A.O.Smith
Water Heaters

CIRCULATING LOOP HEAT EXCHANGER MANUAL

PROMAX® XL MODELS

- **Installation**
- **Operation**
- **Maintenance**

Fill in the Rating Pate Information Here:

MODEL NO._____

SERIAL NO._____

INSTALLATION DATE_____
Month Day Year

⚠ CAUTION

PLEASE READ THOROUGHLY BEFORE INSTALLING AND USING THIS APPLIANCE.

Fill in the Installation Information Here:

INSTALLER_____

STREET ADDRESS_____

CITY/STATE/ZIP_____

PHONE #_____

DISTRIBUTOR_____

STREET ADDRESS_____

CITY/STATE/ZIP_____

PHONE #_____

SAVE THIS MANUAL FOR FUTURE REFERENCE.

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GENERAL INFORMATION

This manual contains instructions for the installation, operation and maintenance of the Promax® XL Heat Exchanger. Read it carefully before installing or using and keep it for future reference.

Intended Applications

The XL Series of heat exchangers provide the means to obtain an isolated source of hot water for radiant floor or wall heating, hydronic air handling units and other closed loop applications. The product line includes single wall and atmospherically vented double wall heat exchangers with two separate btuh inputs for each. The XL Series is intended for connection with the A.O. Smith Promax® SL line of gas-fired water heaters. This unit is not to be connected to pool or spa systems having highly chlorinated water.

Rating Plate

A rating plate identifying the heat exchanger will be found on the front of the unit. When referring to the heat exchanger, always have the information listed on the rating plate readily available.

Customer Responsibilities

Please take the time to read not only this manual but also the warranty sheet enclosed. Warranty of the Promax XL heat exchanger and its parts will depend on proper installation, maintenance and operation. Furthermore, the warranty shall be void if the design or structure of the heat exchanger is, or is attempted to be, modified or altered in any way, including, but not limited to, by attaching non-Company approved appliances or equipment. The manufacturer of this heat exchanger will not be liable for any damages because of failure to comply with the installation and operating instructions outlined on the following pages. Use them as a guide to check the propriety of the heat exchanger installation. You will need to maintain the heat exchanger and water heater as outlined in their respective manuals. Equipment in this carton was inspected and verified to be in good condition at the time it left the factory. When received, a visual inspection of the equipment should be made and any damage noted on the delivery receipt. A damage claim should be filed immediately with the carrier.

ALL TECHNICAL AND WARRANTY QUESTIONS SHOULD BE DIRECTED TO THE LOCAL DEALER FROM WHOM THE HEAT EXCHANGER WAS PURCHASED. IF YOU ARE UNSUCCESSFUL, PLEASE WRITE TO:

Repair Parts

For service or repair parts contact:

First: The Installing Contractor

Second: The local Distributor

AOSmith Water Products Company, Inc.
500 Lindahl Parkway
Ashland City, TN 37015
www.aosmithwaterheaters.com

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THEORY OF OPERATION

The pump on the XL unit draws water off of the top side loop connection fitting (Supply Fitting), circulates it through the primary side of the heat exchanger and back to the tank through the return connection. While passing through the heat exchanger, the water will lose from 10 to 40 degrees dependent on application. A field supplied pump on the secondary side will circulate water into the bottom fitting of the heat exchanger, out the top and through a heating distribution system such as a radiant slab or air handler. The rise in temperature for secondary side fluid is very much dependant on application but should be designed to provide 10 to 30° rise.

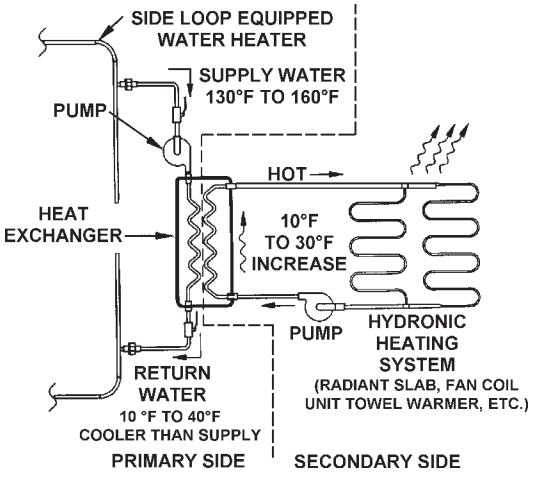


FIGURE 1

SELECTING EQUIPMENT

The Promax XL heat exchanger systems are rated at “Nominal” conditions. Their actual performance may vary significantly based on application. System design should be undertaken only by technically qualified individuals with an understanding of pumps, recirculating water piping and heating applications.

These instructions do not cover load sizing or hydronic heating requirements, but rather provide a means for selecting the correct side loop water heater and heat exchanger to provide a specific target heat output.

The RXLD Series is of vented double-wall construction for those applications where design or local codes require double isolation between fluid streams. Where applications may have a freeze potential on the secondary side piping, propylene glycol may be used to provide freeze protection.

NOTE: Ethylene glycol should not be used.

When selecting equipment for XL applications first compare the target heating capacity to the listed output for the water heaters. Prior to purchasing the water heater be sure to confirm water heater specifications with current literature for the chosen product as specifications are subject to change. Next find the target capacity on the horizontal axis of the heat exchanger performance tables on page 4. Move vertically on the chart to find the intersection of the capacity line and desired heat exchanger outlet water temperature. This is the temperature of the fluid going to the slab, coil, etc. From this intersection the flow required for the secondary loop and the temperature drop, also referred to as “Delta T” can be determined. The “Delta T” shown is the drop in fluid temperature as it passes through the target application. Once the secondary flow rate is determined, the pressure drop for the heat exchanger can be read from the chart , see Figure 2. This should be added to the pressure drop for the rest of the system to determine pumping requirements.

The tables on page 4 show heat exchanger performance for a range of temperature differentials of 10 to 30 degrees. Some applications may not work well with high differentials.

NOTE: Not all heat exchangers will fit all models of Promax SL water heaters. Refer to the Application Table to insure compatibility.

PROMAX SL	MODELS	OUTPUT	XL APPLICATIONS
STANDARD VENT	GCVH-40L	29,600	ALL XL MODELS
	GCVT-40L	35,500	ALL XL MODELS
	GCVT-50L	38,000	ALL XL MODELS
	GCVX-50L	50,050	ALL XL MODELS
	GCG-65L*	49,400	ALL XL MODELS
	FCG-75L*	57,000	ALL XL MODELS
DYNA-CLEAN II	XGV-40L	30,400	ALL XL MODELS
	XGV-50L	32,400	ALL XL MODELS
	GCVH-40Q	29,600	ALL XL MODELS
	GCVT-40Q	35,500	ALL XL MODELS
	GCVT-50Q	38,000	ALL XL MODELS
	GCVX-50Q	50,100	ALL XL MODELS
	GCG-65Q*	49,400	ALL XL MODELS
	FCG-75Q*	60,100	ALL XL MODELS
DIRECT VENT	GDVH-40L	30,000	RXLS 28 & 52 ONLY
	GDVH-50L	36,000	ALL XL MODELS
	GDVH-75L*	41,800	ALL XL MODELS
POWER VENT	GPST-40L	38,000	ALL XL MODELS
	GPST-50L	39,900	ALL XL MODELS
	GPSX-50L	47,500	ALL XL MODELS
	GPST-75L	57,000	ALL XL MODELS
POWER DIRECT VENT	GPDH-40L	30,400	RXLS 28 & 52 ONLY
	GPDT-50L	47,450	ALL XL MODELS
	GPDX-75L	53,200	ALL XL MODELS

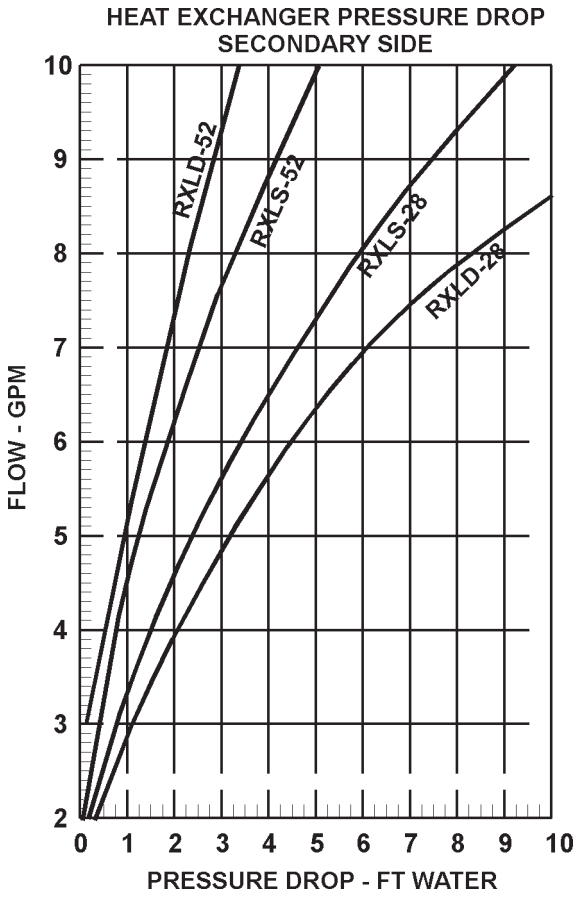
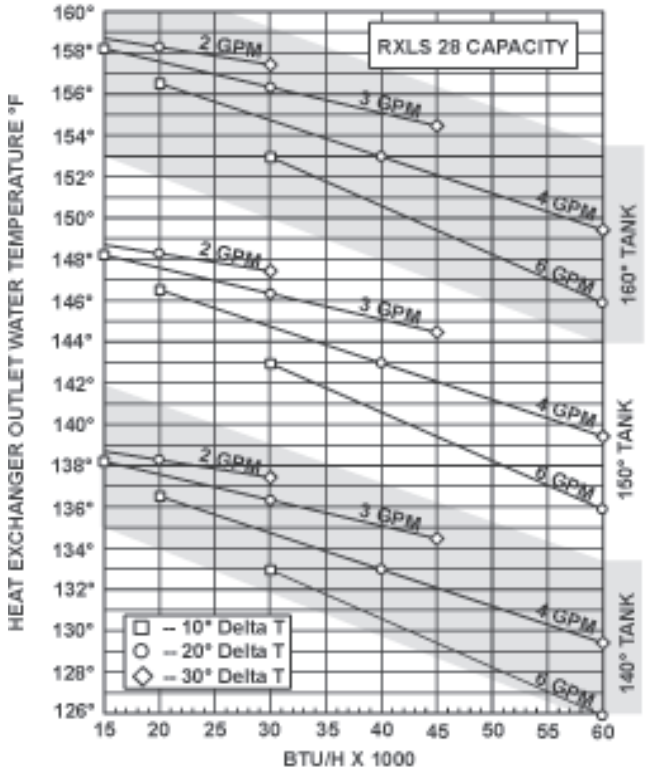


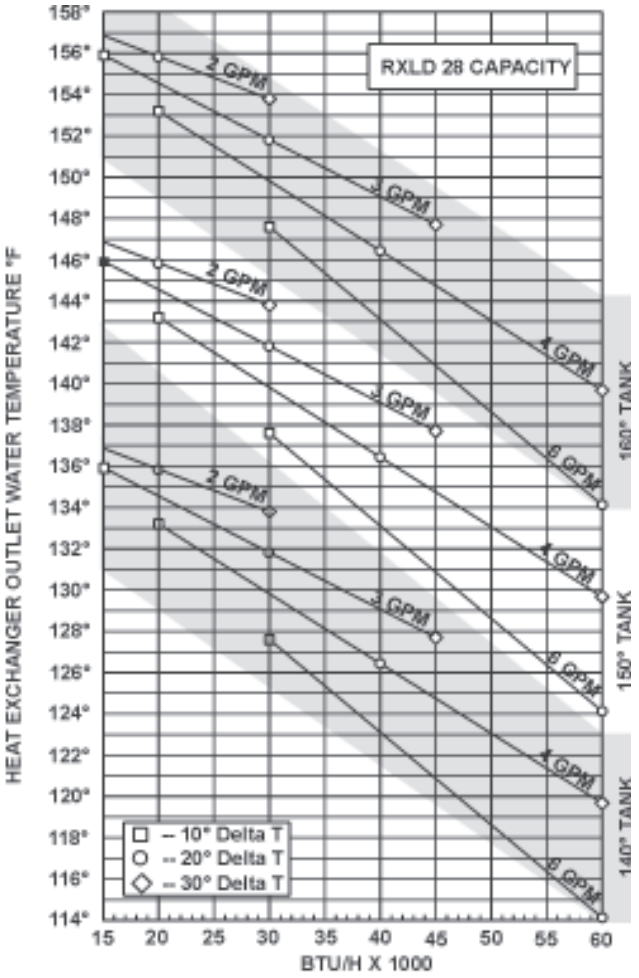
FIGURE 2

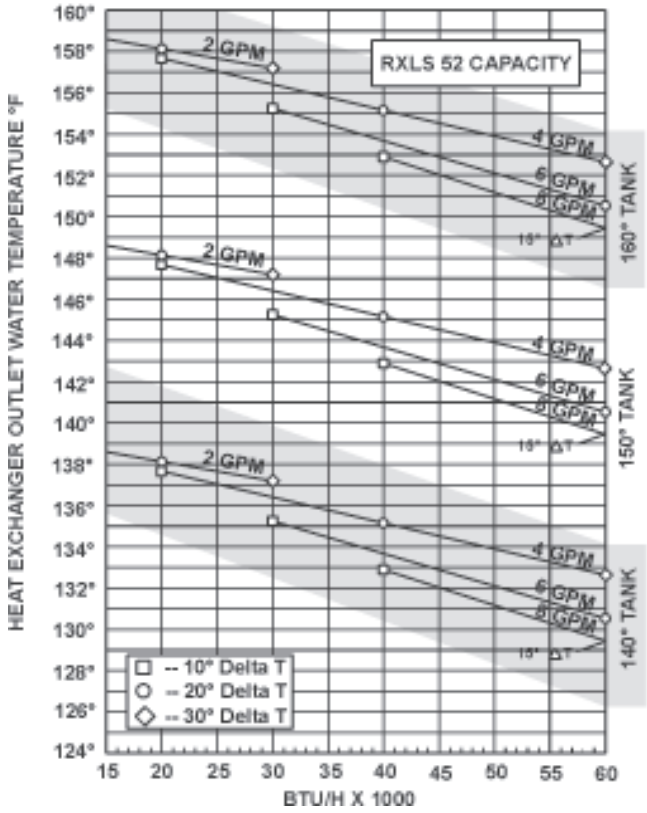
HEAT EXCHANGER PERFORMANCE

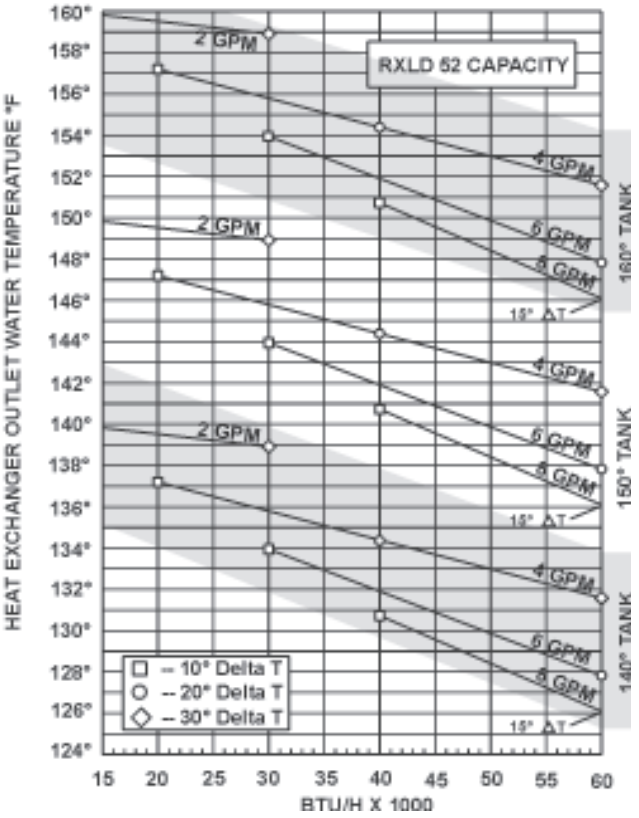
Heat exchanger temperature differentials (Delta T) are shown for reference only. Actual values can be calculated by: Delta T = Btuh/500/gpm

This will determine the difference between the heat exchanger's inlet and outlet water temperatures (Delta T).









TYPICAL INSTALLATION

System piping is application dependent. The diagrams shown reflect typical piping for the most simplistic installations. Slab and tile floor heating often require limit controls to insure fluid temperature limits are not exceeded. Refer to guidelines provided by the Hydronic Applications supplier and/or the Radiant Panel Association to avoid piping and control pitfalls. Always consult local code bodies for code requirements specific to an application or location.

Closed loop secondary side piping should always include a pressure relief valve, expansion tank, drain valve and air separation device. Installers should also provide isolation valves, purge valves, stainers and temperature regulating devices appropriate for the application.

The XL is provided with plugged, auxiliary connections on the front side of the Heat Exchanger. These are common to the primary side of the heat exchanger. These can be used as installation points for thermowells, a drain, or as connection points to flush the heat exchanger, see Figure 3.
The pump supplied with the Promax XL is powered by

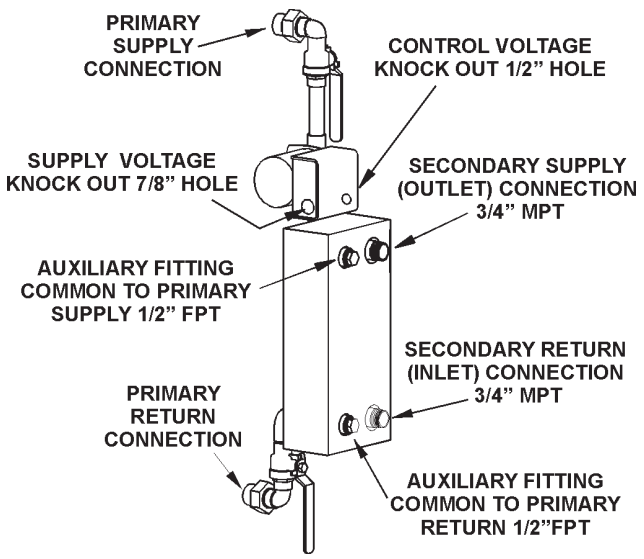


FIGURE 3

Side Loop Water Heater with Closed Loop Distribution Only

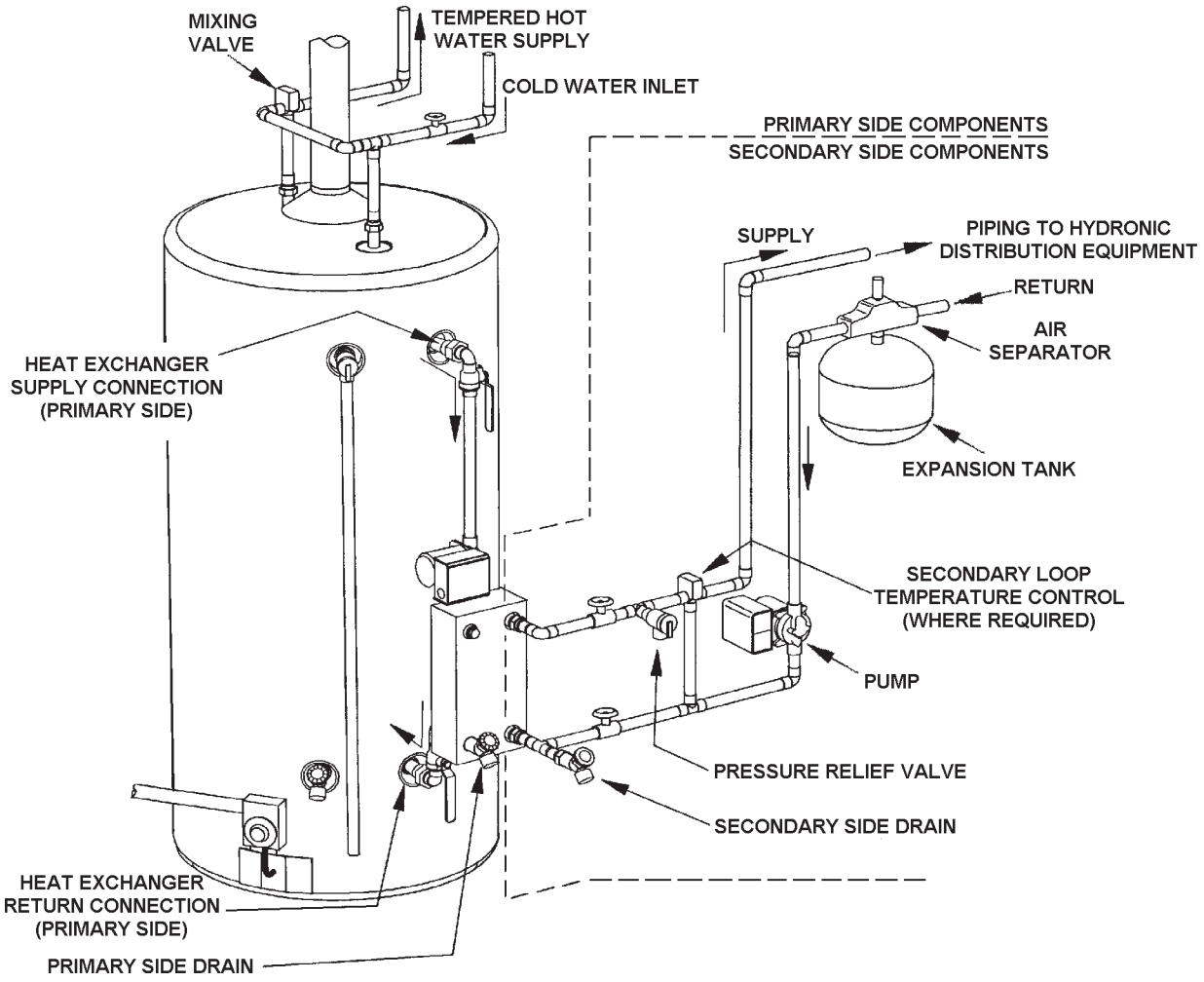


FIGURE 4

Side Loop Water Heater with Air Handler and Heat Exchanger

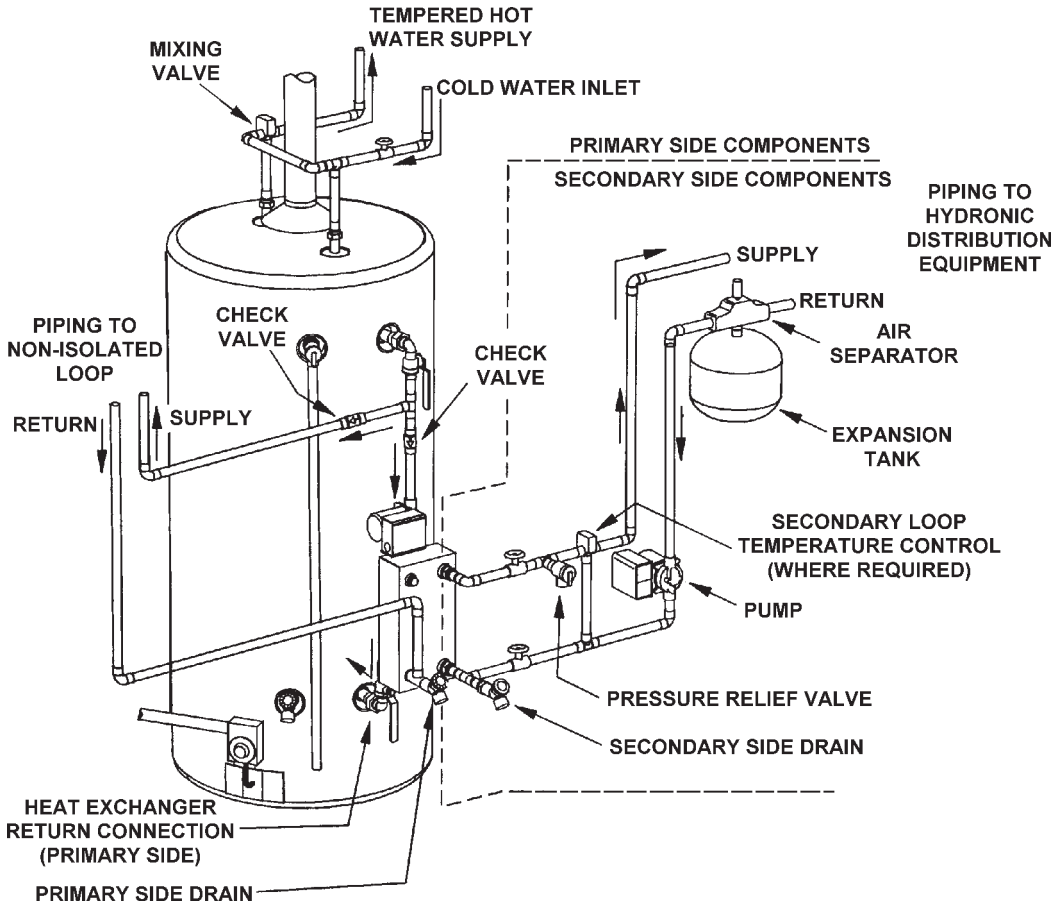


FIGURE 5

WIRING

115V/60 Hz and is equipped with a control relay located inside the wiring termination box on the pump. This relay has a 24 volt coil for low voltage control applications. For control applications that power the pump directly, the relay can be bypassed and removed. All wiring in the pump's termination box should be rated for 60°C or greater, and is to be done in accordance with national and local electric codes.

MOUNTING THE HEAT EXCHANGER TO THE WATER HEATER

Attach Support Leg Double Wall Models Only

Measure the distance from the return connection to the floor. Set the heat exchanger face down and assemble the support leg as shown. Adjust the length of the leg to the fitting height plus 3", see Figure 6.

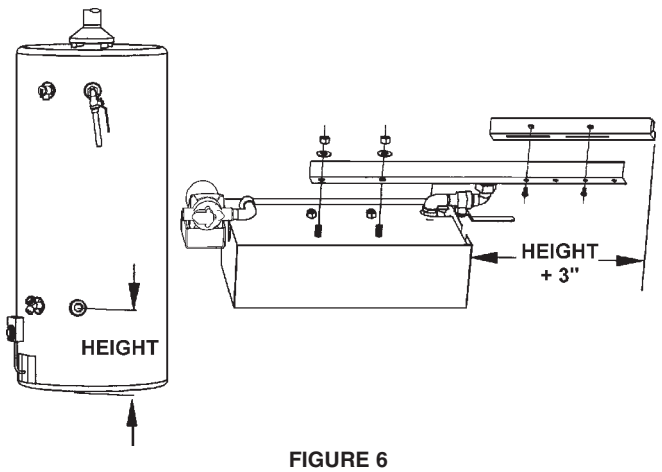


FIGURE 6

Mounting the Heat Exchanger to All Models

NOTE: The units are very top heavy when attached only at the return union. Make sure that the unit is well supported during fit up. Mounting of the RXLD Models requires more than one person.

Using thread seating compound install the included PEX lined steel nipples into the side loop connections. Thread the return fitting onto the lower PEX nipple and tighten the union nut firmly by hand, see Figure 7. Set the heat exchanger on the return fitting, see Figure 8. Then connect the supply fitting and rotate it so that the pipe contacts the pump., see Figure 9. It may be necessary to make a preliminary cut on the pipe to allow this. Mark the pipe at the top of the pump and add 5/8" for solder socket engagement, see Figure 9. Remove and cut the pipe at the second mark. Reinstall the supply side assembly inserting first into the pump and then connect it at the union, see Figure 10. Make any adjustments needed to the length of the support leg on units so equipped.

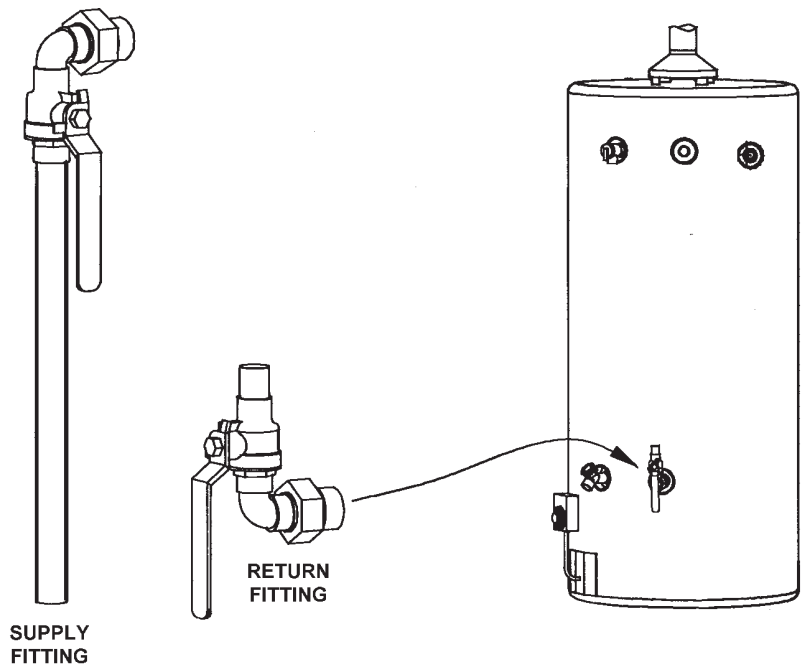


FIGURE 7

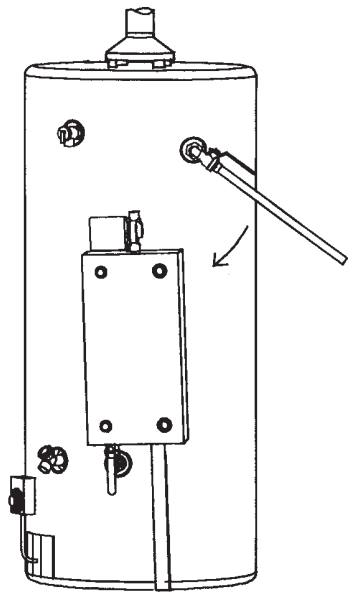


FIGURE 8

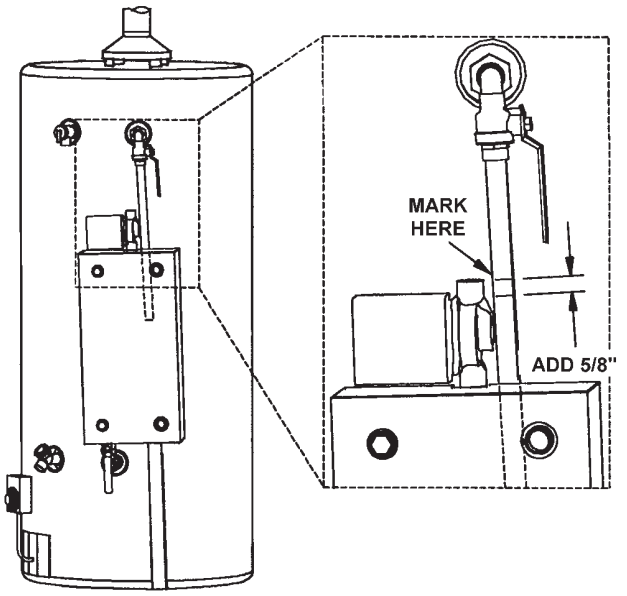


FIGURE 9

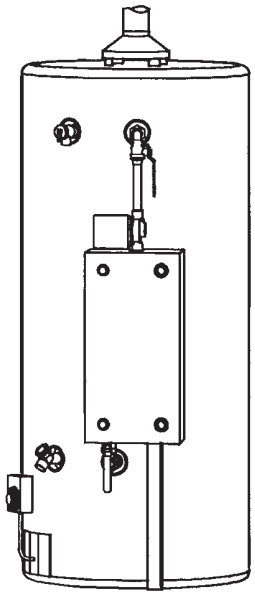
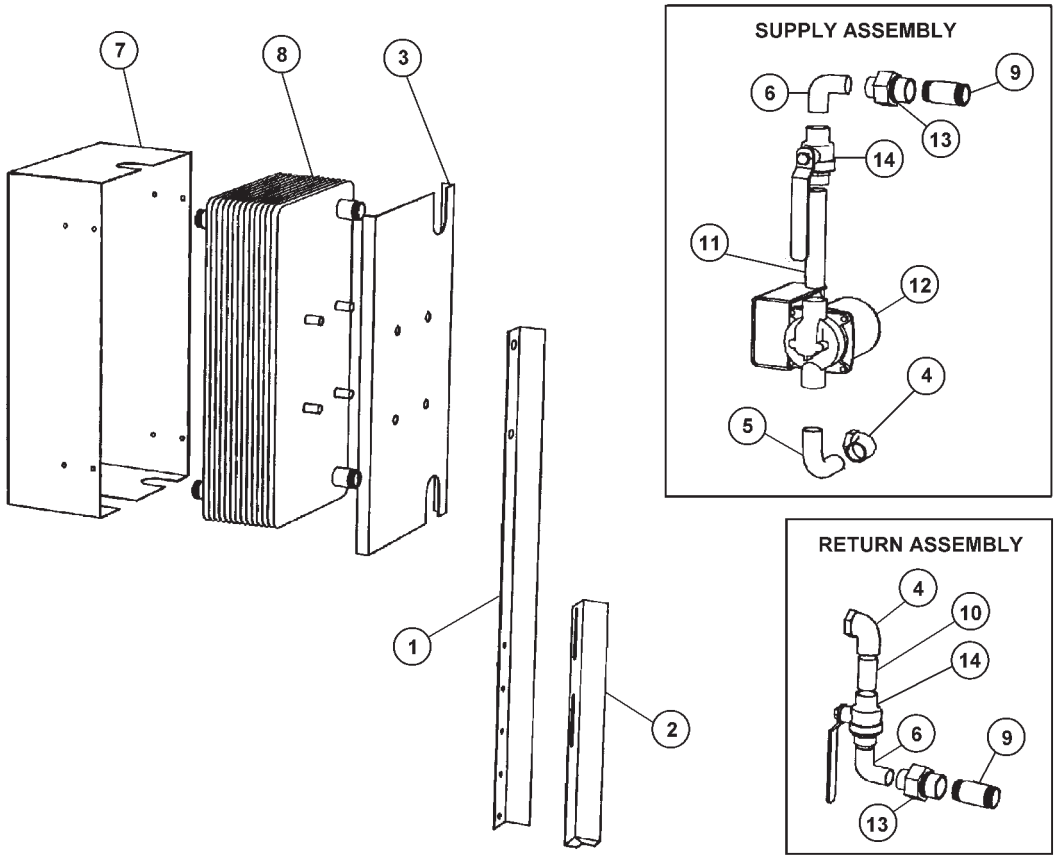


FIGURE 10

REPLACEMENT PARTS



Item	Description	PROMAX XL
1	Angle Fixed Support.	184908-000
2	Angle Sliding Support	184907-000
3	Back Cover,	
	Single wall (Models RXLS 28 & RXLS 52)	184905-000
	Double wall (Models RXLD 28 & RXLD 52)	184909-000
4	Elbow, Cast Brass, 90°, 3/4C x 3/4FPT	184921-000
5	Elbow, Copper, Preformed 3/4”	184902-000
6	Elbow, Copper, 3/4F x 3/4F	0006600680
7	Front Cover,	
	Single Wall (Models RXLS 28 & RXLS 52)	184906-000
	Double Wall (Model RXLD28)	184910-000
	Double-Wall (Model RXLD52)	184910-001
8	Heat Exchanger	
	Single Wall (Model RXLS 28)	184903-000
	Single Wall (Model RXLS 52)	184903-001
	Double Wall (Model RXLD 28)	184904-000
	Double Wall ((Model RXLD 52)	184904-001
9	Nipple, Pex-Lined, .75” x 2.5”	194130-006
10	Pipe, Copper, Nominal Type L, 1.656 x 3/4”	- - - - - - - -
11	Pipe, Copper, Nominal Type L, 17” X 3/4”	- - - - - - - -
12	Pump, TACO, (006-B4-3)	184915-000
13	Union, Di-Electric, 3/4FPT x 3/4C	0009400260
14	Valve, Ball, Full Port, 3/4” x 3/4” Sweat	0007201260