

## Cirrus 120 - 300

Chilled Beam



# Chilled Beam



- Cirrus chilled beam for flushmounting in false ceilings
- Adapted for standard 600 x 600 mm false ceilings module
- Available with the following functions: heating, comfort, control, NCS (Nozzle Control System), RCS (Room Comfort Support).

## Cirrus 120 - 300

Cirrus is chilled beam and integrates ventilation, cooling and heating. It covers a wide range of supply air and assures you the best room comfort. It is supported with a nozzle technology NCS (nozzle control system) that gives you the highest induction rate and flexible air pattern.

Together with RCS (room comfort support), it helps you to have a good indoor condition by directing the air so it will create low air velocities in the occupied zone. Cirrus is available in length of 120, 180, 240 and 300 cm and adapted to false ceilings with a module of 600 x 600 mm.

## Definitions

$\Delta T_{\text{mean}}$  (K): Is the Temperature difference between mean water (cooling/heating in and out) and room air  $T_R$

$\Delta T_{\text{Pr}}$  (K): Temperature difference between room air  $T_R$  and primary air  $T_{\text{Pr}}$

$\Delta T_W$  (K): Temperature difference between water flow  $T_{\text{WIN}}$  and return  $T_{\text{WOUT}}$

$\Delta T_{\text{Pr}}$  (K): Temperature difference between room air  $T_R$  and primary air  $T_{\text{Pr}}$

$T_W$  (K): Temperature difference between water flow  $T_{\text{WIN}}$  and return  $T_{\text{WOUT}}$

$T_{\text{SWIN}}$  (K): Temperature difference between ceiling room air  $T_t$  and inlet water  $T_{\text{WIN}}$

$P_{\text{Pr}}$  (Pa): Primary air pressure drop

$P_W$  (kPa): Water pressure drop

$T_R$  (°C): Room temperature

$T_t$  (°C): Ceiling room temperature

$T_{\text{WIN}}$  (°C): Water inlet temperature

$T_{\text{WOUT}}$  (°C): Water return temperature

$T_{\text{Pr}}$  (°C): Primary air temperature

$P_{\text{Pr}}$  (W): Primary air cooling capacity

$P_{\text{SW}}$  (W): Water cooling capacity

$P_{\text{total}}$  (W): Total cooling capacity  $P_{\text{Pr}} + P_{\text{SW}}$

$Q_W$  (l/h): Water volume flow rate

$Q$  (l/s): Primary air volume flow rate

$L_W$ -dB(A): Sound power level

# Cooling effects for Cirrus 120 - 300

| Unit size  | Nozzle setting | Primary airflow l/s | Sound dB(A) | Nozzle pressure Pa | Cooling capacity Primary air (W) at $\Delta T_{Pr}$ |     |      | Cooling capacity Water (W) at $\Delta T_{mean}$ |      |      | $\Delta P_w$ Water Pressure Drop (kPa) and water flow at 0,05 l/s |
|------------|----------------|---------------------|-------------|--------------------|---|-----|------|---|------|------|---|
|            |                |                     |             |                    | 6   | 8   | 10   | 6   | 8    | 10   |   |
| <b>120</b> | S              | 7                   | <20         | 40                 | 50  | 67  | 84   | 227   | 305  | 387  | 3,1   |
|            | S              | 9                   | <20         | 66                 | 65  | 86  | 108  | 279   | 373  | 471  | 3,1   |
|            | S              | 10                  | <20         | 81                 | 72  | 96  | 120  | 304   | 406  | 511  | 3,1   |
|            | S              | 12                  | 23          | 117                | 86  | 115 | 144  | 352   | 468  | 588  | 3,1   |
|            | M              | 15                  | <20         | 51                 | 108   | 144 | 180  | 295   | 394  | 496  | 3,1   |
|            | M              | 18                  | <20         | 74                 | 130   | 173 | 216  | 341   | 454  | 571  | 3,1   |
|            | M              | 21                  | 24          | 101                | 151   | 202 | 252  | 385   | 511  | 640  | 3,1   |
|            | M              | 24                  | 28          | 132                | 173   | 230 | 288  | 425   | 564  | 705  | 3,1   |
|            | L              | 20                  | 20          | 41                 | 144   | 192 | 240  | 309   | 412  | 519  | 3,1   |
|            | L              | 25                  | 26          | 64                 | 180   | 240 | 300  | 369   | 490  | 614  | 3,1   |
|            | L              | 28                  | 29          | 80                 | 202   | 269 | 336  | 401   | 533  | 667  | 3,1   |
|            | L              | 33                  | 33          | 111                | 238   | 317 | 396  | 452   | 600  | 749  | 3,1   |
| <b>180</b> | S              | 11                  | <20         | 38                 | 79  | 106 | 132  | 355   | 479  | 603  | 4,7   |
|            | S              | 14                  | <20         | 61                 | 101   | 134 | 168  | 434   | 583  | 734  | 4,7   |
|            | S              | 16                  | 21          | 80                 | 115   | 154 | 192  | 484   | 650  | 816  | 4,7   |
|            | S              | 19                  | 24          | 113                | 137   | 182 | 228  | 555   | 743  | 930  | 4,7   |
|            | M              | 23                  | <20         | 53,7               | 166   | 221 | 276  | 460   | 618  | 777  | 4,7   |
|            | M              | 27                  | 20          | 74                 | 194   | 259 | 324  | 524   | 702  | 880  | 4,7   |
|            | M              | 31                  | 24          | 98                 | 223   | 298 | 372  | 583   | 781  | 976  | 4,7   |
|            | M              | 36                  | 28          | 131                | 259   | 346 | 432  | 652   | 870  | 1086 | 4,7   |
|            | L              | 32                  | 24          | 42                 | 230   | 307 | 384  | 484   | 650  | 816  | 4,7   |
|            | L              | 38                  | 29          | 59                 | 274   | 365 | 456  | 555   | 743  | 930  | 4,7   |
|            | L              | 44                  | 33          | 79                 | 317   | 422 | 528  | 620   | 829  | 1036 | 4,7   |
|            | L              | 50                  | 36          | 102                | 360   | 480 | 600  | 680   | 906  | 1132 | 4,7   |
| <b>240</b> | S              | 16                  | 24          | 39                 | 115   | 154 | 192  | 522   | 692  | 863  | 6,3   |
|            | S              | 20                  | 29          | 61                 | 144   | 192 | 240  | 620   | 823  | 1028 | 6,3   |
|            | S              | 23                  | 32          | 81                 | 166   | 221 | 276  | 690   | 915  | 1144 | 6,3   |
|            | S              | 27                  | 35          | 112                | 194   | 259 | 324  | 777   | 1031 | 1289 | 6,3   |
|            | M              | 30                  | <20         | 53                 | 216   | 288 | 360  | 611   | 810  | 1013 | 6,3   |
|            | M              | 37                  | 23          | 81                 | 266   | 355 | 444  | 717   | 950  | 1189 | 6,3   |
|            | M              | 42                  | 27          | 105                | 302   | 403 | 504  | 787   | 1044 | 1305 | 6,3   |
|            | M              | 48                  | 30          | 137                | 346   | 461 | 576  | 867   | 1149 | 1437 | 6,3   |
|            | L              | 47                  | 26          | 42                 | 338   | 451 | 564  | 701   | 930  | 1163 | 6,3   |
|            | L              | 58                  | 31          | 63                 | 418   | 557 | 696  | 819   | 1086 | 1358 | 6,3   |
|            | L              | 65                  | 34          | 80                 | 468   | 624 | 780  | 888   | 1178 | 1472 | 6,3   |
|            | L              | 72                  | 37          | 98                 | 518   | 691 | 864  | 953   | 1265 | 1580 | 6,3   |
| <b>300</b> | S              | 19                  | <20         | 42                 | 137   | 182 | 228  | 630   | 840  | 1045 | 7,8   |
|            | S              | 23                  | 22          | 61                 | 166   | 221 | 276  | 732   | 974  | 1212 | 7,8   |
|            | S              | 27                  | 25          | 85                 | 194   | 259 | 324  | 828   | 1099 | 1371 | 7,8   |
|            | S              | 32                  | 28          | 119                | 230   | 307 | 384  | 938   | 1246 | 1557 | 7,8   |
|            | M              | 38                  | <20         | 55                 | 274   | 365 | 456  | 777   | 1033 | 1287 | 7,8   |
|            | M              | 49                  | 25          | 91                 | 353   | 470 | 588  | 939   | 1247 | 1558 | 7,8   |
|            | M              | 54                  | 27          | 111                | 389   | 518 | 648  | 1006  | 1338 | 1672 | 7,8   |
|            | M              | 61                  | 30          | 142                | 439   | 586 | 732  | 1095  | 1459 | 1823 | 7,8   |
|            | L              | 58                  | 25          | 41                 | 418   | 557 | 696  | 873   | 1159 | 1447 | 7,8   |
|            | L              | 70                  | 29          | 59                 | 504   | 672 | 834  | 1000  | 1330 | 1662 | 7,8   |
|            | L              | 81                  | 33          | 79                 | 583   | 778 | 972  | 1107  | 1474 | 1843 | 7,8   |
|            | L              | 92                  | 36          | 102                | 662   | 883 | 1104 | 1205  | 1607 | 2009 | 7,8   |

# Heating effects for Cirrus 120 - 300

| Unit size | Nozzle setting | Primary airflow l/s | Sound level dB(A) | Nozzle pressure Pa | Heating Capacity Water (W) at $\Delta T_{\text{mean}}$ |     |      |      |      |      | $\Delta P_w$ Water Pressure Drop (kPa) and water flow at 0,02 l/s |
|-----------|----------------|---------------------|-------------------|--------------------|--|-----|------|------|------|------|---|
|           |                |                     |                   |                    | 5  | 10  | 15   | 20   | 25   | 30   |   |
| 120       | S              | 7                   | <20               | 40                 | 102  | 203 | 311  | 422  | 535  | 639  | 1   |
|           | S              | 9                   | <20               | 66                 | 119  | 238 | 364  | 498  | 625  | 747  | 1   |
|           | S              | 10                  | <20               | 81                 | 127  | 255 | 390  | 534  | 668  | 800  | 1   |
|           | S              | 12                  | 23                | 117                | 143  | 288 | 439  | 603  | 750  | 901  | 1   |
|           | M              | 15                  | <20               | 51                 | 129  | 259 | 396  | 543  | 678  | 812  | 1   |
|           | M              | 18                  | <20               | 74                 | 145  | 292 | 446  | 612  | 762  | 915  | 1   |
|           | M              | 21                  | 24                | 101                | 160  | 323 | 492  | 676  | 840  | 1012 | 1   |
|           | M              | 24                  | 28                | 132                | 175  | 352 | 535  | 734  | 912  | 1102 | 1   |
|           | L              | 20                  | 20                | 41                 | 130  | 261 | 400  | 548  | 684  | 820  | 1   |
|           | L              | 25                  | 26                | 64                 | 150  | 303 | 462  | 634  | 789  | 949  | 1   |
|           | L              | 28                  | 29                | 80                 | 162  | 326 | 496  | 682  | 847  | 1021 | 1   |
|           | L              | 33                  | 33                | 111                | 180  | 362 | 550  | 754  | 937  | 1133 | 1   |
| 180       | S              | 11                  | <20               | 38                 | 156  | 309 | 463  | 624  | 784  | 943  | 1,5   |
|           | S              | 14                  | <20               | 61                 | 181  | 361 | 542  | 736  | 920  | 1109 | 1,5   |
|           | S              | 16                  | 21                | 80                 | 198  | 394 | 594  | 806  | 1006 | 1216 | 1,5   |
|           | S              | 19                  | 24                | 113                | 220  | 442 | 666  | 904  | 1128 | 1367 | 1,5   |
|           | M              | 23                  | <20               | 53,7               | 195  | 389 | 586  | 796  | 994  | 1200 | 1,5   |
|           | M              | 27                  | 20                | 74                 | 216  | 433 | 653  | 886  | 1106 | 1339 | 1,5   |
|           | M              | 31                  | 24                | 98                 | 236  | 474 | 715  | 969  | 1209 | 1470 | 1,5   |
|           | M              | 36                  | 28                | 137                | 258  | 521 | 786  | 1061 | 1327 | 1620 | 1,5   |
|           | L              | 32                  | 24                | 42                 | 198  | 394 | 594  | 806  | 1006 | 1216 | 1,5   |
|           | L              | 38                  | 29                | 59                 | 220  | 442 | 666  | 904  | 1128 | 1367 | 1,5   |
|           | L              | 44                  | 33                | 79                 | 241  | 486 | 734  | 992  | 1239 | 1508 | 1,5   |
|           | L              | 50                  | 36                | 102                | 260  | 527 | 794  | 1071 | 1340 | 1637 | 1,5   |
| 240       | S              | 16                  | 24                | 39                 | 228  | 445 | 665  | 884  | 1110 | 1327 | 1,9   |
|           | S              | 20                  | 29                | 61                 | 257  | 514 | 772  | 1028 | 1288 | 1542 | 1,9   |
|           | S              | 23                  | 32                | 81                 | 277  | 562 | 845  | 1124 | 1409 | 1689 | 1,9   |
|           | S              | 27                  | 35                | 112                | 302  | 618 | 931  | 1237 | 1552 | 1862 | 1,9   |
|           | M              | 30                  | <20               | 53                 | 260  | 522 | 784  | 1044 | 1308 | 1566 | 1,9   |
|           | M              | 37                  | 23                | 81                 | 292  | 594 | 895  | 1190 | 1492 | 1790 | 1,9   |
|           | M              | 42                  | 27                | 105                | 312  | 638 | 963  | 1280 | 1606 | 1927 | 1,9   |
|           | M              | 48                  | 30                | 137                | 333  | 683 | 1031 | 1371 | 1721 | 2065 | 1,9   |
|           | L              | 47                  | 26                | 42                 | 281  | 569 | 856  | 1139 | 1428 | 1712 | 1,9   |
|           | L              | 58                  | 31                | 63                 | 314  | 642 | 969  | 1287 | 1616 | 1939 | 1,9   |
|           | L              | 65                  | 34                | 80                 | 332  | 680 | 1027 | 1365 | 1714 | 2057 | 1,9   |
|           | L              | 72                  | 37                | 98                 | 348  | 712 | 1074 | 1431 | 1796 | 2154 | 1,9   |
| 300       | S              | 19                  | <20               | 42                 | 266  | 528 | 797  | 1062 | 1326 | 1592 | 2,4   |
|           | S              | 23                  | 22                | 61                 | 294  | 590 | 888  | 1183 | 1483 | 1777 | 2,4   |
|           | S              | 27                  | 25                | 85                 | 319  | 645 | 969  | 1291 | 1622 | 1943 | 2,4   |
|           | S              | 32                  | 28                | 119                | 348  | 703 | 1057 | 1408 | 1772 | 2123 | 2,4   |
|           | M              | 38                  | <20               | 55                 | 313  | 631 | 949  | 1264 | 1586 | 1901 | 2,4   |
|           | M              | 49                  | 25                | 91                 | 355  | 718 | 1080 | 1439 | 1810 | 2169 | 2,4   |
|           | M              | 54                  | 27                | 111                | 371  | 749 | 1128 | 1505 | 1893 | 2269 | 2,4   |
|           | M              | 61                  | 30                | 142                | 391  | 786 | 1187 | 1583 | 1991 | 2387 | 2,4   |
|           | L              | 58                  | 25                | 41                 | 331  | 669 | 1006 | 1340 | 1685 | 2019 | 2,4   |
|           | L              | 70                  | 29                | 59                 | 363  | 733 | 1103 | 1470 | 1849 | 2216 | 2,4   |
|           | L              | 81                  | 33                | 79                 | 387  | 778 | 1174 | 1565 | 1970 | 2361 | 2,4   |
|           | L              | 92                  | 36                | 102                | 407  | 814 | 1231 | 1642 | 2065 | 2477 | 2,4   |

# Flow patterns, sound data, corrections, pressure drop

## Sound power

| Cirrus  | Correction $K_{oct}$ , dB Octave band, middle frequency (Hz) |     |     |     |     |     |     |    |
|---------|--|-----|-----|-----|-----|-----|-----|----|
|         | 63   | 125 | 250 | 500 | 1k  | 2k  | 4k  | 8k |
| Length  | 63   | 125 | 250 | 500 | 1k  | 2k  | 4k  | 8k |
| 120     | 10   | 3   | -8  | -11 | -10 | -10 | -8  | -3 |
| 180     | 5  | 0   | -4  | -5  | -8  | -11 | -12 | -9 |
| 240     | 2  | 0   | -6  | -5  | -7  | -9  | -9  | -9 |
| 300     | 7  | 1   | -3  | -3  | -7  | -11 | -13 | -9 |
| tol +/- | 6  | 4   | 5   | 7   | 3   | 3   | 5   | 5  |

The sound power levels for each octave band are obtained by adding the sound pressure level  $L_{A10}$ , dB(A) to the corrections  $K_{oct}$  given in the table above, according to the following formula:  $L_W = L_{A10} + K_{oct}$ .

The correction  $K_{oct}$  is the average in the area of application of the Cirrus chilled beam.

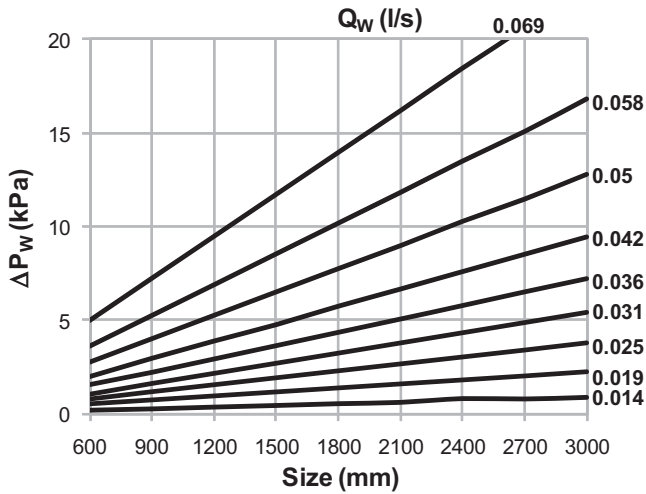
## Sound attenuation

| Cirrus  | Correction $K_{oct}$ , dB Octave band, middle frequency (Hz) |     |     |     |    |    |    |    |
|---------|--|-----|-----|-----|----|----|----|----|
|         | 63   | 125 | 250 | 500 | 1k | 2k | 4k | 8k |
|         | 63   | 125 | 250 | 500 | 1k | 2k | 4k | 8k |
|         | 13   | 14  | 4   | 1   | 6  | 6  | 7  | 11 |
| tol +/- | 1  | 1   | 0   | 0   | 1  | 1  | 1  | 1  |

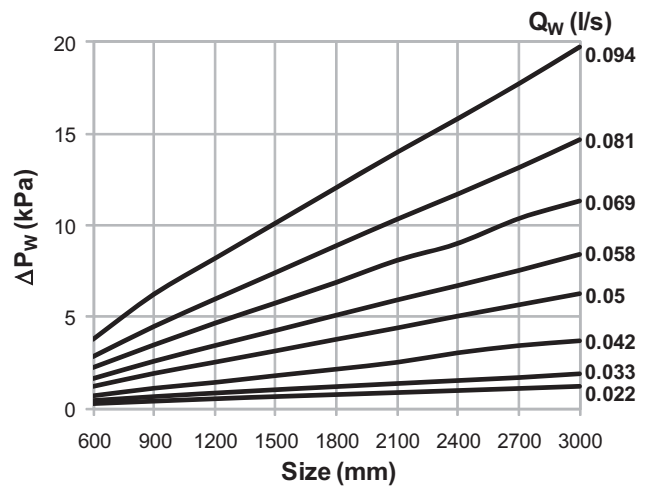
The average sound attenuation  $\Delta L$  of the Cirrus chilled beam from duct to room includes the end reflection of the connecting duct.

## Pressure drop coil

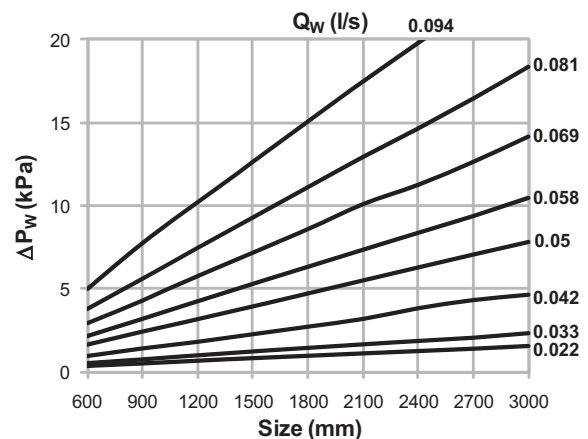
### Pressure drop in coil - 4 pipes system - Heating



### Pressure drop in coil - 4 pipes system - Cooling



### Pressure drop in coil - 2 pipes system - Cooling and Heating

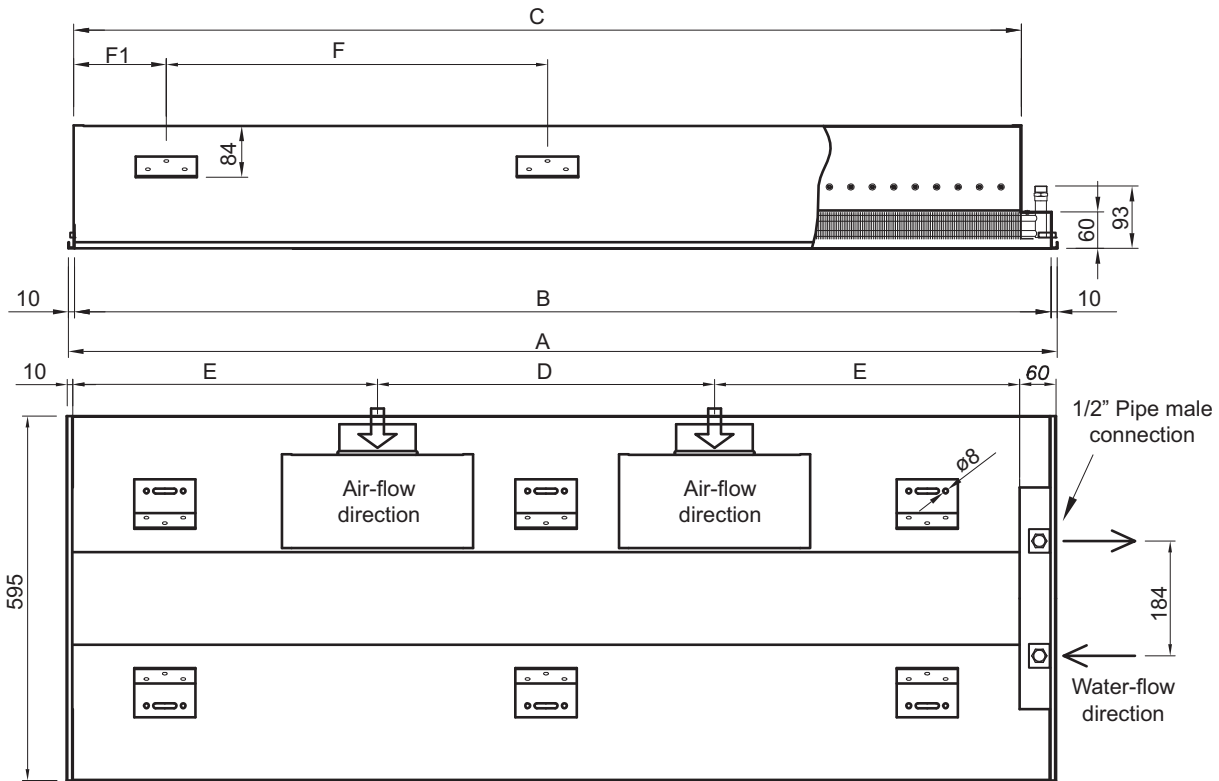
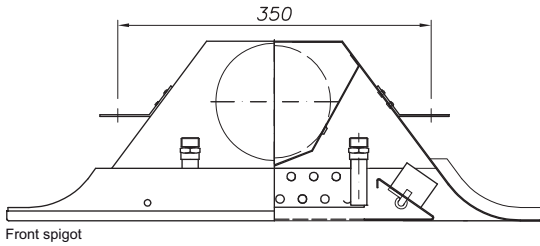


S = Small  
M = Medium  
L = Large

### Notes!

- Supply air and room air are at the same temperature.
- For heating calculations in a change-over, 2-pipe mode, please use the Systemair software for design.

# Dimensions

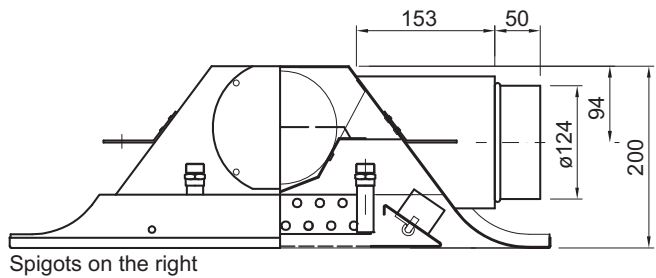


Spigots on the right

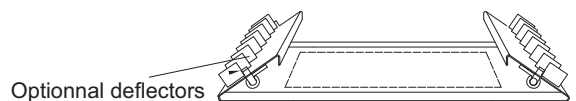
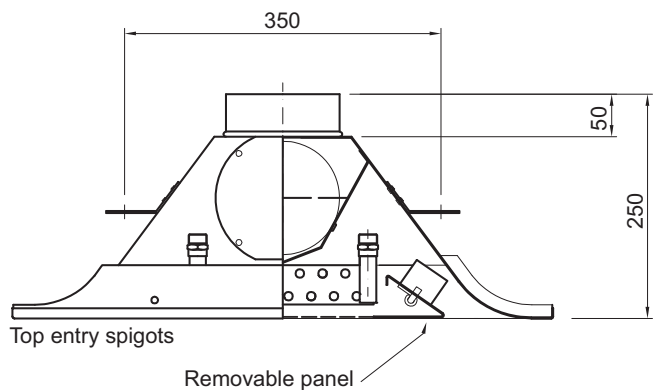
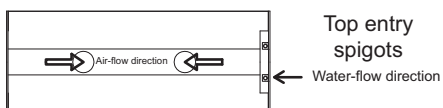
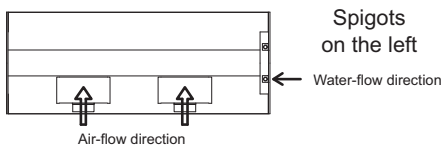
Two side connections only for airflow >50 l/s

| Nom. | A    | B    | C    | D    | E   | F    | F1  |
|------|------|------|------|------|-----|------|-----|
| 120  | 1192 | 1172 | 1122 | NA   | 561 | 822  | 150 |
| 180  | 1792 | 1772 | 1722 | NA   | 861 | 1422 | 150 |
| 240  | 2692 | 2672 | 2622 | 1311 | 656 | 1161 | 150 |
| 300  | 2992 | 2972 | 2922 | 1461 | 731 | 1311 | 150 |

Nom. dimension is given in cm.  
All other dimensions in this table are in mm.



Other constructions



## Description and product code



With the use of RCS, you avoid the risk of getting a draft in the occupied zone and with an unhealthy workplace. To arrange the vanes in a pattern when beams have a risk to collide, are easily done and doesn't affect pressure drop or noise level.

## NCS (Nozzle Control System)



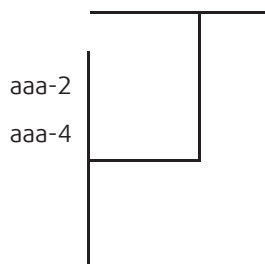
With the possibility to select a range of nozzle position that suits your installation. You will be able to adjust to the desired supply airflow by selecting Nozzle positions S (Small), M (Mid) and L (for higher capacities by combining small and mid nozzles). Following possibilities can provide you with a wide range of airflow.

## Product code, special units, accessories

### Product code

**Cirrus-aaa-b-c**

aaa = length  
 b = 2 => 2 pipe for cooling or heating  
 b = 4 => 4 pipe for cooling and heating  
 c = 1 => one  $\varnothing$  125 mm connection on shortside (standard)  
 c = 2 => two  $\varnothing$  125 mm connections on longside for airflows >50 l/s



aaa = 120, 180, 240, 300 cm

c = 1 or 2    b = 2 or 4

Including NCS and RCS as Standard

### Material and surface finish

The casing is mainly made of galvanized steel sheet. The frontplate is powder painted in white.

The standard colour RAL 9010 corresponds to NCS 0502-Y, gloss level 30.

The coil made of copper tubes (thickness 1 mm) and aluminium fins, connection size is 1/2" male. Maximum working pressure 1.6 MPa.

**ARGUS**, control system for Systemair's Chilled Beams.

This system includes room control unit, valve and actuator in different versions.

For more information, look at separate product sheet for **ARGUS**.

**Cirrus**, can be attached with standard M6 suspension rods.

