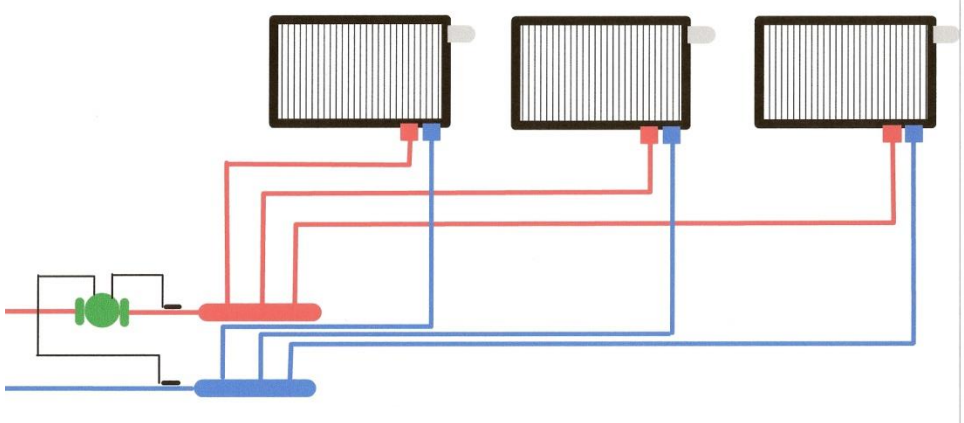




PANEL RADIATOR INSTALLATION MANUAL



Smith's Environmental Products

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8/2015 R3

SPECIFICATIONS

| | HEIGHT | LENGTH | BASEBOARD EQUIVALENT | BTUH OUTPUT | | WEIGHT |
|----------|--------|--------|-------------------------|-------------|--------|--------|
| | | | | 180° F | 140° F | |
| DDR12X16 | 12 | 16 | 3.33 | 1934 | 1068 | 17 |
| DDR12X24 | 12 | 24 | 5.00 | 2900 | 1600 | 24 |
| DDR12X32 | 12 | 32 | 6.67 | 3866 | 2133 | 31 |
| DDR12X40 | 12 | 40 | 8.33 | 4831 | 2661 | 39 |
| DDR12X48 | 12 | 48 | 10.00 | 5800 | 3200 | 46 |
| DDR12X56 | 12 | 56 | 11.67 | 6766 | 3733 | 53 |
| DDR12X64 | 12 | 64 | 13.33 | 7732 | 4265 | 60 |
| DDR16X16 | 16 | 16 | 4.17 | 2418 | 1331 | 23 |
| DDR16X20 | 16 | 20 | 5.21 | 3022 | 1665 | 28 |
| DDR16X24 | 16 | 24 | 6.25 | 3626 | 1999 | 33 |
| DDR16X28 | 16 | 28 | 7.29 | 4231 | 2330 | 38 |
| DDR16X32 | 16 | 32 | 8.34 | 4835 | 2665 | 43 |
| DDR16X36 | 16 | 36 | 9.38 | 5440 | 2996 | 48 |
| DDR16X40 | 16 | 40 | 10.42 | 6044 | 3330 | 52 |
| DDR16X44 | 16 | 44 | 11.46 | 6648 | 3665 | 57 |
| DDR16X48 | 16 | 48 | 12.51 | 7253 | 3995 | 63 |
| DDR20X16 | 20 | 16 | 4.96 | 2876 | 1583 | 28 |
| DDR20X20 | 20 | 20 | 6.19 | 3593 | 1979 | 34 |
| DDR20X24 | 20 | 24 | 7.44 | 4313 | 2375 | 40 |
| DDR20X28 | 20 | 28 | 8.68 | 5033 | 2771 | 46 |
| DDR20X32 | 20 | 32 | 9.91 | 5749 | 3166 | 53 |
| DDR20X36 | 20 | 36 | 11.15 | 6469 | 3562 | 58 |
| DDR20X40 | 20 | 40 | 12.39 | 7186 | 3958 | 64 |
| DDR20X44 | 20 | 44 | 13.63 | 7906 | 4354 | 71 |
| DDR20X48 | 20 | 48 | 14.87 | 8626 | 4746 | 76 |
| DDR24X16 | 24 | 16 | 5.71 | 3310 | 1819 | 31 |
| DDR24X20 | 24 | 20 | 7.13 | 4135 | 2276 | 40 |
| DDR24X24 | 24 | 24 | 8.56 | 4964 | 2730 | 48 |
| DDR24X28 | 24 | 28 | 9.98 | 5790 | 3183 | 56 |
| DDR24X32 | 24 | 32 | 11.41 | 6619 | 3641 | 66 |
| DDR24X36 | 24 | 36 | 12.84 | 7445 | 4094 | 75 |
| DDR24X40 | 24 | 40 | 14.26 | 8270 | 4548 | 81 |
| DDR24X44 | 24 | 44 | 15.69 | 9100 | 5002 | 89 |
| DDR24X48 | 24 | 48 | 17.11 | 9926 | 5459 | 97 |
| DDR24X56 | 24 | 56 | 19.97 | 11580 | 6367 | 114 |
| DDR24X64 | 24 | 64 | 22.82 | 13235 | 7278 | 130 |
| DDR24X72 | 24 | 72 | 25.67 | 14890 | 8190 | 149 |
| DDR36X16 | 36 | 16 | 7.83 | 4541 | 2457 | 48 |
| DDR36X20 | 36 | 20 | 9.79 | 5678 | 3071 | 56 |
| DDR36X24 | 36 | 24 | 11.75 | 6814 | 3685 | 72 |
| DDR36X32 | 36 | 32 | 15.66 | 9083 | 4913 | 88 |

The above BTUH OUTPUT rating is based on average water temperature and 24° Delta T

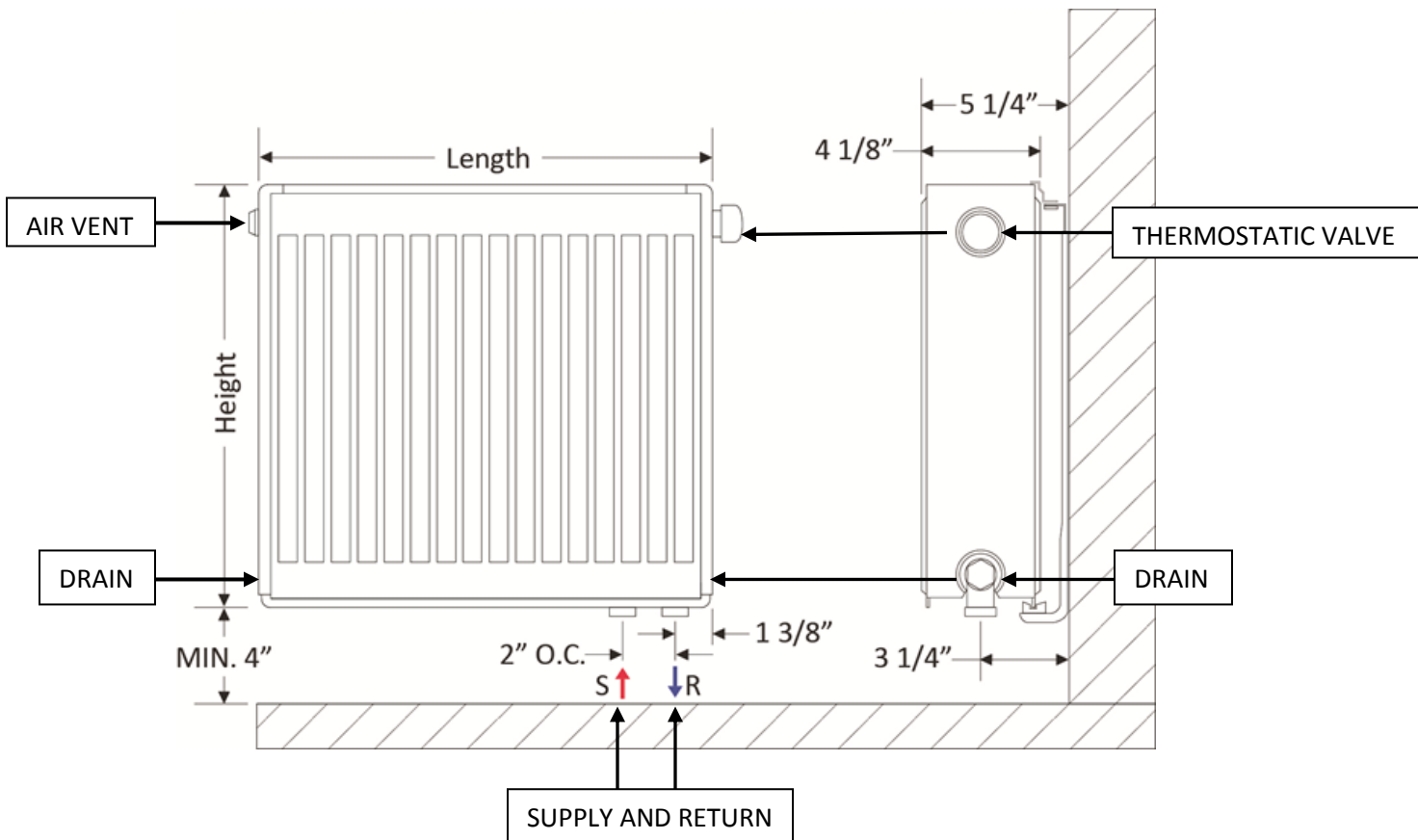
| WATER CONTENT | |
|----------------------|---------------------------|
| HEIGHT | (GALS./Linear Ft.) |
| 12" | .35 |
| 16" | .41 |
| 20" | .47 |
| 24" | .54 |
| 36" | .73 |

If the heating system contains antifreeze, the proper pH must be maintained. High acidity will damage the radiator and void the manufacturer's warranty.

| FITTINGS AND ACCESSORIES | |
|---------------------------------|------------------------------------|
| ITEM # | DESCRIPTION |
| DDEVK12 | 12" Wall Bracket Set |
| DDEVK16 | 16" Wall Bracket Set |
| DDEVK20 | 20" Wall Bracket Set |
| DDEVK24 | 24" Wall Bracket Set |
| DDEVK36 | 36" Wall Bracket Set |
| DDA318 | Dual Pipe Escutcheon |
| DD39438* | 3/8" Pex Tubing Adapter |
| DD39412* | 1/2" Pex Tubing Adapter |
| DD39458* | 5/8" Pex Tubing Adapter |
| DDA43112C* | 1/2" Copper Pipe Adapter |
| DDA554 | 3/4"EK x 1/2" Reducer |
| DDV71110 | Angle Isolation Valve w/By-Pass |
| DDV72110 | Angle Isolation Valve |
| DDV71510 | Straight Isolation Valve w/By-Pass |
| DDV72510 | Straight Isolation Valve |
| DDA4040 | Thermostatic Operator |
| DD8W | White 8" Radsnap Pipe Cover |
| DD8C | Chrome 8" Radsnap Pipe Cover |

*Tube and pipe adaptors are sold individually.

TAPPING IDENTIFICATION



As indicated in the Data Table, Decoro Design steel panel radiators are double panel and available in five different heights; 12", 16", 20", 24" and 36". Each size includes multiple lengths and heat outputs.

Radiators have a light eggshell white epoxy powder coated finish which, if desired, can be repainted by an automobile refinishing professional to a color of your choice.

Each radiator is manufactured with six 1/2" BSP threaded connections, as shown in the illustration above, one of which has a factory installed integral thermostatic valve/adjustable flow-setter, another, a manual air vent, two with drain plugs and a bottom supply and return connection. Many different piping configurations are possible, examples of which will be shown later in this manual.

Each radiator comes standard with two 3/4" male EK x 1/2" male BSP O-Ring adapters, Decoro Design Snap-Grip mounting brackets and a 10 YEAR warranty from the date of installation. Warranty protects the original purchaser from manufacturing defects resulting from faulty materials and/or factory workmanship, and applies to the product only.

INSTALLATION REQUIREMENTS

Decoro Design steel panel radiators are designed to be installed in closed hydronic heating systems, with a maximum operating temperature of 250° F.

If the heating system contains antifreeze, the proper Ph must be maintained. High acidity will damage the radiator and void the manufacturer's warranty.

If radiators are to be installed into an existing heating system, thorough flushing of the boiler and distribution system is required. Continue flushing the system with clean water until it runs clear and debris free for several minutes. For severely dirty systems, a quality cleanser may be necessary. Follow the manufacturer's instructions when using these products.

DIMENSIONS

Height: 12", 16", 20", 24", 36"

Length: 16" to 72" (see specification sheet for available sizes)

Width: 4"

Width including mounting bracket: 5 1/4"

Bottom supply and return: 2" on center

Minimum clearance to floor: 4"

REDUCED AVERAGE WATER TEMPERATURE BTUH OUTPUTS

| Radiator Specifications Chart | | | | | | | | |
|--------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| MODEL | 180°F | 170°F | 160°F | 150°F | 140°F | 130°F | 120°F | 110°F |
| DDR12X16 | 1934 | 1696 | 1477 | 1269 | 1068 | 874 | 727 | 519 |
| DDR12X24 | 2900 | 2542 | 2218 | 1900 | 1600 | 1310 | 1037 | 781 |
| DDR12X32 | 3866 | 3392 | 2958 | 2535 | 2133 | 1747 | 1382 | 1041 |
| DDR12X40 | 4831 | 4237 | 3695 | 3170 | 2661 | 2184 | 1726 | 1300 |
| DDR12X48 | 5800 | 5087 | 4436 | 3804 | 3200 | 2620 | 2074 | 1559 |
| DDR12X56 | 6766 | 5933 | 5175 | 4439 | 3733 | 3057 | 2419 | 1819 |
| DDR12X64 | 7732 | 6783 | 5913 | 5074 | 4265 | 3494 | 2763 | 2081 |
| DDR16X16 | 2418 | 2119 | 1849 | 1583 | 1331 | 1092 | 863 | 648 |
| DDR16X20 | 3022 | 2651 | 2310 | 1982 | 1665 | 1365 | 1078 | 812 |
| DDR16X24 | 3626 | 3180 | 2771 | 2378 | 1999 | 1638 | 1293 | 972 |
| DDR16X28 | 4231 | 3709 | 3235 | 2774 | 2330 | 1911 | 1512 | 1136 |
| DDR16X32 | 4835 | 4241 | 3695 | 3170 | 2665 | 2184 | 1726 | 1297 |
| DDR16X36 | 5440 | 4770 | 4159 | 3566 | 2996 | 2457 | 1941 | 1460 |
| DDR16X40 | 6044 | 5302 | 4620 | 3961 | 3330 | 2726 | 2156 | 1621 |
| DDR16X44 | 6648 | 5831 | 5083 | 4357 | 3665 | 2999 | 2371 | 1784 |
| DDR16X48 | 7253 | 6360 | 5545 | 4753 | 3995 | 3272 | 2590 | 1945 |
| DDR20X16 | 2876 | 2521 | 2197 | 1883 | 1583 | 1300 | 1024 | 771 |
| DDR20X20 | 3593 | 3153 | 2747 | 2354 | 1979 | 1621 | 1279 | 962 |
| DDR20X24 | 4313 | 3780 | 3295 | 2825 | 2375 | 1945 | 1535 | 1153 |
| DDR20X28 | 5033 | 4412 | 3845 | 3296 | 2771 | 2269 | 1791 | 1347 |
| DDR20X32 | 5749 | 5043 | 4392 | 3767 | 3166 | 2593 | 2047 | 1539 |
| DDR20X36 | 6469 | 5670 | 4942 | 4238 | 3562 | 2914 | 2303 | 1733 |
| DDR20X40 | 7186 | 6302 | 5490 | 4709 | 3958 | 3238 | 2559 | 1924 |
| DDR20X44 | 7906 | 6933 | 6040 | 5179 | 4354 | 3562 | 2815 | 2115 |
| DDR20X48 | 8626 | 7561 | 6590 | 5650 | 4746 | 3886 | 3071 | 2310 |
| DDR24X16 | 3310 | 2900 | 2528 | 2167 | 1819 | 1488 | 1177 | 884 |
| DDR24X20 | 4135 | 3627 | 3160 | 2706 | 2276 | 1863 | 1471 | 1105 |
| DDR24X24 | 4964 | 4350 | 3793 | 3248 | 2730 | 2235 | 1764 | 1327 |
| DDR24X28 | 5790 | 5077 | 4424 | 3791 | 3183 | 2607 | 2057 | 1546 |
| DDR24X32 | 6619 | 5800 | 5057 | 4336 | 3641 | 2979 | 2354 | 1767 |
| DDR24X36 | 7445 | 6527 | 5688 | 4872 | 4094 | 3351 | 2648 | 1989 |
| DDR24X40 | 8270 | 7250 | 6318 | 5415 | 4548 | 3722 | 2941 | 2211 |
| DDR24X44 | 9100 | 7977 | 6952 | 5957 | 5002 | 4094 | 3235 | 2429 |
| DDR24X48 | 9926 | 8704 | 7583 | 6496 | 5459 | 4466 | 3528 | 2651 |
| DDR24X56 | 11580 | 10154 | 8847 | 7581 | 6367 | 5213 | 4118 | 3095 |
| DDR24X64 | 13235 | 11604 | 10111 | 8663 | 7278 | 5957 | 4705 | 3535 |
| DDR24X72 | 14890 | 13054 | 11376 | 9745 | 8190 | 6701 | 5295 | 3978 |
| DDR36X16 | 4541 | 3968 | 3443 | 2938 | 2457 | 1999 | 1569 | 1170 |
| DDR36X20 | 5678 | 4957 | 4306 | 3675 | 3071 | 2501 | 1962 | 1464 |
| DDR36X24 | 6814 | 5951 | 5166 | 4408 | 3685 | 2999 | 2354 | 1757 |
| DDR36X32 | 9083 | 7933 | 6885 | 5879 | 4913 | 4002 | 3142 | 2341 |

The above BTUH OUTPUT rating is based on average water temperature and a 24° F Delta T

SIZING

If unfamiliar with heating system design using steel panel radiators, please consult a qualified distributor for guidance before proceeding.

1. An accurate heat loss must be performed to determine the load of the space(s) to be heated.
2. Based on a predetermined design water supply temperature, choose a radiator from the specification chart(s) that most closely matches the heat loss of the space in which it is to be installed. If a single radiator does not have enough capacity, divide the load evenly into two or three radiators. Standard ratings are based on 68°F EAT, the average water temperature and a 24°F water Delta T across the radiator.
3. Radiators preferably should be mounted on an outside wall.
4. Determine if the wall chosen is large enough to accommodate the radiator. If not, multiple radiators may be required.
5. Radiators must be mounted a minimum of 4" above the floor. If straight valves are to be incorporated, additional floor clearance should be considered to ease the installation of the tubing/pipes onto the radiator.

FLOW RATE

Flow rates for a Decoro Design steel panel radiator system are based on the calculated heat loss of each heating zone. Using the calculated heat loss, determine the Btu load of each individual zone. The following formula will be used to calculate the flow rate from the Btu load of the individual zones. The following information is provided as informational only; system design should be conducted by a qualified individual with panel radiator experience.

$$\text{Flow Rate (GPM)} = \text{Heat Loss (Btu/h)} / 500 \times \text{Delta T (F)}^*$$

Delta T is the temperature difference between the supply and return of the radiators in each zone. Standard output ratings are based on a 24 degree Delta T (Temperature Drop) between the supply and return of each panel radiator.

The following table provides several divisors for the above formula to make calculations quicker and easier.

| Delta T (F) | Divisor |
|-------------|---------|
| 10 | 5,000 |
| 15 | 7,500 |
| 20 | 10,000 |
| 24* | 12,000 |
| 25 | 12,500 |
| 30 | 15,000 |
| 35 | 17,500 |

* Standard Rating Application

FLOW RATE (Contd.)

$$\text{Flow Rate (GPM)} = \text{Heat Loss (Btu/h)} / \text{Divisor (above chart)}$$

Example:

Calculated Heat Loss of 23,500 Btu/h

24 Degree Delta T

$$\text{Flow Rate (GPM)} = 23,500 / 24 = 12,000 \text{ (above chart)}$$

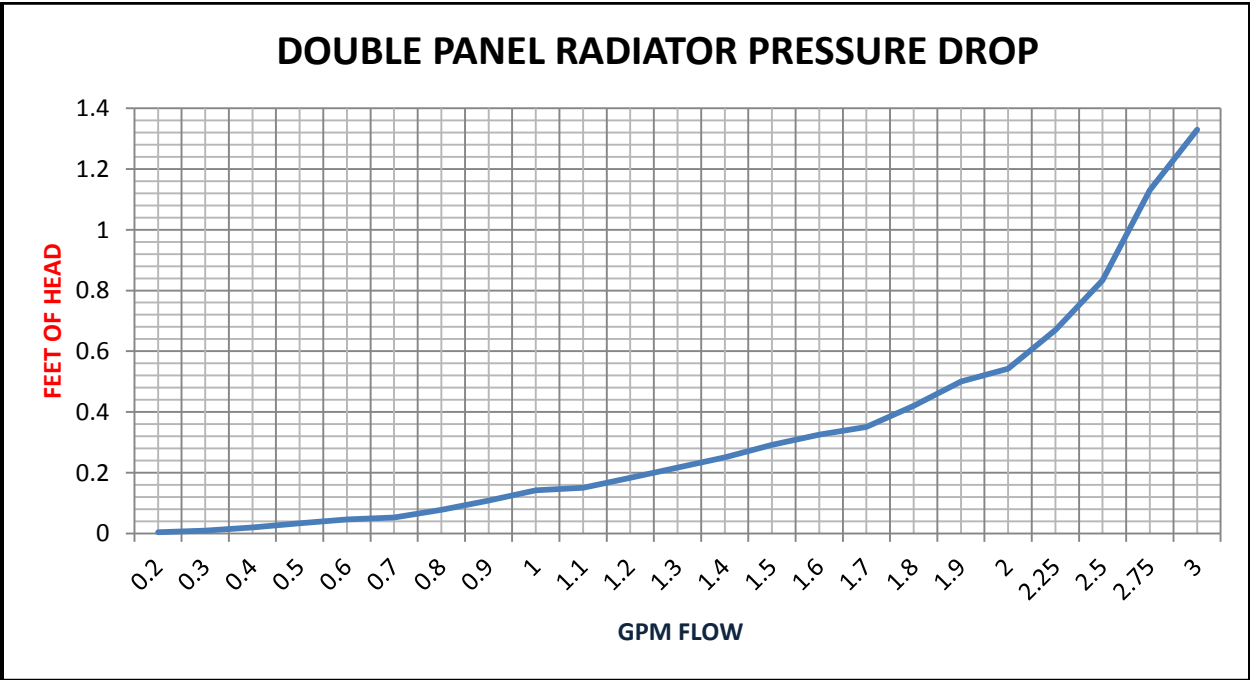
$$\text{GPM} = 23,500 / 12,000$$

$$\text{GPM} = 1.96$$

Series Piping of panel radiators is **not** a preferred method of installation due to the potential of extreme temperature drops across the entire piping circuit. Very careful consideration of system design is required before proceeding. Please consult a qualified distributor

RADIATOR PRESSURE DROP

The following chart will be used to determine the pressure drop for each Decoro Design Double Panel Radiator.



To determine the pressure drop for a radiator, first determine the gpm flow through that radiator using the flow rate formula on the previous page. Once the flow rate is determined, locate the corresponding number on the bottom axis of the chart, move straight up until you intersect the pressure drop curve, now draw a line to the left axis and read the pressure drop in feet of head. Pressure drop through radiator is based on the flow setter valve being in the full open position (position #6, see Thermostatic Valve Assembly chapter).

Repeat this procedure for each individual radiator. If the radiators are to be installed in a series circuit, add the pressure drops of each radiator together to determine the total radiator pressure drop. If the radiators are piped in a parallel circuit use the highest single radiator pressure drop as the total radiator pressure drop for that circuit.

In a series circuit the total loop flow rate passes through each radiator, in a parallel circuit the flow rate is divided among the radiators.

Example:

Determine the pressure drop of a Decoro Design DDR24X64 radiator, at standard conditions 13,235 Btu, with a 24 degree temperature drop.

$$\text{Gpm} = 13,235 / 12,000$$

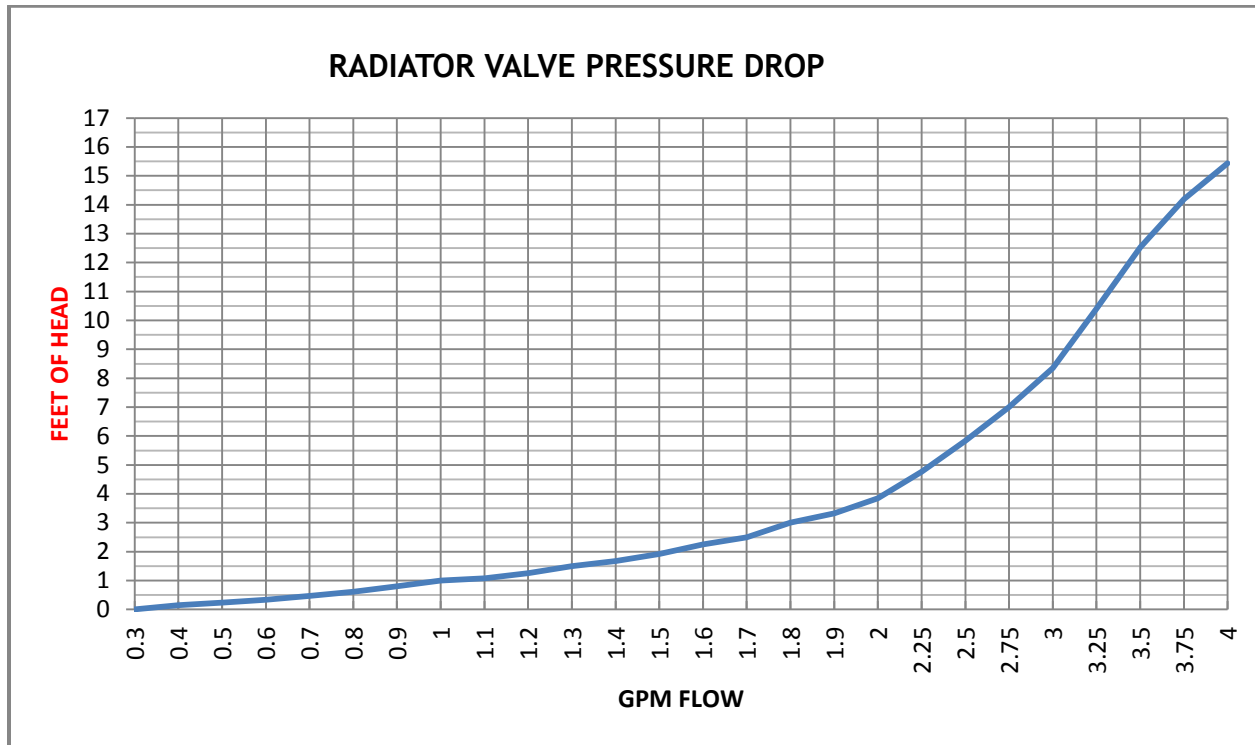
$$\text{Gpm} = 1.10$$

Locate 1.10 gpm on the bottom axis of the above chart, move up to the pressure drop curve, follow the intersecting line to the left axis and read the pressure drop in feet of head, approximately .15. If this radiator was to be installed in a series circuit with 3 other radiators of the same size then the pressure drop through all the radiators would be $.15 \times 3$ (radiators) = .45 foot of head.

The use of heating system antifreeze may affect the flow rate and pressure drop characteristics of a heating system. Please consult a qualified distributor for guidance.

“H” VALVE RADIATOR VALVE PRESSURE DROP

The following chart will be used to determine the pressure drop through all four types of Decoro Design radiator valves.



Determining the pressure drop for the radiator valve is the same procedure used for the radiators on the previous page. Find the calculated flow rate in Gpm on the bottom axis of the chart, move straight up until you intersect the curve then draw a line to the left axis and read the pressure drop in feet of head.

Repeat this procedure for each individual radiator. If the radiators are to be installed in a series circuit, add the pressure drop of each valve in the circuit together to determine the total valve pressure drop. If the radiators are to be piped in parallel the valve with the highest pressure drop will determine the total valve pressure drop for that circuit.

In a series circuit the total loop flow rate passes through all the valves, in a parallel circuit the flow rate is divided among the valves.

Example:

Using the example from the previous page; a DDR24X64 radiator emitting 13,235 Btu @ 1.1 Gpm flow

Find 1.1 Gpm on the bottom axis of the chart, move straight up until you intersect the curve, now follow the horizontal line to the left axis and read the pressure drop for this valve in feet of head, approximately 1.0’.

If there were 3 of these radiators installed in a series circuit the total valve pressure drop would be 3 feet of head ($3 \times 1.0' = 3'$). In a parallel circuit, with the same 3 radiators, the total valve pressure drop for the circuit would be 1.0’, the largest individual valve pressure drop in the parallel circuit.

TOTAL PRESSURE DROP

Total Piping Circuit Pressure Drop

The total circuit pressure drop is calculated by adding together the total radiator pressure drop, total H-valve pressure drop, boiler pressure drop, and the supply and return piping pressure drop (including all devices installed within the piping. (Flowcheck, airscoop, valves etc.).

Circulator Sizing

Circulator size is determined by two criteria; flow rate in gpm and pressure drop in foot of head. After these two items have been calculated for a particular piping circuit, a circulator can be chosen using the manufacturer's performance curve.

Example;

One Decoro Design DDR24X72 panel radiators, 14,890 Btus, installed in a piping circuit designed for a 24 degree temperature drop across the radiator.

Flow rate = $1 \times 14,890 / 12,000$

Flow rate = 1.24 gpm

Radiator Pressure drop = .19 foot of head (from radiator pressure drop chart)

H-valve pressure drop = 1.5 foot of head (from H valve pressure drop chart)

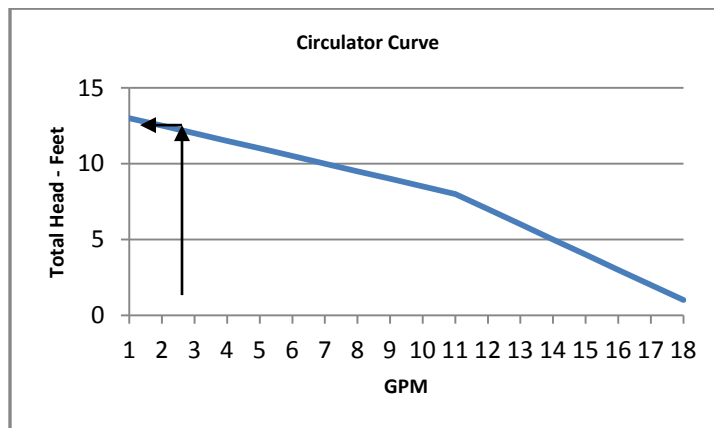
Boiler pressure drop = 1 foot of head (from manufacturers' information)

Supply & return pressure drop = 4.5 foot of head (calculated)

Total Circuit Pressure Drop = 7.19 foot of head

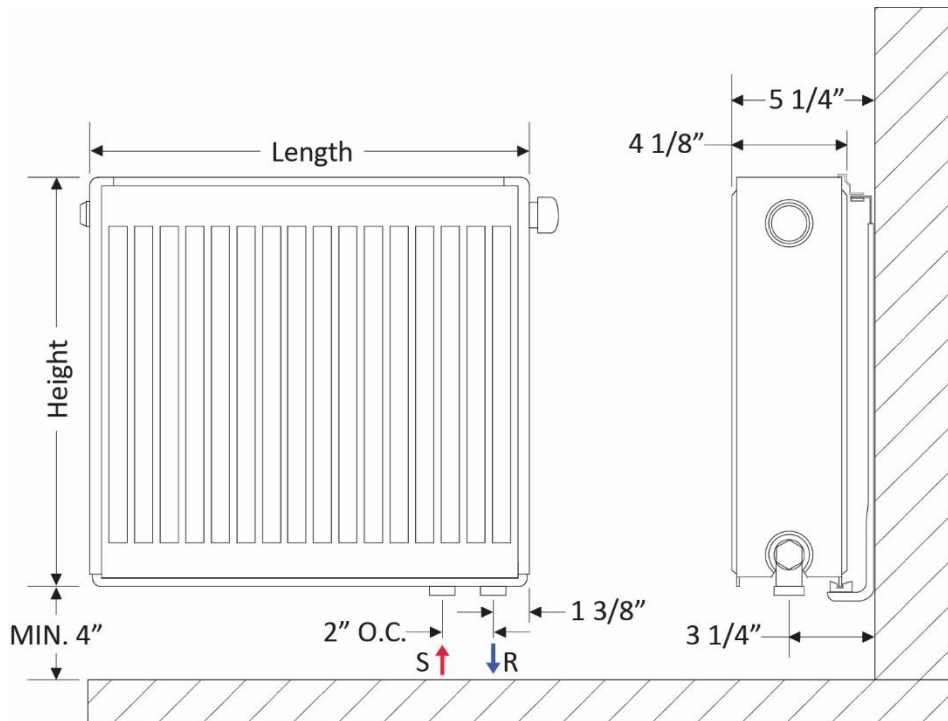
1.24 gpm @ 7.19 foot of head

Using the manufacturer's performance curves, choose a circulator that meets or slightly exceeds the circuits' requirements, see example below.



RADIATOR ROUGH-IN

Dimensions



Radiators should be placed on an outside wall, below a window if possible. Check the installation location and determine if adequate space is available to accommodate the panel size chosen.

Decoro Design recommends the use of the bottom supply and return connections. These connections are located near the end of the radiator. The return connection is 1 3/8" from the end and the supply is 2" further in towards the radiator center. This connection location will accept any one of the four optional H-Valves.

Decoro Design panel radiators are reversible, dependent upon which side is facing the rooms' interior the supply and return connections may be located either on the left or right hand side. Be sure the proper connection location is selected before drilling piping holes.

See the above figure for additional dimensions and rough-in information.

The optional side connections may be used in lieu of the preferred bottom connections. Care must be taken when using these connections. In some cases the integral thermostatic/flow-setter valve will be by-passed causing continued, uncontrolled heating of the radiator. The plugs removed from the side connections must be installed in the unused bottom connections before filling the system with water. Decoro Design valves are not compatible with the side connections.

See the 'Piping Options' section of this manual for more information.

BRACKET AND RADIATOR MOUNTING

Decoro Design Snap-Grip mounting brackets must be securely fastened to the wall. Frame type construction requires the brackets to be fastened to the wall studs, preferably towards the ends of the radiator. With 16" long radiator, if at least bracket cannot be secured to a wall stud, use 3/8" (minimum) hollow wall toggle bolt fasteners. Additional bracket sets are available if required.

Each pair of brackets includes; 2 mounting bolts and plastic masonry anchors; do not use these anchors on frame type construction (figure 1).

Install the brackets, aligning the bottom with the desired height of the radiator bottom; a minimum of 4" is required (additional space should be considered when incorporating straight valves to ease pipe/tubing installation). Plumb the brackets against the wall and mark the screw locations. Drill pilot holes, install the screws (don't tighten to the wall), hang the brackets from the screws and tighten completely.

Extend the top clamp by pulling the nylon thumb retainer towards you approximately 1/4" of an inch while lifting up on the top clamp, repeat for all brackets. Lift the radiator and angle the bottom towards the wall, set the inside water panel into the nylon bottom bracket (figure 2). Tilt the top of the radiator towards the wall, when parallel with the wall; push the top clamp down onto the top rear of the radiator until a click is heard (figure 3). An adjustment screw is installed on the top of the top clamp; this permits minor adjustments to the clamp location if necessary (figure 3).



Figure 1

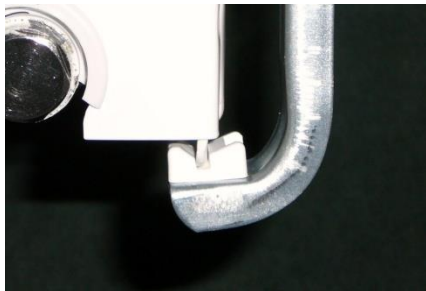


Figure 2



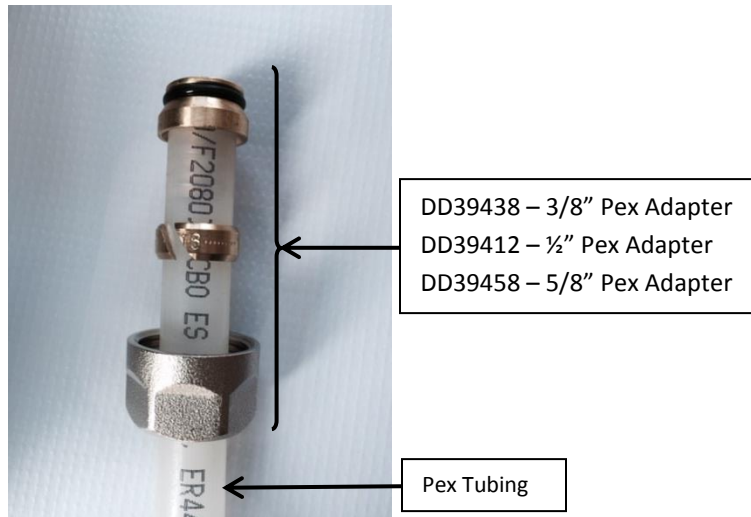
Figure 3



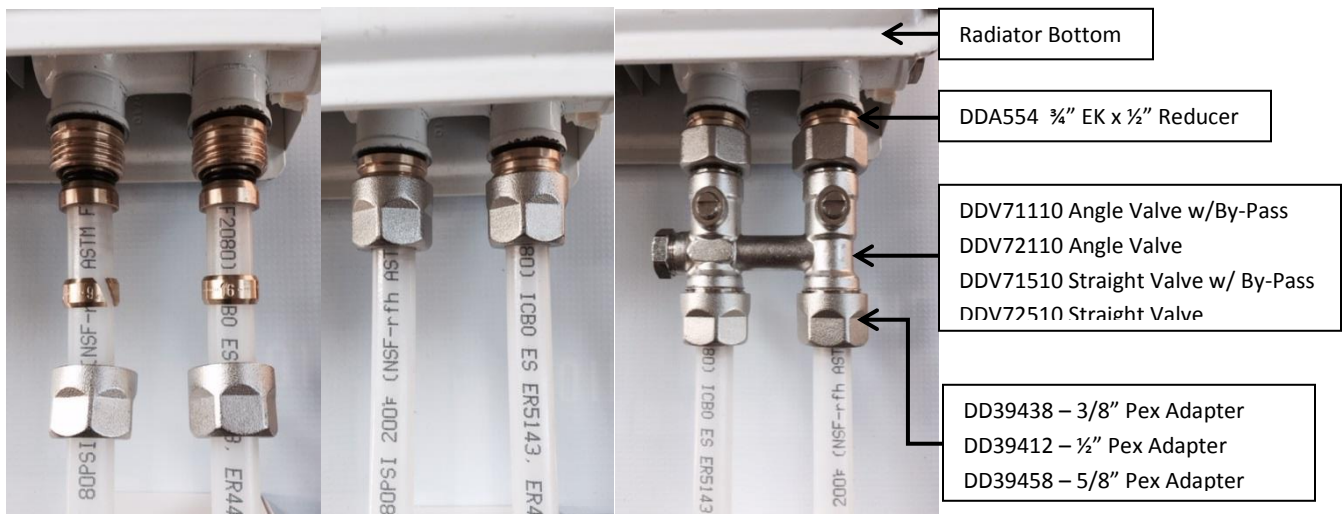
Figure 4

TUBING AND PIPE ADAPTORS

Decoro Design panel radiators may be connected directly to the system piping using the available pex tubing or copper pipe adapters. Isolation and by-pass valves are also available and are installed between the radiator and tubing/pipe adapters.

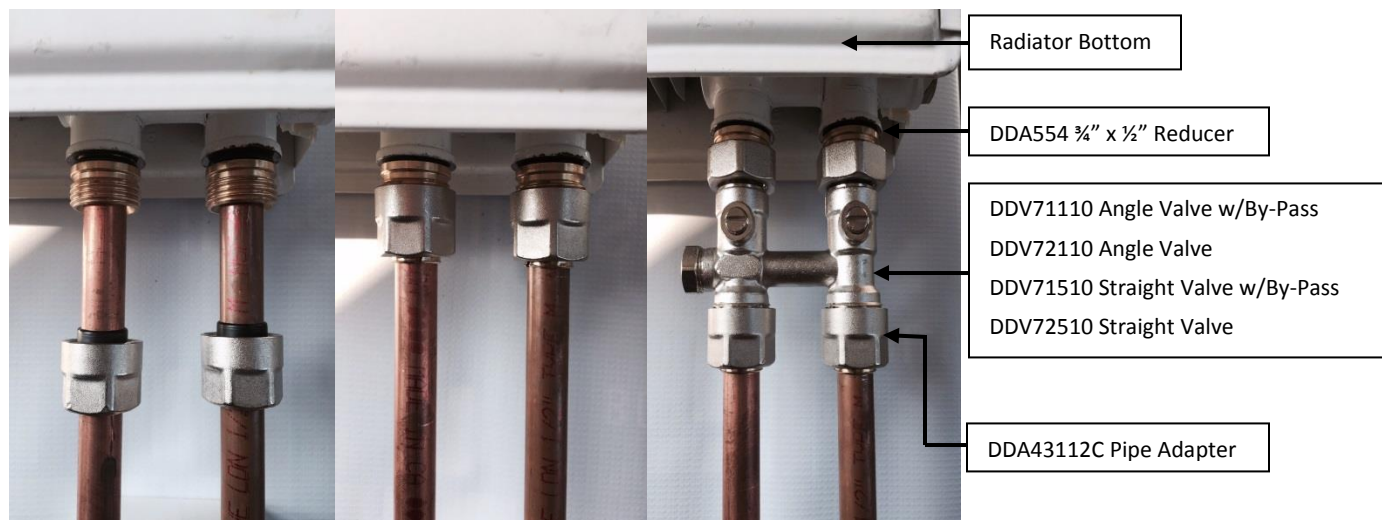


Pex Tubing Adapter Assembly



Pipe thread sealant is not required. Insert the DDA554 reducers into the supply and return connections of the radiator and tighten with a 12mm Allen wrench. Choose the proper size pex tubing adapter. Slide the nut onto the tubing followed by the compression ring, and then insert the o-ring fitting into the end of the tubing. Firmly insert the tubing into the DDA554 reducer until it bottoms out and hold it there. Slide the nut and compression ring onto the DDA554 reducer and tighten. Do not overtighten.

COPPER PIPE ADAPTER ASSEMBLY



Pipe thread sealant is not required. Insert the DDA554 reducers into the supply and return connections of the radiator and tighten with a 12mm allen wrench. Slide the DDA43112C-1/2" copper adapter (one piece) onto the copper pipe. Insert the copper pipe into the reducer and hold it. Slide the copper adapter up the pipe and attach it to the DDA554 reducer and tighten. Do not overtighten.

Installation assembly using valves is the same as described above. The only difference is the addition of one of the valves between the DDA554 reducer and tubing or pipe adapter.

ISOLATION AND BY-PASS VALVES

By-pass Valves

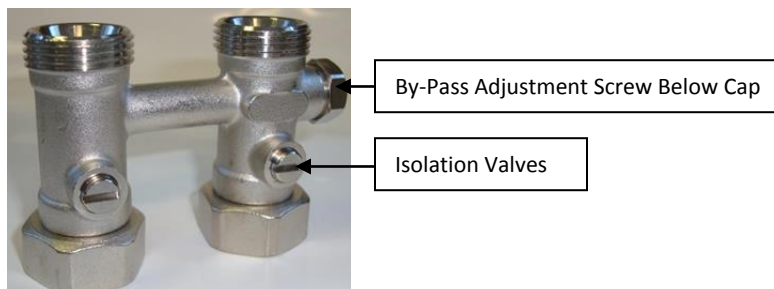
Isolation Valves



Isolation valves DDV72110 & DDV72510, with their integral ball valves and O-ring seats, are designed to make radiator maintenance and removal quick and easy.

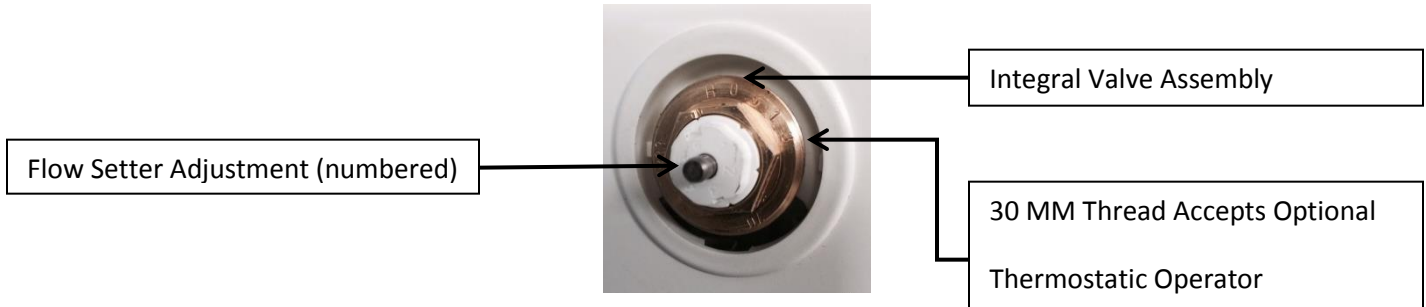
By-Pass valves DDV71110 & DDV71510, are available for use in one pipe systems. They provide the same isolation feature along with an adjustable by-pass capability. Preset to 35% flow through the radiator and 65% through the by-pass. Because of high pressure drop through the valve, a maximum circuit flow rate must not exceed 2 GPM when using either the straight or angled By-Pass Valves. A maximum of 4 radiators may be connected to a By-Pass Valve piping circuit.

The by-pass feature is adjustable. Remove the cap and insert a 5mm allen wrench to adjust. Turning the by-pass screw clockwise closes the by-pass and forces more water flow through the radiator. To reset the adjustment screw to the factory setting, turn clockwise until the by-pass is completely closed then turn counter-clockwise approximately 1 ¾ turns.



INTEGRAL THERMOSTATIC VALVE AND FLOW SETTER ASSEMBLY

Decoro Design panel radiators have integral thermostatic and flow setter valves installed as standard equipment, thermostatic operators are optional.



| Flow Setter | |
|-------------|-----------------|
| Number | Percentage Open |
| 1 | 10 |
| 2 | 20 |
| 3 | 30 |
| 4 | 40 |
| 5 | 50 |
| 6 | 100 |

Flow Setter is factory set to “6”.

Flow Setter is adjusted by removing the white factory installed white cap (turn counterclockwise) and then turning the inner gland (picture above) to the corresponding number. When finished, replace the white cap but do not tighten. If the cap is tightened water flow through the valve will be further impeded.

As the flow setter valve opening is reduced the pressure drop (resistance) through the radiator will increase. Considering the additional pressure, circulator performance may need to be re-assessed.

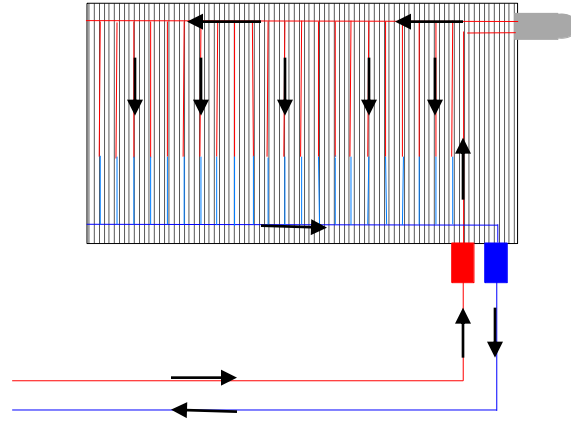
Optional Thermostatic Operator Settings

Install the optional thermostatic operator by first removing the factory installed white cap covering the thermostatic valve (turn counterclockwise). Thermostatic valve should be set to “6”. Set the thermostatic operator to # 5 and then screw onto the valve and tighten. Adjust the operator to the desired room temperature using the reference table below.

| Thermostatic Operator | |
|-----------------------|------------------------------|
| Number | Approximate Room Temperature |
| Snowflake | 43.7 F |
| 1 | 51.8 F |
| 2 | 60.8 F |
| 3 | 68.0 F |
| 4 | 75.2 F |
| 5 | 81.5 F |

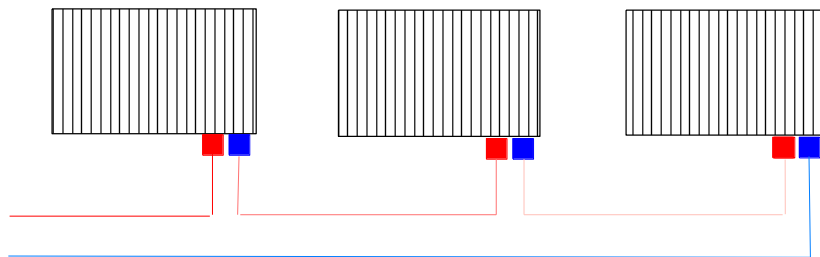


WATER FLOW

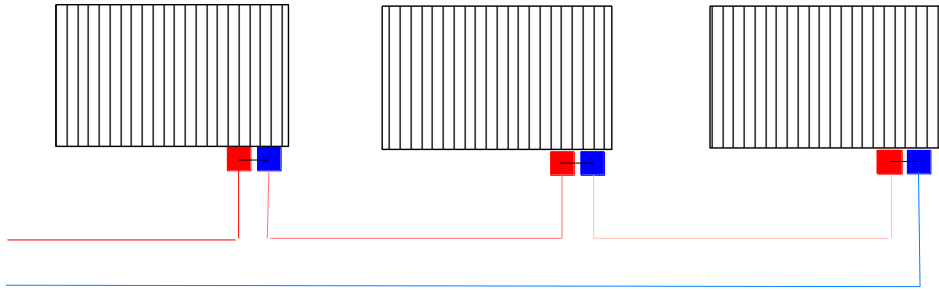


Piping schematics provided on the following pages are informational only and just a small sampling of possible piping arrangements. Sound engineering practices must be adhered to when designing any steel panel radiator heating system.

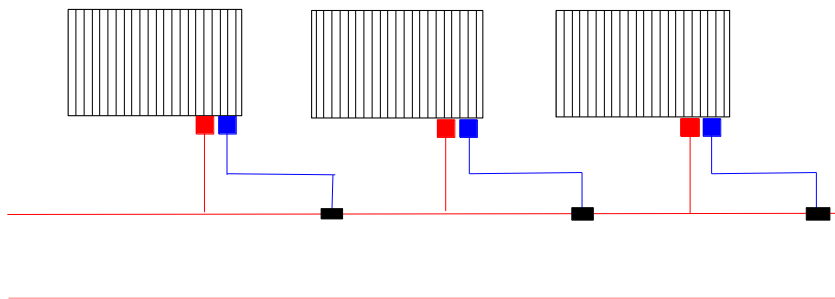
Series Circuit (Maximum Circuit Flow Rate Is 1.5 GPM, and/or 3 Radiators). This is not a preferred method of installation because of the potential of very large temperature drops across the piping circuit. Please consult a qualified individual before proceeding.



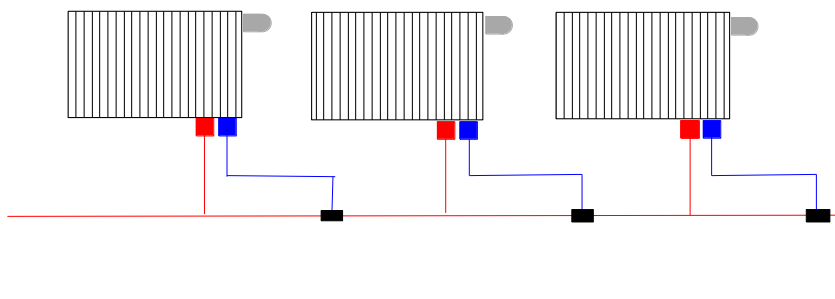
Series Circuit w/By-Pass Valves (Maximum Circuit Flow Rate Is 2 GPM, and/or 4 Radiators).
This is not a preferred method of installation because of the potential of very large temperature and pressure drops across the piping circuit. Please consult a qualified individual before proceeding.



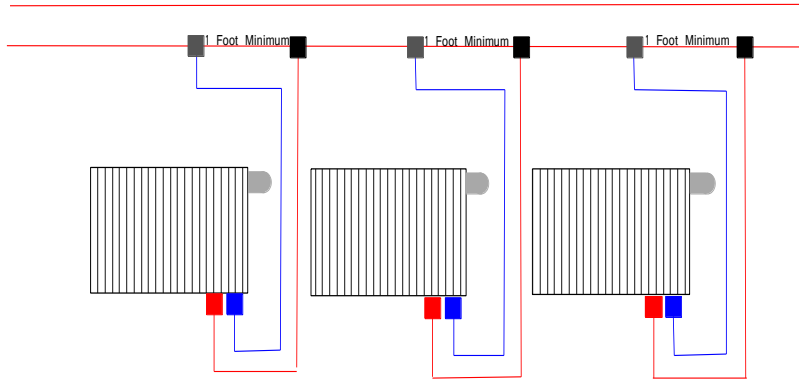
Monoflo (Diverter Tee)



Monoflo w/Thermostatic Operators



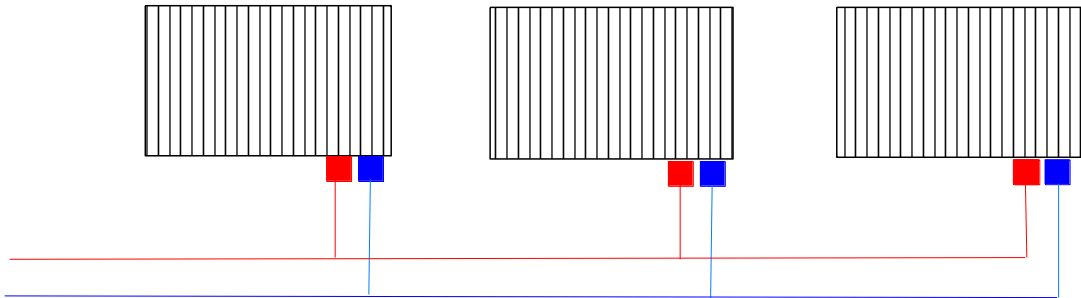
Downflow Monoflo w/ Thermostatic Operators*



*Two monoflow tees required on each radiator

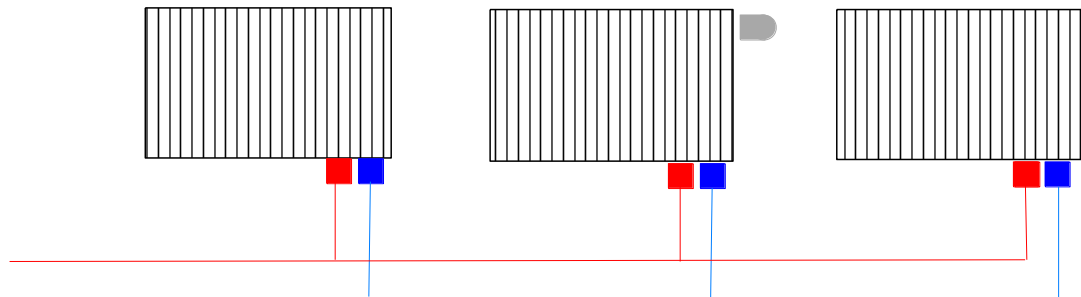
Direct Return

(Flow Balancing Required)

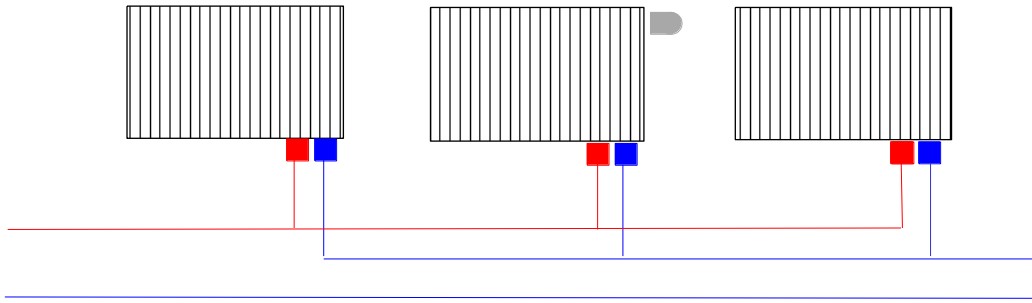


Direct Return w/Thermostatic Operators

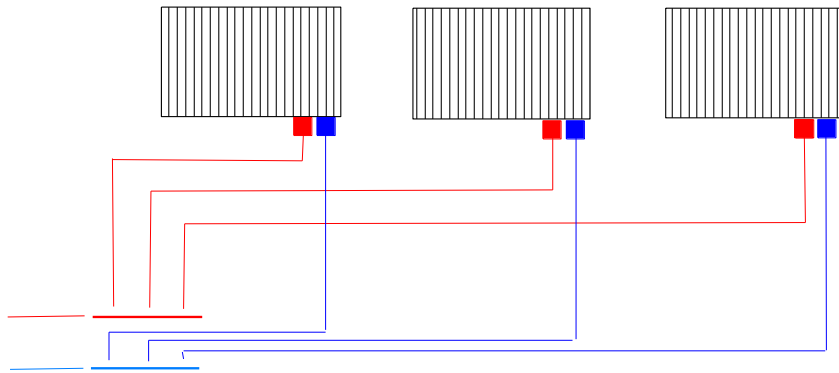
(Flow Balancing Required)



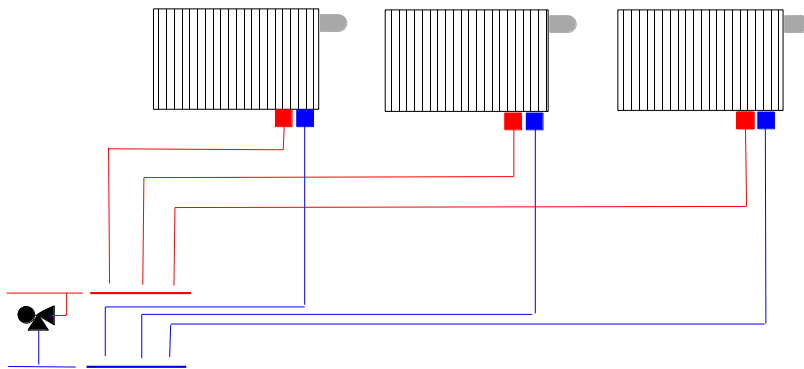
Reverse Return With or Without Thermostatic Operators



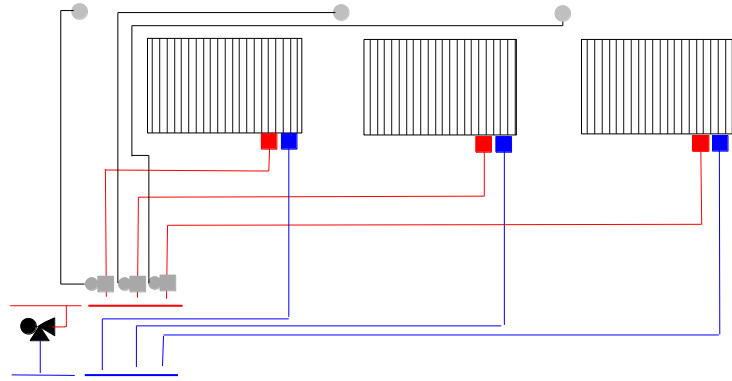
Homerun



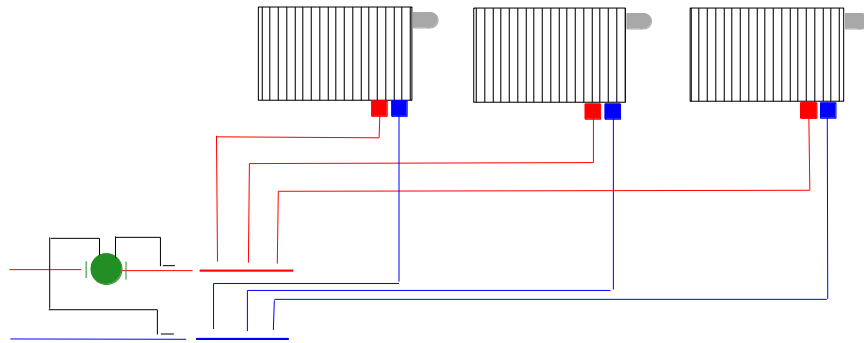
Homerun with Thermostatic Operators and By-Pass Valve



Homerun with Electric Zone Valve and By-Pass Valve



Homerun with Thermostatic Operators and Variable Speed Delta T Circulator



PIPING OPTIONS

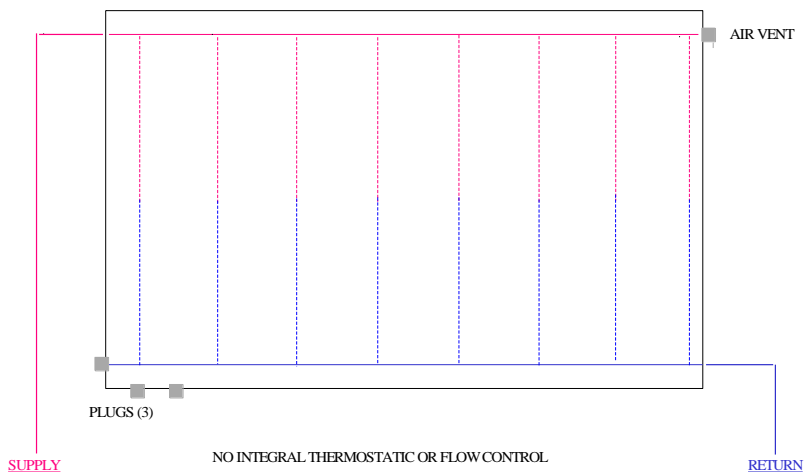
Decoro Design recommends their panel radiators be connected to the piping system through the bottom supply and return connections. This guarantees complete water flow through the radiator and proper operation of the flow-setter and thermostatic valve.

Should it be impossible or impractical to use bottom connections, other piping configurations are possible using the side connections. Extreme care must be used to assure proper water flow and flow-setter and thermostatic valve operation. Improper installation will result in poor system performance, reduced or no radiator Btu output, or lack of temperature control.

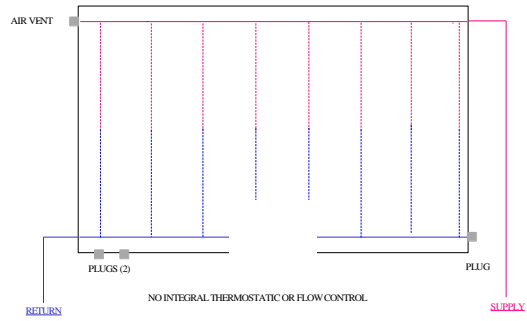
Decoro Design isolation and diverter valves, both straight and angle, fit the supply and return connections on the bottom of the radiator only. Additional fittings may be required and they may not be available from this manufacturer.

Alternate Piping Arrangement Examples

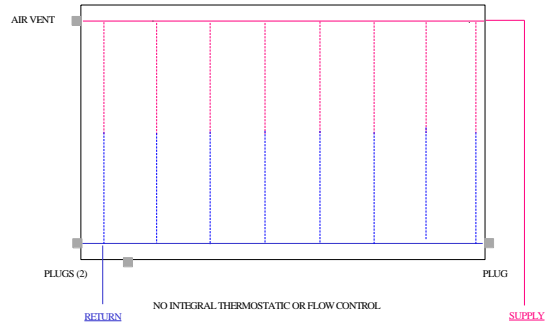
System designer and/or installer are responsible to determine whether proper radiator and/or system operation will result using alternate piping arrangements. Examples are provided for illustrative purposes only!



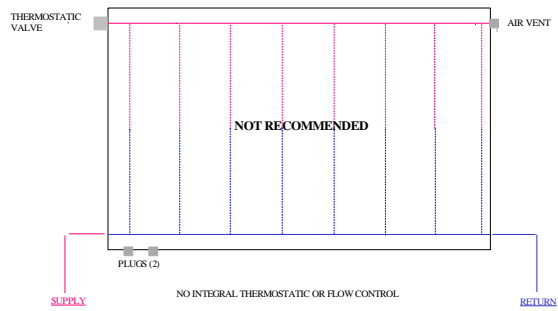
[PANEL RADIATORS - ALTERNATE PIPING ARRANGMENT 1]



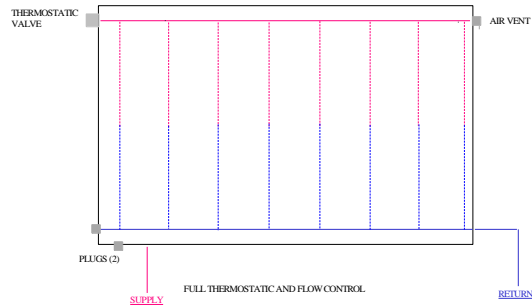
PANEL RADIATORS - ALTERNATE PIPING ARRANGEMENT 2



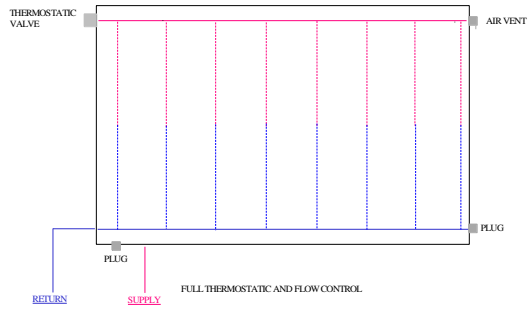
PANEL RADIATORS - ALTERNATE PIPING ARRANGEMENT 3



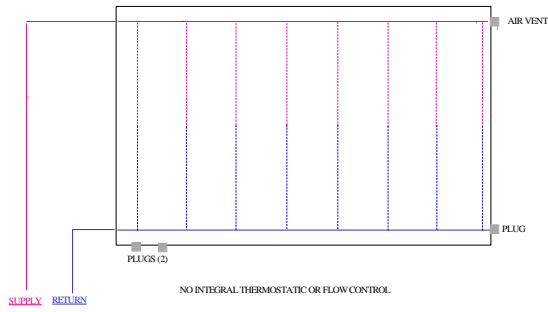
PANEL RADIATORS - ALTERNATE PIPING ARRANGEMENT 4



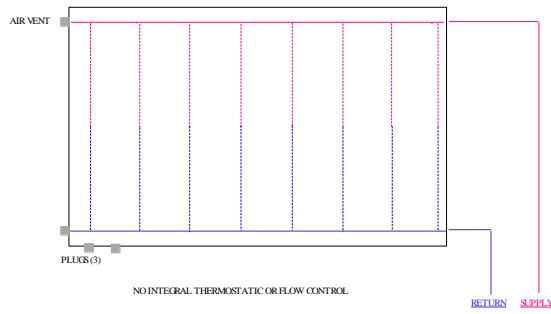
PANEL RADIATORS - ALTERNATE PIPING ARRANGEMENT 4



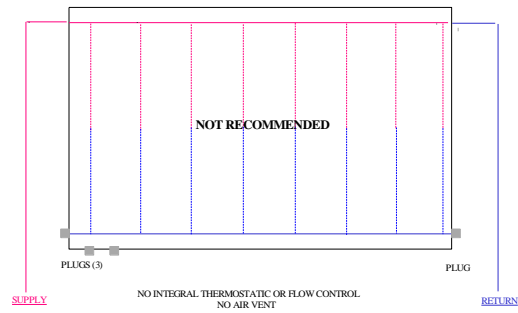
PANEL RADIATORS - ALTERNATE PIPING ARRANGEMENT 5



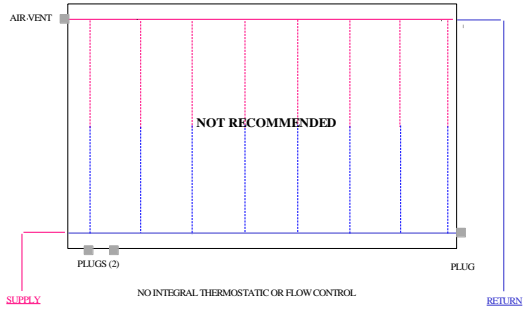
PANEL RADIATORS - ALTERNATE PIPING ARRANGEMENT 6



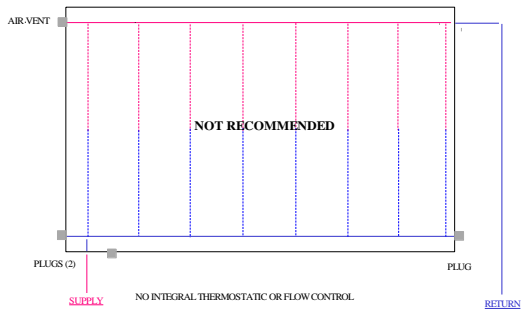
PANEL RADIATORS - ALTERNATE PIPING ARRANGEMENT 7



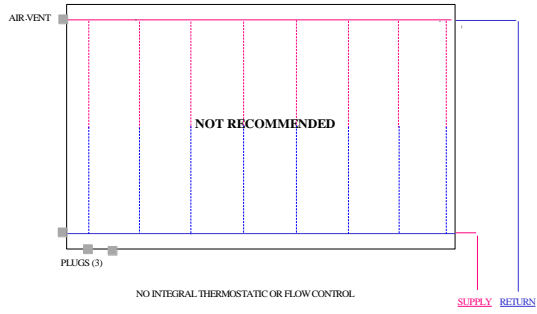
PANEL RADIATORS - ALTERNATE PIPING ARRANGEMENT 4



PANEL RADIATORS - ALTERNATE PIPING ARRANGEMENT 4



PANEL RADIATORS - ALTERNATE PIPING ARRANGEMENT 4



PANEL RADIATORS - ALTERNATE PIPING ARRANGEMENT 4

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