

INSTALLATION MANUAL

MODEL NOS.

UltraSoft 170
625.388170

UltraSoft 180
625.388180

UltraSoft 275
625.388270

UltraSoft 280
625.388280

Caution:

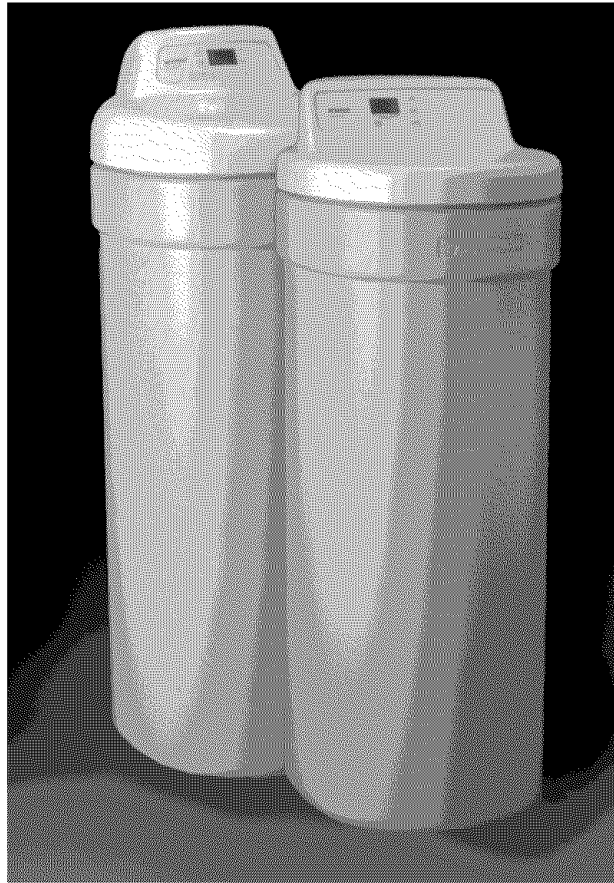
Read and Follow
All Safety Guides
Before You Start To
Install Your Softener.

If you have questions when
installing, operating or main-
taining your softener, and
when setting the timer, call
this toll-free number...

1-800-426-9345

www.KenmoreWater.com

SAVE THIS MANUAL



UltraSoft Water Softeners

With **DELUXE** valve

designed for plumbing up to 1 inch

- ◆ Safety Guides
- ◆ Unpacking
- ◆ Where To Install
- ◆ How To Install
- ◆ Pressure Testing



Systems Tested and Certified by NSF International
against NSF/ANSI Standard 44 for softener performance.

Use the plastic bag and tie provided, to hang manuals
nearby the softener for future reference.

Sears, Roebuck and Co., Hoffman Estates, IL 60179 USA

INTRODUCTION

This manual gives you the steps needed to install your new Kenmore Water Softener. To better understand how the water softener is installed, and to know what you will need, please read this entire manual before beginning.

After you have installed the water softener, the included owner's manual tells you how to start, program, operate and maintain it. The owners manual also has the product warranty, and a listing of repair parts available from Sears.

Your Kenmore Water Softener will remove hardness minerals (measured in grains per gallon...gpg) and some clear water iron (measured in parts per million...ppm) from water. See the specifications, in your owners manual, for the maximum limits of hardness and iron removal. A water softener will not improve other water problems such as acidity, tastes and odors, or iron other than clear water iron. It will not purify contaminated water, or make other unsafe water safe to drink.

Sears sells a complete line of water treating equipment to correct various water problems. To be sure you have the proper type and size equipment, you must have your water tested. Your Sears store can give you water test results for hardness, iron and acidity, and tell you what equipment you need. Simply take at least a 4 oz. sample of your water to Sears, and they will test it while you wait. **If you need help to get your water tested, or if you have other questions about your water, ask at your Sears store, or call Sears Water Line ...1-800-426-9345.**

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SECTION 1

A. SAFETY GUIDES

▲ Read all steps, guides and rules carefully before installing and using your new water softener. Follow all steps exactly to correctly install. Failure to follow them could cause personal injury or property damage. Reading this book will also help you to get all of the benefits from your water softener.

▲ Your water softener will remove hardness minerals and “clear water” iron* from water, up to the limits shown on the specifications page in your owner’s manual. It will not remove other types of iron, acids, tastes and odors, etc. It will not purify polluted water or make it safe to drink.

▲ Check with your local public works department for plumbing, electric and sanitation codes. You must follow their guides as you install your softener. Codes in the State of Massachusetts require installations by a licensed plumber. For installation, use plumbing code 248-CMR of the Commonwealth of Massachusetts.

▲ Use only LEAD-FREE SOLDER AND FLUX, as required by federal and state codes, when installing soldered copper plumbing.

▲ Protect the softener and piping from freezing. Damage from freezing voids the softener warranty. See how to protect from freezing in your owner’s manual.

⚠ CAUTIONS

PLEASE READ AND COMPLY WITH THE FOLLOWING GUIDES TO PREVENT DAMAGE TO THE SOFTENER OR OTHER PROPERTY, PERSONAL INJURY, OR POSSIBLE FATAL SHOCK.

▲ THIS SOFTENER WORKS ON 24 VOLTS ONLY. BE SURE TO USE ONLY THE TRANSFORMER INCLUDED, AND PLUG IT INTO A NOMINAL 120V, 60 CYCLE HOUSEHOLD OUTLET THAT IS GROUNDED AND PROPERLY PROTECTED BY AN OVERCURRENT DEVICE SUCH AS A CIRCUIT BREAKER OR FUSE. IF TRANSFORMER IS REPLACED, USE ONLY THE AUTHORIZED SERVICE, CLASS II, 24 VOLT, 10 VA TRANSFORMER.

▲ Unplug the transformer right away if the power cable should become damaged or frayed. Make repairs, or replace the transformer, before plugging back into the power outlet.

▲ Always unplug the softener from electrical power before removing outer valve covers.

*The capacity to reduce clear water iron is substantiated by WQA test data.

SECTION 1 BEFORE INSTALLING CHECKS & TESTS

B. UNPACKING THE WATER SOFTENER

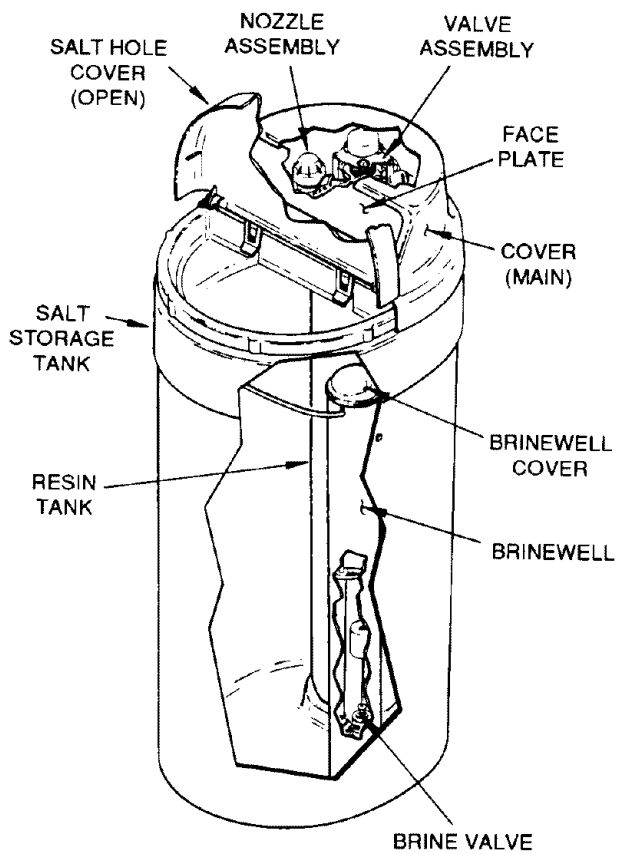
Directions for unpacking the softener are on the top of the shipping carton. This manual, and the owner's manual, were on the small parts cardboard packing piece. You will need the small parts to install the softener. So you don't lose any parts, keep them on the cardboard piece until you are ready to use them. Remove all other cardboard pieces, foam packings, tapes, etc. from the softener and discard.

Check the softener for shipping damage. If you find damage, report it to your Sears store.

Use care when handling the softener. **DO NOT** turn upside-down. **DO NOT** drop, or set on sharp objects that could make a hole in the bottom. The water softener is heavy and to avoid damage, or personal injury, do not try to lift it or move more than necessary. See page 3-4, when you are ready to move it into installation position.

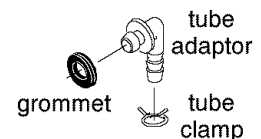
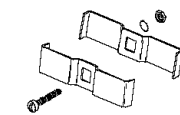
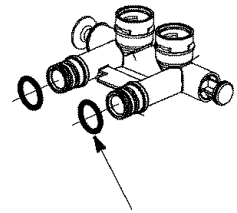
FIG. 1

PARTS DESCRIPTIONS



SMALL PARTS

bypass valve
(included with some models)



C. WATER SYSTEM TESTS

Has your water supply had a chemical analysis?
Please see page A on the inside of the front cover.

CHECK YOUR WATER PRESSURE — For your softener to work right, a water pressure of no lower than 20 pounds per square inch (psi) is needed in the house water pipes. The highest pressure allowed in the water pipes is 125 psi. If pressure is over 125 psi, buy and install a pressure reducing valve in the water inlet pipe to the softener.

Note:

If water pressure during the day is 100 psi or more, pressure during the night may go over 125 psi. Adding a pressure reducing valve may reduce the flow.

If you have a well water system, look at the pressure gauge to find the water pressure. Call your local water department if you have city water. They will tell you what the water pressure is where you live.

CHECK YOUR WATER FLOW RATE — A water flow of at least 3 gallons per minute is needed. A

lower flow will keep your softener from working as well as it should. To make an easy check of your flow rate, do the following. You will need a one gallon container (can, jar, pail, etc.).

- 1.** Fully open two cold water faucets close to the point water enters the house.
- 2.** With both faucets open, fill the gallon container at one faucet while looking at a watch or clock to see how many seconds it takes.
- 3.** Empty the container and go to the second faucet (be sure BOTH faucets are still on). Fill the gallon container at the second faucet and see how many seconds it takes.
- 4.** Turn off both faucets. Now add the number of seconds it took to fill the container at both faucets.
- 5.** A total of 90 seconds, or less, means the system flow rate is good.

FOR FUTURE REFERENCE, ENTER RESULTS OF YOUR WATER SYSTEM TESTS IN THE
“FACTS AND FIGURES TO KEEP” TABLE IN YOUR OWNERS MANUAL.

A. WHERE TO INSTALL THE WATER SOFTENER

SECTION
2

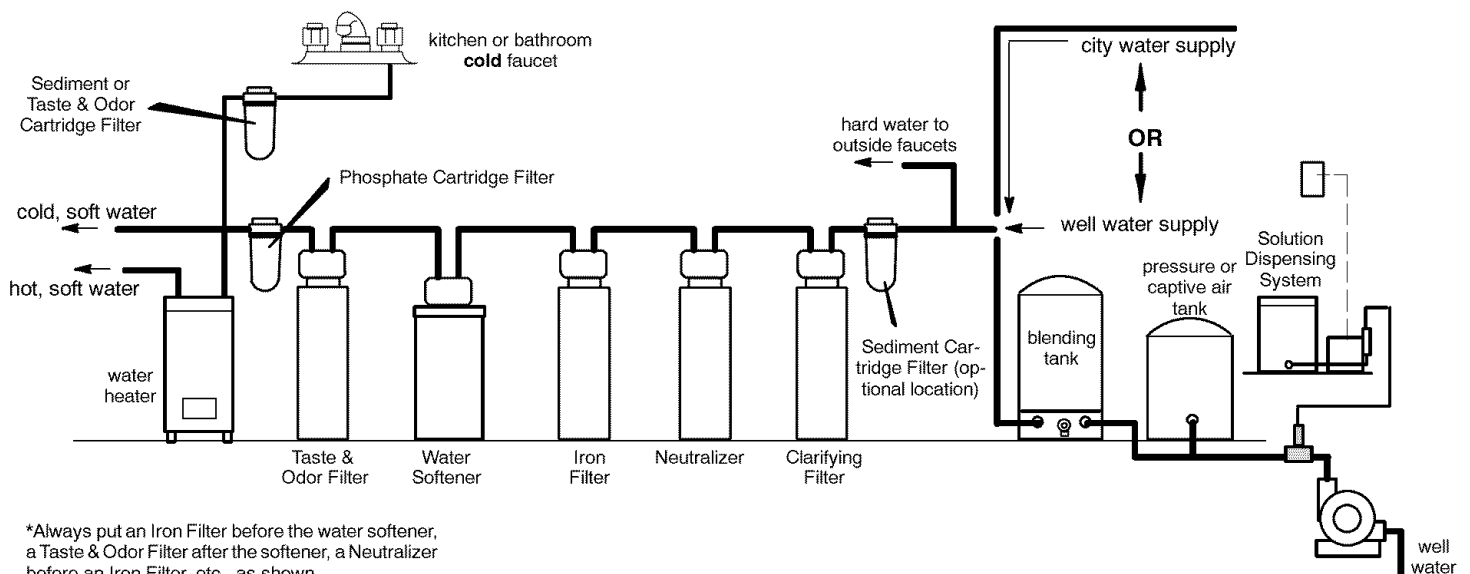
Think of the following points as you choose a place to put your softener. (see FIG. 2).

- Place as close as possible to the pressure tank (well water) or water meter (city water).
- Place as close as possible to a water drain such as a floor drain, laundry tub, sump or standpipe.
- Connect to the house main water pipe **BEFORE THE WATER HEATER. Temperature of water going through the softener must not be more than 120°F (49°C).** Hot water will damage inner softener parts. *To reduce the risk of hot water backup,* piping between the softener and water heater should be as long of a run as possible.
- Keep outside faucets on hard water to save soft water and salt.
- **Do not** install in a place where the softener could freeze. Damage caused by freezing voids the warranty by Sears, Roebuck and Co.
- Put the softener in a place water damage is least likely to occur if it develops a leak. Sears or the manufacturer will not repair or pay for water damage.
- A grounded, 120V electrical outlet, to plug the transformer into is needed within 10 feet of the softener (the softener has a 10 foot power cable). **Be sure the outlet and transformer are in an inside place, to protect from wet weather.** So the softener always has electrical power, use a continuously "live" outlet, that cannot be accidentally switched off.
- When installing in an outside location, you must take the steps necessary to assure the softener, installation plumbing, and wiring, are as well protected from the elements, contamination, vandalism, etc., as when installed indoors.
- Keep the softener out of direct sunlight. The sun's heat can melt plastic parts.

FIG. 2

THE PROPER ORDER TO INSTALL WATER TREATING EQUIPMENT

(Shows sequence of equipment only. — Seldom, if ever, would all items be needed*.)



*Always put an Iron Filter before the water softener, a Taste & Odor Filter after the softener, a Neutralizer before an Iron Filter, etc., as shown.

B. TOOLS, PIPE AND FITTINGS, OTHER MATERIALS NEEDED

You must first decide how to run in and out pipes to the softener. Look at your house main water pipe at the point you will connect the softener. Is the pipe soldered copper, glued plastic, or threaded galvanized or brass? What is the pipe size? What kind of pipe and fittings is it easiest for you to work with, and what tools do you have?

Now look at the common plans for in and out piping on page 2-4 (soldered copper) and 2-5 (threaded). Select the drawing best for you and use it as a guide to plan what materials you will need. As you plan your in and out piping, keep in mind the following check list. Then get all the materials you will need before you start.

Notes:

Use page 2-3 to make a plan drawing for your specific installation.

Some models include a plastic bypass valve, a length of *valve* drain hose, and a length of *overflow* drain hose for the salt storage tank .

- ✓ *In and out fittings included with the softener are 1" NPT threaded adaptors.* You should maintain the same, or larger, pipe size as the water supply pipe, up to the softener inlet and outlet.
- ✓ Use copper, brass, galvanized or PVC plastic pipe and fittings for the in and out pipes. Be sure to check local codes.
- ✓ Copper and galvanized pipe corrode fast when connected together. Use pipe and fittings of the same material.

✓ ALWAYS install a bypass valve or valves. Either use the Sears special valve (included with some models and available at your local Sears store), or 3 shut-off valves (see pages 2-4 and 3-3). Bypass valves let you turn off water to the softener if needed for repairs, but still have water in the house pipes.

✓ Drain tubing (3/8 in. inside diameter), is needed for the valve and salt tank drains. See step 1 and 2 on page 3-5 and 3-6. Some models include a length of drain tubing, or you can buy tubing at most Sears stores.

If a rigid valve drain is needed to comply with plumbing codes, you can buy the parts needed (see page 3-5) to change the softener to a 1/2 in. minimum copper tubing drain.

✓ TOOLS NEEDED:—Common and cross point (Phillips) screw drivers, slip joint pliers and a tape measure or rule. ALSO...

...for SOLDERED COPPER — tubing cutter, propane torch, solid-core LEAD-FREE solder, paste flux, emery cloth, sandpaper or steel wool.

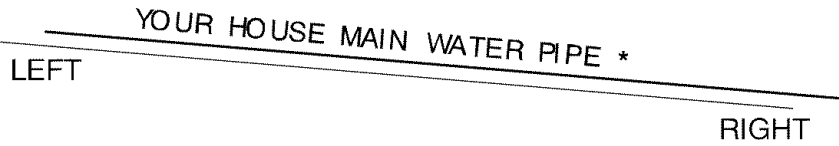
...for THREADED PIPE — hacksaw or pipe cutter, pipe wrenches, pipe threading tool, pipe joint compound approved for use on potable water.

...for PVC PLASTIC — hacksaw, adjustable wrench, solvent cement approved for use on potable water, primer.

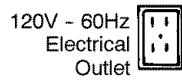
Note: Codes in the State of Massachusetts require installations by a licensed plumber. For installation, use plumbing code 248-CMR of the Commonwealth of Massachusetts.

B. PIPE AND FITTINGS, PLAN DRAWING

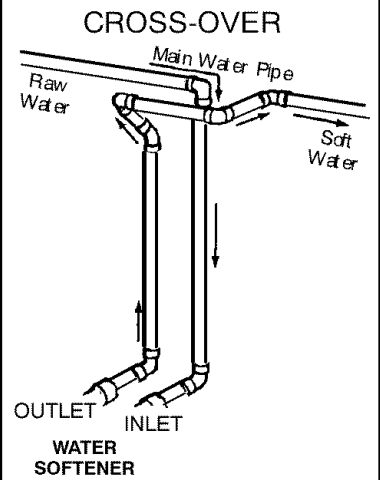
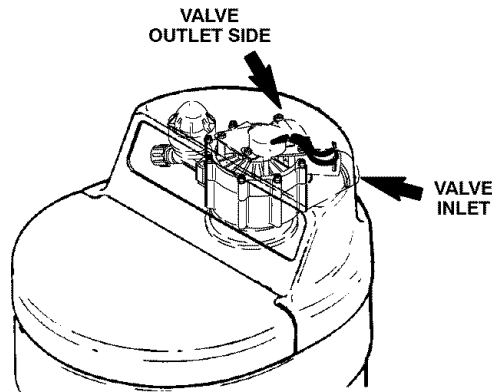
FIG. 3



* In what direction does the water flow? Be sure to plan IN and OUT piping so water flow is to the softener valve inlet. Plan a crossover if flow is from left to right.



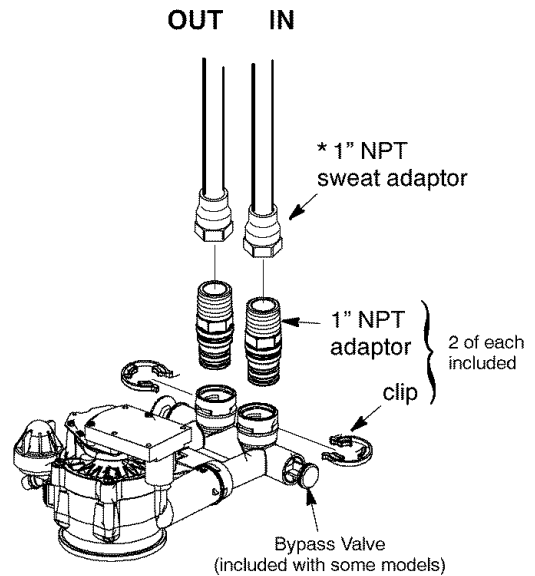
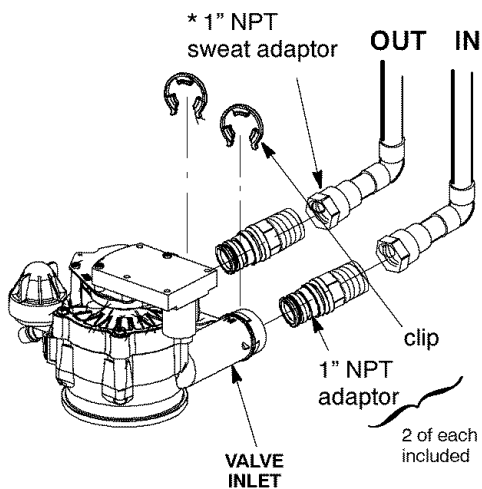
Draw the plans for your In and OUT piping here. Be sure to follow the guides on page 2-2. Include all pipe, fittings and accessories you will use. Make a list of all materials you will need and buy them before you begin to install the water softener.



C. TYPICAL SOLDERED COPPER (OR PVC) IN AND OUT PIPES TO SOFTENER

FIG. 4

DELUXE VALVE MODELS

***NOTE:**

For plumbing connection, buy 2 sweat adaptors and plumb directly to the inlet-outlet adaptors or bypass valve. Threads on the inlet-outlet adaptors 1" NPT.

CAUTION:

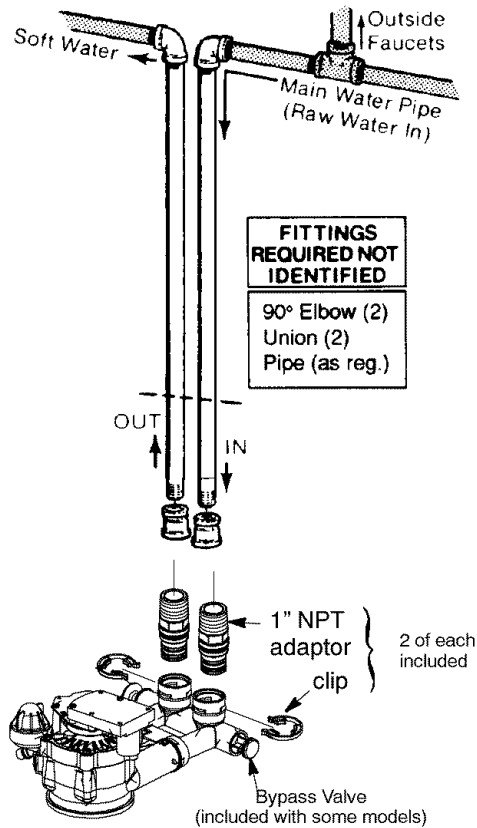
DO ALL SOLDERING BEFORE CONNECTING SWEAT ADAPTOR TO INLET-OUTLET ADAPTORS OR BYPASS VALVE.

D. TYPICAL THREADED IN AND OUT PIPES TO SOFTENER

FIG. 5

If you are planning a threaded plumbing installation, with a 3-valve bypass, use the drawing in Fig. 4 as a guide. Use union fittings, as needed, to connect the plumbing.

DELUXE VALVE MODELS



*NOTE:

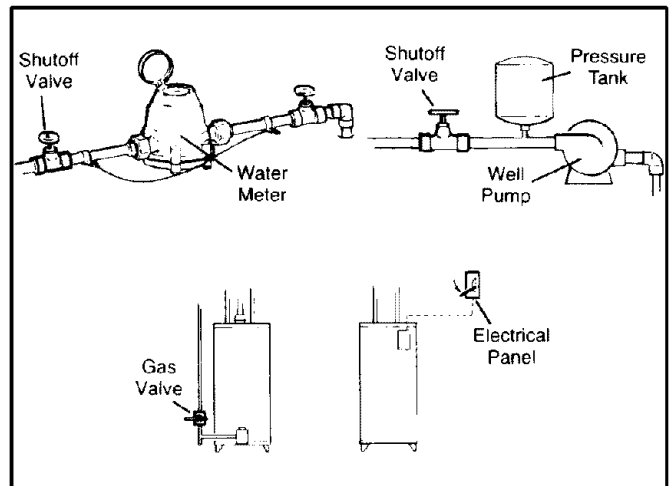
For 1 in. plumbing connection, use a 1 in. threaded straight connector.

A. ASSEMBLE INLET-OUTLET ADAPTORS, OR PLASTIC BYPASS VALVE

SECTION

3

1. Close the shut-off valve on the house main water pipe, near the water meter or pressure tank, to turn off the water.
2. Shut off the gas or electric supply to the water heater.
3. Open the highest and lowest water faucets in your house to let water drain from the pipes. Close faucets after water has drained.
4. If not already done, remove all cardboard or plastic packing pieces from inside the softener. Set the cardboard liner (with parts for installing fastened to it) where you can easily see it, and get to parts as you need them.



- a Visually check and remove any foreign materials from the valve inlet and outlet ports (FIG. 6). Carefully remove the two large plastic clips (you will use them). Check to be sure the turbine and turbine support are firmly in place. (Fig. 6)
- b **BYPASS VALVE:** If not already done, put a light coating of silicone grease on the o-ring seals and slide onto the bypass valve. Push the bypass valve into the softener valve as far as it will go. **Snap the two large holding clips into place, from the top down as shown.** (Fig. 7)

CAUTION... Be sure the clips snap firmly into place so the bypass valve will not pull out. (Fig. 7)

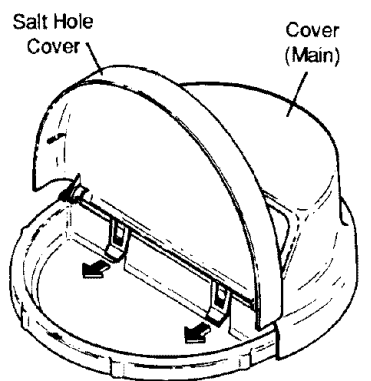
GO TO PAGE 3-4.

- c **INLET AND OUTLET THREADED ADAPTORS:** If not already done, put a light coating of silicone grease on the o-ring seals and slide onto the threaded adaptors. Push the adaptors into the valve inlet and outlet ports, or bypass valve ports, as far as they will go. Both adaptors are the same and fit either port. **Snap the two large holding clips into place, as shown.** (Fig. 7)

CAUTION... Be sure the clips snap firmly into place so the tubes will not pull out. (Fig. 7)

GO TO PAGE 3-3.

Remove the main cover...pull outward on 2 tabs to release. For the UltraSoft 100 remove the salt hole cover first. For the UltraSoft 200 the salt hole cover remains attached to the main cover when removed. So they will not get scratched or broken, set both covers aside.



5. **INSTALL SEARS BYPASS VALVE AND / OR THE INLET OUTLET THREADED ADAPTORS (FIG. 4, 5 AND 6).** All needed parts are on the small parts skin-pack.

Note:

If you **will not** install the bypass valve because you will have a 3-valve bypass, skip step b, but do steps a and c.

A. ASSEMBLE INLET-OUTLET ADAPTORS, OR PLASTIC BYPASS VALVE

DELUXE VALVE MODELS

FIG.6

INSTALLING BYPASS VALVE, and / or INLET and OUTLET THREADED ADAPTORS

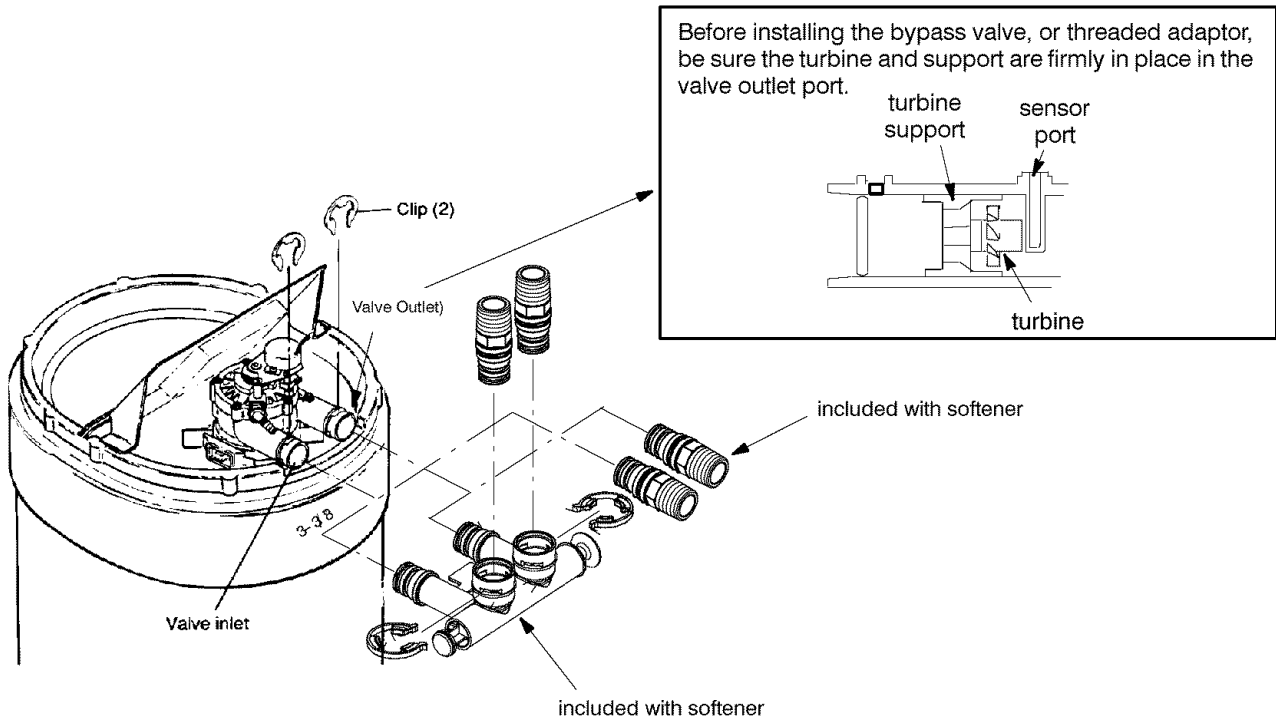


FIG.7

INSTALLING HOLDING CLIPS

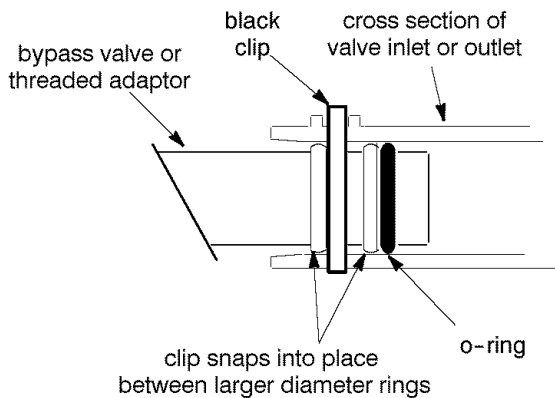
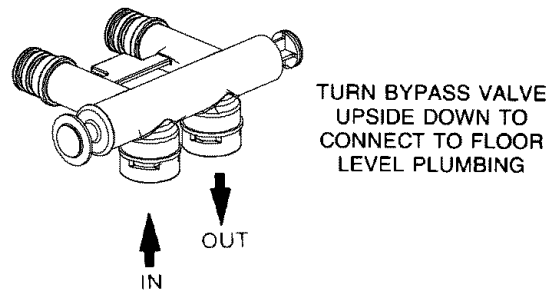


FIG.8

BYPASS VALVE TURNED DOWNWARD



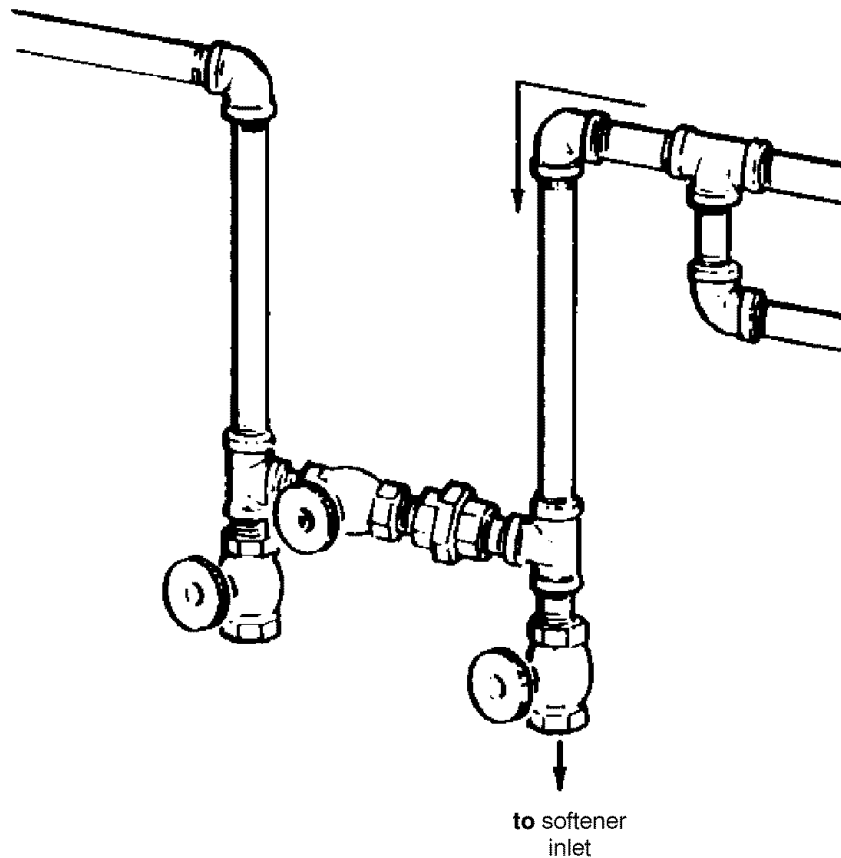
B. INSTALL 3-VALVE BYPASS**1. INSTALLING 3 VALVE BYPASS AND PIPES (FIG. 9)**

- a** Cut the house main water pipe where you will connect the softener. Loosely put together pipe, fittings, and the 3 valves. Place valve(s) within easy reach.

IMPORTANT:

When looking at the front of the softener, the inlet is on the right side. If water in your house main water pipe runs from left to right, be sure to use a "cross-over" as shown on page 2-3.

- b** When all pipe, fittings and valves make a good fit together, tighten all threaded joints (use pipe dope on outside threads), or solder all sweat joints.

FIG.9**3 - VALVE BYPASS**
(threaded plumbing shown)

C. LOCATE WATER SOFTENER, AND CONNECT PIPES

1. MOVE THE SOFTENER INTO PLACE

Move the softener into place, onto a level and smooth surface. If needed, put a piece of 3/4" plywood, at least 17" x 20", under the tank. Then put spacers under the plywood to level the softener. **Do not put shims or spacers directly under the tank**, without the plywood. The weight of the softener, when full of salt and water, may *cause the tank to puncture or break* at the shim or spacer.

To move the softener, grip under the ridge on the salt tank sidewall and carefully rock back and forth, into position.

2. CONNECT THE SOFTENER

(Refer to your plan drawing on page 2-3, and to page 2-4 or 2-5. Read the IMPORTANT note on page 3-3. Then, measure, cut (thread if needed) and put all pipe and fittings together up to the main water pipe, or to the bypass valve(s) you installed on page 3-3.

Notes:

- Include adaptors, reducers, union fittings, etc., as needed.
- Cut pipe lengths exact for correct aligning, and to prevent stress on the softener valve.
- Use pipe joint compound or Teflon tape on outside pipe threads.
- When all piping fits together...
 - ...solder all sweat fittings.
 - ...prime and cement all PVC joints.
 - ...tighten all threaded joints.

⚠ CAUTIONS:

- ▲ **Never solder fittings while connected to non-metallic parts.** Wait until soldered pipe has cooled before connection (see fig. 11).
- ▲ **Be careful when putting pipe fittings together.** Do not cross thread, and do not overtighten.

FIG.10 MOVE SOFTENER INTO PLACE

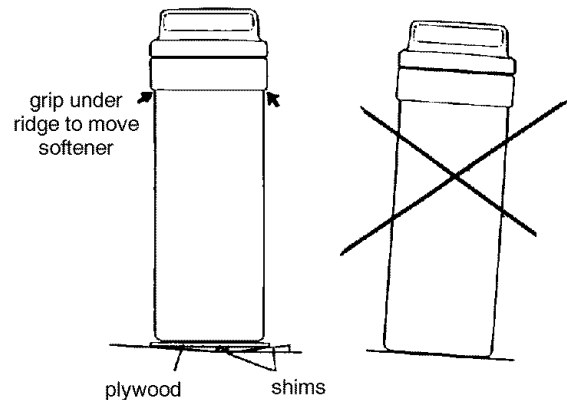
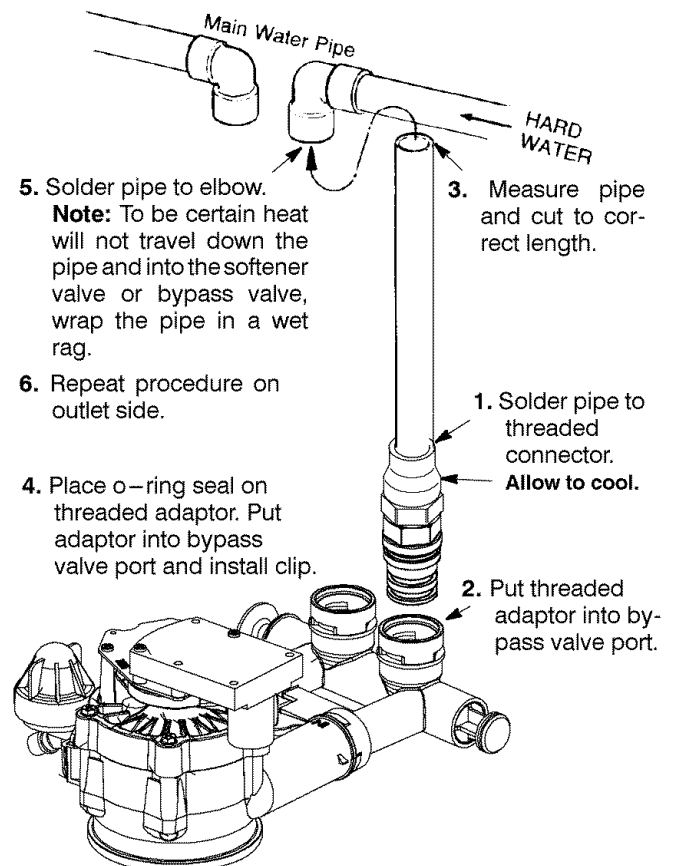


FIG.11 TYPICAL SOLDERING CONNECTIONS



D. CONNECT VALVE AND SALT TANK DRAINS

1. CONNECT THE VALVE DRAIN HOSE

Take a length of 3/8" inside diameter drain tubing and attach one end to the drain fitting (FIG. 12). Use a tube clamp to hold it in place. Put the other end of the tubing over a floor drain, into a laundry tub, standpipe, or other suitable drain. **Check your local codes.**

▲ Leave an air gap of about 1-1/2" between the end of the hose and the drain. This gap is needed so you don't get a back-flow of sewer water into the softener. **Do not** put the end of the hose **into** the drain or connect without the air gap.

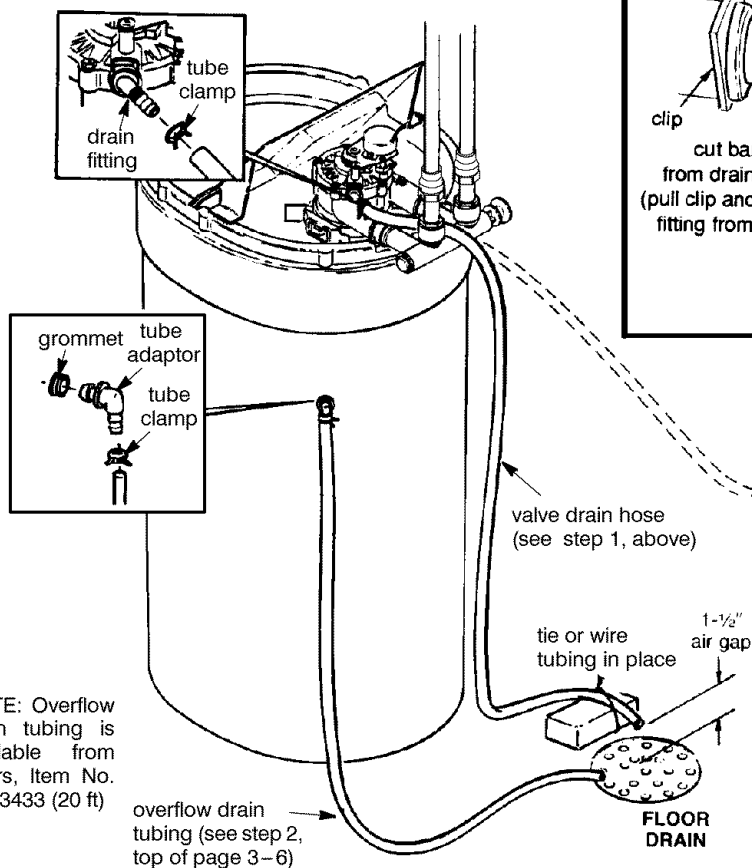
▲ Place and support the hose so it does not kink or have sharp bends. So water pressure does not cause the hose to "whip", tie or wire it in place. Do not pinch the hose shut. **The softener will not work if this drain hose is pinched, plugged, closed or restricted in any way.**

▲ Keep the hose lower than the drain fitting. (In some homes, to get to a drain you must raise the hose and run it over-head. If you need an overhead drain, **do not raise the hose more than 8'** above the floor. A copper drain tube is best to use.)

COPPER DRAIN TUBE: The plumbing codes where you live may say that you must use a copper valve drain tube. A copper tube is also best to use for an over-head drain. Use a copper drain tube if the softener is installed outside, or in the sunlight. Heat from the sun makes many kinds of rubber or plastic hose to soften, flatten and close up.

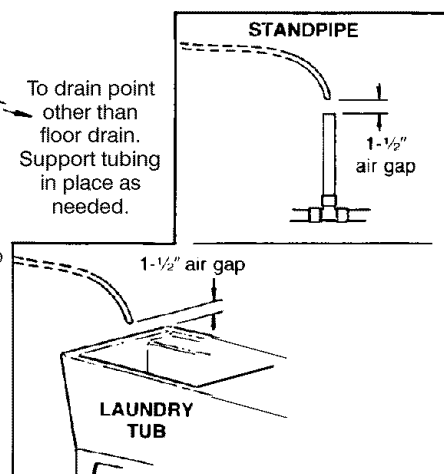
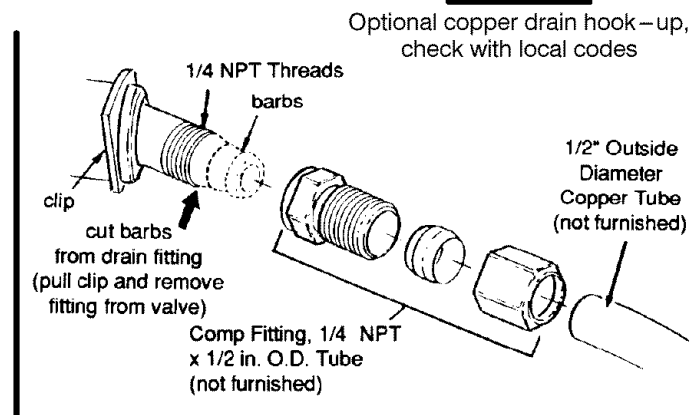
To adapt a copper drain tube to the softener, buy a compression fitting (1/4 in. female pipe threads x 1/2 in. O.D. tube) and tubing from your local hardware store.

FIG.12



DELUXE VALVE

FIG.13



D. CONNECT VALVE AND SALT TANK DRAINS**2. CONNECT SALT TANK OVERFLOW TUBING**

- a** Take the rubber grommet, tube adaptor and tube clamp (FIG. 12) that are on the small parts cardboard liner.
- b** Push the grommet into the hole in the salt tank wall so half is inside and half is outside.
- c** Push the bigger end of the tube adaptor into the grommet.
- d** Push one end of a length of 3/8" I.D. tubing onto the tube adaptor, using the tube clamp to hold it in place. Put the other end of the tubing over the floor drain.

Important:

- The salt tank overflow is for safety only. If the salt tank should overflow with water, the overflow tubing carries it to the drain.
- Over-fill water must run downward through the tubing. Do not raise the tubing higher than the grommet and tube adaptor (FIG. 12).
- **Do not** connect to the valve drain hose you installed in step 1. Both drains must have a separate hose or tube.

E. PRESSURE TEST / CHECK FOR LEAKS

CAUTION:

To avoid water or air pressure damage to softener inner parts, and to flush pipe chips or other residue from the water pipes, be sure to do the following steps exactly as instructed.

Look at the picture in FIG. 15 showing your kind of bypass valve(s).

1. Fully open two cold, soft water faucets nearby the softener.
2. Place bypass valve(s) in "bypass" position. On a single valve, slide the stem inward to *bypass*. On a 3-valve system, close the inlet and outlet valves and open the bypass valve.
3. Fully open the house main water pipe shutoff valve (closed in step 1, page 3-1). Observe steady water flow from both open faucets.
4. Place bypass valve(s) in "service", EXACTLY as follows: **Keep soft water faucets open.**
 - a SINGLE BYPASS VALVE: **SLOWLY**, slide pull the valve stem outward toward *service*, pausing several times to allow the softener to pressurize slowly.
 - b 3-VALVE BYPASS: Fully close the bypass valve and open the outlet valve. **SLOWLY**, open the inlet valve, pausing several times to allow the softener to pressurize slowly.
5. After about three minutes, open a hot water faucet for about one minute, or until all air is expelled, then close.
6. Close both cold water faucets.
7. Check your plumbing work for leaks and fix right away if any are found. **Be sure to observe previous caution notes.**

FIG.14

HOUSE MAIN WATER SHUTOFF VALVES

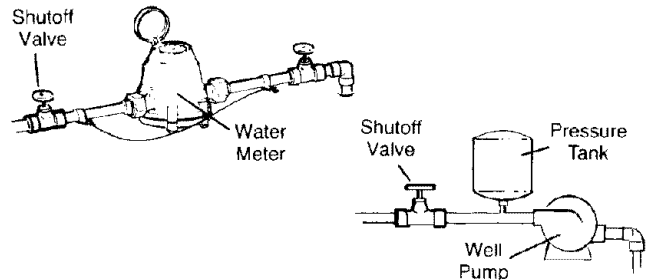
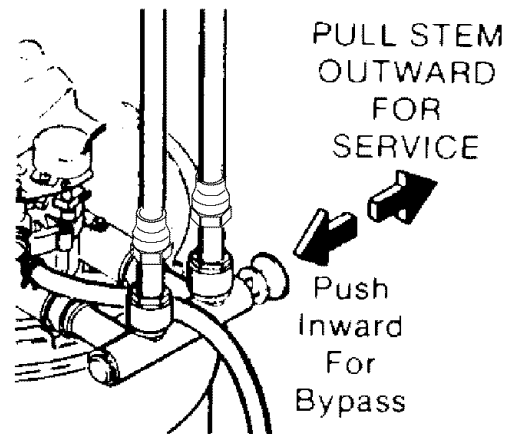


FIG.15

Bypass valve(s) should always remain in soft water **service** position. Position in *bypass* only if needed for softener repairs.

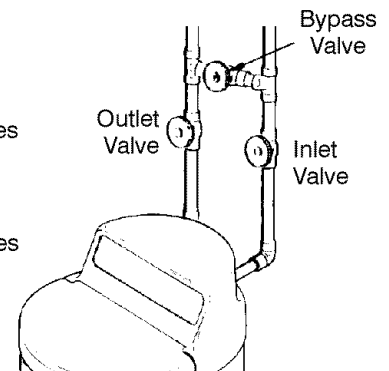
SINGLE BYPASS



3 - VALVE BYPASS

FOR SERVICE
close bypass valve
open inlet & outlet valves

FOR BYPASS
open bypass valve
close inlet & outlet valves



F. GROUNDING / CONNECT TO ELECTRICAL POWER

1. INSTALL GROUNDING WIRE BETWEEN THE SOFTENER IN AND OUT PIPES

The house cold water pipe (iron or copper) is often used to ground all electrical outlets in the home. Outlets are grounded to protect you from shock when you touch any electric appliance plugged into the outlet. If you installed the single bypass valve (FIG. 15), the cold water pipe ground is broken.

To restore the ground, take the ground clamp kit that is on the cardboard liner. Install across the inlet and outlet copper tubes as shown in FIG. 16. Be sure good contact is made between the pipe and the clamps.

FIG.16 COLD WATER PIPE GROUNDING

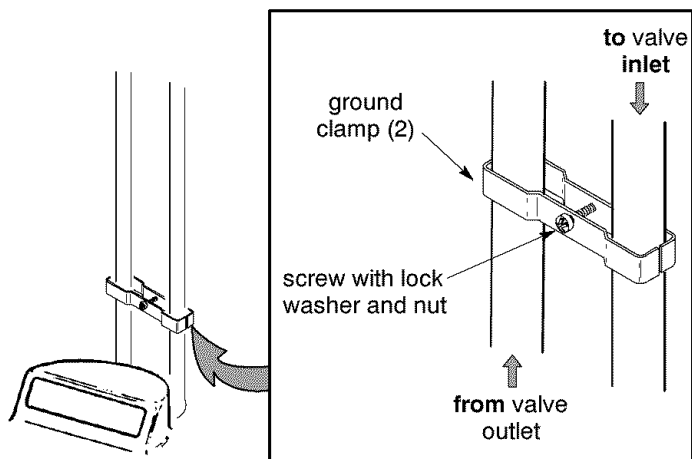
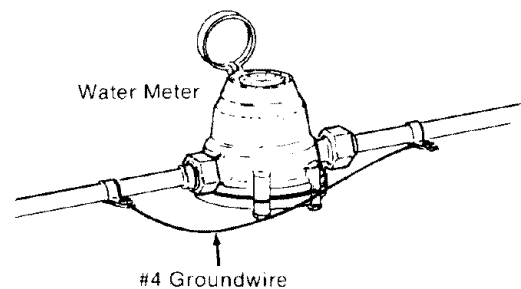


FIG.17 WATER METER JUMPER WIRE



Important:

Be sure the cold water pipe has direct metal to metal contact all the way to the ground. Plastic, rubber or other electrically insulating parts such as hoses, fit-

tings, washers or gaskets can break the direct metal to metal contact. Also check the water meter (city water) or the well pump. Install #4 copper jumper wires, clamped tightly on both ends, across insulated parts (FIG. 17).

2. ELECTRICAL POWER OUTLET FOR YOUR SOFTENER

The softener works on 24 volt, 60 Hz electric power. The included transformer changes standard 120 volt AC house power to 24 volts. You must plug the transformer into a grounded, 120 volt outlet only. Be sure the outlet is always "live" so someone cannot turn it off by mistake.

Note:

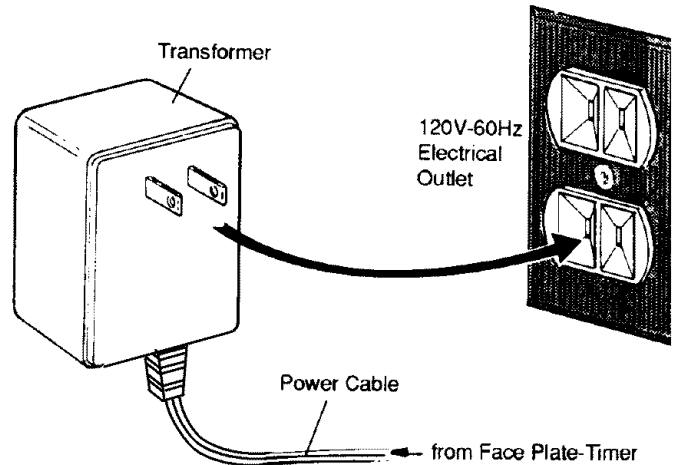
The included transformer is made for *inside use only*. Be sure the electrical outlet you plug the transformer into is inside, to protect from weather (see page 2-1).

F. GROUNDING / CONNECT TO ELECTRICAL POWER

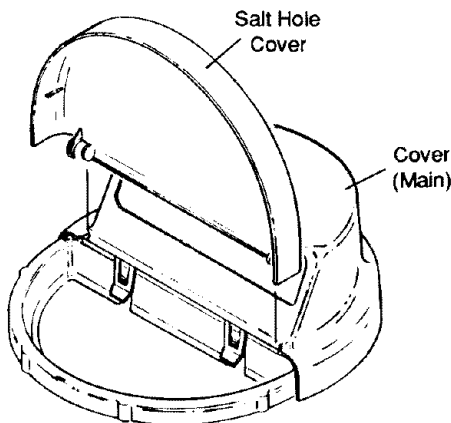
3. PLUG IN THE TRANSFORMER

Plug the transformer into the electrical outlet.

FIG. 18 CONNECTING TRANSFORMER



INSTALL COVERS



After installing your water softener, replace the covers. For the UltraSoft 100, first position the main cover on the softener. Then, set the salt hole cover into the main cover, and lower closed. For the UltraSoft 200, angle the covers so the main cover clips onto the back first, then bring down in front and clip on the 2 tabs inside the rim of the salt hole and lower the salt cover closed.

RESTART THE WATER HEATER

TURN ON THE GAS (OR ELECTRIC) SUPPLY TO THE WATER HEATER AND LIGHT THE PILOT

Your new Sears softener is now softening the water for your household needs. However, your **WATER HEATER is filled with hard water**. To have fully soft water right away, you can drain the water heater so it refills with soft water. If you don't drain the water heater, it will take a few days before you have fully soft water.

To drain the water heater, open a hot water faucet and let it run until the water runs cold. Then close the faucet.

YOUR PLUMBING AND ELECTRICAL WORK IS COMPLETE.

Now go to your owner's manual and do the softener start-up steps...setting the timer, filling the storage tank with salt, sanitizing, etc.

INSTALLATION MANUAL

MODEL NOS.

UltraSoft 425
625.388460

UltraSoft 480
625.388480

UltraSoft 800
625.388800

UltraSoft 880
625.388880

Caution:

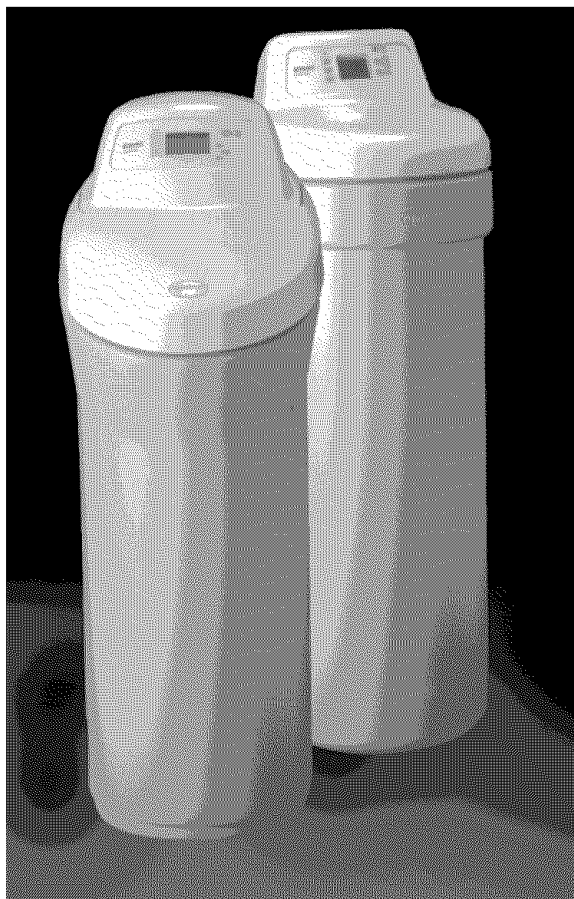
Read and Follow
All Safety Guides
Before You Start To
Install Your Softener.

If you have questions when
installing, operating or main-
taining your softener, and
when setting the timer, call
this toll-free number...

1-800-426-9345

www.KenmoreWater.com

SAVE THIS MANUAL



UltraSoft Water Softeners

With ***HIGH PERFORMANCE*** valve

- ◆ Safety Guides
- ◆ Unpacking
- ◆ Where To Install
- ◆ How To Install
- ◆ Pressure Testing



Systems Tested and Certified by NSF International
against NSF/ANSI Standard 44 for softener performance.

Use the plastic bag and tie provided, to hang manuals
nearby the softener for future reference.

Sears, Roebuck and Co., Hoffman Estates, IL 60179 USA

INTRODUCTION

This manual gives you the steps needed to install your new Kenmore Water Softener. To better understand how the water softener is installed, and to know what you will need, please read this entire manual before beginning.

After you have installed the water softener, the included owner's manual tells you how to start, program, operate and maintain it. The owners manual also has the product warranty, and a listing of repair parts available from Sears.

Your Kenmore Water Softener will remove hardness minerals (measured in grains per gallon...gpg) and some clear water iron (measured in parts per million...ppm) from water. See the specifications, in your owners manual, for the maximum limits of hardness and iron removal. A water softener will not improve other water problems such as acidity, tastes and odors, or iron other than clear water iron. It will not purify contaminated water, or make other unsafe water safe to drink.

Sears sells a complete line of water treating equipment to correct various water problems. To be sure you have the proper type and size equipment, you must have your water tested. Your Sears store can give you water test results for hardness, iron and acidity, and tell you what equipment you need. Simply take at least a 4 oz. sample of your water to Sears, and they will test it while you wait. **If you need help to get your water tested, or if you have other questions about your water, ask at your Sears store, or call Sears Water Line ...1-800-426-9345.**

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**SECTION
1**

A. SAFETY GUIDES

▲ Read all steps, guides and rules carefully before installing and using your new water softener. Follow all steps exactly to correctly install. Failure to follow them could cause personal injury or property damage. Reading this book will also help you to get all of the benefits from your water softener.

▲ Your water softener will remove hardness minerals and “clear water” iron* from water, up to the limits shown on the specifications page in your owner’s manual. It will not remove other types of iron, acids, tastes and odors, etc. It will not purify polluted water or make it safe to drink.

▲ Check with your local public works department for plumbing, electric and sanitation codes. You must follow their guides as you install your softener. Codes in the State of Massachusetts require installations by a licensed plumber. For installation, use plumbing code 248-CMR of the Commonwealth of Massachusetts.

▲ Use only LEAD-FREE SOLDER AND FLUX, as required by federal and state codes, when installing soldered copper plumbing.

▲ Protect the softener and piping from freezing. Damage from freezing voids the softener warranty. See how to protect from freezing in your owner’s manual.

⚠ CAUTIONS

PLEASE READ AND COMPLY WITH THE FOLLOWING GUIDES TO PREVENT DAMAGE TO THE SOFTENER OR OTHER PROPERTY, PERSONAL INJURY, OR POSSIBLE FATAL SHOCK.

▲ THIS SOFTENER WORKS ON 24 VOLTS ONLY. BE SURE TO USE ONLY THE TRANSFORMER INCLUDED, AND PLUG IT INTO A NOMINAL 120V, 60 CYCLE HOUSEHOLD OUTLET THAT IS GROUNDED AND PROPERLY PROTECTED BY AN OVERCURRENT DEVICE SUCH AS A CIRCUIT BREAKER OR FUSE. IF TRANSFORMER IS REPLACED, USE ONLY THE AUTHORIZED SERVICE, CLASS II, 24 VOLT, 10 VA TRANSFORMER.

▲ Unplug the transformer right away if the power cable should become damaged or frayed. Make repairs, or replace transformer, before plugging back into the power outlet.

▲ Always unplug the softener from electrical power before removing outer valve covers.

* The capacity to reduce clear water iron is substantiated by WQA test data.

SECTION 1 BEFORE INSTALLING CHECKS & TESTS

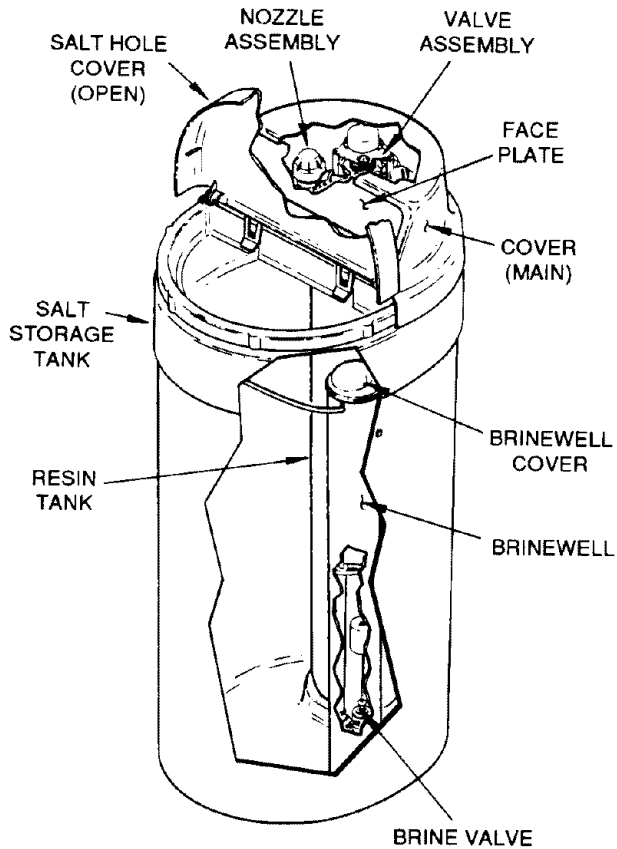
B. UNPACKING THE WATER SOFTENER

Directions for unpacking the softener are on the top of the shipping carton. This manual, and the owner's manual, were on the small parts cardboard packing piece. You will need the small parts to install the softener. So you don't lose any parts, keep them on the cardboard piece until you are ready to use them. Remove all other cardboard pieces, foam packings, tapes, etc. from the softener and discard. **Check the softener for shipping damage.** If you find damage, report it to your Sears store.

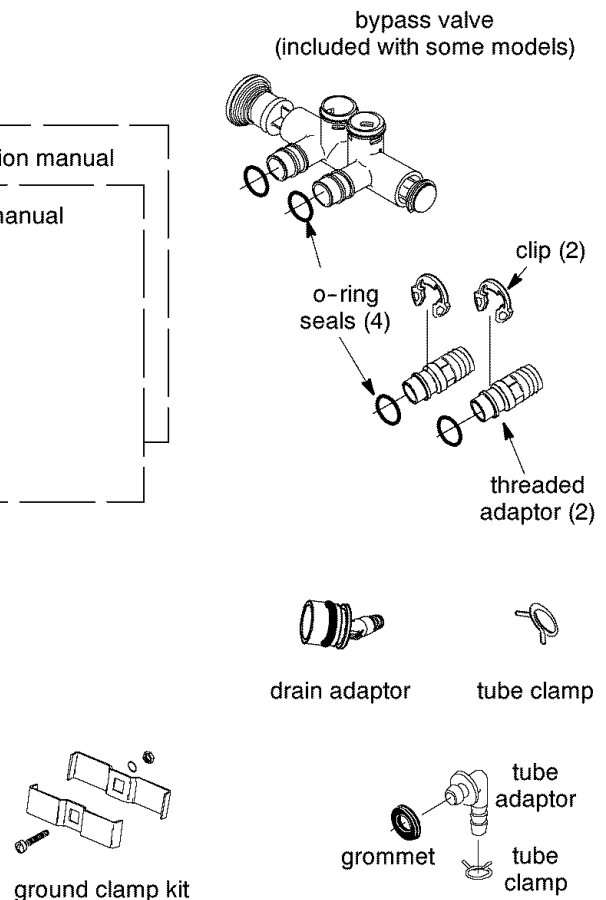
Use care when handling the softener. **DO NOT** turn upside-down. **DO NOT** drop, or set on sharp objects that could make a hole in the bottom. The water softener is heavy and to avoid damage, or personal injury, do not try to lift it or move more than necessary. See page 3-4, when you are ready to move it into installation position.

FIG. 1

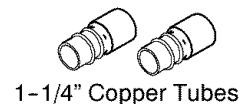
PARTS DESCRIPTIONS



SMALL PARTS



Additional Installation Fittings available from Sears
(see Owner's Manual for part numbers)



1-1/4" Copper Tubes

C. WATER SYSTEM TESTS

Has your water supply had a chemical analysis?
Please see page A on the inside of the front cover.

CHECK YOUR WATER PRESSURE — For your softener to work right, a water pressure of no lower than 20 pounds per square inch (psi) is needed in the house water pipes. The highest pressure allowed in the water pipes is 125 psi. If pressure is over 125 psi, buy and install a pressure reducing valve in the water inlet pipe to the softener.

Note:

If water pressure during the day is 100 psi or more, pressure during the night may go over 125 psi. Adding a pressure reducing valve may reduce the flow.

If you have a well water system, look at the pressure gauge to find the water pressure. Call your local water department if you have city water. They will tell you what the water pressure is where you live.

CHECK YOUR WATER FLOW RATE — A water flow of at least 3 gallons per minute is needed. A

lower flow will keep your softener from working as well as it should. To make an easy check of your flow rate, do the following. You will need a one gallon container (can, jar, pail, etc.).

- 4.** Fully open two cold water faucets close to the point water enters the house.
- 5.** With both faucets open, fill the gallon container at one faucet while looking at a watch or clock to see how many seconds it takes.
- 6.** Empty the container and go to the second faucet (be sure BOTH faucets are still on). Fill the gallon container at the second faucet and see how many seconds it takes.
- 7.** Turn off both faucets. Now add the number of seconds it took to fill the container at both faucets.
- 8.** A total of 90 seconds, or less, means the system flow rate is good.

FOR FUTURE REFERENCE, ENTER RESULTS OF YOUR WATER SYSTEM TESTS IN THE
“FACTS AND FIGURES TO KEEP” TABLE IN YOUR OWNERS MANUAL.

A. WHERE TO INSTALL THE WATER SOFTENER

SECTION
2

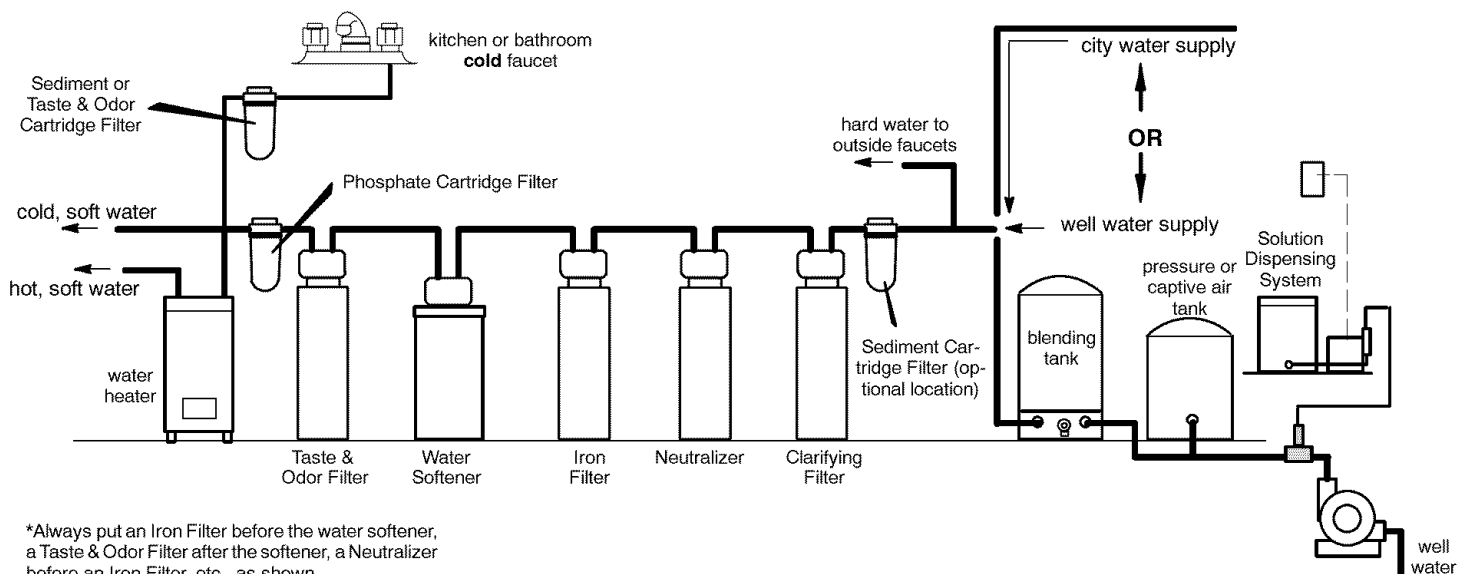
Think of the following points as you choose a place to put your softener. (see FIG. 2).

- Place as close as possible to the pressure tank (well water) or water meter (city water).
 - Place as close as possible to a water drain such as a floor drain, laundry tub, sump or standpipe.
 - Connect to the house main water pipe **BEFORE THE WATER HEATER. Temperature of water going through the softener must not be more than 120°F (49°C).** Hot water will damage inner softener parts. *To reduce the risk of hot water backup,* piping between the softener and water heater should be as long of a run as possible.
 - Keep outside faucets on hard water to save soft water and salt.
- ⚠ • **Do not** install in a place where the softener could freeze. Damage caused by freezing voids the warranty by Sears, Roebuck and Co.
 - ⚠ • Put the softener in a place water damage is least likely to occur if it develops a leak. Sears or the manufacturer will not repair or pay for water damage.
 - ⚠ • A grounded, 120V electrical outlet, to plug the transformer into is needed within 10 feet of the softener (the softener has a 10 foot power cable). **Be sure the outlet and transformer are in an inside place, to protect from wet weather.** So the softener always has electrical power, use a continuously "live" outlet, that cannot be accidentally switched off.
 - ⚠ • When installing in an outside location, you must take the steps necessary to assure the softener, installation plumbing, and wiring, are as well protected from the elements, contamination, vandalism, etc., as when installed indoors.
 - ⚠ • Keep the softener out of direct sunlight. The sun's heat can melt plastic parts.

FIG. 2

THE PROPER ORDER TO INSTALL WATER TREATING EQUIPMENT

(Shows sequence of equipment only. — Seldom, if ever, would all items be needed*.)



*Always put an Iron Filter before the water softener, a Taste & Odor Filter after the softener, a Neutralizer before an Iron Filter, etc., as shown.

B. TOOLS, PIPE AND FITTINGS, OTHER MATERIALS NEEDED

You must first decide how to run in and out pipes to the softener. Look at your house main water pipe at the point you will connect the softener. Is the pipe soldered copper, glued plastic, or threaded galvanized or brass? What is the pipe size? What kind of pipe and fittings is it easiest for you to work with, and what tools do you have?

Now look at the common plans for in and out piping on page 2-4 (soldered copper) and 2-5 (threaded). Select the drawing best for you and use it as a guide to plan what materials you will need. As you plan your in and out piping, keep in mind the following check list. Then get all the materials you will need before you start.

Notes:

Use page 2-3 to make a plan drawing for your specific installation.

Some models include a plastic bypass valve, a length of *valve* drain garden hose, and a length of *overflow* drain hose for the salt storage tank .

- ✓ *In and out fittings included with the softener are 1" NPT threaded adaptors.* You should maintain the same, or larger, pipe size as the water supply pipe, up to the softener inlet and outlet.
- ✓ Use copper, brass, galvanized or PVC plastic pipe and fittings for the in and out pipes. Be sure to check local codes.
- ✓ Copper and galvanized pipe corrode fast when connected together. Use pipe and fittings of the same material.

✓ ALWAYS install a bypass valve or valves. Either use the Sears special valve (included with some models and available at your local Sears store), or 3 shut-off valves (see pages 2-4 and 3-3). Bypass valves let you turn off water to the softener if needed for repairs, but still have water in the house pipes.

✓ Drain tubing (3/8 in. inside diameter), is needed for the valve and salt tank drains. See step 1 and 2 on page 3-5 and 3-6. Some models include a length of drain tubing, or you can buy tubing at most Sears stores.

If a rigid valve drain is needed to comply with plumbing codes, you can buy the parts needed (see page 3-5) to change the softener to a 1/2 in. minimum copper tubing drain.

✓ TOOLS NEEDED:—Common and cross point (Phillips) screw drivers, slip joint pliers and a tape measure or rule. ALSO...

...for SOLDERED COPPER — tubing cutter, propane torch, solid-core LEAD-FREE solder, paste flux, emery cloth, sandpaper or steel wool.

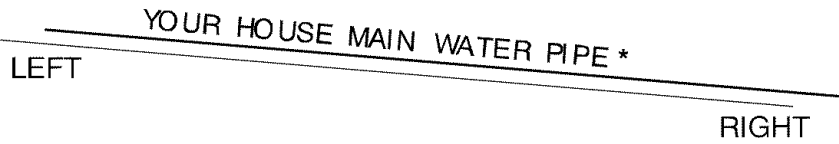
...for THREADED PIPE — hacksaw or pipe cutter, pipe wrenches, pipe threading tool, pipe joint compound approved for use on potable water.

...for PVC PLASTIC — hacksaw, adjustable wrench, solvent cement approved for use on potable water, primer.

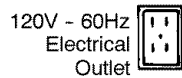
Note: Codes in the State of Massachusetts require installations by a licensed plumber. For installation, use plumbing code 248-CMR of the Commonwealth of Massachusetts.

B. PIPE AND FITTINGS, PLAN DRAWING

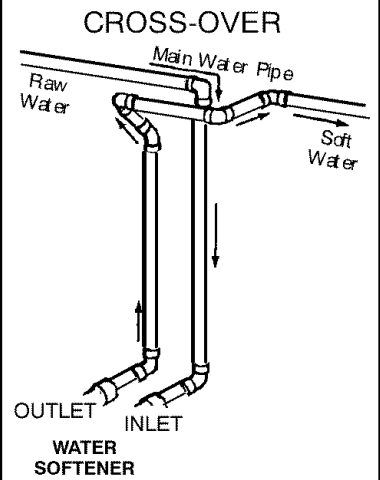
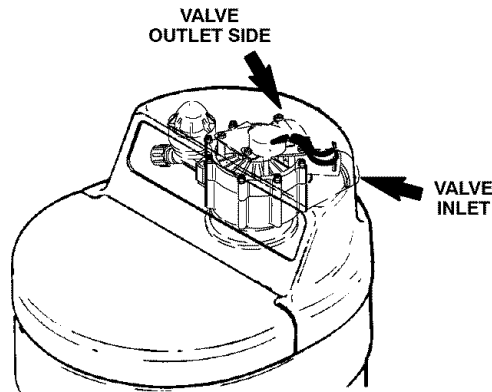
FIG. 3



* In what direction does the water flow? Be sure to plan IN and OUT piping so water flow is to the softener valve inlet. Plan a crossover if flow is from left to right.



Draw the plans for your In and OUT piping here. Be sure to follow the guides on page 2-2. Include all pipe, fittings and accessories you will use. Make a list of all materials you will need and buy them before you begin to install the water softener.



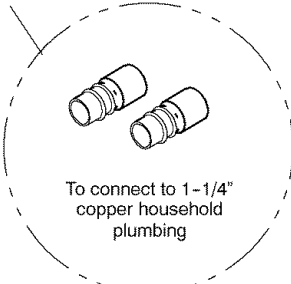
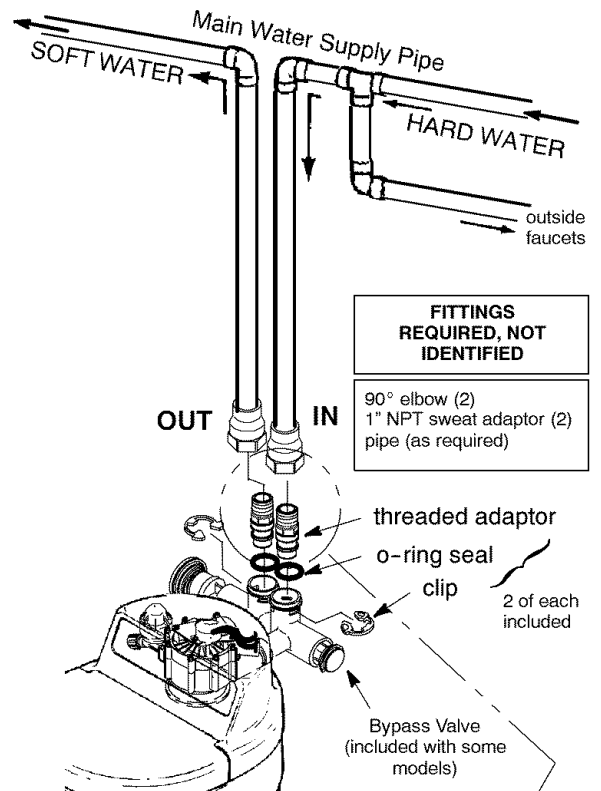
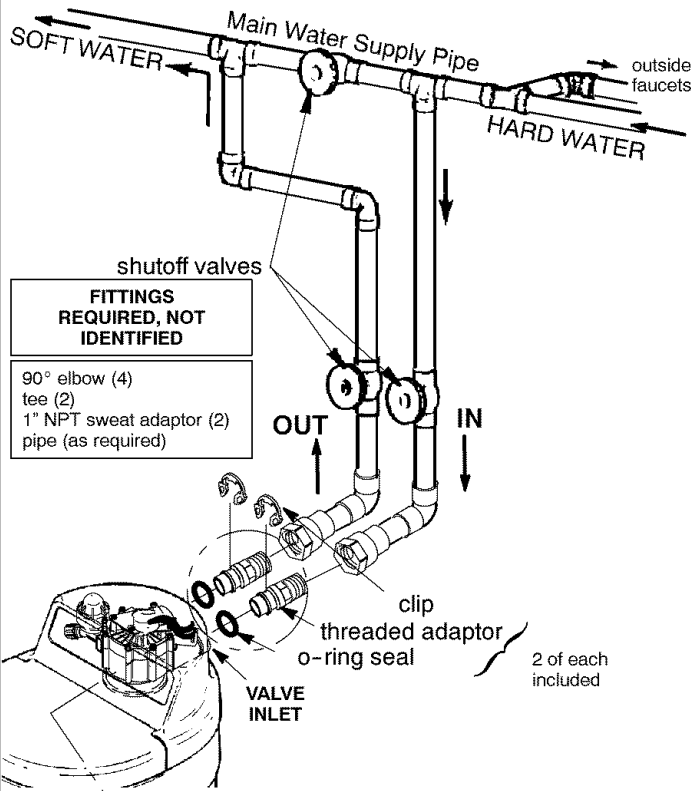
C. TYPICAL SOLDERED COPPER (OR PVC) IN AND OUT PIPES TO SOFTENER

FIG. 4

HIGH PERFORMANCE VALVE MODELS

IN AND OUT PLUMBING USING A 3-VALVE BYPASS

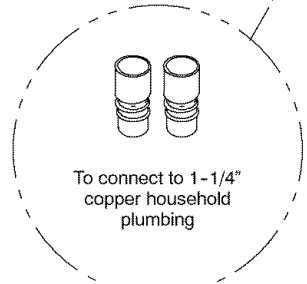
IN AND OUT PLUMBING USING SEARS BYPASS VALVE (included)



Available from Sears see Owner's Manual for part numbers

NOTE:
For plumbing connection, buy 2 sweat adaptors and plumb directly to the inlet-outlet adaptors or bypass valve. Threads on the inlet-outlet adaptors and bypass valve are 1" NPT.

CAUTION:
DO ALL SOLDERING BEFORE CONNECTING SWEAT ADAPTOR TO INLET-OUTLET ADAPTORS OR BYPASS VALVE.

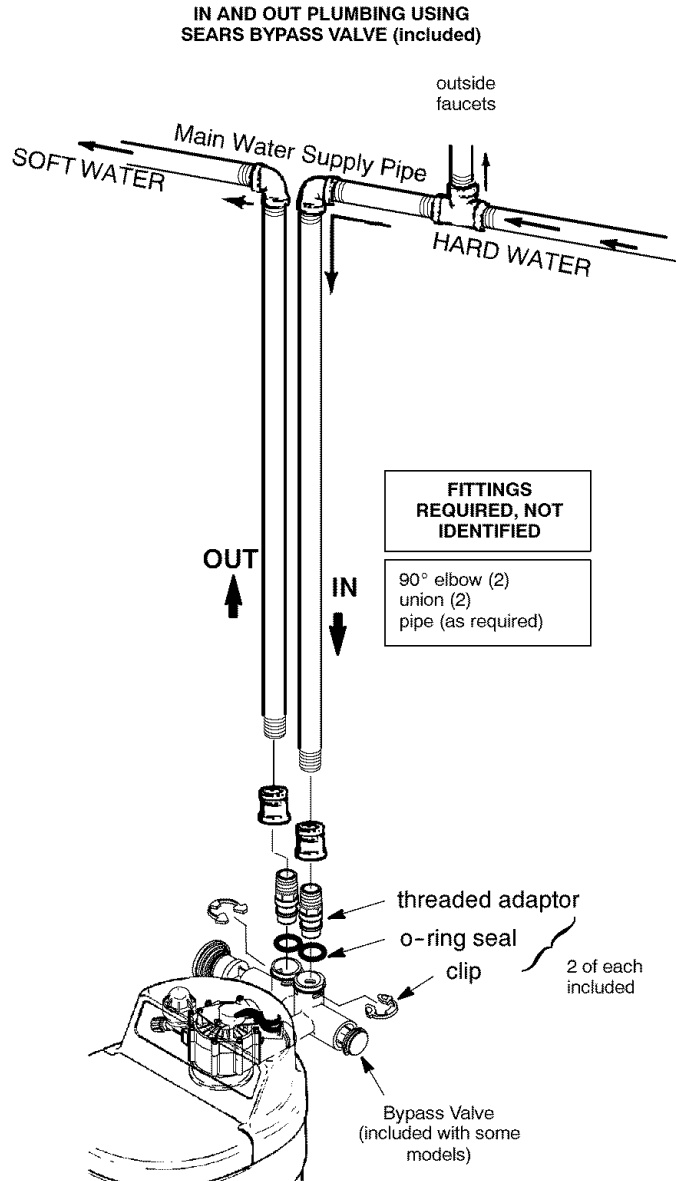


Available from Sears see Owner's Manual for part numbers

D. TYPICAL THREADED IN AND OUT PIPES TO SOFTENER

FIG. 5

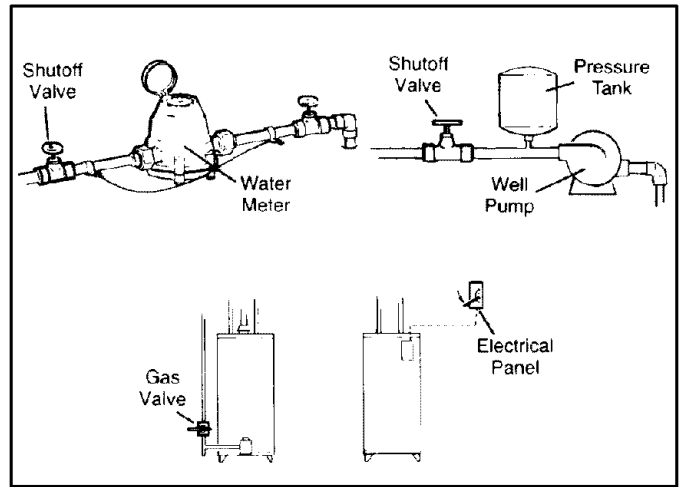
HIGH PERFORMANCE VALVE MODELS



A. ASSEMBLE INLET-OUTLET ADAPTORS, OR PLASTIC BYPASS VALVE

SECTION 3

1. Close the shut-off valve on the house main water pipe, near the water meter or pressure tank, to turn off the water.
2. Shut off the gas or electric supply to the water heater.
3. Open the highest and lowest water faucets in your house to let water drain from the pipes. Close faucets after water has drained.
4. If not already done, remove all cardboard or plastic packing pieces from inside the softener. Set the cardboard liner (with parts for installing fastened to it) where you can easily see it, and get to parts as you need them.



- a Visually check and remove any foreign materials from the valve inlet and outlet ports (FIG. 6). Carefully remove the two large plastic clips (you will use them). Check to be sure the turbine and turbine support are firmly in place. (Fig. 6)
- b **BYPASS VALVE:** If not already done, put a light coating of silicone grease on the o-ring seals and slide onto the bypass valve. Push the bypass valve into the softener valve as far as it will go. **Snap the two large holding clips into place, from the top down as shown.** (Fig. 7)

CAUTION... Be sure the clips snap firmly into place so the bypass valve will not pull out. (Fig. 7)

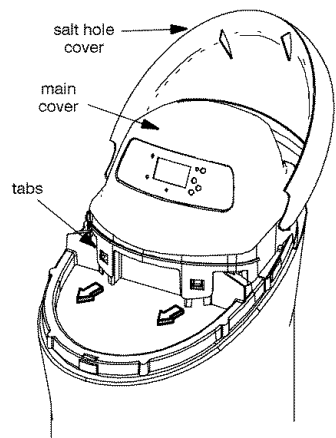
GO TO PAGE 3-4.

- c **INLET AND OUTLET THREADED ADAPTORS:** If not already done, put a light coating of silicone grease on the o-ring seals and slide onto the threaded adaptors. Push the adaptors into the valve inlet and outlet ports, or bypass valve ports, as far as they will go. Both adaptors are the same and fit either port. **Snap the two large holding clips into place, as shown.** (Fig. 7)

CAUTION... Be sure the clips snap firmly into place so the adaptors will not pull out. (Fig. 7)

GO TO PAGE 3-3.

Remove the main cover...pull outward on 2 tabs to release. For the UltraSoft 400 & UltraSoft 800 the salt hole cover remains attached to the main cover when removed. So they will not get scratched or broken, set both covers aside.



5. **INSTALL SEARS BYPASS VALVE AND / OR THE INLET OUTLET THREADED ADAPTORS (FIG. 4, 5 AND 6).** All needed parts are on the small parts skin-pack.

Note:

If you **will not** install the bypass valve because you will have a 3-valve bypass, skip step b, but do steps a and c.

A. ASSEMBLE INLET-OUTLET ADAPTORS, OR PLASTIC BYPASS VALVE

FIG.6

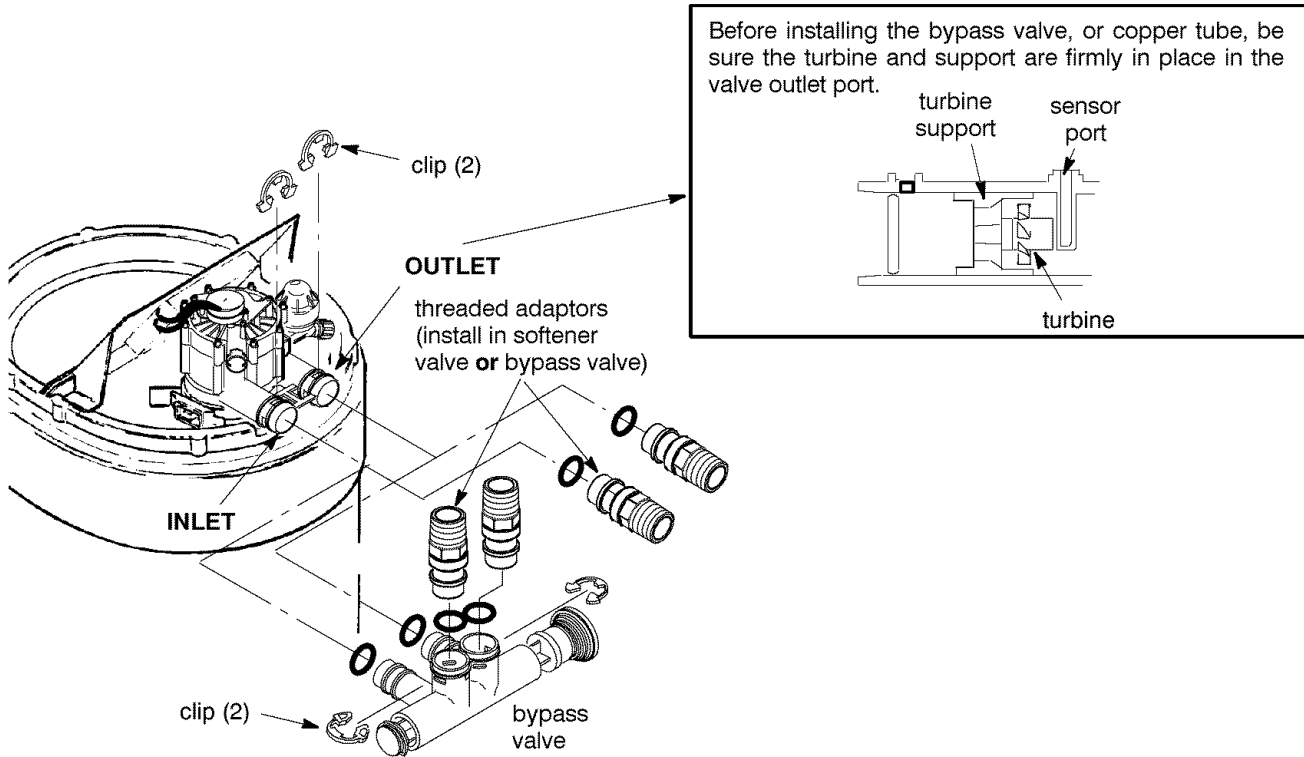
INSTALLING BYPASS VALVE, and / or INLET
and OUTLET THREADED ADAPTORS

FIG.7

INSTALLING HOLDING CLIPS

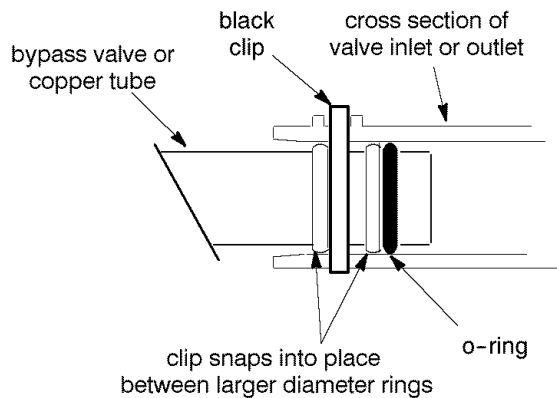
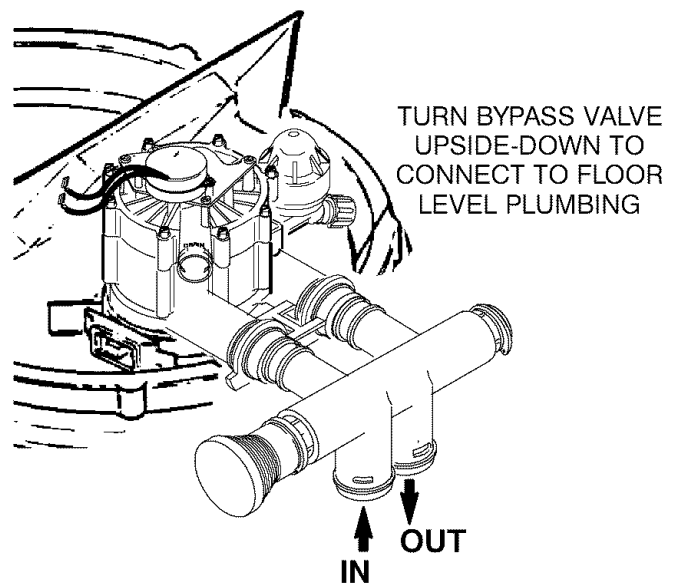


FIG.8

BYPASS VALVE TURNED
DOWNWARD

B. INSTALL 3-VALVE BYPASS

1. INSTALLING 3 VALVE BYPASS AND PIPES (FIG. 9)

- a** Cut the house main water pipe where you will connect the softener. Loosely put together pipe, fittings, and the 3 valves. Place valve(s) within easy reach.

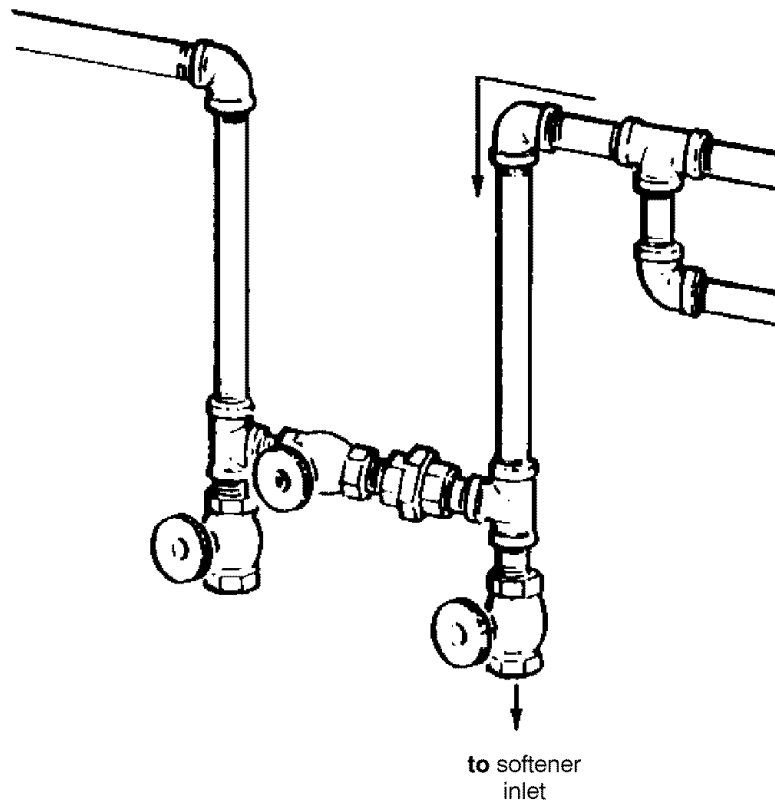
IMPORTANT:

When looking at the front of the softener, the inlet is on the right side. If water in your house main water pipe runs from left to right, be sure to use a "cross-over" as shown on page 2-3.

- b** When all pipe, fittings and valves make a good fit together, tighten all threaded joints (use pipe dope on outside threads), or solder all sweat joints.

FIG.9

3 - VALVE BYPASS
(threaded plumbing shown)



C. LOCATE WATER SOFTENER, AND CONNECT PIPES

1. MOVE THE SOFTENER INTO PLACE

Move the softener into place, onto a level and smooth surface. If needed, put a piece of 3/4" plywood, at least 17" x 20", under the tank. Then put spacers under the plywood to level the softener. **Do not put shims or spacers directly under the tank**, without the plywood. The weight of the softener, when full of salt and water, may *cause the tank to puncture or break* at the shim or spacer.

To move the softener, grip under the ridge on the salt tank sidewall and carefully rock back and forth, into position.

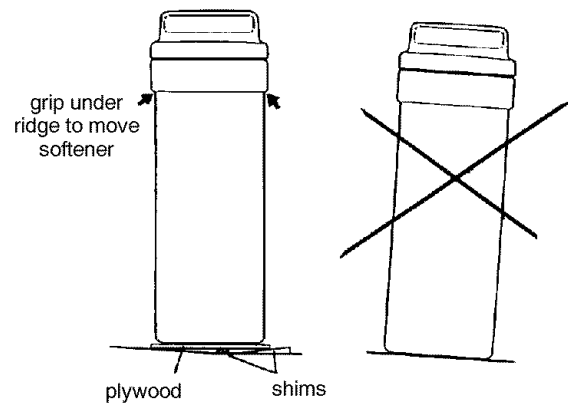
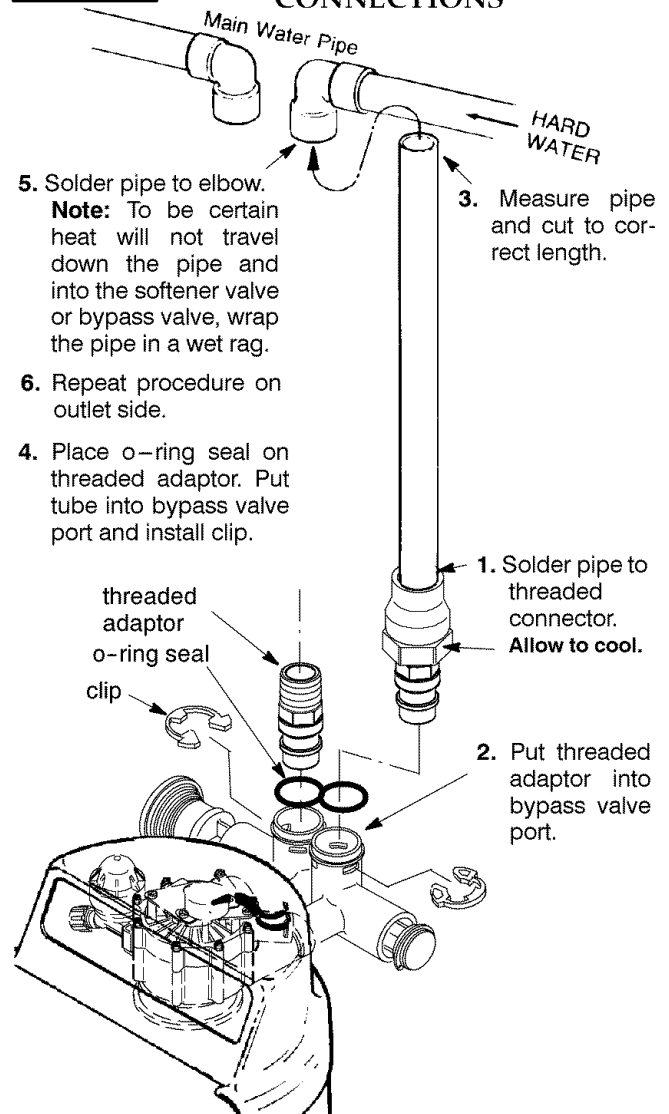
2. CONNECT THE SOFTENER (Refer to your plan drawing on page 2-3, and to page 2-4 or 2-5. Read the IMPORTANT note on page 3-3. Then, measure, cut (thread if needed) and put all pipe and fittings together up to the main water pipe, or to the bypass valve(s) you installed on page 3-3.

Notes:

- Include adaptors, reducers, union fittings, etc., as needed.
- Cut pipe lengths exact for correct aligning, and to prevent stress on the softener valve.
- Use pipe joint compound or Teflon tape on outside pipe threads.
- When all piping fits together...
 - ...solder all sweat fittings.
 - ...prime and cement all PVC joints.
 - ...tighten all threaded joints.

CAUTIONS:

- ▲ Never solder fittings while connected to non-metallic parts. Wait until soldered pipe has cooled before connection (see fig. 11).
- ▲ Be careful when putting pipe fittings together. Do not cross thread, and do not overtighten.

FIG.10 MOVE SOFTENER INTO PLACE**FIG.11** TYPICAL SOLDERING CONNECTIONS

D. CONNECT VALVE AND SALT TANK DRAINS

1. CONNECT THE VALVE DRAIN HOSE

Cut an appropriate length of 3/8" drain tubing (20 ft. roll included) and attach one end to the drain fitting (FIG. 12). Put the other end of the hose over a floor drain, into a laundry tub, standpipe, or other suitable drain. **Check your local codes.**

▲ Leave an air gap of about 1-1/2" between the end of the hose and the drain. This gap is needed so you don't get a back-flow of sewer water into the softener. **Do not** put the end of the hose **into** the drain or connect without the air gap.

▲ Place and support the hose so it does not kink or have sharp bends. So water pressure does not cause the hose to "whip", tie or wire it in place. Do not pinch the hose shut. **The softener will not work if this drain hose is pinched, plugged, closed or restricted in any way.**

▲ Keep the hose lower than the drain fitting. (In some homes, to get to a drain you must raise the hose and run it over-head. If you need an overhead drain, **do not raise the hose more than 8'** above the floor. A copper drain tube is best to use.)

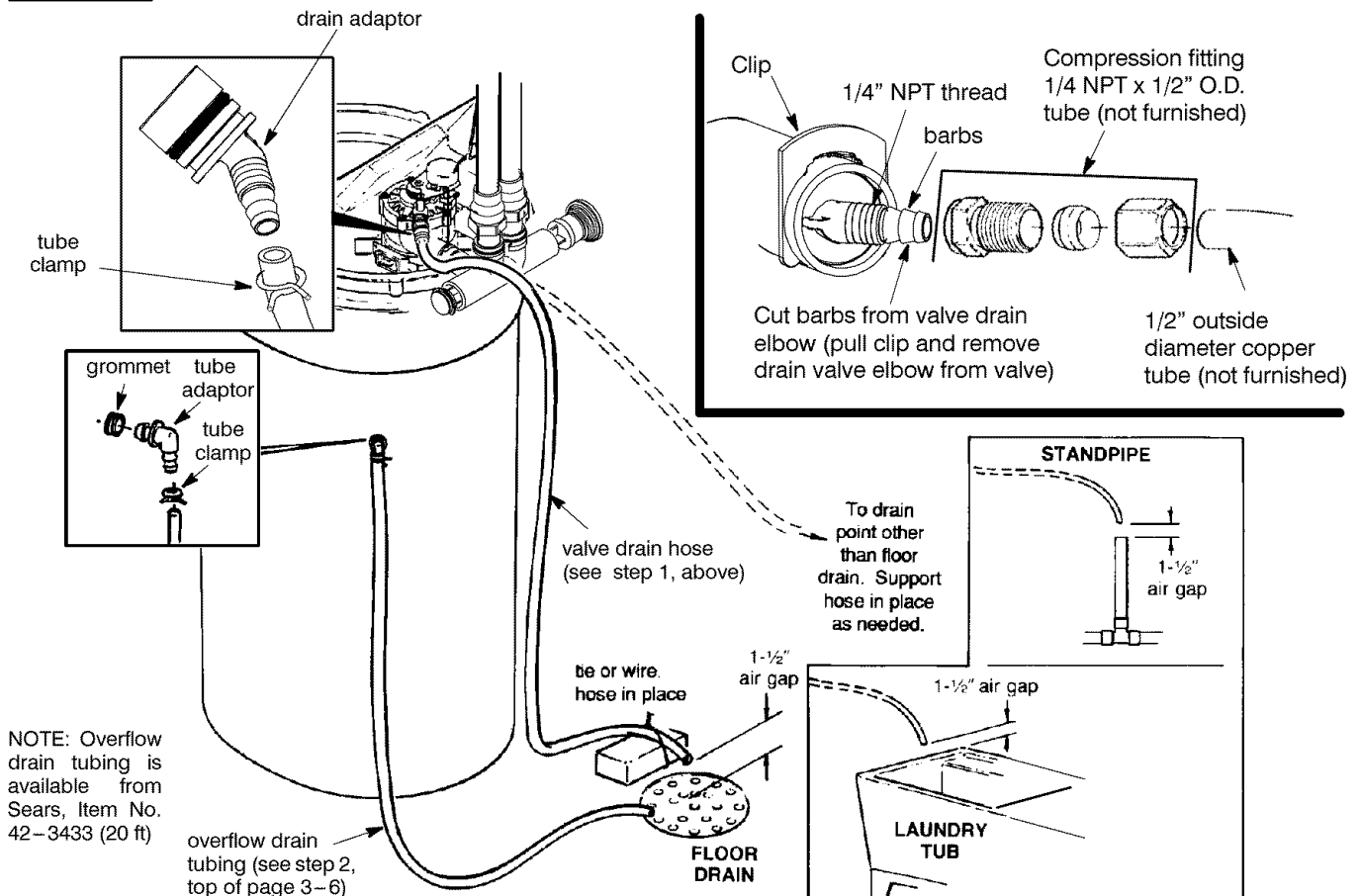
COPPER DRAIN TUBE: The plumbing codes where you live may say that you must use a copper valve drain tube. A copper tube is also best to use for an over-head drain. Use a copper drain tube if the softener is installed outside, or in the sunlight. Heat from the sun makes many kinds of rubber or plastic hose to soften, flatten and close up.

To adapt a copper drain tube to the softener, buy a compression fitting (1/4 NPT x 1/2 in. minimum tube) and tubing from your local hardware store.

HIGH PERFORMANCE VALVE

FIG.13

FIG.12



D. CONNECT VALVE AND SALT TANK DRAINS**2. CONNECT SALT TANK OVERFLOW TUBING**

- a** Take the rubber grommet, tube adaptor and tube clamp (FIG. 12) that are on the small parts cardboard liner.
- b** Push the grommet into the hole in the salt tank wall so half is inside and half is outside.
- c** Push the bigger end of the tube adaptor into the grommet.
- d** Push one end of a length of 3/8" I.D. tubing onto the tube adaptor, using the tube clamp to hold it in place. Put the other end of the tubing over the floor drain.

Important:

- The salt tank overflow is for safety only. If the salt tank should overflow with water, the overflow tubing carries it to the drain.
- Over-fill water must run downward through the tubing. Do not raise the tubing higher than the grommet and tube adaptor (FIG. 12).
- **Do not** connect to the valve drain hose you installed in step 1. Both drains must have a separate hose or tube.

E. PRESSURE TEST / CHECK FOR LEAKS

CAUTION:

To avoid water or air pressure damage to softener inner parts, and to flush pipe chips or other residue from the water pipes, be sure to do the following steps exactly as instructed.

Look at the picture in FIG. 15 showing your kind of bypass valve(s).

1. Fully open two cold, soft water faucets nearby the softener.
2. Place bypass valve(s) in "bypass" position. On a single valve, slide the stem inward to *bypass*. On a 3-valve system, close the inlet and outlet valves and open the bypass valve.
3. Fully open the house main water pipe shutoff valve (closed in step 1, page 3-1). Observe steady water flow from both open faucets.
4. Place bypass valve(s) in "service", **EXACTLY** as follows: **Keep soft water faucets open.**
 - a SINGLE BYPASS VALVE: **SLOWLY**, slide pull the valve stem outward toward *service*, pausing several times to allow the softener to pressurize slowly.
 - b 3-VALVE BYPASS: Fully close the bypass valve and open the outlet valve. **SLOWLY**, open the inlet valve, pausing several times to allow the softener to pressurize slowly.
5. After about three minutes, open a hot water faucet for about one minute, or until all air is expelled, then close.
6. Close both cold water faucets.
7. Check your plumbing work for leaks and fix right away if any are found. **Be sure to observe previous caution notes.**

FIG.14

HOUSE MAIN WATER SHUTOFF VALVES

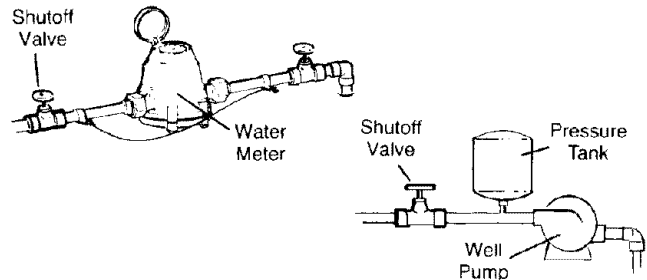
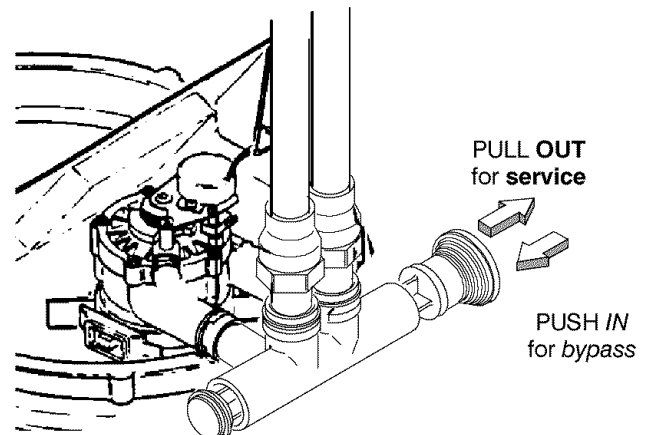


FIG.15

Bypass valve(s) should always remain in soft water **service** position. Position in *bypass* only if needed for softener repairs.

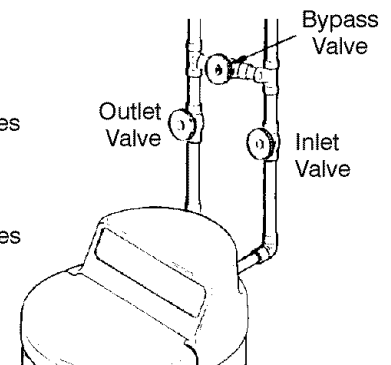
SINGLE BYPASS



3 - VALVE BYPASS

FOR SERVICE
close bypass valve
open inlet & outlet valves

FOR BYPASS
open bypass valve
close inlet & outlet valves



F. GROUNDING / CONNECT TO ELECTRICAL POWER

1. INSTALL GROUNDING WIRE BETWEEN THE SOFTENER IN AND OUT PIPES

The house cold water pipe (iron or copper) is often used to ground all electrical outlets in the home. Outlets are grounded to protect you from shock when you touch any electric appliance plugged into the outlet. If you installed the single bypass valve (FIG. 15), the cold water pipe ground is broken.

To restore the ground, take the ground clamp kit that is on the cardboard liner. Install across the inlet and outlet copper tubes as shown in FIG. 16. Be sure good contact is made between the pipe and the clamps.

FIG.16 COLD WATER PIPE GROUNDING

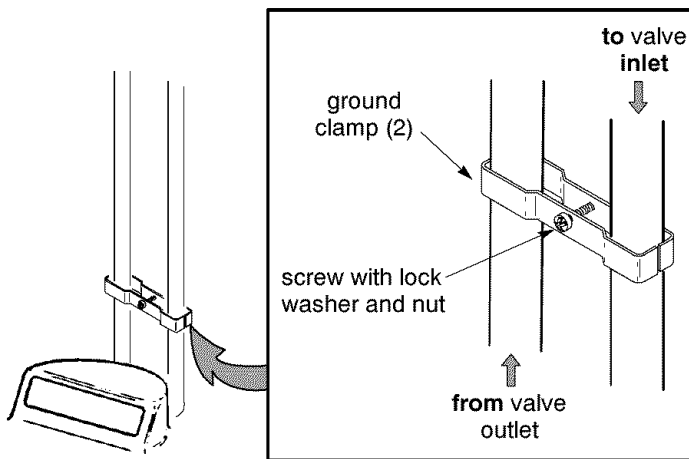
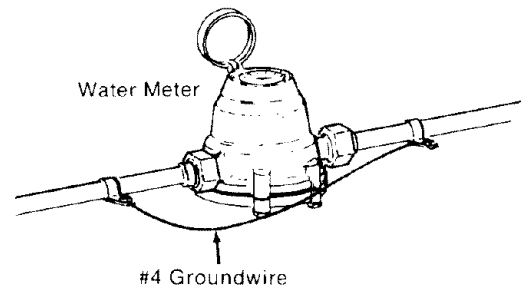


FIG.17 WATER METER JUMPER WIRE



Important:

Be sure the cold water pipe has direct metal to metal contact all the way to the ground. Plastic, rubber or other electrically insulating parts such as hoses, fit-

tings, washers or gaskets can break the direct metal to metal contact. Also check the water meter (city water) or the well pump. Install #4 copper jumper wires, clamped tightly on both ends, across insulated parts (FIG. 17).

2. ELECTRICAL POWER OUTLET FOR YOUR SOFTENER

The softener works on 24 volt, 60 Hz electric power. The included transformer changes standard 120 volt AC house power to 24 volts. You must plug the transformer into a grounded, 120 volt outlet only. Be sure the outlet is always "live" so someone cannot turn it off by mistake.

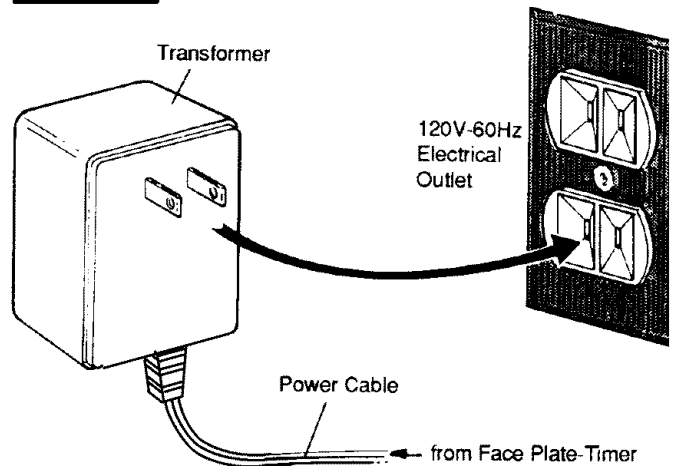
Note:

The included transformer is made for *inside use only*. Be sure the electrical outlet you plug the transformer into is inside, to protect from weather (see page 2-1).

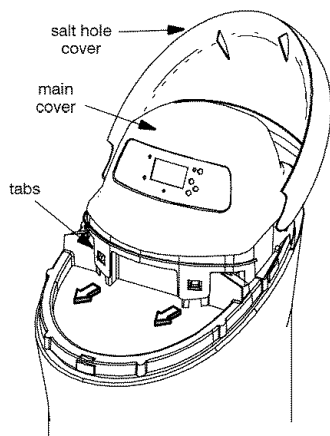
F. GROUNDING / CONNECT TO ELECTRICAL POWER

3. PLUG IN THE TRANSFORMER

Plug the transformer into the electrical outlet.

FIG. 18 CONNECTING TRANSFORMER

INSTALL COVERS



After installing your water softener, replace the covers. For the UltraSoft 400 and UltraSoft 800, angle the covers so the main cover clips onto the back first, then bring down in front and clip on the 2 tabs inside the rim of the salt hole and lower the salt cover closed.

RESTART THE WATER HEATER

TURN ON THE GAS (OR ELECTRIC) SUPPLY TO THE WATER HEATER AND LIGHT THE PILOT

Your new Sears softener is now softening the water for your household needs. However, your **WATER HEATER is filled with hard water**. To have fully soft water right away, you can drain the water heater so it refills with soft water. If you don't drain the water heater, it will take a few days before you have fully soft water.

To drain the water heater, open a hot water faucet and let it run until the water runs cold. Then close the faucet.

YOUR PLUMBING AND ELECTRICAL WORK IS COMPLETE.

Now go to your owner's manual and do the softener start-up steps...setting the timer, filling the storage tank with salt, sanitizing, etc.