

**UNITED DISTRIBUTORS, INC.**

**HYDRO-QUAD®**

**Commercial Water Processor**

**Model 2100 Long Rinse Valve**

**OWNER'S MANUAL**

**HQ-948**



**HQ-1054**

**Nobody Does It Better®**

**Congratulations!**

You have invested in the finest, most exclusive water processing system in the industry. the Hydro-Quad® Water Processor by United Distributors, Inc..

The Hydro-Quad® System is the result of years of research and development by engineers employing state of the art technology and quality materials, all of which means you will enjoy a lifetime of quality water as the proud owner of the patented Hydro-Quad® Water Processor



Tested and Certified by WQA against  
NSF/ANSI 44 for softening performance.

**IMPORTANT: Keep this manual with your important records.**

**Congratulations,** you have invested in the finest, most exclusive water processing system in the industry, the United Standard Hydro-Quad® Water Processor.

The highest quality of water is assured by four (4) complete functions which filter, clarify, soften and refine.

To achieve maximum benefit and performance from your Water Processor, please familiarize yourself with the contents of this manual and keep it handy for a reference guide. You should also safeguard against loss or misplacement.

You should find this manual interesting and informative as it contains adequate information to keep your United Standard Hydro-Quad® in optimum operational condition.

If you have not already done so, please, take the time to complete your Guarantee Card and place it in the mail to insure that your system is registered with the factory for guarantee validation.



**NOBODY Does It Better®**

## **WARNING**

**YOUR WATER PROCESSOR SHOULD BE APPLIED TO POTABLE WATER ONLY.** Your Water Processor is designed for use on water of known acceptable quality only. If bacterial contamination is present, a recognized method of water disinfection is recommended.

Your local UNITED DISTRIBUTORS, INC. dealer employs trained service personnel who are experienced in the installation, operation and service of UNITED DISTRIBUTORS, INC. equipment. We recommend that this system be installed and maintained by a UNITED DISTRIBUTORS, INC. dealer.

**UNITED DISTRIBUTORS, INC.**

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**A.**

# Recommended Procedures:

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HQ948 - HQ1054

### #1 Immediately after installation.

To make sure that your washing machine and dishwasher are clean so that soap products can perform their best, add one pint of ammonia directly to your machines and run them through a regular cycle. This will clean out any detergent that might be left in the machines, and give you brighter clothes and sparkling dishes and glassware.

### #4 Adding Salt.

Once or twice a month check the salt level in the salt storage tank as it will require additional salt periodically. It is necessary to keep the salt level above the water level at all times to insure a continued supply of processed water. WRI recommends that only "pure" water softener salt pellets or crystals be used. DO NOT USE BLOCK SALT OR ANY SALT WITH IODINE!

### #2 For the best results.

You will get even better results from your processed water if you continue to use a fabric softener and bleach in your wash. With processed water, you only have to use 25% of the amount you normally use.

### #5 Hydro-Rinse®.

(1) The salt brine tank has a Hydro-Rinse® drip feeder attached to the side of the brine well. The Hydro-Rinse® assists the salt brine in cleaning and removing deposits from the resin bed.

(2) When the feeder is low, add 4 oz. (1/2 cup) of Hydro-Rinse® and soft processed water to fill line if on city treated water. Use 8 oz. (1 cup) and soft water when on a private well with iron.

(3) NOTE: Never mix Hydro-Rinse® and chlorine together in the feeder. (See #3 above)

### #3 Every six months.

Twice a year, pour one-half cup (3-4 oz.) of chlorine bleach into the tube inside the brine tank. This will clean the Ion-O-Lite C-32-M resin bed in your water processor and assure a continuing supply of fresh, clean water at all times. You may wish to add chlorine bleach three to four times a year if you have a non-chlorinated water supply such as a private well.

### #6 Freezing.

In areas of infrequent freezing temperatures, be aware that the Hydro-Quad® and plumbing pipes could freeze. By allowing cold water taps to run at a fast drip will help prevent this problem.

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## **WATER CONDITIONING TERMS**

Surface waters may contain disease-producing organisms, atmospheric gases, suspended matter or organic substances. Ground waters, while less likely to contain pathogenic organisms, may contain dissolved minerals and undesirable tastes and odors. Water provided by public and private utilities is regarded to be potable - adequately pure for human consumption according to the standards of the local health official; however, it may not be pure enough for certain industrial medical or scientific purposes.

The following list is a series of common terms which are used in connection with water conditioners. A thorough knowledge of these terms and their applications will enable you to better understand the function and operation of your United Standard Water Processor.

**AUTOMATIC SOFTENER.** A fully-automatic water softener regenerates at regular intervals, to provide a continuous supply of soft, conditioned water.

**BACKWASHING.** After the ion-exchange capacity of the water softener resin is exhausted, it is necessary to recharge the resin so that its original capacity may be restored. A very important step in this process is called backwashing, which is accomplished by reversing the flow of the water through the resin. This upward flow of water carries out to the drain any dirt and oxidized iron collected on top of the mineral bed. Backwashing also prevents the resin bed from becoming packed or channeled.

**BACTERIOLOGICAL EXAMINATION.** New wells and private water supplies should be tested at periodic intervals in order to determine if the water is safe to drink. This bacteria test should be conducted by an official representative for the State Board of Health in accordance with accepted practice and local standards. **A water softener, iron filter, clarifier or neutralizer does not purify the water.**

**BED DEPTH.** In every water conditioner, there is a material for a specific purpose. In the water softener, it is called high capacity resin or ion exchange mineral. Depending upon the size of the tank, this material is measured in inches of depth in the tank. This measurement is called the bed depth.

**BLEED THROUGH.** When all of the iron is not being removed during the service cycle of a water softener (or iron filter), the iron remaining in the effluent of treated water is usually referred to as the bleed through.

**BRINE.** A solution of sodium chloride (common salt) used for regenerating the domestic household water softeners.

**BY-PASS.** A connection, or a valve system, that allows the hard water to supply the dwelling while the water softener is being regenerated or serviced.

**CALCIUM.** One of the principal elements that constitutes the earth's crust, the calcium compounds of which when dissolved in water, make the water hard. The presence of calcium in the water is one of the major factors contributing to the formation of scale and insoluble soap curds, which are two ways of easily identifying hard water. Often, it is expressed as calcium carbonate.

**CAPACITY.** This term refers to the ability of certain size water conditioners to remove a specific quantity of hardness minerals, iron or manganese from the water going through the water conditioner.

**CLARIFIER.** The clarifier removes the turbidity which is defined as sand, clay, silt or other undissolved foreign matter.

**CONTROL VALVE.** A device on a water conditioner that may be manually or automatically operated and used to direct (or control) the flow of the water in a certain direction.

### **CONVERSION FORMULA- PARTS PER MILLION TO GRAINS PER GALLON.**

Hardness minerals, calcium and magnesium, are measured in parts per million (ppm) or grains per gallon (gpg). The accepted conversion factor is 17.1 ppm = 1 gpg. i.e., 10 gpg of hardness=171 ppm.

**CORROSION.** The attack by water on any part of a water system, causing the wasting away of metal parts. Some common effects of corrosion are rusted and leaking galvanized water heaters, rusty water from pneumatic (galvanized) pressure tanks of private water systems, pitting and rusting of aluminum water heaters, flow stoppage, leaking pipes and valve failures.

**CYCLE.** The cycle of a water conditioner is generally defined as the length of time it will operate without a backwashing and/or regeneration.

**CYCLE OPERATION.** This term usually refers to the sequence of valve operations on automatic water softeners. A two-cycle valve is a device in which up-flow brining is combined with the backwash cycle sacrificing the performance on both the backwashing and the brining. The eight-cycle valve, such as the one the fully automatic processor features, performs each essential regeneration step separately and, therefore, under the most optimum conditions, this type of valve provides a longer life, a more efficient service and a better performance.

**DISTRIBUTOR.** Sometimes, this device is called a strainer and it is used within the processor tank to distribute the flow of the water throughout the tank and to prevent the resin from escaping into the lines.



**DRAIN VALVE (DRAIN LINE).** A valve or line employed to direct or carry the backwash water, the used regenerant and the rinse water to the nearest drain of a waste system.

**FERRIC IRON.** This term applies to the insoluble form of iron. Ferrous iron in the water is readily converted to ferric iron by exposure to the oxygen in the air.

**FERROUS IRON.** This term applies to the soluble form of iron.

**FILTER-AG.** This is a mineral used in the clarifier to physically separate the suspended matter in some water supplies. This ceramic-like granular material is insoluble and it back-washes freely with less water than sand and other similar filter materials.

**FILTRATION.** This term applies to the process of passing a fluid through a filter material for the purpose of removing turbidity, taste, color or odor.

**FLOC.** This term applies to the suspended particles in the water which have coagulated into larger pieces and may form a mat on the top of the mineral or resin bed in a water conditioner and reduce, or impair, the efficient operation of the equipment.

**FLOW RATE.** In water conditioning, this term refers to the quantity of water and/or brine flowing, given in gallons per minute (gpm) or gallons per hour (gph).

**FREEBOARD.** This term applies to the space above a bed of ion-exchange resin or mineral in a water conditioner tank to allow for the unobstructed expansion of the bed during the backwash cycle.

**GRAINS CAPACITY.** This term applies to the amount of hardness minerals (calcium and/or magnesium) which will be removed by a water conditioner mineral or resin within a specified length of time or by a specific quantity of the resin (see high capacity resin).

**GRAINS PER GALLON (GPG).** This term applies to a common basis of reporting the water analysis. One grain per gallon (gpg) equals 17.1 parts per million (ppm). One grain is 1/7000 of a pound.

**HARDNESS.** (CAC03) This term applies to the compounds of calcium and magnesium which are usually present in the hard water.

**HARDNESS LEAKAGE.** This term applies to the presence of hardness minerals (calcium and magnesium) after the water has passed through the softener. Hardness leakage is encountered primarily because of the resin bed channeling, due to the improper backwashing, the existence of algae or a combination of a high-service water flow with a high hardness and/or TDS content in the water.

**HIGH-CAPACITY RESIN.** This term applies to the manufactured material in the form of beads or granules, which can be described as having the power to take or give off hardness-forming ions for softness-forming ions and reverse cycle thereof. This material is sometimes called zeolite or ion exchange resin.

**HOSE BIB.** This term applies to an outside plumbing connection for attaching a hose.

**HYDROGEN SULFIDE.** (H<sub>2</sub>S) This term applies to a highly corrosive gas which is often found in some water supplies. Water containing hydrogen sulfide gas has a characteristic boiled or rotten egg odor. A water softener is not designed to correct this condition.

**INSTALLATION SEQUENCE.** In water conditioning applications, sometimes it is necessary to install more than one piece of water conditioning equipment in order to properly condition the untreated water. When this situation is necessary, it is imperative for the water conditioning equipment to be installed in the proper sequence to insure a satisfactory operation.

**ION EXCHANGE.** This term applies to the replacement of one ion by another. In the softening process, the sodium in the softener resin is exchanged for calcium, magnesium, and iron (if present).

**IRON.** This term applies to an element and is common to most underground water supplies, though not present in the large quantities that calcium and magnesium can occur. Although the quantities of iron are not usually large, small amounts are highly objectionable in the water system. Iron removal from water is accomplished in two ways: (1) the small amounts of the dissolved iron may be removed by an ion-exchange process or (2) by precipitation and filtration processes. For the latter method, an iron filter is used.

**MAGNESIUM.** (Mg.) This term applies to an element which, along with calcium, is responsible for the hardness of water.

**PARTS PER MILLION (PPM).** This term applies to a common method of reporting the water analyses. 17.1 ppm = 1 gpg (grains per gallon).

**pH VALUE.** This term applies to a number denoting the alkaline or acid nature of the water (or solution). A pH value below 7.0 indicates acidity in the water (or solution). pH values above 7.0 indicate alkalinity of the water (or solution). The pH scale ranges from 0 to 14, 7.0 being the accepted neutral point.

**PRESSURE DROP.** This term applies to the decrease in the water pressure, measured in pounds per square inch (psi).

**REGENERATION.** This term applies to a complete regeneration of a water softener consisting of a backwash cycle, addition of sodium chloride (salt) and rinsing the sodium chloride solution through the ion-exchange resin in order to exchange the hardness ions collected in the resin and prepare the solution for a service cycle.

**RESIN.** This term is used to designate a synthetic polystyrene ion-exchange material (often called a high-capacity resin).

**RINSE.** This term applies to a part of the regeneration cycle of a water softener where fresh water is passed through a water softener to remove the excess salt (sodium chloride) prior to placing the water softener into service.

**SALT.** This term applies to a high-grade sodium chloride of a pellet- or briquetted-type used for the purpose of regenerating a water softener.

**SERVICE RUN.** This term usually refers to the operating cycle of a water softener, during which the hard water passes through the ion-exchange resin and enters the service lines as soft water.

**SODIUM (Na+).** This term applies to an element. Usually found in water supplies (depending upon local soil conditions) and it is a basic part of common salt (sodium chloride).

**SOFT WATER.** This term applies to water containing less than 1 grain per gallon (gpg) of dissolved calcium and magnesium hardness minerals.

**TANNIN.** This term applies to an organic color or dye and it is not a growth sometimes found in waters. The latter is the result of decomposition of wood buried underground.

**TURBIDITY.** This term is used to define the physical appearance of water. The laboratory analysis shows the turbidity (in NTU). All undissolved materials, such as clay, silt or sand, are taken into consideration. If the turbidity is high and unacceptable for use, a clarifier is recommended.



Tested and Certified by WQA against  
NSF/ANSI 44 for softening performance.

This unit conforms to NSF/ANSI 44 for the specific performance claims as verified and substantiated by test data. The efficiency rating is only valid at the stated salt dosage and maximum service flow rate.

## INSTALLATION

### **LOCATION OF WATER PROCESSOR**

1. On municipal water systems, the processor should be installed after the water meter and before the water heater.
2. On well water systems, the processor should be installed after the pressure tank, any filter system and before the water heater.
3. This water system includes a manual device to bypass the unit for servicing and to maintain a water supply for the home or business.
4. Allow 1-2 feet distance between processor and water heater. If this is not possible, install a check valve in water supply line to prevent hot water back-up into the processor.
5. Never expose the Hydro-Quad<sup>®</sup> to freezing conditions or to water temperatures greater than 110°F. An insulated box made of wood, metal, etc. could be used. Insulation of water lines: a heat tape and/or a drop light could be used to help prevent freezing.

### **WATER PRESSURE**

To assure the proper operation of a water processor, a minimum pressure of 20 psi is necessary. Maximum pressure is 80 psi. Install a pressure regulator to maintain proper pressure below 80 psi.

### **PLUMBING CONNECTIONS**

1. All local plumbing codes **must** be followed.
2. Shut off the water supply line and relieve all pressure and water from piping.
3. Position processor in desired location, measure and modify piping as required.

**NOTE: Do not apply heat to any fittings connected to the processor control valve.**

**Use teflon tape as a sealer on threaded connections. Only lead free solder (< 8.0% ppb) is recommended for sweat connections.**

4. Service connections on the control valve are marked "In & Out" arrows accordingly. The service connections should be 3/4" pipe minimum. If the application is provided with 1" service, do not reduce the size of the service. Utilization of a 1" yoke is recommended.



**PLUMBING CONNECTIONS (CONT.)**

5. Do not overtighten the drain line adapter, hand tighten using 2 or 3 wraps of teflon tape.
6. To avoid any possible cross connections, connect the drain line in accordance with local plumbing codes (Pg 8 & 9).
7. A minimum of 1/2" I.D. drain line is required for proper operation (Pg 8 & 9).
8. The backwash rate to drain during regeneration is 1.5 GPM.
9. NEVER CONNECT HOT WATER LINES TO THE PROCESSOR.

**PRESSURE TEST**

After the processor is installed, purge all the air from the water system service lines and inspect for leakage. To purge system, open main water supply slowly to refill piping and conditioner. Open faucets on both hot and cold water lines to purge all air from water system. Any leaks should be corrected immediately. Refer to page 10 and/or 12 for start-up procedures.

PRESSURE DROP vs. FLOW RATES is as follows:

| MODEL | HQ1054-1.5 | HQ1054-1.0 | HQ948-1.0 |
|-------|------------|------------|-----------|
| GPM   | 10.8       | 12         | 10.7      |
| PSI   | 15         | 15         | 15        |

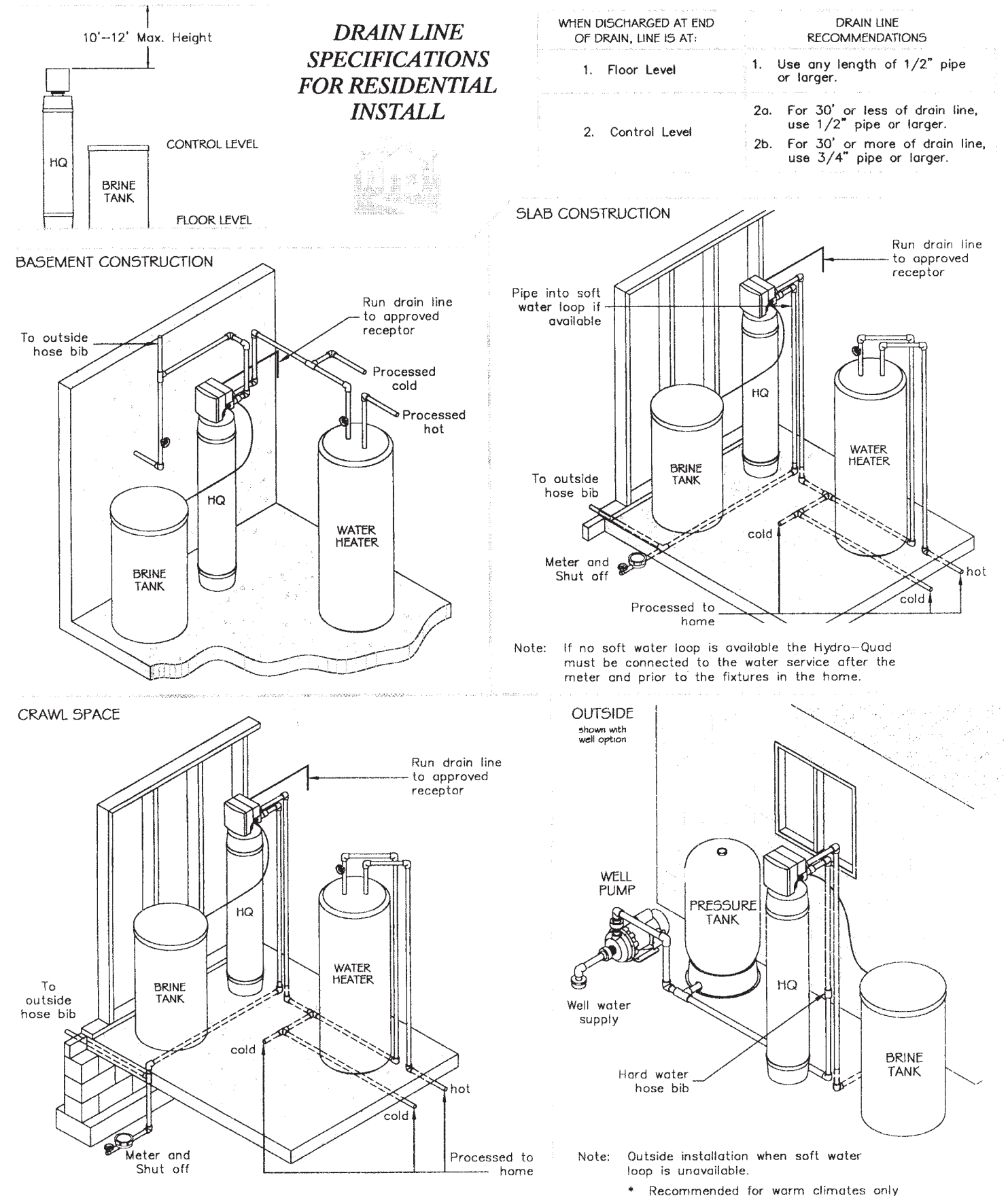
\*\*\*\*\*  
 \*\* DO NOT ATTEMPT TO REHEAT  
**CAUTION** \*\* SOLDERED CONNECTIONS WITH  
 \*\* THE PROCESSOR CONNECTED.  
 \*\* REFER TO INSTALLATION  
 \*\* PROCEDURES ON PAGE 6  
 \*\*\*\*\*  
 (PLUMBING CONNECTIONS)

Inspect to insure the by-pass valve is in the service position.

**ELECTRICAL CONNECTIONS**

1. All electrical codes must be followed.
2. Install ground jumper between inlet and outlet water pipes of processor to insure that electrical ground continuity in the household water system is maintained.
3. Use 3-plug electrical outlet to provide positive ground control.

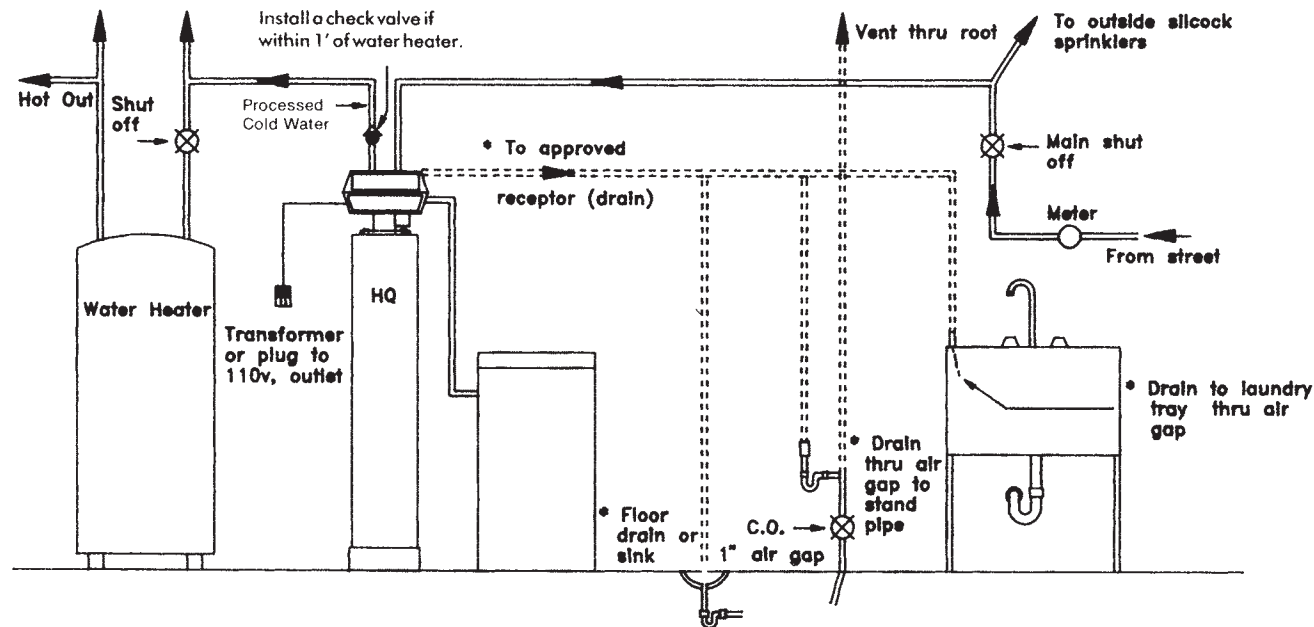
# INSTALLATION AND DESIGN



## HYDRO-QUAD® PLUMBING SCHEMATIC

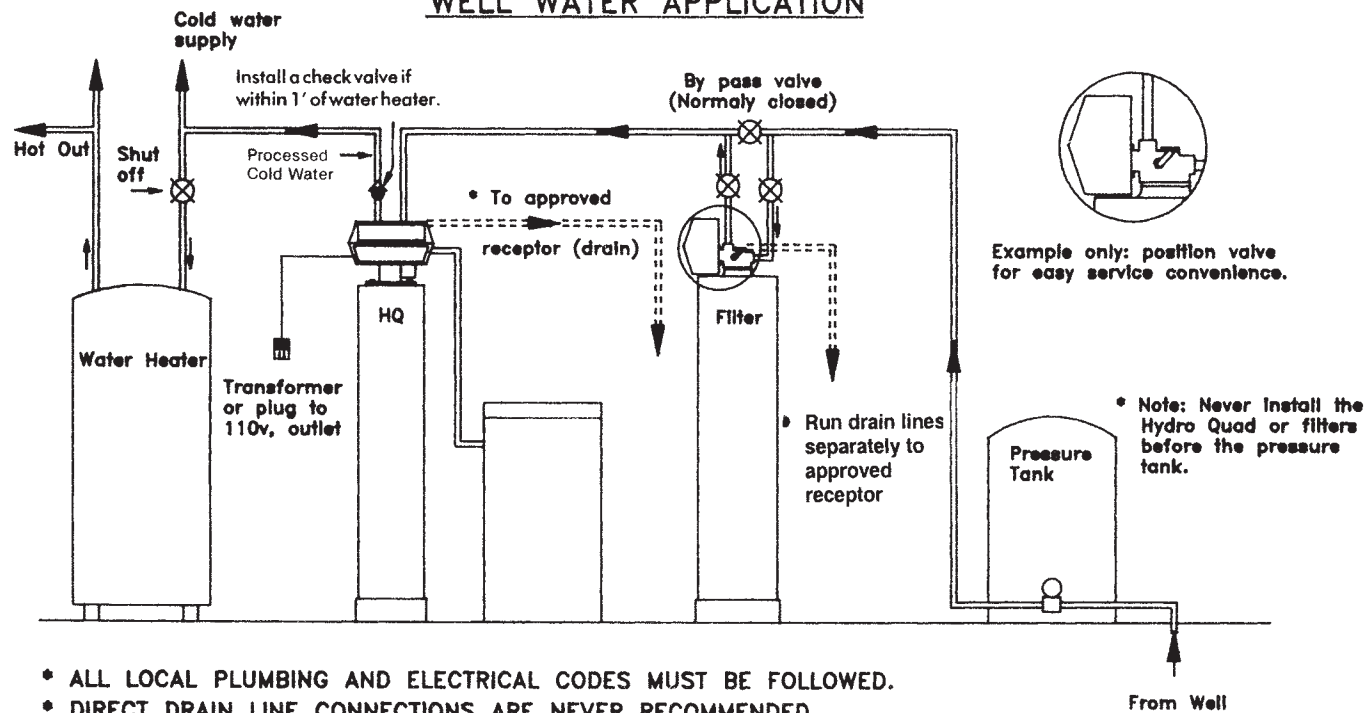
A water processor should be installed on a level floor or surface as close as possible to a floor drain, laundry tub, or properly trapped plumbing outlet. Typical installations of processors and filters are shown in Figures below.

### MUNICIPAL WATER SUPPLY INSTALLATION



\* ALL LOCAL PLUMBING AND ELECTRICAL CODES MUST BE FOLLOWED.

### WELL WATER APPLICATION

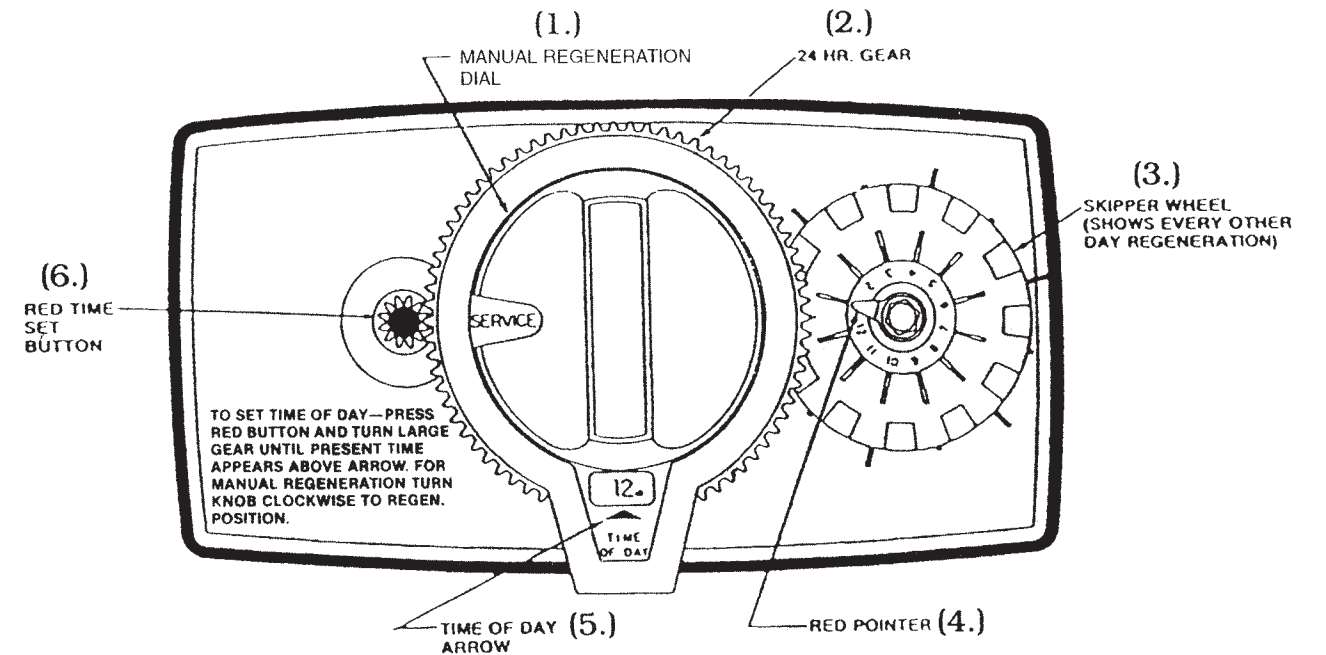


\* ALL LOCAL PLUMBING AND ELECTRICAL CODES MUST BE FOLLOWED.  
 \* DIRECT DRAIN LINE CONNECTIONS ARE NEVER RECOMMENDED.  
 \* IN SOME AREAS DRY WELLS ARE ACCEPTABLE BE SURE TO CHECK THE CODE IN YOUR AREA.

## 12 DAY CLOCK VALVE

### START UP PROCEDURE

The water processor should be installed with the inlet, outlet and drain connections made in accordance with manufacturer's recommendations and to meet applicable plumbing codes.



1. Remove the dust cover.
  2. Open a cold water tap to allow air to escape while system is filling with water. Make sure the valve is in the service position and let water flow into the resin tank. When all air is released from the lines, then close the tap.
- NOTE: The various regeneration positions may be dialed manually by turning the regeneration dial (1) on the front of the control clockwise until the indicator shows that the processor is in the desired position.
3. Manually index the dial (1) to the back-wash position and allow water to flow to the drain for 3 or 4 minutes.
  4. Make sure that the salt dosage is set at 8-9# for 1 cu. ft. or 12# for 1.5 cu. ft. of resin as recommended by the manufacturer. Manually fill the brine tank with water to 1" above salt grid.
  5. Manually index the dial (1) to the brine draw position until the water drops below the salt grid in the brine tank.



6. Plug in the electrical cord or transformer and look into the sight hole in the back of the motor to see that it is running. Make sure wall receptacle has sufficient voltage. Set the days that regeneration is to occur by sliding tabs on skipper wheel (3) outward to expose trip fingers. Each tab is one day. Finger at red pointer (4) is tonight. Moving clockwise from the red pointer, extend or retract fingers to obtain the desired regeneration schedule.
- 6a. To set the correct time of day (5), press red time set button (6) and turn 24 HR gear (2) until present time of day is opposite "time of day" arrow (5).
7. Manually advance the dial (1) to the beginning of the brine fill position: allow the dial to return to the service position automatically. Make sure water level is 1" minimum above grid (3" max.) before adding salt.
8. Fill the brine tank half full with salt. Replace dust cover on the control.
9. Make sure that the by-pass valve is left in the normal service position.
10. To insure the immediate availability of processed hot water, open bathtub hot water faucet until water being drained flows cold. Then close the bathtub faucet. Test for hardness.
11. **SANITIZE!** For each cubic foot of resin add two ounces of 5-1/4% household chlorine bleach to the water in the brine well. Manually index the regeneration dial to the brine draw and allow system to complete the regeneration cycle automatically.

**Different Hydro Quad Capacities \***

|          |              |   |
|----------|--------------|---|
| HQ948    | 0.75 cu. ft. | Capacity= 22,000 grains/regen. at 11.3 lb. salt |
| HQ948    | 1.0 cu. ft.  | Capacity= 22,400 grains/regen. at 6 lb. salt    |
| HQ948    | 1.0 cu. ft.  | Capacity= 24,000 grains/regen. at 8.3 lb. salt  |
| HQ1054+C | 1.0 cu. ft.  | Capacity= 24,000 grains/regen. at 8.3 lb. salt  |
| HQ1054   | 1.5 cu. ft.  | Capacity= 33,600 grains/regen. at 9 lb. salt    |
| HQ1054   | 1.5 cu. ft.  | Capacity= 36,000 grains/regen. at 12.3 lb. salt |

\* The total grain capacity of 1 cu. ft. of Virgin resin is 32,000 grains at 15 lbs. of salt, however, the most economical and best efficient regenerated capacity is 22,400 grains at 6 lbs of salt.

\*\* On clear water iron bearing waters (well water applications) it's suggested to remove upper collector, part #40-2055, pg. #24 and increase salt setting by 4 lbs. (Item #23, Part #40-1355, pages 17 & 18).

Formula: Hardness only (No Iron)

$$\frac{\text{Capacity of unit}}{\# \text{ of people} \times \text{hardness} \times 75 \text{ GPG}} = \# \text{ of days between regeneration}$$

Formula: Hardness and Iron \*\*\*

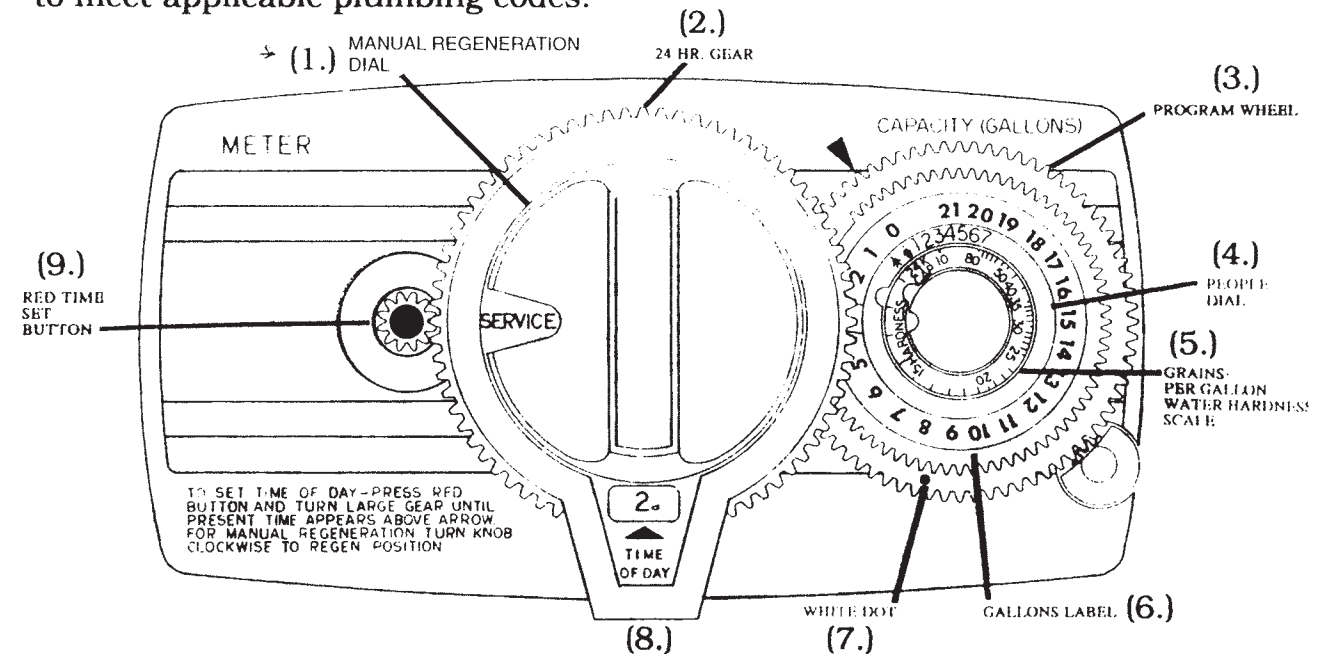
$$\frac{\text{Capacity of unit}}{\# \text{ of people} \times (\text{hardness} + \text{iron}) \times 75 \text{ GPG}} = \# \text{ of days between regeneration}$$

\*\*\* The Hydro-Quad® should never be exposed to iron in excess of 3 ppm. For adequate clear water iron removal up to 1-2 PPM iron, you must have a minimum of 4-6 GPG hardness for each PPM of iron. Remove and discard the upper collector. If these conditions do not exist then an iron filter must be considered.

**STANDARD RANGE METER VALVE**

**START-UP PROCEDURE**

The water processor should be installed with the inlet, outlet and drain connections made in accordance with the manufacturer's recommendations and to meet applicable plumbing codes.



1. Remove dust cover.
2. Open a cold water tap to allow air to escape while system is filling with water. Make sure the valve is in the service position and let water flow into the resin tank. When all air is released from the lines, then close the tap.

NOTE: The various regeneration positions may be dialed manually by turning the regeneration dial (1) on the front of the control clockwise until the indicator shows that the processor is in the desired position.

3. Set water usage program wheel using any one of the following procedures:
  - 3a. **TYPICAL RESIDENTIAL APPLICATION**  
To program, just set the time, set the hardness and it automatically monitors system needs to regenerate only when necessary. To set time of day press red time set button (9.) and turn 24-hour gear (2.) until present time of day (8.) is opposite "time of day arrow". Set program wheel by lifting the "People" \*dial (4.) and rotating it so that the number of people in the household is aligned with the grains per gallon water hardness scale. (5.) Release the dial and check for firm engagement at setting. (This method will provide reserve capacity based on 75 gallons per person.)

\* If more than 7 in family use optional programming procedure on page 13.

## Water Processor Flow Diagrams

### 3b. Optional Programming Procedure

Calculate the gallon capacity of the system, by dividing the hardness (GPG) into the grain capacity of the system, subtract the necessary reserve requirement of 75 gal. per person and set the remaining gallons available opposite the small white dot (7.) on program wheel.

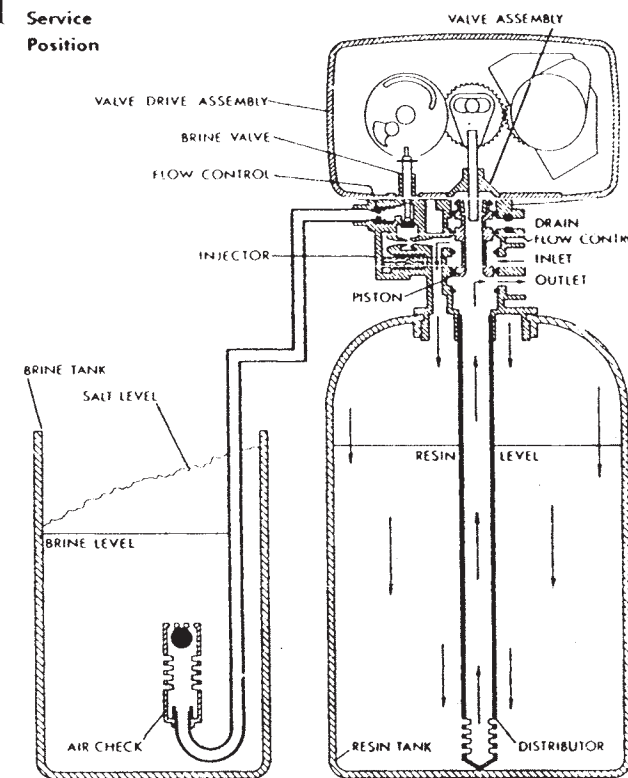
EXAMPLE: HQ 948 1 cu. ft. = 24,000 grains + 12 GPG = 2,000 gals.  
 - 75 Gal. x 4 people = 1,700 gal. capacity setting.

4. Rotate the program wheel (3.) counter-clockwise until it stops and the capacity black arrow is pointing to the number 0.
5. Manually index the dial (1) to the back-wash position and allow water to flow to the drain for 3 or 4 minutes.
6. Make sure that the salt dosage is set at 8-9# for 1 cu. ft. or 12# for 1.5 cu. ft. of resin as recommended by the manufacturer. Manually fill the brine tank with water to 1" above salt grid.
7. Manually index the dial (1) to the brine draw position until the water drops below the salt grid in the brine tank.
8. Plug in the electrical cord or transformer and look in the sight hole in the back of the motor to see that it is running. Make sure wall receptacle has sufficient voltage.
9. Manually advance the dial (1) to the beginning of the brine fill position and allow the dial (1) to return to the service position automatically. Make sure water level is 1" min. above grid (3" max.) before adding salt.
10. Fill the brine tank half full with salt. Replace the dust cover on the control.
11. Make sure that the by-pass valve is left in the normal service position.
12. See #10 on page 11.

**NOTE: The standard range meter has a min./max. capacity of 125/2,125 gals.; and the extended range meter 625/10, 625 gals.**

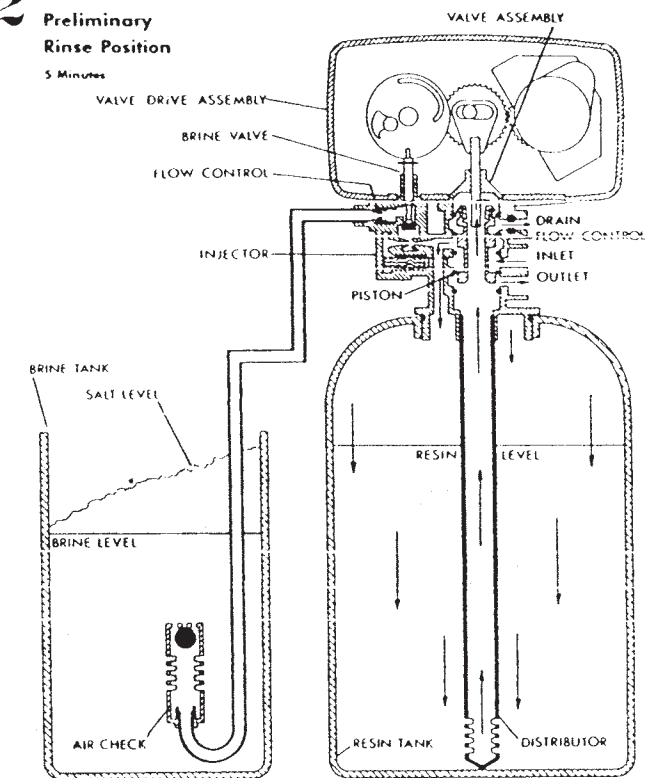
**The extended range meter is available for those applications where low hardness water conditions exist or gallons needed between regenerations exceeds 2,125 gallons.**

**1 Service Position**



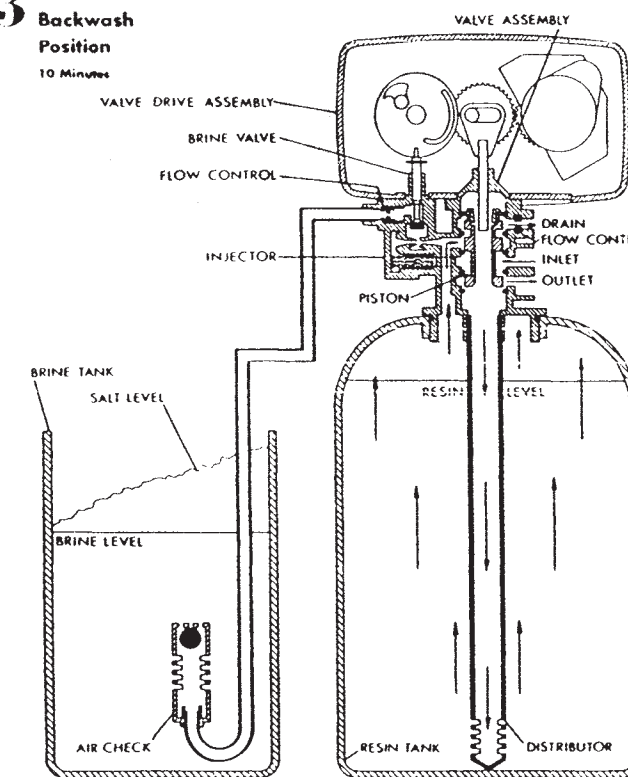
Hard water enters the unit at the valve inlet — flows around the lower piston groove — thru the passage to the top of tank — down thru the resin and enters the distributor as conditioned water. The conditioned water flows up thru the center tube to the valve outlet.

**2 Preliminary Rinse Position**  
5 Minutes



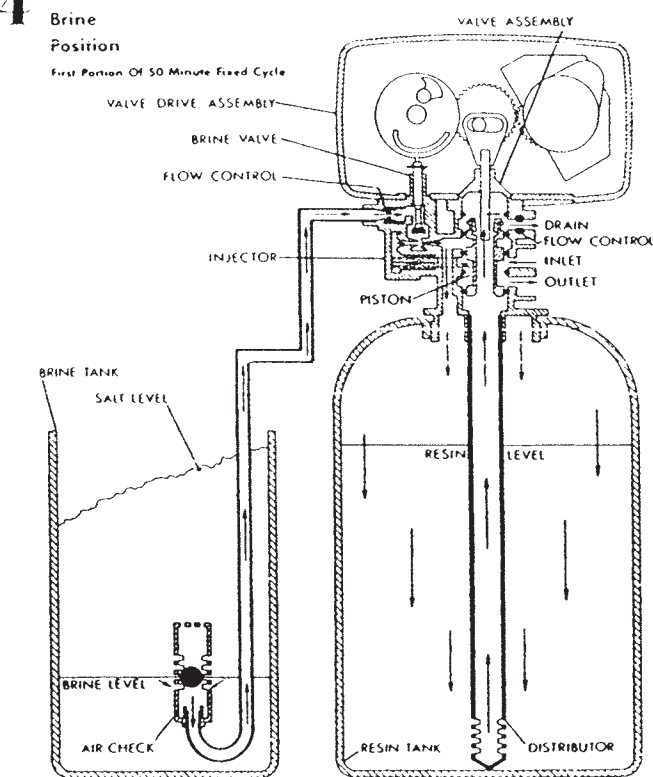
Hard water enters the unit at the valve inlet — flows around the lower piston groove — down thru the top of tank passage — downward thru the resin — up the distributor tube — thru the center hole in the piston — over the top edge of the piston and out the drain line.

**3 Backwash Position**  
10 Minutes



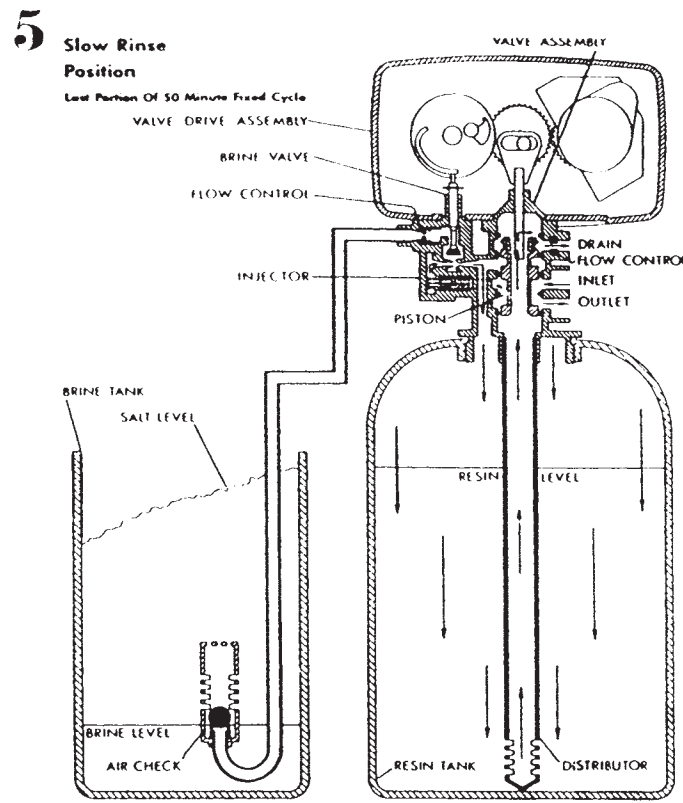
Hard water enters the unit at the valve inlet — flows around the lower piston groove and lower piston land — down thru the center tube and out the distributor — up thru the resin — thru the top of tank passage — around the upper piston groove and out the drain line.

**4 Brine Position**

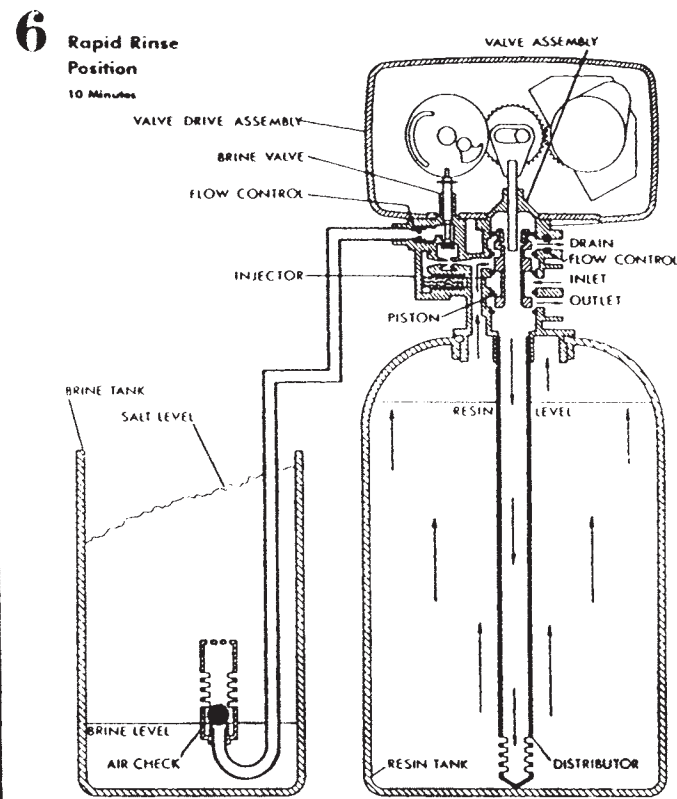


Hard water enters the unit at the valve inlet — flows around the lower piston groove — thru the injector nozzle and orifice to draw brine from the brine tank. The brine flows down thru the resin — into the distributor — up thru the center tube — thru the center hole in the piston and out the drain line.

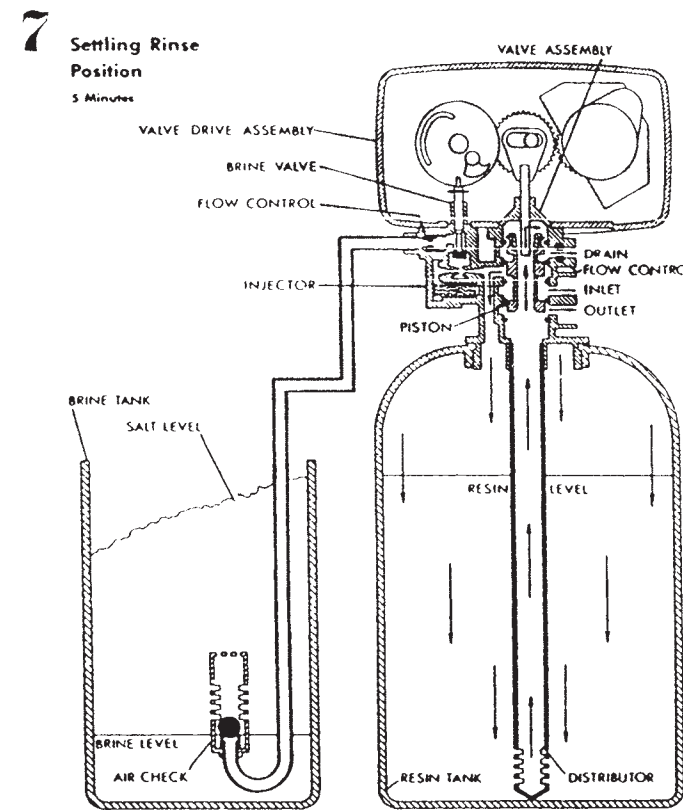




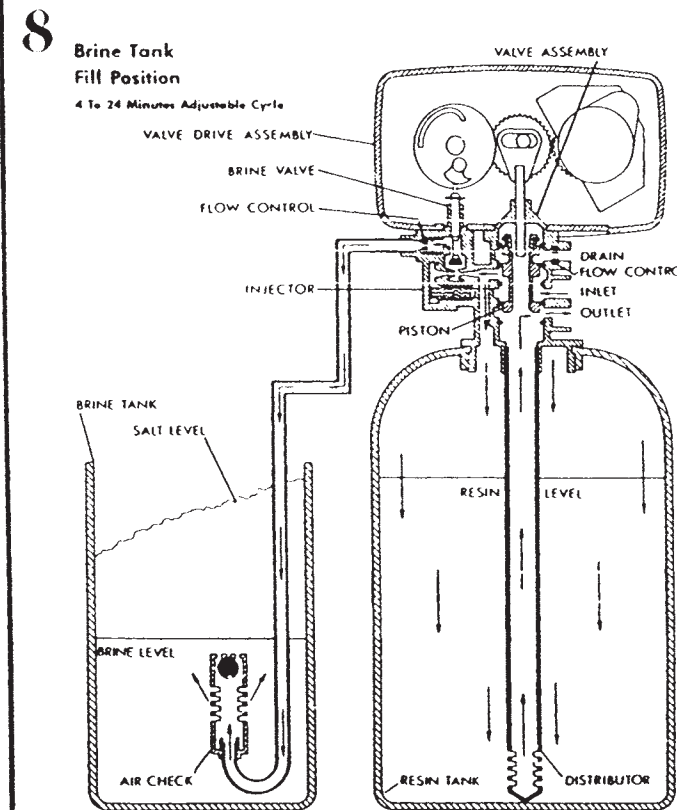
After all the brine has been drawn from the brine tank, hard water continues to enter thru the valve inlet — flows around the lower piston groove — thru the nozzle and orifice — down thru the resin and into the distributor — up thru the center tube — thru the center hole in the piston and out the drain line.



Hard water enters the unit at the valve inlet — flows around the lower piston groove and lower piston land — down thru the center tube and out the distributor — up thru the resin — thru the top of tank passage — around the upper piston groove and out the drain line.



Hard water enters the unit at the valve inlet — flows around the lower piston groove — down thru the top of tank passage — downward thru the resin — up the distributor tube — thru the center hole in the piston — over the top edge of the piston and out the drain line.

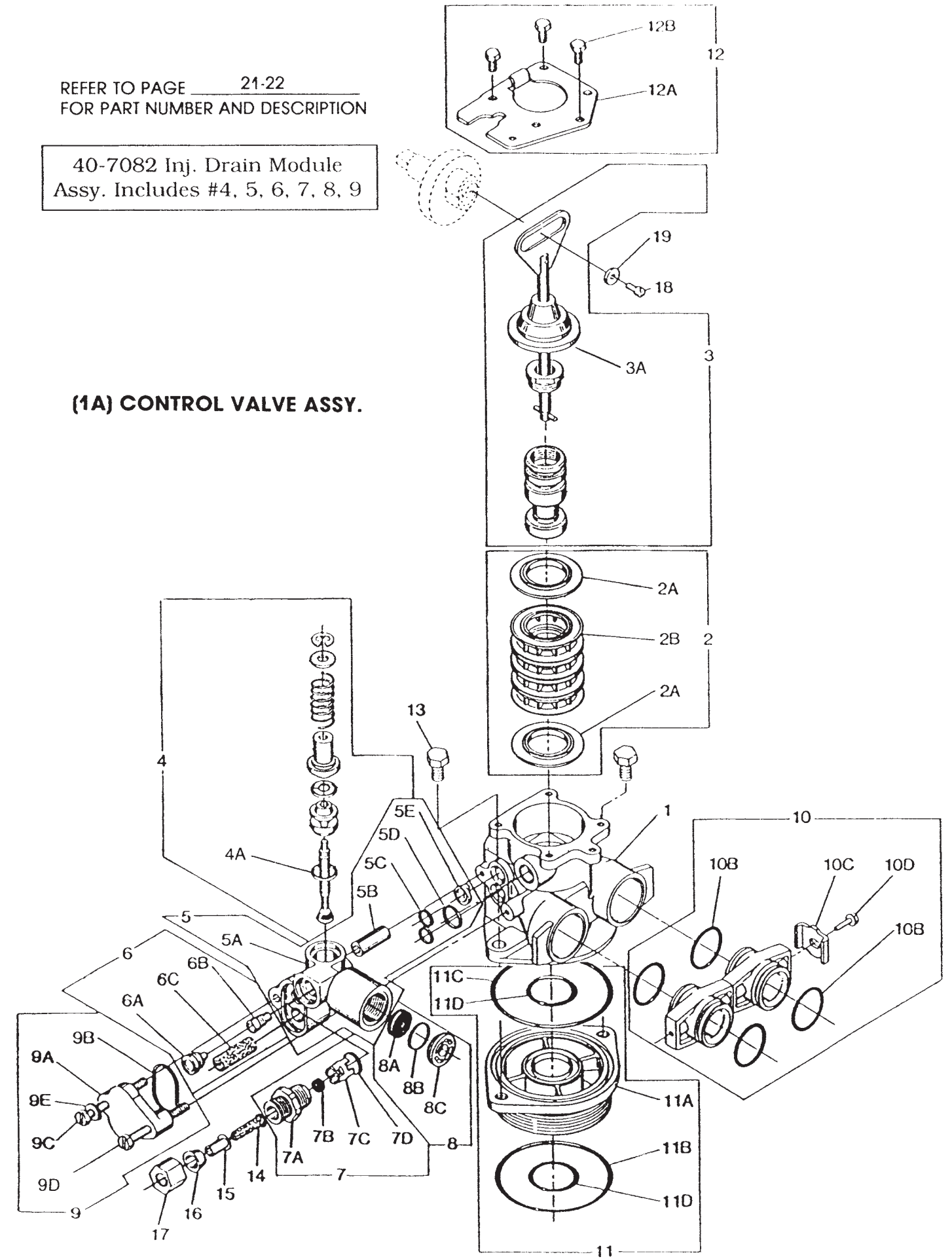


Hard water enters the unit at the valve inlet — flows around the lower piston groove — thru the injector throat — thru the brine valve and flow control to fill the brine tank. Hard water also flows around the lower piston groove — thru the passage to the top of tank — down thru the resin and enters the distributor as conditioned water. The conditioned water flows up thru the center tube to the valve outlet.

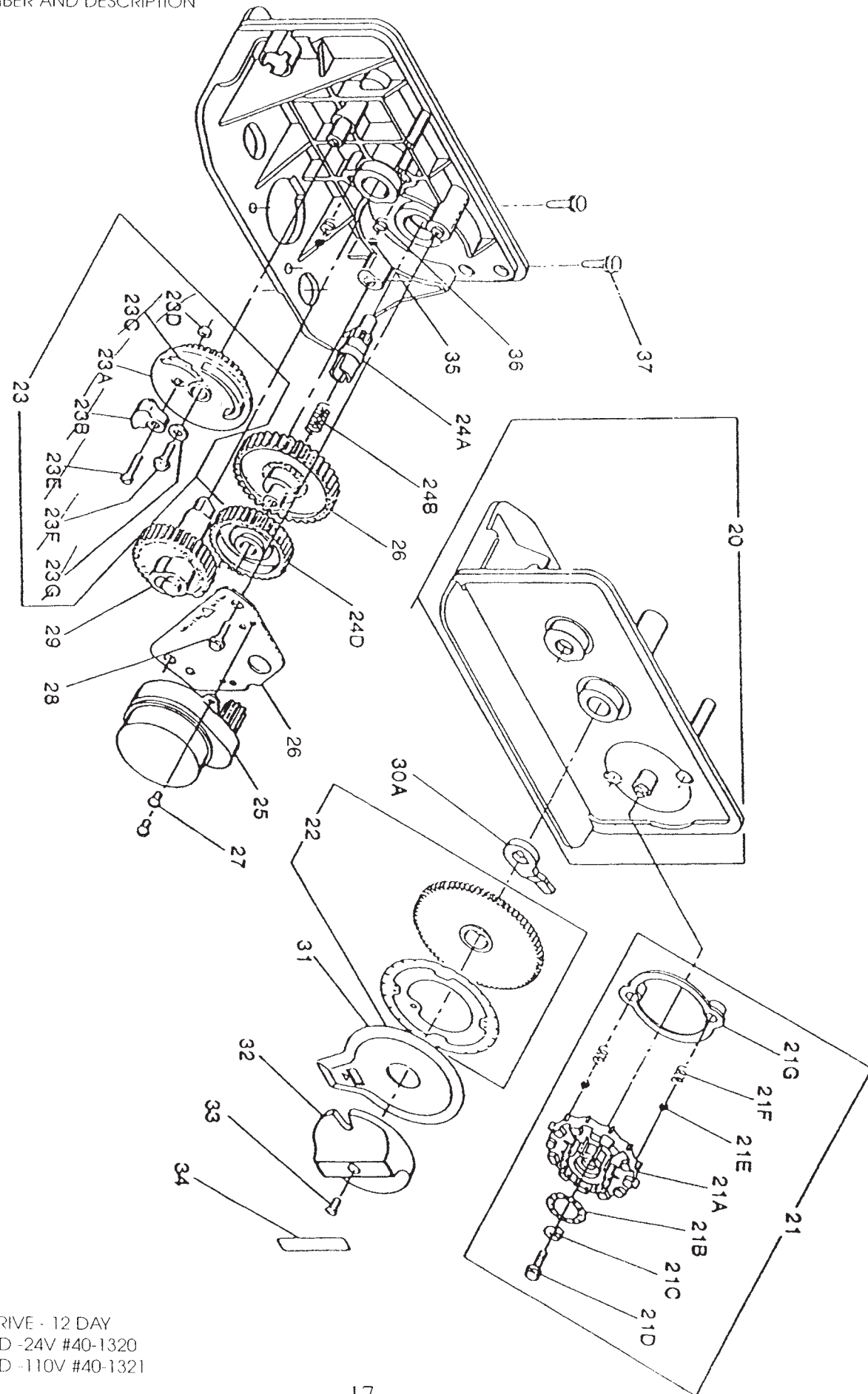
REFER TO PAGE 21-22  
FOR PART NUMBER AND DESCRIPTION

40-7082 Inj. Drain Module  
Assy. Includes #4, 5, 6, 7, 8, 9

(1A) CONTROL VALVE ASSY.

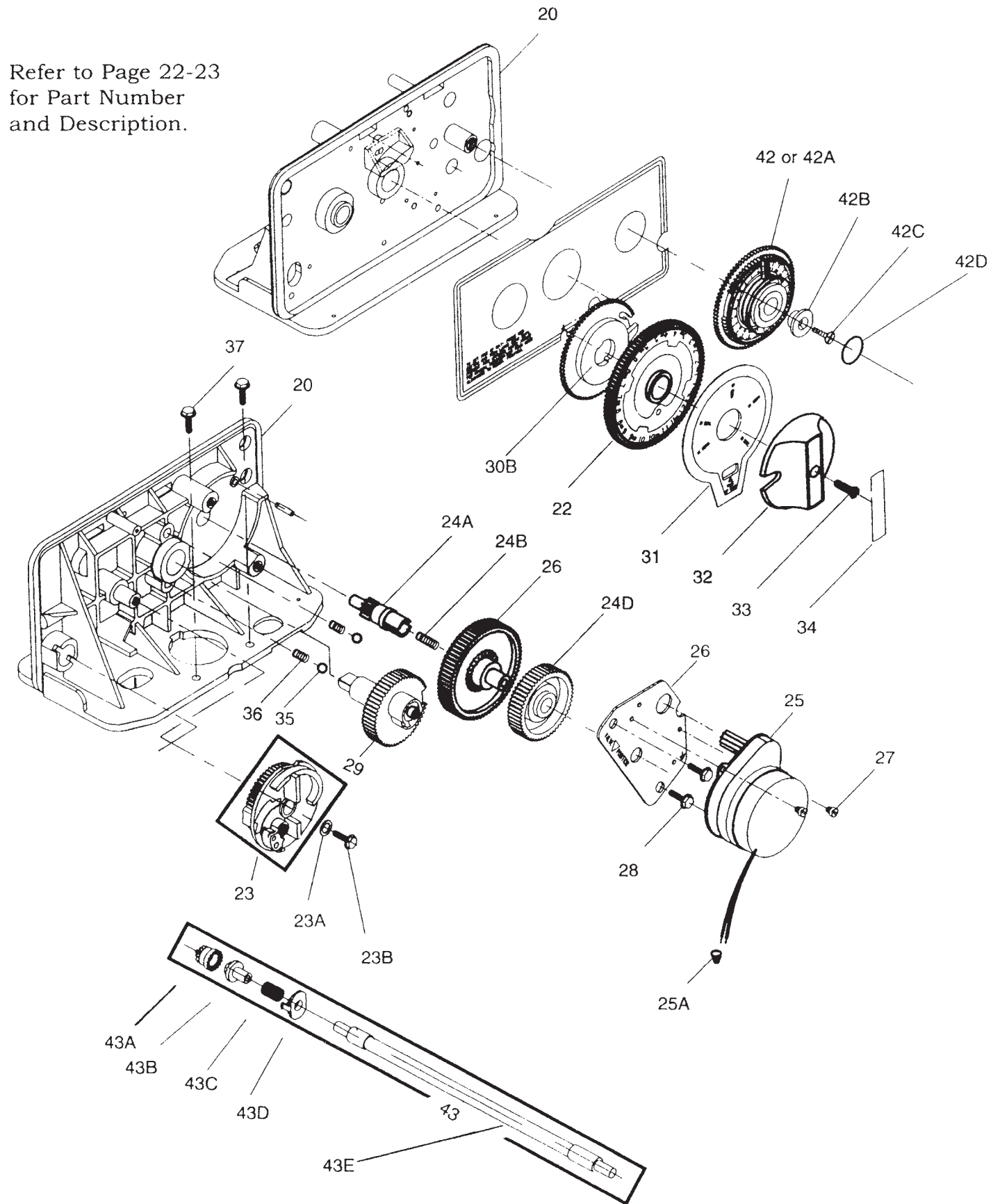






POWERHEAD DRIVE - 12 DAY  
HQ POWERHEAD - 24V #40-1320  
HQ POWERHEAD - 110V #40-1321

Refer to Page 22-23  
for Part Number  
and Description.

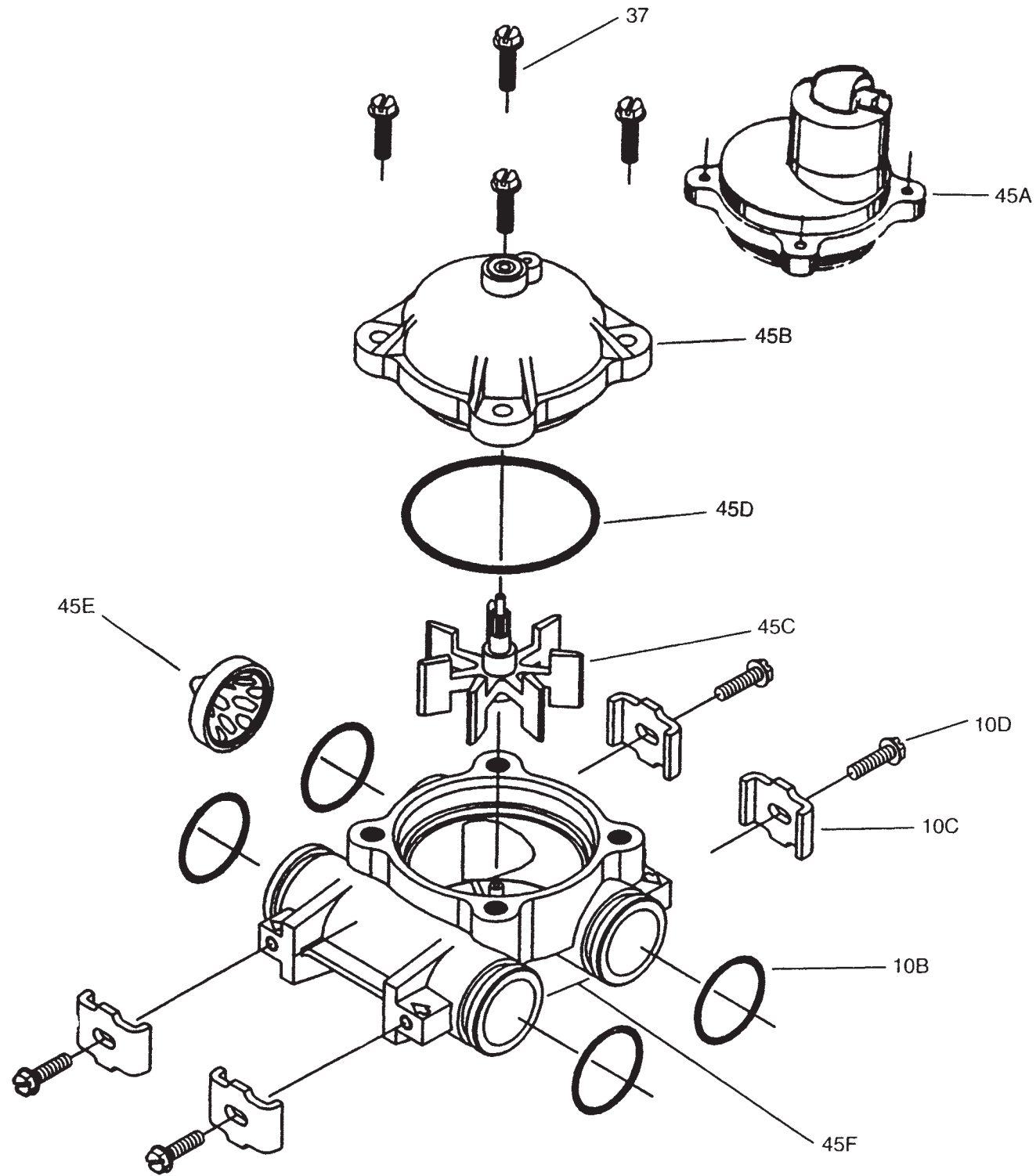


Powerhead Drive - Meter  
HQ Powerhead - 24V MD #40-1455  
HQ Powerhead - 110V MD #40-1456  
HQ Powerhead - 24V MDE #40-1460  
HQ Powerhead - 110V MDE #40-1465

43F  
Short R.A. Ext. Range Cable

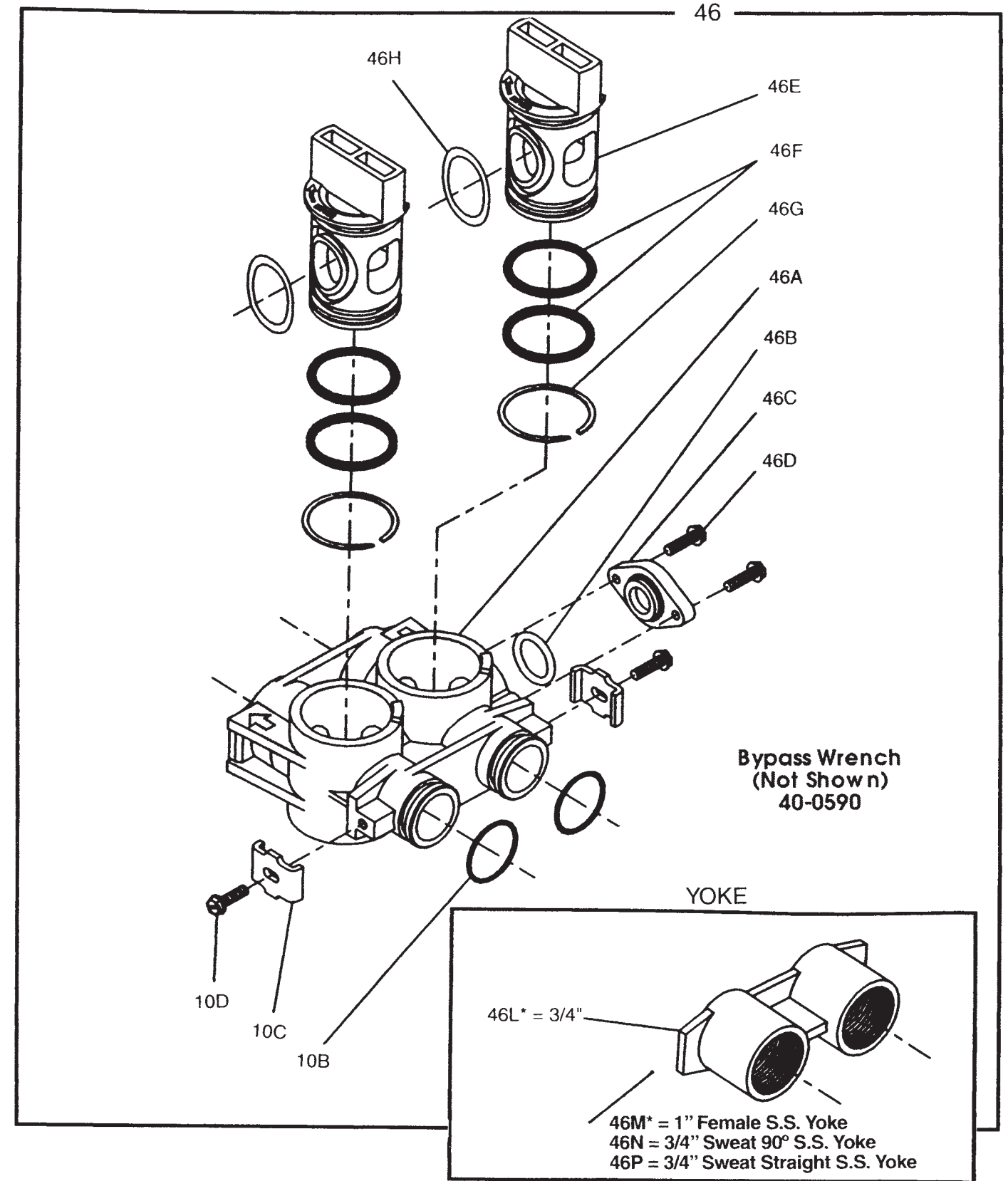
Refer to Page 21-23  
for Part Number  
and Description.

45 = STD. RGE ASSEM.  
45G = EXT. RGE ASSEM.



Refer to Page 21-23  
for Part Number  
and Description.

Flomaster Bypass without Yoke



**PARTS LIST**

| <b>ITEM</b>      | <b>DESCRIPTION</b>                                      | <b>PART NO.</b> |  |                    |         |
|------------------|---|-----------------|--|--------------------|---------|
| 1                | HQ NICKEL-PLATED VALVE BODY                             | 40-0670         |  |                    |         |
| 1A               | HQ NICKEL-PLATED VALVE ASSY.                            | 40-0665         |  |                    |         |
| 2                | SEAL AND SPACER ASSY.                                   | 40-4510         |  |                    |         |
| 2A               | SEAL  | 40-0675         |  |                    |         |
| 2B               | SPACER  | 40-0680         |  |                    |         |
| 3                | PISTON ASSY.(WHITE)                                     | 40-5010         |  |                    |         |
| 3A               | END CAP & ROD ASY. (WHITE)                              | 40-0809         |  |                    |         |
| 4 <sup>(1)</sup> | BRINE POPPET VALVE ASSY.                                | 40-3115         |  |                    |         |
| 4A               | O-RING -  | 40-3125         |  |                    |         |
| 5 <sup>(1)</sup> | INJECTOR BODY ASSY.                                     | 40-3565         |  |                    |         |
| 5A               | INJECTOR BODY   | 40-3570         |  |                    |         |
| 5B               | STAND OF (SPACER)                                       | 40-3575         |  |                    |         |
| 5C               | O-RING - INJECTOR                                       | 40-3580         |  |                    |         |
| 5D               | O-RING - DRAIN  | 40-3585         |  |                    |         |
| 5E               | AIR DISPERSER   | 40-3590         |  |                    |         |
| 5F               | LABEL - B.L.F.C.-.25                                    | 40-8042         |  |                    |         |
| 5G               | LABEL - D.L.F.C. 1.5                                    | 40-9704         |  |                    |         |
| 6 <sup>(1)</sup> | INJECTOR ASSY.  | 40-6047         |  |                    |         |
| 6A               | INJECTOR THROAT, #1 WHITE                               | 40-6045         |  |                    |         |
| 6B               | INJECTOR ORIFICE, #1 WHITE                              | 40-6010         |  |                    |         |
| 6C               | INJECTOR SCREEN   | 40-3515         |  |                    |         |
| 7 <sup>(1)</sup> | B.L.F.C. ASSY.- .25                                     | 40-6545         |  |                    |         |
| 7A               | FITTING - 3/8" B.L.F.C.                                 | 40-6550         |  |                    |         |
| 7B               | WASHERS - .25GPM B.L.F.C.                               | 40-6525         |  |                    |         |
| 7C               | RETAINER - B.L.F.C.                                     | 40-6555         |  |                    |         |
| 7D               | O-RING - B.L.F.C.                                       | 40-6560         |  |                    |         |
| 8 <sup>(1)</sup> | DRAIN FLOW CONTROL ASSY.                                | 40-7080         |  |                    |         |
| 8A               | WASHER - 1.5GPM D.L.F.C.                                | 40-7030         |  |                    |         |
|                  | WASHER - 2.0GPM D.L.F.C.                                | 40-7035         |  |                    |         |
|                  | WASHER - 2.4GPM D.L.F.C.                                | 40-7040         |  |                    |         |
| 8B               | O-RING - D.L.F.C.                                       | 40-7085         |  |                    |         |
| 8C               | RETAINER - D.L.F.C.                                     | 40-7090         |  |                    |         |
| 9 <sup>(1)</sup> | INJECTOR CAP ASSY                                       | 40-3595         |  |                    |         |
| 9A               | INJECTOR CAP  | 40-3600         |  |                    |         |
| 9B               | O-RING - INJECTOR CAP                                   | 40-3605         |  |                    |         |
| 9C               | SCREW - LONG  | 40-3610         |  |                    |         |
| 9D               | SCREW - SHORT   | 40-3615         |  |                    |         |
| 9E               | WASHER #10, 18-8, S.S.                                  | 40-3620         |  |                    |         |
| 10               | COUPLING ASSY.SET                                       | 40-0710         |  |                    |         |
| 10B              | O-RING - COUPLING                                       | 40-0720         |  |                    |         |
| 10C              | CLIP  | 40-0725         |  |                    |         |
| 10D              | SCREW - ADAPTOR COUPLING                                | 40-0730         |  |                    |         |
| 11               | TANK ADAPTOR ASSY. W/SCREEN (BRASS)                     | 40-0613         |  |                    |         |
| 11A              | TANK ADAPTOR - 2½ - 8 THREAD (BRASS)                    | 40-0615         |  |                    |         |
| 11B              | O-RING - TANK (PARK INTERNATIONAL)                      | 40-0620         |  |                    |         |
| 11B              | O-RING - TANK (STRUCTURAL FIBER)                        | 40-0627         |  |                    |         |
| 11C              | O-RING - ADAPTOR  | 40-0625         |  |                    |         |
| 11D              | O-RING - TUBE   | 40-0630         |  |                    |         |
|                  | <sup>(1)</sup> INJECTOR/DRAIN ASSY. (#4, 5, 6, 7, 8, 9) | 40-7082         |  |                    |         |
| 12               | END PLUG RETAINER ASSY.                                 |                 |  |                    | 40-0750 |
| 12A              | RETAINER PLATE  |                 |  |                    | 40-0755 |
| 12B              | SCREW - RETAINER PLATE                                  |                 |  |                    | 40-0760 |
| 13               | SCREW - TANK ADAPTOR                                    |                 |  |                    | 40-0640 |
| 14               | SCREEN - BRINE LINE                                     |                 |  |                    | 40-2525 |
| 15               | BRASS INSERT 3/8"                                       |                 |  |                    | 80-3630 |
| 16               | DELRIN SLEEVE 3/8"                                      |                 |  |                    | 80-3880 |
| 17               | COMPRESSION NUT 3/8"                                    |                 |  |                    | 80-3660 |
| 18               | SCREW   |                 |  |                    | 40-1015 |
| 19               | WASHERS   |                 |  |                    | 40-1315 |
| 20               | BRACKET -12-DAY W/LABEL                                 |                 |  |                    | 40-1325 |
| 20               | BRACKET - METER DRIVE W/LABEL                           |                 |  |                    | 40-1405 |
| 21               | SKIPPER WHEEL ASSY.12 DAY                               |                 |  |                    | 40-4005 |
| 21C              | POINTER   |                 |  |                    | 40-4020 |
| 21D              | SCREW   |                 |  |                    | 40-1015 |
| 21E              | BALL  |                 |  |                    | 40-4025 |
| 21F              | SPRING - SKIPPER WHEEL                                  |                 |  |                    | 40-4030 |
| 21G              | SKIPPER WHEEL RING                                      |                 |  |                    | 40-4035 |
| 22               | 24-HR GEAR ASSY.  |                 |  |                    | 40-1340 |
| 23               | BRINE VALVE CAM ASSY.                                   |                 |  |                    | 40-1355 |
| ***24A           | IDLER PINION  |                 |  |                    |         |
| ***24B           | IDLER SPRING  |                 |  |                    |         |
| ***24D           | DRIVE GEAR  |                 |  |                    |         |
|                  |   |                 |  | DRIVE GEAR ASY ——— | 40-1385 |
| 25               | MOTOR 24 VOLT (1/30 RPM/.125A)                          |                 |  |                    | 40-5545 |
| 25               | MOTOR 110 VOLT (1/30 RPM/.025A)                         |                 |  |                    | 40-5539 |
| 25A              | WIRE NUTS - MOTOR                                       |                 |  |                    | 40-5535 |
| **26             | IDLER GEAR & MOTOR MOUNT PLATE ASY.                     |                 |  |                    | 40-1384 |
| 27               | MOTOR MOUNTING SCREW                                    |                 |  |                    | 40-1295 |
| 28               | SCREW   |                 |  |                    | 40-1015 |
| 29               | MAIN GEAR AND SHAFT                                     |                 |  |                    | 40-1394 |
| 30A              | CYCLE ACTUATOR ARM 12 DAY                               |                 |  |                    | 40-1395 |
| 30B              | CYCLE ACTUATOR GEAR                                     |                 |  |                    | 40-1425 |
| 31               | VALVE POSITION DIAL (USE W/WHITE PISTON)                |                 |  |                    | 40-1396 |
| 32               | KNOB  |                 |  |                    | 40-1397 |
| 33               | SCREW   |                 |  |                    | 40-1398 |
| 34               | LABEL   |                 |  |                    | 40-1399 |
| 35               | BALL  |                 |  |                    | 40-4025 |
| 36               | SPRING - DETENT   |                 |  |                    | 40-1400 |
| 37               | SCREW - DRIVE MOUN./METER COVER                         |                 |  |                    | 40-1401 |
| *42              | *PROGRAM WHEEL - 2,150 GAL. STD. MTR.                   |                 |  |                    | 40-1415 |
| *42A             | *PROGRAM WHEEL. - 10,00 GAL. EXT. RGE.                  |                 |  |                    | 40-9702 |

\* SPECIFY "K" LABEL, "24K"OR "36 K"  
 \*\*ORDER AS AN ASSY.ONLY: 40-1384  
 \*\*\*ORDER AS AN ASSY.ONLY: 40-1385

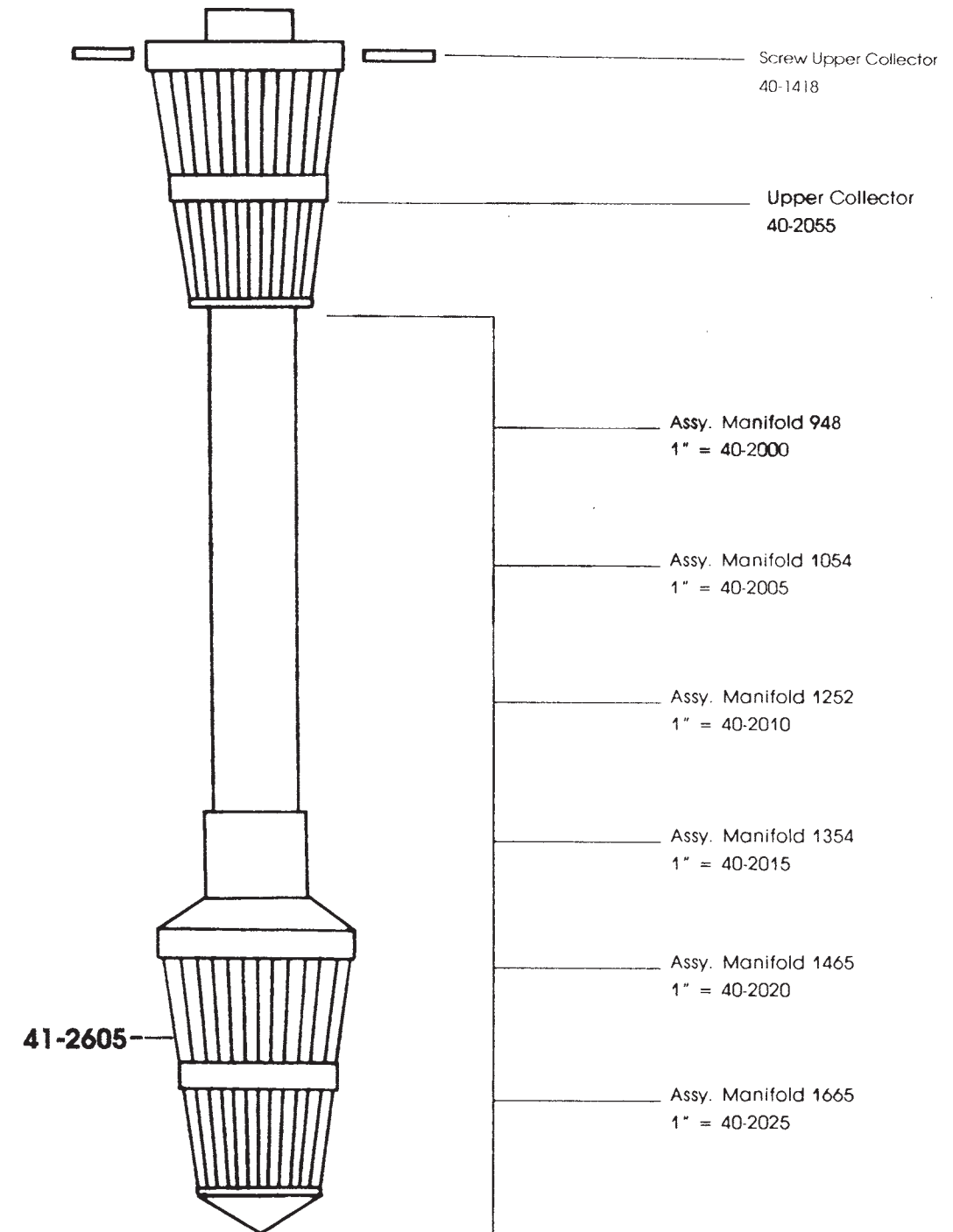


|     |  |         |
|-----|--|---------|
| 42B | PROGRAM WHEEL RETAINER                   | 40-1417 |
| 42C | SCREW                                    | 40-1418 |
| 42D | RETAINER LABEL                           | 40-1419 |
| 43  | CABLE ASSY. - METER                      | 40-8610 |
| 43A | DRIVE PINION                             | 40-1420 |
| 43B | CLUTCH                                   | 40-1421 |
| 43C | CLUTCH SPRING                            | 40-1422 |
| 43D | SPRING RETAINER                          | 40-1423 |
| 43E | CABLE-MTR. 8 1/4" (STD. & EXT.RGE.)      | 40-8615 |
| 43F | CABLE-MTR., R.A. 6 3/4" (EXT. RGE. ONLY) | 40-8105 |
| 44  | CYCLE ACTUATOR GEAR                      | 40-1425 |
| 45  | METER ASSY. 3/4" (STANDARD RANGE)        | 40-8620 |
| 45A | EXT. RT. ANGLE METER COVER W/CABLE       | 40-8673 |
| 45B | STANDARD RANGE METER COVER ASSY.         | 40-8630 |
| 45C | IMPELLER                                 | 40-8635 |
| 45D | O-RING - METER COVER                     | 40-8640 |
| 45E | FLOW STRAIGHTENER                        | 40-8645 |
| 45F | METER BODY (BOTTOM)                      | 40-8520 |
| 45G | METER ASSY. RIGHT ANGLE 3/4" (EXT. RGE.) | 40-8623 |
| 46  | BYPASS - S.S. 3/4" FNPT                  | 40-1525 |
| 46  | BYPASS - S.S. 1" FNPT                    | 40-0233 |
| 46  | BY PASS ASSY.-GLASTEX W/O YOKE           | 40-1548 |
| 46A | BY PASS BODY-GLASTEX                     | NA      |
| 46B | PORT-CAP-O-RING                          | 40-1632 |
| 46C | CAP-SAMPLE PORT                          | NA      |
| 46D | SCREW                                    | NA      |
| 46E | PLUG, BY PASS                            | NA      |
| 46F | O-RING - PLUG                            | 40-1630 |
| 46G | RETAINING RING                           | NA      |
| 46H | O-RING, BY PASS                          | 40-1631 |
| 46L | YOKE-FNPT, S.S., 3/4"                    | 40-1535 |
| 46M | YOKE-FNPT, S.S., 1"                      | 40-1585 |
| 46N | YOKE-SWEAT 90°S.S., 3/4"                 | 40-1538 |
| 46P | YOKE-SWEAT STRAIGHT S.S., 3/4"           | 40-1537 |

**NOT SHOWN:**

|  |         |
|--|---------|
| TRANSFORMER 120/24 VOLT                | 65-3005 |
| MECHANICAL METER (STANDARD)            | 40-1445 |
| CONVERSION KIT W/ POWERHEAD            |         |
| MECHANICAL METER (EXT. RANGE)          | 40-1446 |
| CONVERSION KIT W/POWERHEAD             |         |
| GAP - A - FLOW 21 (INLINE AIR GAP)     | 65-3000 |
| FITTING - DRAIN LINE - 1/2" X BARB ST. | 40-7105 |
| FITTING - DRAIN LINE - 1/2" X BARB 45° | 40-7106 |
| METER CHECKER - EXT. RANGE             | 40-8662 |
| SERVICE KIT - HQ VALVE - 12 DAY 24V    | 40-9035 |
| SERVICE KIT - HQ VALVE - METER 24V     | 40-9037 |
| CORD - 7' 110V POWER                   | 40-1026 |
| STRAIN RELIEF                          | 40-1020 |
| HYDRO RINSE - 1 QT.                    | 60-0053 |
| HYDRO RINSE - 1 GAL.                   | 60-0055 |
| SILICONE GREASE - 2 OZ. TUBE           | 91-0169 |
| DUST COVER -TOP MOUNT                  | 40-7525 |
| BRASS BYPASS SEAL (OLD STYLE)          | 40-1510 |
| LABEL - U.S. ENV.                      | 40-7530 |

## RESIN TANK WATER DISTRIBUTOR

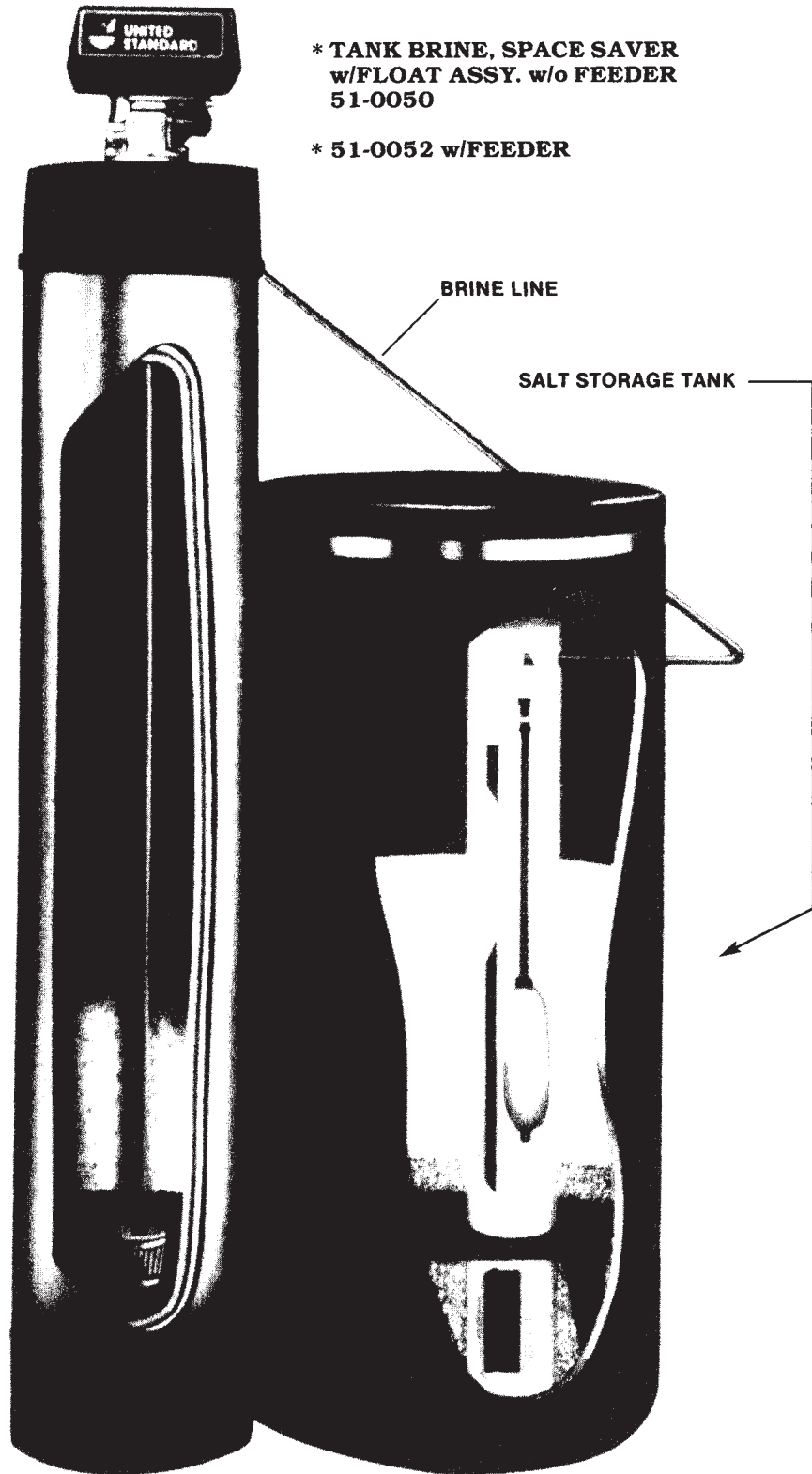


## RESIN AND BRINE TANK

9" BASE: 50-0065  
10" BASE: 50-0070

\* TANK BRINE, SPACE SAVER  
w/FLOAT ASSY. w/o FEEDER  
51-0050

\* 51-0052 w/FEEDER



VALVE - HQ-LR -24V-12 DAY:  
40-0000

VALVE- HQ-LR-110V-12 DAY:  
40-0005

VALVE- HQ-LR-24V-METER:  
40-0020

VALVE- HQ-LR 110V-METER:  
40-0025

9: BLACK CAP FOR HQ 948  
50-0120

10: BLACK CAP FOR HQ 1054  
50-0125

4 MEDIA HQ BED 1 Cu. Ft.  
(COMPLETE)  
60-9000

HQ+C FILTER BED 1 Cu. Ft. + .5 CARBON  
(COMPLETE)  
60-9005

4 MEDIA HQ BED 1.5 Cu. Ft.  
(COMPLETE)  
60-9010

9" JACKET STAINLESS STEEL  
HQ 948 ONLY  
50-0095

10" JACKET STAINLESS STEEL  
HQ 1054 ONLY  
50-0100

TANK BRINE, COMPLETE, 18" x 33"  
W/464 FLOAT ASSY.  
51-0073

LID, BRINE TANK 18:  
51-0190

TANK, BRINE W/LID  
51-0076

90 DEGREE OVERFLOW, BRINE TANK  
TWO PIECE  
51-0250

BRINE WELL-4": 51-0150  
BRINE WELL - 3.5":51-0159

CAP - BRINE WELL 4"  
51-0170

RESIN TANK W/BASE - 948  
50-0005

RESIN TANK W/BASE - 1054  
50-0010

GRID - SALT, 4" HOLE=51-0215  
GRID - SALT, 3.5" HOLE =51-0216

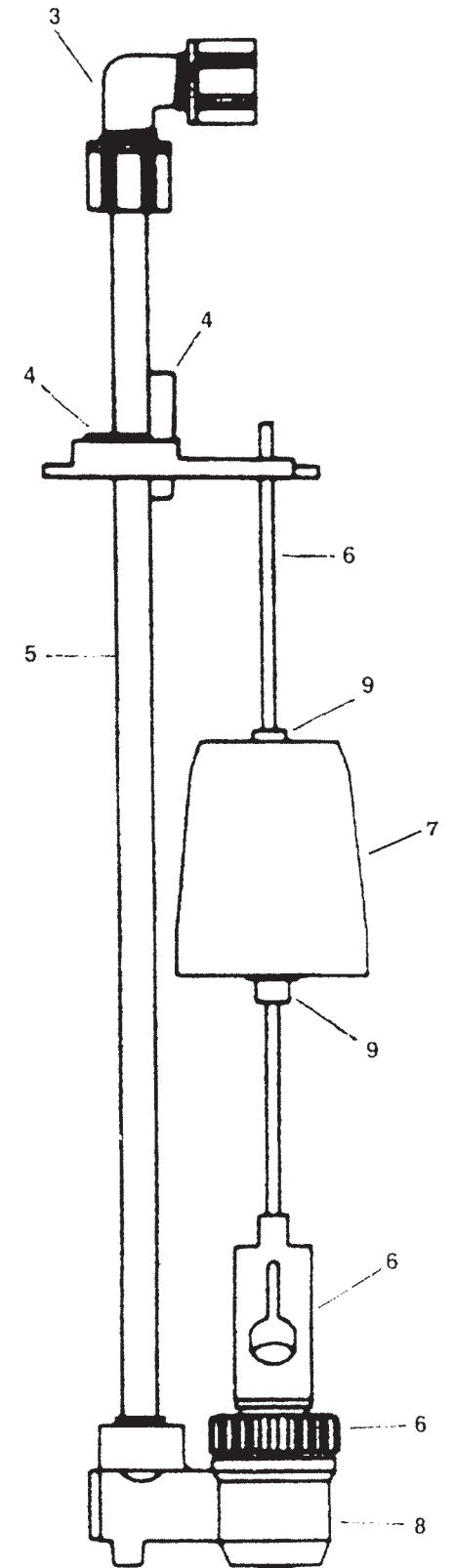
FEEDER - HYDRO RINSE  
60-0049

## BRINE VALVE AND SAFETY FLOAT

| REF. | DESCRIPTION                        | P/N     |
|------|------------------------------------|---------|
| NA   | 464 Brine Valve Float Assy.        | 51-0210 |
| NA   | Brine Line - 3/8" x 5'             | 51-0281 |
| 3.   | Elbow - 3/8" x 3/8"                | 51-0365 |
| 4.   | Guide & Lock                       | 51-0370 |
| 5.   | Draw Tube - 1/4" x 27.75"          | 51-0375 |
| 6.   | Float Rod w/o Bell & Grommet       | 51-0380 |
| 7.   | Bell Float                         | 51-0390 |
| 8.   | Brine Valve Body                   | 51-0435 |
| 9.   | Grommets                           | 51-0385 |
| NA   | Plastic Insert - Brine valve elbow | 51-0440 |

### PRIOR (9-1995) TO CURRENT FLOAT ASSY. #51-0210:

1. Order 2310 Brine Float Assy. # 40-3118  
OR
2. 2310 Brine Valve Only: # 40-3116



## **SERVICE INSTRUCTIONS**

### **PROBLEM: 1.**

Processor fails to regenerate.

#### **CAUSE:**

- A. Electrical service to unit has been interrupted.
- B. Timer is defective.
- C. Power failure.
- D. System is plumbed in backwards (program wheel will count up instead of down).
- E. Meter is not working (program wheel will fail to count up or down),
- F. Worn or broken teeth on gear(s) (24-hour gear stays at one time).
- G. Meter zeroes out, but fails to regenerate (fails to regenerate at 2:00 a.m.).

#### **CORRECTION:**

- A. Assure permanent electrical service (check fuse, plug, pull chain or switch).
- B. Replace timer.
- C. Reset time of day.
- D. Plumb system correctly.
- E. Replace meter cover impeller, program wheel or meter cable assembly.
- F. Visually check 24-hour gear, idler gear and drive gear.
- G. Check for broken tooth on the tab of main gear and shaft, check also for a broken tab on program wheel.

### **PROBLEM: 2.**

Processor delivers hard water.

#### **CAUSE:**

- A. By-pass valve is in by-pass.
- B. No salt in brine tank.
- C. Injectors or screen plugged.
- D. Insufficient water flowing into brine tank.
- E. Internal valve leak: Bad seals & spacers.
- F. O-ring leak at dist. tube; w/valve in brine draw you will get salt to drain immediately.
- G. By-pass in and out plumbed backwards.
- H. By-pass boot leaking hard water.
- I. Hot water tank full of hardness.

- J. Gallon program wheel capacity set incorrectly (processor delivers soft water for short periods of time).
- K. Air check assembly is pre-checking (processor fails to draw all the brine).

#### **CORRECTION:**

- A. Place by-pass in full service position.
- B. Add salt to brine tank and maintain salt level above water level.
- C. Clean or replace injectors and/or screen.
- D. Check salt setting and clean brine flow control if plugged. (8-9 lbs. salt per cu. ft.) Check button size: .25 vs. .50
- E. Replace seals and spacers and/or piston.
- F. Make sure distributor tube is not cracked. Check tube "O" ring & bottom collector.
- G. Replumb correctly.
- H. Change by-pass boot.
- I. Repeated flushings of the hot water tank are required.
- J. Retest the water and set gallon program wheel accordingly.
- K. Make sure the air check ball is not sticking and clean air check slots.

### **PROBLEM: 3.**

Unit uses too much salt.

#### **CAUSE:**

- A. Improper salt setting.
- B. Excessive water in brine tank.
- C. System continually regenerates (immediately starts another regeneration cycle after already completing one due to foreign material built-up between the control knob and the 24-hour gear).

#### **CORRECTION:**

- A. Check salt usage and salt setting (8-9 lb. per cu. ft.)
- B. See Problem #7.
- C. Replace the control knob and 24-hour gear and make sure the dust cover is on.

### **PROBLEM: 4.**

Loss of water pressure.



**CAUSE:**

- A. Iron buildup in line to water processor and in water processor itself.
- B. Excessive dirt/mud/iron from city main or from well.
- C. Inlet plugged due to foreign material broken loose from pipes by recent work done on plumbing system.
- D. Excessive (1 PPM +) of chlorine breaks down resin.
- E. Upper collector plugged w/iron.
- F. Water from the hot water heater is backing up into the processor and melting the slots together on the lower distributor.

**CORRECTION:**

- A. Clean line to water processor. Clean control and add resin cleaner to resin bed. Increase frequency of regeneration.
- B. Replace resin and install sediment filter.
- C. Remove piston and clean control.
- D. Replace resin and reduce excessive chlorine w/GAC filter.
- E. Remove upper collector.
- F. Install a check valve and replace the manifold assembly.

**PROBLEM: 5.**

Loss of resin through drain line.

**CAUSE:**

- A. Air in water system (private well) or high water pressure (city water),

**CORRECTION:**

- A. Assure that well system has proper air eliminator control. Check for dry well condition. Use pressure reducer.

**PROBLEM: 6.**

Iron in processed water.

**CAUSE:**

- A. Fouled resin bed.
- B. Improper backwash.

**CORRECTION:**

- A. Check and clean screen and injector and replace resin bed. Increase

- frequency of regeneration. Install res-up feeder and/or iron filter.
- B. Remove upper collector and make sure the pump can provide the correct GPM for a proper backwash and use larger D.L.F.C. button.

**PROBLEM: 7.**

Excessive water in brine tank.

**CAUSE:**

- A. Plugged drain line flow control, restricted drain line.
- B. Plugged injector system and screen.
- C. Powerhead timer not cycling; stuck in brine refill.
- D. Foreign material in brine poppet valve or missing o-ring seal.
- E. Foreign material in B.L.F.C button.
- F. Brine poppet valve doesn't shut off 100%.

**CORRECTION:**

- A. Clean drain line flow control, straighten drain line.
- B. Clean injector and screen.
- C. Replace timer and/or powerhead.
- D. Clean or replace brine poppet valve. Replace o-ring seal.
- E. Clean BLFC button.
- F. Clean or replace seal and/or poppet valve.

**PROBLEM: 8.**

Softener fails to draw brine.

**CAUSE:**

- A. Drain line flow control is plugged, and/or restricted drain line.
- B. Injector is plugged.
- C. Injector screen plugged.
- D. Line pressure too low.
- E. Internal control leak.
- F. Air disperser is cracked.
- G. Faulty brine valve or air check assembly (vacuum at the valve, but it does not draw the brine out of the tank).

**CORRECTION:**

- A. Clean drain line flow control button, straighten drain line.
- B. Clean or replace injectors.

- C. Clean or replace screen.
- D. Increase line pressure. (Line pressure must be at least 20PSI at all times.)
- E. Change seals and spacers and/or piston assembly.
- F. Replace air disperser.
- G. Clean or replace float assembly.

**PROBLEM: 9.**

Control cycles continuously.

**CAUSE:**

- A. Faulty timer motor.
- B. Faulty powerhead or broken gear teeth.
- C. Foreign material built up between the control knob and 24-hour gear.

**CORRECTION:**

- A. Replace timer motor.
- B. Replace powerhead or gears.
- C. Replace the control knob and 24-hour gear and make sure the dust cover is on.

**PROBLEM: 10.**

Drain flows continuously.

**CAUSE:**

- A. Foreign material in control.
- B. Internal control leak. (2nd seal from top worn or missing)
- C. Control valve jammed in brine or backwash.

**CORRECTION:**

- A. Remove piston assembly and inspect bore. Remove foreign material & check control in various regeneration positions.
- B. Replace seals and/or piston assembly.
- C. Replace all gears on back of valve or replace "L" bracket.

**PROBLEM: 11.**

Salty taste in water.

**CAUSE:**

- A. Too much water in brine tank. Wrong piston rod (check # of grooves.)

**CORRECTION:**

- A. Remove excess water. Replace piston rod (if wrong.)

**GENERAL SERVICE HINTS  
FOR METER VALVE**

**Problem:** Softener Delivers Hard Water.

**Cause:** Reserve Capacity Has Been Exceeded.

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

**Cause:** 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 clutch must give positive "clicks" when program wheel strikes regeneration stop. If it does not, replace meter cable assembly.

**Cause:** 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 to tooth is approximately 30 gallons. If not performing properly, replace meter. See page 37 for correct use of meter checker.

## **VALVE SERVICE INSTRUCTIONS**

### **A. TO REPLACE TIME BRINE POPPET VALVE, INJECTORS AND SCREEN**

1. Unplug electrical cord or transformer from outlet.
2. Turn off water supply to Processor by use of by-pass:
3. Relieve water pressure in the processor by putting the control in backwash position momentarily. Return the control to service position.
4. Disconnect brine line and drain connections at injector body.
5. Remove the two injector body mounting screws. The injector and brine module can now be removed from the control valve. Remove and check valve body O-rings for wear.
6. To replace brine poppet valve.
  - a. Pull brine poppet valve from injector body, also remove & check O-ring at bottom of brine valve hole.
  - b. Apply silicone lubricant to O-ring. and reinstall at bottom of brine valve hole
  - c. Apply silicone on new valve assembly and press into brine valve hole. Shoulder on bushing should be flush with injector body.
- 6a. To replace injectors and screens.
  - a. Remove injector cap and screen, check O-ring. Unscrew injector nozzle and throat from injector body.
  - b. Screw in new injector throat and nozzle. Be sure they are seated tightly. Install a new screen.
  - c. Apply silicone lubricant to O-ring and install around oval extension on injector cap.
7. Apply silicone lubricant to three O-rings and install over three bosses on injector body.
8. Insert screws with washers through injector cap and injector. Place this assembly through hole in timer housing and into the mating holes in the valve body. Tighten screws.
9. Reconnect brine line and drain line.
10. Return by-pass to normal service position.

11. Check for leaks at all seal areas. Check drain seal with the control in the backwash position.
12. Plug electrical cord or transformer into outlet.
13. Set time of day and cycle the control valve manually to assure proper function. Make sure the control valve is returned to the service position.
14. Make sure there is enough salt in the brine tank.
15. Rotate program wheel counter-clockwise until it stops at regeneration position.
16. Start regeneration cycle manually if water is hard.

### **B. TO REPLACE POWERHEAD**

1. Unplug electrical cord or transformer from outlet.
2. Turn off water supply to processor by use of by-pass.
3. Relieve water pressure in the processor by putting the control in the backwash position momentarily. Return the control to service position.
4. Remove screw and washer at drive yoke, Remove powerhead mounting screws. The entire powerhead assembly will now lift off easily.
5. Put new powerhead on top of valve. Be sure drive pin on main gear engages slot in drive yoke (rotate control knob if necessary).
6. Replace powerhead mounting screws. Replace screw and washer at drive yoke.
7. Return by-pass to normal service position. Water pressure should now be applied to the processor.
8. Plug electrical cord or transformer into outlet.
9. Set time of day, program wheel, and salt usage. Cycle the control valve manually to assure proper function. Make sure the control valve is returned to service position.
10. Make sure there is enough salt in the brine tank.
11. Rotate program wheel counter-clockwise until it stops at regeneration position.
12. Start regeneration cycle manually if water is hard.
13. Make sure cable is inserted into meter cover.
14. Replace the control valve dust cover.



**C. TO REPLACE PISTON ASSEMBLY.**

1. Unplug electrical cord or transformer from outlet.
2. Turn off water supply to processor by use of by-pass.
3. Relieve water pressure in the conditioner by putting the control in the backwash position momentarily. Return the control to the service position.
4. Remove screw and washer at drive yoke. Remove powerhead mounting screws. The entire powerhead assembly will now lift off easily. Remove end plug retainer plate.
5. Pull upward on end of piston yoke until assembly is out of valve.
6. Inspect the inside of the valve to make sure that all spacers and seals are in place, and that there is no foreign matter that would interfere with the valve operation.  
  
Take new piston assembly as furnished, lube with water only and push piston into valve by means of the end plug. Twist yoke carefully in a clockwise direction to properly align it with drive gear. Replace end plug retainer plate.
8. Place powerhead on top of valve. Be sure drive pin on main gear engages slot in drive yoke (rotate control knob if necessary).
9. Replace powerhead mounting screws. Replace screw and washer at drive yoke.
10. Return by-pass to normal service position.
11. Plug electrical cord or transformer into outlet.
12. Set time of day. Cycle the control valve manually to assure proper function. Make sure the control valve is returned to the service position.
13. Make sure there is enough salt in brine tank.
14. Rotate program wheel counter-clockwise until it stops at regeneration position.
15. Start regeneration cycle manually if water is hard.
16. Make sure cable is inserted into meter cover.
17. Replace the control valve dust cover.

**D. TO REPLACE SEALS AND SPACERS.**

1. See: To replace Piston Assy. follow steps 1 - 5.
2. Remove and replace seals and spacers with fingers.
3. See: To replace piston assy. and follow steps 6 - 17.

**E. TO REPLACE METER MODULE.**

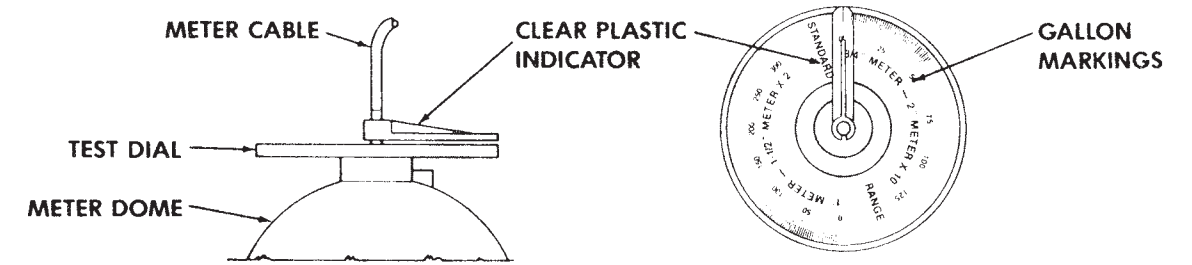
1. Unplug electrical cord or transformer from outlet.
2. Turn off water supply to processor by use of by-pass.
3. Relieve water pressure in the processor by putting the control in the backwash position momentarily. Return the control to the service position.
4. Remove cable from meter cover.
5. Remove two screws and clips at by-pass valve. Pull resin tank away from plumbing connections.
6. Remove two screws and clips at control valve. Pull meter module out of control valve.
7. Apply silicone lubricant to four "O" rings and assemble to four ports on new meter module.
8. Assemble meter control valve. Note: meter portion of module must be assembled at valve outlet.
9. Attach two screws and clips at by-pass valve. Be sure clip legs are firmly engaged with lugs.
10. Push resin tank back into plumbing connections and engage meter ports with by-pass valve.
11. Attach two clips and screws at valve. Be sure clip legs are firmly engaged with lugs.
12. Return by-pass to normal service position.
13. Check for leaks at all seal areas.
14. Plug electrical cord or transformer into outlet.
15. Set time of day. Make sure the control valve is in the service position.
16. Rotate program wheel counter-clockwise until it stops at regeneration position.
17. Start regeneration cycle manually if water is hard.
18. Insert cable into meter cover. Rotate cable to align drive flat if necessary.

**F. TO REPLACE METER COVER AND/OR IMPELLER.**

1. Unplug electrical cord or transformer from outlet.
2. Turn off water supply to processor.
3. Relieve water pressure in the processor by putting the control in the backwash position momentarily. Return the control to the service position.
4. Remove cable from meter cover.
5. Remove four screws on meter cover.
6. Lift cover off of meter module. Remove O-ring.
7. Remove and inspect impeller for gear or spindle damage.
8. Apply silicone lubricant to four O-rings and assemble to four ports on new meter module.
9. Assemble cover to meter module. Be sure impeller spindle enters freely into cover. Press firmly on cover and rotate if necessary to assist in assembly.
10. Replace four screws and finger tighten, and use screwdriver to snug.
11. Return by-pass to normal service position.
12. Check for leaks at all seal areas.
13. Plug electrical cord or transformer into outlet.
14. Set time of day. Make sure the control valve is in the service position.
15. Rotate program wheel counter-clockwise until it stops at regeneration point.
16. Start regeneration cycle manually if water is hard.
17. Insert cable into meter cover. Rotate cable to align drive flat if necessary.

**HOW TO USE METER CHECKERS:**

- |                                 |         |
|---------------------------------|---------|
| A) Standard range meter checker | 40-8660 |
| B) Extended range meter checker | 40-8662 |



- A) Pull cable out of meter dome.
- B) Place test dial over protruding hub on meter dome.
- C) Push brass cable fitting into split hole in clear plastic indicator (ribbed side up).
- D) Push cable into socket in meter dome.
- E) Rotate clear plastic indicator counter clockwise until line is at desired start point.

The numbers will count up from zero. Draw a measured volume of water or time a desired flow rate. The clear plastic indicator hair line should read the appropriate gallons on the test dial.





Section \_\_\_\_\_ Account \_\_\_\_\_ Date Installed \_\_\_\_\_  
 Customer \_\_\_\_\_ Home Phone # \_\_\_\_\_  
 Address \_\_\_\_\_ Work Phone # \_\_\_\_\_  
 City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
 Financed By \_\_\_\_\_ Cash \_\_\_\_\_ Representative \_\_\_\_\_  
 Water System \_\_\_\_\_ R.O. System \_\_\_\_\_  
 (Model) (Serial #) (Model) (Serial #) (Membrane)

Water Condition at install:

City Water \_\_\_\_\_ Well Water \_\_\_\_\_  
 Hardness \_\_\_\_\_ pH \_\_\_\_\_  
 Iron \_\_\_\_\_ Chlorine \_\_\_\_\_  
 No. of people in Household \_\_\_\_\_  
 Water Pressure \_\_\_\_\_ #TDS \_\_\_\_\_  
 Water Temp. \_\_\_\_\_

Installer \_\_\_\_\_

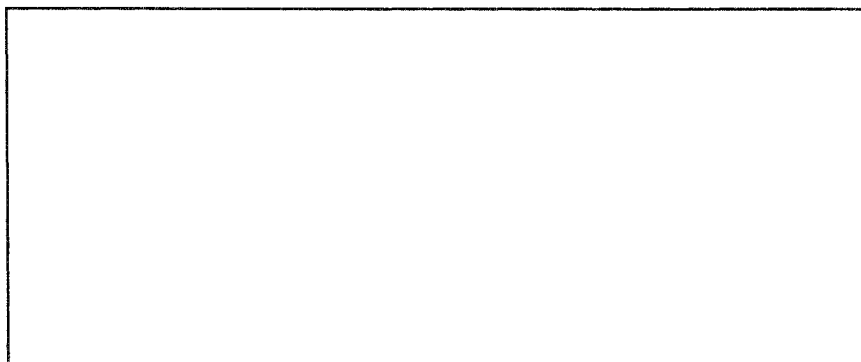
Approx. change out intervals by months:\* "R.O. Only"

| Water              | Pre-Filter | Pre-Carbon** | Membrane  | VOC'S    | Post Carbon |
|--------------------|------------|--------------|-----------|----------|-------------|
| Hard-Chlorinated   | 6-12 mo.   | 6-12 mo.     | 12-36 mo. | 6-12 mo. | 6-12 mo.    |
| Hard-Unchlorinated | 6-12 mo.   | 6-12 mo.     | 12-36 mo. | 6-12 mo. | 6-12 mo.    |
| Soft-Chlorinated   | 12-18 mo.  | 6-12 mo.     | 24-48 mo. | 6-12 mo. | 6-12 mo.    |
| Soft-Unchlorinated | 12-18 mo.  | 6-12 mo.     | 24-48 mo. | 6-12 mo. | 6-12 mo.    |

\* Due to the many water characteristics, the above schedule is for reference only.

\*\* 1 PPM of chlorine or less: Every 6-12 Months.

***FOR SERVICE AND PRODUCT INFORMATION CONTACT:***

A large, empty rectangular box with a thin black border, positioned below the text. It is intended for providing contact information for service and product inquiries.