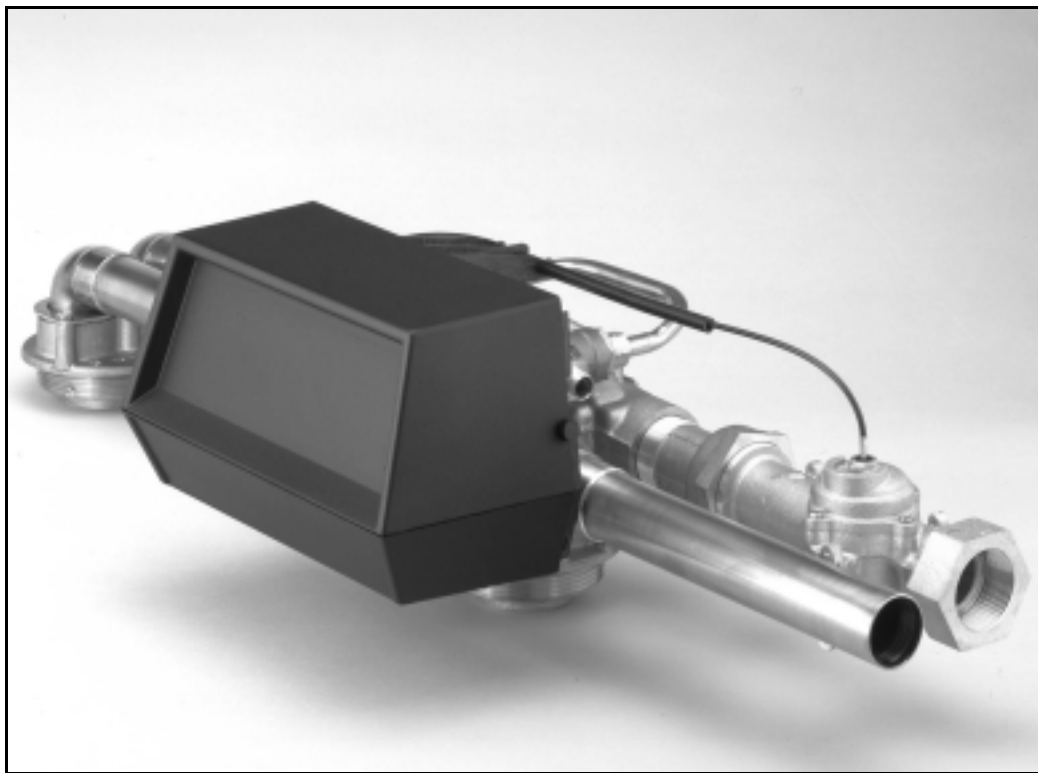


# MODEL 9500

## *Service Manual*



**IMPORTANT:** Fill in pertinent information on page 2 for future reference.

# MODEL 9500 ECONOMINDER®

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## Job Specification Sheet

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- JOB NO. \_\_\_\_\_
- MODEL NO. \_\_\_\_\_
- WATER TEST \_\_\_\_\_
- CAPACITY PER UNIT \_\_\_\_\_ MAX. \_\_\_\_\_ PER REGENERATION
- MINERAL TANK SIZE DIA. \_\_\_\_\_ HEIGHT \_\_\_\_\_
- BRINE TANK SIZE & SALT SETTING PER REGENERATION: \_\_\_\_\_

\* 9500 CONTROL VALVE SPECIFICATIONS

1) Type of Timer

- A) 82 minute available regeneration time, 1/15 RPM
- B) 164 minute available regeneration time, 1/30 RPM

2) Type of Meter

- A) Std. range 625 to 10,625 gal. setting
- B) Ext. range 3,125 to 53,125 gal. setting

3) Meter Gallon Setting \_\_\_\_\_ gal. (see pages 6 & 7)

4) Regeneration Program Setting (see page 5)

- A) Backwash \_\_\_\_\_ min.
- B) Brine & Slow Rinse \_\_\_\_\_ min.
- C) Rapid Rinse \_\_\_\_\_ min.
- D) Brine Tank Refill \_\_\_\_\_ min.

5) Drain Line Flow Control \_\_\_\_\_ gpm

6) Brine Refill Rate \_\_\_\_\_ gpm

7) Injector Size \_\_\_\_\_

# MODEL 9500 ECONOMINDER®

## General & Commercial Installation Checklist

**WATER PRESSURE:** A minimum of 25 pounds of water pressure is required for the valve to operate effectively.

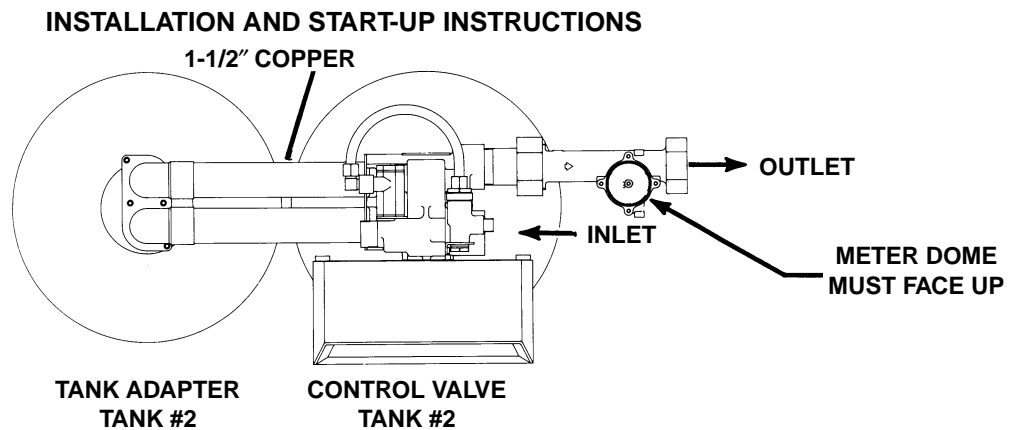
**ELECTRICAL FACILITIES:** A continuous 110 volt, 60 Hertz current supply is required. Make certain the current supply is always hot and cannot be turned off with another switch.

**EXISTING PLUMBING:** Condition of existing plumbing should be free from lime and iron buildup. Piping that is built up heavily with lime and/or iron should be replaced. If piping is clogged with iron, a separate iron filter unit should be installed ahead of the water softener.

**LOCATION OF SOFTENER AND DRAIN:** The softener should be located close to a drain.

**BY-PASS VALVES:** Always provide for the installation of a by-pass valve.

**CAUTION:** Water pressure is not to exceed 125 p.s.i., water temperature is not to exceed 110° F, and the unit cannot be subjected to freezing conditions.



1. Place the softener tank where you want to install the unit, making sure the tanks are level and on a firm base.
2. All plumbing should be done in accordance with local plumbing codes. The pipe size for the drain line should be the same size as the drain line flow control connection.
3. Both tanks must be the same height and diameter and filled with equal amounts of media. The 1-1/2 distributor tube should be cut flush with top of each tank.
4. Lubricate the distributor O-Ring seal and tank O-Ring seal with silicone lubricant. Place the main control valve on one tank and the tank adapter on the second tank.
5. NOTE: The 1-1/2" copper tubing to interconnect the tanks must be soldered prior to assembly on the main control valve and tank adapter.
6. Solder joints near the drain must be done prior to connecting the Drain Line Flow Control fitting. Leave at least 6" between the DLFC and solder joints when soldering. Failure to do this could cause damage to the drain module.
7. Teflon tape is the only sealant to be used on the drain fitting.
8. Make sure that the floor is clean beneath the salt storage tank and that it is level.
9. Place approximately 1" of water above the grid plate (if used) in your salt tank. Salt may be placed in the unit at this time.
10. On units with a by-pass, place in by-pass position. Turn on the main water supply. Open a cold soft water tap nearby and let run a few minutes or until the system is free from foreign material (usually solder) that may have resulted from the installation.
11. Place the by-pass in service position and let water flow into the mineral tanks. When water flow stops, open a cold water tap nearby and let run until air pressure is relieved.
12. Electrical: All electrical connections must be connected according to codes. Plug unit into electrical outlet. **Do not insert meter cable** into the meter yet.

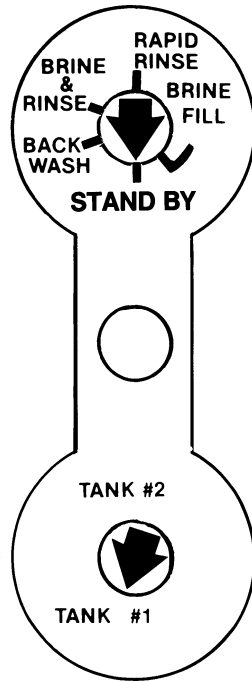
# MODEL 9500 ECONOMINDER®

## General & Commercial Installation Checklist (Cont'd.)

13. Tank #1 has control valve.

Tank #2 has the adapter.

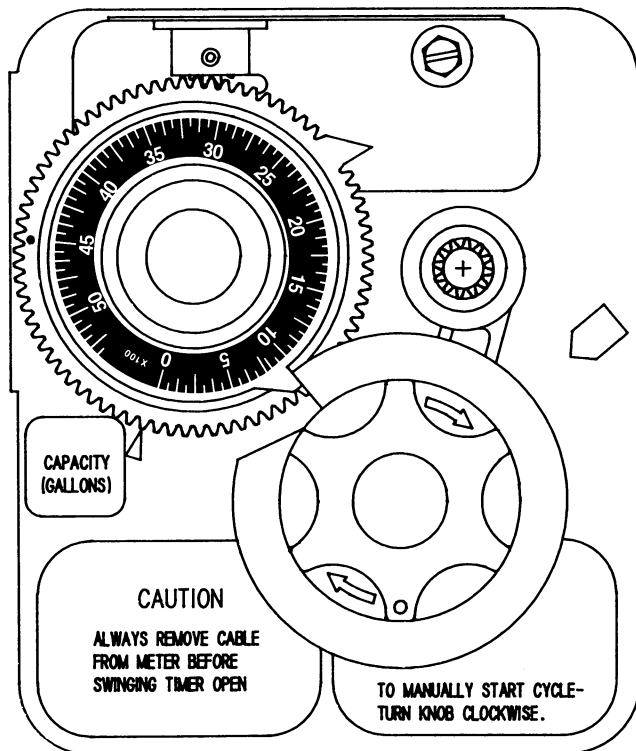
Look on the right side of the control valve, it has indicators which tell you which position the control valve is in during regeneration and which tank is *IN SERVICE*. Photo on the right indicates the valve is in the service position and tank #1 is supplying conditioned water. Tank #2 is on standby.



14. Cycle timer into backwash position. Turn manual knob (figure 1) so that the micro switch is riding on the 1st set of pins (figure 2). In this position the tanks will switch (lower piston) and the control valve will move to the backwash position (upper piston). *You must wait until the positioning of upper and lower pistons has stopped before advancing the timer further. If advanced too fast the control will not home into the service position (it will not advance to any other position).* To correct this, rotate the manual knob back to service and start again into backwash. **Note:** once valve has positioned itself into the backwash cycle, the homing circuit is locked in.

With all the air backwashed out, slowly cycle the timer to the brine position; rapid rinse; and brine tank refill. You must wait for the control drive motor to position itself in each cycle and stop, before advancing on to the next position.

Once back in the service position, cycle the control valve again into the backwash position. The tanks will switch again, and you will backwash the air head out of the other tank. Cycle the control back to the service position. Leave the timer in the open position.



### DO NOT INSERT METER CABLE YET.

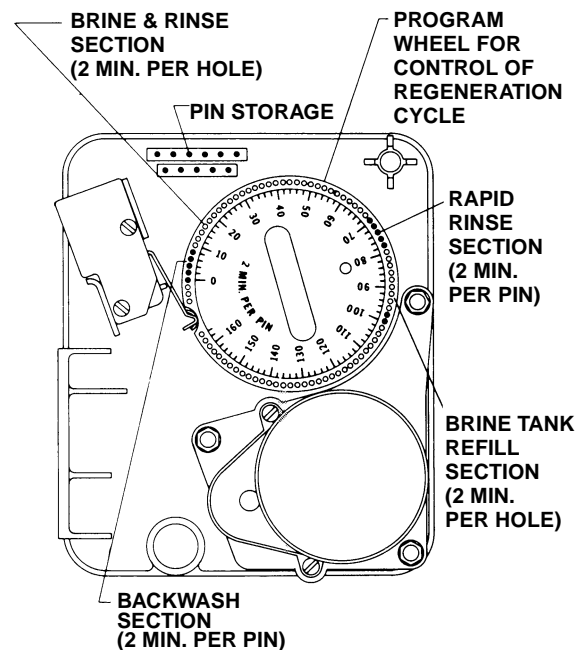


Figure 2

NOTE: Make sure the meter cable is not inserted in the meter dome. Swing the timer out to expose the program wheel *Figure 2* (to swing timer out) grab onto the lower right corner of timer face *Figure 1* and pull outward.

NOTE: 2 motors are available, 1/15 RPM will have a 82 min. reg. time available.

# MODEL 9500 ECONOMINDER®

## Regeneration Cycle Program Setting Procedure

### (Brine Tank Refill Separate From Rapid Rinse)

#### How To Set The Regeneration Cycle Program:

The regeneration cycle program on your water conditioner has been factory preset, however, portions of the cycle or program may be lengthened or shortened in time to suit local conditions.

To expose cycle program wheel, grasp timer in lower right hand corner and pull, releasing snap retainer and swinging timer to the left. Meter cable *must* be removed from meter dome before opening timer.

To change the regeneration cycle program, the program wheel must be removed. Grasp program wheel and squeeze protruding lugs towards center, lift program wheel off timer. (Switch arms may require movement to facilitate removal.)

Return timer to closed position engaging snap retainer in back plate. Make certain all electrical wires locate above snap retainer post.

#### How To Change The Length Of The Backwash Time:

The program wheel as shown in the drawing is in the service position. As you look at the numbered side of the program wheel, the group of pins starting at zero determines the length of time your unit will backwash.

FOR EXAMPLE: If there are six pins in this section, the time of backwash will be 12 min. (2 min. per pin). To change the length of backwash time, add or remove pins as required. The number of pins times two equals the backwash time in minutes.

#### How To Change The Length Of Brine And Rinse Time:

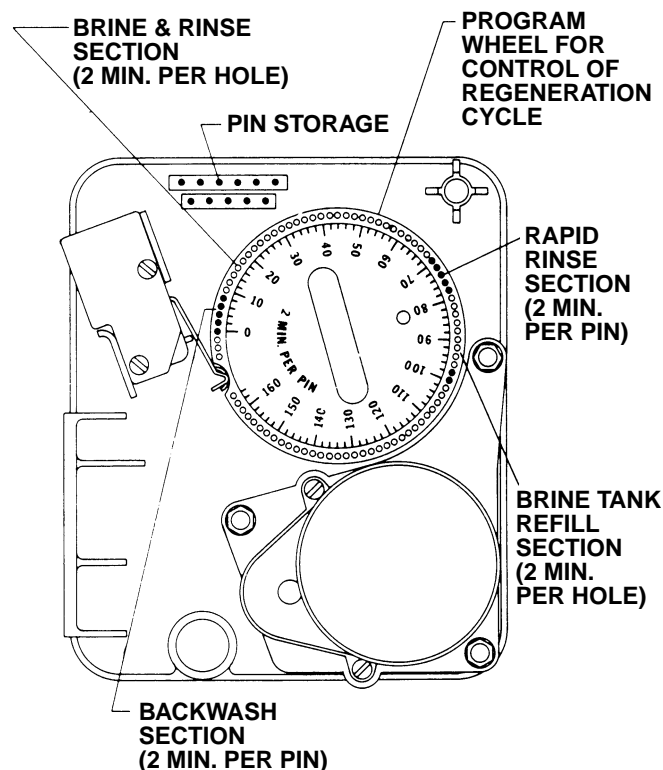
The group of holes between the last pin in the backwash section and the second group of pins determines the length of time that your unit will brine and rinse. (2 min. per hole.)

To change the length of brine and rinse time, move the rapid rinse group of pins to give more or fewer holes in the brine and rinse section. Number of holes times two equals brine and rinse time in minutes.

#### How To Change The Length Of Rapid Rinse:

The second group of pins on the program wheel determines the length of time that your water conditioner will rapid rinse. (2 min. per pin.)

To change the length of rapid rinse time, add or remove pins at the higher numbered end of this section as required. The number of pins times two equals the rapid rinse time in minutes.



NOTE: Program wheels having 0 to 82 min. cycle times, use "1" min. per pin or hole to set regeneration times. The layout of pins and holes on the program wheel follow the same procedure as on this page.

#### How To Change The Length Of Brine Tank Refill Time:

The second group of holes on the program wheel determines the length of time that your water conditioner will refill the brine tank (2 min. per hole.)

To change the length of refill time, move the two pins at the end of the second group of holes as required.

The regeneration cycle is complete when the outer micro-switch is tripped by the two pin set at end of the brine tank refill section. The program wheel, however, will continue to rotate until the inner micro-switch drops into the notch on the program wheel. See page 6 for salt setting calculations, and page 25 for general timer settings.

# MODEL 9500 ECONOMINDER®

## Time Brine Refill & Meter Setting Procedure

### PROGRAMMING

1. Your control valve has been factory set for backwash; brine and slow rinse; rapid rinse and brine tank fill times. Any of these times can be changed by repositioning the pins and holes or adding more pins (see pg. 5). Note that two different speed timer motors are used, one allows for an 82 minute maximum regeneration time (each pin or hole = 1 min.). The other allows for 164 minute maximum regeneration time (each pin or hole = 2 min.).
2. The 9500 Control has a separate brine tank fill cycle. Your desired salt setting must be calculated, using the brine line flow control rate of refill (in gpm) times your timer setting. Then using one gallon of fresh water dissolving approximately 3 lbs. salt, calculate your refill time.

ie: A desired 30 lb. salt setting: The unit has a 1.0 gpm refill rate, we will need a 10 gallon fill. (10 gal. x 3 lb./gal. = 30 lb. salt). The timer refill section would have to be set at 10 minutes. (10 min. x 1.0 gpm = 10 gal. fill)

**Note:** There always must be 2 pins at the end of your refill time. This is to stop the fill cycle. With your regeneration times now set, place timer back to its original position, making sure the lower right hand corner snaps back into the backplate and the meter cable slides through the backplate and does not bind.

### 3. Setting the gallon wheel

Knowing the amount of resin you have in each tank and your salt setting per regeneration, calculate the gallons available, using the following capacities as a guide:

Salt Setting at	One Cubic Foot of Resin	Capacity per Regeneration
15 lb		30,000 grains
10 lb		27,000 grains
8 lb		24,000 grains
6 lb		20,000 grains

$$\text{Gallons available} = \frac{\text{Capacity per Cubic Foot.}}{\text{Compensated Hardness of H}_2\text{O}} \times \text{Cubic Feet of Resin per Tank}$$

ie: 35 grain water; each tank having 7 cubic feet of resin and salted at 56 lb. of salt, yielding a usable 168,000 grain capacity: 4,800 gallons available =  $\frac{168,000 \text{ gr. capacity}}{35 \text{ gr. water}}$

### DO NOT SET THIS FIGURE - GO TO STEP 4

4. Since the 9500 Valve regenerates with soft water from the other tank, you must subtract the water used for regeneration. Take each of your regeneration cycles and calculate the water used. (Use the injector Slow Rinse rate chart supplied, see pg. 24.)

ie: Unit is set up for a 21 tank having 7 ft<sup>3</sup> of resin and salting at 8 lbs. per ft<sup>3</sup>, 12.0 gpm backwash, 4C injector, 2.0 gpm brine refill, and 60 psi and timer set up for 10 min. backwash, 42 min. brine and rinse, 10 min. rapid rinse, 10 min. brine tank fill.

- A. Backwash - 10 mins. x 12.0 gpm = 120.0 gallons
  - B. Brine and Rinse - 42 mins. x 1.95 gpm = 81.9 gallons  
(See injector chart slow rinse flow, pg. 24)
  - C. Rapid Rinse - 10 mins. x 12.0 gpm = 120.0 gallons
  - D. Brine Tank Fill - 10 mins. x 2.0 gpm = 20.0 gallons
- Total Regeneration Water = 341.9 gallons

# MODEL 9500 ECONOMINDER®

## Time Brine Refill & Meter Setting Procedure (Cont'd.)

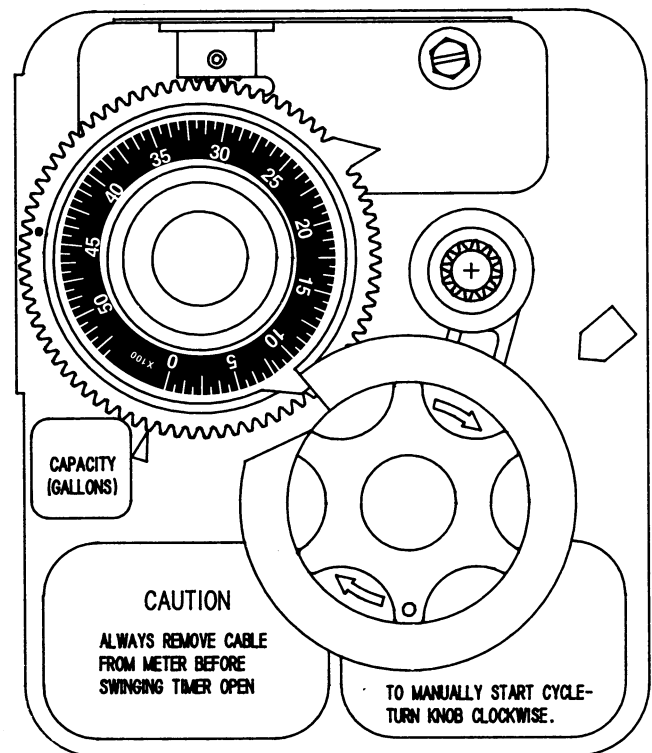
If we have 4800 gallons available from Step 3, we want to subtract the regeneration water used from the total water available.

4800 gallons available - 342 gallons used (in regeneration, step 4) = 4458 gallons setting

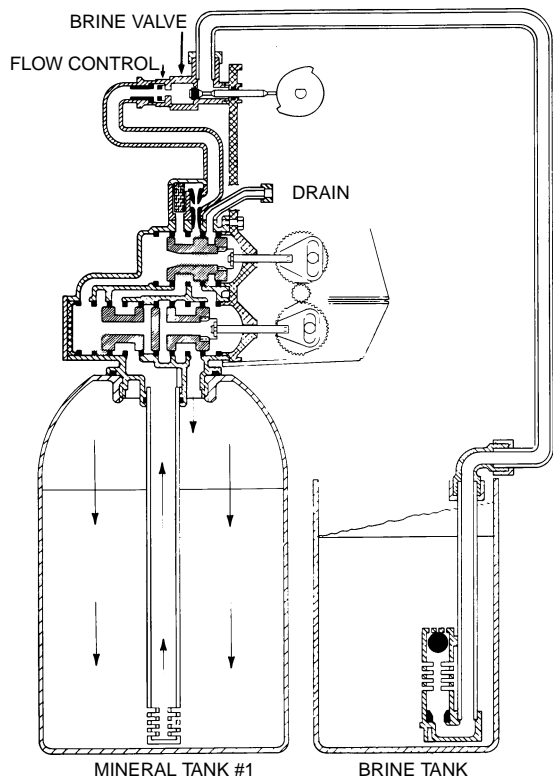
5. **NOW** set Meter wheel at approximately 4458 gallons. Lift the inner dial of the meter program wheel so that you can rotate it freely. Position the white dot opposite the 4458 gallon setting (see diag. below).

**NOTE:** There is a slight delay time from the time the meter zeros out and when the cycle starts. Units using the 1/15 rpm motor, 82 minute regeneration time available have a 9 *minute delay*. Units using the 1/30 rpm motor, 180 minute regeneration time available have an 18 *minute delay*. Typically on residential equipment this delay period is not critical. On commercial applications, this must be taken into consideration and continuous flows for 9 minutes or 18 minutes should be subtracted from water available.

- NOW**
1. Insert Meter cable into Meter.
  2. Check Bypass.
  3. Plug unit in.

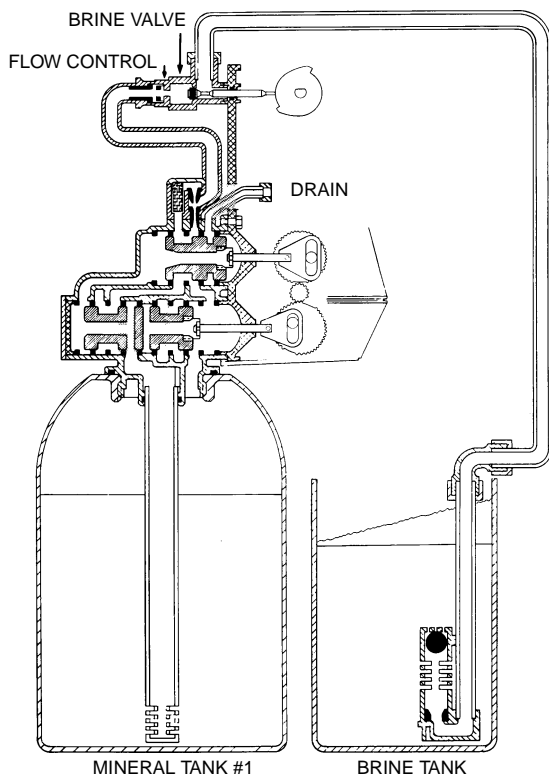


# MODEL 9500 ECONOMINDER®



## 1 - SERVICE POSITION

Hard water enters the unit at the valve inlet, flows around the lower piston, and down through the mineral in the first tank. Conditioned water enters the center tube through the bottom distributor, flows up through the center tube, around the lower piston, through the meter, and out the valve outlet. The second mineral tank is regenerated and on standby.

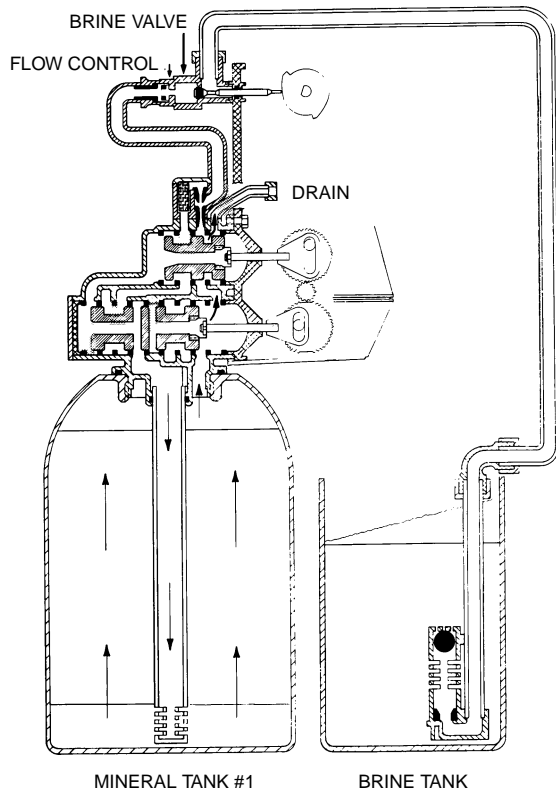


## 2 - TANKS SWITCHING (the meter has initiated a regeneration)

Hard water enters the unit at the valve inlet, flows around the lower piston, through the pipe leading to the second mineral tank, and down through the mineral in the second tank. Conditioned water enters the center tube of the second tank through the bottom distributor, flows up through the center tube, through the pipe leading back to the main valve, around the lower piston, through the meter, and out the valve outlet. The depleted first mineral tank is out of the flow path, and ready for regeneration.

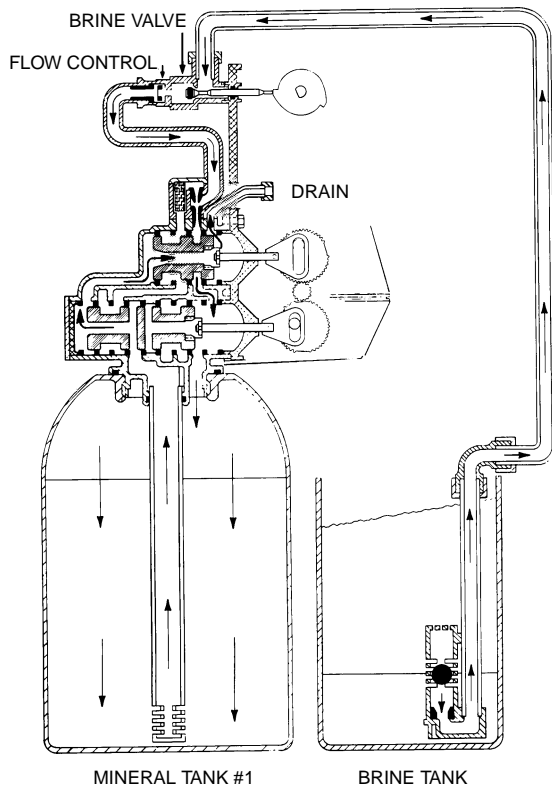


# MODEL 9500 ECONOMINDER®



### 3 - BACKWASH

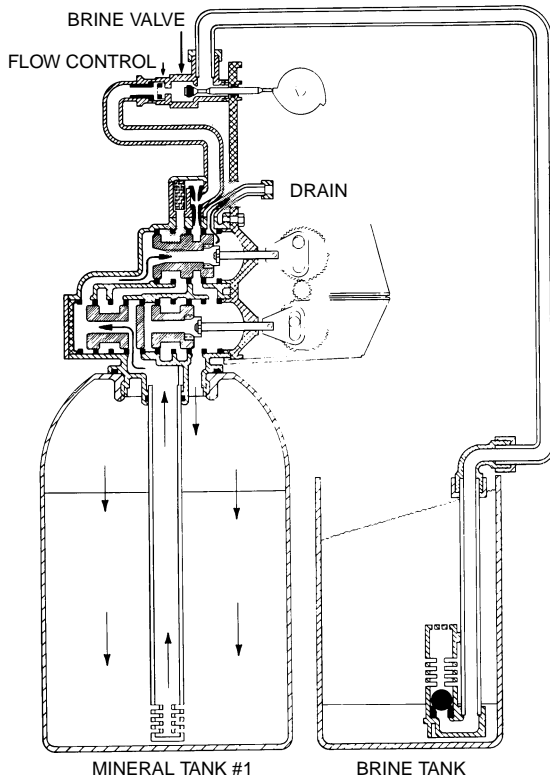
Conditioned water from the second mineral tank flows around the lower piston, around the upper piston, through the center of the lower piston, down the center tube, up through the mineral, around the upper piston, and out the drain line.



### 4 - BRINE DRAW

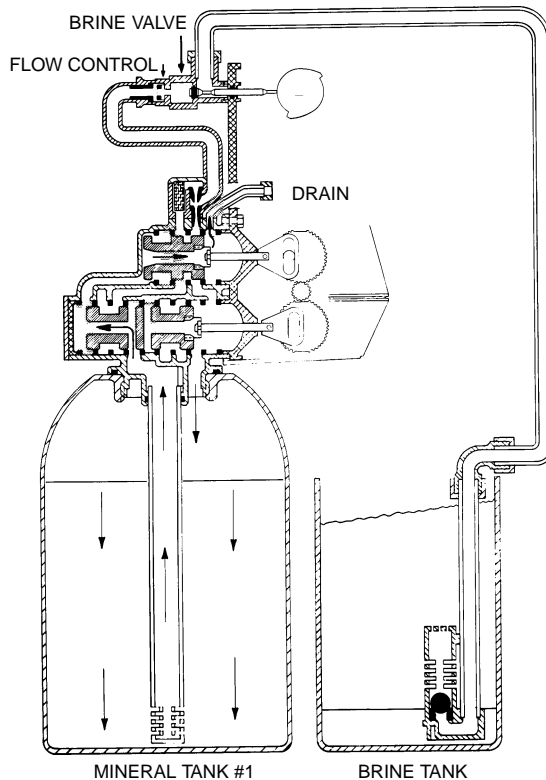
Conditioned water from the second mineral tank flows around the lower piston, around the upper piston, into the injector housing, and down through the nozzle and throat to draw brine from the brine tank. Brine flows around the upper piston, down through the mineral, into the center tube through the bottom distributor, up the center tube, through the center of the lower piston, through the center of the upper piston, and out through the drain line.

# MODEL 9500 ECONOMINDER®



## 5 - SLOW RINSE

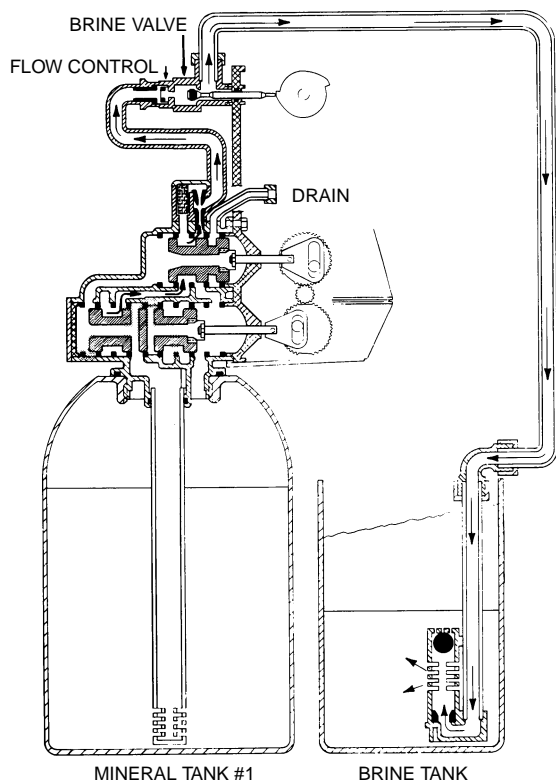
Conditioned water from the second mineral tank flows around the lower piston, around the upper piston, into the injector housing, down through the nozzle and throat, around the upper piston, down through the mineral, into the center tube through the bottom distributor, up the center tube, through the center of the lower piston, through the center of the upper piston, and out through the drain line.



## 6 - RAPID RINSE

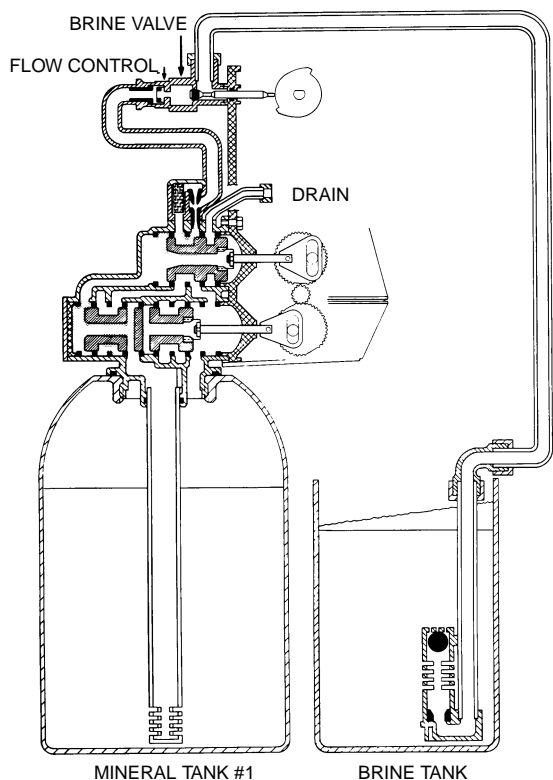
Conditioned water from the second mineral tank flows around the lower piston, around the upper piston, and down through the mineral in the first tank. Rinse water from the mineral bed enters the center tube through the bottom distributor, flows up the center tube, through the center of the lower piston, through the center of the upper piston, and out through the drain line.

# MODEL 9500 ECONOMINDER®



## 7 - BRINE TANK FILL POSITION

Conditioned water from the second mineral tank flows around the lower piston, around the upper piston, into the injector housing, through the brine line flow control, through the brine valve, and into to brine tank. No water flows through the first mineral tank.



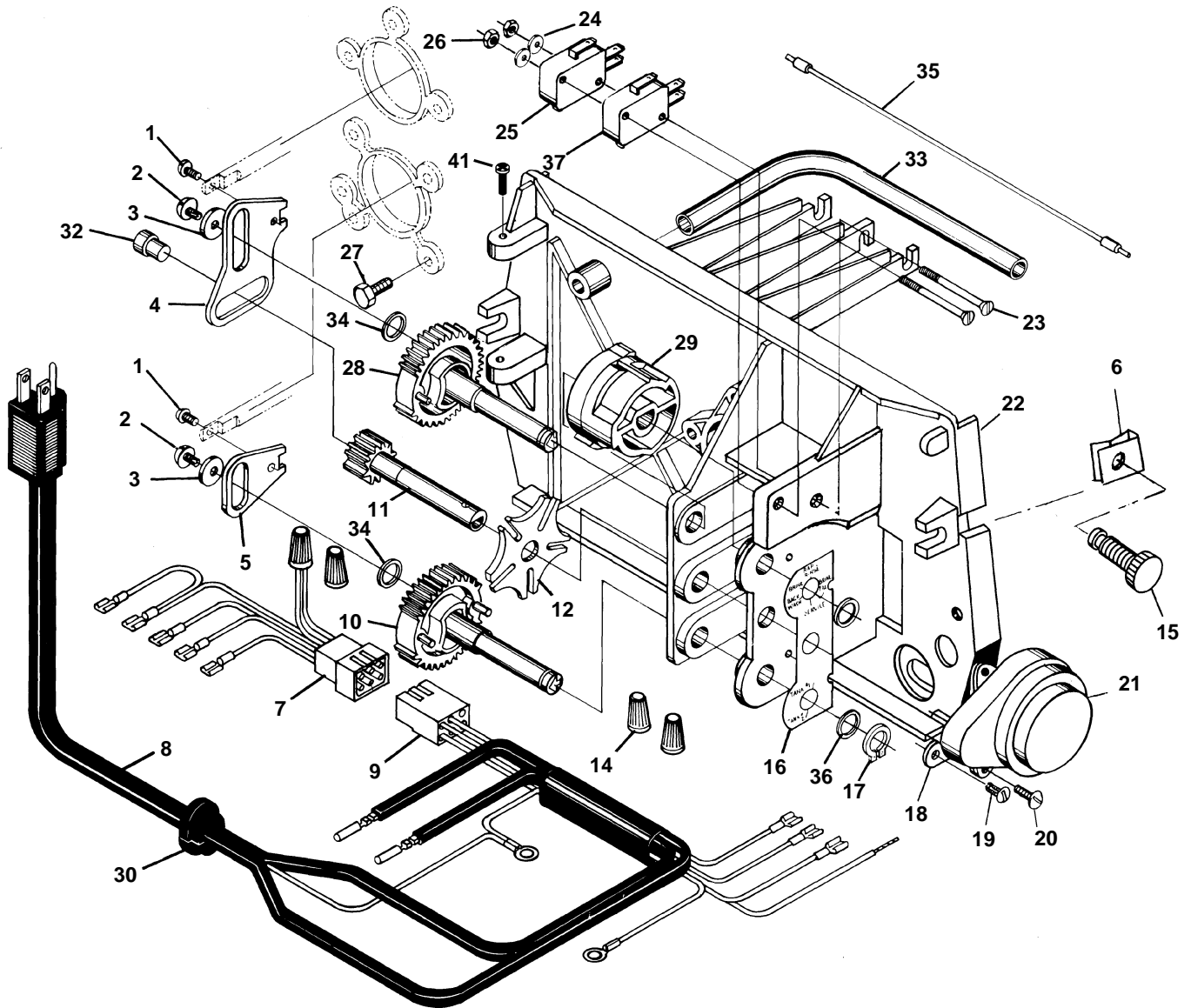
## 8 - SERVICE (TANKS SWITCHED)

Hard water enters the unit at the valve inlet, flows around the lower piston, through the pipe leading to the second mineral tank, and down through the mineral in the second tank. Conditioned water enters the center tube of the second tank through the bottom distributor, flows up through the center tube, through the pipe leading back to the main valve, around the lower piston, through the meter, and out the valve outlet. The regenerated first mineral tank is out of the flow path, and ready for use when the second mineral tank becomes depleted.

# MODEL 9500 ECONOMINDER®

## Drive Assembly

(See Opposite Page for Parts List)



# MODEL 9500 ECONOMINDER®

## Drive Assembly

### Parts List

Item No.	Quantity	Part No.	Description
1	2	11335	Screw
2	2	18564	Screw, Hex Washer, #6-20
3	2	13363	Washer
4	1	14921	Piston Rod Link, Upper
5	1	15019	Piston Rod Link, Lower
6	2	18728	Nut, Clip, #8-32
7	1	15203	Wiring Harness - Timer
8	1	11838	Power Cord
9	1	15202	Wiring Harness - Drive
10	1	15134	Drive Gear Assy, Lower
11	1	15135-02	Drive Gear Assy
12	1	14896	Geneva Wheel
14	4	12681	Wire Connector
15	2	19367	Cover Screw
16	1	15175	Position Decal
17	2	14917	Retaining Ring
18	1	15199	Ground Plate
19	1	14430	Screw, Hex Washer, #6
20	2	19160	Screw, Motor Mtg.
21	1	18737	Drive Motor - 24V., 50/60 Hz (Red Wires)
	1	18738	Drive Motor - 120V., 60 Hz (Black Wires)
	1	18739	Drive Motor - 220V., 50 Hz (Yellow Wires)
22	1	15131	Control Panel
23	2	15172	Screw, Flat Hd #4-40
24	2	10340	Washer, Lock, #4
25	1	10218	Micro Switch (Homing)
26	2	10339	Nut, Micro Switch
27	7	15331	Screw, Valve Mtg.
28	1	15133	Drive Gear Assy, Upper
29	1	17331	Triple Cam
30	1	13547	Strain Relief
31	1	15810	Retaining Ring, Drive Gear
32	1	15323	Guide Pin Upper Piston Rod Link
33	1	17337	Cable Guide
34	2	15372	Washer, Thrust
35	1	17744	Meter Cable Assy. - 20- 3/4" Long
36	2	15692	Spacer
37	1	16433	Micro Switch (Program)
38	1	10302	Insulator (not shown)
39	1	18699	Cover, Top (not shown)
40	1	14779	Cover, Bottom (not shown)
	1	19291-020	Cover, 1 Piece, Black (not shown)
41	2	15173	Screw

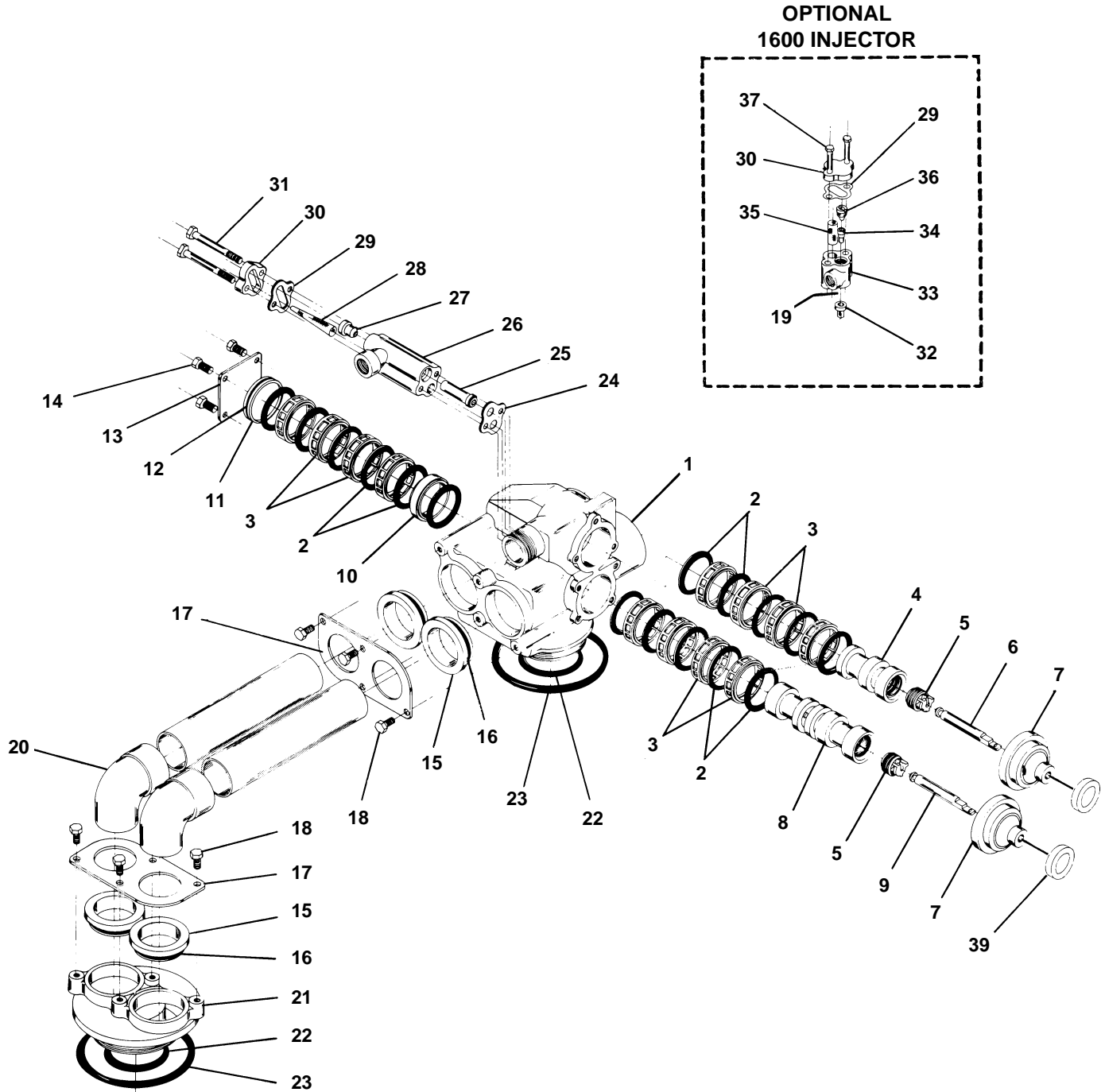
#### OPTIONAL AUX. DRIVE SWITCH 60320-10

1	10218	Switch
2	10302	Insulator
2	16442	Screw
2	16443	Spacer
1	17765	Cam. Switch
2	10339	Nut

# MODEL 9500 ECONOMINDER®

## Control Valve Assembly

(See Opposite Page for Parts List)



# MODEL 9500 ECONOMINDER®

## Control Valve Assembly

### Parts List

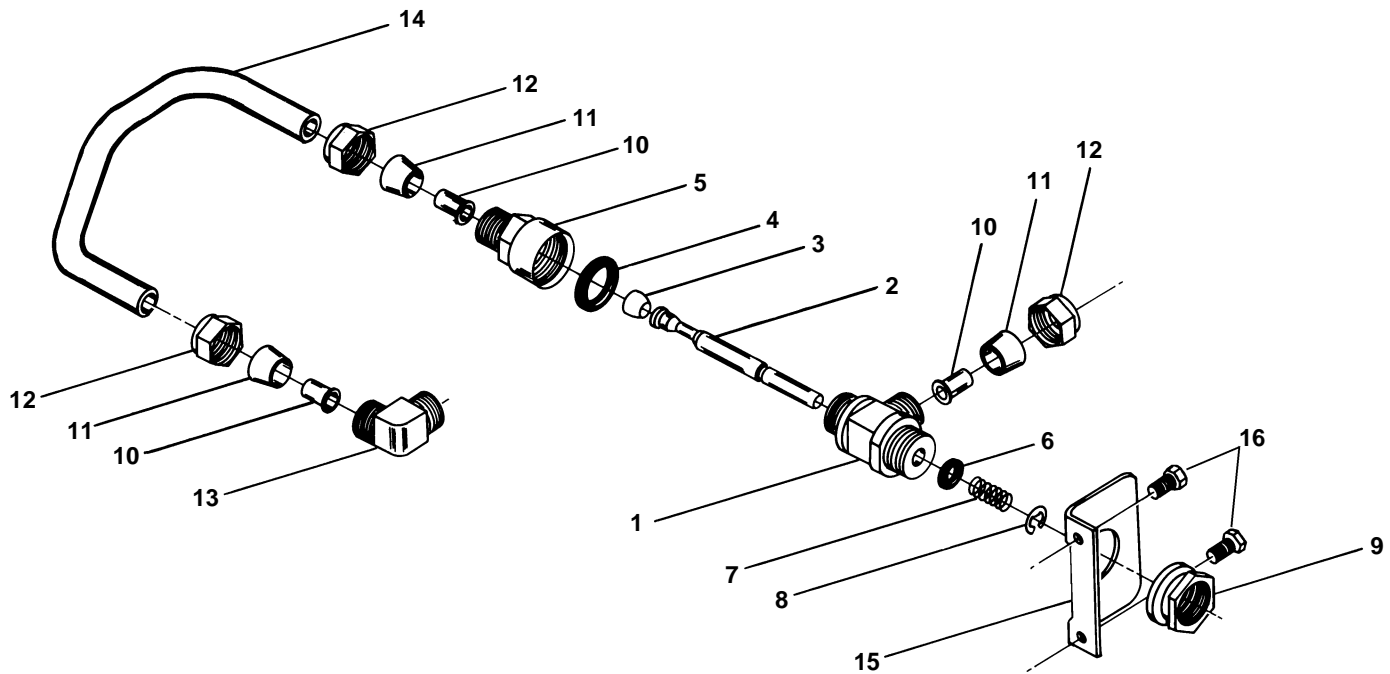
Item No.	Quantity	Part No.	Description
1	1	16919-01	Valve Body
2	16	16101	Seal
3	12	16638-01	Spacer
		16638	Spacer Hot Water
4	1	17110	Upper Piston
5	2	14309	Retainer, Piston Rod
	2	15110	Retainer, Piston Rod, H.W.
6	1	16957	Upper Piston Rod
7	2	17212	End Plug Assy.
	2	17212-01	End Plug Assy. H.W.
8	1	17111	Lower Piston
9	1	16956	Lower Piston Rod
10	1	17092	Spacer Disk
11	1	16955	End Plug
12	3	16394	O-Ring -029
13	1	14906	End Plate
14	4	15137	Screw, End Plate
		17657	Metric
15	4	17052	Coupling, Pipe
16	4	17224	O-Ring -224
17	1	17061	Coupling Retainer
18	8	10231	Screw, Retainer
		17659	Metric
19	1	11475	Injector Body Gasket, 1600
20	2	17353	.90° Copper Elbow
21	1	16916-01	Second Tank Adapter
22	2	13577	O-Ring -226
23	2	16455	O-Ring -347
24	1	14805	Injector Body Gasket, 1700
25	1	*14802	Injector Throat
26	1	17777	Injector Body
27	1	*14801	Injector Nozzle
28	1	14803	Injector Screen
29	1	10229	Injector Cover Gasket
30	1	11893	Injector Cover
31	2	14804	Screw, Injector Body
		17655	Metric
32	1	16221	Air Dispenser
33	1	17776	Injector Body
34	1	10914-3	Injector Throat #3, Yellow
35	1	10227	Injector Screen
36	1	10913-3	Injector Nozzle #3, Yellow
37	2	10692	Screw, Injector Body
		17656	Metric
38	1	60366	D.L.F.C. 1" NPT (not shown) - Specify Size
39	2	17558	Spacer
40	2	19608-15	Dispenser, Upper (not shown)
41	1	11248	Pin (not shown)

*Injector Throat	Injector Nozzle	Size	Color
14802-03	14801-03	#3C	Yellow
14802-04	14801-04	#4C	Green
14802-05	14801-05	#5C	White
14802-06	14801-06	#6C	Red

# MODEL 9500 ECONOMINDER®

## 1600 Series Brine System



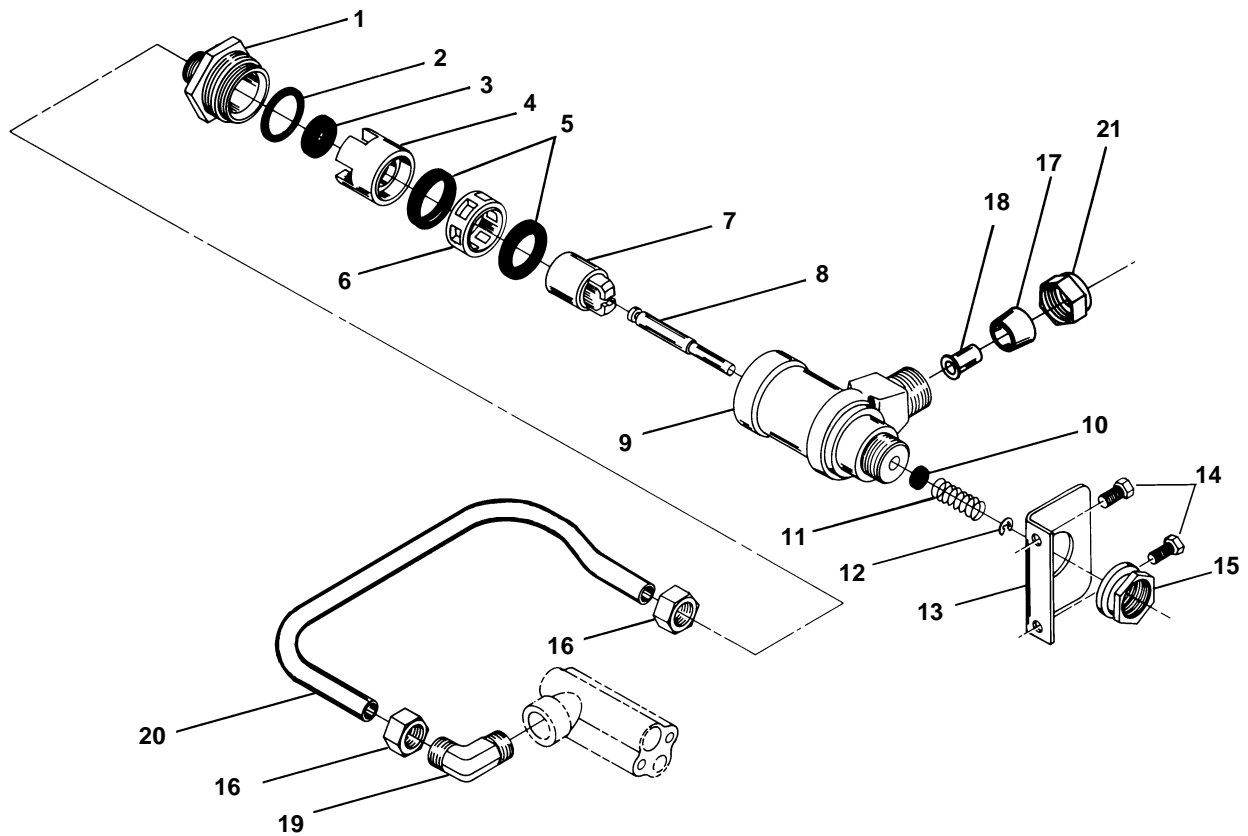
### PARTS LIST

Item No.	Quantity	Part No.	Description
1	1	12748	Brine Valve Body
2	1	16958	Brine Valve Stem
3	1	12626	Brine Valve Seat
4	1	11982	O-Ring
5	1	12747	Flow Control Fitting w/Flow Control Label
6	1	12550	Quad Ring
7	1	10249	Brine Valve Spring
8	1	10250	Retaining Ring
9	1	10269	Nut, Jam
10	3	10332	Tube insert 3/8"
11	3	10330	Delrin Sleeve 3/8"
12	3	10329	Fitting Nut 3/8"
	3	18698	Nut & Sleeve Assy H.W.
13	1	10328	90° Elbow - 1/4 Pipe Thd. to 3/8" Tube
14	1	16960	Brine Valve Tube
15	1	16922	Bracket, B/V
16	2	15137	Screw, B/V Bracket
		17657	Metric



# MODEL 9500 ECONOMINDER®

## 1700 Series Brine System

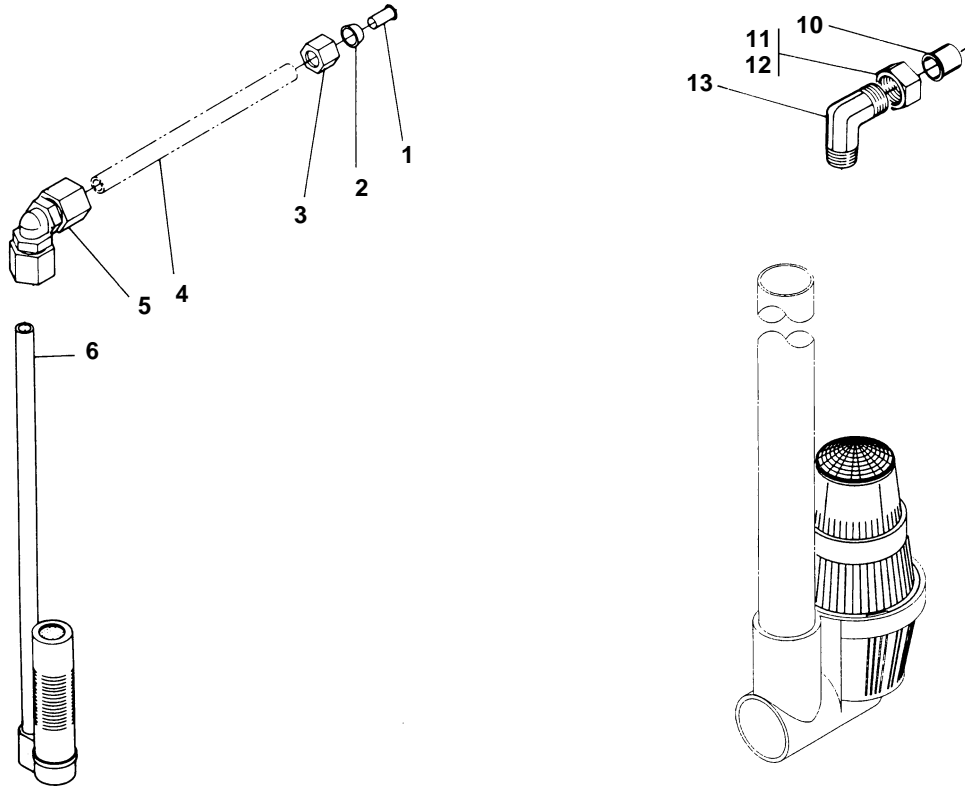


### PARTS LIST

Item No.	Quantity	Part No.	Description
1.....	1	14792.....	End Plug
2.....	1	13201.....	O-Ring, End Plug
3.....	1	.....	Washer Flow Control (specify size)
4.....	1	14785.....	Flow Control Retainer
5.....	2	14811.....	Piston Seal
6.....	1	14798.....	Spacer
7.....	1	14795.....	Brine Valve Piston
8.....	1	16929.....	Brine Valve Stem
9.....	1	14790.....	Brine Valve Body
10.....	1	12550.....	Quad Ring, Brine Stem
11.....	1	15310.....	Spring, Brine Valve
12.....	1	10250.....	Retaining Ring
13.....	1	16922.....	Bracket, B/V
14.....	2	15137.....	Screw, B/V Bracket
15.....	1	10269.....	Nut, Jam
16.....	2	15414.....	Nut, Tube
17.....	1	16124.....	Sleeve
18.....	1	15415.....	Insert
19.....	1	15413.....	Elbow
20.....	1	16959.....	Brine Valve Tube
21.....	1	16123.....	Nut, Tube

# MODEL 9500 ECONOMINDER®

## Air Check



### PARTS LIST

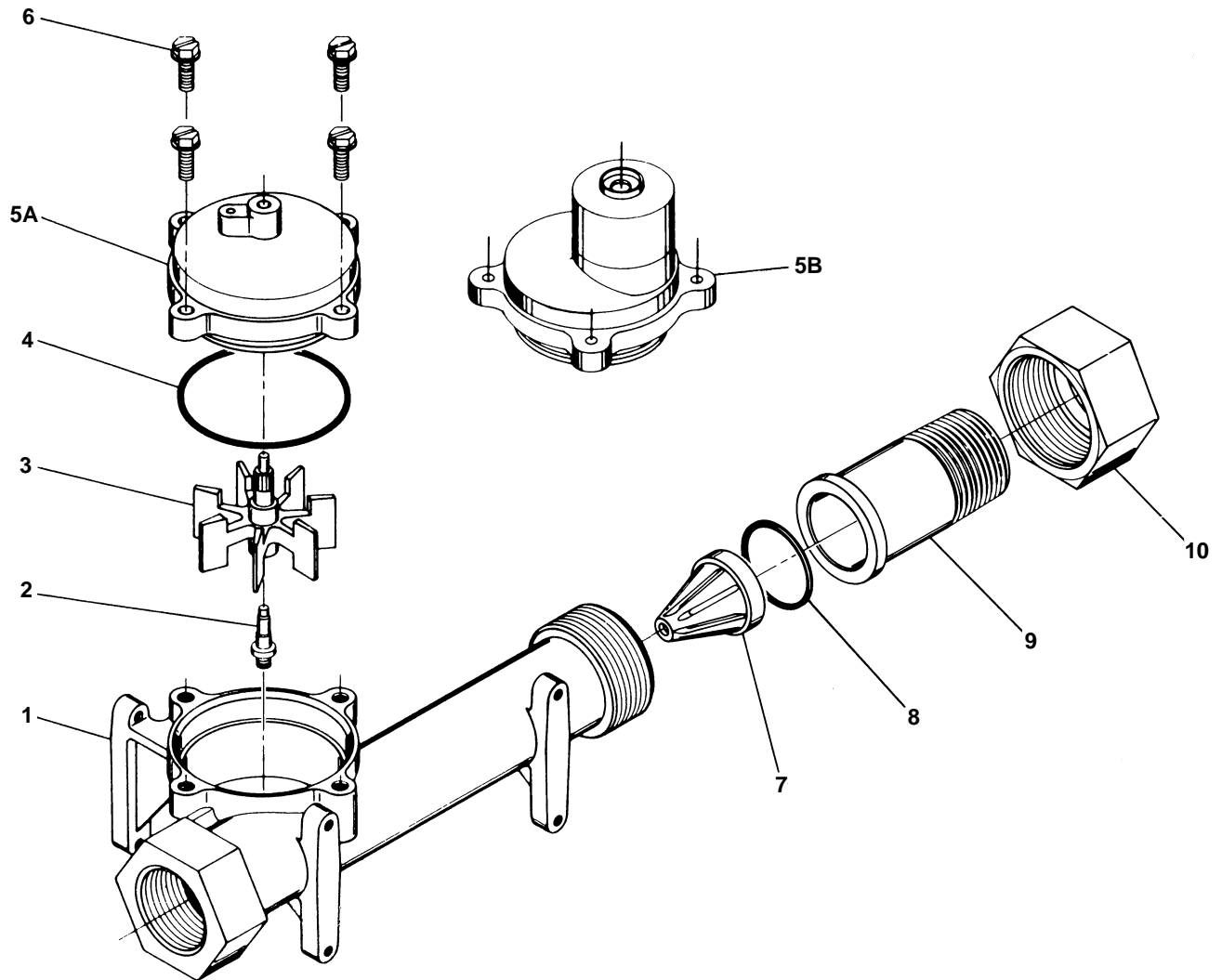
Item No.	Quantity	Part No.	Description
1	1	10332	Tube Insert 3/8"
2	1	10330	Ferrule
3	1	10329	Tube Nut 3/8"
4	1	Not Supplied	Brine Line Tube (3/8 Flexible Tube)
5	1	12794	90° Elbow - 3/8" T to 3/8" T
	1	13555	90° Elbow - 3/8" T to 3/8" T, HW
6	1	60002	#500 Air Check Assembly
	1	60003	#500 Air Check Assembly, HW

#### For Use With 2 GPM Flow Control

10		15415	Tube Insert 1/2"
11		16123	Ferrule 1/2"
12		16124	Tube Nut 1/2"
13		15413	Elbow
14		60009	#900 Air Check Assembly
		60009-01	#900 Air Check Assembly, HW

# MODEL 9500 ECONOMINDER®

## 1-1/2" Meter Assembly



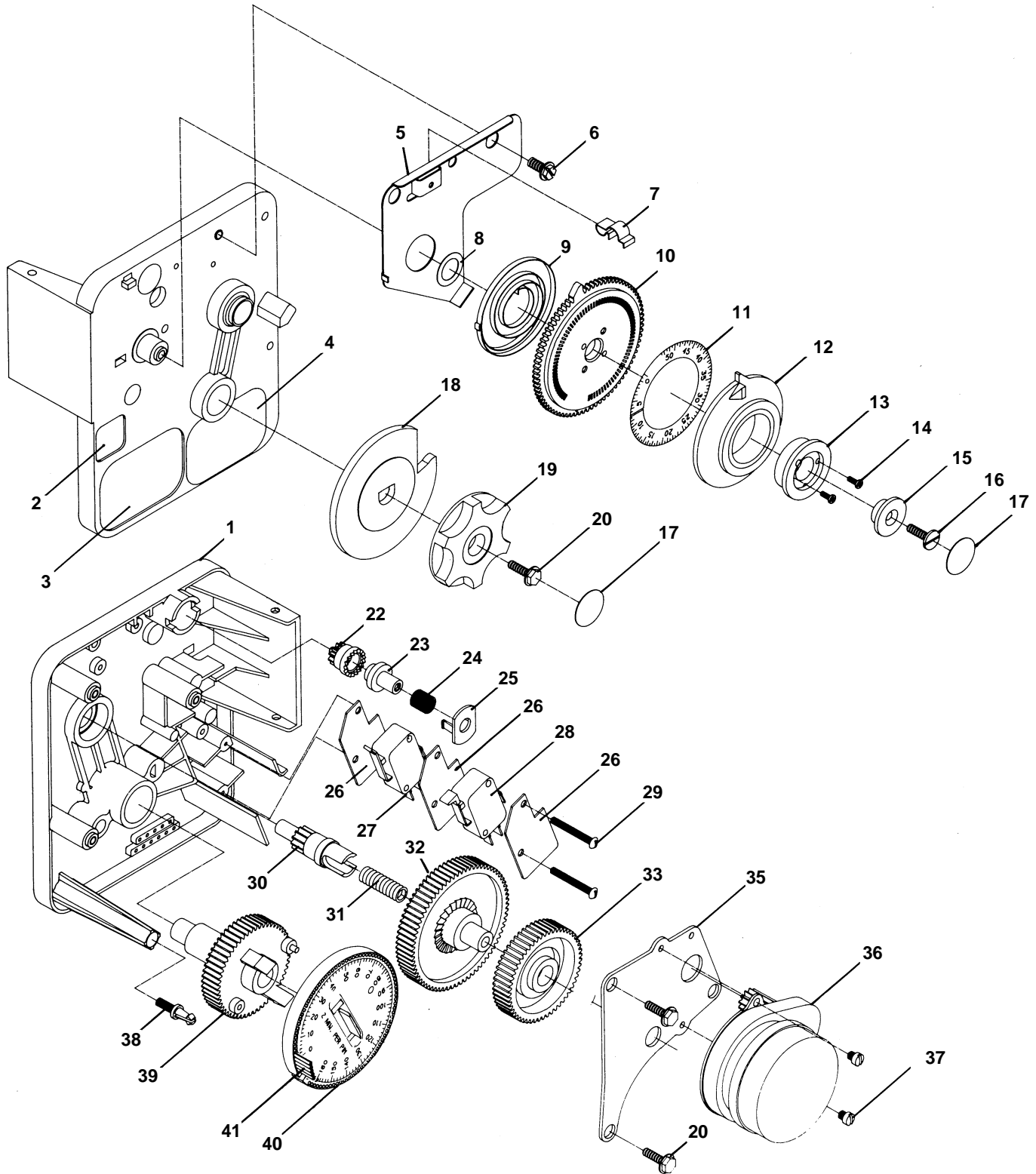
### PARTS LIST

Item No.	Quantity	Part No.	Description
1.....	1	17569	Meter Body
2.....	1	13882	Impeller Post
3.....	1	13509	Impeller
4.....	1	13847	O-Ring - Meter Cover
5A.....	1	15218	Meter Cover Assembly (St.d)
5B.....	1	15237	Meter Cover Assembly (Extended Range)
6.....	4	12112	Screw - Meter Cover
7.....	1	17542	Flow Straightener
8.....	1	12733	O-Ring
9.....	1	17544	Nipple - Quick Connect
10.....	1	17543	Nut - Quick Connect

# MODEL 9500 ECONOMINDER®

## Timer Assembly

(See Opposite Page for Parts List)



# MODEL 9500 ECONOMINDER®

## Timer Assembly

### Parts List

Item No.	Quantity	Part No.	Description
1	1	13870-03	Timer Housing Assy.
2	1	17870	Label - Capacity Gallons
3	1	15465	Label - Caution
4	1	16930	Label - Instruction
S	1	15227	Actuator Plate
6	1	10300	Screw, Hex Washer #8
7	1	17513	Spring Clip
8	1	15407	Washer, Plain #4
9	1	15228	Spring
10	1	15224-01	Drive Gear - Program Wheel
11	1	15968	Gallon Label 1-1/2" Meter
		15971	Gallon Label 1-1/2" Meter - Ext. Range
		15969	Gallon Label 1" Meter
		15970	Gallon Label 1" Meter - Ext. Range
12	1	15956	Adjusting Disc
13	1	16218	Program Wheel Cover
14	2	17054	Screw, #4-40
15	1	13806	Program Wheel Retainer
16	1	13748	Screw, FlatHd #6-20
17	2	11999	Button Decal
18	1	15223	Cycle Actuator Gear
19	1	13886-01	Knob
20	4	13296	Screw, Hex Washer #6-20
22	1	17724	Drive Pinion
23	1	17723	Drive Pinion Clutch
24	1	14276	Spring - Meter Clutch
25	1	14253	Retainer
26	3	14087	Insulator
27	1	15314	Switch
28	1	15320	Switch
29	2	11413	Screw, Pan Hd #4-40
30	1	13018	Idler Shaft
31	1	18563	Spring - Idler Shaft
32	1	13017	Idler Gear
33	1	13164	Drive Gear
35	1	13887	Motor Mtg. Plate
36	1	18743	Motor - 120V 60 Hz.-1/30 RPM
		18824	Motor - 220V 50 Hz.-1/30 RPM
		19170	Motor - 120V 60 Hz.-1/15 RPM
		18825	Motor - 220V 50 Hz.-1/15 RPM
37	2	13278	Screw, #6-32
38	1	14265	Spring Clip
39	1	15055	Main Drive Gear
40	1	19210-02	Program Wheel, 90 min.
		19210-05	Program Wheel, 180 min.
41	23	15493	Roll Pin
42	1	14430	Screw, Hex Washer, #6 (Ground, Not Shown)
		60308	.3200 Timer
		60310	.3210 Timer
		15203	Harness
		12681	Wire Nuts

#### 60320-02

#### Aux. Timer Switch

1	15320	Switch
1	15275	Gear
3	15808	Pin
2	19370	Screw

# MODEL 9500 ECONOMINDER®

## Service Instructions

PROBLEM	CAUSE	CORRECTION
1. Softener fails to regenerate.	A. Electrical service to unit has been interrupted. B. Timer is defective.	A. Assure permanent electrical service (check fuse, plug, pull chain or switch). B. Replace timer.
2. Hard water.	A. By-pass valve is open. B. No salt in brine tank. C. Injector screen plugged. D. Insufficient water flowing into brine tank. E. Hot water tank hardness. F. Leak at distributor tube. G. Internal valve leak.	A. Close by-pass valve. B. Add Salt to brine tank and maintain salt level above water level. C. Clean injector screen. D. Check brine tank fill time and clean brine line flow control if plugged. E. Repeated flushing of the hot water tank is required. F. Make sure distributor tube is not cracked. Check O-Ring and tube pilot. G. Replace seals and spacers and/or piston.
3. Unit used too much salt.	A. Improper salt setting. B. Excessive water in brine tank.	A. Check salt usage and salt setting. B. See Problem No. 7.
4. Loss of water pressure.	A. Iron buildup in line to water conditioner. B. Iron buildup in water conditioner. C. Inlet of control plugged due to foreign material broken loose from pipe by recent work done on plumbing system.	A. Clean line to water conditioner. B. Clean control and add mineral cleaner to mineral bed. Increase frequency of regeneration and/or backwash time. C. Remove pistons and clean control.
5. Loss of mineral through drain line.	A. Air in water system. B. Drain line flow control too large.	A. Assure that well system has proper air eliminator control. Check for dry well condition. B. Check to ensure drain line flow control is sized properly for your mineral tank.
6. Iron in conditioned water.	A. Fouled mineral bed.	A. Check backwash, brine draw and brine tank fill. Increase frequency of regeneration.
7. Excessive water in brine tank.	A. Plugged drain line flow control. B. Plugged injector system. C. Timer not cycling.	A. Check flow control. B. Clean injector and screen. C. Replace timer.

# MODEL 9500 ECONOMINDER®

## Service Instructions (Cont'd.)

PROBLEM	CAUSE	CORRECTION
8. Softener fails to draw brine.	D. Foreign material in brine valve.	D. Replace brine valve seat and clean valve.
	E. Foreign material in brine line flow control.	E. Clean brine line flow control.
	F. Power loss during brine fill.	F. Check power source.
	A. Drain line flow control is plugged.	A. Clean drain line flow control.
	B. Injector is plugged.	B. Clean injector.
	C. Injector screen plugged.	C. Clean screen.
9. Control cycles continuously.	D. Line pressure is too low.	D. Increase line pressure to 25 P.S.I. min.
	E. Internal Control Leak	E. Change seals, spacers and piston assembly.
10. Drain flows continuously.	A. Broken or shorted switch.	A. Determine if switch or timer is faulty and replace it, or replace complete power head.
	A. Valve is not programming correctly.	A. Check timer program and positioning of control. Replace power head assembly if not positioning properly.
	B. Foreign material in control.	B. Remove power head assembly and inspect bore, remove foreign material and check control in various regeneration positions.
	C. Internal control leak.	C. Replace seals and piston assembly.

### General Service Hints

#### Problem: Softener Delivers Hard Water.

Cause could be that . . . Reserve Capacity Has Been Exceeded.

**Correction:** Check salt dosage requirements and reset program wheel to provide additional reserve.

Cause could be that Program Wheel Is Not Rotating With Meter Output.

**Correction:** Pull cable out of meter cover and rotate manually. Program wheel must move without binding and cycle actuator must start the cycle before the clutch releases.

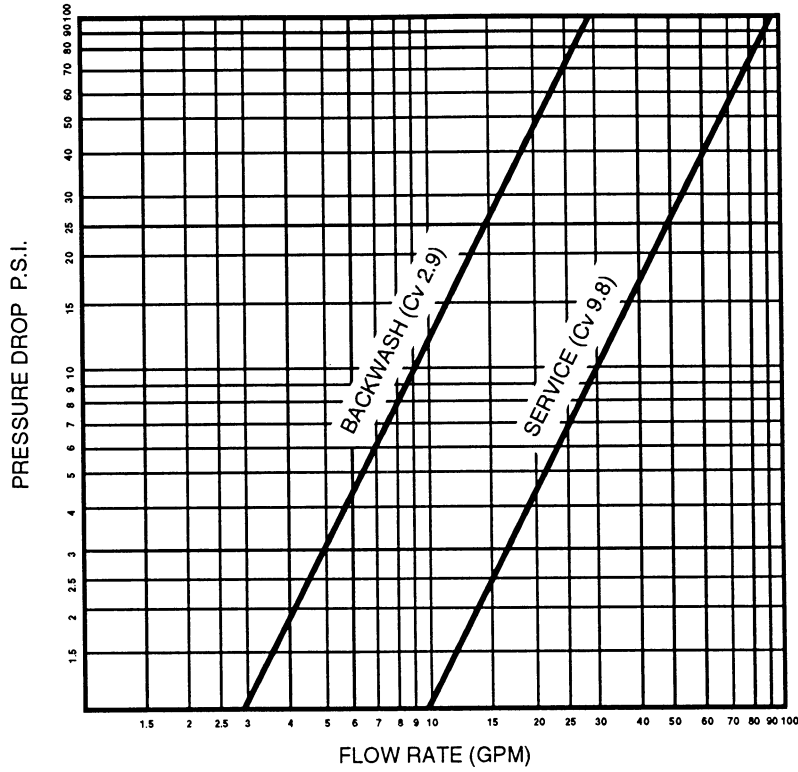
Cause could be that . . . Meter Is Not Measuring Flow.

**Correction:** Check output by observing rotation of small gear on front of timer (Note — program wheel must not be against regeneration stop for this check). Each tooth is approximately 75 gallons on 1-1/2" installations. If not performing properly, replace meter.

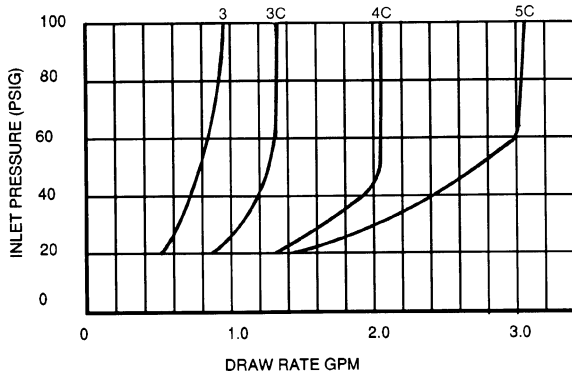
# MODEL 9500 ECONOMINDER®

## Flow Data & Injector Draw Rates

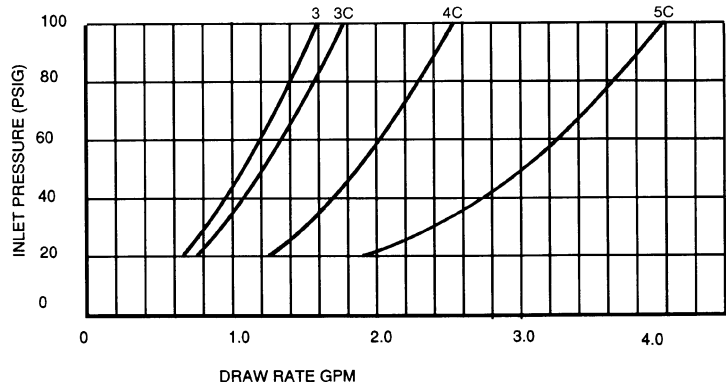
### SERVICE AND BACKWASH



### INJECTOR DRAW RATE ON EMPTY TANK



### SLOW RINSE RATE ON EMPTY TANK





# MODEL 9500 ECONOMINDER®

## Typical Timer Settings At Various Salting Levels

### Salting @ 6# Per Ft<sup>3</sup>

Tank Dia.	Volume of Resin	B/W Rate-GPM	B/W Time-Min.	Inj. Size	Brine and Slow Rinse Time-Minutes @ 6# Per Ft <sup>3</sup>			Fast Rinse Time (min.)	Brine Refill Rate-GPM	Brine Tank Refill Time-Minutes @ 6# Per Ft <sup>3</sup>
					35 PSI	60 PSI	90 PSI			
14"ø	3 Ft <sup>3</sup>	5.0	10	3	34	30	26	10	1.0	6 min. 18 lb.
16"	4 Ft <sup>3</sup>	7.0	10	3	54	42	40	10	1.2	6 min. 29 lb.
18"	5 Ft <sup>3</sup>	9.0	10	3C	40	34	32	10	1.2	10 min. 36 lb.
21"	6 Ft <sup>3</sup>	12.0	10	3C	40	34	32	10	2.0	6 min. 36 lb.
21"	7 Ft <sup>3</sup>	12.0	10	4C	40	32	30	10	2.0	8 min. 48 lb.
24"	8 Ft <sup>3</sup>	15.0	10	4C	40	32	30	10	2.0	8 min. 48 lb.
24"	9 Ft <sup>3</sup>	15.0	10	4C	48	42	42	10	2.0	10 min. 60 lb.
24"	10 Ft <sup>3</sup>	15.0	10	4C	48	42	42	10	2.0	10 min. 60 lb.

### Salting @ 8# Per Ft<sup>3</sup>

Tank Dia.	Volume of Resin	B/W Rate-GPM	B/W Time-Min.	Inj. Size	Brine and Slow Rinse Time-Minutes @ 6# Per Ft <sup>3</sup>			Fast Rinse Time (min.)	Brine Refill Rate-GPM	Brine Tank Refill Time-Minutes @ 6# Per Ft <sup>3</sup>
					35 PSI	60 PSI	90 PSI			
14"ø	3 Ft <sup>3</sup>	5.0	10	3	44	40	40	10	1.0	8 min. 24 lb.
16"	4 Ft <sup>3</sup>	7.0	10	3	66	52	52	10	1.2	10 min. 36 lb.
18"	5 Ft <sup>3</sup>	9.0	10	3C	44	38	38	10	1.2	12 min. 43 lb.
21"	6 Ft <sup>3</sup>	12.0	10	3C	40	32	30	10	2.0	8 min. 48 lb.
21"	7 Ft <sup>3</sup>	12.0	10	4C	48	42	42	10	2.0	10 min. 60 lb.
24"	8 Ft <sup>3</sup>	15.0	10	4C	52	48	48	10	2.0	12 min. 72 lb.
24"	9 Ft <sup>3</sup>	15.0	10	4C	52	48	48	10	2.0	12 min. 72 lb.
24"	10 Ft <sup>3</sup>	15.0	10	4C	60	52	52	10	2.0	14 min. 84 lb.

### Salting @ 10# Per Ft<sup>3</sup>

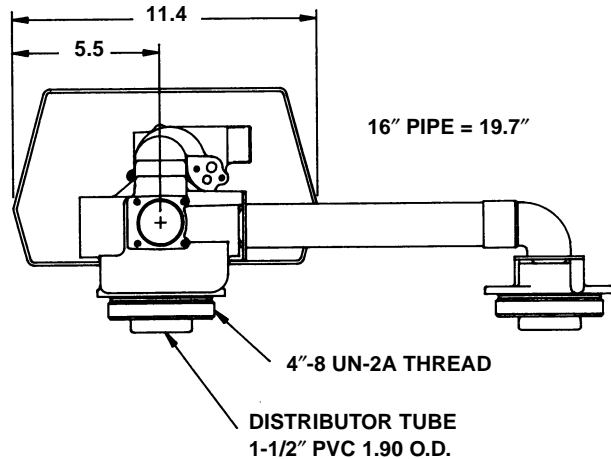
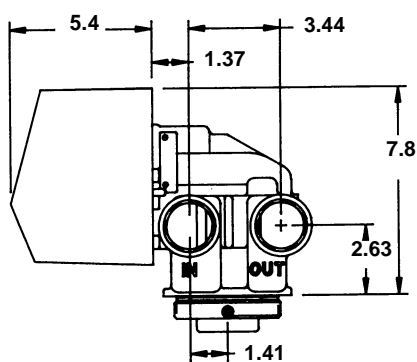
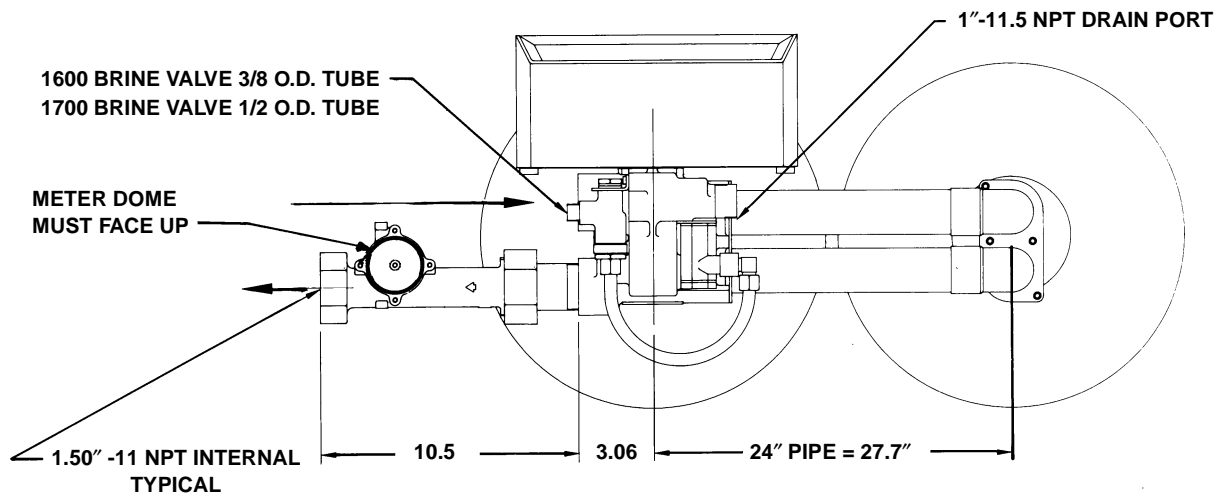
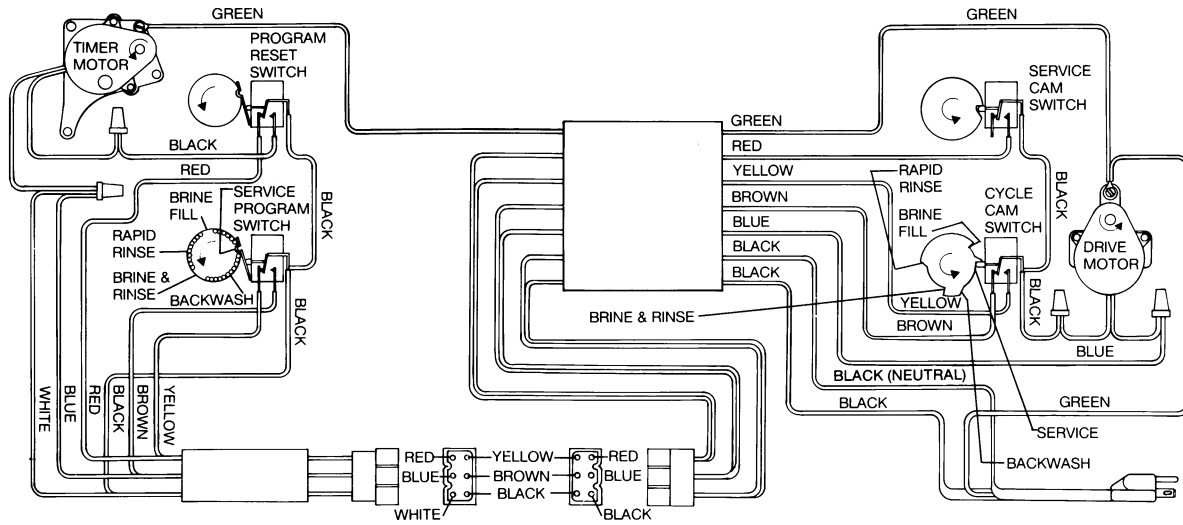
Tank Dia.	Volume of Resin	B/W Rate-GPM	B/W Time-Min.	Inj. Size	Brine and Slow Rinse Time-Minutes @ 6# Per Ft <sup>3</sup>			Fast Rinse Time (min.)	Brine Refill Rate-GPM	Brine Tank Refill Time-Minutes @ 6# Per Ft <sup>3</sup>
					35 PSI	60 PSI	90 PSI			
14"ø	3 Ft <sup>3</sup>	5.0	10	3	54	46	46	10	1.0	10 min. 30 lb.
16"	4 Ft <sup>3</sup>	7.0	10	3C	44	38	38	10	1.2	12 min. 43 lb.
18"	5 Ft <sup>3</sup>	9.0	10	3C	54	46	46	10	1.2	14 min. 50 lb.
21"	6 Ft <sup>3</sup>	12.0	10	3C	48	42	42	10	2.0	10 min. 60 lb.
21"	7 Ft <sup>3</sup>	12.0	10	4C	52	48	48	10	2.0	12 min. 72 lb.
24"	8 Ft <sup>3</sup>	15.0	10	4C	60	52	52	10	2.0	14 min. 84 lb.
24"	9 Ft <sup>3</sup>	15.0	10	5C	60	46	46	10	2.0	16 min. 96 lb.
24"	10 Ft <sup>3</sup>	15.0	10	5C	68	50	50	10	2.0	18 min. 108 lb.

### Salting @ 15# Per Ft<sup>3</sup>

Tank Dia.	Volume of Resin	B/W Rate-GPM	B/W Time-Min.	Inj. Size	Brine and Slow Rinse Time-Minutes @ 6# Per Ft <sup>3</sup>			Fast Rinse Time (min.)	Brine Refill Rate-GPM	Brine Tank Refill Time-Minutes @ 6# Per Ft <sup>3</sup>
					35 PSI	60 PSI	90 PSI			
14"ø	3 Ft <sup>3</sup>	5.0	10	3	82	66	66	10	1.0	15 min. 45 lb.
16"	4 Ft <sup>3</sup>	7.0	10	3C	70	60	60	10	1.2	18 min. 65 lb.
18"	5 Ft <sup>3</sup>	9.0	10	3C	82	70	70	10	1.2	22 min. 79 lb.
21"	6 Ft <sup>3</sup>	12.0	10	3C	64	58	58	10	3.0	10 min. 90 lb.
21"	7 Ft <sup>3</sup>	12.0	10	4C	76	68	68	10	2.0	18 min. 108 lb.
24"	8 Ft <sup>3</sup>	15.0	10	5C	76	56	56	10	5.0	8 min. 120 lb.
24"	9 Ft <sup>3</sup>	15.0	10	5C	90	66	66	10	4.0	12 min. 144 lb.
24"	10 Ft <sup>3</sup>	15.0	10	5C	96	70	70	10	5.0	10 min. 150 lb.

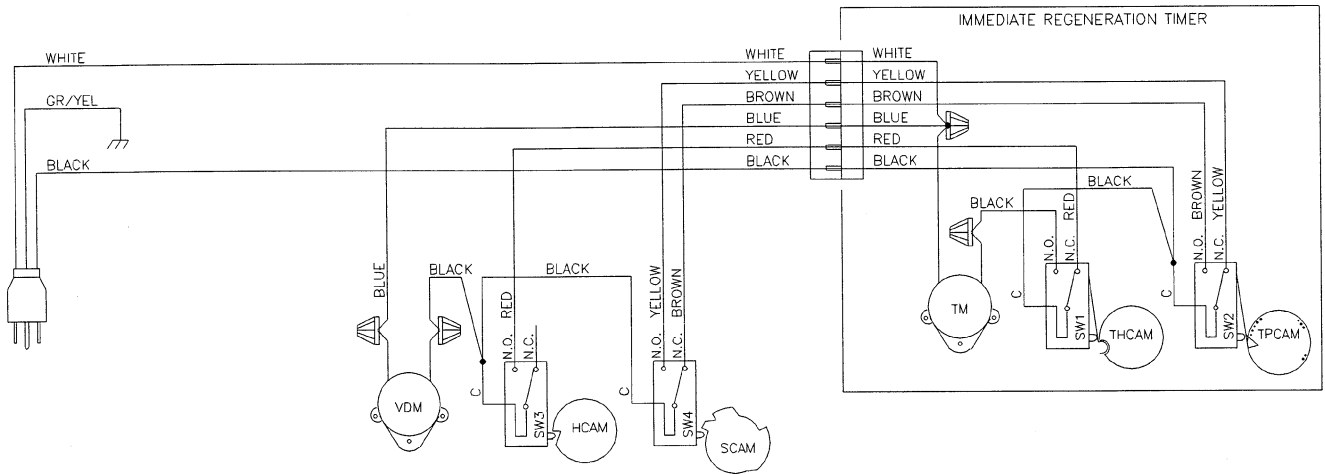
# MODEL 9500 ECONOMINDER®

## 2 Tank Wiring & Control Dimensions



# MODEL 9500

## Valve Wiring Diagram



- TM – TIMER MOTOR
- VDM – VALVE DRIVE MOTOR
- SW1 – TIMER HOMING SWITCH
- SW2 – TIMER PROGRAM SWITCH
- SW3 – VALVE HOMING SWITCH
- SW4 – VALVE STEP SWITCH
- THCAM – TIMER HOMING CAM
- TPCAM – TIMER PROGRAM CAM
- HCAM – VALVE HOMING CAM
- SCAM – VALVE STEP CAM

NOTE:  
TWIN TANK METER IMMEDIATE REGENERATION

# MODEL 9500 ECONOMINDER®

## Service Assemblies

<b>60037</b> . . . . . <b>1600 Brine Valve</b>	<b>60381</b> . . . . . <b>1700 Injector Assembly</b>
10269 . . . . . Nut, Jam	For Illustration, See Page 14
1 . . . . . 10249 . . . . . Brine Valve Spring	1 . . . . . 11893 . . . . . Injector Cap
1 . . . . . 10250 . . . . . Retaining Ring	1 . . . . . 10229 . . . . . Injector Cover Gasket
3 . . . . . 10329 . . . . . 3/8" Brass Nut	1 . . . . . 17777 . . . . . Injector Body
3 . . . . . 10330 . . . . . 3/8" Ferrule	1 . . . . . 14801 . . . . . Injector Nozzle
3 . . . . . 10332 . . . . . 3/8" Sleeve	1 . . . . . 14802 . . . . . Injector Throat
1 . . . . . 16958-02 . . . . . 1600 Brine Valve Stem w/seat	1 . . . . . 14803 . . . . . Injector Screen
1 . . . . . 12748 . . . . . Brine Valve Body	2 . . . . . 14804 . . . . . Screw
1 . . . . . 12550 . . . . . Quad Ring	1 . . . . . 14805 . . . . . Injector Body Gasket
1 . . . . . 16960 . . . . . Tube, Brine Valve	
<b>60039</b> . . . . . <b>1700 Brine Valve</b>	<b>60108</b> . . . . . <b>9500 Piston Assembly - Upper</b>
For Illustration, See Page 17	For Illustration, See Page 14
1 . . . . . 10250 . . . . . Brine Valve Spring	1 . . . . . 11335 . . . . . Screw
1 . . . . . 12550 . . . . . Quad Ring	1 . . . . . 14309 . . . . . Piston Rod Retainer
1 . . . . . 13201 . . . . . Quad Ring	1 . . . . . 17110 . . . . . Piston
1 . . . . . 14785 . . . . . Flow Control Retainer	1 . . . . . 17212 . . . . . End Plug Assembly
1 . . . . . 14790 . . . . . Brine Valve Body	1 . . . . . 16957 . . . . . Piston Rod
1 . . . . . 14792 . . . . . Brine Valve End Plug	<b>60109</b> . . . . . <b>9500 Piston Assembly - Lower</b>
1 . . . . . 14795 . . . . . Brine Valve Piston	For Illustration, See Page 14
1 . . . . . 16929 . . . . . Brine Valve Stem	1 . . . . . 11335 . . . . . Screw
1 . . . . . 14798 . . . . . Spacer	1 . . . . . 14309 . . . . . Piston Rod Retainer
2 . . . . . 14811 . . . . . Piston Seal	1 . . . . . 17111 . . . . . Piston
1 . . . . . 15310 . . . . . Brine Valve Spring	1 . . . . . 17212 . . . . . End Plug Assembly
1 . . . . . 16123 . . . . . Nut 1/2"	1 . . . . . 16956 . . . . . Piston Rod
1 . . . . . 16124 . . . . . Ferrule 1/2"	<b>60134</b> . . . . . <b>9500 Seal and Spacer Kit - Upper</b>
1 . . . . . 10269 . . . . . Nut, Jam	For Illustration, See Page 14
1 . . . . . 15415 . . . . . Insert	5 . . . . . 16101 . . . . . Seal
<b>60080</b> . . . . . <b>1600 Injector Assembly</b>	4 . . . . . 16638-01 . . . . . Spacer
For Illustration, See Page 14	<b>60133</b> . . . . . <b>9500 Seal and Spacer Kit - Lower</b>
1 . . . . . 10227 . . . . . Injector Screen	For Illustration, See Page 14
1 . . . . . 11893 . . . . . Injector Cap	11 . . . . . 16101 . . . . . Seal
1 . . . . . 10229 . . . . . Injector Cover Gasket	8 . . . . . 16638-01 . . . . . Spacer
1 . . . . . 10328 . . . . . 90° Elbow 1/4" NPT x 3/8" Tube	1 . . . . . 17092 . . . . . Spacer
2 . . . . . 10692 . . . . . Screw	<b>60610-01</b> . . . . . <b>9500 Meter Assembly - Std. Range</b>
1 . . . . . 10913 . . . . . Injector Nozzle	For Illustration and Parts List
1 . . . . . 10914 . . . . . Injector Throat	See Page 19
1 . . . . . 11475 . . . . . Injector Body Gasket	<b>60610-02</b> . . . . . <b>9500 Meter Assembly - Ext. Range</b>
1 . . . . . 17776 . . . . . Injector Body	For Illustration and Parts List,
<b>60715-16</b> . . . . . <b>Tube Assy, 2nd Tank 16"</b>	See Page 19
For Illustration, See Page 14	<b>60420</b> . . . . . <b>9500 Powerhead Assembly</b>
1 . . . . . 18601 . . . . . Bag/Screws	See "Parts Price List"
4 . . . . . 17052 . . . . . Coupling	<b>60136-9500</b> . . . . . <b>9500 Service Repair Kit</b>
2 . . . . . 17353 . . . . . 90° 1-1/2" 2 Elbow	See "Parts Price List"
2 . . . . . 17061 . . . . . Coupling Retainer	
4 . . . . . 17224 . . . . . O-Ring -224	<b>Flow Controls</b>
2 . . . . . 17351-16 . . . . . 16", 1-1/2" Copper Tube	60366-50 . . . . . Fleck flow control 5.0 GPM 1" NPT
8 . . . . . 10231 . . . . . Screw, Hex	60366-70 . . . . . Fleck flow control 7.0 GPM 1" NPT
<b>60715-24</b> . . . . . <b>Tube Assy, 2nd Tank 24"</b>	60708-10 . . . . . Fleck flow control 10.0 GPM 1" x 3/4" NP
1 . . . . . 17351-24 . . . . . 24" 1-1/2" Copper Tube	60708-12 . . . . . Fleck flow control 12.0 GPM 1" x 3/4" NP
(Replaces 17351-16)	60708-15 . . . . . Fleck flow control 15.0 GPM 1" x 3/4" NP
	60708-20 . . . . . Fleck flow control 20.0 GPM 1" x 3/4" NP
	60708-25 . . . . . Fleck flow control 25.0 GPM 1" x 3/4" NP

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