



# Instruction Sheet

## Solar Pumping Station (SPS)

"00" and Load Match® Cartridge Circulators

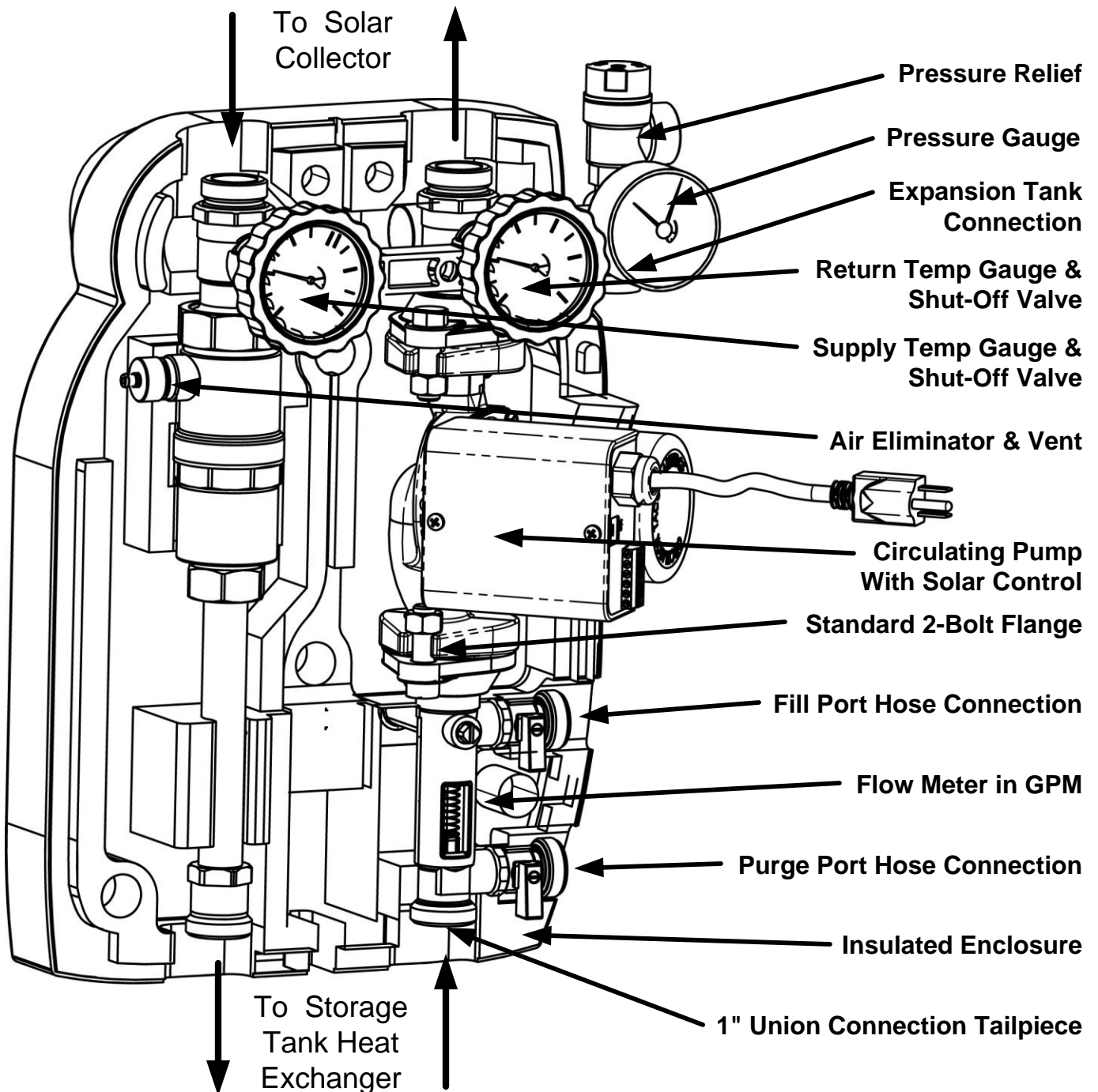
102-373

SUPERSEDES: New

EFFECTIVE: August 1, 2009

Plant ID# 001-3936

The Taco Solar Pumping Station (SPS) combine all the features needed for a closed loop solar water heating system. Just 5 easy connections to make; 2 for the solar collector(s), 2 for the storage tank's heat exchanger and 1 for the expansion tank. The Solar Pumping Station includes a circulator with an integral variable speed solar control, isolation ball vales, air elimination, flow meter and a safety group.



## Component Identification



Supply



Return

(A) Shut-off ball valve on the supply (thermometer with red ring and scale 30-250°F & 0-120°C) with "Solar" check valve.

(B) Shut-off ball on the return (thermometer with blue ring and scale 30-250°F & 0-120°C) with "Solar" check valve.

### Solar Check Valve

The ball valves of both the supply and the return feature an integral flow check (IFC). It ensures no gravity flow and low head losses. To manually open the check valve, such as in the case of draining the system, rotate the handle 45° clockwise.

### (C) Circulating Pump

The circulating pump is a standard variable speed Taco 00 Series, 2 bolt flange style. The ball valves before and after the circulating pump, make it possible to service the circulator without draining the installation.

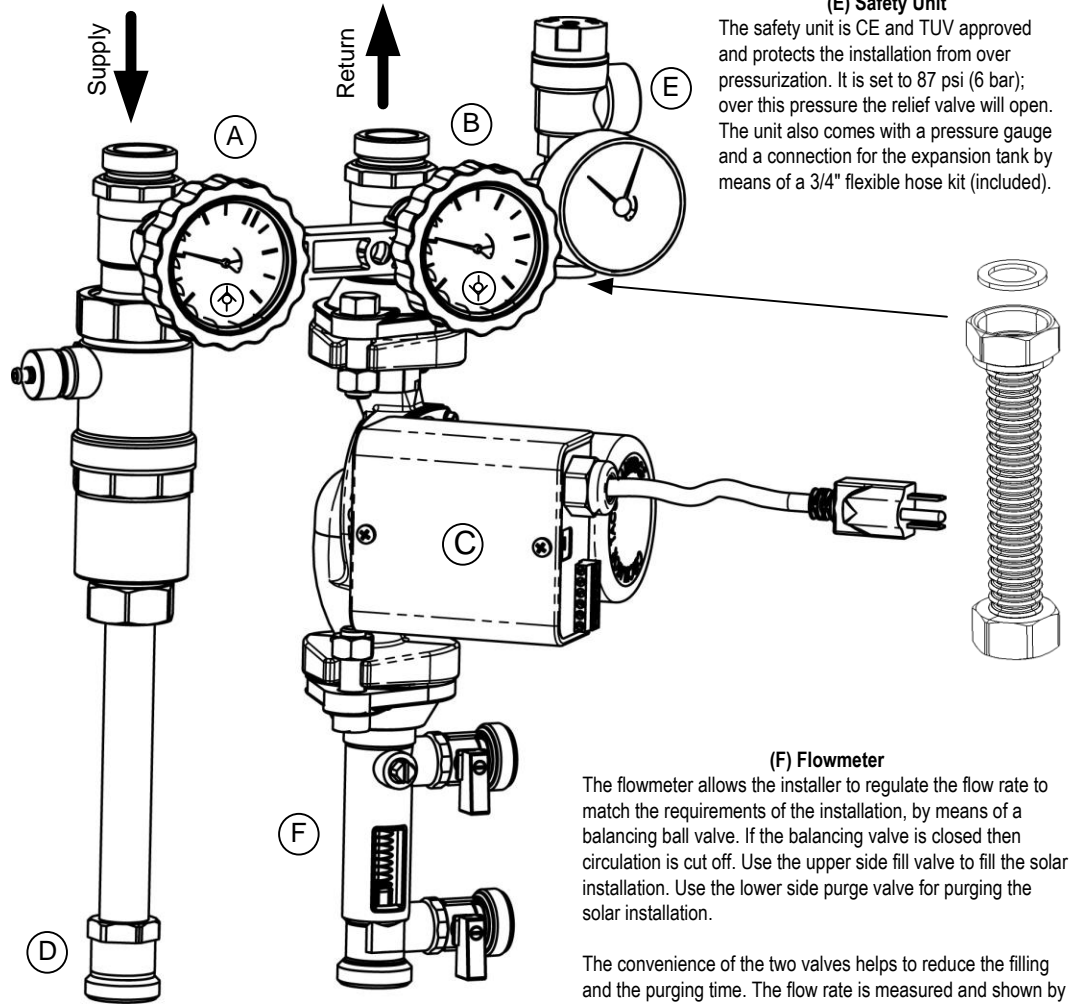
### (D) Union Tailpiece

The 1" unions on the Solar Pumping Station allow direct connections to flexible stainless steel collector line sets as well as adaptors to copper pipe. Adaptors (4) for 3/4" copper pipe are supplied with unit.

### Optional Solar Differential Temperature Control

(may be attached or shipped separate)

Please see manufactures supplied instructions for installation and set-up of solar differential temperature control.



### (E) Safety Unit

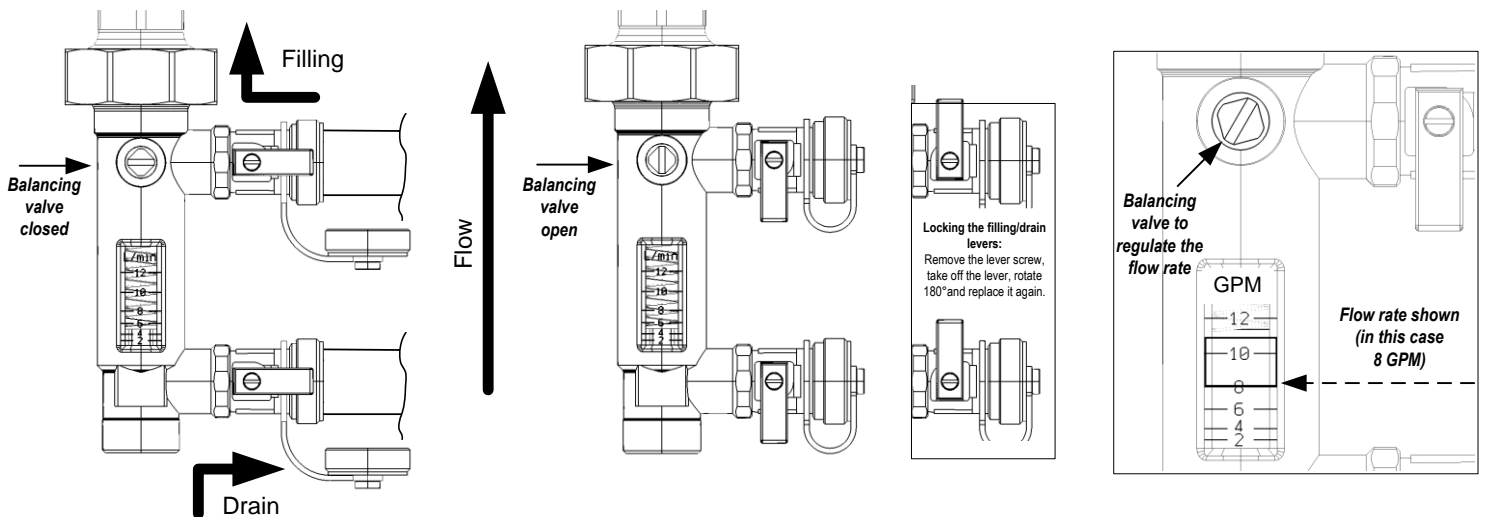
The safety unit is CE and TUV approved and protects the installation from over pressurization. It is set to 87 psi (6 bar); over this pressure the relief valve will open. The unit also comes with a pressure gauge and a connection for the expansion tank by means of a 3/4" flexible hose kit (included).

### (F) Flowmeter

The flowmeter allows the installer to regulate the flow rate to match the requirements of the installation, by means of a balancing ball valve. If the balancing valve is closed then circulation is cut off. Use the upper side fill valve to fill the solar installation. Use the lower side purge valve for purging the solar installation.

The convenience of the two valves helps to reduce the filling and the purging time. The flow rate is measured and shown by the sliding cursor inside the flowmeter. The flow rate is read from lower edge of sliding cursor. This measurement is effected by adjusting the balancing valve.

## Directions for use of Flowmeter



(1) – Filling and purging the installation:  
Remove the hose caps from the side filling and draining valves and connect the hose unions. Close the balancing valve and open the side filling and draining valves. Use a pump to fill the system with a quality solar fluid to typically 20-40 psi.

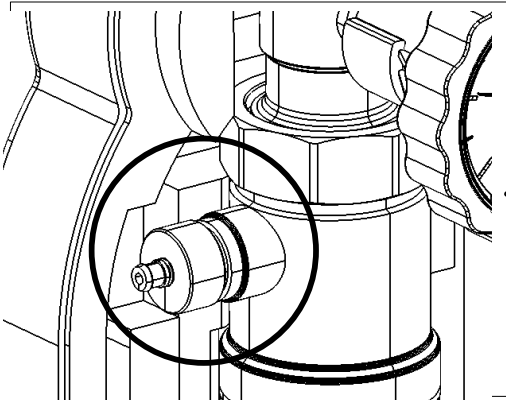
(2) – To starting up the installation:  
Close the side filling and draining valves and open the balancing valve. Remove the hose unions and replace hose caps.

To avoid any unwanted opening of the side valves, it is better to lock the levers in the close position, as shown.

(3) - Regulate the flow rate using the balancing valve when circulator is running at full speed.

**Note:** The flow rate is referenced from the lower edge of sliding cursor. (See picture)

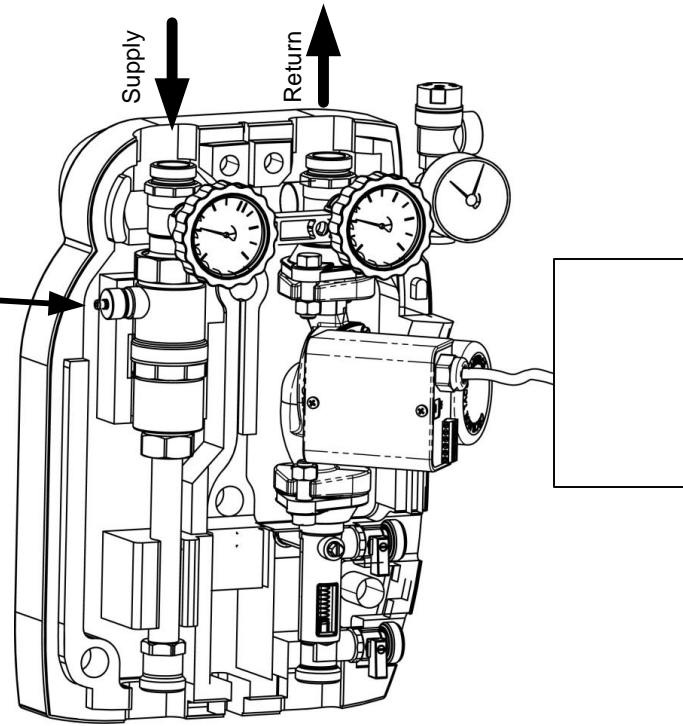
## Directions for Venting of Air



### **Air Vent**

The manual air vent is a device that continually removes air that is entrained with the solar fluid. The air rises to the upper part of the vent and it can be manually eliminated through the special vent connection. Unscrew the knurled metal ring lock 360° to vent any captured air.

This operation should to be done periodically.



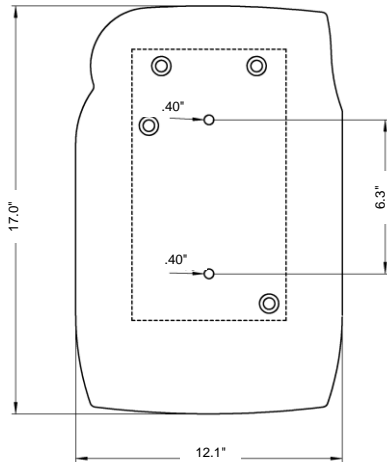
## Directions for Mounting Module

### **Epp Insulation Box**

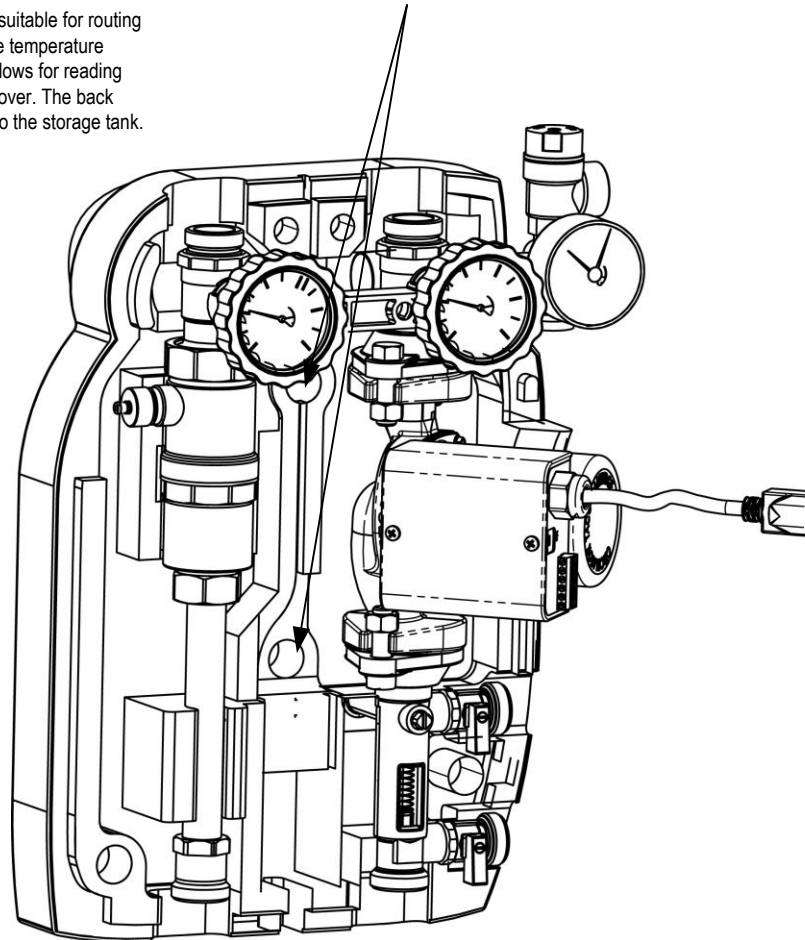
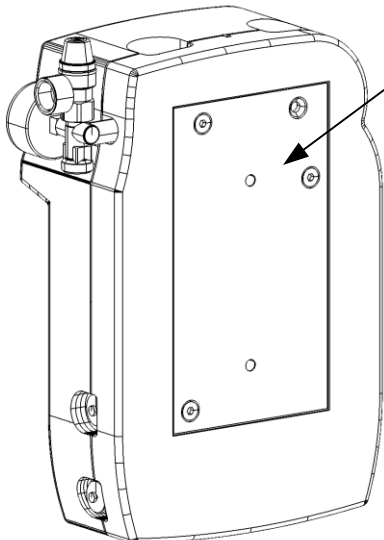
Measurements. 12.1" X 17.0" X 6.6"  
(308 mm X 434 mm X 169 mm)

The enclosure has wiring channels suitable for routing of the power supply cable and of the temperature sensor cables. A special window allows for reading the flow rate without taking off the cover. The back plate fastens the unit to the wall or to the storage tank.

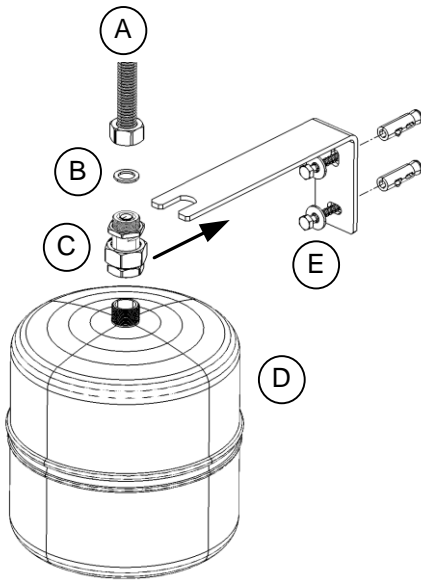
Fastening holes on the back fixing plate. Openings on the insulation box allow the fastening of pumping station without disassembling the unit.



Back plate to fasten the unit to the wall or to the storage tank.



## Directions for Mounting Expansion Tank and Bracket



### BRACKET AND CONNECTOR FOR THE EXPANSION TANK

(A) 3/4" flexible pipe connected to the safety unit of the solar pumping station.

(B) Fiber sealing gasket included.

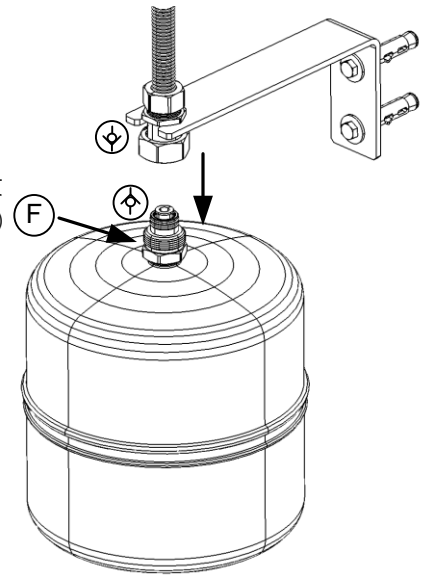
(C) Connector with double check valve to disconnect the expansion tank in a reliable and fast way without any leakage.

(D) Expansion tank with 3/4" BSP threaded connection. (not included)

(E) Fixing bracket provided with plugs and screws to fix it to the wall.

(F) Bottom half of connector (C) that threads on to 3/4" BSP expansion tank nipple.

Attach the bracket (E) to the wall with the plugs or screws (centre distance 2.2" or 55 mm). Screw the Connector (F) to the expansion tank. Install the connector (C) on the fixing bracket using the special groove then lock with the nut. Screw connector (F) into the bottom of connector (C). Screw the flexible pipe from the safety unit (A) to the top of connector (C) with sealing gasket (B) in between.



### REPLACEMENT OF THE EXPANSION TANK

The connector (C) holds up the expansion tank and allows for quick removal, without any leakage. By unscrewing the nut (F) it is possible to disconnect one end of the connector from the expansion tank. The other end of the connector stays fixed on the bracket connected to the safety unit. Both the ends have a check valve that becomes operative at the time of the disconnection: this prevents any leakage both from the expansion tank and from the flexible pipe. To put in service again, it is necessary to reconnect the connector by screwing the nut (F). In that way the two check valves are opened and the expansion tank is again connected to the installation.

**Note:** If expansion tank nipple has NPT threads than use a hardening type thread sealer like Loctite or SAF-T-LOC.

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Printed in USA

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