

# PANEL RADIATORS

# GENERAL

## PRODUCT SURVEY

	Integral	Plainor	Compact	Vertical
profiled front (profile 50 mm)	✓	—	✓	✓
flat front	—	✓	—	—
side covers	✓	✓	✓	✓
top grill	✓	✓	✓	—
assembly points	✓	✓	✓	✓
n° connections	6	6	4	4 / 6
supply and return pipes invisible	✓	✓	—	—
thermostatic valve body included	✓	✓	—	—
hangers	✓	✓	✓	✓
assembly packaging	✓	✓	✓	—
bore template	—	—	—	✓

## APPROVALS & WARRANTY

In the manufacturing of the radiators, the highest quality standards are set.

The panel radiator complies with all international standards; it is ISO-certified and conducts internal quality tests that exceed these standards.

The Radiator quality and heat emission outputs have been tested and listed by the following institutes:



This translates to a 5-year warranty, after installation, provided that the proper system pressure and installation procedures are adhered to.

## SPECIFICATIONS

- All radiators are manufactured with cold rolled, high quality steel plate according to DIN 1623 and EN 10130.  
Thickness of the steel is .05" [1.25 mm.]  
Some models come standard with a 2" on center (50 mm) left or right rough in connection.
- Test pressure 117 psig [8 bar]
- Working pressure 88 psig [6 bar]



## POWDER COATING PROCESS & COLORS

The surface of the radiator is treated in three stages: a primer coat treatment and 2 separate finishing processes.

As part of the pre-treatment, each radiator is fully degreased. This process ensures optimal bonding of the primer coat. The phosphate coat and the primer offer maximum protection against oxidation. The next step is the rinsing each radiator in a de-mineralized water bath.

the radiators are painted with a process similar to that in a modern automobile factory. The radiators are degreased, phosphate treated, primed (using electrophoretic KTL-bath), and then dried at 390°F (200 °C). Finally, every radiator is painted through an electrostatic powder coating process with epoxy polyesters and enameled at 450°F (230°C) resulting in a brilliance of approximately 70%.

**Standard color is white RAL 9016.**

Other RAL powder coat colors are available at additional cost.

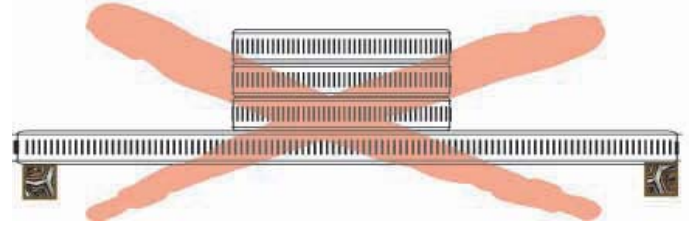
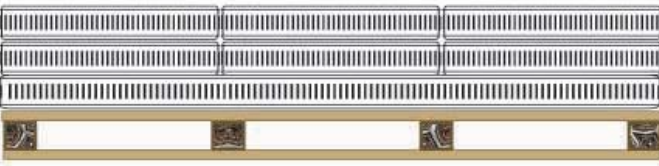
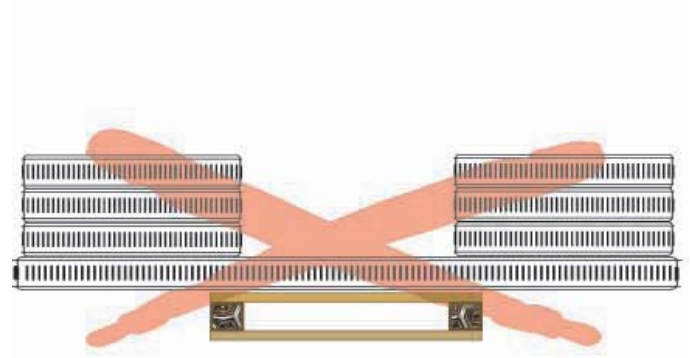
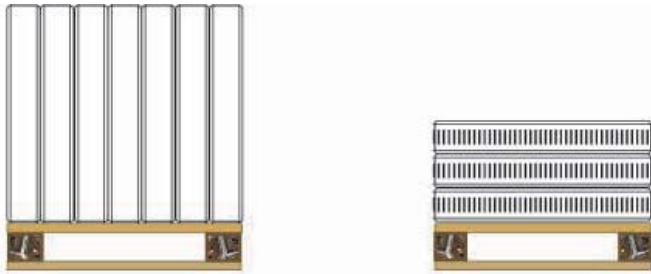
# GENERAL

## TRANSPORTATION / STORING / STACKING

Improper transportation, storing and handling can lead to damage and the possibility of the radiator leaking.

Special care should be taken for long radiators and should not be placed or transported horizontally on pallets or skids that are smaller than the actual radiator itself. Smaller radiators should not be placed or transported on the outer parts of longer radiators as the longer radiators can be damaged and edges bent.

Common sense should be applied in supporting and re-packaging of the radiators.



Do not store the radiators in an exterior environment subject to sun, and weather conditions without protective covering.

If moisture is seen inside the packaging, open and dry.



## PACKAGING & LOADING ON PALLETS

Type	Number per pallet
11	8
21	8
22	8
33	5

The radiators are protected on 4 sides with cardboard, inclusive of corner edge protection and are shrink-wrapped.

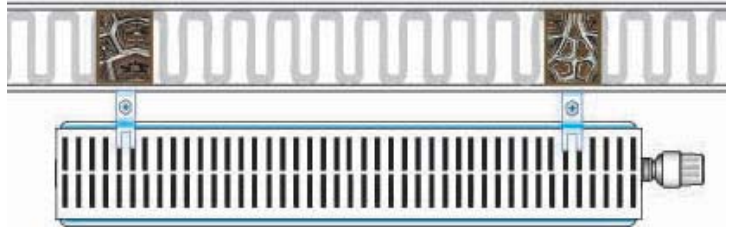
The radiators remain inside their packaging until installation to prevent damage. The entire packaging is recyclable.

# GENERAL

## INSTALLATION RECOMMENDATIONS

When installing a radiator against a sheet rock wall, attach the hangers to the wood studs in the wall whenever possible. Reversible radiators have the convenience of locating the hanger with the studs. Reversible radiators are only available in 21, 22 and 33. Other radiators have fixed dimension for hanger locations. In this event, backing should be provided for proper installation.

**Long radiators are heavy once filled up with water, it is important to make sure the proper amount of hangers are installed to provide support so the radiator does not come off the wall. Human injury and physical damage can occur if the radiator falls off the finished wall.**



## SERIES LOOP SYSTEMS



The panel radiators can also be used in series loop systems with by-pass Multiflex fittings.

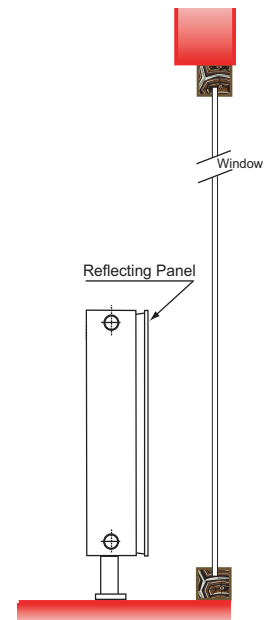
A Multiflex by-pass fitting can also isolate the radiator. This way, a radiator can be removed without interrupting the operation of the heating system. Multiflex fitting can also be installed before the radiators after the rough. This allows for the complete operation of the hydronic system. Now each radiator can be installed after finish painting and easily purged and put into operation without affecting the heating system.

Allow 2" center to center below the radiator to accommodate the Multiflex fitting. The valve insert flow setter, installed at the factory, should be set to its highest setting (6, which is the factory setting) in series loop systems. This allows maximum flow to the system.

**Caution should be exercised in series loop installation for developed lengths of supply & return piping, as well as BTU capacity of the radiators. If questions arise, please contact our technical department.**

## PEDESTAL MOUNTING

In order to prevent excessive heat loss of radiators placed in front of a window, a reflecting panel can be installed between the window and the radiator to improve system efficiency. This accessory is available at additional cost.



# Integral

## DESCRIPTION

### Standard components:

Top grill and side covers are firmly attached to the radiator, yet removable (does not apply for type 10). The front is profiled.

Powder coating process is in correspondence to the DIN 55900 norm and EN 442 (emission free):

- Preparation: degreasing, phosphate layer and rinsing with De-mineralized-water.
- 1st coating process: applying the primer coating according to the cataphoresis process.
- Final coat: according to the epoxy-polyester powder principal.

Standard color is RAL 9016, white. An extensive range RAL-colors are available (at extra charge).

What does the **Integral** name mean? Integrated valve & piping system. Thanks to its design, the supply and return connection is concealed behind the cover and is no longer visible from the side of the radiator.

The supply and return pipes are located at the bottom right (or left if a REV model) and if connected to the wall, provides a clean finish and allows easy cleaning underneath the radiator.

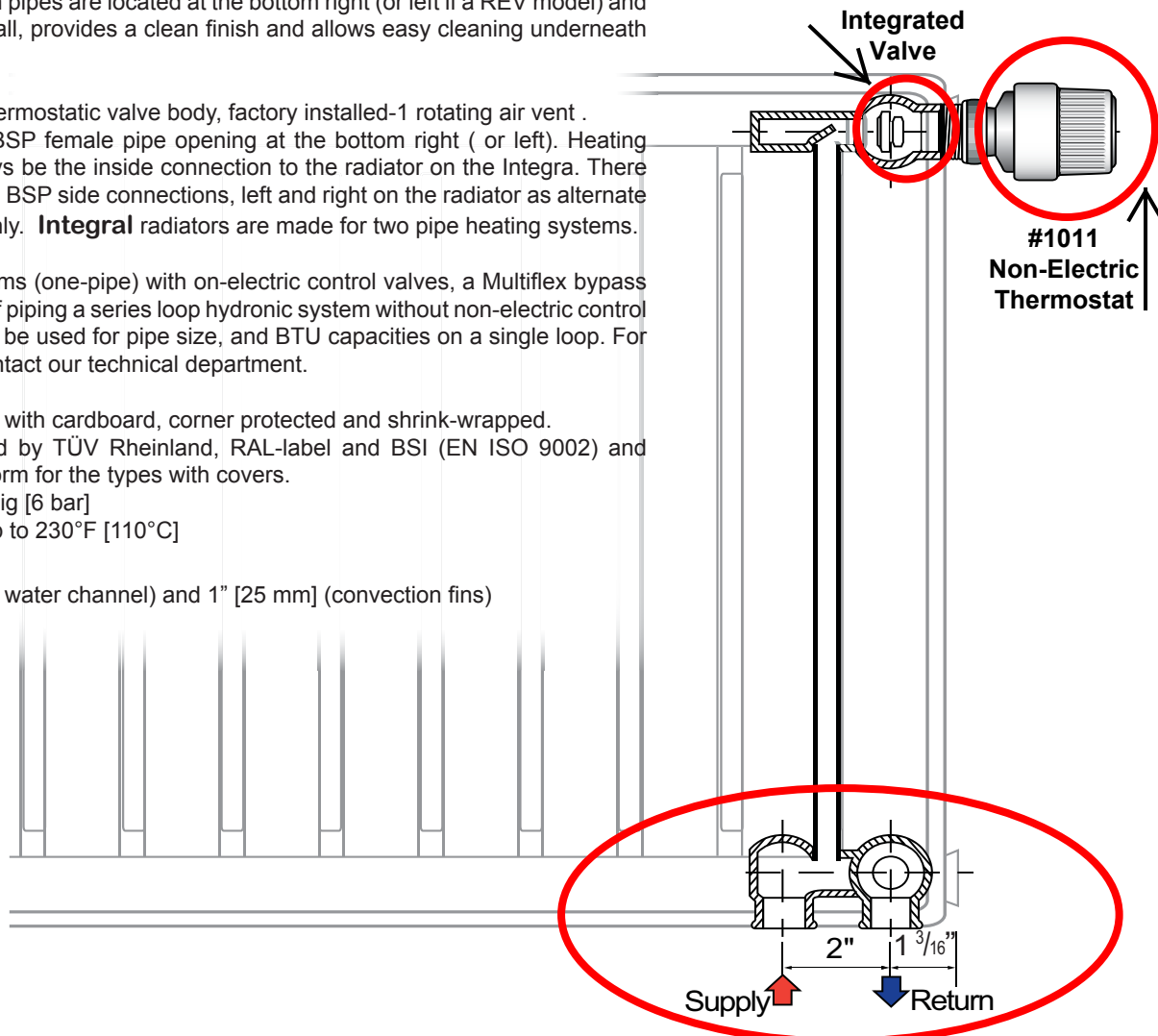
The Cv-adjustable thermostatic valve body, factory installed-1 rotating air vent .  
Connections: 2 -½" BSP female pipe opening at the bottom right ( or left). Heating supply inlet will always be the inside connection to the radiator on the Integra. There are also four other ½" BSP side connections, left and right on the radiator as alternate return connections only. **Integral** radiators are made for two pipe heating systems.

For series loop systems (one-pipe) with on-electric control valves, a Multiflex bypass fitting must be used. If piping a series loop hydronic system without non-electric control valve, caution should be used for pipe size, and BTU capacities on a single loop. For more information, contact our technical department.

Packaging: protected with cardboard, corner protected and shrink-wrapped.  
Quality is guaranteed by TÜV Rheinland, RAL-label and BSI (EN ISO 9002) and meets the BAGUV-norm for the types with covers.  
Work pressure: 88 psig [6 bar]  
Medium: hot water up to 230°F [110°C]

Step: 2" [50 mm] (hot water channel) and 1" [25 mm] (convection fins)

**Warranty: 5 years**

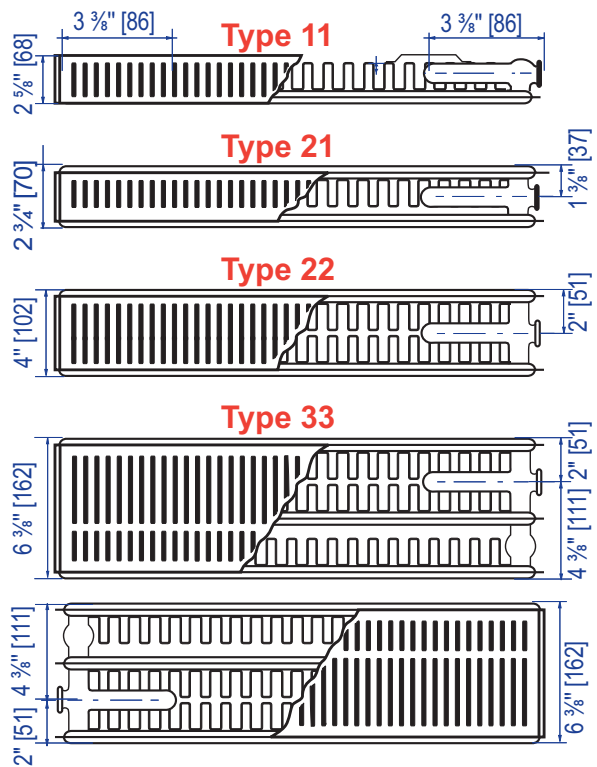




# Integral TYPES

Types 11 - 21 - 22 - 33

Height (inch)	11 3/4"	15 3/4"	19 5/8"	23 5/8"	35 5/8"
Height (mm)	300	400	500	600	900
Width (inch)	15 3/4"	19 5/8"	23 5/8"	27 1/2"	31 1/2"
	35 3/8"	39 3/8"	43 1/4"	47 1/4"	51 1/8"
	55 1/8"	59"	63"	66 7/8"	70 7/8"
	74 3/4"	78 3/4"	86 5/8"	94 1/2"	102 3/8"
Width (mm)	400	500	600	700	800
	900	1000	1100	1200	1300
	1400	1500	1600	1700	1800
	1900	2000	2200	2400	2600
	2800	3000			



Test pressure 118 psig [8 bar]

Work pressure 88psig [6 bar]

Connections 6 x 1/2" BSP

BTU capacity measured in accordance with EN 442 (European standard converted from Watts to BTU's)

Hanging hardware: 4 or 6 welded lugs to received hangers, except for the reversible type 21, 22 and 33

Accessories: 1 stop, 1 rotating air vent, (2 or 3 L-consoles, screws and wall plugs are in the packaging and are inclusive in the price for type 11)

Accessories: Floor standing brackets, screening plate and towel rack + see price-list.

Packaging: solid packaging of cardboard shrink-wrapped with corner guards and edge protection

## CONNECTIONS

Every **Integral** radiator is equipped with 6 connections 1/2" BSP (European threads).

**It is highly recommended that one purchases the required transition pieces from us to receive tapered NPT connections.**

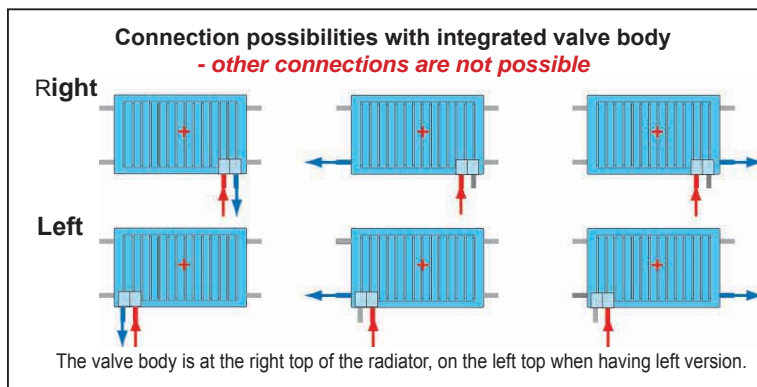
The Kv-adjustable integrated valve insert, the stop and the air vent are installed at the factory. All radiators are equipped with an integrated supply and return on the right hand side of the radiator. This is the standard connection. Left hand radiators available by special order. Please allow 6-8 weeks for special orders.

**Integral** models are also available in Reversible style. With no welded lugs on the radiator, it can be installed in a right or left hand configuration.

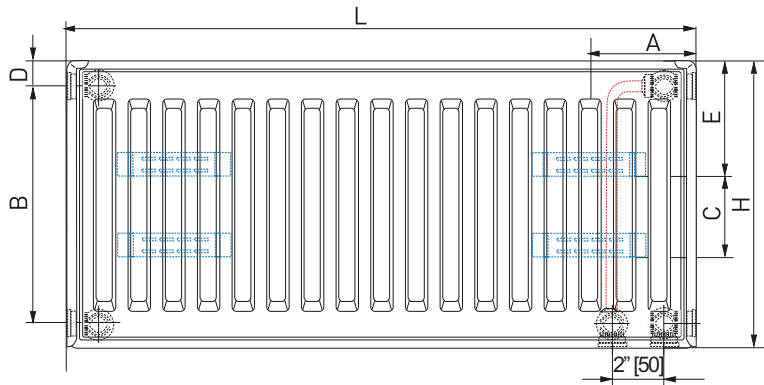
**Please note:**

**Reversible radiators are offered in 21, 22, and 33 style only. 21, and 22 rough in dimensions remain the same. If the 33 is reversed, the left hand rough dimension changes as reflected in the dimensions.**

If you have any questions regarding rough in's, please contact the technical department.

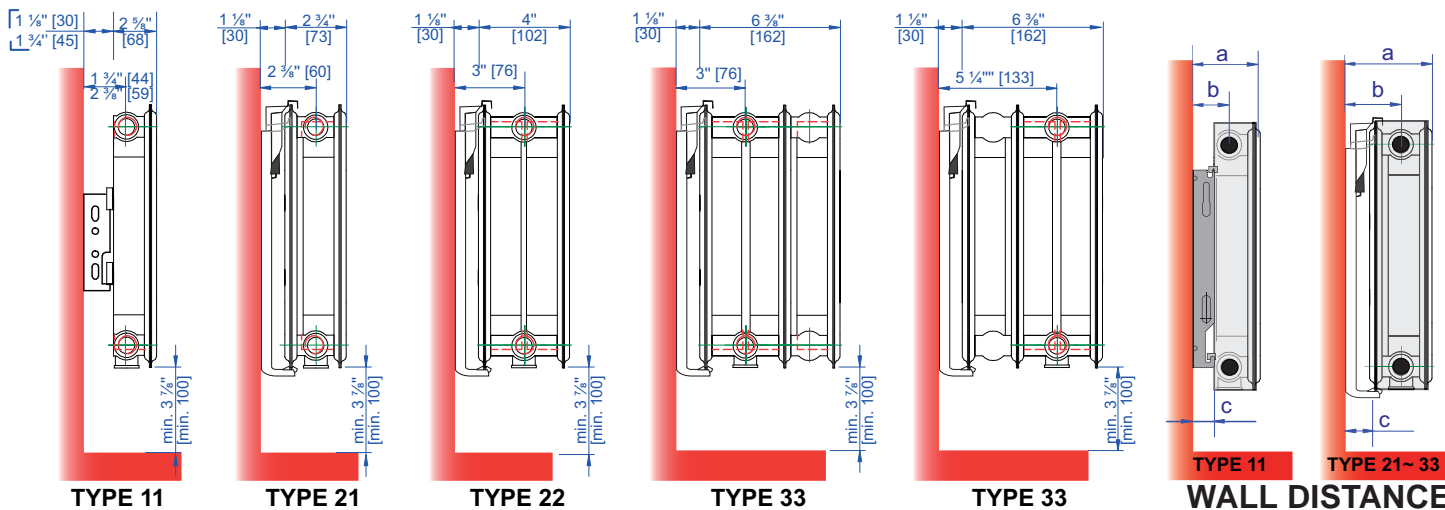


# Integral DIMENSIONS



H		C		B	
inch	mm	inch	mm	inch	mm
11 3/4"	300	3 3/8"	85	9 3/4"	249
15 1/4"	400	7 1/4"	185	13 3/4"	349
19 5/8"	500	11 1/4"	285	17 5/8"	449
23 5/8"	600	15 1/8"	385	21 5/8"	549
27 1/2"	700	19 1/8"	485	25 1/2"	649
31 1/2"	800	23"	585	29 1/2"	749
35 3/8"	900	27"	685	33 3/8"	849

Type	A		E		D	
	inch	mm	inch	mm	inch	mm
11	4 5/8"	117	4 3/4"	120	1"	26
21	no lugs		4 3/4"	120	1"	26
22			4 3/4"	120	1"	26
33			4 3/4"	120	1"	26



Note: Integral reversible Type 21 - 22 - 33 do not have lugs welded on type 11 : right hand connection is standard - left connection is optional

## INSTALLATION

**Type 11 radiators** are equipped with 4 or 6 welded-on hanging lugs at the rear. (6 pieces from L 65" [1650 mm])

The wall hangers are of the type MCW angular bracket - equipped with an acoustic lining in Nylon. The radiators can be supported without the hanger or other attachments visible.

**Type 21, 22 and 33**, the wall hangers are of the type HKD.

The number of hangers used on a radiator depends of the length and weight of the radiator.

Pedestal mounts are available for any type of Integral radiator.



Floor stand covers



type	a		b		c	
	inch	mm	inch	mm	inch	mm
11 narrow assembly	3 7/8"	98	1 3/4"	44	1 1/8"	30
11 wide assembly	4 1/2"	113	2 3/8"	59	1 3/4"	45
21	3 1/2"	100	2 3/8"	60	1 1/8"	30
22	5 1/4"	132	3"	76	1 1/8"	30
33 right connection	7 1/2"	192	3"	76	1 1/8"	30
33 left connection	7 1/2"	192	5 1/4"	133	1 1/8"	30



radiators with welded lugs



reversible Type 21, 22 and 33

## Radiator Installation

**IMPORTANT INFORMATION**

**PLEASE READ THROUGH THE ENTIRE INSTALLATION INSTRUCTIONS BEFORE STARTING INSTALLATION**

- This product is for use with hydronic heating systems connected to boilers or oxygen dead hydraulic systems with system separation. This product should never be installed with open systems.
- This radiator should be inspected for damage before installing on the wall. This product is provided for heating professionals and related trades.
- Please do not lift the radiator by the top grille or side panel as cosmetic damage can occur.
- Please note that style 11 radiators are right hand connection only unless special ordered left hand.
- The connections on all opening of the radiator are ½" BSP connections; please consult the Hydronic Alternatives radiator accessory sheet for appropriate BSP to FPT, Pex or copper connections.

**PACK CONTENTS**

1 x radiator	2 x chrome blanking plugs
2 x wall brackets (unassembled)	1 x air bleed key
1 x air bleeder	4 x bracket buffers (11 series only)
1 x integrated valve	

**INSTALLATION INSTRUCTIONS**

**Step 1**

Remove packaging and visibly inspect the radiator for damage before installing. Note that type 21, 22 and 33 are reversible and will have hangers installed in the packaging and will require assembly. (Please refer to page (2) of this document for assembly instructions). Type 11 radiators are right hand configuration only unless special ordered. There is an accessory pack which includes the Integrated Valve, Air Bleeder, (2) Chrome Plugs and mounting hardware located inside the packaging at the bottom of the radiator that will need to be installed. If you receive a radiator with a "Red Dot" on the outer packaging, the hangers will come preassembled separately with Integrated Valve, Air Bleeder & Chrome Plugs already installed on the radiator requiring tightening only. The cardboard, polyethylene and corner protectors are all recyclable.

**Step 2**

Select your desired installation location and check that there are no water pipes or electrical wires behind the location where the holes need to be made for the radiator hanger. Note the hangers can be fastened to existing wood studs or lagged into masonry walls using appropriate anchors. If wall studs cannot be used, backing should be roughed behind the finish wall to support the weight of the radiator. Please note that the bottom of the radiator should be at least 4" above the finish floor for sufficient airflow and ease of making your supply and return connections.

**Step 3**

Once the hangers have been assembled and mounted on the wall, position the radiator on the floor directly in front of the wall hangers. Carefully lift the radiator into position, once the radiator is firmly set into the bottom channel with the plastic insulator snap the spring clip so that the ears connect in between the grille spaces. Once the spring clip has snapped into position the supply and return connections can be safely made. If the spring clip is not properly engaged the possibility of the radiator coming loose from the wall could occur. Make sure the spring clip on the hanger assembly is properly engaged before proceeding with the heating system connections.

**Step 4**

Now that the radiator is firmly attached to the wall, the supply and return connections can begin. Please note that all connections on our radiators are BSP or parallel thread. Consult the Radiator Accessory price sheet to select the appropriate BSP to North American thread connections. Transition fittings are available for ½" copper, ½" female iron pipe and ¾", ½" and ⅝" PE RT or Pex pipe. If a series/one pipe installation is desired please select an angle or straight "H" fitting with the desired connections mentioned above. When connecting radiators in a series loop confirm that your pipe size is appropriate to support the BTU capacity and that your pump will be able to overcome the total dynamic head of the pressure drop through the piping, radiator and connection fittings. Please note for through the floor installations protection against direct sunlight for PE RT or Pex tubing should be taken. UV degradation can occur over time and premature failure of the piping can occur. In the radiator Accessory price sheet we provide part # HRDB 50 floor escutcheon and pipe covers which are UV resistant.



RADIATOR INSTALL 2016

### Step 5

Once the radiator is connected to your heating system air must be removed from the unit. Each radiator is provided with a coin vent. If the radiator is installed with a home run manifold system then purging can take place at the manifold. If piped with copper or steel, provision to purge the radiators should be made or it will be difficult to remove the air which will impact the performance of the system.

### Step 6

Note that the integral valve installed to receive the non-electric thermostat has a built in flow setter. You will notice embossed in the side of the integrated valve at the top right or left of the radiator the numbers 1 through 6. These are defined flow positions with 1 being the least amount of flow and 6 the most. If you use a non-electric thermostat it will be self-regulating and position 6 should be used. #6 is the default position and sometimes during the installation of the non-electric thermostat the position can get changed. Please verify that position #6 is set before installing your thermostat. If you want to balance the flow of the system then devices to measure flow should be installed on the return side.

### Step 7

Check all connections for leaks. Remember leaks cause fresh water to be added to the system and will cause corrosion. Also, small leaks will deteriorate the powder coat finish of the product.

### Step 8

Note: It is highly recommended that a non-electric thermostat be installed to protect the radiator against excessive surface temperature. The introduction of the non-electric thermostatic head enhances the overall quality of the product providing a higher level of comfort and the ability to control the temperature at each radiator location which will save on your overall energy use. We highly recommend the installation of this device.



### Hanger Assembly

#### Step 1

Remove the hangers and top clips from the radiator packaging.

#### Step 2

Assemble the hangers by sliding the top clip into the vertical rail and secure with the spring provided. Note that the spring is directional and the larger side of the spring attaches to the top clip.

### Integrated Valve, Air Bleeder & Chrome plug (2) Installation

#### Step 1

Remove the Integrated Valve, Air Bleeder & Chrome plugs from the radiator packaging.

#### Step 2

Install the Integrated Valve in the radiator at the top on the same side where the 2" on center bottom connections are located.

#### Step 3

Install the Air Bleeder on the opposite side of the radiator at the top directly across from the Integrated Valve.

#### Step 4

Install the chrome plugs (2) in the lower side ports.

#### Note:

All connections are ½" BSP and radiator fittings have O-rings. Overtightening is not necessary, damage can occur to the O-rings.

### CARE AFTER INSTALLATION

To clean the radiator, use warm soapy water and a soft cloth. Chemical or abrasive cleaners should not be used. Radiator brushes are available to remove dust buildup on the convective fins only a horsehair brush should be used.



# Integral

## Pressure drop with alternate connections

