

## INSTALLATION, OPERATION & MAINTENANCE

# PANEL RADIATOR

### INSTALLATION

1. Radiators are boxed together in as few crates as possible. A box of brackets is included as a separate piece, and it is marked to denote brackets. Inside the crates, each panel is wrapped in foam sheeting. Saving this foam to re-wrap the panel once it is wall mounted will protect it from construction site damage

2. Each radiator is tagged with a label that indicates the project; name, model type, color, connection code, bracket type & quantity and tag number. The tag number will usually designate a floor level and room number for easier placement on the job. Locate each radiator as required.

#### Horizontal Models

3. Carefully place each radiator face down on a smooth level surface (e.g. floor or table). Distribute the mounting brackets for each radiator. The tag on the radiator indicates the quantity of brackets. Mount the brackets securely on wall studs (ANGBKT for PR, PR2 and PR2F models, FINBKT for PRF and PR3F models), using specified fasteners (by others), spacing them as evenly as possible at 2 to 4 feet apart, with a bracket at least 12 inches from each end of the panel. Allow a minimum of 3 inches below each panel radiator to facilitate cleaning and to assure proper output.

#### 4A. RADIATORS PRF, PR3F (FINS ON BACK SIDE OF PANEL)

With the radiator face down, attach each PR-CLIP to the fins at the stud location. Slide the PR-CLIP into the slots in the fins and push up to lock them in place. With the radiator still face down, thread the PK45 offset bolts (5/16" carriage bolts) into the bottom threaded positions with a crescent wrench. Once the bolts have cleared the paint away, they should turn easily by hand. Hang the panel by engaging the flanges of the PR-CLIP with the FINBKT. Determine if the PK45 offset bolts are properly adjusted. Check that the panel is level.

#### 4B. RADIATORS PR, PR2, PR2F (NO FINS ON BACK SIDE OF PANEL)

With the radiator face down, thread the PK45 offset bolts (5/16" carriage bolts) into the bottom threaded positions with a crescent wrench. Once the bolts have cleared the paint away, they should turn easily by hand. Hang the panel by engaging the fingers of the ANGBKT with the

welded hanging angle on the back of the unit. Determine if the PK45 offset bolts are properly adjusted. Check that the panel is level. Remove the radiator from the wall before proceeding to step 6.

#### 5. FLOOR POST & PEDESTAL MOUNTED RADIATORS

When using floor posts, each post must line up with a corresponding PK45 offset bolt attached to the backside of the radiator. Using this spacing as a guide, securely fasten each floor post to the floor, using specified fasteners (by others). The bracket is attached to the floor post (ANGBKT for PR, FINBKT for PRF), for the PRF, the PR-CLIP to the radiator, as described in step #4. The nut and bolt used to attach the bracket to the floor post is to be supplied by others. For pedestal mounting, the pedestals should be arranged so that the end pedestals sit within 12 inches of each end of the radiator, with the remainder spaced evenly along the radiator's length. Each pedestal should be securely fastened to the floor using appropriate fasteners. Radiators sit on the pedestals with the flanges on the pedestal extending into the space between the panels on model PR2, or between the fins on models PR2F and PR3F. Proceed to step 6.

#### Vertical Model PRV

3. Carefully place each radiator face down on a smooth level surface (e.g. floor or table). With the radiator still face down, thread the PK45 offset bolts (5/16" carriage bolts) into the bottom threaded positions with a crescent wrench. Once the bolts have cleared the paint away, they should turn easily by hand. Distribute the wall-mounted angle brackets (ANGBKT) for each radiator. The tag on the radiator indicates the quantity of brackets. Mount the brackets securely on wall studs or solid backing, spacing them to match the horizontal wall mounting bars on the backside of the PRV panel. There will be (2) ANGBKT brackets for each horizontal mounting bar. Make sure to mount the wall-mounted angle brackets (ANGBKT) in far enough to avoid contact with the optional side-perforated grille. Hang the panel by engaging the fingers of the ANGBKT with the horizontal wall mounting bars on the back of the unit. Determine if the PK45 offset bolts are properly adjusted. Check that the panel is level. Allow a minimum of 3 inches below each panel radiator to facilitate cleaning and to assure proper output. Proceed to step 6.



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### **Ceiling Model PRC**

3. PRC model ceiling radiators do not come with any mounting brackets. Threaded rod with locking nuts by others is typically used to secure the panel to the ceiling structure. There are two mounting holes per cross-member stiffener on the backside of the radiator. Each of these mounting points should be used to suspend the radiator, to avoid sagging. Attach the threaded rods to the radiator before raising the assembly to the ceiling for final mounting.

4. Once the radiator is securely fastened to the ceiling structure, adjust the nuts on the threaded rod to straighten and level the radiator. It is recommended to have at least 3 inches minimum from the face of the radiator to the finished ceiling above it. In cases where upward radiation from the backside of the radiator is undesirable, foil faced insulation can be placed in the cavities created by the perforated steel side channels. Proceed to step 6.

### **All Models**

6. Radiators expand a maximum of 0.016 inch per linear foot of length if heated to 215°F. Piping attached to the radiator must provide the necessary expansion compensation. Flexible piping and elbowed piping are two simple ways to provide the 1/8 inch to 1/2 inch (typical) of flexibility required in expansion situations (usually series piping).

7. Thread the supply and return fitting into the connections on the radiator. The sealing tape or pipe dope used is the installers' choice – make sure the connections are leak tight. One-quarter turn past hand tight is usually sufficient. Each radiator needs to be fitted with a 1/8" air vent prior to startup. Once the radiators are installed, the system can be tested to 50 psi. **DO NOT OVER-PRESSURIZE THE RADIATORS** as permanent damage may occur.

### **Standard (Low) Pressure Panels – Maximum 56 psi**

#### **High Pressure Panels – Maximum 128 psi**

8. When the system has been shown to hold 50-PSI maximum air, the piping and radiators can be filled with water. As water fills the system and radiators, air is forced to the vent fittings. Vent as much air as possible before turning on the circulating pump(s).

9. With the system is filled, operate the circulator(s) to force the remaining air to the high points of the system. Turn off the circulator(s) to vent the panels. Each radiator should be individually bled of air. Once cold venting has been completed, heat the system to design temperature and repeat the venting procedure as many times as necessary to remove all air from the system.

### **OPERATION**

1. Panel Radiators are manufactured in the USA of cold rolled low carbon steel and should be used only in closed hydronic systems to assure no corrosion of any system components.

2. Proper radiator operation depends on adequate flow of water to the panel, which can only be accomplished when all the system air has been fully vented from the panels.

3. Radiators should each be vented, with the system pressurized but in a static state (pumps off). Venting may need to be done periodically to assure a closed system.

4. Panel Radiators require less flow rate than other hydronic heating products. If flow noise is apparent, balance the system until the noise is reduced.

### **MAINTENANCE**

1. Hydronic system maintenance should include routine checks for piping leaks (usually indicated by frequent makeup water), and a yearly diagnosis of the system water pH to evaluate its corrosive potential.

2. Internal radiator maintenance depends entirely on the system water makeup and proper venting. Hydronic system additives are available to passivate and protect against freezing. These additives will not significantly reduce the output of the Panel Radiators.

3. External radiator maintenance consists of keeping the surfaces clean, and any paint nicks or deep scratches painted with touch-up to prevent any surface rust.

4. Radiators can be painted after sanding with fine grit paper to dull the high gloss and by wiping with solvent or a tack rag. Use only oil-based enamel paint (alkyd, acrylic, urethane, or epoxy) – do not use latex or lacquer paint. Use urethane or epoxy enamel for radiators located in harsh environments. Spray the paint to achieve an even coating and let dry completely before heating the radiator.