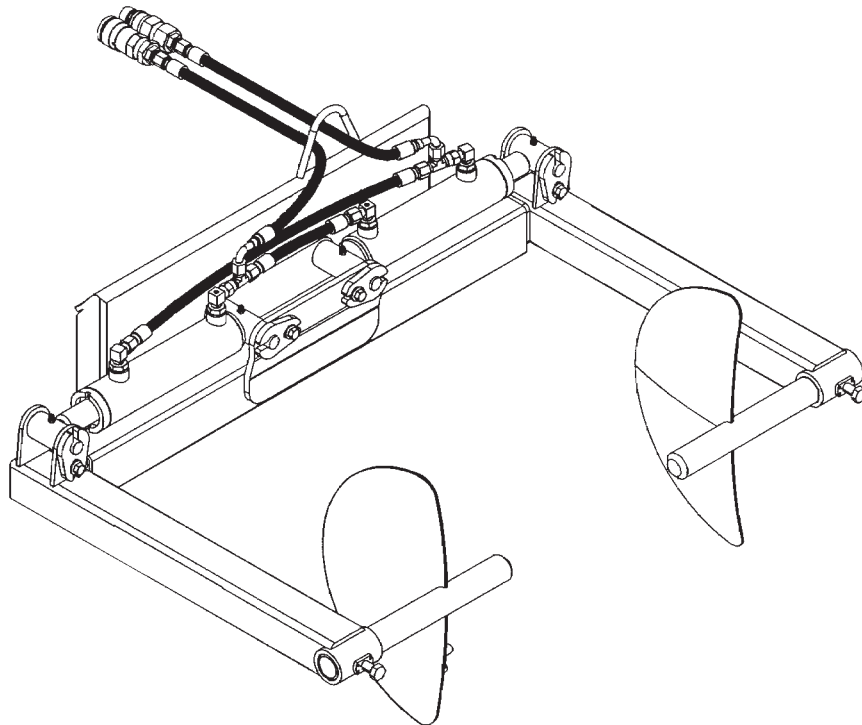
## SOD HANDLER



**PALADIN**  
LIGHT CONSTRUCTION GROUP



*The Power of Combined Excellence*



SERIAL NUMBER: \_\_\_\_\_

MODEL NUMBER: \_\_\_\_\_

Manual Number: OM655  
Part Number: 75555  
Rev. 3



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## TO THE OWNER

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### GENERAL COMMENTS

Congratulations on the purchase of your new BRADCO product! This product was carefully designed and manufactured to give you 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 safety precautions and maintenance procedures, as described in this manual.

### ABOUT THIS MANUAL

This manual has been designed to help you do a better, safer job. Read this manual carefully and become familiar with its contents. **Remember, never let anyone operate this unit without reading the "Safety Precautions" and "Operating Instructions" sections of this manual. (See Sections B and G respectively.)**

Unless noted otherwise, right and left sides are determined from the position of the operator when behind the product facing forward.

### 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 this page. This information may be obtained from the identification plate located on the product.

**MODEL** \_\_\_\_\_  
**SERIAL NUMBER** \_\_\_\_\_  
**DATE PURCHASED** \_\_\_\_\_

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

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## SAFETY PRECAUTIONS

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TAKE NOTE! THIS SAFETY ALERT SYMBOL FOUND THROUGHOUT THIS MANUAL IS USED TO CALL YOUR ATTENTION TO INSTRUCTIONS INVOLVING YOUR PERSONAL SAFETY OR OTHERS. FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN INJURY OR DEATH.



**THIS SYMBOL MEANS:**

**ATTENTION!**

**BECOME ALERT!**

**YOUR SAFETY IS INVOLVED!**

**SIGNAL WORDS:** Note the use of signal words DANGER, WARNING, and CAUTION with the safety messages. The appropriate signal word for each has been selected using the following guidelines:

**DANGER:** Indicates an imminently hazardous situation, which if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations, **typically for machine components which, for functional purposes, cannot be guarded.**

**WARNING:** Indicates a potentially hazardous situation, which if not avoided, could result in death or serious injury, and **includes hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices.**

**CAUTION:** Indicates a potentially hazardous situation, which if not avoided, **may result in minor or moderate injury. It may also be used to alert against unsafe practices.**

## SAFETY PRECAUTIONS

### GENERAL INFORMATION

This section is composed of various warnings and safety tips. **Read and learn all the information in this section before you attempt to use your attachment.** Also read your vehicle owner's manual before using your equipment. This knowledge will help you operate your unit safely. **Do not take this information lightly, it is presented for your benefit and for the benefit of others working around you.**

The "Safety Alert Symbol", as previously described, will be used throughout this manual. It will appear with the word **DANGER, WARNING, or CAUTION** above it, and a safety message pertaining to the specific topic being covered. Take the time to read these messages as you come across them.

### TO THE OPERATOR

The primary responsibility for safety with the equipment falls to the operator. Make sure that the equipment is operated only by responsible individuals with the proper instruction. It is the skill, care, common sense, and good judgment of the operator that will determine how efficiently and safely the job is performed. Know your equipment before you start. Know its capabilities and how to operate all the controls. Visually inspect your equipment before you start, and never operate equipment that is not in proper working order.

### BEFORE YOU START

1. **Read the entire loader and attachment operator's manuals** before ever attempting to use the loader. This knowledge is necessary for safe operation.
2. **Follow all safety decals.** Keep them clean, and replace them if they become worn, damaged, or illegible.
3. **Do not paint over,** remove, or deface any safety signs or warning decals on your equipment.
4. **Know your equipment inside and out.** Know how to operate all controls, and know emergency shut down procedures.
5. **Keep all stepping surfaces, pedals, and controls free from dirt, grease, and oil.** Keep equipment clean to help avoid injury from a fall when getting on or off equipment.
6. **Use handholds and step plates when getting on/off .** Failure to do so could cause a fall.
7. **Be alert to others in the work area.** Be sure others know when and where you will be working. Make sure no one is behind equipment.
8. **Never take passengers on your equipment.** There is no safe place for a passenger.

## SAFETY PRECAUTIONS

9. **Never try to board equipment while it is moving.**
10. **Turn off engine before performing maintenance.** If lift arms must be left raised for maintenance or any other reason, use a positive lift arm lock to secure the arms in place. Serious damage or personal injury could result from lift arms accidentally lowering.
11. **Reduce speed when driving over rough terrain,** on a slope, or turning, to avoid overturning the loader.
12. **Test all controls before you begin.**
13. **Do not smoke when refueling.** Allow room in the gas tank for expansion. Wipe up any spilt fuel. Secure cap tightly when done.

### WORKING WITH THE ATTACHMENT

1. **Never operate the unit without first reading and understanding the operator's manual.**
2. **Operate the attachment only in daylight or sufficient artificial light.**
3. **Do not carry load with arms in the raised position.** Always carry loads close to the ground. Do not step off platform with load raised.
4. **Check your work area, and know where all utility lines are.** Avoid hitting underground electrical wires, cables, pipes, fence posts, gas lines, uneven sidewalk edges, large rocks, etc.
5. **Never operate equipment while under the influence** of alcohol or prescription drugs, which could inhibit physical and/or mental capacity.
6. **Do not exceed rated operating capacity, as machine may become unstable, which may result in loss of control.**
7. **Slow down before turning.** Sharp turns on any terrain may cause loss of control.
8. **Always lower the loader arms to the ground,** shut off the engine, and remove the key before getting off the unit.

### TRANSPORTING THE ATTACHMENT

1. **Follow all federal, state, and local regulations when transporting the unit on public roads.**
2. **Use extra care when loading or unloading the machine onto a trailer or truck.**

### MAINTENANCE

1. **Never work on equipment while it is running.**
2. **Never make hydraulic repairs while the system is under pressure.** Injury or death could result.

## SAFETY PRECAUTIONS

3. **Observe proper maintenance schedules** and repairs to keep the unit in safe working order.
4. **Always wear safety goggles or glasses when working on equipment.**
5. **Use a drift and hammer when pressing out pins,** to prevent the pin from shattering.
6. **Use only manufacturer recommended replacement parts.** Other parts may be substandard in fit and quality.

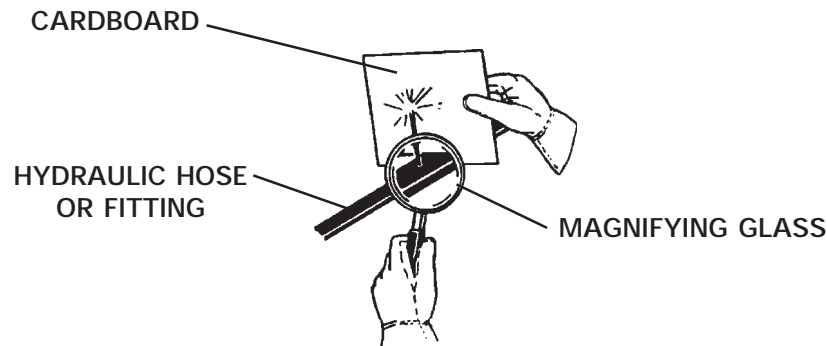
### **WARNING!**



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.



# INTERNATIONAL SYMBOLS

As a guide to the operation of your equipment, various international symbols have been utilized on the instruments and controls. The symbols are shown below with an indication of their meaning.

	Engine speed		Alternator charge
	Hours recorded		Power take-off (on)
	Engine water temperature		Power take-off (off)
	Lights		"Tortoise," slow or minimum setting
	Horn		"Hare," fast or maximum setting
	Engine oil pressure		Caution
	Hazard warning		Control lever operating direction
	Axle connect		Rock shaft (raised)
	Axle disconnect		Rock shaft (lowered)
	Continuously variable		Remote cylinder (extended)
	Increase		Remote cylinder (retracted)
	Decrease		Remote cylinder (FLOAT)
	Diesel fuel		Differential lock
	Creeper range		Read operators manual
	High range		Neutral
	Low range		Forward
			Reverse

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# PREOPERATION

## SOD LAYER

### GENERAL INFORMATION

The BRADCO Sod Layer was designed to be easy to use and maintain. It is operated by the loader's auxiliary hydraulics and mounts to the toolbar / quick attach mechanism for easy mounting.

Unless noted otherwise, right and left are determined from the position of the operator facing forward.

Remember to read the "Safety Precautions" and "Operating Instructions" sections of this manual BEFORE you attempt to install or use 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 sod layer as may be necessary without notification.

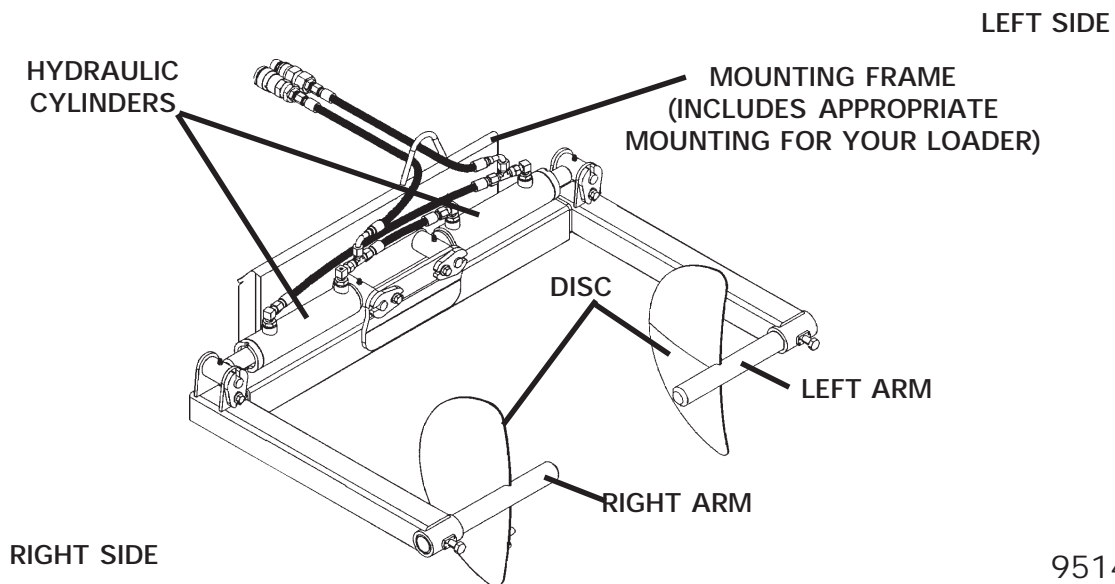
### BEFORE OPERATION

The primary responsibility for safety with this equipment falls to the operator. Make sure that the equipment is operated only by trained individuals that have read and understand this manual. Don't hurry the learning process or take the unit for granted. Practice the operation of your new equipment and become familiar with the controls and the way it handles on your machine.

If there is any portion of this manual or function you do not understand, contact your local authorized dealer or the manufacturer.

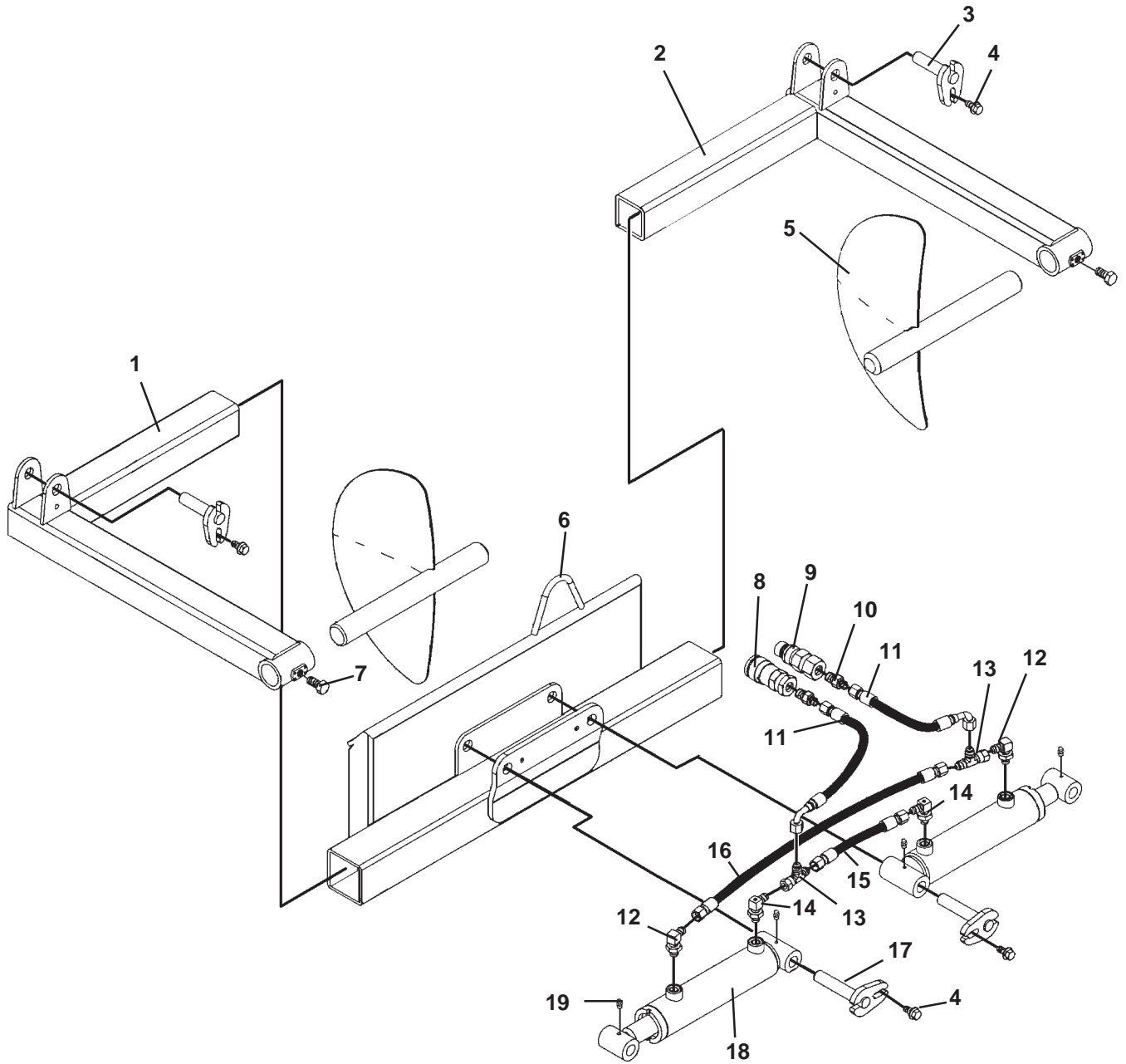
### NOMENCLATURE

Throughout this manual, reference is made to various components. Study the following diagram to acquaint yourself with the various names of these components. This knowledge will be helpful when reading through this manual or when ordering service parts.



# SOD LAYER ASSEMBLY

ASSEMBLY #19226



# SOD LAYER ASSEMBLY

ASSEMBLY #19226

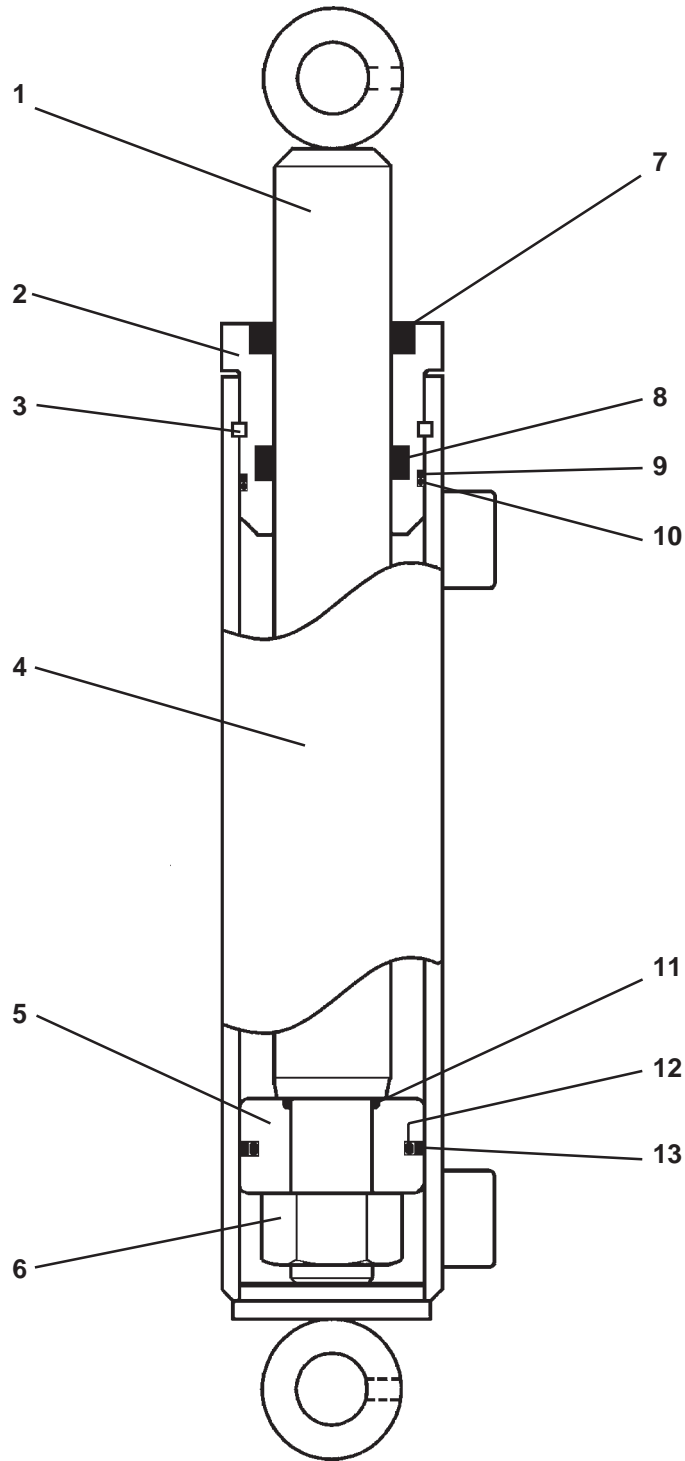
<u>NO</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	19334	Right Arm
2	1	19331	Left Arm
3	2	18588	Cylinder Pin .75" X 2.81"
4	4	1953	.38" UNC X .75" Flange Head Capscrew
5	2	2004940	Disc
6	1	**	Sod Layer / Mounting Frame
7	2	1088	.50" UNC X 1.00" Hex Capscrew
8	1	**	Female Coupler
9	1	**	Male Coupler
10	2	30324	Straight Connector 8MBo-6MFS
11	2	38125	Hose Assembly .25" X 53" 6FFS-6FFS 90°
12	2	30204	90° Elbow 6MFS - 6MBo
13	2	30316	Tee 6MFS-6FFSS-6MFS
14	2	30323	90° Elbow with Orifice 6MFS-6MBo
15	1	38123	Hose Assembly .25" X 7.50" 6FFS-6FFS
16	1	38124	Hose Assembly .25" X 22" 6FFS-6FFS
17	2	18587	Cylinder Pin .75" X 3.75"
18	2	19222	Cylinder Assembly
19	4	6616	Grease Fitting

**\*\* Sod Layer / Mounting Frame and hydraulic couplers are specific to your loader application. Contact Factory or your local BRADCO dealer to order these items.**

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# CYLINDER ASSEMBLY

ASSEMBLY #19222



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# CYLINDER ASSEMBLY

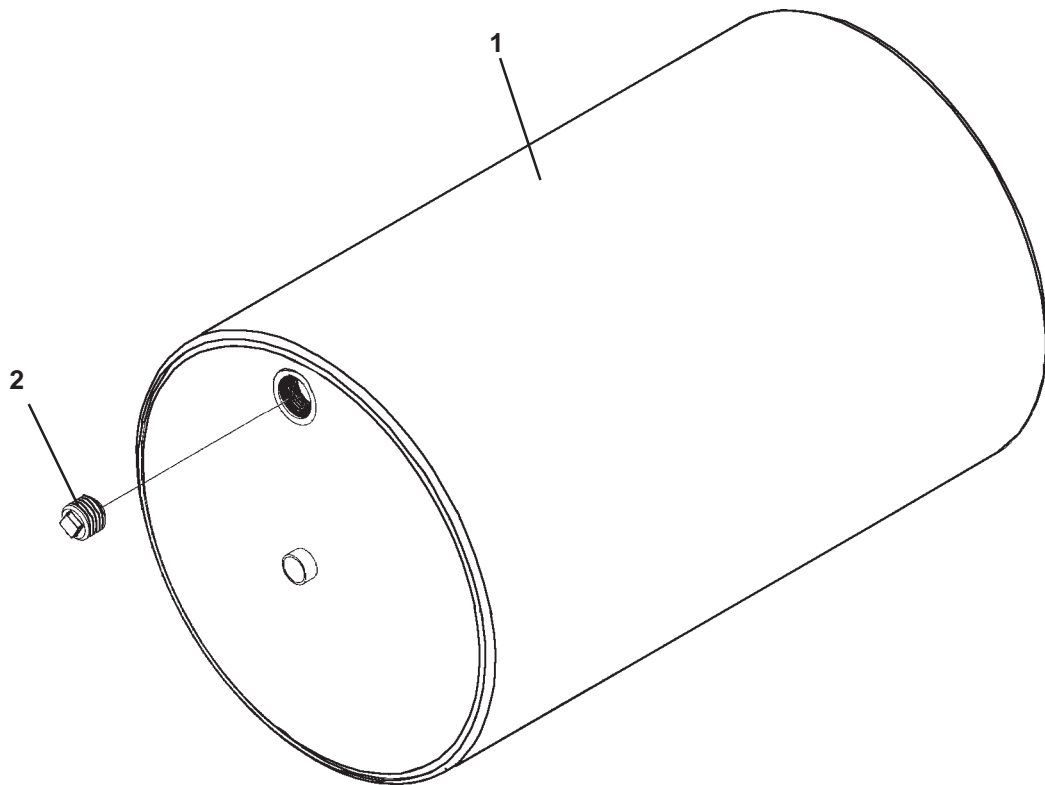
ASSEMBLY #19222

<u>NO</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	19224	Cylinder Rod
2	1	57330	Cylinder Gland
3	1	7164*	Gland Retainer Ring
4	1	19223	Cylinder Tube
5	1	6992	Piston
6	1	1482	Hex Nut
7	1	4974*	Rod Wiper
8	1	45219*	PolyPak Seal
9	1	4634*	Back-Up Washer
10	1	4633*	O'Ring
11	1	4635*	O'Ring
12	1	4637*	O'Ring
13	1	4636*	Piston Ring

**NOTE: Seal Kit #45136 includes all parts marked with an asterisk (\*). Parts are not sold separately.**

# OPTIONAL LAWN ROLLER

ASSEMBLY #104388



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# OPTIONAL LAWN ROLLER

ASSEMBLY #104388


<u>NO</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	101361	Roller Drum
2	1	30365	Plug - Sq. Head 1.50" NPT

## INSTALLATION AND OPERATION

### ATTACHING

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

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

**WARNING!**  **To Avoid Serious Personal Injury, make sure the Sod Layer 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 cylinders 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, 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 cylinders with a multi-purpose grease will greatly increase the life of the product.**

### OPERATION

Simplicity of operation is one of the key features of the BRADCO Sod Layer. The Sod Layer mounts to the attachment mechanism of your loader, therefore thorough knowledge of the loader controls is necessary for attachment operation. Read the loader operator's manual for information regarding operation before attempting to use this attachment

**Raising & Lowering The Attachment** is accomplished by raising and lowering the loader arms.

**CAUTION!**  **Be aware of any overhead power or telephone lines, tree limbs, etc., that the raised attachment / loader arms could come into contact with. Contact with electrical lines could cause electrocution and death. Take notice of any water or gas shut off, stumps, sidewalk edges etc., that the lowered attachment could come into contact with.**

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## INSTALLATION AND OPERATION

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### **BEFORE OPERATING THE ATTACHMENT**

1. Clear work area of all bystanders, pets, and livestock.
2. Be sure all hydraulic hoses, fittings, bolts, and pivot pins are tight.

### **OPERATING TIPS**

The Sod Layer is a great attachment for unrolling sod, whether you have a big project or a smaller job where space restrictions are a concern. The BRADCO Sod Layer can transport and lay a roll of sod up to 34" wide.

Preparation of the soil is critical, and yet often neglected. Site preparation will simplify maintenance for years to come and provide a healthier lawn. Consult the nearest county extension office for soil sampling materials and procedures, and then make any necessary amendments to the soil in preparation for the sod.

Sod should be purchased as fresh as possible and laid as soon as possible, or within one day after delivery. **NOTE: If sod needs to be stored for more than 24 hours after delivery, it should be kept in a cool, shaded area to avoid drying out of the exposed rolls.**

Sod should be unrolled onto slightly moistened soil, staggering the joints. When laying sod on a slope, unroll across the slope and stake each length to hold it in place.

Fill any cracks with soil to prevent edges from drying. A lawn roller is recommended to smooth the site and ensure the roots have good contact with the soil.

Keep the sod moist but not saturated until it is firmly rooted in the soil (a few days), and then gradually reduce watering. After two to three months it may be treated as an established lawn.

**DANGER! NEVER EXCEED THE RATED LIFT CAPACITY OF YOUR LOADER.**



### **OPTIONAL LAWN ROLLER**

The optional lawn roller attaches directly to the sod layer for smoothing out the lawn, and ensuring that the roots on new sod have good contact with the soil.

### **MOUNTING INSTRUCTIONS:**

**IMPORTANT:** The lawn roller drum, when full, weighs approximately 758 lbs. Combined weight of the drum and sod layer is approximately 920 lbs. The following chart can work as a guide when determining the amount of water added to the drum. Check your skid-steer's rated lift capacity before adding water.

# INSTALLATION AND OPERATION

Fill Plug Location	Approximate Weight
1 o'clock	724 lbs.
2 o'clock	602 lbs.
3 o'clock	406 lbs.
4 o'clock	214 lbs.
5 o'clock	103 lbs.

**NOTE: Drum weight without water is approximately 65 lbs.**

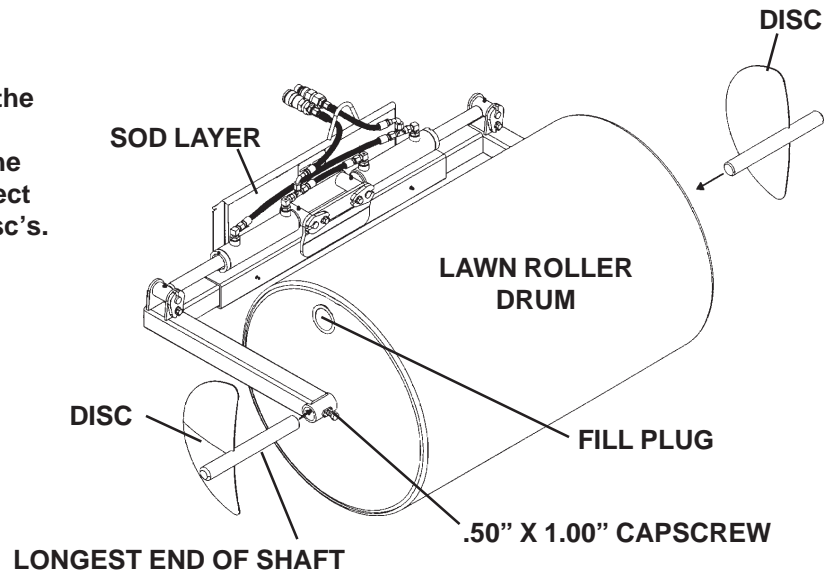
**DANGER! NEVER EXCEED THE RATED LIFT CAPACITY OF YOUR LOADER.**



1. Remove the pipe plug and fill the roller drum with water to the desired level.
2. Loosen the .50" x 1.00" capscrew securing the discs to the arms and remove the disc's from the sod layer.
3. Extend the arms until there is a minimum of 45" between the left and right arm.
4. Position the arms on each side of the drum. See Figure #1
5. Position the discs with the longest length of shaft to the inside and install them through the attachment and into the drum. Tighten the .50" x 1.00" capscrew to secure the in place. See Figure #1

**FIGURE #1**

**NOTE: Due to the weight of the drum it may be necessary to remove the sod layer from the skid-steer to obtain the correct position for installing the disc's.**



## **LAWN ROLLER OPERATING TIPS**

When using the lawn roller we recommend making a forward pass and then driving back over the same path to smooth out any skid-steer tracks.

Due to the weight of the roller, and to minimize lawn damage, before turning lift the roller and rotate it down, toward the front of the skid-steer.

When moving to a new location, lift the roller drum and rotate it down toward the front of the skid-steer. This will keep the weight close to the skid-steer and give you maximum control.

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## INSTALLATION AND OPERATION

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**WARNING!**  **TO PREVENT POSSIBLE INJURY OR DEATH, DO NOT TRANSPORT THE ATTACHMENT (WITH THE LAWN ROLLER INSTALLED) BY LIFTING STRAIGHT UP OFF THE GROUND. CENTER OF GRAVITY IS EXTENDED AND LOSS OF CONTROL COULD OCCUR.**

### **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 rods with grease.
7. Store the unit in a dry and protected place. Leaving the unit outside will materially shorten its life.

**IMPORTANT: IN NORTHERN CLIMATES, DRAIN ALL WATER FROM THE LAWN ROLLER TO PREVENT DAMAGE TO THE UNIT FROM FREEZING.**

## MAINTENANCE & SERVICE

### GENERAL INFORMATION

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

### DAILY

- Check all bolts and nuts for tightness.
- Replace any missing bolts or nuts with approved replacement parts.
- Check hydraulic system for hydraulic oil leaks. See procedure below.
- Visually inspect the machine for worn parts or cracked welds, and repair as necessary.

### EVERY 40 HOURS

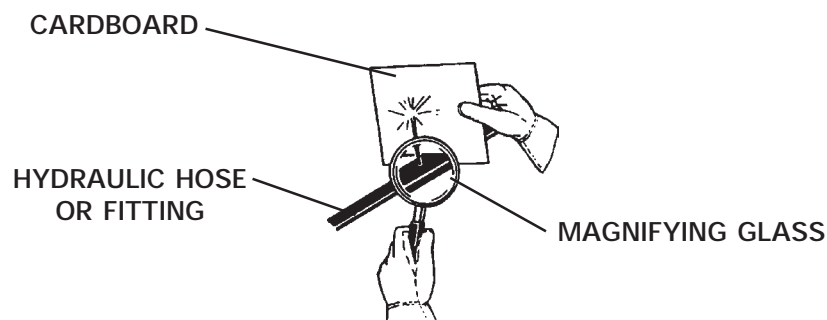
- Lubricate all grease fittings.

**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

## CYLINDER SEAL REPLACEMENT

### CYLINDER SEAL REPLACEMENT

#### GENERAL INFORMATION

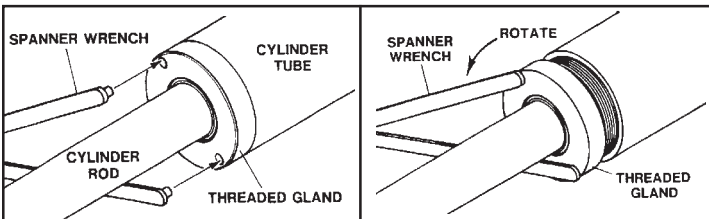
The following information is provided to assist you in the event you should need to repair or rebuild a hydraulic cylinder. When working on hydraulic cylinders, make sure that the work area and tools are clean and free of dirt to prevent contamination of the hydraulic system and damage to the hydraulic 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

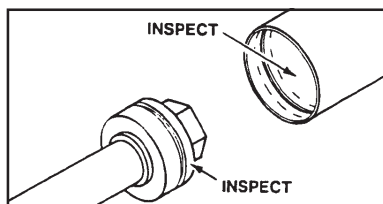
**IMPORTANT:** Do not contact the active surface of the cylinder rod with the vise. Damage to the rod could result.

#### THREADED TYPE GLAND

1. Rotate the gland with a spanner wrench counter-clockwise until the gland is free of the cylinder tube.

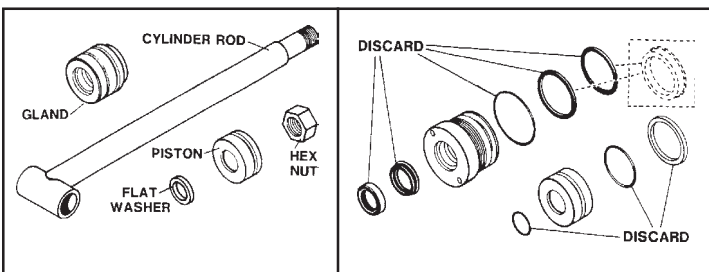


2. Pull the cylinder rod from the cylinder tube.
3. Inspect the piston and the bore of the cylinder tube for deep scratches or galling. If damaged, the piston and cylinder tube must be replaced.



4. 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.

5. Remove and discard all the old seals.

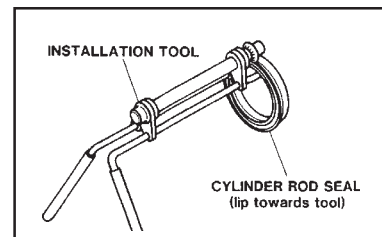


#### ASSEMBLY PROCEDURE

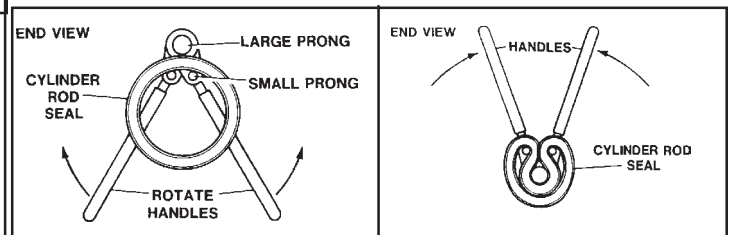
**IMPORTANT:** Replace all seals even if they do not appear to be damaged. Failure to replace all seals may result in premature cylinder failure.

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.

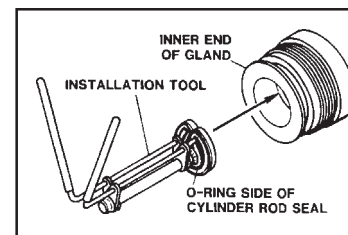
A special installation tool (Part #65349) is available to help with installing the seal. Simply fit the end of the tool over the seal so that the large prong of the tool is on the outside of the seal, and the two smaller prongs on the inside. The lip of the seal should be facing towards the tool.



Rotate the handles on the tool around to wrap the seal around the end of the tool.



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.

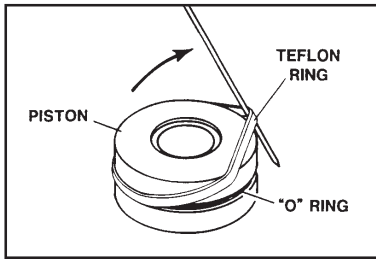


2. Install the new piston ring, rod wiper, O-rings and backup washers if applicable on the piston.

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.

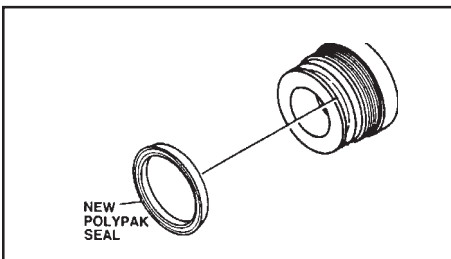
# MAINTENANCE

## CYLINDER SEAL REPLACEMENT

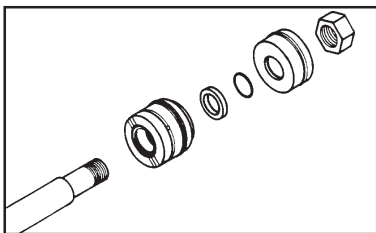


3. After installing the rod seal inside the gland as shown in step #1, install the external seal.

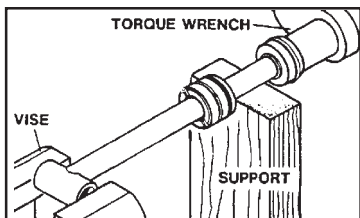
**NOTE:** Threaded glands may have been equipped with a separate O-ring and backup washer system or a polypak (all in one) type seal. Current seal kits contain a polypak (all in one) type seal to replace the discarded seal types on ALL THREADED GLANDS.



4. 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.



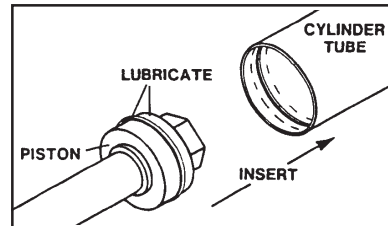
5. Secure the cylinder rod (mounting end) in a vise with a support at it's center. Torque the nut to the amount shown for the thread diameter of the cylinder rod (see chart).



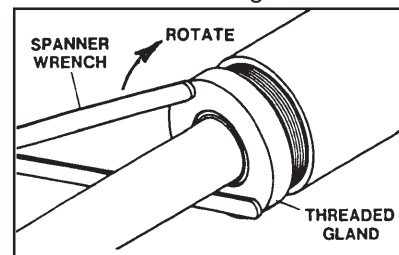
**IMPORTANT:** Do not contact the active surface of the cylinder rod with the vise. Damage to the rod could result.

6. Apply a lubricant (such as Lubriplate #105) to the piston and teflon ring. Insert the cylinder rod assembly into the cylinder tube.

**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.



7. Use a spanner wrench to rotate the gland clockwise into the cylinder. Continue to rotate the gland with the spanner wrench until it is tight.



**NOTE:** Seal kits will service most cylinders of similar bore size and rod diameter.

**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.

**TORQUE SPECIFICATION CHART**

Use the following torque values when tightening the nuts on the cylinder rod threads.

Thread Diameter	POUNDS - FEET	
	Minimum	Maximum
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.

# TROUBLESHOOTING

## SOD LAYER

PROBLEM	POSSIBLE CAUSE	POSSIBLE REMEDY
Arms do not open and close.	Loader auxiliary hydraulics not engaged.	Refer to loader operator's manual.
	Inadequate hydraulic flow from loader.	Check hydraulic flow to attachment.
	Low oil supply.	Add oil.
	Couplers not engaged.	Engage couplers.
	Air in hydraulic lines.	Activate system until air is purged from system.
	Broken hose.	Replace damaged hose.
	Obstruction in hydraulic lines.	Remove obstruction and replace if necessary.
Arms open and close too slowly.	Cold Oil	Warm oil with engine at idle.
	Oil leaking past cylinder packings.	Replace cylinder packings.
Arms fail to maintain their position.	Broken or leaking hydraulic lines.	Replace broken hose and check for leaks.
	Oil leaking past cylinder packings.	Replace cylinder packings.

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# 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.

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	Inches	Millimeters	Pounds Feet		Newton-Meters		Pounds Feet		Newton-Meters		Pounds Feet		Newton-Meters	
			Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
1/4	6.35		5	6	6.8	8.13	9	11	12.2	14.9	12	15	16.3	30.3
5/16	7.94		10	12	13.6	16.3	17	20.5	23.1	27.8	24	29	32.5	39.3
3/8	9.53		20	23	27.1	31.2	35	42	47.5	57.0	45	54	61.0	73.2
7/16	11.11		30	25	40.7	47.4	54	64	73.2	86.8	70	84	94.9	113.9
1/2	12.70		45	52	61.0	70.5	80	96	108.5	130.2	110	132	149.2	179.0
9/16	14.29		65	75	88.1	101.6	110	132	149.2	179.0	160	192	217.0	260.4
5/8	15.88		95	105	128.7	142.3	150	180	203.4	244.1	220	264	298.3	358.0
3/4	19.05		150	185	203.3	250.7	270	324	366.1	439.3	380	456	515.3	618.3
7/8	22.23		160	200	216.8	271.0	400	480	542.4	650.9	600	720	813.6	976.3
1	25.40		250	300	338.8	406.5	580	696	786.5	943.8	900	1080	1220.4	1464.5
1-1/8	25.58		-	-	-	-	800	880	1084.8	1193.3	1280	1440	1735.7	1952.6
1-1/4	31.75		-	-	-	-	1120	1240	1518.7	1681.4	1820	2000	2467.9	2712.0
1-3/8	34.93		-	-	-	-	1460	1680	1979.8	2278.1	2380	2720	3227.3	3688.3
1-1/2	38.10		-	-	-	-	1940	2200	2630.6	2983.2	3160	3560	4285.0	4827.4

\* Thick Nuts must be used with Grade 8 bolts

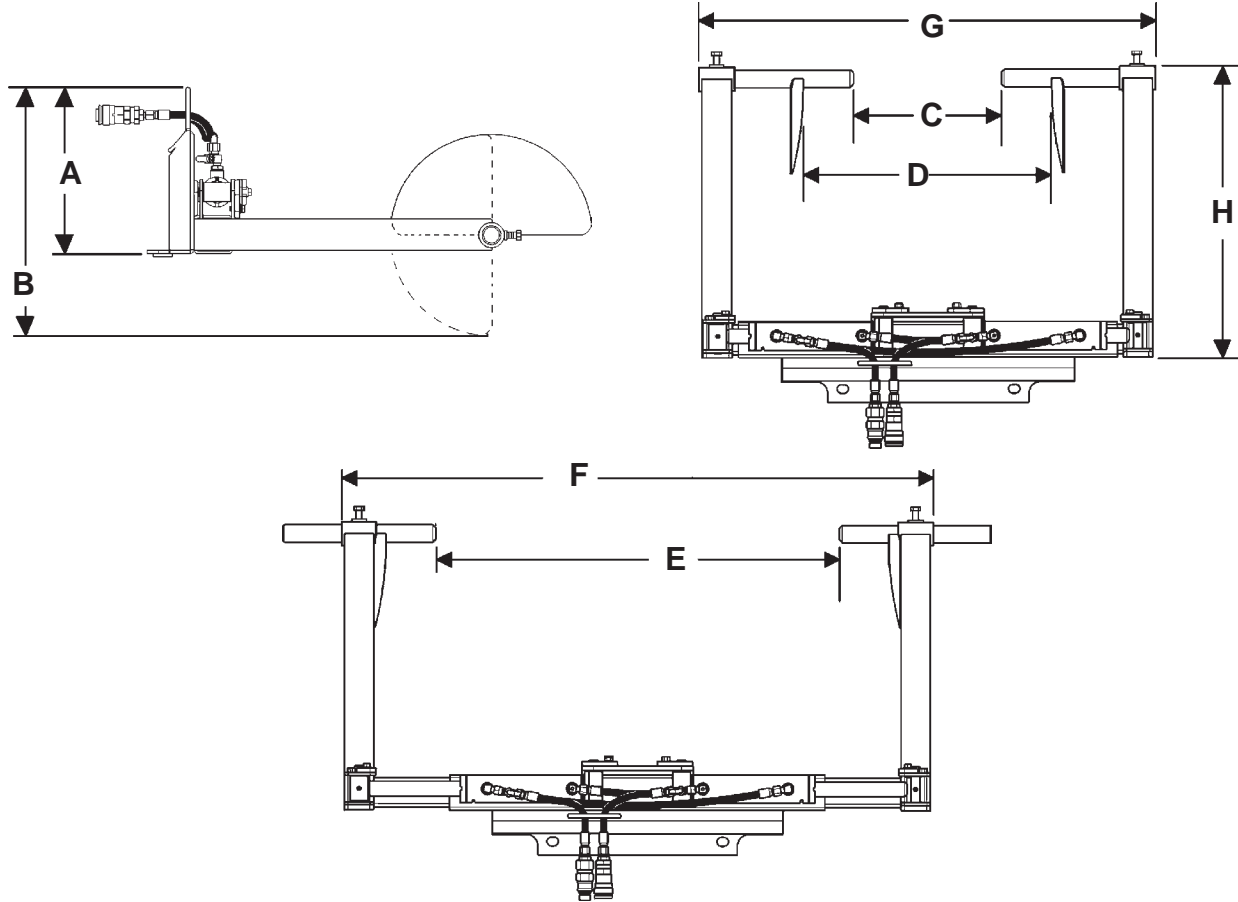
### METRIC BOLT TORQUE SPECIFICATIONS

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		5.8-9.4	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

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# SPECIFICATIONS

## SOD LAYER



# SPECIFICATIONS

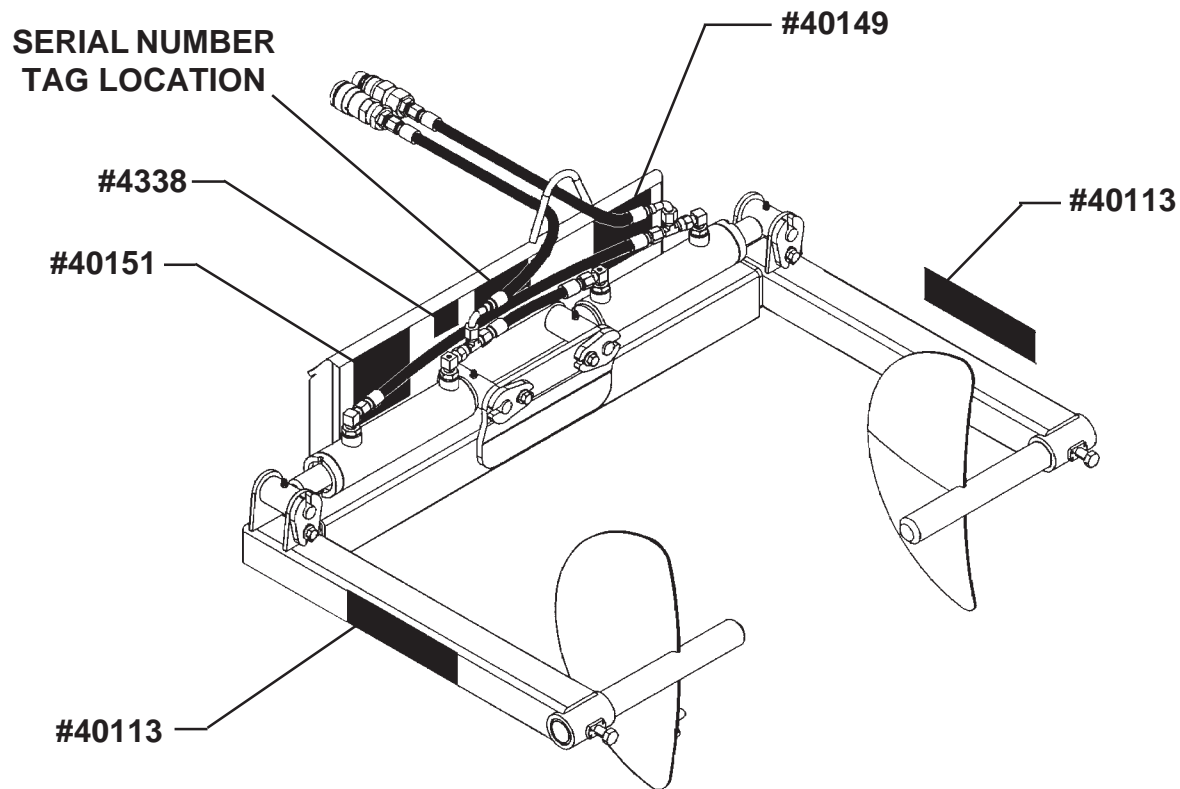
<b>DESCRIPTION</b>	
A. Overall Height (Sod Roll Guides Up Position) .....	13.19"
B. Overall Height (Sod Roll Guides Down Position) .....	19.62"
C. Minimum Opening .....	12.50"
D. Minimum Sod Roll Size .....	21.00"
E. Maximum Sod Roll Size .....	34.00"
F. Overall Width (Arms Open) .....	50.50"
G. Overall Width (Arms Closed) .....	38.50"
H. Overall Length without Mount .....	24.50"
Operating Pressure (PSI) .....	1500-3000
Weight (LBS) .....	195#
<b><u>CYLINDER SPECIFICATIONS</u></b>	
Bore .....	2.00"
Stroke .....	6.00"
Rod Diameter .....	1.25"
<b>SPECIFICATIONS AND DESIGN ARE SUBJECT TO CHANGE WITHOUT NOTICE AND WITHOUT LIABILITY THEREFOR.</b>	

# DECALS

## DECAL PLACEMENT

### GENERAL INFORMATION

The diagram on this page shows the location of the decals used on the BRADCO Sod Layer. 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 attachment. They contain information you need to know for both safety and longevity.



**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.

# BRADCO®

BRADCO LOGO  
PART #40113



MADE IN USA  
PART #4338



DANGER! PINCH POINTS  
PART #40149



WARNING! HIGH PRESSURE FLUID  
PART #40151

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# Limited Warranty

Except for the Excluded Products as described below, all new products are warranted to be free from defects in material and/or workmanship during the Warranty Period, in accordance with and subject to the terms and conditions of this Limited Warranty.

1. Excluded Products. The following products are excluded from this Limited Warranty:

(a) Any cable, part that engages with the ground (i.e. sprockets), digging chain, bearing, teeth, tamping and/or demolition head, blade cutting edge, pilot bit, auger teeth and broom brush that either constitutes or is part of a product.

(b) Any product, merchandise or component that, in the opinion of Paladin Light Construction<sup>1</sup>, has been (i) misused; (ii) modified in any unauthorized manner; (iii) altered; (iv) damaged; (v) involved in an accident; or (vi) repaired using parts not obtained through Paladin Light Construction.

2. Warranty Period. The Limited Warranty is provided only to those defects that occur during the Warranty Period, which is the period that begins on the first to occur of: (i) the date of initial purchase by an end-user, (ii) the date the product is first leased or rented, or (iii) the date that is six (6) months after the date of shipment by Paladin Light Construction as evidenced by the invoiced shipment date (the "Commencement Date") and ends on the date that is twelve (12) months after the Commencement Date.

3. Terms and Conditions of Limited Warranty. The following terms and conditions apply to the Limited Warranty hereby provided:

(a) Option to Repair or Replace. Paladin Light Construction shall have the option to repair or replace the product.

(b) Timely Repair and Notice. In order to obtain the Limited Warranty, (i) the product must be repaired within thirty (30) days from the date of failure, and (ii) a claim under the warranty must be submitted to Paladin Light Construction in writing within thirty (30) days from the date of repair.

(c) Return of Defective Part or Product. If requested by Paladin Light Construction, the alleged defective part or product shall be shipped to Paladin Light Construction at its manufacturing facility or other location specified by Paladin Light Construction, with freight PRE-PAID by the claimant, to allow Paladin Light Construction to inspect the part or product.

Claims that fail to comply with any of the above terms and conditions shall be denied.

## **LIMITATIONS AND EXCLUSIONS.**

**THIS LIMITED WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND ANY WARRANTY BASED ON A COURSE OF DEALING OR USAGE OF TRADE.**

**IN NO EVENT SHALL PALADIN LIGHT CONSTRUCTION BE LIABLE FOR CONSEQUENTIAL OR SPECIAL DAMAGES.**

**IN NO EVENT SHALL PALADIN LIGHT CONSTRUCTION BE LIABLE FOR ANY LOSS OR CLAIM IN AN AMOUNT IN EXCESS OF THE PURCHASE PRICE, OR, AT THE OPTION OF PALADIN LIGHT CONSTRUCTION, THE REPAIR OR REPLACEMENT, OF THE PARTICULAR PRODUCT ON WHICH ANY CLAIM OF LOSS OR DAMAGE IS BASED. THIS LIMITATION OF LIABILITY APPLIES IRRESPECTIVE OF WHETHER THE CLAIM IS BASED ON BREACH OF CONTRACT, BREACH OF WARRANTY, NEGLIGENCE OR OTHER CAUSE AND WHETHER THE ALLEGED DEFECT IS DISCOVERABLE OR LATENT.**

<sup>1</sup>Attachment Technologies Inc., a subsidiary of Paladin Brands Holding, Inc. (PBHI) is referred to herein as Paladin Light Construction.