FLOWING EXPERTISE

COMPONENTS FOR RENEWABLE ENERGY SYSTEMS





www.caleffi.com

THE CALEFFF GREEN

THIS IS OUR SUSTAINABLE COMMITMENT. A BELIEF, A WAY OF LIFE AND A WAY OF DOING THINGS. THIS IS OUR TANGIBLE CONTRIBUTION TO ENVIRONMENTAL AND SOCIAL CHANGE.

We are building a more responsible future to meet the demands made by the **PEOPLE** of today and tomorrow, through **PRODUCTS** that will help them to save resources and that are designed to offer a more sustainable kind of comfort. To bring the perfect climate to life and have a positive impact on the **ENVIRONMENT**.





GREEN **R**EVOLUTION

SUPPORTING THE ENERGY TRANSITION



COMPONENTS FOR RENEWABLE ENERGY

We encourage the use of innovative components which guarantee the utmost **EFFICIENCY**, **SAFETY** and **ENERGY SAVINGS**.

Our comprehensive range of products is dedicated to systems that use **SOLAR**, **GEOTHERMAL** and **BIOMASS** energy.









BIOMASS ENERGY

Biomass consists of materials of organic origin, both plant and animal-based, which have not undergone fossilisation processes. It can be used to produce electrical energy, to heat spaces and to power technological processes.

GEOTHERMAL ENERGY

This is the energy that can be obtained from heat reserves under the earth's surface. The systems are created using heat pumps which are used to increase the temperature of the thermal medium, which accumulates thermal energy from the subsoil. They are predominantly used to heat homes and to produce domestic hot water.



Traditional sources of energy, such as oil, coal, tar and gas

- are limited and are running out;
- cause atmospheric pollution, emitting CO₂ and greenhouse gases;
- are only located in a few countries, which creates geo-political tension and conflict;
- may present risks when being transported by oil tankers or oil pipelines

and represent the **PAST** in terms of energy sources.

RENEWABLE energy sources:

- are unlimited;
- do not cause pollution;
- do not emit carbon dioxide;

and can be sourced everywhere. The sun and heat from the earth or from water are available in all countries; there are no transportation risks and they represent the **FUTURE**.

In some cases, however, alternative or renewable energies are not capable of providing a fully independent and significant contribution to the global demand for energy: this may be due to technical or cost-related issues, or to territorial invasiveness.

This leads to the application of **hybrid systems**, especially in residential buildings and in connection with retrofit work.

COMPONENTS FOR SOLAR THERMAL SYSTEMS

 Semi-automatic self-cleaning magnetic filter High-efficiency deaerator 	577 series 5516 series	
 Deaerator-dirt separator with magnet Composite multifunction device with dirt separator and strainer 	5464 series 5453 series	
 Adjustable differential by-pass valve Balancing valve with flow meter 	518 series 132 series	
 Compact automatic charging unit Composite instrument holder 	580 series 305 series	
- Stainless steel buffer tank-hydraulic separator	5485 series	
- Changeover and distribution unit for radiant panel/fan-coil systems	664 series	

Geothermal heat pumps						
 Pre-assembled geothermal manifold Modular geothermal manifold Shut-off/balancing devices Shut-off devices 	110 series 110 series 112 series 871 series					

COMPONENTS FOR BIOMASS SYSTEMS

Safety and protection components

- Temperature relief valve
 Temperature safety relief valve
- Temperature relief valveTemperature relief valve with
- automatic filling
- Draught regulating valve

Distribution and control units

- Anti-condensation valve

280 series

- Anti-condensation recirculation and distribution unit

281 series

COMPONENTS FOR SOLAR THERMAL SYSTEMS

The CALEFFI SOLAR product series has been specially developed for use in solar thermal systems, where high temperatures are regularly reached and where, depending on the type of system, glycol may be present. The materials used to make the components and their performance levels MUST take account of these specific operating conditions.

Closed solar thermal systems with forced circulation

This type of circulation takes place with the help of pumps, which are only activated when the temperature of the thermal medium in the panels is higher than the temperature of the water inside the storage tank.

Obviously in these systems there are no constraints for the location of the tanks. The diagram below shows the main components of a solar thermal system operating with forced circulation.

Open solar thermal systems with natural circulation

This type of circulation takes place without the use of pumps.

The thermal medium heating up inside the panels becomes lighter than the medium contained in the tanks, triggering natural circulation which is the same as the principle used in old radiator-based systems.

Naturally, for similar circulation to be able to take place, the storage tanks must be positioned higher than the panels. This is the limiting principle of these systems: something that, in practice, makes them a solution for small-sized systems only.

Suitable mixing valves need to be installed between the tanks and the distribution networks, as very high temperatures can be reached in solar thermal systems, especially in domestic water storage tanks. As far as the temperature of the incoming hot water is concerned, the operating range of these mixing valves should not be lower than 85–90 °C. A range that extends to higher values therefore offers greater safety, considering the fact that system faults which serve to limit the temperature of the water inside the tanks are not to be excluded.

SAFETY RELIEF VALVE

tech. broch. 01089

Safety relief valve for solar thermal systems. Brass body. Chrome plated. Female - female connections. PN 10. **Working temperature range: -30–160 °C. Max. percentage of glycol: 50 %.** Oversized drain outlet. Discharge rating: 1/2" - 50 kW;

 172 - 30 kW,

 3/4" - 100 kW.

 TÜV approval according to

 TRD 721 - SV 100 § 7.7.

 Settings: 2,5 - 3 - 4 - 6 - 8 - 10 bar.

Code		Setting	
253 042	1/2" F x 3/4" F	2.5 bar	
253 043	1/2" F x 3/4" F	3 bar	
253 044	1/2" F x 3/4" F	4 bar	
253 046	1/2" F x 3/4" F	6 bar	
253 048	1/2" F x 3/4" F	8 bar	
253 040	1/2" F x 3/4" F	10 bar	
253 052	3/4" F x 1" F	2.5 bar	
253 053	3/4" F x 1" F	3 bar	
253 054	3/4" F x 1" F	4 bar	
253 056	3/4" F x 1" F	6 bar	
253 058	3/4" F x 1" F	8 bar	
253 050	3/4" F x 1" F	10 bar	

AIR VENT VALVES

250

253

tech. broch. 01133

- Pair consisting of:Automatic air vent for solar thermal systems.
 - Brass body. Chrome plated. Max. working pressure: 10 bar. Working temperature range: -30–180 °C. Max. percentage of glycol: 50 %.
- Shut-off cock complete with seal.

Brass body. Chrome plated. Max. working pressure: 10 bar. Working temperature range: -30–200 °C. Max. percentage of glycol: 50 %.

Max. discharge pressure

251 DISCAL*AIR*®

High-performance automatic air vent for solar heating systems. Brass body. Chrome plated. Female connection. Max. working pressure: 10 bar. Max. discharge pressure: 10 bar. Working temperature range: -30–160 °C. Max. percentage of glycol: 50 %.

tech. broch. 01135

Code

251004 1/2" F

250 tech. broch. 01133

Shut-off cock complete with seal.

Brass body. Chrome plated. Max. working pressure: 10 bar. Working temperature range: -30– 200 °C. Max. percentage of glycol: 50 %.

Code

250 300	3/8" M x 3/8" F - butterfly handle
250 400	1/2" M x 1/2" F - lever handle

Code

250 831	3/8" M without cock	2.5 bar
250 931	3/8" M	2.5 bar
250 031	3/8" M without cock	5 bar
250 131	3/8" M	5 bar
250 041	1/2" M without cock	5 bar

DEAERATORS

251

3/4" F

Code

251003

tech. broch. 01134

Discal® Deaerator for solar thermal systems. Brass body. Female - female connections. Max. working pressure: 10 bar. Max. discharge pressure: 10 bar. Working temperature range: -30– 160 °C.

Max. percentage of glycol: 50 %.

MANUAL AIR SEPARATOR

251

tech. broch. 01197

Manual air separator for solar thermal systems. Brass body. Female - female connections. Max. working pressure: 10 bar. **Working temperature range: -30–** 200 °C. **Max. percentage of glycol: 50 %**.

Code

251093 3/4" F

251 DISCAL®

tech. broch. 01134

Deaerator for solar thermal systems. Brass body. Female - female connections. With drain. Max. working pressure: 10 bar. Max. discharge pressure: 10 bar. Working temperature range: -30–160 °C. Max. percentage of glycol: 50 %. PATENT.

251 006 1" F 251 007 1 1/4" F	Code				
251 007 1 1/4" F	251 006	1" F			
	251 007	1 1/4" F			

Application diagram for DISCAL® vertical 251 series

Application diagram, 251 series

CIRCULATION UNITS

278

Circulation unit for solar thermal systems, return connection. Electric supply: 230 V (AC).

Max. working pressure: 10 bar.

Safety relief valve working temperature range: -30-160 °C. Safety relief valve setting: 6 bar (for other settings refer to 253 series using adapter code F21224).

Flow meter working temperature range: -10-110 °C. Max. percentage of glycol: 50 %.

- Consisting of:
- Solar circulation pump;
- 253 series safety relief valve for solar thermal systems;
- filler/drain cock;
- instrument holder fitting with pressure gauge;
- flow meter;
- return temperature gauge;
- shut-off and check valve;
- 2 hose connections;
- pre-formed shell insulation.

Code	Flow meter scale (I/min)	Pump	
278050HE 3/4" F	1–13	UPM3 15-75*	
278052HE 3/4" F	8–30	UPM3 15-75*	

* With PWM control

279

Circulation unit for solar thermal systems, flow and return connection. Electric supply: 230 V (AC).

Max. working pressure: 10 bar.

Safety relief valve working temperature range: -30–160 °C. Safety relief valve setting: 6 bar (for other settings refer to

253 series using adapter code F21224). Flow meter working temperature range: -10–110 °C.

Max. percentage of glycol: 50 %.

- Consisting of:
- Solar circulation pump; - 253 series safety relief valve for solar thermal systems;
- 2 fill/drain cocks;
- instrument holder fitting with pressure gauge;
- flow meter;
- air vent device;
- flow temperature gauge;
- return temperature gauge;
- 2 shut-off valves and check valves;
- 2 hose connections;
- pre-formed shell insulation.

Set up for connection to digital regulator DeltaSol[®] SLL.

Code		Flow meter scale (l/min)	Pump	
279050HE	3/4" F	1–13	UPM3 15-75*	
279052HE	3/4" F	8–30	UPM3 15-75*	

* With PWM control

CIRCULATION UNITS

255

Circulation unit for solar thermal systems, flow and return connection.

Max. working pressure: 10 bar. Safety relief valve working temperature range: -30–160 °C. Safety relief valve setting: 6 bar (for other settings, see 253 series).

Flow meter max. temperature: 120 °C. Max. percentage of glycol: 50 %.

Consisting of:

- Solar circulation pump with PWM control only;
- 253 series safety relief valve for solar thermal systems;
- 2 fill/drain cocks complete with hose connection;
- instrument holder fitting with pressure gauge;
- flow regulator with flow meter;
- air vent device;
- flow temperature gauge;
- return temperature gauge;
- 2 shut-off valves and check valves;
- pre-formed shell insulation.

CE

Code	Flow meter scale (l/min)	Pump	
255266HE 1" F	5–40	PML 25-145*	

* May only be used in conjunction with controller featuring PWM control

278

DeltaSol[®] SLL digital regulator with PWM control. Electric supply: 230 V (AC). Complete with **pre-formed** shell insulation compatible with 278...HE, 279...HE and 255...HE series circulation units.

Complete with 3 Pt1000 probes; optional fourth probe. Functions: differential temperature regulator with supplementary and optional functions.

Inputs: Outputs:

for 4 Pt1000 temperature probes. 3 semiconductor relays, 2 PWM.

CE

Code

278005

ACCESSORIES FOR CIRCULATION UNITS

tech. broch. 01246

Expansion vessel for primary circuit in solar thermal systems, CE certified. Max. working pressure: 10 bar. System working temperature range: -10-120 °C. Diaphragm temperature range: -10–70 °C. Max. percentage of glycol: 50 %. Conforms to EN standard 13831. Bladder diaphragm.

(E[§]

259

Code	Litres	Connection	Pre-charge (bar)	
259 008	8	3/4"	2,5	
259 012	12	3/4"	2,5	
259 018	18	3/4"	2,5	
259 025	25	3/4"	2,5	
259 033	33	3/4"	2,5	

259

161

Pocket for Pt1000 probe. Stainless steel body. Length: 100 mm.

tech. broch. 01246

Expansion vessel for primary circuit in solar thermal systems, CE certified. Max. working pressure: 10 bar. System working temperature range: -10–120 °C. Diaphragm temperature range: -10–70 °C. Max. percentage of glycol: 50 %. Conforms to EN standard 13831. Diaphragm membrane.

adapter

Code

F21224

series. For use during installation of the 253 series 1/2" valve.

Accessory for circulation units in the 266, 267, 268, 269, 278 and 279

tech. broch. 01136

	001110000011	(Dai)				
50	3/4"	2,5				
80	1"	2,5				
	50 80	50 3/4" 80 1"	50 3/4" 2,5 80 1" 2,5	50 3/4" 2,5 80 1" 2,5	50 3/4" 2,5 80 1" 2,5	50 3/4" 2,5 80 1" 2,5

3/4"

255

Expansion vessel connection kit. Consisting of: - stainless steel flexible hose (L=610 mm); - automatic shut-off cock; - wall mounting bracket (for vessels up to 24 litres). Max. working pressure: 10 bar. Cock working Tmax: 110 °C Max. percentage of glycol: 50 %.

Code

255007

5580

Shut-off ball valve for expansion vessels, with drain cock.

For solar thermal systems. Max. working pressure: 6 bar. Max. working temperature: 120 °C. Max. percentage of glycol: 50 %.

Code				
5580 52	3/4"			
5580 62	1"			

BALL VALVE

240

tech. broch. 01185

Ball valve for solar thermal systems. AISI 316 stainless steel body and ball. PN 63. Female - female connections. AISI 304 stainless steel basket. Working temperature range: -30-200 °C. Max. percentage of glycol: 50 %.

MECHANICAL FITTINGS WITH O-RING SEAL

Code 254602

2540

Mechanical female fitting, O-Ring seal for solar thermal systems. For annealed copper, hard copper, brass, mild steel and stainless steel pipes.

Max. working pressure: 16 bar. Working temperature range: -30– 160 °C.

Max. percentage of glycol: 50 %. Black nickel-plated nut.

2546

Mechanical tee fitting, O-Ring seal for solar thermal systems. For annealed copper, hard copper, brass, mild steel and stainless steel pipes. Max. working pressure: 16 bar. Working temperature range: -30-160 °C. Max. percentage of plycol: 50 %

Max. percentage of glycol: 50 %. Black nickel-plated nut.

Code

2540 55	3/4" F - Ø 15	
2540 58	3/4" F - Ø 18	
2540 52	3/4" F - Ø 22	
2540 62	1" F - Ø 22	
2540 68	1" F - Ø 28	

2543

Mechanical coupling fitting, O-Ring seal for solar thermal systems. For annealed copper, hard copper, brass,

mild steel and stainless steel pipes. Max. working pressure: 16 bar. Working temperature range: -30–160 °C. Max. percentage of glycol: 50 %.

Black nickel-plated nut.

Code

2543 05	Ø 15	
2543 08	Ø 18	
2543 02	Ø 22	

2544

Mechanical male fitting, O-Ring seal for solar thermal systems. For annealed copper, hard copper, brass, mild steel and stainless steel pipes. Max. working pressure: 16 bar. Working temperature range: -30–160 °C. Max. percentage of glycol: 50 %.

Black nickel-plated nut.

Code		
2544 55	3/4" M - Ø 15	
2544 58	3/4" M - Ø 18	
2544 52	3/4" M - Ø 22	
2544 65	1" M - Ø 15	
2544 62	1" M - Ø 22	

Code

2545

Mechanical elbow fitting, O-Ring seal for solar thermal systems. For annealed copper, hard copper, brass, mild steel and stainless steel pipes.

Max. working pressure: 16 bar. Working temperature range: -30–160 °C.

Max. percentage of glycol: 50 %. Black nickel-plated nut.

2545 05	Ø 15
2545 08	Ø 18
2545 02	Ø 22

Ø 22

2547

Mechanical male elbow fitting, O-Ring seal for solar thermal systems. For annealed copper, hard copper, brass, mild steel and stainless steel pipes. Max. working pressure: 16 bar. **Working temperature range: -30– 160** °C.

Max. percentage of glycol: 50 %. Black nickel-plated nut.

Code	
2547 55	3/4" M ·

2547 55	3/4" M - Ø 15	
2547 58	3/4" M - Ø 18	
2547 52	3/4" M - Ø 22	

2548

Mechanical female elbow fitting, O-Ring seal for solar thermal systems. For annealed copper, hard copper, brass, mild steel and stainless steel pipes. Max. working pressure: 16 bar. **Working temperature range: -30– 160** °C.

Max. percentage of glycol: 50 %. Black nickel-plated nut.

Code

2548 55	3/4" F - Ø 15	
2548 58	3/4" F - Ø 18	
2548 52	3/4" F - Ø 22	

2540

Plug for Ø 22 copper pipe.

Code

254002 Ø 22

3-PIECE STRAIGHT UNION FITTING

588

3-piece straight union fitting for solar thermal systems. Max. working pressure: 16 bar. Working temperature range: -30–160 °C. Max. percentage of glycol: 50 %. Black nickel-plated nut.

Code

588 052	3/4" F x M with union
588 062	1" F x M with union

HEAT METER

75025 CONTECA® EASY SOLAR tech. broch. 01311

Direct heat metering with local reading by means of LCD or centralised reading via Bus transmission.

Max. working pressure: 10 bar. Working temperature range: 5-120 °C. Max. percentage of glycol: 50 %.

The CONTECA® EASY module is supplied complete with:

- pair of temperature probes with immersion pockets.
- Y pockets for immersion probes.
- volume meter with pulse output (Tmax 120 °C).
- electronic integrator with LCD display.

Electric supply 24 V (AC) (+10 % -5 %) / 50/60 Hz - 1 W. Set for transmission in RS-485 Bus mode.

Conforms to EN 1434-1.

CE

BALANCING VALVE WITH	FLOW
METER	

tech. broch. 01148

Balancing valve with flow meter, for solar thermal systems. Direct reading of flow rate. Brass valve body and flow meter. Chrome plated. Ball valve for flow rate adjustment. Graduated scale flow meter with magnetic movement flow rate indicator. With insulation.

Max. working pressure: 10 bar. Working temperature range: -30–130 °C. Max. percentage of glycol: **50** % PATENT PENDING.

Code		Flow rate range (I/min)		
258 503	3/4"	2-7	 	
258 533	3/4"	3–10		
258 523	3/4"	7–28		
258603	1"	10-40		

Code	Connection	Туре	Q _{nom} m³/h	
75025 4	1/2"	single nozzle	1,5	
75025 5	3/4"	single nozzle	2,5	
75025 6	1"	multi-nozzle	3,5	
75025 7	1 1/4"	multi-nozzle	6	
75025 8	1 1/2"	multi-nozzle	10	
75025 9	2"	multi-nozzle	15	

Application diagram for 75025 series heat meter and 258 series balancing valve

MOTORISED BALL DIVERTER VALVE - Operating time 10 s

6443 tech. broch. 01132

Motorised three-way ball diverter valve. Max. working pressure: 10 bar. Δp max: 10 bar. Working temperature range: -5–110 °C.

Complete with motor with 3-contact control.

With auxiliary microswitch. Electric supply: 230 V (AC) or 24 V (AC).

Auxiliary microswitch contact rating: 0,8 A (230 V). Ambient temperature range: 0–55 °C. Protection class: IP 54. **Operating time: 10 s (90° rotation)**.

Operating time: 10 s (90° rotation) Supply cable length: 100 cm. PATENT.

Code		Voltage V	Kv (m³/h)	
6443 46	1/2"	230	3,9	
6443 56	3/4"	230	3,9	
6443 57	3/4"	230	8,6	
6443 66	1"	230	9,0	
6443 48	1/2"	24	3,9	
6443 58	3/4"	24	3,9	
6443 59	3/4"	24	8,6	
6443 68	1"	24	9,0	

THERMOSTATIC DIVERTER VALVE

2620 tech. broch. 01335 Thermostatic diverter valve for solar thermal systems. Dezincification resistant alloy body

CR. Max. working pressure: 10 bar. Factory setting: 45 °C. Inlet Tmax: 100 °C.

Code		Temperature adjustment	Kv (m³/h)	
2620 40	1/2"	35–55 °C	1,5	
2620 50	3/4"	35–55 °C	1,7	

Code		Temperature adjustment	Kv (m³/h)	
2620 60	1"	38–52 °C	2,6	

2620 series thermostatic diverter valve application diagram

THERMOSTATIC MIXING VALVES

232140	1/2	30-03 0	2,0	
2521 50	3/4"	30–65 °C	2,6	

Code		adjustment	Kv (m³/h)	
2521 51	3/4"	35–65 °C	4,5	
2521 60	1"	35–65 °C	5,5	
2521 70	1 1/4"	35–65 °C	7,6	
2521 80	1 1/2"	35–65 °C	11,0	
2521 90	2"	35–65 °C	13,3	

252340 1/2" 30-65 °C 4,0 252350 3/4" 30-65 °C 4,5 252360 1" 30-65 °C 6,9 252370 1 1/4" 30-65 °C 9,1 252380 1 1/2" 35-65 °C 14,5 252390 2" 35-65 °C 19,0	Code		Temperature adjustment	Kv (m³/h)	
252350 3/4" 30–65 °C 4,5 252360 1" 30–65 °C 6,9 252370 1 1/4" 30–65 °C 9,1 252380 1 1/2" 35–65 °C 14,5 252390 2" 35–65 °C 19,0	2523 40	1/2"	30-65 °C	4,0	
252360 1" 30-65 °C 6,9 252370 1 1/4" 30-65 °C 9,1 252380 1 1/2" 35-65 °C 14,5 252390 2" 35-65 °C 19,0	2523 50	3/4"	30–65 °C	4,5	
252370 1 1/4" 30–65 °C 9,1 252380 1 1/2" 35–65 °C 14,5 252390 2" 35–65 °C 19,0	2523 60	1"	30–65 °C	6,9	
252380 1 1/2" 35–65 °C 14,5 252390 2" 35–65 °C 19,0	2523 70	1 1/4"	30–65 °C	9,1	
2523 90 2" 35–65 °C 19,0	2523 80	1 1/2"	35–65 °C	14,5	
	2523 90	2"	35–65 °C	19,0	

High temperature and solar systems

In solar thermal systems with natural circulation, the temperature of the domestic water in the storage tank can vary considerably, depending on the degree of solar radiation, and can reach very high temperatures. In summer especially, and with low water usage, the hot water at the storage outlet can actually reach temperatures around 98 °C before the temperature and pressure safety relief valves are triggered. The hot water cannot be used directly at these temperatures, as values above 50 °C can very quickly cause burns. Installing a thermostatic mixing valve therefore makes it possible to:

• reduce the temperature of the water distributed throughout the domestic water system to a value suitable for the end user.

• keep mixed water temperature constant despite variations in inlet temperature and pressure conditions.

 \bullet maintain consistent performance levels over time, even with a continuously high inlet hot water temperature.

• ensure the high-temperature water in the storage tank lasts longer, by distributing it to the user circuit at a reduced temperature.

 \bullet have an anti-scald safety function in case of inlet cold water supply failure.

Exposure time required to cause partial burns

Temperature	Adults	Children 0-5 years
70 °C	1 s	
65 °C	2 s	0.5 s
60 °C	5 s	1 s
55 °C	30 s	10 s
50 °C	5 min	2.5 min

ANTI-SCALD THERMOSTATIC MIXING VALVES

Code		Temperature adjustment	Kv (m³/h)	
2527 14	1/2"	35–55 °C	1,5	
2527 13	3/4"	35–55 °C	1,7	

High-performance adjustable anti-scald thermostatic mixing valve, with check valves and strainers at the inlets. For use in solar thermal systems and instantaneous domestic hot water production systems.

Male threaded union connections.

Max. working pressure: 1400 kPa. Inlet Tmax: 100 °C.

Certified to standard AS 4032.2.

Dezincification resistant alloy body ${
m I\!R}$.

Code		Temperature adjustment	Kv (m³/h)	
252212HP AUS	DN 15	35–55 °C	1,5	
252219HP AUS	DN 20	35–55 °C	1,7	

2522

Adjustable thermostatic mixing valve, with check valves and strainers, for solar thermal systems. High thermal performance device with anti-scald safety function.

With override function for thermal disinfection. Dezincification resistant alloy body ${\ensuremath{\mathbb CR}}$.

Male threaded union connections.

Max. working pressure: 1400 kPa. Inlet Tmax: 100 °C. Certified to standard AS 4032.1.

Code		Temperature adjustment	Kv (m³/h)	
252212TMF AUS*	DN 15	30–50 °C	1,3	
252219TMF AUS	DN 20	30–50 °C	1,4	

* without union

2522

Adjustable thermostatic mixing valve, with check valves and strainers, for solar thermal systems. High thermal performance device with anti-scald safety function. Dezincification resistant alloy body CR. Male threaded union connections. Max. working pressure: 1400 kPa. Inlet Tmax: 100 °C. Certified to standard AS 4032.1.

 \frown

Temperature Code adjustment Kv (m³/h) 3,0 252225TM AUS DN 25 30–50 °C

SOLAR STORAGE-BOILER CONNECTION KIT

The kit consists of:

- Anti-scald thermostatic mixing valve, adjustable with knob, for solar thermal systems. Complete with strainers and check valves at the inlets.
- Diverter valve with three-contact actuator.
- With auxiliary microswitch.
- Thermostat with probe for solar thermal system, for operating the diverter value. **Temperature display**
- diverter valve. Temperature display. - Pre-formed protective shell cover.

Mixing valve-valve coupling with adjustable inlet and outlet connection positions.

Mixing valve

Dezincification resistant alloy body CR. Max. working pressure: 10 bar. Adjustment temperature range: 35–55 °C. Inlet Tmax: 100 °C.

Diverter valve

Brass body. Max. working pressure: 10 bar. Working temperature range: -5–110 °C.

Actuator

Three-contact type. Electric supply: 230 V (AC). Power consumption: 4 VA Auxiliary microswitch contact rating: 0,8 A (230 V). Ambient temperature range: 0–55 °C. Protection class: IP 54. Operating time: 10 s. Supply cable length: 1 m.

Thermostat with probe

Electric supply: 230 V (AC). Adjustable temperature range: 25–50 °C. Factory setting: 45 °C. Casing protection class: IP 42.

264352 3/4'

Code

Function

An anti-scald thermostatic mixing valve, at the kit inlet, controls the temperature of the water coming from the solar water storage tank. The thermostat, by means of the probe positioned on the hot water flow from the solar water storage tank, controls the diverter valve at the kit outlet. Depending on the temperature setting, the valve diverts the water between the user circuit and the boiler circuit, **without thermal integration**.

Hydraulic diagrams

SOLARNOCAL 264 series kit application diagram

SOLAR STORAGE-BOILER CONNECTION KIT

265 **SOLARINCAL**

tech. broch. 01163

Solar storage boiler-to-boiler connection kit,

- with thermal integration. Consisting of:
- Anti-scald thermostatic mixing valve, adjustable with knob, for solar thermal systems. Complete with strainers and check valves at the inlets.
- Diverter valve with three-contact actuator. With auxiliary microswitch.
- Thermostat with probe for solar thermal system, for operating the
- diverter valve. Temperature display.
- Pre-formed protective shell cover.

Mixing valve-valve coupling with adjustable inlet and outlet connection positions.

Mixing valve / Diverter valve / Actuator / Thermostat with

probe For technical specifications, see 264 series.

F29384	spare mix ing valve for 262 and 265 series
265 352	3/4"
Code	

265

Thermostat with boiler temperature display. For 264 and 265 series devices. Electric supply: 230 V (AC). Adjustable temperature range: 25-50 °C. Factory setting: 45 °C. Casing protection class: IP 42.

Code

265001

Function

The thermostat, by means of the probe positioned on the hot water flow from the solar water storage tank, controls the diverter valve at the kit inlet. Depending on the temperature setting, the valve diverts the water between the user circuit and the boiler circuit, with thermal integration. An anti-scald thermostatic mixing valve, at the kit outlet, constantly controls the temperature of the water sent to the end user.

Hydraulic diagrams

SOLARINCAL 265 series kit application diagram

SOLAR STORAGE-BOILER THERMOSTATIC CONNECTION KIT

Solar storage-boiler connection kit, with thermal integration. Consisting of:

- Anti-scald thermostatic mixing valve, adjustable with knob, for solar thermal systems. Complete with strainers and check valves at the inlet.

- Thermostatic diverter valve. - Pre-formed protective shell cover.

Mixing valve-valve coupling with adjustable inlet and outlet connection positions.

Mixing valve

Dezincification resistant alloy body CR. Max. working pressure: 10 bar. Adjustment temperature range: 35-55 °C. Inlet Tmax: 100 °C. Performance according to the NF 079 doc. 8, EN 15092, EN 1111, EN 1287.

Diverter valve

Brass body. Max. working pressure: 10 bar. Factory setting: 45 °C. Inlet Tmax: 100 °C. Code

F29384		spare mixing valve for 262 and 265 series	
262 342	1/2"	without insulation	
262 350	3/4"		

Function

262

A thermostatic diverter valve, at the kit inlet, receives hot water coming from the solar water storage tank.

Depending on the temperature setting, valve diverts the water automatically and in a proportional manner between the user circuit and the circuit for the boiler with storage, with thermal integration.

The valve modulates the flow rates to optimise the energy contained in the solar water storage and reduce boiler operation times to a minimum. An anti-scald thermostatic mixing valve, at the kit outlet, constantly controls the temperature of the water sent to the end user.

Hydraulic diagrams

SOLAR STORAGE-BOILER THERMOSTATIC CONNECTION KIT

263 Solarincal-t <i>plus</i>	tech. broch. 01164	 The kit consists of: Anti-scald thermostatic mixing valve, adjustable with knob, for solar thermal systems. Complete with strainers and check valves at the inlet. Thermostatic diverter valve. Thermostatic control device. Pre-formed protective shell cover.
		Mixing valve Dezincification resistant alloy body (R). Max. working pressure: 10 bar. Adjustment temperature range: 35–55 °C. Inlet Tmax: 100 °C. Performance according to the NF 079 doc. 8, EN 15092, EN 1111, EN 1287.
		Diverter valve Dezincification resistant alloy body CR. Max. working pressure: 10 bar. Factory setting: 45 °C. Inlet Tmax: 100 °C.
		Control device Dezincification resistant alloy body R . Factory setting: 30 °C. Inlet Tmax: 85 °C.
		PATENT. Code
		263 350 3/4"

Function

A thermostatic diverter valve, at the kit inlet, receives hot water coming from the solar water storage tank. Depending on the temperature setting, the valve diverts the water automatically and in a proportional manner between the user circuit and the **instantaneous boiler**circuit, **with thermal integration**. The valve modulates the flow rates to optimise the energy contained in the solar water storage and reduce boiler operation times to a minimum. A specific thermostatic control device limits the boiler inlet temperature to prevent it being switched on and off too often, which leads to hunting and irregular operation.

An anti-scald thermostatic mixing valve, at the kit outlet, constantly controls the temperature of the water sent to the end user.

Hydraulic diagrams

SOLARINCAL-T PLUS 263 series kit application diagram

COMBINED TEMPERATURE AND PRESSURE SAFETY RELIEF VALVE

tech. broch. 01147

Combined temperature and pressure relief valve for solar thermal systems.

For solar thermal systems, to protect the hot water storage. Dezincification resistant alloy body (R.

Chrome plated. Setting temperature: 90 °C. Discharge rating: 1/2" x Ø 15: 10 kW. 3/4" x Ø 22: 25 kW.

Settings: 6 - 7 - 10 bar. Certified to EN 1490. settings: 7 - 10 bar.

309

Code

309 461	1/2" M x Ø 15	6 bar	
309 471	1/2" M x Ø 15	7 bar	
309 401	1/2" M x Ø 15	10 bar	
309 561	3/4" M x Ø 22	6 bar	
309 571	3/4" M x Ø 22	7 bar	
309 501	3/4" M x Ø 22	10 bar	

Function

limits of the system.

tolerance values.

The combined temperature and pressure relief valve controls and limits the temperature and pressure of the hot water inside a solar domestic hot water storage tank and prevents the water from reaching temperatures over 100 °C (with the formation of steam). On reaching the setting values, the valve discharges enough water into the atmosphere to ensure the temperature and pressure values fall back within the operating

Product certification in accordance with European Standard EN 1490

European Standard EN 1490: 2000, entitled "Building valves -Combined temperature and pressure relief valves - Tests and requirements", describes the construction and performance specifications the TP safety relief valves must possess.

Caleffi 309 series TP safety relief valves are certified by the Buildcert (UK) Certifying Authority as compliant with the requirements of European Standard EN 1490.

Application diagram for 309 series valve on solar hot water storage tank

ANTIFREEZE SAFETY DEVICE

603 ICEGAL®

Antifreeze safety device. **For solar thermal systems, to protect the hot water storage**. Dezincification resistant alloy body **(R**). Max. working pressure: 10 bar. Ambient temperature range: -30–90 °C. Opening temperature: 3 °C. Closing temperature: 4 °C.

Code			
603 040	1/2" F nut		

Function

The antifreeze safety device prevents ice build-up in domestic water circuits, thereby avoiding possible damage to water storage tanks and pipes.

and pipes. When the minimum ambient trigger temperature is reached, it automatically opens up a minimum passage of water to the drain, allowing a small continuous flow of water at the inlet; this prevents any risk of freezing.

When the ambient temperature rises or in the event of contact with water at a higher temperature, the opposite action takes place, with the device closing again and normal circuit operating conditions being restored.

Application diagram for 603 series device on domestic water circuit

COMPONENTS FOR AIR-WATER HEAT PUMP SYSTEMS

Self-contained air-water heat pump

Aerothermal heat pump systems offer huge benefits in terms of renewable energy: they do not require any outside space, any specific permits or any expensive digging work to bury or lay the heat exchangers. Nevertheless, there are some limits to be taken into consideration, such as the huge fluctuations in the temperature of the outside air. The outside air can reach very low temperatures, making the heat pump work with somewhat limited COP values and overly high system running costs.

SIZING

ANTIFREEZE VALVE

The discharge flow rate does not depend on the size of the valve, only on the size of the pipe.

Choose the size of the valve in accordance with the pipe.

BY-PASS VALVE

Sized according to the minimum flow rate required by the heat pump.

DEAERATOR - DIRT SEPARATOR

Sized based on the maximum recommended medium flow speed to the device connections.

Maximum speed = 1.2 m/s

DIVERTER VALVE

As it is a diverter valve, it should be **sized according to the Kv**, the only relevant value, so that the pressure drop is suitable for the available value within the system. Take account of the following average pressure drop values:

- 200–300 mm w.g. (system with low pressure drop)
- 500-600 mm w.g. (system with high pressure drop)

EXPANSION VESSEL

In systems with a heat pump, it is possible to calculate an approximate size of the volume required for expansion, considering the latter as around 5 % of the maximum volume of the system.

The machine usually houses a vessel with a capacity of 6-8 litres. If this capacity is insufficient, an additional vessel should be installed in the system to cover the difference.

Air-water heat pump with external unit and internal unit

Dividing the HP into two units, one external and one internal, connected via a gas cooling circuit, means that this technology can also be used in colder climates without having to add glycol to the system.

HYDRAULIC SEPARATOR

The hydraulic separator should be sized in accordance with the maximum flow rate at the inlet. The selected value should be the sum of the primary circuit flow rates (G_{PRIM}) or the sum of the secondary circuit flow rates (G_{SEC}), whichever is greater.

Hydraulic separation leads to recirculation of the hot water and an increase in the primary circuit return temperature. In a HP system, this may cause short machine operating cycles, compromising its performance. The increase in flow to the primary circuit should therefore be controlled so that it is at the maximum approximately 30 % more than the secondary circuit.

ANTIFREEZE PROTECTION

108 iStop® tech. broch. 01376

Antifreeze valve. Brass body. Max. working pressure: 10 bar. Working temperature range: 0–65 °C. Ambient temperature range: -30–60 °C. Opening temperature: 3 °C. Closing temperature: 4 °C.

Threaded connections.

Code	Connection	
108 601	1" M	
108 701	1 1/4" M	
108 801	1 1/2" M	

Connections with olive fitting for copper pipe.

Code		
108 301	Ø 28	

108 iStop®PLUS tech. broch. 01419

Threaded connections.

Code	
108 622	1" M

Connections with olive fitting for copper pipe.

PLICA

Code		
108 322	Ø 28	

Operating principle

The 108 series antifreeze valve allows drainage of the medium in the circuit when the circuit temperature reaches a value of 3 $^{\circ}\mathrm{C}.$

Operating principle The 108 series antifre

The 108 series antifreeze valve allows drainage of the medium in the circuit when the circuit temperature reaches a value of 3 °C. In outside temperature conditions over 5 °C, antifreeze valve cut-in is inhibited by the air temperature sensor. This prevents the valve from cutting in during operation in cooling mode during the summer.

Water temperature [°C]

108 iStop® tech. broch. 01422 Antifreeze valve with air sensor.

Antifreeze valve with air sensor. Brass body. Max. working pressure: 5 bar. Working temperature range: 0–65 °C. Ambient temperature range: -30–60 °C.

Antifreeze function (water sensor). Opening temperature: 3 °C. Closing temperature: 4 °C.

Enabling of antifreeze function with outside air temperature < 5 °C.

PATENT PENDING.

ANTIFREEZE PROTECTION WITH AIR

SENSOR

Threaded connections.

Code	Connection	
108 611	1" M	
108 711	1 1/4" M	

Antifreeze valve application diagram

Water temperature [°C]

MOTORISED THREE-WAY BALL DIVERTER VALVES

CE

tech. broch. 01392 Three-way motorised ball valve. With auxiliary microswitch. Electric supply: 230 V (AC). Max. working pressure: 10 bar. ∆p max: 10 bar. Medium working temperature range: -5-110 °C. Ambient temperature range: 0-55 °C. Power consumption: 4 VA Auxiliary microswitch contact rating: 0,8 A (230 V). Protection class: IP 54. 90° rotation.

638

tech. broch. 01196

Three-way motorised ball valve, with insulation kit for heating and cooling systems. Electric supply: 230 V (AC) Max. working pressure: 16 bar. ∆p max: 10 bar. Medium working temperature range: -10-110 °C. Ambient temperature range: -10-55 °C. With auxiliary microswitch. Power consumption: 6 VA. Auxiliary microswitch contact rating: 6 (2) A - 230 V (AC). Protection class: IP 65. Operating time: 50 s 90° rotation.

Code		Operating time	Voltage V	Kv (m³/h)	
638 373	1 1/4"	50 s	230	24,7	
638 383	1 1/2"	50 s	230	47	

6445

6440

tech. broch. 01131 Spare motor with 3-contact control for three-way motorised ball zone valves, 6445 series. Electric supply: 230 V (AC).

Code	Voltage V	Operating time	
6440 22	230	40 s	
6440 32	230	10 s	

Wiring diagram for 6445 series valves with 3-contact control

Spare motor for three-way motorised ball valves, 638 series. 90° rotation.

Insulation kit for use in heating and cooling systems. Medium working temperature range: -10-110 °C.

For three-way motorised valves, 638 series.

Code	Use	
CBN638173	638373	
CBN638183	638383	

29

SEMI-AUTOMATIC SELF-CLEANING MAGNETIC FILTER

577 tech. broch. 01391 CALEFFI XF

Semi-automatic self-cleaning magnetic filter.

Composite material body. Threaded female connections. Adjustable for horizontal and vertical installations.

Drain cock with hose connection. Max. working pressure: 3 bar. Working temperature range: 0-90 °C. Filter mesh size $\emptyset = 0.16$ mm.

Threaded female connections.

Code			
577 500	3/4"		
577 600	1"		
577 700	1 1/4"		

Connections with olive fitting for copper pipe.

Code			
577 200	Ø 22		
577 300	Ø 28		

Insulation for semi-automatic selfcleaning magnetic filter.

Code	Use	
CBN577500	577500/600/700	
CBN577800	577800/900	

Cleaning the filter mesh

To clean the CALEFFI XF filter with the circulator stationary, there is no need to disassemble the component because it contains a mechanism with brushes to clean the filter mesh.

577 CALEFFI XF

tech. broch. 01391

Semi-automatic self-cleaning magnetic filter complete with by-pass. Composite material body.

Threaded female connections. Adjustable for horizontal and vertical installations.

Drain cock with hose connection. Max. working pressure: 3 bar. Working temperature range: 0-90 °C. Filter mesh size $\emptyset = 0.16$ mm.

Threaded female connections.

Code			
577 800	1 1/2"		
577 900	2"		

Adjustable by-pass

Sizes DN 40 (code 577800, 1 1/2") and DN 50 (code 577900, 2") are equipped with a by-pass to restrict the flow rate passing through the device by up to 50 % and thereby increase the Kv value. We recommend 100 % filtration during filling and for the first few weeks of system operation. Then, during the "maintenance" phase, the device can be set to function as a by-pass to achieve a higher Kv.

CALEFFI HED[®] HIGH-EFFICIENCY DEAERATOR

5516 tech. broch. 01416 CALEFFI HED®

High-efficiency deaerator. Composite material body. Adjustable for horizontal and vertical installations. With hygroscopic safety cap. Max. working pressure: 3 bar. Working temperature range: 0–90 °C. PATENT PENDING.

Threaded connections.

Code

5516 06	1" F
5516 07	1 1/4" F
5516 17	1 1/4" M

Connections with olive fitting for copper pipe.

Code			
5516 02	Ø 22		
5516 03	Ø 28		

DEAERATOR-DIRT SEPARATOR WITH MAGNET

Composite material body. Threaded female connections. Adjustable for horizontal and vertical installations.

With hygroscopic safety cap. Drain cock with hose connection. Max. working pressure: 3 bar. Working temperature range: 0–90 °C.

Threaded female connections.

Code		
5464 05	3/4"	
5464 06	1"	
5464 07	1 1/4"	

Connections with olive fitting for copper pipe.

Code				
5464 02	Ø 22			
5464 03	Ø 28			

Insulation for high-efficiency deaerators.

Code CBN551602

С

Use

602 551606/607

Contraction of the second		Pre	essure g	jauge.	
ode	bar	Connection	Pos.	Ø	

COMPOSITE MULTI-FUNCTION DEVICE WITH DIRT SEPARATOR AND STRAINER

5453 tech. broch. 01258 DIRTMAGPLUS®

Composite multifunction device in with dirt separator and strainer. Specifically designed for complete cleaning of the hydraulic circuit, with continuous protection of the generator and the components. Composite material body. Dirt separator with composite internal element, **complete with magnet**.

Two inspectable strainers with steel mesh: 1 for first passage (in blue) already fitted, 1 for maintenance (in grey) provided. Pair of shut-off valves with nut, brass body. Adjustable for horizontal or vertical or 45° installations. Threaded female

connections. Drain cock with hose connection. Max. working pressure: 3 bar.

Working temperature range: 0–90 °C.

Threaded female connections.

Code

5453 75	3/4"
5453 76	1"
5453 77	1 1/4"

Connections with olive fitting for copper pipe.

Code

5453 72	Ø 22			
5453 73	Ø 28			

DIFFERENTIAL BY-PASS VALVE

tech. broch. 01007

Differential by-pass valve, adjustable with graduated scale. Max. working pressure: 10 bar. Working temperature range: 0–110 °C. Max. percentage of glycol: 30 %.

519

Threaded connections.

Code		Setting range m w.g.	
519 500	3/4"	1–6	
519 504	3/4"	10–40	
519 700	1 1/4"	1–6	
519 703	1 1/4"	5–25	

Connections with olive fitting for copper pipe.

Code		Setting range m w.g.	
519 002	Ø 22	1–6	

518 tech. broch. 01007 Differential by-pass valve, adjustable with graduated scale.

Max. working pressure: 10 bar. Working temperature range: 0–100 °C. Max. percentage of glycol: 30 %.

Threaded connections.

Code		Setting range m w.g.	
518 015	3/4" M	1–6	

518

tech. broch. 01410

Differential by-pass valve, adjustable with graduated scale. Max. working pressure: 10 bar. Working temperature range: 0–100 °C. Max. percentage of glycol: 30 %.

Threaded connections.

Code		Setting range m w.g.	
518 500	3/4"	1–6	

Connections with olive fitting for copper pipe.

Code		Setting range m w.g.	
518 002	Ø 22	1–6	

Differential by-pass valve application diagram

BALANCING VALVE WITH FLOW METER

Code Flow rate range (I/min) **132**512 3/4' 5-13 **132**522 3/4" 7–28 **132**602 1" 10-40 **132**702 1 1/4" 20-70 **132**802 1 1/2" 30-120

Application diagram

COMPACT AUTOMATIC CHARGING UNIT

580011

Automatic compact charging unit conforming to EN 1717 with BA for checking the backflow preventer and pressure reducing valve.

Code

580011 1/2"

tech. broch. 01361

type backflow preventer, shut-off valves, strainer, pressure test ports For horizontal or vertical

installation. Brass body With insulation.

Filling unit adjustment range: 0,8-4 bar.

Max. working pressure: 10 bar. Max. working temperature: 65 °C. Backflow preventer conforming to EN 12729

Pressure reducing valve to EN 1567. PATENT.

580010

Automatic compact charging unit conforming to EN 1717 with BA type backflow preventer, shut-off valves, strainer, pressure test ports for checking the backflow preventer and pressure reducing valve.

tech, broch, 01333

For horizontal or vertical installation.

Dezincification resistant alloy body ${f R}$. With insulation.

Filling unit adjustment range: 0,8-4 bar. Max. working pressure: 10 bar. Max. working temperature: 65 °C. Backflow preventer conforming to EN

Pressure reducing valve to standard EN 1567 PATENT PENDING.

Code

580010 1/2"

Reference standards for backflow protection

To avoid the backflow of water from the heating system, which is polluted and dangerous for human health, it is essential to install an automatic charging unit with a backflow preventer.

The correct use of hydraulic backflow preventers is governed by the European reference standard EN 1717: 2000 ("Protection against pollution of potable water in hydraulic installations and general requirements of devices to prevent pollution by backflow").

STAINLESS STEEL BUFFER TANK-HYDRAULIC SEPARATOR FOR HEAT PUMP

5485

tech. broch. 01406

tech. broch. 01406

Wall-mounted buffer tank-hydraulic separator for heat pump. In AISI 304 **stainless steel**. With highly effective PPE insulation.

Max. working pressure: 4 bar. Max. percentage of glycol: 30 %. Working temperature range: -10–95 °C (without the formation of ice).

Connections:

- (548515/520/525/530) 1" F. - (548550) 1 1/4" F.

Front probe holder connection: 1/4" F.

Code	Volume	Connections	
5485 15	15 litres	1" F	
5485 20	20 litres	1" F	
5485 25	25 litres	1" F	
5485 30	30 litres	1" F	
5485 50	50 litres	1 1/4" F	

5020 MINICAL®

Automatic air vent. In hot stamped brass. With hygroscopic safety cap. With insulation. Max. working pressure: 10 bar. Max. discharge pressure: 2.5 bar. Max. working temperature: 120 °C.

Code

502067 1" M

Connection fitting for air vent valve for 548550/548551

Code

Construction details

Material AISI 304 stainless steel

The 5485 series buffer tank-hydraulic separator is a higher quality product than traditional carbon steel types, and therefore helps to keep the thermal system clean.

It therefore reduces the number of problems caused by the impurities generated by corrosion and, as a result, minimises maintenance costs for the entire system.

Expanded PPE insulation

The highly effective expanded PPE insulation allows the heat pump to run efficiently in both heating and cooling modes.

The special boxy geometry makes the buffer tank-hydraulic separator extremely compact and visually attractive.

Front probe holder connection

The 1/4" probe holder connection can be used to measure the thermal medium temperature with temperature probes or measurement temperature gauges.

Sizing

The hydraulic separator should be sized in accordance with the maximum recommended flow rate value at the inlet. The selected value should be the sum of the primary circuit flow rates or the sum of the secondary circuit flow rates, whichever is greater.

On the other hand, the buffer tank-hydraulic separator volume depends on the minimum volume of water required by the heat pump manufacturer to guarantee proper machine operation even in defrosting phases. Generally, with more modern heat pumps, it can assume an average value calculated on the basis of the machine power, which varies from 2.5 to 3.5 litres/kWt.

Volume	Connections	Maximum flow rate	HP nominal power
15 I	1"	3,5 m ³ /h	2 5 1/1/4
201	1"	3,5 m ³ /h	S-S KVVL
25 I	1"	3,5 m ³ /h	6–8 kWt
30 I	1"	3,5 m ³ /h	9–12 kWt
50 I	1 1/4"	5,5 m ³ /h	13–25 kWt

STAINLESS STEEL BUFFER TANK-HYDRAULIC SEPARATOR FOR HYBRID SYSTEMS

Volume

50 litres

Connections 1 1/4" F

Code

548551

tech. broch. 01380

Buffer tank-hydraulic separator for hybrid systems, wall mounted. In AISI 304 **stainless steel**. With highly effective PPE insulation. Max. working pressure: 4 bar. Max. percentage of glycol: 30 %. Working temperature range: -10–95 °C (without the formation of ice). Connections: 1 1/4" F.

Front probe holder connection 1/4" F.

		Reg. EU No. 812/203 App. IV.2.1		
Code	Volume [litres]	Useful volume [litres]	Energy class (ErP)	Dispersion [W]
5485 15	15	15	А	16
5485 20	20	20	А	20
5485 25	25	25	A	22
5485 30	30	30	В	28
5485 50	50	49	A	27
5485 51	50	49	A	27

The 5485 series is designed for high energy efficiency.

Low losses ensure the buffer tank-hydraulic separator is in the best energy efficiency classes.

502067 1" M

Connection fitting for air vent valve for 548550/548551

Code

COMPOSITE INSTRUMENT HOLDER

Code **305**503

305 Composite instrument holder for heating systems. Supplied with air vent, composite safety relief valve and pressure gauge. With insulation. Working temperature range: 5-90 °C. Up to 50 kW.

3/4"

3 bar TÜV

305

Composite instrument holder for heating systems. Supplied with an air vent, composite safety relief valve, pressure gauge, automatic shut-off cock for expansion vessels and mounting brackets. With insulation.

Working temperature range: 5–90 °C. Up to 50 kW.

Code			
305 663	1"	3 bar TÜV	

305

Composite instrument holder for heating systems.

Supplied with a composite air vent, safety relief valve and pressure gauge.

With insulation. Working temperature range: 5-90 °C. Up to 50 kW.

Code	
305 671	1" 1,8 bar
305 673	1"3 bar NF
305 674	1" 4 bar with insulation

Application diagrams for 305 series instrument holder

CHANGEOVER AND DISTRIBUTION UNIT RADIANT PANEL/FAN-COIL SYSTEM

664

tech. broch. 01417

Changeover and distribution unit for radiant panel/fan-coil system, pre-assembled in box.

- Complete with:
- distribution manifolds for radiant panel systems with flow meters and shut-off valves, insulated,
- distribution manifolds for fan-coil systems with lockshield valves for preset flow rate and shut-off valves, insulated,
- three-way diverter valve with three-point control, complete with insulation and anti-condensation spacer,
- check valve kit,
- box.
- Max. working pressure: 6 bar.

Maximum working temperature: 5–60 °C. Electric supply: 230 V - 50/60 Hz.

Changeover and distribution unit dimensions for radiant panel/fan-coil systems

COMPONENTS FOR GEOTHERMAL HEAT PUMP SYSTEMS

In circuits with a **geothermal heat pump** the thermal medium is generally a mixture of water and antifreeze fluid, as the temperatures can be extremely low. The components are made using high-performance materials for this type of application.

The heat in the ground

The ground contains a large amount of heat from two sources: one external and one internal.

The external source is mostly due to the sun and rain: in practice, the only significant sources up to 15 metres deep. This is the heat used by the shallow exchangers (for example, horizontal geothermal probes).

Heat from inside is generated by the nuclear decay of radioactive substances in substratum rocks: in practice, the only source that keeps the soil warm at a depth of more than 20 m.

Heat from a depth of 20 m and beyond is utilised by vertical geothermal probes.

Geothermal system components

Usually, geothermal probes are connected to the system via a manifold fitted with balancing valves: in fact, system balancing is necessary to guarantee proper heat exchange in the ground.

It is advisable to install all safety and control devices, normally used in closed circuit systems, between the geothermal manifold and the heat pump, to guarantee proper system and machine operation.

Horizontal geothermal probe systems

Heat pump systems with horizontal probes use the heat stored in the layers of the earth nearest to the surface (up to a depth of 15 m); this heat comes primarily from the sun and rain. For this reason horizontal probes withstand fluctuations in surface temperature better and, to be installed, they need large areas clear of constructions, paving or vegetation that can prevent heat reaching the ground.

Vertical geothermal probe systems

Systems with vertical ground source probes are based on the fact that, below a depth of 20 m, the temperature of the subsoil is constant and no longer depends on daily or seasonal temperature changes: below 20 m, the temperature of the ground increases by approximately 3 °C every 100 m in depth.

PRE-ASSEMBLED GEOTHERMAL MANIFOLD

110

tech. broch. 01221

Pre-assembled geothermal manifold. Consisting of:

- automatic air vents
- temperature gauges Ø 80 mm
- filler/drain cocks
- composite flow and return manifolds
- end fitting caps with insulation
- stainless steel wall mounting brackets
- set of labels for flow direction and circuit identification - wall mounting wall anchors.

Max. working pressure: 6 bar. Max. system test pressure: 10 bar. Working temperature range: -10-60 °C. Ambient temperature range: -20-60 °C. Medium: water, glycol solutions, saline solutions. Max. percentage of glycol: 50 %. Manifold DN 50. Max. flow rate: 7 m³/h. Outlet centre distance: 100 mm. Outlet connection with mechanical seal for 112 series balancing valves.

Code			Outlet connection	
110 7B5	2 circuits	1 1/4"	42 p.2,5 TR.	
110 7C5	3 circuits	1 1/4"	42 p.2,5 TR.	
110 7D5	4 circuits	1 1/4"	42 p.2,5 TR.	
1107E5	5 circuits	1 1/4"	42 p.2,5 TR.	
110 7F5	6 circuits	1 1/4"	42 p.2,5 TR.	
110 7G5	7 circuits	1 1/4"	42 p.2,5 TR.	
110 7H5	8 circuits	1 1/4"	42 p.2,5 TR.	

For more than 8 outlet circuits, see the modular manifold.

MODULAR GEOTHERMAL MANIFOLD

110

Modular manifold single module in composite. Max. working pressure: 6 bar. Max. system test pressure: 10 bar. Working temperature range: -10-60 °C. Ambient temperature range: -20-60 °C. Medium: water, glycol solutions, saline solutions. Max. percentage of glycol: 50 %. Manifold DN 50. Outlet connection with mechanical seal for 112 series balancing valves.

Code	Outlet connection
110 700	42 p.2,5 TR.

Code

110

tech. broch. 01221

tech. broch. 01221

Stainless steel tie-rods for assembling modular manifolds. M8 threaded stainless steel bar.

0000	
110 012	for manifold with 2 circuits
110 013	for manifold with 3 circuits
110 014	for manifold with 4 circuits
110 015	for manifold with 5 circuits
110 016	for manifold with 6 circuits
110 017	for manifold with 7 circuits
110 018	for manifold with 8 circuits
110 019	for manifold with 9 circuits
110 020	for manifold with 10 circuits
110 021	for manifold with 11 circuits
110 022	for manifold with 12 circuits

110

Assembly kit for modular manifolds.

- Consisting of:
- brass end fitting with automatic air vent, filler/drain cock; - brass head plug;
- pre-formed shell insulation;
- screws and bolts for rods and bracketing;
- set of labels for flow direction and circuit identification;
- temperature gauge with pocket (-30-50 °C);
- 2 sealing gaskets.

Max. working pressure: 6 bar. Max. system test pressure: 10 bar. Working temperature range: -10-60 °C. Ambient temperature range: -20-60 °C. Medium: water, glycol solutions, saline solutions. Max. percentage of glycol: 50 %. Connections: 1 1/4" F.

1 1/4" F **110**750

110

tech. broch. 01221

tech. broch. 01221

Pair of stainless steel mounting brackets to secure modular manifolds. Rapid wall coupling system. Rapid coupling system for the manifold and mounting brackets. Complete with screws and wall anchors.

Code

40

110001

SHUT-OFF AND BALANCING DEVICE

Code

112621

112631

112641

112 tech. broch. 01235 Balancing valve with flow meter. Complete with fitting for polyethylene pipe. Direct reading of flow rate. Ball valve for flow rate adjustment. Graduated scale flow meter with magnetic movement flow rate indicator. Brass valve body and flow meter. Manifold connection: female connection with captive nut 42 p.2,5 TR. Max. working pressure: 10 bar. Working temperature range: -10-40 °C. Ambient temperature range: -20-60 °C. Medium: water, glycol solutions, saline solutions. Max. percentage of glycol: 50 %. Accuracy: ±10 %.

871

Ball valve complete with fitting for polyethylene pipe. Brass body. Manifold connection: female connection with captive nut 42 p.2,5 TR.

Max. working pressure: 16 bar. Working temperature range: -10-40 °C. Ambient temperature range: -20-60 °C. Medium: water, glycol solutions, saline solutions.

Max. percentage of glycol: 50 %.

Code	Connection	
871 025	42 p.2,5 TR x Ø 25	
871 032	42 p.2,5 TR x Ø 32	
871 040	42 p.2,5 TR x Ø 40	

110 Union with sealing gasket. Max. working pressure: 16 bar. Max. working temperature: 40 °C.

Code	Connection	
110 050	42 p.2,5 TR x 3/4"	
110 060	42 p.2,5 TR x 1"	

The use of a flow meter makes the system balancing process significantly easier, as the flow rate can be measured and checked at any time and differential pressure gauges or reference charts are not required.

Connection

42 p.2,5 TR x Ø 25

42 p.2,5 TR x Ø 32

42 p.2,5 TR x Ø 40

112 tech. broch. 01235

Scale (m³/h)

0.3-1.2

0.3-1.2

0.3-1.2

Insulation for balancing valves. Material: closed cell expanded PE-X. Thickness: 10 mm. Density: int. part 30 kg/m³, ext. part: 80 kg/m³. Thermal conductivity (DIN 52612): at 0 °C: 0,038 W/(m·K); at 40 °C: 0.045 W/(m·K). Coefficient of resistance to water vapour (DIN 52615): > 1,300 Working temperature range: 0-100 °C. Reaction to fire (DIN 4102): class B2.

Code	Use	
112 001	Ø 25 - Ø 32	
112 003	Ø 40	

COMPONENTS FOR BIOMASS SYSTEMS

Biomass

Biomass is "the biodegradable fraction of products, waste and residues of biological origin from agriculture (including plant and animal substances), forestry and related industries (including fisheries and aquaculture), as well as the biodegradable fraction of industrial and municipal waste". Biomass can be in the form of a solid, liquid or gas. This range of Caleffi products has been specifically designed for **wood-based solid biomass** (solid fuel) systems.

Solid fuel generators

Solid fuel generators can be classified in two macro-categories:

1) **Boilers:** generators "for solid fuels, stoked manually and automatically", for installation in specific technical areas. Heating takes place via a plumbing connection to the heating system.

2) **Residential devices**: "solid fuel burning heating appliances with builtin boiler, not exceeding a total nominal heat output of 35 kW", installed directly inside the home. Manually or automatically stoked. Heating takes place via air and water circulation, with a plumbing connection to the heating system. Residential devices can be classified in three types: - Fireplace heating systems

- Thermostoves
- Thermocookers

The generators are further divided according to their fuel stoking system: **Manual stoking**, typically used in log-burning generators, requires an operator to put the blocks of wood into the generator stoking compartment.

Automatic stoking refers to the last device conveying the fuel (for example pellets or woodchips) from the storage tank to the combustion chamber.

Manually and automatically stoked boiler

Manually and automatically stoked residential device

Reference standards

The standards classify systems according to the expansion system (open or closed vessel) and according to the system for stoking fuel in the generator, manually (logs) or automatically (pellets, woodchips etc.).

Generator	Power	Manufacturing standard	System standard
Boiler	Up to 500 kW	UNI EN 303-5 (2012)	UNI EN 12828 (2014) Europe
Boiler	< 35 kW		UNI EN 12828 (2014) Italy
Boiler	> 35 kW		Collection R I.S.P.E.S.L. (2009) Italy
Residential	Up to 35 kW	UNI EN 16510 (2019) UNI EN 14785 (2006)	UNI 10412-2 (2009) Italy

We have provided some significant examples of open and closed vessel systems created in accordance with applicable standards

Devices in black: compulsory according to regulations. Devices in a square or in pink: optional or to be provided as an alternative according to regulations.

Collection R I.S.P.E.S.L. (2009): Applicatory technical specifications of Title II of Italian Ministerial Decree DM 1.12.75 in accordance with art. 26 of the decree. (P>35 kW for Italy). Manually and automatically stoked. Open vessel.

UNI 10412-2 (2009): Hot water heating systems - Safety requirements.

Part 2: Specific requirements for systems with residential solid fuel burning heating appliances with built-in boiler, not exceeding a total nominal heat output of 35 kW. Automatically stoked. Closed vessel.

UNI EN 303-5 (2012): Boilers for solid fuels, stoked manually and automatically, with nominal power up to 500 kW. Closed vessel.

Collection R I.S.P.E.S.L. (2009): Applicatory technical specifications of Title II of Italian Ministerial Decree DM 1.12.75 in accordance with art. 26 of the decree. (P>35 kW for Italy). Manually (up to 100 kW) and automatically stoked. Closed vessel.

UNI 10412-2 (2009): Hot water heating systems - Safety requirements.

Part 2: Specific requirements for systems with residential solid fuel burning heating appliances with built-in boiler, not exceeding a total nominal heat output of 35 kW. Manually stoked. Closed vessel.

The CALEFFI BIOMASS[®] product series was created specifically for use in circuits of systems with non-pulverised wood-based solid fuel generators, operating at high temperature with water or glycol solutions as the thermal medium. The materials used to make the components and their performance levels take account of the specific system requirements in terms of the efficiency and safety of the generators and systems.

System with solid fuel generator and inertial storage

Production takes place through a solid fuel generator with manual or automatic stoking.

The heating medium distribution zone essentially consists of an inertial tank and an anti-condensation recirculation and distribution unit connecting the generator to the system used. The recirculation unit controls the return temperature to the generator to avoid condensation, by means of the built-in thermostatic sensor. Three typical operating situations may occur:

- biomass boiler on and distribution circulator off: the heat produced by the wood-fired boiler brings the water storage tank to temperature;
- biomass boiler on and distribution circulator on: the heat produced by the wood-fired boiler is conveyed to the distribution system;
- biomass boiler off and distribution circulator on: the distribution system utilises the heat stored previously in the water storage tank.

The temperature of the water supplied to the terminals can be regulated with a climatic curve.

System with solid fuel generator and compact connection and energy management unit

Production takes place through a solid fuel generator with manual or automatic stoking, with open or closed vessel. Using this unit allows:

- connection of new solid fuel generators to existing systems with a boiler (boilers and residential devices, with maximum heat output of 35 kW, both with open or closed vessel);
- hydraulic separation of the mediums of the two generators as described in INAIL (Ex ISPESL (Italy));
- simple and automatic management of operating priority between the solid fuel generator and the boiler;
- management of the solid fuel generator with built-in anti-condensation system (optional);
- installation of a compact system, with plumbing connection facility.

SAFETY DEVICES

Code Settina **542**870 1 1/2" M x 1 1/4" F 98 °C 1 1/2" M x 1 1/2" F **542**880 99 °C

Function

The temperature relief valve discharges the system water on reaching the setting temperature. Featuring positive action. It can be used with non-pulverized solid fuel generators with open or closed vessel in accordance with current legislation.

Normative references INAIL (Ex **ISPESL** (Italy))

According to the provisions of Collection Ed. 2009, regarding R "central heating systems using hot water with temperatures no greater than 110 °C and a maximum nominal heat output greater than 35 kW", a temperature relief valve must be used in the following cases:

Open vessel systems

- Systems with heat generators stoked with non-pulverized solid fuel, in place of the consumption water heater or emergency exchanger (ch. R.3.C., point 2.1, letter i2).

Closed vessel systems

- Thermal systems with generators stoked with non-pulverized solid fuels up to a nominal heat output of 100 kW with partial cut-off in place of the residual power dissipation device (ch. R.3.C., point 3.2).

Function

The temperature safety relief valve limits the water temperature in solid fuel generators equipped with a built-in storage or emergency heat exchanger (for instant cooling). reaching the setting On temperature, the valve opens the flow of mains water through the

emergency exchanger or built-in storage unit, so as to draw off the excess heat and thereby lower the temperature of the system water contained in the generator jacket.

Normative references

303-5.

Its application is specified by INAIL (Ex ISPESL (Italy)) regulations, Collection R Ed. 2009, chapter

R.3.C., point 2.1, letter i2; point 3.1, letter i; point 3.3. The valve complies with EN 14597 and can be combined with solid fuel generators with a heat output of less than 100 kW, used according to the system provisions of standards EN 12828, UNI 10412-2 and EN

mm

46

SAFETY DEVICES

Code		Setting
544 400	1/2" F	100 °C

Function

On reaching the setting temperature, the temperature relief valve discharges the water of the system with a solid fuel generator.

The device incorporates, in a single unit, a temperature relief valve with positive safety remote sensor and a filling valve. The discharge of water makes it possible to limit the system water temperature, while the filling inlet allows replacement of the discharged flow rate.

Normative references

Used in generators which do not have an emergency heat exchanger and for heat outputs < 35 kW (Italy).

544

Temperature relief valve with automatic filling for solid fuel generators, with manual purge knob.

Max. working pressure: 6 bar. Max. working temperature: 120 °C. Setting temperature: 100 °C (0/-5 °C). Discharge flow rate at Δp 1 bar and T=110 °C: 1800 l/h.

Code		Setting	
544 501	3/4"	100 °C	

Function

The device incorporates, in a single unit, a temperature relief valve and a filling valve which work simultaneously via a built-in sensor on the valve body. On reaching the setting value, the valve opens the discharge outlet to remove excess heat and, at the same time, opens the filling inlet to replace the flow of water discharged from the system.

Normative references

Used in generators which do not have an emergency heat exchanger and for heat outputs < 35 kW (Italy).

Code

529050

529151

529

Draught regulating valve, male threaded connection. Adjustment range: 30–90 °C. **Certified to standard EN 14597**.

tech. broch. 01226

	Pocket L (mm)	
3/4" M ISO 7/1	58	
	3/4" M ISO 7/1	Pocket L (mm) 3/4" M ISO 7/1 58

Function

The draught regulating valve, installed on board the solid fuel generator with the thermostatic element immersed in the medium, automatically regulates the comburent air flow rate, thus helping to achieve more uniform and complete combustion.

ANTI-CONDENSATION VALVE

280 tech. broch. 01223

Anti-condensation valve with thermostatic control of the return temperature to solid fuel generators. Brass body.

Male pipe union connections. Max. percentage of glycol: 50 %. Max. working pressure: 10 bar. Working temperature range: 5–100 °C. Settings (Tset): 45 °C, 55 °C, 60 °C, 70 °C.

Setting accuracy: ±2 °C. By-pass complete closing temperature: Tmix = Tset + 10 °C = Tr.

Code	DN	Connection	Kv (m³/h)	Max. recommended power	
280 05.	20	3/4"	3,2	10 kW	
280 26 . *	20	1"	3.2*	10 kW	
280 06.	25	1"	9	35 kW	
280 07.	32	1 1/4"	12	45 kW	

(*) Choosing a valve

The valve should be chosen based on the Kv value (to which the DN size of the body corresponds) and not based only on the threaded connections.

Given the system flow rate, the corresponding pressure drops on the valve should be calculated using the Kv value. The sum of pressure drops at the valve and those for the rest of the system should be compatible with the available head for the generator pump.

Code completion

Settings	45 °C	55 °C	60 °C	70 °C
•	4	5	6	7

Spare thermostat for anticondensation valve.

Code	Setting	Use	
F29629	45 °C	code 28005. / 28026	5.
F29630	55 °C	code 28005. / 28026	5.
F29631	60 °C	code 28005. / 28026	5 .
F29632	70 °C	code 28005. / 28026	6.
F29633*	45 °C	code 28006. / 2800	7.
F29634*	55 °C	code 28006. / 2800	7.
F29635*	60 °C	code 28006. / 2800	7.
F29636*	70 °C	code 28006. / 2800	7.

* Use also for 281, 282, 2850, 2851, 2853, 2855 series

Thermostat replacement to modify setting

The adjustment sensor can easily be removed for maintenance or to change the setting.

Installation

The valve can be fitted on both sides of the generator in any position, vertical or horizontal.

Installation is recommended on the return to the generator in mixing mode; it is also permitted on the flow from the generator in diverter mode.

Function

The anti-condensation valve, used in heating systems with a solid fuel generator, automatically regulates at the setting value the temperature of the water returning to the generator.

Keeping the generator at a high temperature **prevents condensation** of the water vapour contained in the flue gas.

Condensation produces tarry deposits that, accumulating on the metal surfaces of the flue gas-system water exchanger, cause corrosion, reduce the thermal efficiency of the flue gas-system water exchanger and are a source of danger for the flues as they are flammable.

The anti-condensation valve extends the life of the generator and ensures greater efficiency.

Characteristic components

- 1) Thermostatic sensor
- 2) Obturator
- 3) Spring

4) Plug 5) Valve body

Installation in mixing mode (anti-condensation)

Operating principle

The thermostat, completely immersed in the medium, controls the movement of an obturator that regulates the flows in by-pass and towards the system. On starting up the heat generator, the anti-condensation valve recirculates the flow water so as to bring the generator up to temperature as quickly as possible (1). When the flow temperature Tf exceeds the setting of the anti-condensation valve Tset, the cold port of the valve starts to open in order to carry out mixing Tmix: in this phase system filling begins (fig. 2). When the return temperature to the generator Tmix is greater than the setting of the anti-condensation valve by approximately 10 °C, the by-pass port closes and water returns to the generator at the same temperature as the system return (3 and 4).

Tf = Flow temperature Tset = Anti-condensation setting temperature

Tmix = Mixed water return temperature to generator Tr = System return temperature

Application diagram

System with inertial storage

ANTI-CONDENSATION RECIRCULATION AND DISTRIBUTION UNIT

281

tech. broch. 01224

Anti-condensation recirculation and distribution unit, with thermostatic control of the return temperature to solid fuel generators. Brass body. **With insulation.**

Female connections with union. Medium: water, glycol solutions. Max. percentage of glycol: 50 %. Working temperature range: 5–100 °C. Max. working pressure: 10 bar. Max. recommended flow rate: 2 m³/h. Temperature gauge scale: 0–120 °C.

Anti-condensation valve

Working temperature range: 5–100 °C. Settings T(set): 45 °C, 55 °C, 60 °C, 70 °C. Setting accuracy: ± 2 °C. By-pass complete closing temperature: Tmix = Tset + 10 °C = Tr.

Pump

High-efficiency pump WILO PARA MS/7

CE

Code	DN	Connection	Pump	
28106.WYP	25	1" F	WILO PARA MS/7	
28107.WYP	25	1 1/4" F	WILO PARA MS/7	

Choosing the unit

The unit should be chosen based on the available head, which depends on the DN, and not based only on the threaded connections. When the system pressure drops are known, the available head for the unit pump appears.

Spare part for 281 series

Code

F29806 rotor only for 281 series unit

Code completion

Settings	45 °C	55 °C	60 °C	70 °C
•	4	5	6	7

Function

The anti-condensation recirculation and distribution unit enables the connection of the solid fuel generator to the user system (direct or with inertial storage). It controls the return temperature to the generator to avoid condensation, by means of the built-in thermostatic sensor.

Characteristic components

- 1) Anti-condensation thermostatic sensor
- 2) High-efficiency pump
- 3) Natural circulation clapet valve
- 4) Union with built-in ball valve

5) Temperature gauge housing

6) Insulation

Construction details

Single casting and reversibility

The compact brass single casting, that houses the pump and functional components, enables immediate installation of the device, either on the right or left of the solid fuel generator, respecting the flow directions as shown. The temperature gauges can be extracted from the housings and re-inserted in the same position on the back side of the unit.

Anti-condensation valve

This device incorporates a thermostatic sensor to control the temperature of the water returning to the solid fuel generator so as to prevent condensation. The sensor has been specifically realised to be removed from the valve body for maintenance or replacement if necessary.

Natural circulation clapet valve

The function of this clapet device is to ensure natural circulation of the medium in the event of pump stop due to an electrical power failure. When the pump is active, the thrust of the medium keeps the valve closed, forcing the water to flow through the anti-condensation thermostatic valve. In the event of pump stop, when the water within the generator is at high temperature, a natural

circulation of the water begins, by-passing the anti-condensation valve, thus preventing the temperature in the generator from reaching dangerous high levels. The unit is supplied with the natural circulation valve locked. To enable the function, remove the locking screw.

COMPACT CONNECTION AND ENERGY MANAGEMENT UNIT (heating version)

2850

tech. broch. 01259

Compact unit for connection and energy management. Threaded female connections. Primary side connection: 1" F. Connection on system secondary side: 1" F. Connection on boiler secondary side: 3/4" F. Medium: water, glycol solutions. Max. percentage of glycol: 30 %. Working temperature range: 5–100 °C. Max. working pressure: 10 bar. Max. heat exchanger net output: 35 kW. Maximum recommended primary circuit flow rate: 1,7 m³/h. Maximum recommended secondary circuit flow rate: 1,7 m³/h. Anti-condensation valve setting temperature (Tset): 55 °C. Setting accuracy: ± 2 °C.

By-pass complete closing temperature: Tmix = Tset+10 $^{\circ}$ C = Tr.

Regulator: Pump:

Electric supply: 230 V - 50/60 Hz. Primary circuit: high-efficiency pump PARA MS/7. Secondary circuit: high-efficiency variable speed pump PARA 15/7.

Code	Connection	Prim. circ. pump	
285060HE2	1"	PARA MS/7	without anti-cond. valve
285065HE2	1"	PARA MS/7	

Code	Connection	
285065HE3	1"	without prim. circ. pump and regulator

Function

Main functional features:

- connection of new solid fuel generators to existing systems (boilers and residential devices, with maximum heat output of 35 kW both with open or closed vessel);
- option of not adding the power outputs of the two generators as described in INAIL (Ex ISPESL (Italy));
- simple automatic management of operating priority between the solid fuel generator and the boiler;
- built-in anti-condensation system (optional) for solid fuel generator;
- compact system with hydraulic connection facility.

Characteristic components

- 1) Single casting unit with PARA MS/7 pump, complete with anticondensation valve (optional), primary side
- 2) PARA 15/7 pump, secondary side (system)
- 3) Brazed plate heat exchanger
- 4) Digital regulator
- 5) Shut-off valves
- 6) Support plate. Dimensions (h x b): 334 x 684 mm.
- 7) Check valve
- 8) Manual air vent
- 9) Temperature gauge

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