

Section 22 35 00

DOMESTIC WATER HEAT EXCHANGERS

Furnish and install as shown in schedules, AquaPort™ substation models XP0300100 and/or XP0525180, as manufactured by Uponor Inc.

1. Each XP0300100 substation shall be rated to heat: \_\_\_\_\_ gpm (\_\_\_\_l/s) of water from \_\_\_\_\_°F (\_\_\_\_\_°C) to \_\_\_\_\_°F (\_\_\_\_\_°C) when supplied with \_\_\_\_\_ gpm (\_\_\_\_l/s) of boiler water at \_\_\_\_\_°F (\_\_\_\_\_°C) to the substation.
2. Each XP0525180 substation shall be rated to heat: \_\_\_\_\_ gpm (\_\_\_\_l/s) of water from \_\_\_\_\_°F (\_\_\_\_\_°C) to \_\_\_\_\_°F (\_\_\_\_\_°C) when supplied with \_\_\_\_\_ gpm (\_\_\_\_l/s) of boiler water at \_\_\_\_\_°F (\_\_\_\_\_°C) to the substation.

AquaPort must be installed in accordance with ICC-ES PMG-1543 and all applicable codes, manufacturer’s installation instructions, and to the satisfaction of the authorities having jurisdiction.

**Design AND Construction**

Each substation shall be engineered, parts procured, factory manufactured and assembled, and managed under ISO certifications 9001, 14001, and 50001. Each assembly shall be pressure tested and housed in a flanged, in-wall cabinet complete with door and carry an ICC-ES PMG Product Certificate.

Each heat exchanger shall be of the counter-current flow ANSI 316 stainless steel, 99.9% copper-brazed-plate heat exchanger designed, and manufactured in accordance with:

* IAPMO PS 92-2013e1, Heat Exchangers and Indirect Water Heaters
* CAN/CSA B379.1-2009 – Section 7.4 and 8.10, Packaged Solar Domestic Hot Water Systems (Liquid to Liquid Heat Transfer)

The heat exchanger shall be atmospherically vented with visible leak-detection ports.

The maximum static pressure on the potable and hydronic flow paths shall be 125 psi (8.6 bar).

The maximum operating temperature for the substation shall be 180°F (82°C).

Each substation will contain isolation service valves on the heating and domestic water inlets and outlets; and come with 0.5 mm mesh strainers for removing flow particles and coin vents for purging of air. Purge/drain valves will also be provided on the hydronic supply and returns.

Substation shall be assembled with:

* Domestic water fitting material meeting CW 724 R, C69300
* Hydronic fitting material meeting CW 617 N, C37700
* Seal type meeting VDI 2200, DVGW, EG 1935/2004, FDA, GL, TA Air, VP 201, W270, WRAS
* Piping to be stainless steel 1.4101/ANSI 316

(continued)

* Shutoff valves meeting CW 511 L, C27453
* Proportional control valve meeting ASSE LEC 2010, NSF 61, DIN 3555-2020, VP 201
* Threads (swivel nuts) G ¾" acc. ISO 228, tightening torque min 30 Nm, max 50 Nm
* Connection to pipe network ¾" FNPT tapered

**Pressure Testing**

Before shipping, each substation shall pass a factory leak-saturation test to 75 psi (5 bar).

**Mechanical Control System**

Each substation shall be furnished with a self-contained, non-electric control system for maintaining flow, pressure, and temperatures to, through, and from the connected domestic and heating systems, including:

One (1) proportional control valve (PCV) rated to meet ASSE LEC 2010 that shall provide flow of hydronic heated water in proportion to the required domestic hot water (DHW) demand. PCV shall come with two sets of three dynamic seals between the potable and hydronic flow parts. Proportional control will shuttle to the closed position during zero DHW demand. PCV shall be rated for a minimum flow of 0.13 gpm (0.5 l/min) and maximum flow of 9.0 gpm (34 l/min). The potable and hydronic water side of the PCV must be pressure-tight when a pressure of 232 psi (1600 KPa) is applied for 60 seconds.  
  
One (1) domestic water temperature discharge control valve (DWCV) with actuator and capillary tube with sensing bulb. Capillary tube bulb shall be inserted into the DHW flow outlet. DWCV shall be capable of adjusting domestic water temperatures between 95°F and 158°F (35°C and 70°C).

One (1) hydronic flow regulator (HFR) with partner port for supplemental regulation of flow across the DWCV and PCV.

One (1) temperature bypass valve (TBV) with partner ports for maintaining a minimum and continuous heating flow to the substation.

One (1) optional flow-restrictor disc for field modification to the domestic cold-water flow rate.

**Warranty**

The heater shall carry the following manufacturer’s warranty from date of shipment:

1. Ten (10) years on stationary parts: Heat exchanger, pipe, and compression fitting connections
2. Two (2) years on moving parts: Air vents, DHW controller, proportional control valve, hydronic flow regulator, temperature bypass valve, isolation valves, and purge drain valves
3. Corrosion-related failures in/on items A and B above are not covered under warranty.