

# SOFTENER SERIES

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## INSTALLATION INSTRUCTION & OWNER'S MANUAL Ver 2.1



**APEC WATER**



[www.FreeDrinkingWater.com](http://www.FreeDrinkingWater.com)

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**Please keep this Owner's Manual for future reference.**

**It contains useful information on how to maintain and care for your  
APEC Whole House Water Softener System**

*Thank you for choosing APEC Whole House Water Filter System.*

**Please read and become familiar with instructions and parts needed before proceeding with the installation.**

### **General Installation/Operation/Maintenance Requirements**

- Use a Licensed Plumber to Install this product.
- Check with your state and local public works department for plumbing and sanitation codes. You must follow these guidelines as you install the whole house water filter.
- This water filter system will withstand up to 90 psi water pressure. If your house's water pressure is higher than 90 psi, install a pressure reducing valve before the system is installed.
- DO NOT use with water that is microbiologically unsafe or of unknown quality without adequate disinfecting before or after.
- DO NOT install the water treatment system in an outside location or anywhere it will be exposed to direct sunlight.
- DO NOT install the water treatment system where temperatures gets to freezing.
- Manufacturer warranty can be voided if the installation requirements above are not met.

### **BEFORE INSTALLATION:**

**Inspect the system:** Please take the system and all the components out of the box. Inspect the system and all the connection fittings carefully, make sure nothing is damaged during shipping. If any part is cracked or broken, please do not proceed with the installation and contact APEC or your distributor for an exchange or diagnosis.

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## System installation kit



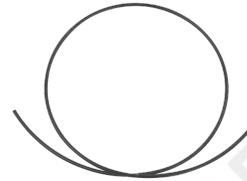
Softener Tank  
**X 1**



Salt Tank  
**X 1**



Bypass Valve  
**X 1**



Salt Tank Tubing  
**X 1**

### V3007-02LF kit includes:



Brass Sweat Adapter Kit  
**X 2**



1" Quick Connect  
**X 2**



Plastic Split Rings  
**X 2**



Rubber O-rings  
**X 2**

### V3007 kit includes:



Elbow Solvent Kit  
**X 2**



1" Quick Connect  
**X 2**



Plastic Split Rings  
**X 2**



Rubber O-rings  
**X 2**

### Drain line adapter:

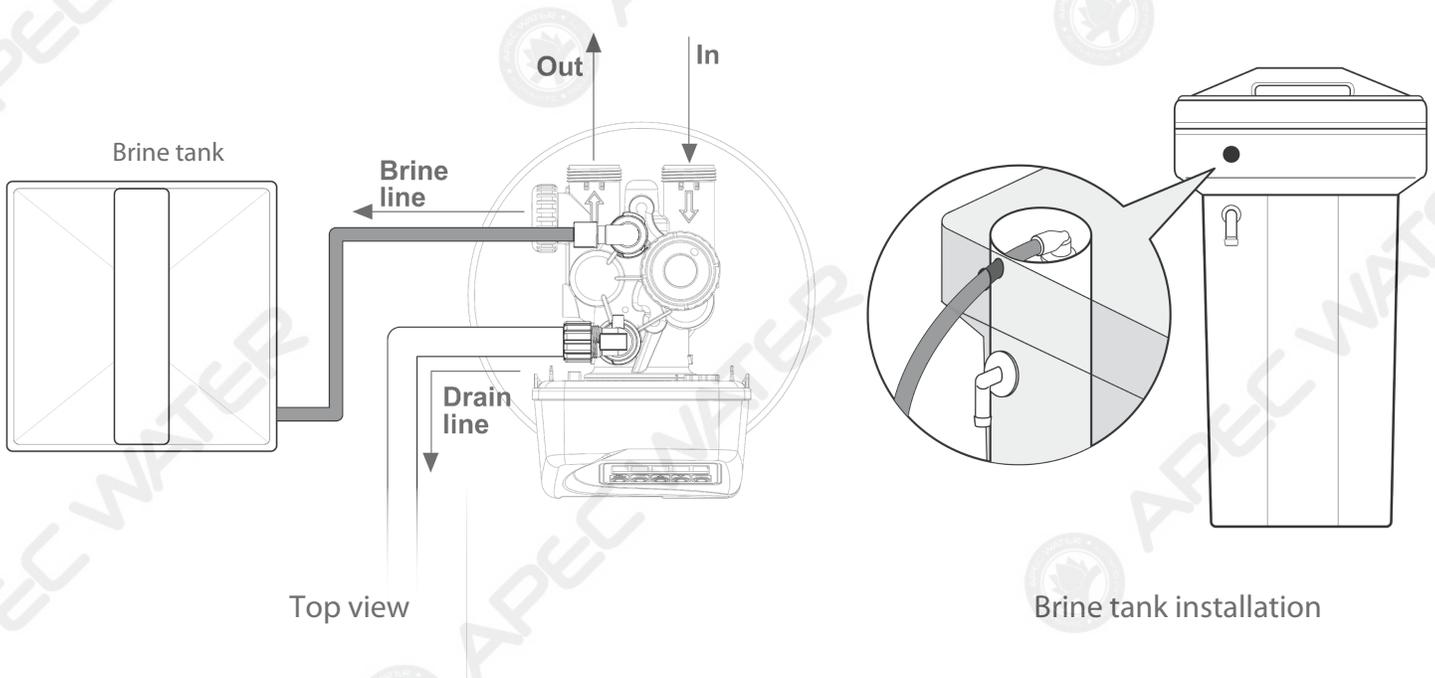


Option 1



Option 2

## Installation



### SITE REQUIREMENTS:

The control valve, fittings and/or bypass are designed to accommodate minor plumbing misalignments but are not designed to support the weight of a system or the plumbing.

Do not use Vaseline, oils, other hydrocarbon lubricants or spray silicone anywhere. A silicon lubricant may be used on black o-rings but is not necessary. **Avoid any type of lubricants, including silicone, on red or clear lip seals.**

**Do not use pipe dope or other sealants on threads.** Teflon tape must be used on the threads of the 1" NPT elbow or the 1/4" NPT connection and on the threads for the drain line connection. Teflon tape is not necessary on the nut connections or caps because o-ring seals are used. The nuts and caps are designed to be unscrewed or tightened by hand or with the special plastic Service Wrench, #V3193. If necessary a pliers can be used to unscrew the nut or cap. **Do not use a pipe wrench** to tighten or loosen nuts or caps. **Do not place screwdriver in slots on caps and/or tap with a hammer.**

### SITE REQUIREMENTS:

- Water pressure: 20-90 psi
- Water temperature: 40° F - 100° F
- The tanks should be on a firm, level surface
- Electrical: Use a 115/120v, 60Hz uninterrupted outlet
- Current draw is 0.25 amperes
- A 15-foot power cord is furnished
- The plug-in transformer is for dry locations only
- Batteries are not used

The Clack tanks on your softener systems have slightly higher operating pressure and temperature guidelines by themselves than what is listed above.

1. The distance between the drain and the water softener should be as short as possible. All plumbing should be done in accordance with local plumbing codes.
2. Since salt must be periodically added to the brine tank, it should be located where it is easily accessible.
3. Do not install any water softener with less than 10 feet of piping between its outlet and the inlet of a water heater.

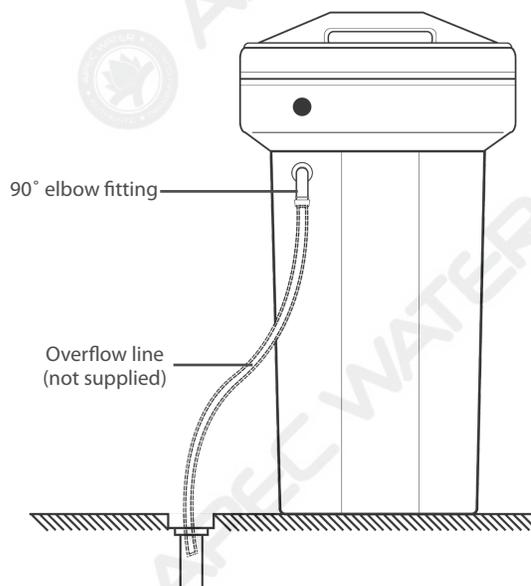
4. Do not locate unit where it or its connections (including the drain and overflow lines) will ever be subjected to room temperatures under 34° F.
5. The use of resin cleaners in an unvented enclosure is not recommended.
6. **INLET/OUTLET PLUMBING:** Connect to a supply line downstream of outdoor spigots. Install an inlet shutoff valve and plumb to the unit's bypass valve inlet located at the right rear as you face the unit. When assembling the installation fitting package (inlet and outlet), connect the fitting to the plumbing system first and then attach the nut, split ring and o-ring. Heat from soldering or solvent cements may damage the nut, split ring or o-ring. Solder joints should be cool and solvent cements should be set before installing the nut, split ring and o-ring. Avoid getting solder flux, primer, and solvent cement on any part of the o-ring, split ring, bypass valve or control valve. If the building's electrical system is grounded to the plumbing, install a copper grounding strap from the inlet to the outlet pipe. **Plumbing must be done in accordance with all applicable local codes.**
7. **DRAIN LINE:** First, be sure that the drain can handle the backwash rate of the system. Solder joints near the drain must be done prior to connecting the drain line flow control fitting. Leave at least 6" between the drain line flow control fitting and solder joints. Failure to do this could cause interior damage to the flow control. Install a ½" I.D. flexible plastic tube to the Drain Line Assembly or discard the tubing nut and use the ¾" NPT fitting for rigid pipe. If the backwash rate is greater than 7 gpm, use a ¾" drain line. Where the drain line is elevated but empties into a drain below the level of the control valve, form a 7" loop at the discharge end of the line so that the bottom of the loop is level with the drain connection on the control valve. This will provide an adequate antisiphon trap. Where the drain empties into an overhead sewer line, a sink-type trap must be used. Run drain tube to its discharge point in accordance with plumbing codes. Pay special attention to codes for air gaps and anti-siphon devices.
8. **BRINE TANK CONNECTION:** Install a 3/8" O.D. polyethylene tube from the Refill Elbow to the Brine Valve in the brine tank.

**PLEASE NOTE: After installing salt into the brine tank, please fill water into the brine tank up to a little above salt level.**

**9. OVERFLOW LINE CONNECTION:**

AN OVERFLOW DRAIN LINE IS RECOMMENDED WHERE A BRINE OVERFLOW COULD DAMAGE FURNISHINGS OR THE BUILDING STRUCTURE.

Your softener may be equipped with a brine tank safety float which greatly reduces the chance of an accidental brine overflow. In the event of a malfunction, however, an OVERFLOW LINE CONNECTION will direct the "overflow" to the drain instead of spilling on the floor where it could cause considerable damage. This 90 degree elbow fitting is located on the side of the brine tank. To connect overflow fitting, attach a length of ½" I.D. tubing (not supplied) and run to a drain outlet. Do not elevate overflow line higher than 3" below

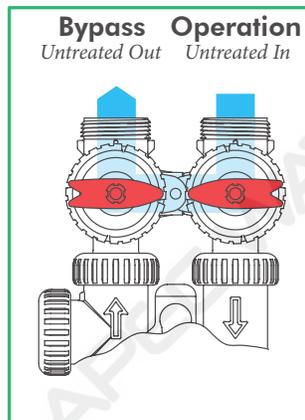
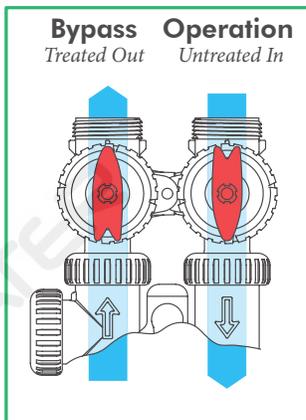


bottom of overflow fitting. Do not “tie” this tube into the drain line of the control valve. Overflow line must be a direct, separate line from overflow fitting to drain, sewer, or tub. Allow an air gap as per the drain line instructions.

**IMPORTANT: Never insert a drain line directly into a drain, sewer line, or trap. Always allow an air gap between the drain line and the wastewater to prevent the possibility of sewage being back-siphoned into the softener.**

## Bypass Operation

To shut off water to the system, please position arrow handles as shown in the bypass operation diagram to the right. If your valve doesn't look like the diagram, contact your service technician for instructions on how to shut off water.

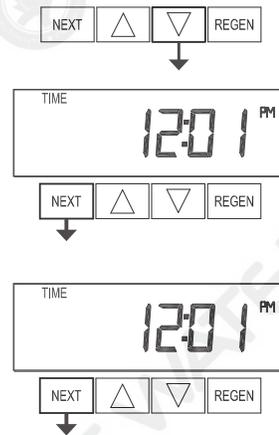


## Setting Time of Day

Push **NEXT** until time of day screen is displayed. Press and hold **▼** until **SET TIME** is displayed and the hour flashes once. Press **▲** or **▼** until the correct hour is displayed.

Then press **NEXT**. The minutes will flash. Press **▲** or **▼** until the correct minute is displayed

Press **Next** to return to the User Displays. Time of day should only need to be set after power outages lasting more than 8 hours, if the battery has been depleted and a power outage occurs, or when daylight savings time begins or ends. If a power outage lasting more than 8 hours occurs, the time of day will flash on and off which indicates the time of day should be reset. If a power outage lasts less than 8 hours and the time of day flashes on and off, the time of day should be reset and the battery be replaced.



## Set Water Hardness

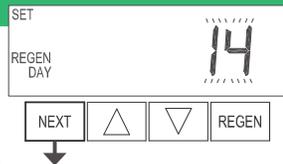
### Step 1i

To enter Installer Display press **NEXT** and ▲ simultaneously for about 5 seconds and release.



### Step 2i

Day Override: When volume capacity is set to "oFF", sets the number of days between regenerations. When volume capacity is set to AUTO or to a volume, sets the maximum number of days between regenerations. If value set to "oFF", regeneration initiation is triggered solely by volume used. If value is set in days (allowable range from 1 to 28) regeneration initiation will be called for on that day regardless of actual water usage.



Set Day Override using ▲ or ▼:

- number of days between regeneration (1 to 28); or
- "oFF".  
See Setting Options Table for more detail on setup.

Press **NEXT** to go to Step 3i.

Press **REGEN** to return to previous step.

### Step 3i

Next Regeneration Time (hour): Set the hour of day for regeneration using ▲ or ▼. The default time is 2:00. This display will show "REGEN on 0 GAL" if "on 0" is selected in Set Regeneration Time Option in Softener System Setup or Filter System Setup.



Press **NEXT** to go to Step 4i.

Press **REGEN** to return to previous step.

### Step 4i

Next Regeneration Time (minutes): Set the minutes of day for regeneration using ▲ or ▼. This display will not be shown if "on 0" is selected in Set Regeneration Time Option in Softener System Setup or Filter System Setup.



**EXIT TO DISPLAY SCREENS**

Press **NEXT** to exit Installer Display Settings.

Press **REGEN** to return to previous step.

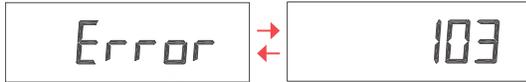
## Regeneration & Error Screens, Button Operation & Function



### Regen Screen

Displays the time remaining in the current cycle. Pressing **REGEN** advances to the next cycle.

### Error Screen



Alternated flashing Err and error code every 3 seconds. Clear by disconnecting the power supply at the PC board and reconnecting, or press **NEXT** and **REGEN** simultaneously for 3 seconds.



In Alternator Systems when a unit is waiting to initiate the first cycle step of regeneration, "REGEN Pndg" is displayed.



"STbY" is displayed in Alternator Systems when a valve is in Standby state.



"REGEN Pndg RINSE FILL" is displayed whenever a zero-capacity tank has transferred to an off-line state and is currently waiting to initiate the second portion of a regeneration cycle. Viewed only when Delayed Rinse and Fill is set to ON.

### Button Operation and Function

**NEXT** Scrolls to the next display.

**REGEN** Pressing once and releasing will schedule a regeneration at the preset delayed regeneration time.

Pressing again and releasing will cancel the regeneration.

Pressing and holding for 3 seconds will initiate an immediate regeneration.

Pressing while in regeneration will advance to the next cycle.

Pressing in the program levels will go backwards to the previous screen.

  Changes variable are displayed.

 **NEXT**  **REGEN** Key sequence to lock and unlock program settings.

**NEXT** **REGEN** Holding for 3 seconds initiates a control reset. The software version is displayed and the piston returns to the home/service position, resynchronizing the valve.

**REGEN**  Used with valve type 1.0Γ, holding for at least 3 seconds causes a switch in the tank in Service without cycling the regeneration valve. After tank switch, days remaining and capacity remaining status is retained for each tank until the next regeneration.

## Manual Regeneration

Normally, you don't need to perform regeneration after installation, please follow the two steps below in case manual regeneration is needed.

1. Pressing and releasing the **REGEN** button. "REGEN TODAY" will flash on the display and the regeneration will occur at the delayed regeneration time. The user can cancel the request by pressing and releasing the **REGEN** button.
2. Pressing & holding the **REGEN** button for approximately 3 seconds will immediately start the regeneration. The user cannot cancel this request, except by resetting the control by pressing **NEXT** and **REGEN** simultaneously for 3 seconds.

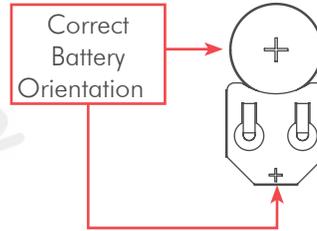
## Front Cover and Drive Assembly

Part No.	Description	Qty
CL3175EE-01	WS1 Front Cover Assembly	1
CL3107-01	Motor Assembly	1
CL3106-01	Drive Bracket & Spring Clip	1
CL3408EE-04BOARD	WS1 thru 2 EE PCB 5 Digit Rpl Board	1
CL3110	Drive Reducing Gear 12 x 36	3
CL3109	Drive Gear Cover	1
CL3002TC	TC Drive Assembly	*
<b>Not Shown</b>		
CL3186	AC Adapter 120V-12V	1
CL3186EU	AC Adapter 220-240V-12V EU	
CL3186UK	AC Adapter 220-240V-12V UK	
CL3186-01	AC Adapter Cord Only	

Relay Specifications: 12V DC Relay with a coil resistance not less than 80 ohms. If mounting relay under the cover check for proper mounting dimensions on the backplate.

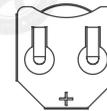
### Wiring for Correct On/Off Operation

PC Board Relay Terminal Block.....Relay  
 RLY 1.....Coil - +  
 COM.....Coil +



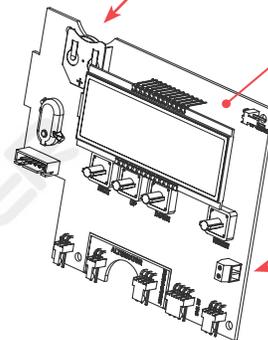
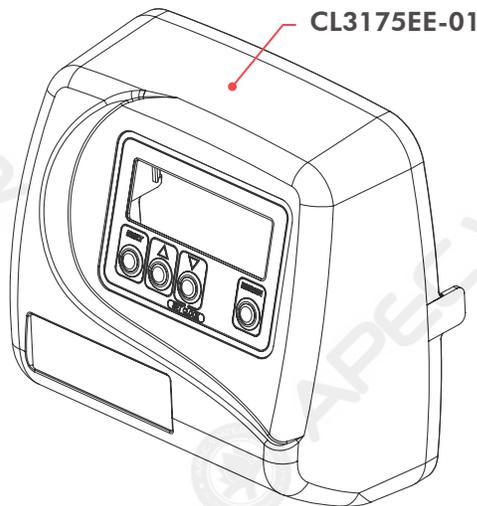
Battery replacement is 3 volt lithium coin cell type 2032.

When replacing the battery, align positives and push down to fully seat.



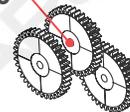
Fully Seated

**CL3408EE-04BOARD**

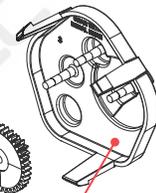


PC Board Relay Terminal Block

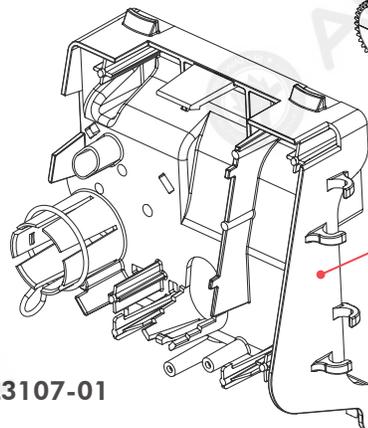
**CL3110**



**CL3109**



**CL3106-01**



**CL3107-01**



# LIMITED PRODUCT WARRANTY

## Scope

APEC takes pride in selling a superb line of products, including this Whole House Water Filtration ("Product"). As such, APEC expressly warrants to the original purchaser that, for a period of ten (10) years from the date of purchase, its tanks, valves, in/out non-electric heads, bypasses and fittings will be free from defects in material and workmanship. Within that ten (10) year period from the original purchase, APEC will, at its option, repair or replace the Product without charge, or refund the cost of the Product, if the Product fails or does not perform as warranted solely due to a manufacturing defect within the warranty period, subject to the limitations and exclusions set forth in this Limited Product Warranty. This Limited Product Warranty only applies when the Product is used, stored, handled, fabricated and/or installed in the manner recommended by APEC in the Installation Instruction & Owner's Manual ("Manual").

Note: APEC Water warrants to the customer that its solid-state electronic heads (if applicable) will be free from defects in material and workmanship under normal use and service for a period of five (5) years limited.

## Repair or Replacement

Repair or replacement during this ten (10) year and five (5) year limited warranty shall include reasonable labor charges necessary to repair or replace the defective Product, but shall not include freight charges or any other local labor charges from third parties other than APEC, unless APEC expressly approves such charges in writing. During the entire ten (10) year and five (5) year limited warranty, APEC's obligation to repair or replace shall further be limited to repair or replacement with the styles, models, products, colors, etc. of the Product that are available at the time of the repair or replacement, and shall be limited to the repair or replacement of only the specific Product that fails due to a manufacturing defect. Any repaired or replaced product shall also remain subject to the original ten (10) year and five (5) year limited warranty from the date of the original purchase, and any repair or replacement shall not extend the original warranty period in any manner or start a new warranty period.

## Conditions of Validity of this Limited Product Warranty

Even though the Product has extremely high endurance for operating conditions such as pH, maximum TDS, temperature, and optimum water pressure, THIS LIMITED PRODUCT WARRANTY SHALL ONLY BE VALID IF:

1. The replaceable media is changed and maintained on a regular basis as directed in the Manual. Moreover, depending on local water input water quality, regular maintenance may need to be increased.
2. The Product is operated within the confines of its suggested operating conditions:

Any information or suggestion by APEC with respect to the Product concerning applications, specifications or compliance with codes and standards is provided solely for your convenient reference and is made without any representation as to accuracy or suitability. You must verify and test the suitability of any information with respect to the Product for your specific application.

## Non-Covered Defects

THIS LIMITED PRODUCT WARRANTY DOES NOT COVER DEFECTS CAUSED BY:

1. Improper storage, installation, maintenance, handling, use and/or alterations of the Product, including, but not limited to, non-compliance with the installation, maintenance and standard operation conditions stated in the Manual and this Limited Product Warranty.
2. Unreasonable use, unintended use, or misuse of the Product for something other than its intended purpose as a whole house water filtration system.
3. Use of replacement parts, media, or other accessories that are not sold or manufactured by APEC for use with this particular Product.
4. Damage not resulting from manufacturing defects that occur while the Product is in the original purchaser's possession.
5. Installation of the Product with known or visible manufacturing defects at the time of installation.
6. Damage caused by freezing, flood, fire or Act of God.

## CONDITIONS THAT RENDER THIS LIMITED PRODUCT WARRANTY VOID

THIS LIMITED PRODUCT WARRANTY SHALL BE VOID IF:

1. The Product is not operated in compliance with normal municipal water conditions for which the particular model of this Product is intended.
2. The person seeking to invoke the warranty is not the original purchaser. That is, this Limited Product Warranty only extends to original purchasers.
3. The Product is purchased used. That is, this Limited Product Warranty only covers new products.
4. The Product is purchased from someone other than APEC or one of APEC's authorized dealers. This is because, unless the Product was sold by APEC or one of its authorized dealers, APEC cannot verify or guarantee the integrity or authenticity of the Product.

## General Conditions

The warranties set forth herein are the only warranties made by APEC in connection with the product. APEC cannot and does not make any implied or express warranties with respect to the product, and disclaims all other warranties, including, but not limited to, any warranty of merchantability or fitness for a particular purpose. Products sold by APEC are sold only to the specifications specifically set forth by APEC in writing. Other than the limited product warranty set forth herein, APEC makes no other warranties, express or implied. APEC's sole obligation under this warranty shall be repair or replacement of a non-conforming product or parts of the product, or at the option of APEC, return of the product and a refund of the purchase price. Buyer assumes all risk whatsoever as to the result of the use of the product purchased, whether used singularly or in combination with any other products or substances.

No claim by the buyer/owner of any kind, including claims for indemnification, shall be greater in amount than the purchase price of the products in respect to which damages are claimed. In no event shall APEC be liable to buyer/owner in tort, contract or otherwise, for any special, indirect, incidental, consequential, reliance, statutory, special, punitive or exemplary damages, including, but not limited to, lost profits, loss of use, loss of time, inconvenience, damage to good will or reputation, or loss of data, even if advised of the possibility of such damages or such damages could have been reasonably foreseen, in connection with, arising out of, or as a result of, the sale, delivery, servicing, use or loss of use of the products sold hereunder, or for any liability of buyer to any third party with respect thereto.

## Obtaining Warranty Coverage or General Inquiries

If coverage is available, you may obtain coverage under this Limited Product Warranty by providing APEC with proof of original purchase, and that you are the original purchaser. For service under this Limited Product Warranty, you must notify APEC by phone at 1-800-880-4808, by email at [techsupport@freedrinkingwater.com](mailto:techsupport@freedrinkingwater.com), or in writing at 301 Brea Canyon Road, City Of Industry, CA 91789. In making the claim, please provide your name, address, phone number, a description of the product involved, and an explanation of the defect.



**Advanced Purification Engineering Corp.**

301 Brea Canyon Road  
City Of Industry, CA 91789

*For questions or comments please visit our website at:*

**[www.FreeDrinkingWater.com](http://www.FreeDrinkingWater.com)**

*For technical support contact us at:*

**Techsupport@freedrinkingwater.com**  
**1-800-880-4808**