



HT52 / HT66 / HT768 HYDRAULIC TILLERS OPERATOR'S & PARTS MANUAL



PALADIN LIGHT CONSTRUCTION



SERIAL NUMBER: _____

MODEL NUMBER: _____

Manual Number: OM680
Part Number: 75580
Rev. 3

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TO THE OWNER

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.

SAFETY PRECAUTIONS

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.
2. **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.

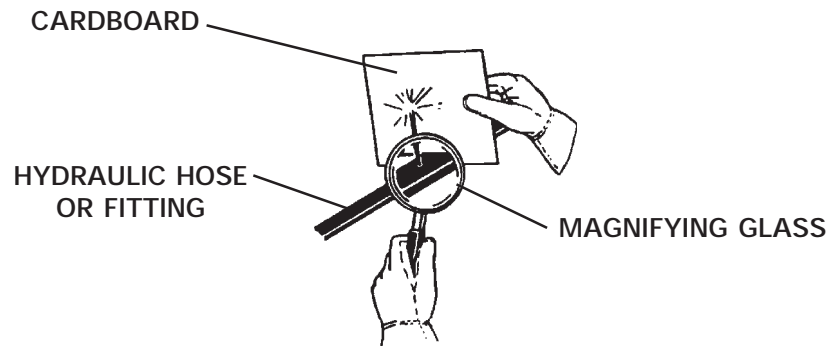
WARNING!



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

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.

OPTIONS

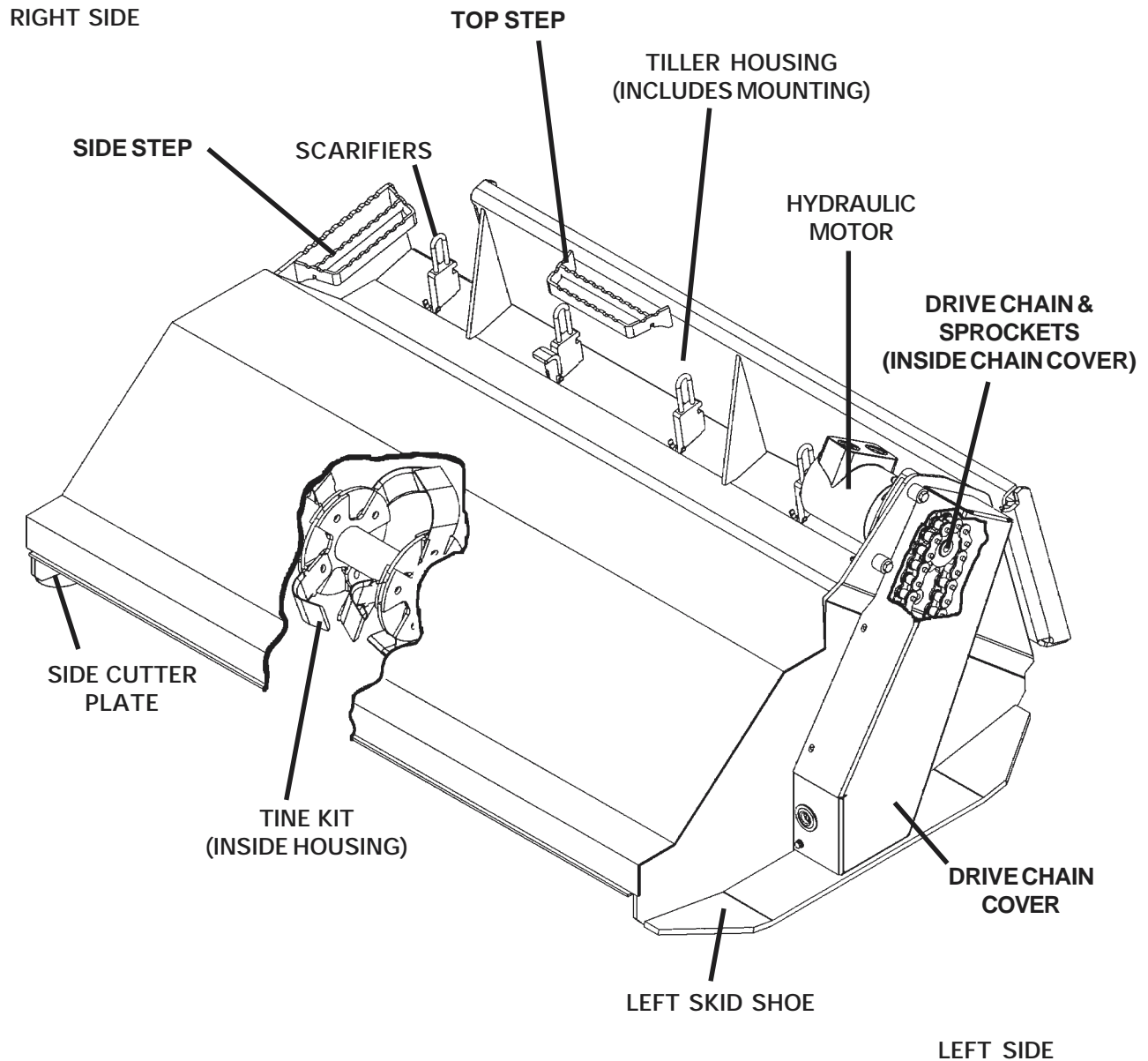
OPTION	HT52	HT66	HT78
Tine Kit - 4" Depth	102067	102069	102305
Tine Kit - 6" Depth	102068	102070	102306
Scarifier Assembly	102071	102072	102307
SF Hose Kit - 72" Long Hoses	100983	100983	100983
SF Hose Kit - 88" Long Hoses	100984	100984	100984
HF Hose Kit - 73" Long Hoses - .62" Couplers	NA	104393	104393
HF Hose Kit - 73" Long Hoses - .75" Couplers	NA	104395	104395
HF Hose Kit - 88" Long Hoses - .62" Couplers	NA	104394	104394
HF Hose Kit - 88" Long Hoses - .75" Couplers	NA	104396	104396
Motor Kit (14-17 GPM)	102065	102065	NA
Motor Kit (18-28 GPM)	102066	102066	NA
Motor Kit (29-44 GPM) High Flow	NA	102291	102291
<i>Motor #102391 (Used on NH and Case Tillers ONLY)</i>			

PREOPERATION

TILLER

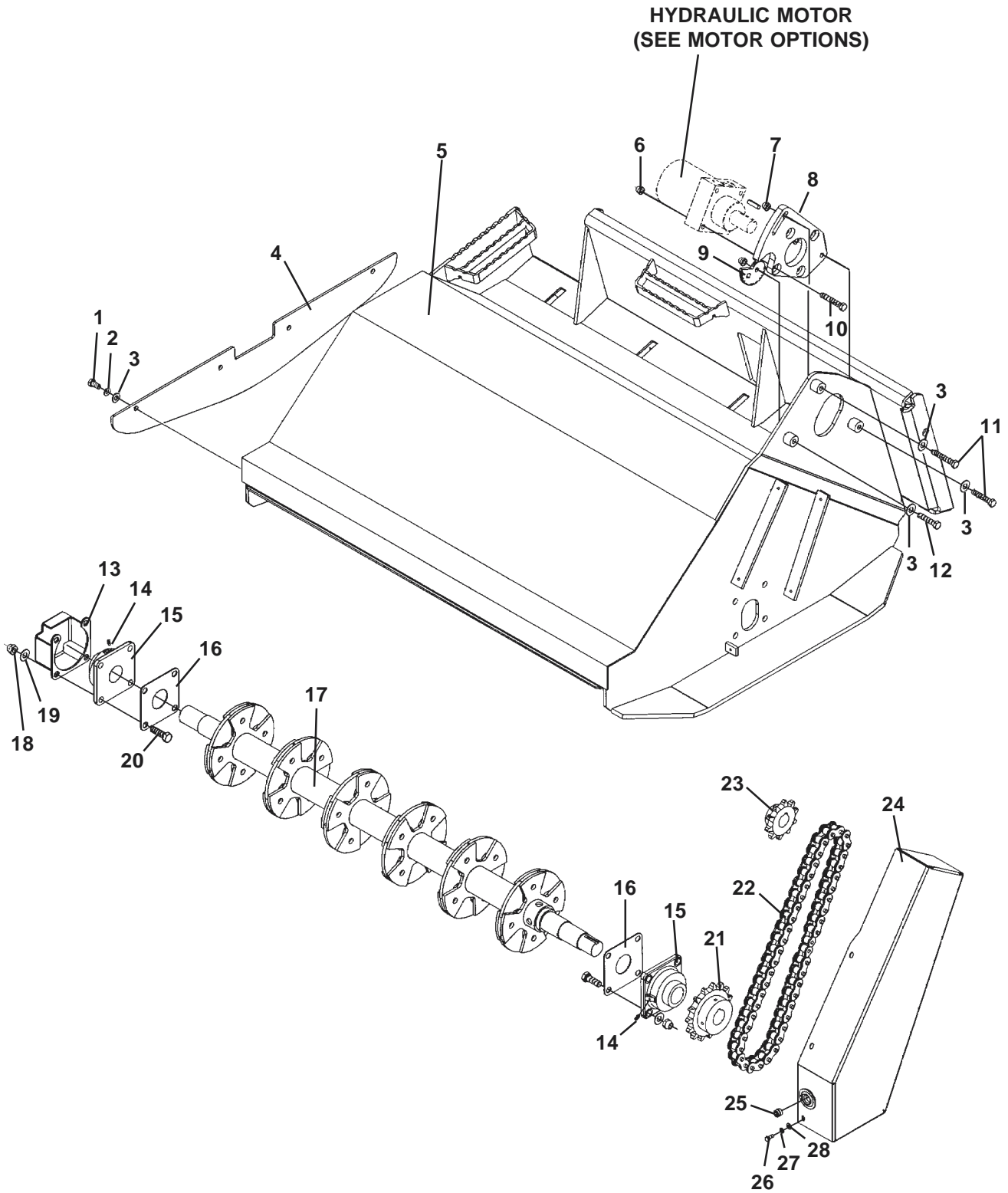
NOMENCLATURE

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

52", 66" & 78" TILLER ASSEMBLY

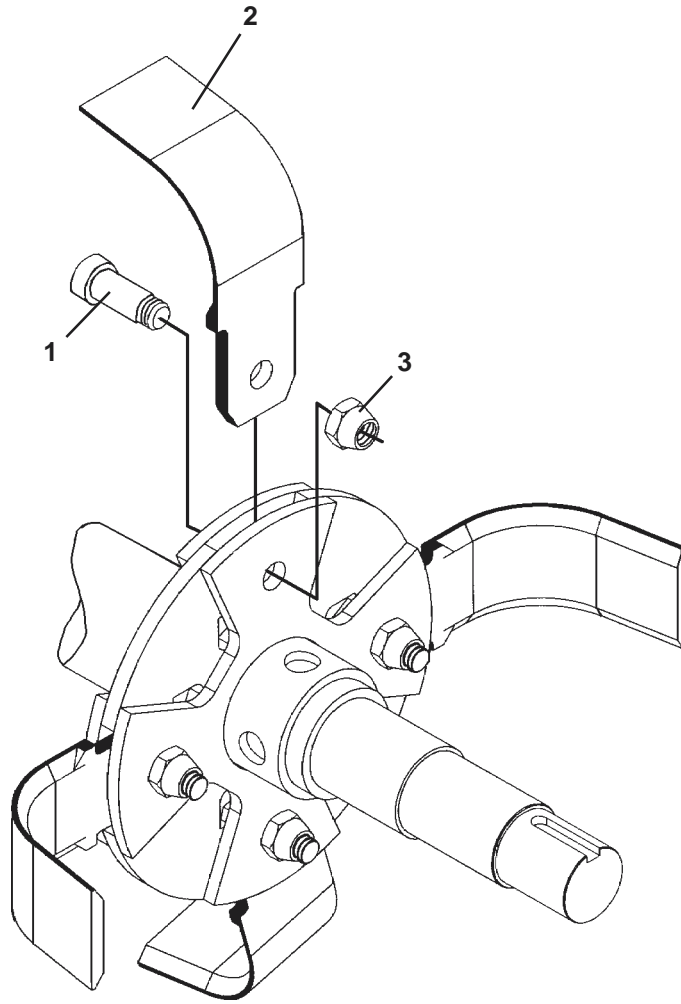


TILLER ASSEMBLY

52", 66" & 78" TILLER ASSEMBLY

<u>NO</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	4	1088	.50" UNC X 1.00" Hex Capscrew
2	4	1505	.50" Lock Washer
3	7	1646	.50" Hard Flat Washer
4	1	100954	Side Cutter Plate
5	1	102004	52" Tiller Housing
	1	100961	66" Tiller Housing
	1	102296	78" Tiller Housing
6	4	1841	.50" UNC Deformed Lock Nut (Not used with High Flow Motor Kit)
7	3	1841	.50" UNC Deformed Lock Nut
8	1	100965	Adjustment Plate (Not used with High Flow Motor Kit)
9	1	32848	Cam Lock
10	4	1096	.50" UNC X 3.00" Hex Capscrew (Not used with High Flow Motor Kit)
11	2	1096	.50" UNC X 3.00" Hex Capscrew (Not used with High Flow Motor Kit)
12	1	1094	.50" UNC X 2.50" Hex Capscrew
13	1	101074	Shaft Cover
14	2	6616	Grease Fitting
15	2	100947	Bearing Assembly
16	2	101499	Bearing Seal Plate
17	1	102001	52" Shaft
	1	100936	66" Shaft
	1	102295	78" Shaft
	-	32903	Replacement Key
18	8	1839	.62" UNC Deformed Lock Nut
19	8	1627	.62" Hard Flat Washer
20	8	10071	.62" UNC X 2.25" Hex Capscrew Grade 8
21	1	101795	15 Tooth Sprocket
	2	1575	Set Screw
22	1	102003	Drive Chain
	-	67451	Connector Link
23	1	101794	10 Tooth Sprocket
	2	1575	Set Screw
24	1	101054	Chain Cover
25	1	3467	Plug (Remove to Grease Bearing)
26	5	1021	.31" UNC X .75" Hex Capscrew
27	5	1502	.31" Lock Washer
28	5	1513	.31" Flat Washer

TINE ASSEMBLY OPTIONS



TINE ASSEMBLY OPTIONS

TINE ASSEMBLIES FOR 52" TILLERS

TINE ASSEMBLY #102067 - 4" DEPTH

<u>NO</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	24	10106	.50" UNC X 1.75" Socket .62" Shoulder Capscrew
2	24	100948	Bi-Directional Tine - 4" Depth
3	24	1841	.50" UNC Deformed Lock Nut

TINE ASSEMBLY #102068 - 6" DEPTH

<u>NO</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	24	10106	.50" UNC X 1.75" Socket .62" Shoulder Capscrew
2	24	101077	Bi-Directional Tine - 6" Depth
3	24	1841	.50" UNC Deformed Lock Nut

TINE ASSEMBLIES FOR 66" TILLERS

TINE ASSEMBLY #102069 - 4" DEPTH

<u>NO</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	32	10106	.50" UNC X 1.75" Socket .62" Shoulder Capscrew
2	32	100948	Bi-Directional Tine - 4" Depth
3	32	1841	.50" UNC Deformed Lock Nut

TINE ASSEMBLY #102070 - 6" DEPTH

<u>NO</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	32	10106	.50" UNC X 1.75" Socket .62" Shoulder Capscrew
2	32	101077	Bi-Directional Tine - 6" Depth
3	32	1841	.50" UNC Deformed Lock Nut

TINE ASSEMBLIES FOR 78" TILLERS

TINE ASSEMBLY #102305 - 4" DEPTH

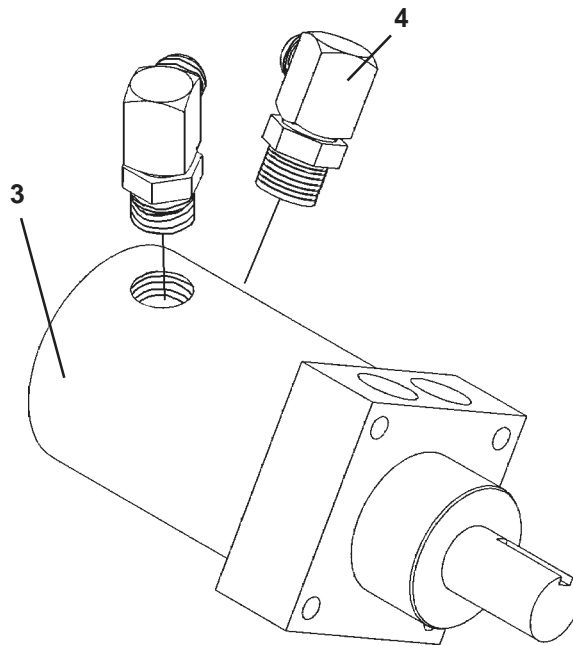
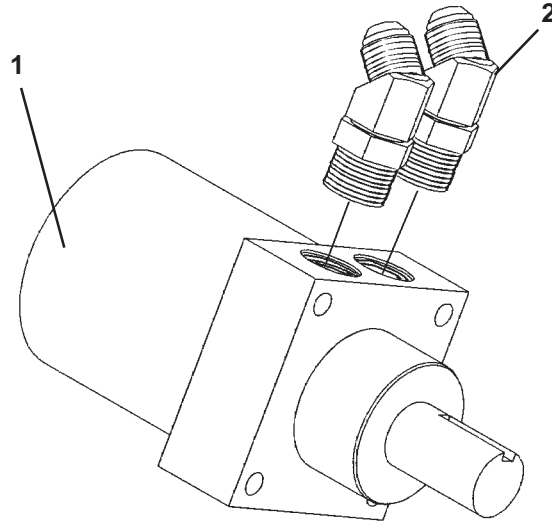
<u>NO</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	40	10106	.50" UNC X 1.75" Socket .62" Shoulder Capscrew
2	40	100948	Bi-Directional Tine - 4" Depth
3	40	1841	.50" UNC Deformed Lock Nut

TINE ASSEMBLY #102306 - 6" DEPTH

<u>NO</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	40	10106	.50" UNC X 1.75" Socket .62" Shoulder Capscrew
2	40	101077	Bi-Directional Tine - 6" Depth
3	40	1841	.50" UNC Deformed Lock Nut

HYDRAULIC MOTOR ASSEMBLY OPTIONS

STANDARD FLOW MOTOR ASSEMBLIES



HYDRAULIC MOTOR ASSEMBLY OPTIONS

STANDARD FLOW MOTOR ASSEMBLIES

MOTOR ASSEMBLY #102065 14 - 17 GPM

<u>NO</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	102060	Hydraulic Motor 22.8 CID
	-	32903	Replacement Key
	-	45456**	Replacement Seal Kit
2	2	30356	45° Elbow 10MBo-12MJ

MOTOR ASSEMBLY #102066 18 - 28 GPM

<u>NO</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
3	1	100524	Hydraulic Motor 28.3 CID
	-	32903	Replacement Key
	-	45895**	Replacement Seal Kit
4	2	22600	90° Elbow 12MBo-12MJ

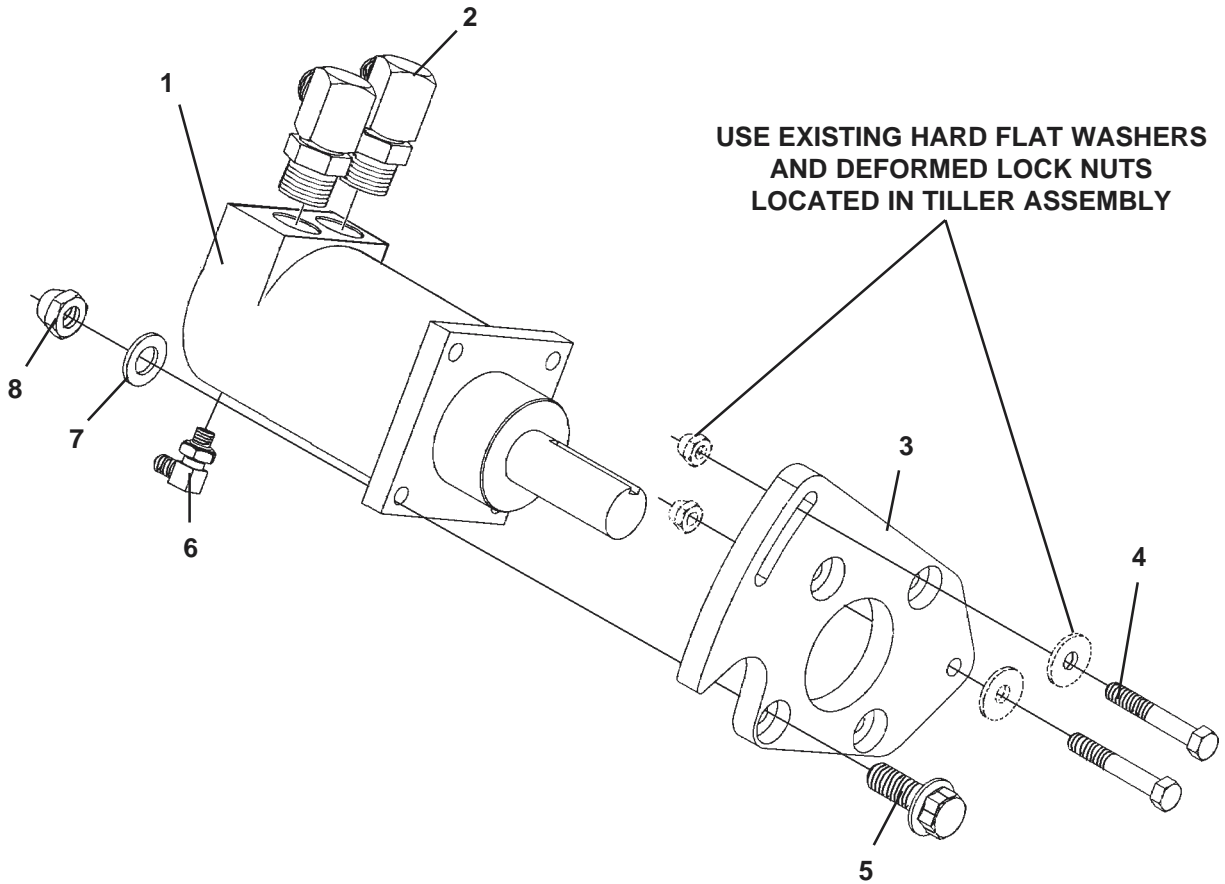
MOTOR ASSEMBLY FOR CASE AND NEW HOLLAND TILLERS ONLY

<u>NO</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
3	1	102391	Hydraulic Motor 22.8 CID
	-	32903	Replacement Key
	-	45895**	Replacement Seal Kit
4	2	22600	90° Elbow 12MBo-12MJ

**** Field replacement of internal motor seals voids warranty.**

HYDRAULIC MOTOR ASSEMBLY OPTIONS

HIGH FLOW MOTOR ASSEMBLIES



HYDRAULIC MOTOR ASSEMBLY OPTIONS

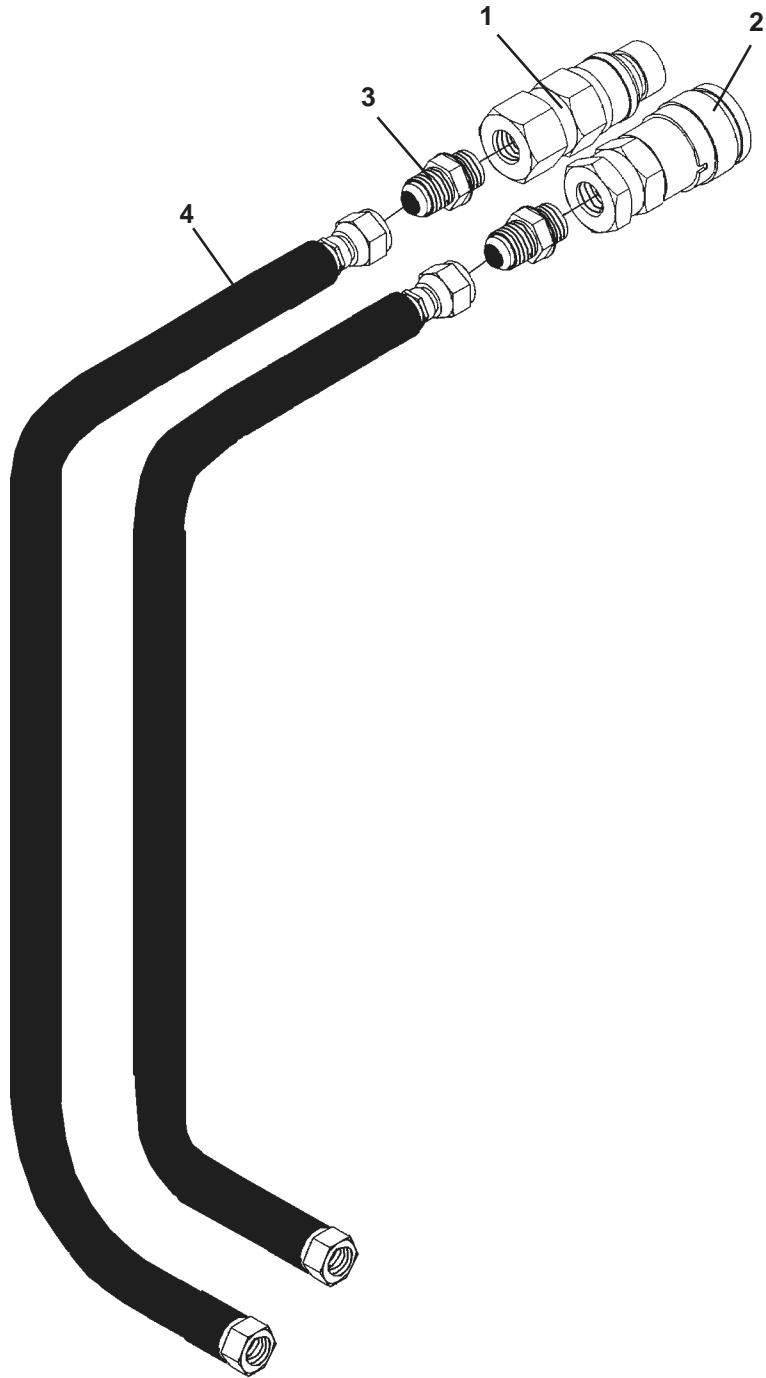
HIGH FLOW MOTOR ASSEMBLIES

MOTOR ASSEMBLY #102291 29 - 44 GPM

<u>NO</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	103269	Hydraulic Motor
		5647	Replacement Key
		45897**	Replacement Seal Kit
2	2	30051	90° Elbow 16MBo-12MJ
3	1	102290	Adjustment Plate (High Flow Motor ONLY) (Replace Adjustment Plate in Tiller Assembly)
4	2	1097	.50" UNC X 3.25" Hex Capscrew (Replace 3.00" Capscrews in Tiller Assembly)
5	4	10111	.75" UNC X 2.00" 12pt Flange Capscrew (Replace .50" x 3.00" Capscrews in Tiller Assembly)
6	1	3434	90° Elbow 6MBo-6MJ
7	4	1649	.75" Hard Flat Washer
8	4	1936	.75" UNC Lock Nut

** Field replacement of internal motor seals voids warranty.

STANDARD FLOW HOSE SET



STANDARD FLOW HOSE SET

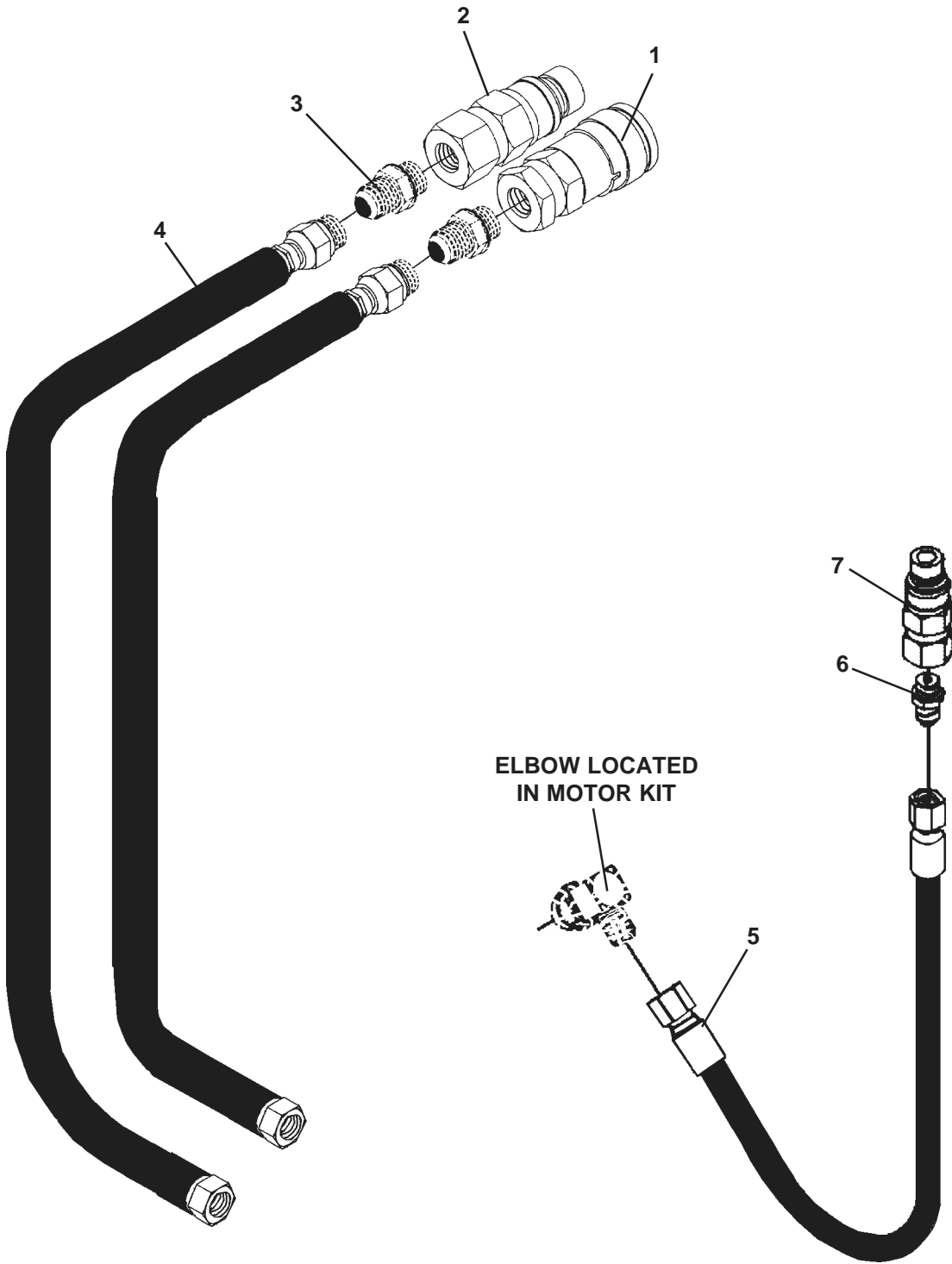
HYDRAULIC ASSEMBLY #100983

<u>NO</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	19632	Male Coupler
2	1	22518	Female Coupler
3	2	3419	Straight Adapter 12MBo-12MJ
4	2	38235	Hose Assembly .62" X 72" 12FJX-12FJX-HS

HYDRAULIC ASSEMBLY #100984

<u>NO</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	19632	Male Coupler
2	1	22518	Female Coupler
3	2	3419	Straight Adapter 12MBo-12MJ
4	2	38236	Hose Assembly .62" X 88" 12FJX-12FJX-HS

HIGH FLOW HOSE SET



ELBOW LOCATED
IN MOTOR KIT

HIGH FLOW HOSE SET

HOSE KIT #104393

<u>NO</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	84921	Female Coupler .62"-12FBo-FF
2	1	19636	Male Coupler .62"-12FBo-FF
3	2	3419	Straight Connector 12MBo-12MJ
4	2	35920	Hose .75" X 73" 12FJX-12FJX
5	1	37483	Case Drain Hose .25" X 79" 6FJX-6FJX
	1	38327	Case Drain Hose .25" X 94" 6FJX-6FJX
6	1	3269	Straight Adapter 8MBo-6MJ
7	1	84923	Male Coupler

HOSE KIT #104394

<u>NO</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	84921	Female Coupler .62"-12FBo-FF
2	1	19636	Male Coupler .62"-12FBo-FF
3	-	----	NOT USED WITH LONGER HOSE #37060
4	2	37060	Hose .75" X 88" 12MBo-12FJX
5	1	37483	Case Drain Hose .25" X 79" 6FJX-6FJX
	1	38327	Case Drain Hose .25" X 94" 6FJX-6FJX
6	1	3269	Straight Adapter 8MBo-6MJ
7	1	84923	Male Coupler

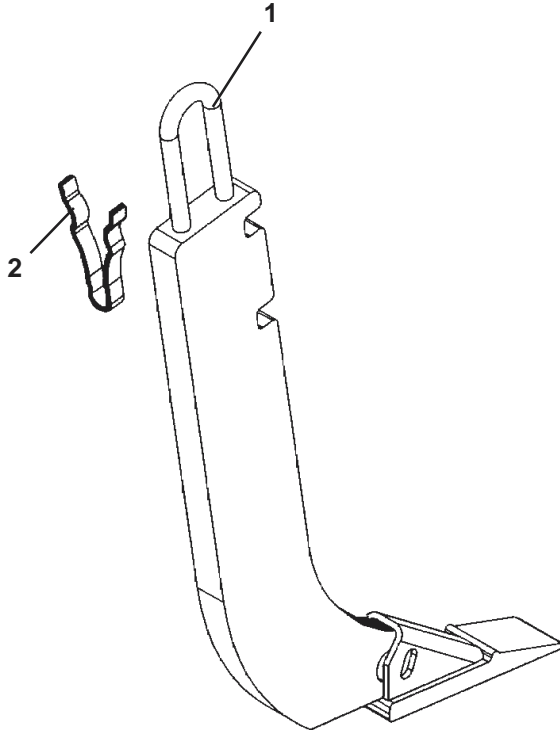
HOSE KIT #104395

<u>NO</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	22520	Female Coupler .75"-12FBo-FF
2	1	19638	Male Coupler .75"-12FBo-FF
3	2	3419	Straight Connector 12MBo-12MJ
4	2	35920	Hose .75" X 73" 12FJX-12FJX
5	1	37483	Case Drain Hose .25" X 79" 6FJX-6FJX
	1	38327	Case Drain Hose .25" X 94" 6FJX-6FJX
6	1	3269	Straight Adapter 8MBo-6MJ
7	1	84923	Male Coupler

HOSE KIT #104396

<u>NO</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	22520	Female Coupler .75"-12FBo-FF
2	1	19638	Male Coupler .75"-12FBo-FF
3	-	----	NOT USED WITH LONGER HOSE #37060
4	2	37060	Hose .75" X 88" 12MBo-12FJX
5	1	37483	Case Drain Hose .25" X 79" 6FJX-6FJX
	1	38327	Case Drain Hose .25" X 94" 6FJX-6FJX
6	1	3269	Straight Adapter 8MBo-6MJ
7	1	84923	Male Coupler

OPTIONAL SCARIFIER ASSEMBLY



OPTIONAL SCARIFIER ASSEMBLY

SCARIFIER ASSEMBLY #102071 FOR 52" TILLERS

<u>NO</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	4	101009	Scarifier Shank
2	4	101484	Spring Clip

SCARIFIER ASSEMBLY #102072 FOR 66" TILLERS

<u>NO</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	5	101009	Scarifier Shank
2	5	101484	Spring Clip

SCARIFIER ASSEMBLY #102307 FOR 78" TILLERS

<u>NO</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	6	101009	Scarifier Shank
2	6	101484	Spring Clip

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 over tiller housing in such a fashion as to avoid pinching and chafing of the hoses 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.

OPERATING INSTRUCTIONS

GENERAL INFORMATION

The BRADCO tiller is perfect for home gardening, landscaping and vegetable farming just to mention a few. 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 the skid-steer loader. Such knowledge is crucial for safe, efficient operation of the equipment.

Some information may be general in nature due to unknown and varying operating conditions. However, through experience and these instructions, you should be able to develop procedures suitable to your particular situation.


THE SKID-STEER 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. The BRADCO tiller has various motor options to adapt the GPM of the tiller to the GPM of your skid-steer. Check to ensure that the tiller is equipped with the correct motor for your skid-steer application by referring to the parts diagram. **NOTE: There is only one motor option on the Case/New Holland Tillers.**

BEFORE OPERATING THE TILLER

- Clear the work area of all bystanders, pets and livestock.
- Be sure all tiller tines, bolts and nuts are tight and chain guards are in place.
- 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 the tiller performance.

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.

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

OPERATING THE TILLER

The main purpose of the BRADCO tiller is to cultivate soil. The tiller is bi-directional; it will operate with the tines rotating in either direction.

OPERATING INSTRUCTIONS

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

NOTE: Although the performance of the tiller can vary significantly depending upon the way it is used, we recommend the following operating procedure for maximum productivity.

1. Following the loader manual's operating and safety procedures, start the loader and position the tiller at the starting location.
2. With the loader at idle speed and the arms fully back and lowered, the tiller will be slightly off of the ground, engage the auxiliary hydraulic to begin tiller rotation.

NOTE: Be sure tines are rotating in the desired direction for skid-steer travel.

3. Position the tiller parallel to the ground and increase engine RPM. (Tines will cut better at full RPM).
4. Carefully lower the tiller to the ground and begin to slowly travel in the desired direction. Gradually increase speed until the desired results are achieved.

NOTE: It is recommended after the first 50 feet to stop and check the tiller depth.

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.

For finish tilling operation, it is recommended the tiller be operated while driving in reverse with the tines rotating in a clockwise direction when viewed from the left side of the machine. Due to the offset mounting configuration this will allow the right tracks to be covered as the skid-steer moves in reverse, finishing the tilling operation.

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/pull the loader. The most common is traveling too fast and low engine RPM (tines moving too slowly for ground conditions). If you have increased the engine RPM and decreased travel speed and the tiller continues to "walk up" check the tines. Make sure the cutting edge is still sharp and all tines are intact.

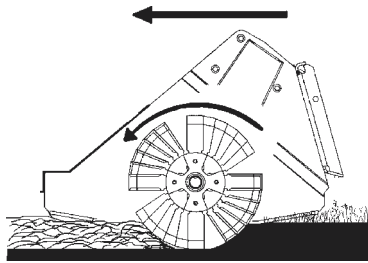
OPERATING INSTRUCTIONS

TINE ROTATION

The BRADCO tiller can be operated while traveling in forward or reverse and the tines rotating in either direction. Although standard direction of rotation is for the tines to rotate in the same direction the skid-steer is traveling, reversing the tine rotation has been noted to bury debris better.

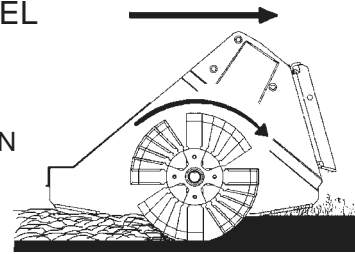
STANDARD TILLING

STANDARD TILLING IS WHEN YOU ARE TRAVELING IN THE SAME DIRECTION THAT THE TINES ARE ROTATING.



DIRECTION OF TRAVEL

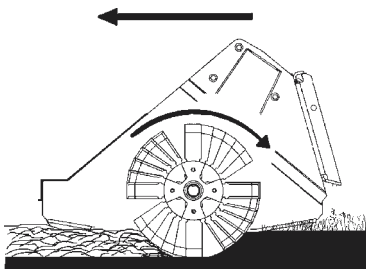
DIRECTION OF ROTATION



RECOMMENDED FOR FINISH TILLING

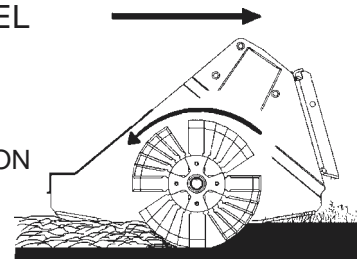
REVERSE TILLING

REVERSE TILLING IS WHEN YOU ARE TRAVELING IN THE OPPOSITE DIRECTION THAT THE TINES ARE ROTATING.



DIRECTION OF TRAVEL

DIRECTION OF ROTATION

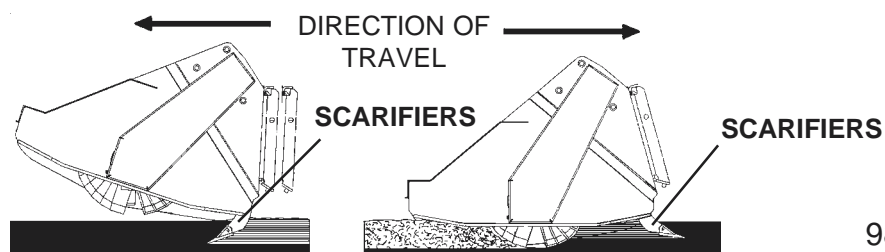


OPTIONAL SCARIFIER TEETH

The optional scarifier teeth are used in front of the tiller tines to dig into and loosen the soil, therefore increasing the efficiency of the hydraulic horsepower available for tilling. The teeth can be used when traveling in forward or reverse by switching the direction of the teeth. When traveling in reverse, use the scarifiers and the tiller in the same pass. When traveling forward rotate the tiller up with the scarifiers digging into the ground to loosen hard, packed soil and then return to the starting point to start the tilling operation. The scarifier teeth can be lifted up and stored on the unit when not in use.

TRAVEL IN THE FORWARD DIRECTION WITH THE TILLER ROTATED UP AND THE SCARIFIER TEETH DIGGING INTO THE SOIL.

TRAVEL IN REVERSE WITH THE SCARIFIER TEETH DIGGING INTO THE SOIL FOLLOWED BY THE ROTATING TINES.



LUBRICATION

GENERAL INFORMATION


Economical and efficient operation of any machine is dependent upon regular and proper lubrication of all moving parts with a quality lubricant. Neglect leads to reduced efficiency, wear, breakdown and needless replacement of parts.


All parts provided with grease fittings should be lubricated, as indicated. If any grease fittings are missing, replace them immediately. Clean all fittings thoroughly before using the grease gun.

IMPORTANT: Avoid excessive greasing. Dirt collects on exposed grease and greatly increases wear. After greasing, wipe off excessive grease from fittings.

LUBRICATION SYMBOLS

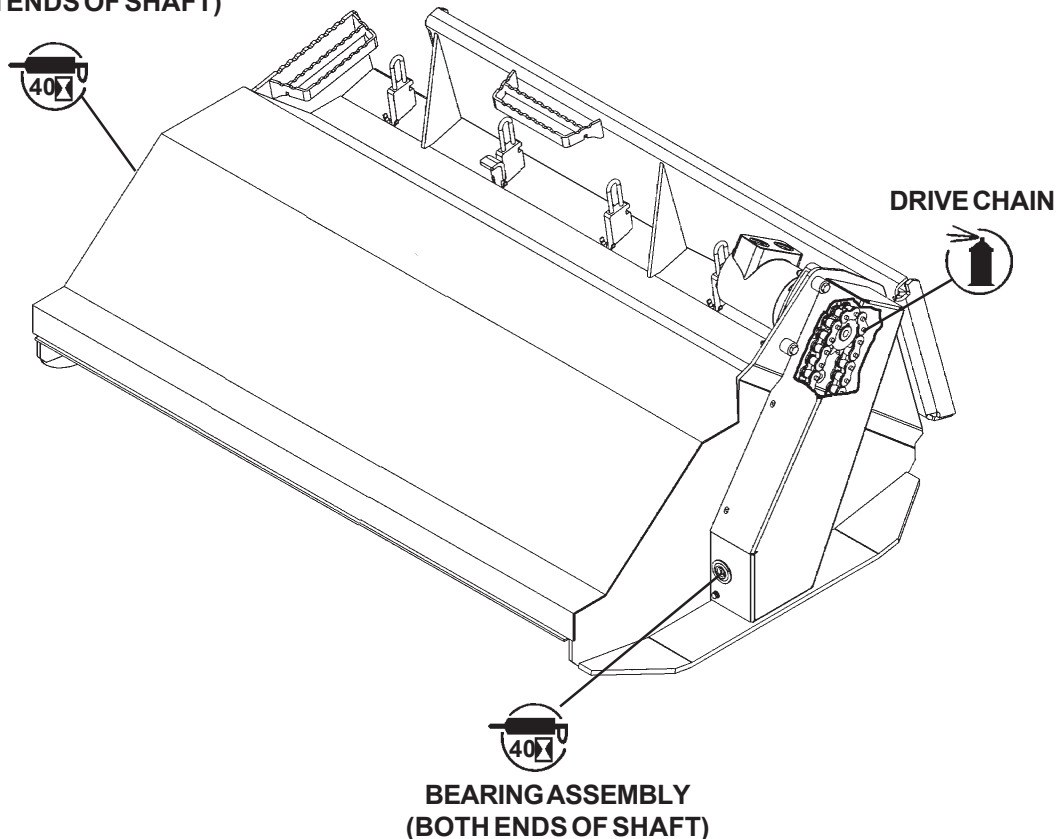
The following symbols are used on the lubrication diagram below. It is reproduced here with its meaning for your convenience.

 Lubricate weekly or every 40 hours of operation, whichever comes last, with SAE Multi-Purpose Lubricant or equivalent SAE Multi-Purpose type grease.

 Lubricate drive chain periodically with a chain lubricant

 **CAUTION! SHUT OFF ENGINE BEFORE LUBRICATING EQUIPMENT.**

**BEARING ASSEMBLY
(BOTH ENDS OF SHAFT)**



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 chain 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.

WEEKLY

- Lubricate all grease zerks.

NOTE: Avoid using high pressure pneumatic lubricating equipment on the tiller shaft bearings. These bearings are assembled with special high dirt exclusion seals. High pressure lubricating equipment can damage the seals.

- Adjust and lubricate drive chain. To lubricate drive chain: remove chain cover and spray a chain lubricant along the drive chain.

WARNING! Do not operate the tiller during any maintenance or while the chain cover is removed.



CHAIN ADJUSTMENT

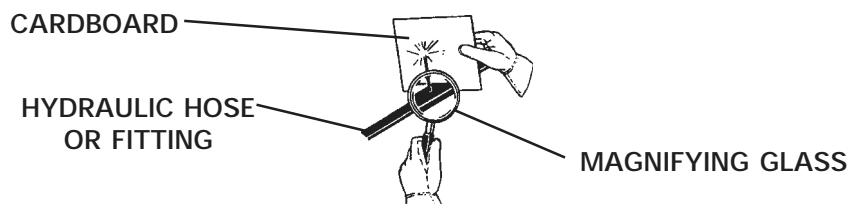
We recommend adjusting the chain after the initial 4 hours and then monthly thereafter. **TO ADJUST THE CHAIN:** Remove the chain cover and loosen the two bolts on the motor mounting adjustment plate and the one bolt on the cam lock. Insert a 1/2" ratchet into the cam lock and rotate until the chain is tight. (A properly adjusted chain will have a minimal amount of chain deflection. Over tensioning will cause premature wear.) **NOTE: If all of the cam lock adjustment is used and the chain and sprocket are still serviceable you can remove a "half link" from the chain at the master link location. If replacing the chain it is recommended to replace the sprockets at the same time.**

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.



MAINTENANCE & SERVICE

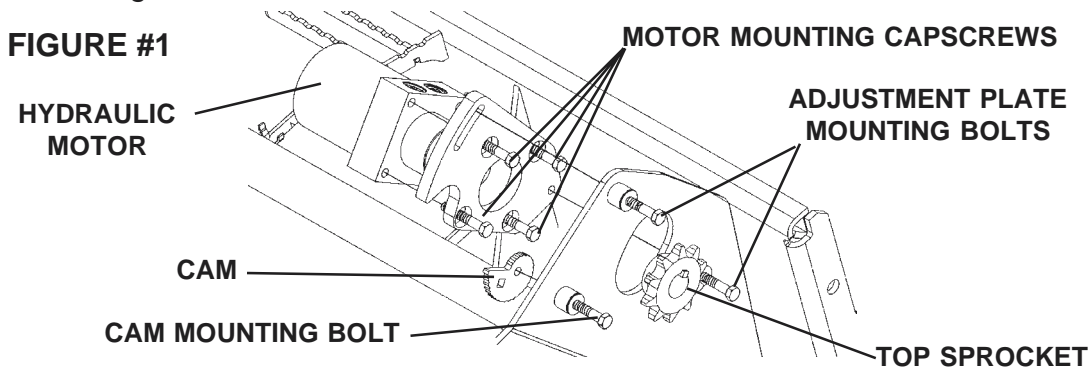
REPLACING THE HYDRAULIC MOTOR

Set the tiller on the ground and place supports under the assembly to keep the weight of the unit off of the tines.

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



1. Remove the chain guard on the left side of the tiller. NOTE: It is recommended that you loosen the chain tension by loosening cam tension.
2. Remove the top sprocket from the hydraulic motor by loosening the two set screws and sliding off of the motor shaft.
3. Tag and disconnect the hydraulic hoses and fittings from the hydraulic motor.
4. Remove the three bolts securing the motor adjustment plate and then either loosen or remove the cam from the tiller housing. See Figure #1
5. Remove the bolts securing the motor to the motor adjustment plate. See Figure #1



6. Install the new hydraulic motor to the motor plate using the existing hardware.
7. Reconnect the hydraulic hoses and fittings to the new motor in the same orientation and in the same port as previously installed.
8. Bolt the motor plate to the tiller housing using the existing hardware. Loosely install the cam to the tiller housing.
9. Place the drive chain over the top sprocket and install the sprocket onto the new hydraulic motor. Tighten sprocket set screws.

NOTE: Align the top sprocket with the bottom sprocket using a straight edge. Failure to align the two sprockets with each other will cause excessive wear to the chain and sprockets.

10. Tighten the cam to the housing and following the chain adjustment instructions on the previous page, tighten the chain.
11. Install the chain cover to the tiller.

NOTE: Field replacement of internal motor seals voids warranty.

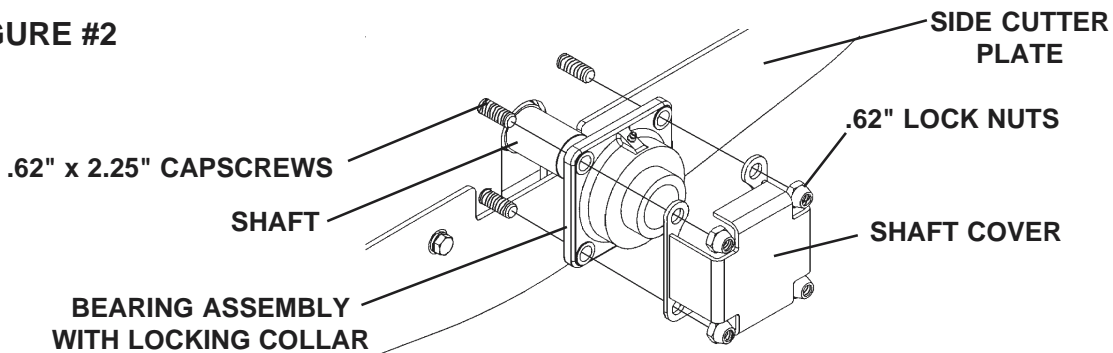
IMPORTANT: When replacing parts use only factory approved replacement parts. Manufacturer will not claim responsibility for use of unapproved parts or accessories and/or other damages as a result of their use.

REPLACING RIGHT BEARING ASSEMBLY

Set the tiller on the ground and place supports under the assembly to keep the weight of the unit off of the tines and shaft.

1. Remove the shaft cover from the right side of the housing. See Figure #2
2. Remove the set screws holding the bearing locking collar in place and remove the bearing assembly. See Figure #2

FIGURE #2



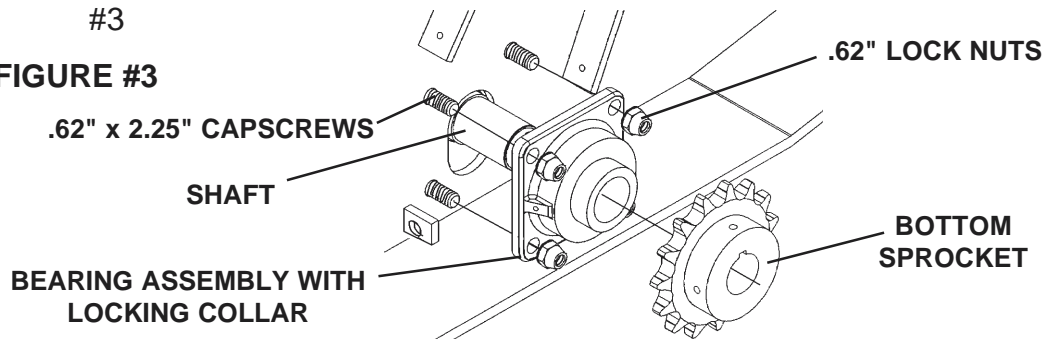
3. Position the new bearing assembly over shaft. Install the shaft cover and tighten all hardware. Secure the bearing assembly to the shaft using the locking collar provided with the bearing.

REPLACING LEFT BEARING ASSEMBLY

Set the tiller on the ground and place supports under the assembly to keep the weight of the unit off of the tines and shaft.

1. Remove the chain guard on the left side of the tiller. **NOTE: It is recommended that you loosen the chain tension by loosening cam tension.**
2. Remove the bottom sprocket from the shaft by loosening the two set screws and sliding off the sprocket and chain. See Figure #3
3. Unbolt the bearing assembly from the housing, loosen the two setscrews securing the assembly to the shaft and remove the bearing assembly. See Figure #3

FIGURE #3



MAINTENANCE & SERVICE

4. Position the new bearing assembly and secure in place with the existing hardware and then with the locking collar included with the assembly.
5. Place the drive chain over the bottom sprocket and install the sprocket onto the shaft. Tighten sprocket set screws.

NOTE: Bottom sprocket should be installed against the bearing assembly and the top sprocket adjusted to align with it. Align the sprockets using a straight edge. Failure to align the two sprockets with each other will cause excessive wear to the chain and sprockets.

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.

REPLACING TINE ASSEMBLY

Set the tiller on the ground in a location where a hoist is available and remove the attachment from your skid-steer. Securely attach a hoist to the front portion of the tiller and rotate the tiller until it is resting on the quick-attach mounting plate.

1. Inspect all tines and replace as needed.

NOTE: Be sure to install new tines in the same direction as the tine being removed.

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.

REPLACING CHAIN AND SPROCKETS

Set the tiller on the ground and place supports under the assembly to keep the weight of the unit off of the tines and shaft. It is recommended that the sprockets and chain be replaced at the same time. A worn chain will adversely affect the service life of the sprockets and worn sprockets will adversely affect the service life of the chain.

1. Remove the chain guard and loosen chain tension by loosen the cam tension.
2. Remove the top and bottom sprockets by first loosening the two set screws. Slide the sprockets, with chain, off of the shaft and assemble the new chain onto the new sprockets.
3. Position the sprockets in place and tighten. Adjust the chain following the chain adjustment procedure at the beginning of this section.

NOTE: Bottom sprocket should be installed against the bearing assembly and the top sprocket adjusted to align with it. Align the sprockets using a straight edge. Failure to align the two sprockets with each other will cause excessive wear to the chain and sprockets.

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. Set the attachment on the ground and follow the standard shut down procedure in your loader operator's manual.
3. With the loader engine OFF, 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 recommended you 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.

TROUBLESHOOTING

TILLER

PROBLEM	POSSIBLE CAUSE	POSSIBLE REMEDY
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.	Chain broken or off sprockets.	Replace chain. Check chain tensioning cam and motor adjustment plate capscrews. Tighten and adjust as required.
	Key sheared or missing.	Check and replace motor key or drive shaft key as required.
	Tiller carried by loader.	Lower loader arms.
	Insufficient power.	Increase engine RPM.
Tillage depth insufficient.	Worn or bent tines	Replace as necessary.
	Obstacles entangled in tine assembly.	Clear obstacles from tine assembly.
	Scarifier adjusted too deep.	Adjust scarifier height.

TROUBLESHOOTING

TILLER

PROBLEM	POSSIBLE CAUSE	POSSIBLE REMEDY
Tiller making excessive noise and/or vibrating.	Bearings worn or damaged.	Replace as needed
	Chain too loose.	Check chain and adjust as needed.
Tiller skips or leaves grass residue.	Badly worn tines.	Replace as needed.
	Ground speed too fast for soil conditions.	Reduce ground speed.
Soil texture too coarse.	Tiller RPM too slow.	Increase RPM.
	Ground speed too fast.	Reduce ground speed.
Tiller bumping on ground.	Obstacles entangled in tine assembly.	Clear obstacles from tine assembly.
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 g round 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.

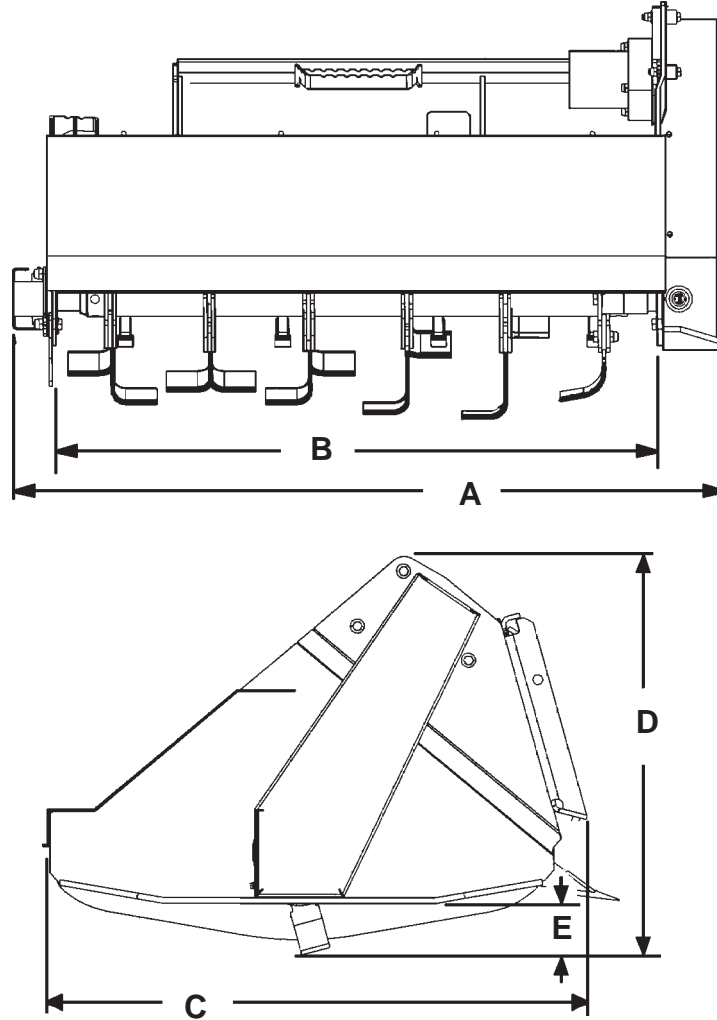
SAE Grade No.		2				5				8*			
Bolt head identification marks as per grade. NOTE: Manufacturing Marks Will Vary													
		TORQUE		TORQUE		TORQUE		TORQUE		TORQUE		TORQUE	
Bolt Size	Inches	Pounds Feet		Newton-Meters		Pounds Feet		Newton-Meters		Pounds Feet		Newton-Meters	
		Min.	Max.	Min.	Max.	Min.	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

SPECIFICATIONS



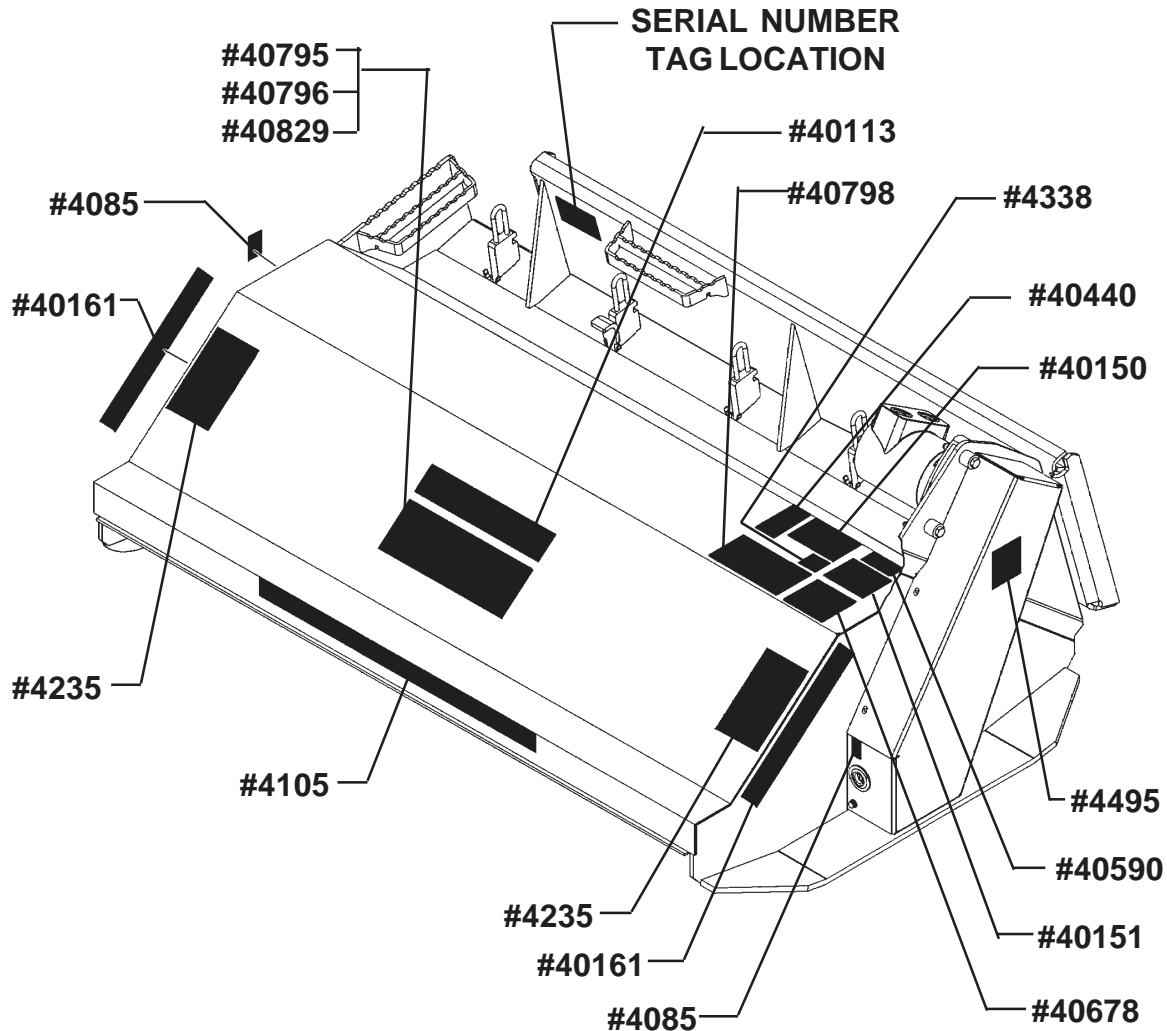
SPECIFICATIONS			
DESCRIPTION	HT52	HT66	HT78
A. Overall Width	61.63"	75.69"	87.75"
B. Maximum Tilling Width	52.00"	66.00"	78.00"
C. Overall Length	47.13"	47.13"	47.13"
D. Overall Height	34.70"	34.70"	34.70"
E. Tilling Depth (Varies with Tine Option)	4"-6"	4"-6"	4"-6"
Weight (With 4" Tine Assembly)	750#	1000#	1300#
Recommended GPM			
Motor Kit #102065	14-17	14-17	NA
Motor Kit #102066	18-28	18-28	NA
Motor Kit #102291	NA	29-44	29-44
Number of Tines	24	32	40
Number of Scarifier Teeth (Optional)	4	5	6

DECALS

DECAL PLACEMENT

GENERAL INFORMATION

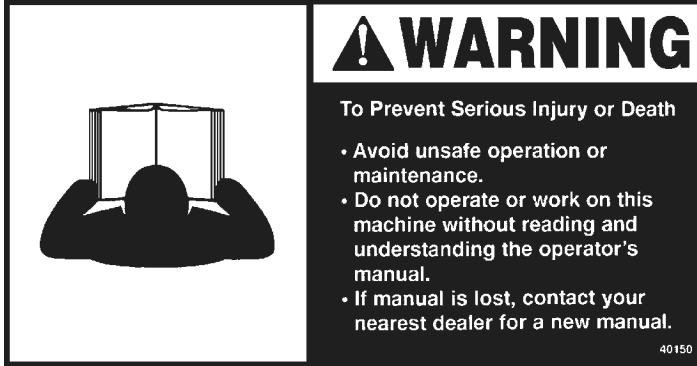
The diagram on this page shows the location of the decals used on the BRADCO Tiller. The decals are identified by their part numbers, with reductions of the actual decals located on the following pages. Use this information to order replacements for lost or damaged decals. Be sure to read all decals 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



PART #40150
WARNING! READ MANUAL



PART #40440
CALL BEFORE YOU DIG



PART #40590
CAUTION! DO NOT OPERATE ON HI FLOW SYSTEMS



PART #40151
WARNING! HIGH PRESSURE FLUID



PART #4235
WARNING! MOVING PADDLES



PART #40798
CAUTION! SCARIFIER TEETH CONTACT

DANGER STAND CLEAR

PART #4105
DANGER! STAND CLEAR

STAND CLEAR

PART #40161
STAND CLEAR



PART #4338
MADE IN U.S.A.

BRADCO®

PART #40113
BRADCO LOGO

HT52

PART #40795
HT52 MODEL NUMBER

HT66

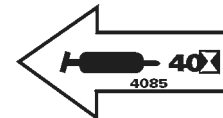
PART #40796
HT66 MODEL NUMBER

HT78

PART #40838
HT78 MODEL NUMBER



PART #4495
WARNING! GUARD REMOVED



PART #4085
GREASE 40 HOURS



PART #40678
WARNING! BEFORE LEAVING
OPERATOR'S SEAT

PREDELIVERY CHECKLIST

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.

LIMITED WARRANTY

EFFECTIVE ON PRODUCTS MANUFACTURED AFTER JANUARY 1, 2001

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 twenty four (24) 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.