

CLIMAVER PRODUCT SELECTION

Product	Fire exigencies	Acoustical absorption	Cleaning	Air Speed	Presentation
SISTEMA CLIMAVER METAL ⁽¹⁾	—	—	**	**	System
CLIMAVER PLUS R	*	*	*	**	Product
CLIMAVER A2	**	*	*	**	Product
CLIMAVER A2 NETO	**	**	*	*	Product

(1) It can be assembled with any Climaver ductboard.

- ** Best performance
- * Good performance

EXPORT SERVICE

GUADALAJARA

Tel.: +34 949 26 83 63 / 64
 Fax: +34 949 26 83 84 / 85 / 86
 e-mail: fernando.gimeno@saint-gobain.com

LOGISTICS

GUADALAJARA

Móvil: +34 649 453 699
 Tel.: +34 94 926 83 62 / 64 / 65 / 67 / 68 / 98
 Fax: +34 94 926 83 84 / 85 / 86
 e-mail: fernando.gimeno@saint-gobain.com



ISOVER

The Insulation Solutions

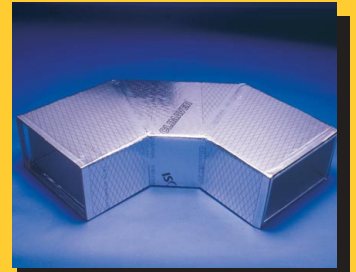
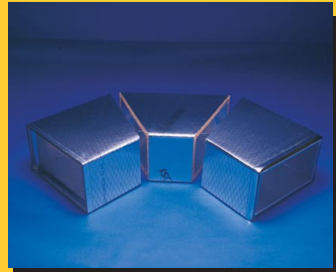
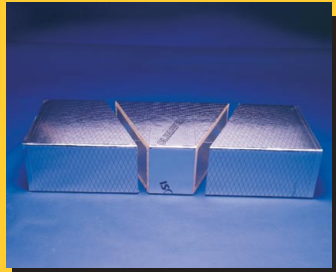
SAINT-GOBAIN CRISTALERÍA, S.A.
 Paseo de la Castellana, 77
 28046 MADRID
 SPAIN

e-mail: isover.es@saint-gobain.com

www.isover.net

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ISOVER



CLIMAVER PLUS R

The ductwork revolution





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Glasswool ductboards for manufacturing air distribution ducts in air conditioning (heating and cooling) installations.

DESCRIPTION

CLIMAVER PLUS R is a high density double faced glasswool panel. Both sides of the pannel are faced with an aluminum surface.

- External facing: Aluminium+reinforced glass fibre mesh+kraft.
- Internal facing: Aluminium+kraft.

(The aluminium acts as a vapour barrier and gives protection to the inner and outer surface of the duct; the reinforced glass fibre mesh provides more resistance to punching).

✓ Male female edges

CLIMAVER PLUS R ductboards have exclusive design with male/female edges, in order to provide greater strength for joints, easy installation and exceptional inside finish. This exclusive edges:

- Guarantee high strength joints, due to the double density of pannel joining edges.
- Reduce the number of cutting operations (time saver)
- Make easier the duct assembly.

✓ Exclusive flanged male edge

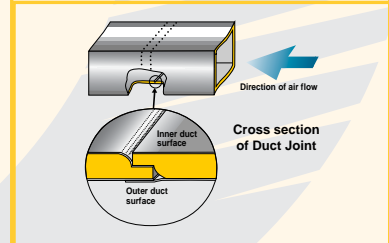
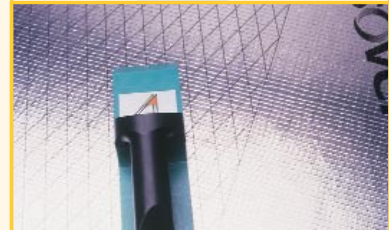
CLIMAVER PLUS R has an exclusive male edge facing. The edge recovering is obtained by extending the inner surface.

✓ Ruled external facing

The external facing of Climaver Plus R ductboards has an exclusive pattern of parallel lines. These lines guide the cutting of straight ducts to obtain duct fittings using the Straight Duct Method (*)

CLIMAVER PLUS R is supplied as pannels for duct construction.

(*) Straight Duct Method – MTR, Método del Tramo Recto in Spanish- is an assembly method that uses a straight duct as a basis to obtain duct fittings and, therefore, fabricate the ductwork.





/// THERMAL INSULATION

Thermal conductivity	$\lambda_{90/90} \leq 0,032 \text{ W/m} \cdot \text{K}$
Thermal resistance	$R \geq 0,75 \text{ m}^2 \cdot \text{K/W}$
(Referred to 10 °C)	

/// VAPOUR PERMEANCE

Approximate value: 0,013 g/m² mm Hg day (outer facing value).

/// ACOUSTICAL ABSORPTION

The glasswool has an exceptional acoustic absorption. It can reduce the noises in the air conditioning installation (usually generated by fans).

Ex: 1 m of Climaver Plus R (duct 40 x 30 cm) reduces the noise in 6,4 dB (1000 Hz).

To evaluate the noise reduction, it is necessary to know the absorption coefficients (α):

Frequency (Hz)	125	250	500	1.000	2.000
Acoustical absorption α	0,20	0,20	0,20	0,60	0,50

This means the following noise reduction (by duct length).

Straigh duct noise reduction (dB/m)						
Cross section (mm)	200 x 200	2,81	2,81	2,81	11,09	8,83
	300 x 400	1,64	1,64	1,64	6,47	5,15
	400 x 500	1,26	1,26	1,26	4,99	3,97
	400 x 700	1,10	1,10	1,10	4,36	3,47
	500 x 1.000	0,84	0,84	0,84	3,33	2,65



/// FIRE REACTION

CLIMAVER PLUS R is classified as:

- Euroclass C-s1,d0.

/// MECHANICAL PROPERTIES

CLIMAVER PLUS R boards have R5 rigidity, according to EN13403 (European Standard for non-metallic ducts). This rigidity is the maximum level of the ones established by this standard.

CLIMAVER PLUS R ductboards can stand static pressure under 800 Pa with no evidence of fissures or swellings (test according to EN 13403).

/// PRESSURE DROPS

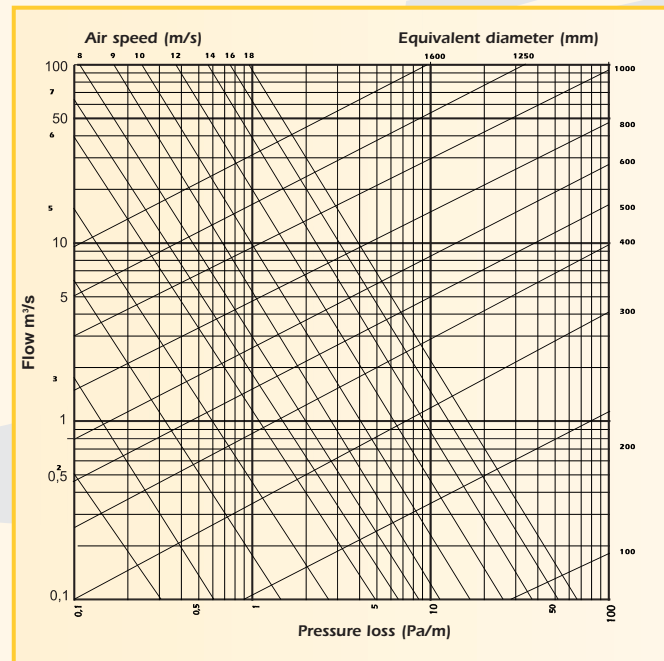
The inner lining surface area of the CLIMAVER PLUS and CLIMAVER PLUS R has a maximum roughness equivalent to that of galvanised sheet metal.

Laboratory tests on straight and elbowed duct installations have shown pressure losses to be similar in both cases.

Thus, a pressure loss due to friction can be reduced up to 40% using this system with respect to the rest of the line depending on the geometry of the ducts and air speed.

Pressure loss calculation: The ASHRAE pressure loss instrument for galvanised sheet metal or equivalent, such as the one below, can be used to calculate the pressure loss in CLIMAVER PLUS air ducts. In this case, the equivalent diameter of the rectangular duct section (a x b) is given:

$$d = 1,3 \cdot \frac{(a \times b)^{0,625}}{(a + b)^{0,25}}$$





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The ductwork revolution

DUCT CLEANING

CLIMAVER PLUS R ducts are “cleanable”, after surpassing tests made by pressure air methods “skeeper” and “brushing” without presenting tears or breakage of the inner facing.

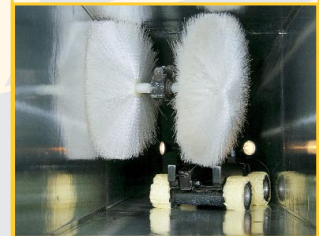
Watching openings in the duct network must be made separated 10 meters each maximum to facilitate its cleaning. The profiles PERFIVER H have been developed to be sure that the access ducts are perfectly sealed. The cover must be sealed with CLIMAVER tape.

CLIMAVER METAL SYSTEM

CLIMAVER METAL systems has been designed for those applications where cleaning is a strong requirement. To ensure that often cleanings of the duct network can be made, internal edges are sealed and protected whit the profile PERFIVER L. CLIMAVER PLUS R ductboards can be used for the assembly of the CLIMAVER METAL SYSTEM. This system combines CLIMAVER ductboards with the profiles PERFIVER L, to be placed in the longitudinal edges of the duct.

THE CLIMAVER METAL SYSTEM provides:

- Hermetic assembly system.
- Cleaning.
- Resistance.
- Quality Assembly.



CERTIFICATES

CE Product
It fulfills EN-13403 for non-metallic ducts.

WORK CONDITIONS

In agreement with EN-13403, CLIMAVER ducts are not recommended in the following cases:

- Air circulation at a temperature > 90°C.
- Transport of solids or corrosive liquids.
- Vertical ducts of height superior to two plants, without proper edge supports, properly covered outer ducts and buried ducts.





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The ductwork revolution

ASSEMBLY

Although there are other assembly methods, the recommended method is the “Straight Duct Method”, MTR(*). This method is based in the use of a straight duct as the basis to obtain duct fittings, and, therefore, the ductwork.

The Straight Duct Method uses two types of accessories:

- Climaver tools. There are two types of Climaver tools: Climaver MM, they are used to groove the pannel so that it can be fold into duct section, and Climaver MTR, which are used to cut the straight duct and obtain the pieces that will be used to obtain duct fittings.
- Climaver Glue and Climaver Tape. These are used to seal the joints of the pieces in order to obtain duct fittings. Climaver Glue has been specially developed to glue glass wool.

Climaver tape must be made of pure aluminium, 50mm thickness and 65 mm width.



The Straight Duct Method has clear advantages:

- Precision
- Resistance and Quality
- Lower pressure drops
- Cleaner work



Instructions for the Straight Duct Method are provided in the MTR Brief Guide or the Manual for assembly of Climaver Ducts. Both are available by request.

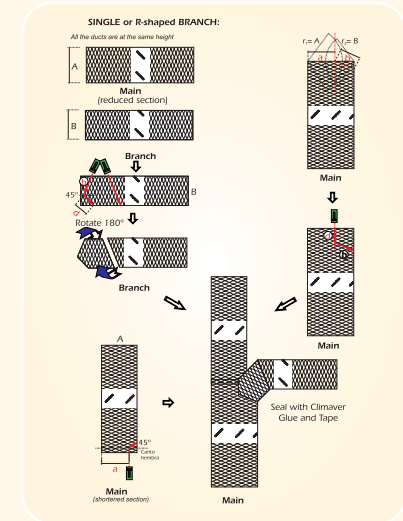
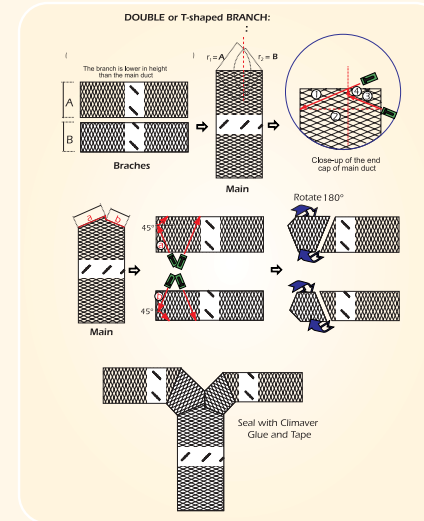
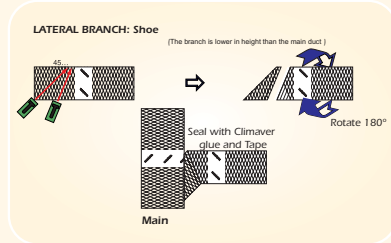
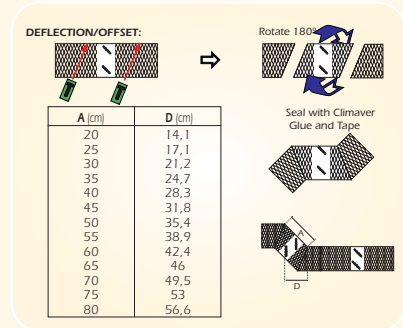
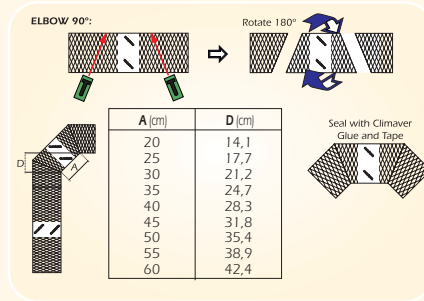
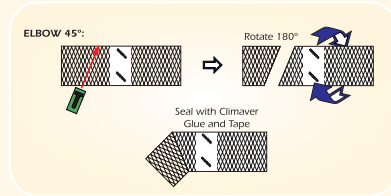
(*) MTR are the Spanish initials for Straight Duct Method: Método del Tramo Recto



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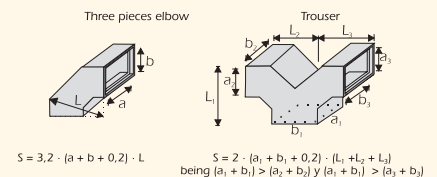
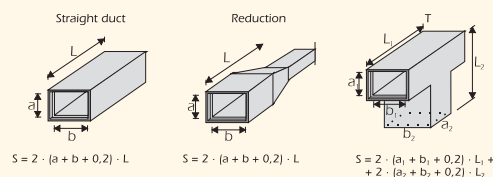
ASSEMBLY METHOD. MTR (*), STRAIGHT DUCT METHOD



The instructions for ducts assembly according to the Straight Duct Method, MTR, are detailed in the "Climaver Assembly Handbook", free available under request.

MEASUREMENTS

Although each installation has its own peculiarities, it can be taken as an orientation the following measurements for the consumption of Climaver in an installation:



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