



# MEGA-PURE® One Liter Water Still

## OPERATION MANUAL AND PARTS LIST *SERIES 798*

Model Number	Voltage	
A440266	120V	Without Bottle
A440267	120V	With Bottle
A7981	240V	Without Bottle
A7982	240V	With Bottle

# Important Information

This manual contains important operating and safety information. You must carefully read and understand the contents of this manual prior to the use of this equipment.

Water purification technology employs one or more of the following: chemicals, electrical devices, mercury vapor lamps, steam and heated vessels. Care should be taken when installing, operating or servicing Barnstead products. The specific safety notes pertinent to this Barnstead product are listed on page 4.

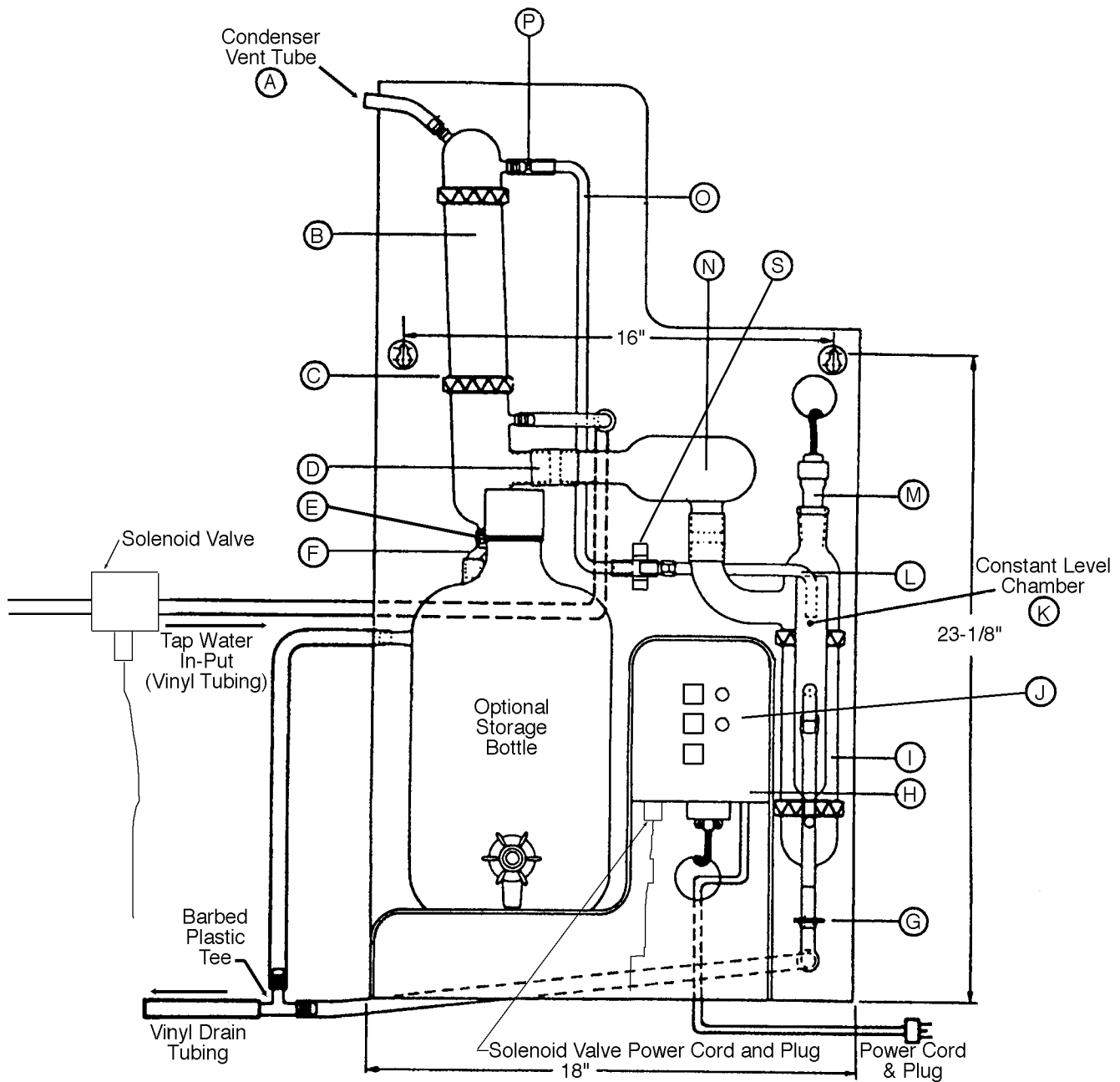


Figure 1 MEGA-PURE One Liter Still

---

# Table of Contents

Important Information.....	2
Table of Contents.....	3
Safety Information.....	4
Alert Boxes.....	4
Warnings.....	4
Introduction.....	6
Unpacking.....	7
Installation and Service Requirements.....	8
Location of Unit.....	8
Service Requirements.....	8
Power.....	9
Water Supply Requirements.....	9
Drain.....	10
Initial Assembly.....	10
Feedwater Connections.....	11
Tap Water Boiler Feed.....	11
Pretreated Boiler Feed.....	12
Demineralizer Treated Boiler Feed.....	13
In-House Treated Boiler Feed.....	14
Still Output Connections.....	16
Storage Bottle Installation.....	16
Automatic Collection System Installation.....	17
Operation.....	18
High Temperature Cut-off Switch.....	19
Maintenance and Servicing.....	20
Cleaning.....	20
Troubleshooting.....	21
General.....	21
Electrical.....	23
Still Troubleshooting.....	23
Automatic Collection System Troubleshooting.....	24
Parts List.....	25
Parts arranged by Exploded View key number.....	25
Exploded View.....	26
Wiring Diagram.....	27
Ordering Procedures.....	28
One Year Limited Warranty.....	32

---

# Safety Information

Your Barnstead MEGA-PURE One Liter Water Still has been designed with function, reliability, and safety in mind. It is your responsibility to install it in conformance with local electrical codes. For safe operation, please pay attention to the alert signals throughout the manual.

---

## Alert Signals



### Warning

Warnings alert you to a possibility of personal injury.



### Caution

Cautions alert you to a possibility of damage to the equipment.



### Note

Notes alert you to pertinent facts and conditions.

---

## Warnings

To avoid electrical shock, always:

1. Use a properly grounded electrical outlet of correct voltage and current handling capacity.
2. Ensure that the equipment is connected to electrical service according to local and national standards. Failure to properly connect may create a fire or shock hazard.
3. Do not mount the MEGA-PURE One Liter Water Still directly over equipment that requires electrical service. Routine maintenance of this unit may involve water spillage and subsequent electrical shock hazard if improperly located.
4. Replace fuses with those of the same type and rating.
5. Disconnect from power supply before servicing.
6. Do not connect unit to electrical service until instructed to do so.

To avoid personal injury:

1. Do not use in the presence of flammable or combustible materials; fire or explosion may result. This device contains components which may ignite such materials.
2. Wear eye and hand protection when using acid for cleaning, as acid spattering may occur.
3. Use this device with water feed only. Failure to comply with the above could result in explosion and personal injury.
4. Ensure all piping connections are tight to avoid leakage of chemicals.

5. Always depressurize chemical lines before disassembly.
  6. To avoid exposure to chemical fumes, ensure adequate ventilation when using chemicals for cleaning.
  7. Follow carefully the manufacturers' safety instructions on labels of chemical containers and Material Safety Data Sheets (M.S.D.S.).
  8. "Caution - Hot Surface. Avoid Contact." Glass portions of still become hot when still is operating. To avoid burns, do not touch hot glass.
  9. Refer servicing to qualified personnel.
- C. To ensure safe mounting:
1. Wall composition and construction, as well as fastener type, must be considered when mounting this unit. The mounting surface and fasteners selected must be capable of supporting a minimum of 60 lbs.; inadequate support and/or fasteners may result in damage to mounting surface and/or equipment. If you are unsure of mounting surface composition, condition and construction, or correct fasteners, consult your building maintenance group or contractor.

---

# Introduction



## Warning

Use a properly grounded electrical outlet of correct voltage and current handling capacity.

Ensure that the equipment is connected to electrical service according to local and national standards. Failure to properly connect may create a fire or shock hazard.

Do not mount the MEGA-PURE One Liter Water Still directly over equipment that requires electrical service. Routine maintenance of this unit may involve water spillage and subsequent electrical shock hazard if improperly located.

Do not connect unit to electrical service until instructed to do so.



## Note

Operation of the still at a voltage less than the stated voltage will cause a drop in still output.

Your Barnstead MEGA-PURE One Liter Water Still is a compact, all glass unit with Teflon<sup>®</sup> connectors designed to provide 1.4 liter per hour of high purity distilled water. The product water is non-pyrogenic per USP XIX. Resistivity will be greater than 1.0 megohm-cm at the condenser outlet using most tap water as feed. This water still can be used as a discrete unit or with customer supplied pretreated water. It can also be connected to the Barnstead Automatic Collection System for completely automatic operation.

Your MEGA-PURE One Liter Water Still allows you to replace tap water boiler feed with demineralized, distilled or R.O. water for low maintenance operation and high purity distillate. Distilled water storage can be easily handled in the optional 6-liter polyethylene or 9-liter Pyrex brand storage bottle. Either fits conveniently inside the water still cabinet and dispenses distilled water through a valve which is accessible at the front of the still.

Choice of a location for your MEGA-PURE One Liter Water Still is primarily a matter of convenience. This unit may be located on a bench or wall mounted.

Your MEGA-PURE One Liter Water Still is rated at either 120 volts, 50/60 Hz, 1000 watts, single phase or 240 volts, 50/60 Hz, 1000 watts, single phase. This unit requires approximately 11 to 15 liters per hour of cooling water.

The cabinet and glassware are protected against damage from overheating by a thermal switch.

---

# Unpacking

Tools required: Diagonal cutting pliers.

1. Remove parts box and still from shipping carton and place on workbench.
2. Check glassware inside the main cabinet for damage. Check parts in the accessory box for damage. Identify any broken or damaged parts and report them to your dealer immediately.

*Refer to Figure 1 (page 2) for the following step:*

3. Using diagonal cutting pliers, cut and remove the five (5) plastic shipping ties. The shipping tie locations are: Two (2) on the condenser "B", two (2) on the boiler "I", and one (1) on the trap "N."

---

# Installation and Service Requirements



## Warning

Do not mount the MEGA-PURE One Liter Water Still directly over equipment that requires electrical service. Routine maintenance of this unit may involve water spillage and subsequent electrical shock hazard if improperly located.

Wall composition and construction, as well as fastener type, must be considered when mounting this unit. The mounting surface and fasteners selected must be capable of supporting a minimum of 60 lbs.; inadequate support and/or fasteners may result in damage to mounting surface and/or equipment. If you are unsure of mounting surface composition, condition and construction, or correct fasteners, consult your building maintenance group or contractor.



## Warning

Ensure that the equipment is connected to electrical service according to local and national standards. Failure to properly connect may create a fire or shock hazard.

Do not connect unit to electrical service until instructed to do so.

---

## Location of Unit

Choice of location for the MEGA-PURE One Liter Water Still is primarily a matter of convenience as long as the service requirements, listed on the next page, are met.

- A. The still may be bench or wall mounted. Allow 4"-6" clearance at the sides and top for circulation of ambient air to prevent buildup of heat in the cabinet.
- B. Unit Dimensions: 18" wide x 10" deep x 34" high.
- C. Wall Mounting: The still is supplied with slotted mounting holes located 16" on center in the rear of the cabinet and 22 <sup>7</sup>/<sub>8</sub>" from the bottom. The weight of the unit with a full storage bottle is 45-60 lbs.

---

## Service Requirements

### Power

Your water still is supplied with a power cord (5 feet long) and plug. The plug on the 120V unit requires a standard North American 120V, 15A, 3-prong receptacle. The plug on the 240V unit requires a standard European 240 volt receptacle. (See Figure 2.) If you do not have the required receptacle available within 5 feet of your still, a certified electrician should install one in accordance with local and national standards. As an alternate method of power supply for a 240 volt unit, your electrician may remove the supplied plug and wire the cord to a 15A-250V breaker box. (See Figure 3.)

### Water Supply Requirements

Barnstead recommends one of the following options for supplying water to operate your MEGA-PURE One Liter Water Still.

#### OPTION #1

A single, untreated cold water supply. The supply must be capable of providing a minimum of 4 gallons (15 liters) per hour at a pressure of 20-100 psi and be located within 4 feet (1.2 meters) of the MEGA-PURE One Liter Water Still. You must provide a shut off valve and reducer as shown in Figure 4.



## INSTALLATION AND SERVICE REQUIREMENTS



**Note**

The double solenoid valve kit is not needed if you are using a MEGA-PURE D1 or D2 deionizer for pretreatment.

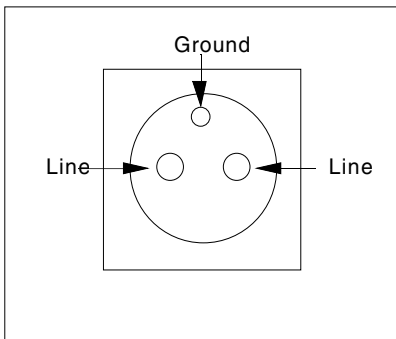


Figure 2 240 Volt Receptacle

With Option #1, approximately 4 gallons of untreated water will be used per hour in the cooling section of the still, 1 gallon of this water will be used as boiler feed. Water connections are discussed on pages 13-14.

**OPTION #2**

An untreated cold water supply plus a source of RO, demineralized or previously distilled water. The untreated supply must be capable of providing a minimum of 4 gallons (15 liters) per hour at a pressure of 20-100 psi and be located within 4 feet (1.2 meters) of the water still. The treated supply must be capable of providing 1 gallon (3.75 liters) per hour and be located within 4 feet of the water still. You must provide a shut-off valve and reducer at each water supply (see Figure 4). In addition you will require the optional double solenoid valve kit (Catalog No. RY798X2A (120V) or 440236 (240V)).

With Option #2, approximately 4 gallons of untreated water will be used each hour for cooling. The second (treated) water supply of 1 gallon per hour will be used as boiler feed. Water connections are discussed on pages 14-18.

**Drain**

An open or atmospherically vented drain located lower than the still is necessary to allow for gravity flow. Barnstead supplies a 5 foot length of 1/2" I.D. vinyl tubing for the drain. Additional tubing may be purchased from your laboratory dealer.

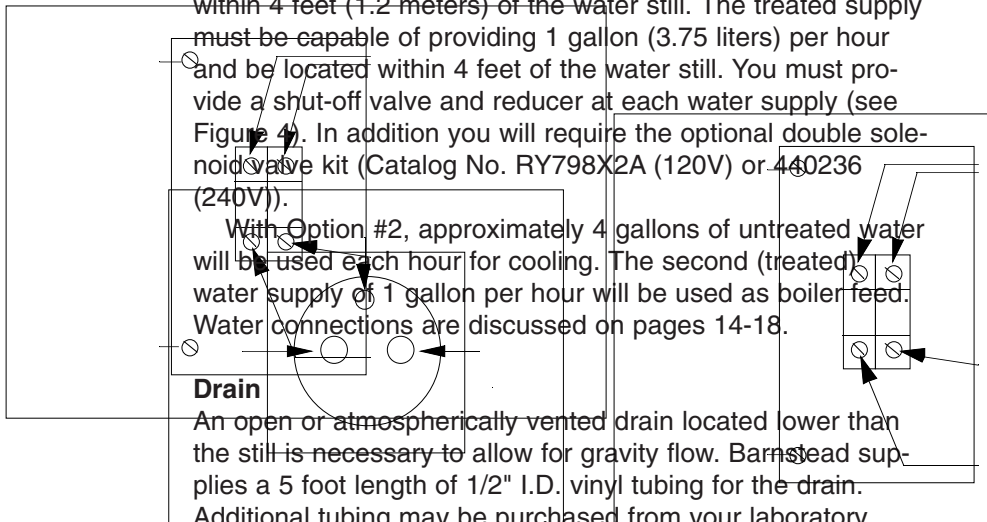


Figure 4 Shut-off Valve

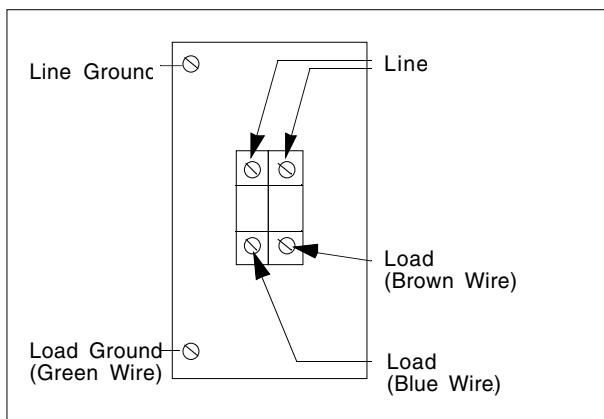
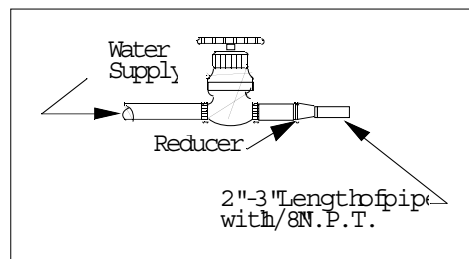


Figure 3 15A - 250V Breaker Box



# Initial Assembly

Tools required for assembly: 7/16" open end wrench, diagonal cutting pliers, common screwdriver.

1. Unwrap the condenser "B" and thoroughly flush all of the salt out.
2. Reattach the condenser "B" to the still and then attach the two Teflon connectors "D" and "P" to the condenser "B" as shown in Figure 1.
3. Check orientation of trap "N." If it is not level or tilted back toward the boiler as shown in Figure 1, move the condenser "B" up in its bracket. This will tilt trap as shown in Figure 1.
4. Remove the packing material and rotate tube "L" into the constant level chamber of boiler "I" as shown in Figure 1.
5. Unpack the Vycor<sup>®</sup> immersion heater "M" and check the voltage rating on the top cap. It should agree with the voltage of your power supply. If it does not, contact your dealer and order the correct heater.
6. Insert the immersion heater into the top opening of boiler "I" as shown in Figure 1.
7. Thread the heater plug and cord through the large hole above the boiler "I," then back through the hole below the control box "H." Plug heater plug into the receptacle on the bottom of the control box. The plug is twist-lock type and requires 1/4 clockwise turn to lock in place.

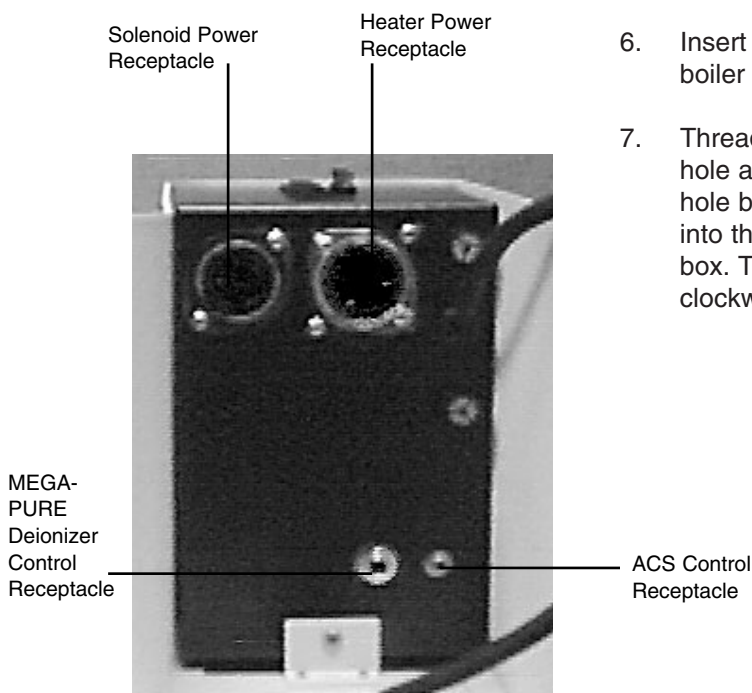


Figure 5 Control Bottom Connections

# Feedwater Connections



## Note

Barnstead strongly recommends that you install the optional flowmeter (Catalog Number 440092) into your feedwater line(s). This will allow you to control the flow of water to your still easily and precisely.

This still always uses tap water for cooling the steam in the condenser. However, you have the option of feeding your boiler with higher purity pretreated water, thereby reducing the need to drain and clean your boiler.

If you will be using tap water as your boiler feedwater, proceed to the Tap Water Boiler Feed section. If you will be using a supply of distilled, deionized or reverse osmosis water as your boiler feed, proceed to the Pretreated Boiler Feed section.

---

## Tap Water Boiler Feed

See Figure 6

1. Install a customer supplied shutoff valve onto your tap water source. Thread the solenoid valve onto your customer supplied shutoff, with the side marked "in" toward the shutoff.
2. Install the supplied fitting to the "out" side of the solenoid valve. Connect the 5/16" I.D. tubing (from the condenser) to this fitting.
3. Route 3/8" I.D. vinyl drain tubing to an atmospherically vented drain.

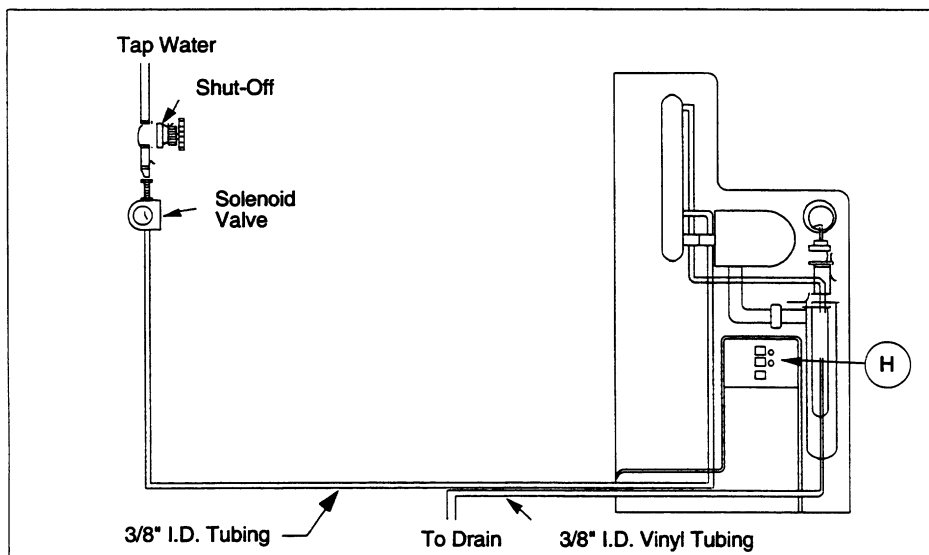


Figure 6 Tap Water Feed Only

## FEEDWATER CONNECTIONS

4. Plug the solenoid valve power cord (not shown) into the receptacle on the bottom of the control box "H." (See Figure 5.)
5. Go to the Still Output Connections section to complete your still's setup.

---

## Pretreated Boiler Feed

When a supply of distilled, deionized or reverse osmosis water is to be used as boiler feed, first revise the still connections as follows:

1. Remove boiler fill tube "O" from still and set aside.
2. Locate the 3/8" I.D. x 44" long vinyl tubing and one barbed tee (3/8" I.D. x 3/8" I.D. x 3/8" I.D.) in the parts box.
3. Install one end of the vinyl tubing to the cooling water outlet located on the top right of the condenser "B" (where boiler fill tube "O" was attached). Route the other end through the cabinet and down the back as shown in Figure 7.
4. Cut the 3/8" I.D. vinyl drain tubing and install the barbed tee. Connect the 3/8" I.D. vinyl tubing from condenser to the barbed tee. Push the vinyl tubing all the way onto the tee to assure a leak free seal.
5. Route the drain tubing to an atmospherically vented drain.

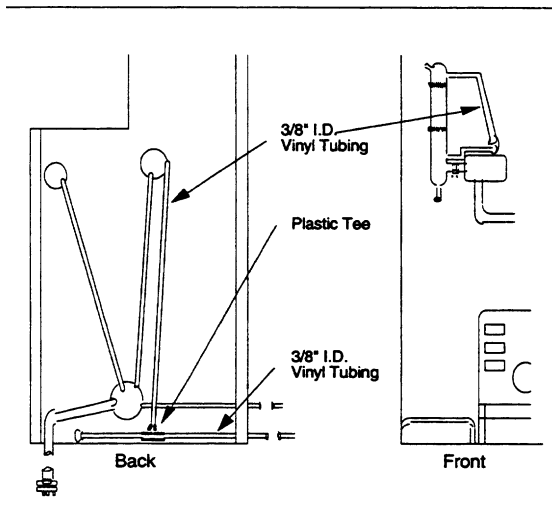


Figure 7 Tubing Connections

If you will be using a MEGA-PURE D1 or D2 demineralizer to provide pretreated boiler feed, go to the Demineralizer Treated Boiler Feed section. If you will be using an "in-house" source of pretreated water for boiler feed, go to the In-House Treated Boiler Feed section.

## Demineralizer Treated Boiler Feed

See Figure 8. (Must have optional still adapter kit: Catalog No. 440376)

1. Install a customer supplied shutoff valve onto your tap water source. Thread the solenoid valve onto your customer supplied shutoff, with the side marked "in" toward the shutoff.
2. Install the fitting supplied with the still adapter kit into the "out" side of the solenoid valve. Connect the 1/4" O.D. tubing (from the demineralizer) to this fitting.
3. Cut the 1/4" O.D. tubing (from last step) at a convenient point and install the tee from the still adapter kit (Catalog No. 440376).
4. Connect a length of 1/4" O.D. tubing to the third arm of the tee. Connect the 1/4" O.D. to 3/8" I.D. adapter to the free end of this length of 1/4" O.D. tubing. Connect the 5/16" I.D. tubing (from the condenser) to this adapter.
5. Locate boiler fill tube "L." Connect 7/16" I.D. vinyl tubing from demineralizer output to end of boiler fill tube. Route as shown and install clip "S" to support the tubing.



**Note**

If using the optional flowmeter, install it at this point instead of the adapter.

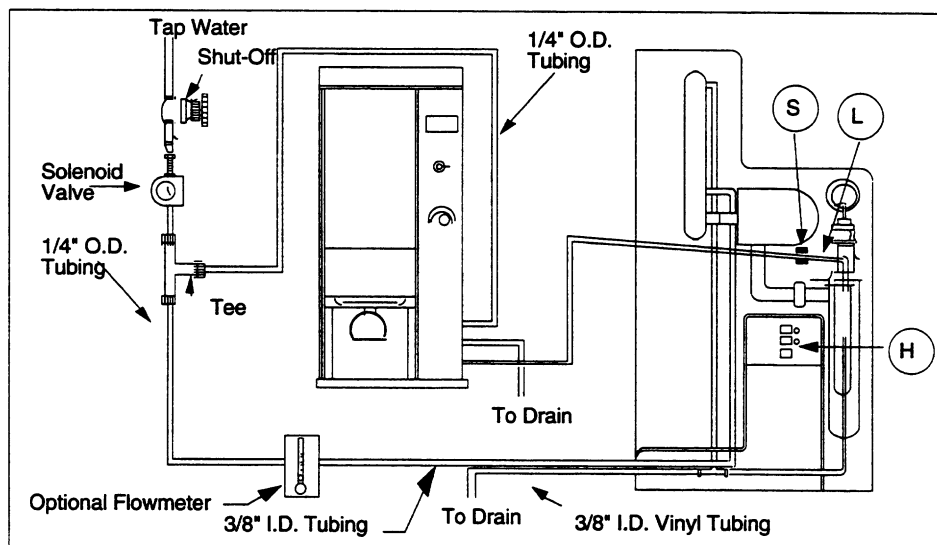


Figure 8 Deionizer Feed

## FEEDWATER CONNECTIONS

6. Route 3/8" I.D. vinyl drain tubing to atmospherical-ly vented drain.
7. Plug solenoid valve power cord (not shown) into receptacle in control box "H."
8. Plug still adapter kit cable into right side of dem-inalizer and receptacle in control box "H."
9. Go to the Still Output Connections section on page 19 to complete the setup of your still.

---

## In-House Treated Boiler Feed

See Figure 9. (Must have optional double solenoid valves: Catalog No. 440236 (240V), RY798X2A (120V))

1. Install customer supplied shutoff valves onto your tap water source and your in-house treated water source. Thread the solenoid valves onto your customer supplied shutoffs, with the sides marked "in" toward the shutoffs.
2. Install the supplied 5/16" fitting to the "out" side of the solenoid valve on your tap water source. Connect the 5/16" I.D. tubing (from the condenser) to this fitting.

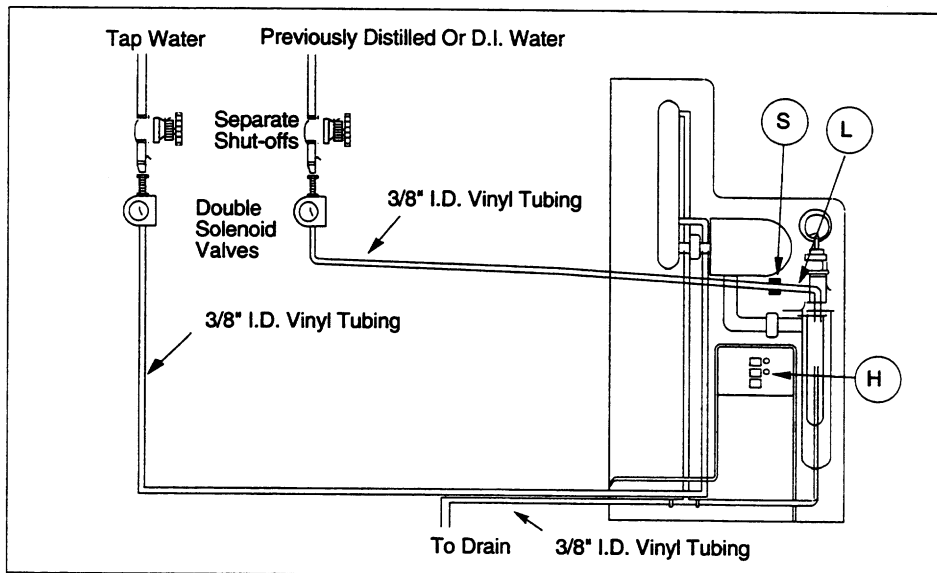


Figure 9 In-house Treated Feed

---

## FEEDWATER CONNECTIONS

3. Connect the 3/8" fitting and 3/8" I.D. vinyl tubing from the double solenoid valve kit to the "out" side of the solenoid valve on your treated water supply.
4. Locate the boiler fill tube "L." Connect 3/8" I.D. from treated water supply solenoid to the end of the boiler fill tube. Route as shown and install clip "S" to support the tubing.
5. Route the 3/8" I.D. vinyl drain tubing to an atmospherically vented drain.
6. Plug the solenoid valve power cord (not shown) into the receptacle in control box "H" (See Figure 5.)
7. Go to the Still Output Connections section on page 19 to complete the setup of your still.

# Still Output Connections

If you are using one of the optional Storage Bottles, go to the Storage Bottle Installation section. If you are connecting your still to an Automatic Collection System, go to the Automatic Collection System Installation section.



## Note

The storage bottles do not automatically control the still.

---

## Storage Bottle Installation

To install the optional 6 or 9 liter storage bottle inside the one liter still cabinet, first locate the following parts in the storage bottle parts box:

- Product delivery tube "F"
- Teflon Connector "E"
- 20" length of 1/2" vinyl tubing
- Plastic tee (1/2 X 1/2 X 1/2)

1. Place storage bottle (with product delivery tube "F" installed) inside still cabinet below condenser "B." Connect product delivery tube to condenser with Teflon connector "E."
2. Locate plastic tee (1/2 x 1/2 X 1/2) and 20" length of 1/2" vinyl tubing in parts box. Connect to bottle overflow tubulation and drain as shown in Figure 10 below.

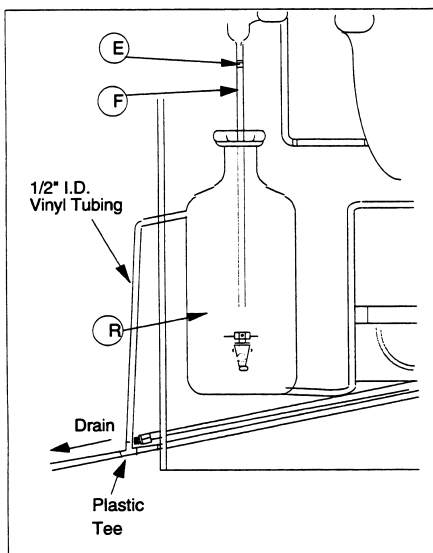


Figure 10 Storage Bottle Installation



## Automatic Collection System Installation

Before connecting your MEGA-PURE One Liter Water Still to the Barnstead Automatic Collection System, move the still to its final location.

1. Locate ACS tube "Q" and Teflon connector "E" in the ACS parts box. Locate distillate outlet tube (TU798X1) in the still parts box. Assemble to tubing from collection system as shown in Figure 11.
2. Plug input jack from ACS into ACS receptacle on bottom of still control box "H." (See Figure 5)

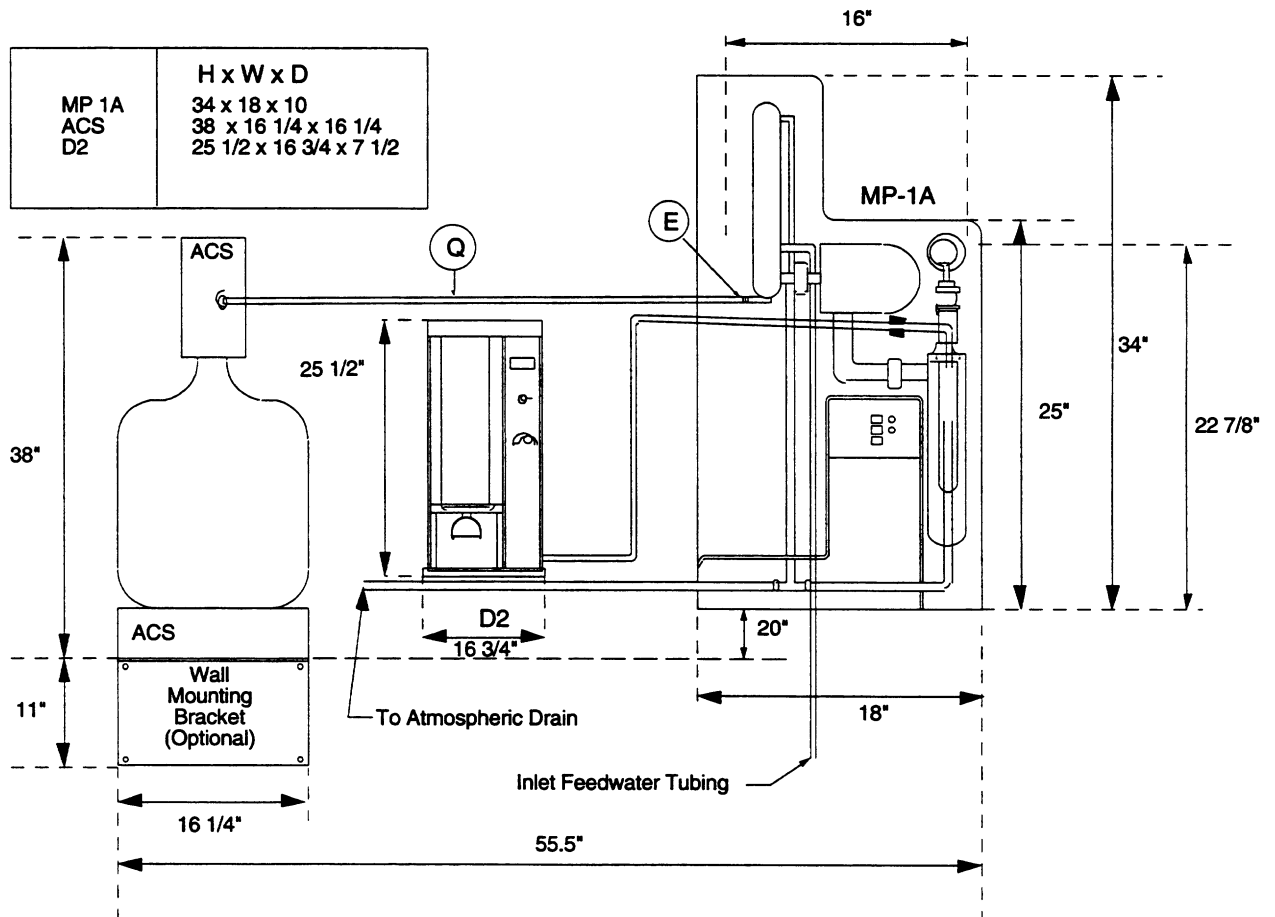


Figure 11 Complete System Layout (Not to scale)

---

# Operation



## Warning

Use a properly grounded electrical outlet of correct voltage and current handling capacity.

Ensure that the equipment is connected to electrical service according to local and national standards. Failure to properly connect may create a fire or shock hazard.

Do not use in the presence of flammable or combustible materials; fire or explosion may result. This device contains components which may ignite such materials.

Use this device with water feed only. Failure to comply with the above could result in explosion and personal injury.

“Caution - Hot Surface. Avoid Contact.” Glass portions of still become hot when still is operating. To avoid burns, do not touch hot glass.

Plug electrical power cord into appropriate receptacle. Refer to *Figure 1, page 2* for referenced locations.

1. Close drain clamp "G" on bottom of boiler "I."
2. Open valve at tap water source and treated water source if so installed.
3. Switch on the main power breaker on control at customer power source.
4. Push "Water" switch on control box "H". Green indicator will light and solenoid will open. Allow boiler to fill.
5. Push "OPERATE" switch. Indicator will light and heaters will come on.
6. Allow the still to operate for 15-20 minutes. For maximum volume of distillate, increase the flow of cooling water to the point where only a slight wisp of steam is visible at the condenser vent "A." If you are using a separate source of pretreated water for your boiler feed, adjust the boiler feed flow so that a constant overflow from the boiler is maintained.
7. Your MEGA-PURE One Liter Water Still should now be operational. Run the still for 4-5 hours to cleanse itself before collecting water for use.
8. To shut your water still off push the OFF switch. This will shut the water supply and the heaters off.

If any difficulties are encountered in operating this water still, check all operating and assembly steps to be sure the still was assembled and is being operated correctly. If the difficulty still exists, consult the Troubleshooting section of this manual.

**Note**

If you are feeding an ACS with your still, note that when the ACS is full, it will signal the still to shut down.

During this shut-down, the heater and the water supply will both shut off and the front panel lights on the still will be extinguished. This normal operation can mimic the effects of an overheating boiler, but does not represent any problem with the still.

---

## High Temperature Cut-off Switch

Your MEGA-PURE One Liter Water Still is protected against overheating by a thermal switch located in the control box at the right hand side of the boiler. Should the boiler overheat, the switch will open causing the heater and water supply to shut off. When the boiler cools (5-15 minutes), the switch will reset automatically, but the still will have to be restarted by the operator. When unit has cooled, press the "WATER" switch and then the "OPERATE" switch to restore normal operation. Check boiler occasionally for proper water level.

---

# Maintenance and Servicing



## Warning

Disconnect from the power supply before servicing.

Wear eye and hand protection when using acid for cleaning, as acid spattering may occur.

Ensure all piping connections are tight to avoid leakage of chemicals.

Always depressurize chemical lines before disassembly.

To avoid lung injury or suffocation, ensure adequate ventilation when using chemicals for cleaning.

Follow carefully the manufacturers' safety instructions on labels of chemical containers and Material Safety Data Sheets (M.S.D.S.).

Refer servicing to qualified personnel.

---

## Cleaning

For top performance and efficiency, the MEGA-PURE One Liter Water Still should be kept clean and free of scale. It is recommended that the boiler be drained and refilled with fresh water daily to flush the boiler of the concentration of contaminants from the previous day's run.

When using untreated boiler feed, cleaning is recommended after every 15-20 hours of operation. The unit should be cleaned with a hydrochloric acid solution. This is done as follows:

1. Push unit "OFF" switch.
2. Disconnect output tubing at condenser "B" from collection vessel and temporarily place a beaker under condenser outlet.
3. Drain boiler by opening clamp "G." Close clamp "G" after boiler has completely drained. Refill boiler.
4. Use the spare pinch clamp from the parts box to shut off overflow tube from constant level chamber "K" as close as possible to overflow stem.
5. Carefully pour approximately 260 ml. of 10% hydrochloric acid solution into top of constant level chamber "K."
6. Wait approximately 10 minutes or until residue disappears. If additional cleaning is required, drain boiler down 1 inch and turn unit on for a few minutes until residue disappears. Do not boil. Turn the still off.
7. Carefully drain the unit, remove clamp from overflow tube and refill with fresh water. Drain boiler, refill with fresh water and operate for 30 minutes. Reconnect tubing from collection vessel to condenser "B."

## Troubleshooting

### General

Problem	Causes	Solution
Leaks.	The most common leak is one occurring in the vinyl drain tubing. Hot water causes softening and pulling loose at the plastic barbed connectors.	Runs of vinyl tubing should be supported to reduce the pull on the plastic connectors. Small clamps may be used to firmly hold the vinyl tubing.
Rough Boiling.	Rough boiling is the result of alkali attack to the matte finish on the heaters. The most common cause is using water pretreated with NaCl regenerated water softeners.	Remove heater and lightly roughen surface with 150 grit sandpaper.
Scale Build-up.	A brownish-white scale in the boiler indicates that the boiler requires cleaning.	Clean boiler per cleaning instructions. Scale should not be allowed to accumulate as heaters may be damaged.
<p>Heater Failure.</p> <p><i>Heater failure due to scale build-up or alkali attack will not be replaced under warranty.</i></p>	<p>Short life on Vycor<sup>®</sup> immersion heaters can usually be attributed to use of water pretreated with NaCl regenerated water softeners or excessive scale buildup.</p> <p>Softened water used as a boiler feed causes a concentration of sodium ions and alkaline attack of the Vycor<sup>®</sup> glass. Rough boiling will be the first indication of alkaline attack. At failure, the heaters will usually pinhole and water entering will short out the element.</p> <p>Scale build-up will occur when boiler feed is not being deionized.</p>	<p>If softened water must be used, heater life can be prolonged somewhat by draining boiler every day.</p> <p>When using the still without a deionizer, scale build-up must be removed after every 15-20 hours of operation (see "Cleaning Instructions"). Failure to do so will cause heaters to build up heat internally and fail or cause glass envelope failure.</p>

---

## MAINTENANCE AND SERVICING

### General (con't)

<b>Problem</b>	<b>Causes</b>	<b>Solution</b>
Steam at Condenser Vent.	A slight wisp of steam exiting at the condenser vent is normal. Gases in the steam are also being removed.	If there is an excessive amount of steam leaving the condenser vent, increase the cooling water flow rate.
No Steam at Condenser Vent.		If no steam is visible, decrease cooling water flow rate.
Water Pressure Variations.	Pressure fluctuations in your tap water line will cause erratic flow in cooling water and may cause water level in boiler to drop.	Have a plumber install a pressure regulator in your tap water line and regulate to 20-25 psi.
Output Less Than 1 Liter/Hr.	Heaters will produce in excess of 1 L/hr. of distilled water when run at the rated voltage. At lower voltages, output will drop accordingly.  Also see "Steam at Condenser Vent" as excess steam at this point will reduce output.	

---

## OPERATION

---

### Electrical

Before troubleshooting can begin, the problem component must be determined. That is accomplished as follows:

1. Disconnect the demineralizer and ACS jacks from the still control box and attempt to run the still. If still fails, see "Still Troubleshooting." If still runs, go to step #2.
2. Connect the demineralizer input jack back up to the still control box and attempt to run the still. If still fails to run see "Demineralizer Troubleshooting" (in the Demineralizer Manual). If still runs, see "Automatic Collection System Troubleshooting."

---

### Still Troubleshooting

<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
Heaters and water will not stay on.	Hi-temp cut-off switch open.	Remove control box and replace switch.
Heater not boiling, heater light on.	Heater element burnt out.	Check heater (13.9Ω for 120V or 55.9Ω for 240V) and replace.
Heater not working.	Heater element burnt out.	Replace heater.
Water will not come on, but light works.	Solenoid valve not working.	Check plug for connection. Replace solenoid valve.
No lights in switches.	ACS full; still off.  Indicator lights burnt out.	This is normal operation when the still is used to feed an ACS. When water level in the ACS drops, still will reactivate and lights will come back on automatically.  Replace switches (switches will operate without lights).
Fuse(s) blown.	Heater shorted.  High voltage.	Check heater (13.9Ω for 120V or 55.9Ω for 240V) and replace.  Check input voltage against heater rating. Correct.
Unit off, but water still flowing.	Solenoid valve installed backwards.  Solenoid valve stuck open.	Solenoid labeled "in" on input side. Check.  Replace solenoid valve.

---

## MAINTENANCE AND SERVICING



### Warning

Replace fuses with those of the same type and rating.

---

## Automatic Collection System Troubleshooting

Problem	Cause	Solution
Will not turn still on or off as it should.	Float stuck.	Remove level control cover and free-up.
	Switch not working.	Replace switch.
	Input jack not plugged in.	Check and reconnect.
	Jack board defective.	Replace jack board.



# Parts List

All replacement parts must be ordered through your laboratory dealer.

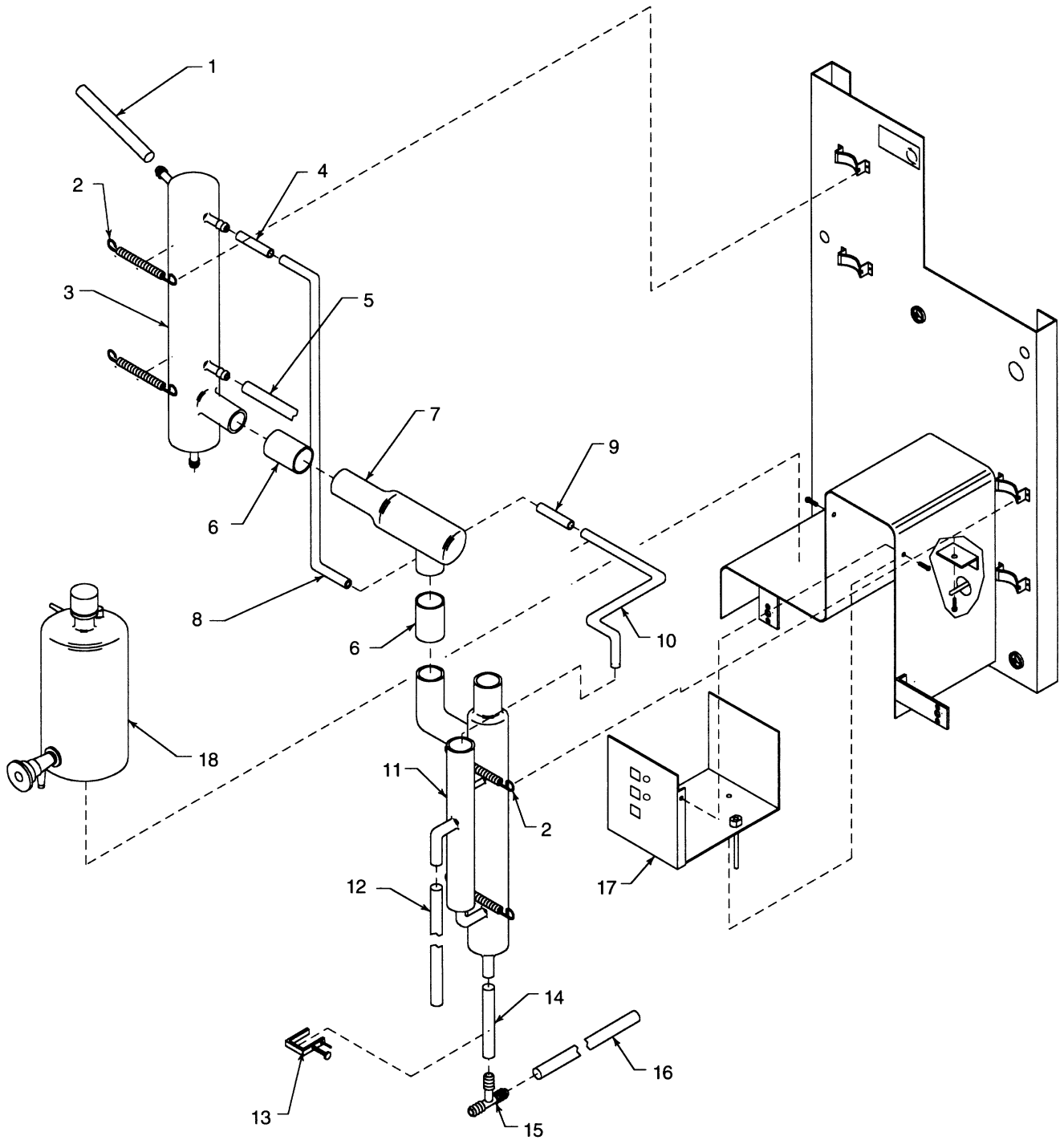
## Parts arranged by Exploded View key number

Exploded View Key Number	Figure 1 Item Key	Description	Part Number
1	A	Steam Vent Tubing	TU674X6
2	C	Boiler/Condenser Spring (set of 4)	416104
3	B	Condenser	401203
4	P	Teflon® Connector (3/8" I.D.)	401398
5		Inlet Tubing	TU674X7
6	D	Teflon® Connector (1 5/32" I.D.)	401397
7	N	Steam Trap	401202
8	O	Boiler Fill Tube (Cond. to Conn.)	401215
9		Teflon® Connector (3/8" I.D.)	401398
10	L	Boiler Fill Tube (Conn. to Boiler)	401216
11	I	Boiler	401201
12		Constant Level Overflow Tubing	TU674X3
13	G	Boiler Drain Tubing Clamp	927917
14		Boiler Drain Tubing	TU674X2
15		Drain "T"	927326
16		Drain Tubing	TU674X1
17	H	Electrical Control Box (120V)	CN798X1A
		Electrical Control Box (240V)	CN798X2A
	F	Distillate Outlet Tube - Tubing/Bottle	TU798X2
	J	Water, Operate, Off Switches	SW745X1A
	M	Vycor Immersion Heater, 120V-1000W	740880
	M	Vycor Immersion Heater, 240V-1000W	EL798X1B
	Q	Distillate Outlet Tube - ACS	TU798X1
	Not Shown	Electrical Control Box PC Board	PC798X1A
	Not Shown	Solenoid Valve (120V)*	RY798X1A
	Not Shown	Solenoid Valve (240V)	440093
	Not Shown	Fuse (Buss Type ABC-12A, 250V)	410148
	Not Shown	Hi-Temperature Cutoff Switch	SWX150
Optional Accessories			
18		6-Liter Polyethylene Bottle	413964
18		9-Liter Pyrex Brand Bottle	410535
		Flowmeter Kit	440092
		Dual Solenoid Valve (120V)	RY798X2A
		Dual Solenoid Valve (240V)	440236
19		Connector** within electrical box	CE798X1A

\*RY798X1A Solenoid Valve ( supplied with still)

\*\*CE798X1A #19 is shown in Figure 5

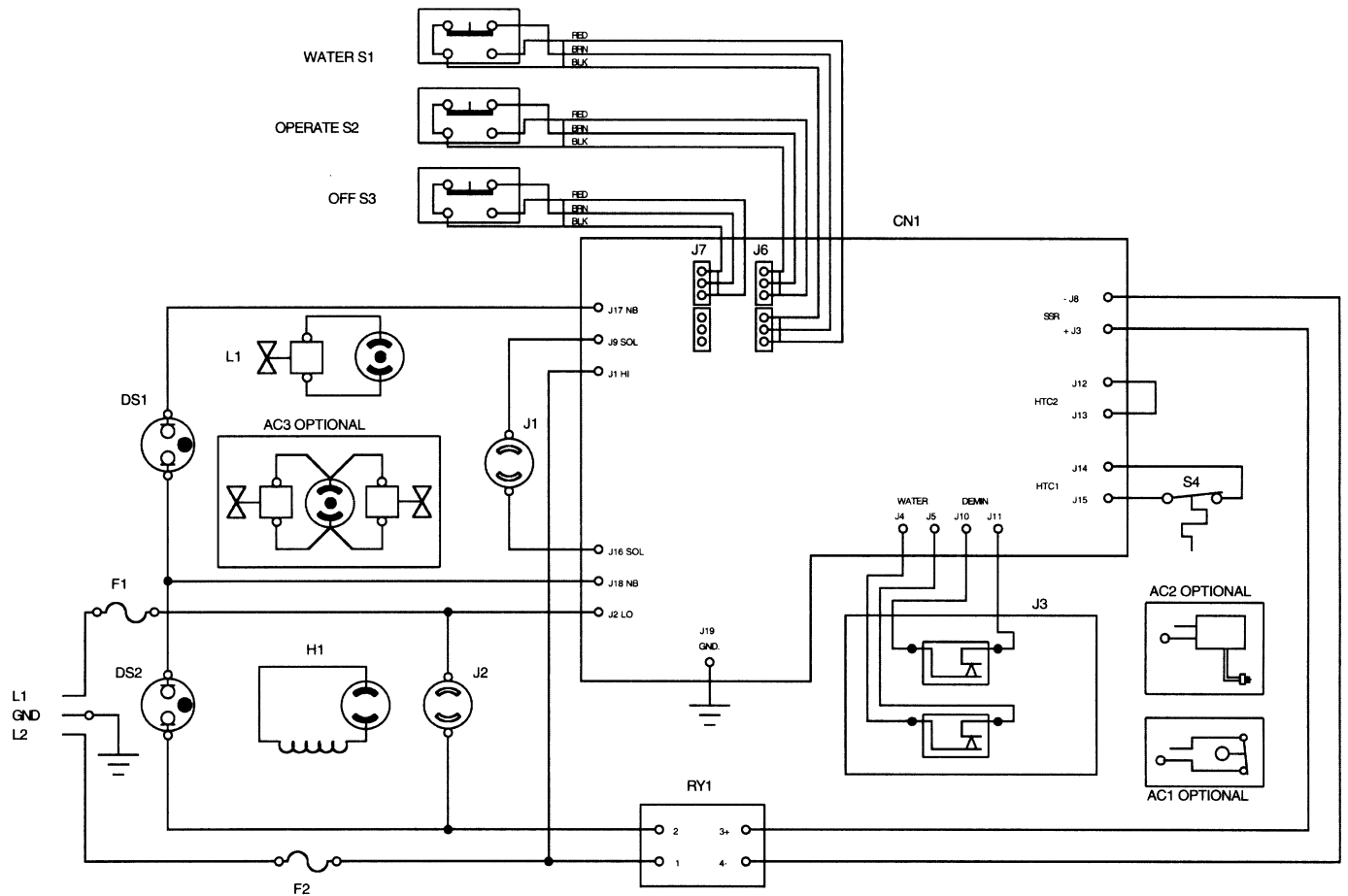
# Exploded View



# Wiring Diagram

DIAGRAM COMPONENT LIST

REF. NO.	DESCRIPTION
CN1	CONTROL
DS1	PILOT LIGHT, POWER (GREEN)
DS2	PILOT LIGHT, CYCLE (AMBER)
F1	FUSE
F2	FUSE
J1	SOLENOID RECEPTACLE
J2	HEATER RECEPTACLE
J3	ACCESSORY JACKS
S1	SWITCH (WATER)
S2	SWITCH (OPERATE)
S3	SWITCH (OFF)
S4	SWITCH, L.W.C.O. (THERMAL)
L1	SOLENOID VALVE ASS'Y
H1	HEATER ASSEMBLY
RY1	RELAY
AC1	AUTO COLLECTION SYS.
AC2	D1 SINGLE CART. DEIONIZER
AC3	D2 DUAL CART. DEIONIZER



---

# Ordering Procedures

Please refer to the Specification Plate for the complete model number, serial number, and series number when requesting service, replacement parts or in any correspondence concerning this unit.

All parts listed herein may be ordered from the **Barnstead International** dealer from whom you purchased this unit or can be obtained promptly from the factory. When service or replacement parts are needed we ask that you check first with your dealer. If the dealer cannot handle your request, then contact our Customer Service Department at 563-556-2241 or 800-553-0039.

Prior to returning any materials to **Barnstead International**, please contact our Customer Service Department for a "Return Goods Authorization" number (RGA). Material returned without a RGA number will be refused.

Teflon is a registered trademark of the DuPont Company  
PYREX is a registered trademark of Corning, Inc.  
MEGA-PURE is a registered trademark of Barnstead International







---

# One Year Limited Warranty

Barnstead International (“BARNSTEAD”) warrants that if a product manufactured by Barnstead shall be free of defects in materials and workmanship for one (1) year from the first to occur of (i) the date the product is sold by BARNSTEAD or (ii) the date the product is purchased by the original retail customer (the “Commencement Date”). Except as expressly stated above, BARNSTEAD MAKES NO OTHER WARRANTY, EXPRESSED OR IMPLIED, WITH RESPECT TO THE PRODUCTS AND EXPRESSLY DISCLAIMS ANY AND ALL WARRANTIES, INCLUDING BUT NOT LIMITED TO, WARRANTIES OF DESIGN, MERCHANT ABILITY AND FITNESS FOR A PARTICULAR PURPOSE.


An authorized representative of BARNSTEAD must perform all warranty inspections. In the event of a defect covered by BARNSTEAD’s warranty, BARNSTEAD shall, as its sole obligation and exclusive remedy, provide free replacement parts to remedy the defective product. In addition, for products sold by BARNSTEAD within the continental United States or Canada, BARNSTEAD shall provide provide free labor to repair the products with the replacement parts, but only for a period of ninety (90) days from the Commencement Date.

BARNSTEAD’s warranty provided hereunder shall be null and void and without further force or effect if there is any (i) repair made to the product by a party other than BARNSTEAD or its duly authorized service representative, (ii) misuse (including use inconsistent with written operating instructions for the product), mishandling, contamination, overheating, modification or alteration of the product by any customer or third party or (iii) use of replacement parts that are obtained from a party who is not an authorized dealer of BARNSTEAD.

Heating elements, because of their susceptibility to overheating and contamination, must be returned to the BARNSTEAD factory and if, upon inspection, it is concluded that failure is due to factors other than excessive high temperature or contamination, BARNSTEAD will provide warranty replacement. As a condition to the return of any product, or any constituent part thereof, to BARNSTEAD’s factory, it shall be sent prepaid and a prior written authorization from BARNSTEAD assigning a Return Goods Number to the product or part shall be obtained.

IN NO EVENT SHALL BARNSTEAD BE LIABLE TO ANY PARTY FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, OR FOR ANY DAMAGES RESULTING FROM LOSS OF USE OR PROFITS, ANTICIPATED OR OTHERWISE, ARISING OUT OF OR IN CONNECTION WITH THE SALE, USE OR PERFORMANCE OF ANY PRODUCTS, WHETHER SUCH CLAIM IS BASED ON CONTRACT, TORT (INCLUDING NEGLIGENCE), ANY THEORY OF STRICT LIABILITY OR REGULATORY ACTION.

The name of the authorized Barnstead International dealer nearest you may be obtained by calling 1-800-446-6060 (563-556-2241) or writing to:

 **Barnstead**International  
an Apogent company *Your Lab Starts Here*

2555 Kerper Boulevard  
P.O. Box 797  
Dubuque, Iowa 52001-0797  
Phone: 563-556-2241 or 800-553-0039  
Fax: 563-589-0516  
E-mail: [mkt@barnstead.com](mailto:mkt@barnstead.com)  
[www.barnstead.com](http://www.barnstead.com)

