SECTION 23 82 29

RADIATORS, HYDRONIC AND ELECTRIC - COMMERCIAL AND RESIDENTIAL

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\*\* NOTE TO SPECIFIER \*\* Runtal North America, Inc.; Hydronic and Electric Radiant Heating  
This section is based on the products of Runtal North America, Inc., which is located at:187 Neck Rd.Ward Hill, MA 01835-0778Toll Free Tel: 800-526-2621Tel: 978-373-1666Fax: 978-372-7140Email: [request info (info@runtalnorthamerica.com)](https://arcat.com/rfi?action=email&company=Runtal%252BNorth%252BAmerica%252C%252BInc.&message=RE%253A%2520Spec%2520Question%2520(15762rtl)%253A%2520&coid=35294&spec=15762rtl&rep=&fax=978-372-7140)  
Web: <http://www.runtalnorthamerica.com>   
 [ [Click Here](https://arcat.com/company/runtal-north-america-inc-35294) ] for additional information.  
Hydronic, Electric and Steam Heating Solutions  
As part of the Zehnder Group AG, headquartered in Switzerland, Runtal North America, Inc., prides itself on a rich history of radiant heat, engineering, design, and manufacturing. The Runtal brand is considered a world leader in radiator technology, having invented the flat-panel steel radiator back in 1953.  
Over5 years ago, Zehnder Group AG initiated a major commitment to the American and Canadian markets by the opening a state-of-the-art factory in Ward Hill, Massachusetts to produce welded steel hydronic and electric heating products under the famous Runtal brand.  
As a result, Runtal's products can be found where only the best will do. From architects designing some of the most high-profile commercial and institutional projects in North America, to residential designers and builders and discerning homeowners throughout North America, the Runtal brand is synonymous with high quality, unique design, and comfortable heating performance. Comfort, style, versatility, durability, and energy efficiency are all engineered into every radiator that Runtal builds.  
With products available for hydronic, electric and steam systems, Runtal provides an unparalleled range of comfort solutions to suit every living space within the home, office, or commercial/institutional application.  
If you are in the Boston area, we invite you to visit our manufacturing facility and showroom in Ward Hill (Haverhill) Massachusetts.

1. GENERAL
   1. SECTION INCLUDES

\*\* NOTE TO SPECIFIER \*\* Delete items below not required for project.

* + 1. Commercial hydronic radiators.
    2. Commercial hydronic towel radiators.
    3. Commercial electric radiators.
    4. Commercial electric towel radiators.
    5. Commercial steam radiators.
    6. Residential hydronic radiators.
    7. Residential hydronic towel radiators.
    8. Residential electric radiators.
    9. Residential electric towel radiators.
    10. Residential steam radiators.
    11. Specialty and made-to-order residential radiators.
  1. RELATED SECTIONS

\*\* NOTE TO SPECIFIER \*\* Delete any sections below not relevant to this project; add others as required.

* + 1. Section 22 05 00 - Common Work Results for Plumbing.
    2. Section 26 05 00 - Common Work Results for Electrical.
  1. SUBMITTALS
     1. Submit under the provisions of Section 01 30 00.
     2. Product Data:
        1. Manufacturer's data sheets on each product to be used.
        2. Preparation instructions and recommendations.
        3. Storage and handling requirements and recommendations.
        4. Typical installation methods.

\*\* NOTE TO SPECIFIER \*\* Delete if not applicable to product type.

* + 1. Shop Drawings: Include details of materials, construction, and finish. Include relationship with adjacent construction.
  1. QUALITY ASSURANCE
     1. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with a minimum of fifteen years' documented experience.
     2. Installer Qualifications: Company specializing in performing Work of this section with minimum two years documented experience with projects of similar scope and complexity.
     3. Source Limitations: Provide each type of product from a single manufacturing source to ensure uniformity.
  2. PRE-INSTALLATION CONFERENCE
  3. DELIVERY, STORAGE, AND HANDLING
     1. Store and handle in strict compliance with manufacturer's written instructions and recommendations.
     2. Protect from damage due to weather, excessive temperature, and construction operations.
  4. PROJECT CONDITIONS
     1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.
  5. WARRANTY
     1. Manufacturer's standard limited warranty unless indicated otherwise.
        1. All Runtal North America Inc. radiators will have a five-year standard limited warranty per published Limited Warranty statement as published on the Runtal North America, Inc. web site.

1. PRODUCTS
   1. MANUFACTURERS
      1. Acceptable Manufacturer: Runtal North America, Inc., which is located at:187 Neck Rd.Ward Hill, MA 01835-0778Toll Free Tel: 800-526-2621Tel: 978-373-1666Fax: 978-372-7140Email: [request info (info@runtalnorthamerica.com)](https://arcat.com/rfi?action=email&company=Runtal%252BNorth%252BAmerica%252C%252BInc.&message=RE%253A%2520Spec%2520Question%2520(15762rtl)%253A%2520&coid=35294&spec=15762rtl&rep=&fax=978-372-7140);Web: <http://www.runtalnorthamerica.com>

\*\* NOTE TO SPECIFIER \*\* Delete one of the following two paragraphs: coordinate with requirements of Division 1 section on product options and substitutions.

* + 1. Substitutions: Not permitted.
    2. Requests for substitutions will be considered in accordance with the provisions of Section 01 60 00.

\*\* NOTE TO SPECIFIER \*\* Delete article if not required or delete basis of design options not required.

* 1. COMMERCIAL HYDRONIC RADIATORS
     1. Basis of Design: Radiant Baseboard - Model R: Built to Order. Length: 2 to 29.5 ft in 2 inch increments without splicing. Wall to wall applications for perimeter heating.
        1. Panel Heights: 3 to 70 inches.
        2. Construction: Cold rolled welded steel one piece. Flattened water tubes welded to headers at each end.

\*\* NOTE TO SPECIFIER \*\* Delete the top grille if radiators are to be curved.

* + - * 1. Top Grille: 0.09 inch thick minimum, all-welded perforated.

\*\* NOTE TO SPECIFIER \*\* Many standard colors and over 100 optional colors.

* + - 1. Finish: Gloss powder coat. Color: \_\_\_\_\_\_\_\_. Paint Thickness: 2 to 3 mils.

\*\* NOTE TO SPECIFIER \*\* Delete mounting options not required.

* + - 1. Mounting: Wall. Typical stud wall without additional blocking or strapping.
      2. Mounting: Free standing. Floor posts required.
      3. Mounting: Recessed wall.
      4. Mounting: Curved Panels.
      5. Panel Thermal Expansion: Not to exceed 1/64 inch per ft at 215 degrees F AWT.
      6. Header Pipes: Square 0.109 inches minimum wall thickness. Include necessary supply, return, and air vent connections. Internal baffling as required.

\*\* NOTE TO SPECIFIER \*\* 3/4 inch NPT inlets and outlets are available by special order.

* + - 1. Piping Connections: Inlet and Outlet: 1/2 inch NPT. Vents: 1/8 inch NPT.
      2. Pressure Rating, Standard: 56 psi max. Test Pressure: 74 psi max.
         1. Minimum Wall Thickness: 0.048 inch.
      3. Pressure Rating, High: 128 psi max. Test Pressure: 184 psi max.
         1. Minimum Wall Thickness: 0.078 inch.

\*\* NOTE TO SPECIFIER \*\* The following three items are optional. Delete options not required.

* + - 1. Ribbed pipe cover trims. Finished to match radiators.
      2. Combination shutoff valve/union fitting of less than two inches in width for the supply and return to each panel radiator. Field installed by others.
      3. Runtal-Flex Connectors: Where appropriate to provide expansion compensation.

\*\* NOTE TO SPECIFIER \*\* Delete model options not required.

* + - 1. Model: R-1. Height: 2.8 inches Depth: 1.6 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 230.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 160.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 90.
      2. Model: R-2. Height: 5.7 inches Depth: 1.6 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 420.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 300.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 170.
      3. Model: R-3. Height: 8.6 inches Depth: 1.6 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 620.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 440.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 250.
      4. Model: R-4. Height: 11.5 inches Depth: 1.6 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 820.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 580.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 330.
      5. Model: R-5. Height: 14.4 inches Depth: 1.6 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 1020.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 720.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 410.
      6. Model: R-6. Height: 17.3 inches Depth: 1.6 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 1220.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 860.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 500.
      7. Model: R-7. Height: 20.2 inches Depth: 1.6 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 1430.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 1010.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 580.
      8. Model: R-8. Height: 23.1 inches Depth: 1.6 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 1640.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 1160.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 660.
      9. Model: R-9. Height: 26.0 inches Depth: 1.6 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 1850.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 1300.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 750.
      10. Model: R-10. Height: 29 inches Depth: 1.6 inches.
          1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 2060.
          2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 1450.
          3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 830.
    1. Basis of Design: Radiant/Convective Baseboard - Model RF: Built to order. Length: 2 to 29.5 ft in 2 inch increments without splicing. Wall to wall applications for perimeter heating.
       1. Construction: Cold rolled welded steel one piece. Flattened water tubes welded to headers at each end.
          1. Steel Corrugated Fins: Welded to rear side of water tubes. Increases convective output. No less than 32 fins per foot.

Fins start 1 inch from headers and are spot welded three times to tube.

\*\* NOTE TO SPECIFIER \*\* Delete the top grille if radiators are to be curved.

* + - * 1. Top Grille: 0.09 inch thick minimum, all-welded perforated.

\*\* NOTE TO SPECIFIER \*\* Many standard colors and over 100 optional colors.

* + - 1. Finish: Gloss powder coat. Color: \_\_\_\_\_\_\_\_. Paint Thickness: 2 to 3 mils.
      2. Mounting: Wall: Typical stud wall without additional blocking or strapping.
      3. Panel Thermal Expansion: Not to exceed 1/64 inch per ft at 215 degrees F AWT.
      4. Header Pipes: Include necessary supply, return, and air vent connections. Internal baffling as required.

\*\* NOTE TO SPECIFIER \*\* 3/4 inch NPT inlets and outlets are available by special order.

* + - 1. Piping Connections: Inlet and Outlet: 1/2 inch NPT. Vents: 1/8 inch NPT.
      2. Pressure Rating, Standard: 56 psi max. Test Pressure: 74 psi max.
         1. Minimum Wall Thickness: 0.048 inch.
      3. Pressure Rating, High: 128 psi max. Test Pressure: 184 psi max.
         1. Minimum Wall Thickness: 0.078 inch.

\*\* NOTE TO SPECIFIER \*\* The following three items are optional. Delete options not required.

* + - 1. Ribbed pipe cover trims, finished to match the radiators, provided with the radiation.
      2. Combination shutoff valve/union fitting of less than two inches in width for the supply and return to each panel radiator, to be field installed by others.
      3. Runtal-Flex Connectors: Where appropriate to provide expansion compensation.

\*\* NOTE TO SPECIFIER \*\* Delete model options not required.

* + - 1. Model: RF-1. Height: 2.8 inches Depth: 1.6 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 550.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 390.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 220.
      2. Model: RF-2. Height: 5.7 inches Depth: 1.6 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 870.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 620.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 350.
      3. Model: RF-3. Height: 8.6 inches Depth: 1.6 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 1120.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 790.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 460.
      4. Model: RF-4. Height: 11.5 inches Depth: 1.6 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 1360.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 960.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 550.
      5. Model: RF-5. Height: 5.7 inches Depth: 1.6 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 1720.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 1210.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 700.
      6. Model: RF-6. Height: 17.3 inches Depth: 1.6 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 1990.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 1400.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 800.
      7. Model: RF-7. Height: 20.2 inches Depth: 1.6 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 2150.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 1510.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 880.
      8. Model: RF-8. Height: 23.1 inches Depth: 1.6 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 2390.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 1680.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 970.
      9. Model: RF-9. Height: 26 inches Depth: 1.6 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 2530.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 1780.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 1020.
      10. Model: RF-10. Height: 29 inches Depth: 1.6 inches.
          1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 2660.
          2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 1880.
          3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 1080.
    1. Basis of Design: Double Finned Panel Radiant/Convective - Model R2F: Built to order. Length: 2 to 29.5 ft in 2 inch increments without splicing. Wall to wall applications for perimeter heating.
       1. Construction: Cold rolled welded steel one piece. Flattened water tubes welded to headers at each end.
          1. Steel Corrugated Fins: Welded to rear side of water tubes. Increases convective output. No less than 32 fins per foot.

Fins start 1 inch from headers and are spot welded three times to tube.

\*\* NOTE TO SPECIFIER \*\* Delete the top grille if radiators are to be curved.

* + - * 1. Top Grille: 0.09 inch thick minimum, all-welded perforated.

\*\* NOTE TO SPECIFIER \*\* Many standard colors and over 100 optional colors.

* + - 1. Finish: Gloss powder coat. Color: \_\_\_\_\_\_\_\_. Paint Thickness: 2 to 3 mils.

\*\* NOTE TO SPECIFIER \*\* Delete mounting options not required.

* + - 1. Mounting: Wall. Typical stud wall without additional blocking or strapping.
      2. Mounting: Wall. Cantilever brackets.
      3. Mounting: Free standing. Floor posts or pedestals are required.
      4. Panel Thermal Expansion: Not to exceed 1/64 inch per ft at 215 degrees F AWT.
      5. Header Pipes: Square 0.109 inches minimum wall thickness. Include necessary supply, return, and air vent connections. Internal baffling as required.

\*\* NOTE TO SPECIFIER \*\* 3/4 inch NPT inlets and outlets are available by special order.

* + - 1. Piping Connections: Inlet and Outlet: 1/2 inch NPT. Vents: 1/8 inch NPT.
      2. Pressure Rating, Standard: 56 psi max. Test Pressure: 74 psi max.
         1. Minimum Wall Thickness: 0.048 inch.
      3. Pressure Rating, High: 128 psi max. Test Pressure: 184 psi max.
         1. Minimum Wall Thickness: 0.078 inch.

\*\* NOTE TO SPECIFIER \*\* The following three items are optional. Delete options not required.

* + - 1. Ribbed pipe cover trims, finished to match the radiators, provided with the radiation.
      2. Combination shutoff valve/union fitting of less than two inches in width for the supply and return to each panel radiator, to be field installed by others.
      3. Runtal-Flex Connectors: Where appropriate to provide expansion compensation.

\*\* NOTE TO SPECIFIER \*\* Delete model options not required.

* + - 1. Model: R2F-1. Height: 2.8 inches Depth: 4.8 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 980.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 689.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 395.
      2. Model: R2F-2. Height: 5.7 inches Depth: 4.8 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 1590.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 1118.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 640.
      3. Model: R2F-3. Height: 8.6 inches Depth: 4.8 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 2020.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 1421.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 813.
      4. Model: R2F-4. Height: 11.5 inches Depth: 4.8 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 2420.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 1701
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 974.
      5. Model: R2F-5. Height: 14.4 inches Depth: 4.8 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 3100
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 2177.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 1246.
      6. Model: R2F-6. Height: 17.3 inches Depth: 4.8 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 3470.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 2443
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 1398.
      7. Model: R2F-7. Height: 20.3 inches Depth: 4.8 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 3846.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 2707.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 1549.
      8. Model: R2F-8. Height: 23.1 inches Depth: 4.8 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 4211.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 2963.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 1696.
      9. Model: R2F-9. Height: 26.1 inches Depth: 4.8 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 4432.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 3119.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 1785.
      10. Model: R2F-10. Height: 29 inches Depth: 4.8 inches.
          1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 4644.
          2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 3269.
          3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 1871.
    1. Basis of Design: Triple Finned Panel Radiant/Convective - R3F Perimeter Models. Can be ordered with finished panels on the backside when visible from outside, such as floor to ceiling glass or mullion mounted radiators. Higher heat output is available by ordering panels with optional fins, or double or triple panel models. Steel double panel radiators.
       1. Built to order. Length: 2 to 29.5 ft in 2 inch increments without splicing. Wall to wall applications for perimeter heating.
       2. Construction: Cold rolled welded steel one piece. A pair of flattened water tube panels welded to headers at each end.
          1. Steel Corrugated Fins: Welded to the inside of panels to increase convective radiator output. No less than 32 fins per foot.

Fins start 3 inches from the end of the radiator.

A third fin set is on the radiator backside for maximum convective output.

\*\* NOTE TO SPECIFIER \*\* Delete the top grille if radiators are to be curved.

* + - * 1. Top Grille: 0.09 inch thick minimum, all-welded perforated.

\*\* NOTE TO SPECIFIER \*\* Many standard colors and over 100 optional colors.

* + - 1. Finish: Gloss powder coat. Color: \_\_\_\_\_\_\_\_. Paint Thickness: 2 to 3 mils.

\*\* NOTE TO SPECIFIER \*\* Delete mounting options not required.

* + - 1. Mounting: Wall. Support blocking for radiator mounting to be by others.
      2. Mounting: Free standing. Floor posts or pedestals are required.
      3. Panel Thermal Expansion: Not to exceed 1/64 inch per ft at 215 degrees F AWT.
         1. Expansion Compensation: Provided as required. Piping by others.
      4. Header Pipes: Square 0.109 inches minimum wall thickness. Include necessary supply, return, and air vent connections. Internal baffling as required.

\*\* NOTE TO SPECIFIER \*\* 3/4 inch NPT inlets and outlets are available by special order.

* + - 1. Piping Connections: Inlet and Outlet: 1/2 inch NPT. Vents: 1/8 inch NPT.
      2. Pressure Rating, Standard: 56 psi max. Test Pressure: 74 psi max.
         1. Minimum Wall Thickness: 0.048 inch.
      3. Pressure Rating, High: 128 psi max. Test Pressure: 184 psi max.
         1. Minimum Wall Thickness: 0.078 inch.

\*\* NOTE TO SPECIFIER \*\* The following three items are optional. Delete options not required.

* + - 1. Ribbed pipe cover trims, finished to match the radiators, provided with the radiation.
      2. Combination shutoff valve/union fitting of less than two inches in width for the supply and return to each panel radiator, to be field installed by others.
      3. Runtal-Flex Connectors: Where appropriate to provide expansion compensation.

\*\* NOTE TO SPECIFIER \*\* Delete model options not required.

* + - 1. Model: R3F-1. Height: 2.8 inches Depth: 4.8 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 1300.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 920.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 530.
      2. Model: R3F-2. Height: 5.7 inches Depth: 4.8 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 2020.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 1420.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 820.
      3. Model: R3F-3. Height: 8.6 inches Depth: 4.8 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 2580.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 1810.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 1040.
      4. Model: R3F-4. Height: 11.5 inches Depth: 4.8 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 3090.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 2170.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 1250.
      5. Model: R3F-5. Height: 14.4 inches Depth: 4.8 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 3790.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 2670.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 1530.
      6. Model: R3F-6. Height: 17.3 inches Depth: 4.8 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 4270.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 3000.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 1720.
      7. Model: R3F-7. Height: 20.2 inches Depth: 4.8 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 4738.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 3335.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 1909.
      8. Model: R3F-8. Height: 23.1 inches Depth: 4.8 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 5200.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 3660.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 2095.
      9. Model: R3F-9. Height: 26 inches Depth: 4.8 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 5451.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 3836.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 2196.
      10. Model: R3F-10. Height: 29 inches Depth: 4.8 inches.
          1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 5690.
          2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 4005.
          3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 2293.
    1. Basis of Design: Radiant Vertical Steel Panels - Model RV: Tubes running vertically from floor to ceiling. Fits unused spaces. Can be recessed into the wall to clear door swings.
       1. Built to order. Length: 2 to 29.5 ft in 2 inch increments without splicing. Wall to wall applications for perimeter heating.
       2. Construction: Cold rolled low carbon welded steel, one piece. A pair of flattened water tube panels welded to headers at each end.

\*\* NOTE TO SPECIFIER \*\* Delete the top grille if radiators are to be curved.

* + - * 1. Side Grille: 0.09 inch thick minimum, all-welded perforated. On both sides.

\*\* NOTE TO SPECIFIER \*\* Many standard colors and over 100 optional colors.

* + - 1. Finish: Gloss powder coat. Color: \_\_\_\_\_\_\_\_. Paint Thickness: 2 to 3 mils.

\*\* NOTE TO SPECIFIER \*\* Delete mounting options not required.

* + - 1. Mounting: Wall. Support blocking for radiator mounting to be by others.
      2. Mounting: Free standing.
      3. Panel Thermal Expansion: Not to exceed 1/64 inch per ft at 215 degrees F AWT.
         1. Expansion Compensation: Provided in the piping as required, by others.
      4. Header Pipes: Square 0.109 inches minimum wall thickness. Include necessary supply, return, and air vent connections. Internal baffling as required.

\*\* NOTE TO SPECIFIER \*\* 3/4 inch NPT inlets and outlets are available by special order.

* + - 1. Piping Connections: Inlet and Outlet: 1/2 inch NPT. Vents: 1/8 inch NPT.
      2. Pressure Rating, Standard: 56 psi max. Test Pressure: 74 psi max.
         1. Minimum Wall Thickness: 0.048 inch.
      3. Pressure Rating, High: 128 psi max. Test Pressure: 184 psi max.
         1. Minimum Wall Thickness: 0.078 inch.

\*\* NOTE TO SPECIFIER \*\* The following three items are optional. Delete options not required.

* + - 1. Ribbed pipe cover trims, finished to match the radiators, provided with the radiation.
      2. Combination shutoff valve/union fitting of less than two inches in width for the supply and return to each panel radiator, to be field installed by others.
      3. Runtal-Flex Connectors: Where appropriate to provide expansion compensation.

\*\* NOTE TO SPECIFIER \*\* Delete model options not required.

* + - 1. Model: RV-2. Width: 5.7 inches. Depth: 1.6 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 400.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 290.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 160.
      2. Model: RV-3. Width: 8.6 inches. Depth: 1.6 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 600.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 430.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 250.
      3. Model: RV-4. Width: 11.5 inches. Depth: 1.6 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 800.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 570.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 330.
      4. Model: RV-5. Width: 14.4 inches. Depth: 1.6 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 1000.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 710.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 410.
      5. Model: RV-6. Width: 17.3 inches. Depth: 1.6 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 1200.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 850.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 490.
      6. Model: RV-7. Width: 20.2 inches. Depth: 1.6 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 1400.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 990.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 570.
      7. Model: RV-8. Width: 23.1 inches. Depth: 1.6 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 1600.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 1130.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 650.
      8. Model: RV-9. Width: 26.1 inches. Depth: 1.6 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 1796.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 1264.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 724.
      9. Model: RV-10. Width: 29 inches. Depth: 1.6 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 1996.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 1405.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 808.
    1. Basis of Design: Column Steel Panel Radiators - Model RS2: Utilizes evenly spaced, vertical flat tubing, allows light to pass through. Dual function as full-height room dividers, balustrades, or knee walls. Higher BTU output than flat-orientation radiators. Greater exposed tube area.
       1. Tubes run vertically from floor to ceiling. Fits into unused space. Can be recessed into the wall to clear door swings.
       2. Built to order. Length: 4 to 20 ft in 2 inch increments.
       3. Construction: Cold rolled low carbon welded steel, one piece. A pair of flattened water tube panels welded to headers at each end.

\*\* NOTE TO SPECIFIER \*\* Many standard colors and over 100 optional colors.

* + - 1. Finish: Gloss powder coat. Color: \_\_\_\_\_\_\_\_. Paint Thickness: 2 to 3 mils.

\*\* NOTE TO SPECIFIER \*\* Delete mounting options not required.

* + - 1. Mounting: Wall. Support blocking for radiator mounting to be by others.
      2. Mounting: Free standing. Floor posts required.
      3. Panel Thermal Expansion: Not to exceed 1/64 inch per ft at 215 degrees F AWT.
         1. Expansion Compensation: Provided in the piping as required, by others.
      4. Header Pipes: Round 0.072 inches minimum wall thickness. Include necessary supply, return, and air vent connections. Internal baffling as required.

\*\* NOTE TO SPECIFIER \*\* 3/4 inch NPT inlets and outlets are available by special order.

* + - 1. Piping Connections: Inlet and Outlet: 1/2 inch NPT. Vents: 1/8 inch NPT.
      2. Pressure Rating, Standard: 56 psi max. Test Pressure: 74 psi max.
         1. Minimum Wall Thickness: 0.048 inch.
      3. Pressure Rating, High: 128 psi max. Test Pressure: 184 psi max.
         1. Minimum Wall Thickness: 0.078 inch.

\*\* NOTE TO SPECIFIER \*\* The following two items are optional. Delete options not required.

* + - 1. Combination shutoff valve/union fitting of less than two inches in width for the supply and return to each panel radiator, to be field installed by others.
      2. Runtal-Flex Connectors: Where appropriate to provide expansion compensation.

\*\* NOTE TO SPECIFIER \*\* Delete model options not required.

* + - 1. Model: RS2-16. Width: 16 inches. Depth: 4 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 1380.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 960.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 540.
      2. Model: RS2-24. Width: 23.6 inches. Depth: 4 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 1920.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 1320.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 780.
      3. Model: RS2-30. Width: 29.5 inches. Depth: 4 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 2280.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 1620.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 900.
      4. Model: RS2-36. Width: 35.6 inches. Depth: 4 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 2640.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 1860.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 1080.
      5. Model: RS2-78. Width: 78.8 inches. Depth: 4 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 6300.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 4380.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 2520.
      6. Model: RS2-84. Width: 84.6 inches. Depth: 4 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 6780.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 4740.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 2700.
    1. Basis of Design: Ceiling Radiators - Model RC: Hung from threaded rods and hangers. Project a minimum of 3 inches from the finished ceiling.
       1. Built to order. Length: 2 to 29.5 ft in 2 inch increments without splicing.
       2. Construction: Cold rolled welded steel one piece. Flattened water tubes welded to headers at each end.

\*\* NOTE TO SPECIFIER \*\* Delete the top grille if radiators are to be curved.

* + - * 1. Side Grilles: 0.09 inch thick minimum, all-welded perforated.

\*\* NOTE TO SPECIFIER \*\* Many standard colors and over 100 optional colors.

* + - 1. Finish: Gloss powder coat. Color: \_\_\_\_\_\_\_\_. Paint Thickness: 2 to 3 mils.
      2. Mounting: Ceiling: Support blocking for radiator mounting to be by others.
      3. Panel Thermal Expansion: Not to exceed 1/64 inch per ft at 215 degrees F AWT.
      4. Header Pipes: Square 0.109 inches. Include necessary supply, return, and air vent connections. Internal baffling as required.

\*\* NOTE TO SPECIFIER \*\* 3/4 inch NPT inlets and outlets are available by special order.

* + - 1. Piping Connections: Inlet and Outlet: 1/2 inch NPT. Vents: 1/8 inch NPT.
      2. Pressure Rating, Standard: 56 psi max. Test Pressure: 74 psi max.
         1. Minimum Wall Thickness: 0.048 inch.
      3. Pressure Rating, High: 128 psi max. Test Pressure: 184 psi max.
         1. Minimum Wall Thickness: 0.078 inch.

\*\* NOTE TO SPECIFIER \*\* The following three items are optional. Delete options not required.

* + - 1. Ribbed pipe cover trims, finished to match the radiators, provided with the radiation.
      2. Combination shutoff valve/union fitting of less than two inches in width for the supply and return to each panel radiator, to be field installed by others.
      3. Runtal-Flex Connectors: Where appropriate to provide expansion compensation.

\*\* NOTE TO SPECIFIER \*\* Delete model options not required.

* + - 1. Model: RC-2. Height: 5.7 inches Depth: 1.6 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 270.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 190.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 110.
      2. Model: RC-3. Height: 8.6 inches Depth: 1.6 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 400.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 290.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 170.
      3. Model: RC-4. Height: 11.5 inches Depth: 1.6 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 530.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 380.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 220.
      4. Model: RC-5. Height: 14.4 inches Depth: 1.6 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 660.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 470.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 270.
      5. Model: RC-6. Height: 17.3 inches Depth: 1.6 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 800.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 560.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 320.
      6. Model: RC-7. Height: 20.2 inches Depth: 1.6 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 940.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 660.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 380.
      7. Model: RC-8. Height: 23.1 inches Depth: 1.6 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 1070.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 760.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 430.
      8. Model: RC-9. Height: 26 inches Depth: 1.6 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 1203.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 847.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 485.
      9. Model: RC-10. Height: 29 inches Depth: 1.6 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 1340.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 943.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 540.
    1. Basis of Design: Low Surface Temp: Radiant Baseboard - Thermotouch, Model TT.
       1. Low surface temperature radiators. Reduces front panel temperature by 40 to 60 degrees F less than the average water temperature. Units are radiant and convective.
       2. Built to order. Length: 2 to 29.5 ft in 6 inch increments without splicing.
       3. Construction: Cold rolled welded steel one piece. A pair of flattened water tube panels welded to headers at each end.
          1. Steel Corrugated Fins: Welded to the inside of panels to increase convective radiator output. No less than 32 fins per foot.

Fins start 3 inches from the end of the radiator.

A third fin set is on the radiator backside for maximum convective output.

* + - * 1. Top Grille: 0.09 inch thick minimum, all-welded perforated.

\*\* NOTE TO SPECIFIER \*\* Many standard colors and over 100 optional colors.

* + - 1. Finish: Gloss powder coat. Color: \_\_\_\_\_\_\_\_. Paint Thickness: 2 to 3 mils.

\*\* NOTE TO SPECIFIER \*\* Delete mounting option not required.

* + - 1. Mounting: Wall. To typical stud wall without additional blocking or strapping.
      2. Mounting: Free standing. Floor posts required.
      3. Panel Thermal Expansion: Not to exceed 1/64 inch per ft at 215 degrees F AWT.
         1. Expansion Compensation: Provided in the piping as required, by others.
      4. Header Pipes: Square 0.109 inches minimum wall thickness. Include necessary supply, return, and air vent connections. Internal baffling as required.

\*\* NOTE TO SPECIFIER \*\* 3/4 inch NPT inlets and outlets are available by special order.

* + - 1. Piping Connections: Inlet and Outlet: 1/2 inch NPT. Vents: 1/8 inch NPT.
      2. Pressure Rating, Standard: 56 psi max. Test Pressure: 74 psi max.
         1. Minimum Wall Thickness: 0.048 inch.
      3. Pressure Rating, High: 128 psi max. Test Pressure: 184 psi max.
         1. Minimum Wall Thickness: 0.078 inch.

\*\* NOTE TO SPECIFIER \*\* The following three items are optional. Delete options not required.

* + - 1. Combination shutoff valve/union fitting of less than two inches in width for the supply and return to each panel radiator, to be field installed by others.
      2. Runtal-Flex Connectors: Where appropriate to provide expansion compensation.
      3. Trim covers.

\*\* NOTE TO SPECIFIER \*\* Delete model options not required.

* + - 1. Model: TT-2. Height: 6 inches Depth: 3.3 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 870.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 610.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 349.
      2. Model: TT-3 Height: 9 inches Depth: 3.3 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 1120.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 784.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 451.
      3. Model: TT-4. Height: 12 inches Depth: 3.3 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 1360.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 952.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 544.
    1. Basis of Design: Low Surface Temp: Double Sided Steel Panel Radiators. Model UFLT. Reduces the front panel temperature by 20 to 30 degrees F less than the average water temperature. Units are radiant and convective.
       1. Built to order. Length: 6 inch increments from 2 to 24 ft and 1 ft increments from 4 to 24 ft. without splicing.
       2. Construction: Cold rolled welded steel one piece. A pair of flattened water tube panels welded to headers at each end.
          1. Steel Corrugated Fins: Welded to rear side of water tubes. Increases convective output. No less than 32 fins per foot.

Fins start 1 inch from headers and are spot welded three times to tube.

* + - * 1. Top Grille: 0.09 inch thick minimum, all-welded perforated.

\*\* NOTE TO SPECIFIER \*\* Many standard colors and over 100 optional colors.

* + - 1. Finish: Gloss powder coat. Color: \_\_\_\_\_\_\_\_. Paint Thickness: 2 to 3 mils.

\*\* NOTE TO SPECIFIER \*\* Delete mounting options not required.

* + - 1. Mounting: Wall. To typical stud wall without additional blocking or strapping.
      2. Mounting: Free standing. Floor posts required.
      3. Panel Thermal Expansion: Not to exceed 1/64 inch per ft at 215 degrees F AWT.
         1. Expansion Compensation: Provided in the piping as required, by others.
      4. Header Pipes: Includes necessary supply, return, and air vent connections.

\*\* NOTE TO SPECIFIER \*\* 3/4 inch NPT inlets and outlets are available by special order.

* + - 1. Piping Connections: Inlet and Outlet: 1/2 inch NPT. Vents: 1/8 inch NPT.
      2. Pressure Rating, Standard: 56 psi max. Test Pressure: 74 psi max.
         1. Minimum Wall Thickness: 0.048 inch.
      3. Pressure Rating, High: 128 psi max. Test Pressure: 184 psi max.
         1. Minimum Wall Thickness: 0.078 inch.

\*\* NOTE TO SPECIFIER \*\* The following three items are optional. Delete options not required.

* + - 1. Ribbed pipe cover trims, finished to match the radiators, provided with the radiation.
      2. Combination shutoff valve/union fitting of less than two inches in width for the supply and return to each panel radiator, to be field installed by others.
      3. Runtal-Flex Connectors: Where appropriate to provide expansion compensation.

\*\* NOTE TO SPECIFIER \*\* Delete model options not required.

* + - 1. Model: UFLT-2. Height: 5.7 inches Depth: 1.6 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 867.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 610.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 349.
      2. Model: UFLT-3. Height: 8.6 inches Depth: 1.6 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 1118.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 787.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 451.
      3. Model: UFLT-4. Height: 11.5 inches Depth: 1.6 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 1351.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 951.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 544.
      4. Model: UFLT-5. Height: 14.4 inches Depth: 1.6 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 1718.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 1209.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 692.
    1. Basis of Design: Tubular Round Spiral Fin Convective Radiator. Model Series XFF:
       1. Highly effective heat output capacity. Stock models are available for quick delivery.
       2. Construction: Cold rolled welded steel one piece. Round water tube welded to headers at each end.
          1. Steel Spiral Fins: Welded to water tube. Increases convective radiator output.

Fins start at 3 inches from the end of the radiator.

* + - 1. For close loop hot water systems only. Not for use with domestic hot water system.

\*\* NOTE TO SPECIFIER \*\* Delete model options not required.

* + - 1. Model XFF 100 (LxHxDia): 39.4 x 7.5 x 5.2 inches. Height: 8 inches. BTUH: 2553.
         1. Pipe Centers: 43.2 inches. Bracket Centers: 35.6 inches.
      2. Model XFF 150 (LxHxDia): 59.1 x 7.5 x 5.2 inches. Height: 8 inches. BTUH: 3920.
         1. Pipe Centers: 62.9 inches. Bracket Centers: 55.3 inches.
      3. Model XFF 200 (LxHxDia): 78.8 x 7.5 x 5.2 inches. Height: 8 inches. BTUH: 5288.
         1. Pipe Centers: 82.6 inches. Bracket Centers: 76.0 inches.
      4. Mounting: Floor. Pedestal mounts. Horizontal mount only.
      5. Finish: Painted. 16 to 156 inches in 2 inch increments.
         1. Color: Matt black.
         2. Color: White.
         3. Color: Argenta.
      6. Finish: Chrome.16 to 80 inches in 2 inch increments.
         1. Chrome finish reduces radiator output by 12 percent.
      7. Working Pressure: 100 psi maximum.
      8. Working Temperature: 200 degrees F maximum.
      9. Connections: 1/2 inch BSP underside tapping. Angle Valves: 1/2 inch NPT female pipe, included. Air Vent: 1/4 inch.

\*\* NOTE TO SPECIFIER \*\* Delete paragraph below if not required. Not all radiators can be curved. Please contact manufacturer to make sure that the curve is feasible. Some double panel models can be factory curved. Contact the Manufacturer for more details.

* + 1. Curved and Segmented Single Panel Radiators: To follow architectural walls.
       1. Radiator length must be ordered by arc Length.
       2. Mounting: Clip or Strap.

\*\* NOTE TO SPECIFIER \*\* Delete curved option not required.

* + - 1. Factory Curved: Concave and convex curves.
         1. Non-Finned Models: Min Radius: 5 ft.
         2. Finned Models: Min Radius: 10 ft.
      2. Field Curved: Concave and convex curves. Suit larger curvatures.
         1. Minimum Radius: 15 ft. Minimum Length: 15 ft.
    1. Basis of Design: Hot Spring. Vertical installation only.
       1. For closed loop systems only. Not for use with domestic hot water systems.

\*\* NOTE TO SPECIFIER \*\* Delete model option not required.

* + - 1. Model: HOT 60. Height: 25.6 inch. Dia: 7.8 inch. Depth: 11.00 inch. BTUH: 1975.
      2. Model: HOT 180. Height: 72.8 inch. Dia: 7.8 inch. Depth: 11.00 inch. BTUH: 6681.
      3. Working Pressure: 100 psi maximum.
      4. Working Temperature: 200 degrees F Maximum.

\*\* NOTE TO SPECIFIER \*\* Delete finish and color options not required.

* + - 1. Finish: Painted. 16 to 156 inches in 2 inch increments.
         1. Color: White.
         2. Color: Metallica.
      2. Finish: Chrome.16 to 80 inches in 2 inch increments.
         1. Chrome finish reduces radiator output by 20 percent.

\*\* NOTE TO SPECIFIER \*\* Delete article if not required or delete basis of design option not required.

* 1. COMMERCIAL HYDRONIC TOWEL RADIATORS
     1. Basis of Design: Round Tube Style: A large surface area to maximize radiant output, making it a heat source, towel warmer, and dryer. Can be the primary source of heat for bathrooms and anywhere floor space is limited. Available in a wide array of sizes.
        1. May be part of the closed loop hydronic heating system.
        2. Construction: Welded one piece. Round water tubes welded to headers.

\*\* NOTE TO SPECIFIER \*\* Delete material and finish options not required.

* + - 1. Material: Low carbon steel.

\*\* NOTE TO SPECIFIER \*\* Standard colors and over 100 optional colors. Delete option nor required.

* + - * 1. Finish: Gloss powder coat. Color: \_\_\_\_\_\_\_\_. Paint Thickness: 2 to 3 mils.
        2. Finish: Chrome plated.
      1. Material: Stainless steel. Finish: Brushed stainless steel.
      2. Mounting: Wall. Method: Wall brackets.
         1. Drywall Construction: May require metal wall anchors.
         2. Solid Wood or Placement Directly onto Blocking: Requires No. 8 x 1-1/2 inch long screws.

\*\* NOTE TO SPECIFIER \*\* 3/4 inch NPT inlets and outlets are available by special order.

* + - 1. Piping Connections: Inlet and Outlet: 1/2 inch NPT. Vents: 1/8 inch NPT.
      2. Style: Runtal Omnipanel.
      3. Heat Outputs: At 180 degrees F AWT and 70 degrees F room temperature.

\*\* NOTE TO SPECIFIER \*\* Delete model and finish options not required.

* + - 1. Model: Runtal Neptune. Width: 19.5 inches. Depth: 4.2 inches.
         1. NTR-3320. Height: 33.1 inches.

Painted Finish: 2228 BTUH.

Chrome Finish and Stainless Steel: 1782 BTUH.

* + - * 1. NTR-4620. Height: 45.7 inches.

Painted Finish: 2706 BTUH.

Chrome Finish and Stainless Steel: 2213 BTUH.

* + - 1. Model: Runtal Radia. Depth: 3.6 inches.
         1. RTR-2924. Width: 23.6 inches. Height: 28.4 inches. BTUH: 2136.
         2. RTR-4624. Width: 23.6 inches. Height: 45.4 inches. BTUH: 3358.
         3. RTR-4630 Width: 29.5 inches. Height: 45.4 inches. BTUH: 4150.
      2. Model: Runtal Versus. Width: 22.8 inches. Depth: 3.2 inches.
         1. VTR-5223. Height: 51.5 inches. BTUH: 2656.
         2. VTR-6923. Height: 68.5 inches. BTUH: 3494.
      3. Model: Runtal Solea. Width: 19.7 inches. Depth: 5.5 inches.
         1. STR-3420. Height: 33.8 inches. BTUH: 2014.
         2. STR-5420. Height: 53.3 inches. BTUH: 3108.
      4. Model: Runtal Fain. Width: 19.7 inches. Depth: 3.5 inches. Height: 33.1 inches.
         1. FTR-3320: BTUH: 984.
    1. Basis of Design: Flat Tube Style: A large surface area to maximize radiant output. A heat source, towel warmer, and dryer. Can be the primary source of heat for bathrooms and anywhere floor space is limited.
       1. To be installed in loop hydronic heating system.
       2. Construction: Cold rolled welded steel one piece. Flattened water tubes welded to headers at each end.

\*\* NOTE TO SPECIFIER \*\* Many standard colors and over 100 optional colors.

* + - 1. Finish: Gloss powder coat. Color: \_\_\_\_\_\_\_\_. Paint Thickness: 2 to 3 mils.
      2. Mounting: Wall. Method: Wall brackets.
         1. Drywall Construction: May require metal wall anchors.
         2. Solid Wood or Placement Directly onto Blocking: Requires No. 8 x 1-1/2 inch long screws.

\*\* NOTE TO SPECIFIER \*\* 3/4 inch NPT inlets and outlets are available by special order.

* + - 1. Piping Connections: Inlet and Outlet: 1/2 inch NPT. Vents: 1/8 inch NPT.
      2. Style: Runtal Omnipanel. Heat outputs at 180 degrees F AWT and 70 degrees F room temperature.

\*\* NOTE TO SPECIFIER \*\* Delete model and width options not required.

* + - 1. Model: TW9. Height: 26.1 inches.
         1. Width: 16 inches. BTUH: 1600.
         2. Width: 20 inches. BTUH: 2000.
         3. Width: 24 inches. BTUH: 2400.
         4. Width: 30 inches. BTUH: 3000.
         5. Width: 36 inches. BTUH: 3600.
      2. Model: TW12. Height: 34.8 inches.
         1. Width: 16 inches. BTUH: 1920.
         2. Width: 20 inches. BTUH: 2400.
         3. Width: 24 inches. BTUH: 1880.
         4. Width: 30 inches. BTUH: 3600.
         5. Width: 36 inches. BTUH: 4320.
      3. Height: 43.6 inches.
         1. Width: 16 inches. BTUH: 2400.
         2. Width: 20 inches. BTUH: 3000.
         3. Width: 24 inches. BTUH: 3600.
         4. Width: 30 inches. BTUH: 4500.
         5. Width: 36 inches. BTUH: 5400.
      4. Model: TW18. Height: 52.3 inches.
         1. Width: 16 inches. BTUH: 3040.
         2. Width: 20 inches. BTUH: 3800.
         3. Width: 24 inches. BTUH: 4560.
         4. Width: 30 inches. BTUH: 5700.
         5. Width: 36 inches. BTUH: 6840.
      5. Model: TW21. Height: 61.1 inches.
         1. Width: 16 inches. BTUH: 3520.
         2. Width: 20 inches. BTUH: 4400.
         3. Width: 24 inches. BTUH: 5280.
         4. Width: 30 inches. BTUH: 6600.
         5. Width: 36 inches. BTUH: 7920.

\*\* NOTE TO SPECIFIER \*\* Delete article if not required or delete basis of design option not required.

* 1. COMMERCIAL ELECTRIC RADIATORS
     1. Basis of Design: Electric Baseboard - Even radiant heat and high output.
        1. Model: EB3 Series. Mounting: Wall. Either end may be used for wiring.
        2. Model: EBP Series. Mounting: Floor, pedestal. Either end may be used for wiring.
        3. Compliance: cULus Listed.
        4. Height: 10.5 inches. Depth: 2.25 inches.
        5. Lengths: Available in 3 to 10 ft in 12 inch increments. Weight: 10 lbs per ft.
        6. Construction: Welded steel.

\*\* NOTE TO SPECIFIER \*\* 10 standard colors and over 100 optional colors

* + - 1. Finish: Powder coat. Color: \_\_\_\_\_\_\_\_.
      2. Wiring: Multiple electric baseboards must be wired in parallel.

\*\* NOTE TO SPECIFIER \*\* Delete model and length options not required.

* + - 1. Model: EB3-120D-(120 Volts).
      2. Model: EBP-120D-(120 Volts). Freestanding floor mounted option for curtain wall.
      3. Model: EB3-208D-(208 Volts).
      4. Model: EBP-208D-(208 Volts). Freestanding floor mounted option for curtain wall.
      5. Model: EB3-240D-(240 Volts).
      6. Model: EBP-240D-(240 Volts). Freestanding floor mounted option for curtain wall.
      7. Length: 36 inches. BTUH Output: 1500. Watt Output: 440.
      8. Length: 48 inches. BTUH Output: 2000. Watt Output: 586.
      9. Length: 60 inches. BTUH Output: 2500. Watt Output: 733.
      10. Length: 72 inches. BTUH Output: 3000. Watt Output: 879.
      11. Length: 84 inches. BTUH Output: 3500. Watt Output: 1026.
      12. Length: 96 inches. BTUH Output: 4000. Watt Output: 1172.
      13. Length: 108 inches. BTUH Output: 4500. Watt Output: 1319.
      14. Length: 120 inches. BTUH Output: 5000. Watt Output: 1466.
      15. Accessories:

\*\* NOTE TO SPECIFIER \*\* Delete accessory options not required.

* + - * 1. Floor pedestals.
        2. End caps.
        3. End trims.
        4. Center trims.
        5. Inside corner trims.
        6. Outside corner trims.
    1. Basis of Design: Electric Wall Panels - Model EWP:
       1. Compliance: cULus:
       2. Construction: Welded construction.

\*\* NOTE TO SPECIFIER \*\* 10 standard colors and over 100 optional colors

* + - 1. Finish: Powder coat. Color: \_\_\_\_\_\_\_\_.
      2. Wiring: Multiple electric baseboards must be wired in parallel.
      3. Lengths: 2 ft.
      4. Lengths: 3 ft.
      5. Lengths: 4 ft.
      6. Depth: 2-1/2 inches.
      7. Height, EWP-6 Series: 17-1/4 inch.
      8. Height, EWP-8 Series: 23-1/8 inch.
      9. Weight, EWP-6 Series: 15 lbs per ft.
      10. Weight, EWP-8 Series: 20 lbs per ft.

\*\* NOTE TO SPECIFIER \*\* Delete model and length options not required.

* + - 1. Model: EWP-6-120D-(120 Volts).
         1. Length: 24 inches. BTUH Output: 2013. Watt Output: 590. Amps: 4.9.
         2. Length: 36 inches. BTUH Output: 3003. Watt Output: 880. Amps: 7.3.
         3. Length: 48 inches. BTUH Output: 4026. Watt Output: 1180. Amps: 9.8.
      2. Model: EWP-6-208D-(208 Volts).
         1. Length: 24 inches. BTUH Output: 2013. Watt Output: 590. Amps: 2.8.
         2. Length: 36 inches. BTUH Output: 3003. Watt Output: 880. Amps: 4.2.
         3. Length: 48 inches. BTUH Output: 4026. Watt Output: 1180. Amps: 5.7.
      3. Model: EWP-6-240D-(240 Volts).
         1. Length: 24 inches. BTUH Output: 2013. Watt Output: 590. Amps: 2.5.
         2. Length: 36 inches. BTUH Output: 3003. Watt Output: 880. Amps: 3.7.
         3. Length: 48 inches. BTUH Output: 4026. Watt Output: 1180. Amps: 4.9.
      4. Model: EWP-8-120D-(120 Volts).
         1. Length: 24 inches. BTUH Output: 2627. Watt Output: 770. Amps: 6.4.
         2. Length: 36 inches. BTUH Output: 3924. Watt Output: 1150. Amps: 9.6.
         3. Length: 48 inches. BTUH Output: 5220. Watt Output: 1530. Amps: 12.8.
      5. Model: EWP-8-208D-(208 Volts).
         1. Length: 24 inches. BTUH Output: 2627. Watt Output: 770. Amps: 3.7.
         2. Length: 36 inches. BTUH Output: 3924. Watt Output: 1150. Amps: 5.5.
         3. Length: 48 inches. BTUH Output: 5220. Watt Output: 1530. Amps: 7.4.
      6. Model: EWP-8-240D-(240 Volts).
         1. Length: 24 inches. BTUH Output: 2627. Watt Output: 770. Amps: 3.2.
         2. Length: 36 inches. BTUH Output: 3924. Watt Output: 1150. Amps: 4.8.
         3. Length: 48 inches. BTUH Output: 5220. Watt Output: 1530. Amps: 6.4.

\*\* NOTE TO SPECIFIER \*\* Delete article if not required or delete basis of design option not required.

* 1. COMMERCIAL ELECTRIC TOWEL RADIATORS
     1. Basis of Design: Flat Tube Style: Runtal Omnipanel ll. Large surface area.
        1. Compliance: cULus.
        2. Controls: Built-in toggle switch. Operates without accessories or a timer or thermostat.
        3. Controls: No unit controls for when building codes won't permit unit mounted controls on specific placements, such as above a tub.
           1. Must be connected to a switching device, thermostat, relay switch, etc.
        4. Wiring Procedures and Connections: In accordance with the National Electric Code (NEC) and local codes.

\*\* NOTE TO SPECIFIER \*\* Delete finish option not required. Over 100 optional colors

* + - 1. Finish: Powder coat. Color: \_\_\_\_\_\_\_\_.
      2. Finish: Chrome plated.
      3. Finish: Brushed stainless steel.
      4. Mounting: Wall. Mounting brackets supplied.

\*\* NOTE TO SPECIFIER \*\* Delete model and voltage options not required.

* + - 1. Model: OPII 9. Width: 24.0 inches. Depth: 3.8 inches. Height: 26.1 inches.
         1. BTUH Output: 1450. Watt Output: 425.
         2. Voltage: 120. Amp Draw: 3.5.
         3. Voltage: 208. Amp Draw: 2.0.
         4. Voltage: 240 Amp Draw: 1.9.
      2. Model: OPII 12. Width: 24.0 inches. Depth: 3.8 inches. Height: 34.8 inches.
         1. BTUH Output: 2400. Watt Output: 700.
         2. Voltage: 120. Amp Draw: 5.8.
         3. Voltage: 208. Amp Draw: 3.4.
         4. Voltage: 240 Amp Draw: 2.9.
      3. Model: OPII 15. Width: 24.0 inches. Depth: 3.8 inches. Height: 43.6 inches.
         1. BTUH Output: 2400. Watt Output: 700.
         2. Voltage: 120. Amp Draw: 5.8.
         3. Voltage: 208. Amp Draw: 3.4.
         4. Voltage: 240 Amp Draw: 2.9.
    1. Basis of Design: Round Tube Style: Five round tube towel radiators. Voltage: 120.
       1. Wiring: Direct wire.
       2. Wiring: Plug-in.
       3. Digital Controls: Soft-touch. Five settings: Off, low, med. High, High timer for 3 hours.

\*\* NOTE TO SPECIFIER \*\* Delete finish options not required. Over 100 optional colors.

* + - 1. Finish: Powder coat. Color: \_\_\_\_\_\_\_\_.
      2. Finish: Chrome plated.
      3. Finish: Brushed stainless steel.
      4. Mounting: Wall. Mounting brackets supplied.

\*\* NOTE TO SPECIFIER \*\* Delete style and model options not required.

* + - 1. Style: Runtal Neptune.
         1. Model: NTRE-3320 (WxDxH). 19.5 x 4.2 x 37.4 inches.

BTUH Output: 1536. Watt Output: 450. Amp Draw at 120 V: 4.1.

* + - * 1. Model: NTRE-3320C/S (WxDxH). 19.5 x 4.2 x 37.4 inches.

BTUH Output: 1024. Watt Output: 300. Amp Draw at 120 V: 2.7.

* + - * 1. Model: NTRE-4620 (WxDxH). 19.5 x 4.2 x 50.0 inches.

BTUH Output: 2048. Watt Output: 600. Amp Draw at 120 V: 5.5.

* + - * 1. Model: NTRE-4620C/S (WxDxH). 19.5 x 4.2 x 50.0 inches.

BTUH Output: 1536. Watt Output: 450. Amp Draw at 120 V: 4.1.

* + - 1. Style: Runtal Radia.
         1. Model: RTRE-2924 (WxDxH). 23.6 x 3.6 x 32.7 inches.

BTUH Output: 1536. Watt Output: 450. Amp Draw at 120 V: 4.1.

* + - * 1. Model: RTRE-4624 (WxDxH). 23.6 x 3.6 x 49.7 inches.

BTUH Output: 2048. Watt Output: 600. Amp Draw at 120 V: 5.5.

* + - * 1. Model: RTRE-4630 (WxDxH). 29.5 x 3.6 x 49.7 inches.

BTUH Output: 3072. Watt Output: 900. Amp Draw at 120 V: 8.2.

* + - 1. Style: Runtal Versus.

\*\* NOTE TO SPECIFIER \*\* Delete options not required. Horizontal Tube Placement: To the Left; VTREL. Horizontal Tub Placement: To the Right; VTRER.

* + - * 1. Model: VTREL-5223 (WxDxH). 22.8 x 3.2 x 55.8 inches.

BTUH Output: 2048. Watt Output: 600. Amp Draw at 120 V: 5.5.

* + - * 1. Model: VTRER-5223 (WxDxH). 22.8 x 3.2 x 55.8 inches.

BTUH Output: 2048. Watt Output: 600. Amp Draw at 120 V: 5.5.

* + - * 1. Model: VTREL-6923 (WxDxH). 22.8 x 3.2 x 72.8 inches.

BTUH Output: 2048. Watt Output: 600. Amp Draw at 120 V: 5.5.

* + - * 1. Model: VTRER-6923 (WxDxH). 22.8 x 3.2 x 72.8 inches.

BTUH Output: 2048. Watt Output: 600. Amp Draw at 120 V: 5.5.

* + - 1. Style: Runtal Solea. A curved profile allowing towels to be hung on top of each other.
         1. Model: STRE-3420 (WxDxH). 19.7 x 5.5 x 38.1 inches.

BTUH Output: 1536. Watt Output: 450. Amp Draw at 120 V: 4.1.

* + - * 1. Model: STRE-5420 (WxDxH). 19.7 x 5.5 x 57.6 inches.

BTUH Output: 3072. Watt Output: 900. Amp Draw at 120 V: 8.2.

* + - 1. Style: Runtal Fain. Stainless steel construction.
         1. Model: FTRE-3320 (WxDxH). 19.7 x 3.5 x 37.4 inches.

BTUH Output: 984. Watt Output: 300. Amp Draw at 120 V: 2.7.

\*\* NOTE TO SPECIFIER \*\* Delete article if not required or delete basis of design options not required.

* 1. COMMERCIAL STEAM RADIATORS
     1. Basis of Design: Steam Radiators - Steamview:
        1. Construction: Cast steel. Uniform fittings.

\*\* NOTE TO SPECIFIER \*\* Delete steam system not required. Delete supply options not required.

* + - 1. Two-Pipe Steam System:
         1. Left hand steam supply. Top input.
         2. Left hand steam supply. Bottom input.
         3. Right hand steam supply. Top input.
         4. Right hand steam supply. Bottom input.
         5. A 1 inch NPT tapping is built into each corner of the radiator.

Two 1 inch plugs are provided to plug the two unused radiator tappings.

A 1 inch plug with a 1/8 inch vent tapping.

Pipe dope should be applied to the plugs.

* + - * 1. Proper Size Reducing Bushing for the Steam Trap: Supplied by the installer.
      1. One-Pipe Steam System:
         1. Left hand steam supply. Bottom input.
         2. Right hand steam supply. Bottom input.
         3. A 1 inch NPT tapping is built into each corner of the radiator.

Two 1 inch plugs are provided to plug the two unused radiator tappings.

A 1 inch plug with a 1/8 inch vent tapping.

Pipe dope should be applied to the plugs.

* + - * 1. A one pipe steam air vent or control valve in the mounted in the 1/8 inch vent tapping. Supplied by the installer.
      1. Mounting: Wall brackets. Secure to load-bearing wall members; wall stud or solid backing, capable of handling the radiator's weight.
         1. Orientation: Tilt radiator 1/16 inch per ft toward the condensate return.

\*\* NOTE TO SPECIFIER \*\* Over 100 optional colors

* + - 1. Finish: Powder coat. Color: \_\_\_\_\_\_\_\_.
      2. Profile Depth: 2.5 to 3 inches. Wall Gap: 1.9 to 2.6 inches.

\*\* NOTE TO SPECIFIER \*\* Delete model options not required.

* + - 1. Model SV16-24. Height: 16 inches. Length: 23.34 inch. BTUH Output: 2564.
      2. Model SV16-36. Height: 16 inches. Length: 34.68 inch. BTUH Output: 3763.
      3. Model SV16-48. Height: 16 inches. Length: 47.44 inch. BTUH Output: 5104.
      4. Model SV16-60. Height: 16 inches. Length: 58.78 inch. BTUH Output: 6306.
      5. Model SV16-72. Height: 16 inches. Length: 71.53 inch. BTUH Output: 7646.
      6. Model SV24-24. Height: 24 inches. Length: 23.34 inch. BTUH Output: 3553.
      7. Model SV24-36. Height: 24 inches. Length: 34.68 inch. BTUH Output: 5225.
      8. Model SV24-48. Height: 24 inches. Length: 47.44 inch. BTUH Output: 7106.
      9. Model SV24-60. Height: 24 inches. Length: 58.78 inch. BTUH Output: 8778.
      10. Model SV24-72. Height: 24 inches. Length: 71.53 inch. BTUH Output: 10659.
    1. Basis of Design: Steam Radiators - Steam Flow Form: Fins arranged in a spiral around the heating tube radiate heat efficiently throughout the room.
       1. For two-pipe steam systems only.
       2. Construction: Stainless steel.
       3. Mounting: Floor. Pedestals. Tilt Toward Condensate Return: 1/16 inch per foot.
       4. Height: 7.65 inches. Diameter: 5.5 inches.

\*\* NOTE TO SPECIFIER \*\* Delete model option not required.

* + - 1. Model XSFF 91.44: Length: 36 inches. BTUH: 3000
      2. Model XSFF 182.88: Length: 72 inches. BTUH: 6230
      3. Supply Side: Control Valve. 1 inch NPT.
      4. Return Side: Steam trap. 1/2 inch NPT.
    1. Basis of Design: Steam Radiators - Charleston Pro:
       1. For one and two pipe steam systems.
       2. Construction: All-welded single piece steel. Uniform fittings.

\*\* NOTE TO SPECIFIER \*\* Delete steam system not required. Delete supply options not required.

* + - 1. 2-Pipe Steam System:
         1. Left hand steam supply. Top input.
         2. Left hand steam supply. Bottom input.
         3. Right hand steam supply. Top input.
         4. Right hand steam supply. Bottom input.
         5. A 1 inch NPT tapping is built into each corner of the radiator.

Two 1 inch plugs are provided to plug the two unused radiator tappings.

A 1 inch plug with a 1/8 inch vent tapping.

Pipe dope should be applied to the plugs.

* + - * 1. Proper Size Reducing Bushing for the Steam Trap: Supplied by the installer.
      1. 1-Pipe Steam System:
         1. Left hand steam supply. Bottom input.
         2. Right hand steam supply. Bottom input.
         3. A 1 inch NPT tapping is built into each corner of the radiator.

Two 1 inch plugs are provided to plug the two unused radiator tappings.

A 1 inch plug with a 1/8 inch vent tapping.

Pipe dope should be applied to the plugs.

* + - * 1. A one pipe steam air vent or control valve in the mounted in the 1/8 inch vent tapping. Supplied by the installer.
      1. Mounting: Wall brackets. Secure to load-bearing wall members; wall stud or solid backing, capable of handling the radiator's weight.
         1. Orientation: Tilt radiator 1/16 inch per ft toward the condensate return.

\*\* NOTE TO SPECIFIER \*\* 10 standard colors and over 100 optional colors

* + - 1. Finish: Powder coat. Color: White.
      2. Finish: Powder coat. Color: Steel gray.
      3. Finish: Powder coat. Color: \_\_\_\_\_\_\_\_.
      4. Profile Depth: 4 to 4.25 inches.

\*\* NOTE TO SPECIFIER \*\* Delete model options not required.

* + - 1. Model CP16-24. Height: 16 inches. Length: 25.10 inch. BTUH Output: 2990.
      2. Model CP16-36. Height: 16 inches. Length: 35.98 inch. BTUH Output: 4370.
      3. Model CP16-48. Height: 16 inches. Length: 48.66 inch. BTUH Output: 5980.
      4. Model CP16-60. Height: 16 inches. Length: 61.34 inch. BTUH Output: 7590.
      5. Model CP16-72. Height: 16 inches. Length: 72.20 inch. BTUH Output: 8970.
      6. Model CP24-24. Height: 24 inches. Length: 25.10 inch. BTUH Output: 4654.
      7. Model CP24-36. Height: 24 inches. Length: 35.98 inch. BTUH Output: 6820.
      8. Model CP24-48. Height: 24 inches. Length: 48.66 inch. BTUH Output: 9308.
      9. Model CP24-60. Height: 24 inches. Length: 61.34 inch. BTUH Output: 11814.
      10. Model CP24-72. Height: 24 inches. Length: 72.20 inch. BTUH Output: 13962.

\*\* NOTE TO SPECIFIER \*\* Delete article if not required or delete basis of design options not required.

* 1. RESIDENTIAL HYDRONIC RADIATORS
     1. Basis of Design: Baseboard Radiators: Lw profile perimeter heating solution.
        1. Construction: Heavy gauge fully welded steel.

\*\* NOTE TO SPECIFIER \*\* Over 100 optional colors

* + - 1. Finish: Powder coat. Color: \_\_\_\_\_\_\_\_.
      2. Mounting: Wall. Hardware included. 1 to 3 inches from floor.

\*\* NOTE TO SPECIFIER \*\* Delete model options not required.

* + - 1. Model UF-2: Height: 6 inches. BTUH per ft: 600.
      2. Model UF-3: Height: 9 inches. BTUH per ft: 770.
      3. Model UF-4: Height: 12 inches. BTUH per ft: 930.
      4. Lengths: 2 to 3.5 ft in 6 inch increments. 4 to 14 ft in 1 ft increments.
      5. Uniform Pipe Fittings: 1/2 inch NPT. Vent Fittings: 1/8 inch. Vent included.
      6. Air Vent: To be opposite the supply side of the radiator.
      7. Multiple piping configurations.
      8. Vertical Covers: For straight vertical pipe between the radiator and floor. Field cut for heights other than 3 and 10 inches.
      9. Horizontal Covers: Standard trims simply snap into place. Require a 2 inch overlap on the radiator for proper fit.
         1. Straight Trims: 12 inches long. Used as end and center trims.
         2. Inside Corners: 12 x 12 inch
         3. Right End Cap: 6 x 2 inch.
         4. Left End Cap: 2 x 6 inch.
         5. Outside Corner Trims and Special Trims: Available by request.
    1. Basis of Design: Wall Panel Radiators:
       1. Construction: Heavy gauge fully welded steel.

\*\* NOTE TO SPECIFIER \*\* Over 100 optional colors

* + - 1. Finish: Powder coat. Color: \_\_\_\_\_\_\_\_.

\*\* NOTE TO SPECIFIER \*\* Delete model option not required.

* + - 1. Model UF-6: Height: 18 inches. BTUH per ft: 1430.
      2. Model UF-8: Height: 24 inches. BTUH per ft: 1810.
      3. Lengths: 2 to 3.5 ft in 6 inch increments. 4 to 14 ft in 1 ft increments.
      4. Mounting: Wall. Hardware included. 1 to 3 inches from floor.
      5. Uniform Pipe Fittings: 1/2 inch NPT. Vent Fittings: 1/8 inch. Vent included.
      6. Air Vent: To be opposite the supply side of the radiator.
      7. Multiple piping configurations.
      8. Vertical Covers: For straight vertical pipe between the radiator and floor. Field cut for heights other than 3 and 10 inches.
      9. Horizontal Covers: Standard trims simply snap into place. Require a 2 inch overlap on the radiator for proper fit.
         1. Straight Trims: 12 inches long. Used as end and center trims.
         2. Inside Corners: 12 x 12 inch
         3. Right End Cap: 6 x 2 inch.
         4. Left End Cap: 2 x 6 inch.
         5. Outside Corner Trims and Special Trims: Available by request.
    1. Basis of Design: Vertical Panel Radiators:
       1. Construction: Heavy gauge fully welded steel.

\*\* NOTE TO SPECIFIER \*\* Over 100 optional colors

* + - 1. Finish: Powder coat. Color: \_\_\_\_\_\_\_\_.
      2. Mounting: Wall. Hardware included. 1 to 3 inches from floor.

\*\* NOTE TO SPECIFIER \*\* Delete model options not required.

* + - 1. Model UHX-4 (HxWxD): 36 x 12 x 2 inches. BTUH: 1680.
      2. Model UHX-4 (HxWxD): 72 x 12 x 2 inches. BTUH: 3360.
      3. Model UHX-6 (HxWxD): 36 x 18 x 2 inches. BTUH: 2520.
      4. Model UHX-6 (HxWxD): 72 x 18 x 2 inches. BTUH: 5040.
      5. Model UHX-8 (HxWxD): 36 x 24 x 2 inches. BTUH: 3360.
      6. Model UHX-8 (HxWxD): 72 x 24 x 2 inches. BTUH: 6720.
      7. Uniform Pipe Fittings: 1/2 inch NPT. Vent Fittings: 1/8 inch. Vent included.
      8. Air Vent: To be opposite the supply side of the radiator.
      9. Piping Configuration: Supply: Bottom left. Return: Bottom right.
      10. Piping Configuration: Supply: Bottom right. Return: Bottom left.
      11. Vertical Covers: For straight vertical pipe between the radiator and floor. Field cut for heights other than 3 and 10 inches.

\*\* NOTE TO SPECIFIER \*\* Delete article if not required or delete basis of design options not required.

* 1. RESIDENTIAL HYDRONIC TOWEL RADIATORS
     1. Basis of Design: Flat-Tube Hydronic Towel Radiators:
        1. Model Series: Omnipanel: Low profile design available in five sizes. A large surface area maximizes radiant output, making it a heat source, towel warmer, and dryer.
        2. To be installed in a Closed Loop Forced Hot Water Heating Systems.
        3. Construction: Cold rolled welded steel one piece. Flattened water tubes welded to headers at each end.

\*\* NOTE TO SPECIFIER \*\* Over 100 optional colors.

* + - 1. Finish: Gloss powder coat. Color: \_\_\_\_\_\_\_\_. Paint Thickness: 2 to 3 mils.
      2. Mounting: Wall. Method: Wall brackets.
         1. Drywall Construction: May require metal wall anchors.
         2. Solid Wood or Placement Directly onto Blocking: Requires No. 8 x 1-1/2 inch long screws.

\*\* NOTE TO SPECIFIER \*\* 3/4 inch NPT inlets and outlets are available by special order.

* + - 1. Piping Connections: Inlet and Outlet: 1/2 inch NPT. Vents: 1/8 inch NPT.
      2. Style: Runtal Omnipanel.
      3. Heat outputs at 180 degrees F AWT and 70 degrees F room temperature.

\*\* NOTE TO SPECIFIER \*\* Delete model and width options not required.

* + - 1. Model: TW9. Height: 26.1 inches.
         1. Width: 16 inches. BTUH: 1600.
         2. Width: 20 inches. BTUH: 2000.
         3. Width: 24 inches. BTUH: 2400.
         4. Width: 30 inches. BTUH: 3000.
         5. Width: 36 inches. BTUH: 3600.
      2. Model: TW12. Height: 34.8 inches.
         1. Width: 16 inches. BTUH: 1920.
         2. Width: 20 inches. BTUH: 2400.
         3. Width: 24 inches. BTUH: 1880.
         4. Width: 30 inches. BTUH: 3600.
         5. Width: 36 inches. BTUH: 4320.
      3. Height: 43.6 inches.
         1. Width: 16 inches. BTUH: 2400.
         2. Width: 20 inches. BTUH: 3000.
         3. Width: 24 inches. BTUH: 3600.
         4. Width: 30 inches. BTUH: 4500.
         5. Width: 36 inches. BTUH: 5400.
      4. Model: TW18. Height: 52.3 inches.
         1. Width: 16 inches. BTUH: 3040.
         2. Width: 20 inches. BTUH: 3800.
         3. Width: 24 inches. BTUH: 4560.
         4. Width: 30 inches. BTUH: 5700.
         5. Width: 36 inches. BTUH: 6840.
      5. Model: TW21. Height: 61.1 inches.
         1. Width: 16 inches. BTUH: 3520.
         2. Width: 20 inches. BTUH: 4400.
         3. Width: 24 inches. BTUH: 5280.
         4. Width: 30 inches. BTUH: 6600.
         5. Width: 36 inches. BTUH: 7920.
    1. Basis of Design: Round Tube Style: A large surface area to maximize radiant output, making it a heat source, towel warmer, and dryer.
       1. May be part of the closed loop hydronic heating system.
       2. Construction: Welded one piece. Round water tubes welded to headers.

\*\* NOTE TO SPECIFIER \*\* Delete material and finish options not required. The Runtal Fain model is available in Stainless steel.

* + - 1. Material: Low carbon steel.

\*\* NOTE TO SPECIFIER \*\* Delete finish option not required. Over 100 optional colors.

* + - * 1. Finish: Gloss powder coat. Color: \_\_\_\_\_\_\_\_. Paint Thickness: 2 to 3 mils.
        2. Finish: Chrome plated.
      1. Material: Stainless steel. Finish: Brushed stainless steel.
      2. Mounting: Wall. Method: Wall brackets.
         1. Drywall Construction: May require metal wall anchors.
         2. Solid Wood or Placement Directly onto Blocking: Requires No. 8 x 1-1/2 inch long screws.

\*\* NOTE TO SPECIFIER \*\* 3/4 inch NPT inlets and outlets are available by special order.

* + - 1. Piping Connections: Inlet and Outlet: 1/2 inch NPT. Vents: 1/8 inch NPT.
      2. Style: Runtal Omnipanel.
      3. Heat outputs at 180 degrees F AWT and 70 degrees F room temperature.

\*\* NOTE TO SPECIFIER \*\* Delete model options not required. Then delete finish options not required.

* + - 1. Model: Runtal Neptune. Width: 19.5 inches. Depth: 4.2 inches.
         1. NTR-3320. Height: 33.1 inches.

Painted Finish: 2228 BTUH.

Chrome Finish and Stainless Steel: 1782 BTUH.

* + - * 1. NTR-4620. Height: 45.7 inches.

Painted Finish: 2706 BTUH.

Chrome Finish and Stainless Steel: 2213 BTUH.

* + - 1. Model: Runtal Radia. Depth: 3.6 inches.
         1. RTR-2924. Width: 23.6 inches. Height: 28.4 inches. BTUH 2136.
         2. RTR-4624. Width: 23.6 inches. Height: 45.4 inches. BTUH 3358.
         3. RTR-4630. Width: 29.5 inches. Height: 45.4 inches. BTUH 4150.
      2. Model: Runtal Versus.
         1. Width: 22.8 inches. Depth: 3.2 inches.
         2. VTR-5223. Height: 51.5 inches. BTUH 2656.
         3. VTR-6923. Height: 68.5 inches. BTUH 3494.
      3. Model: Runtal Solea.
         1. Width: 19.7 inches. Depth: 5.5 inches.
         2. STR-3420. Height: 33.8 inches. BTUH 2014.
         3. STR-5420. Height: 53.3 inches. BTUH 3108.
      4. Model: Runtal Fain.
         1. Width: 19.7 inches. Depth: 3.5 inches. Height: 33.1 inches.
         2. FTR-3320. BTUH: 984.

\*\* NOTE TO SPECIFIER \*\* Delete article if not required or delete basis of design options not required.

* 1. RESIDENTIAL ELECTRIC RADIATORS
     1. Basis of Design: Electric Baseboard - Even radiant heat and high output design.

\*\* NOTE TO SPECIFIER \*\* Delete model option not required.

* + - 1. Model: EB3 Series. Mounting: Wall. Either end may be used for wiring.
      2. Model: EBP Series. Mounting: Floor, pedestal. Either end may be used for wiring.
      3. Compliance: cULus Listed.
      4. Height: 10.5 inches. Depth: 2.25 inches.
      5. Lengths: Available in 3 to 10 ft in 12 inch increments. Weight: 10 lbs per ft.
      6. Construction: Welded steel.

\*\* NOTE TO SPECIFIER \*\* Over 100 optional colors.

* + - 1. Finish: Powder coat. Color: \_\_\_\_\_\_\_\_. Paint Thickness: 2 to 3 mils.
      2. Wiring: Multiple electric baseboards must be wired in parallel.

\*\* NOTE TO SPECIFIER \*\* Delete model and length options not required.

* + - 1. Model: EB3-120D-(120 Volts).
      2. Model: EBP-120D-(120 Volts). Freestanding floor mounted option for curtain wall.
      3. Model: EB3-208D-(208 Volts).
      4. Model: EBP-208D-(208 Volts). Freestanding floor mounted option for curtain wall.
      5. Model: EB3-240D-(240 Volts).
      6. Model: EBP-240D-(240 Volts). Freestanding floor mounted option for curtain wall.
      7. Length: 36 inches. BTUH Output: 1500. Watt Output: 440.
      8. Length: 48 inches. BTUH Output: 2000. Watt Output: 586.
      9. Length: 60 inches. BTUH Output: 2500. Watt Output: 733.
      10. Length: 72 inches. BTUH Output: 3000. Watt Output: 879.
      11. Length: 84 inches. BTUH Output: 3500. Watt Output: 1026.
      12. Length: 96 inches. BTUH Output: 4000. Watt Output: 1172.
      13. Length: 108 inches. BTUH Output: 4500. Watt Output: 1319.
      14. Length: 120 inches. BTUH Output: 5000. Watt Output: 1466.
      15. Accessories:

\*\* NOTE TO SPECIFIER \*\* Delete accessory options not required.

* + - * 1. Floor pedestals.
        2. End caps.
        3. End trims.
        4. Center trims.
        5. Inside corner trims.
        6. Outside corner trims.
    1. Basis of Design: Electric Wall Panels - Model EWP:
       1. Compliance: cULus:
       2. Construction: Welded construction.

\*\* NOTE TO SPECIFIER \*\* Over 100 optional colors.

* + - 1. Finish: Powder coat. Color: \_\_\_\_\_\_\_\_. Paint Thickness: 2 to 3 mils.
      2. Wiring: Multiple electric baseboards must be wired in parallel.
      3. Depth: 2-1/2 inches.

\*\* NOTE TO SPECIFIER \*\* Delete model and length options not required.

* + - 1. Model: EWP-6-120D-(120 Volts). Height: 17-1/4 inch. Weight: 15 lbs per ft
         1. Length: 24 inches. BTUH Output: 2013. Watt Output: 590. Amps: 4.9.
         2. Length: 36 inches. BTUH Output: 3003. Watt Output: 880. Amps: 7.3.
         3. Length: 48 inches. BTUH Output: 4026. Watt Output: 1180. Amps: 9.8.
      2. Model: EWP-6-208D-(208 Volts). Height: 17-1/4 inch. Weight: 15 lbs per ft
         1. Length: 24 inches. BTUH Output: 2013. Watt Output: 590. Amps: 2.8.
         2. Length: 36 inches. BTUH Output: 3003. Watt Output: 880. Amps: 4.2.
         3. Length: 48 inches. BTUH Output: 4026. Watt Output: 1180. Amps: 5.7.
      3. Model: EWP-6-240D-(240 Volts). Height: 17-1/4 inch. Weight: 15 lbs per ft
         1. Length: 24 inches. BTUH Output: 2013. Watt Output: 590. Amps: 2.5.
         2. Length: 36 inches. BTUH Output: 3003. Watt Output: 880. Amps: 3.7.
         3. Length: 48 inches. BTUH Output: 4026. Watt Output: 1180. Amps: 4.9.
      4. Model: EWP-8-120D-(120 Volts). Height: 23-1/8 inch. Weight: 15 lbs per ft
         1. Length: 24 inches. BTUH Output: 2627. Watt Output: 770. Amps: 6.4.
         2. Length: 36 inches. BTUH Output: 3924. Watt Output: 1150. Amps: 9.6.
         3. Length: 48 inches. BTUH Output: 5220. Watt Output: 1530. Amps: 12.8.
      5. Model: EWP-8-208D-(208 Volts). 23-1/8 inch. Weight: 15 lbs per ft
         1. Length: 24 inches. BTUH Output: 2627. Watt Output: 770. Amps: 3.7.
         2. Length: 36 inches. BTUH Output: 3924. Watt Output: 1150. Amps: 5.5.
         3. Length: 48 inches. BTUH Output: 5220. Watt Output: 1530. Amps: 7.4.
      6. Model: EWP-8-240D-(240 Volts). 23-1/8 inch. Weight: 15 lbs per ft
         1. Length: 24 inches. BTUH Output: 2627. Watt Output: 770. Amps: 3.2.
         2. Length: 36 inches. BTUH Output: 3924. Watt Output: 1150. Amps: 4.8.
         3. Length: 48 inches. BTUH Output: 5220. Watt Output: 1530. Amps: 6.4.

\*\* NOTE TO SPECIFIER \*\* Delete article if not required or delete basis of design options not required.

* 1. RESIDENTIAL ELECTRIC TOWEL RADIATORS:
     1. Basis of Design: Flat Tube Style: Runtal Omnipanel ll.
        1. Compliance: cULus.
        2. Controls: Built-in toggle switch. Operates without further accessories or connected to a timer or thermostat.
        3. Controls: No unit controls for when building codes won't permit unit mounted controls on specific placements, such as above a tub.
           1. Must be connected to a switching device, thermostat, relay switch, etc.
        4. Wiring Procedures and Connections: In accordance with the National Electric Code (NEC) and local codes.

\*\* NOTE TO SPECIFIER \*\* Delete finish options not required. Over 100 optional colors.

* + - 1. Finish: Gloss powder coat. Color: \_\_\_\_\_\_\_\_. Paint Thickness: 2 to 3 mils.
      2. Finish: Chrome plated.
      3. Finish: Brushed stainless steel.
      4. Mounting: Wall. Mounting brackets supplied.

\*\* NOTE TO SPECIFIER \*\* Delete model and voltage options not required.

* + - 1. Model: OPII 9. Width: 24.0 inches. Depth: 3.8 inches. Height: 26.1 inches.
         1. BTUH Output: 1450. Watt Output: 425.
         2. Voltage: 120. Amp Draw: 3.5.
         3. Voltage: 208. Amp Draw: 2.0
         4. Voltage: 240 Amp Draw: 1.9
      2. Model: OPII 12. Width: 24.0 inches. Depth: 3.8 inches. Height: 34.8 inches.
         1. BTUH Output: 2400. Watt Output: 700.
         2. Voltage: 120. Amp Draw: 5.8.
         3. Voltage: 208. Amp Draw: 3.4
         4. Voltage: 240 Amp Draw: 2.9
      3. Model: OPII 15. Width: 24.0 inches. Depth: 3.8 inches. Height: 43.6 inches.
         1. BTUH Output: 2400. Watt Output: 700.
         2. Voltage: 120. Amp Draw: 5.8.
         3. Voltage: 208. Amp Draw: 3.4
         4. Voltage: 240 Amp Draw: 2.9
    1. Basis of Design: Round Tube Style: Five round tube towel radiators.

\*\* NOTE TO SPECIFIER \*\* Delete wiring option not required.

* + - 1. Wiring: Direct wire.
      2. Wiring: Plug-in.
      3. Digital Controls: Soft-touch. Five settings: Off, low, med. High, High timer for 3 hours.

\*\* NOTE TO SPECIFIER \*\* Delete finish options not required. Over 100 optional colors.

* + - 1. Finish: Powder coat. Color: \_\_\_\_\_\_\_\_.
      2. Finish: Chrome plated.
      3. Finish: Brushed stainless steel.
      4. Mounting: Wall. Mounting brackets supplied.

\*\* NOTE TO SPECIFIER \*\* Delete style and model options not required.

* + - 1. Style: Runtal Neptune.
         1. Model: NTRE-3320 (WxDxH). 19.5 x 4.2 x 37.4 inches.

BTUH Output: 1536. Watt Output: 450. Amp Draw at 120 V: 4.1.

* + - * 1. Model: NTRE-3320C/S (WxDxH). 19.5 x 4.2 x 37.4 inches.

BTUH Output: 1024. Watt Output: 300. Amp Draw at 120 V: 2.7.

* + - * 1. Model: NTRE-4620 (WxDxH). 19.5 x 4.2 x 50.0 inches.

BTUH Output: 2048. Watt Output: 600. Amp Draw at 120 V: 5.5.

* + - * 1. Model: NTRE-4620C/S (WxDxH). 19.5 x 4.2 x 50.0 inches.

BTUH Output: 1536. Watt Output: 450. Amp Draw at 120 V: 4.1.

* + - 1. Style: Runtal Radia.
         1. Model: RTRE-2924 (WxDxH). 23.6 x 3.6 x 32.7 inches.

BTUH Output: 1536. Watt Output: 450. Amp Draw at 120 V: 4.1.

* + - * 1. Model: RTRE-4624 (WxDxH). 23.6 x 3.6 x 49.7 inches.

BTUH Output: 2048. Watt Output: 600. Amp Draw at 120 V: 5.5.

* + - * 1. Model: RTRE-4630 (WxDxH). 29.5 x 3.6 x 49.7 inches.

BTUH Output: 3072. Watt Output: 900. Amp Draw at 120 V: 8.2.

* + - 1. Style: Runtal Versus.

\*\* NOTE TO SPECIFIER \*\* Horizontal Tube Placement: To the Left; VTREL. Horizontal Tub Placement: To the Right; VTRER.

* + - * 1. Model: VTREL-5223 (WxDxH). 22.8 x 3.2 x 55.8 inches.

BTUH Output: 2048. Watt Output: 600. Amp Draw at 120 V: 5.5.

* + - * 1. Model: VTRER-5223 (WxDxH). 22.8 x 3.2 x 55.8 inches.

BTUH Output: 2048. Watt Output: 600. Amp Draw at 120 V: 5.5.

* + - * 1. Model: VTREL-6923 (WxDxH). 22.8 x 3.2 x 72.8 inches.

BTUH Output: 2048. Watt Output: 600. Amp Draw at 120 V: 5.5.

* + - * 1. Model: VTRER-6923 (WxDxH). 22.8 x 3.2 x 72.8 inches.

BTUH Output: 2048. Watt Output: 600. Amp Draw at 120 V: 5.5.

* + - 1. Style: Runtal Solea. A curved profile allowing towels to be hung on top of each other.
         1. Model: STRE-3420 (WxDxH). 19.7 x 5.5 x 38.1 inches.

BTUH Output: 1536. Watt Output: 450. Amp Draw at 120 V: 4.1

* + - * 1. Model: STRE-5420 (WxDxH). 19.7 x 5.5 x 57.6 inches.

BTUH Output: 3072. Watt Output: 900. Amp Draw at 120 V: 8.2.

* + - 1. Style: Runtal Fain. Stainless steel construction.
         1. Model: FTRE-3320 (WxDxH). 19.7 x 3.5 x 37.4 inches.

BTUH Output: 984. Watt Output: 300. Amp Draw at 120 V: 2.7.

\*\* NOTE TO SPECIFIER \*\* Delete article if not required or delete basis of design options not required.

* 1. RESIDENTIAL STEAM RADIATORS
     1. Basis of Design: Steamview. Made for one and two pipe steam systems.
        1. Construction: Cast steel.

\*\* NOTE TO SPECIFIER \*\* Delete steam system not required. Then delete supply options not required.

* + - 1. 2-Pipe Steam System:
         1. Left hand steam supply. Top input.
         2. Left hand steam supply. Bottom input.
         3. Right hand steam supply. Top input.
         4. Right hand steam supply. Bottom input.
         5. A 1 inch NPT tapping is built into each corner of the radiator.

Two 1 inch plugs are provided to plug the two unused radiator tappings.

A 1 inch plug with a 1/8 inch vent tapping.

Pipe dope should be applied to the plugs.

* + - * 1. Proper Size Reducing Bushing for the Steam Trap: Supplied by the installer.
      1. 1-Pipe Steam System:
         1. Left hand steam supply. Bottom input.
         2. Right hand steam supply. Bottom input.
         3. A 1 inch NPT tapping is built into each corner of the radiator.

Two 1 inch plugs are provided to plug the two unused radiator tappings.

A 1 inch plug with a 1/8 inch vent tapping.

Pipe dope should be applied to the plugs.

* + - * 1. A one pipe steam air vent or control valve in the mounted in the 1/8 inch vent tapping. Supplied by the installer.
      1. Mounting:
         1. Wall Mounting Brackets: To be secured to load-bearing wall members; wall stud or solid backing, capable of handling the radiator's weight.
         2. Orientation: Radiator is to be tilted a minimum of 1/16 inch per ft toward the condensate return.

\*\* NOTE TO SPECIFIER \*\* Over 100 optional colors

* + - 1. Finish: Powder coat. Color: \_\_\_\_\_\_\_\_.

\*\* NOTE TO SPECIFIER \*\* Delete model options not required.

* + - 1. Model: SV16-24 (HxDxL): 16 x 2.5-3.0 x 24 inches. Weight: 10 lbs. BTUH: 2564.
      2. Model: SV16-36 (HxDxL): 16 x 2.5-3.0 x 36 inches. Weight: 15 lbs. BTUH: 3763.
      3. Model: SV16-48 (HxDxL): 16 x 2.5-3.0 x 48 inches. Weight: 22 lbs. BTUH: 5104.
      4. Model: SV16-60 (HxDxL): 16 x 2.5-3.0 x 60 inches. Weight: 27 lbs. BTUH: 6306.
      5. Model: SV16-72 (HxDxL): 16 x 2.5-3.0 x 72 inches. Weight: 33 lbs. BTUH: 7646.
      6. Model: SV24-24 (HxDxL): 24 x 2.5-3.0 x 24 inches. Weight: 14 lbs. BTUH: 3553.
      7. Model: SV24-36 (HxDxL): 24 x 2.5-3.0 x 36 inches. Weight: 21 lbs. BTUH: 5225.
      8. Model: SV24-48 (HxDxL): 24 x 2.5-3.0 x 48 inches. Weight: 30 lbs. BTUH: 7106.
      9. Model: SV24-60 (HxDxL): 24 x 2.5-3.0 x 60 inches. Weight: 37 lbs. BTUH: 8778.
      10. Model: SV24-72 (HxDxL): 24 x 2.5-3.0 x 72 inches. Weight: 46 lbs. BTUH: 10659.
    1. Basis of Design: Charleston Pro: Made for one and two pipe steam systems.
       1. Construction: All-welded steel.

\*\* NOTE TO SPECIFIER \*\* Delete steam system not required. Then delete supply options not required.

* + - 1. 2-Pipe Steam System:
         1. Left hand steam supply. Top input.
         2. Left hand steam supply. Bottom input.
         3. Right hand steam supply. Top input.
         4. Right hand steam supply. Bottom input.
         5. A 1 inch NPT tapping is built into each corner of the radiator.

Two 1 inch plugs are provided to plug the two unused radiator tappings.

A 1 inch plug with a 1/8 inch vent tapping.

Pipe dope should be applied to the plugs.

* + - * 1. Proper Size Reducing Bushing for the Steam Trap: Supplied by the installer.
      1. 1-Pipe Steam System:
         1. Left hand steam supply. Bottom input.
         2. Right hand steam supply. Bottom input.
         3. A 1 inch NPT tapping is built into each corner of the radiator.

Two 1 inch plugs are provided to plug the two unused radiator tappings.

A 1 inch plug with a 1/8 inch vent tapping.

Pipe dope should be applied to the plugs.

* + - * 1. A one pipe steam air vent or control valve in the mounted in the 1/8 inch vent tapping. Supplied by the installer.
      1. Mounting:
         1. Wall Mounting Brackets: To be secured to load-bearing wall members; wall stud or solid backing, capable of handling the radiator's weight.
         2. Orientation: Radiator is to be tilted a minimum of 1/16 inch per ft toward the condensate return.

\*\* NOTE TO SPECIFIER \*\* Over 100 optional colors

* + - 1. Finish: Powder coat. Color: \_\_\_\_\_\_\_\_.

\*\* NOTE TO SPECIFIER \*\* Delete model options not required.

* + - 1. Model: SV16-24 (HxDxL): 16 x 4 x 24 inches. Weight: 21 lbs. BTUH: 2990.
      2. Model: SV16-36 (HxDxL): 16 x 4 x 36 inches. Weight: 30.3 lbs. BTUH: 4370.
      3. Model: SV16-48 (HxDxL): 16 x 4 x 48 inches. Weight: 40.5 lbs. BTUH: 5980.
      4. Model: SV16-60 (HxDxL): 16 x 4 x 60 inches. Weight: 51.3 lbs. BTUH: 7590.
      5. Model: SV16-72 (HxDxL): 16 x 4 x 72 inches. Weight: 60.5 lbs. BTUH: 8970.
      6. Model: SV24-24 (HxDxL): 24 x 4 x 24 inches. Weight: 29.2 lbs. BTUH: 4654.
      7. Model: SV24-36 (HxDxL): 24 x 4 x 36 inches. Weight: 42.4 lbs. BTUH: 6820.
      8. Model: SV24-48 (HxDxL): 24 x 4 x 48 inches. Weight: 57.8 lbs. BTUH: 9308.
      9. Model: SV24-60 (HxDxL): 24 x 4 x 60 inches. Weight: 73.2 lbs. BTUH: 11814.
      10. Model: SV24-72 (HxDxL): 24 x 4 x 72 inches. Weight: 86.4 lbs. BTUH: 13962.
    1. Basis of Design: Steam Radiators - Steam Flow Form: Fins arranged in a spiral around the heating tube radiate heat efficiently throughout the room.
       1. For two-pipe steam systems only.
       2. Construction: Stainless steel.
       3. Mounting: Floor. Pedestals. Tilt Toward Condensate Return: 1/16 inch per foot.
       4. Height: 7.65 inches. Diameter: 5.5 inches.
       5. Supply Side: Control Valve. 1 inch NPT.
       6. Return Side: Steam trap. 1/2 inch NPT.

\*\* NOTE TO SPECIFIER \*\* Delete model option not required.

* + - 1. Model XSFF 91.44: Length: 36 inches. BTUH: 3000.
      2. Model XSFF 182.88: Length: 72 inches. BTUH: 6230.
  1. SPECIALTY AND MADE-TO-ORDER RESIDENTIAL RADIATORS
     1. Basis of Design: Made-to-Order Radiant Baseboard - Model VLX: 5-year limited warranty.
        1. Built to order. Length: 20 inches to 29.5 ft in 2 inch increments
        2. Construction: Cold rolled welded steel one piece. Flattened water tubes welded to headers at each end.

\*\* NOTE TO SPECIFIER \*\* Delete the top grille if radiators are to be curved.

* + - * 1. Top Grille: 0.09 inch thick minimum, all-welded perforated.

\*\* NOTE TO SPECIFIER \*\* Many standard colors and over 100 optional colors.

* + - 1. Finish: Gloss powder coat. Color: \_\_\_\_\_\_\_\_. Paint Thickness: 2 to 3 mils.

\*\* NOTE TO SPECIFIER \*\* Delete mounting options not required.

* + - 1. Mounting: Free standing. Floor posts required.
      2. Panel Thermal Expansion: Not to exceed 1/64 inch per ft at 215 degrees F AWT.
      3. Piping Connections: Inlet and Outlet: 1/2 inch NPT. Vents: 1/8 inch NPT.
      4. Pressure Rating, Standard: 56 psi max. Test Pressure: 74 psi max.
         1. Minimum Wall Thickness: 0.048 inch.
      5. Pressure Rating, High: 128 psi max. Test Pressure: 184 psi max.
         1. Minimum Wall Thickness: 0.078 inch.

\*\* NOTE TO SPECIFIER \*\* The following three items are optional. Delete options not required.

* + - 1. Ribbed pipe cover trims, finished to match the radiators, provided with the radiation.
      2. Combination shutoff valve/union fitting of less than two inches in width for the supply and return to each panel radiator, to be field installed by others.
      3. Runtal-Flex Connectors: To be used where appropriate to provide expansion compensation for the radiators.
      4. Avg Water Temp of 180 degrees F. BTUH/ft at 65 degrees F, EAT.

\*\* NOTE TO SPECIFIER \*\* Delete model options not required.

* + - 1. Model with Fins: VLX 7/7. Height: 2.8 inches Depth: 2 inches. BTUH/ft: 380.
      2. Model with Fins: VLX 14/14. Height: 5.8 inches Depth: 2 inches. BTUH/ft: 610.
      3. Model with Fins: VLX 21/21. Height: 8.6 inches Depth: 2 inches. BTUH/ft: 790.
      4. Model with Fins: VLX 28/28. Height: 11.5 inches Depth: 2 inches. BTUH/ft: 950.
      5. Model without Fins: VX 7. Height: 2.8 inches Depth: 2 inches. BTUH/ft: 160.
      6. Model without Fins: VX 14. Height: 5.8 inches Depth: 2 inches. BTUH/ft: 290.
      7. Model without Fins: VX 21. Height: 8.6 inches Depth: 2 inches. BTUH/ft: 430.
      8. Model without Fins: VX 28. Height: 11.5 inches Depth: 2 inches. BTUH/ft: 570.
    1. Basis of Design: Made-to-Order Wall Panels:
       1. Construction: Heavy gauge fully welded steel.
       2. Finish: Electrostatically applied, baked on powder coat paint. Color: \_\_\_\_\_\_\_\_.
       3. Available Lengths: 20 inches to 354 inches in increments of 2 inches.
       4. Mounting: Wall. Hardware included. 1 to 3 inches from floor.
       5. Uniform Pipe Fittings: 1/2 inch NPT. Vent Fittings: 1/8 inch. Vent included.
       6. Air Vent: To be opposite the supply side of the radiator.
       7. Multiple piping configurations
       8. Vertical Covers: For straight vertical pipe between the radiator and floor. Field cut for heights other than 3 and 10 inches.
       9. Horizontal Covers: Standard trims simply snap into place. Require a 2 inch overlap on the radiator for proper fit.
          1. Straight Trims: 12 inches long. Used as end and center trims.
          2. Inside Corners: 12 x 12 inch
          3. Right End Cap: 6 x 2 inch.
          4. Left End Cap: 2 x 6 inch.
          5. Outside Corner Trims and Special Trims: Available by request.
       10. Average Water Temperature: 180 degrees F

\*\* NOTE TO SPECIFIER \*\* Delete model options not required.

* + - 1. Model with Fins: VLX 35/35. Height: 14.4 inches. Depth: 2 inches. BTUH: 1260.
      2. Model with Fins: VLX 42/42. Height: 17.2 inches. Depth: 2 inches. BTUH: 1460.
      3. Model with Fins: VLX 49/49. Height: 20.2 inches. Depth: 2 inches. BTUH: 1650.
      4. Model with Fins: VLX 56/56. Height: 23.1 inches. Depth: 2 inches. BTUH: 1840.
      5. Model with Fins: VLX 63/56. Height: 26.1 inches. Depth: 2 inches. BTUH: 1950.
      6. Model with Fins: VLX 70/56. Height: 29.0 inches. Depth: 2 inches. BTUH: 2050.
      7. Model without Fins: VX 35. Height: 14.4 inches. Depth: 2 inches. BTUH: 710.
      8. Model without Fins: VX 42. Height: 17.2 inches. Depth: 2 inches. BTUH: 860.
      9. Model without Fins: VX 49. Height: 20.2 inches. Depth: 2 inches. BTUH: 1010.
      10. Model without Fins: VX 56. Height: 23.1 inches. Depth: 2 inches. BTUH: 1150.
      11. Model without Fins: VX 63. Height: 26.1 inches. Depth: 2 inches. BTUH: 1300.
      12. Model without Fins: VX 70. Height: 29.0 inches. Depth: 2 inches. BTUH: 1450.
    1. Basis of Design: Made-to-Order Vertical Steel Panel Radiators: Model HX:
       1. Tubes running vertically from floor to ceiling. Can be recessed into the wall.
       2. Built to order. Length: 20 inches to 29.5 ft in 2 inch increments without splicing. Wall to wall applications for perimeter heating.
       3. Construction: Cold rolled low carbon welded steel, one piece. A pair of flattened water tube panels welded to headers at each end.

\*\* NOTE TO SPECIFIER \*\* Delete the top grille if radiators are to be curved.

* + - * 1. Side Grille: 0.09 inch thick minimum, all-welded perforated. On both sides.

\*\* NOTE TO SPECIFIER \*\* Many standard colors and over 100 optional colors.

* + - 1. Finish: Powder coat. Color: \_\_\_\_\_\_\_\_. Paint Thickness: 2 to 3 mils.

\*\* NOTE TO SPECIFIER \*\* Delete mounting options not required.

* + - 1. Mounting: Wall. Support blocking for radiator mounting to be by others.
      2. Mounting: Free standing. Floor posts required.
      3. Panel Thermal Expansion: Not to exceed 1/64 inch per ft at 215 degrees F AWT.
         1. Expansion Compensation: Provided in the piping as required, by others.
      4. Header Pipes: Square 0.109 inches minimum wall thickness. Include necessary supply, return, and air vent connections. Internal baffling as required.
      5. Uniform Pipe Fittings: 1/2 inch NPT. Vent Fittings: 1/8 inch. Vent included.
      6. Air Vent: To be opposite the supply side of the radiator.
      7. Multiple piping configurations.
      8. Pressure Rating, Standard: 56 psi max. Test Pressure: 74 psi max.
         1. Minimum Wall Thickness: 0.048 inch.
      9. Pressure Rating, High: 128 psi max. Test Pressure: 184 psi max.
         1. Minimum Wall Thickness: 0.078 inch.

\*\* NOTE TO SPECIFIER \*\* The following three items are optional. Delete options not required.

* + - 1. Ribbed pipe cover trims, finished to match the radiators, provided with the radiation.
      2. Combination shutoff valve/union fitting of less than two inches in width for the supply and return to each panel radiator, to be field installed by others.
      3. Runtal-Flex Connectors: To be used where appropriate to provide expansion compensation for the radiators.
      4. Avg Water Temp: 180 degrees F.

\*\* NOTE TO SPECIFIER \*\* Delete model options not required.

* + - 1. Model: HX7. Width: 2.7 inches. Depth: 2 inches. BTUH/ft: 140.
      2. Model: HX14. Width: 5.7 inches. Depth: 2 inches. BTUH/ft: 280.
      3. Model: HX21. Width: 8.6 inches. Depth: 2 inches. BTUH/ft: 420.
      4. Model: HX28. Width: 11.5 inches. Depth: 2 inches. BTUH/ft: 560.
      5. Model: HX35. Width: 14.3 inches. Depth: 2 inches. BTUH/ft: 700.
      6. Model: HX42. Width: 17.3 inches. Depth: 2 inches. BTUH/ft: 840.
      7. Model: HX49. Width: 20.3 inches. Depth: 2 inches. BTUH/ft: 980.
      8. Model: HX56. Width: 23.1 inches. Depth: 2 inches. BTUH/ft: 1120.
      9. Model: HX63. Width: 26.1 inches. Depth: 2 inches. BTUH/ft: 1260.
      10. Model: HX70. Width: 29.0 inches. Depth: 2 inches. BTUH/ft: 1400.
    1. Basis of Design: Made-to-Order Steel Panel Column Radiators - Model R Series: Evenly spaced, vertical flat tubing. Allows light to pass through. Dual function as full-height room dividers, balustrades, or knee walls. Higher BTU output than flat-orientation radiators.
       1. Tubes running vertically from floor to ceiling. Can be recessed into the wall to clear door swings.
       2. Built to order. Length: 6 inches to 20 ft.
       3. Construction: Cold rolled low carbon welded steel, one piece. A pair of flattened water tube panels welded to headers at each end.

\*\* NOTE TO SPECIFIER \*\* Many standard colors and over 100 optional colors.

* + - 1. Finish: Gloss powder coat. Color: \_\_\_\_\_\_\_\_. Paint Thickness: 2 to 3 mils.

\*\* NOTE TO SPECIFIER \*\* Delete mounting options not required.

* + - 1. Mounting: Wall. Support blocking for radiator mounting to be by others.
      2. Mounting: Free standing. Floor posts required.
      3. Panel Thermal Expansion: Not to exceed 1/64 inch per ft at 215 degrees F AWT.
         1. Expansion Compensation: Provided in the piping as required, by others.
      4. Header Pipes: Round 0.072 inches minimum wall thickness. Include necessary supply, return, and air vent connections. Internal baffling as required.

\*\* NOTE TO SPECIFIER \*\* 3/4 inch NPT inlets and outlets are available by special order.

* + - 1. Piping Connections: Inlet and Outlet: 1/2 inch NPT. Vents: 1/8 inch NPT.
      2. Pressure Rating, Standard: 56 psi max. Test Pressure: 74 psi max.
         1. Minimum Wall Thickness: 0.048 inch.
      3. Pressure Rating, High: 128 psi max. Test Pressure: 184 psi max.
         1. Minimum Wall Thickness: 0.078 inch.

\*\* NOTE TO SPECIFIER \*\* The following two items are optional. Delete options not required.

* + - 1. Combination shutoff valve/union fitting of less than two inches in width for the supply and return to each panel radiator, to be field installed by others.
      2. Runtal-Flex Connectors: To be used where appropriate to provide expansion compensation for the radiators.

\*\* NOTE TO SPECIFIER \*\* Delete model options not required.

* + - 1. Model: R1040-2. Height: 15.9 inches. Depth: 4 inches. BTUH/ft: 960.
      2. Model: R1060-2. Height: 23.6 inches. Depth: 4 inches. BTUH/ft: 1320.
      3. Model: R1075-2. Height: 29.5 inches. Depth: 4 inches. BTUH/ft: 1620.
      4. Model: R1090-2. Height: 35.6 inches. Depth: 4 inches. BTUH/ft: 1860.
      5. Model: R1200-2. Height: 78.8 inches. Depth: 4 inches. BTUH/ft: 4380.
      6. Model: R1215-2. Height: 84.6 inches. Depth: 4 inches. BTUH/ft: 4740.

\*\* NOTE TO SPECIFIER \*\* Delete paragraph below if not required. Some double panel models can be factory curved. Contact the Manufacturer for more details.

* + 1. Basis of Design: Made-to-Order Curved and Segmented Single Panel Radiators: To follow architectural walls.
       1. Radiator length must be ordered by arc length.
       2. Mounting: Clip or Strap.
       3. Factory Curved: Concave and convex curves.
          1. Non-Finned Models: Min Radius: 5 ft. Max Length: 20 ft.
          2. Finned Models: Min Radius: 10 ft. Max Length: 16 ft.
       4. Field Curved: Concave and convex curves. Suit larger curvatures.
          1. Minimum Radius: 15 ft. Minimum Length: 15 ft.
    2. Basis of Design: Made-to-Order High Output Radiators: Model VLX-2: 5-year limited warranty.
       1. Built to order. Length: 2 to 29.5 ft in 2 inch increments
       2. Construction: Cold rolled welded steel one piece. Flattened water tubes welded to headers at each end.

\*\* NOTE TO SPECIFIER \*\* Delete the top grille if radiators are to be curved.

* + - * 1. Top Grille: 0.09 inch thick minimum, all-welded perforated.

\*\* NOTE TO SPECIFIER \*\* Many standard colors and over 100 optional colors.

* + - 1. Finish: Gloss powder coat. Color: \_\_\_\_\_\_\_\_. Paint Thickness: 2 to 3 mils.

\*\* NOTE TO SPECIFIER \*\* Delete mounting options not required.

* + - 1. Mounting: Wall. Support blocking for radiator mounting to be by others.
      2. Mounting: Free standing. Floor posts required.
      3. Panel Thermal Expansion: Not to exceed 1/64 inch per ft at 215 degrees F AWT.
      4. Piping Connections: Inlet and Outlet: 1/2 inch NPT. Vents: 1/8 inch NPT.
      5. Pressure Rating, Standard: 56 psi max. Test Pressure: 74 psi max.
         1. Minimum Wall Thickness: 0.048 inch.
      6. Pressure Rating, High: 128 psi max. Test Pressure: 184 psi max.
         1. Minimum Wall Thickness: 0.078 inch.

\*\* NOTE TO SPECIFIER \*\* The following three items are optional. Delete options not required.

* + - 1. Ribbed pipe cover trims, finished to match the radiators, provided with the radiation.
      2. Combination shutoff valve/union fitting of less than two inches in width for the supply and return to each panel radiator, to be field installed by others.
      3. Runtal-Flex Connectors: To be used where appropriate to provide expansion compensation for the radiators.

\*\* NOTE TO SPECIFIER \*\* Delete model options not required. Then delete average water temperatures not required.

* + - 1. Model with Fins: VLX 7/7-2. Height: 2.8 inches Depth: 4.8 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 1300.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 920.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 530.
      2. Model with Fins: VLX 14/14-2. Height: 5.7 inches Depth: 4.8 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 2020.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 1420.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 820.
      3. Model with Fins: VLX 21/21-2. Height: 8.6 inches Depth: 52 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 2580.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 1810.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 1040.
      4. Model with Fins: VLX 28/28-2. Height: 11.5 inches Depth: 2 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 3090.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 2170.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 1250.
      5. Model with Fins: VLX 35/35-2. Height: 14.4 inches Depth: 2 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 3790.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 2670.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 1530.
      6. Model with Fins: VLX 42/42-2. Height: 17.2 inches Depth: 2 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 4270.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 3000.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 1720.
      7. Model with Fins: VLX 49/49-2. Height: 20.2 inches Depth: 2 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 4738.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 3335.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 1909.
      8. Model with Fins: VLX 56/56-2. Height: 23.1 inches Depth: 2 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 5200.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 3660.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 2095.
      9. Model with Fins: VLX 63/56-2. Height: 26.1 inches Depth: 2 inches.
         1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 5451.
         2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 3836.
         3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 2196.
      10. Model with Fins: VLX 70/56-2. Height: 29.0 inches Depth: 2 inches.
          1. Avg Water Temp of 215 degrees F: BTUH/ft at 65 degrees F, EAT: 5691.
          2. Avg Water Temp of 180 degrees F: BTUH/ft at 65 degrees F, EAT: 4005.
          3. Avg Water Temp of 140 degrees F: BTUH/ft at 65 degrees F, EAT: 2293.
    1. Basis of Design: Made-to-Order Hot Spring. Vertical installation only.
       1. For closed loop systems only. Not for use with domestic hot water systems.
       2. Working Pressure: 100 psi maximum.
       3. Working Temperature: 200 degrees F Maximum.

\*\* NOTE TO SPECIFIER \*\* Delete model and finish options not required.

* + - 1. Model: HOT 60. Height: 25.6 inch. Dia: 7.8 inch. Depth: 11.00 inch. BTUH: 1975.
      2. Model: HOT 180. Height: 72.8 inch. Dia: 7.8 inch. Depth: 11.00 inch. BTUH: 6681.
      3. Finish: Painted. 16 to 156 inches in 2 inch increments. Color: White.
      4. Finish: Painted. 16 to 156 inches in 2 inch increments. Color: Metallica.
      5. Finish: Chrome. 16 to 80 inches in 2 inch increments.
         1. Chrome finish reduces radiator output by 20 percent.
    1. Basis of Design: Made-to-Order Steam Flow Form: Fins arranged in a spiral around the heating tube radiate heat efficiently throughout the room.
       1. For two-pipe steam systems only.
       2. Construction: Stainless steel.

\*\* NOTE TO SPECIFIER \*\* Delete chrome plated finish if not require.

* + - 1. Finish: Chrome Plated. Chrome plating will drop BTUH by 12 percent.
      2. Mounting: Floor. Pedestals. Tilt Toward Condensate Return: 1/16 inch per foot.
      3. Average Supply Hydronic Water Temperature: 180 degrees F.
      4. Height: 7.5 inches. Diameter: 5.2 inches.
      5. Supply Side: Control Valve. 1 inch NPT.
      6. Return Side: Steam trap. 1/2 inch NPT.

\*\* NOTE TO SPECIFIER \*\* Delete model options not required.

* + - 1. Model XFF 100: Length: 39.4 inches. BTUH: 2553.
      2. Model XFF 150: Length: 59.1 inches. BTUH: 3920.
      3. Model XFF 200: Length: 78.8 inches. BTUH: 5288.

1. EXECUTION
   1. EXAMINATION
      1. Do not begin installation until the substrates have been properly constructed and prepared.
      2. If substrate preparation is the responsibility of another installer, notify Architect in writing of unsatisfactory preparation before proceeding.
   2. PREPARATION
      1. Clean surfaces thoroughly prior to installation.
      2. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
   3. INSTALLATION
      1. Install in accordance with manufacturer's instructions, approved submittals, and in proper relationship with adjacent construction.
   4. FIELD QUALITY CONTROL
      1. Field Inspection: Coordinate field inspection in accordance with appropriate sections in Division 01.

\*\* NOTE TO SPECIFIER \*\* Include if manufacturer provides field quality control with onsite personnel for instruction or supervision of product installation, application, erection, or construction. Delete if not required.

* + 1. Manufacturer's Services: Coordinate manufacturer's services in accordance with appropriate sections in Division 01.
  1. CLEANING AND PROTECTION
     1. Clean products in accordance with the manufacturer's recommendations.
     2. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION