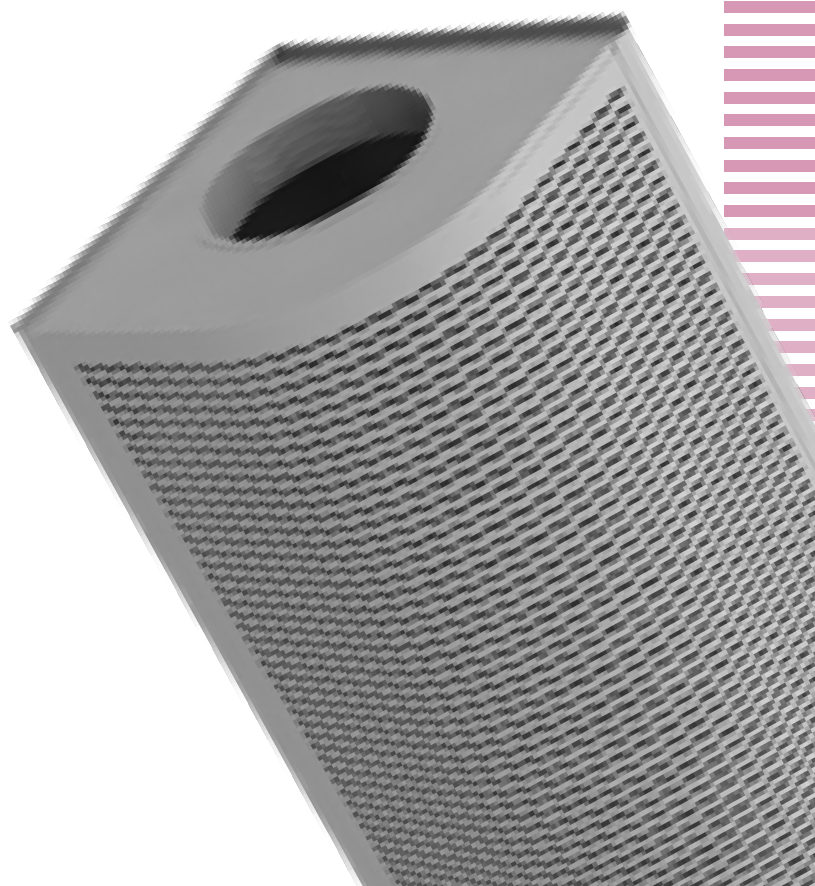


KOOLAIR

S-90

Displacement diffusers

Displacement



ISO 9001

BUREAU VERITAS
Certification

Sistema de Gestión

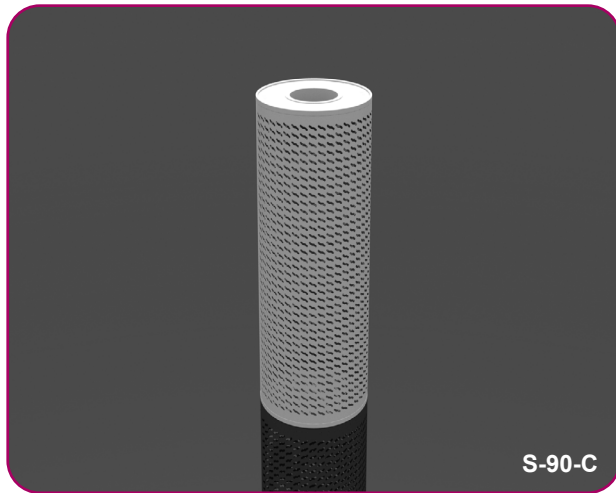


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General characteristics



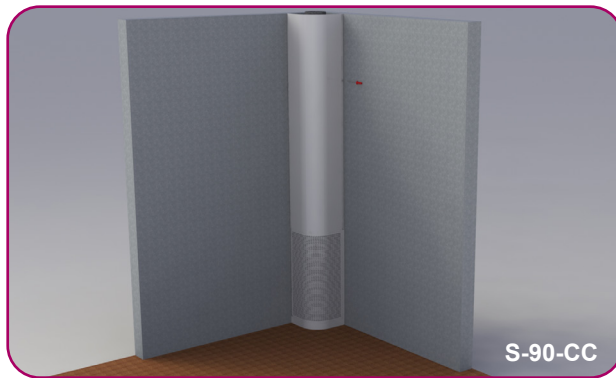
S-90-C

Description

The S-90 circular diffusers are displacement units for floor installation. The unit includes upper and lower covers and a perforated air distribution face plate. Connections can be made through the upper or lower cover.

The units are of galvanised steel sheet construction with aluminium sections and include an air equalising plate (painted in black) inside, as well as static pressure measurement to obtain the supply flow rate. The standard finish is RAL 9010 white paint, although any RAL colour is available upon request.

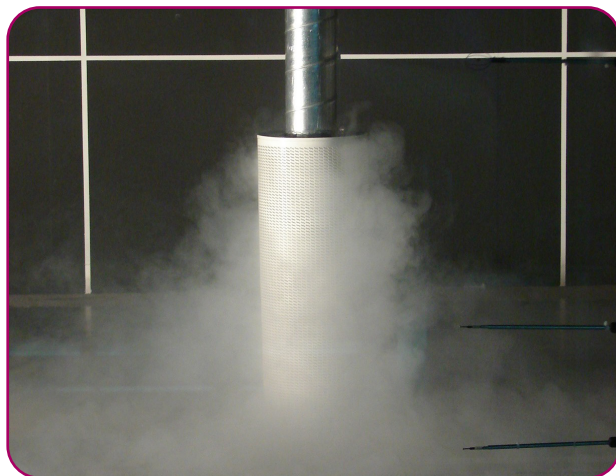
The S-90-44 version has a larger free air outlet area than the standard S-90 diffuser to provide an outlet velocity reduction of 35%.



S-90-CC

Applications

The circular displacement flow diffusers of the S-90 series can be used both in comfort and industrial environments. Air is supplied from the occupied area level at a slow outlet velocity (< 0.8 m/s) to minimise turbulence. Depending on the size, the units can also supply large air volumes. Air is supplied at a temperature difference of -1 to -6 °C with respect to the ambient temperature.



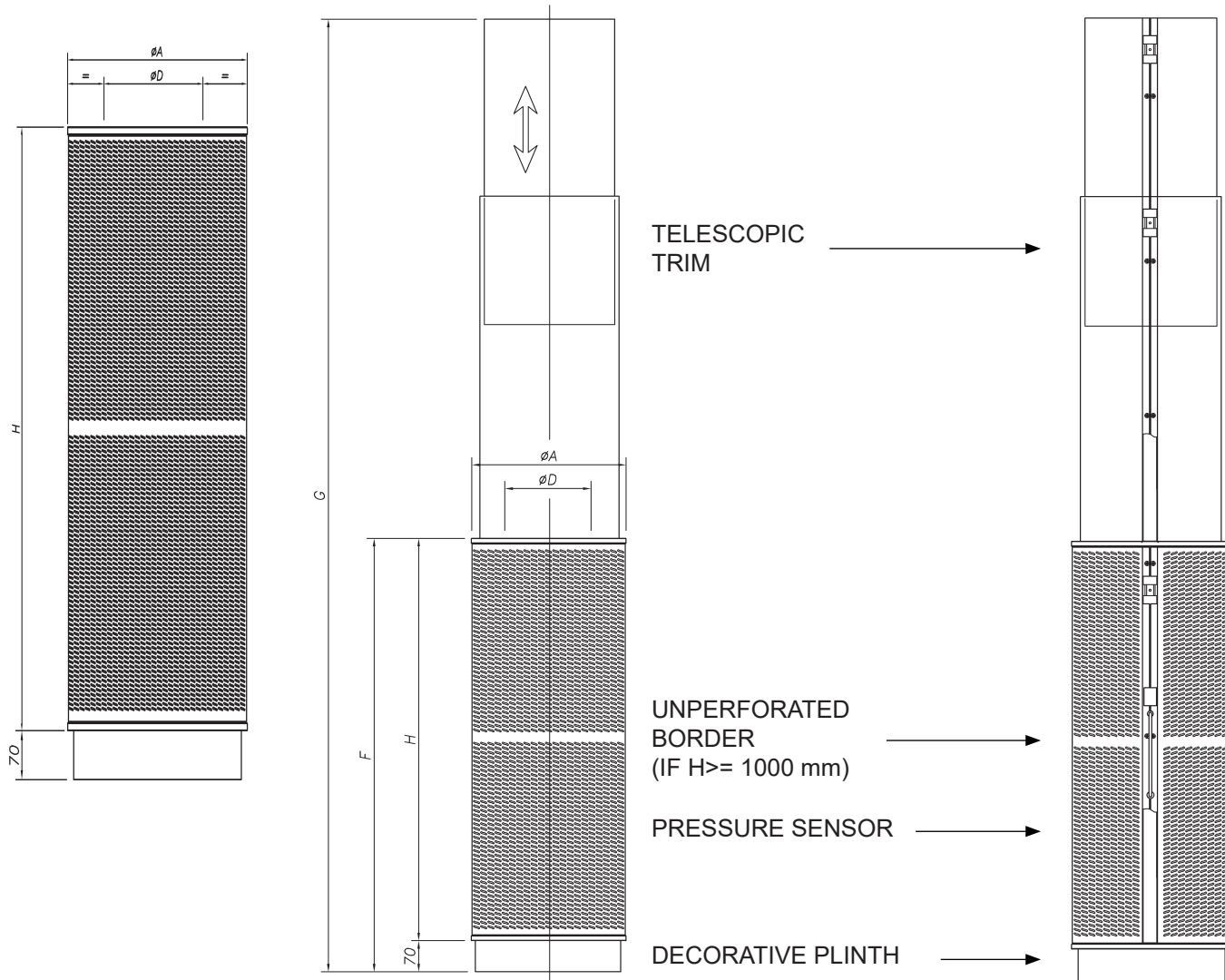
S-90 Series Circular Models

S-90-C	Round
S-90-SC	Semicircular
S-90-CC	Quadrant

S-90-C Model - Round

Dimensions

The S-90-C diffuser is a cylindrical displacement unit that supplies air at a low velocity to the habitable area. Optional accessories include a plinth (-Z) and trim (-ET).



Size	ØA	F	G	ØD	H
125	300	670	2400-3500	125	600
160	335	970		160	900
200	375			200	
250	430	1270		250	1200
315	495	1570	2750-3500	315	1500
400	580	1870		400	1800
500	680	2070	2800-3500	500	2000
630	810			630	

S-90-C Model - Round

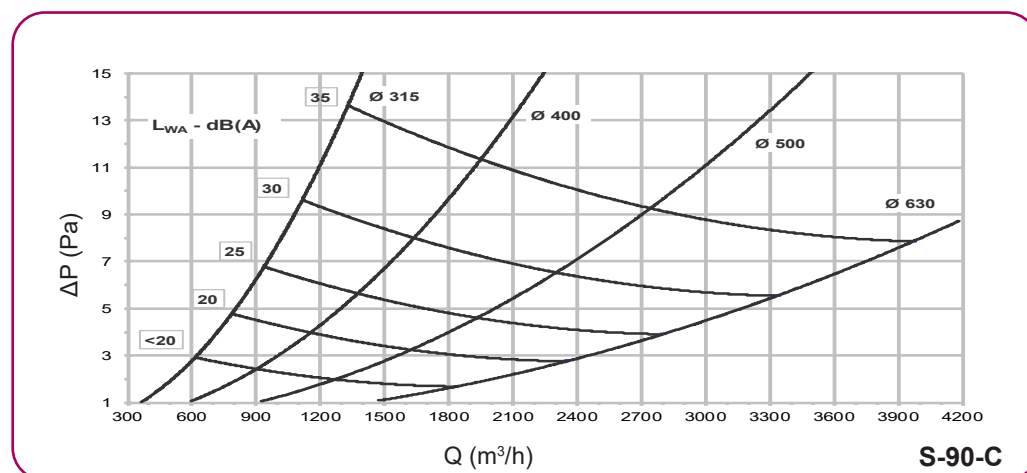
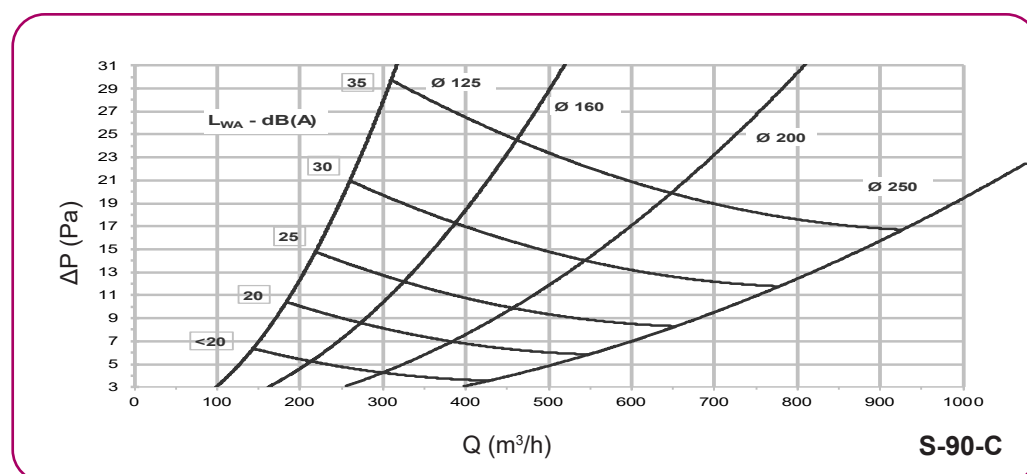
Technical data

The air flow, pressure drop and horizontal throw of the air jet are listed below for a velocity of 0.20 m/s in the occupied area, based on a specific sound level.

S-90-C Quick selection table				
Flow rate - Sound level L_w - Pressure drop - Throw				
Model	m^3/h (Pa) [m]			
	20 dB(A)	25 dB(A)	30 dB(A)	35 dB(A)
125	170 (9) [2,3]	225 (15) [2,7]	270 (21) [3,5]	310 (30) [4,0]
160	270 (9) [2,3]	320 (13) [2,5]	380 (17) [3,0]	460 (25) [3,6]
200	380 (7) [3,0]	460 (10) [3,0]	550 (14) [4,0]	650 (20) [4,7]
250	540 (6) [3,2]	650 (9) [3,7]	770 (12) [4,6]	930 (17) [5,5]
315	800 (5) [2,3]	1000 (7) [2,8]	1100 (10) [3,1]	1350 (14) [4,8]
400	1150 (4) [3,6]	1400 (6) [3,3]	1650 (8) [3,8]	1950 (12) [4,5]
500	1620 (3) [3,4]	1950 (5) [4,1]	2300 (7) [5,9]	2800 (10) [6,0]
630	2350 (3) [4,6]	2800 (4) [5,5]	3400 (6) [6,9]	4000 (8) [8,0]

Pressure drop and sound level selection charts

These charts allow the sound level and pressure drop data to be obtained from the supply flow rate.



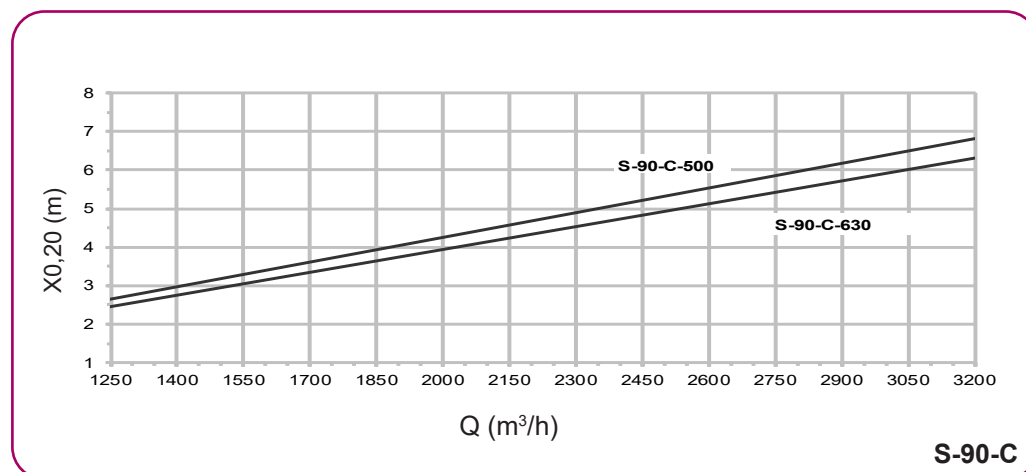
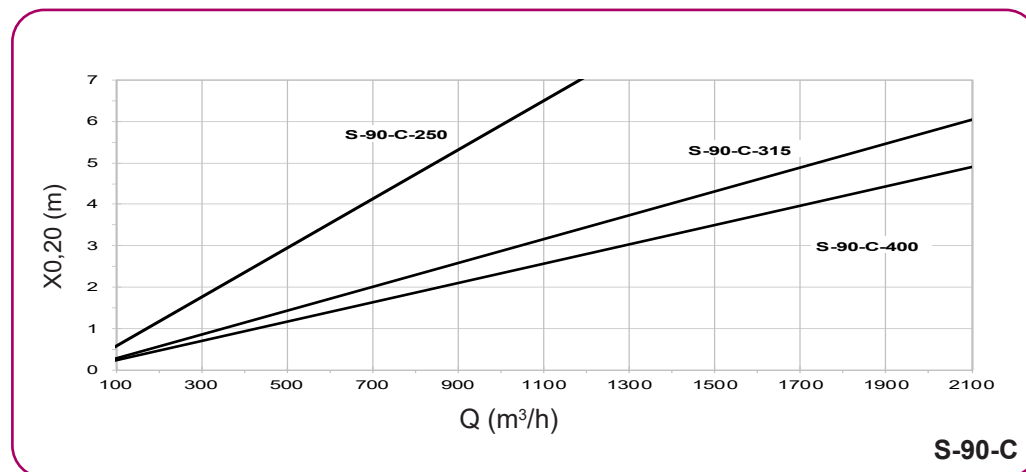
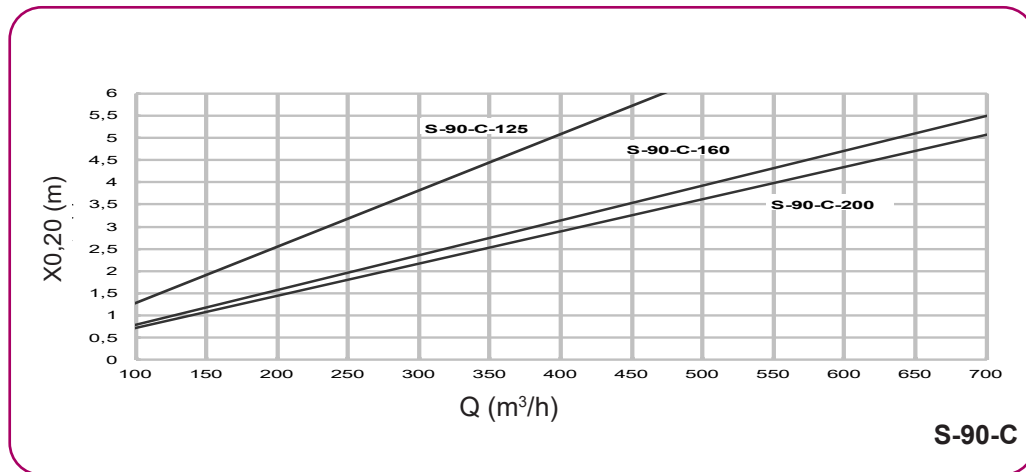
Symbols:

Q (m^3/h): Air flow per displacement unit
 ΔP (Pa): Pressure drop
 L_{WA} (dBA): Sound power level

S-90-C Model - Round

Selection charts

The selection charts shown allow the horizontal throw of the air jet to be obtained from the supply flow rate, when the velocity in the occupied area is 0.20 m/s.



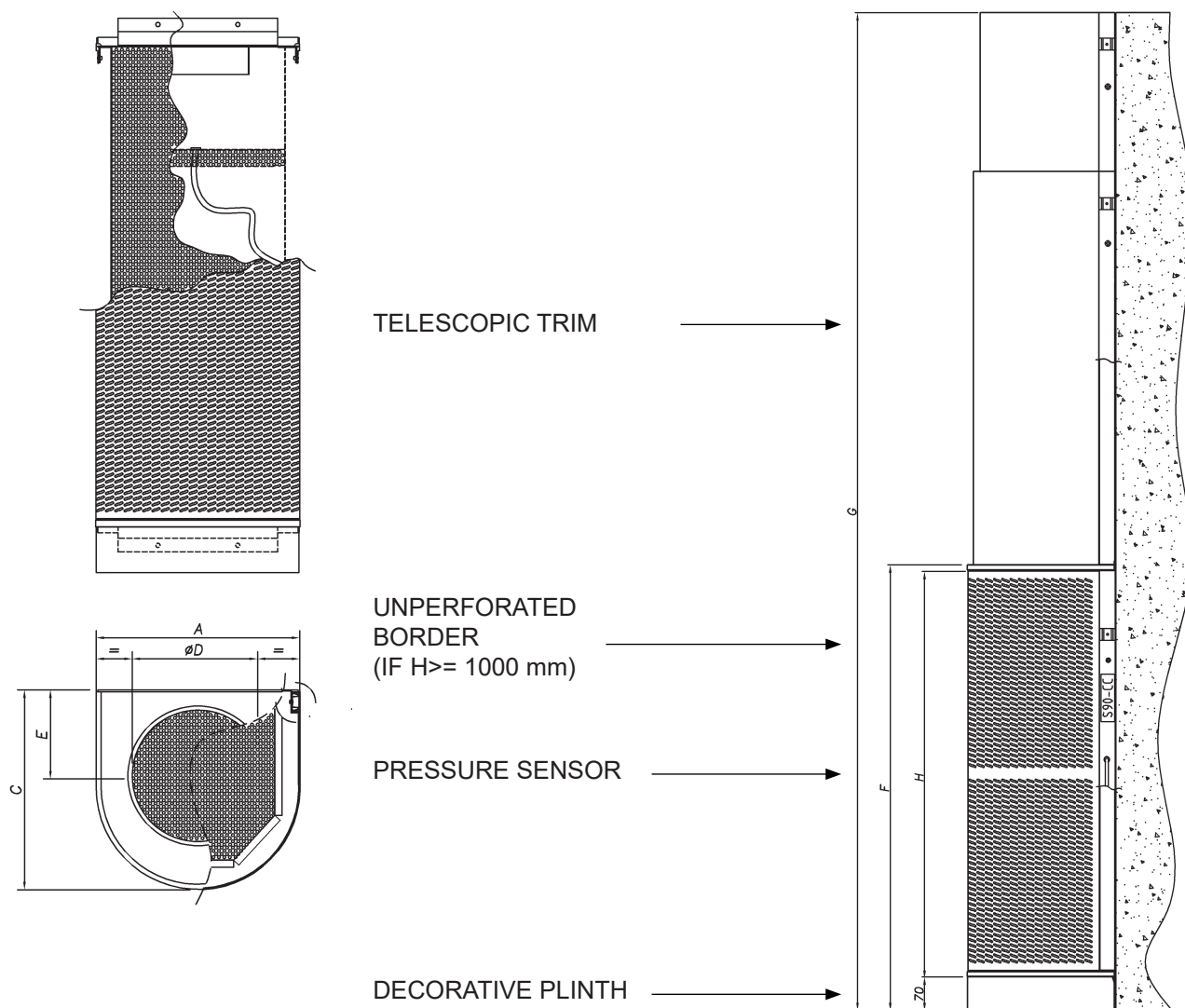
Symbols:

Q (m³/h): Air flow per displacement unit
 X_{0,20}(m): Horizontal throw of the air jet, when the velocity in the occupied area is 0.20 m/s for a temperature difference of T = -3 °C

S-90-SC Model - Semicircular

Dimensions

The S-90-SC diffuser is a semicircular wall-mounted displacement unit that supplies the air at low velocity to the habitable area. Optional accessories include a plinth (-Z) and trim (-ET).



Size	A	H	G	ØD	C	E	F
160	335	900	2400-3500	160	325	140	970
200	375			200	365	160	
250	430	1200		250	420	185	1270
315	495	1500	2750-3500	315	480	218	1570
400	580	1800		400	565	260	1870
500	680	2000	2800-3500	500	665	310	2070
630	810			630	795	375	

S-90-SC Model - Semicircular

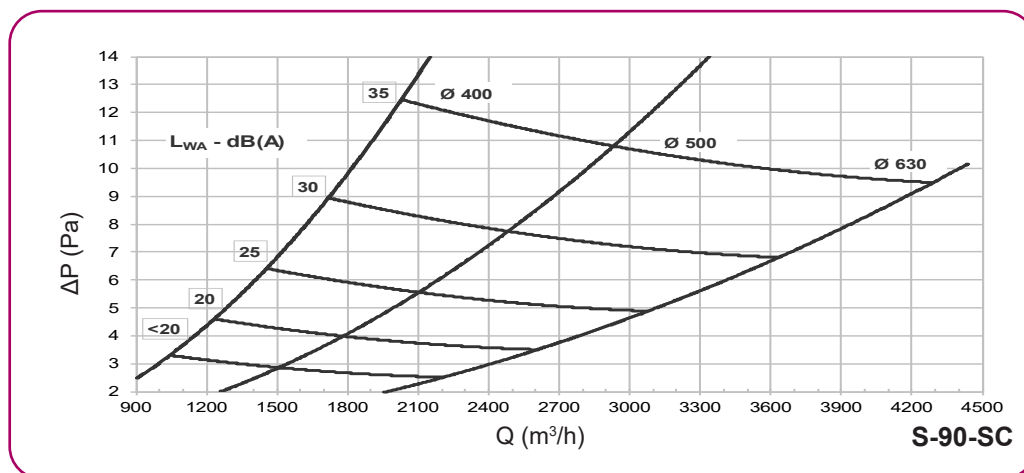
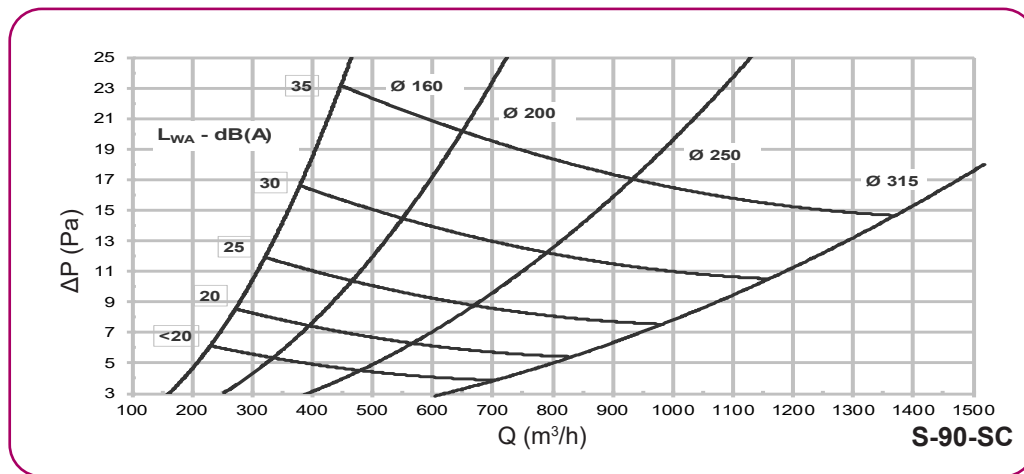
Technical data

The air flow, pressure drop and horizontal throw of the air jet are listed below for a velocity of 0.20 m/s in the occupied area, based on a specific sound level.

S-90-SC Quick selection table				
Flow rate - Sound level L_w - Pressure drop - Throw				
Model	m^3/h (Pa) [m]			
	20 dB(A)	25 dB(A)	30 dB(A)	35 dB(A)
160	270 (8) [4,5]	320 (12) [5,4]	380 (17) [6,3]	450 (23) [7,5]
200	390 (7) [6,1]	460 (10) [7,1]	550 (14) [8,0]	650 (20) [9,5]
250	560 (6) [5,6]	660 (9) [6,4]	800 (13) [7,1]	950 (18) [7,0]
315	840 (6) [3,0]	980 (8) [3,7]	1150 (10) [4,1]	1350 (14) [4,7]
400	1250 (5) [3,7]	1450 (6) [4,4]	1700 (9) [5,5]	2000 (12) [5,9]
500	1800 (4) [5,3]	2100 (5) [6,1]	2450 (8) [7,2]	2900 (11) [8,0]
630	2600 (3) [6,8]	3100 (5) [7,5]	3600 (7) [8,0]	4350 (10) [9,5]

Pressure drop and sound level selection charts

These charts allow the sound level and pressure drop data to be obtained from the supply flow rate.



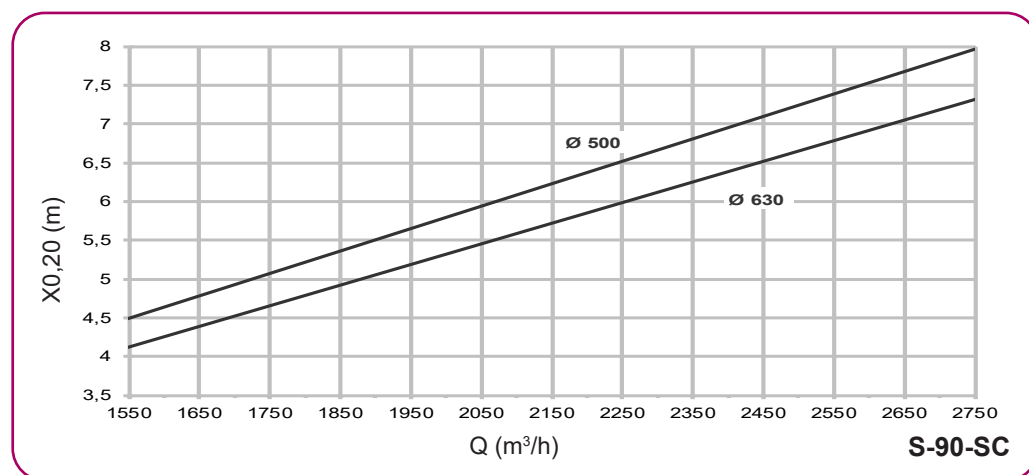
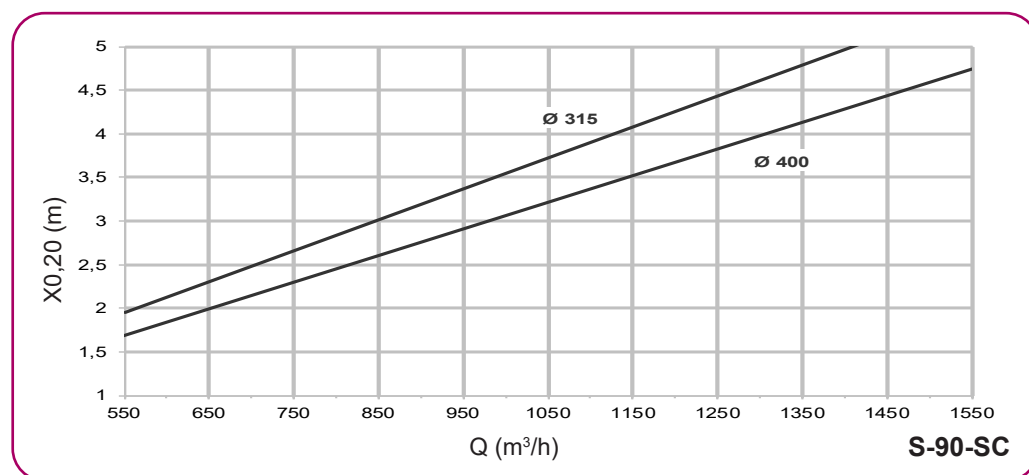
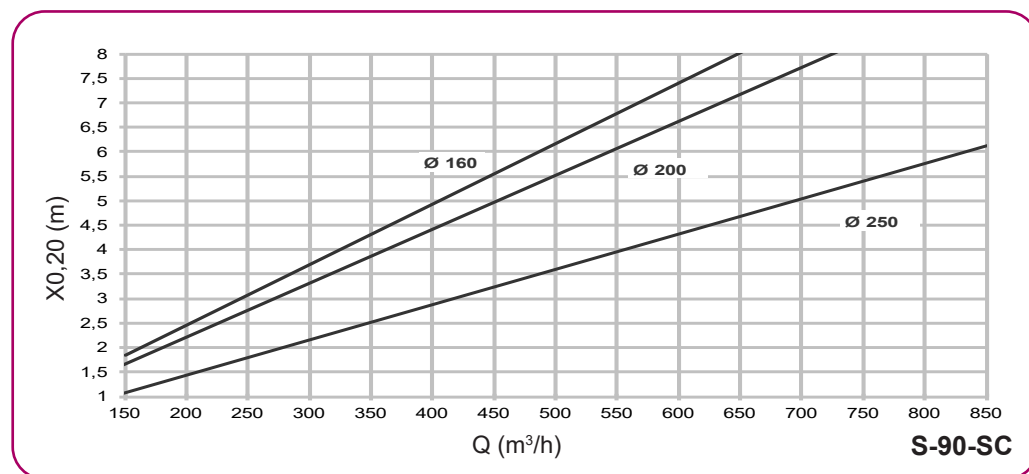
Symbols:

- Q (m^3/h): Air flow per displacement unit
- ΔP (Pa): Pressure drop
- L_{WA} (dBA): Sound power level

S-90-SC Model - Semicircular

Selection charts

The selection charts shown allow the horizontal throw of the air jet to be obtained from the supply flow rate, when the velocity in the occupied area is 0.20 m/s.



Symbols:

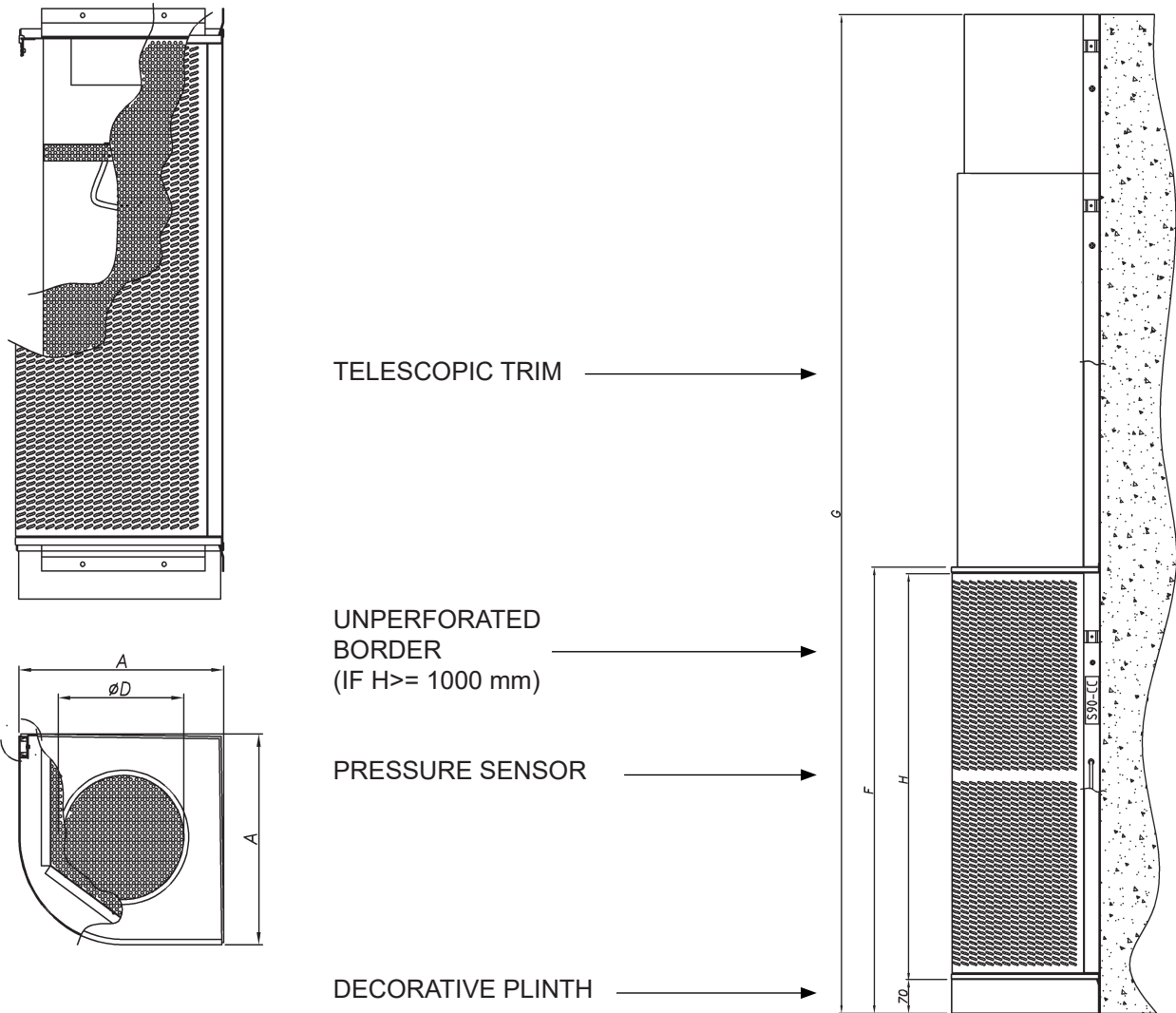
Q (m³/h): Air flow per displacement unit

X_{0,20}(m): Horizontal throw of the air jet, when the velocity in the occupied area is 0.20 m/s for a temperature difference of T = -3 °C

S-90-CC Model - Quadrant

Dimensions

The S-90-CC diffuser is a quadrant-shaped corner displacement unit that supplies the air at low velocity to the habitable area. Optional accessories include a plinth (-Z) and trim (-ET).



Size	A	H	G	ØD	F
160	335	900	2400-3500	160	970
200	375			200	
250	430	1200	2750-3500	250	1270
315	495	1500		315	1570
400	580	1800	2800-3500	400	1870
500	680	2000		500	2070
630	810		630		

S-90-CC Model - Quadrant

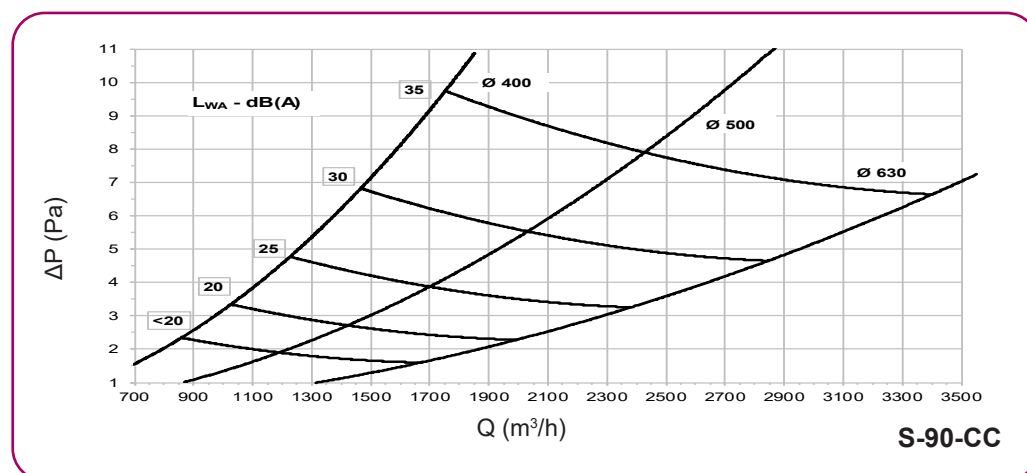
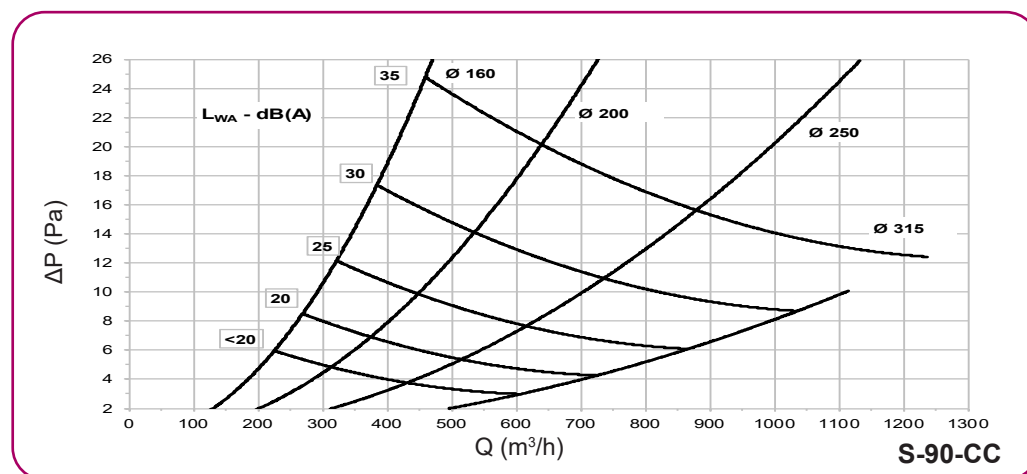
Technical data

The air flow, pressure drop and horizontal throw of the air jet are listed below for a velocity of 0.20 m/s in the occupied area, based on a specific sound level.

Tabla de selección rápida S-90-CC				
Caudal - Nivel sonoro L_w - Pérdida de carga - Alcance				
Modelo	m ³ /h (Pa) [m]			
	20 dB(A)	25 dB(A)	30 dB(A)	35 dB(A)
160	270 (9) [4,5]	320 (12) [5,4]	390 (18) [6,5]	460 (25) [7,5]
200	370 (7) [6,0]	450 (10) [7,0]	540 (14) [8,2]	630 (20) [9,5]
250	520 (5) [5,2]	620 (8) [6,1]	740 (11) [7,0]	880 (13) [7,7]
315	730 (4) [3,7]	860 (6) [4,5]	1040 (9) [5,5]	1230 (13) [7,7]
400	975 (4) [4,2]	1250 (5) [5,4]	1450 (7) [6,5]	1770 (10) [7,3]
500	1400 (4) [6,6]	1700 (4) [6,8]	2000 (6) [8,2]	2400 (8) [9,5]
630	2000 (2) [7,5]	2400 (4) [8,7]	2850 (5) [9,8]	3400 (7) [11,2]

Pressure drop and sound level selection charts

These charts allow the sound level and pressure drop data to be obtained from the supply flow rate.



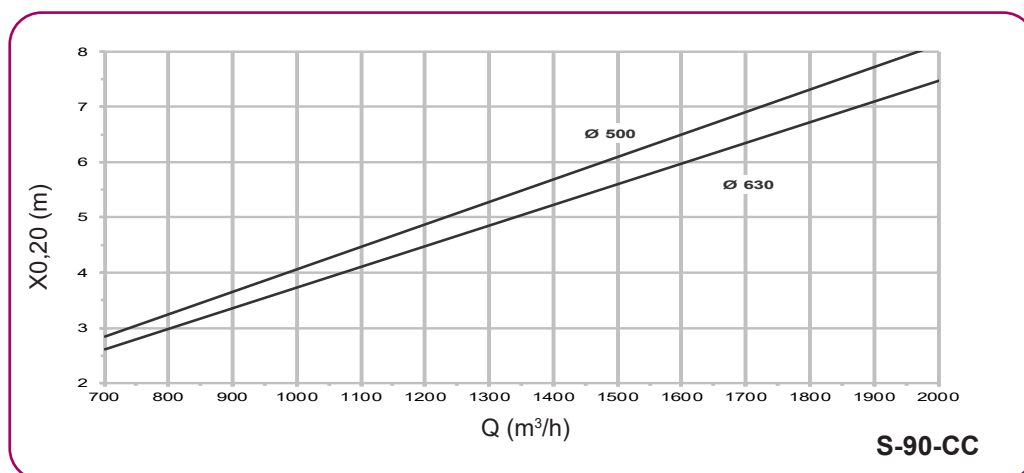
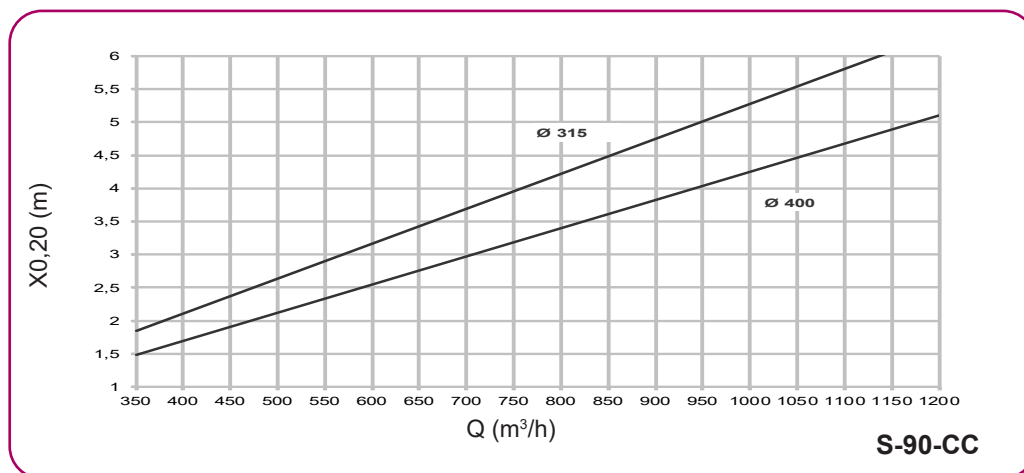
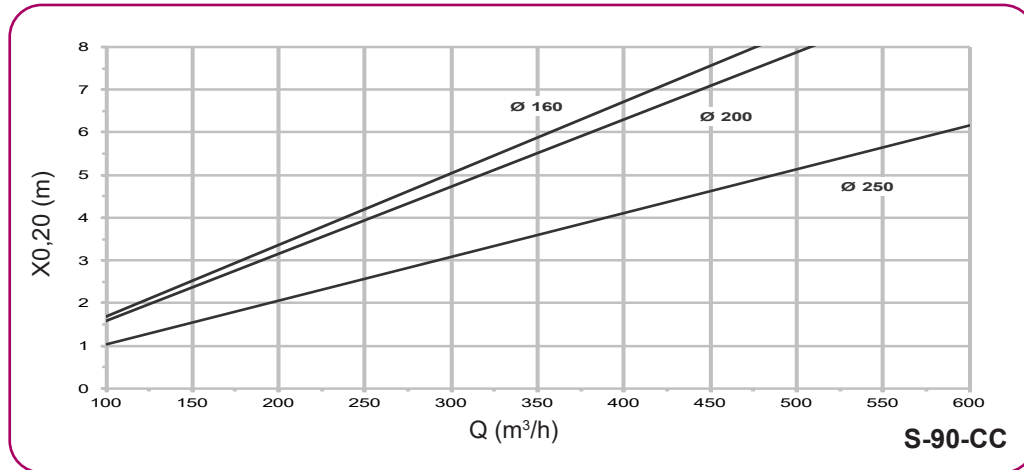
Symbols:

Q (m³/h): Air flow per displacement unit
 ΔP (Pa): Pressure drop
 L_{WA}(dBA): Sound power level

S-90-CC Model - Quadrant

Selection charts

The selection charts shown allow the horizontal throw of the air jet to be obtained from the supply flow rate, when the velocity in the occupied area is 0.20 m/s.



Symbols:

Q (m³/h): Air flow per displacement unit
 X_{0,20}(m): Horizontal throw of the air jet, when the velocity in the occupied area is 0.20 m/s for a temperature difference of T = -3 °C

Selection example

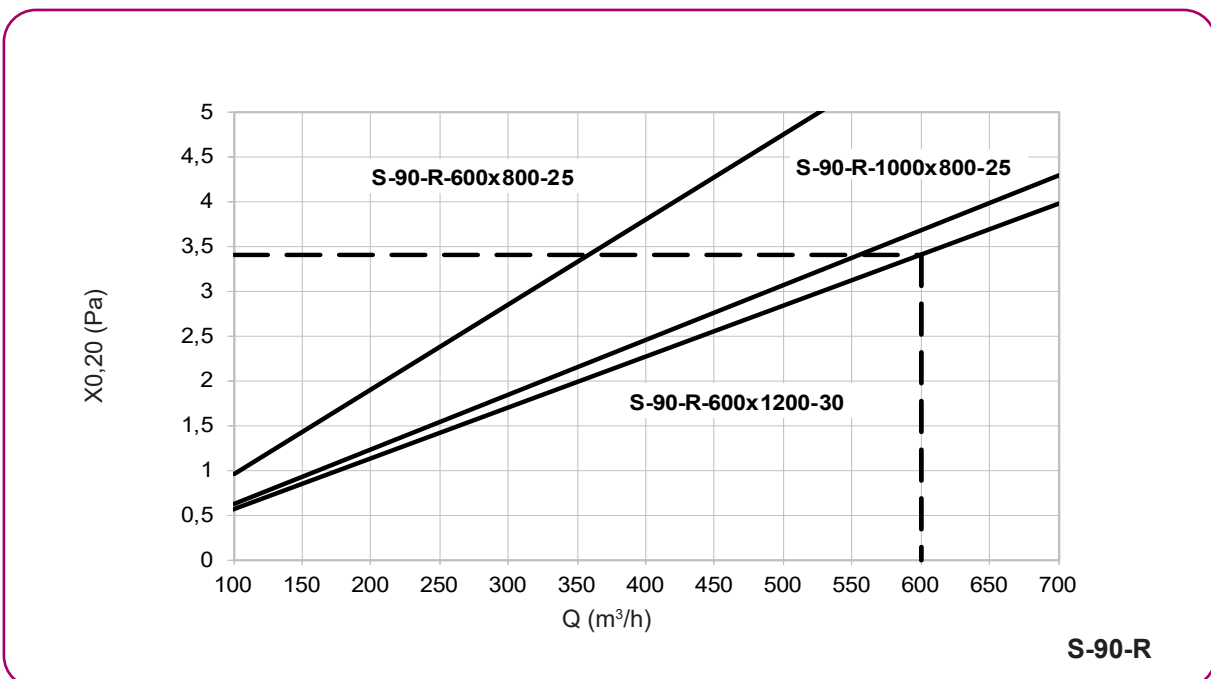
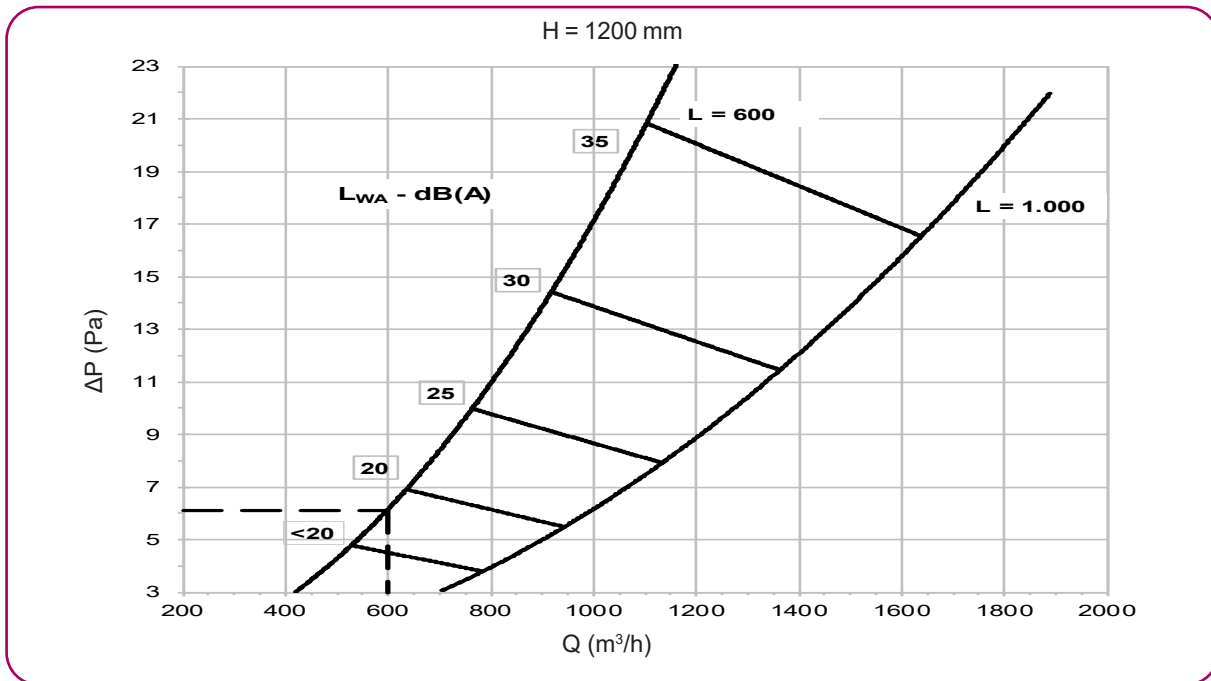
Air conditioning is to be provided to a room using a displacement system. Based on the architectural characteristics of the room, a decision was made to use the S-90-R rectangular diffuser of 600x1200 (LxH). The following data are assumed:

Unit supply air flow = 600 m³/h

Room dimensions = 10x10x4 (LxAxH)

Temperature difference (difference between supply temperature and ambient temperature) = 3 °C

The technical data for the selected diffuser is obtained from the catalogue charts:



Results

Pressure drop: 6 Pa

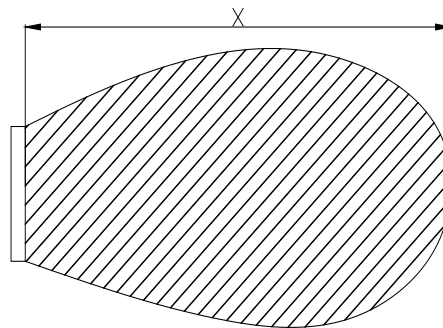
Sound power level: <20 dBA

(*) Distance where the velocity isovel achieves $V_x = 0.20$ m/s: 3.4 m

NOTE: (*) This data is known as the near zone and is defined as the area near the supply terminal unit in which the air velocity is higher than the velocity of 0.20 m/s for HVAC installations.

Floor mount:

Near zone **S-90-RE**



Correction factors

Coefficient table to correct the horizontal throw of the air jet, when the velocity in the occupied area reaches 0.20 m/s for a different temperature difference from the one used in the catalogue charts, which is $\Delta T = -3^\circ \text{C}$.

ΔT	C
-1 °C	0,86
-2 °C	0,92
-3 °C	1,00
-4 °C	1,10
-5 °C	1,17
-6 °C	1,25

$X_{0.20 \text{ total}} = X_{0.20 \text{ Chart}} \times C$

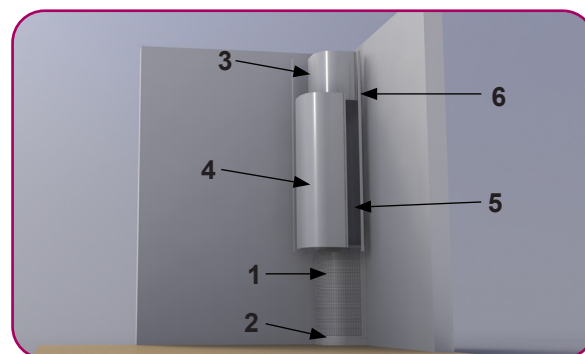
Installation

Assembly instructions for telescopic covers and bases of S-90 series diffusers.

All S-90 diffuser models and sizes are manufactured for installation with cover and plinth, except for S-90-RE diffusers which are flush mounted in the wall. The steps to be followed for installation are shown below:

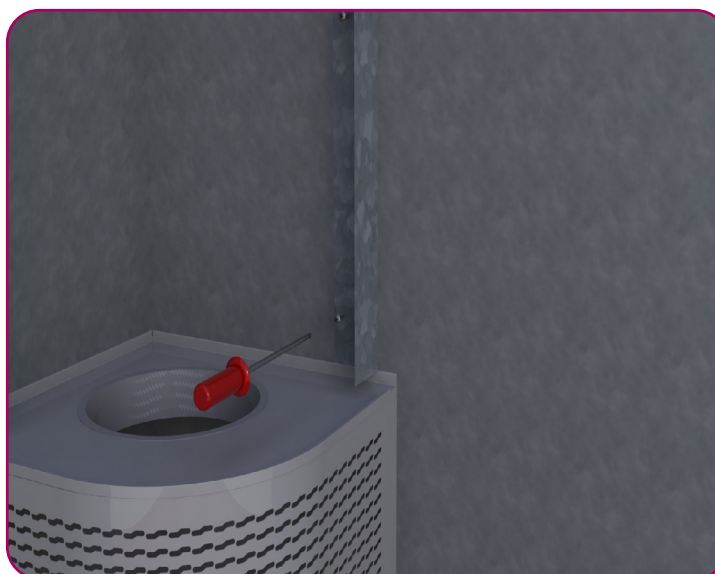
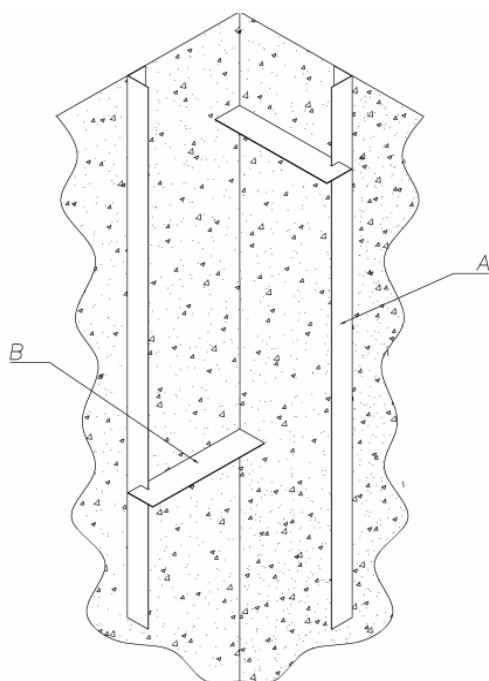
Existing components

Diffuser	1
Plinth	2
Upper cover	3
Lower cover	4
Band fasteners for trim section	5
Removable trim sections	6

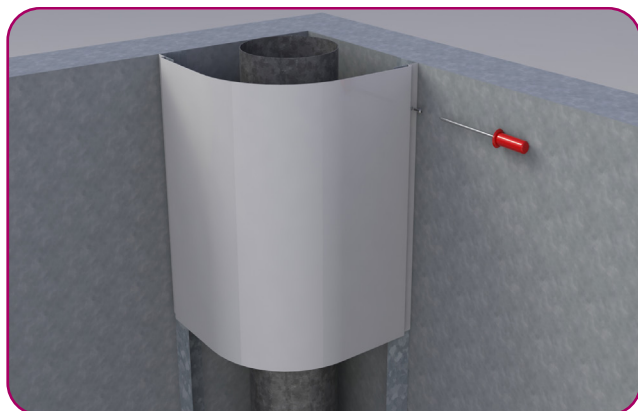


To attach the upper and lower covers, use the (A) guiding brackets previously attached to the wall by screws and aligned at the correct distance with the help of the (B) alignment parts.

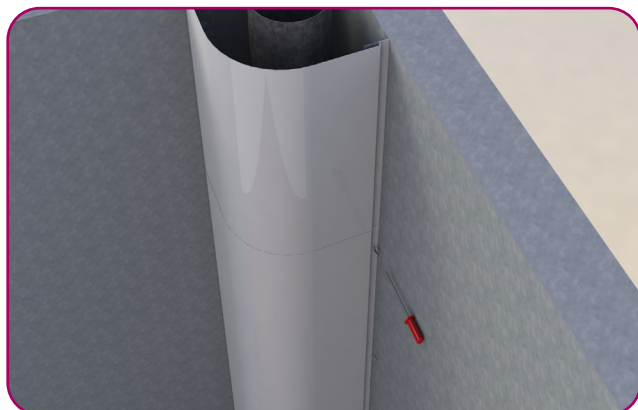
Position the air ductwork, fitting it to the diffuser and the wall properly in order to prevent leaks and noise.



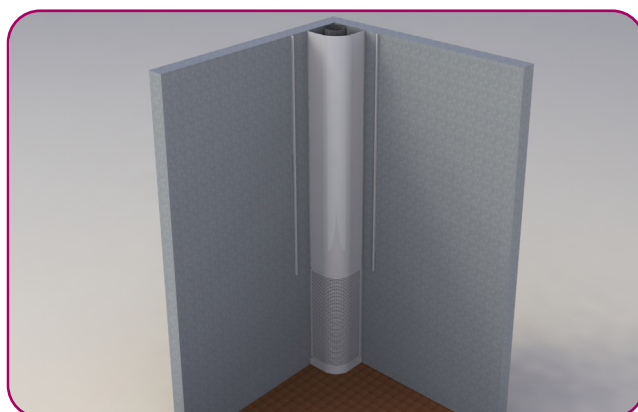
Installation



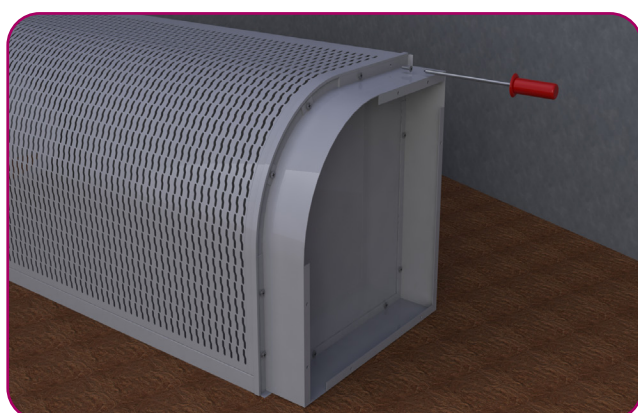
To attach the upper cover, screw it onto the (A) guiding brackets flush with the ceiling.



The lower cover will be placed in the same way and bolted to the "A" guide angles.



Lastly, place the trim sections.



To install the plinth, turn the diffuser and screw it onto the diffuser base. The plinth can also be attached to the floor and then screwed onto the diffuser base.

Codification

S-90-C-44 - 160 - ET - RAL-9016 shine

1

2

3

4

1. Diffuser type:

- S-90-C - Round diffuser
- S-90-SC - Semicircular diffuser
- S-90-CC - Quadrant diffuser
- S-90-C-44 - Round diffuser for higher flow rates
- S-90-SC-44 - Semicircular diffuser for higher flow rates
- S-90-CC-44 - Quadrant diffuser for higher flow rates

2. Model:

- 125 - For S-90-CC only
- 160
- 200
- 250
- 315
- 400
- 500
- 630

3. Accessories:

- SA - without accesory
- Z - with plinth
- ET - with telescopic duct cover

4. Treatment:

- RAL-9003 shine
- RAL-9003 matt
- RAL-9005 shine
- RAL-9005 matt
- RAL-9006 shine
- RAL-9006 matt
- RAL-9010 shine
- RAL-9010 mat
- RAL-9016 shine
- RAL-9016 matt
- Galvanized

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