



Electronic Service Manuals

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MAGNUM DUAL VAC AUTOMATIC 1400 DVA

AND
MAGNUM 900 AUTOMATIC & MAGNUM 1400 AUTOMATIC

REFERENCE MANUAL

Operating Instructions • Parts List • Troubleshooting

Machine Serial Number _____



Castex Industries, Inc., 4240 Blue Star Hwy., Holland, Michigan 49423
616- 392-6966

**WARNING: TO AVOID ELECTRICAL SHOCK, DO
NOT EXPOSE TO RAIN. STORE INDOORS.**

Use only CASTEX chemicals, others could harm the machine.

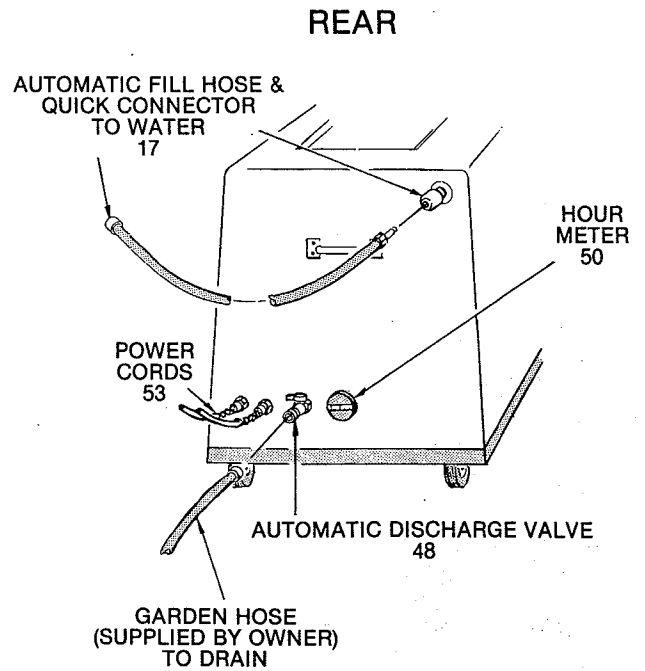
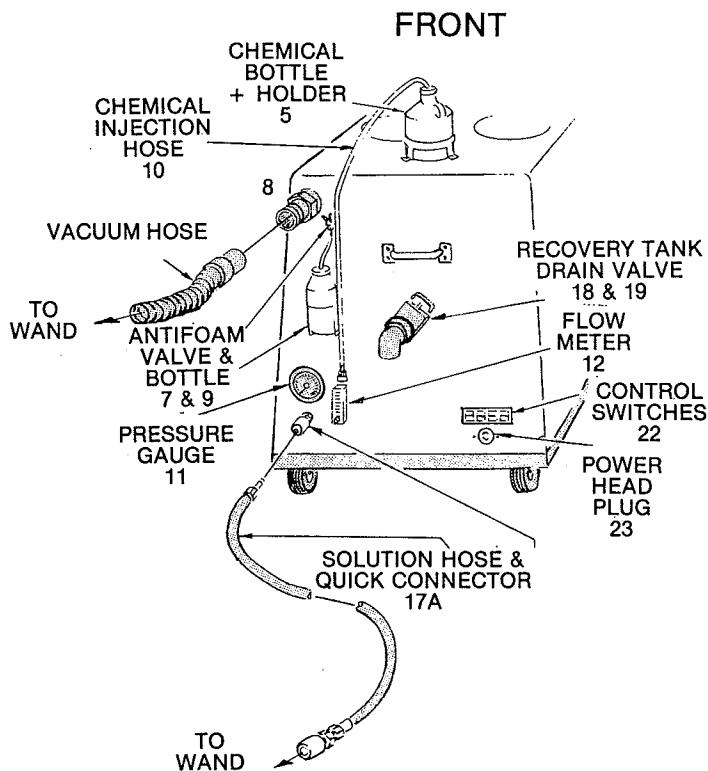
AUTOMATIC FILL AND DISCHARGE SET UP AND OPERATION:

(Numbers refer to the code numbers for the diagram on page 2 and to the parts drawing on pages 4 to 6.)

1. Hook the machine to a hot water supply. Attach the automatic fill hose to machine at #17 simply by pushing—the quick coupler automatically locks on. Attach the other end to the hot water source. An optional faucet ring adapter set is available for various types of hook-ups. Do not turn water on yet.
2. Lift float #55 by chain and remove float pin #47 and lower float **gently**. DO NOT LET FLOAT DROP! If float drops, it can cause damage to the inlet valve on the automatic fill system. For the same reason, ALWAYS HAVE THE FLOAT PIN IN PLACE WHILE TRANSPORTING THE MACHINE.
3. To connect the chemical bottle, place a gallon bottle of CASTEX Cleaning Agent in the holder #5. Insert chemical feed line #10 so that it touches the bottom of the bottle.
4. Fill the Anti-Foam bottle #9 and replace the top making sure the injection hose is at the bottom of the bottle. Open the T-valve #7 approximately $\frac{1}{4}$ turn to allow Anti-Foam into the discharge tank.
5. Turn on the hot water supply. The clean water tank will fill to approximately 6 inches and as it fills the chemical is injected. Chemicals are injected at the proportioner valve #57 only when the machine is filling.
6. Check the flow meter #12. Adjust the ball for the correct amount of chemical to be injected by opening the needle valve at the bottom of the meter. Number 1 on the flow meter is approximately one ounce per gallon of water. Due to changes in the water pressure and volume the ball on the meter will vary from time to time.
7. To connect the discharge system, remove the cap on the automatic discharge valve #48 and connect a $\frac{3}{4}$ " garden hose ($\frac{1}{2}$ " hose or larger, $\frac{3}{4}$ " preferred). Put the other end of the hose into a disposal drain (janitor's closet, toilet, drain, outside, etc.). Open the automatic discharge valve (open when handle is in line with the valve).
8. Be certain the drain valve at the front of the machine #18 is shut and then plug machine into two **separate grounded** circuits.*

DO NOT OPERATE THE MACHINE WITHOUT A GROUND PIN! The third prong on the plug is necessary to avoid an electrical hazard.
9. Prime the solution pump any time the machine is run out of water. Insert the bleeder hose into the solution hose quick coupler #17A. Put the other end of the bleeder hose into the vacuum intake #8. Turn the solution pump switch on and let the pump run until you see no air bubbles in the solution. Kink off the hose for approximately 5 seconds so that the solution pushes all air out of the pump and regulator. Turn the solution pump switch off. Remove bleeder hose and drain recovery tank.
FOR A NEW MACHINE: Run approximately one gallon of water out of the bleeder hose to flush antifreeze out of the pump system into the recovery tank or other container. A new machine has antifreeze to protect it while it is being shipped.
10. Connect vacuum hose to machine at #8 and to floor tool.
11. Connect solution hose to machine at #17A and to floor tool.
12. In sequence, turn on the solution pump switch, primary vacuum switch, and secondary vacuum switch.* (If all switches are turned on at once, the initial power demand could overload the circuit.) BOTH vacuums must be on for the machine to operate properly.

*The special order machines, Magnum 900 and 1400 Automatic have **one** vacuum and have only **one** power cord that draws **20** amps. Also, these machines have only **one** vacuum switch.



13. Turn on the discharge pump switch. The discharge pump turns on and off automatically and it will NOT run until the recovery tank has reached a certain level. The pump will NOT pump the recovery tank completely dry. Approximately 4 inches will be left when the discharge pump shuts itself off.
14. To operate, squeeze the floor tool valve handle while drawing the floor tool toward you with the opening held steadily against the carpet. NOTE: The hour meter runs only when the solution pump is running.
15. You may wish to adjust the solution pressure. The pressure is factory set at 150 pounds per square inch (psi) at the floor tool tips WHEN THE TRIGGER IS ACTIVATED. Pressure will be approximately 50 psi higher when the machine is running but the floor tool trigger is NOT engaged. To adjust the pressure, loosen the 1/2" locknut on the T-handle #41 under the machine. Turn the T-handle clockwise to increase pressure to a maximum of 200 psi with the floor tool activated. Turn the T-handle counterclockwise to decrease pressure. Tighten the locknut.
16. To change the chemical bottle, first turn the machine off, then replace the bottle and insert the chemical suction line so that the end is touching the bottom of the bottle.
17. Be certain the discharge screen #73, the clean water filter #45 and the pipe stand screen at #8 are kept clean.
18. Maintain a filter at the vacuum hose intake #8. The filter is actually a ladies knee-high stocking. The band at the top of the stocking fits around the vacuum intake nozzle and the toe of the stocking trails into the recovery tank. The vacuum hose fits right over the nylon's band to hold it all in place. As the machine is used, any large debris pulled up into the vacuum system is caught in the nylon stocking. To change the stocking, turn the machine off, support the full nylon stocking in the recovery tank with your hand and remove the stocking band from the vacuum access port on top of the machine. A stocking can be rinsed and reused as long as it develops no holes.
19. Should the automatic discharge system fail for any reason and the dirty water level rises too high in the tank, a float will shut off the flow of air to the vacuum motors which will stop the vacuum function. The vacuum motors will continue to run but there will be no suction at the floor tool. Turn machine off immediately and empty the recovery tank.

MANUAL FILL AND DISCHARGE SET UP AND OPERATION:

1. Fill the clean water tank with hot water and the proper amount of CASTEX Cleaning Agent. Always mix powder chemicals in the filling bucket — DO NOT MIX POWDER CHEMICALS IN THE MACHINE!

WARNING:

Use a clean bucket to fill the machine. Empty dirty water into *another* bucket. Always be certain to use **SEPARATE BUCKETS** to fill and to empty machine. Perfectly clean water must be in the clean water tank to avoid fouling the internal system.

2. Follow steps 8 through 12 under "Automatic Fill and Discharge Set Up and Operation."
3. As the machine is used, dirty solution will begin to fill the discharge tank. When the tank is full, a float will shut off the flow of air to the vacuum motors which will stop the vacuum function. The vacuum motors will continue to run but there will be no suction at the floor tool. Turn the machine off immediately.
4. To empty the discharge tank, turn the machine off and then position a discharge bucket under the drain valve down spout #19. Pull valve T-handle to empty the dirty water. Be certain this valve is closed before continuing operation. To avoid overfilling, empty the recovery tank every time you fill the clean water tank — be sure to use separate buckets!
5. Follow steps 14, 15, 17, and 18 under "Automatic Fill and Discharge Set Up and Operation."

NOTE: It is possible to use either the automatic fill OR the automatic discharge system ALONE. Simply follow the instructions pertaining to the automatic system you wish to use.

WHEN FINISHED:

1. Turn off all switches.
2. Turn off water supply, chemical flow meter #12, and Anit-Foam valve #7.
3. Drain recovery tank by opening valve #18 and catching dirty solution in a bucket.
4. Vacuum unused solution from the clean water tank into the recovery tank.
5. Drain and rinse recovery tank and clean all filters (#73, #45, at #4, at #8). Turn on both vacuums, put one hand over vacuum hose intake #8 and one hand over drain #19 and slowly lift hand on drain. Do this 2-3 times. This cleans and dries the drain valve seat and will significantly extend its useful life. Close valve and unplug the machine.
6. Disconnect solution and vacuum hoses from floor tool and from machine.
7. Pick float #55 up by the chain and insert float support pin #47. Gently lower float so that it rests on the pin.
8. Disconnect garden hose, drain and replace automatic discharge cap.
9. Disconnect water intake system.

DO NOT ALLOW THE MACHINE TO FREEZE!

10. If machine will be subject to freezing temperatures, pump all the water out of the system by placing the bleeder hose into solution hose quick connector and running the pump until it is dry. Pour an antifreeze solution (such as windshield washer fluid) into the solution tank and pump until you can see it coming out of the bleeder hose. Be sure the chemical injection system is dry. Antifreeze can be pumped back into the bottle when you are ready to use the machine again.

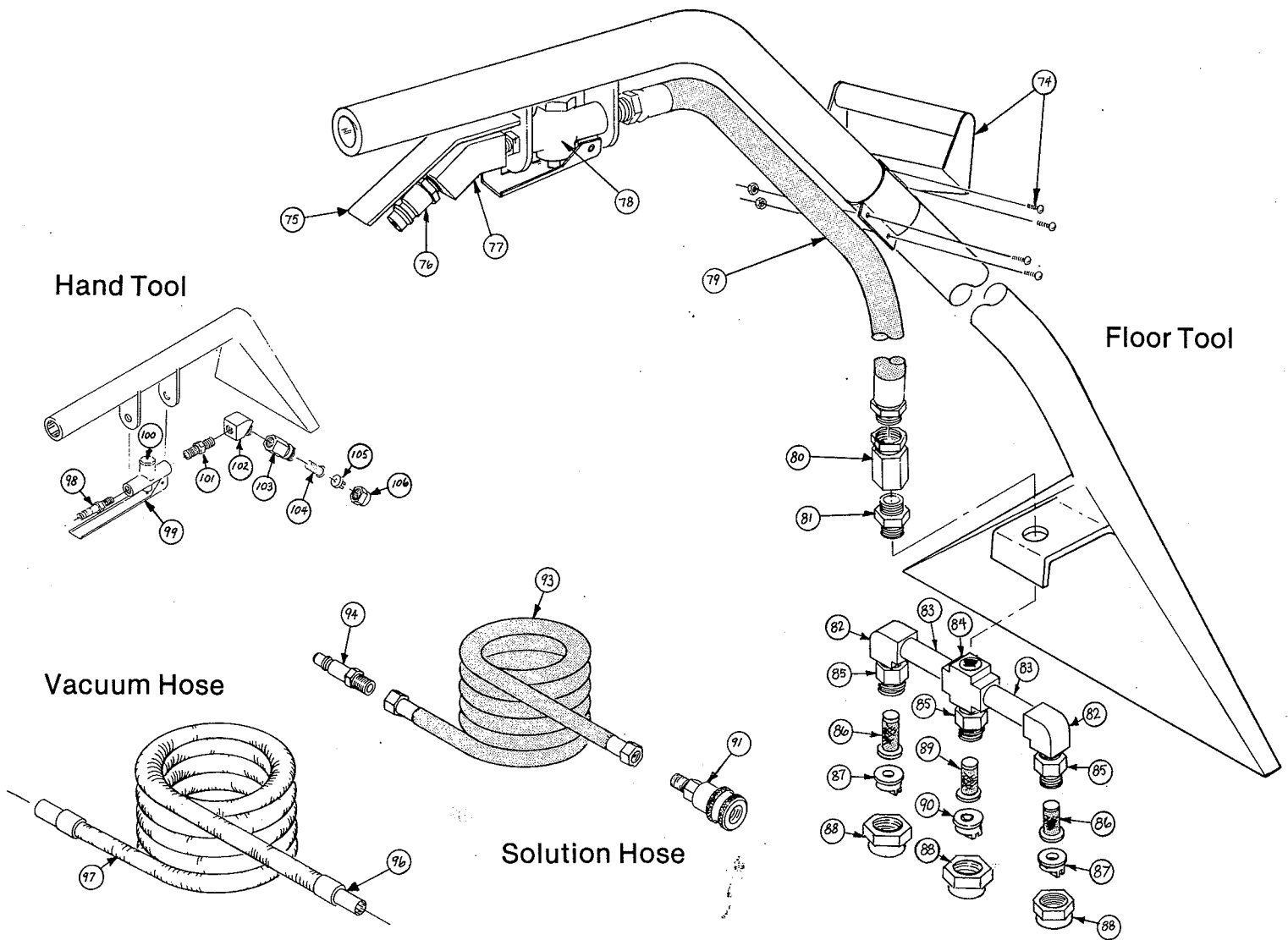
GENERAL SERVICE POLICY

Whenever ordering parts or requesting any type of service, specify

- a) the model of the machine
- b) the serial number of the machine
- c) the size wand you are using

All parts returned to the factory must arrive freight prepaid with a return authorization number issued by CASTEX. Always enclose a note indicating the above plus exactly what is wrong with the returned part, your name and address.

Always order parts by part number and description.

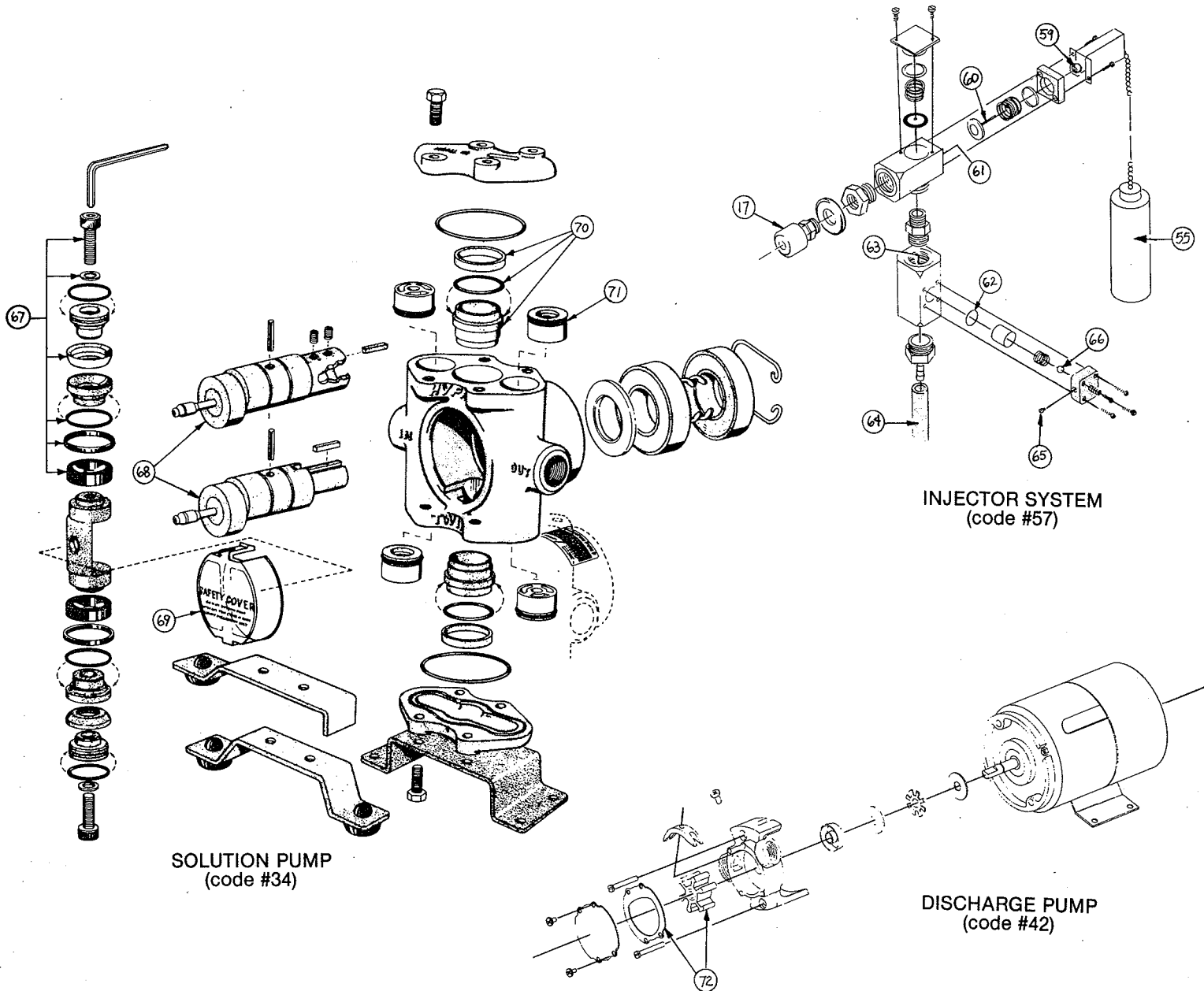


PARTS CHART

CODE #	PART #	DESCRIPTION	CODE #	PART #	DESCRIPTION
74	10401	hand grip complete	90	10450	stainless steel tip #11002
75	10471	floor tool trigger	91	10315	quick coupler, 1/4" MPT
76	10420	quick coupler plug, 1/4" MPT	93	10319	solution hose 25' x 1/4" H.P. comp.
77	10466	elbow, 1/4" 45 degree	94	10420	quick coupler plug, 1/4" MPT
78	10410	flow control valve	96	10523	hose cuff only, 2"
79	10414	high pressure wand feed hose complete	97	10520	vacuum hose complete, 25' x 2"
80	10331	swedge fitting	98	10420	quick coupler plug, 1/4" MPT
81	10452	hex nipple, 1/4"	99	10470	hand tool handle
82	10468	elbow, 1/4" 90 degree	100	10410	flow control valve
83	10464	nipple, 1/4" x 2"	101	10452	hex nipple, 1/4"
84	10465	cross extruded, 1/4"	102	10453	elbow, street, 1/4", 45 degree
85	10436	spray body, male	103	10454	female spray body, 1/4"
86	10435	no drip spray nozzle screen	104	10431	regular spray nozzle screen
87	10449	stainless steel tip #9502	105	10446	brass tip #8002
88	10432	spray body cap	106	10432	spray body cap
89	10431	regular spray nozzle screen	107	10731	tee, 1/4"

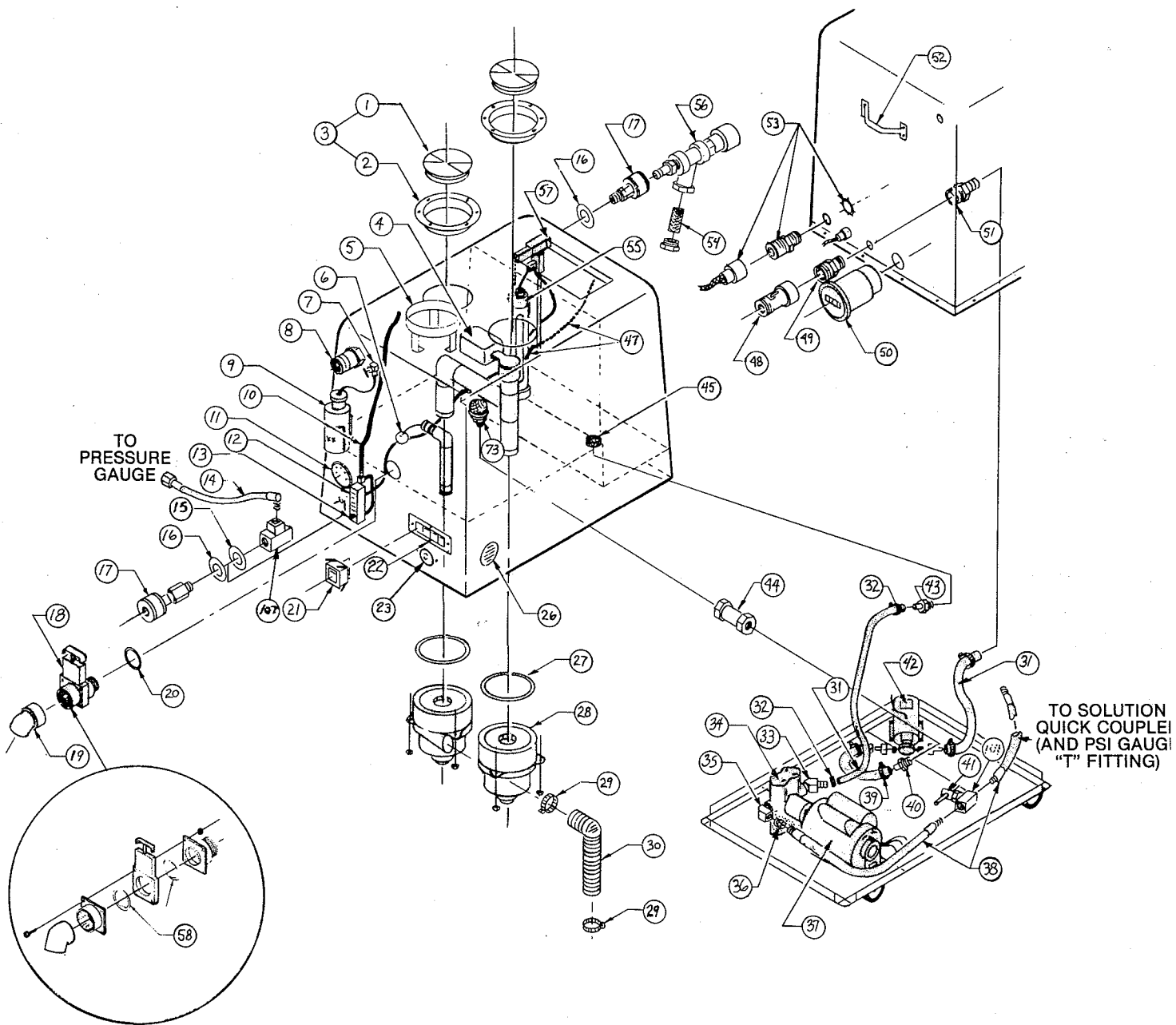
NOTE: Proper tip and screen filter placement in the floor tool is important in the solution system of the machine. The floor tool comes with at least one regular screen to allow the tool to drain when finished with a job. For a complete no-drip floor tool, put a no-drip screen in place of the regular screen.

Be certain to keep #87 tips in the outside positions on any floor tool and a #90 tip in the inside position.



PARTS CHART

CODE #	PART #	DESCRIPTION	CODE #	PART #	DESCRIPTION
1	10106	lint trap lid, clear	18	10114	drain valve complete
2	10107	lint trap lid outer ring	19	10113	drain valve down spout
3	10105	lint trap lid assembly w/screws	20	10111	drain valve gasket
4	10506	auto shut off complete	21	10612	rocker switch, lighted
5	10757	bottle rack, finished	22*	10627	switch, gang plate
6	10636	switch, ball float	23*	10254	power head plug
7	17022	Anti-Foam needle valve "L" 1/4 x 1/8 M	24	—	heater reset button
8	10116	nylon hose barb, vacuum intake	26	10120	chrome vent, 3"
9	17017	Anti-Foam bottle w/holder	27	10501	vacuum blower gasket
10	17013	chemical injection hose, vinyl tubing 1/4 x 3/8	28*	10504	vacuum blower, 2 1/2 hp, 3 stage
11	17010	pressure gauge, 0-600	29	10503	clamp, worm type #28
12	17009	chemical flo-meter	30	10502	exhaust hose for vacuum
13	17009A	chemical flo-meter, stem assembly only	31	RX, 1/2"	
14	17081	hose, pressure gauge complete		CONTEND	hose, red contender, 1/2"
15	10317	washer, fender plain	32	10424	clamp, worm type #6
16	10316	washer, fender painted	33	10474	elbow, street 1/2 x 45°
17	10315	quick coupler, 1/4" MPT	34	10745	solution pump, twin piston
			35	10437	elbow, street 1/2 x 90°
			36	10761	bushing, 1/2 x 1/4



CODE #	PART #	DESCRIPTION	CODE #	PART #	DESCRIPTION
37	17046	1/3 hp energy-saver motor	56	10752C	in line filter complete (includes code #54)
38	17082B	hose, pump outlet complete	57	10750	Dema-matic w/injector complete
39	10424	clamp, worm type #6	58	10117	drain valve gate seal
40	10427	hose barb, 1/2 x 1/2	59	-	set screw
41	10746	pressure relief valve	60	-	valve stem
42	10728	auto discharge pump	61	-	inlet valve
43	10427	hose barb, 1/2 x 1/2, (M)	62	-	O-ring
44	10482	valve, check-1 1/2"	63	-	injector
45	10110	clean water tank filter	64	-	discharge hose
47	10736	float support pin assembly	65	-	chemical metering screw
48	17023	discharge shut off valve	66	-	check valve
49	10480	adapter, 3/4 MGH x 1/2 MP	67	10744	cup kit, set of 2
50	10617	hour meter	68	10754	grease fitting
51	10496	hose barb, 1/2 FP x 1/2 H	69	10755	safety cover
52	10102	handle for fiberglass cabinet	70	10756	cylinder sleeve kit
53*	10623	cord grip, woodhead w/lock nut	71	10743	valve kit, set of 4
54	-	in line filter screen (included in code #56)	72	SKR360	impeller & gasket kit
55	-	clean water float & case	73	10109	discharge filter
			107	10731	tee, 1/4"

*Special order machines, Magnum 900 and 1400 Automatic require only **one** vacuum/blower #28, only **one** power cord #53, only 3 switches #22 and do not have the power head plug #23. Wiring is also different.

SUGGESTED MAINTENANCE:

1. Keep all filters and screens clean (#45, #73, #89, #86, at #4, and at #8). An in-line filter screen #56 is a recommended option. Be certain that this filter screen #54 is kept clean as well.
2. Every forty (40) hours of operation run Brown-Ex through the complete chemical system and through the pump and tanks. Use a gallon jug containing Brown-Ex in place of the normal cleaning agent. Run 2-3 ounces through the system and leave overnight in above freezing temperatures. This dissolves the normal alkaline accumulations in the system.
3. Thoroughly rinse the recovery tank with a hose through the access port after every use.
4. Polish the fiberglass case with car wax approximately once a month to keep your image clean.

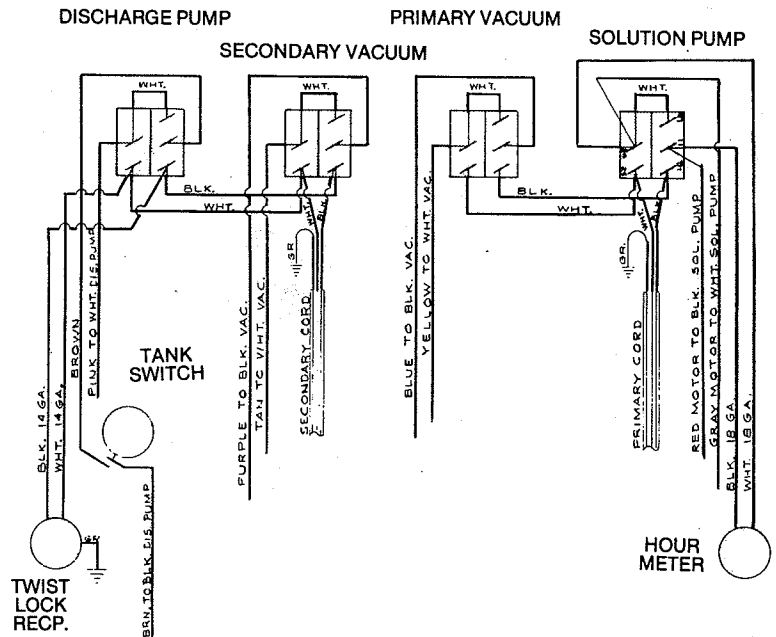
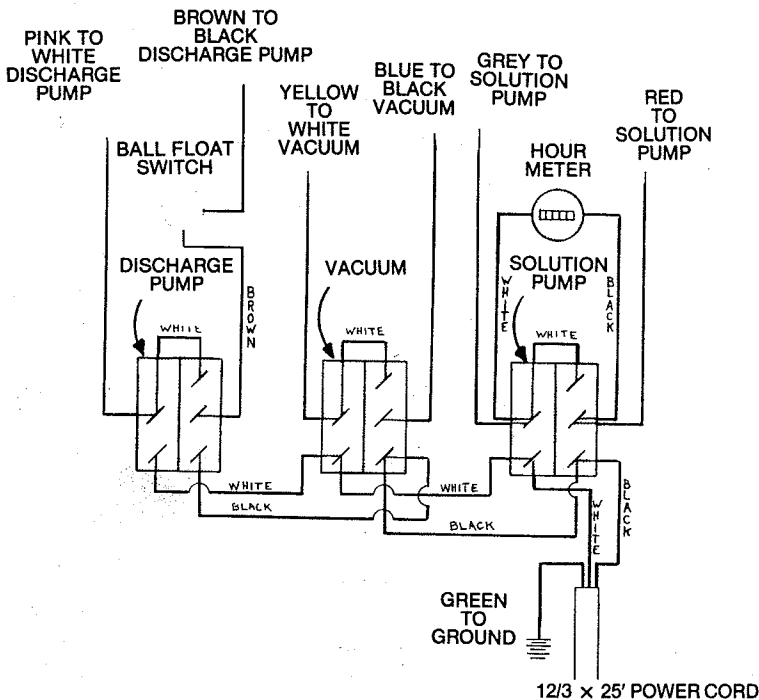
5. Every fifty (50) hours of operation grease the solution pump as follows:

- a. Unplug and drain the machine.
- b. Remove safety cover #69 on the solution pump by carefully squeezing the two side tabs.
- c. Use a high temperature waterproof grease. Use a low pressure plunger-type grease gun with flexible hose. Never use a pneumatic gun as the pressure is much too high.
- d. Fit the grease gun on the grease fitting #68. Use very little grease as too much grease or too much pressure can ruin a nearby delicate seal. With a hand grease gun, use no more than 1" travel on the handle.
- e. Replace the safety cover by gently squeezing the tabs and fitting it so that one tab is pointing toward the bottom of the frame and one toward the bottom of the recovery tank.

WIRING

900 & 1400 AUTOMATIC

1400 DUAL VAC AUTOMATIC



NOTE: ALL GREEN GROUND WIRES CONNECT TO FRAME

TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION
Low solution pressure	1. Pump airlocked	1. Prime pump (see operating instructions)
	2. Weak pressure relief valve (#41)	2. Replace valve
	3. Dirt in pressure relief valve (#41)	3. Twist pressure relief valve all the way out, then with pump running, and with trigger pulled on floor tool, twist valve in until the desired pressure is reached
	4. Restricted inlet line (#31)	4. Clear out and check for kinks
	5. Clean water tank filter dirty (#45)	5. Clean screen
	6. Restricted or worn solution pump valves (#71)	6. Dismantle and clean or replace
	7. Worn solution pump piston cups (#67)	7. Replace piston cups
	8. Worn solution pump cam bearing	8. Replace pump
Chemical not injecting or very little chemical getting into system, but water is flowing into solution tank	1. Water not on or low water pressure	1. Increase water flow
	2. Injector hole plugged (#63)	2. Clean out and install filter screen on automatic fill line
	3. Metering screw on injector turned in (#65)	3. Turn screw so it is flush with black injector manifold
	4. Check valve stuck in injector manifold (#66)—prevent with regular use of Brown-Ex	4. Clean check valve by soaking in Brown-Ex
	5. Air leak in chemical feed line (#10)—continuous bubbles in chemical suction line or in flow meter	5. Check for defective hose and replace, check for loose clamps or fittings and tighten or replace
	6. Screen on foot valve blocked (foot valve rests on bottom of chemical bottle)	6. Clear screen
	7. Hose on discharge side of injector missing or shorter than 10 inches (#64)	7. Replace hose
	8. Flo-meter valve is plugged (#12)—ball won't move in valve	8. Soak in Brown-Ex

TROUBLESHOOTING (continued)

PROBLEM	CAUSE	SOLUTION
Large pressure drop when valve on floor tool is engaged (up to 50 psi drop is normal)	1. Foreign matter in solution pump valves (#71)	1. Clean or replace valve
	2. Worn valve in solution pump (#71)	2. Replace valve
	3. Worn solution pump piston (#67)	3. Rebuild pump
	4. Improper tips in floor tool	4. Replace with proper tips
Solution tank will not fill with water	1. Water supply not turned on	1. Turn water on at source
	2. Dema-Matic set screw (#59) loose on valve ball which controls water – caused by transporting machine without float supported by support pin	2. Loosen set screw and slide ball tight to main body and retighten set screw
	3. Dema-Matic valve stem (#60) damaged – caused by transporting machine without float supported by support pin	3. Replace
	4. Dema-Matic inlet valve plugged (#61) with lime or rust	4. Clean out and install filter (#56) on water inlet valve
Solution pump motor will not run	1. Fuse blown or circuit breaker popped (there are no fuses or circuit breakers in the machine)	1. Replace fuse or reset breaker
	2. Faulty switch	2. Replace switch
	3. Switch not on	3. Turn switch on
	4. Thermal overload activated – motor is too hot and will automatically shut down until cool	4. Let motor cool and check to see what caused it to overheat. Pressure may be set too high, Air intake may be blocked with lint, Extension cord may be too thin (use 10 gauge), Excessively hot water in tank can also activate thermal overload
	5. Faulty motor	5. Replace motor
	6. Solution pump bearing freezes up – caused by not greasing	6. Repair or replace
Solution tank overfills or won't shut off	1. Dirt in Dema-Matic inlet valve (#61)	1. Clean out and install filter (#56) on water inlet valve
	2. Float movement restricted	2. Clean out float guide tube (#55)

TROUBLESHOOTING (continued)

PROBLEM	CAUSE	SOLUTION
Discharge system fails to operate	1. Unit not plugged in	1. Plug in
	2. Switch not on	2. Turn switch on
	3. Not enough water in recovery tank to activate discharge system	3. Will automatically turn on when there is sufficient water in tank
	4. Large foreign body in discharge pump impeller (#72)	4. Remove face plate on pump and clean. You may need to replace impeller.
	5. Faulty float switch (#6)	5. Replace float switch
	6. Defective discharge pump motor	6. Replace motor
	7. Discharge filter in waste tank plugged (#73)	7. Clean filter
Drain valve leaks	1. Lint or dirt in drain valve gasket (#58)	1. Clean gaskets and, if leak continues, replace gaskets
Discharge motor system runs, but not discharging	1. Discharge valve (#48) closed	1. Open valve
	2. Filter screen plugged (#73)	2. Clean screen
	3. Discharge lines plugged or kinked	3. Clean or straighten
	4. Worn or damaged pump impeller (#72)	4. Replace impeller
	5. Check valve (#44) plugged	5. Clean check valve
Loss of vacuum (be certain both vacuums are on)	1. Drain valve open (#18)	1. Close drain valve
	2. Recovery tank full, closing vacuum safety shutoff	2. Drain recovery tank
	3. Lint on top of stand pipe #4	3. Remove lint trap lid and clean screen
	4. Kinks in vacuum hose	4. Straighten hose
	5. Holes in vacuum hose	5. Replace hose
	6. Excess foam in vacuum hose or recovery tank	6. Use Anti-Foam in discharge tank
	7. Bad vacuum motor	7. Replace motor
	8. Blades let loose in vacuum cage—caused by water going through vacuum	8. Replace motor
	9. Lint trap lid on top of stand pipe (#4) won't seal	9. Replace lid

TROUBLESHOOTING (continued)

PROBLEM	CAUSE	SOLUTION
Uneven spray or no spray	1. Dirty or plugged spray tips	1. Clean or replace
	2. Improper size tips or improper degree of spray angle	2. Replace with proper tips
	3. Worn spray tips	3. Replace spray tips
Leaking floor tool	1. Quick coupler on hose or on floor tool defective	1. Replace quick coupler
	2. Flow control valve leaking	2. Install valve rebuild kit
	3. Hose split or fittings loose	3. Replace hose and tighten fittings
	4. Quick coupler and plug not fully engaged	4. Reinsert quick coupler

TRUCKMOUNT SYSTEM

(Numbers refer to diagram on page 14)

GENERATOR

Complete installation instructions, maintenance suggestions, and replacement part numbers are included with the generator #39. Be certain to install the star washers #30 provided with the generator as this creates the necessary ground. (When bolting the generator to the floor of the van, use a star washer between the head of the bolt and the generator base and one under the van floor against the truck body.) It is recommended that you install your generator behind the driver's seat of a van. Every make of van is different, but generally this location is fairly clear of gas lines, brake lines, wires for rear lights, etc. and you should have room for the muffler.

BE CERTAIN TO FILL THE CRANK CASE #28 WITH OIL BEFORE STARTING THE GENERATOR!

ELECTRICAL

1. Determine the place you will mount the remote control panel #8. The rear door pillar on the driver's side of a van is recommended. Before mounting, wire the remote control panel as follows:

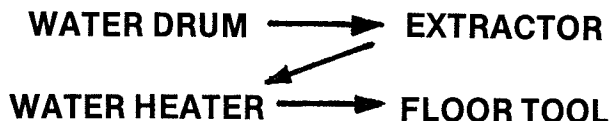
2. Run the brown 5 strand cord #1 on the remote control to the generator. Install the remote start plug #40 (packed with the generator muffler) on the end of the brown cord #1. The numbers on the plug connect with the colors on the brown remote start wire as follows: #1 = yellow, #2 = blue, #3 = green, #5 = red, #6 = white. Use a crimp connector, wire nuts or solder (not included). Plug into the side of the generator at #34 (plugs in only one way so do not force).
3. To activate the hour meter #4 and switches #3A and #3B on the remote control, connect the yellow 18/3 power cord #18 from the remote control to the duplex outlets #25. The white wire attaches to an unused **silver** screw on the duplex outlet. The black wire attaches to an unused **brass** screw. The green wire attaches to the green ground screw with another wire already in place on the ground screw.
4. Generally the top toggle switch #3A is used to activate the remote control for the water pump #23. The bottom switch #3B can be used as you please for lights, etc. To connect the top switch to the water pump #23, connect the

black wire on the water pump to the black wire on the top of the switch. The white wire from the pump must be connected to the white wire on the remote control switch and the green wire from the pump must be connected to the green wire on the remote control switch. (The power cord to connect the remote control to the water pump is **not** included. Use an 18/3 cord #19.) After all wiring is completed on the back of the remote control, mount on the rear door pillar.

5. To connect the duplex outlets (plugs) #25 to the generator, run the prewired 10/3 black power cord #38 from the duplex outlets to the generator. Remove the generator cover #35 by removing the two mounting screws. Strip the black wire covering back approximately 4" on the black power cord #38 and then strip the end of each individual wire back approximately 1/2". Remove the large circular knockout at #36 located on the side of the generator electrical box and install the 3/4" romex connector #37 through the hole left by the knockout at #36. Run the black 10/3 wire through the romex connector into the generator. Inside the generator, connect these wires using the wire nuts packed loose inside the electrical box. Connect the black wire to the black pigtail in the generator, the white wire connects to the white pigtail, the green wire connects to the green grounding screw. Tighten the screws on the romex connector to hold the cord securely in place.

WATER SYSTEM

The flow of water begins in the water drum #21. The water is pumped from the water drum into the extractor through the automatic fill hose #20. Chemicals are injected at this time and the cleaning solution is pumped out of the quick coupler through the hose #16 connected to the water heater (hose is included with the purchase of a water heater). The solution is heated and comes out at the mixing valve where the solution hose from the floor tool is connected.



If you do not use the water drum, connect the water supply to the automatic fill hose at #22.

WATER HEATER

All operating instructions and replacement part numbers are included with the purchase of a water heater #12. The heater can be mounted on the back door of any van using the optional mounting brackets #10A and #10B. Install the mounting brackets on a van as follows:

1. Install the lower bracket #10B on the driver's side rear door. Position the bracket so that it just clears the van floor when the door is closed and leave extra clearance if you will later be installing carpeting on the van floor. Fasten the bottom bracket to the door using at least 12 sheet metal screws (not included) as this bears the entire weight of the heater.
2. Position the water heater #12 on the lower bracket with the hot and cold outlets pointing toward the **inside** of the van when the van door is open 90 degrees. (The heater is pictured with the hot and cold outlets pointed to the outside of the van so that all components could be shown.) The propane gas hook-ups should be kept as far from the van interior as possible.
3. The top bracket #10A is installed so that it bridges the window and is fastened with sheet metal screws to the frame of the rear window. On the top bracket two full thread carriage bolts #9 should be positioned to snugly hold the curved metal band #11 against the heater to prevent it from tipping off of the lower bracket. Secure the curved metal band to the carriage bolts with the lock nuts provided.

PARTS CHART

CODE #	PART #	DESCRIPTION	CODE #	PART #	DESCRIPTION
1	20715	5-strand brown extension cord	21	17055	water drum & pump
2	10253	start switch for generator	22	10491	adapter, 3/4 MGH x 3/8 hose
3A	10622	indicator light (top)	23	10202	water pump
3B	10622	indicator light (bottom)	24	RX3600-06	hose, yellow
4	10617	hour meter	25	20712	duplex outlets
6A	10613	toggle switch (top)	26	10110	water drum filter
6B	10613	toggle switch (bottom)	27	—	oil filter
8	17054	remote control panel	28	—	oil fill
9	20311	full thread carriage bolt	29	—	oil drain
10A	17067LG	heater door bracket (top)	30	—	star washers to ground generator
10B	17067LG	heater door bracket (bottom)	31	10483	gas shut off
11	17069-A	metal band to secure heater to bracket	32	—	positive battery cable entrance
12	17062LG-1	Hotomatic water heater	33	—	generator controls
14	17075	gas regulator	34	—	plug to activate remote start switch
15	17031-A	gas hose complete	35	—	generator electrical box
16	17089	cold water intake hose	36	—	knockout to connect duplex outlets to generator
17	17068	hose reel	37	—	romex connector
18	20713	power cord, 1/3 (connects toggle switches to duplex outlets)	38	20714	power cord, 1/3 running from duplex outlets to generator
19	20713	power cord, 1/3 (connects switch to water pump)	39	17050-0	Onan generator
20	17038	automatic fill hose			

