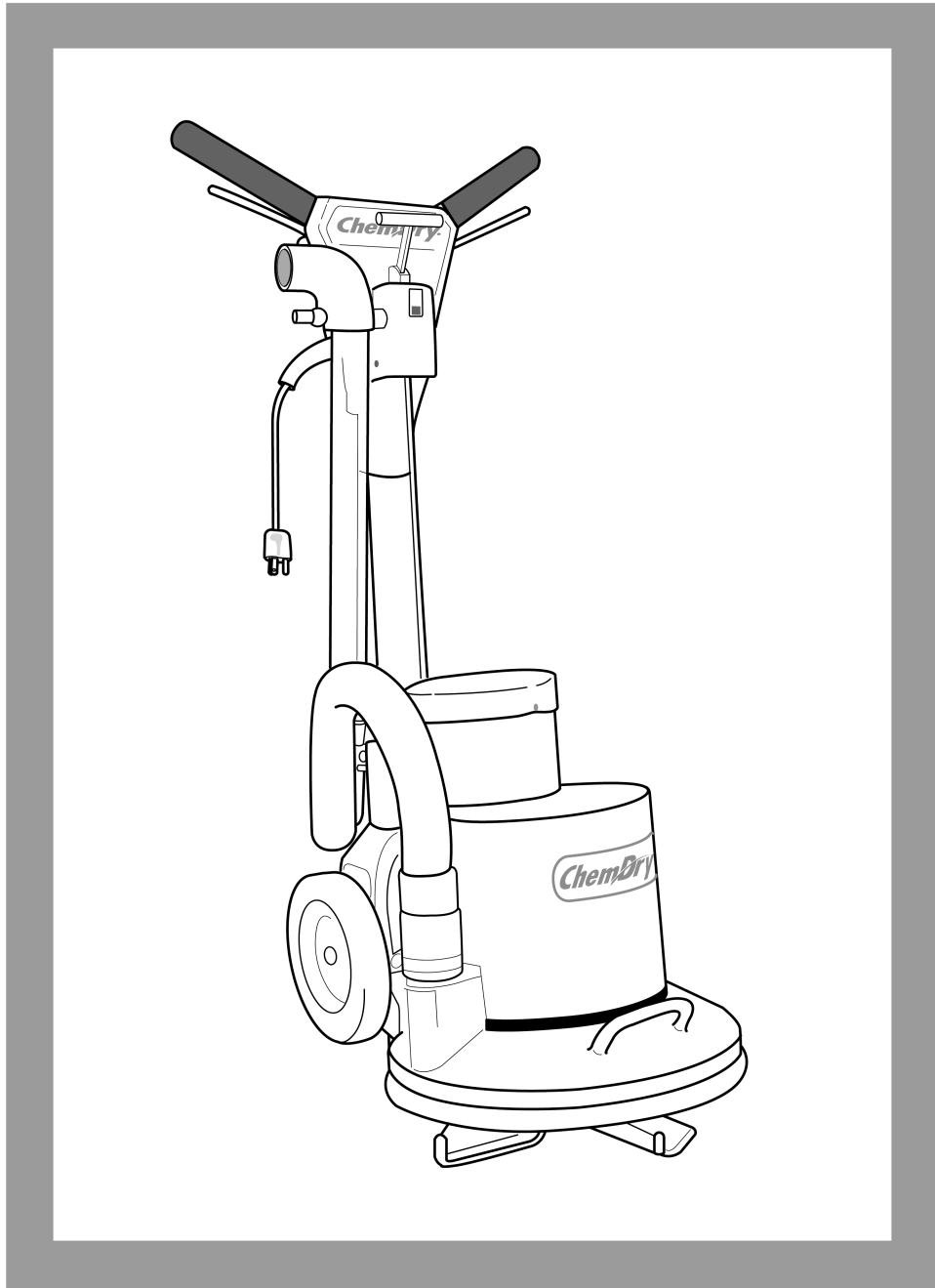


Chem-Dry® PowerHead Owner's Manual



ChemDry®

Superior Carpet and Upholstery Cleaning

Chem-Dry[®] PowerHead

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Machine Serial Number_____

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Revised 11/22/99

Congratulations,

You now own a piece of equipment that incorporates the latest in carpet cleaning technology. The Chem-Dry PowerHead's features will almost certainly increase the productivity of you and your business, while decreasing the fatigue factor that may have prevented you from going after some of the large cleaning jobs that are available to carpet cleaners and maintenance professionals today. With competition as strong as it is in most communities, you have invested in not only a cleaning tool, but a marketing tool that will enhance your professional image in every way.

The Chem-Dry PowerHead is **REVOLUTIONARY**. Your foresight in purchasing this ultimate "cleaning machine" will be rewarded with the knowledge that you care enough to give your customer the maximum cleaning effectiveness.

Using the PowerHead in your business will turn you into a professional carpet cleaning operator, rather than a professional laborer.

Once again, congratulations to another Chem-Dry cleaning professional who will not wait for tomorrow, and who will not have to compete against the PowerHead. The competition will have to compete with you!

An Evolution That Had To Happen

Your new PowerHead has been precision engineered to bring you to the state-of-the-art in carpet cleaning. In the past, a wand technician had to supply all the pressure and motion to do the cleaning. The Powerhead's weight distribution and rotary motion enable the technician to maneuver the unit easily with less fatigue and without back strain.

The PowerHead's electric motor drives its precision transmission which, in turn, rotates the cleaning head assembly. The Natural® cleaning solution is injected through the center of the stainless steel gearbox shaft directly to the five spray jets. Soiled solution is then extracted from the carpet by five extraction cleaning heads and drawn through the aluminum exhaust manifold to the HCU recovery tank.

Construction

The base, manifolds, handle, gearbox housing, and cleaning heads are all cast or molded aluminum. Other parts are either metal, stainless steel or high impact plastic.

Machine Specifications

	Chem-Dry PowerHead AX
Length:	23"
Base Width:	15"
Height:	43"
Weight:	70 lbs
Motor:	115 V, 1/2 HP TEFC
Gearbox:	1725 RPM Input 130 RPM Output Permanently Lubricated Helical Gear Drive
Oil Capacity:	14 oz

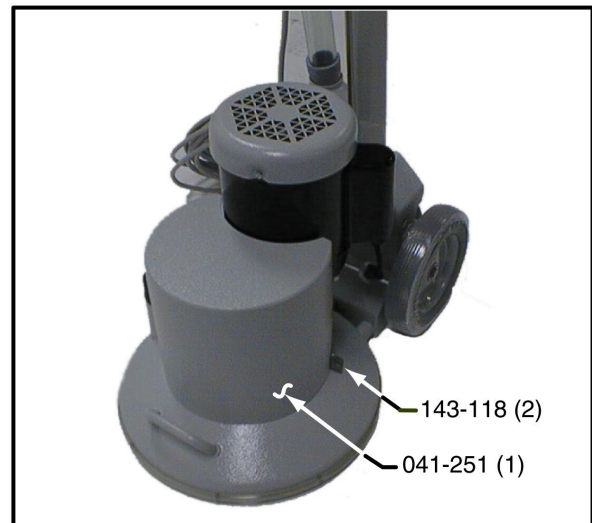
Assembly Instructions

To prepare your machine for use, follow these instructions:

- a) Remove the machine from the packaging. Inspect the machine carefully for any damage that may have occurred during shipping. If any oil spillage is noted, be sure to check the gearbox lubricant level (see instructions).
- b) Now, attach the cleaning head to the base. Lean the machine back and rest it on the handle. Thread the cleaning head onto the exposed shaft remembering to go in a counterclockwise direction (left-handed threads).

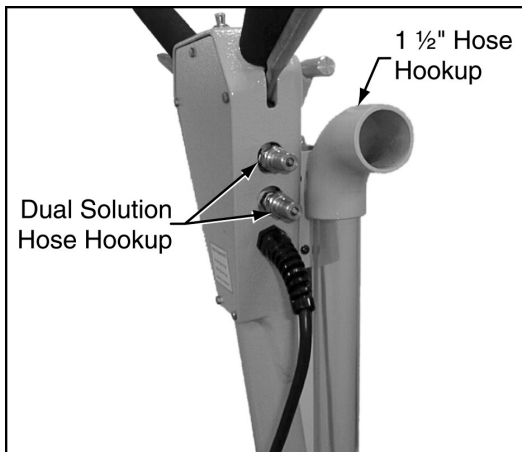
Important: Remove the gearbox cover and replace the solid shipping plug from the top of the gearbox with the vented plug provided before operating the machine. Reattach the cover back onto the PowerHead.

Your machine is now ready to operate.



Operation

Preparation



1. **Handle Adjustment:** Push the clamp forward to loosen the linkage. Adjust the handle to a comfortable height. Pull clamp back to lock in place.

NOTE: Most technicians have found better control and less fatigue when the handle is in a low position-- just around the hip line. There is an ideal position for each person which will ensure the PowerHead will do the work for you.

2. **Solution and Vacuum Hose Hook-Ups:** Your PowerHead is equipped with two 440 S/S male quick connects for the dual solution hose and an one and a half inch (1-½") vacuum hose inlet (refer to the above photo). A dual solution hose with the two 440 female quick connects is required. The vacuum inlet

requires a one and a half inch (1-½") I.D. and a two (2") O.D. vacuum hose for proper air flow.

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

3. **Electrical Cord Hook-Up:** The 50 foot electrical cord on your PowerHead is a detachable three-prong grounded line requiring a three-prong, 15 amp receptacle. A three-prong to two-prong adapter may be used, providing its ground wire is properly attached to a grounded terminal.

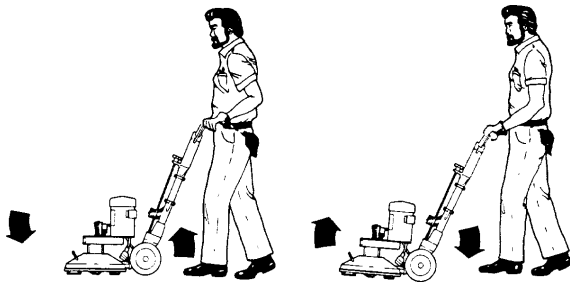
◆ CAUTION ◆

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

Operating Instructions

1. **Control Functions:** There are control triggers located on each side of the handle under the rubber hand grips. As you operate the PowerHead, the trigger on your right-hand side controls the electric motor that drives the cleaning heads. The Safety switch located on the top of the handle must be

depressed while the trigger is pulled. Once the motor is running, the safety switch can be released. This must be done each time the trigger is released and the motor is re-started. This lockout will prevent accidental starting of the motor. On the left hand side, the trigger controls the low pressure carbonating solution spray. The air flows constantly while the PowerHead is in operation.



- 2. Maneuvering Your PowerHead:** Your PowerHead maneuvers like a buffer. To move the PowerHead to the right, lift the handle slightly. The more you lift or lower the handle, the faster the PowerHead will move.

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 PowerHead, practice on an open carpeted area. Depress both the solution trigger and motor trigger and move the PowerHead slowly in a three to five

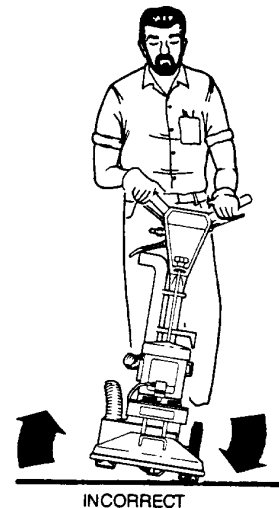
foot arc, as shown in **Cleaning Patterns** on the following page.

◆ CAUTION ◆

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

Once 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 indentations.)

Do not tilt machine sideways while moving forward and backward. A loss of control may result in damage to the unit or location.



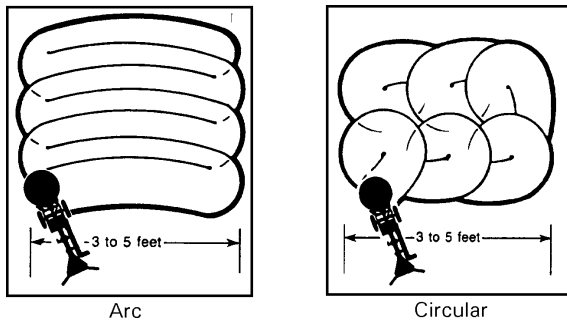
- 3. Using the Crevice Tool:** The crevice tool is located on the front right-hand side of the Power Head. To remove, pull the crevice tool upward until the alignment pin matches the large diameter of the key hole slot. Pull the tool away from the PowerHead and it is ready to use. When attaching it back onto the machine, rest the end of the tool on the lower elbow and slide the pin into the key hole slot. Gently push the crevice tool into the elbow until it is snug.

Cleaning Information

Cleaning Patterns

For regular carpet cleaning, use an overlapping arc pattern, two times over the same area (one pass 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.

Note: Dirtiest areas may require two or more cleaning passes. Using either



pattern, you should develop a comfortable rhythm. To obtain maximum performance from your PowerHead, move it slowly and deliberately with a 50% overlap, giving it time to clean and extract. (Unlike a manual wand, the PowerHead is doing the work you had to do in the past) A steady pace rather than a frenzied one will increase efficiency and production and decrease fatigue.

The Following Cautions Should Be Observed While Cleaning:

1. DO NOT operate your PowerHead over metal floor moldings.

Damage to both the molding and the cleaning head will result.

2. DO NOT operate your PowerHead on hardwood floors.
3. DO NOT operate your PowerHead over loose or unraveled carpet seams. The cleaning head may catch and cause further damage.
4. DO NOT operate your PowerHead 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 should the extraction heads catch the loose carpet.

Special Information

During the cleaning of some plush carpets, you may notice a "pilling" effect. With an PowerHead, 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 PowerHead weighs approximately

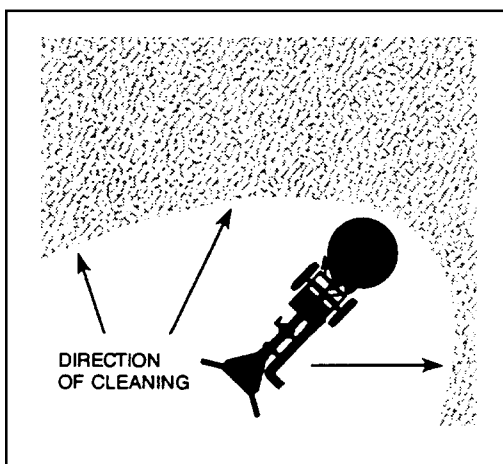
70 pounds and rests on five four-inch cleaning heads, the yarns are not sucked up into the vacuum heads as they are with a vacuum cleaner or old-style cleaning wand.

◆ CAUTION ◆

The PowerHead may cause further damage to older, rubber-backed, glued down carpets that may be delaminating with age. When in doubt, DO NOT use your PowerHead.

Cleaning Hints

A. Most cleaners customarily clean their way out of an area or room. With the PowerHead, it is possible to clean into an area or room, as shown in the illustration below, 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.

B. The PowerHead is a very aggressive carpet cleaning machine 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.

The PowerHead 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.

Machine Maintenance

Good care and regular maintenance of your PowerHead will result in a long, dependable life for the unit. Keep in mind that your PowerHead will be in full view of your customer. A PowerHead that is dirty and unkempt in appearance can cause your 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.

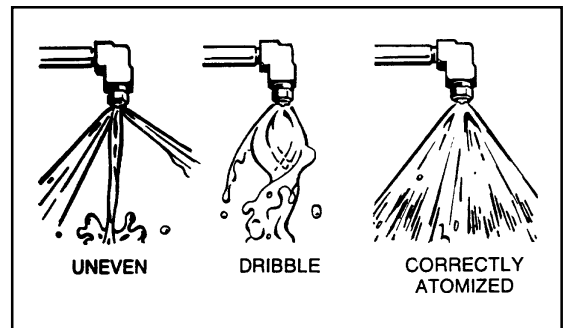
The surface finish on your PowerHead is a durable, baked on epoxy coating and is easily cleaned with a damp cloth. To further protect the finish, a light coat of good silicon base polish should be applied periodically.

Lubrication and maintenance play a key role in the life of your PowerHead. 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.

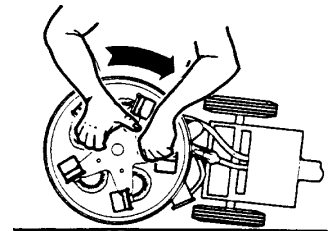
Daily Maintenance

1. Inspect the power cord for cuts, breaks, etc. Repair as needed.
2. Inspect the vacuum hoses for breaks or tears. Repair or replace as necessary.

3. Visually inspect your PowerHead for water leaks, damage to the cleaning heads, etc. Repair as necessary.
4. Check the jet spray for evenness. An uneven spray will cause improper flow of the cleaning solution.



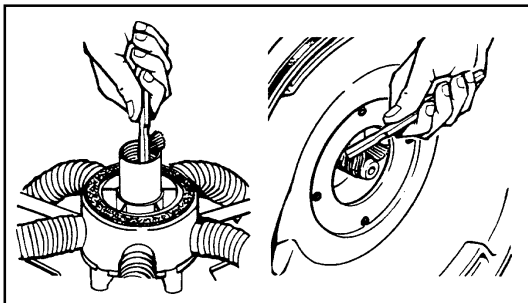
5. Remove the cleaning head. It unscrews in the same direction it turns during operation (or clockwise when looking at it from the underside). Once you have loosened the assembly, spin it off with your hands. If the cleaning head is difficult to remove, you may use a $\frac{3}{4}$ inch socket wrench on the exposed center nut located under the gearbox cover. To prevent the gearbox from turning, remove the gearbox cover to expose the output shaft.



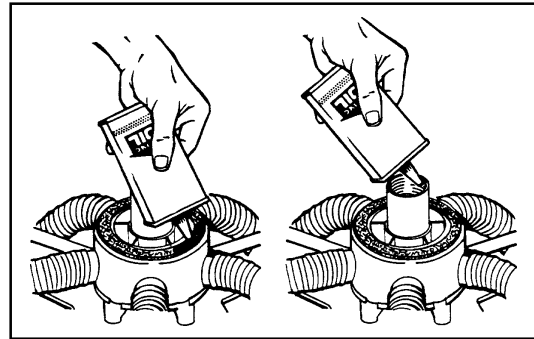
The output shaft will accept a $\frac{5}{8}$ inch wrench just below the rotary union. Wash the cleaning heads and shroud assembly with a garden hose, being careful not to wet the electric motor assembly. Clean any lint buildup from the cleaning heads and vacuum hoses (lint buildup will restrict proper air flow and prolong drying time). Before cleaning the cleaning head assembly, place the rubber stopper (available in the Service Kit, Part No. E2000-SK) inside the threaded bore of the hub. This will prevent debris from entering the solution lines and clogging the spray jets.

◆ CAUTION ◆

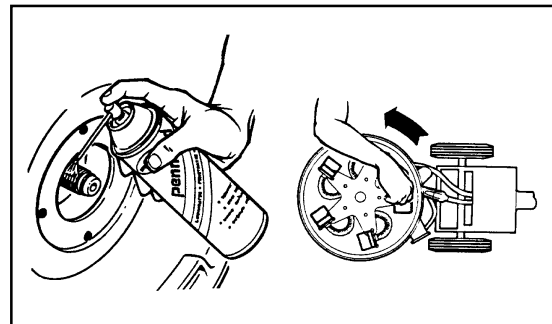
6. Clean off any debris that may have accumulated on the gearbox shaft or the inside threaded bore of the hub. An accumulation of debris here, if not removed, may damage the gearbox oil seal. This will result in loss of oil in the gearbox. If the gearbox is operated without oil, severe damage may occur.



7. 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.



8. Coat the shaft with Pennz-Guard or a similar lubricant. Reinstall the vacuum head assembly onto the shaft by rotating it counter-clockwise.



IMPORTANT: 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. All it takes is the slightest grain of dirt or sand to obstruct the threads. If you turn too far onto a grain of dirt, the hub may become locked onto the shaft of the gearbox.

Periodic Maintenance

Check the oil level in the gearbox on a monthly basis. This is a permanently lubricated gearbox. 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 gearbox. Turn the cleaning head until you can see the inspection hole in the gear. With the PowerHead 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.

NOTE: When checking the oil level in the gearbox, you can use a toothpick as a dip stick. The oil level should read $\frac{3}{8}$ of an inch.

Transport and/or Storage

Whenever your PowerHead is transported or stored, it is recommended that the cleaning head be removed. The machine will then sit flat on the floor and remain more stable, especially during transport.

Freeze Warning and Protection

Your PowerHead can sustain damage from freezing, as can any equipment that functions with the use of water. Care must be taken to protect this tool from freezing just as you do your other equipment. To protect it from freezing, simply blow air from a gas station air hose through the solution quick connect with the valve open.

This will blow all 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.

Machine Assembly Parts

Figure 1 PowerHead Handle Assembly

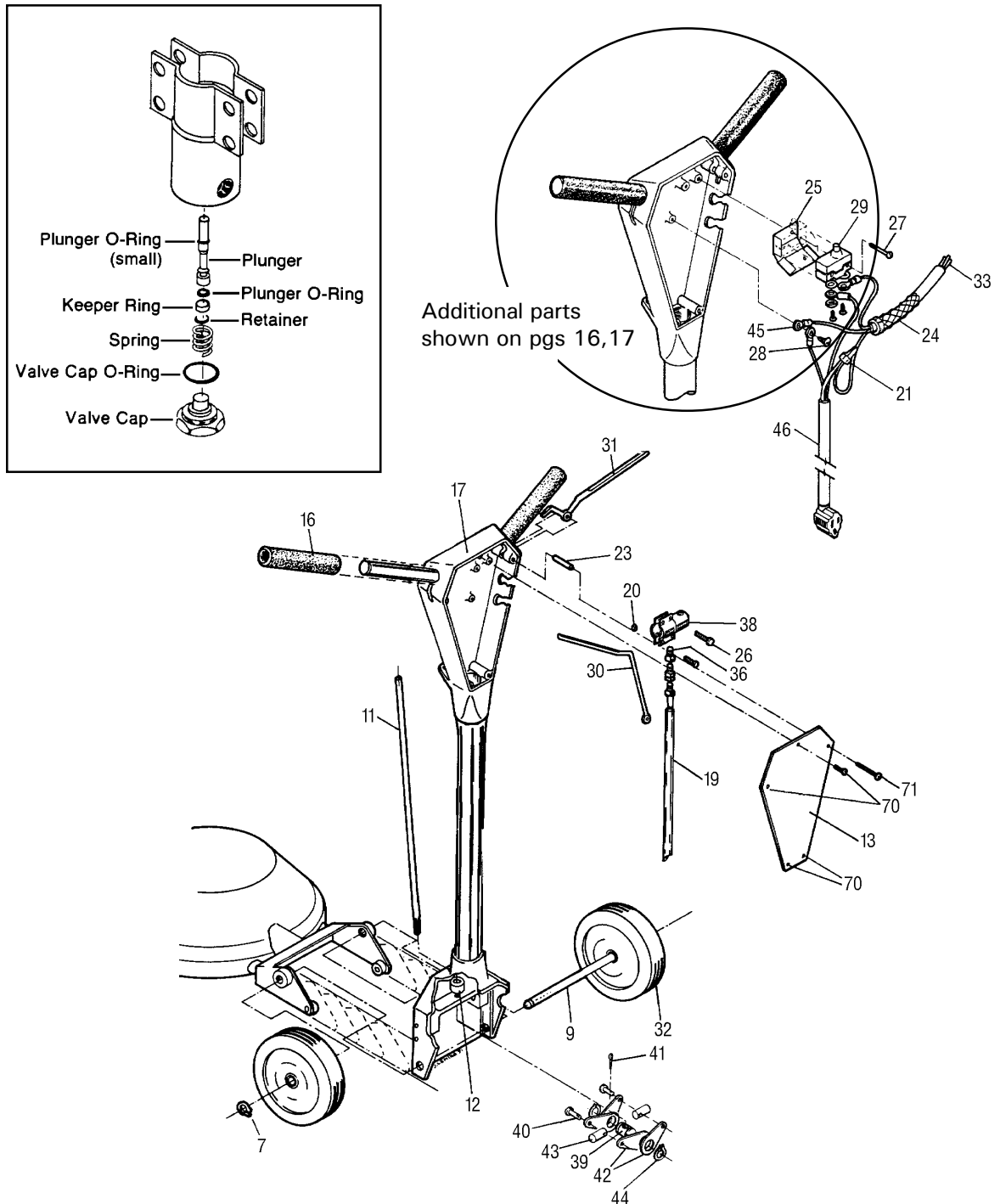
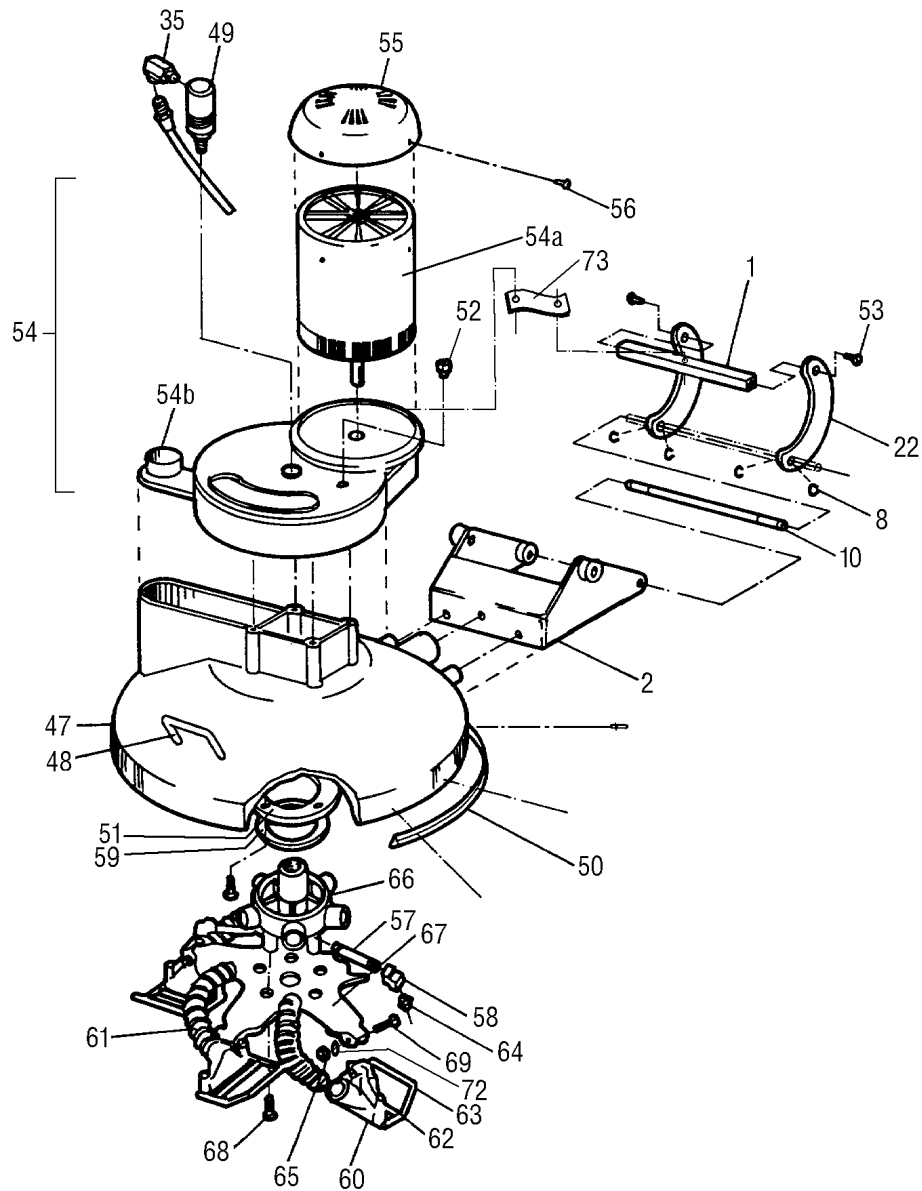


Figure 2 PowerHead Base Assembly



PowerHead Parts List

ITEM	PART NO	DESCRIPTION	QTY
1	015-066	Bracket, Hood	1
2	015-139	Bracket, Handle Brace	1
7	139-009	Ring, Snap Ring (E-Clip) x ½"	2
8	139-010	Ring, Snap Ring (E-Clip) x 5/16"	4
9	141-004	Axle, Wheel	1
10	141-005	Rod, Handle Arc	1
11	141-007	Rod Assy, Handle Adjusting	1
12	020-004	Collar, 3/8" Set	1
13	041-014	Cover, Handle Access	1
16	061-001	Handle, Foam Grip	2
19	068-127	Hose, Solution Valve to Rotary Union	1
20	094-010	Nut ¼"-20 s/s Hex	1
21	094-021	Nut, Wire - Yellow	1
22	107-096	Handle Arc	2
23	107-103	Trigger Pivot	1
24	108-012	Protector, Power Cord Relief Grip	1
25	108-014	Shield, Micro Switch	1
26	143-002	Screw, ¼"-20 x 1" HHC s/s	3
27	143-048	Screw, 6-32 x 1" Rnd Hd Mach s/s	2
28	143-336	Screw, 10-32 x ¼" s/s Pan Head	1
29	157-032	Switch, Micro	1
30	167-009	Trigger, o/s Brass Solution Valve	1
31	167-010	Trigger, Power	1
32	177-001	Wheel, 8"	2
33	178-004	Cord, 14/3 x 50' Gray - Power	1
36	052-506	Nipple, ¼" x 9/16—18 JIC s/s	1
38	169-047	Valve, s/s Solution	1
39	094-030	Nut, Adjusting	1
40	103-012	Pin, ¼ x 7/8" Clevis	2
41	103-013	Pin, 3/32 x ½" s/s Cotter	2
42	107-097	Link	4

ITEM	PART NO	DESCRIPTION	QTY
43	107-101	Plunger	2
44	139-006	Ring, 5/8" Snap	2
45	037-016	Terminal, #10 Ring - 16 AWG	1
46	178-039	Cord, 14/3 x 6' Gray	1
47	006-009	Base Assembly	
48	061-027	Handle, Base - Lift	1
49	052-522	Rotary Union, 1/8" NPT s/s	1
50	078-108	Kit, Roto Shroud Bumper and Rivet	1
51	105-008	Plate, Cast Base - Seal	1
52	106-014	Plug, PowerHead Gearbox Vent	1
53	143-166	Screw, 10—24 x 3/8" s/s Btn Hd Cap	2
54	604-052-005	Motor/Gearbox Assembly	1
54A	604-052-006	Elect. Motor Assembly	1
54B	059-001	Gearbox Complete, Spur	1
54C	604-052-010	Elect. Motor Assy, WDR	1
55041-123		Cover, 1/2 HP TEFC Motor	1
56	143-096	Screw, 3/8 16 x 3/4" s/s Btn Hd	3
57	052-515	Nipple, 1/8" x 4" s/s	5
58	052-513	Elbow, 1/8" s/s Female	5
59	057-047	Gasket, Felt Hub	1
60	064-022	Head, New Skid Assy Complete	5
61	068-174	Hose, Vac Hub/Skid	1
62	064-011	Head, New Cast Skid-Weldment	1
63	107-049	Skid Bottom, New Style Shoe	1
64	076-037	Jet, H 1/8VV 80015 SS-STD	5
Optional:			
	076-052	Jet, 1) 2 Piece Set Twist Out	5
	076-058	Jet, 1) 2 Piece Brass #8001	5
65	094-009	Nut, 5/16 — 18 s/s Nylock Half	5
66	107-040	Hub with Ring, Double Lead Thread s/s	1
67	107-089	S/S Heat Treated Star	1
68	143-012	Screw, 5/16 — 18 x 3/4" s/s HHC	5

ITEM	PART NO	DESCRIPTION	QTY
69	143-162	Screw, $\frac{5}{16}$ x 1" Stripper - 1/4-20 s/s	5
70	143-166	Screw, 10-24 x $\frac{3}{8}$ " s/s Btn Hd Cap	4
71	143-065	Screw, 10-24 x 1 $\frac{3}{4}$ " s/s Btn Hd Cap	5
72	174-049	Washer, $\frac{5}{16}$ " s/s Flat	3
73	015-009	Bracket, Handle Brace	1
Not Shown:			
	094-036	Nut, NPT Pipe Plastic used w/ Item No. 24	1
	143-096	Screw, 16 x 1" HHC s/s used with Item No. 54	3
	174-055	Washer, Latch Pivot used with Item No. 54	3
	174-057	Washer, $\frac{3}{8}$ " s/s Lock used with Item No. 54	3

Figure 3 Handle Assembly-Detail

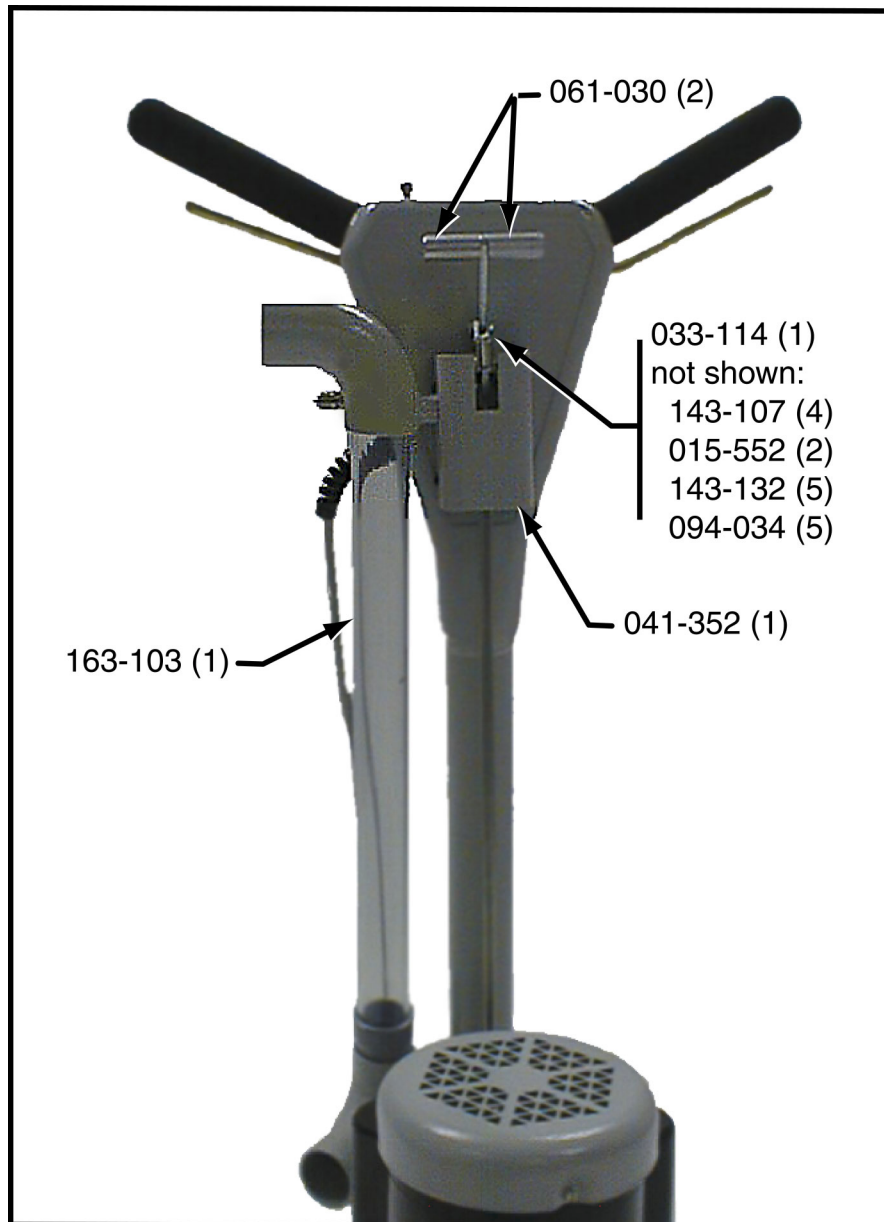
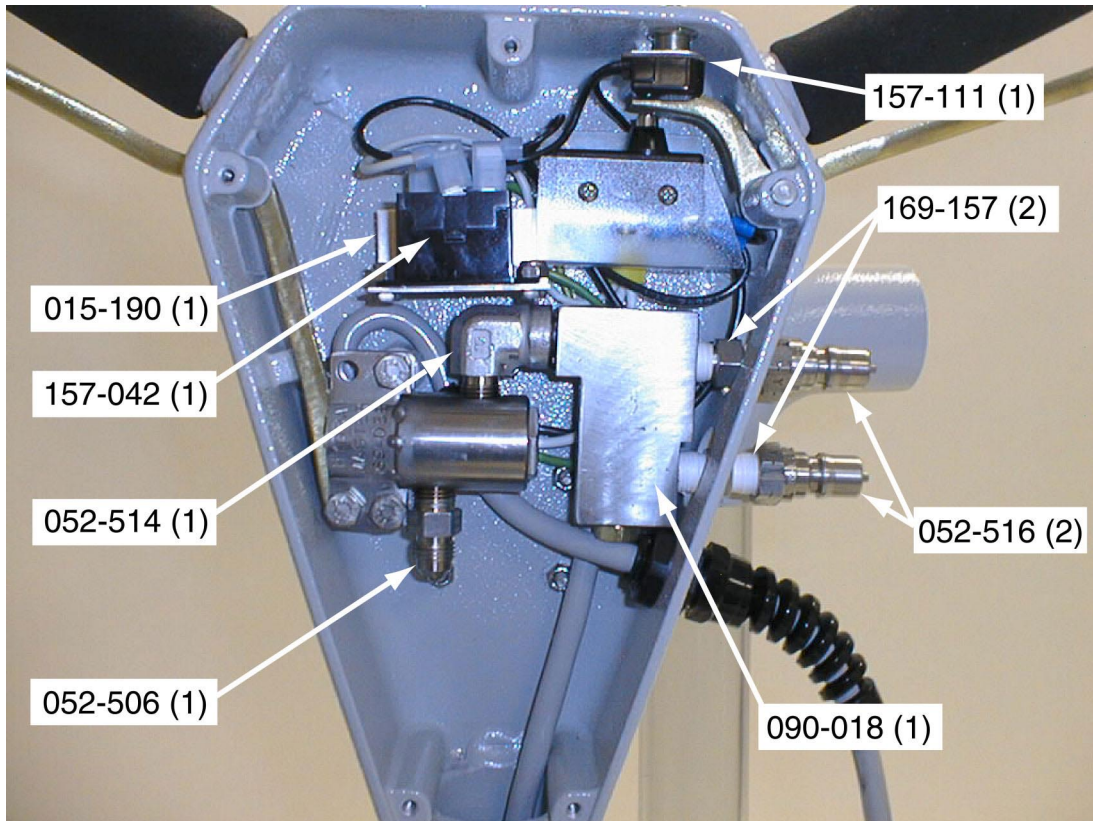


Figure 4 Handle Assembly-Detail

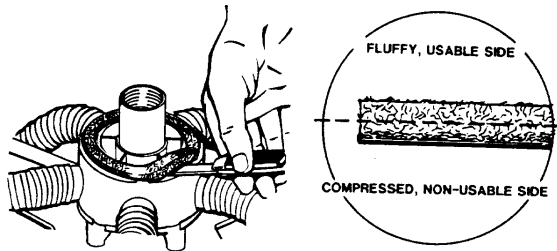


Repair

Removal of Components

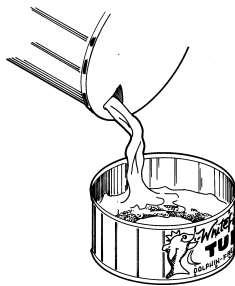
Felt Vacuum Seal Replacement:

A worn or unlubricated seal 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.



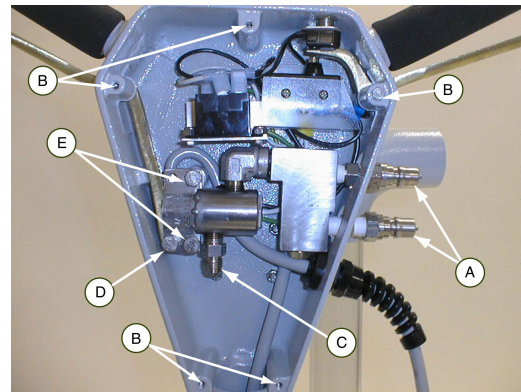
First, remove the vacuum head assembly as previously described. Using a pocket knife, carefully pry the seal up and lift it out. If the seal appears worn or glazed so that it will not lubricate well, try turning it over. If that does not work, or if it is damaged, replace it with a new one. We recommend changing the felt seal after 10 hours of use. Replace it with a spare, soaked seal. Press the seal in place and saturate it with a quality 30 weight SAE motor oil. Always place the flattened, used seal in an oil bath to rejuvenate.

NOTE: A tuna fish can is the right size and shape and does not require a large amount of oil (a plastic container for this purpose is included in the Service Kit, Part No. E2000-SK) This seal and its condition play an important part in the optimum performance of your PowerHead.



High Pressure Valve Assembly:

The valve assembly's moving parts will eventually wear out in time. Its repair or replacement is a relatively simple operation.



1. Remove the 440 male quick connect (A) with a wrench.
2. Remove the five allen head screws (B) in the back plate on the handle and lift the back panel off.
3. Disconnect the stainless steel hose (C) from the bottom of the valve assembly.
4. Remove the bolt (D) holding the trigger.
5. Remove the two bolts (E) holding the valve assembly in the handle and pull out.
6. The valve may now be rebuilt or replaced.

◆ CAUTION ◆

If the valve has been frozen, inspect it for leakage before reinstalling the back plate.

Troubleshooting

No.	Problem/Possible Cause	Solution
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 cleaning head and clear all vacuum lines and heads of debris.
1.3	Low vacuum flow from power source.	Refer to Troubleshooting section of equipment manual.
No.	Problem/Possible Cause	Solution
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	Kinked or clogged solution hose.	Remove hose. Repair or replace.
2.3	Cleaning hub not properly threaded to shaft.	Remove cleaning hub from shaft. Clean and rethread onto shaft.
No.	Problem/Possible Cause	Solution
3.0 Water Leak at Rotary Union		
3.1	Foreign matter in rotary union seal.	Dismantle rotary union. Clean. Reassemble and install.
No.	Problem/Possible Cause	Solution
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.

No.	Problem/Possible Cause	Solution
5.0	Loss of Oil from Gearbox.	
5.1	Loose or ruptured oil seal.	Replace damaged oil seal. Refill gearbox with oil.
No.	Problem/Possible Cause	Solution
6.0	No Power.	
6.1	PowerHead 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
No.	Problem/Possible Cause	Solution
7.0	Head Wobbles During Operation.	
7.1	One leg of cleaning head is bent.	Straighten leg.

Limited Warranty Plan

Harris Research, Inc (HRI) warrants PowerHead AX 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 HRI, nor to assume for HRI any other liability in connection with any HRI 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 Chem-Dry Franchisee (owner) without the written consent of HRI. HRI's warranty shall cease to be in effect.

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

HRI agrees, at its option, to repair at the point of shipment, or to replace without charge, any parts or parts of products of HRI manufacture, which within the specified warranty period shall be proved to HRI satisfaction to have been defective when shipped, provided the Chem-Dry Franchisee (owner) promptly notifies HRI, in writing, of such alleged defect. HRI 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. HRI's liability to the Chem-Dry Franchisee (owner), 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 HRI within 30 days. No warranty liability whatsoever shall attach to HRI unless and until HRI 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 HRI shall have no liability for consequential, incidental or other damages howsoever caused.

(continued on the following page...)

(Limited Warranty Plan continued...)

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 HRI, to be expendable in normal use, including, but not limited to paint, labels and other cosmetic parts or features.

Freezing of any water or chemical related component will VOID all warranties on water or chemical related components, internal or external, of this equipment.

Deposits and buildup in the water or chemical systems due to hardness in the water used or chemicals which results in deposits, will VOID all warranties on affected components.

All recommended maintenance must be performed by authorized service personnel.

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

Coverage Schedule

Frame, Handle, Body	3 years
Gearbox	1 year
Motor	1 year
Valves, Hoses	1 year