

DOMESTIC AND INTERNATIONAL



CMX-20 Rotary Extractor Owner's Manual

Models 700-041-008 and 700-041-009

U. S. Products
11015 47th Avenue West, Mukilteo, Washington 98275

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1- Introduction

Congratulations,

You now own a piece of equipment that incorporates the latest in carpet, tile and grout cleaning technology. Your foresight in purchasing an CMX-20 Rotary Extractor shows that you care enough to give your customer the maximum cleaning process available. You have invested in not only a cleaning tool, but a marketing tool that will enhance your professional image in every way.

The CMX-20's features will almost certainly increase your productivity while decreasing the fatigue factor that may have prevented you from going after some of the larger cleaning jobs that are available to carpet cleaners and maintenance professionals today.

Your new CMX-20 is a powerful Rotary Jet Extractor that has been precision engineered to bring you to the state-of-the-art in carpet, tile and grout cleaning. The CMX-20's weight distribution and rotary motion enable the operator to maneuver the unit easily with less fatigue and without back strain.

The CMX-20's electric motor drives its precision transmission which, in turn, rotates the head, or star, assembly.



Cleaning solution is injected through the center of the gear box shaft directly to the three spray jets.

Soiled solution is then extracted from the carpet by five stainless steel cleaning heads and drawn through the aluminum exhaust manifold to your cleaning system's recovery tank.

NOTICE

The CMX-20 is available in either the 120 V 60 Hz version or the 230 V 50Hz/60Hz versions. Photos and illustrations throughout this manual show only the CMX-20 120 V version due to space limitations.

CMX-20

CONTACT INFORMATION

If you have any questions regarding the operation, maintenance or repair of this machine, refer to the following information and contact the appropriate U.S. Products department.

<u>Hours</u>	<u>Telephone Numbers</u>	<u>E-mail Addresses</u>
Monday-Friday	(425) 775-7275 Support	Tech Support: techsupport@usproducts.com
7:00 a.m. to 5:00 p.m.	(425) 775-7276 Parts	Parts Support: csorders@usproducts.com
Pacific Time	FAX (425) 771-7156 - Parts (800) 426-4225 - Support	

When calling or contacting us, be sure to reference the serial number and date of purchase.

FOR YOUR REFERENCE:

Serial No. _____

Date of Purchase: _____

WARNINGS, CAUTIONS AND NOTICES

WARNING

U. S. Products uses this WARNING symbol throughout the manual to warn of possible injury or death.

CAUTION

This CAUTION symbol is used to warn of possible equipment damage.

NOTICE

This NOTICE symbol indicates that federal or state regulatory laws may apply, and also emphasizes supplemental information.

CMX-20

2- Machine Specifications

	CMX-20 - 120 V	CMX-20 - 230 V	
Length	23"	23"	
Base Width	16"	16"	
Height - Standard	Up to 43"	Up to 43"	
Height - with Extended Handle	Up to 49"	Up to 49"	
Weight	70 lbs	70 lbs	
Motor	1/2 HP Totally Enclosed Fan-Cooled	1/2 HP Totally Enclosed, Fan-Cooled	
Voltage	120 V, 60 Hz	230 V, 50 Hz or 60 Hz	
Gear Box	1,725 rpm Input 130 rpm Output Permanently Lubricated Helical Gear Drive	230 V, 50 Hz	230 V, 60 Hz
		1,450 rpm Input 109 rpm Output Permanently Lubricated Helical Gear Drive	1,725 rpm Input 130 rpm Output Permanently Lubricated Helical Gear Drive
Oil Capacity	12 oz	12 oz	
Star Head Plate	Replaceable, Spring Steel Arms	Replaceable, Spring Steel Arms	
Cleaning Heads	Five Cast Aluminum	Five Cast Aluminum	
Solution Jets	Three Stainless Steel, 80015 Veejet 80	Three Stainless Steel, 80015 Veejet 80	
Solution Strainer	Mesh, Stainless	Mesh, Stainless	
Solution Valve	Stainless Steel, High Pressure	Stainless Steel, High Pressure	
Cleaning Rate	Five Heads Rotating at 130 rpm = 650 Cleaning Passes/Minute	230 V, 50 Hz	230 V, 60 Hz
		Five Heads Rotating at 109 rpm = 545 Cleaning Passes/Minute	Five Heads Rotating at 130 rpm = 650 Cleaning Passes/Minute

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	CMX-20 - 120 V	CMX-20 - 230 V
Handle Assembly	Foam Grips, Adjustable Height	Foam Grips, Adjustable Height
Transportation Wheels	8" diameter, 1-1/2" Wide; Gray, Non-Marking	8" diameter, 1-1/2" Wide; Gray, Non-Marking
Electric Cord	50 ft, 14/3	50 ft w/M-F IEC Ends 230 V

The base, exhaust manifolds, handle, gear box housing and cleaning heads are all cast aluminum. Other parts are either metal or high impact plastic.

NOTICE

The operating temperature and pressure of the cleaning solution as well as the vacuum power depend entirely on the type of cleaning system you use.

CONFIGURATIONS

When selecting your high efficiency rotary extractor machine, you have several models from which to choose:

If you want this configuration:	Order this P/N:
CMX-20 - 120 V	700-041-008
CMX-20 - 230 V	700-041-009

See Table 8-1 for detailed parts lists for all configurations.

CMX-20

OPTIONAL EQUIPMENT

To better meet your business needs, U. S. Products offers these options which you can add to your basic rotary extractor system:

If you want this option:	Order this P/N:
Pad and Bonnet Driver	190-041-020 (Top Photo, Figure 2-1)
Hard Floor Attachment (LD)	190-041-024 (Bottom Photo, Figure 2-1)
Hard Floor Attachment (MD)	190-041-026 (Bottom Photo, Figure 2-1)
Hard Floor Attachment (HD)	190-041-025 (Bottom Photo, Figure 2-1)

Bonnet



Hard Floor



**Figure 2-1. CMX-20
Optional Equipment**

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3 - Assembly Instructions

To prepare your CMX-20 for use, follow these instructions:

1. Remove the machine from the packaging. Inspect the machine carefully for any damage that may have occurred during shipping.
2. Remove the solid shipping plug from the top of the gear box (see Figure 3-1).
3. Check the gear box lubricant level (see page 6-4 of this Owner's Manual).
4. Insert the vented plug (provided) into the gear box in place of the solid shipping plug. The solid shipping plug may be discarded.
5. Remove the protective wrapping material from the wheels.
6. Attach the cleaning head, or star, assembly to the base of the CMX-20 (see Figure 3-1).
 - a. Lean the machine back and rest it on the handle.
 - b. Thread the star assembly (cleaning head) onto the exposed shaft in a counterclockwise direction.

CAUTION

Be sure to remove the solid shipping plug from the top of the gear box and replace it with the vented plug (P/N 000-106-014), provided, before operating the machine (see Figure 3-1). Failure to follow these directions may result in damage to the gear box and seal.

Your CMX-20 is now ready to operate.



Figure 3-1. Fully Assembled CMX-20

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4 - Operating Instructions

PREPARATION

NOTICE

Operating instructions presented in this section apply to both the 120 V and 230 V versions of the CMX-20. However, photos and illustrations show only the 120 V version due to space limitations.

Handle Adjustment

Pull or push on the adjustment lever to adjust the height of the handles (see Figure 4-1). Several adjustments may be needed before a desirable operating position is found.

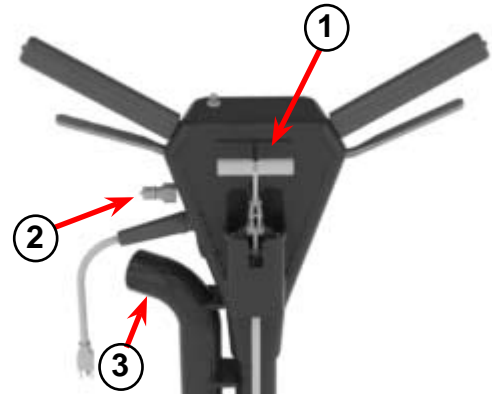


Figure 4-1. (1) Pull or Push on Adjustment Lever; (2) Location of 440 Male Quick Connect; (3) Vacuum Hose Inlet (120 V Version Shown)

NOTICE

Most operators have better control and experience less fatigue when the handle is in a lower position, at the operator's hip line. For each person, there is an ideal position which ensures the CMX-20 does the work instead of the individual.

Solution and Vacuum Hose Connections

Your CMX-20 is equipped with a 440 male quick connect for the solution hose connection and a 2" O.D. vacuum hose inlet (see Figure 4-1). The vacuum inlet requires a 2" I.D. vacuum hose for proper air flow with a truckmounted system.

NOTICE

The vacuum hose must be in good condition to ensure maximum airflow.

A solution hose with a 440 female quick connect is also required. If you do not have a 440 female quick connect, order it from U. S. Products.

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Electrical Cord Connection

The 50 ft electrical cord on your CMX-20 (120 V/60 Hz configuration) is a permanently attached, three-prong grounded line requiring a three-prong, 15 Amp receptacle.

A three-prong to two-prong adapter may be used if its ground wire is properly attached to a grounded terminal.

⚠ WARNING

Do not, under any circumstances, remove the ground prong from your CMX-20 power cord. Serious injury or death may result.

For best results, vacuum the carpet thoroughly prior to using the carpet cleaning system.

OPERATION

Control Functions

Control triggers are located on each side of the handle under the rubber hand grips (see Figure 4-2).

1. To operate the CMX-20, squeeze the **motor trigger** on your right-hand side to control the electric motor which drives the cleaning heads (see Figure 4-2).

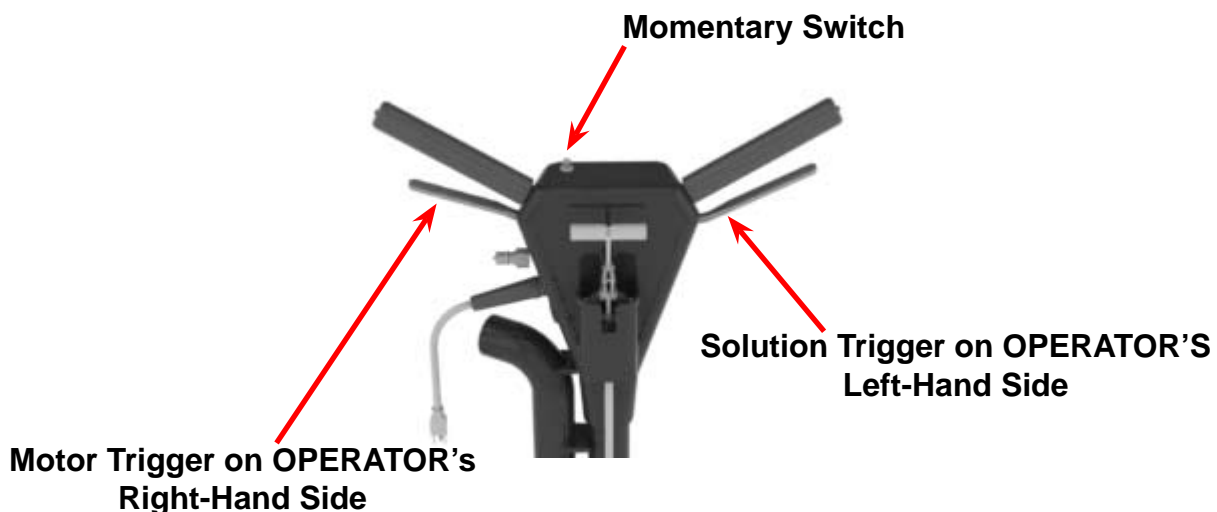


Figure 4-2. Location of Control Triggers and Momentary Switch as Viewed from Front of Machine (Opposite of Operator's Position)

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2. To fully engage the motor as you are cleaning, you also need to hold down the momentary switch, or button, at the same time you as you squeeze the motor trigger (see Figure 4-2). The momentary switch is an integrated safety feature on the CMX-20 which cuts power to the machine if the operator's hands leave the machine for any reason.
3. On the left-hand side, squeeze the solution trigger to control the high pressure solution spray (see Figure 4-2).

Notice that the air flows constantly while the CMX-20 is in operation.

CAUTION

Do not operate your CMX-20 on dry carpets. The friction generated by the revolving cleaning heads may damage fibers in the carpet.

Maneuvering Your CMX-20

Your CMX-20 maneuvers like a rotary floor machine.

1. To move the CMX-20 to the right, lift the handle slightly (see Figure 4-3). The more you lift or lower the handle, the faster the CMX-20 will move.

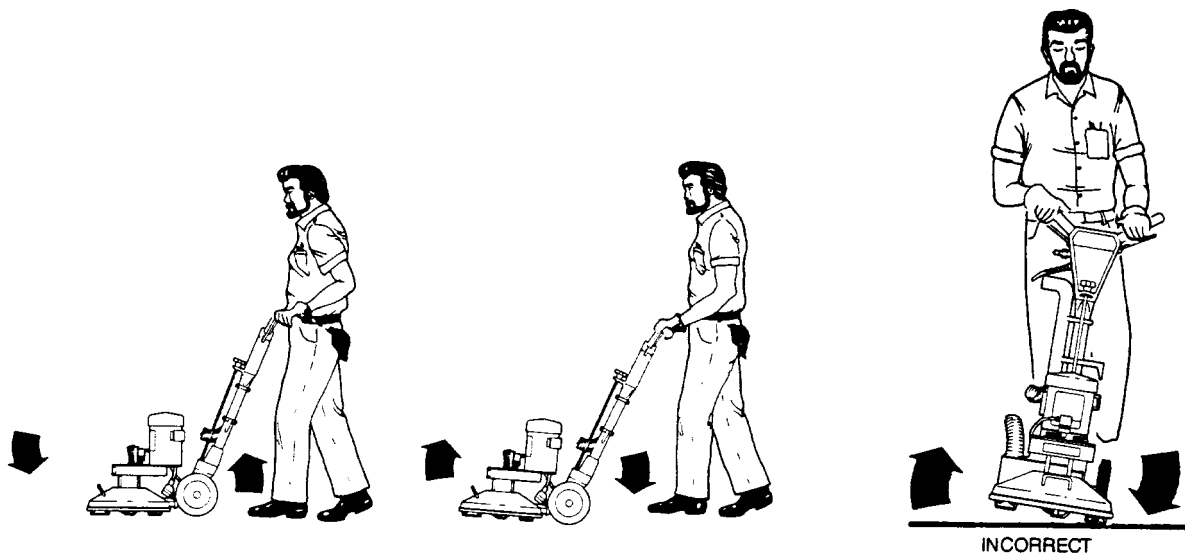


Figure 4-3. Lift or Lower Handle to Maneuver; Illustration to the Right Shows Incorrect Maneuver

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2. To move forward and backward, position the handle so that the unit remains stationary, then push forward or pull back. To familiarize yourself with your CMX-20, practice on an open area. Depress both the solution trigger and motor trigger and move the CMX-20 slowly in a 3 to 5-ft arc, as shown in Figure 4-4.

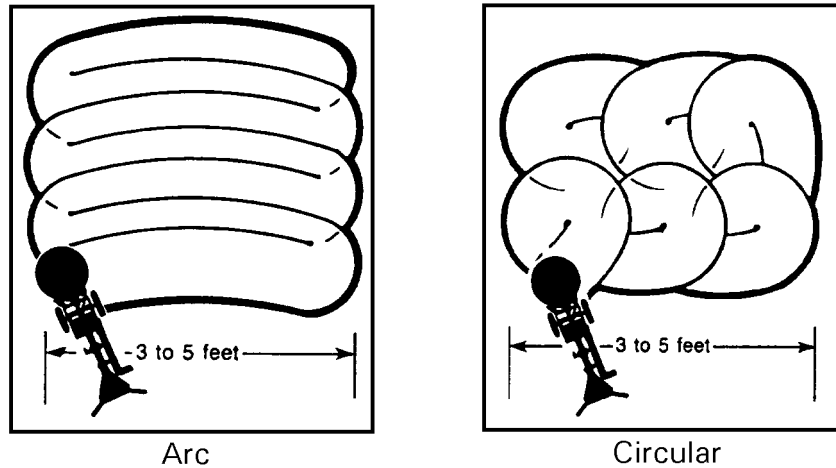


Figure 4-4. Correct Cleaning Patterns

After you have become familiar with the speed and movement of the machine, practice making it hover in one spot. (The hovering maneuver is useful for removing stubborn stains, as well as removing furniture indentions.)

CAUTION

Do not tilt CMX-20 sideways while moving forward and backward. A loss of control may result in damage to the unit or cleaning area.

5 - Cleaning Information

CLEANING PATTERNS

For regular carpet cleaning use an overlapping arc pattern three times over the same area (two passes with solution and one pass for drying). When cleaning carpets, first clean in circular pattern, then use the overlapping arc pattern to dry the area.

NOTICE

Dirtiest areas may require two or more cleaning passes. Using either pattern shown in Figure 4-4, you should develop a comfortable rhythm. To obtain maximum performance from your CMX-20, move it slowly and deliberately with a 50% overlap, giving it time to clean and extract. A steady pace rather than a frenzied one will increase efficiency and production, and decrease fatigue.

CAUTION

The following cautions should be observed while cleaning:

1. DO NOT operate your CMX-20 over metal floor moldings. Damage to both the molding and the cleaning head will result.
2. DO NOT operate your CMX-20 on hardwood floors.
3. DO NOT operate your CMX-20 over loose or unraveled carpet seams. The cleaning head may catch and cause further damage.
4. DO NOT operate your CMX-20 on concrete floors. It will develop sharp edges on the extraction heads that will damage carpet fibers.
5. DO NOT clean over the edge of a loose carpet. Instead, clean only up to the edge. Damage may occur if the extraction heads catch the loose carpet.

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SPECIAL INFORMATION

When you clean some plush carpets, you may notice a “pilling” effect. (Pilling occurs when fluffy particles appear on carpet surfaces; it is caused by fibers that loosen because of a weak twist or snags.)

With a CMX-20, loose yarns form balls and are kicked aside as the cleaning heads revolve. This is normal when aggressive cleaning or even normal vacuuming takes place, as evidenced by a number of dead, loose yarns in the vacuum cleaner bag. These loose yarns, in most cases, are short staple yarns or filler yarns used to give the carpet a denser appearance.

Because your CMX-20 weighs approximately 70 lbs and rests on five 4” cleaning heads, the yarns are not sucked up into the vacuum heads as they are with a vacuum cleaner or old-style cleaning wand.

CAUTION

On older, rubber backed, glued down carpets that may be delaminating with age, the CMX-20 may cause further delamination. When in doubt, DO NOT use your CMX-20 on such carpets.

CLEANING HINTS

1. Most cleaners customarily clean their way out of an area or room. With the CMX-20, you can clean into an area or room, as shown in the Figure 5-1, so that the hoses are dragged behind you during the cleaning process rather than kicked out of the way as you back out of an area. The “cleaning into” method works especially well in hallways or confined areas.
2. The CMX-20 is a very aggressive carpet cleaning power head and will leave the carpet with a freshly cleaned appearance. The carpet should be brushed or groomed after the cleaning process to remove any swirl marks left behind.
3. The CMX-20 has been very successful in restoring badly matted traffic lanes in front of doorways and sofas. Even pivot areas can be brought back to life again, in most cases. “Cornrowing” in hallways can also be eliminated with minimal effort.

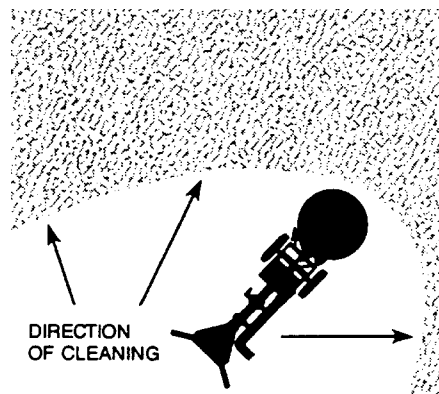


Figure 5-1. Clean into Area or Room

6 - Machine Maintenance

Good care and regular maintenance of your CMX-20 will result in a long, dependable life for the unit. Keep in mind that your CMX-20 will be in full view of your customer. An CMX-20 that is dirty and unkempt in appearance can cause your business or professional image to suffer. You are offering your customer the latest in cleaning technology. Therefore, it is important that your company image reflect your desire to give your customer the best.

The surface finish on your CMX-20 is a durable, powder coating and is easily cleaned with a damp cloth. To further protect the finish, a light coat of good silicon base polish should be applied periodically.

Lubrication and maintenance play a key role in the life of your CMX-20. Hence, the following daily and periodic maintenance steps must be followed. Train yourself to maintain your unit on a regular schedule until it becomes habitual.

DAILY MAINTENANCE

1. Disconnect the CMX-20 from the power source and inspect its power cord for cuts, breaks and abrasions. Repair or replace as needed.
2. Inspect the vacuum hoses for breaks or tears. Repair or replace as necessary.
3. Visually inspect your CMX-20 for water leaks, wear damage to the cleaning heads, and so forth. Repair or replace as necessary.
4. Remove the inline solution filter screen by unfastening the nut showing through the cut out on the back panel using a 15/16" wrench. Remove the nut which houses the inline filter (see Figure 6-1).
5. Rinse it under water to remove debris. If necessary, use a toothbrush to remove stubborn particles.
6. Before re-inserting the nut/inline filter, check the O-ring on the inside of the nut/inline filter. If the O-ring is cracked or damaged, replace the O-ring.

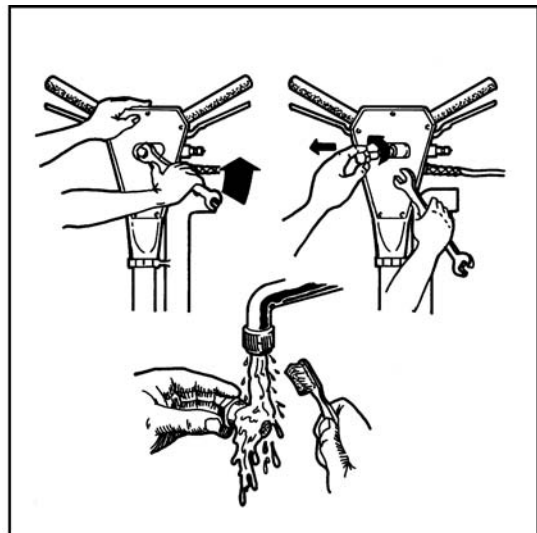


Figure 6-1. Remove Nut/Inline Filter

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7. Check the spray on the jets for even flow. An uneven spray will cause improper flow of the cleaning solution (see Figure 6-2).

⚠ WARNING

Do NOT spray the high pressure solution in your face or eyes. Bodily injury can result.

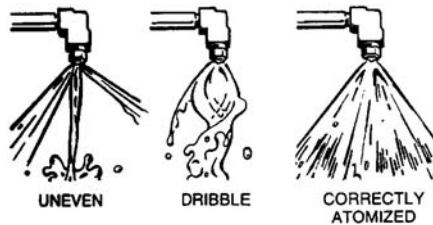


Figure 6-2. Check Jet Spray for Even Flow



Figure 6-3. Loosen Cleaning Head Assembly

8. Loosen the cleaning head (star assembly). It unscrews in the same direction it turns during operation (or clockwise when looking at it from the underside) - see Figure 6-3.
9. After you have loosened the head assembly, spin it off with your hands. If the cleaning head is difficult to remove, you may use a 3/4" socket wrench on the exposed center nut. To prevent the gear box from turning, insert a 5/8" wrench just below the rotary union (see Figure 6-4).
10. Wash the cleaning heads and shroud assembly with a garden hose, being careful not to wet the electric motor assembly.
11. Clean any lint built up on the cleaning heads and vacuum hoses (lint buildup will restrict proper airflow and prolong drying time).



Figure 6-4. Location of Rotary Union

12. Clean off any debris that may have accumulated on the gear box shaft or the inside threaded bore of the hub (see Figure 6-5).
13. Lubricate the felt vacuum seal on top of the hub with a quality, 30 weight SAE motor oil. Also, put a few drops into the hub threads (see Figure 6-6).
14. Coat the shaft with TKX® All-Purpose Lube or a similar lubricant. Re-install the vacuum head assembly onto the shaft by rotating it counter-clockwise (Figure 6-7).

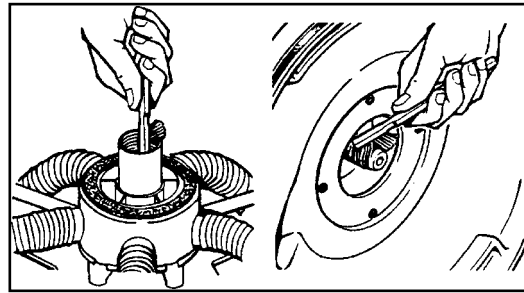


Figure 6-5. Clean Off Debris from Gear Box Shaft

CAUTION

An accumulation of debris in the gear box, if not removed, may damage the gear box oil seal. This will result in loss of oil in the gear box. If the gear box is operated without oil, severe damage may occur.

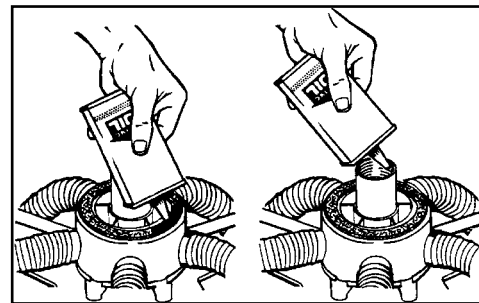


Figure 6-6. Lubricate Vacuum Seal on Top of Hub

CAUTION

While rotating the vacuum head assembly in the counter-clockwise position, make sure that it spins freely all the way down. If it begins to require the slightest finger tip pressure, unscrew it and brush off the threads.

The smallest grain of dirt or sand will obstruct the threads. If you turn too far onto a grain of dirt, the hub may become locked onto the shaft of the gear box.

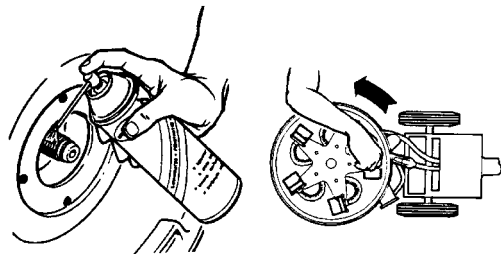


Figure 6-7. Lubricate Shaft and Re-install Head Assembly

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PERIODIC MAINTENANCE

Check the oil level in the gear box on a monthly basis. This is a permanently lubricated gear box. You do not need to change the oil. However, maintaining the proper oil level is important.

To check the oil level, remove the vent plug and look into the gear box. Turn the star until you can see the inspection hole in the gear. When the CMX-20 is sitting flat on a table or the floor, the oil level should be up to, but not above, the middle of the gear. If oil needs to be added, use a quality 80-90 weight gear oil.

NOTICE

When checking the oil level in the gear box, you can use a toothpick as a dip stick. The oil level should read 3/8" deep.

Locking Mechanism

If the locking mechanism becomes loose and fails to hold the handle in position, tighten it by following these simple steps:

1. Remove the retaining clip from one wheel, using a flat-bladed screwdriver (see Figure 6-8).
2. Remove the wheel from one side of the unit.
3. Ensure that the clamp is set to the locking position.
4. Tighten the setscrew as shown in Figure 6-9 to achieve the desired clamping force.
5. Re-install the wheel and retain with the original clip.
6. If the locking mechanism becomes loose again in the future, remove the wheel on the other side of the unit and tighten the other setscrew, in order to even up the wear on the clamping pins.



Figure 6-8. Remove Retaining Clip with Screwdriver



Figure 6-9. Tighten Setscrew

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TRANSPORT AND/OR STORAGE

Whenever your CMX-20 is transported or stored, U. S. Products recommends that you remove the star assembly (cleaning head). The machine will then sit flat on the floor and remain more stable, especially during transport.

FREEZE WARNING AND PROTECTION

Your CMX-20 can suffer damage from freezing, as can any equipment that functions with the use of water. Care must be taken to protect this machine from freezing just as you do your other equipment.

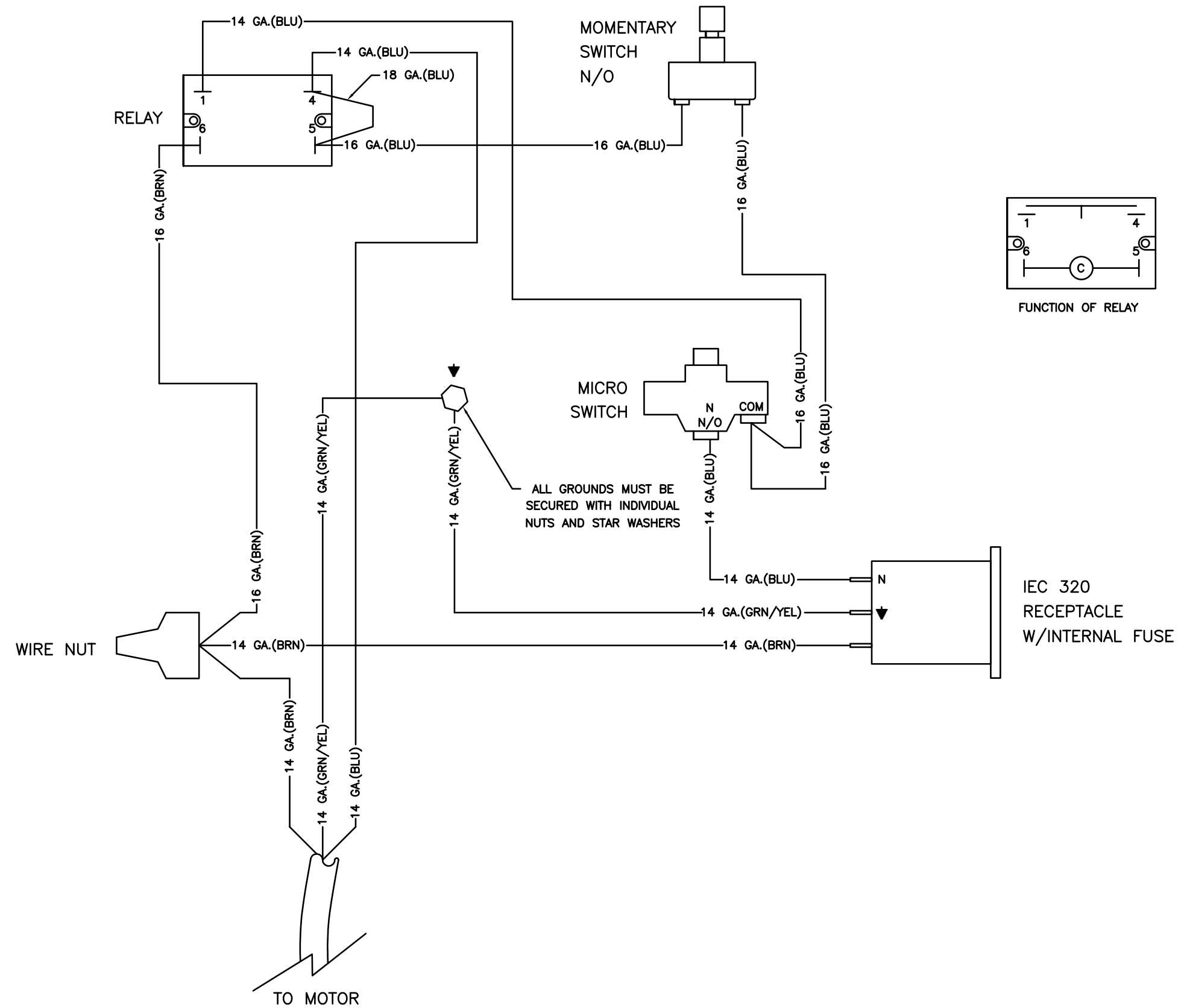
To protect it from freezing, simply blow air from an air hose through the solution quick connect with the valve open. This eliminates water from the valve, solution line, rotary union and jet assembly.

Open and close the valve several times to ensure that all water is removed.

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Figure 7-2. Wiring Diagram - 230 V, 50 Hz
4503 Rev. A



8 - Assembly Drawings and Parts Lists

The following CMX-20 major assemblies are detailed in this section:

- Final Assembly Parts List
- Upper and Lower Handle Assembly Parts List
- Handle Locking Linkage Assembly Parts List
- Base and Drive Train Assembly Parts List
- Gear Box Assembly Parts List
- Vacuum Head (Original Style) Assembly Parts List
- Vacuum Shoe and Skid (Original Style) Assembly Parts List
- CMX-20 - 120 V Assembly Parts List (P/N 604-999-004)
- CMX-20 - 230 V Assembly Parts List (P/N 604-999-220)

NOTICE

Assembly drawings in this section show the 120 V, 60 Hz version only (top level P/N 700-041-008) due to space limitations.

See Table 8-1 for a list of top level part numbers and associated assemblies for the two configurations of CMX-20 Rotary Extractors.

CMX-20

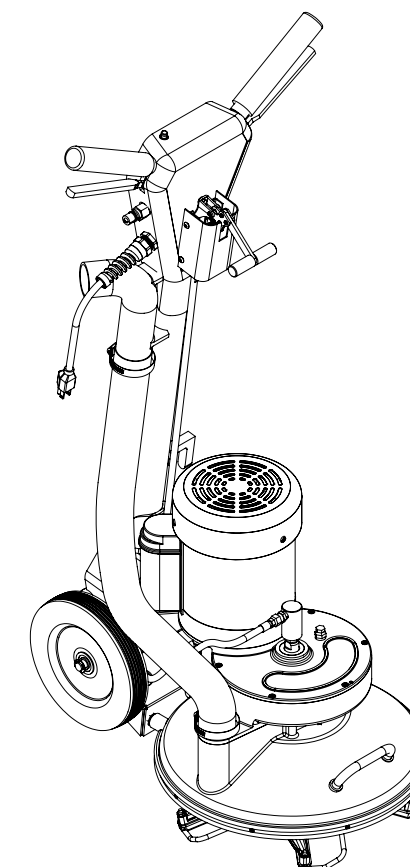
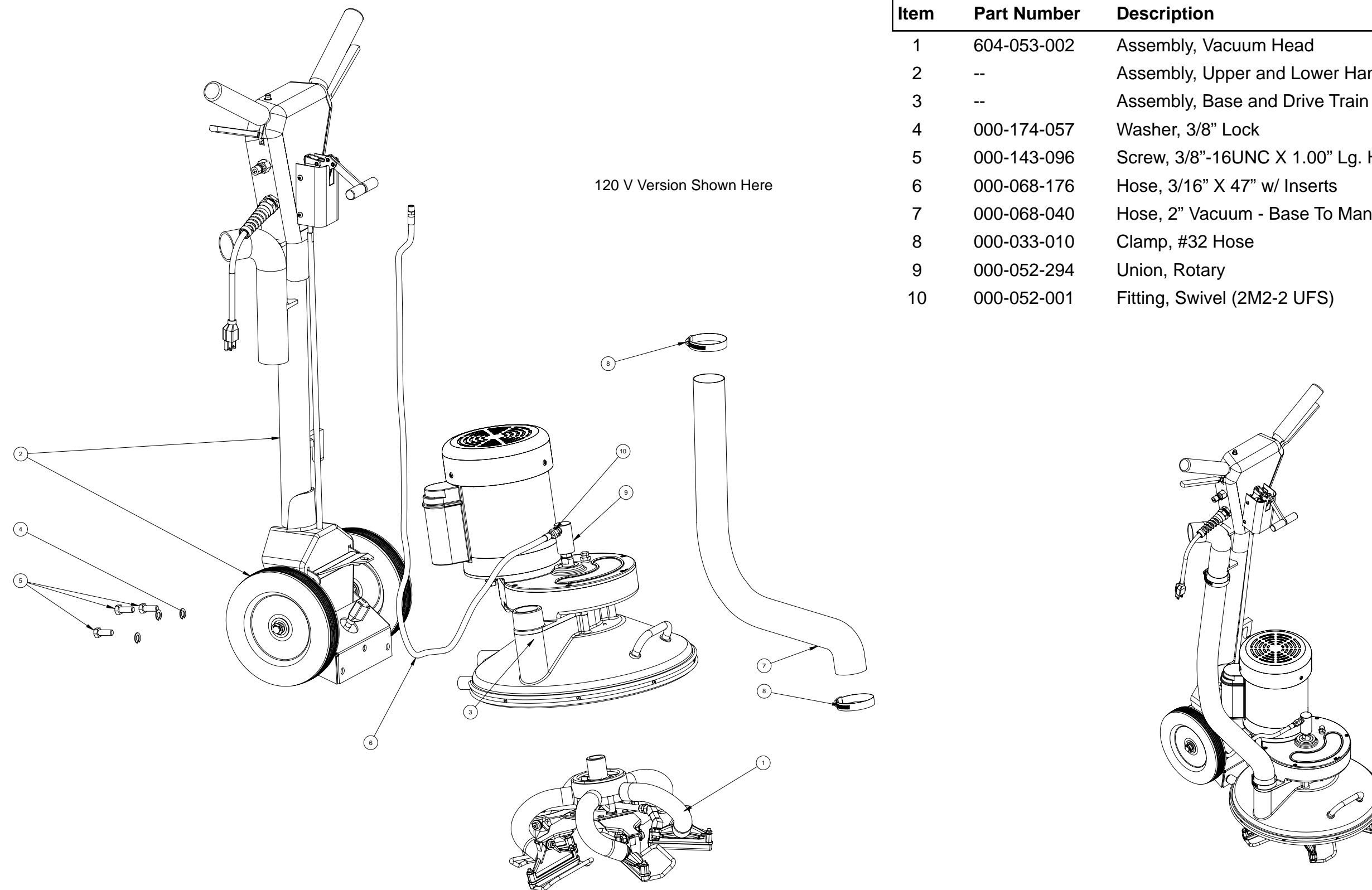
Table 8-1. CMX-20 Configurations

CMX-20	Top Level P/N	Top Level Assembly Parts List			See This Page for Detailed Parts List
		P/N	Description	Qty	
CMX-20 - 120 V	700-041-008	000-057-047	Gasket, Felt Hub	2	Page 8-16 604-999-004 120 V Final Assembly
		000-081-351	Label,CMX-20	1	
		000-105-018	Plate, Serial I.D.	1	
		604-999-004	CMX-20 - 120 V Final Assembly	1	
CMX-20 - 230 V	700-041-009	000-057-047	Gasket, Felt Hub	2	Page 8-17 604-999-220 230 V Final Assembly
		000-081-351	Label,CMX-20	1	
		000-105-018	Plate, Serial I.D.	1	
		604-999-220	CMX-20 - 230 Volt Final Assembly	1	

Figure 8-1. Final Assembly
6393 Rev. C

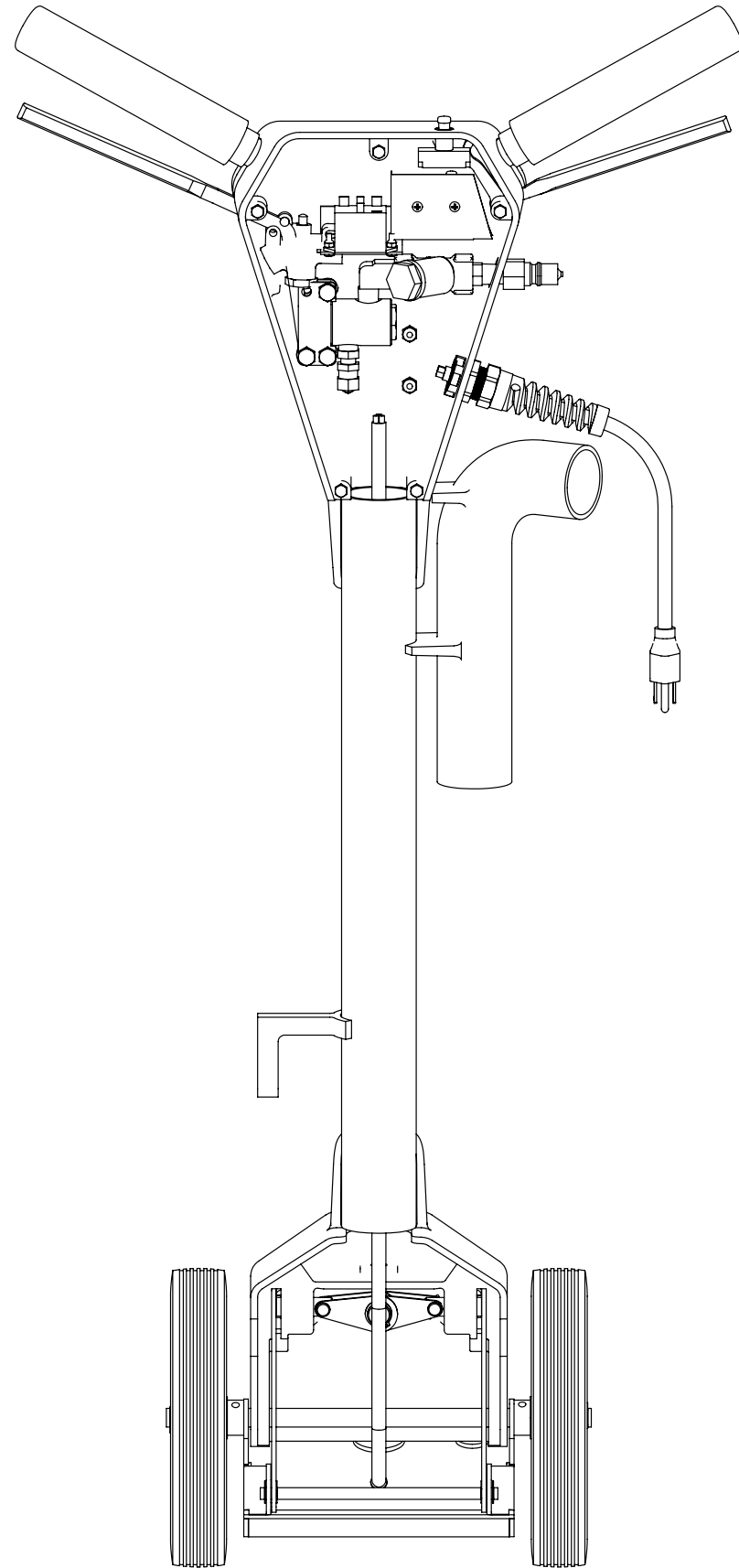
Final Assembly Parts List

Item	Part Number	Description	Qty
1	604-053-002	Assembly, Vacuum Head	1
2	--	Assembly, Upper and Lower Handle	1
3	--	Assembly, Base and Drive Train	1
4	000-174-057	Washer, 3/8" Lock	3
5	000-143-096	Screw, 3/8"-16UNC X 1.00" Lg. Hex Head	3
6	000-068-176	Hose, 3/16" X 47" w/ Inserts	1
7	000-068-040	Hose, 2" Vacuum - Base To Manifold	1
8	000-033-010	Clamp, #32 Hose	2
9	000-052-294	Union, Rotary	1
10	000-052-001	Fitting, Swivel (2M2-2 UFS)	1



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Figure 8-2. Upper and Lower Handle Assembly - Overview
6391 Rev. G



120 V Version
Shown Here

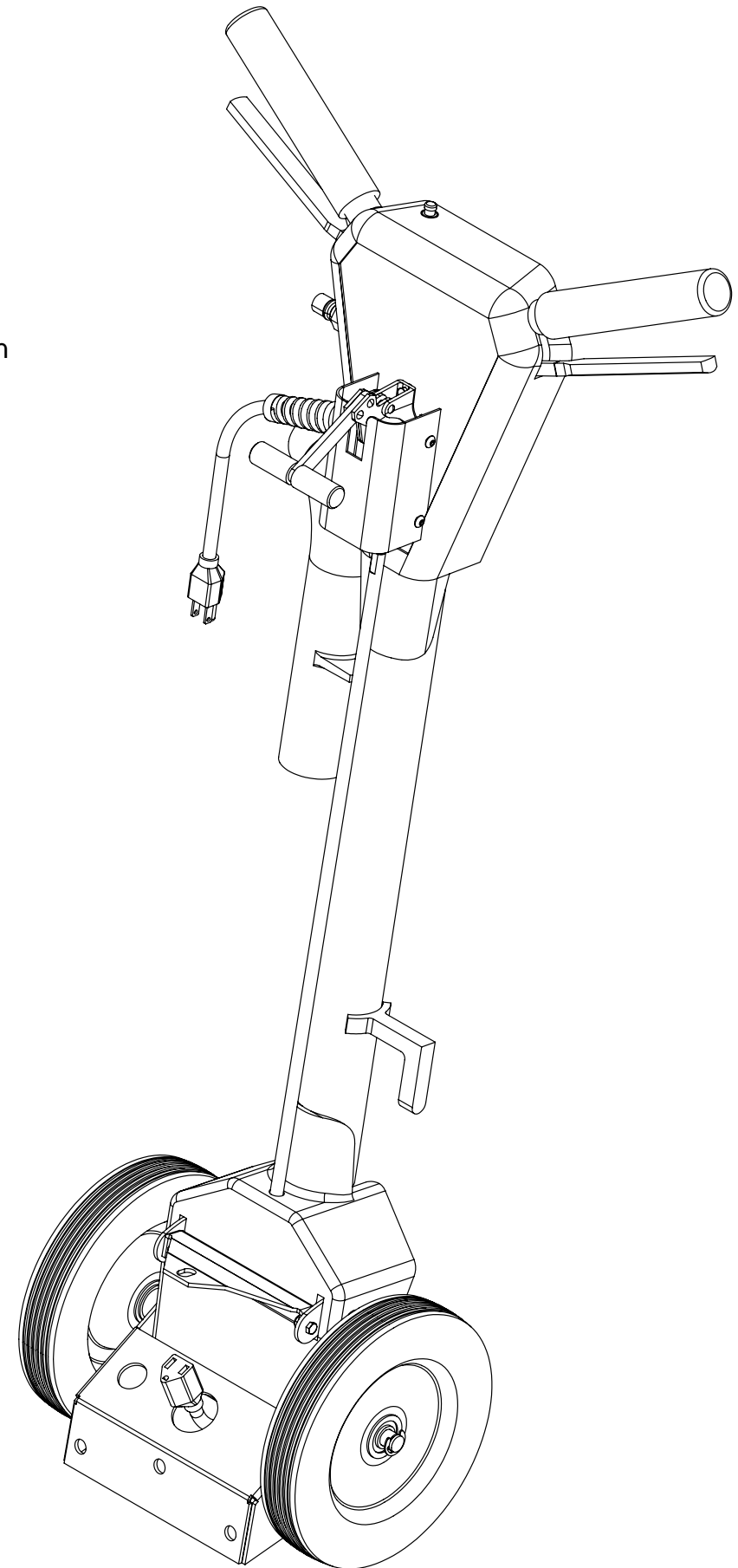
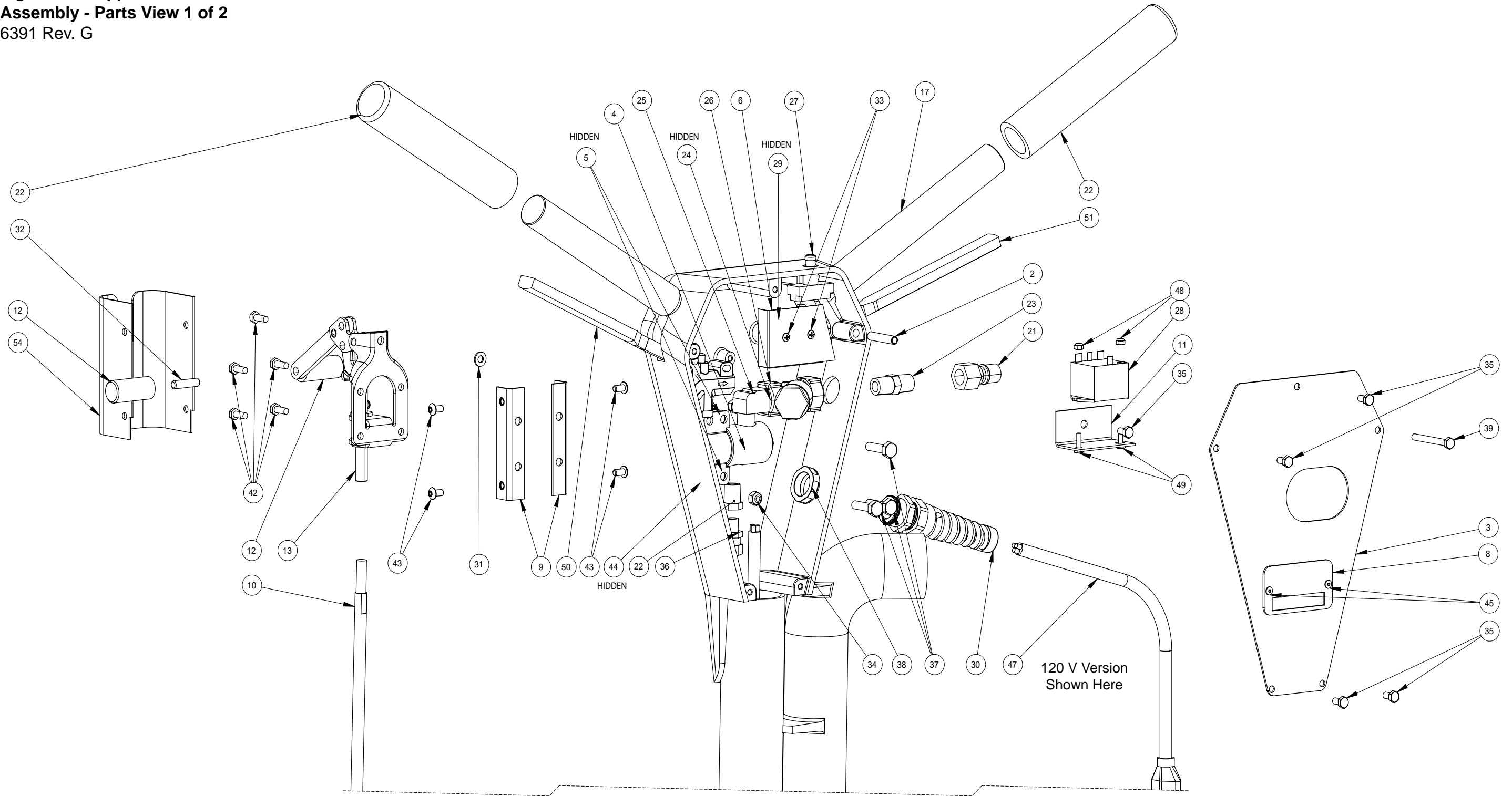
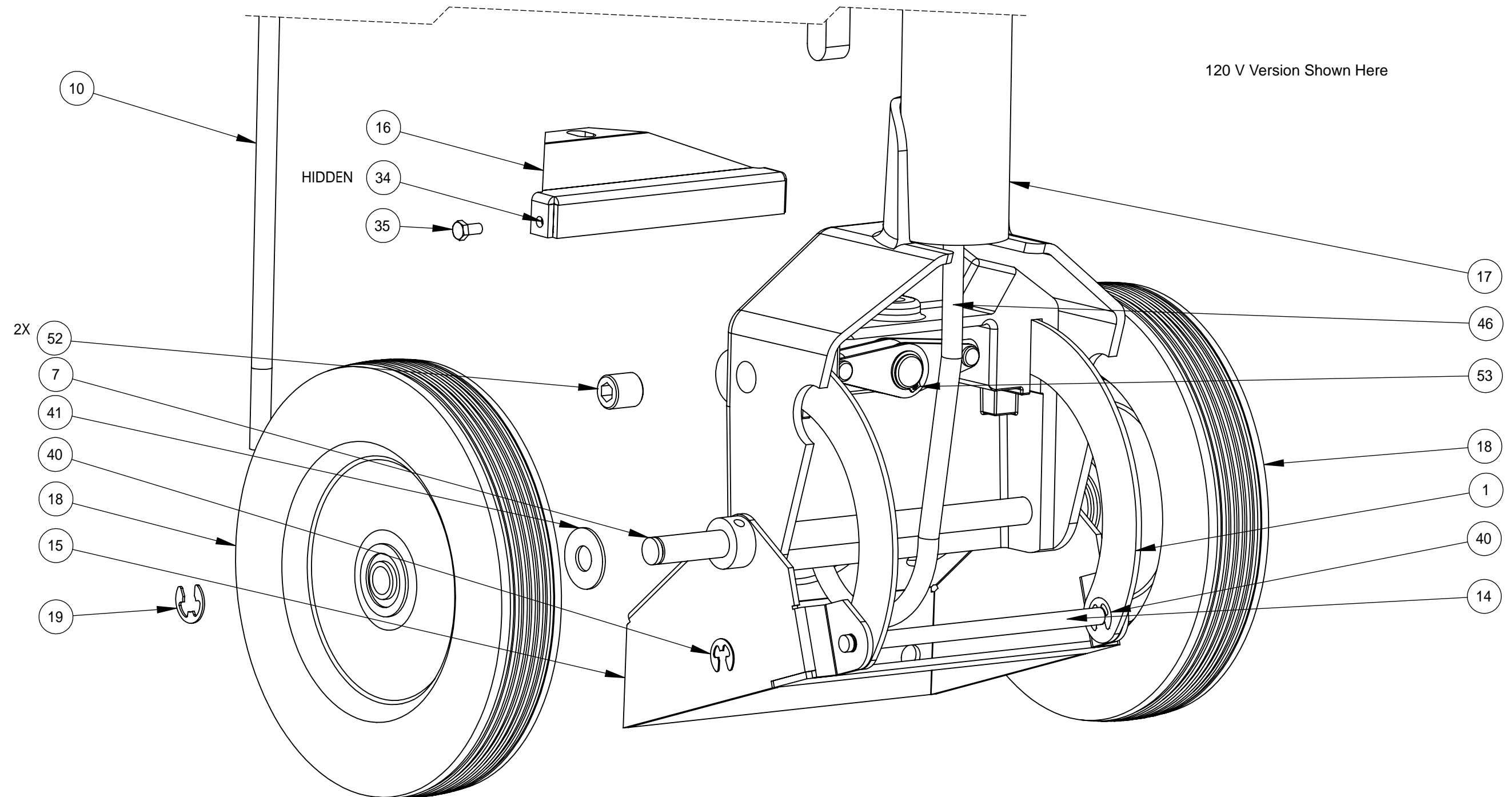


Figure 8-3. Upper and Lower Handle Assembly - Parts View 1 of 2
6391 Rev. G



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Figure 8-4. Upper and Lower Handle Assembly - Parts View 2 of 2
6391 Rev. G

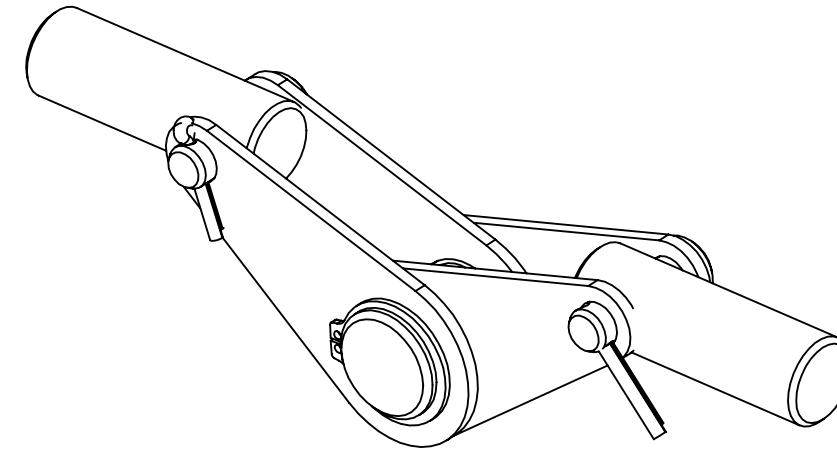
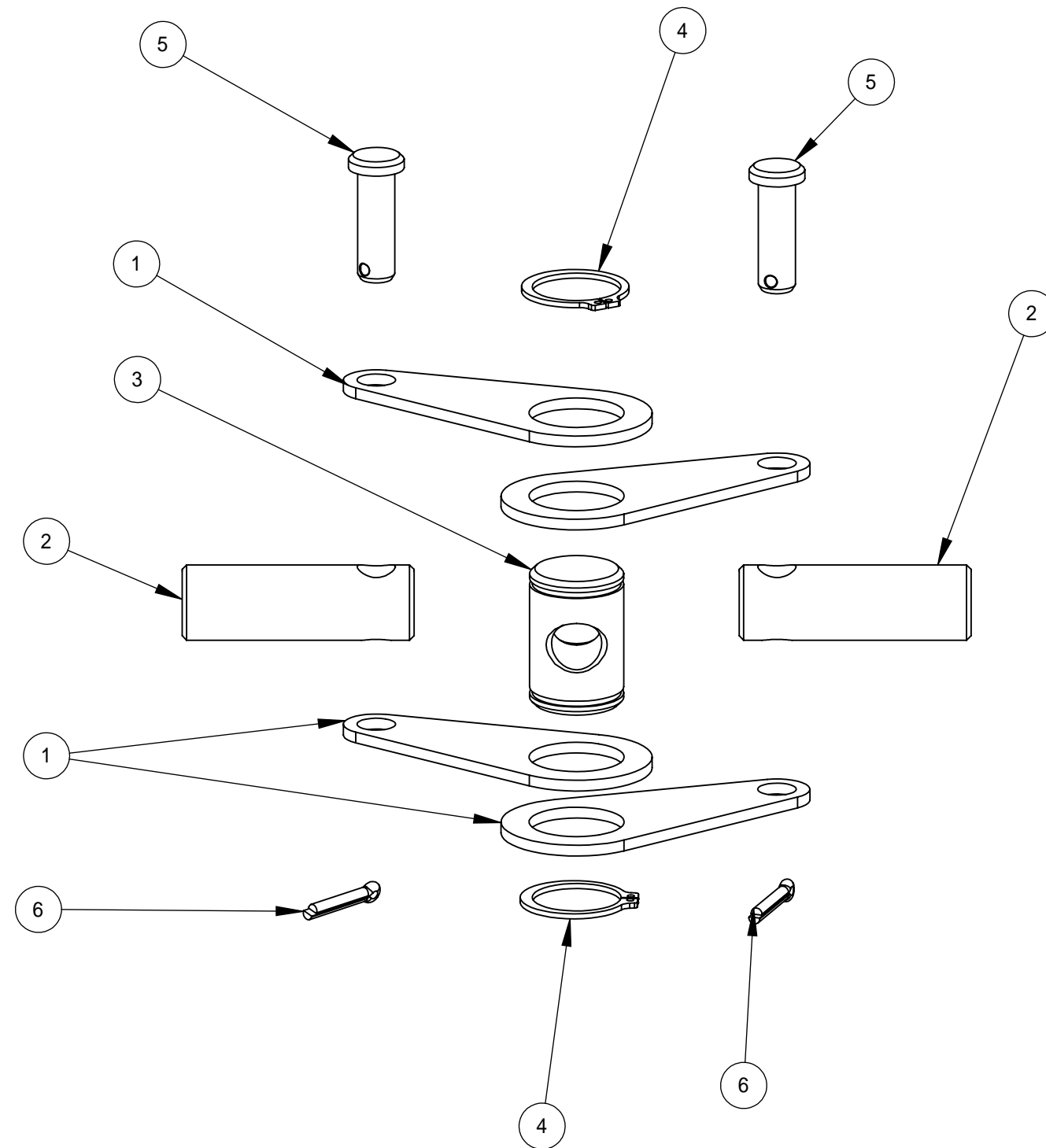


Upper and Lower Handle Assembly Parts List

Item	Part Number	Description	Qty	Item	Part Number	Description	Qty
1	000-107-096	Handle, Arc	2	29	000-157-032	Switch, Micro (120 V Version Only)	1
2	000-107-103	Trigger Pivot	1		000-157-133	Switch, 230 V (230 V Version Only)	1
3	000-105-007	Plate, Back - Handle	1	30	000-108-012	Protector, Power Cord Relief (120 V Version Only)	1
4	000-169-058	Valve, S/S Solution	1	31	000-174-001	Washer, #10 Flat	1
5	000-154-001	Spacer, 1/4" X 5/16" - S/S Solution Valve	2	32	000-156-031	Stud, 1/4"-20UNC X 1.00" Lg.	1
6	000-108-014	Shield, Micro Switch	1	33	000-143-048	Screw, #10-24UNC X 0.25" Lg. Pan Head Phillips	2
7	000-141-004	Axle, Wheel	1	34	000-094-034	Nut, #10-24UNC Nylock	7
8	000-105-018	Plate, Serial I.D.	1	35	000-143-166	Screw, #10-24UNC X 3/8" Lg. Hex Head	7
9	000-015-987	Bracket, Linkage Clamp	2	36	000-052-001	Fitting, Swivel (2M2-2 UFS)	1
10	000-141-007	Adjusting Rod Assembly	1	37	000-143-002	Screw, 1/4"-20UNC X 1.00" Lg. Hex Head	3
11	000-015-190	Bracket, AC Relay	1	38	000-094-036	Nut, 1/2" NPT Pipe Plastic (120 V Version Only)	1
12	000-061-030	Handle, 'T' Handle	2	39	000-143-065	Screw, #10-24UNC X 1.75" Lg. Hex Head	1
13	000-033-114	Clamp, Linkage - Modified	1	40	000-139-010	Ring, Snap (E-Clip) X 5/16"	4
14	000-141-031	Rod, Handle Arc	1	41	000-174-006	Washer, 7/16" Flat	2
15	000-015-139	Bracket, Hi Speed Handle To Base Weldment	1	42	000-143-126	Screw, #10-24UNC X 0.50" Lg. Hex Head	5
16	000-015-006	Bracket, Head Stabilizer - Weldment	1	43	000-143-107	Screw, #10-24UNC X 3/8" Lg. Button Head Socket	4
17	000-061-017	Handle, Hi Speed (120 V Version Only)	1	44	000-094-009	Nut, 1/4"-20UNC Nylock	1
	604-051-019	Handle, Hi Speed (230 V Version Only)	1	45	000-040-003	Rivet, 1/8" X 5/16"	2
18	000-177-001	Wheel, 8"	2	46	000-178-039	Cord, Power - 14/3 Gray X 42" w/ Female (120 V Version Only)	1
19	000-139-009	Ring, Snap (E-Clip) X 1/2"	2	47	000-178-004	Cord, Power 14/3 Gray X 50' w/ Male (120 V Version Only)	1
21	000-052-050	Quick Connect, 440 Male w/ Viton Std	1		000-178-054	Cord, 50' w/M-F IEC Ends 230 V (230 V Version Only)	1
22	000-052-059	Bushing, 1/4" MPT X 1/8" FPT	1	48	000-094-063	Nut, #6-32UNC Nylock	2
22	000-061-004	Grip, Foam - Handle	2	49	000-143-575	Screw, #6-32UNC X 0.50" Lg. Hex Head	2
23	000-052-071	Nipple, 1/4" NPT Hex	1	50	000-167-009-07	Trigger, Handle - Left Hand	1
24	000-052-072	Nipple, 1/4" NPT Close	1	51	000-167-010-07	Trigger, Handle - Right Hand	1
25	000-052-085	Elbow, 1/4" NPT Street	1	52	000-143-609	Screw, 5/8-18 X 5/8Lg, Socket Hd Set	2
26	000-049-033	Filter, In-Line, "Y"	1	53	604-051-002	Assembly, Handle Locking Linkage	1
27	000-157-151	Switch, Chrome, Momentary (120 V Version Only)	1	54	000-041-352	Cover, Linkage Clamp	1
	000-157-134	Switch, 230 V Momentary (230 V Version Only)	1				
28	000-157-149	Relay, AC Relay 120 V (120 V Version Only)	1				
	000-157-132	Relay, 230 V 30 Amp SPST (230 V Version Only)	1				

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Figure 8-5. Handle Locking Linkage Assembly
6390 Rev. A



Handle Locking Linkage Assembly Parts List

Item	Part Number	Description	Qty
1	000-107-097	Link	4
2	000-107-256	Plunger	2
3	000-094-030-07	Nut, Adjusting, Linkage - Handle Locking	1
4	000-139-006	Ring, 5/8 Snap	2
5	000-103-012	Pin, 1/4 X 7/8" - Clevis	2
6	000-103-013	Pin, Cotter	2

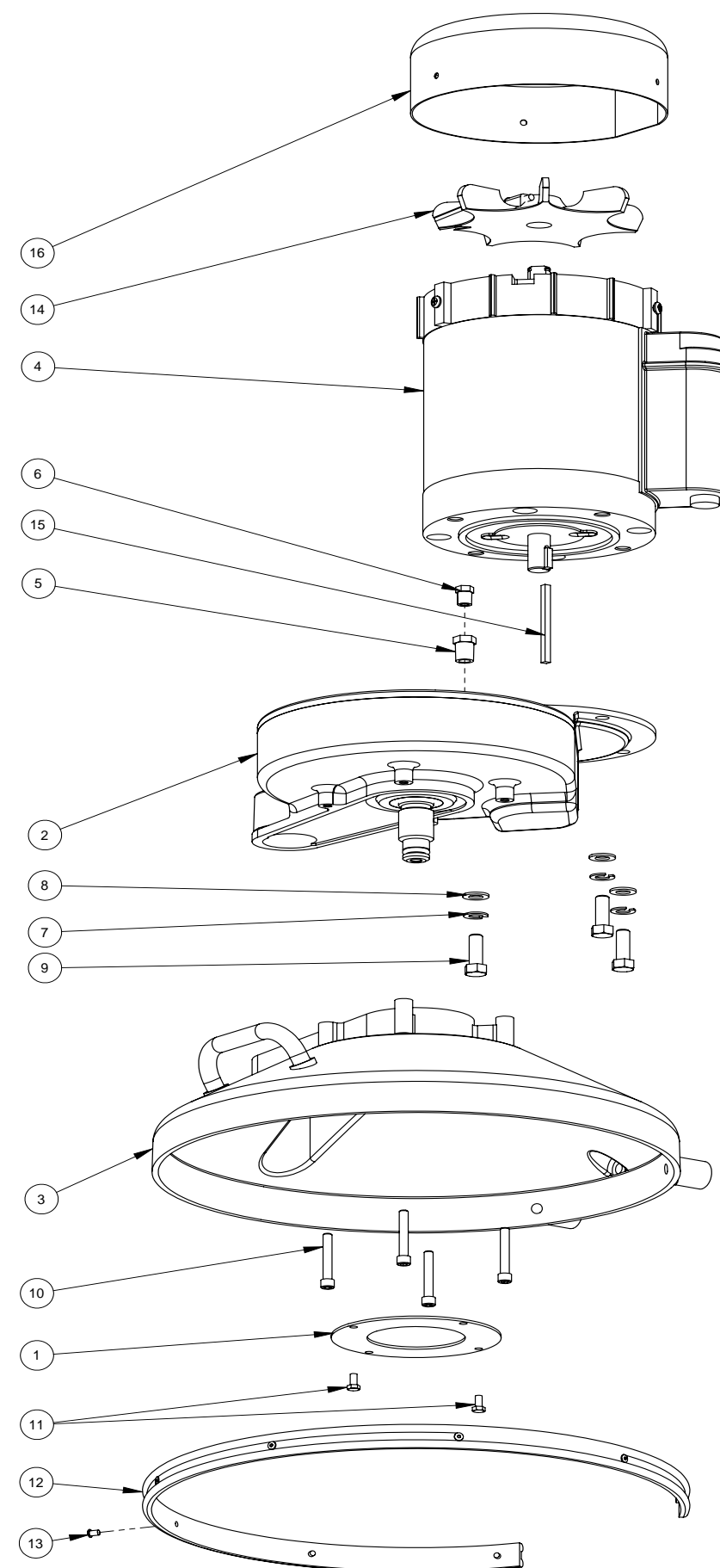
Figure 8-6. Base and Drive Train Assembly
6392 Rev. C

Base and Drive Train Assembly Parts List

Item	Part Number	Description	Qty
1	000-105-008	Plate, Seal	1
2	000-059-001	Gear Box - Complete	1
3	000-006-009	Base w/ Handle - Weldment	1
4	000-091-015	Motor, 1/2 HP TEFC-H/S (120 V Version)	1
	000-091-016	Motor, 1/2 HP TEFC-22 (230 V Version)	1
5	000-052-059	Bushing, 1/4" MPT X 1/8" FPT	1
6	000-106-001	Plug, 1/8" NPT*	1
7	000-174-057	Washer, 3/8" Lock	3
8	000-174-055	Washer, Flr Tech Latch Pivot	3
9	000-143-096	Screw, 3/8"-16UNC X 1.00" Lg. Hex Head	3
10	000-143-075	Screw, 1/4"-20UNC X 1.50" Lg. Socket Head	4
11	000-143-166	Screw, #10-24UNC X 3/8" Lg. Hex Head	2
12	000-131-014	Gasket, Roto Shroud	1
13	000-040-003	Rivet, 1/8" X 5/16"	8
14	000-050-002	Fan, Motor	1
15	000-077-012	Key, 3/16" X 2.5" Lg. Class 2 Fit	1
16	000-041-122	Cover, 1/2 HP TEFC Motor	1

NOTICE

* Prior to operating the machine, replace the shipping plug (P/N 000-106-001) with the vented plug (P/N 000-106-014). See page 3-1 in this manual for more information.



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Figure 8-7. Gear Box
2191 Rev. C

Gear Box Assembly Parts List

Item	Part Number	Description	Qty
1	000-042-007	Body, Gear Box	1
2	000-041-078	Cover, Gear Box	1
3	000-059-004	Gear, Spur - Spur Gear Box Driven Gear	1
4	000-150-002	Output Shaft, Spur, Double Lead Thread	1
5	000-059-006	Gear/Input Shaft Assembly	1
6	000-008-007	Bearing, Spur - Gear Box	1
7	000-008-008	Bearing, Spur, Race - Gear Box	2
8	000-008-009	Bearing, Spur - Gear Box	1
9	000-008-012	Bearing, Spur - Gear Box	1
10	000-008-041	Bearing, Spur - Gear Box	1
11	000-097-009	O-Ring, Cast Gear Box	1
12	000-103-023	Pin, Dowel - 3/16" X 3/4"	2
13	000-147-018	Seal, Spur Gear Box	1
14	000-147-019	Seal, Spur Gear Box	1
15	000-147-015	Seal, Thread Shaft -	1
16	000-143-157	Screw, #10-24UNC X 1.00" Lg. Flat Head	1
17	000-143-114	Screw, #10-24UNC X 0.50" Lg. Flat Head Phillips	5

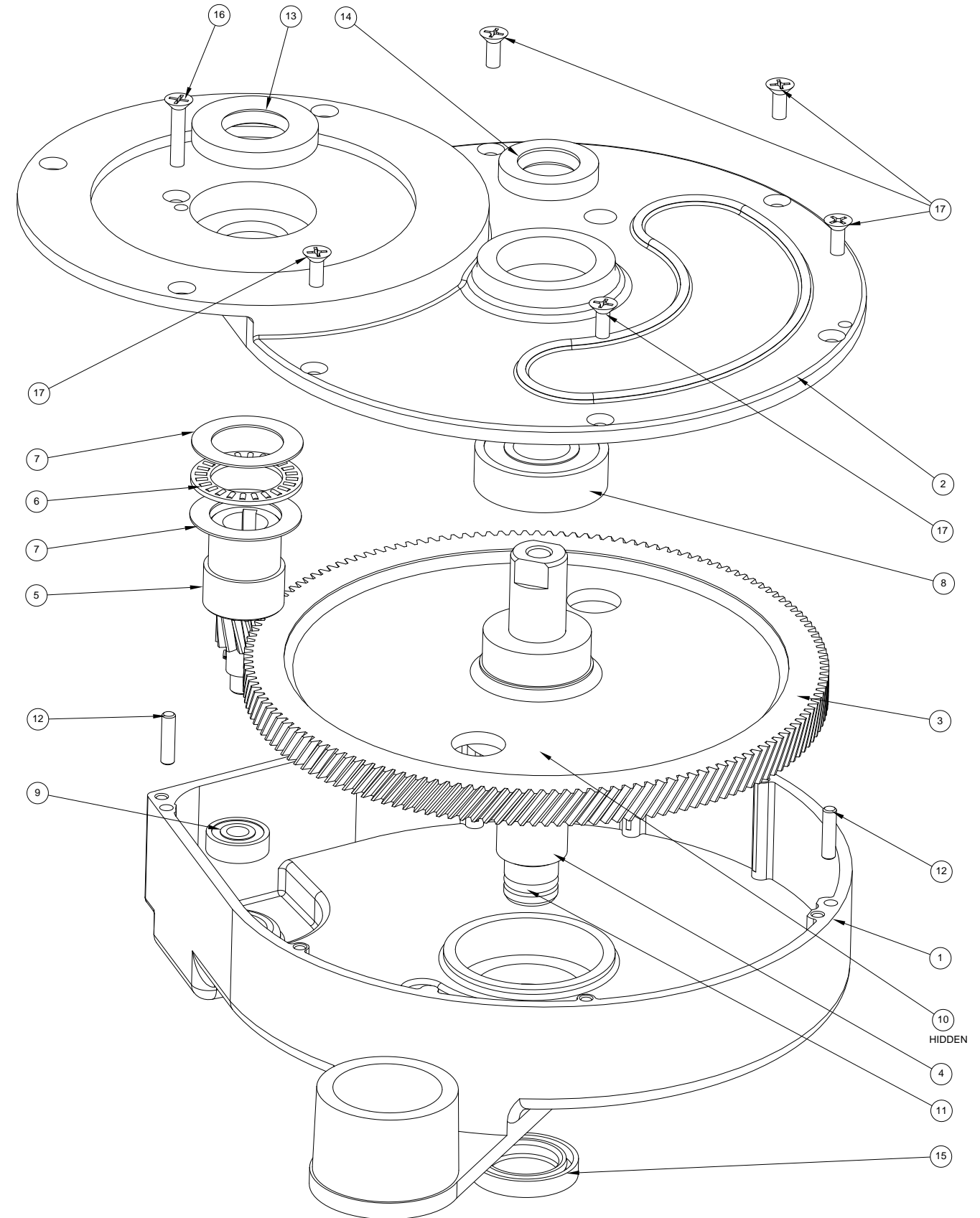
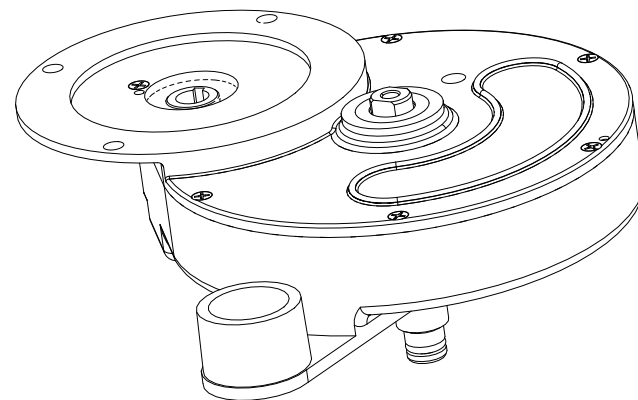
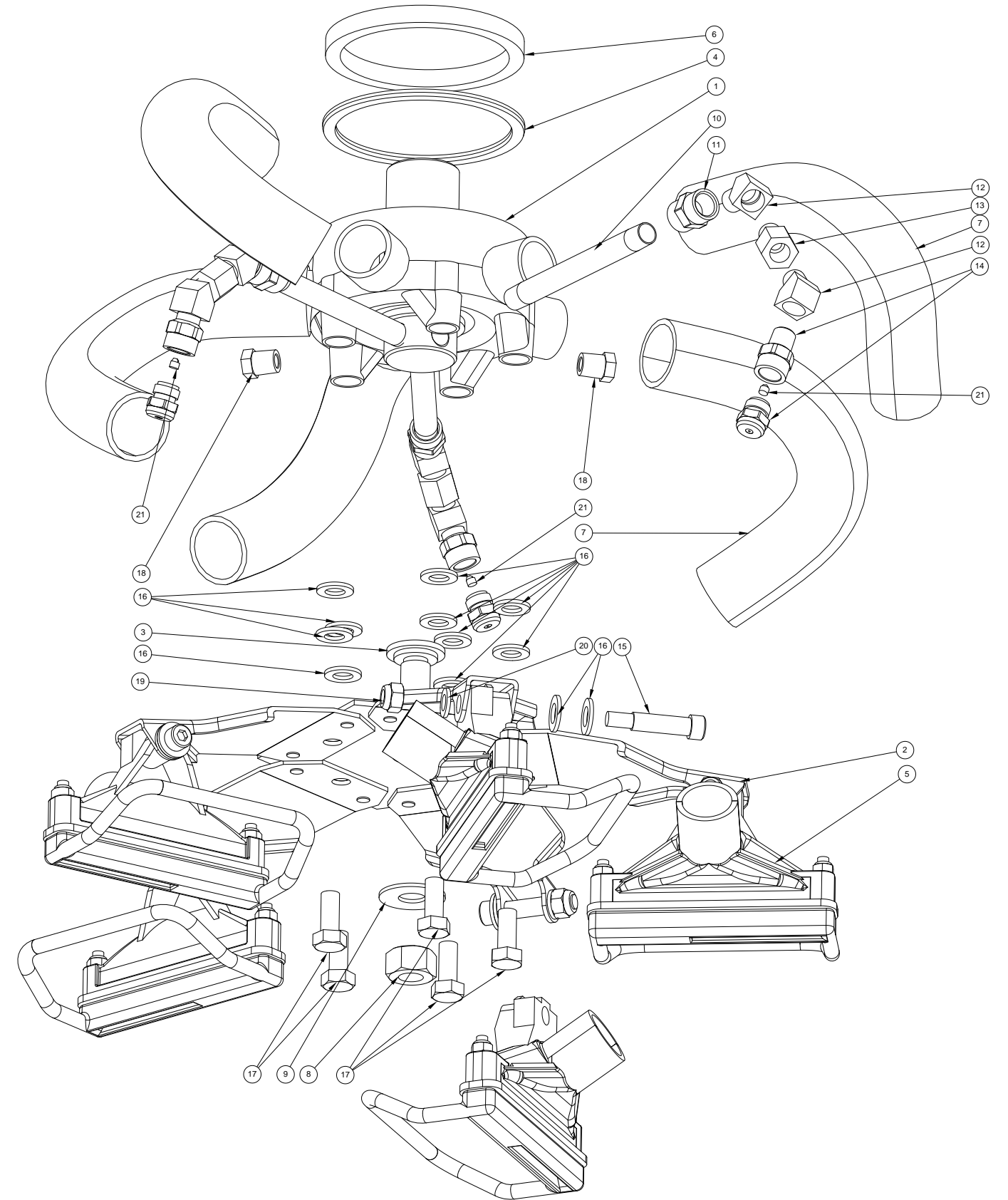
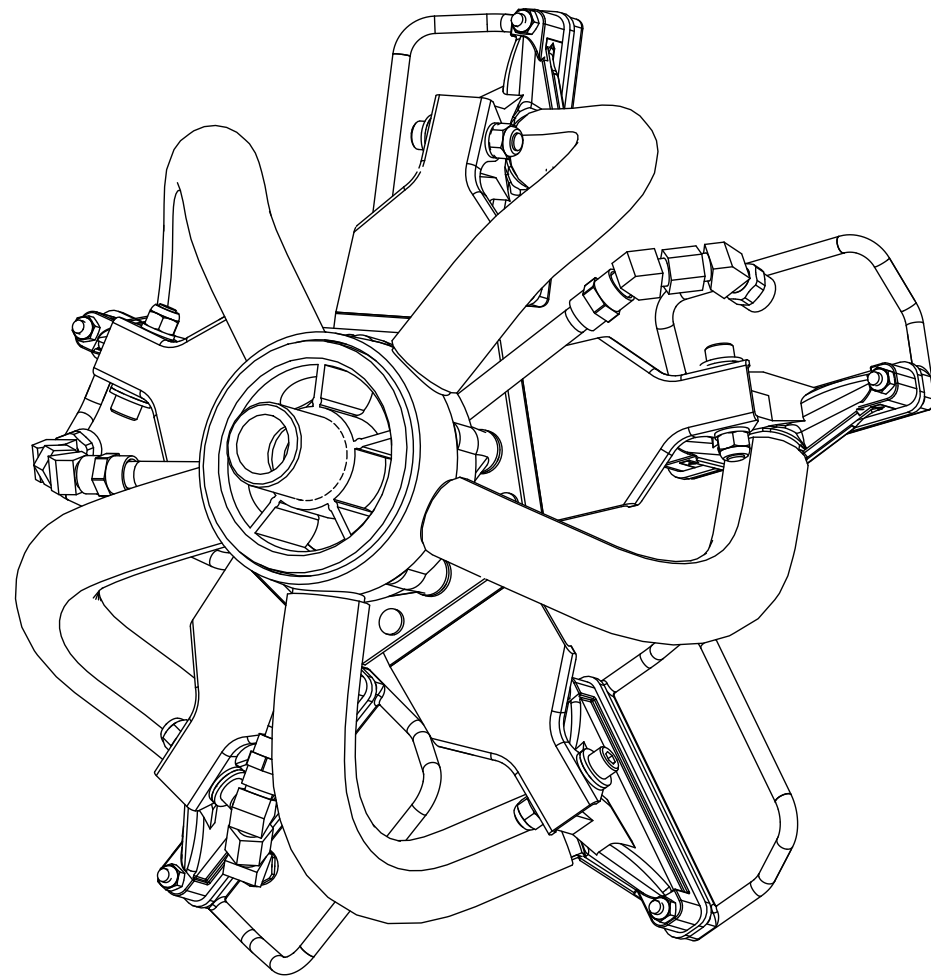


Figure 8-8. Vacuum Head Assembly
6389 Rev. A



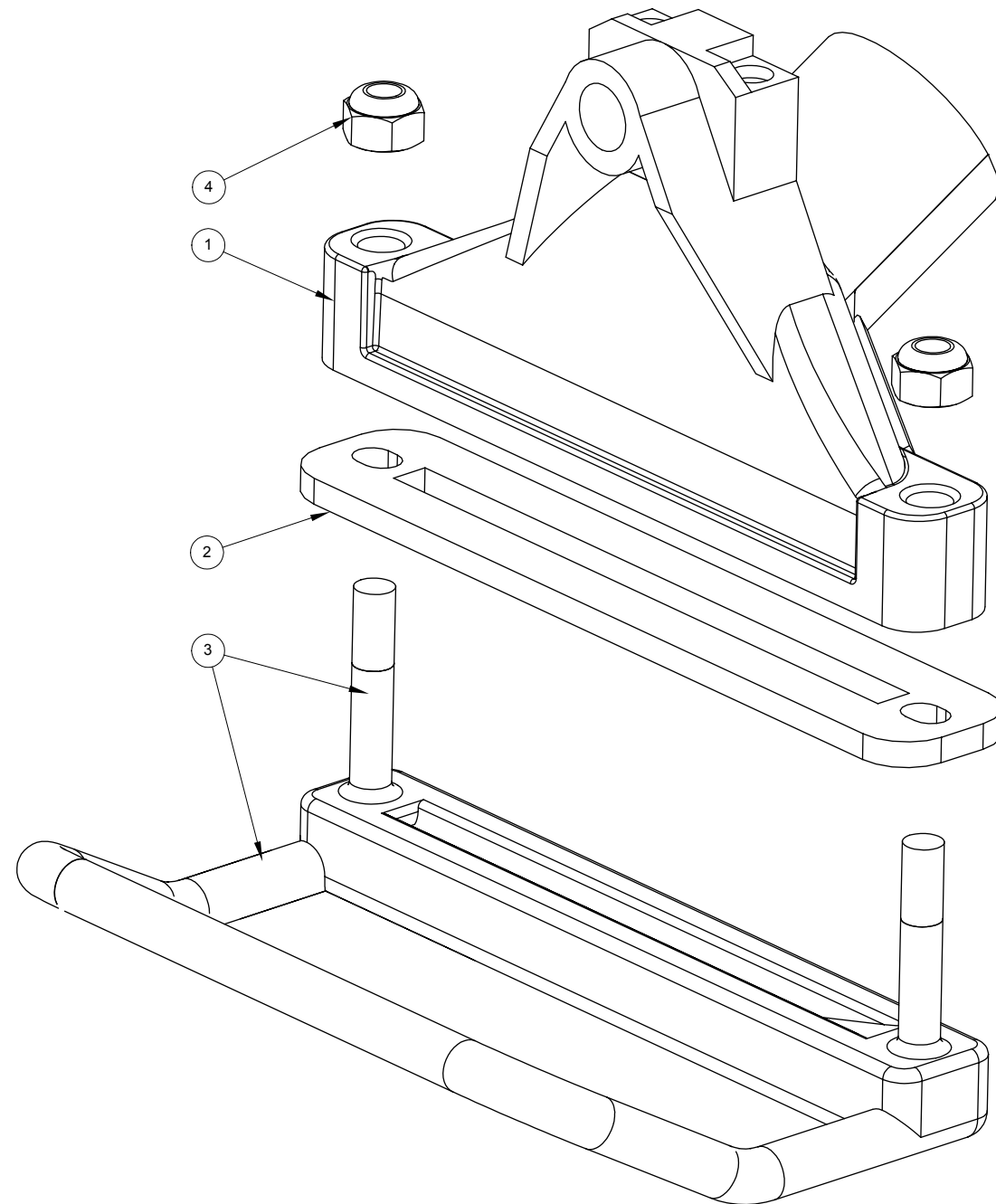
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Vacuum Head Assembly Parts List

Item	Part Number	Description	Qty
1	000-107-020	Plastic Hub - Double Lead Insert	1
2	000-107-089	Star, Assembly	1
3	000-143-045	Screw, 1/2" Modified Star Removal Bolt	1
4	000-139-001	Ring, Plastic	1
5	000-064-012	Assembly, Vacuum Shoe and Skid	5
6	000-057-047	Gasket, Felt	1
7	000-068-174	Hose, 1" Vacuum - Gray	5
8	000-094-019	Nut, 1/2"-13UNC Hex	1
9	000-174-006	Washer, 7/16" Flat	1
10	000-052-515	Nipple, 1/8" NPT X 4" Lg.	3
11	000-052-440	Coupler, 1/8" FPT Brass	3

Item	Part Number	Description	Qty
12	000-052-078	Elbow, 1/8" NPT X 45° Street	6
13	000-052-427	Bushing, 1/8" NPT X 1/8" FPT	3
14	000-076-076	Jet, Full Cone 1/8"	3
15	000-143-162	Screw, 5/16" X 1" Lg. Stripper - 1/4"-20UNC	5
16	000-174-049	Washer, 5/16" Flat	20
17	000-143-012	Screw, 5/16"-18UNC X 3/4" Lg.	5
18	000-106-001	Plug, 1/8" NPT	2
19	000-094-009	Nut, 1/4"-20UNC Nylock	5
20	000-174-003	Washer, 1/4" Flat	5
21	000-076-078	Vane, Cone Jet	3

Figure 8-9. Vacuum Shoe and Skid Assembly
6386

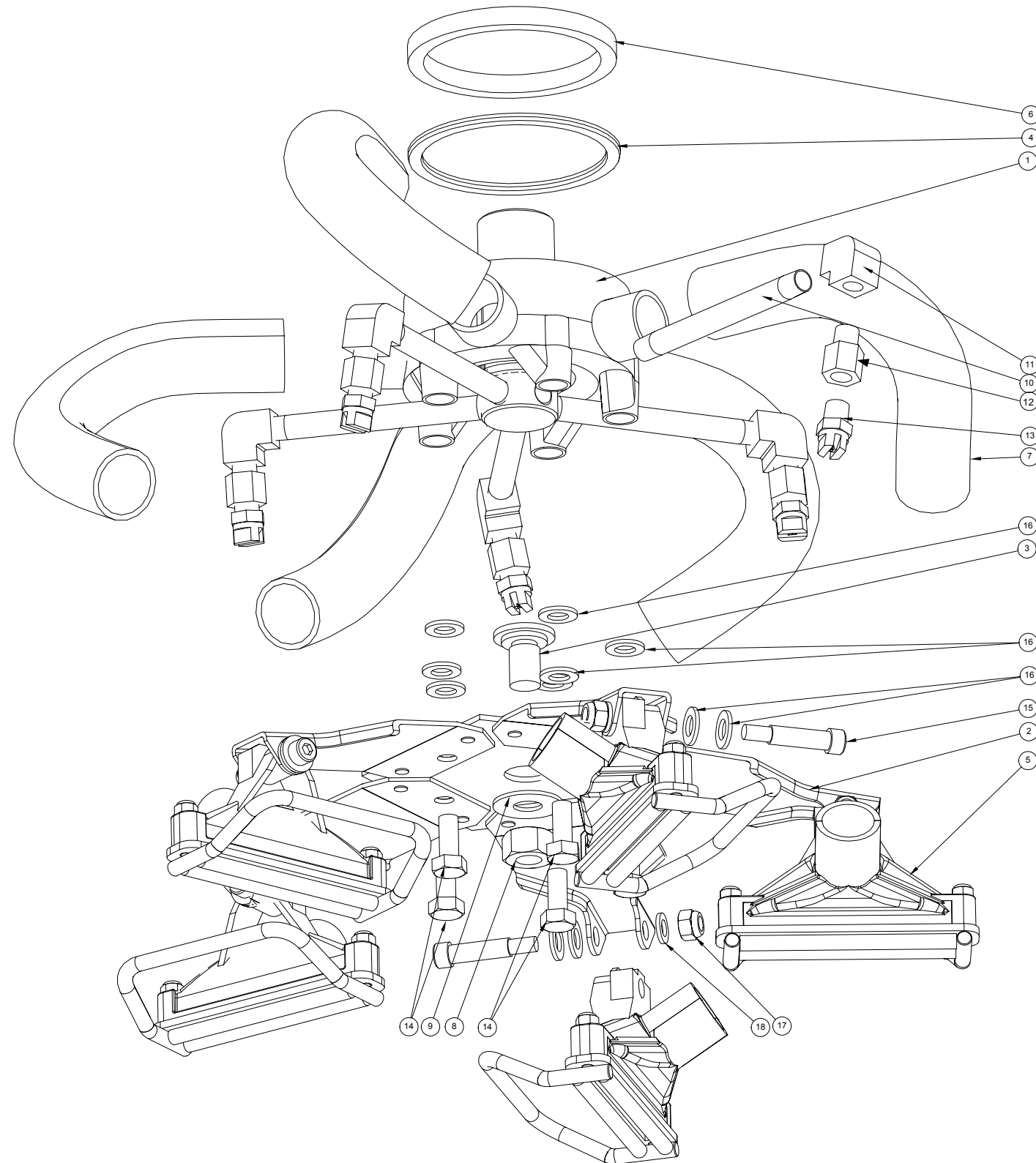


Vacuum Shoe and Skid Assembly Parts List

Item	Part Number	Description	Qty
1	000-064-011	Shoe, 4" Vac Head - Weldment	1
2	000-057-048	Gasket, Vacuum Head	1
3	000-107-245	Skid	1
4	000-094-058	Nut, #10-32UNF - Nylock	2

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Figure 8-10. Vacuum Head (Original Style) Assembly
6388

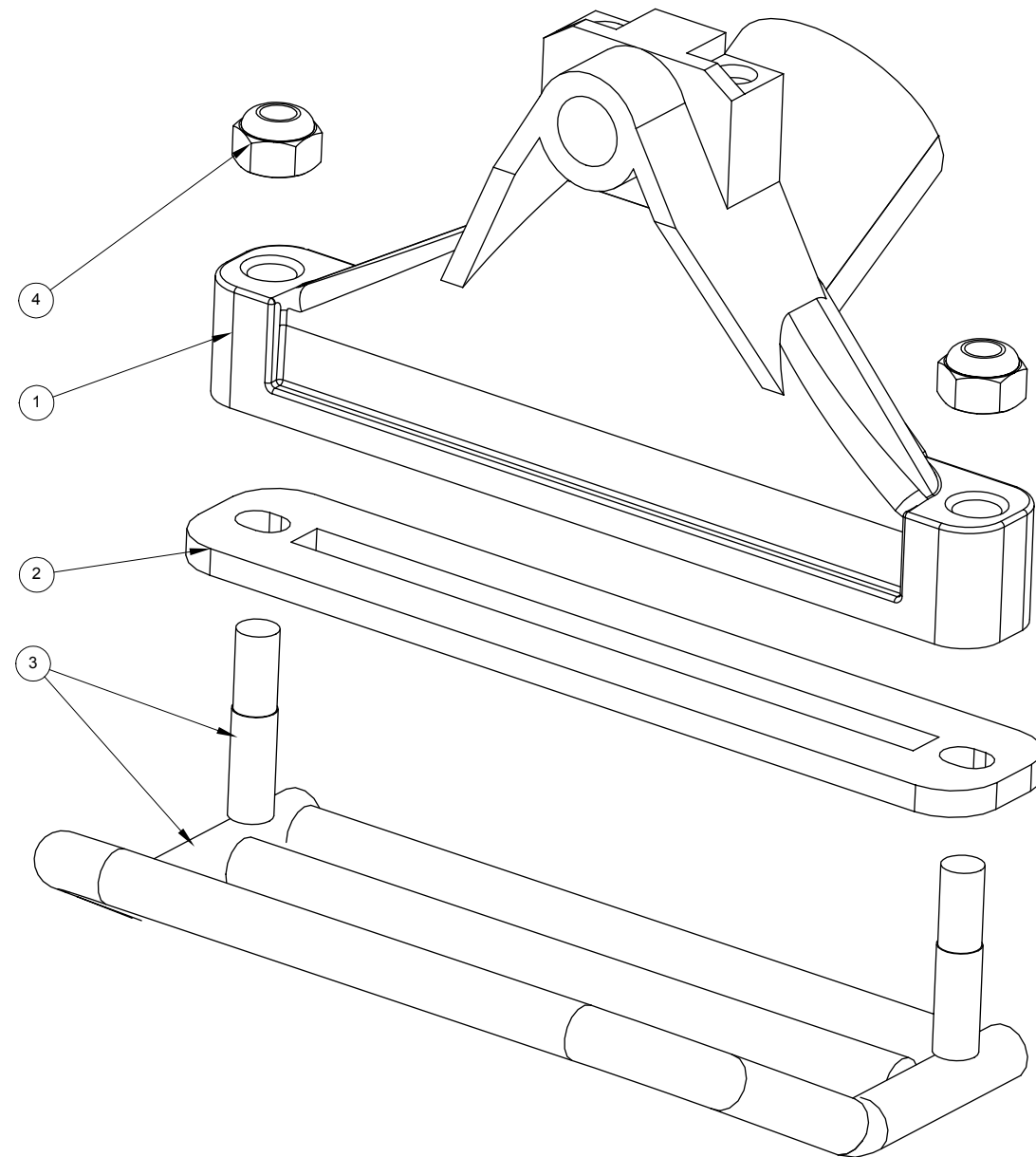


Vacuum Head (Original Style) Assembly Parts List

Item	Part Number	Description	Qty
1	000-107-020	Plastic Hub, Double Lead Insert	1
2	000-107-089	Star, Wheel Assembly	1
3	000-143-045	Screw, 1/2" Modified Star Removal Bolt	1
4	000-139-001	Ring, Plastic	1
5	00-064-012-O	Shoe and Skid Assembly (Original Style)	5
6	000-057-047	Gasket, Felt	1
7	000-068-174	Hose, 1" Vacuum - Gray	5
8	000-094-019	Nut, 1/2"-13UNC Hex	1
9	000-174-006	Washer, 7/16" Flat	1
10	000-052-080	Nipple, 1/8" NPT x 4 Lg.	5
11	000-052-089	Elbow, 1/8" NPT Female	5
12	000-052-427	Bushing, 1/8" NPT x 1/8 FPT	5
13	000-076-037	Jet, H 1/8Vv 80015 S/S	5
14	000-143-012	Screw, 5/16"-18UNC x 0.75 Lg. Hex Head	5
15	000-143-162	Screw, 5/16 x 1" Stripper - 1/4" -20UNC	5
16	000-174-049	Washer, 5/16" Flat	20
17	000-094-009	Nut, 1/4"-20UNC Hex Nylock	5
18	000-174-003	Washer, 1/4" Flat	5

Figure 8-11. Vacuum Shoe and Skid (Original Style) Assembly
6387

Vacuum Shoe and Skid (Original Style) Assembly Parts List



Item	Part Number	Description	Qty
1	000-064-011	4" Vac Head - Weldment	1
2	000-057-048	Gasket, Vacuum Head	1
3	000-107-095	Skid, Wire	1
4	000-094-058	Nut, #10-32UNF - Nylock	2

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CMX-20 - 120 V Assembly Parts List (P/N 604-999-004)

Part Number	Description	Qty	Part Number	Description	Qty
000-006-009	Base, w/Handle - Powder Coated	1	000-105-008	Plate, Cast Base	1
000-015-006	Bracket, Head Stabilizer	1	000-106-001	Plug, 1/8" Brass	1
000-015-139	Bracket, Handle-To-Base	1	000-106-014	Plug, Gear Box Vent	1
000-015-190	Bracket, Relay Mount	1	000-107-096	Handle Arc	2
000-015-552	Bracket, Linkage Clamp - Powder Coated	2	000-107-097	Link	4
000-033-010	Clamp, Size 32 Hose	2	000-107-103	Trigger Pivot	1
000-033-114	Clamp, Linkage - Modified	1	000-107-256	Plunger, Locking	2
000-041-013	Cover, Handle Access	1	000-108-012	Protector, Power Cord Relief	1
000-041-352	Cover, Linkage Clamp	1	000-108-014	Shield, Micro Switch	1
000-049-033	Filter, 1/4" Inline Y	1	000-131-014	Gasket, Roto Shroud	3.3 ft
000-052-001	Fitting, Swivel, 2M-2UFS	2	000-139-006	Ring, 5/8" Snap	2
000-052-050	1/4" Male Quick Connector	1	000-141-004	Axle, Hi Speed Wheel	1
000-052-059	Bushing, 1/4 M X 1/8	2	000-141-007	Rod Assembly, Handle Adj. Clamp	1
000-052-071	Nipple, 1/4 Brass Hex	1	000-141-031	Rod, Handle Arc	1
000-052-072	Nipple, 1/4 Brass Close	1	000-143-609	Screw, 5/8-18 X 5/8 Lg	2
000-052-085	Elbow, 1/4" Brass Street	1	000-156-031	1/4-20 X 1" S/S	1
000-052-294	Rotary Union, Brass	1	000-157-032	Switch, Micro	1
000-059-001	Gear Box Complete	1	000-157-149	Relay, AC Relay 120 V	1
000-061-004	Handle, Foam Grip-Closed	2	000-157-151	Switch, Chrome Momentary	1
000-061-017	Handle, Weldment - Coated	1	000-167-009-07	Trigger, Left Hand	1
000-061-030	Handle, Clamp "T" (Raw)	2	000-167-010-07	Trigger, Right Hand	1
000-068-176	Hose, 3/16" X 45" Teflon	1	000-169-058	Valve, S/S	1
000-068-193	Hose, 2" Clear Vacuum	2.8 ft	000-174-030	Washer, 5/8" I.D. X 7/8"	2
000-091-015	Motor, 1/2 HP TEFC-H/S	1	000-177-001	Wheel, 8" Hi Speed	2
000-094-030-07	Nut, Adjusting, Linkage	1	000-178-004	Cord, 14/3 X 50' Gray	1
000-094-036	Nut, 1/2" NPT Pipe Plastic	1	000-178-039	Cord, 14/3 X 42" Modified	1
000-103-012	Pin, 1/4 X 7/8" Clevis	2	604-053-002	Dble. Thread Vac. Head	1

CMX-20 - 230 V Assembly Parts List (P/N 604-999-220)

Part Number	Description	Qty	Part Number	Description	Qty
000-006-009	Base, w/Handle - Coat	1	000-103-012	Pin, 1/4 X 7/8" Clevis	2
000-011-001	Bezel, Threaded for 000-157-134	1	000-105-008	Plate, Cast Base	1
000-015-006	Bracket, Head Stabilizer	1	000-106-001	Plug, 1/8" Brass	1
000-015-139	Bracket, Handle-To-Base	1	000-106-014	Plug, Gear Box Vent	1
000-015-190	Bracket, Relay Mount	1	000-106-109	Plug, 230 V IEC w/Fuse Receptacle	1
000-015-552	Bracket, Linkage Clamp	2	000-107-096	Handle Arc	2
000-033-010	Clamp, Size 32 Hose	2	000-107-097	Link	4
000-033-114	Clamp, Linkage - Modified	1	000-107-103	Trigger Pivot	1
000-041-013	Cover, Handle Access	1	000-107-256	Plunger, Locking	2
000-041-352	Cover, Linkage Clamp	1	000-108-014	Shield, Micro Switch	1
000-049-033	Filter, 1/4" Inline Y	1	000-131-014	Gasket, Roto Shroud	3.3 ft
000-052-001	Fitting, Swivel, 2M-2UFS	2	000-139-006	Ring, 5/8" Snap	2
000-052-050	1/4" Male Quick Connector	1	000-141-004	Axle, Hi Speed Wheel	1
000-052-059	Bushing, 1/4 M X 1/8	2	000-141-007	Rod Assembly, Handle Adj. Clamp	1
000-052-071	Nipple, 1/4 Brass Hex	1	000-141-031	Rod, Handle Arc	1
000-052-072	Nipple, 1/4 Brass Close	1	000-143-609	Screw, 5/8-18 X 5/8 Lg	2
000-052-085	Elbow, 1/4" Brass Street	1	000-156-031	1/4-20 X 1" S/S	1
000-052-294	Rotary Union, Brass	1	000-157-132	Relay, 230 V 30 Amp SPST	1
000-056-009	Fuse, 6.3 Amp 5mm X 20	2	000-157-133	Switch, 230 V	1
000-059-001	Gear Box Complete	1	000-157-134	Switch, 230 V Momentary	1
000-061-004	Handle, Foam Grip-Closed	2	000-167-009-07	Trigger, Left Hand	1
000-061-030	Handle, Clamp "T" (Raw)	2	000-167-010-07	Trigger, Right Hand	1
000-061-119	Knob, Push Button	1	000-169-058	Valve, S/S	1
000-068-176	Hose, 3/16" X 45" Teflon	1	000-174-030	Washer, 5/8" I.D. X 7/8"	2
000-068-193	Hose, 2" Clear Vacuum	2.8 ft	000-177-001	Wheel, 8" Hi Speed	2
000-081-102	Label, 230 V CE	1	000-178-054	Cord, 50' w/M-F IEC Ends 230 V	1
000-091-016	Motor, 1/2 HP TEFC-22	1	604-051-019	Handle, Powder Coated	1
000-094-030-07	Nut, Adjusting, Linkage	1	604-053-002	Dble.Thread Vac. Head	1

CMX-20

9 - Repair and Replacement

FELT VACUUM SEAL

The felt vacuum seal plays an important part in the optimum performance of your CMX-20. If it is worn or unlubricated, it will not form a proper seal. Lack of a proper seal will impair the vacuuming capabilities of the unit and therefore leave behind more water in the carpet than is desirable.

To replace the vacuum seal:

1. First, remove the vacuum head assembly as previously described.
2. Using a pocket knife or similar tool, carefully pry the seal up and lift it out. If the seal appears worn or glazed so that it will not lubricate well, turn it over (see Figure 9-1). If that does not work, or if it is damaged, replace it with a new seal.
3. HydraMaster recommends changing the felt seal after 10 hours of use. Replace it with a seal that has been pre-soaked in a quality 30 weight SAE motor oil .
4. Press the seal in place and saturate it with the motor oil. If a flattened seal will be re-used, place the used seal in an oil bath to rejuvenate it.

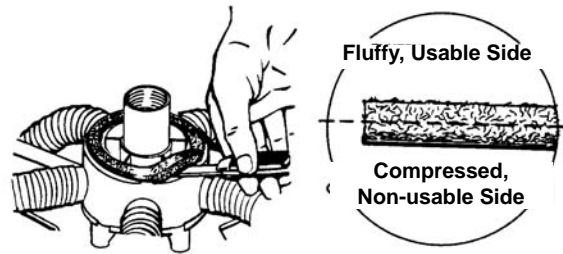


Figure 9-1. Carefully Pry Seal Up and Lift Out

NOTICE

For the seal's oil bath, use a small receptacle the size and shape of a tuna fish can.

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HIGH PRESSURE VALVE ASSEMBLY

In the event that the valve assembly needs to be replaced, follow this procedure:

1. Remove the 440 male quick connect with a wrench.
2. Remove the five hex head screws in the back plate on the handle and lift the back plate off.
3. Disconnect the stainless steel hose from the bottom of the valve assembly (see Figure 9-2).
4. Remove the bolt holding the trigger (see Figure 9-2).
5. Remove the two bolts holding the valve assembly in the handle (see Figure 9-2).
6. The valve may now be rebuilt or replaced.

CAUTION

If the valve has been frozen, inspect it for leakage before re-installing the back plate.

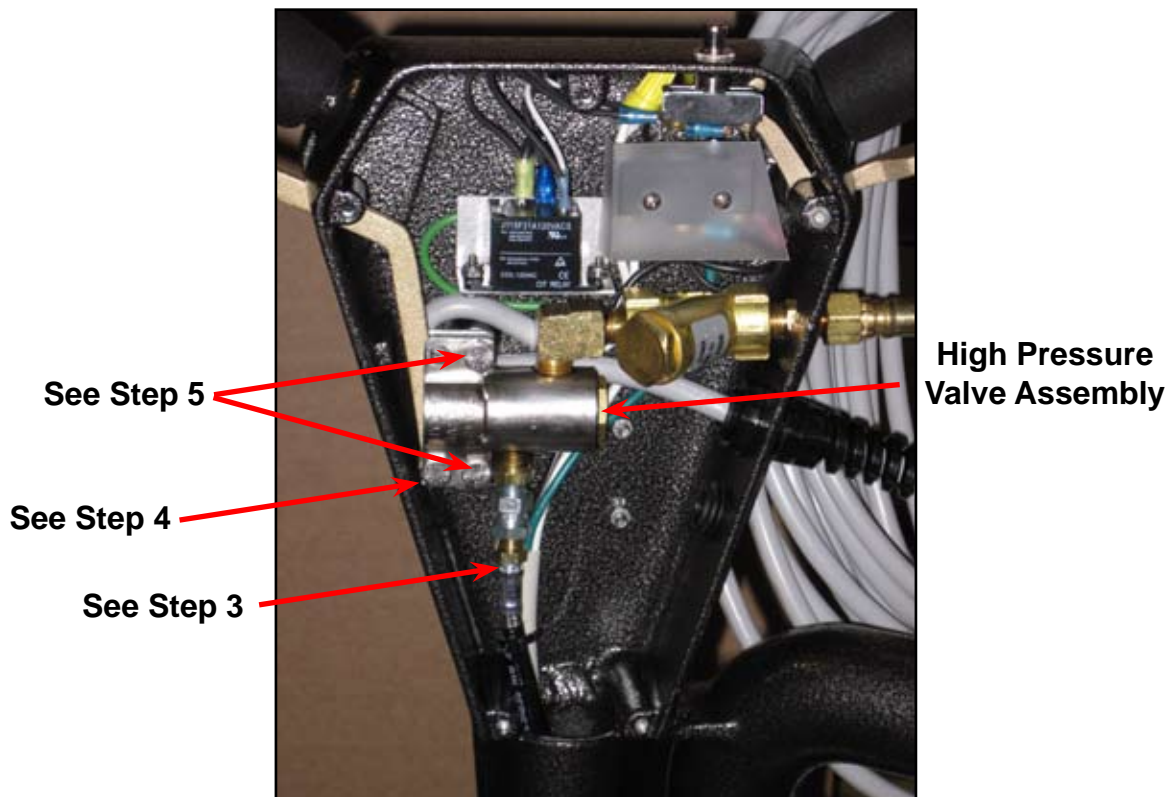


Figure 9-2. Quick Connect, Back Plate and Stainless Steel Hose Removed from Upper Handle Assembly

10 - Troubleshooting

1.0 Low Vacuum Flow at the Cleaning Heads

1.1 Hub not sealing properly.	Replace felt seal with a lubricated one.
1.2 Restricted air flow.	Remove hoses from the vacuum shoe and skid assembly, and clear them of debris.
1.3 Low vacuum flow from power.	Refer to Troubleshooting section of source equipment manual.

2.0 Low Water Flow at Cleaning Heads (indicated by irregular Water Temperature)

2.1 Restricted jets.	Remove jets and clear them of debris.
2.2 Clogged water strainer.	Remove water strainer and clean.
2.3 Kinked or clogged solution hose.	Remove hose. Repair or replace.
2.4 Cleaning hub not properly threaded.	Remove cleaning hub from shaft to shaft. Clean and rethread onto shaft.

3.0 Water Leak at Rotary Union

3.1 Foreign matter in rotary union seal.	Dismantle rotary union. Clean. Re-assemble and install.
--	---

4.0 Water Leak at Valve

4.1 Ruptured plunger or valve O-ring.	Repair or replace damaged plunger, O-ring, seal. Check for freeze damage.
4.2 Ruptured plunger or valve O-ring.	Repair or replace damaged plunger, O-ring, seal. Check for freeze damage.

5.0 Loss of Oil from Gearbox

5.1 Loose or ruptured oil seal.	Replace damaged oil seal. Refill gearbox with oil.
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6.0 No Power

6.1 CMX-20 wiring or power source.	Have an electrician inspect unit for possible wiring or motor problems.
6.2 Overload power source.	Locate an unused power source.
6.3 Gearbox.	Repair or replace gearbox.

7.0 Head during Operation

7.1 One leg of star bent.	Straighten star.
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CMX-20

11 - Warranty Information

U. S. Products warrants Rotary Extractor machines of its manufacture to be free from defects in material and workmanship if properly installed, maintained, and operated under normal conditions with competent supervision. No person, agent, representative or dealer is authorized to give any warranties on behalf of U. S. Products, nor to assume for U. S. Products any other liability in connection with any U. S. Products products. This warranty shall extend to the original purchaser of said equipment for the periods listed below from date of installation. If repairs or replacements are made by the Purchaser without U. S. Products's written consent, U. S. Products's warranty shall cease to be in effect.

Machinery, equipment and accessories furnished by U. S. Products, but manufactured by others, are warranted only to the extent of the original manufacturer's warranty to U. S. Products unless otherwise specified in the listing below.

U. S. Products agrees, at its option, to repair at the point of shipment, or to replace without charge, any parts or parts of products of U. S. Products's manufacture, which within the specified warranty period shall be proved to U. S. Products's satisfaction to have been defective when shipped, provided the purchaser promptly notifies U. S. Products, in writing, of such alleged defect. U. S. Products will pay all freight and transportation charges within the United States, via normal ground shipping means, for replacement of parts covered under this warranty.

This warranty covers parts, as specified, and does not cover labor which may be necessary in completing repairs. U. S. Products's liability to Purchaser, whether in contract or in tort arising out of warranties, representation, instructions, or defects from any cause shall be limited to repairing or replacing the defective part or parts. To qualify for warranty coverage, defective parts must be returned to U. S. Products within 30 days. No warranty liability whatsoever shall attach to U. S. Products unless and until U. S. Products has received payment in full for the warranted machine or part.

Except as stated in this section and in the proceeding section and except as to title, there are no guarantees or warranties of merchantability, fitness, performance or otherwise, express, implied or statutory, and U. S. Products shall have no liability for consequential, incidental or other damages howsoever caused.

All components not specifically referenced in the schedule below are covered under this warranty for a period of one (1) year, excepting those parts which are considered, by U. S. Products, to be expendable in normal use, including but not limited to paint, labels and other cosmetic parts or features.

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Freeze-related damage of any CMX-20 component will VOID all warranties on water- or chemical-related components, internal or external.

Hard water deposits and buildup in the CMX-20 will VOID all warranties on affected components.

All recommended maintenance must be performed by competent service personnel.

Records of periodic maintenance must be kept and copies may be required to be furnished to U. S. Products before this warranty is honored.

Coverage Schedule

Frame, Handle, Body	3 years
Gear Box	1 year
Motor	1 year
Valves, Filters, Hoses	1 year