Installation Instructions

RA2000 One Pipe Steam (1PS) Thermostatic Radiator Valve

ENGINEERING TOMORROW

Description:

RA 2000 one pipe steam (1PS) thermostatic radiator valve is a three part assembly consisting of a valve body (013G0140), air vent (013L8011) and thermostatic operator (air vent and thermostatic operators are sold separately). See Thermostatic Operator Selection instructions below to determine correct operator for your application.

The 1PS thermostatic radiator valve assembly is designed to provide accurate temperature control and quiet operation on all "non-vacuum" low pressure (max. 15 psig) one pipe steam heating systems.

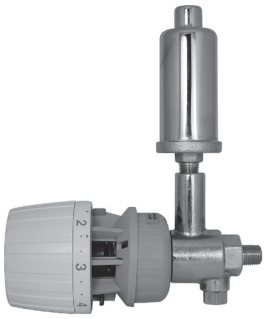
Note: For proper valve operation, the steam supply must be cycled by a boiler control. Do not install the 1PS thermostatic radiator valve assembly in the same room where the boiler is cycled by an existing space thermostat. 1PS thermostatic radiator valve assembly is not recommended for copper fin tube radiators.

Function:

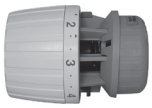
A temperature change around the thermostatic operator's sensor results in a modulating action of air venting from the radiator or convector.

When the thermostatic operator calls for heat, steam enters the radiator and pushes air out through the vent. When the setting temperature is reached, the 1PS valve will be closed and no further air venting takes place.

The venting action occurs during each system (boiler) on-cycle only when heat is required. Air will re-enter the radiator during the system off-cycle via a patented "'across the seat" vacuum breaker. This eliminates condensate build-up and allows natural system aspiration to occur.



RA 2000 1PS Thermostatic Radiator Valve (Complete Assembly)



Thermostatic Operator (013G8250 shown)

Air Vent (013L8011)

1PS Valve (013G0140)

1/8" 45° Street Elbows (Optional) (013L8300)

Spare Parts:

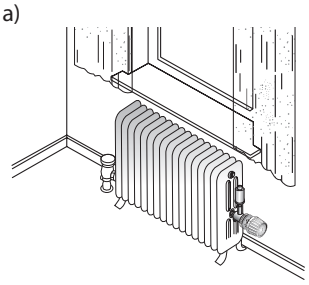
Packing Gland (013G0290)

Vacuum Breaker (013U7175)

Thermostatic Operator Selection:

Free Standing Radiators/Built-In Sensor: Use built-in sensor when room air can pass freely over the sensor.

a)

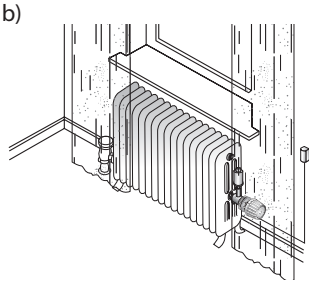


Standard (013G8250) Tamper Resistant (013G8240)

Use standard or tamper resistant model with combined dial/operator/sensor. Always install the operator horizontally.

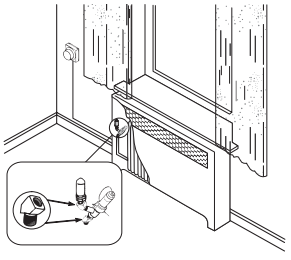
Free Standing Radiators/Remote Sensor: Use remote sensor when room air cannot pass freely over the sensor.

b)



(013G8252)
Use dial / operator with remote sensor. The sensor and capillary tube may be extended up to 6' and can be easily wall mounted.

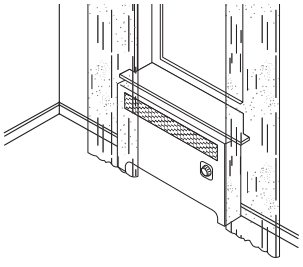
Convectors: The one-pipe low-pressure steam convector is inaccessible; room air cannot continually pass freely over the valve.



Available for mounting the 1PS assembly onto convectors are 1/8" 45° street elbows, part number 013L8300. When ordering these elbows two pieces are needed per convector.

(013G8564)
Use operator with separate remote dial and remote sensor. Place the remote sensor beneath the element or on a draft-free wall. The remote dial mounts on the enclosure or wall.

Enclosed Radiators: The cabinet enclosed radiator configuration requires that the dial and sensor be mounted separately, away from the valve.



(013G8562)
Use dial / operator with remote sensor. The sensor and capillary tube may be extended up to 6' and can be easily wall mounted.

(Remote sensors are not to be placed under cast iron elements of any type)

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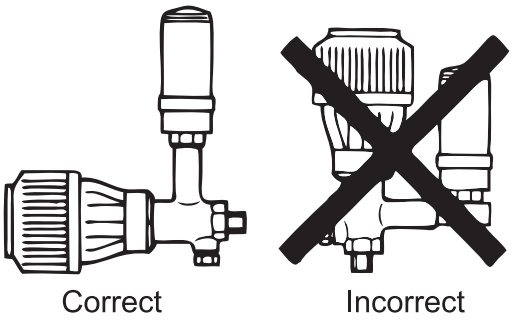
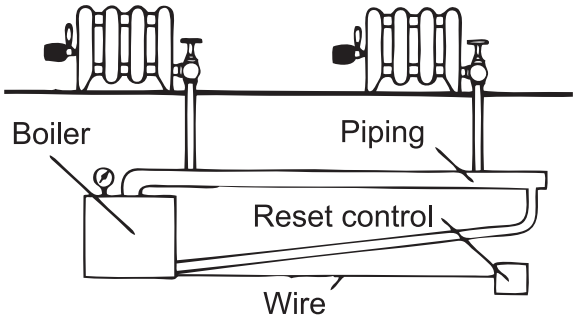
Prior to Installation:

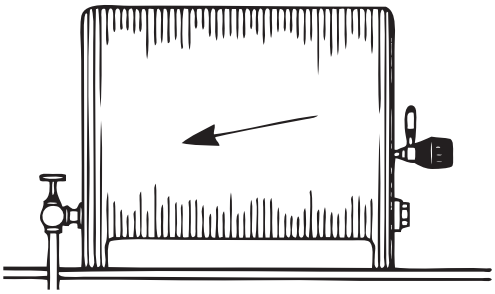


The operator with valve-mounted dial and sensor must be mounted horizontally.

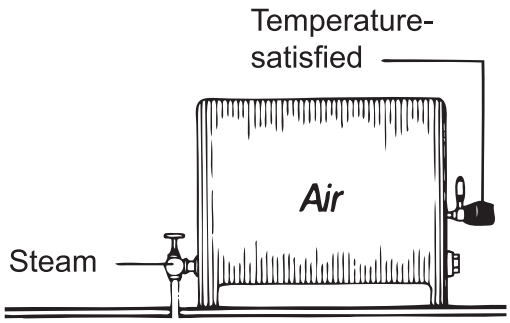
IMPORTANT
In one-pipe steam systems sufficient pitch is required to permit condensate return. Condensate should not be trapped in the valve or vent.



Boiler/Steam supply must be cycled by a reset control or room thermostat and must not run at constant pressure (which would prevent air from entering back into the system).



Make sure that free-standing radiators or cast iron convectors are properly pitched and that hand valves are FULLY open.



To aid in preventing overheating of rooms that are temperature satisfied, boiler steam pressure must be kept low, recommended normally at or below 2 psig. Otherwise air will be compressed in the radiator, allowing steam to enter when not required.

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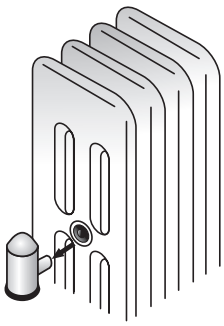
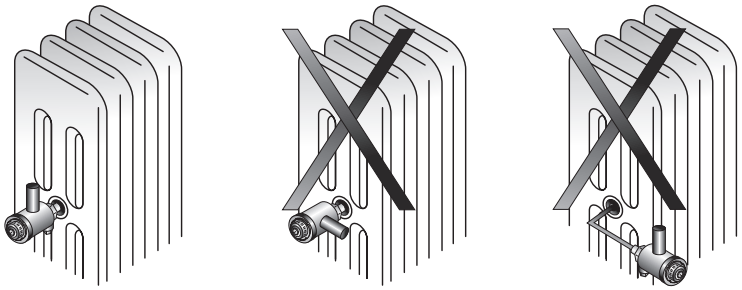
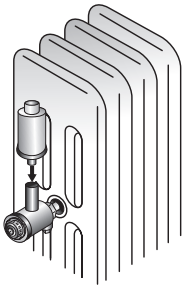
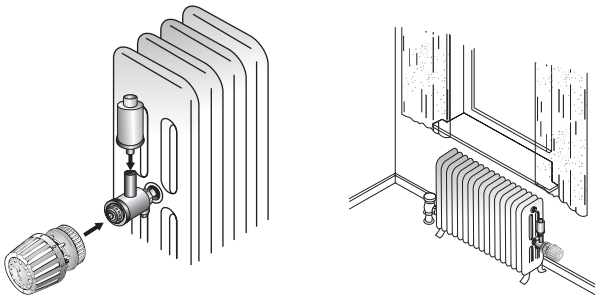
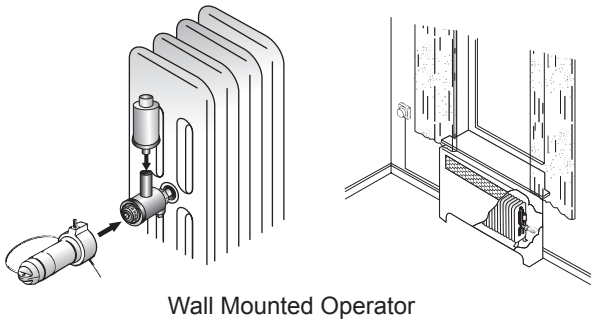
Installation:

1. With the heat source off, carefully remove existing air vent from the radiator.	
2. Carefully thread the valve body (013G0140) into the radiator. Tighten the valve such that the orientation of the air vent port is up. The piping of an extension between the radiator and valve body should not be done.	
3. Tighten the air vent (013L8011) to the valve body. If using an air vent not supplied by Danfoss, it must be a straight shank vent.	
4. Mount the thermostatic operator to the valve. Refer to the installation instructions included with the thermostatic operator for proper mounting to the valve.	 Valve Mounted Operator  Wall Mounted Operator

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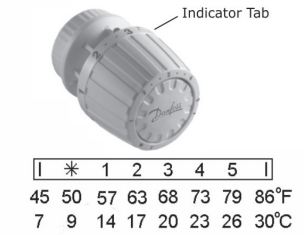
Setting:



Indicated temperatures are approximate
Adjust the dial to the desired setting.

The user can easily set room temperature by turning the dial clockwise or counterclockwise. The diagram to the left shows the approximate relationship between dial scale numbers and room temperature.

At its lowest setting, the RA 2000-1PS provides frost protection and maintains room temperature at approximately 45°F.
At its highest setting, the RA 2000-1PS maintains room temperature at approximately 85°F.

The temperature on all RA 2000-1PS models may be limited or locked (see instructions included with specific operator for details on this procedure).

Troubleshooting:

Symptoms	Cause / Issue
"Spitting" air vent	• Check the pitch of the radiator • Fully open the supply valve • Check riser air vent for main system • Verify if excessive pressure is within system
Overheating within room	• Ensure thermostatic operator is in an appropriate location • Move remote sensor or dial/sensor to a different location • The vacuum breaker mechanism may be clogged with debris • Verify if excessive pressure is within system
Under heating within room	• Ensure thermostatic operator is in an appropriate location • Move remote sensor or dial/sensor to a different location • The air vent may be stuck closed • Check riser air vent for main system • Check the pitch of the radiator • Verify if excessive pressure is within system

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