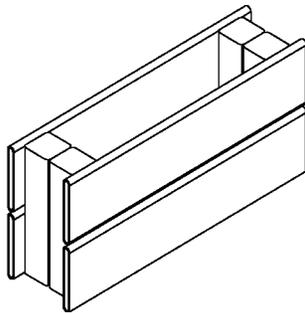


Installation Instructions:

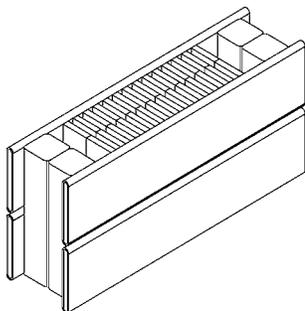
1. Radiators are boxed together in as few crates as possible. A box of brackets is included as a separate piece, and it is marked to denote brackets. Inside the crates, each panel is wrapped in foam sheeting. Saving this foam to re-wrap the panel once it is wall mounted will protect it from construction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



Model PR2

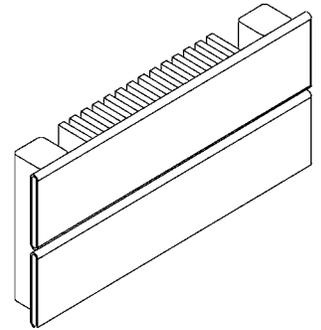
2. Each radiator is tagged with a label that indicates the project name, model type, color, connection code, bracket type & quantity and tag number. Locate each radiator as required.

3. Carefully place each radiator face down on a smooth level surface (i.e. floor or table). Distribute the brackets for each radiator. The tag on the radiator indicates the quantity of brackets. Mount the brackets securely on wall studs or solid backing with two lag bolts, spacing them as evenly as possible at 2' to 4' apart, with a bracket at least 12" from each end of the panel. Allow a minimum of 3" below each panel radiator to facilitate cleaning and to assure proper output. For baseboard models, 1" above the floor is permissible with little loss of heat output.



Model PR2F

4. **Radiators with Fins on back side of panel (PRF & PR3F):** With the radiator face down, attach each PR CLIP to the fins at the stud location. With the radiator still face down, thread the leveling 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 (installed on wall in step 3) onto the brackets to determine if the leveling bolts are properly adjusted. Check that the panel is level.



Model PRF

5. **Radiators without Fins on back side of panel (PR, PR2 & PR2F):** With the radiator face down, thread the leveling 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 onto the brackets (installed on wall in step 3) to determine if the leveling bolts are properly adjusted. Check that the panel is level.

6. Remove the radiator from the wall and thread the supply and return fittings into the connections on the radiator. The sealing tape or pipe dope used is the installer's choice – make sure the connections are leak tight. One quarter of a turn past hand tight is usually sufficient. Each radiator needs to be fitted with a 1/8" air vent prior to startup.

Installation Instructions *(con't)*:

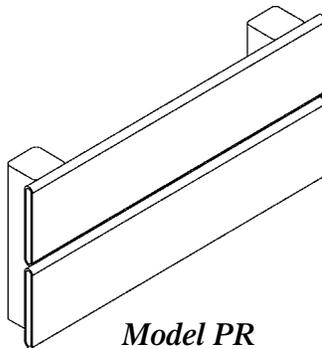
1. Once the radiators are installed, the system can be tested to 50 psi. **DO NOT OVER-PRESSURIZE THE RADIATORS** as permanent damage may be done.

Standard Pressure Panels – Maximum 56 psi

Medium Pressure Panels – Maximum 85 psi

High Pressure Panels – Maximum 128 psi

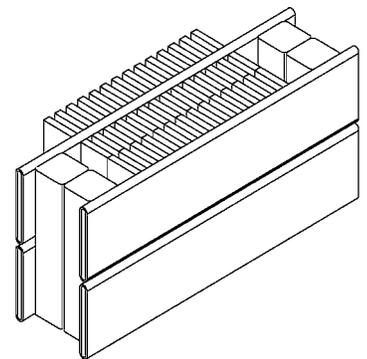
2. PED-SM & Pedestal Mounted Radiators: When using PED-SM, each PED-SM must line up with a corresponding leveling bolt attached to the back side of the radiator. Using this spacing as a guide, securely fasten each floor post to the floor, using appropriate fasteners. The



Model PR

The FIN BKT is attached to the PED-SM, and the FIN BKT to the radiator, as described in step #4 above. The nut and bolt used to attach the FIN BKT to the PED-SM is to be supplied by others. A 1/4" bolt a minimum of 1 1/2" long is recommended.

3. For PR2F & PR3F Pedestal mounting with PED-BM-SQ the pedestals should be arranged so that the end pedestals sit within 12" 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 "fingers" of the pedestals sticking up between the fins to provide stability.



Model PR3F

4. 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.
5. 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).
6. When the system is filled, operate the circulating pump(s) to force the remaining air to the high points of the system. Turn off the circulating pump(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.

RITTLING RADIATORS

Horizontal Units

Installation, Operation & Maintenance

Operation & Maintenance:

Radiator Operation

1. 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. Flexible piping and elbowed piping are two simple ways to provide the 1/8" to 1/2" (typical) of flexibility required in expansion situations (usually series piping).
5. Rittling Radiators require less flow rate than other hydronic heating products. If flow noise is apparent, balance the system until the noise is reduced.
6. For a delta T of 20° F (T supply minus T return), divide the total Btu/hr capacity of the loop by 10,000. This gives the Flow Rate in gallons per minute (GPM).
7. Many levels of control are available today for hydronic systems. Rittling Radiators will provide nice, even heating whether operated by a simple thermostat to baseboard loop system, or an advanced boiler reset controller with motorized mixing valves, constant circulation and two-pipe distribution.

Radiator 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 Rittling 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 repainted 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, 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.



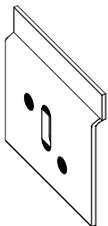
WARRANTY

Hydro-Air Components, Inc., manufacturer of the Rittling product line, guarantees their products to be free from defects in material and workmanship for a period of one year from date of shipment from our Buffalo, New York factory.

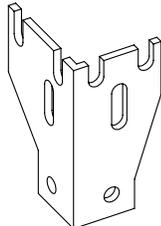
Should there be any defects in the good(s), the purchaser should promptly notify Hydro-Air Components, Inc. and upon receipt of written consent from Hydro-Air Components, Inc., the purchaser shall return the defective good(s) to the factory for inspection with freight prepaid. If inspection shows the goods to be defective, Hydro-Air Components, Inc. will at its discretion repair or replace the said item(s).

Defects arising from damage due to shipment, improper installation, negligence or misuse by others are not covered by this warranty.

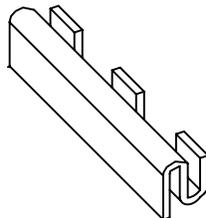
This warranty is extended only to the original purchaser from Hydro-Air Components, Inc.



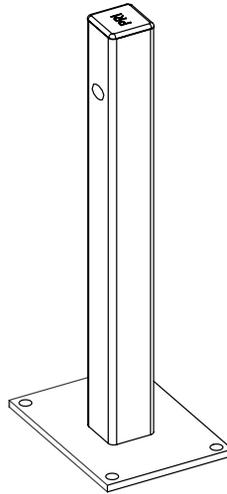
FIN BKT



ANG BKT



PR CLIP



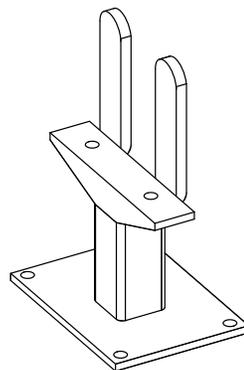
PED-SM

PED-SM

The PED-SM floor post is typically used to mount PR or PRF radiators. Also, PR2F and PR3F radiators over four tubes tall must also be mounted on PED-SM floor posts. The ANG BKT (PR & PR2F) or FIN BKT (PRF & PR3F) wall mounting brackets supplied with the radiator are bolted to the floor post, using nuts and bolts supplied by the installer. The leveling bolt screws into the radiator and rests against the floor post to level the radiator.

The 3"x3" base has four mounting holes. The installer supplies the appropriate mounting bolts to secure the PED-SM base to the floor.

The PED-SM's height is fixed to provide 3" clearance under the radiator, unless otherwise specified.



PED-BM-SQ

PED-BM-SQ

The PED-BM-SQ pedestal is used to mount PR2F or PR3F radiators, up to four tubes tall. Radiators over four tubes tall should not be mounted on PED-BM-SQ pedestals, because they will be unstable. Mounting is accomplished by setting the radiator down over the fingers of the PED-BM-SQ. The bottom tubes of the radiator rest on the pedestal, while the fingers protrude up through the fins to stabilize the radiator.

For Radiators without Fins (on the back side of the panel) – no wall mounting clips should be ordered for radiators to be mounted on PED-BM-SQ pedestals. The 3"x3" base has four mounting holes. The installer supplies the appropriate mounting bolts to secure the PED-BM-SQ base to the floor.

The PED-BM-SQ's height is fixed to provide 3" clearance under the radiator, unless otherwise specified.



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