



Electronic Service Manuals

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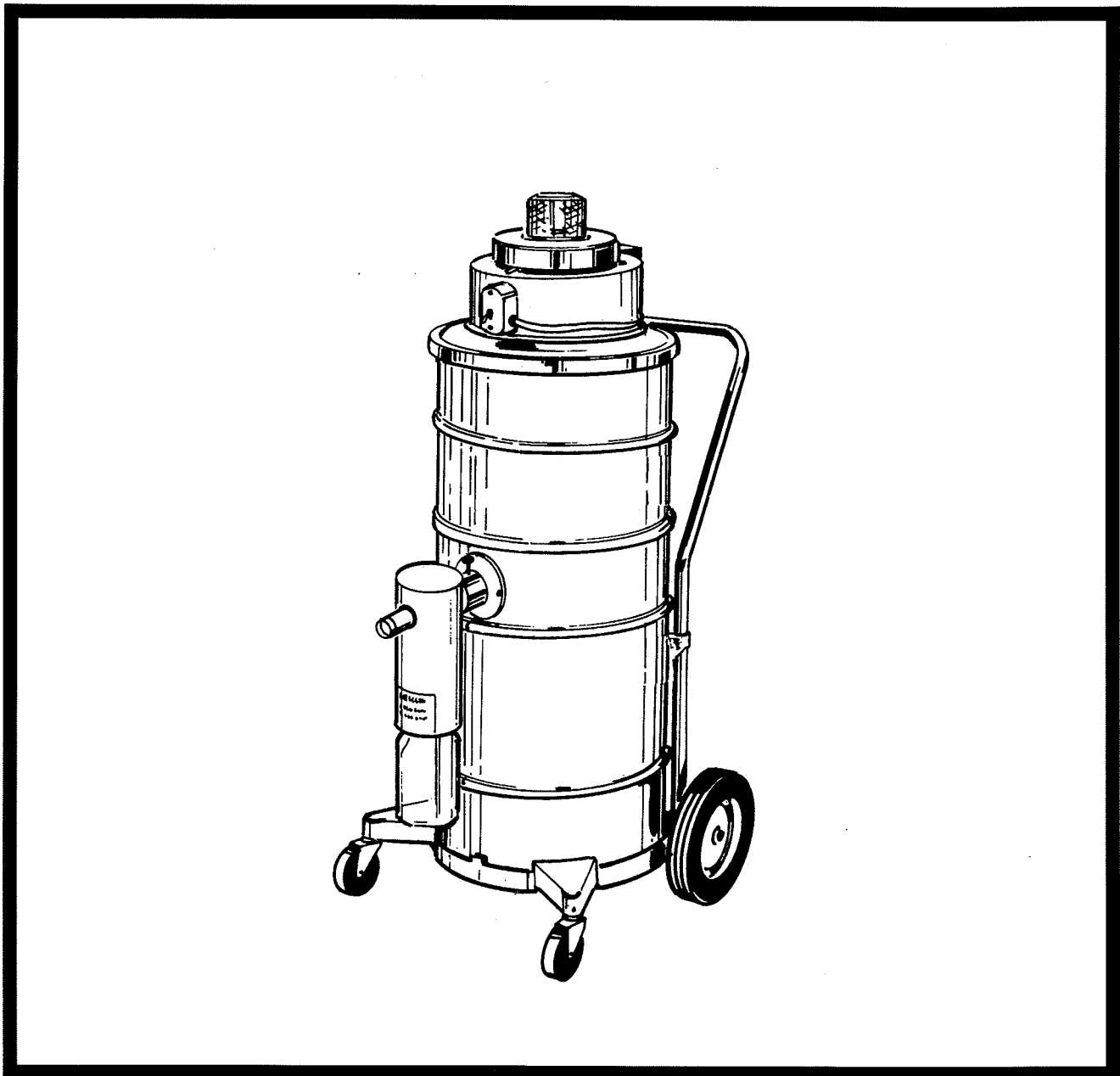
Serving the Cleaning Industry Since 1922

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Mercury Vacuum

Model: MRS 1-4

■ OPERATION ■ SERVICE ■ PARTS ■ CARE



Revised 8/98

Minuteman[®]

OPERATING INSTRUCTIONS

INSPECTION

Carefully unpack and inspect your machine for shipping damage. Each unit is tested and thoroughly inspected before shipment, and any damage is the responsibility of the delivering carrier who should be notified immediately. Read all instructions carefully before operating.

WARNING

Models C81015-01, 03; C82015-01, 03; C83015-01, 03 Dry Only

Electrical shock could occur if used on wet surfaces. Do not expose to rain. Store indoors.

WARNING

Models C84015-01, 03, Wet and Dry

To avoid electric shock, do not expose to rain. Store indoors.

Electric motors can cause explosions when operated near explosive materials or vapors. Do not operate this machine near flammable material such as solvent, thinner, fuels, grain dust, etc.

SPECIAL WARNING TO PURCHASER

Use of replacement filters and/or prefilters not manufactured by Minuteman International Inc. or its designated licensees, will void all warranties expressed or implied. A potential health hazard exists without exact original equipment replacement.

CAUTION

Hazardous materials must be disposed of properly. Never throw contaminated debris in your usual trash receptacle. Place debris in a plastic bag or can marked "HAZARDOUS MATERIALS" and take to a hazardous waste handler.

ELECTRICAL

This machine is designed to operate on a standard 15 amp, 115 volt, 60 hz, AC circuit. Voltages below 105 volts AC or above 125 volts AC could cause serious damage to the motor.

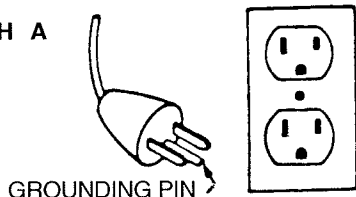
GROUNDING INSTRUCTIONS

To protect the operator from electrical shock, this machine must be grounded while in use. This machine is equipped with an approved three-conductor power cord and grounding type plug to fit the proper grounding type receptacle.

This machine is for use on a nominal 120 volt circuit and has a grounding plug that looks like the plug illustrated in sketch A. Make sure that the machine is connected to an outlet having the same configuration as the plug. No adapter should be used with this machine.

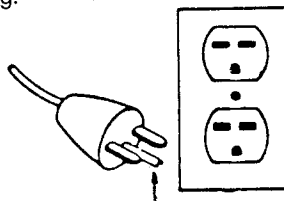
For equipment rated 150-250 volts: If the machine is provided with an attachment plug as shown in sketch B, it is intended for use on a 240 volt (nominal) circuit. No adapter is available for this plug.

SKETCH A



GROUNDING PIN

SKETCH B



GROUNDING PIN

EXTENSION CORDS

If an extension cord is used, the wire size must be at least one size larger than the power cord on the machine and must be limited to 25 feet in length. Extension cord must be three-wire grounded.

MAINTENANCE AND USAGE

Keep the motor intake cooling air screen clean. If this screen (on top of the motor) becomes clogged, it restricts the flow of cooling air to the motor and will cause overheating.

No lubrication of the motor is required. Machine is equipped with sealed bearings.

For optimum performance, empty and clean filter bag regularly. A clogged and dirty bag restricts the flow of air and results in reduced vacuum.

Check carbon brush periodically. Replace when worn down to approximately 1/2" in length.

Always unplug the machine when removing the motor head off the tank. This will prevent the accidental starting of the motor and the possibility of fingers or objects getting into the unprotected impeller intake.

CAUTION

The MRS-1, 2, 3, and 4 Mercury Recovery Vacuums have been designed for the recovery of liquid mercury or mercury oxides as a result of spills. They should not be used as conventional vacuums for every day cleaning unless it applies to the recovery of mercury contaminated debris.

When not in use the machine and all its components should be stored in a cool, dry and well ventilated room. If possible, the room should be vented to outside air. Storing area **should not** have air return vent leading to air circulating central system.

Always wear the required and proper face mask, gloves and protective clothing when cleaning up a mercury spill. Check with your Health/Safety Department or your work supervisor if you are not familiar with the use and procedure for operating a Mercury Recovery Vacuum.

OPERATING AND FILTER CARE INSTRUCTIONS

The Minuteman Mercury Recovery Vacuums, MRS-1, 2, 3 and 4, have been designed to clean up liquid mercury and mercury oxide spills. An activated charcoal canister filter is provided to absorb and contain the gas vapor given off by the liquid mercury. In some applications where the liquid mercury is in the presence of another dry toxic dust material, a H.E.P.A. (High Efficiency Particulate Air) filter is also used. The H.E.P.A. filter module is always used ahead of the charcoal filter so any fine toxic dust particles, down to .3 micron size, are removed from the exhausted air before it passes through the charcoal filter.

Do not at any time attempt to bypass, remove, substitute, or by any other means change the filters recommended for use with this vacuum. Use only approved Minuteman filters and filter bags.

Do not at any time, or in any way, attempt to clean or remove dust particles that may collect or accumulate on the surface of the H.E.P.A. filter media.

Do not reverse or attempt to clean "prefilters" which have accumulated dust for the purpose of reusing them.

Since liquid mercury gives off a gas vapor, you are required to remove all traces of it within the vacuum tank assembly and the mercury separator after each use and prior to storing the vacuum. Any mercury residue left in the vacuum will continue to give off vapor which will be absorbed by the charcoal filter, thereby reducing the life of the charcoal filter.

Remove disposable collector bag and prefilters at the end of each cleanup period.

The efficiency of your vacuum will be determined by the amount and the density of the material you are vacuuming. All vacuums will lose efficiency as they become filled. The operator must, therefore, be the one to determine the frequency for emptying and changing filters based on the efficiency and performance of the vacuum during the cleaning process.

GENERAL INFORMATION

The charcoal filter supplied with your Mercury Recovery Vacuum is a specially activated, impregnated carbon design to increase the absorbent capacity for mercury vapor gases. The life of the charcoal canister is determined by the volume of mercury vapor it is exposed to.

The vacuum lid assembly is equipped with a timer which will record actual running time of the unit. The timer is not resettable, therefore, you are required to keep a permanent log book to indicate each replacement of the charcoal filter.

The log will give the vacuum operator a record of the life span of each filter and approximate time for changes.

Monitoring the exhaust air with vacuum running is the only accurate way to determine the continued efficiency of the charcoal filter.

When not in use, your Mercury Recovery Vacuum and all its components should be stored in a cool, dry and well ventilated room. If possible, the room should be vented to outside air. Storing area should not have air return vent leading to air circulating central system.

ASSEMBLY PROCEDURE FOR MRS-1

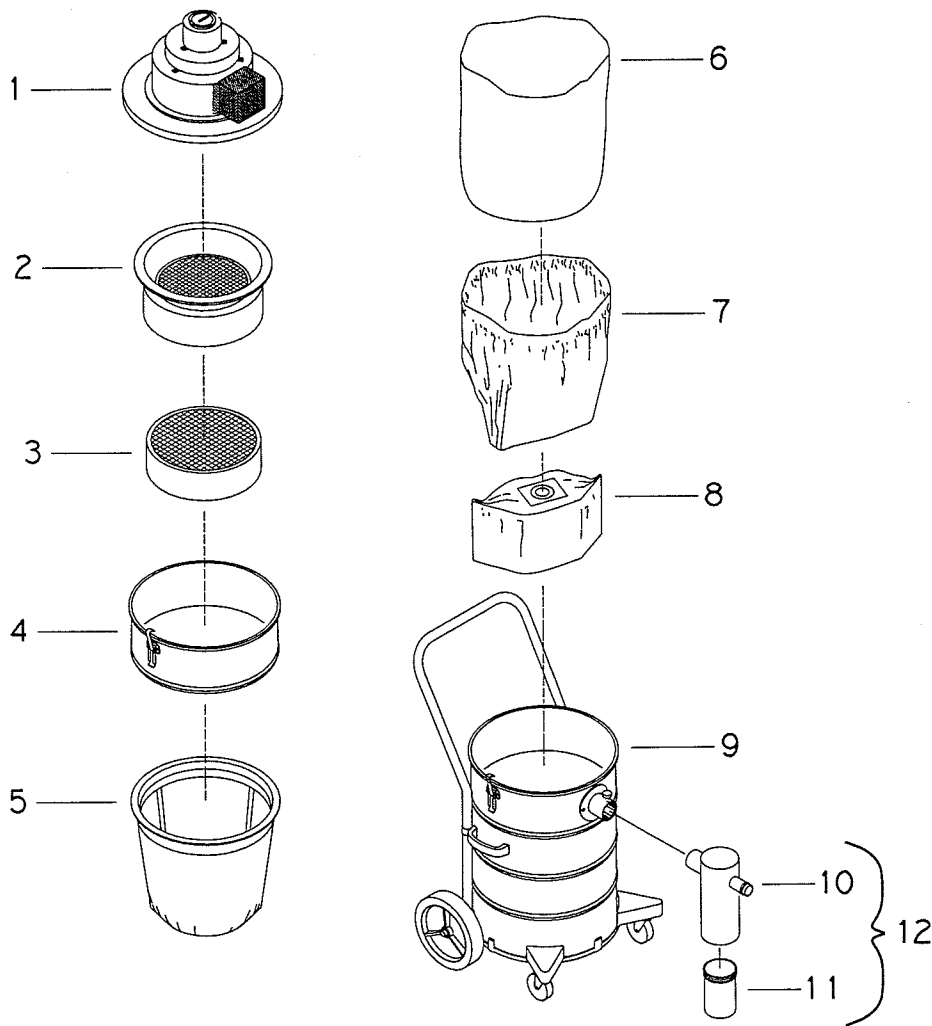
See Schematic Figure 1, Page 4

1. Tank assembly is equipped with intake down tube for attaching disposable collector bag.
2. Carefully open the folds of disposable collector bag No. 8 and insert into tank.
3. Place the cardboard collar onto the intake tube and carefully pull the collar over the tube until the rubber gasket is past the ring on the end of the tube.
4. Take the paper filter protector No. 7 and insert it into the tank. Snap the elastic band around the rim of the tank. allow two inches to overlap the tank rim.
5. Place the white Dacron filter into the tank. Snap the elastic band around the rim of the tank in the same manner as the filter protector.
6. Place bag frame No. 5 down into the Dacron filter.
7. Install adapter assembly No. 4 on top of tank as shown.
8. Assemble charcoal filter module:
 - a. Place holder assembly No. 2 with rim gasket down, clamps up, on table.
 - b. Remove any plastic wrapping from charcoal canister No. 3.
 - c. Place canister into holder with cover toward the seating gasket.
 - d. Position latches over the rim of the canister and snap down one at a time.
9. Place charcoal module assembly into the tank with gasket seating around adapter rim.
10. Place the vacuum motor lid assembly No. 1 onto the tank making sure it seats all the way around and engage lid latches.
11. Screw collector jar No. 11 onto separator No. 10.
12. Insert separator onto tank intake.
13. Press the hose end without cuff onto the intake of the separator.
14. Assemble the wands and curved ends with floor tool on one end and hose adapter on other end. Attach this wand assembly to end of vacuum hose.
15. Plug in electric cord and turn vacuum on. Spray aerosol anti-static spray in through floor tool for 2 to 3 seconds. Anti-static spray will coat the inside of the wand assembly hose and separator, reducing static electricity during liquid mercury pickup.

PROCEDURE FOR CLEANING MRS-1

1. Remove wand assembly or other pickup tools from hose; disassemble and place in plastic bag.
2. Remove hose from separator, insert plugs provided at each end, and place in plastic bag with tools.
3. Remove jar from separator, then cap jar and store in safe place.
4. If separator is left on vacuum, plug all openings with caps provided.
5. Unplug electric cord from electric service and remove vacuum lid assembly.
6. Before removing charcoal filter module, take the elastic band of the Dacron filter bag and snap it over the rim gasket of the module.
7. To remove filter bag protector, reach down to the bottom of the filter, pull up on the center of the bag so you are turning it inside out. Pull up as far as possible and carefully remove the elastic band around the rim of the tank without allowing it to snap off. Crumple the filter bag into a tight ball and place it in a disposable plastic liner bag.
8. Reach into the tank and gently push the collar of the filter bag down and off the intake tube. Place one of the "mercury caution decals" over the bag opening and carefully remove the disposable filter bag from the tank. Place in plastic liner bag with other contaminated debris.
9. Using damp disposable paper towels or rags, wipe down the inside of tank assembly. Place wipers in plastic liner bags.
10. All traces of mercury residue must be removed prior to storing Mercury Recovery Vacuum. Inside of tank should be checked with a "sniffer" or comparable air measuring device to determine if all traces of mercury have been removed.
11. Re-assemble vacuum following procedure above on Page 3. Using a "sniffer" or other air measuring device, plug in electric cord and turn on vacuum. Monitor the exhaust air coming through the vacuum with all filters in place. The highest safe exposure concentration level is 0.05 mg/M^3 . Any reading above this level coming through the exhaust would indicate that the charcoal filter requires changing.
12. When charcoal filter is replaced, dispose of canister in same plastic bag with other contaminated debris. **(DO NOT STORE NEAR HEAT OR BURN ANY MERCURY CONTAMINATED ITEMS.)**

1. Lid Assy 255115 (115V) 255125 (230V)
2. Filter Holder 750487
3. Mercury Vapor Canister..... 761760
4. Adapter 750080 (PTD) 750081 (SS)
5. Cloth Bag Assy 805062
6. Dacron Filter..... 805005
7. Filter Protector 805038PKG (10)
8. Disposable Paper Bag..... 760598PKG (10)
9. Tank 15 Gallon 750610 (SS) 750612 (PTD)
10. Separator..... 750490
11. Separator Jar..... 761764
12. Separator Comp 750489



MRS-1 Fig. 1

ASSEMBLY PROCEDURE FOR MRS-2 AND MRS-3

See Schematic Figure 2, Page 6

Steps 1 through 9 follow same procedure as outlined for MRS-1 on Page 3.

10. Install adapter ring as shown.
 11. Assemble H.E.P.A. filter module:
 - a. Place H.E.P.A. filter module No. 2 with rim gasket down on table.
 - b. Place pink impact filter No. 3 smooth side down and center over the H.E.P.A. filter.
 - c. Place screen and open clamp No. 4 onto H.E.P.A. filter. Lock clamping latch.
 12. Set H.E.P.A. filter module into adapter assembly. Center so rim gasket seats evenly around tank.
 13. Place the vacuum motor assembly No. 1 onto adapter and secure with lid latches.
- * The MRS-2 is used for the recovery of mercury contaminated dirt in dry form. Assemble metal hose swivel connector on hose and insert into hose intake. All dry debris recovered will go into the disposable filter bag.
- * For model MRS-3, assembly is same as above with the addition of the separator No. 16 which is inserted into the tank hose intake. This unit is used to recover liquid mercury spills in the presence of other toxic dust materials. The MRS-3 offers the capability to recover and separate the mercury from the dry material.

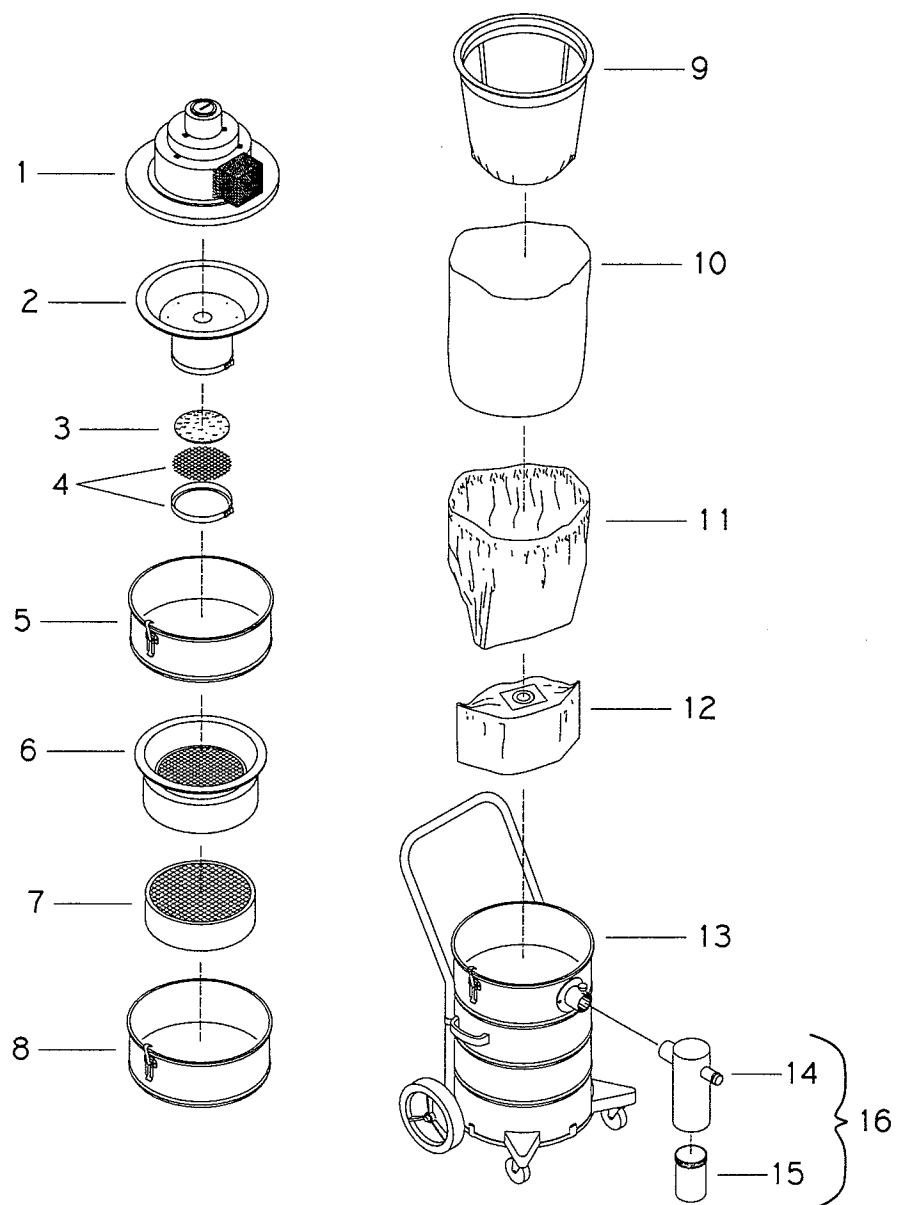
PROCEDURE FOR CLEANING MRS-2 AND MRS-3

1. Remove vacuum hose, tools and attachments and place in plastic liner bag.
2. Unplug electric cord from electric service and remove vacuum lid assembly.
3. Remove H.E.P.A. filter assembly, turn upside down and visually check pink impact filter. If impact filter is discolored and packed with dust particles, replace it. Follow procedure No. 11 above.
4. Remove 1 to 1 adapter.
5. Remove charcoal filter assembly.
6. Remove white Dacron filter with bag frame.

Steps 7, 8, 9 and 10 follow same procedure as outlined for MRS-1 on Page 3.

11. On MRS-3 where the separator has been in use:
 - a. Remove jar from separator and then cap. Store in safe place or dispose in plastic liner bag with other contaminated debris.
 - b. Remove separator from vacuum, plug all openings with caps provided. Store in plastic bag liner with other tools and attachments.
 - c. Plug hose intake on vacuum tank.
12. Re-assemble vacuum following procedure above for MRS-2 and MRS-3, steps 1 through 13.

1. Lid Assy 255115 (115V) 255125 (230V)
2. H.E.P.A. Filter Module 750493
3. Pink Prefilter 110121PKG (12)
4. Clamp Assy 750006
5. Adapter 750080 (PTD) 750081 (SS)
6. Filter Holder 750487
7. Mercury Vapor Canister 761760
8. Adapter 750080 (PTD) 750081 (SS)
9. Cloth Bag Assy 805062
10. Dacron Filter 805005
11. Filter Protector 805038PKG (10)
12. Disposable Paper Bag 760598PKG (10)
13. Tank 15 Gallon 750610 (SS) 750612 (PTD)
14. Separator 750490
15. Separator Jar 761764
16. Separator Comp..... 750489



MRS-2 and MRS-3 Fig. 2

ASSEMBLY PROCEDURE FOR MRS-4

See Schematic Figure 3, Page 8

1. Place water shutoff assembly No. 5 onto tank centering gasket around rim.
2. Place 1 to 1 adapter No. 4 onto tank, center and engage tank lid latches.
3. Install charcoal filter assembly No. 3 into adapter No. 2. Using latches place in assembly No. 4.
4. Place the vacuum motor lid assembly No. 1 onto tank making sure it seats all the way around the adapter rim.

MRS-4 is ready for the recovery of mercury contaminated liquids only.

5. Attach hose assembly and tools required for your job applications.
6. Turn on vacuum and spray anti-static spray into end of tool you are using, proceed with cleanup.

DO NOT USE THIS MACHINE TO PICK UP FLAMMABLE OR EXPLOSIVE LIQUIDS OR OTHER MATERIAL.

DO NOT USE THIS MACHINE IN AN EXPLOSIVE ATMOSPHERE.

PROCEDURE FOR CLEANING MRS-4

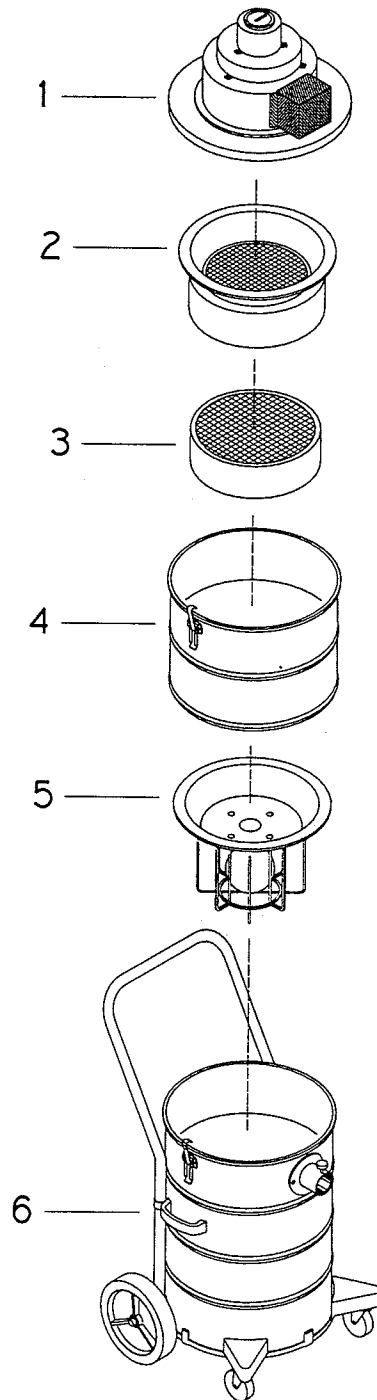
1. Check with your Health/Safety Department for the proper procedure for disposing mercury contaminated liquid which you have recovered in the MRS-4 vacuum.
 2. Unplug electric cord from electric service and remove vacuum lid assembly.
 3. Remove charcoal filter assembly.
 4. Remove 1 to 1 adapter.
 5. Remove water shutoff assembly and wipe down underside of water shutoff. Place wiping material in plastic liner bag with proper label.
 6. Dispose of mercury contaminated liquid in vacuum tank in accordance with procedures set up by your Health/Safety Department.
 7. Wipe down inside of tank assembly, place wiping material in plastic liner bag.
 8. Re-assemble MRS-4 following procedure above.
-

Lid Assy..... 255115 (115V) 255125 (230V)

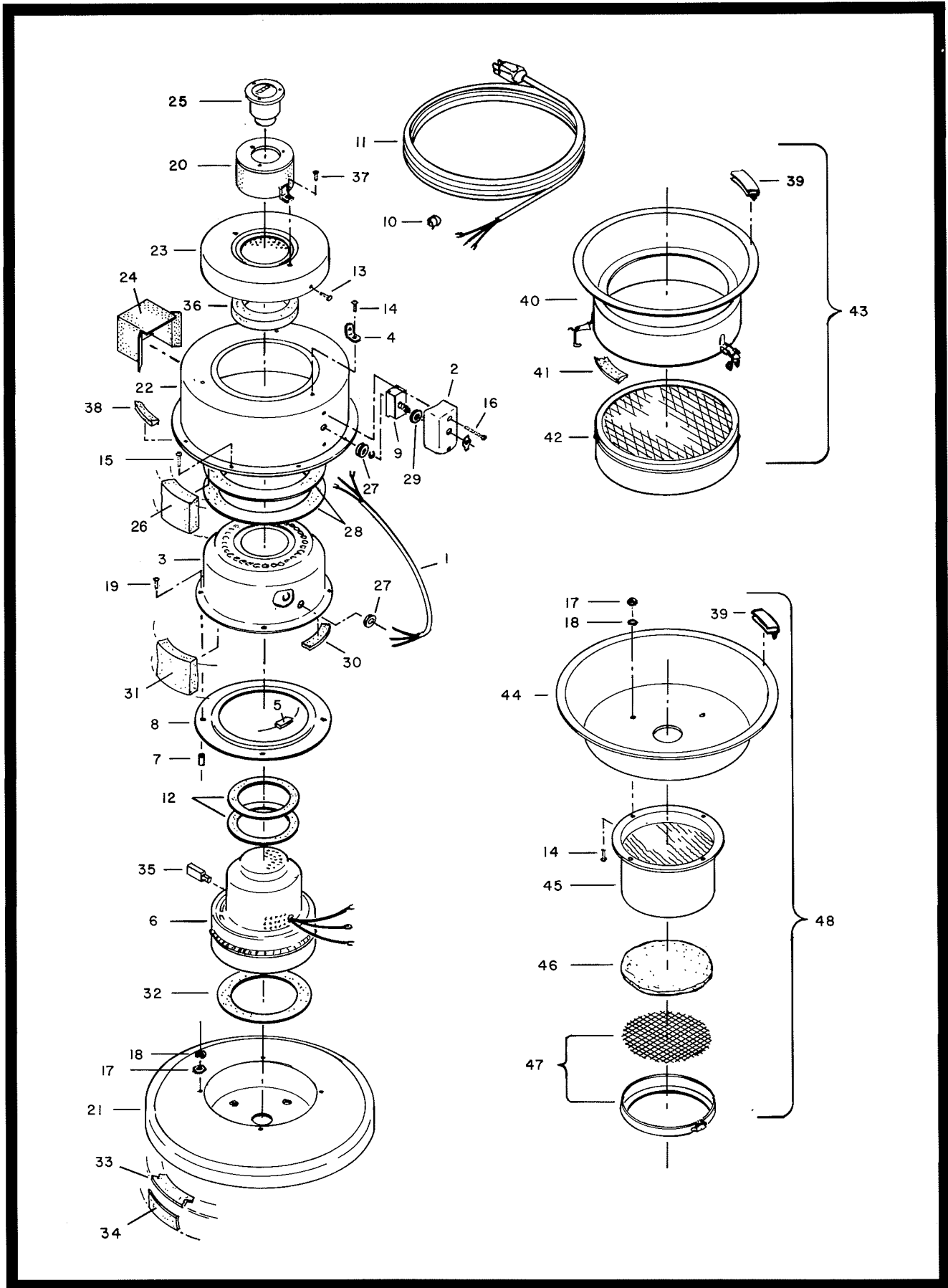
1:1 Adapter
Painted.....110902
Stainless Steel.....110901

Float Assy.....110408

Tank Assy w/o Down Tube
Painted.....750614
Stainless Steel.....750616



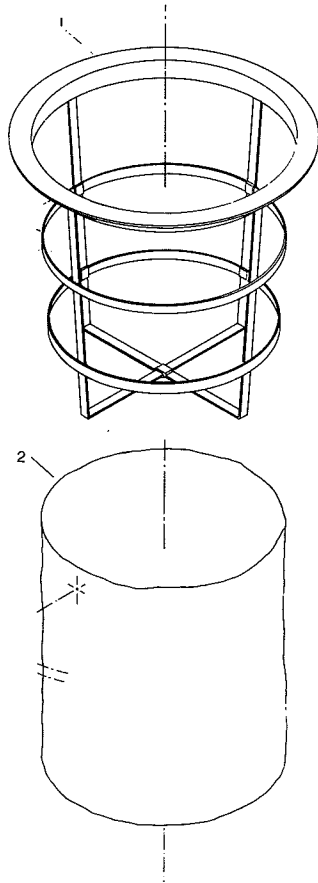
MRS-4 Fig. 3



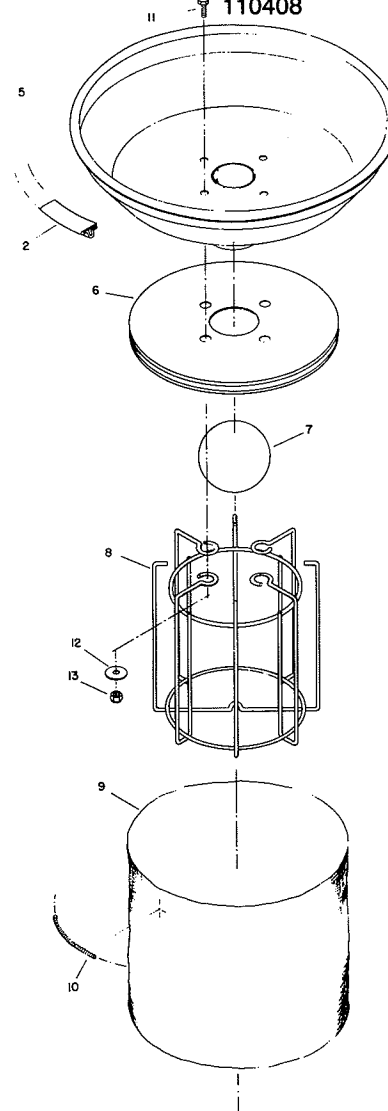
Parts Listing

ITEM NO.	PART NO.	QTY.	DESCRIPTION
1	101018	1	Cord Assy.
2	101019	1	Switch Box
3	101006PTD	1	Inter Vent Dome
4	101030	3	Bracket
5	255030	1	Gasket
6	255039	1	Motor 115V
7	255049	4	Spacer
8	255046PLT	1	Motor Retainer
9	380002	1	Switch, 1 1/2 HP
10	380032	1	Strain Relief
11	381020	1	Cord 16-3 x 50 ft.
12	250026	2	Gasket Motor
13	710356	3	SCR-MC 10-32 x 5/8
14	710330	8	SCR-MC 8/32 x 5/8
15	710356	8	SCR-MC 10/32 x 5/8
16	710365	2	SCR-MC 10/32 x 1 3/4
17	711304	8	Nut-Hex 8/32
18	711552	8	WSR-Lock #8
19	710362	4	SCR-MC 10/32 x
20	750492	1	HSG Weldment
21	750502	1	Lid SS, Includes Items 33, 34
22	750509	1	Exhaust Air Cover
23	101041PLT	1	Top Dome
24	750508	1	Air Baffle
25	761758	1	Timer
26	101033	2	Insulation
27	101008	2	Grommet
28	480049	2	Gasket
29	711556	1	WSR-Loc 1/2
30	101009	1	Gasket
31	101007	1	Insulation
32	480049	1	Gasket
33	480052	1	Gasket
34	480053	1	Gasket
35	255008	2	Carbon Brush Replacement
36	101005	1	Rubber Gasket
37	710356	2	SCR-MC 10-32 x 5/8
38	101012	1	Gasket
39	805018	1	Gasket
40	750487	1	Filter Mounting Assy.
41	762184	1	Gasket
42	761760	1	Vapor Canister MRS
43	750494	1	Mercury Vapor Assy.
44	762194	1	H.E.P.A. Mounting Plate
45	110010	1	H.E.P.A. Filter
46	110121PKG	1	Impact Filter, pkg. of 12
47	750006	1	Filter Retainer Ring
48	750493	1	H.E.P.A. Filter Assy.

CLOTH BAG WITH FRAME COMPLETE
805062

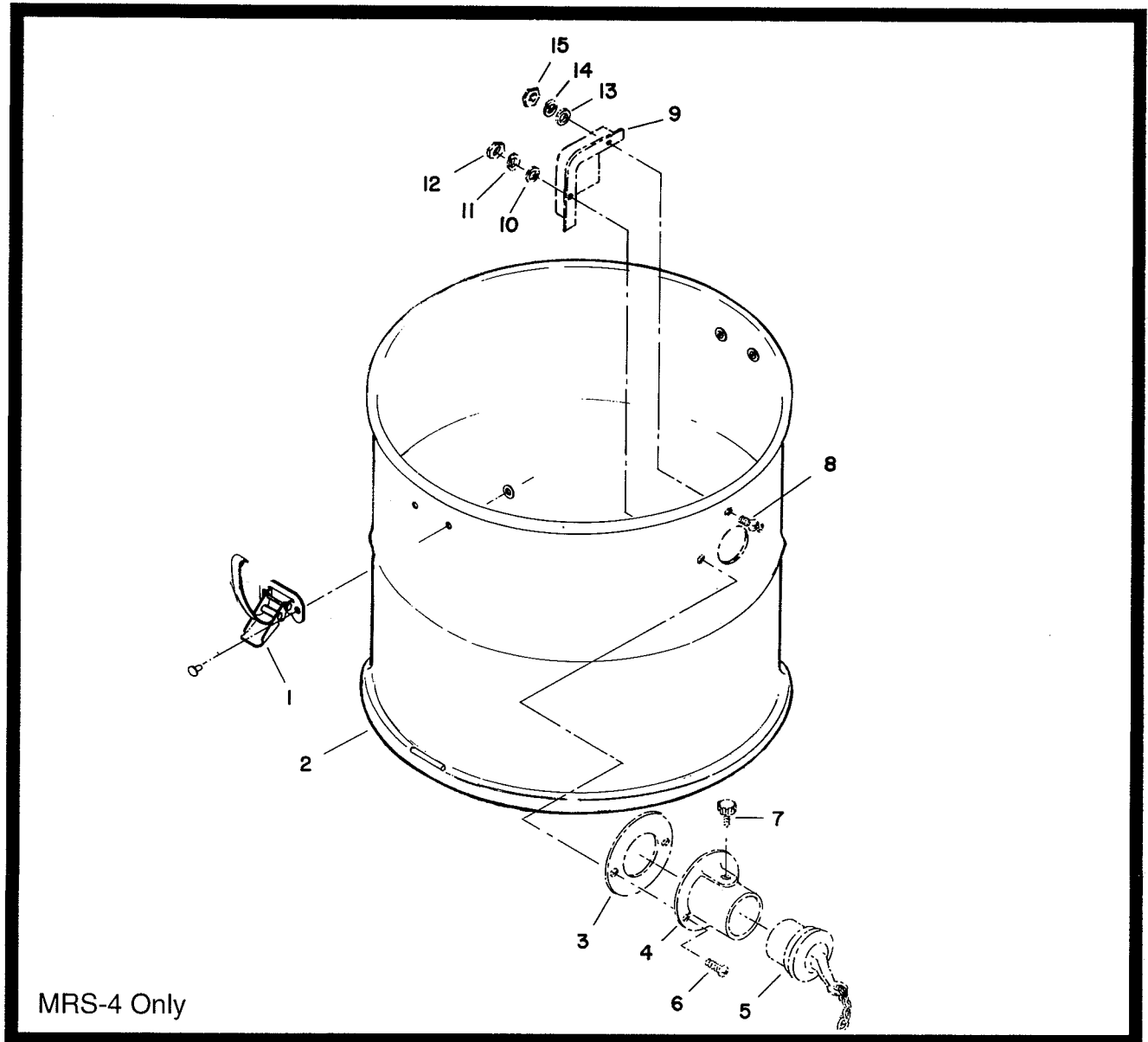


CLOTH BAG WITH FRAME COMPLETE
110408



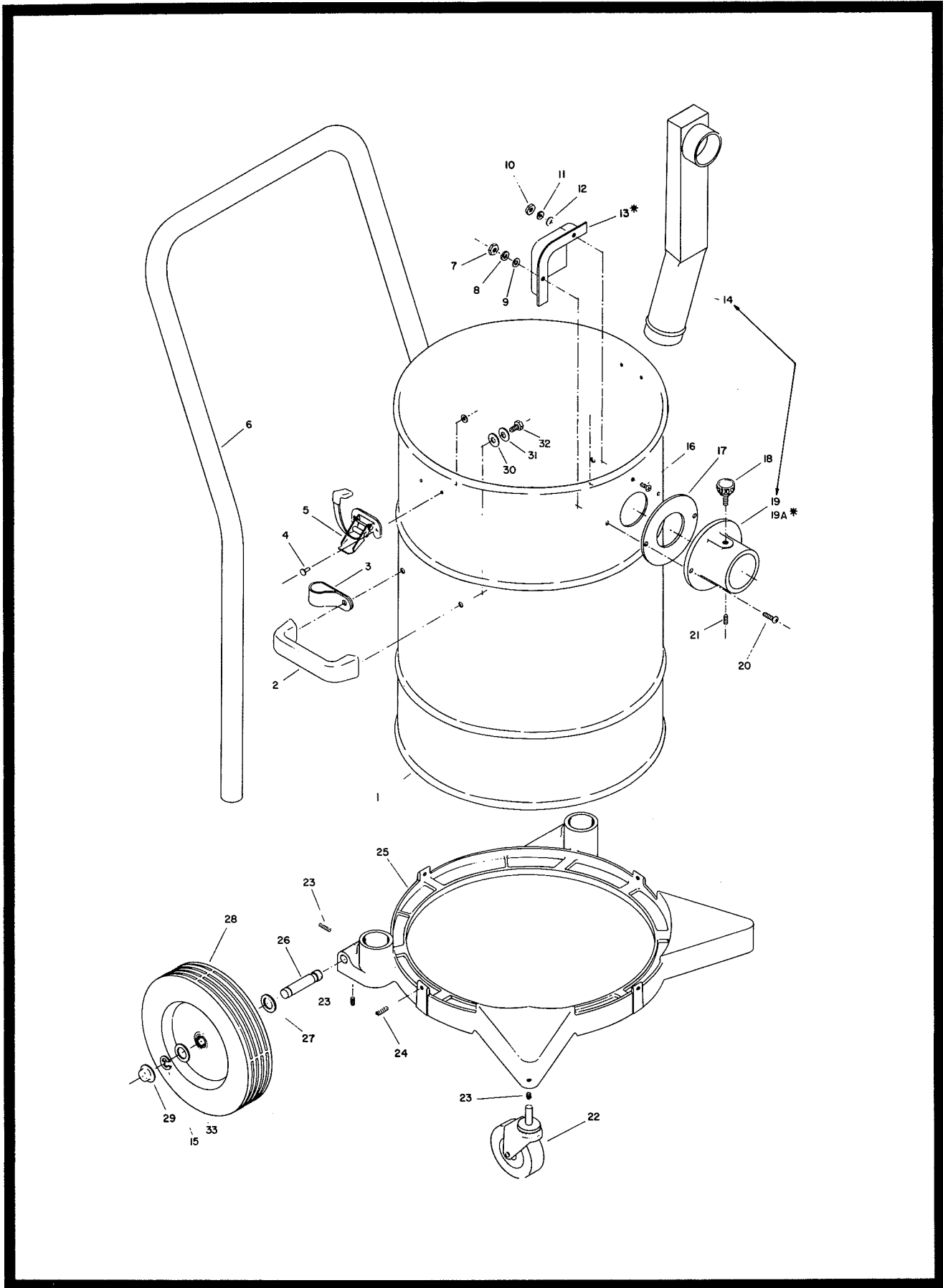
Parts Listing

ITEM NO.	PART NO.	QUANTITY	DESCRIPTION
1	750097	1	Bag Frame
2	805054	1	Bag Only
5	750405	1	Assembly-Plate Water Shutoff
6	760231MCH	1	Ring, Bag Retainer
7	380046	1	Ball, Float
8	380045CTD	1	Cage Float Assembly
9	760234	1	Lint Trap Bag
10	760260	1	Spring, Retainer
11	711203	4	BLT, 1/4-20 x .50 HHMS
12	711519	4	WSR, Flat 1/4 ID x 1" OD
13	711373	4	Nut, Nyloc 1/4-20



Parts Listing

ITEM NO.	PART NO.	QUANTITY	DESCRIPTION
1	761054	2	Latch
2	110902	1	Adapter 1:1 PTD Inc. #1
2a	110901	1	Adapter 1:1 SS Inc. #1
3	900036	1	Gasket
4	900112POL	1	Intake
5	750402	1	Plug Assy.
6	710356	2	SCR-MC 10-32 x .62
7	500033	1	Knob
8	710530	1	SCR-MC 8/32 x .50
9	900035	1	Deflector
10	711503	2	WSR, Flat #10
11	711543	2	WSR, Lock #10
12	711310	1	Nut-Hex 10/32
13	711502	1	WSR, Flat #8
14	711542	1	WSR, Lock #8
15	711304	1	Nut-Hex 8/32



Parts Listing

ITEM NO.	PART NO.	QTY.	DESCRIPTION
1	900004POL	1	Tank, Polished 15 Gal. SS
1A	900001	1	Tank, PLT 15 Gal.
2	900031POL	2	Handle, Tank Polished
3	900038	2	Clamp, Handle
4	711915	4	Rivet .19 x .28 x .37HD STNI
5	761054	2	Latch
6	900037PLT	1	Handle, Plated Common
7	711310	2	Nut, Hex 10-32 STPL
8	711543	2	WSR, Helical SPR LOC #10
9	711503	6	WSR, Flat #10
10	711304	1	Nut, Hex 8-32
11	711542	1	Washer, LOC #8
12	711502	1	Washer FLT #8
13	900035	1	Deflector
14	750498	1	Down Tube
15	711713	2	Retaining Ring E Type
16	710530	1	SCR-MC 8/32 x .50
17	900036	1	Gasket
18	500033	1	Knob
19	900113POL	1	Intake Polished for Item #14
19A	900112POL	1	Intake Polished for Item #13
19B	900113PTD	1	Intake Plated MRS only for Item #14 MRS
20	710356	2	SCR-MC 10-32 x .62 STPL
21	711005	1	Screw, Set ¼-20 x .31
22	900033	2	Caster, Swivel
23	711005	4	SCR, Set ¼-20 x .31
24	711006	4	SCR, Set ¼-20 x .62
25	760984PTD	1	BKT, Wheel
26	900066	2	Axle
27	711582	2	WSR, Wave
28	900040	2	Wheel
29	130032	2	Cap, Retainer
30	711591	4	Washer, Rubber
31	711505	4	WSR, Flat ¼
32	711203	4	BLT, HH ¼-20 x .62
33	711594	2	Washer, FLT
****	750322		Wheel Bkt. Assy. Complete
****	750610		Tank Assy. Comp. SS w/Down Tube
****	750612		Tank Assy. Comp. Painted w/Down Tube
****	750616		Tank Assy. Comp. SS w/Deflector
****	750614		Tank Assy. Comp. PTD w/Deflector

LIMITED WARRANTY

Minuteman International, Inc. warrants to the original purchaser/user that this product is free from defects in workmanship and materials under normal use and service for a period of three years from date of purchase. In addition, Minuteman International, Inc. will, at its option, honor labor warranty claims for the first 12 months from date of sale, provided such claims are submitted through and approved by factory authorized repair stations. Minuteman International, Inc. will, at its option, repair or replace without charge, except for transportation costs, parts that fail under normal use and service when operated and maintained in accordance with the applicable operation and instruction manuals.

This warranty does not apply to normal wear, or to items whose life is dependent on their use and care, such as belts, cords, switches, hoses, rubber parts, electrical motor components or adjustments. Parts not manufactured by Minuteman International, Inc. such as engines, batteries, battery chargers, hydraulic pumps, and tires are covered by and subject to the warranties and/or guarantees of their manufacturers. Please contact Minuteman International, Inc. for procedures in warranty claims against these manufacturers.

Special warning to purchaser -- Use of replacement filters and/or prefilters not manufactured by Minuteman International, Inc. or its designated licensees, will void all warranties expressed or implied.

A potential health hazard exists without exact original equipment replacement.

All warranted items become the sole property of Minuteman International, Inc. or its original manufacturer, whichever the case may be.

Minuteman International, Inc. disclaims any implied warranty, including the warranty of merchantability and the warranty of fitness for a particular purpose. Minuteman International, Inc. assumes no responsibility for any special, incidental or consequential damages.

This limited warranty is applicable only in the U.S.A. and Canada, and is extended only to the original user/purchaser of this product. Customers outside the U.S.A. and Canada should contact their local distributor for export warranty policies. Minuteman International, Inc. is not responsible for costs or repairs performed by persons other than those specifically authorized by Minuteman International, Inc. This warranty does not apply to damage from transportation, alterations by unauthorized persons, misuse or abuse of the equipment, use of non-compatible chemicals, or damage to property, or loss of income due to malfunctions of the product.

If a difficulty develops with this machine, you should contact the dealer from whom it was purchased.

This warranty gives you specific legal rights, and you may have other rights which vary from state to state. Some states do not allow the exclusion or limitation of special, incidental or consequential damages, or limitations on how long an implied warranty lasts, so the above exclusions and limitations may not apply to you.

Minuteman[®]

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