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## WTFNDR Series Residential Metered Nitrate System

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Installation and Operation Manual

March 2015 Version

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**Installation and Operating Instructions for WTFN  
Top Mount Nitrate Filters**

**Model #:**

_____	WTFN240DR	Nitrate Filter
_____	WTFN320DR	Nitrate Filter
_____	WTFN480DR	Nitrate Filter
_____	WTFN640DR	Nitrate Filter

**Shipping Carton Description / unit:**

# of cartons	Contents	Description
1	Mineral tank	Distributor pipe installed
1	WTFN control valve	WTFN control valve and bypass

**Note: The WTFN320DR units have a vortech distributor and do not require gravel.**

**Filter Media is Packaged as Follows:**

Model #	Gravel (preloaded at factory)	Media
WTFN240DR	15 lbs.	0.75 CF A-520E
WTFN320DR	n/a	1.0 CF A-520E
WTFN480DR	15 lbs.	1.5 CF A-520E
WTFN640DR	20 lbs.	2.0 CF A-520E

**NOTE: THIS FILTER IS NOT INTENDED TO BE USED FOR TREATING WATER THAT IS MICROBIOLOGICALLY UNSAFE OR OF UNKNOWN QUALITY WITHOUT ADEQUATE DISINFECTION WHETHER BEFORE OR AFTER THE SYSTEM.**

**Water Filter Positioning:**

1. Place water filter in desired position, far enough from walls and other obstructions to allow for servicing the unit.
2. Place the water filter within reasonable access to a grounded 115V/60 HZ circuit and a legal drain line connection.

### ***Water Filter Tank Loading:***

1. **(Note: only for the 240, 480, and 640 units)** Center the distributor and make sure it is resting on the bottom of the tank. The top of the distributor pipe should be **flush with the top of the tank** (this was prefitted at the factory).
2. Cover the top opening of the distributor pipe before filling the tank with media.
4. Pour the appropriate media provided with the unit into the top of the tank. See page one for your specific model number unit to determine the amount of media to load into the mineral tank.

Model #	Media
WTFN240DR	0.75 CF A-520E
WTFN320DR	1.0 CF A-520E
WTFN480DR	1.5 CF A-520E
WTFN640DR	2.0 CF A-520E

5. Remove the material used to cover the top opening of the distributor pipe.

### ***WTFN Control Valve:***

1. Turn the control valve upside down and ensure that the control valve distributor o'ring is in place. Use silicone lubricant on the o'ring.
2. Place the control valve onto the distributor pipe and into the tank opening.
3. Thread the control valve hand tight . Do not overtighten.
4. The control valve's drain connection is 1/2" npt and is located on the back right of the control valve.

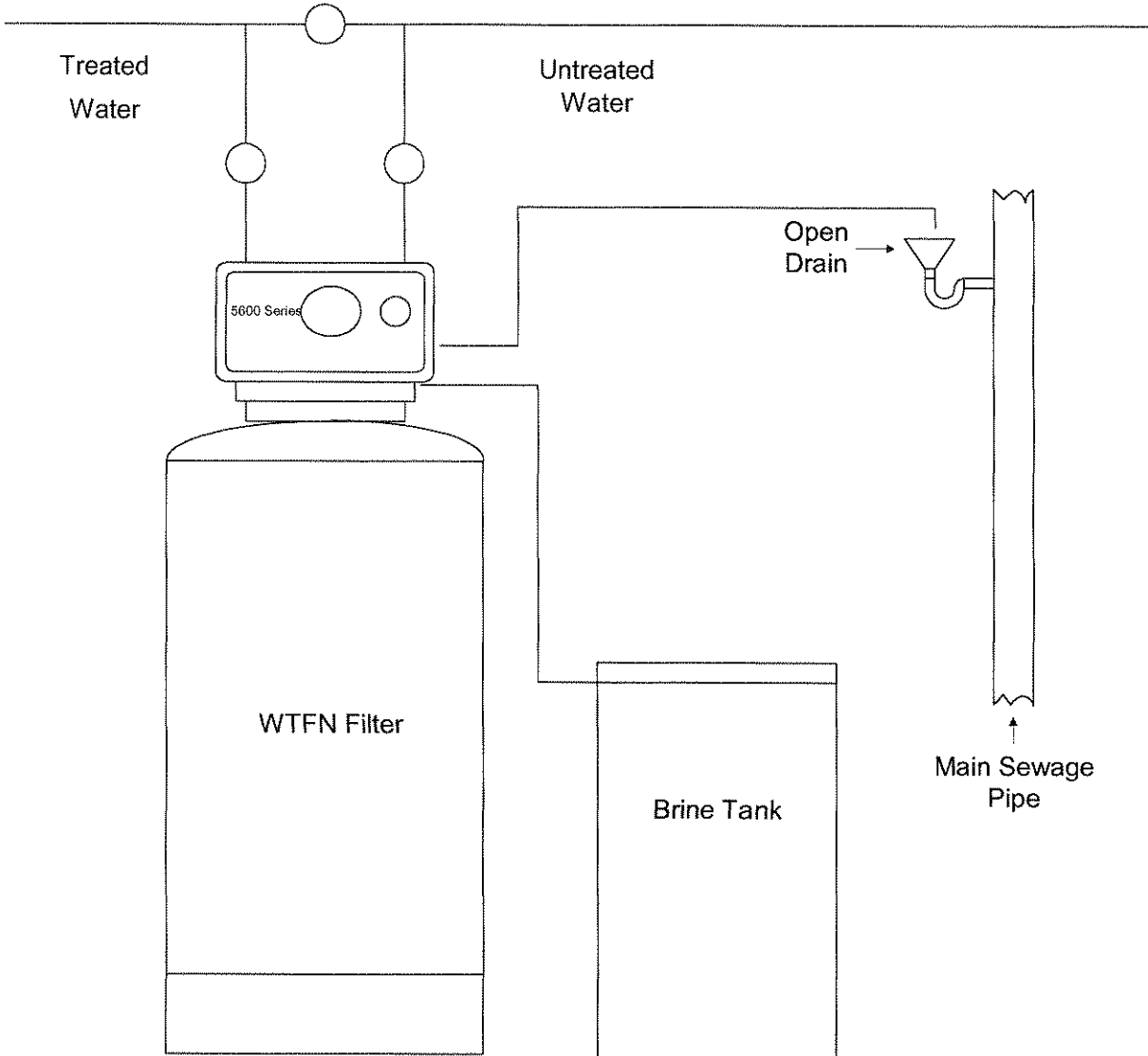
### ***Service and Drain Piping:***

1. Pipe filter system into the service lines (see Figure 1) using the bypass valve assembly supplied with the unit. The inlet and outlet connections of the control valve are located on the back of the valve body. As you face the timer the inlet is on the right and and the outlet is on the left. Always follow local plumbing codes when installing our water treatment equipment.

2. If sweat fittings are used, be sure soldering is done in such a manner as not to allow heat to reach the valve. If Schedule 80 PVC is used make sure to follow the proper primer and solvent instructions.
3. The drain line connection is located on the top of the valve body as you face the timer. The drain line must be of adequate size to allow for full regeneration flow.
  - The control valve drain connection is 1/2" npt.
  - Never decrease the drain piping size to below 5/8".
  - Maximum drain line length is 20 feet.
  - Maximum drain line height is 8 feet above the control valve.
  - The end of the drain line must be piped to an open drain.
  - Always follow local plumbing codes when piping drain lines to a waste pipe.

UNDER NO CIRCUMSTANCES SHOULD THERE BE A DIRECT CONNECTION WITH SANITARY SEWAGE FACILITIES.

Figure 1



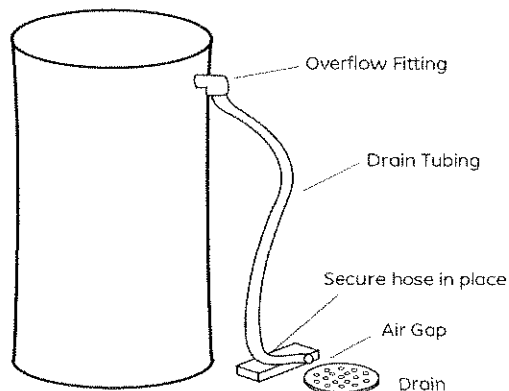
**Electrical Requirements:**

Always follow all local electrical codes when installing our water treatment equipment.

1. Provide a properly grounded 115V/60 HZ electrical outlet.
2. Maximum amperage required is 3 amps.
3. Make sure the electrical service provides power 24 hours per day. Avoid using outlets that are switch controlled.
4. Follow all local electrical codes when installing our water treatment equipment.

### ***Brine Tank:***

1. The brine tank should be located directly beside the water filter mineral tank.
2. Connect one end of the 3/8" poly tubing to the compression fitting on the top of the brine shutoff valve located in the brine tank and the other end to the compression fitting located on the right side of the WTFN control valve.
3. Make sure the plastic gripper assembly is properly positioned on each end of the tubing.
4. The brine shutoff valve contains a float that controls the water level in the brine tank. The float height was preset at the factory.

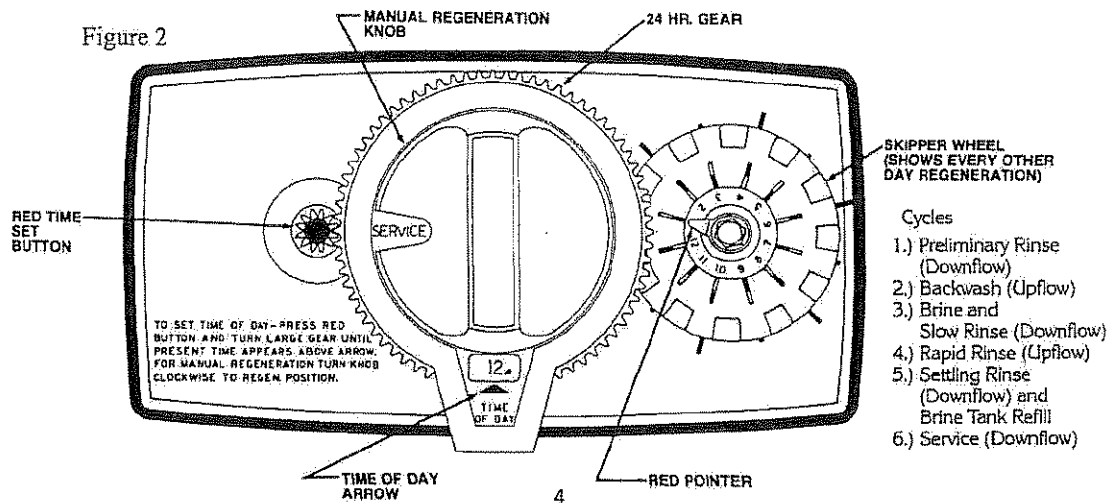


### ***Filling Water Filter with Water:***

1. Close inlet and outlet ball valves.
2. Turn Manual Regeneration Knob in a clockwise direction until you reach the Backwash position.
3. Open inlet ball valve 1/4 turn and allow water to fill tank slowly for approximately 10 minutes. After all air has been purged from tank, fully open inlet ball valve and allow water to run in this position for 15 minutes.
4. Turn the Manual Regeneration Knob in a clockwise direction until you reach the Rapid Rinse position. Allow the unit to stay in this position for approximately 10 minutes to purge the media fines to drain.

5. Plug the timer into the electrical outlet. The timer will automatically advance to the service position after completing the Rapid Rinse cycle. If water runs dirty to service, place unit in backwash position and allow the timer to go through a complete regeneration. The total regeneration will take approximately 2 hours. The unit will be in the service position after regeneration is complete.

### WTFN Control Valve Timer Settings:



### Time of Day Setting

- 1) To set the proper time of day, depress the Red Time Set Button and turn the 24 Hour Gear until the correct time of day is aligned with the Time of Day Arrow. **Note whether the time is A.M. or P.M.**
- 2) The timer is preset to regenerate at 12:00 AM.

### Regeneration Frequency Setting (1-99 Days Between Regeneration Option) (the factory default is 2 AM)

- 1) Locate the Skipper Wheel on the timer. (See Figure 2).
- 2) The Skipper Wheel has a total of 12 pins which means you have a variety of choices for regeneration frequency. To set a regeneration simply slide a pin to the outside of the Skipper Wheel. This exposes the pin beyond the outer edge of the Skipper Wheel and will engage a regeneration cycle on that day.
 

le: Sliding the # 1 pin to the outside sets the timer to regenerate once every 12 days.



- 3) The recommended regeneration frequency will change according to your water quality problems. We usually recommend a regeneration frequency of 1x6 days for normal water conditions and 1x3 days for severe water conditions. Please contact installer for assistance.

***Final Check:***

1. Make sure the water level in the brine tank is at least 1" above the plastic grid plate.
2. Fill the brine tank with Solar Salt
3. Make sure the drain line connection meets all plumbing codes and that the drain line size can handle the backwash flow rate of the filter.
4. Make sure the Inlet and Outlet ball valves are open and the Bypass ball valve is closed.
5. Make sure the control valve timer is plugged into an electrical outlet with power 24 hours per day.
6. Check all piping for leaks.

## Troubleshooting

### Symptom: Unit Fails to Regenerate

Cause	Solution
Faulty electrical supply	Verify that electrical power is getting to the outlet
Low inlet water pressure	Verify a minimum 20 psi inlet water pressure
Drain line is restricted	Insure that the drain line is free of blockage
Defective timer motor	Replace the timer motor
Plugged backwash flow control	Clean or replace the backwash flow control
All skipper pins are slid inward	Slide the desired number of pins outward
The injector is plugged	Clean the injector

### Symptom: Hard Water When Unit is in Service Position

Cause	Solution
The bypass valve is open or defective	Insure that the bypass valve is in the service position
No salt in the brine tank	Add solar salt to the brine tank
Not enough water in the brine tank	Verify that the 5600 timer is set for the proper amount of salt usage
Unit fails to draw brine (salt water)	See symptom: Unit fails to draw brine
Excessive water usage	Set the timer to regenerate more often
Loss of cation resin	See symptom: Loss of cation resin
Change in raw water hardness level	Test the raw water hardness level and adjust regeneration frequency
Leak at the distributor tube	Verify that the distributor is flush with the top of the tank

**Symptom: Unit uses too Much Salt**

<b>Cause</b>	<b>Solution</b>
Improper salt usage timer setting	Verify that salt usage setting on the back of the timer is set according to the Specification Reference Table
Excessive water in the brine tank	See symptom: Excessive water in Brine Tank

**Symptom: Loss of Cation Resin**

<b>Cause</b>	<b>Solution</b>
Backwash flow control is missing or is the incorrect size	Verify that the proper backwash flow control is installed
Air in the system	Verify that the well system is operating properly

**Symptom: Excessive Water in the Brine Tank**

<b>Cause</b>	<b>Solution</b>
Injector is plugged	Clean or replace the injector
Defective or damaged piston/spacers assembly	Replace the piston/spacers assembly
The brine float assembly seals on the 464 brine tank shutoff are dirty or worn	Replace the 464 brine float assembly
Salt setting at the back of the timer assembly is set incorrectly	Verify that the salt setting on the timer assembly corresponds with the reference table
Drain line is restricted	Insure that there are no restrictions in the drain line piping
Plugged backwash control	Clean the backwash flow control (BWFC)

**Symptom: Unit Fails to Draw Brine**

<b>Cause</b>	<b>Solution</b>
Injector is plugged	Clean or replace the injector
Loose suction line connection	Verify that all suction line connections are tight
Drain line is restricted	Insure that there are no restrictions in the drain line piping
Low inlet water pressure	Verify a minimum 20 psi inlet water pressure
Improper installation of distributor pipe	Verify that the distributor is flush with the top of the tank

**Symptom: Continuous Flow to Drain**

<b>Cause</b>	<b>Solution</b>
Defective or damaged piston/spacers assembly	Replace the piston/spacers assembly
Piston rod assembly is damaged	Replace piston rod assembly
Drive motor failure	Replace the drive motor

**Symptom: Loss of Water Pressure**

<b>Cause</b>	<b>Solution</b>
Dirt build-up in softener tank	Clean or replace the Cation Resin
Dirt build-up in the inlet piping to the Water Softener Unit	Clean or replace the inlet piping
Distributor pipe is plugged	Clean or replace the distributor pipe

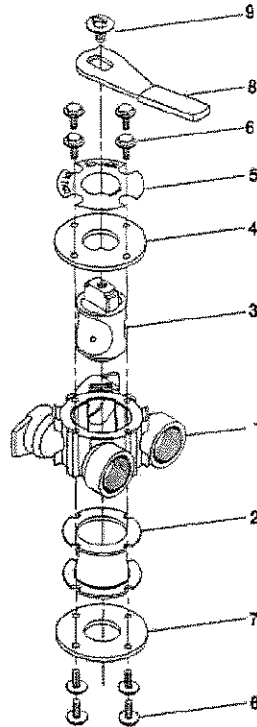
**Symptom: Control Valve Cycles Continuously**

<b>Cause</b>	<b>Solution</b>
Defective timer assembly	Replace the timer assembly

# WTFN FILTER CONTROL VALVE & PARTS

## MODEL 5600

*by-pass valve assembly*



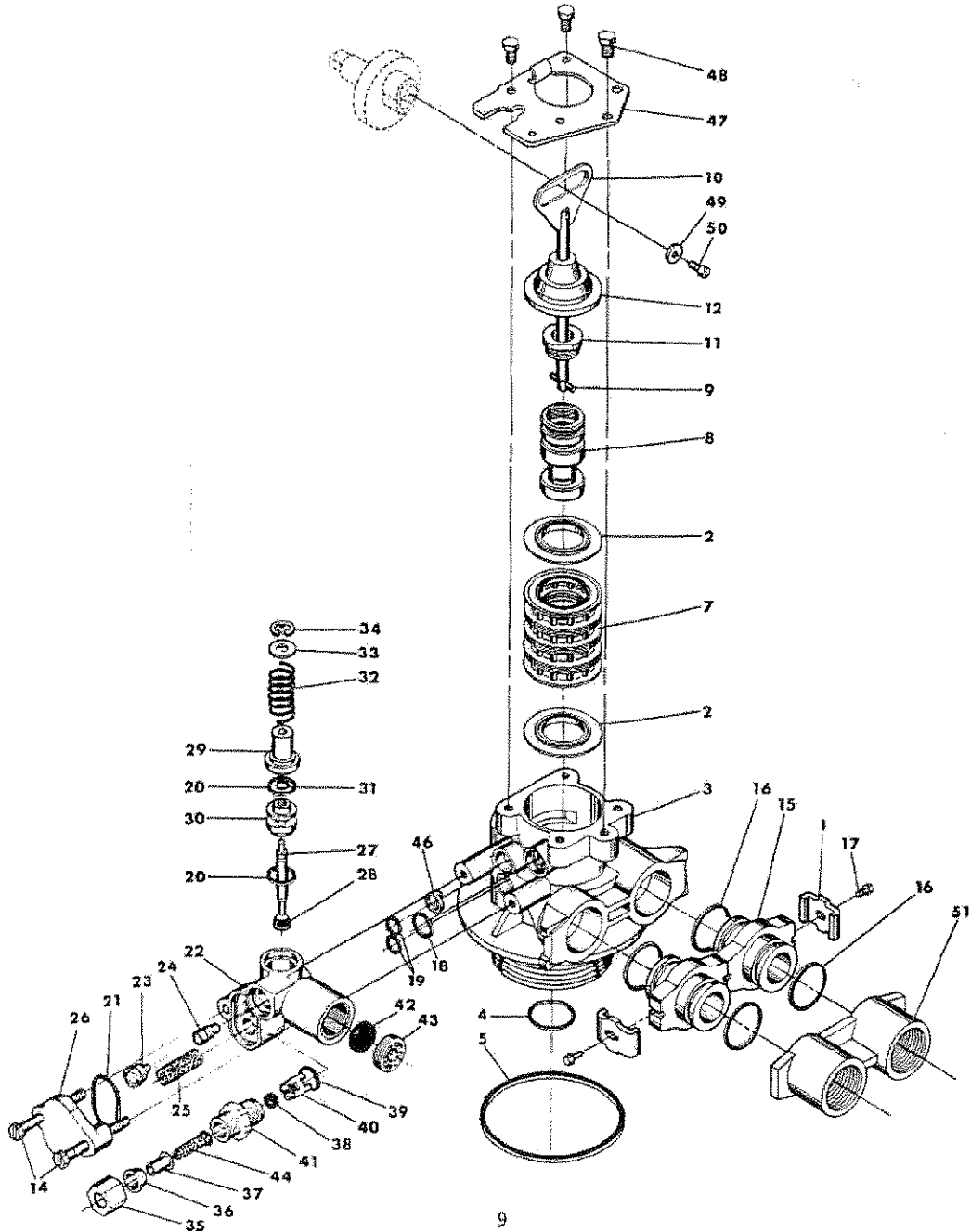
### PARTS LIST

Item No.	Quantity	Part No.	Description
1	1	17290	By-Pass Valve Body, 3/4"
	1	17290NP	By-Pass Valve Body, 3/4" Nickel Plate
	1	13399	By-Pass Valve Body, 1"
	1	13399NP	By-Pass Valve Body, 1", Nickel Plate
2	1	11726	Seal, By-Pass
3	1	11972	Plug, By-Pass
4	1	11978	Side Cover
5	1	13604-01	Label
6	8	15727	Screw
7	1	11986	Side Cover
8	1	11979	Lever, By-Pass
9	1	11989	Screw, Hex Head, 1/4-14

# MODEL 5600

## control valve assembly

(see opposite page for parts list)



**MODEL 5600  
CONTROL VALVE ASSEMBLY  
PARTS LIST**

ITEM NO.	NO. REQ'D.	PART NO.	DESCRIPTION
1	2	13255	Adapter Clip
2	5	13242	Seal
3	1	14449	Valve Body Assembly - 1" Dist.
	1	14450	Valve Body Assembly - 1 1/16" Dist.
4	1	13304	"O" Ring - Distributor Tube - 1"
	1	10244	"O" Ring - Distributor Tube - 1 1/16"
5	1	12281	"O" Ring - Top of Tank
6			Not Assigned
7	4	14241	Spacer
8	1	13247	Piston - Standard
	1	13781	Piston - Low Water
	1	13852	Piston - Filter
9	1	10696	Piston Pin
10	1	13001	Piston Rod Assembly
11	1	12953	Piston Retainer
12	1	13446	End Plug Assembly Std. - White
	1	13446-10	End Plug Assembly Filter - Black
	1	13446-20	End Plug Assembly Low Water - Gray
13			Not Assigned
14	2	13315	Screw - Injector Mounting
15	2	13709	Adapter Coupling
16	4	13305	"O" Ring - Adapter Coupling
17	2	13314	Screw - Adapter Coupling
18	1	12638	"O" Ring - Drain
19	2	13301	"O" Ring - Injector
20	2	13302	"O" Ring - Brine Spacer
21	1	13303	"O" Ring - Injector Cover
22	1	13163	Injector Body
23	1	10913	Injector Nozzle - Specify Size
24	1	10914	Injector Throat - Specify Size
25	1	10227	Injector Screen
26	1	13166	Injector Cover
27	1	13172	Brine Valve Stern
28	1	12626	Brine Valve Seat
29	1	13165	Brine Valve Cap
30	1	13167	Brine Valve Spacer
31	1	12550	Quad Ring
32	1	11973	Spring - Brine Valve
33	1	16098	Washer - Brine Valve
34	1	11981-01	Retaining Ring
35	1	10329	B.L.F.C. Fitting Nut
36	1	10330	B.L.F.C. Ferrule
37	1	10332	B.L.F.C. Tube Insert
38	1	12094	B.L.F.C. Button - .25 GPM
	1	12095	B.L.F.C. Button - .50 GPM
39	1	12977	"O" Ring - B.L.F.C.
40	1	13245	B.L.F.C. Button Retainer
41	1	13244	B.L.F.C. Fitting
42	1		D.L.F.C. Button - Specify Size
43	1	13173	D.L.F.C. Button Retainer
44	1	12767	Screen - Brine Line
45	1	15348	"O" Ring - D.L.F.C. (not shown)
46	1	13497	Air Disperser
47	1	13546	End Plug Retainer
48	3	12112	Screw
49	1	13363	Washer
50	1	13296	Screw
51	1	13708	Adapter - 3/4" N.P.T.
	1	13398	Adapter - 1" N.P.T.

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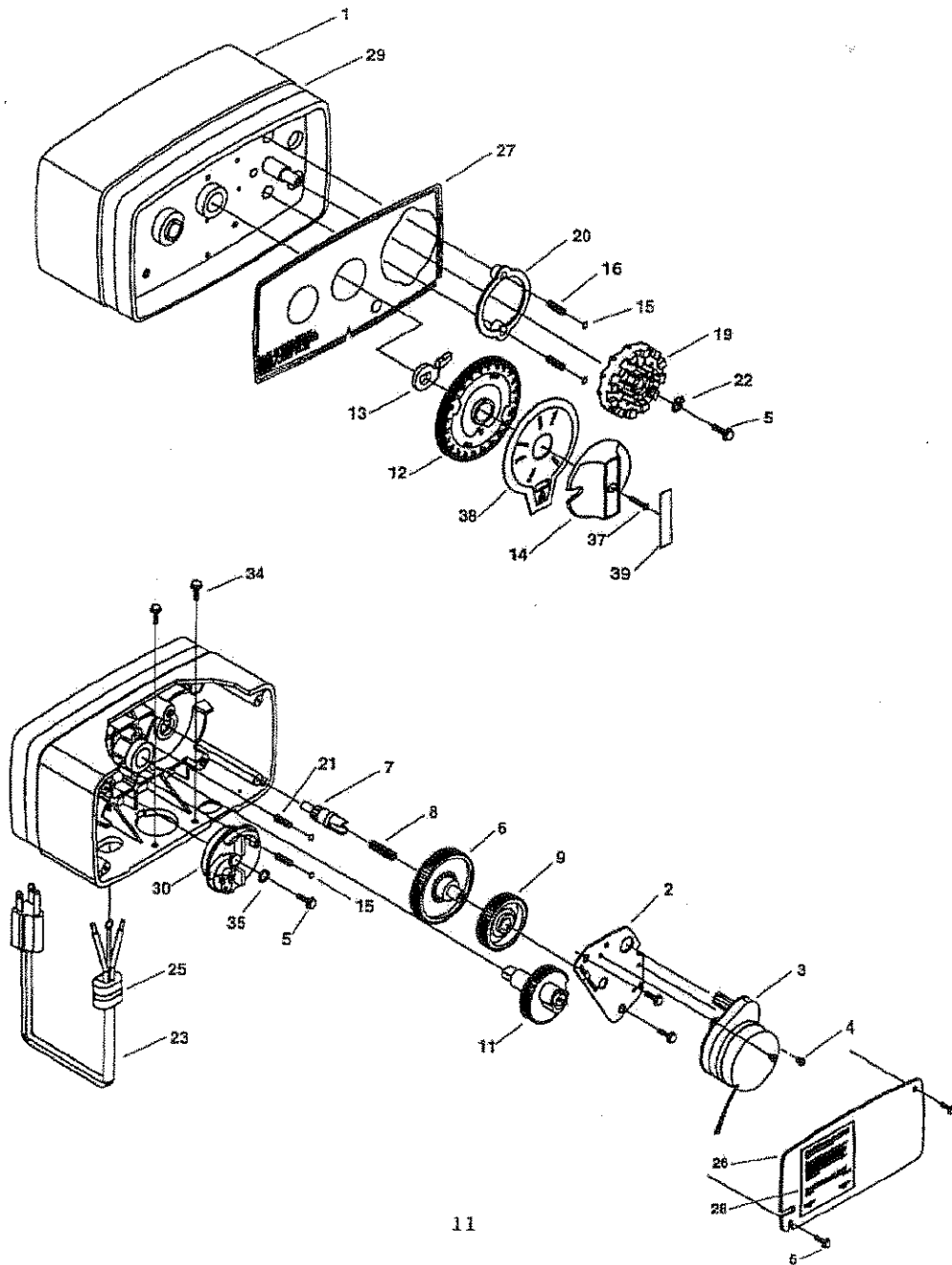
# MODEL 5600

## control valve drive assembly

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(see opposite page for parts list)

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**MODEL 5600  
CONTROL VALVE DRIVE ASSEMBLY  
PARTS LIST**

ITEM NO.	NO. REQ'D.	PART NO.	DESCRIPTION
1	1	13162-000	Drive Housing
2	1	13175	Motor Mounting Plate
3	1	13400	Motor - 110V, 60 Hz.
	1	13494	Motor - 24V, 60 Hz.
4	3	11384	Screw - Motor Mtg. & Ground Wire
5	6	13295	Screw - Component Mounting
6	1	13017	Idler Gear
7	1	13018	Idler Pinion
8	1	13312	Spring - Idler
9	1	13164	Drive Gear
11	1	13170	Main Gear & Shaft
12	1	19205	24 Hour Gear Assembly, Silver
	1	19205-01	24 Hour Gear Assy, Tan
13	1	13011	Cycle Actuator Gear
14	1	14177	Knob - Manual Regeneration
15	4	13300	Ball - 1/2" Dia.
16	2	13311	Spring - Detent - Skipper Wheel
19	1	14381	Skipper Wheel Assembly - 12 Day
	1	14860	Skipper Wheel Assembly - 7 Day
20	1	13864	Skipper Wheel Ring
21	2	14457	Spring - Detent - Main Gear
22	1	13014	Regeneration Pointer
23	1	11842	Electrical Cord - Standard
24	2	12681	Wire Connector (Not Shown)
25	1	13547	Strain Relief
26	1	13229	Back Cover
27	1	13309	Front Label - Brown on Beige
	1	13437	Front Label - Blue/Silver on Black
28	1	13310	Rear Label
29	1	13348	Tape Stripe - Brown on Beige
	1	13436	Tape Stripe - Blue on Silver
30	1	60514	Brine Cam Assembly, 3-18
	1	60514-01	Brine Cam Assy., 6-36
34	2	12473	Screw-Drive Mounting
35	1	12037	Washer
37	1	15151	Screw - Knob
38	1	14176	Valve Position Dial - Standard
	1	14278	Valve Position Dial - Low Water
	1	15478	Valve Position Dial - Chemical Filter
	1	16715	Valve Position Dial - Filter
39	1	14175	Knob Label - Beige
	1	14207	Knob Label - Silver

