

Rittling Element

Catalog





Zehnder decorative radiators



Heating and cooling ceiling systems

zehnder

always the
best climate



Comfortable indoor ventilation



Clean air solutions

Always the best climate for

IMPROVED QUALITY OF LIFE

With Zehnder, you will find the perfect climate for any space.

www.zehnder-systems.com



Custom-building innovative hydronic systems for commerce, industry and institutions since 1946

Zehnder Rittling long ago coined the phrase “Reinventing Finned Tube” to describe its commitment to design innovation and its unlimited custom engineering capability. For decades, Zehnder Rittling's constantly expanding inventory and proven ability to control costs without compromising the highest quality standards in manufacturing have made the name synonymous with image, performance, reliability, price, delivery and service.

Zehnder Rittling's diversity and flexibility have freed architects from the constraints of designing around limited catalog selections of standard elements and enclosure configurations. Today Zehnder Rittling engineers can draw on, or modify, any of 42 different hydronic heating elements and 150 standard enclosure models to build any system an architect can draw to tolerances of less than 0.03125 inch, at an exceptionally competitive cost.

For the architects of the future, Zehnder Rittling will continue to advance finned tube technology in still more new directions and develop ever more efficient, cost-effective hydronic heat transfer systems.

Over sixty-five years of quality, innovation and service... and we're just getting warmed up.



| | |
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Single-source manufacturer for all installation conditions

42 types of finned tube
Specialists in the design and manufacturing of element heating equipment since 1946, Zehnder Rittling offers an unmatched selection of finned tube and enclosures. This single-source responsibility gives you the flexibility and convenience to design a radiant heating system based on the requirements of the installation rather than the limitations of the supplier.

Feature permanently bonded fins for rapid, constant and maximum heat transfer from the quality tubing used.

Copper/Aluminum Element

Tube: 3/4", 1" or 1-1/4"

Fin: 2-3/4" x 4", 3-1/4" x 3-1/4" or 4-1/14" x 4-1/4"

1' to 12' lengths in 6" increments

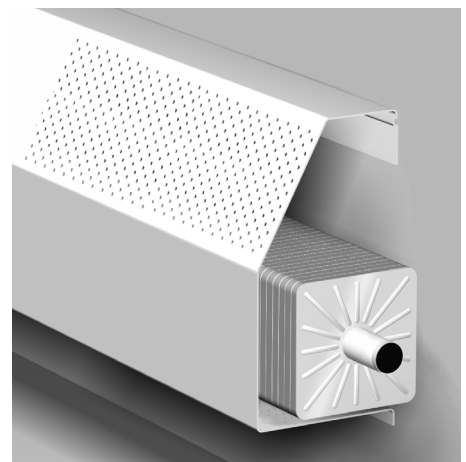
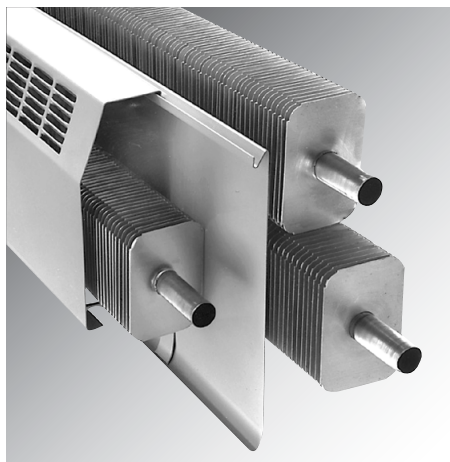
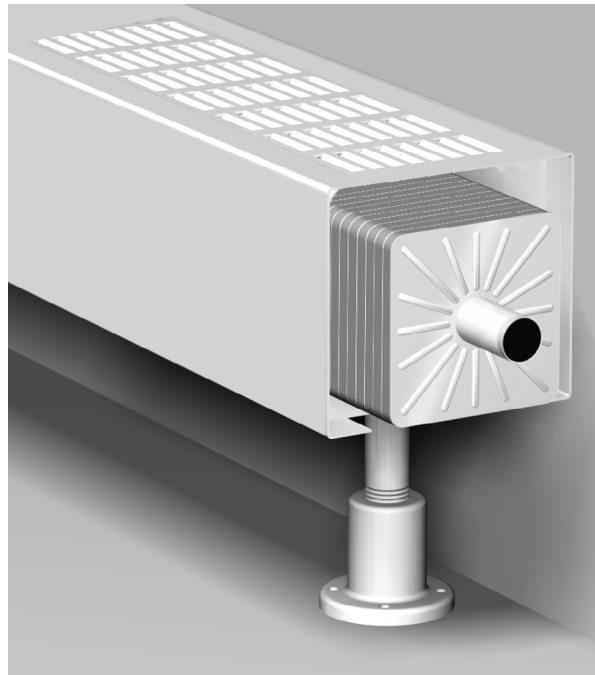
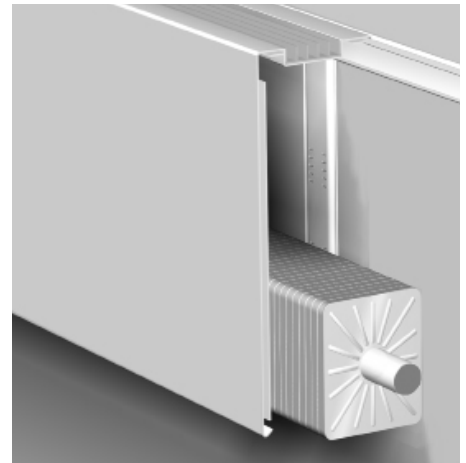
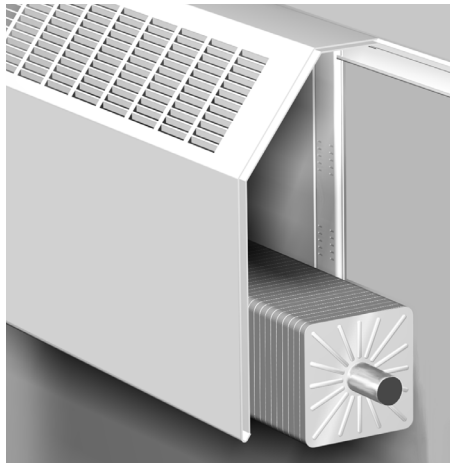
Steel Element

Tube: 1", 1-1/4" or 2"

Fin: 3-1/4" x 3-1/4" or 4-1/14" x 4-1/4"

1-1/2' to 10' length in 6" increments

Fully guaranteed to meet or exceed ratings published in this catalog for bare tube and in individual Zehnder Rittling product literature, when installed as directed.



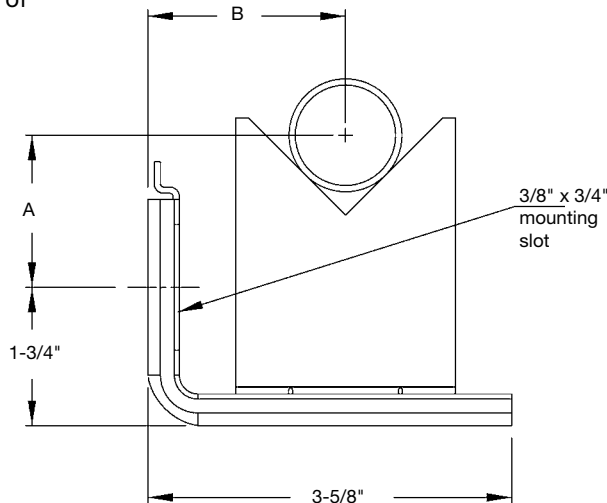
Galvannealed-steel

Cradle-type expansion bracket for bare tube installation

Zehnder Rittling element can be installed bare or with any Zehnder Rittling enclosure using Zehnder Rittling's cradle-type expansion brackets. Made of sturdy, ribbed, galvannealed steel, these economical brackets permit 1-1/4 inches of

element expansion. The L-Shaped enclosure brackets support both the enclosure and element. Second row brackets are used for bare tube applications as well as 2 row and 3 row installations.

Second row bracket, base element installations



Enclosures 20 inches high accommodate one or two rows of element; those 24 inches high accommodate one, two or three rows of finned tube.

| Tube size | Dimension A |
|---------------|-------------|
| 1" Steel | 1-3/4" |
| 1-1/4" Steel | 1-7/8" |
| 2" Steel | 2-1/4" |
| 3/4" Copper | 1-3/8" |
| 1" Copper | 1-1/2" |
| 1-1/4" Copper | 1-5/8" |

| Enclosure depth | Dimension B |
|------------------|-------------|
| 3-1/2", 3-15/16" | 1-31/32" |
| 4-1/2", 5-3/8" | 2-17/32" |

Over 50 enclosure styles

Unlimited combinations

Regency Enclosures

When appearance and flexibility of the heating installation are primary considerations, Zehnder Rittling Regency Enclosures offer thermal efficiency and an emphatic vertical stance with unobtrusive louvers and sleek, wall-hugging profiles. The thirteen Regency wall models can be supplied as either low-profile enclosures, for a narrower depth and shorter heights (3-15/16" vs. 5-3/8") where floor-to-sill clearance is minimal, or as standard-dimensioned units, where there are fewer size restrictions. Pedestal enclosures can be used for floor installations where a wall installation is not possible, often in front of floor to ceiling windows.

Architectural Enclosures

Complements contemporary architectural and interior design. These models feature unobtrusive linear profiles and strong horizontal lines. Available in standard, low profile, pedestal and slope-top enclosure styles.

Utility E-Series Enclosures

Provides compact, economical protection against fin contact. Six (6) styles of louvered-outlet or expanded-metal element covers are available for wall mounting.

Econo-Line Enclosures

Low cost, high thermal efficiency and superior appearance make Econo-Line baseboard models an ideal heating solution for light commercial applications.

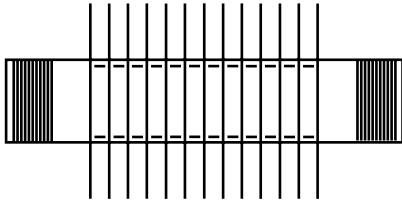
Security Enclosures

Designed to provide safe, durable, rugged and tamper-proof heating for correctional facilities, public housing, health care institutions, schools and other high-traffic or harsh environments. The series is comprised of sixteen (16) models in pattern strip or fully perforated styles.

Models and dimensions

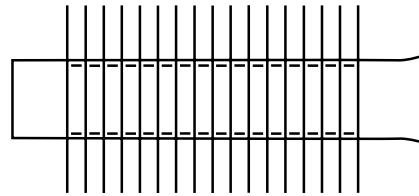
Steel tube

- 1'-6" min. to 10'-0" max. on 6" increments

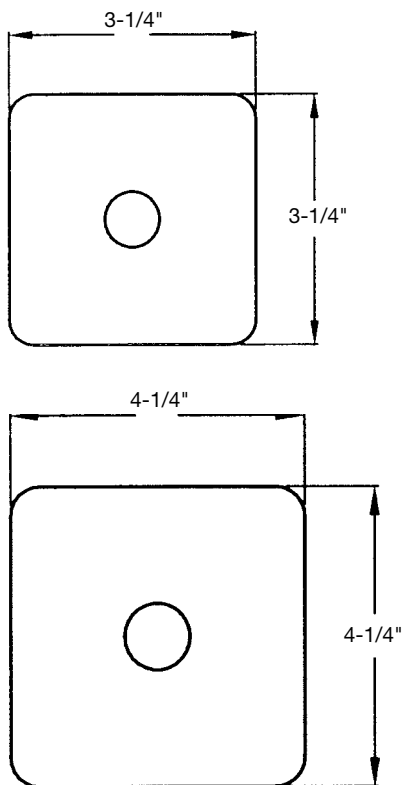


Copper tube

- 1'-0" min. to 12'-0" max. on 6" increments

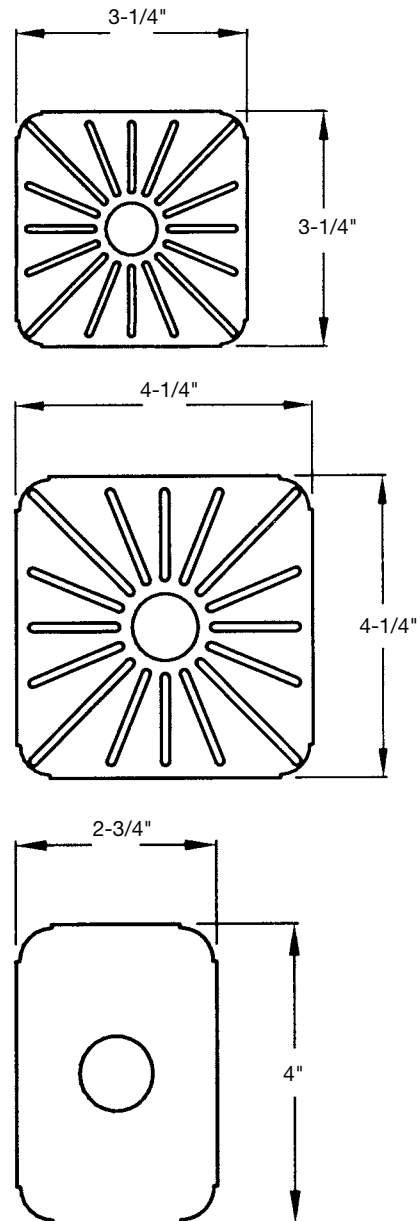


Steel fins



Aluminum fins

- (with extruded collars) Ribbed for greater rigidity



- Unless otherwise specified, each end has American Standard pipe thread, gauged flush plus or minus one thread. Available on request is plain end, chamfered for welding.

- One end has a swaged end; the other end is plain.

Models and dimensions

| Element Model | | 1/4 Tube size (D) Nominal | Actual | Tube material | Element size (H x W) | Element material | Fins/ft. | | | | |
|---------------------|---------------------|------------------------------|-----------|--------------------|-------------------------|------------------|-----------|--------------------|-----------------|----------|----|
| Steel | 1S-3/4 X 3/4-32 | 1" | IPS | Steel SCH 40 | 3-1/4" x 3-1/4" | Steel | 32 | | | | |
| | 1S-3/4 X 3/4-40 | | | | | | 40 | | | | |
| | 1S-3/4 X 3/4-48 | | | | | | 48 | | | | |
| | 1S-4/4 X 4/4-32 | | | | | | 32 | | | | |
| | 1S-4/4 X 4/4-40 | | | | | | 40 | | | | |
| | 1S-4/4 X 4/4-48 | | | | | | 48 | | | | |
| | 1 1/4S-3/4 X 3/4-32 | 1 1/4" | IPS | Steel SCH 40 | 3-1/4" x 3-1/4" | Steel | 32 | | | | |
| | 1 1/4S-3/4 X 3/4-40 | | | | | | 40 | | | | |
| | 1 1/4S-3/4 X 3/4-48 | | | | | | 48 | | | | |
| | 1 1/4S-4/4 X 4/4-32 | | | | | | 32 | | | | |
| | 1 1/4S-4/4 X 4/4-40 | | | | | | 40 | | | | |
| | 1 1/4S-4/4 X 4/4-48 | | | | | | 48 | | | | |
| | 2S-4/4 X 4/4-32 | 2" | IPS | Steel SCH 40 | 4" x 2-3/4" | Steel | 32 | | | | |
| | 2S-4/4 X 4/4-40 | | | | | | 40 | | | | |
| | 2S-4/4 X 4/4-48 | | | | | | 48 | | | | |
| Copper | 3/4C-2 3/4 X 4-32 | 3/4" | 7/8" OD | Copper 0.020" wall | 4" x 2-3/4" | Aluminum | 32 | | | | |
| | 3/4C-2 3/4 X 4-40 | | | | | | 40 | | | | |
| | 3/4C-2 3/4 X 4-48 | | | | | | 48 | | | | |
| | 3/4C-3/4 X 3/4-32 | | | | | | 7/8" OD | Copper 0.020" wall | 3-1/4" x 3-1/4" | Aluminum | 32 |
| | 3/4C-3/4 X 3/4-40 | | | | | | | | | | 40 |
| | 3/4C-3/4 X 3/4-48 | | | | | | | | | | 48 |
| | 3/4C-4/4 X 4/4-32 | | | | | | 7/8" OD | Copper 0.020" wall | 4-1/4" x 4-1/4" | Aluminum | 32 |
| | 3/4C-4/4 X 4/4-40 | | | | | | | | | | 40 |
| | 3/4C-4/4 X 4/4-48 | | | | | | | | | | 48 |
| | 1C-2 3/4 X 4-32 | 1" | 1-1/8" OD | Copper 0.025" wall | 4" x 2-3/4" | Aluminum | 32 | | | | |
| | 1C-2 3/4 X 4-40 | | | | | | 40 | | | | |
| | 1C-2 3/4 X 4-48 | | | | | | 48 | | | | |
| | 1C-3/4 X 3/4-32 | | 1-1/8" OD | Copper 0.025" wall | 4" x 2-3/4" | Aluminum | 32 | | | | |
| | 1C-3/4 X 3/4-40 | | | | 3-1/4" x 3-1/4" | | 40 | | | | |
| | 1C-3/4 X 3/4-48 | | | | 48 | | | | | | |
| | 1C-4/4 X 4/4-32 | | 1-1/8" OD | Copper 0.025" wall | 3-1/4" x 3-1/4" | Aluminum | 32 | | | | |
| | 1C-4/4 X 4/4-40 | | | | 4-1/4" x 4-1/4" | | 40 | | | | |
| | 1C-4/4 X 4/4-48 | | | | 48 | | | | | | |
| | 1 1/4C-2 3/4 X 4-32 | | 1 1/4" | 1-1/8" OD | Copper 0.025" wall | 4-1/4" x 4-1/4" | Aluminum* | 32 | | | |
| | 1 1/4C-2 3/4 X 4-40 | | | | | | | 40 | | | |
| | 1 1/4C-2 3/4 X 4-48 | | | | | | | 48 | | | |
| 1 1/4C-3/4 X 3/4-32 | 13/8" OD | | | Copper 0.028" wall | 4" x 2-3/4" | Aluminum | 32 | | | | |
| 1 1/4C-3/4 X 3/4-40 | | | | | 3-1/4" x 3-1/4" | | 40 | | | | |
| 1 1/4C-3/4 X 3/4-48 | | | | | 48 | | | | | | |
| 1 1/4C-4/4 X 4/4-32 | 13/8" OD | Copper 0.028" wall | | 3-1/4" x 3-1/4" | Aluminum | 32 | | | | | |
| 1 1/4C-4/4 X 4/4-40 | | | | 4-1/4" x 4-1/4" | | 40 | | | | | |
| 1 1/4C-4/4 X 4/4-48 | | | | 48 | | | | | | | |

Note:

■ Fin thickness is 0.027" (steel) or 0.016" (aluminum)

Performance ratings

Steel

| Element | Rows of Element (on 6-inch centers) | Recommended minimum installed height (in inches)* | Steam heat | Hot water heat | | | | | | | | | |
|----------------|-------------------------------------|---|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|------|
| | | | 215°F factor of 1.00 | 220°F factor of 1.05 | 210°F factor of 0.95 | 200°F factor of 0.86 | 190°F factor of 0.78 | 180°F factor of 0.69 | 170°F factor of 0.61 | 160°F factor of 0.53 | 150°F factor of 0.45 | 140°F factor of 0.40 | |
| Steel ratings | | | | | | | | | | | | | |
| 1" Dia. steel | 1S-3¼ X 3¼-32 | 1 | 8-7/8 | 890 | 935 | 846 | 765 | 694 | 614 | 543 | 472 | 401 | 356 |
| | | 2 | 14-7/8 | 1550 | 1628 | 1473 | 1333 | 1209 | 1070 | 946 | 822 | 698 | 620 |
| | | 3 | 20-7/8 | 2150 | 2258 | 2043 | 1849 | 1677 | 1484 | 1312 | 1140 | 968 | 860 |
| | 1S-3¼ X 3¼-40 | 1 | 8-7/8 | 960 | 1008 | 912 | 826 | 749 | 662 | 586 | 509 | 432 | 384 |
| | | 2 | 14-7/8 | 1650 | 1733 | 1568 | 1419 | 1287 | 1139 | 1007 | 875 | 743 | 660 |
| | | 3 | 20-7/8 | 2280 | 2394 | 2166 | 1961 | 1778 | 1573 | 1391 | 1208 | 1026 | 912 |
| | 1S-3¼ X 3¼-48 | 1 | 8-7/8 | 1030 | 1082 | 979 | 886 | 803 | 711 | 628 | 546 | 464 | 412 |
| | | 2 | 14-7/8 | 1740 | 1827 | 1653 | 1496 | 1357 | 1201 | 1061 | 922 | 783 | 696 |
| | | 3 | 20-7/8 | 2400 | 2520 | 2280 | 2064 | 1872 | 1656 | 1464 | 1272 | 1080 | 960 |
| 1" Dia. steel | 1S-4¼ X 4¼-32 | 1 | 8-7/8 | 1070 | 1124 | 1017 | 920 | 835 | 738 | 653 | 567 | 482 | 428 |
| | | 2 | 14-7/8 | 1881 | 1975 | 1787 | 1617 | 1467 | 1298 | 1147 | 997 | 846 | 752 |
| | | 3 | 20-7/8 | 2472 | 2596 | 2349 | 2126 | 1928 | 1706 | 1508 | 1310 | 1113 | 989 |
| | 1S-4¼ X 4¼-40 | 1 | 8-7/8 | 1170 | 1229 | 1112 | 1006 | 913 | 807 | 714 | 620 | 527 | 468 |
| | | 2 | 14-7/8 | 1924 | 2020 | 1828 | 1654 | 1501 | 1327 | 1174 | 1020 | 866 | 770 |
| | | 3 | 20-7/8 | 2497 | 2622 | 2372 | 2147 | 1948 | 1723 | 1523 | 1323 | 1124 | 999 |
| | 1S-4¼ X 4¼-48 | 1 | 8-7/8 | 1280 | 1344 | 1216 | 1101 | 998 | 883 | 781 | 678 | 576 | 512 |
| | | 2 | 14-7/8 | 2033 | 2135 | 1932 | 1749 | 1586 | 1403 | 1240 | 1078 | 915 | 813 |
| | | 3 | 20-7/8 | 2617 | 2748 | 2486 | 2250 | 2041 | 1806 | 1596 | 1387 | 1178 | 1047 |
| 1½" Dia. steel | 1½S-3¼ X 3¼-32 | 1 | 8-7/8 | 870 | 914 | 827 | 748 | 679 | 600 | 529 | 461 | 392 | 348 |
| | | 2 | 14-7/8 | 1570 | 1649 | 1492 | 1350 | 1225 | 1083 | 958 | 832 | 707 | 628 |
| | | 3 | 20-7/8 | 2210 | 2321 | 2100 | 1901 | 1724 | 1525 | 1348 | 1171 | 995 | 884 |
| | 1½S-3¼ X 3¼-40 | 1 | 8-7/8 | 930 | 977 | 884 | 780 | 725 | 642 | 567 | 493 | 419 | 372 |
| | | 2 | 14-7/8 | 1600 | 1680 | 1520 | 1376 | 1248 | 1104 | 976 | 848 | 720 | 640 |
| | | 3 | 20-7/8 | 2220 | 2331 | 2109 | 1909 | 1732 | 1532 | 1354 | 1177 | 999 | 888 |
| | 1½S-3¼ X 3¼-48 | 1 | 8-7/8 | 980 | 1029 | 931 | 843 | 764 | 676 | 598 | 519 | 441 | 392 |
| | | 2 | 14-7/8 | 1640 | 1722 | 1558 | 1410 | 1279 | 1132 | 1000 | 869 | 738 | 656 |
| | | 3 | 20-7/8 | 2240 | 2352 | 2128 | 1926 | 1747 | 1546 | 1366 | 1187 | 1008 | 896 |
| 1½" Dia. steel | 1½S-4¼ X 4¼-32 | 1 | 8-7/8 | 1060 | 1113 | 1007 | 912 | 827 | 731 | 647 | 562 | 477 | 424 |
| | | 2 | 14-7/8 | 1855 | 2098 | 1898 | 1719 | 1559 | 1379 | 1219 | 1059 | 899 | 799 |
| | | 3 | 20-7/8 | 2412 | 2764 | 2501 | 2264 | 2053 | 1817 | 1606 | 1395 | 1185 | 1053 |
| | 1½S-4¼ X 4¼-40 | 1 | 8-7/8 | 1160 | 1218 | 1102 | 998 | 905 | 800 | 708 | 615 | 522 | 464 |
| | | 2 | 14-7/8 | 1912 | 2008 | 1817 | 1645 | 1492 | 1320 | 1167 | 1014 | 861 | 765 |
| | | 3 | 20-7/8 | 2485 | 2609 | 2360 | 2137 | 1938 | 1714 | 1516 | 1317 | 1118 | 994 |
| | 1½S-4¼ X 4¼-48 | 1 | 8-7/8 | 1270 | 1334 | 1207 | 1092 | 991 | 876 | 775 | 673 | 572 | 508 |
| | | 2 | 14-7/8 | 2016 | 2116 | 1915 | 1733 | 1572 | 1391 | 1230 | 1068 | 907 | 806 |
| | | 3 | 20-7/8 | 2622 | 2753 | 2491 | 2255 | 2045 | 1809 | 1599 | 1390 | 1180 | 1049 |

*Measured from floor to top of upper fins.

Ratings shown are based on:

- Installation height shown. Lower heights are not recommended.
- Entering air temperature of 65 °F.
- Steam at nominal 1 (actual 0.9) psig and 215 °F.
- Average Water Temperature (degrees F) shown with a water velocity of 3 feet per second or more.
- For other conditions, refer to EZSelect selection software.

Performance ratings

Steel

| Element | Rows of Element (on 6-inch centers) | Recommended minimum installed height (in inches)* | Steam heat | Hot water heat | | | | | | | | | |
|---------------|--|--|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|------|
| | | | 215°F factor of 1.00 | 220°F factor of 1.05 | 210°F factor of 0.95 | 200°F factor of 0.86 | 190°F factor of 0.78 | 180°F factor of 0.69 | 170°F factor of 0.61 | 160°F factor of 0.53 | 150°F factor of 0.45 | 140°F factor of 0.40 | |
| Steel ratings | | | | | | | | | | | | | |
| 2" Dia. steel | 2S-4¼ X 4¼-32 | 1 | 8-7/8 | 1020 | 1071 | 969 | 877 | 796 | 704 | 622 | 541 | 459 | 408 |
| | | 2 | 14-7/8 | 1816 | 1907 | 1726 | 1562 | 1417 | 1253 | 1108 | 963 | 817 | 727 |
| | | 3 | 20-7/8 | 2416 | 2537 | 2295 | 2078 | 1884 | 1667 | 1474 | 1280 | 1087 | 966 |
| | 2S-4¼ X 4¼-40 | 1 | 8-7/8 | 1130 | 1187 | 1074 | 972 | 881 | 780 | 689 | 599 | 509 | 452 |
| | | 2 | 14-7/8 | 1909 | 2004 | 1814 | 1642 | 1489 | 1317 | 1164 | 1012 | 859 | 764 |
| | | 3 | 20-7/8 | 2491 | 2616 | 2367 | 2142 | 1943 | 1719 | 1520 | 1320 | 1121 | 996 |
| | 2S-4¼ X 4¼-48 | 1 | 8-7/8 | 1230 | 1292 | 1169 | 1058 | 959 | 849 | 750 | 652 | 554 | 492 |
| | | 2 | 14-7/8 | 1948 | 2046 | 1851 | 1675 | 1520 | 1344 | 1188 | 1033 | 877 | 779 |
| | | 3 | 20-7/8 | 2510 | 2635 | 2384 | 2158 | 1957 | 1732 | 1531 | 1330 | 1129 | 1004 |

*Measured from floor to top of upper fins.

Ratings shown are based on:

- Installation height shown. Lower heights are not recommended.
- Entering air temperature of 65 °F.
- Steam at nominal 1 (actual 0.9) psig and 215 °F.
- Average Water Temperature (degrees F) shown with a water velocity of 3 feet per second or more.
- For other conditions, refer to EZSelect selection software.

Performance ratings

Copper

| Element | Rows of Element (on 6-inch centers) | Recommended minimum installed height (in inches)* | Steam heat | Hot water heat | | | | | | | | | |
|-----------------------|-------------------------------------|---|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|------|
| | | | 215°F factor of 1.00 | 220°F factor of 1.05 | 210°F factor of 0.95 | 200°F factor of 0.86 | 190°F factor of 0.78 | 180°F factor of 0.69 | 170°F factor of 0.61 | 160°F factor of 0.53 | 150°F factor of 0.45 | 140°F factor of 0.40 | |
| Copper ratings | | | | | | | | | | | | | |
| 3/4" Dia. copper | 3/4C-2 3/4 X 4-32 | 1 | 8-7/8 | 1010 | 1061 | 960 | 869 | 788 | 697 | 616 | 535 | 455 | 404 |
| | | 2 | 14-7/8 | 1850 | 1943 | 1758 | 1591 | 1443 | 1277 | 1129 | 981 | 833 | 740 |
| | | 3 | 20-7/8 | 2620 | 2751 | 2489 | 2253 | 2044 | 1808 | 1598 | 1389 | 1179 | 1048 |
| | 3/4C-2 3/4 X 4-40 | 1 | 8-7/8 | 1160 | 1218 | 1102 | 998 | 905 | 800 | 708 | 615 | 522 | 464 |
| | | 2 | 14-7/8 | 2030 | 2132 | 1929 | 1746 | 1583 | 1401 | 1238 | 1076 | 914 | 812 |
| | | 3 | 20-7/8 | 2840 | 2982 | 2698 | 2242 | 2215 | 1960 | 1732 | 1505 | 1278 | 1136 |
| | 3/4C-2 3/4 X 4-48 | 1 | 8-7/8 | 1310 | 1376 | 1245 | 1127 | 1022 | 904 | 799 | 694 | 590 | 524 |
| | | 2 | 14-7/8 | 2220 | 2331 | 2109 | 1909 | 1732 | 1532 | 1354 | 1177 | 999 | 888 |
| | | 3 | 20-7/8 | 3050 | 3203 | 2898 | 2623 | 2379 | 2105 | 1861 | 1617 | 1373 | 1220 |
| 3/4" Dia. copper | 3/4C-3 1/4 X 3 1/4-32 | 1 | 8-7/8 | 940 | 987 | 893 | 808 | 733 | 649 | 573 | 498 | 423 | 376 |
| | | 2 | 14-7/8 | 1700 | 1785 | 1615 | 1462 | 1392 | 1173 | 1037 | 901 | 765 | 680 |
| | | 3 | 20-7/8 | 2400 | 2520 | 2280 | 2064 | 1872 | 1656 | 1464 | 1272 | 1080 | 960 |
| | 3/4C-3 1/4 X 3 1/4-40 | 1 | 8-7/8 | 1060 | 1113 | 1007 | 912 | 827 | 731 | 647 | 562 | 477 | 424 |
| | | 2 | 14-7/8 | 1830 | 1922 | 1739 | 1574 | 1427 | 1263 | 1116 | 970 | 824 | 732 |
| | | 3 | 20-7/8 | 2540 | 2667 | 2413 | 2184 | 1981 | 1753 | 1549 | 1346 | 1143 | 1016 |
| | 3/4C-3 1/4 X 3 1/4-48 | 1 | 8-7/8 | 1190 | 1250 | 1131 | 1023 | 928 | 821 | 726 | 631 | 536 | 476 |
| | | 2 | 14-7/8 | 1960 | 2058 | 1862 | 1686 | 1529 | 1352 | 1196 | 1039 | 882 | 784 |
| | | 3 | 20-7/8 | 2670 | 2804 | 2537 | 2296 | 2083 | 1842 | 1629 | 1415 | 1202 | 1068 |
| 3/4" Dia. copper | 3/4C-4 1/4 X 4 1/4-32 | 1 | 8-7/8 | 1260 | 1323 | 1197 | 1084 | 983 | 869 | 769 | 668 | 567 | 504 |
| | | 2 | 14-7/8 | 2160 | 2268 | 2052 | 1858 | 1685 | 1490 | 1318 | 1145 | 972 | 864 |
| | | 3 | 20-7/8 | 2990 | 3140 | 2841 | 2571 | 2332 | 2063 | 1824 | 1585 | 1346 | 1196 |
| | 3/4C-4 1/4 X 4 1/4-40 | 1 | 8-7/8 | 1420 | 1491 | 1349 | 1221 | 1108 | 980 | 866 | 753 | 639 | 568 |
| | | 2 | 14-7/8 | 2290 | 2405 | 2176 | 1969 | 1786 | 1580 | 1397 | 1214 | 1031 | 916 |
| | | 3 | 20-7/8 | 3080 | 3234 | 2926 | 2649 | 2402 | 2125 | 1879 | 1632 | 1386 | 1232 |
| | 3/4C-4 1/4 X 4 1/4-48 | 1 | 8-7/8 | 1590 | 1670 | 1511 | 1367 | 1240 | 1097 | 970 | 843 | 716 | 636 |
| | | 2 | 14-7/8 | 2420 | 2541 | 2299 | 2081 | 1888 | 1670 | 1476 | 1283 | 1089 | 968 |
| | | 3 | 20-7/8 | 3160 | 3318 | 3002 | 2718 | 2465 | 2180 | 1928 | 1675 | 1422 | 1264 |

*Measured from floor to top of upper fins.

Ratings shown are based on:

- Installation height shown. Lower heights are not recommended.
- Entering air temperature of 65 °F.
- Steam at nominal 1 (actual 0.9) psig and 215 °F.
- Average Water Temperature (degrees F) shown with a water velocity of 3 feet per second or more.
- For other conditions, refer to EZSelect selection software.

Performance ratings

Copper

| Element | Rows of Element (on 6-inch centers) | Recommended minimum installed height (in inches)* | Steam heat | Hot water heat | | | | | | | | | |
|-----------------------|-------------------------------------|---|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|------|
| | | | 215°F factor of 1.00 | 220°F factor of 1.05 | 210°F factor of 0.95 | 200°F factor of 0.86 | 190°F factor of 0.78 | 180°F factor of 0.69 | 170°F factor of 0.61 | 160°F factor of 0.53 | 150°F factor of 0.45 | 140°F factor of 0.40 | |
| Copper ratings | | | | | | | | | | | | | |
| 1" Dia. copper | 1C-2¾ X 4-32 | 1 | 8-7/8 | 1010 | 1061 | 960 | 869 | 788 | 697 | 616 | 535 | 455 | 404 |
| | | 2 | 14-7/8 | 1850 | 1943 | 1758 | 1591 | 1443 | 1277 | 1129 | 981 | 833 | 740 |
| | | 3 | 20-7/8 | 2610 | 2741 | 2480 | 2245 | 2036 | 1801 | 1592 | 1383 | 1175 | 1044 |
| | 1C-2¾ X 4-40 | 1 | 8-7/8 | 1190 | 1250 | 1131 | 1023 | 928 | 821 | 726 | 631 | 536 | 476 |
| | | 2 | 14-7/8 | 2020 | 2121 | 1919 | 1737 | 1576 | 1394 | 1232 | 1071 | 909 | 808 |
| | | 3 | 20-7/8 | 2820 | 2961 | 2679 | 2425 | 2200 | 1946 | 1720 | 1495 | 1269 | 1128 |
| | 1C-2¾ X 4-48 | 1 | 8-7/8 | 1300 | 1365 | 1235 | 1118 | 1014 | 897 | 793 | 689 | 585 | 520 |
| | | 2 | 14-7/8 | 2200 | 2310 | 2090 | 1892 | 1716 | 1518 | 1342 | 1166 | 990 | 880 |
| | | 3 | 20-7/8 | 3020 | 3171 | 2869 | 2597 | 2356 | 2084 | 1842 | 1601 | 1359 | 1208 |
| 1" Dia. copper | 1C-3¼ X 3¼-32 | 1 | 8-7/8 | 930 | 977 | 884 | 800 | 725 | 642 | 567 | 493 | 419 | 372 |
| | | 2 | 14-7/8 | 1690 | 1775 | 1606 | 1453 | 1318 | 1166 | 1031 | 896 | 761 | 676 |
| | | 3 | 20-7/8 | 2350 | 2468 | 2233 | 2021 | 1833 | 1622 | 1434 | 1246 | 1058 | 940 |
| | 1C-3¼ X 3¼-40 | 1 | 8-7/8 | 1050 | 1103 | 998 | 903 | 819 | 725 | 641 | 557 | 473 | 420 |
| | | 2 | 14-7/8 | 1830 | 1922 | 1739 | 1574 | 1427 | 1263 | 1116 | 970 | 824 | 732 |
| | | 3 | 20-7/8 | 2480 | 2604 | 2356 | 2133 | 1934 | 1711 | 1513 | 1314 | 1116 | 992 |
| | 1C-3¼ X 3¼-48 | 1 | 8-7/8 | 1210 | 1271 | 1150 | 1041 | 944 | 835 | 738 | 641 | 545 | 484 |
| | | 2 | 14-7/8 | 1940 | 2037 | 1843 | 1668 | 1513 | 1339 | 1183 | 1028 | 873 | 776 |
| | | 3 | 20-7/8 | 2600 | 2730 | 2470 | 2236 | 2028 | 1794 | 1586 | 1378 | 1170 | 1040 |
| 1" Dia. copper | 1C-4¼ X 4¼-32 | 1 | 8-7/8 | 1300 | 1365 | 1235 | 1118 | 1014 | 897 | 793 | 689 | 585 | 520 |
| | | 2 | 14-7/8 | 2300 | 2415 | 2185 | 1978 | 1794 | 1587 | 1403 | 1219 | 1035 | 920 |
| | | 3 | 20-7/8 | 3130 | 3287 | 2974 | 2692 | 2441 | 2160 | 1909 | 1659 | 1409 | 1252 |
| | 1C-4¼ X 4¼-40 | 1 | 8-7/8 | 1460 | 1533 | 1387 | 1256 | 1139 | 1007 | 891 | 774 | 657 | 584 |
| | | 2 | 14-7/8 | 2440 | 2562 | 2318 | 2098 | 1903 | 1684 | 1488 | 1293 | 1098 | 976 |
| | | 3 | 20-7/8 | 3250 | 3413 | 3088 | 2795 | 2535 | 2243 | 1983 | 1723 | 1463 | 1300 |
| | 1C-4¼ X 4¼-48 | 1 | 8-7/8 | 1620 | 1701 | 1539 | 1393 | 1264 | 1118 | 988 | 859 | 729 | 648 |
| | | 2 | 14-7/8 | 2550 | 2678 | 2423 | 2193 | 1989 | 1760 | 1556 | 1352 | 1148 | 1020 |
| | | 3 | 20-7/8 | 3330 | 3497 | 3164 | 2864 | 2597 | 2298 | 2031 | 1765 | 1499 | 1332 |

*Measured from floor to top of upper fins.

Ratings shown are based on:

- Installation height shown. Lower heights are not recommended.
- Entering air temperature of 65 °F.
- Steam at nominal 1 (actual 0.9) psig and 215 °F.
- Average Water Temperature (degrees F) shown with a water velocity of 3 feet per second or more.
- For other conditions, refer to EZSelect selection software.

Performance ratings

Copper

| Element | Rows of Element (on 6-inch centers) | Recommended minimum installed height (in inches)* | Steam heat | Hot water heat | | | | | | | | | |
|-----------------------|-------------------------------------|---|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|------|
| | | | 215°F factor of 1.00 | 220°F factor of 1.05 | 210°F factor of 0.95 | 200°F factor of 0.86 | 190°F factor of 0.78 | 180°F factor of 0.69 | 170°F factor of 0.61 | 160°F factor of 0.53 | 150°F factor of 0.45 | 140°F factor of 0.40 | |
| Copper ratings | | | | | | | | | | | | | |
| 1 1/4" Dia. copper | 1 1/4C-2 3/4 X 4-32 | 1 | 8-7/8 | 1010 | 1061 | 960 | 869 | 788 | 697 | 616 | 535 | 455 | 404 |
| | | 2 | 14-7/8 | 1850 | 1932 | 1748 | 1582 | 1435 | 1270 | 1122 | 975 | 828 | 736 |
| | | 3 | 20-7/8 | 2610 | 2741 | 2480 | 2245 | 2036 | 1801 | 1592 | 1383 | 1175 | 1044 |
| | 1 1/4C-2 3/4 X 4-40 | 1 | 8-7/8 | 1150 | 1208 | 1093 | 989 | 897 | 794 | 702 | 610 | 518 | 460 |
| | | 2 | 14-7/8 | 2010 | 2111 | 1910 | 1729 | 1568 | 1387 | 1226 | 1065 | 905 | 804 |
| | | 3 | 20-7/8 | 2800 | 2940 | 2660 | 2408 | 2184 | 1932 | 1708 | 1484 | 1260 | 1120 |
| | 1 1/4C-2 3/4 X 4-48 | 1 | 8-7/8 | 1290 | 1355 | 1226 | 1109 | 1006 | 890 | 787 | 684 | 581 | 516 |
| | | 2 | 14-7/8 | 2170 | 2279 | 2062 | 1866 | 1693 | 1497 | 1324 | 1150 | 977 | 868 |
| | | 3 | 20-7/8 | 2980 | 3129 | 2831 | 2563 | 2324 | 2056 | 1818 | 1579 | 1341 | 1192 |
| 1 1/4" Dia. copper | 1 1/4C-3 1/4 X 3 1/4-32 | 1 | 8-7/8 | 920 | 966 | 874 | 791 | 718 | 635 | 561 | 488 | 414 | 368 |
| | | 2 | 14-7/8 | 1680 | 1764 | 1596 | 1445 | 1310 | 1159 | 1025 | 890 | 756 | 672 |
| | | 3 | 20-7/8 | 2300 | 2415 | 2185 | 1978 | 1794 | 1587 | 1403 | 1219 | 1035 | 920 |
| | 1 1/4C-3 1/4 X 3 1/4-40 | 1 | 8-7/8 | 1030 | 1082 | 979 | 886 | 803 | 711 | 628 | 546 | 464 | 412 |
| | | 2 | 14-7/8 | 1820 | 1911 | 1729 | 1565 | 1420 | 1256 | 1110 | 965 | 819 | 728 |
| | | 3 | 20-7/8 | 2430 | 2552 | 2309 | 2090 | 1895 | 1677 | 1482 | 1288 | 1094 | 972 |
| | 1 1/4C-3 1/4 X 3 1/4-48 | 1 | 8-7/8 | 1130 | 1187 | 1074 | 972 | 881 | 780 | 689 | 599 | 509 | 452 |
| | | 2 | 14-7/8 | 1920 | 2016 | 1824 | 1651 | 1498 | 1325 | 1171 | 1018 | 864 | 768 |
| | | 3 | 20-7/8 | 2520 | 2646 | 2394 | 2167 | 1966 | 1739 | 1537 | 1336 | 1134 | 1008 |
| 1 1/4" Dia. copper | 1 1/4C-4 1/4 X 4 1/4-32 | 1 | 8-7/8 | 1350 | 1418 | 1283 | 1161 | 1053 | 932 | 824 | 716 | 608 | 540 |
| | | 2 | 14-7/8 | 2440 | 2562 | 2318 | 2098 | 1903 | 1684 | 1488 | 1293 | 1098 | 976 |
| | | 3 | 20-7/8 | 3270 | 3434 | 3107 | 2812 | 2551 | 2256 | 1995 | 1733 | 1472 | 1308 |
| | 1 1/4C-4 1/4 X 4 1/4-40 | 1 | 8-7/8 | 1500 | 1575 | 1425 | 1290 | 1170 | 1035 | 915 | 795 | 675 | 600 |
| | | 2 | 14-7/8 | 2600 | 2730 | 2470 | 2236 | 2028 | 1794 | 1586 | 1378 | 1170 | 1040 |
| | | 3 | 20-7/8 | 3430 | 3602 | 3259 | 2950 | 2675 | 2367 | 2092 | 1818 | 1544 | 1372 |
| | 1 1/4C-4 1/4 X 4 1/4-48 | 1 | 8-7/8 | 1650 | 1733 | 1568 | 1419 | 1287 | 1139 | 1007 | 875 | 743 | 660 |
| | | 2 | 14-7/8 | 2680 | 2814 | 2546 | 2305 | 2090 | 1849 | 1635 | 1420 | 1206 | 1072 |
| | | 3 | 20-7/8 | 3510 | 3686 | 3335 | 3019 | 2738 | 2422 | 2141 | 1860 | 1580 | 1404 |

*Measured from floor to top of upper fins.

Ratings shown are based on:

- Installation height shown. Lower heights are not recommended.
- Entering air temperature of 65 °F.
- Steam at nominal 1 (actual 0.9) psig and 215 °F.
- Average Water Temperature (degrees F) shown with a water velocity of 3 feet per second or more.
- For other conditions, refer to EZSelect selection software.

Mechanical specifications

General

Furnish and install finned tube heating elements and enclosures as indicated on plans, with required mounting components and accessories. Material shall be manufactured in accordance with Zehnder Rittling's High Quality Standards.

Steel heating elements

Steel heating elements shall consist of 0.027" thick galvanized fins permanently bonded to high pressure A106 seamless schedule 40B steel tubing by mechanically expanding the steel tubing to the steel fins. Steel tube wall thickness; 1" dia. - 0.133", 1-1/4" dia. - 0.140", 2" dia - 0.154", prior to tube expansion.

Guaranteed working pressures:

1" IPS - 780 psig at temperature up to 650°F. 1-1/4" IPS - 660 psig at temperatures up to 650°F.
2" IPS - 405 psig at temperatures up to 650°F.

Copper-aluminum heating elements

Copper-Aluminum heating elements shall consist of 0.016" thick, 1100 grade aluminum fins permanently bonded to lightly annealed copper alloy 122 seamless drawn tubing by mechanically expanding the copper tubing to the aluminum fins. Copper tube wall thickness; 3/4" dia - 0.020", 1" dia. - 0.025", 1-1/4" dia. - 0.028", prior to tube expansion. Copper tube meets the following ASTM standard designations: ASTM B42, ASTM B68, ASTM B75, ASTM B88, ASTM B111, ASTM B152, ASTM B280.

Guaranteed working pressures:

1-1/4" CU - 194 psig at temperatures up to 300°F. 1" CU - 204 psig at temperature up to 300°F. 3/4" CU - 218 psig at temperatures up to 300°F.

Hanger brackets

All hanger brackets shall be die formed for rigidity.

All hangers must provide for lengthwise movement of elements during expansion and contraction as well as aligning elements to prevent contact with brackets, walls or enclosure.

Special applications

Zehnder Rittling's reputation for leadership in commercial heating systems design and fabrication thrives on a demonstrated ability to modify or adapt components from our vast standard inventory and to break new ground with innovative applications.

Our ingenuity and expertise free architects from the constraints of hydronic-heating conventions. We can, for instance, customize enclosures to any dimensions in stainless, textured embossed, or perforated steel for installation anywhere: in ceilings, walls, or trenches. We'll angle finned tube systems to match the wall or slope of a floor. We can even fabricate the enclosure to match the curve of a wall. We'll fabricate all copper heating elements, bronze anodized and other specialty outlet grilles, or pipe enclosures without grilles. Challenge us and we'll build it!

If you have a special application you would like us to evaluate, please call to arrange a consultation with a Zehnder Rittling expert.

zehnder

always the
best climate

Always the best climate for

SMART IDEAS

A large grid of graph paper, consisting of 20 columns and 30 rows of small squares, intended for writing or drawing ideas.

The brand with the best indoor climate solutions.

The broad and clearly structured portfolio from the Zehnder Group is split into four product lines. Consequently, we can provide the right product, the perfect system and the matching service for all types of projects - from new builds to renovations, single- or multiple- family homes, as well as commercial projects. This variety ensures that our wealth of experience is continuously expanding, providing tangible added value to our customers on a daily basis.



Decorative radiators

Our individual decorative radiators for living and bathrooms not only make a home warmer but also more attractive. Created by renowned designers, they impress with excellent functionality.

NUMBERS THAT SPEAK FOR THEMSELVES

MANUFACTURER OF THE

1ST

STEEL RADIATOR IN THE WORLD

121

YEARS OF INNOVATIVE TRADITION

AROUND

3,000

EMPLOYEES

FOUNDED IN

1895

19

REPRESENTED IN COUNTRIES

1,800,000

TONNES OF CO₂ SAVED SINCE 2005

WARRANTY

Zehnder guarantees its products to be free from defects in material and workmanship for a period of one year from date of shipment from our Buffalo, New York factory.

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

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



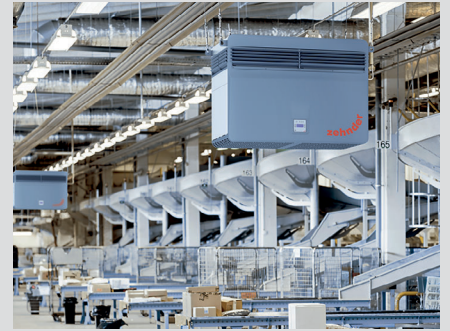
Comfortable indoor ventilation

Our comfortable indoor ventilation is energy-efficient and provides a healthy indoor climate. It promotes the well-being of the occupants and increases the value of the property.



Heating and cooling ceiling systems

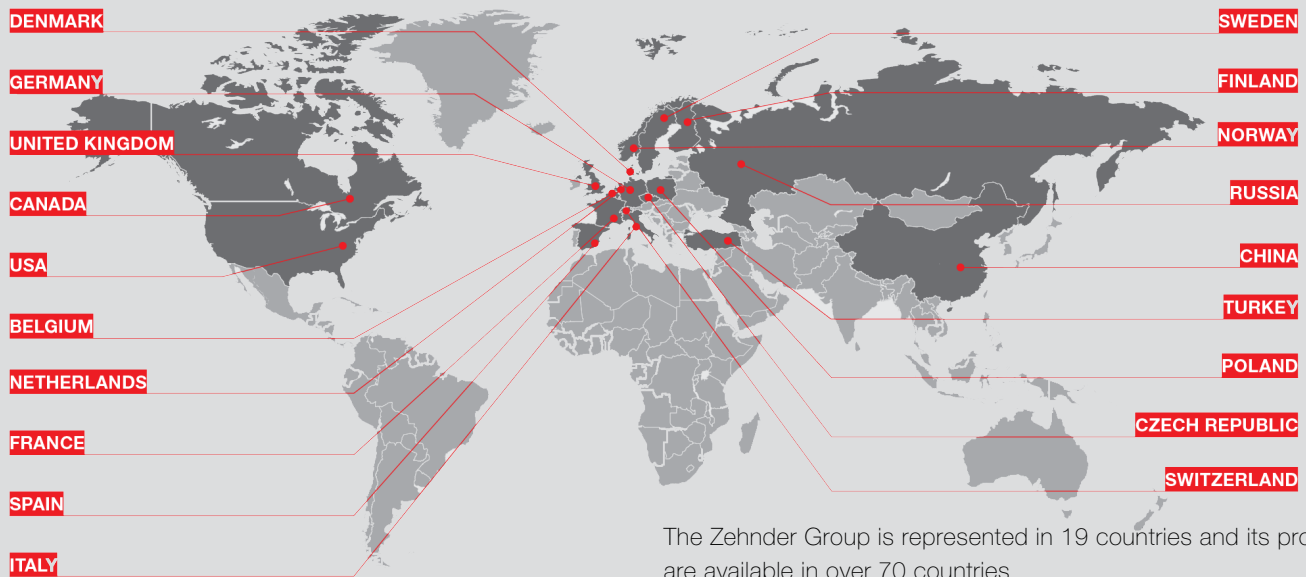
Zehnder heating and cooling ceiling systems are convenient and energy-efficient for heating and cooling. They are perfectly attuned to the relevant environment.



Clean air solutions

Clean air solutions from Zehnder reduce the level of dust in the air, create a healthier working climate and reduce the amount of cleaning required.

BEST CLIMATE IN THE WORLD



The Zehnder Group is represented in 19 countries and its products are available in over 70 countries

This warranty is extended only to the original purchaser from Zehnder.

IMPORTANT: Approved submittal documentation, specific to each project, supersedes the general guidelines contained within this document.



The Zehnder brand offers excellent indoor climate solutions within the sectors of decorative radiators, clean air solutions, comfortable indoor ventilation and heating and cooling ceiling systems.

