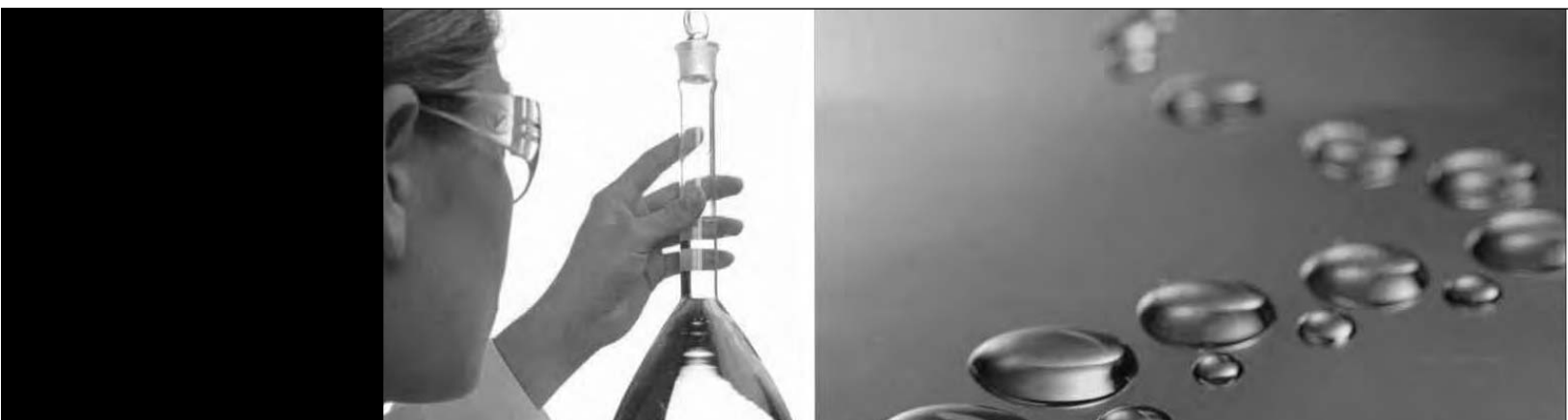


MEGA-PURE® 3A Water Still

Series 1923

Operating Manual and Parts List LT1923X1 (7006749) Rev. 1



Models covered in this manual	
Model number	Voltage
A440696 (6751)	208V
A440367 (6749)	220-240V

MANUAL NUMBER LT1923X1 (7006749)

1	28194	3/12/12	Removed 208V heater as unavailable - pg 11-1	ccs
0	--	4/14/10	Transfer to Marietta (was LT1923X1 2/15/07)	ccs
REV	ECR/ECN	DATE	DESCRIPTION	By



Important Read this instruction manual. Failure to read, understand and follow the instructions in this manual may result in damage to the unit, injury to operating personnel, and poor equipment performance. ▲

Caution All internal adjustments and maintenance must be performed by qualified service personnel. ▲

Material in this manual is for information purposes only. The contents and the product it describes are subject to change without notice. Thermo Fisher Scientific makes no representations or warranties with respect to this manual. In no event shall Thermo be held liable for any damages, direct or incidental, arising out of or related to the use of this manual.

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Important operating and/or maintenance instructions. Read the accompanying text carefully.



Potential electrical hazards. Only qualified persons should perform procedures associated with this symbol.



Equipment being maintained or serviced must be turned off and locked off to prevent possible injury.



Hot surface(s) present which may cause burns to unprotected skin, or to materials which may be damaged by elevated temperatures.



Marking of electrical and electronic equipment, which applies to electrical and electronic equipment falling under the Directive 2002/96/EC (WEEE) and the equipment that has been put on the market after 13 August 2005.



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- ✓ Always use the proper protective equipment (clothing, gloves, goggles, etc.)
- ✓ Always dissipate extreme cold or heat and wear protective clothing.
- ✓ Always follow good hygiene practices.
- ✓ Each individual is responsible for his or her own safety.

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Regardless of your needs, our professional telephone technicians are available to assist you Monday through Friday from 8:00 a.m. to 6:00 p.m. Eastern Time. Please contact us by telephone or fax. If you wish to write, our mailing address is:

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Marietta, OH 45750

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Section 1 Safety Information

This manual contains important operating and safety information. The user 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 Thermo Scientific products.

Your MEGA-PURE 3A Water Still has been designed with function, reliability, and safety in mind. It is the user's responsibility to install it in conformance with local electrical codes. For safe operation, pay attention to Notes, Cautions, and Warnings throughout the manual.

Warnings

To avoid electrical shock, always:

1. Use a properly grounded electrical outlet of correct voltage and current handling capacity.
2. Disconnect from the power supply prior to maintenance and servicing.
3. 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.
4. Do not mount your MEGA-PURE 3A 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.
5. For continued protection against possible fire hazard, replace fuses only with the same type and rating of fuse.
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. Glass portions of still become hot when still is operating. To avoid burns, do not touch hot glass.
3. Wear eye and hand protection when using acid for cleaning, as acid spattering may occur. Failure to comply could result in explosion and personal injury.
4. Use this device with water feed only.
5. Ensure all piping connections are tight to avoid leakage of chemicals.
6. Always depressurize chemical lines before disassembly.
7. To avoid lung injury or suffocation, ensure adequate ventilation when using chemicals for cleaning.
8. Follow carefully the manufacturers' safety instructions on labels of chemical containers and Material Safety Data Sheets (M.S.D.S.).
9. Caution - Hot Surface. Avoid. Glass portions of still become hot when still is operating. To avoid burns, do not touch hot glass.
10. Refer servicing to qualified personnel.

To ensure safe mounting:

Wall and bench 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 85 lbs.; inadequate support and/or fasteners may result in damage to mounting surface and/or equipment. If unsure of mounting surface composition, condition and construction, or correct fasteners, consult your building maintenance group or contractor.

Section 2 Specifications

Electrical

ModelA440696

Power208V, 50/60 Hz, 2.5KW, 11A

ModelA440367

Power220-240V, 50/60 Hz, 2.5KW, 11A

Dimensions

Width58.4 cm (23")

Depth30.5 cm (12")

Height114.3 cm (45")

Clearance Requirements

Sides15.4 cm (6") minimum for servicing

Above . .15.4 cm (6") minimum for removal of top cover & air circulation

Product Water

3.4 liters per hour of high purity distilled water

Environmental Conditions

Operating:

17°C to 30°C; 20% to 80% relative humidity, non-condensing.

Installation Category II (over-voltage) in accordance with IEC 664.

Pollution Degree 2 in accordance with IEC 664.

Altitude limit:2,000 meters.

Storage: -25°C to 65°C; 10% to 85% relative humidity

Declaration of Conformity (for 220-240 volt, -33 CE models only)

We hereby declare under our sole responsibility that this product conforms with the technical requirements of the following standards:

EMC:

EN 61000-3-2 Limits for Harmonic Current Emissions

EN 61000-3-3 Limits for Voltage Fluctuations and Flicker

EN 61326-1 Electrical Equipment for Measurement, Control and Laboratory Use - Part I: General Requirements

Safety:

EN61010-1 Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use - Part I: General Requirements

EN61010-2-010 Part II: Particular requirements for laboratory equipment for the heating of materials.

per the provisions of the Electromagnetic Compatibility Directive 89/336/EEC, as amended by 92/31/EEC and 93/68/EEC, and per the provisions of the Low Voltage Directive 73/23/EEC, as amended by 93/68/EEC.

Copies of the Declaration of Conformity are available upon request.

Section 3 Introduction

The Thermo Scientific MEGA-PURE 3A Water Still is a compact, all glass and PTFE unit designed to provide approximately 3.4 liters per hour of high purity distilled water. The product water, as produced, is non-pyrogenic per U.S.P. XIX and will have a resistivity up to 1.7M ohm-cm or higher at the product outlet, using most tap water as feed. Pretreatment may be required to achieve >1.0M ohm/cm water. This water still can be used as a discrete unit, with customer supplied pretreated water, or in conjunction with a Thermo Scientific Demineralizer. It can also be connected to the Thermo Scientific Automatic Collection System for complete automatic operation.

The MEGA-PURE 3A Water Still is rated at 220-240V, 50/60 Hz, 2500 watts, single phase. It is also available in 208V. Changing the unit for use on either 220-240V or 208V operation requires only replacing the Vycor® immersion heater with a heater having the required voltage rating.

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

Choice of a location for your MEGA-PURE 3A Water Still is primarily a matter of convenience. This unit may be located on a bench or wall mounted.

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Warning Do not connect unit to power source until instructed to do so. ▲

Electrical Requirements

To operate the MEGA-PURE 3A Water Still, the customer must provide a power source of single phase, 50/60 Hz. 15 amp, 208 - 240VAC.

Your water still is supplied with a power cord and plug. A certified electrician should install a receptacle box within 5 feet of the still. The correct receptacle to match the supplied plug is a Hubbel #5661. Figure 3-1 shows proper wiring for this receptacle.

As an alternate method, your electrician may remove the supplied plug and wire the cord to a 15A-250V breaker box as shown in Figure 3-2.

The electrical controls have been designed to operate on voltages between 208 and 240 volts AC. The Vycor® immersion heater will be labeled either 208V or 240V, according to your order. The 240 volt heater may be used at 208V, 220V, 230V, or 240V, but at the lower voltages, there will be some reduction in the volume of distilled water produced. Exchange an improperly ordered heater with your dealer. Used heaters cannot be exchanged.

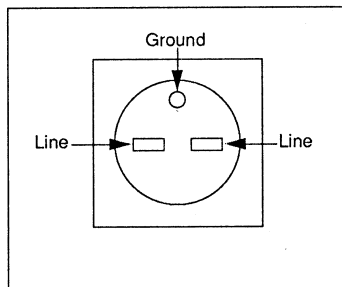


Figure 3-1. Receptacle

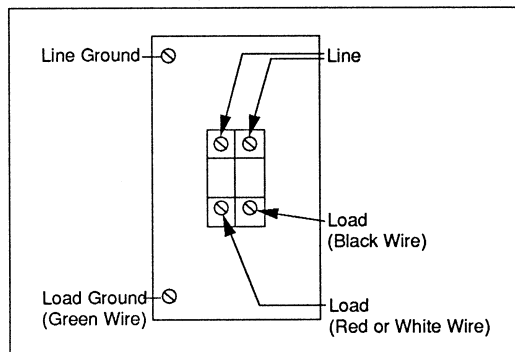


Figure 3-2. 15A-250V Breaker Box

Caution Never use 208V heaters on voltage higher than 208 volts as premature heater failure will occur. ▲

Water Supply Requirements

We recommend one of the following options for supplying water to operate your MEGA-PURE 3A Water Still.

OPTION #1

A single, untreated cold water supply. The supply must be capable of providing a minimum of 7 gallons per hour at a pressure of 20-100 psi and be located within 4 feet of the MEGA-PURE® 3A Water Still. You must provide a shut off valve and reducer as shown in Figure 3-3.

With Option #1, approximately 7 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 in “Feedwater Connections”.

OPTION #2

An untreated cold water supply plus a source of reverse osmosis, demineralized or previously distilled water. The untreated supply must be capable of providing a minimum of 7 gallons per hour at a pressure of 20-100 psi and be located within 4 feet of the water still. The treated supply must be capable of providing 1 gallon 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 3-3). In addition, you will require the optional double solenoid valve kit.

With Option #2, approximately 7 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 in “Feedwater Connections”.

Drain

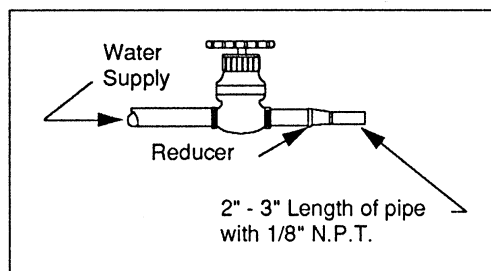


Figure 3-3. Reducer

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

Section 4 Unpacking

Caution Do not use NaCl regenerated water softeners to supply boiler feed as alkali attack will shorten heater life. ▲

1. Remove parts box and still from shipping carton and place on workbench.
2. Remove the two (2) shipping screws located on upper back of unit and discard. Turn two (2) cover fasteners located on the lower front of unit $\frac{1}{4}$ turn counterclockwise, and lift cover out and up to remove. Set cover aside.
3. 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 4-1 for the following steps:

4. 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 P, and one (1) on the trap U.
6. Using a $\frac{7}{16}$ " wrench, loosen the nut (all the way) on coupling C. While holding onto condenser, remove springs Y. Carefully remove condenser from coupling and cabinet.
7. Remove tape from the condenser outlets. Allow the salt used as packing to flow into the plastic bag around the condenser. Discard the bag and salt. Rinse the remaining salt residue from the condenser.

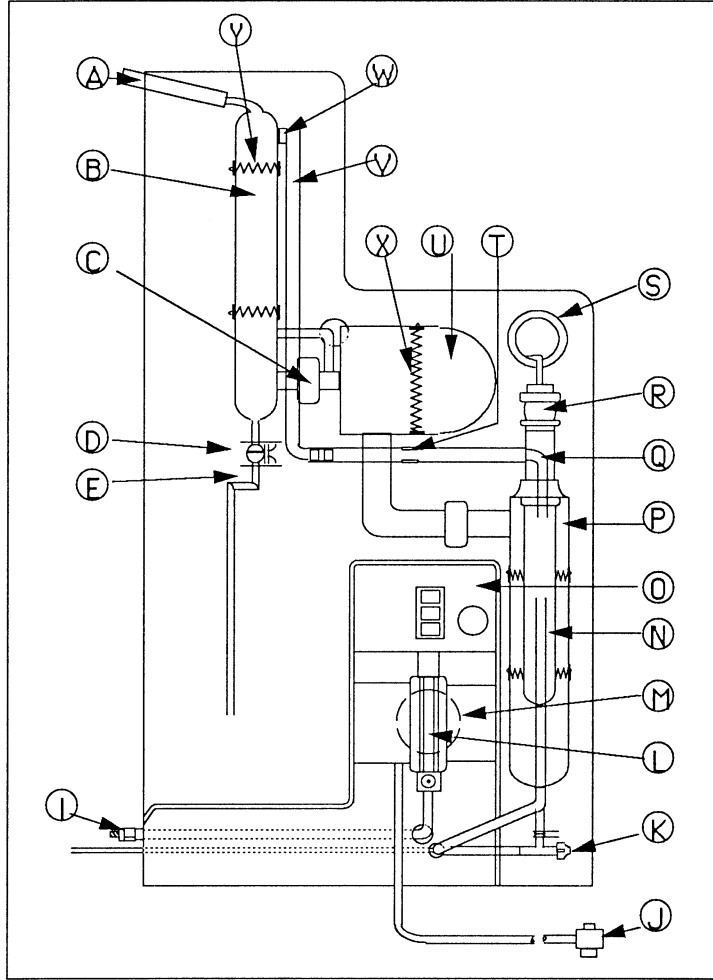


Figure 4-1. Component Locations

Section 5 Assembly

Tools required for assembly: 7/16" open end wrench, diagonal cutting pliers, common screwdriver. Refer to Figure 4-1 for component locations.

1. Re-install the condenser B into the coupling C and clamp condenser in place with springs Y.
2. Tighten coupling C using 7/16" wrench. Coupling should be just tight enough to prevent rotation with moderate hand pressure.
3. Check orientation of trap U. If it is not level or tilted back toward the boiler as shown in Figure 4-1, move the condenser B up in its bracket. This will tilt trap as shown.
4. In the following steps, use warm water on connections for ease of assembly.
 - a. Connect tube V to upper right condenser tubulation using PTFE connector W.
 - b. Connect vinyl tubing from flowmeter to lower right tubulation of condenser.
5. Remove packing material and rotate tube Q into the constant level chamber of boiler P as shown in Figure 4-1.
6. Unpack the Vycor® immersion heater R 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 correct heater.
7. Insert immersion heater into the top opening of boiler P as shown in Figure 4-1.
8. Thread heater plug and cord through the large hole above the boiler P, then back through the hole below the control box O. Plug heater plug into receptacle on bottom of control box. Plug is twist-lock type and requires ¼ clockwise turn to lock in place.
9. Route water supply and drain tubing through side of cabinet.

Refer below if you will be using a source of pretreated water as boiler feed or optional 3½ gallon storage bottle is being installed.

If neither applies, move assembled still to its final location. See layout recommendations and plumbing details.

Pretreated Boiler Feed

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

1. Remove boiler fill tubes V and Q and set aside.
2. Locate the 3/8" I.D. x 44" long vinyl tubing and one barbed tee (1/2 x 1/2 x 3/8) in parts box.
3. Install one end of the vinyl tubing to the top right tubulation on condenser B and route the other end through the cabinet and down the back as shown in Figure 5-1.
4. Cut the 1/2" I.D. vinyl drain tubing and install barbed tee. Connect 3/8" I.D. vinyl tubing from condenser to barbed tee. Push vinyl tubing all the way onto tee to assure a leak-free seal.
5. If the 3½ gal. storage bottle is not being installed, move the still to its final location. See Figure 5-3 for layout recommendations and following sections for final plumbing details.

3½ Gallon Storage Bottle

To install the optional 3½ gallon storage bottle inside the 3 liter still cabinet, first locate the following parts:

Bottle dust cover F

Product delivery tube E

Thomas clamp D

20" length of 1/2" vinyl tubing

Plastic tee (1/2 x 1/2 x 1/2)

1. Place bottle dust cover on 3½ gallon bottle and route product delivery tube through hole in cover. Place this assembly inside still cabinet below condenser B and connect product delivery tube to condenser with clamp D .
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 tubing and drain as shown in Figure 5-2.
3. Move still to its final location. See Figure 5-3 for layout recommendations. See following sections for final plumbing details.

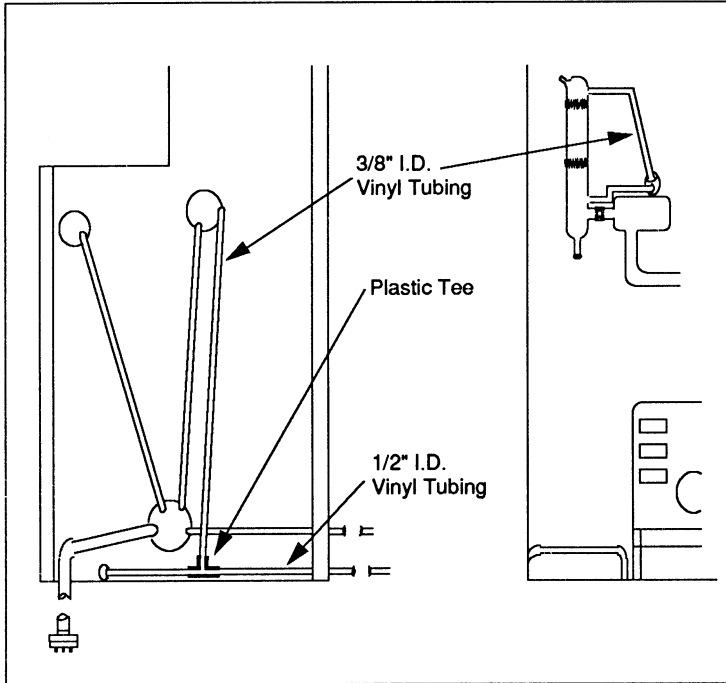


Figure 5-1. Vinyl Tubing Route

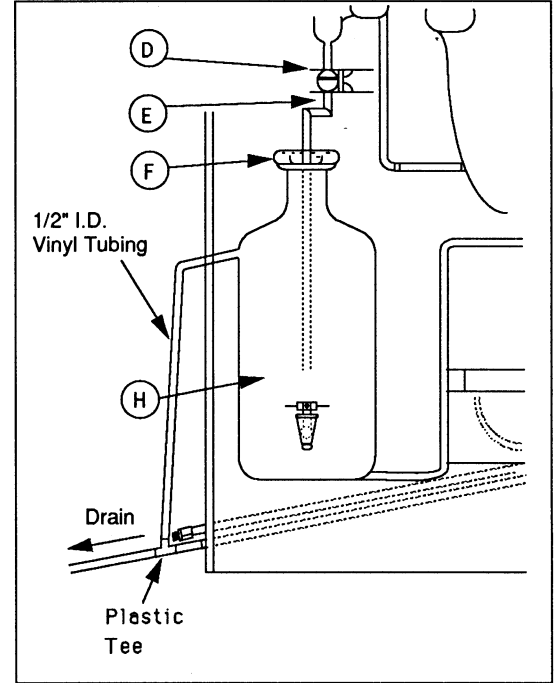


Figure 5-2. Drain

Automatic Collection System (ACS)

Before connecting your MEGA-PURE® 3A Water Still to the Thermo Scientific Automatic Collection System, move the still to its final location.

Locate ACS tube Z and Thomas clamp D in the parts box. Assemble to tubing from collection system as shown in Figure 5-3.

Plug input jack from ACS into ACS receptacle on bottom of still control box O. See following sections for final plumbing details.

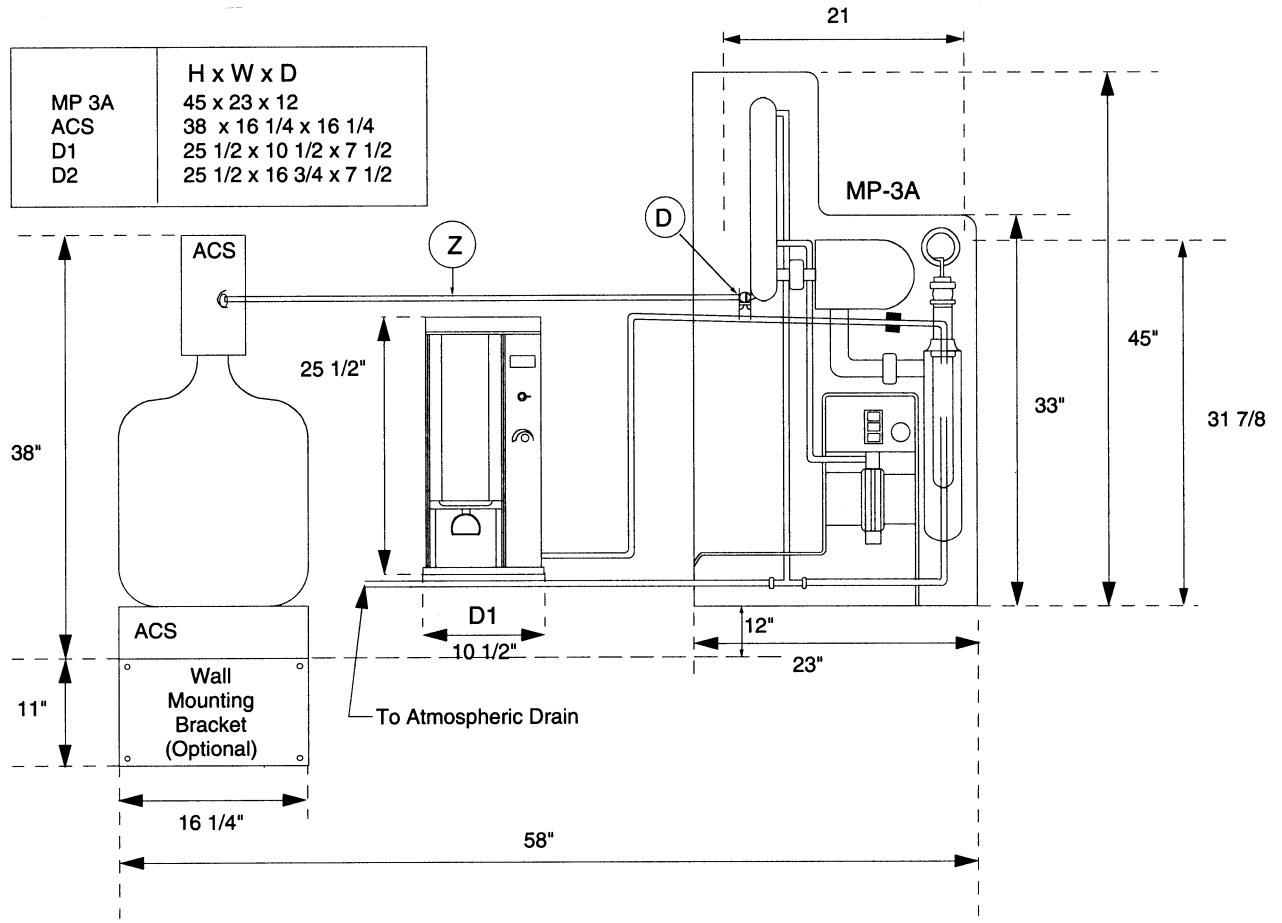


Figure 5-3. Layout Recommendation

Plumbing Details

Tap Water Feed Only - Figure 5-4

1. Thread solenoid valve onto customer supplied shutoff, "IN" side towards shutoff.
2. Install 1/4" O.D. tubing and supplied fitting to "OUT" side of solenoid valve.
3. Route 1/2" I.D. vinyl tubing to atmospherically vented drain.
4. Plug solenoid valve power cord (not shown) into receptacle in control box O.

Plumbing Details (continued)

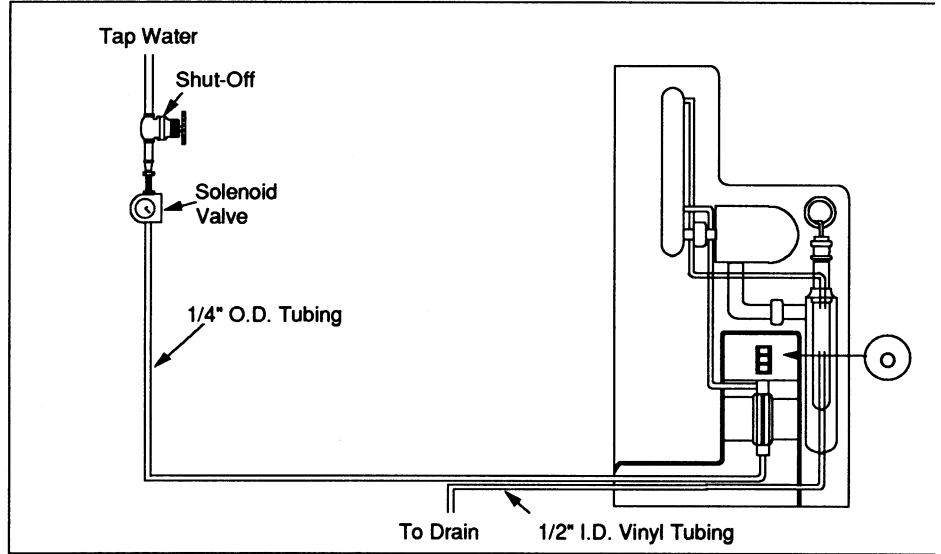


Figure 5-4. Tap Water Feed

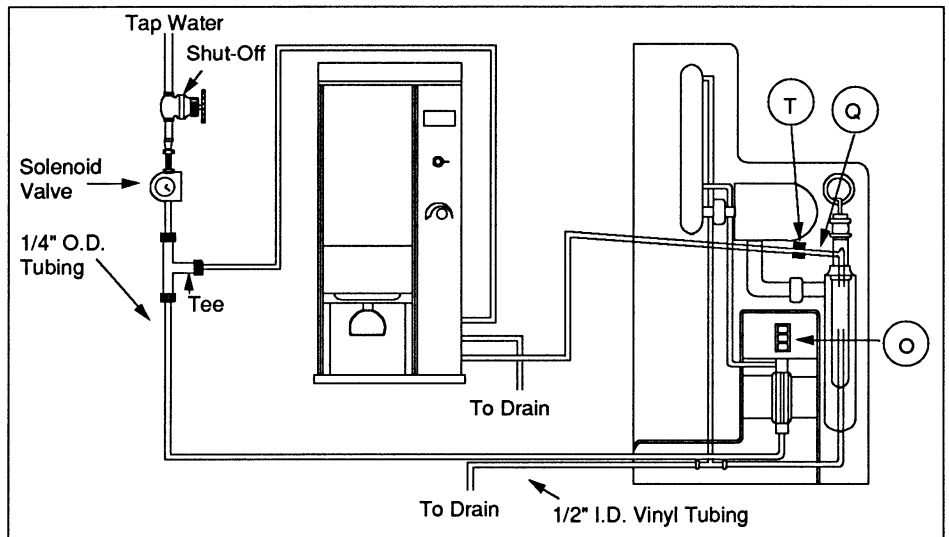


Figure 5-5. Tap Water with Demineralizer

Tap Water with Demineralizer - Figure 5-5 (must have optional still adapter kit)

1. Thread solenoid valve ("IN" side towards shutoff) onto customer supplied shutoff.
2. Install 1/4" O.D. tubing and supplied fitting to "OUT" side of solenoid valve.
3. Cut 1/4" O.D. tubing from last step at convenient point and install tee from still adapter kit.

Tap Water with Demineralizer (continued)

4. Connect ¼" O.D. tubing from demineralizer to tee.
5. Locate boiler fill tube Q. Connect 3/8" I.D. vinyl tubing from demineralizer output to end of boiler fill tube. Route as shown and install clip T to support.
6. Route ½" I.D. vinyl tubing to atmospherically vented drain.
7. Plug solenoid valve power cord (not shown) into receptacle in control box O.
8. Plug still adapter kit cable into right side of demineralizer and receptacle in control box O.

In-House Treated Tap Water - Figure 9 (must have optional double solenoid valves)

1. Thread solenoid valves ("IN" side towards shutoff) onto customer supplied shutoffs.
2. Install ¼" O.D. tubing and supplied fitting to "OUT" side of solenoid on tap water.
3. Connect fitting and 3/8" I.D. vinyl tubing from double solenoid valve kit to "OUT" side of treated water supply.

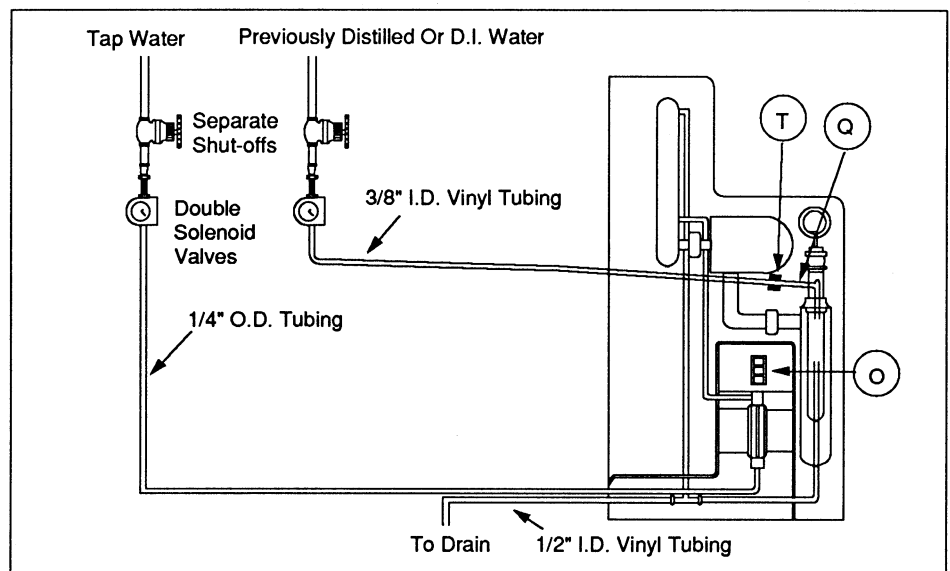


Figure 5-6. Double Solenoid Valves

In-House Treated Tap Water (continued)

4. Locate boiler fill tube Q. Connect 3/8" I.D. from treated water supply solenoid to end of boiler fill tube. Route as shown and install clip T to support.
5. Route 1/2" I.D. vinyl tubing to atmospherically vented drain.
6. Plug solenoid valve power cord (not shown) into receptacle in control box O.

Section 6 Installation

Space allotment for a still should include a 6" clearance at the sides and top to allow for cover removal and air circulation.

Wall Mounting

The MEGA-PURE 3A Water Still has slotted holes for wall mounting. To support the weight of this unit, use ¼" x 1¼" lag bolts for mounting. An optional wall mounting bracket is available for the Automatic Collection System (ACS). Demineralizers have slotted holes for wall mounting.

Warning Do not mount your MEGA-PURE 3A 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. ▲

Warning 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 85 lbs.; inadequate support and/or fasteners may result in damage to mounting surface and/or equipment. If unsure of mounting surface composition, condition and construction, or correct fasteners, consult your building maintenance group or contractor. ▲

Bench Mounting

The MEGA-PURE 3A Water Still has bench mounting flanges located at the bottom of the cabinet. When used with the ACS, the MEGA-PURE 3A Water Still must be mounted to a secure 12" platform to allow for gravity feed of distilled water to the ACS.

Warning Replace front protective cover before proceeding.

Section 6
Installation

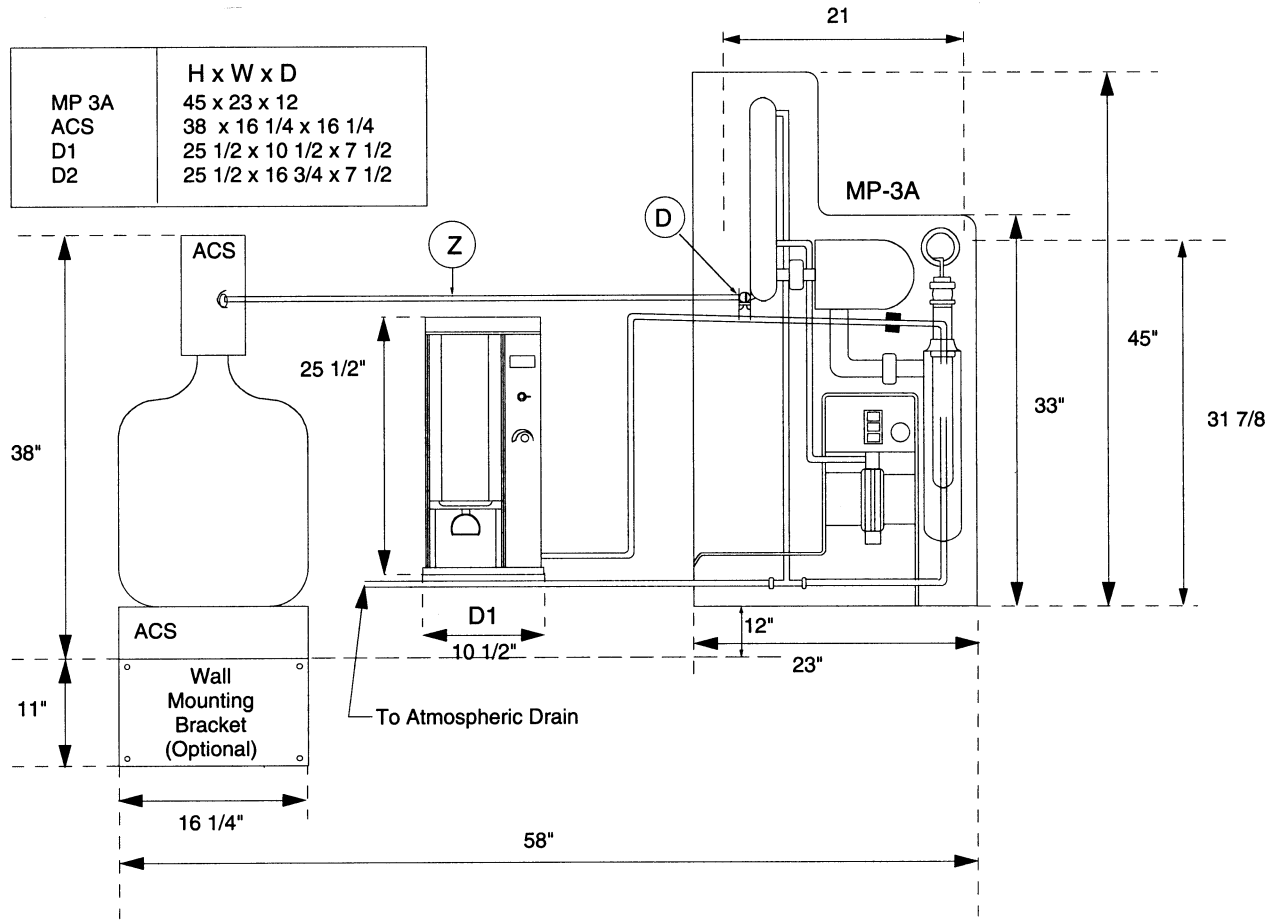


Figure 6-1. Layout Recommendations

Section 7 Operation

Plug electrical power cord into 208V, 220V or 240V, 15 amp receptacle. Refer to Figure 7-1.

1. Close drain stopcock K on bottom of boiler P.
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 O and allow boiler to fill. Set Flowmeter L to approximately 450 cc/min.
5. Push "OPERATE" switch. Light will light and heaters will come on.
6. Allow still to operate for 15-20 minutes. For distillate at maximum purity set flowmeter L at 450 cc/min. For maximum volume of distillate increase flow at flowmeter L to the point where only a slight wisp of steam is visible at the condenser vent A.
7. Your MEGA-PURE 3A 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

Warning 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. Failure to comply could result in explosion and personal injury. ▲

Warning Use this device with water feed only. ▲

Warning To avoid electrical shock, always 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. s

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

Note Pretreated feedwater-flow rate should be adjusted so as to “just maintain a full boiler.” Too fast a flow water will exhaust pretreatment cartridges prematurely. ▲

Note Under most feedwater conditions, the 450 cc/min. flow rate will provide greater than 60°C temperature at the condenser vent. Very cold feedwater may require slightly less than 450 cc/min. to maintain vent temperature above 60°C. To optimize product water purity, use to verify vent temperature to >60°C. ▲

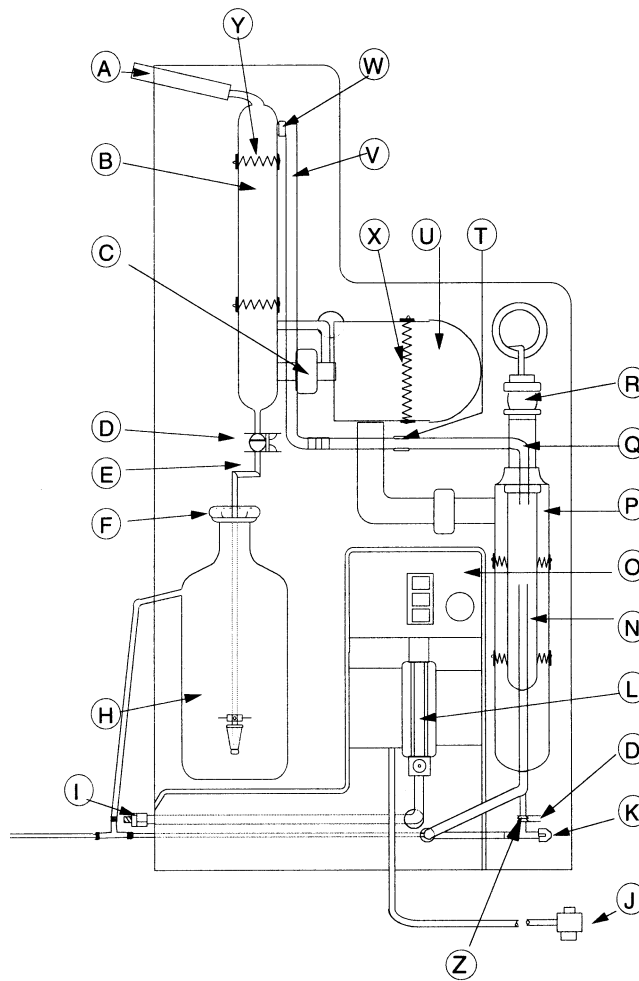


Figure 7-1. Still Schematic

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 difficulty still exists, consult Troubleshooting section of this manual.

High Temperature Cut-off Switch

Your MEGA-PURE 3A Water Still is protected against overheating by a thermal switch located in the control box at the left 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 "WATER" and "OPERATE" switches to restore normal operation. Check boiler occasionally for proper water level.

Caution Always allow the unit to cool completely before resuming operation. Cool water on hot glass could cause boiler damage. ▲

Caution Do not use the flowmeter to turn the water off. ▲

Section 8 Maintenance and Servicing

For top performance and efficiency, the MEGA-PURE 3A 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. Perform this procedure 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 2/3 by opening stopcock K. Close stopcock K after boiler has completely drained.
4. Use the spare pinch clamp from the parts box to shut off overflow tube from constant level chamber N as close as possible to overflow stem.
5. Carefully pour approximately 250 ml. of 10% hydrochloric acid solution into top of constant level chamber N.
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. If scale remains that the 10% hydrochloric solution will not remove, rinse boiler three times with feedwater (fill and drain). Add 300 ml of 6% NaOH to boiler and let stand for 30 minutes. Flush boiler several times after draining. May need to add feedwater to bring cleaning solution up to scale level.
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.

Warning To avoid lung injury or suffocation, ensure adequate ventilation when using chemicals for cleaning. Wear eye and hand protection when using acid for cleaning, as acid spattering may occur. ▲

Warning To avoid electrical shock, always disconnect from power supply before maintenance and servicing. Refer servicing to qualified personnel. For continued protection against possible fire hazard, replace fuses only with the same type and rating of fuse. ▲

Section 9 Troubleshooting

Electrical

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

1. Disconnect the demineralizer and jacks from the still control box and attempt to run the still. If still fails, see "Still Troubleshooting." If still runs, go on to the next step.
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." If still runs, see "Automatic Collection System."

Still Troubleshooting

Problem	Causes	Solution
Heaters and water will not stay on.	Hi-temp cut-off switch open.	Remove control box and replace switch.
Heater not working.	Heater burned 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.	Lights burned out.	Replace switches (switches will operate without lights)
Fuse blown.	Heater shorted.	Check heater (19 ohms for 208V or 22 ohms for 240V) and replace.
	High voltage.	Check input voltage against heater rating. Correct.
Unit off, but water still flowing.	Solenoid valve installed backwards.	Solenoid labeled "in" on input side. Check.

General Troubleshooting

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 to the plastic connectors.
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.
Heater Failure. <i>Heater failure due to scale build-up or alkali attack will not be replaced under warranty.</i>	<p>Short life on Vycor® 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® 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>	If softened water must be used, heater life can be prolonged somewhat by draining boiler every day.
	Scale build-up will occur when boiler feed is not being deionized.	When using the still without the 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.
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 at flowmeter L.

General Troubleshooting (continued)

Problem	Causes	Solution
No Steam at Condenser Vent.		If no steam is visible, decrease flow rate at flowmeter L.
Water Pressure Variations.	Pressure fluctuations in your tap water line will cause erratic reading in the flowmeter 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 3 Liters/Hr.	Heaters rated 208V or 240V will produce in excess of 3 liters/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	

Still Troubleshooting

Problem	Causes	Solution
Heaters and water will not stay on.	Hi-temp cut-off switch open.	Remove control box and replace switch.
Heater not working.	Heater burned 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.	Lights burned out.	Replace switches (switches will operate without lights)
Fuse blown.	Heater shorted.	Check heater (19 ohms for 208V or 22 ohms for 240V) and replace
	High voltage	Check input voltage against heater rating. Correct.
Unit off, but water still flowing.	Solenoid valve installed backwards.	Solenoid labeled "in" on input side. Check.

Demineralizer Troubleshooting

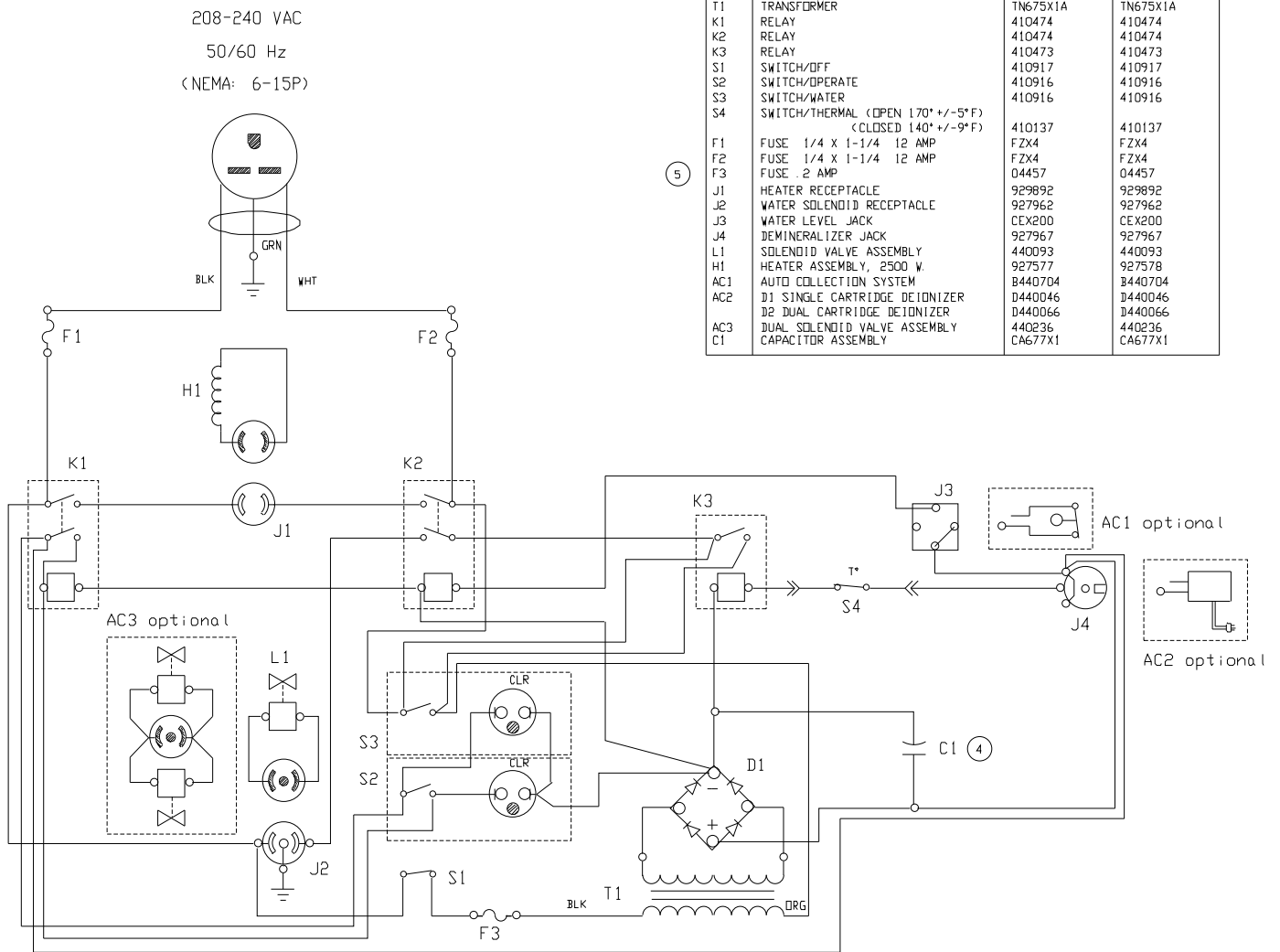
Problem	Causes	Solution
Still will not operate.	Cartridge expended. Red light burnt out. Relay contacts open. No power.	Change cartridge. Check light & replace. If operational, clean contacts. If not, replace. Check fuse.
No green light.	Green light burnt out.	Check & replace. Check ohm rating of light on circuit board.
Still on with red light on demineralizer.	Relay contacts closed. Input jack not plugged in.	Check and replace. Check and reconnect.
Both lights on, or good lights will not light, or erratic light operation.	Printed circuit board.	Replace.

Automatic Collection System Troubleshooting

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

DIAGRAM COMPONENT LIST

REF. NO.	DESCRIPTION	MODEL NO. AND OUR PART NO. (S)	
		A440367, 240V	A440696, 208V
D1	BRIDGE RECTIFIER	SCX82	SCX82
T1	TRANSFORMER	TN675X1A	TN675X1A
K1	RELAY	410474	410474
K2	RELAY	410474	410474
K3	RELAY	410473	410473
S1	SWITCH/OFF	410917	410917
S2	SWITCH/OPERATE	410916	410916
S3	SWITCH/WATER	410916	410916
S4	SWITCH/THERMAL (OPEN 170° +/-5°F) (CLOSED 140° +/-9°F)	410137	410137
F1	FUSE 1/4 X 1-1/4 12 AMP	FZX4	FZX4
F2	FUSE 1/4 X 1-1/4 12 AMP	FZX4	FZX4
F3	FUSE .2 AMP	04457	04457
J1	HEATER RECEPTACLE	929892	929892
J2	WATER SOLENOID RECEPTACLE	927962	927962
J3	WATER LEVEL JACK	CEX200	CEX200
J4	DEMINERALIZER JACK	927967	927967
L1	SOLENOID VALVE ASSEMBLY	440093	440093
H1	HEATER ASSEMBLY, 2500 W.	927577	927578
AC1	AUTO COLLECTION SYSTEM	B440704	B440704
AC2	D1 SINGLE CARTRIDGE DEIONIZER D2 DUAL CARTRIDGE DEIONIZER	D440046 D440066	D440046 D440066
AC3	DUAL SOLENOID VALVE ASSEMBLY	440236	440236
C1	CAPACITOR ASSEMBLY	CA677X1	CA677X1



Warning To avoid electrical shock, always disconnect from power supply before maintenance and servicing. Refer servicing to qualified personnel. ▲

Model Type:A440696 or A440367

Product Name:MEGA-PURE® 3A Water Still

Series Number:675

Glass Replacement Parts		
Item	Description	Part No.
E	Product Delivery Tube	401185
P	Boiler	401204
U	Steam Trap	401205
B	Condenser	401206
V	Boiler Fill Tube (Condenser to Connector)	401217
Q	Boiler Fill Tube (Connector to Boiler)	401218
z	Auto Collection Sys. (ACS) Tube	410915
F	Bottle Dust Cover	413935
R	VYCOR Immersion Heater, 240V-2500W	740883
K	Drain Stopcock Assembly	410038

Hardware Replacement Parts		
Item	Description	Part No.
W	PTFE Glass Connector, 7/16" I.D.	401416
C	Drainline Coupling, 1-1/2" 409169	
	Hi-Pressure Tubing, 1/4" O.D. x 5' Long	410126
D	#18 Thomas Clamp	410141
L	Flowmeter	410152
—	Plastic "Tube Fitting" Assortment	410447
X	Boiler and Trap Springs	410918
Y	Condenser Springs	410919
T	Boiler Fill Tube Clip	410921

Electrical Replacement Parts		
Item	Description	Part No.
—	Hi-Temp Cut-Off Switch	410137
—	Fuse, 12A-250V ABC	FZX4
—	Bridge Rectifier	410471
—	Transformer	410472
R-1	Relay	410473
R-2 & 3	Relay	410474
—	Water and Operate Switches	410916
—	Power Off Switch	410917
J	Solenoid Valve Assembly	440093
O	Electrical Control Box Complete	440717
—	12 Amp Fuse Holder	FZX9
—	DI and ACS Jack Assembly	CE675X1A

Optional Accessories		
Item	Description	Part No.
H	3-1/2 Gallon (Manual) Storage Bottle	413934
—	Double Solenoid Valve Assembly	440236
Z	Drain Assembly O-Ring	GSX29

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Ordering Procedures

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 Thermo Scientific dealer from whom you purchased this unit or can be obtained promptly from the factory. When service or replacement parts are needed, check first with your dealer. If the dealer cannot process your request, then contact our Technical Services Department.

Prior to returning any materials, please contact our Technical Services Department for a "Return Materials Authorization" number (RMA). Material returned without an RMA number will be refused.

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S C I E N T I F I C