



# 40" & 48" TILLERS

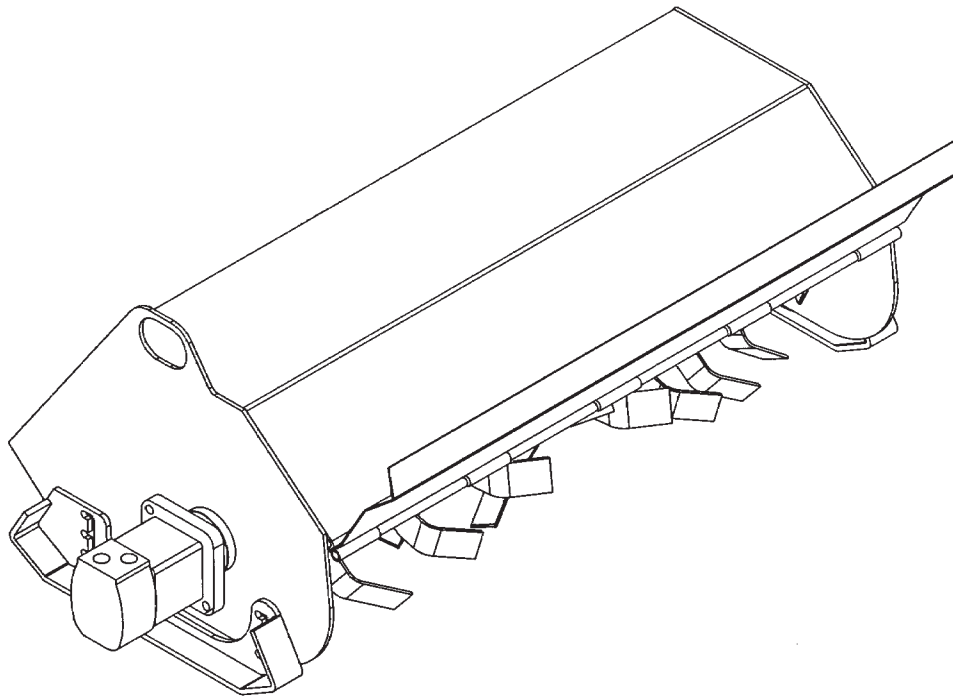
## OPERATOR'S AND PARTS MANUAL



**PALADIN**  
LIGHT CONSTRUCTION GROUP



*The Power of Combined Excellence*



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

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

Manual Number: OM637  
Part Number: 75537  
Rev. 4



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# TABLE OF CONTENTS

---

<b>TO THE OWNER .....</b>	<b>A</b>
<b>SAFETY PRECAUTIONS .....</b>	<b>B</b>
General Information	
To The Operator	
Before You Start	
Working With The Tiller	
Transporting the Tiller	
Maintenance	
<b>INTERNATIONAL SYMBOLS .....</b>	<b>C</b>
<b>PREOPERATION .....</b>	<b>D</b>
General Information	
Before Operation	
Major Component Nomenclature	
<b>TILLER ASSEMBLY .....</b>	<b>E</b>
Tiller Assembly	
Tine Assembly	
<b>INSTALLATION .....</b>	<b>F</b>
<b>OPERATING INSTRUCTIONS .....</b>	<b>G</b>
General Information	
The Loader	
Raising/Lower the Tiller	
Before Operating the Tiller	
Operating the Tiller	
<b>MAINTENANCE &amp; SERVICE .....</b>	<b>L</b>
Daily	
Replacing Hydraulic Motor	
Replacing Left Bearing	
Replacing The Tine Assembly	
Replacing The Tines	
<b>REMOVAL &amp; STORAGE .....</b>	<b>M</b>
<b>TROUBLESHOOTING .....</b>	<b>N</b>
<b>BOLT TORQUE .....</b>	<b>O</b>
<b>SPECIFICATIONS .....</b>	<b>P</b>
<b>DECALS .....</b>	<b>Q</b>
<b>PREDELIVERY CHECKLIST .....</b>	<b>R</b>
<b>LIMITED WARRANTY .....</b>	<b>S</b>

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## TO THE OWNER

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### GENERAL COMMENTS

Congratulations on the purchase of your new tiller! Your tiller was carefully designed and manufactured to give you years of dependable service. Your tiller will require some minor maintenance (such as cleaning and lubricating), 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 tiller 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 tiller 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 tiller 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 tiller in the space provided on this page. This information may be obtained from the identification plate located on the back of tiller housing.

**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

## TILLER

### 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 tiller.** 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 tiller 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

### TILLER

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 TILLER

1. **Never operate the unit without first reading and understanding the operator's manual.**
2. **Operate the tiller 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 TILLER

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

### TILLER

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.

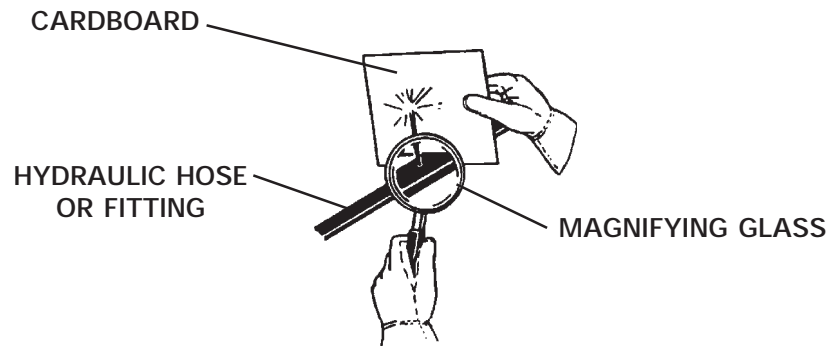
#### **WARNING!**



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

## TILLER

### GENERAL INFORMATION

The BRADCO tillers were designed to be easy to use and maintain. They are operated by the loader's auxiliary hydraulics, and mount 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 tiller.

**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 tillers as may be necessary, without notification.**

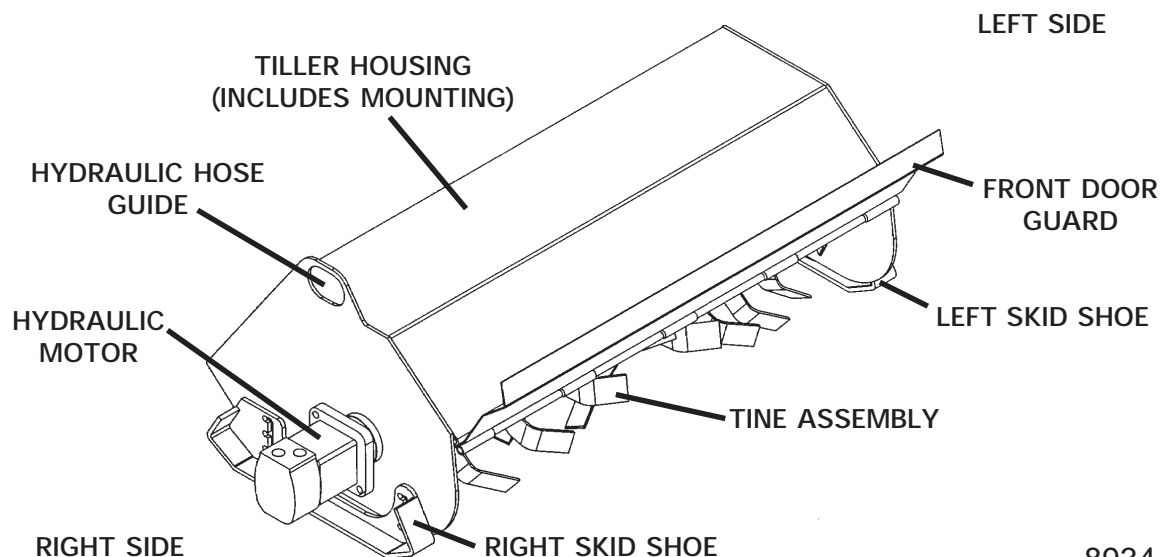
### BEFORE OPERATION

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.

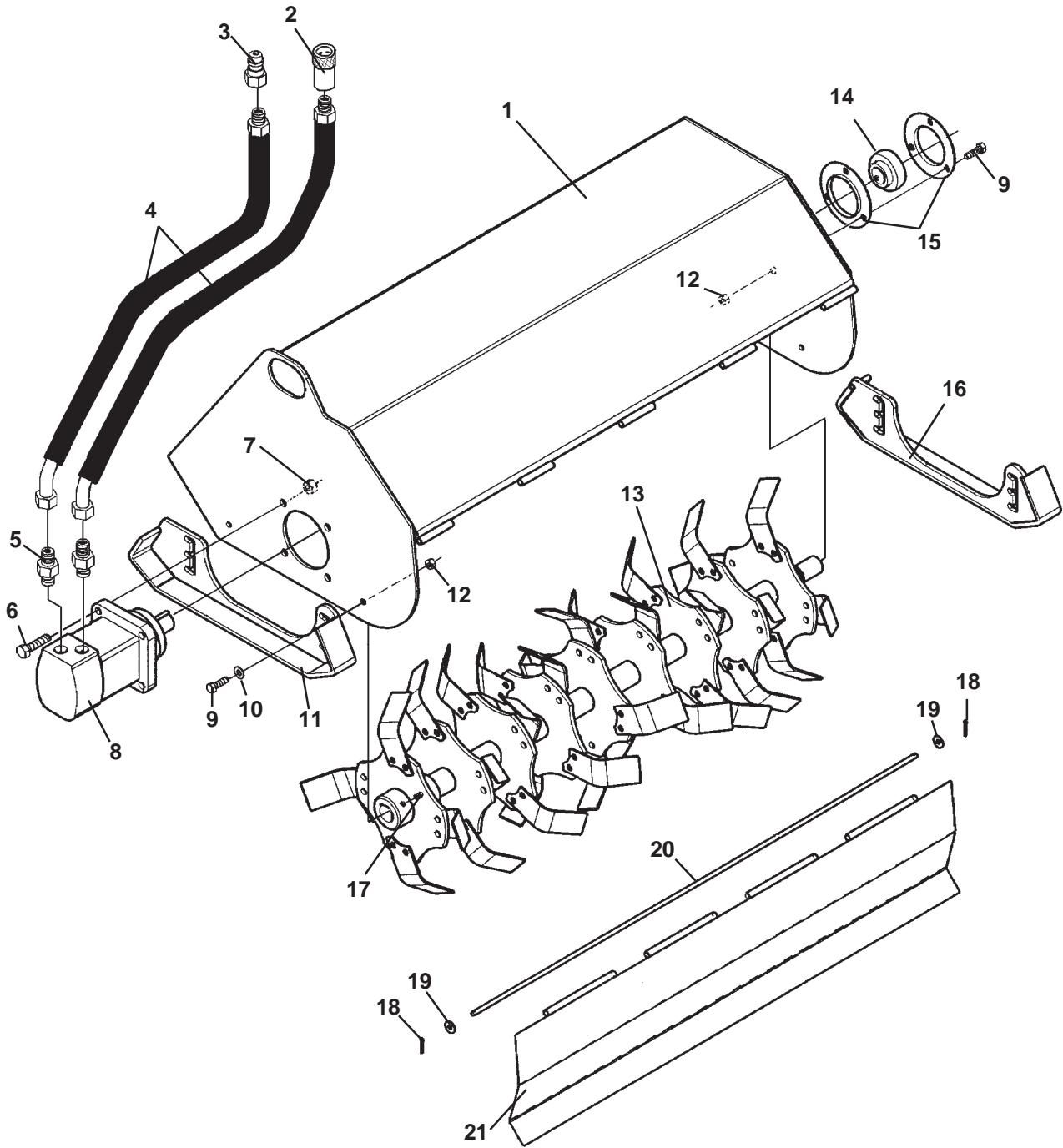
### NOMENCLATURE

Throughout this manual, reference is made to various tiller 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.



# TILLER ASSEMBLY

40" & 48" TILLER ASSEMBLY



**TILLER ASSEMBLY**

40" &amp; 48" TILLER ASSEMBLY

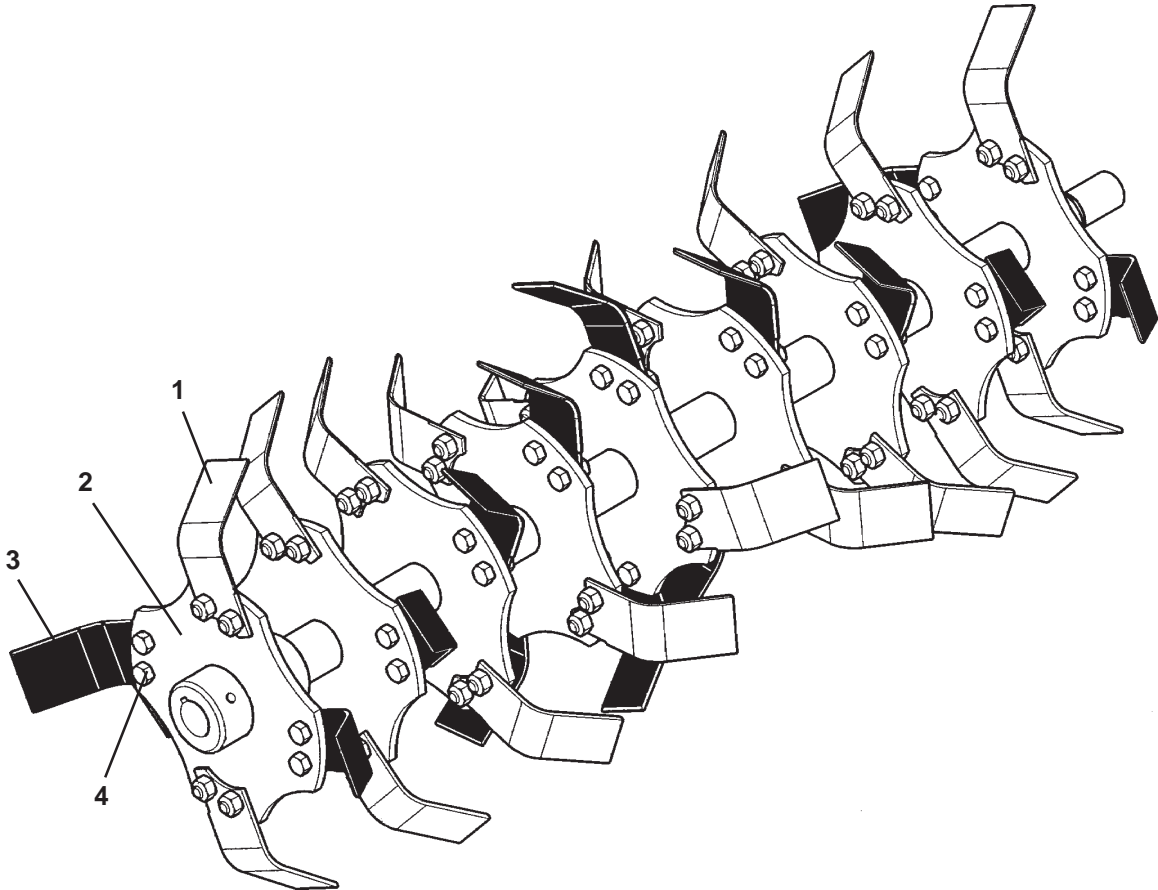
<u>NO</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	**	Tiller Housing
2	1	**	Quick Coupler - Female
3	1	**	Quick Coupler - Male
4	2	38044	Hose Assembly .50" X 66" 10MBo-10FJ45° HS
5	2	3431	Straight Adapter 10MBo-10MJ
6	4	1091	.50" UNC X 1.75" Hex Capscrew
7	4	1841	.50" UNC Deformed Lock Nut
8	1	17405	Motor
	-	1675	Replacement Key
9	7	1043	.38" UNC X 1.00" Hex Capscrew
10	4	1800	.38" Hard Flat Washer
11	1	2004209	Right Skid Shoe
12	7	1837	.38" UNC Deformed Lock Nut
13	1	2004263	40" Tine Assembly (See Breakdown)
	1	2006030	48" Tine Assembly (See Breakdown)
14	1	2004285	Ball Bearing with Collar
15	1	2004280	Flangette Set
16	1	2004207	Left Skid Shoe
17	2	1575	Set Screw
18	2	1611	Cotter Pin
19	2	1524	.31" Flat Washer
20	1	2004214	40" Hinge Bar
	1	2006005	48" Hinge Bar
21	1	2004212	40" Front Door Guard
	1	2006000	48" Front Door Guard

**\*\* Tiller Housing and hydraulic couplers are specific to your loader application. Contact Factory or your local BRADCO dealer to order these items.**

# TINE ASSEMBLY

40" TINE ASSEMBLY #2004263

48" TINE ASSEMBLY #2006030





## TINE ASSEMBLY

40" TINE ASSEMBLY #2004263

48" TINE ASSEMBLY #2006030

### 40" TINE ASSEMBLY #2004263

<u>NO</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	18	2000116	Tiller Tine - Left
2	1	2004264	40" Tiller Hub
3	18	2000121	Tiller Tine - Right
4	72	17428	.44" UNF X 1.00" Hex Capscrew - Grade 8
	72	17429	.44" UNF Deformed Lock Nut - Grade 8

### 48" TINE ASSEMBLY #2006030

<u>NO</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	22	2000116	Tiller Tine - Left
2	1	2006025	48" Tiller Hub
3	22	2000121	Tiller Tine - Right
4	88	17428	.44" UNF X 1.00" Hex Capscrew - Grade 8
	88	17429	.44" UNF Deformed Lock Nut - Grade 8

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# INSTALLATION INSTRUCTIONS

## TILLER

### GENERAL INFORMATION

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

Remember to read all safety warnings, decals, and operating instructions before operating the loader or attachment.

### MOUNTING INSTRUCTIONS

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

**NOTE: It is important to make sure the locking mechanism on your quick attach is engaged, therefore locking the attachment onto the loader.**

**IMPORTANT: Make sure all foreign matter is cleaned from hydraulic connectors before making connections.**

4. With the auxiliary hydraulic system turned off, route the hydraulic hoses through the hose guide on the tiller housing, and connect them to their proper auxiliary couplers on the loader.
5. Complete the predelivery checklist located in the back of this manual (Section R). Tiller installation is now complete.

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# OPERATING INSTRUCTIONS

## GENERAL INFORMATION

The BRADCO tiller is perfect for home gardening, landscaping, and vegetable farming. It turns up hard packed ground, and leaves the perfect seedbed for gardens or lawns.


Simplicity of operation is one of the key features of the BRADCO Tiller. It is important, however, to be familiar with and know the controls and adjustments on both the tiller and loader. Such knowledge is crucial for safe, efficient operation of equipment. Take the time to learn how they operate now.

## THE LOADER

The tiller mounts to the attachment mechanism of your loader. Due to this arrangement, thorough knowledge of the loader controls is necessary for tiller operation. Read your loader operator's manual for information regarding operation before attempting to use the attachment.

## RAISING / LOWERING THE TILLER


Raise / lower the tiller unit by raising / lowering the loader arms.

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

## BEFORE OPERATING THE TILLER

- Clear work area of all bystanders, pets and livestock.
- Be sure all tiller tines, bolts and nuts are tight, and front door guard is in place and secure.
- Clear the area of rocks, branches, and other foreign objects.
- Tall grass and weeds may need to be mowed before tilling to avoid wrapping around the tine assembly, therefore reducing tiller performance.
- Adjust the left and right skid shoes to the correct location for the desired tilling depth.

**DANGER!**  **ROTATING TINES HAZARD!** To prevent serious injury or death from rotating tines: Stay clear of tiller when engine is running. Keep others away. Keep hands, feet, and clothing away from moving parts. Follow Safety Shutdown Procedure whenever leaving operator's station.

**WARNING!**  **THROWN OBJECT HAZARD!** To prevent serious injury or death from thrown objects, stay away from discharge area during operation. Keep others away.

# OPERATING INSTRUCTIONS

## OPERATING THE TILLER

After thoroughly checking the tiller and preparing the work area, you are ready to begin tilling.

Following the loader manual's operating and safety procedures, start the loader and position the tiller at your starting location.

With the loader at idle speed and the tiller off of the ground, engage the auxiliary hydraulics to begin tiller rotation. Position the tiller so the skid-shoes are parallel to the ground, and increase the engine RPM.

**NOTE: Tiller Tines will cut better at full RPM.**

Carefully lower the tiller to the ground and begin to slowly travel in reverse. Gradually increase your speed until the desired results are achieved. It is recommended after the first 50 feet to stop and check to ensure that the tiller is adjusted properly.

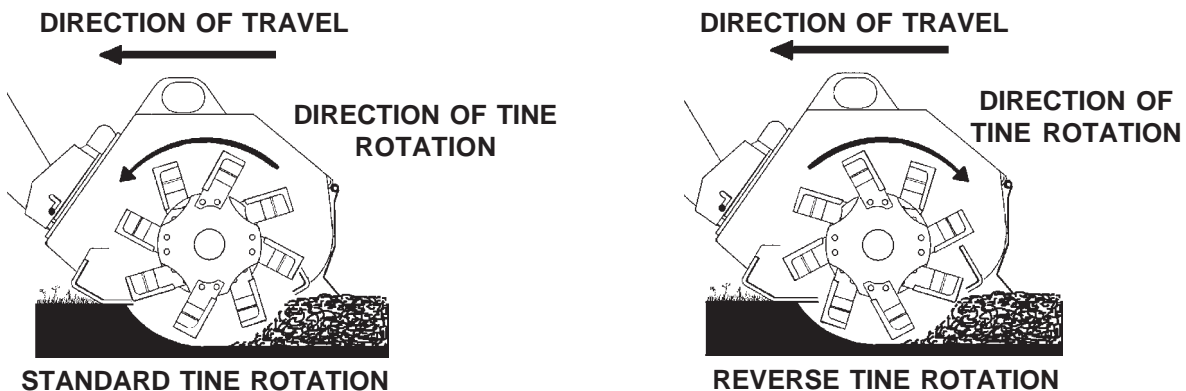
**CAUTION:** Be prepared for sudden loader movement when lowering tiller into the ground. Rotating tines are capable of pulling or pushing the loader, depending on tine rotation.



Tilling should not be done in wet conditions, as soil will stick to the tines.

There are several conditions that will cause the tiller to "walk up" onto the top of the ground and push the loader. The most common is traveling too fast and low engine RPM (tines moving too slowly for ground conditions). If you have increased tine RPM and decreased travel speed and the tiller continues to "walk up", check the tines. Make sure the cutting edge is still sharp and that the tiller is rotating in the correct direction for tine installation. See Figure #1.

**FIGURE #1**



(NOTE: THE SHARP EDGE OF TINES MUST BE INSTALLED TO CONTACT THE GROUND FIRST.)

## REVERSE TINE TILLER

The BRADCO tiller can be re-assembled to reverse tine rotation. The reverse rotation of the tiller tines forces the tiller into the ground, preventing it from "walking up" on hard ground. Once it is in the ground, it stays put. Reverse tine rotation has also been noted to bury debris better than standard tine rotation.

## 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

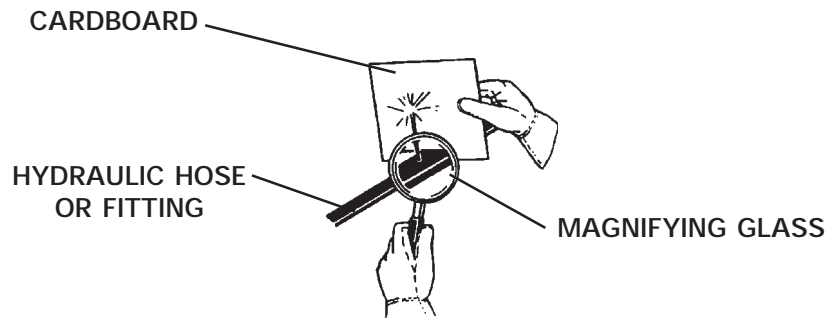
- Check all tines, bolts and nuts for tightness.
- Replace any missing tines, bolts, or nuts with approved replacement parts.
- Check that front door guard is securely in place.
- Check hydraulic system for hydraulic oil leaks. See procedure below.
- Visually inspect the machine for worn parts or cracked welds, and repair as necessary.

**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 & SERVICE

### REPLACING THE HYDRAULIC MOTOR

Set the tiller on the ground, and place supports under the tine assembly to keep it in place and off the ground.

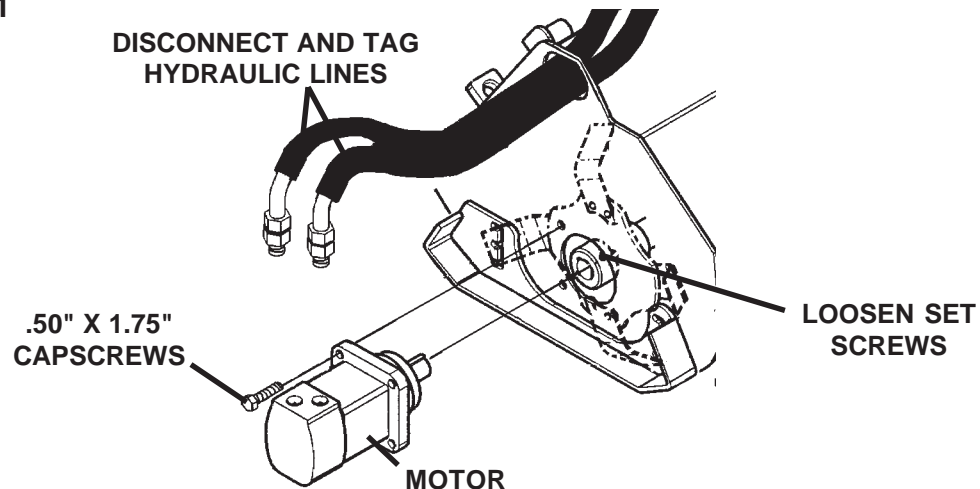
**WARNING!** Avoid serious injury. Follow Safety Shutdown procedures before performing service.



1. Remove the (4) 1091 bolts securing the motor to the tiller housing, and loosen the two set screws on the end of the hub assembly. See Figure #1.
2. Tag and disconnect the hydraulic hoses and fittings from the hydraulic motor, and slide the motor out of the housing and hub assembly. See Figure #1.
3. Install the new hydraulic motor using the existing capscrews and lock nuts. See Figure #1.
4. Re-connect the hydraulic hoses and fittings to the new motor.
5. Run the tiller to verify that hose connection is correct.

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

FIGURE #1



### REPLACING LEFT BEARING

Set the tiller on the ground and place supports under the tine assembly to keep it in place and off the ground.

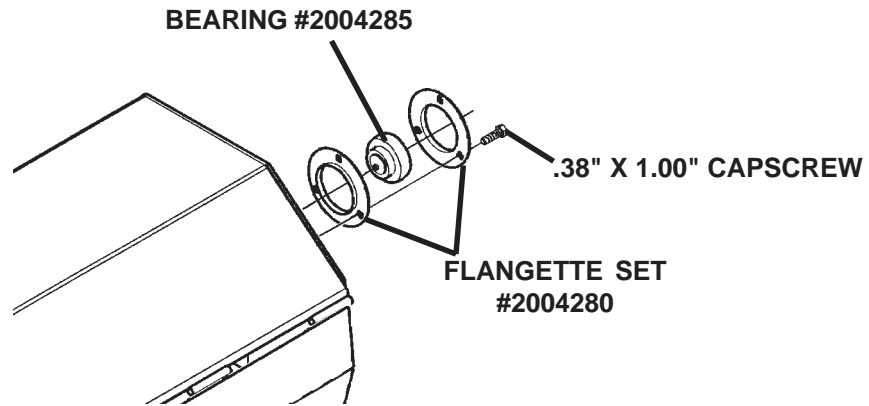
**WARNING!** Avoid serious injury. Follow Safety Shutdown procedures before performing service.



1. Remove the (3) #1043 bolts securing the flangette set and bearing to the left side of the tiller housing. See Figure #2.
2. Remove the bearing #2004285 and replace with new bearing. See Figure #2.
3. Re-install the flangette set with the existing hardware. See Figure #2.



FIGURE #2



### REPLACING THE TINE ASSEMBLY

Set the tiller on the ground and place supports under the tine assembly to keep it in place while disconnecting the hub assembly.

**WARNING!** Avoid serious injury. Follow Safety Shutdown procedures before performing service.



1. Remove the (3) #1043 bolts securing the flangette set and bearing to the left side of the tiller housing. See Figure #2
2. Loosen the two set screws on the right side of the hub assembly (motor end). See Figure #1.
3. Slide the tine assembly off of the motor shaft and remove. **(NOTE: It may be necessary to remove two tines to acquire the space needed to clear the motor shaft.)**
4. Reverse the procedure to install the new tine assembly.

### REPLACING TINES

Set the tiller on the ground and place supports under the skid shoes to keep it off the ground.

**WARNING!** Avoid serious injury. Follow Safety Shutdown Procedures before performing service.



1. Position the worn or damaged tines to the front of the tiller.
2. Lift front door shield to gain access to the tine assembly.
3. Remove the (2) capscrews and lock nuts from the worn tine and replace using new hardware. **(NOTE: Be sure to install the correct tine (left or right) in the correct direction (standard rotation or reverse rotation).)**

**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.

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# REMOVAL & STORAGE

## TILLER

### GENERAL INFORMATION

The following procedure will help you to keep your unit in top condition. It will also help you get off to a good start the next time your tiller is needed. We therefore strongly recommend that you take the extra time to follow these procedures whenever your tiller will not be used for an extended period of time.

### REMOVAL

***NOTE: When detaching attachments it is recommended you follow the detaching instructions in your loader operator's manual.***

1. Remove and store the tiller in a dry and protected place. Leaving the tiller outside will materially shorten its life.
2. Roll the attachment mechanism backward as far as it will go. Once the mechanism is rolled all the way back, follow the standard shut down procedure in your loader operator's manual.
3. With the loader engine OFF, leave the operator's compartment and disengage the attachment lock pins. Release hydraulic pressure from the auxiliary hydraulic system and disconnect the hydraulic couplers from the loader.
4. Start the loader engine and make sure that the lift arm is lowered and in contact with the loader frame.
5. Roll the attachment mechanism forward and slowly back up until the attachment is free from the loader.

### PREPARATION FOR STORAGE

1. Clean the unit thoroughly, removing all mud, dirt, and grease.
2. Inspect for visible signs of wear, breakage, or damage. Inspect tines for wear. Order any parts required and make the necessary repairs to avoid delays when starting next season. **NOTE: When replacing tines it is necessary to replace mounting hardware also.**
3. Tighten all loose nuts, capscrews, and hydraulic connections.
4. Cap the hydraulic couplers to protect the hydraulic system from contaminants.
5. Touch up all unpainted and exposed areas with paint to prevent rust.
6. Replace decals if damaged or in unreadable condition.
7. Store the unit in a dry and protected place. Leaving the machine outside will materially shorten its life.

### REMOVING FROM STORAGE

1. Remove all protective coverings.
2. Check hydraulic hoses for deterioration and replace if necessary.

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# TROUBLESHOOTING

## TILLER

PROBLEM	POSSIBLE CAUSE	POSSIBLE REMEDY
Tiller makes intermittent clicking sounds.	Loose or broken tines.	Tighten or replace.
Tiller is not rotating.	Loader auxiliary hydraulics not engaged.	Refer to loader operator's manual.
	Inadequate hydraulic flow from loader.	Check hydraulic flow to tiller.
	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.
	Loose or damaged hydraulic connection.	Tighten or replace fittings.
	Obstruction between tiller and housing.	Remove obstruction.
	Hydraulic motor damaged or seal blown.	Call Bradco service department for instructions.
Tillage depth insufficient.	Tiller carried by loader.	Lower loader arms.
	Insufficient power.	Increase engine RPM.
	Skid shoes need adjusting.	Readjust skid-shoes.
	Worn or bent tines	Replace as necessary.
	Obstacles entangles in tine assembly.	Clear obstacles from tine assembly.
Tiller skips or leaves grass residue.	Badly worn tines.	Replace as needed.
	Ground speed too fast for soil conditions.	Reduce ground speed.

# TROUBLESHOOTING

## TILLER

PROBLEM	POSSIBLE CAUSE	POSSIBLE REMEDY
Soil texture too coarse.	Tiller RPM too slow.	Increase RPM.
	Ground speed too fast.	Reduce ground speed.
Tiller bumping on ground.	Obstacles entangles in tine assembly.	Clear obstacles from tine assembly.
	Tines installed incorrectly for tiller rotation.	Check tine installation and direction of tiller rotation. Reinstall if necessary.
Tines balling up with soil.	Soil too wet.	Delay tilling until soil dries.
	Worn or bent tines.	Replace as needed.
	Ground speed too fast for soil conditions.	Reduce ground speed.



# 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

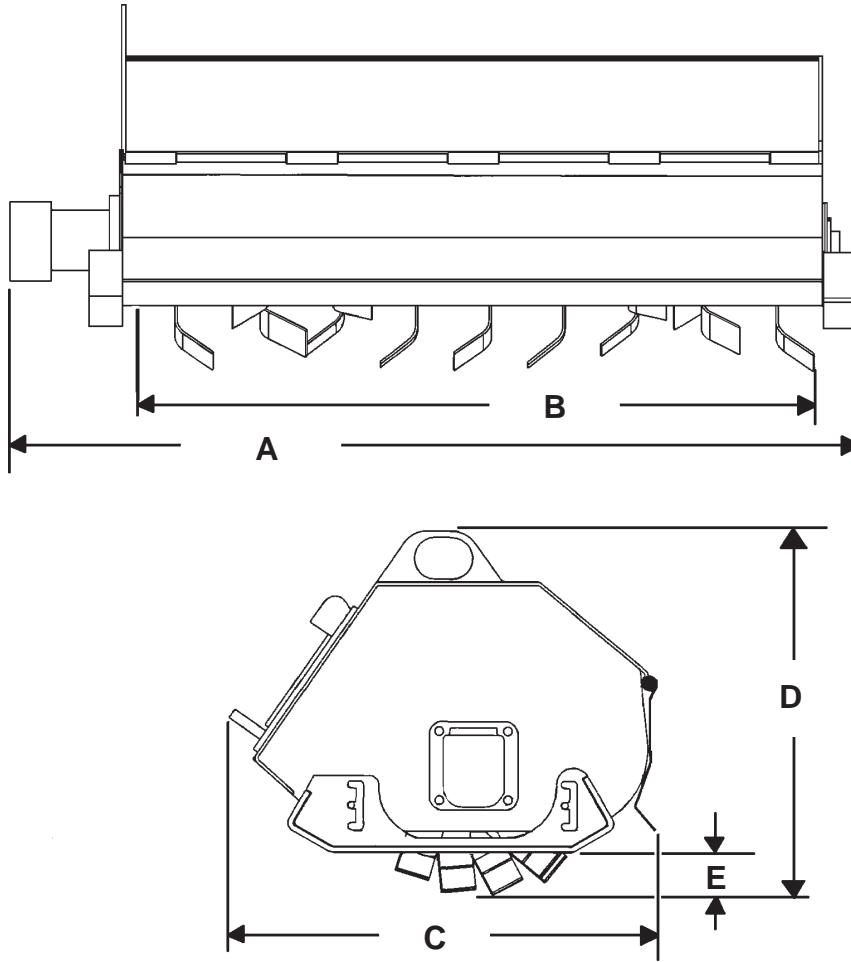
Size of Screw	Grade No.	Coarse Thread			Fine Thread		
		Ptich (mm)	Pounds Feet	Newton-Meters	Pitch (mm)	Pounds Feet	Newton-Meters
M6	5.6	1.0	3.6-5.8	4.9-7.9	-	-	-
	8.8		5.8-9.4	7.9-12.7		-	-
	10.9		7.2-10	9.8-13.6		-	-
M8	5.6	1.25	7.2-14	9.8-19	1.0	12-17	16.3-23
	8.8		17-22	23-29.8		19-27	25.7-36.6
	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

## TILLER



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

# SPECIFICATIONS

DESCRIPTION	40"	48"
A. Overall Width .....	50.62"	58.62"
B. Max. Tilling Width .....	40.00"	48.00"
C. Overall Length .....	25.50"	25.50"
D. Overall Height .....	21.80"	21.80"
E. Tilling Depth .....	4.50"	4.50"
Weight .....	320#	357#
RPM @ 8 GPM .....	120 RPM	
Recommended GPM .....	8-15	
Operating Pressure (PSI) .....	1500-3000 PSI	

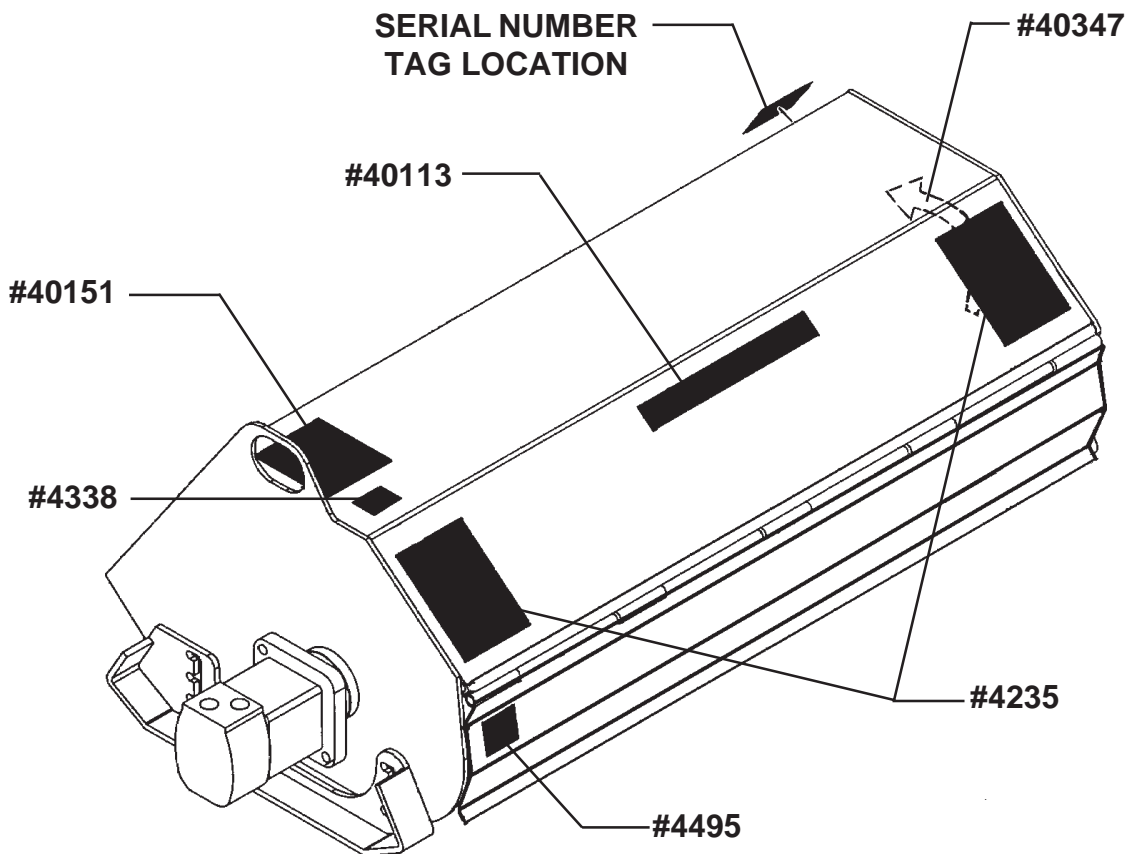
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# DECALS

## DECAL PLACEMENT

### GENERAL INFORMATION

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

DECALS  
DECALS

# BRADCO®

PART #40113  
BRADCO LOGO



PART #4338  
MADE IN U.S.A.



PART #40347  
ROTATION DIRECTION

**! DANGER**



**Moving paddles.  
Keep all personnel  
away from machine  
while operating.**

4235

PART #4235  
DANGER! MOVING PADDLES

**! WARNING**



**HIGH-PRESSURE FLUID HAZARD**

To prevent serious injury or death:

- Relieve pressure on system before repairing or adjusting or disconnecting.
- Wear proper hand and eye protection when searching for leaks. Use wood or cardboard instead of hands.
- Keep all components in good repair.

#40151

PART #40151  
WARNING! HIGH PRESSURE FLUID

**! WARNING**

THIS GUARD COVERS  
MOVING PARTS UNDERNEATH.  
REMOVE GUARD FOR SERVICE  
ONLY. SEE SERVICE  
MANUAL FOR SERVICE  
INSTRUCTIONS.

#4495

PART #4495  
WARNING! GUARDS

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**PREDELIVERY CHECKLIST**

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**GENERAL INFORMATION**

The following is a list of areas that should be inspected by the dealer prior to delivery of the BRADCO Tiller to the customer. The customer should check the list and make sure that the dealer has completed the inspection. Completion of this checklist will help ensure that the customer receives the tiller in complete working order, ready to install.

**PREDELIVERY CHECKLIST - CHECK AND ADJUST AS NECESSARY**

1. \_\_\_\_\_ Visually inspect the tiller for bent, loose, cracked, damaged, or missing parts. Check for any other irregularities.
2. \_\_\_\_\_ Check bolts for tightness. Retighten after the first eight working hours, and after every forty working hour intervals thereafter. See "Bolt Torque", Section O.
3. \_\_\_\_\_ Check all hydraulic connections for leaks and all hoses for proper positioning to reduce chafing and binding.
4. \_\_\_\_\_ Make sure decals are not damaged or missing and are in their correct location. See "Decals" Section Q.
5. \_\_\_\_\_ Make sure the customer has the necessary couplers to attach the tiller to the loader auxiliary hydraulic couplers.
6. \_\_\_\_\_ Complete and return the manufacturer's "Warranty Validation Form" and sign your dealership predelivery checklist.

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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.