

ECOTOP VF-HF

high efficiency glazed flat-plate
solar collectors

VF 2.8

VF 2.3

VF 2.0

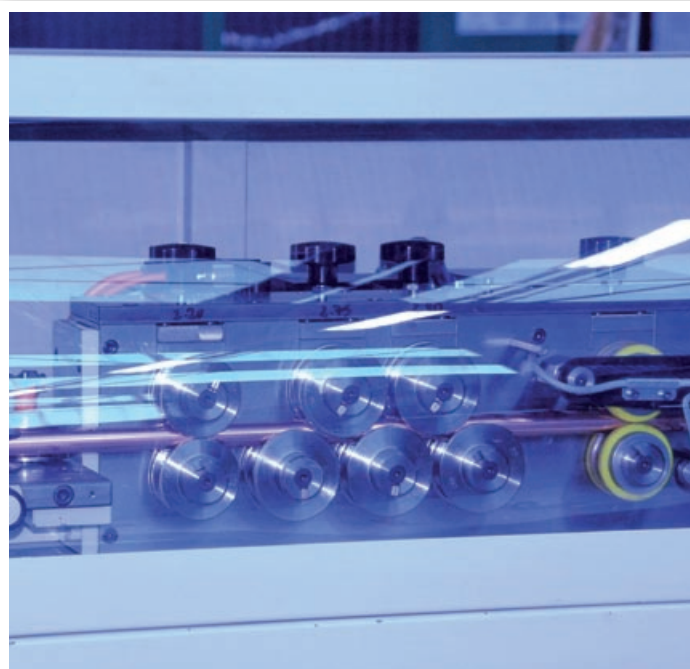
HF 2.3



- > **MAXIMUM MODULARITY**
- > **SIMPLIFIED INSTALLATION**
- > **ASSEMBLY ON THE ROOF OR
FLUSH WITH THE ROOF (VF)**

> **PRODUCTS = PRODUCTION**

COMBINATION OF EXCELLENCE FOR THE FERROLI GROUP



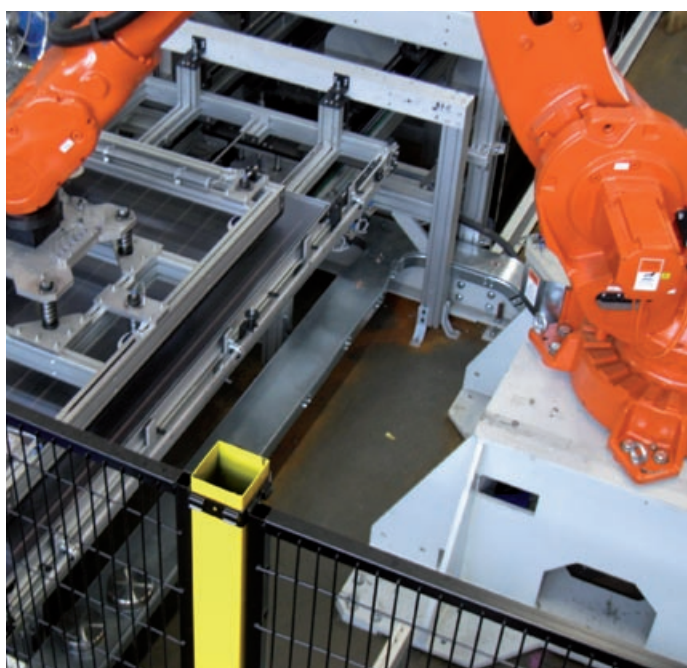
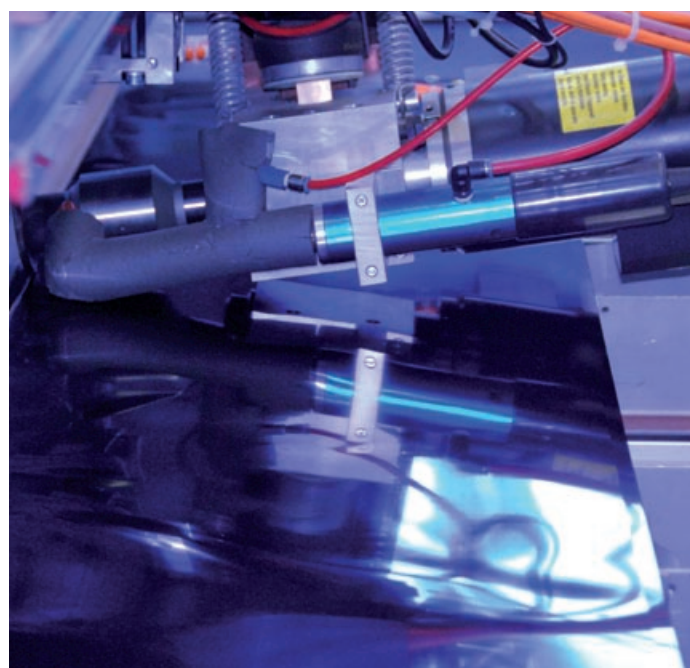
The Ferroli spirit has always been to enter new markets by fully accepting the challenges.

It is with this same spirit that Ferroli has decided to develop the heart of its solar heating systems **entirely in Italy**: the new generation glazed flat-plate solar collectors.

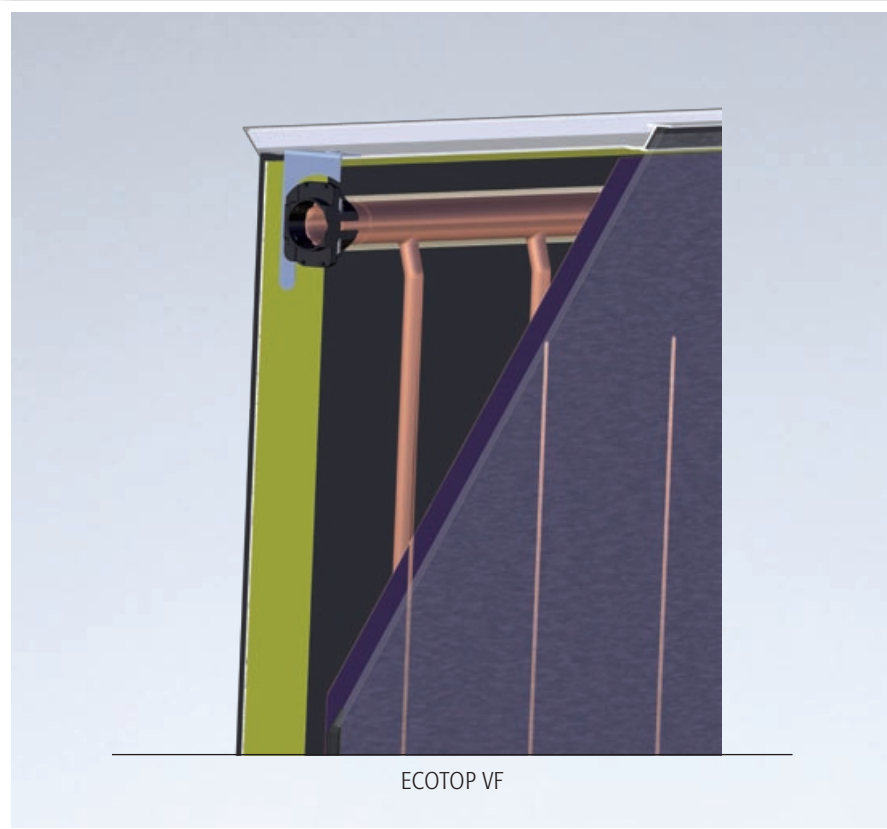
The facilities in Alano di Piave (BL) have been equipped with the most modern manufacturing technology.

A highly automated production line guarantees the quality of the solar collectors according to the most demanding expectations. Two robots can work non-stop to produce these modern solar "heat generators".

Ferroli solar collectors are exported all over the world from the centre of Veneto.



> **QUALITY** CARE TO DETAILS



The prestigious voluntary **"Keymark"** certification achieved for the entire range of ECOTOP VF and HF flat-plate solar collectors demonstrates the passion and care that Ferroli has dedicated to the design and production of its flat-plate solar collectors.

The use of environmentally-friendly and recyclable materials is the basis for the design of the Ferroli ECOTOP solar collectors.

The aluminium section bar casing guarantees solidity, lightness and is easily recyclable.

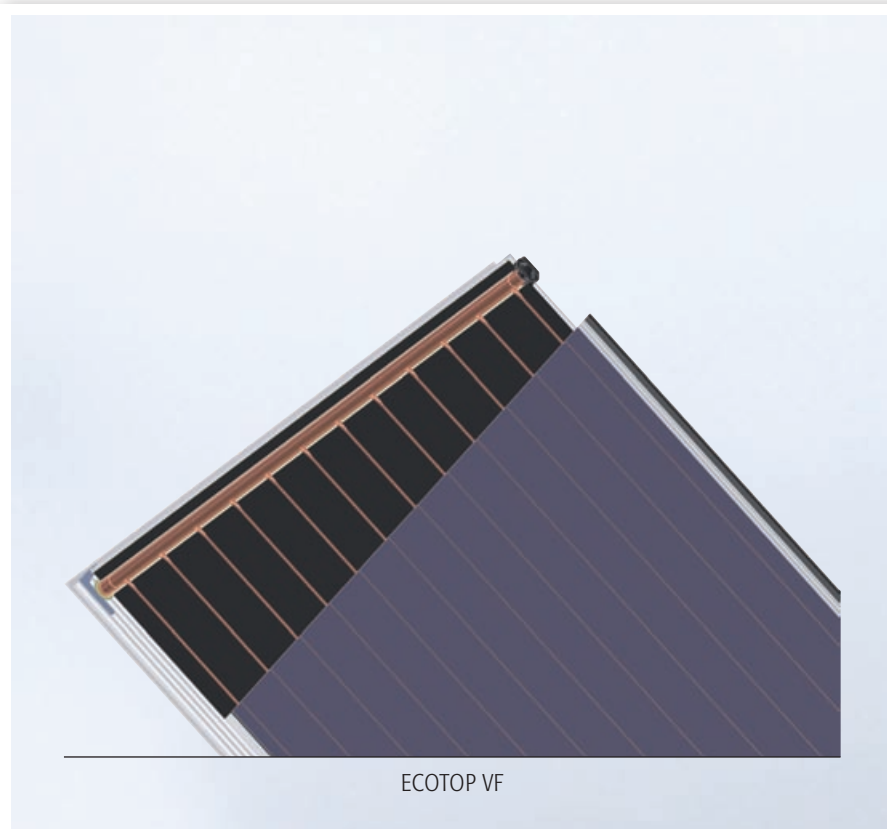
The special glass with a low iron content ensures high transparency to sunlight and helps retain the infrared radiation re-emitted by the heat absorber inside the collector, maximising collector efficiency.

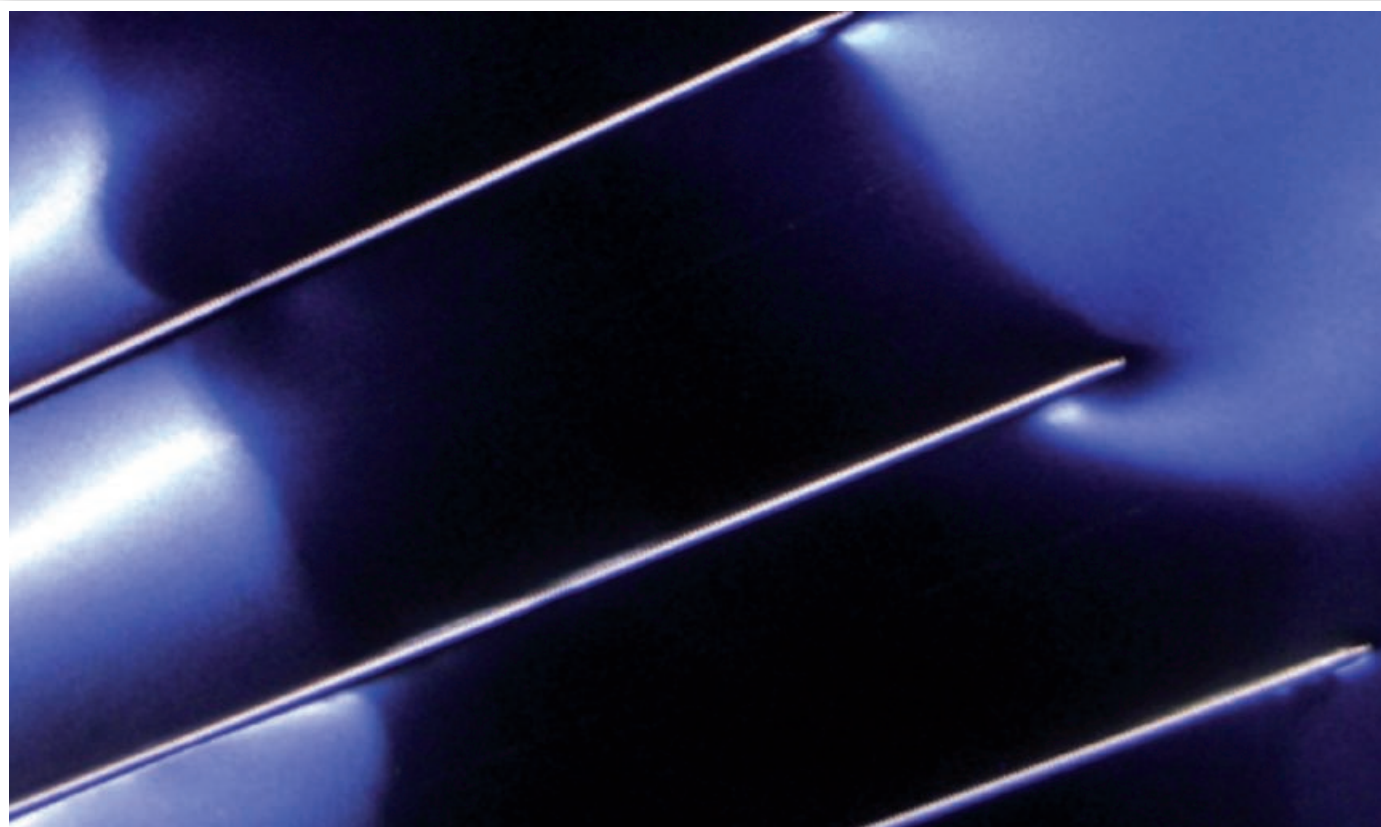
The highly selective absorber, treated using a 100% environmentally-friendly process, can withstand extreme conditions of heat stress, humidity and the elements for many years.

The parallel distribution of the vertical tubes in the collector guarantees high efficiency and a more optimised operating field of the collector, even when used in multiple configurations.

This ensures more uniform temperature distribution in the collectors and prevents thermal stress on the welding inside the tubing, guaranteeing total collector reliability.

The precision ultrasonic welding of the inner tubing together with the continuous shape and high quality of the copper absorber guarantee the best quality results, with reduced energy consumption in the production process.





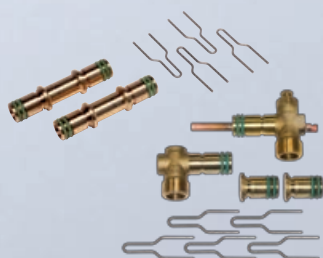
DETAIL OF THE CONNECTIONS
INSIDE THE COLLECTOR

The collector is insulated with high-density rock wool. No CFCs. No compromise.

The quick couplings with special double o-rings ensure simple and error-free assembly and allow natural expansion of the copper tubes without creating mechanical stress on the collector.

The connection fittings feature special ventilation slits to prevent and resolve occasional internal condensate that may occur naturally when there are considerable temperature swings (e.g. night/day).

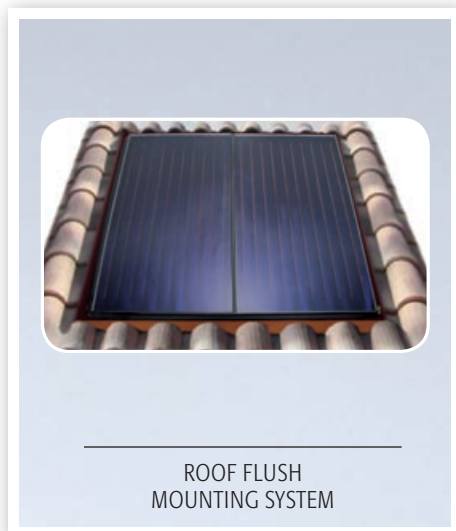
Tightness of the quick couplings is continually checked in production up to 10 bars, with the couplings designed to withstand pressures up to 30 bars.



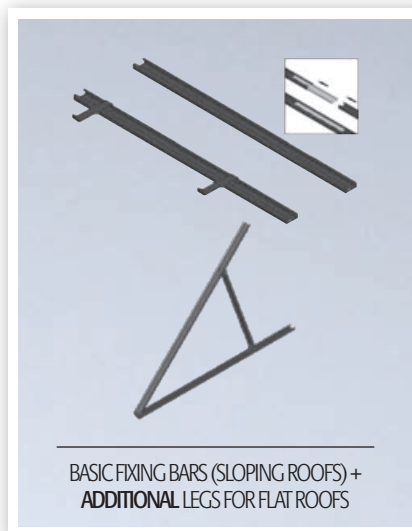
WATER CONNECTION KIT

> ACCESSORIES

HAVING A SOLID SUPPORT IS IMPORTANT



ROOF FLUSH
MOUNTING SYSTEM



BASIC FIXING BARS (SLOPING ROOFS) +
ADDITIONAL LEGS FOR FLAT ROOFS



BRACKETS FOR TILES ON SLOPING
ROOFS

Ferrolì supplies a series of dedicated accessories to complete the product:

> ROOF FLUSH MOUNTING SYSTEM

Developed specifically for the ECOTOP VF vertical collectors (2.0, 2.3 and 2.8), allows the three types of collectors to be quickly installed on sloping tile roofs.

Made up of quick and easy to assemble modular elements, with compact dimensions and easy to store and handle with the collectors. **Includes all the collectors' fixing accessories.**

> FRAMES FOR FLAT ROOFS

Built from painted hot galvanised steel with stainless steel bolts, featuring simplified assembly and easy adjustment.

The frames have passed the strictest approval tests on metallic bars for outdoor uses (e.g.

window and door frames), meaning they are also suitable for use in coastal areas and in areas exposed to strong pollution (class 4 as per EN 1670).

Two models, suitable for both VF (vertical) and HF (horizontal) collectors.

> FRAMES FOR SLOPING ROOFS (AND CORRESPONDING BRACKETS FOR TILES: "MARSEILLE" STYLE FLAT TILES, CURVED TILES, SLATE, WOODEN OR SHEET METAL ROOFS)

These are modular and easy to install in unlimited numbers (each collector has a pair of fastening bars that attach to the adjacent one in the group) and are made using the same materials and with the same certification as the frames for flat roofs. They include two fixed brackets for easier collector positioning while working on the roof. Two models, suitable for both VF (vertical) and HF (horizontal) collectors.

> NEWS All the frame systems, both for flat and sloping roofs, are modular (i.e. made up of identical elements), compact in length and easy to store and handle together with the collectors, so as to optimise store space and management for our customers.

That's not all:

> A SPECIAL LINE OF SPECIAL READY-TO-USE (PREMIXED) SOLAR FLUIDS, UNDER THE "FERSOL" BRAND

In 5 kg and 25 kg containers.

The main advantages (in addition to system reliability) are:

- 1) factory premixed with quality controlled demineralised water, to prevent calcification and fouling in all installation and operating conditions of the solar heating system;
- 2) precise and constant composition of the solar fluid, without errors or hassles for mixing on site (for example, when cold glycol is hard to mix with water)
- 3) use of specific inhibitors for high temperatures, which vaporise and condense together with the antifreeze glycol, guaranteeing at all times a controlled range of fluid acidity so as to avoid damaging parts of the system or the collector
- 4) tracing dye that indicates (by changing colour) the need to replace the solar fluid
- 5) use of atoxic and environmentally-friendly propylene glycol as the antifreeze component in the mixture

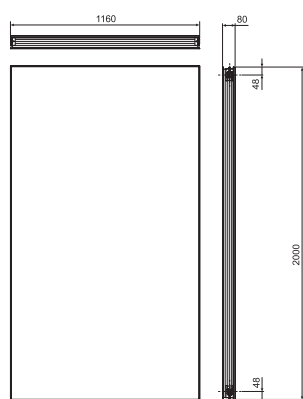


CONTAINERS OF FERSOL

> TECHNICAL SPECIFICATIONS SUMMARY TABLE

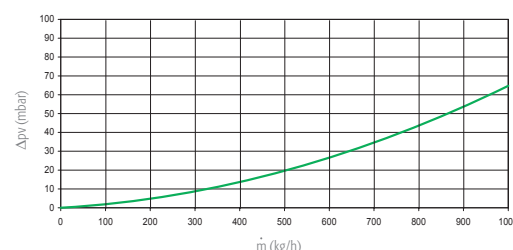
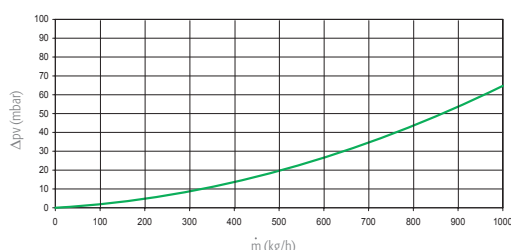
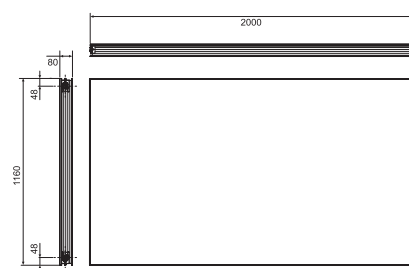
MODEL		ECOTOP VF 2.0	ECOTOP VF 2.3	ECOTOP VF 2.8	ECOTOP HF 2.3
Gross surface area	m ²	1.97	2.32	2.78	2.32
Opening surface area	m ²	1.89	2.23	2.69	2.23
Absorber surface area	m ²	1.87	2.21	2.66	2.21
Width	mm	1160	1160	1160	1160
Height	mm	1700	2000	2400	2000
Depth	mm	80	80	80	80
Number of fittings	no.	4	4	4	4
Fitting sizes	Ø	3/4"± M	3/4"± M	3/4"± M	3/4"± M
Optical efficiency (ref. absorber)	%	76.4	75.5	78	74.7
Thermal transmission coefficient a1 (ref. absorber)	W/m ² K	3.764	3.731	3.28	4.096
Thermal transmission coefficient a2 (ref. absorber) W	W/m ² K2	0.017	0.009	0.026	0.018
Optical efficiency (ref. opening)	%	75.5	75	77.1	73.7
Thermal transmission coefficient a1 (ref. opening)	W/m ² K	3.72	3.706	3.24	4.043
Thermal transmission coefficient a2 (ref. opening)	W/m ² K2	0.017	0.009	0.026	0.018
Absorption efficiency	%	95	95	95	95
Emissivity	%	5	5	5	5
High-density rock wool insulation, thickness	mm	40	40	40	40
Toughened, clear prismatic glass, thickness	mm	4	4	4	4
Transmittance	%	91.4	91.4	91.4	91.4
Weight	Kg	35	41	49	43.5
Water content	l	1.4	1.5	1.6	1.9
Max operating pressure	bar	10	10	10	10
Stagnation temperature	°C	177	177	177	177
Radiation angle correction factor	K 50°	0.896	0.89	0.897	0.884
Heat carrier fluid flow-rate	l/h	100-250	100-250	100-300	100-350
Max number of collectors in one battery	no.	8	8	8	4

> TECHNICAL SPECIFICATIONS TECHNICAL DRAWINGS - PRESSURE LOSSES



ECOTOP VF

ECOTOP HF



PS: Pressure losses for one collector with anti-freeze mixture with solar fluid temperature 50°C

> CERTIFICATION

DIN CERTCO - KEYMARK

DIN CERTCO

Gesellschaft für Konformitätsbewertung mbH



CERTIFICATE

The company

Ferrolì S.p.A.
Via Ritonda 78/A
37047 SAN BONIFACIO (VR)
ITALY

with its production site in

Alano di Piave

hereby receives the confirmation that the product/s

Solar collectors

of the type

ECOTOP VF 2.3

conforms to

DIN EN 12975-1:2006-06
DIN EN 12975-2:2006-06

Specific CEN KEYMARK Scheme Rules for Solar Thermal Products version 10.07 (Edition: 2009-02)

and is granted the licence to use the marks



in conjunction with the Registration No. below.

Registration No.: 011-7S735 F

This Certificate is valid until 2014-03-31.



DAP-ZE-2460.00

See annex for further information.

DIN CERTCO Gesellschaft für
Konformitätsbewertung mbH
Alboinstraße 56, 12103 Berlin



2009-03-30

Dipl.-Ing. Dipl.-Wi.-Ing. Sören Scholz
- Head of Certification Body -

S. Scholz



NOTICE FOR DEALERS:

As part of its efforts to constantly improve its range of products, with the aim of increasing the level of customer satisfaction, the company stresses that the appearance, dimensions, technical data and accessories may be subject to variation.

Consequently, ensure that the customer is provided with up-to-date technical and/or sales documents (price lists, catalogues, brochures, etc....).

The products described in this document are covered by warranty if purchased and installed in Italy.