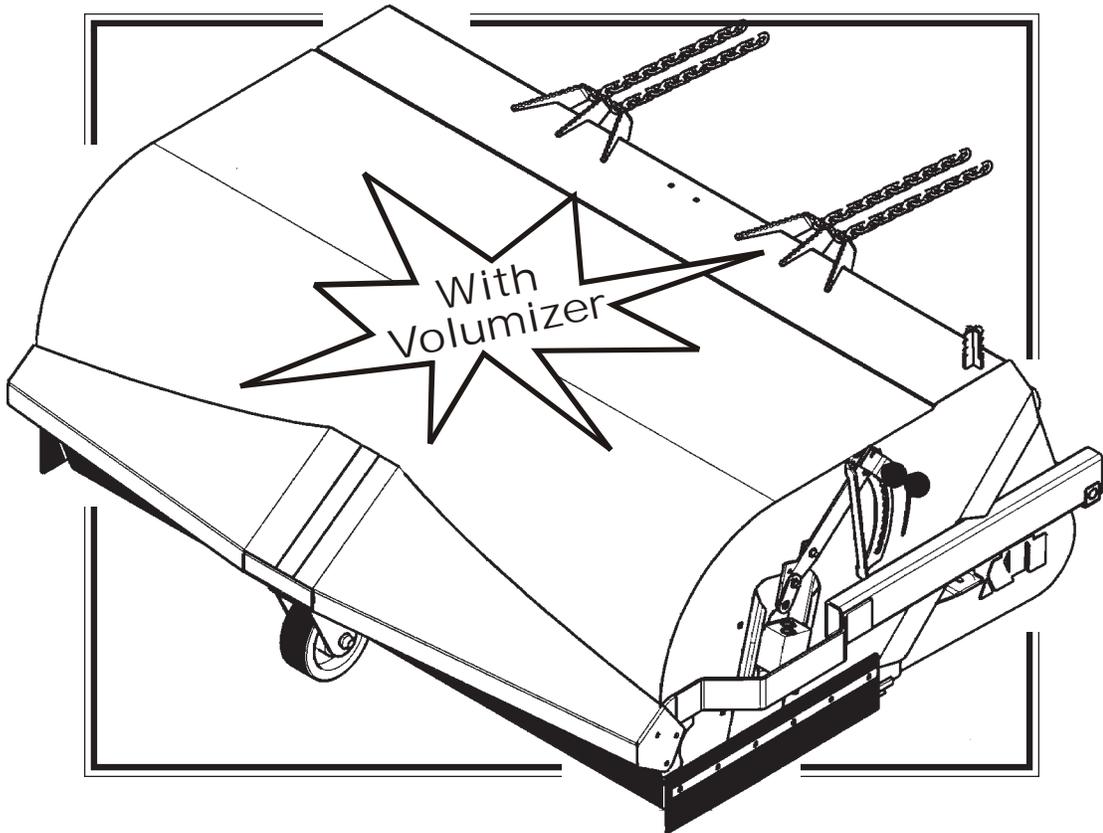


BRADCO®

BB60, BB72, & BB84 BUCKET BROOMS



OPERATOR'S & PARTS MANUAL

BRADCO®
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REV. 3

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TO THE OWNER

GENERAL COMMENTS

Congratulations on the purchase of your new Bradco Sweeper. Your sweeper was carefully designed and manufactured to give you many years of dependable service. Your sweeper will require some minor cleaning maintenance to keep it in top working condition. Be sure to observe all safety precautions 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 the sweeper without reading the "Safety Precautions" and "Operating Instructions" sections of this manual.

Unless noted otherwise, "right-hand" and "left-hand" sides are determined from the position of the operator sitting in the operator's seat 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 sweeper, 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 serial number and model number of your sweeper in the space provided on this page.

MODEL: _____ **SERIAL NUMBER:**

SAFETY PRECAUTIONS

BRADCO BROOMS

GENERAL INFORMATION

The purpose of this manual is to provide safe operating and maintenance procedures for the intended use of the broom. It is important that all information in this manual is READ and UNDERSTOOD before operating the broom.

Since the manufacturer has no direct control over machine application and operation, it is the responsibility of the operator to conform to good safety practices in the implementation of this machine.

This section is composed of various warnings and safety tips which must be followed. Also read the owner's manual which came with the skid-steer loader which the broom is attached to.

The safety alert symbol is used throughout this manual to bring attention to items which must be followed for your safety and the safety of those around you. 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 the 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 a potentially 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, could result in minor or moderate injury. It may also indicate unsafe practices which could result in serious damage to the machinery.

Notes are also found in this manual.

NOTE: Provides information which may be of special interest.

SAFETY PRECAUTIONS

BRADCO BROOMS

TO THE OPERATOR

The primary responsibility for safety with the equipment falls to the operator. 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 the equipment before you start. Know the capabilities, dimensions, and how to operate all the controls. Visually inspect the equipment before you start, and never operate equipment that is not in proper working order with all safety devices in place and operating.

BEFORE YOU START

Wear the right clothing and gear for the job. Protective equipment such as hard hat, steel-toed shoes, leather gloves, respirator or safety glasses may be in order. They can protect you from needless injury. Be sure to meet the requirements for the specific job site. Do not wear loose clothing or things such as rings and watches around the equipment. They could get caught in moving parts and lead to serious injury or death.

Know your equipment. Know how to operate all controls and know emergency shutdown procedures. Make sure all safety devices are in place.

Inspect the equipment. Check for missing shields, loose bolts, twisted or damaged hydraulic hoses. Be sure all operational decals are in place and legible. Never operate a damaged or unsafe machine. Remember, you are responsible for your safety and the safety of those around you.

Keep all step plates, grab bars, pedals, and controls free of dirt, grease, oil, and water. Keep clear of tools, rags, and extra parts. Keep equipment clean to help avoid injury from a fall when getting on or off equipment.

OPERATING PRECAUTIONS

Know your work area before you begin. Observe any potential hazard areas such as soft ground, drop-offs, rocks, and other obstacles.

Know where all utility lines are. Observe overhead electrical and phone lines. Be sure equipment will safely clear them.

Be alert to others in the work area. Be sure others know when and where you will be working. Make sure no one is underneath or behind equipment.

Never try to board equipment while it's moving.

Do not stand in front of the equipment when it is operating.

SAFETY PRECAUTIONS

BRADCO BROOMS

Always use the seat belt and safety ROPS that are on the equipment.

Never allow riders or passengers on the equipment unless the equipment is designed for passengers.

Test all controls before starting operation. This includes safety equipment and devices.

Be aware of what is going on around you. Watch for others who may not be watching out for themselves.

MAINTENANCE PRECAUTIONS

Replace all safety shields and guards when finished performing maintenance. Do not operate the broom with protective equipment removed.

Never perform maintenance or adjustments while the broom is operating. Turn off the engine when performing maintenance to prevent accidental movement.

Make sure all operating and residual pressures are relieved before working on a hydraulic system. Shut engine off and operate all the controls to relieve any pressure.

Use only manufacturer recommended replacement parts. Other parts may be substandard in fit and quality.

Do not set relief valve pressures higher than recommended by the manufacturer. Relief valves should be checked and adjusted only by a trained service technician. Do not remove or block a relief valve.

Observe proper maintenance schedules. Proper maintenance can help prevent a hazardous condition.

Always wear safety goggles or glasses when working on equipment.

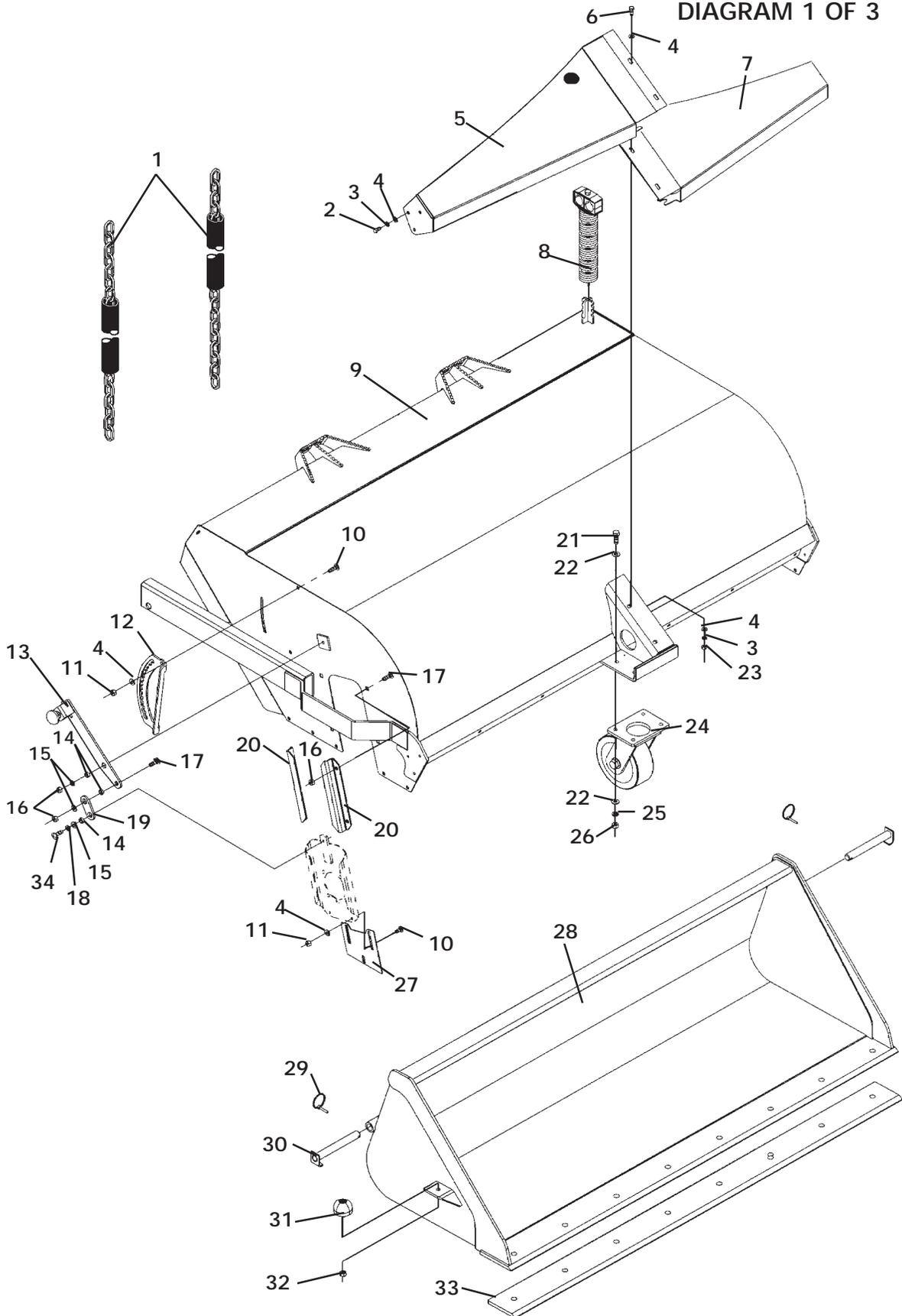
Never use your hands to search for hydraulic fluid leaks. Use cardboard or paper to indicate the presence of a leak. High pressure hydraulic fluid leaks can be invisible, and may cause an infection or toxic reaction if skin is penetrated. Seek medical attention immediately if hydraulic fluid is injected into skin.

Always clean the ends of the hydraulic lines before attaching them to the loader. This reduces the amount of contamination in hydraulic components. Cover and protect the ends when the broom is disconnected and not being used.

60" BUCKET BROOM ASSEMBLY

ASSEMBLY #15860

DIAGRAM 1 OF 3



60" BUCKET BROOM ASSEMBLY

ASSEMBLY #15860

LIST 1 OF 3

<u>NO</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	2	31077	Transport Chain
	2	36302	Rubber Chain Cover
2	6	1042	.38" UNC X .75" Hex Capscrew
3	8	1503	.38" Lock Washer
4	18	1514	.38" Flat Washer
5	1	15871	Right Sprayer Shroud
	1	32796	Cap Plug
	1	34136	Rubber Edge 33.50"
6	2	1044	.38" UNC X 1.25" Hex Capscrew
7	1	15870	Left Sprayer Shroud
	1	34136	Rubber Edge 33.50"
8	1	21693	Spring and Clamp Assembly
9	1	15850	Broom Bucket
10	8	10008	.38" UNC X 1.00" Carriage Bolt
11	8	1536	.38" UNC Nylock Nut
12	2	89872	Broom Indexing Sprocket
13	2	89866	Spring Pin Lever Assembly
	-	89871	Replacement Spring
	-	89870	Replacement Pin
14	6	89884	Spacer Tube
15	6	1515	.44" Flat Washer
16	12	1745	.44" UNC Nylock Nut
17	10	10009	.44" UNC X 1.25" Carriage Bolt
18	2	1504	.44" Lock Washer
19	2	89873	Link
20	4	89731	Slide Guide
21	4	1091	.50" UNC X 1.75" Hex Capscrew
22	8	1646	.50" Hard Flat Washer
23	2	1226	.38" UNC Hex Nut
24	1	89886	Wheel Assembly
25	4	1505	.50" Lock Washer
26	4	1228	.50" UNC Hex Nut
27	2	89880	Dust Shield
28	1	15840	Bucket
29	2	21169	Klik Pin
30	2	31080	Pin
31	2	6886	Rubber Bumper
32	2	1841	.50" UNC Deformed Lock Nut
33	1	15873	Cutting Edge
	7	1712	.50" UNC X 1.50" Plow Bolt
	7	1516	.50" Flat Washer
	7	1841	.50" UNC Deformed Lock Nut
34	2	1066	.44" UNC X 1.00" Hex Capscrew

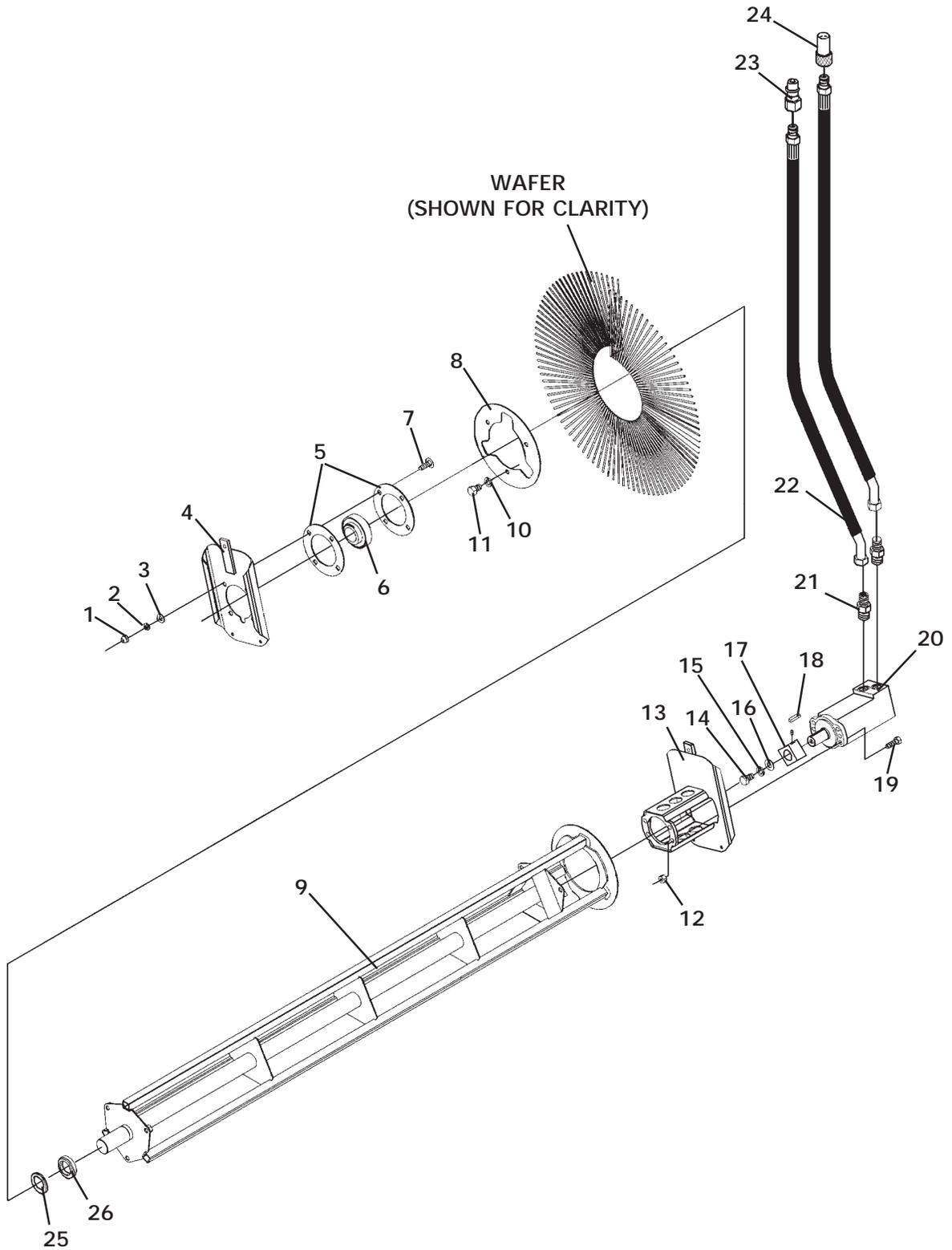
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60" BUCKET BROOM ASSEMBLY

ASSEMBLY #15860

DIAGRAM 2 OF 3



9754
8-2-04

60" BUCKET BROOM ASSEMBLY

ASSEMBLY #15860

LIST 2 OF 3

<u>NO</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	4	1228	.50" UNC Hex Nut
2	4	1505	.50" Lock Washer
3	4	1646	.50" Hard Flat Washer
4	1	89882	Idler Face Plate
5	1	89129	Flangette Set
6	1	89127	Bearing
7	4	1872	.50" UNC X 1.50" Carriage Bolt
8	1	89932	Wafer End Retainer
9	1	15844	Core
10	3	1504	.44" Lock Washer
11	3	1066	.44" UNC X 1.00" Hex Capscrew
12	4	1841	.50" UNC Deformed Lock Nut
13	1	89933	Motor Housing
14	1	1362	.62" UNF x 1.00" Hex Capscrew
15	1	1506	.62" Lock Washer
16	1	1517	.62" Flat Washer
17	1	89805	2" Square Drive Block
18	--		Replacement Key
19	4	1090	.50" UNC X 1.50" Hex Capscrew
20	1	89996	Motor
21	2	22552	Straight Adapter
22	2	37924	Hose .50" x 98" 8FFS 45° - 12MBo
23	1	22519	Male Coupler
24	1	22518	Female Coupler
25	1	16380	Washer
26	1	16379	Spacer

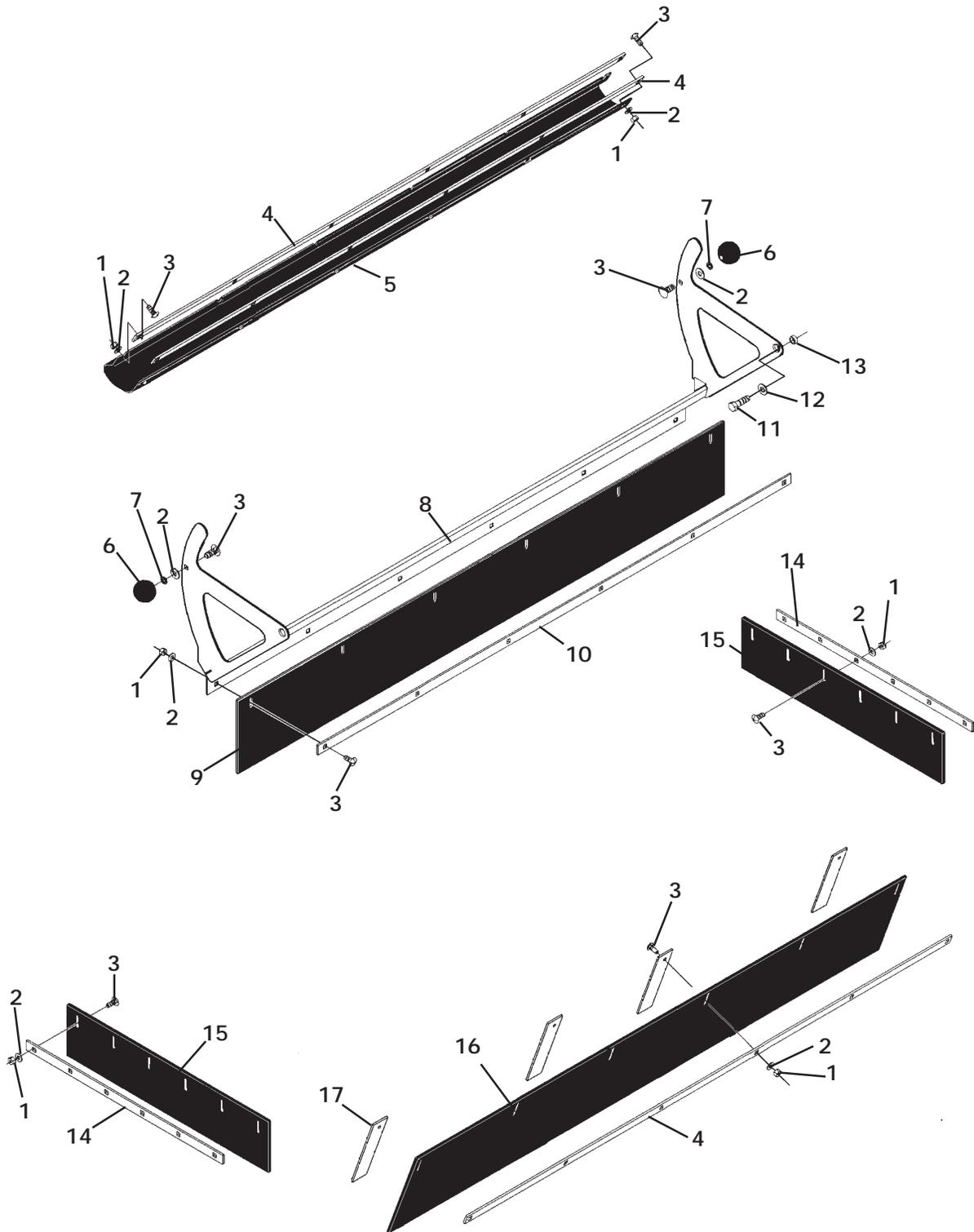
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60" BUCKET BROOM ASSEMBLY

ASSEMBLY #15860

DIAGRAM 3 OF 3



60" BUCKET BROOM ASSEMBLY

ASSEMBLY #15860

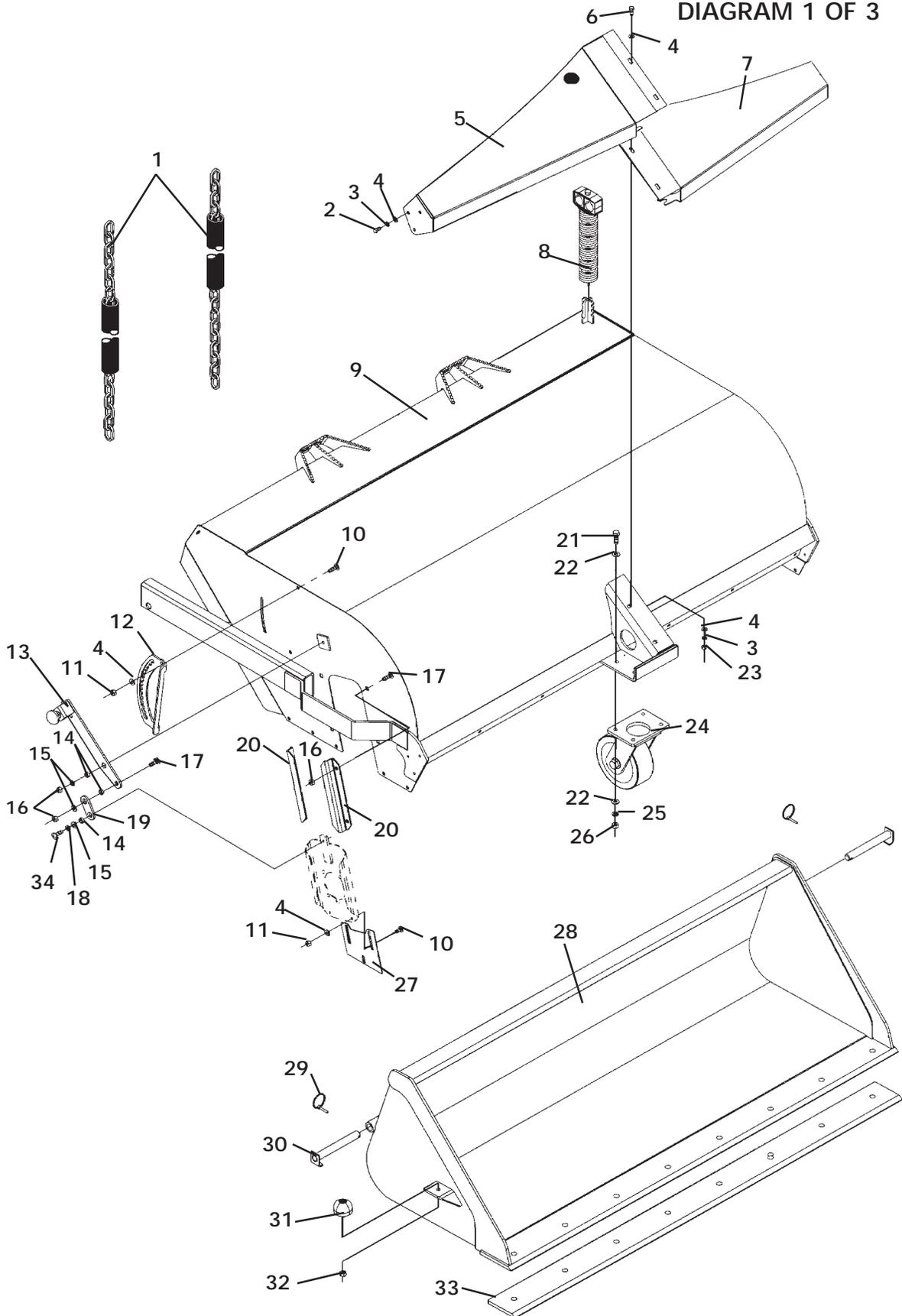
LIST 3 OF 3

<u>NO</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	36	1536	.38" UNC Nylock Nut
2	38	1514	.38" Flat Washer
3	38	10008	.38" UNC X 1.00" Carriage Bolt
4	3	15857	Backing Strip
5	1	15855	Rubber Skirt 8.00" x 61.63"
6	2	85838	Ball Knob
7	2	1503	.38" Lock Washer
8	1	15858	Volumizing Shield
9	1	15856	Rubber Skirt 8.00" x 60.37"
10	1	15872	Backing Strip
11	2	1069	.44" UNC X 1.75" Hex Capscrew
12	2	1515	.44" Flat Washer
13	2	89884	Spacer Tube
14	2	89879	Backing Strip
15	1	89735	Rubber Skirt Left 5.50" x 23"
	1	15386	Rubber Skirt Right 5.50" x 23"
16	1	15854	Rubber Skirt 10.50" x 61.63"
17	4	32298	Spring Strip

72" BUCKET BROOM ASSEMBLY

ASSEMBLY #89720

DIAGRAM 1 OF 3



72" BUCKET BROOM ASSEMBLY

ASSEMBLY #89720

LIST 1 OF 3

<u>NO</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	2	31077	Transport Chain
	2	36302	Rubber Chain Cover
2	6	1042	.38" UNC X .75" Hex Capscrew
3	8	1503	.38" Lock Washer
4	18	1514	.38" Flat Washer
5	1	89740	Right Sprayer Shroud
	1	32796	Cap Plug
	1	34136	Rubber Edge 33.50"
6	2	1044	.38" UNC X 1.25" Hex Capscrew
7	1	89739	Left Sprayer Shroud
	1	34136	Rubber Edge 33.50"
8	1	21693	Spring and Clamp Assembly
9	1	89721	Broom Bucket
10	8	10008	.38" UNC X 1.00" Carriage Bolt
11	8	1536	.38" UNC Nylock Nut
12	2	89872	Broom Indexing Sprocket
13	2	89866	Spring Pin Lever Assembly
	-	89871	Replacement Spring
	-	89870	Replacement Pin
14	6	89884	Spacer Tube
15	6	1515	.44" Flat Washer
16	12	1745	.44" UNC Nylock Nut
17	10	10009	.44" UNC X 1.25" Carriage Bolt
18	2	1504	.44" Lock Washer
19	2	89873	Link
20	4	89731	Slide Guide
21	4	1091	.50" UNC X 1.75" Hex Capscrew
22	8	1646	.50" Hard Flat Washer
23	2	1226	.38" UNC Hex Nut
24	1	89886	Wheel Assembly
25	4	1505	.50" Lock Washer
26	4	1228	.50" UNC Hex Nut
27	2	89880	Dust Shield
28	1	89888	Bucket
29	2	21169	Klik Pin
30	2	31080	Pin
31	2	6886	Rubber Bumper
32	2	1841	.50" UNC Deformed Lock Nut
33	1	89995	Cutting Edge
	8	1712	.50" UNC X 1.50" Plow Bolt
	8	1516	.50" Flat Washer
	8	1841	.50" UNC Deformed Lock Nut
34	2	1066	.44" UNC X 1.00" Hex Capscrew

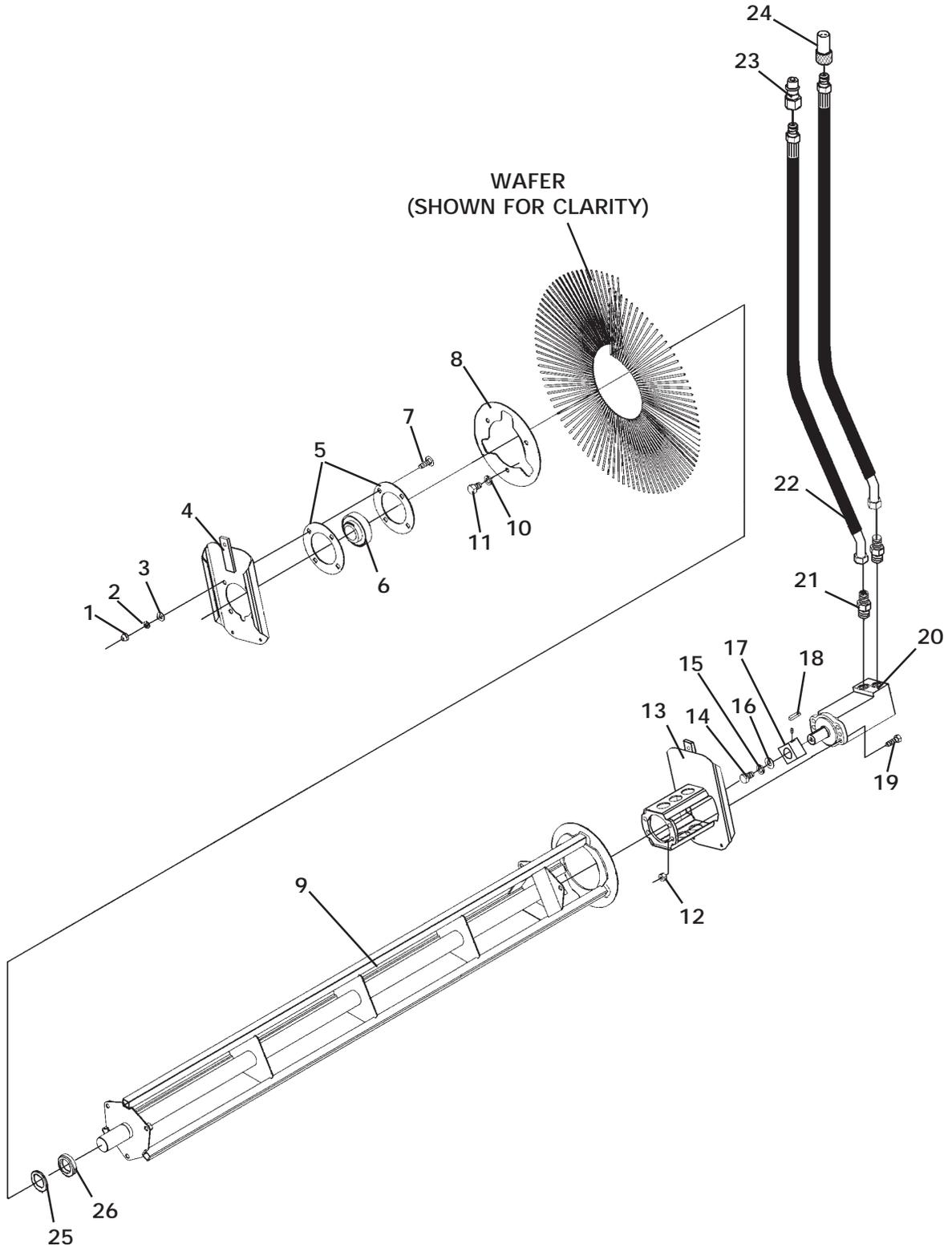
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72" BUCKET BROOM ASSEMBLY

ASSEMBLY #89720

DIAGRAM 2 OF 3



72" BUCKET BROOM ASSEMBLY

ASSEMBLY #89720

LIST 2 OF 3

<u>NO</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	4	1228	.50" UNC Hex Nut
2	4	1505	.50" Lock Washer
3	4	1646	.50" Hard Flat Washer
4	1	89882	Idler Face Plate
5	1	89129	Flangette Set
6	1	89127	Bearing
7	4	1872	.50" UNC X 1.50" Carriage Bolt
8	1	89932	Wafer End Retainer
9	1	89920	Core
10	3	1504	.44" Lock Washer
11	3	1066	.44" UNC X 1.00" Hex Capscrew
12	4	1841	.50" UNC Deformed Lock Nut
13	1	89933	Motor Housing
14	1	1362	.62" UNF x 1.00" Hex Capscrew
15	1	1506	.62" Lock Washer
16	1	1517	.62" Flat Washer
17	1	89805	2" Square Drive Block
18	--		Replacement Key
19	4	1090	.50" UNC X 1.50" Hex Capscrew
20	1	89996	Motor
21	2	22552	Straight Adapter
22	2	37924	Hose .50" x 98" 8FFS 45° - 12MBo
23	1	22519	Male Coupler
24	1	22518	Female Coupler
25	1	16380	Washer
26	1	16379	Spacer

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72" BUCKET BROOM ASSEMBLY

ASSEMBLY #89720

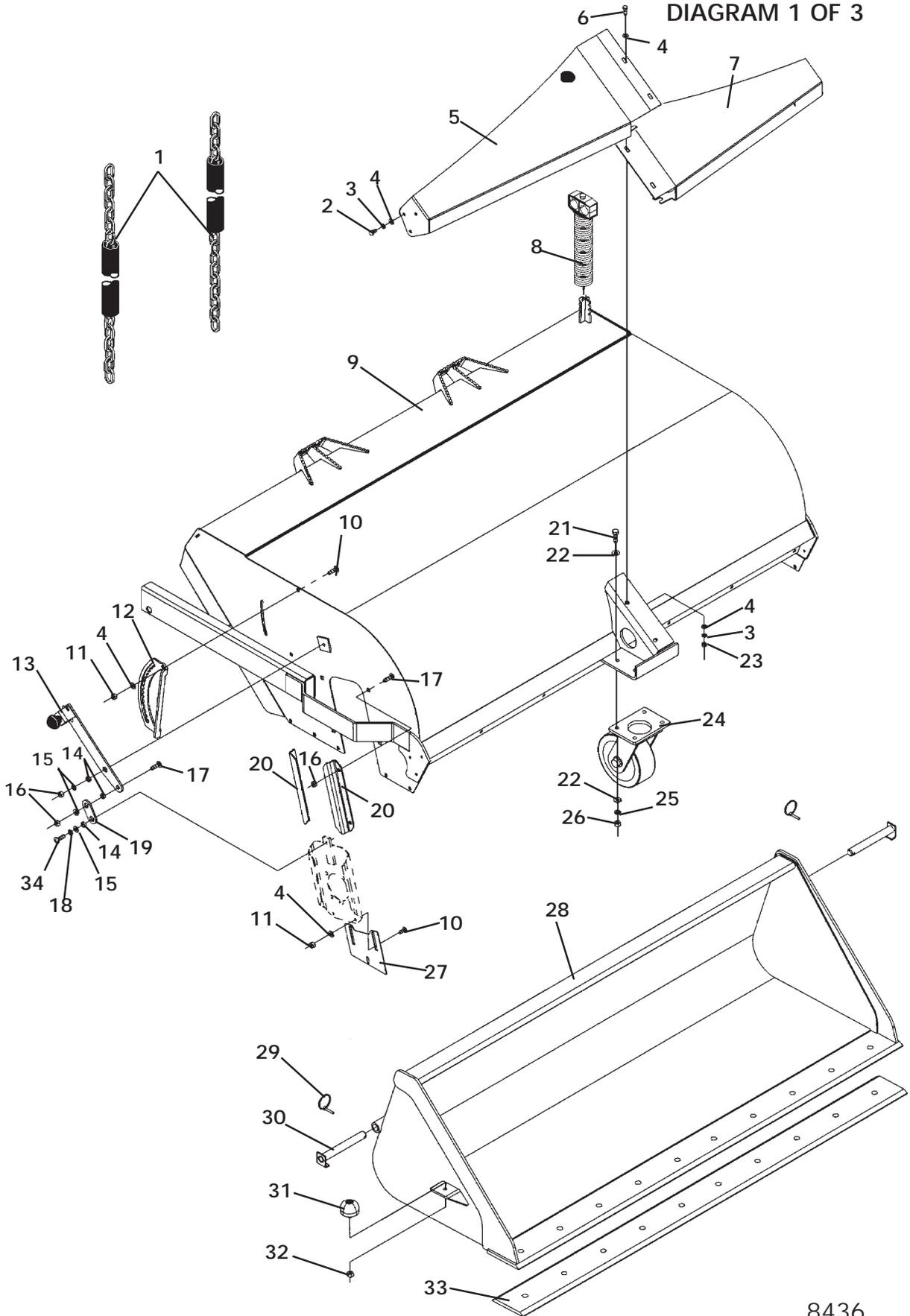
LIST 3 OF 3

<u>NO</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	40	1536	.38" UNC Nylock Nut
2	42	1514	.38" Flat Washer
3	42	10008	.38" UNC X 1.00" Carriage Bolt
4	3	89738	Backing Strip
5	1	89736	Rubber Skirt 8.00" x 73.63"
6	2	85838	Ball Knob
7	2	1503	.38" Lock Washer
8	1	89874	Volumizing Shield
9	1	89737	Rubber Skirt 8.00" x 72.38"
10	1	89878	Backing Strip
11	2	1069	.44" UNC X 1.75" Hex Capscrew
12	2	1515	.44" Flat Washer
13	2	89884	Spacer Tube
14	2	89879	Backing Strip
15	1	89735	Rubber Skirt Left 5.50" x 23"
	1	15386	Rubber Skirt Right 5.50" x 23"
16	1	89734	Rubber Skirt 10.50" x 73.63"
17	4	32298	Spring Strip

84" BUCKET BROOM ASSEMBLY

ASSEMBLY #31937

DIAGRAM 1 OF 3



84" BUCKET BROOM ASSEMBLY

ASSEMBLY #31937

LIST 1 OF 3

<u>NO</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	2	31077	Transport Chain
	2	36302	Rubber Chain Cover
2	6	1042	.38" UNC X .75" Hex Capscrew
3	8	1503	.38" Lock Washer
4	18	1514	.38" Flat Washer
5	1	32167	Right Sprayer Shroud
	1	32796	Cap Plug
	1	34137	Rubber Edge 44.50"
6	2	1044	.38" UNC X 1.25" Hex Capscrew
7	1	32166	Left Sprayer Shroud
	1	34137	Rubber Edge 44.50"
8	1	21693	Spring and Clamp Assembly
9	1	31938	Broom Bucket
10	8	10008	.38" UNC X 1.00" Carriage Bolt
11	8	1536	.38" UNC Nylock Nut
12	2	89872	Broom Indexing Sprocket
13	2	89866	Spring Pin Lever Assembly
	-	89871	Replacement Spring
	-	89870	Replacement Pin
14	6	89884	Spacer Tube
15	6	1515	.44" Flat Washer
16	12	1745	.44" UNC Nylock Nut
17	10	10009	.44" UNC X 1.25" Carriage Bolt
18	2	1504	.44" Lock Washer
19	2	89873	Link
20	4	89731	Slide Guide
21	4	1091	.50" UNC X 1.75" Hex Capscrew
22	8	1646	.50" Hard Flat Washer
23	2	1226	.38" UNC Hex Nut
24	1	89886	Wheel Assembly
25	4	1505	.50" Lock Washer
26	4	1228	.50" UNC Hex Nut
27	2	89880	Dust Shield
28	1	31940	Bucket
29	2	21169	Klik Pin
30	2	31080	Pin
31	2	6886	Rubber Bumper
32	2	1841	.50" UNC Deformed Lock Nut
33	1	32836	Cutting Edge
	10	1712	.50" UNC X 1.50" Plow Bolt
	10	1516	.50" Flat Washer
	10	1841	.50" UNC Deformed Lock Nut
34	2	1066	.44" UNC X 1.00" Hex Capscrew

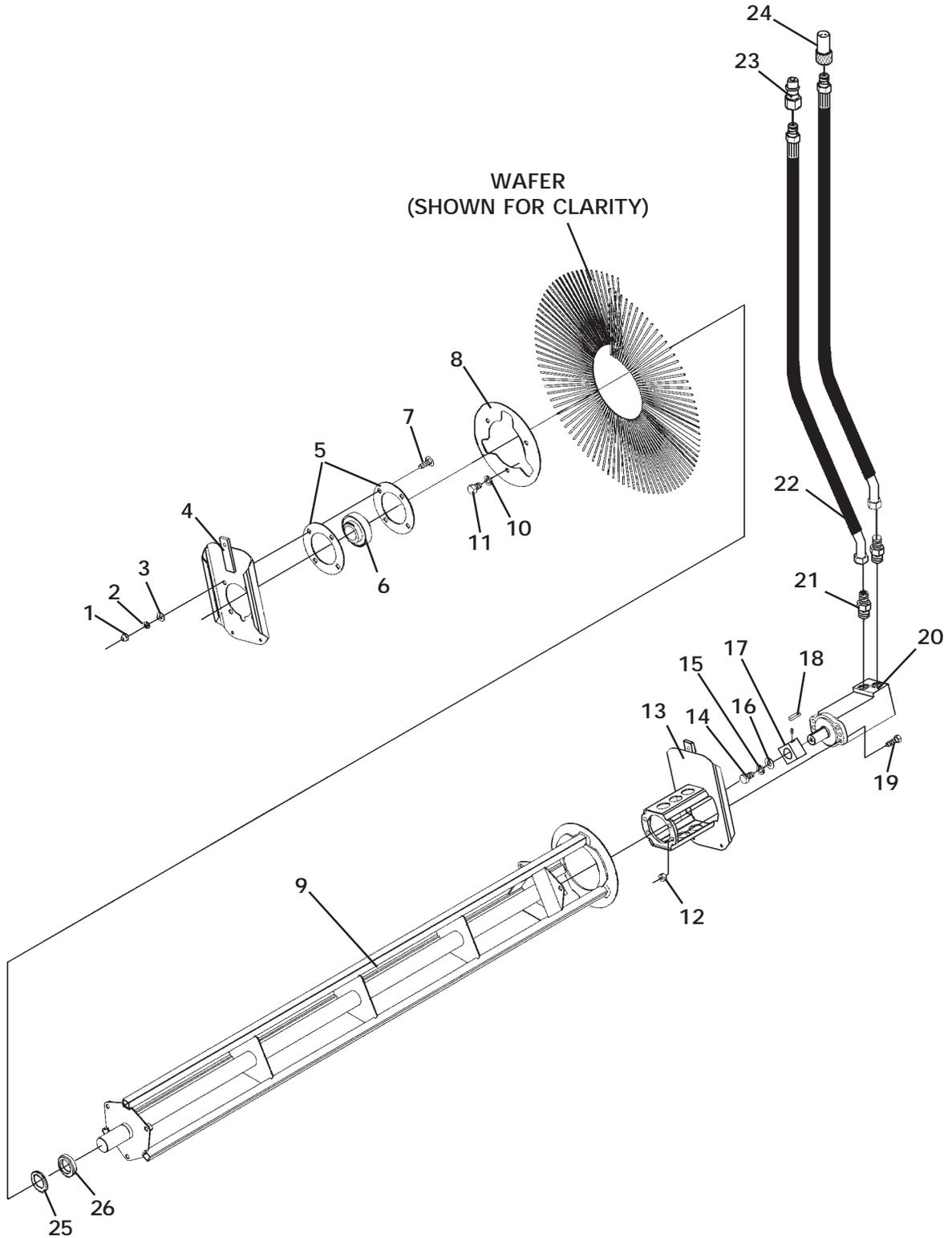
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84" BUCKET BROOM ASSEMBLY

ASSEMBLY #31937

DIAGRAM 2 OF 3



84" BUCKET BROOM ASSEMBLY

ASSEMBLY #31937

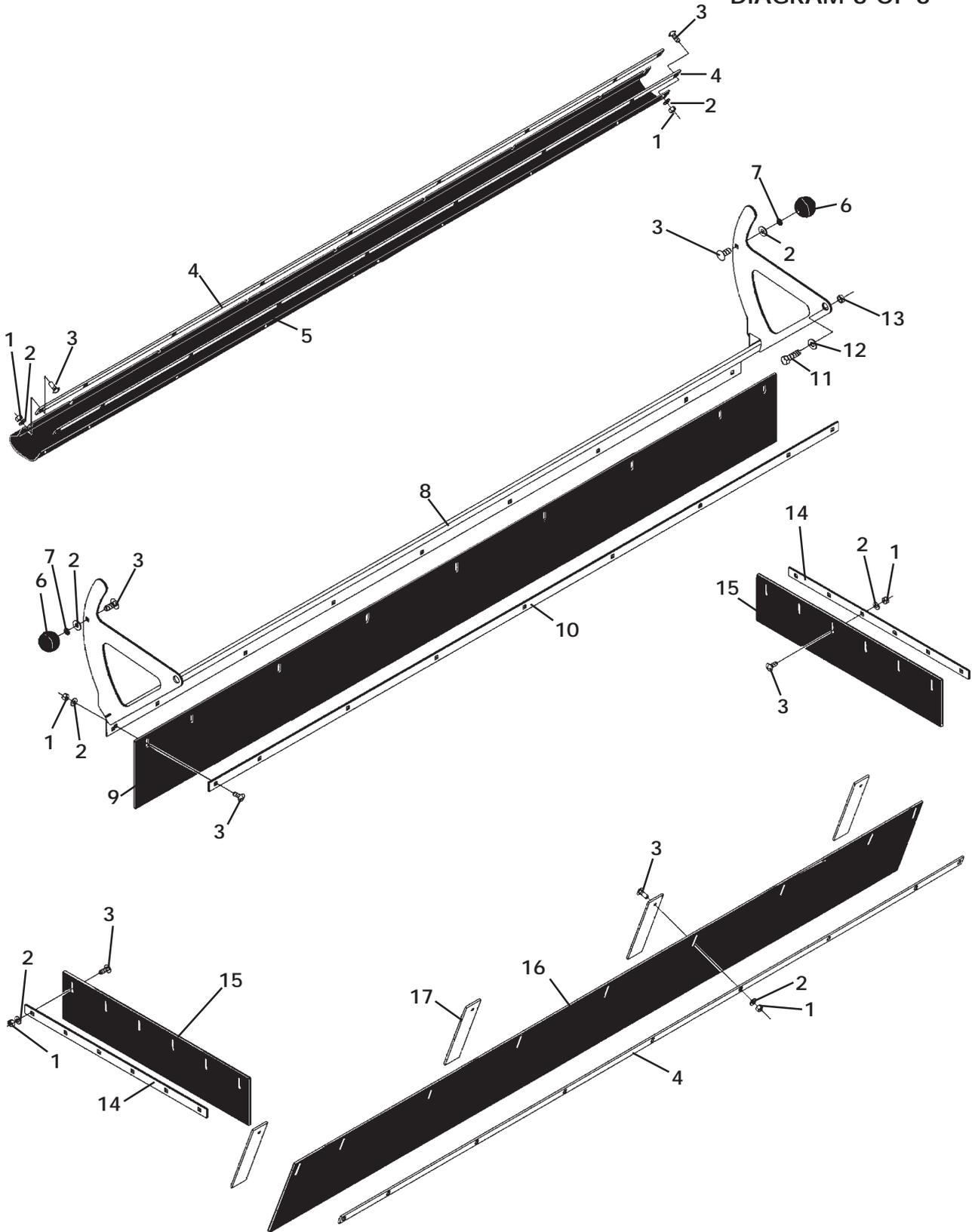
LIST 2 OF 3

<u>NO</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	4	1228	.50" UNC Hex Nut
2	4	1505	.50" Lock Washer
3	4	1646	.50" Hard Flat Washer
4	1	89882	Idler Face Plate
5	1	89129	Flangette Set
6	1	89127	Bearing
7	4	1872	.50" UNC X 1.50" Carriage Bolt
8	1	89932	Wafer End Retainer
9	1	31977	Core
10	3	1504	.44" Lock Washer
11	3	1066	.44" UNC X 1.00" Hex Capscrew
12	4	1841	.50" UNC Deformed Lock Nut
13	1	89933	Motor Housing
14	1	1362	.62" UNF x 1.00" Hex Capscrew
15	1	1506	.62" Lock Washer
16	1	1517	.62" Flat Washer
17	1	89805	2" Square Drive Block
18	--		Replacement Key
19	4	1090	.50" UNC X 1.50" Hex Capscrew
20	1	89996	Motor
21	2	22552	Straight Adapter
22	2	37924	Hose .50" x 98" 8FFS 45° - 12MBo
23	1	22519	Male Coupler
24	1	22518	Female Coupler
25	1	16380	Washer
26	1	16379	Spacer

84" BUCKET BROOM ASSEMBLY

ASSEMBLY #31937

DIAGRAM 3 OF 3



84" BUCKET BROOM ASSEMBLY

ASSEMBLY #31937

LIST 3 OF 3

<u>NO</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	48	1536	.38" UNC Nylock Nut
2	50	1514	.38" Flat Washer
3	50	10008	.38" UNC X 1.00" Carriage Bolt
4	3	32496	Backing Strip
5	1	32529	Rubber Skirt 8.00" x 73.63"
6	2	85838	Ball Knob
7	2	1503	.38" Lock Washer
8	1	32834	Volumizing Shield
9	1	32530	Rubber Skirt 8.00" x 72.38"
10	1	32497	Backing Strip
11	2	1069	.44" UNC X 1.75" Hex Capscrew
12	2	1515	.44" Flat Washer
13	2	89884	Spacer Tube
14	2	89879	Backing Strip
15	1	89735	Rubber Skirt Left 5.50" x 23"
	1	15386	Rubber Skirt Right 5.50" x 23"
16	1	32528	Rubber Skirt 10.50" x 73.63"
17	4	32298	Spring Strip

MOUNTING & INSTALLATION

BRADCO BROOMS

ATTACHING THE UNIT

The BRADCO® bucket brooms come in three different lengths. The weight and capacity of the skid-steer or prime mover determines which model broom can be attached.

DANGER: Never mount a broom to a skid-steer or prime mover which is not capable of handling the weight of the broom.



Broom Size	Skid-Steer Capacity
5 ft. (1524 mm)	Min. 1300 lbs (590 kg)
6 ft. (1829 mm)	Min 1700 lbs. (771 kg)
7 ft. (2133 mm)	Min. 1700 lbs. (771 kg)

The bucket broom comes with a universal adapter plate capable of attaching the broom to most common skid loaders.

1. Attach the bucket broom to the prime mover's quick attach, and lock in place.
2. Attach the chains to a convenient location on the prime mover loader arms, such as a cross bar or step, taking special consideration if hydraulic tubes are located along the cross bar. **DO NOT install chains in a location where hydraulic lines may become damaged.** Leave chains loose with equal slack on both.

CAUTION: Avoid equipment damage and personal injury. Chains must be of equal length, and long enough to keep the sweeper level during dumping. Short chains may cause the sweeper to tip back and damage the sweeper body.



3. Connect the hydraulic hoses to the auxiliary hydraulic couplers on the prime mover.
4. Make adjustments to the chains and brushes.
See the Adjustments Section F.

If the bucket broom does not fit the loader arms, contact your skid-steer dealer for optional adapter plates to convert the machine to a more common adapter plate configuration. Refer to the skid-steer loader operator's manual for proper mounting and safe operation of attachments.

DANGER: Never operate an implement which is not securely attached to the skid-steer loader.



The skid-steer loader is required to have auxiliary hydraulics that are capable of 8-20 gpm (30-83 L/min). The hydraulic pressure must be capable of 2000-3250 psi (140-225 bar). Verify that the skid-steer is capable of hydraulic motor operation at these levels.

ADJUSTMENTS

BRADCO BROOMS

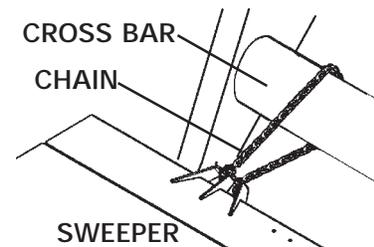
ADJUSTING CHAINS

The BRADCO® bucket brooms are equipped with two transport/dumping chains. These chains are to be attached to the skid-steer loader arms at a convenient location, such as the cross bar or step, taking special consideration if hydraulic tubes are routed along the cross bar.

CAUTION: Avoid equipment damage and personal injury. Chains must be of equal length, and long enough to keep the sweeper level during dumping. Short chains may cause the sweeper to tip back and damage the sweeper body.



1. Make sure both chains are quite loose with equal slack.
2. Raise the unit, and then dump the bucket slowly. The unit will dump correctly if chains have the proper tension. If the unit tips down when test dumping, go to step #3.
3. Tighten both chains by the same amount (no more than 2 links each).
4. Repeat steps #2 and #3 until the unit dumps correctly.

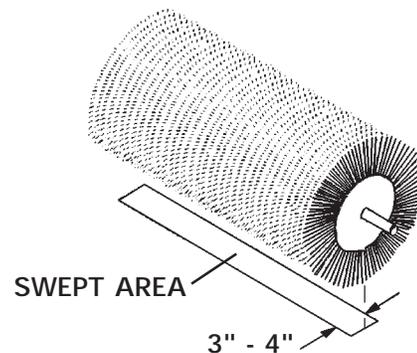


ADJUSTING THE SWEEPER BRUSH

A properly adjusted brush offers the best sweeping performance.

To adjust the brush pattern:

1. Move the sweeper to a dusty, flat surface.
2. Set the prime mover brake; leave the engine running.
3. Start the sweeper at a slow speed; then lower the sweeper bucket to 1" above the ground.
4. Run the sweeper in a stationary position for 30 seconds.
5. Raise the sweeper and back away.
6. Switch off the prime mover engine, and remove the key.
7. Check the brush pattern left in the dust. The swept area should be 3"- 4" wide, running the full length of the brush.



ADJUSTMENTS

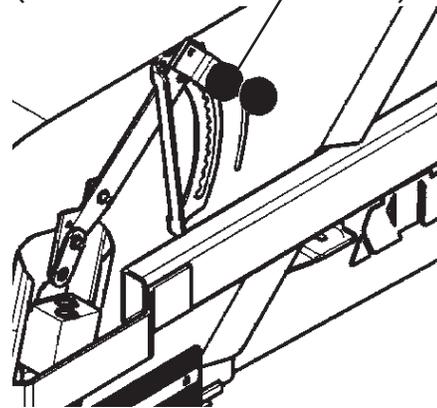
BRADCO BROOMS

8. If the brush pattern is not 3" - 4" wide the brush height needs to be adjusted.

a. If the brush pattern is too wide, pull and turn the height adjusting knob and move one notch down. Repeat on the opposite side.

b. If the brush pattern is too narrow, pull and turn the height adjusting knob and move one notch up. Repeat on the opposite side.

HEIGHT ADJUSTMENT KNOB
(PULL AND TURN TO UNLOCK)



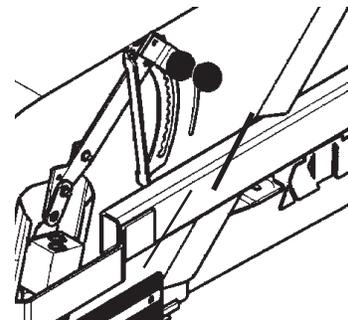
9. Repeat steps #1 through #8 until the brush pattern is 3" - 4" wide.
10. Adjust the front and side flaps to contact the sweeping surface lightly and evenly.

ADJUSTING THE VOLUMIZER

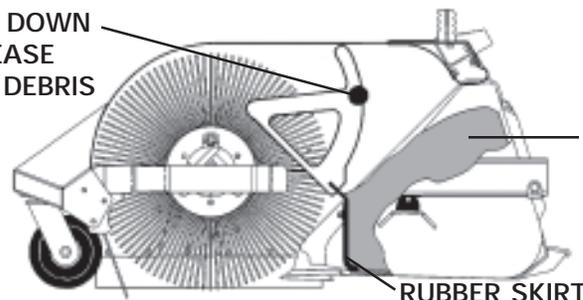
The volumizer needs adjusting only if the rubber skirt becomes worn or if the amount of debris in the bucket needs to be limited to accommodate the lift capacity of your specific prime mover.

1. Move the sweeper to a level surface.
2. Adjust the volumizer adjustment knobs down (equal distance on each side) to decrease the amount of debris collected in the bucket, and also if the bottom of the rubber skirt has become worn.

VOLUMIZER
ADJUSTMENT KNOB



MOVE KNOB DOWN
TO DECREASE
AMOUNT OF DEBRIS



DEBRIS COLLECTED
IN THE BUCKET

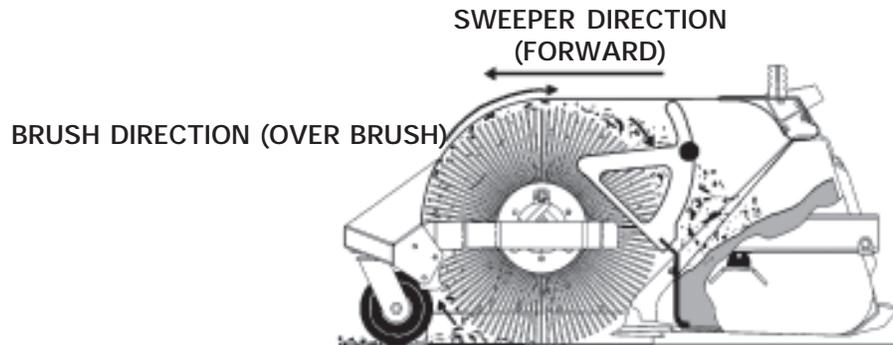
RUBBER SKIRT

OPERATING INSTRUCTIONS

OPERATING THE BROOM

The **BRADCO**® Bucket Sweepers use the prime mover hydraulic flow to operate. To start the brush, turn on the skid-steer's auxiliary hydraulics; to stop it, turn off the hydraulic flow.

With this broom, you sweep "Over" the brush while moving in a forward direction. **NOTE: Broom rotation should always be away from the operator, except during end of pass - pile clean up.**



CAUTION!  Only fully trained operators or trainee operators under the close supervision of a fully trained person should use this machine.

Check all hydraulic fittings for leaks, and to ensure that they are properly connected and routed. Check hardware for tightness.

Be sure all persons not operating the sweeper are clear of the sweeper discharge area.

To increase or decrease brush speed, change the skid-steer's rpm. Use the **LOWEST** speed that will complete the job. In general, half throttle provides plenty of engine speed.

The front caster wheel feature allows the broom to follow ground contours. Therefore, **DO NOT** run the sweeper with the skid-steer in the "FLOAT" position. Using Float allows the sweeper to drop too low and lift too high, resulting in poor sweeping and damage to the unit.

DUMPING

Empty the bucket by raising the sweeper above the container, then dump using the prime mover tilt controls.

DANGER!  Avoid electrical shock. Stay away from overhead wires.

CAUTION!  Avoid equipment damage and/or personal injury. Adjust the chains properly. Otherwise the sweeper can tip back onto the

OPERATING INSTRUCTIONS

STOPPING THE BROOM

Never stop the sweeper at high engine speed. Decrease skid-steer engine speed before stopping the hydraulic flow to the broom.

IMPORTANT: Avoid sweeper and motor damage. Decrease prime mover engine speed (rpm) before stopping hydraulic flow to disengage the sweeper.

END OF PASS - PILE CLEAN UP

During normal sweeping operation, a small pile of material is pushed along in front of the broom. End of pass - pile clean up is one of the two reasons the main brush should be operated in reverse direction with "Stuck on Material" being the second. **NOTE: Using reverse mode for normal sweeping will NOT clean as well, and will result in premature wear of the cutting edge and machine surfaces.**

To clean up this pile at the end of the sweeping pass, throttle down the prime mover, drop the bucket cutting edge to the grade surface, and change the hydraulic flow (operating with broom rotation in reverse), and inch forward. This action (similar to that of a broom and dust pan), will wisp the small pile of debris into the bucket. **NOTE: Space is made available in front of the volumizer rubber skirt to capture this debris.**

STUCK ON MATERIAL

When stuck on material is encountered that cannot be removed by the rotating brush alone, the operator may simply back over the material and lower the bucket edge to the ground and scrape the material loose. The broom direction may be reversed to assist if needed.

IMPORTANT: DO NOT forget to return the bucket to its approximate 1" clearance position and change the broom rotation to forward direction after pile clean up and/or removal of stuck on material.

OPERATING TIPS

- Follow ALL safety precautions outlined in this manual.
- Operate the sweeper on flat, level surfaces only.
- DO NOT run the sweeper with skid-steer in "Float" position.
- DO NOT engage or disengage the brush at a high engine speed. This damages the sweeper and motor.
- DO NOT scrape with the bucket while sweeping. It is for collection and loading (when sweeper is removed) and will wear prematurely if it is used for scraping. Never operate the sweeper with the bucket less than 1" from the ground.

GUTTERBRUSH OPERATION

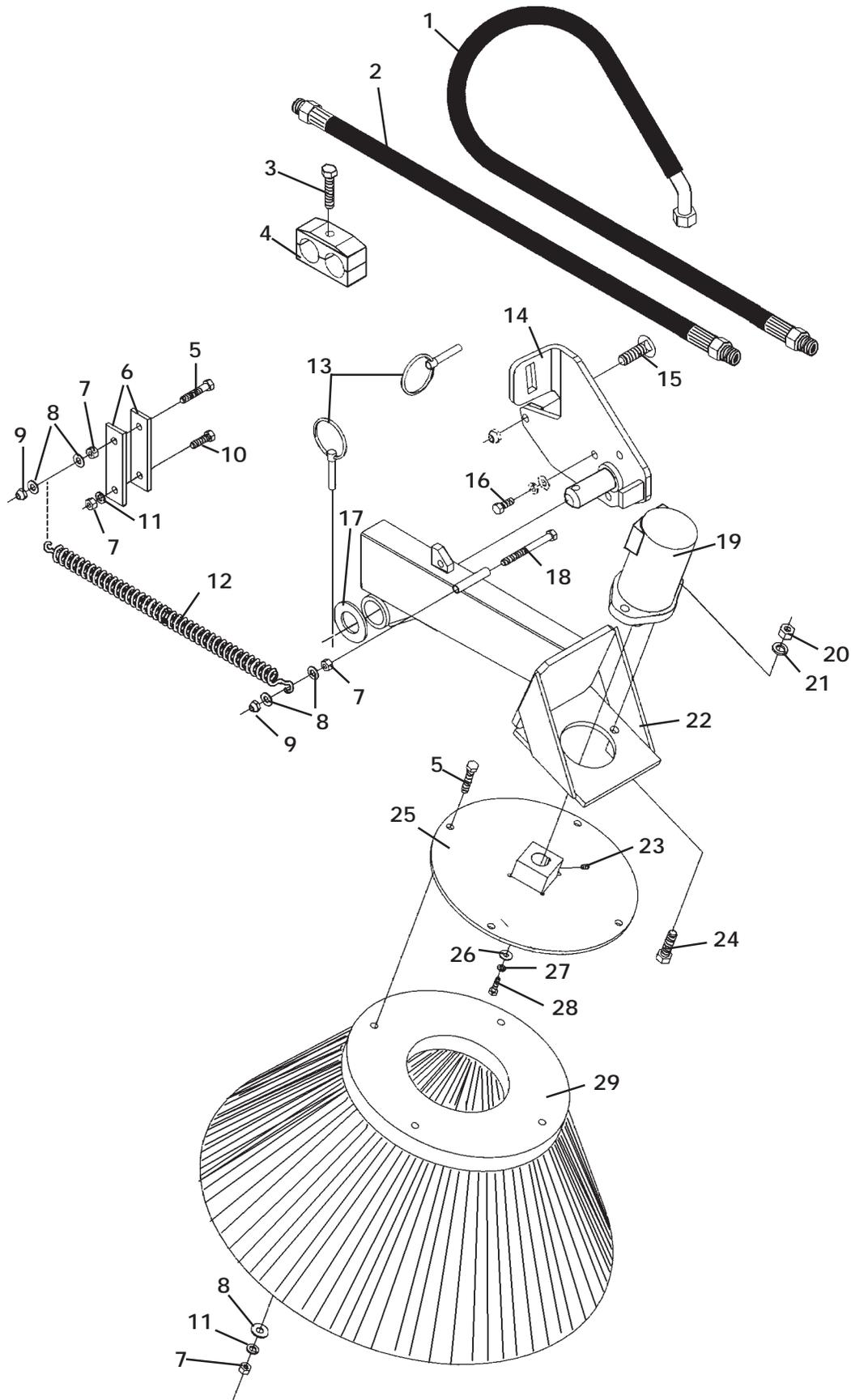
See Section "I" for gutterbrush parts, installation and operation.

WATER KIT OPERATION

See Section "I" for water kit parts, installation and operation.

OPTIONAL PIN-ON GUTTER BRUSH

RIGHT SIDE GUTTER BRUSH ASSEMBLY #32266



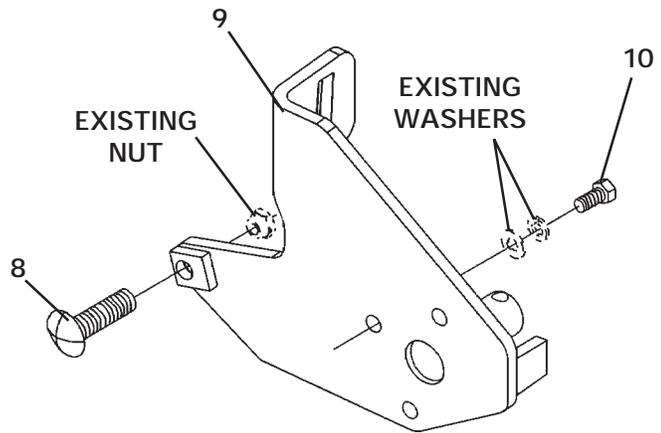
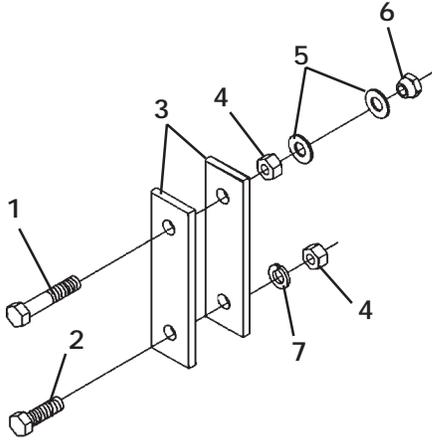
OPTIONAL PIN-ON GUTTER BRUSH

RIGHT SIDE GUTTER BRUSH ASSEMBLY #32266

<u>NO</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	37947	Hose .50" X 150" 8FORFS 45° - 10MBo
2	1	37948	Hose .50" X 180" 12MBo - 10MBo
3	1	1072	.44" UNC X 2.50" Hex Capscrew
4	1	81358	Double Hose Clamp
5	5	1047	.38" UNC X 2.00" Hex Capscrew
6	2	33618	Clamp Bar
7	7	1226	.38" UNC Hex Nut
8	8	1525	.38" SAE Flat Washer
9	2	1837	.38" UNC Deformed Lock Nut
10	1	1044	.38" UNC X 1.25 Hex Capscrew
11	5	1503	.38" Lock Washer
12	1	31471	Linkage Spring
	1	31472	Insert Nut
	1	31473	Gutter Brush Bolt
13	2	57496	Lynch Pin
14	1	33485	Right Brush Mount
15	1	10010	.44" UNC X 1.50" Carriage Bolt
16	3	1043	.38" UNC X 1.00" Hex Capscrew
17	1	1941	1.25" Hard Flat Washer
18	1	1054	.38" UNC X 3.75" Hex Capscrew
19	1	14929	Hydraulic Motor
20	2	1228	.50" UNC Hex Nut
21	2	1505	.50" Lock Washer
22	1	33472	Arm
23	1	1999	.25" UNF X .38" Set Screw
24	2	1091	.50" UNC X 1.75" Hex Capscrew
25	1	31463	Brush Plate
26	1	10032	.25" Fender Washer
27	1	1501	.25" Lock Washer
28	1	1002	.25" UNC X .75" Hex Capscrew
29	1	11854	Replacement Brush

OPTIONAL PIN-ON GUTTER BRUSH

LEFT SIDE GUTTER BRUSH ASSEMBLY #33916



OPTIONAL PIN-ON GUTTER BRUSH

LEFT SIDE GUTTER BRUSH ASSEMBLY #33916

<u>NO</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	1047	.38" UNC X 2.00" Hex Capscrew
2	1	1044	.38" UNC X 1.25 Hex Capscrew
3	2	33618	Clamp Bar
4	2	1226	.38" UNC Hex Nut
5	2	1525	.38" SAE Flat Washer
6	1	1837	.38" UNC Deformed Lock Nut
7	1	1503	.38" Lock Washer
8	1	10010	.44" UNC X 1.50" Carriage Bolt
9	1	33486	Left Brush Mount
10	3	1043	.38" UNC X 1.00" Hex Capscrew

MOUNTING INSTALLATION & OPERATION

OPTIONAL PIN-ON GUTTER BRUSH ASSEMBLY

The following instructions will assist in the installation of the pin-on gutter brush assembly.

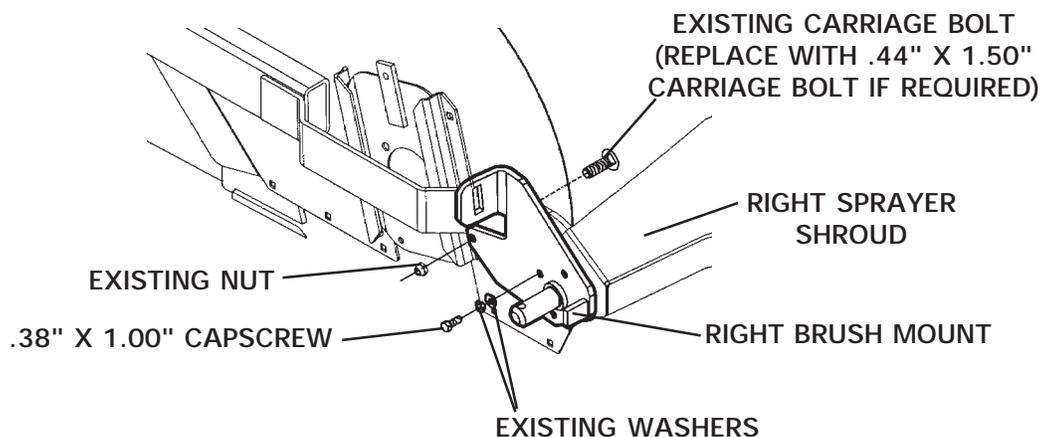
MOUNTING INSTALLATION

1. Remove the three capscrews on the end of the right sprayer shroud, and the .44" UNC Nylock nut from the bottom bolt on the slide guide. See Figure #1
2. Position the right brush mount and reinstall the .44" UNC Nylock nut. See Figure #1

NOTE: If the bolt length is insufficient, replace the .44" UNC X 1.25" carriage bolt with the .44" UNC X 1.50" carriage bolt. See Figure #1

3. Using the existing washers, replace the three .38" UNC X .75" bolts removed in step #1 with .38" UNC X 1.00" capscrews supplied. See Figure #1

FIGURE #1

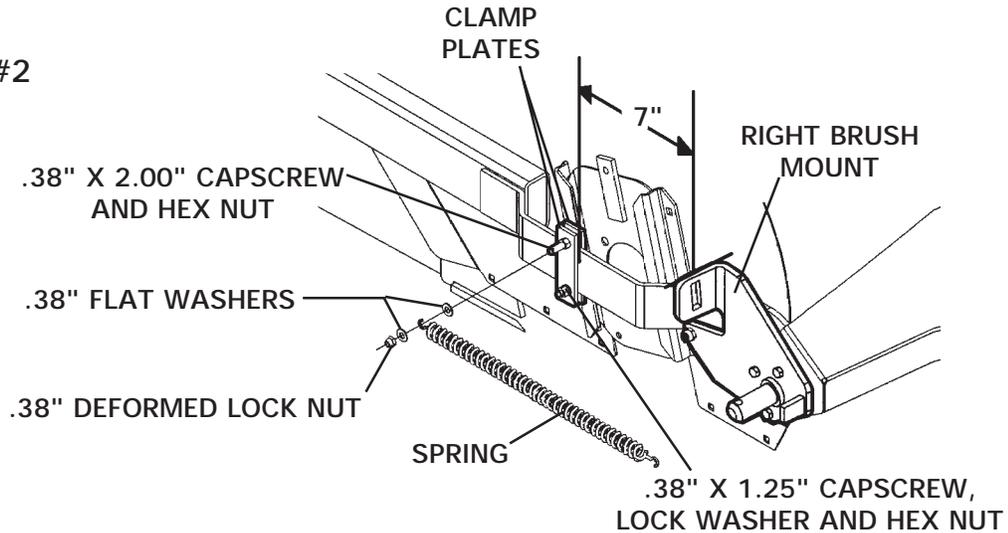


4. Measuring back approximately 7" from the bent portion of the right brush mount, mark the side of the sweeper for installing the clamp plates. See Figure #2
5. Position the clamp plates onto the side of the sweeper with the inside edge of the clamp plate at the 7" mark. Clamp into place using .38" UNC X 2.00 capscrew through the top holes, followed by a .38" hex nut and a .38" UNC X 1.25" capscrew through the bottom hole followed by a lock washer and deformed lock nut. See Figure #2
6. Install the spring #31471 onto the top clamp plate capscrew with a flat washer on each side of the spring, followed by a deformed lock nut. See Figure #2

MOUNTING, INSTALLATION & OPERATION

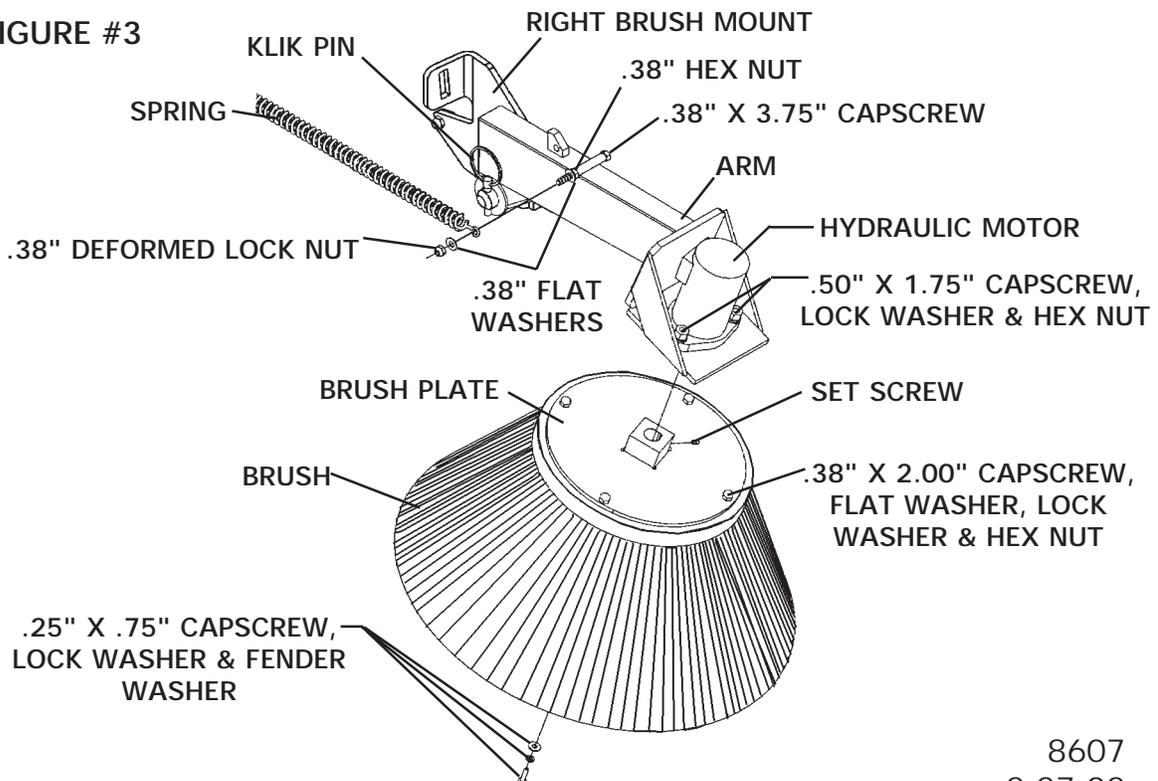
OPTIONAL PIN-ON GUTTER BRUSH ASSEMBLY

FIGURE #2



7. Bolt the hydraulic motor to the arm using the .50" hardware provided. See Figure #3
8. Install the brush plate to the brush using the remaining (5) .38" UNC X 2.00" capscrows, flat washers, lock washers and hex nuts provided. See Figure #3
9. Install the brush to the arm by installing the .25" UNC X .75" capscrow, lock washer, and fender washer to the end of the motor shaft. Tighten the set screw in the motor drive block on the brush plate. See Figure #3

FIGURE #3



MOUNTING, INSTALLATION & OPERATION

OPTIONAL PIN-ON GUTTER BRUSH ASSEMBLY

10. Slide the arm assembly onto the pivot pin on the mount, and install one klik pin. Position the arm in the transport position, and install the second klik pin. See Figure #3
11. Install the remaining end of the spring onto the arm assembly by installing the .38" UNC X 3.75" capscrew through the tube on the arm followed by a hex nut, flat washer, spring, flat washer, and deformed lock nut. See Figure #3
12. Install the hose clamp to the rear of the sweeper using the .44" UNC X 2.50" capscrew provided.
13. Connect the hydraulic hoses to the motor, and route through the hose clamp.
14. Remove completely the outside hose from the sweeper motor. Remove the coupler from the end of the hose, and install it onto the end of the 180" hose going to the gutter brush motor.
15. Connect the 150" hose with the 45° end coming from the gutter brush motor to the outside port on the sweeper motor.
16. Adjust according to "Adjustment" instructions.

IMPORTANT:

Avoid hydraulic system damage. Make sure hose ends and gutter brush motor ports are clean before installation.

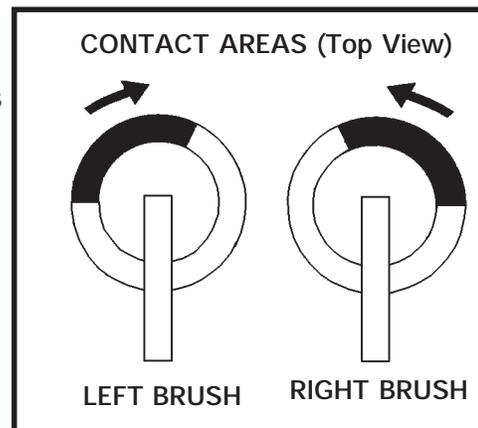
Avoid hose damage. Make sure that hoses do not get pinched or twisted. Do not allow hoses to drag on the ground.

NOTE: If the gutter brush rotates in the wrong direction, reverse the hoses at the gutter brush motor end.

ADJUSTMENTS

On a properly adjusted gutter brush, only a portion of the brush contacts the sweeping surface. See Figure #1 for proper contact areas for both left and right gutter brushes.

1. Lower the gutter brush onto the surface to be swept.
2. Loosen the capscrews on the clamp plates, and reposition the clamp plates to create the necessary down pressure for the correct contact area.
3. Tighten clamp plates.



MOUNTING, INSTALLATION & OPERATION

OPTIONAL PIN-ON GUTTER BRUSH ASSEMBLY

OPERATION

Gutter brushes are for sweeping forward only. When sweeping next to a curb or wall, sweep so only the bristle tips touch the vertical surface.

When not using the gutter brush for a short time, raise it up and lock into the transport position.

NOTE: The gutter brush rotates whenever the sweeper is engaged.

When not using the gutter brush for extended periods of time, you may wish to remove it from the sweeper.

If your gutter brush was a field installation, disconnect the 150" hose from the sweeper motor and reconnect the original hose. Re-install the coupler from the 180" hose, and remove the gutter brush arm. Cap the gutter brush hoses.

IMPORTANT: Contaminates can damage the hydraulic system. Cap the gutter brush hoses or ports whenever the gutter brush is removed.

If your gutter brush was factory installed, you will need to purchase a bushing adapter with a #10 female boss o'ring and a #12 male boss o'ring end.

Disconnect the 150" hose from the gutter brush motor (plug the motor port), and install the bushing adapter. Connect the coupler from the 180" hose going to the gutter brush. Cap the gutter brush hose, and remove the gutter brush from the sweeper.

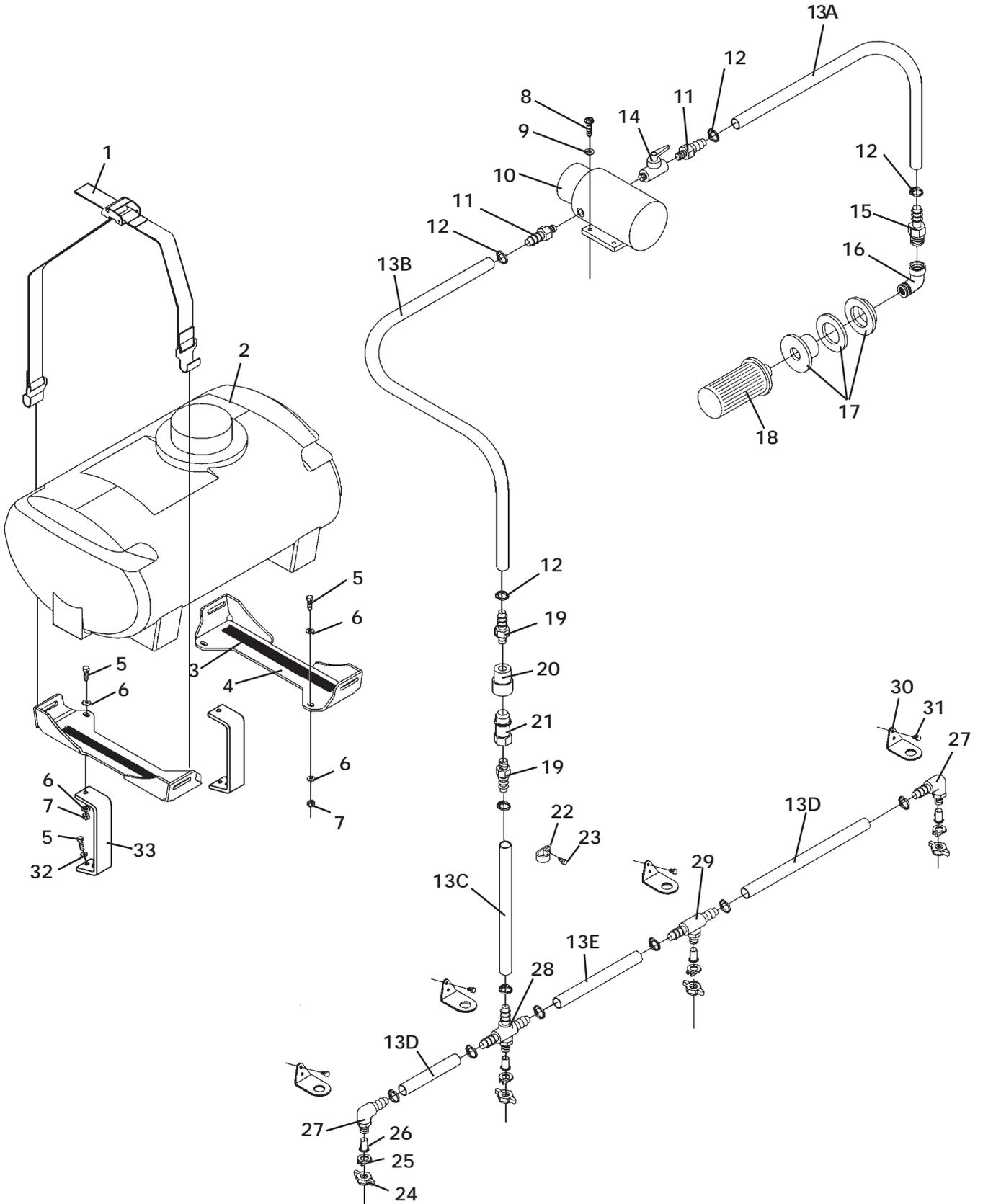
REPLACING THE GUTTER BRUSH

When the gutter brush becomes worn, it may be necessary to replace it.

To replace the brush: Remove the four .38 x 2.00" capscrews from the brush plate and remove the worn gutter brush. Attach the new gutter brush to the plate with the same four capscrews. Adjust down pressure as needed.

25 GALLON WATERKIT ASSEMBLY

ASSEMBLY #11232



25 GALLON WATERKIT ASSEMBLY

ASSEMBLY #11232

<u>NO</u>	<u>REQ'D</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	2	32219	Cambuckle Strap
2	1	32260	25 Gallon Tank
3	2	32218	Hose Sock
4	2	32217	Mounting Bracket
5	8	1043	.38" UNC X 1.00" Hex Capscrew
6	8	1525	.38" Flat Washer
7	4	1536	.38" UNC Nylock Nut
8	4	10030	#10 X 1.00" Pan Head Screw
9	4	10031	#10 Flat Washer
10	1	32259	Pump - 12 Volt
11	2	30216	Hose Barb
12	12	30227	Hose Clamp
13	1	36297	PVC Hose - .38" X 15' (Cut into 6 Hoses) A = 19" Long (Approximately) B = 30" Long (Approximately) C = 28" Long (Approximately) D = 18" Long (2 required) (Approximately) E = 24" Long (Approximately)
14	1	30231	Ball Valve
15	1	30217	Hose Barb
16	1	30218	90° Elbow
17	1	30219	Bulkhead Seal
18	1	30220	Strainer
19	2	30213	Hose Barb
20	1	30215	Female Quick Coupler
21	1	30214	Male Quick Coupler
22	1	30212	Hose Clamp
23	1	1641	#10 X .50" Self Tapping Screw
24	4	30225	Nozzlebody Wing Cap
25	4	30229	Spray Nozzle Tip
26	4	30221	Inline Nozzlebody Strainer
27	2	30222	90° Nozzlebody
28	1	30224	Cross Nozzlebody
29	1	30223	Tee Nozzlebody
30	4	32365	Nozzlebody bracket (Angle Brooms Only)
31	8	1641	#10 X .50" Screw (Angle Brooms Only)
32	4	1503	.38" Lock Washer (Angle Brooms Only)
33	2	15177	Rear Mounting Bracket (Angle Brooms Only)

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MOUNTING INSTALLATION & OPERATION

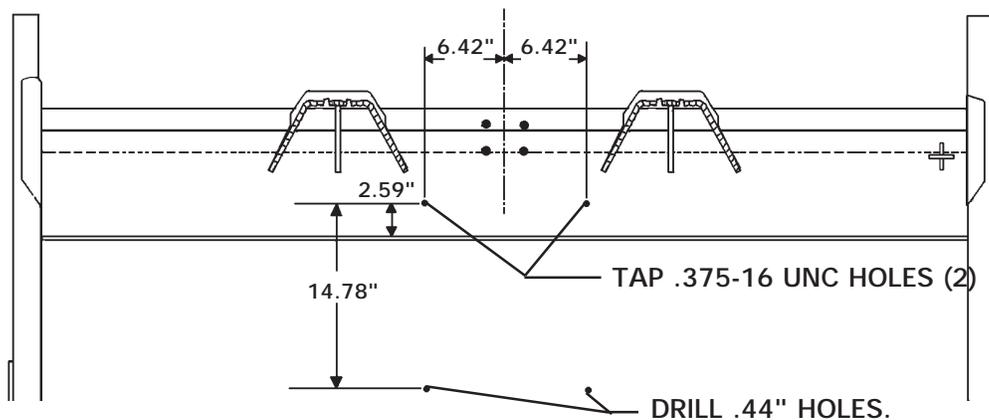
OPTIONAL 25 GALLON WATER KIT ASSEMBLY BUCKET BROOMS

The following instructions will assist in the installation of the optional 25 gallon water kit assembly.

MOUNTING INSTALLATION

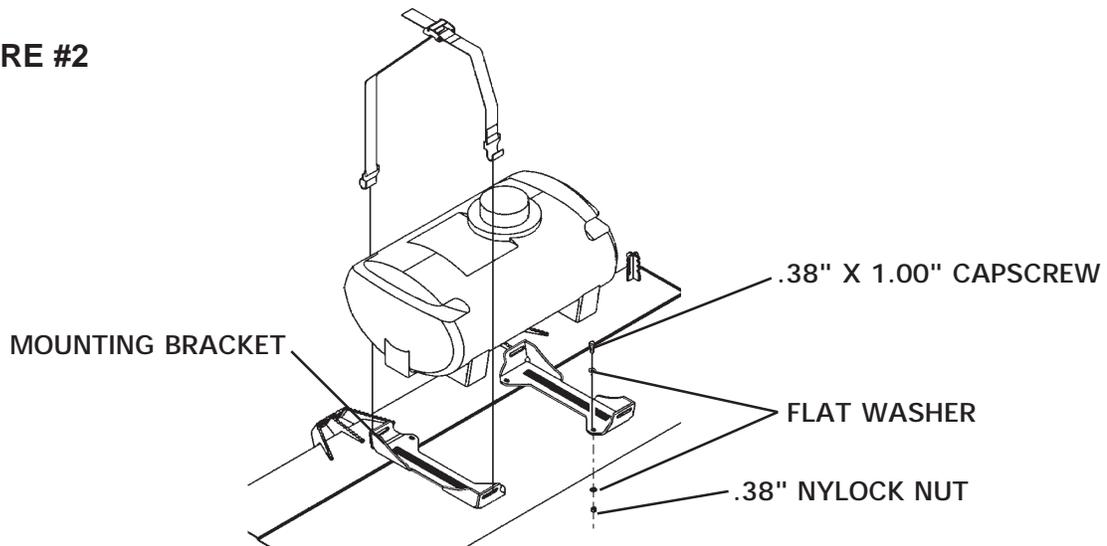
1. Even though the brooms currently have the holes drilled into the cannister for mounting the water tank brackets, there are some early production units that do not. Measuring from the center of the bucket, drill two .31" holes and tap to .375-16 UNC into the top of the cannister and then just drill two .44" holes. See Figure #1 for correct location.

FIGURE #1



2. Position the brackets onto the top of the broom and bolt down using the .38" UNC X 1.00" capscrews, flat washers, and nylock nuts provided. See Figure #2

FIGURE #2



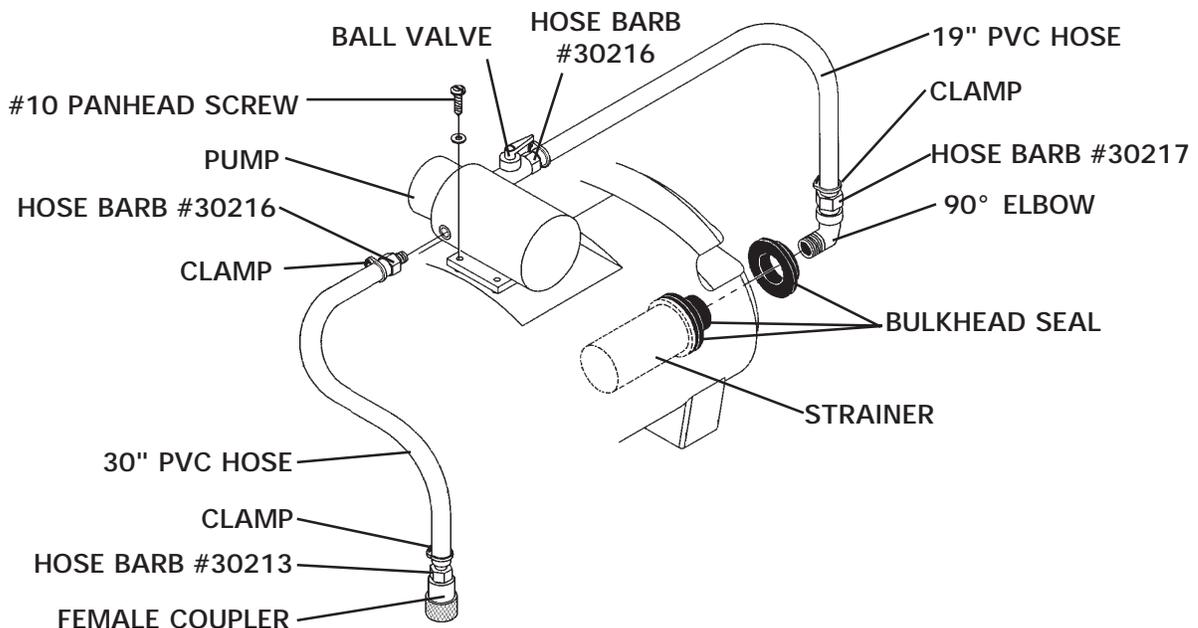
NOTE: To gain access to the underneath side of the cannister it may be necessary to either lift the broom up with the skid-steer loader (be sure to lock the arms in the raised position and turn off the engine before working on the broom), or lift the broom with an overhead hoist, allowing the bucket to open (as in the dumping position).

MOUNTING INSTALLATION & OPERATION

OPTIONAL 25 GALLON WATER KIT ASSEMBLY BUCKETBROOMS

3. Install the pump to the top of the tank (ports to the back of the sweeper), with the (4) #10 X 1.00" screws and flat washers provided. See Figure #3
4. Install the Strainer and the bulkhead seal to the inside of the tank with the male end and the seal to the inside, and the female end of the bulkhead seal on the outside of the tank. See Figure #3
5. Install the 90° elbow (#30218), followed by the hose barb with a .50" NPT end. See Figure #3
6. Install the ball valve (#30231) into the pump, followed by the hose barb with a .25" NPT end. See Figure #3
7. Cut a 19" long piece of PVC hose, and install it onto the two hose barbs with two hose clamps. See Figure #3
8. Install the remaining hose barb, with a .25" NPT end, to the other side of the pump. See Figure #3
9. Cut a 30" piece of PVC hose and install it onto the hose barb with a hose clamp, followed by one of the hose barbs with a .38" NPT end, hose clamp, and the female quick coupler. See Figure #3

FIGURE #3

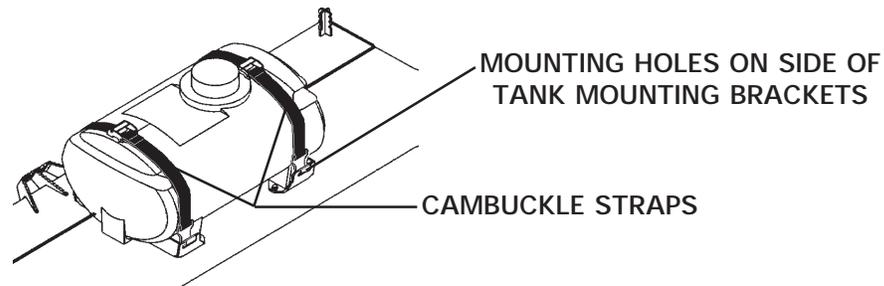


10. Strap the tank to the top of the broom, using the two cambuckle straps provided. See Figure #4

MOUNTING INSTALLATION & OPERATION

OPTIONAL 25 GALLON WATER KIT ASSEMBLY BUCKETBROOMS

FIGURE #4

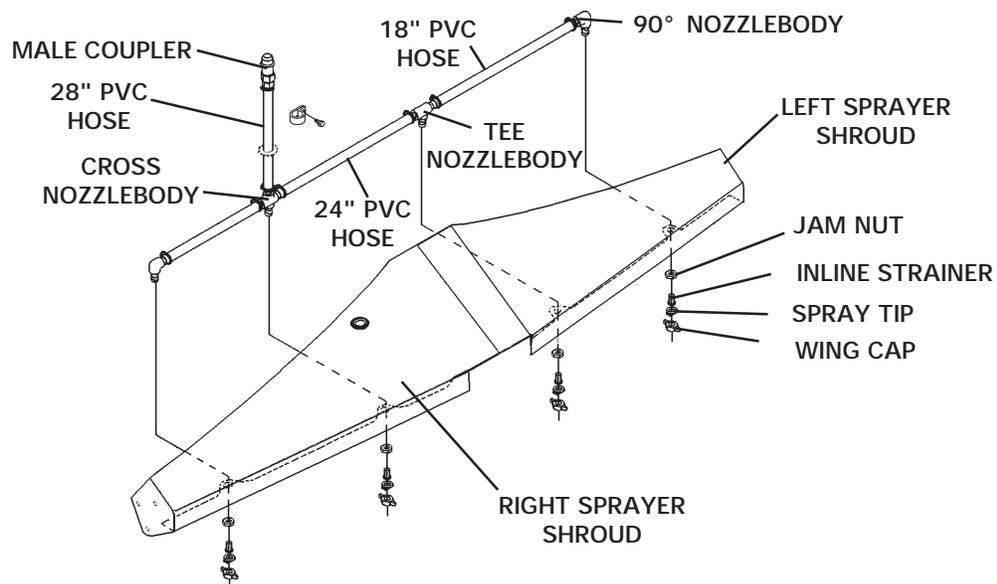


11. On the bottom side of the sprayer shrouds there are four mounting holes. Install the two 90° nozzlebodies to the outside holes (facing to the center). See Figure #5

NOTE: Nozzle bodies are installed by placing them through the mounting holes and securing in place with the jam nuts provided. See Figure #5

12. On the second hole in the right shroud install the cross nozzlebody, and in the remaining hole on the left shroud install the tee nozzlebody. See Figure #5

FIGURE #5



13. On the bottom side of the nozzlebodies install the inline strainers, spray nozzle tips, and wing caps. See Figure #5
14. Cut two 18" pieces of PVC hose, and install them onto the outside nozzlebodies with a 24" piece of PVC hose between the middle nozzlebodies. See Figure #5
15. Cut a 28" piece of PVC hose, and install it onto the top port of the cross nozzlebody. Route the hose through the hole in the top of the right shroud, and clamp into place using the hose clamp and self tapping screw provided. Install the remaining hose barb and male coupler.
16. Connect the couplers together to complete the circuit.

MAINTENANCE

GENERAL INFORMATION

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

LUBRICATION

Lubrication is an important part of maintenance. It is recommended that all grease fittings be lubricated after every 40 hours of use. There are only five (5) grease fittings to be lubricated in the following locations:

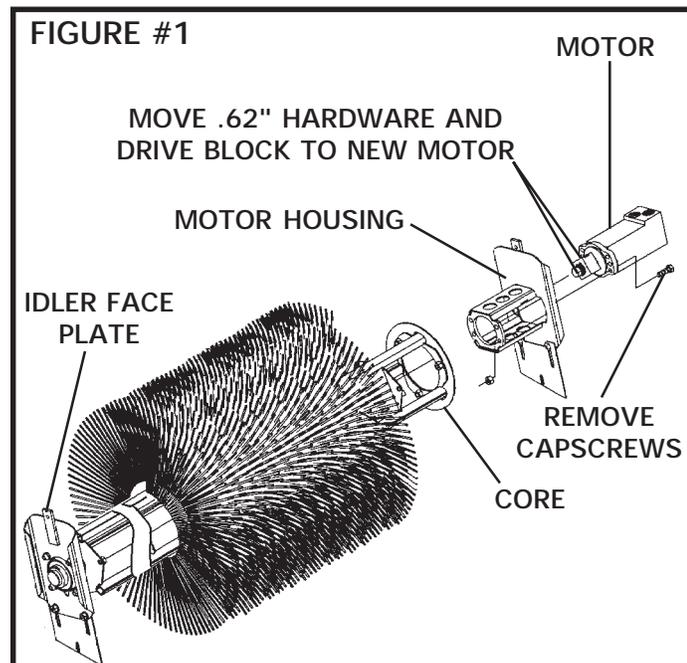
- Front caster axle and swivel zerks (2).
- Pivot pin brackets located on the back of the bucket (2).
- Bearing on the core located on the right side of the bucket (1).

REPLACING HYDRAULIC MOTOR

1. Lower the sweeper to rest on the ground. Place supports under the frame of the broom if not supported by the skid-steer.
2. Tag and disconnect the hydraulic hoses from the hydraulic motor.
3. Remove the rubber skirts on the side of the sweeper.
4. Remove the top center bolt from the idler face plate and the motor housing.
5. Raise the sweeper leaving the brush on the ground and back away.

WARNING! **Avoid serious injury. Lower and stop the sweeper, set the brake, stop the skid-steer engine and remove the key before leaving the operator's seat.**

6. Slide the motor housing out of the core of the brush. See Figure #1
7. Remove the four (4) .50" x 1.50" capscrews securing the motor to the housing. See Figure #1



MAINTENANCE

REPLACING HYDRAULIC MOTOR (CONTINUED)

8. Remove the hydraulic motor. See Figure #1
9. Remove the drive block and .62" hardware from the motor and install on the replacement motor. See Figure #1
10. Bolt the new motor into the housing, using the existing hardware removed in Step #7.
11. Slide the motor housing into the core of the brush.
12. Position the sweeper over the brush and lower into place.
13. Reinstall the top center bolts on the idler face plate and the motor housing. (Be sure to position the link for the spring lever on the outside of the idler face plate and the motor housing before bolting into place.)
14. Reinstall the rubber skirts to the side of the sweeper (leave the nut loose on the hole in the dust shield to allow for brush adjustment) Connect the hydraulic hoses to the new motor.
15. Run the sweeper to verify that hose connection is correct.

REPLACING BRUSHES

As the brushes become worn, they need to be replaced. It is recommended that all brushes are replaced at the same time.

Replacing only a section of brushes is acceptable for special sweeping applications, where only part of the brush is being used consistently and the remainder of the brushes are in "new" condition.

1. Drive the sweeper to a location where an overhead hoist is available. Lower the sweeper to rest on the ground. Place supports under the frame of the broom, if not supported by the skid-steer.
2. Tag and disconnect the hydraulic hoses from the hydraulic motor.
3. Remove the rubber skirts on the sides of the sweeper.
4. Remove the top center bolt from the idler face plate and the motor housing.
5. Raise the sweeper leaving the brush on the ground and back away.

WARNING!  **Avoid serious injury. Lower and stop the sweeper, set the brake, stop the skid-steer engine, and remove the key before leaving the operator's seat.**

6. Slide the motor housing out of the core of the brush. See Figure #1 in "Replacing the Hydraulic Motor".

REPLACING BRUSHES (CONTINUED)

7. Remove the lock collar from the bearing on the idler face plate end of the core.
8. Remove the idler face plate and wafer end retainer.
9. For quick and easy removal of the worn brushes: Using an overhead hoist, attach to the motor end of the core and lift. The brushes (wafers) will fall off of the core.

10. Set the core on end, with the motor end on the ground.

11. For installation of the new brushes, number the tubes on the core as 1, 2, and 3. See Figure #2

12. Slide the first brush section (wafer) onto the core, with a drive pin on each side of tube #1. Be sure the drive pins angle UP. See Figure #3

13. Place the second brush section onto the core, with a drive pin on each side of tube #2. Be sure the drive pins are angled down.

14. Place the third brush section onto the core, with a drive pin on each side of tube #3. Be sure the drive pins are angled up.

15. Continue sliding brush sections (wafers) on until the core is full, making sure to alternate tubes AND the direction of the drive pins.

16. When the core is full, reinstall the wafer end retainer and using the overhead hoist, gently lay the brush back onto the ground.

17. Reinstall the idler face plate and locking collar.

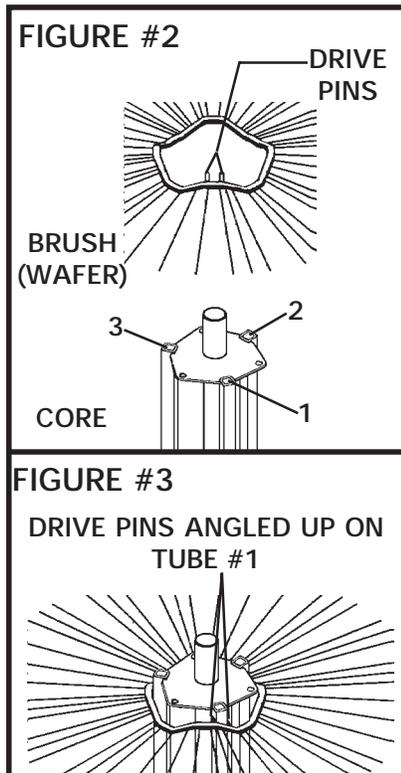
18. Slide the motor housing into the core of the brush.

19. Position the sweeper over the brush and lower into place.

20. Reinstall the top center bolts on the idler face plate and the motor housing. (Be sure to position the link for the spring lever on the outside of the idler face plate and the motor housing before bolting into place.)

14. Reinstall the rubber skirts to the side of the sweeper (leave the nut loose on the hole in the dust shield to allow for brush adjustment). Connect the hydraulic hoses to the motor.

15. Run the sweeper to verify that hose connection is correct.



REMOVAL AND STORAGE

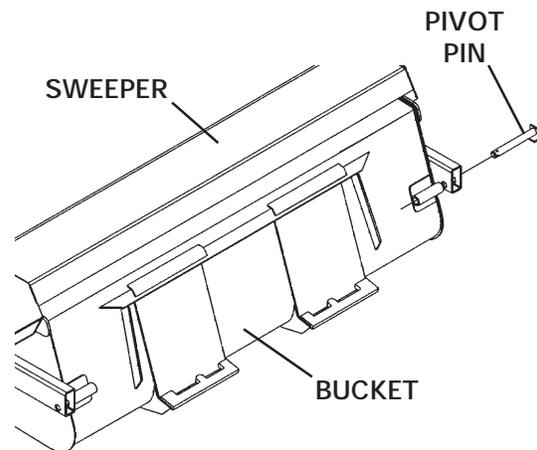
REMOVING BUCKET & SWEEPER

1. Move the sweeper to the storage area.
2. Set the bucket on blocks to keep the brush off of the ground during storage.
3. Disconnect and cap the hydraulic lines to prevent contaminants from entering the system.
4. Remove the support chains from the skid-steer.
5. Unlock the sweeper from the skid-steer, and following the instructions in your skid-steer operator's manual, remove the bucket.
6. Back the skid-steer away from the sweeper.

To re-install the sweeper, follow the instructions in Section E "Mounting & Installation" and Section F "Adjustments".

REMOVING THE SWEEPER ONLY

1. Move the sweeper to the storage area.
2. Set the sweeper on blocks to keep the brush off of the ground during storage.
3. Disconnect and cap the hydraulic lines to prevent contaminants from entering the system.
4. Remove the support chains from the skid-steer.
5. Remove the two pivot pins from the rear of the bucket.
6. Back the skid-steer away from the sweeper.



IMPORTANT: The bucket is for collection and loading only. Scraping with the bucket edge wears the bucket prematurely.

To re-install the sweeper; drive the bucket between the sweeper side arms, aligning the pivot pin holes. Pin the side arms to the bucket with the pivot pins, and connect the hydraulic lines to the skid-steer. Re-connect the chains to the cross bar or step, taking special consideration if hydraulic tubes are routed along the cross bar. Make any adjustment necessary.

IMPORTANT: Do not store the sweeper with weight on the brush. This will deform the bristles, destroying their effectiveness. To avoid this problem, place the sweeper on blocks.

Do not store the polypropylene brushes in direct sunlight. They will deteriorate and crumble.

Keep polypropylene brush material away from intense heat or flame. It will melt.

TROUBLESHOOTING

<u>PROBLEM</u>	<u>POSSIBLE CAUSE</u>	<u>POSSIBLE REMEDY</u>
Brush rotates wrong direction.	Hoses installed incorrectly.	Switch hoses at quick couplers.
Broom fails to operate.	Low oil supply	Add oil.
	Improper hose hookup.	Check hydraulic diagram; reinstall properly.
	Motor damaged.	Check pressure, flow & back pressure. Check flow on return side for bypassing, more than 2 GPM, replace motor.
	Broken hydraulic lines.	Check for leaks and replace damaged line.
	Pinched hose or tube.	Reroute hose; replace tube.
	Motor drive block loose.	Retighten block to shaft.
	Motor shaft key broken.	Replace.
Brush slows or stops when sweeping.	Brush pattern too wide.	Check brush pattern and adjust to 3-4". (See Adjust ments Section of this manual.)
	Travel speed too fast.	Travel no more than 5 MPH when sweeping.
	Trying to sweep too much material at once.	Make several passes.
	Motor failing.	Replace motor.
Broom operates too slow.	Cold oil.	Warm oil with engine at idle speed.
	Engine speed too slow.	Advance throttle. (Use the lowest speed that will complete the job.)
	Oil too heavy.	Use recommended oil
	Motor damaged.	Check pressure, flow & back pressure.
Brush wears into cone shape.	Sweeper is not level.	Level sweeper before each use.
	Tires on prime mover at different pressure or are different size.	Check tire size and ratings. Make corrections, as necessary.

TROUBLESHOOTING

<u>PROBLEM</u>	<u>POSSIBLE CAUSE</u>	<u>POSSIBLE REMEDY</u>
Brush head assembly "bounces" during sweeping.	Sweeper stored with weight on the brush causing deformation of bristles.	Replace wafers.
	Travel speed too fast and/or brush speed too slow.	Find correct combination of ground and brush speeds.
	Core is bent.	Replace.
Brush wears too quickly. or bristles falling out.	Brush pattern too wide.	Check brush pattern and adjust to 3-4". (See Adjustments Section of this
	Wafer damaged.	Replace.
	Sweeping large debris causing extensive wear of wafers.	Replace worn wafers.
Volumizer not retaining debris.	Volumizing baffle or (skirt) positioned incorrectly.	Position baffle (skirt) to the inside of the bucket.
	Volumizer adjusted incorrectly.	Adjust according to instruction in the "Adjustments Section of this manual.
Hydraulic oil over-heating.	To much down force.	Check brush pattern and adjust to 3-4". (See Adjustments Section of this manual.)
	Quick coupler or hose restriction.	Inspect couplers and hoses for dirt, rust, and other contaminates and repair or replace as needed.
	Skid-steer relief valve set too low.	See skid-steer operator's manual and/or dealer for proper relief valve service and adjustment.
External leakage.	Loose fitting.	Tighten all fittings.
	O'ring damaged on fittings.	Replace o'ring.
	Broken hydraulic line.	Check for leaks and replace damaged line.
	Motor housing damaged.	Replace.



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

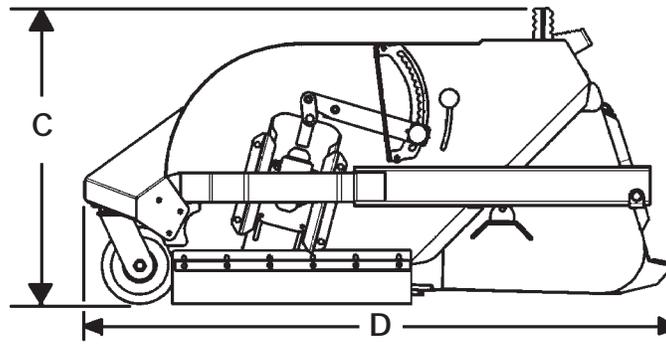
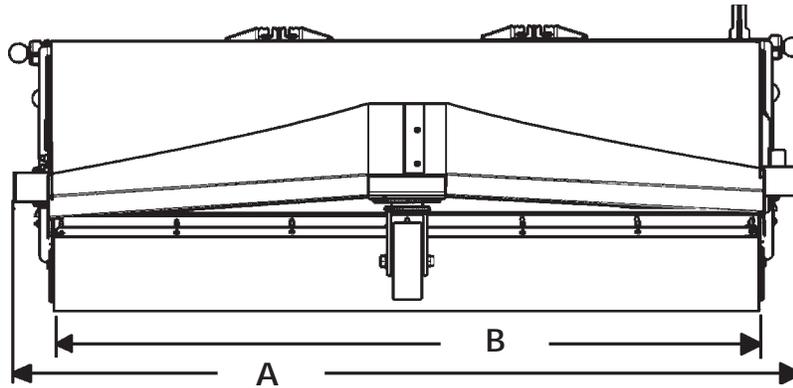
* Thick Nuts must be used with Grade 8 bolts

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

SPECIFICATIONS

BRADCO BUCKET BROOMS

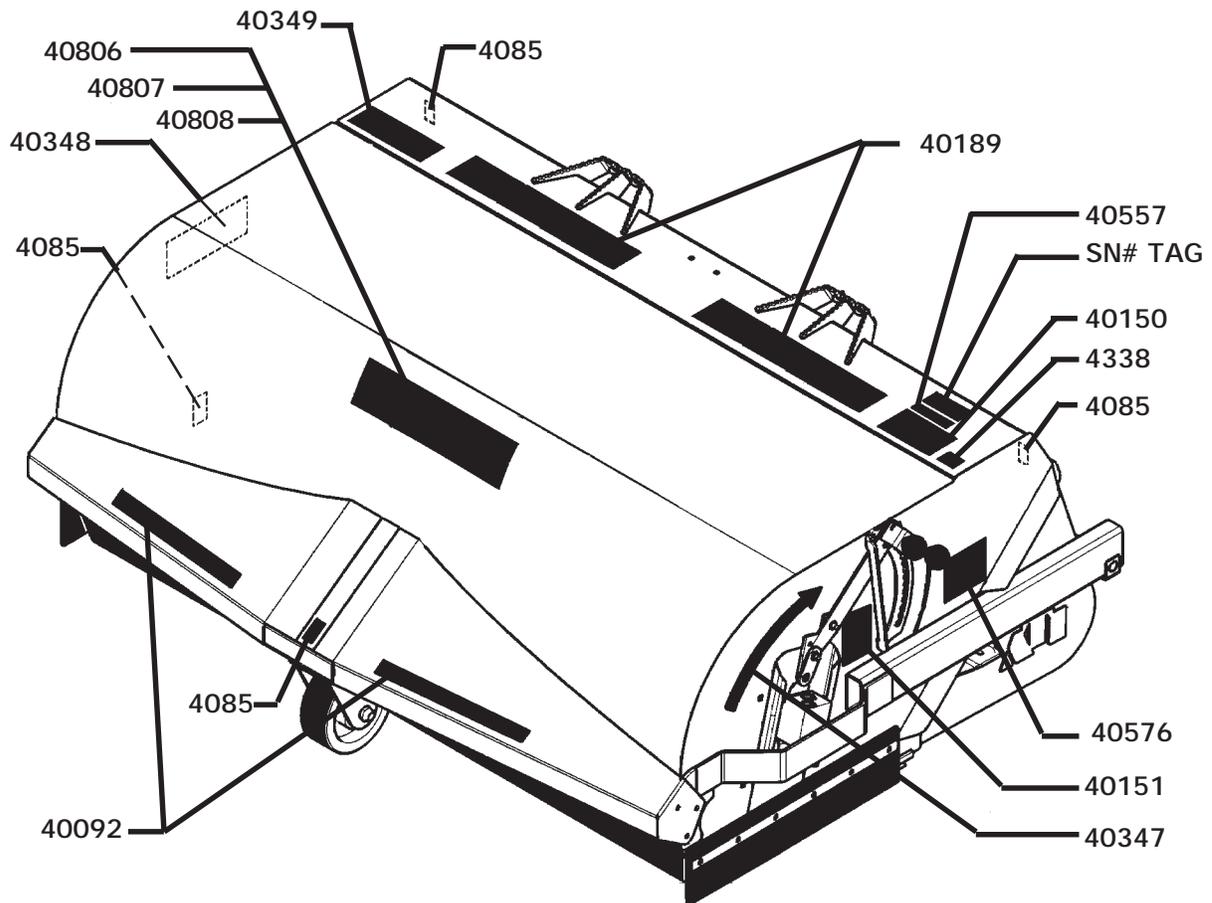


SPECIFICATIONS			
DESCRIPTION	BB60	BB72	BB84
A. Overall Width	70"	82"	94"
B. Sweeping Width	61"	73"	85"
with Optional Gutter Brush	74"	86"	98"
C. Overall Height	30.5"	30.5"	30.5"
D. Overall Length	61.93"	61.93"	61.93"
Weight	1101#	1183#	1276#
Bucket Capacity (Cu. Ft.)	14.1 ³	17.0 ³	19.9 ³
Brush Diameter	26"	26"	26"
Wafers (Quantity)	29	37	45
Hydraulic Flow (GPM)	14 - 20		
Hydraulic Pressure (PSI)	2000 - 3000		
Rated Brush Speed (RPM)	340		

DECALS

DECAL LOCATION

The diagram on this page shows the location of all the decals used on the BRADCO bucket Broom. 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 broom. They contain information you need to know for both safety and longevity.



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

Replacing Safety Signs: Clean the area of application with nonflammable solvent, then wash the same area with soap and water. Allow the surface to fully dry. Remove the backing from the safety sign, exposing the adhesive surface. Apply the safety sign to the position shown in the diagram above, and smooth out any bubbles.

BRADCO®

PART #40092
BRADCO LOGO (WHITE)

BB60 BB72

PART #40806
BB60 MODEL NUMBER (60" BUCKET BROOM)

PART #40807
BB60 MODEL NUMBER (72" BUCKET BROOM)

BB84

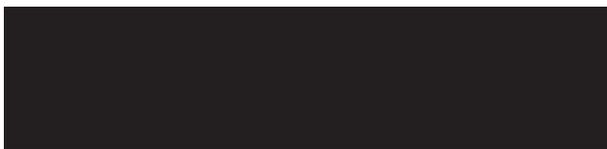
PART #40808
BB60 MODEL NUMBER (84" BUCKET BROOM)



PART #40347
DIRECTION OF ROTATION



PART #4338
MADE IN U.S.A.



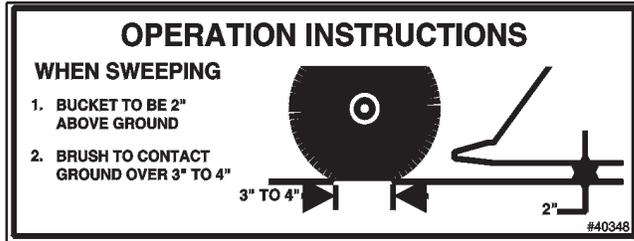
PART #40189
NON-SLIP SURFACE (3" X 24")

! WARNING	
HIGH-PRESSURE FLUID HAZARD	
To prevent serious injury or death:	
<ul style="list-style-type: none"> • 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. 	
<small>#40151</small>	

PART #40151
WARNING! HIGH PRESSURE FLUID

! WARNING
To Prevent Serious Injury or Death
<ul style="list-style-type: none"> • Avoid unsafe operation or maintenance. • Do not operate or work on this machine without reading and understanding the operator's manual. • If manual is lost, contact your nearest dealer for a new manual.
<small>40150</small>

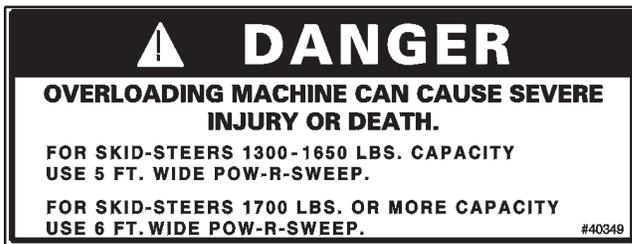
PART #40150
WARNING! READ MANUAL



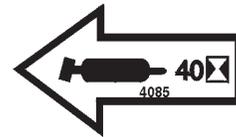
PART #40348
OPERATION INSTRUCTIONS



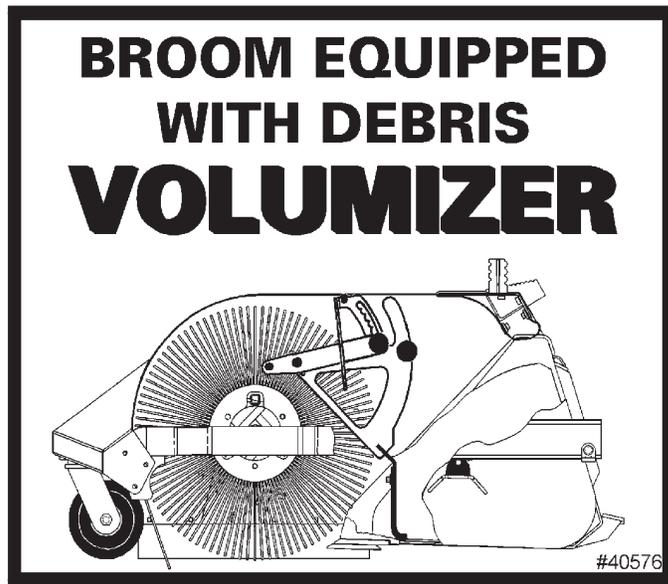
PART #40557
PATENT PENDING



PART #40349
DANGER! MACHINE OVERLOAD



PART #4085
GREASE 40 HOURS



PART #40576
DEBRIS VOLUMIZER

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.