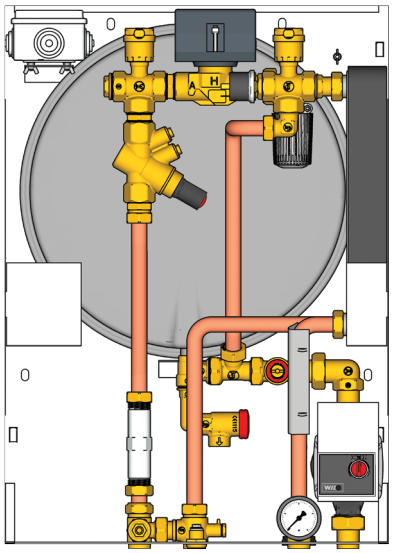
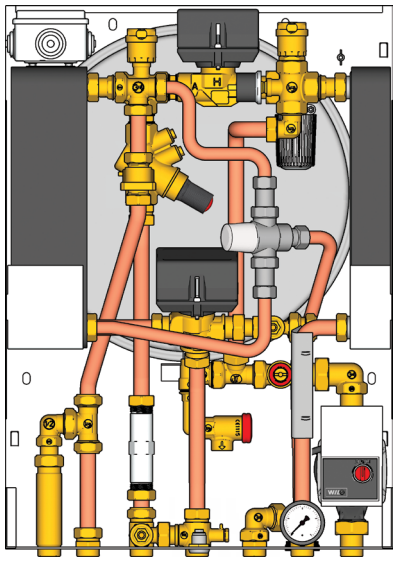
GE556Y171 - Y172 - Y173 (GE556-1 SERIES)

WITH DOUBLE HEAT EXCHANGER IN PARALLEL CONFIGURATION



GE556Y171



GE556Y172 - GE552Y173

Figure 1 - GE556-1

Versions and product codes

Product code	Type	Heat exchanger nominal power [kW]		Jig with valves
		Heating	SHW	
GE556Y171	Heating	17,4	-	GE551Y081 GE551Y083
GE556Y172	Heating and SHW production	17,4	56	GE551Y082 GE551Y084
GE556Y173	Heating and SHW production	17,4	67	GE551Y082 GE551Y084

Table 1 - Product codes

Main features

- Painted (RAL9010) steel cabinet, for external installation, with key lock.
- Double heat exchanger configuration in parallel (except GE556Y171): priority on the production of sanitary hot water with respect to the heating function.
- Heating handling with controlled temperature.
- Spacers for the meters.
- Expansion vessel, safety valve and high efficiency circulator (15/6), all comply with ErP Directive (2009/125/CE).
- Motorised zone valve for heating.
- 3/4" connections.
- Dynamic balancing valve, R206A series.
- WRAS certified components for the sanitary hot water circuit.

Technical data

- Max. working temperature of the primary circuit and secondary circuits (heating and SHW): 90 °C
- Max. working pressure of the primary circuit and secondary SHW: 16 bar.

Warning.
Maximum differential pressure for the primary side = 4 bar (due to the priority valve)

- Maximum working pressure of the heating secondary circuit: 3 bar (safety valve setting)
- Nominal primary flow:
  670 l/h @ 80 °C for 17,4 kW (GE556Y171)
  975 l/h @ 80 °C for 56 kW (GE556Y172)
  970 l/h @ 80 °C for 67 kW (GE556Y173)

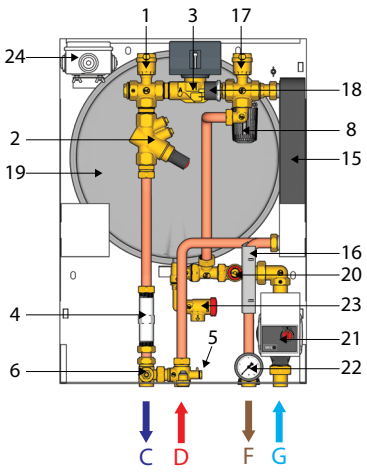
Description

GE556 series is composed of heat interface units for heating and SHW (Sanitary Hot Water) production; they are fed by means of hot water from centralised boiler plant (e.g. district heating).
The present version uses a configuration of **two heat exchangers in parallel** (except GE556Y171), this has two principal advantages:

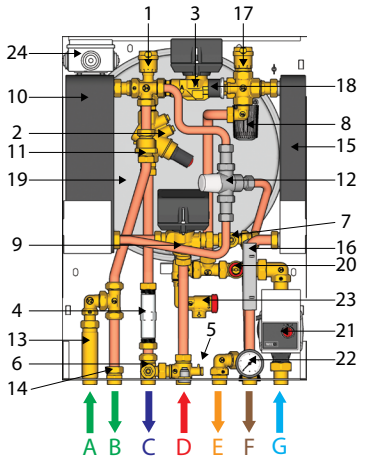
- Parallel and non-intermittent handling of the sanitary hot water and heating functions.
- Higher safety, the heating circuit is a sealed pressurised system should there be any leaks within property only a small amount of water will be discharged.

The adopted configuration is an innovative variant with the use of thermostatic actuators, and an automatic balancing of the primary flow particularly practical and reliable, as can be seen from the following data.

Components



GE556Y171



GE556Y172
GE556Y173

Legenda		
1	Automatic air vent	PRIMARY
2	Dynamic balancing valve	
3	Motorised heating 2 way zone valve	
4	Spacer pipe for energy meter	
5	Temperature probe housing for energy meter	
6	Primary by-pass	
7	Lockshield valve for heating	
8	Thermostatic head R462L for temperature control of heating	
9	Priority valve for sanitary hot water function	
10	Heat exchanger, sanitary hot water function	SHW PRODUCTION
11	Flow switch	
12	TMV2 & TMV3 thermostatic mixing valve	
13	Spacer pipe for sanitary hot water meter	
14	Check valve	
15	Heat exchanger, heating function	RISCALDA-MENTO
16	Sensor of thermostatic head R462L	
17	Automatic air vent	
18	Automatic air vent	
19	Expansion vessel	
20	Ball valve for circulator maintenance	
21	High efficiency circulator	
22	Manometer	
23	Safety valve	
24	Electric box	CONTROLLI

A: Cold water inlet
B: Cold water outlet
C: Primary outlet
D: Primary inlet
E: Hot water outlet
F: Heating outlet
G: Heating inlet

Figure 2 – components

Optional components

On each satellites, it is possible to install the following optional components:

- Energy meter (M-Bus): product code GE552Y159

Respect the flow direction in figure 5. The flow temperature sensor of energy meter has to be installed into the appropriate housing (fig.2-5).

- Sanitary hot water meter (M-Bus): product code GE552Y190

Respect the flow direction in figure 5.

- Insulation in expanded PEx: product code GE551Y180
- Jig with valves and 3/4" connections: GE551Y081 & GE551Y082 (table1 and fig.3)
- Jig with valves, filters and Ø 22 mm connections: GE551Y083 & GE551Y084 (table 1 and fig. 3 & 4)

Warning.
The installation should be undertaken by suitably qualified and authorised personnel only.
Observe the EU norms and regulations concerning the use (installation, fixing, etc.), the operation, the recalibration and the replacement the meters.
Please refer to the assembly instructions supplied with any meter.

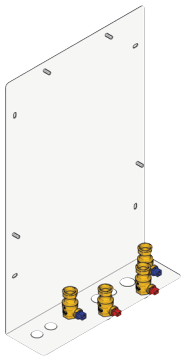
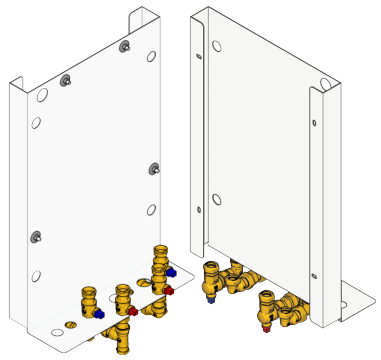
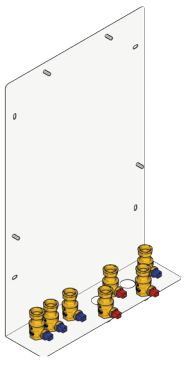
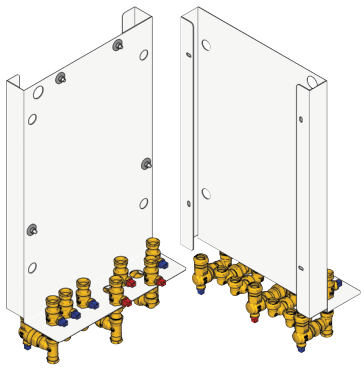
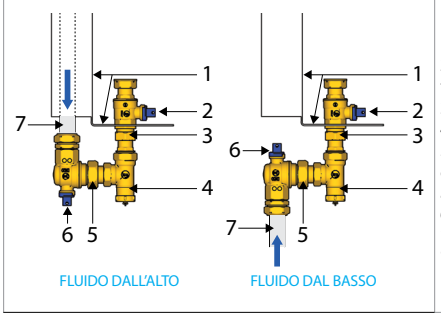
GE551Y081 JIG WITH 4 VALVES	GE551Y083 - JIG WITH 4 VALVES (possibility of connections from above)
	
GE551Y082 JIG WITH 7 VALVES	**GE551Y084 - JIG WITH 7 VALVES (possibility of connections from above)**
	

Figure 3 – type of jigs

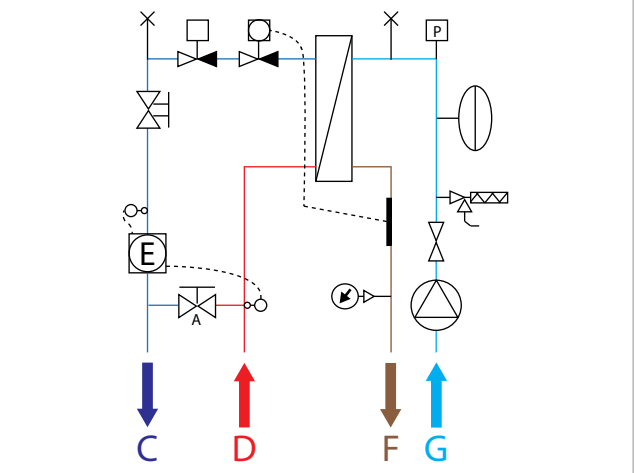
JIGS COMPONENTS GE551Y083, GE551Y084



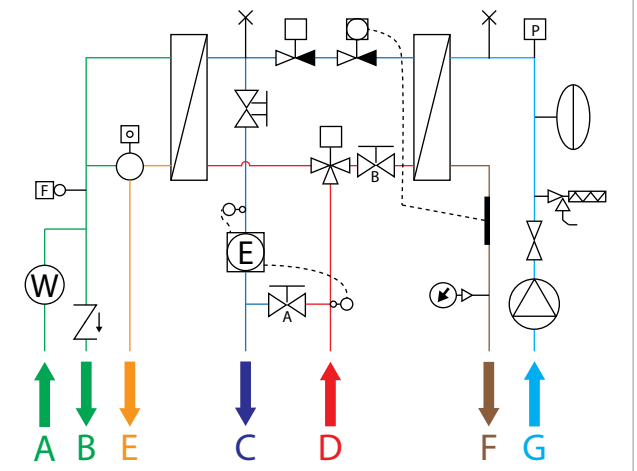
1. Metallic frame
2. Ball valve to isolate the unit
3. Filter
4. Dirt separator
5. Joint that allows the connection from above and from below
6. Ball valve to allow the inspection of the filter
7. System pipes, Ø 22 mm

Figure 4 - Jig components

Operation



GE556Y171



GE556Y172 - GE556Y173

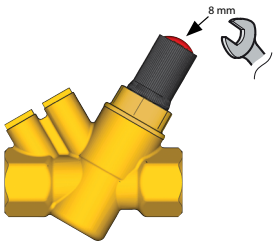
Legend			
	Automatic air vent		Heat exchanger
	Dynamic balancing valve	F	Flow switch
	Motorised 2 way zone valve		Manual air vent and discharge
E	Spacer for energy meter		Manometer
	Temperature probe housing for energy meter		TMV2 & TMV3 thermostatic mixing valve
A	Primary by-pass	B	Heating lockshield valve
	Priority valve	W	Spacer for sanitary cold water meter
P	Pressure switch		Sensor of thermostatic head R462L
	Ball valve for circulator maintenance		Expansion vessel
	Thermostatic head R462L		High efficiency circulator
	Check valve		Safety valve
A: Cold water inlet B: Cold water outlet C: Primary outlet D: Primary inlet		E: Hot water outlet F: Heating outlet G: Heating inlet	

Figure 5 – Operating scheme

SHW: cold inlet (fig.2-A), cold outlet (fig.2-B), hot outlet (fig.2-E). In place of the brass spacer (fig.2-12) a sanitary hot water meter can be installed. A TMV2+TMV3 thermostatic mixing valve regulates the temperature of SHW (Sanitary Hot Water).

HEATING: inlet (fig.2-G) and outlet (fig.2-F). The circuit is simply composed of the heat exchanger and a circulator. As it deals with a closed circuit, the equipment is completed by: expansion vessel, safety valve, and manometer. For the heating provide for a filing system, that is a connection from the sanitary to the heating, with an appropriate backflow preventer.

PRIMARY: inlet (fig.2-D) and return (fig.2-C). The energy meter can be installed in place of the spacer (fig.2-4) by installing the inlet temperature probe in the appropriate housing (fig.2-5). For GE556Y171, the primary circuit operates only for the heating circuit; the primary circuit is composed of a dynamic balancing valve, an automatic air vent, a heat exchanger and a thermostatic valve with remote sensor that regulates the power for the heating circuit. The zone valve can control the heating by means of a thermostat (not supplied). For GE556Y172-173, the primary circuit is divided into two sides: one is for the heating handling (similar to the one described above), the other is for the production of SHW. If the SHW flow switch is activated (by a SHW request), the priority valve closes the heating side and gives power to the SHW production side.



R206AY014 dynamic balancing valve (3/4") - Δp: 30-400 kPa		
l / sec	l / h	Setting
0.113	406	1.0
0.119	427	1.1
0.125	449	1.2
0.131	470	1.3
0.137	492	1.4
0.143	513	1.5
0.149	535	1.6
0.155	556	1.7
0.161	578	1.8
0.167	599	1.9
0.172	621	2.0
0.178	642	2.1
0.184	664	2.2
0.190	685	2.3
0.196	707	2.4
0.202	728	2.5
0.208	750	2.6
0.214	771	2.7
0.220	793	2.8
0.226	814	2.9
0.232	836	3.0
0.238	857	3.1
0.244	879	3.2
0.250	900	3.3
0.256	922	3.4
0.262	943	3.5
0.268	965	3.6
0.274	987	3.7
0.280	1010	3.8
0.286	1030	3.9
0.292	1050	4.0
0.298	1070	4.1
0.304	1090	4.2
0.310	1120	4.3
0.316	1140	4.4
0.322	1160	4.5
0.328	1180	4.6
0.334	1200	4.7
0.340	1220	4.8
0.346	1240	4.9
0.352	1270	5.0

Table 2 – R206A regulation

Protection and safety systems

Warning.
Danger of burns and electric shocks. Access to the HIU should be by suitably qualified and authorised personnel only.

It is important that the access to the HIU is made only by suitably qualified and authorised personnel: the cabinets are provided with key locking.

Controls and maintenance

Heating circuit pressure

Periodically inspect the pressure of the heating circuit by using the pressure gauge (fig.2-21): the pressure value must be maintained over 1 bar (pressure values under 1 bar can damage the circulator by cavitation).
A pressure switch with 0,8 bar settings is provide to protect the circulator.

Warning.
Circulator stops if the pressure is below 0,8 bar due to the pressure switch device. Please, refill the system to restart the circulator.

A filling loop is provided and must be fitted between the cold feed and heating flow (the HIU has no internal filling loop); during filling be aware that the safety valve will activate at 3 bar (fig.2-22): Warning: danger of burns.
In order to eliminate the air in the heating circuit, use the air vent (fig.2-1 and fig.2-16).

Safety valve

Periodically operate the manual handwheel of the safety valve (fig.2-21).
Be careful the discharge of water may be hot. Warning: danger of burns.

Adjustments

Sanitary hot water temperature

Adjust the temperature of the sanitary hot water using the thermostatic mixing valve (fig.2-11).
Ensure that the valve is commissioned under normal system conditions. The valve must be commissioned to suit site conditions and the desired outlet temperature set by the installer.
• With normal supply conditions established and the hot and cold water supplies running, open the outlet and leave running.
• Remove the cap and release the locking nut from the temperature spindle.
• Using an 8 mm allen key rotate the temperature adjustment spindle anticlockwise to increase the mixed water temperature or clockwise to reduce the mixed water temperature - at all times ensuring the probe of the thermostat is under the flowing water.
• The use of a digital thermostat when setting the valve is recommended, once the desired outlet temperature is reached, re-fit the locking nut to the temperature spindle to prevent unauthorised adjustment of the valve and replace the cap on the valve body.

Heating

Adjust the heating temperature using the thermostatic head (fig.2-7):

Position	1	2	3	4	5
Temperature [°C]	23	34	45	56	67

Warning.
Provide a safety thermostat for the low temperature heating applications.

If you notice that the rating temperature of the heating is higher than the set value, the flow of the primary may be too high and the thermostatic head is not able to close.
To balance the heating production functions, you can adjust the **dynamic balancing valve** (fig.2-2) but note that it also affects the SHW production. Finally, it is possible to change the heating power by modifying the circulator speed using the red knob (fig.2-20).

Electrical connections

On the top left of the HIU there is an electrical box IP55 (fig.2-23) containing a relay for the priority valve controlled by means of the flow switch and the control and supply of the circulator (fig.2-20).

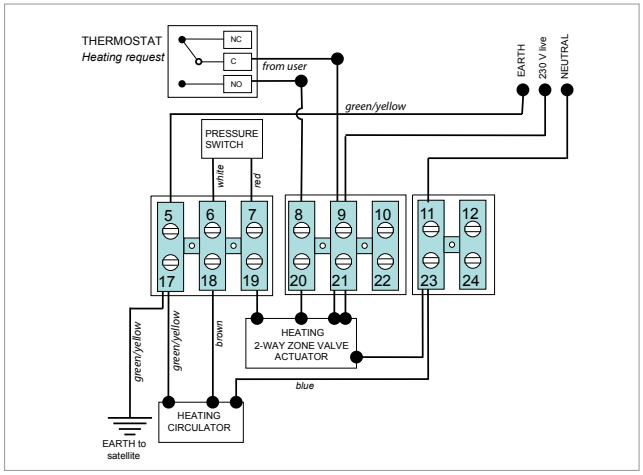


Figure 6a – Electrical connections fo GE556Y171 satellite

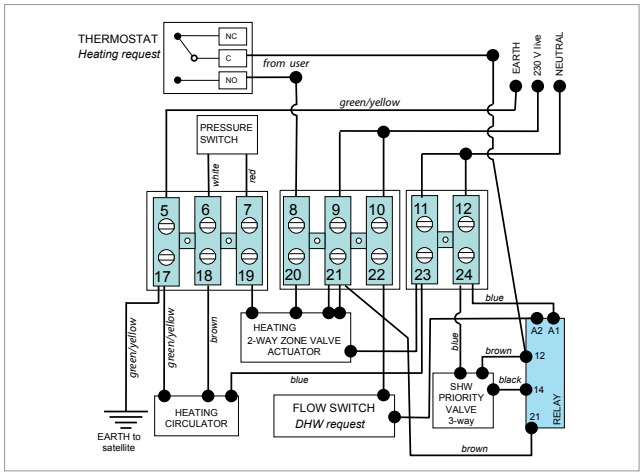


Figure 6b – Electrical connections fo GE556Y172-173 satellites

Technical data

• Supply voltage for circulator: 230 V / 50 Hz.
• Maximum electrical power for the HIU: 43 W (for GE556Y171)
49 W (for GE556Y172, GE556Y173)
• Electrical power for the circulator: 3÷45 W / 0,03÷0,44 A.

Heating demand - thermostat connection

The heating demand should be given via the normally open contact of the thermostat (N.O. contact, see fig.6) to terminal n°8; the common contact of the thermostat has to be connected to connection n°12 on the relay.
For the connection of the thermostat use a 2-conductor cable with 0,5 mm^2 section. No polarity need be complied with for the connections.

M-Bus

For the connection of the M-Bus data transmission cable to the concentrator refer to the thermal energy meters datasheet.

Small heat exchanger (GE556Y171)

Primary circuit

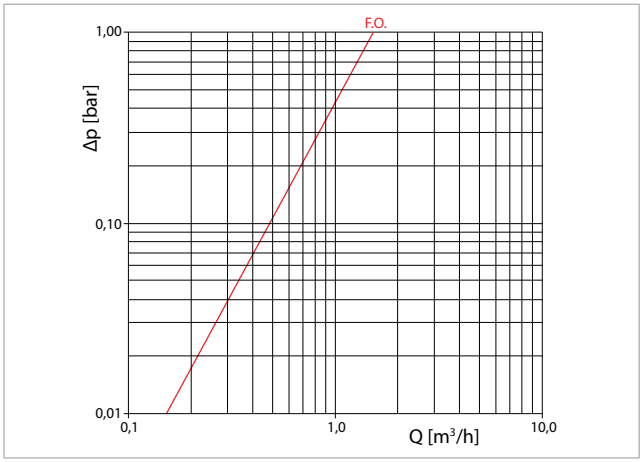


Figure 7 – Primary circuit for heating production, dynamic balancing valve fully open

Heating

Heating - Radiators			Flowrate [l/h] and primary outlet temperature (radiators 65-53 °C)		
Circulator speed	Flowrate [m³/h]	Power [kW]	80 °C	75 °C	72 °C
Max	1,2	17,4	670 (57 °C)	950 (59 °C)	1350 (61 °C)

Table 3 – Primary circuit data for radiator heating.

Heating - Radiant floor			Flowrate [l/h] and primary outlet temperature (radiators 45-38 °C)		
Circulator speed	Flowrate [m³/h]	Power [kW]	70 °C	65 °C	60 °C
Max	1,2	10,0	280 (39 °C)	340 (39 °C)	430 (40 °C)

Table 4 – Primary circuit data for floor radiant heating.

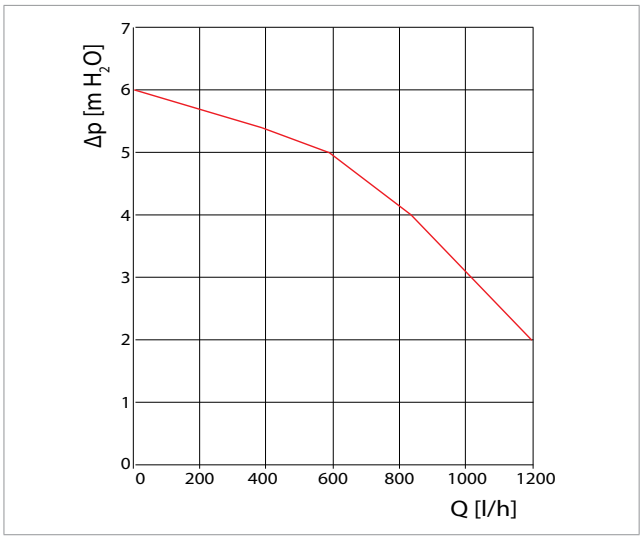


Figure 8 – Heating flow rate diagram.

Small heat exchanger (GE556Y172)

Primary circuit

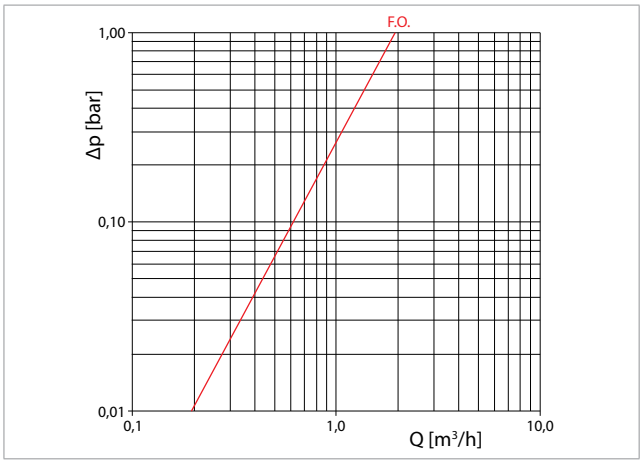
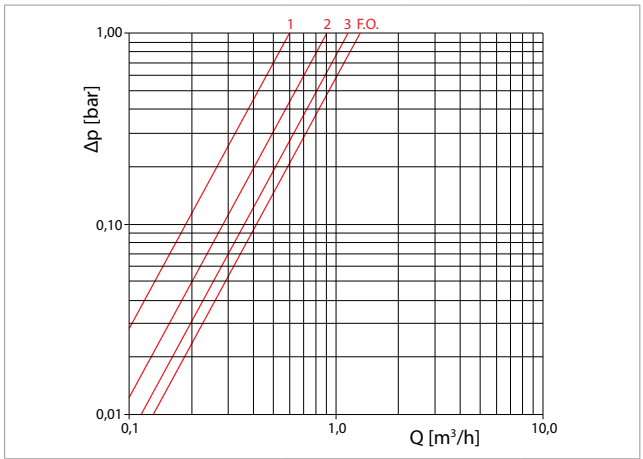


Figure 9 – Primary circuit for sanitary hot water production, dynamic balancing valve fully open



Lockshield valve n° of turns	1	2	3	F.O.
Kv	0,6	0,9	1,1	1,25

Figure 10 – Primary circuit for heating, lockshield valve and dynamic balancing valve fully open

Heating

Heating - Radiators			Flowrate [l/h] and primary outlet temperature (radiators 65-53 °C)		
Circulator speed	Flowrate [m³/h]	Power [kW]	80 °C	75 °C	72 °C
Max	1,2	17,4	670 (57 °C)	950 (59 °C)	1350 (61 °C)

Table 5 – Primary circuit data for radiator heating.

Heating - Radiant floor			Flowrate [l/h] and primary outlet temperature (radiators 45-38 °C)		
Circulator speed	Flowrate [m³/h]	Power [kW]	70 °C	65 °C	60 °C
Max	1,2	10,0	280 (39 °C)	340 (39 °C)	430 (40 °C)

Table 6 – Primary circuit data for floor radiant heating.

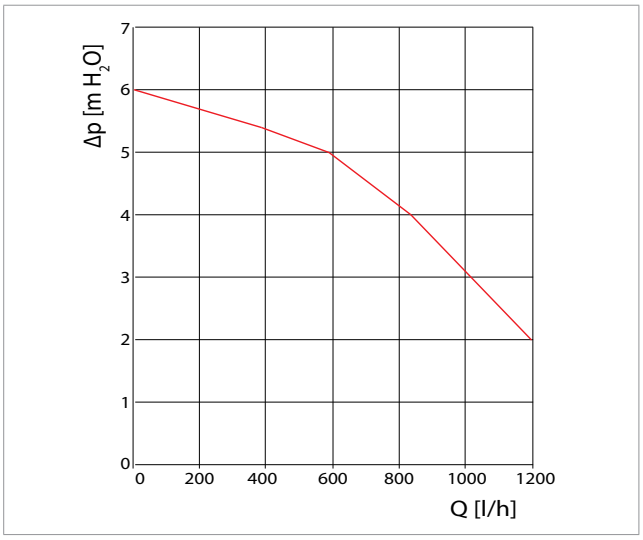
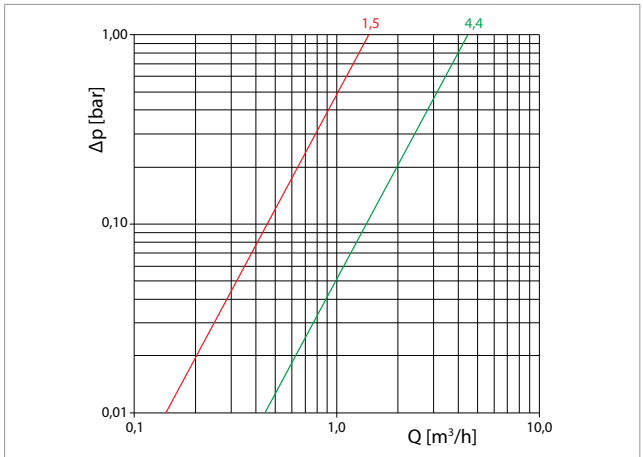


Figure 11 – Heating flow rate diagram.

Sanitary hot water production

SHW			Flowrate [l/h] and primary outlet temperature (SHW 10-50 °C)				
l/min	l/h	kW	80 °C	75 °C	70 °C	65 °C	60 °C
12	720	33	510 (22,9 °C)	580 (25 °C)	690 (27,9 °C)	865 (31,4 °C)	1210 (36 °C)
15	900	42	670 (25,7 °C)	775 (28,1 °C)	935 (31,1 °C)	1200 (34,8 °C)	
17	1020	47	785 (27,5 °C)	920 (30,2 °C)	1120 (33,2 °C)	1480 (37,1 °C)	
20	1200	56	975 (30,2 °C)	1150 (32,9 °C)	1430 (36,1 °C)		

Table 7 – Primary circuit data for sanitary hot water production.



Kv	Description	Ref. figure 2
1,5	Sanitary hot water	A-E
4,4	Sanitary cold water	A-B

Figure 12 – Hydraulic data for hot and cold sanitary water circuits.

Large heat exchanger for sanitary water production (GE556Y173)

Primary circuit

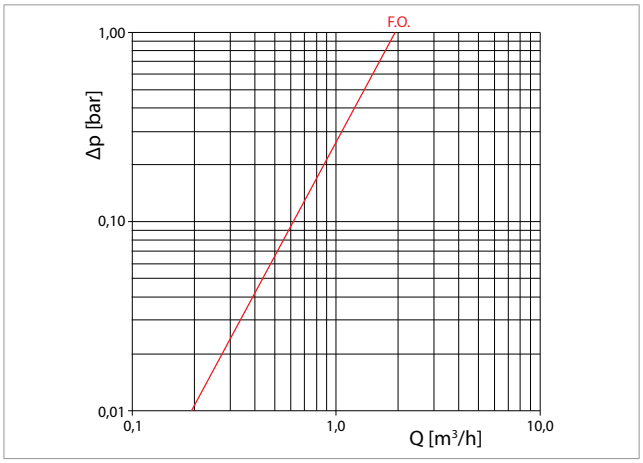
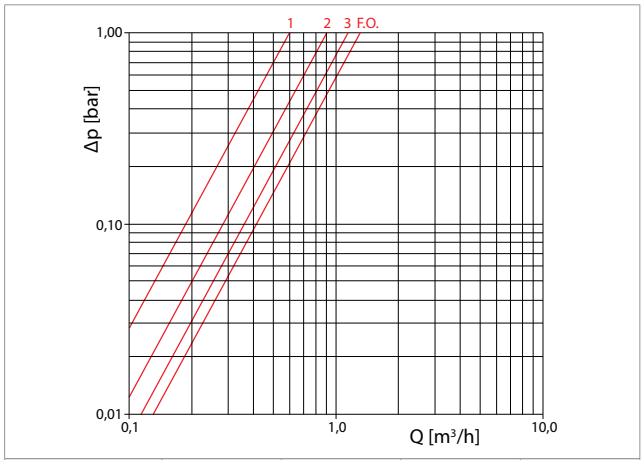


Figure 13 – Primary circuit for sanitary hot water production, dynamic balancing valve fully open.



Lockshield valve n° of turns	1	2	3	F.O.
Kv	0,6	0,9	1,1	1,25

Figure 14 – Primary circuit for heating, lockshield valve and dynamic balancing valve fully open

Heating

Heating - Radiators			Flowrate [l/h] and primary outlet temperature (radiators 65-53 °C)		
Circulator speed	Flowrate [m³/h]	Power [kW]	80 °C	75 °C	72 °C
Max	1,2	17,4	670 (57 °C)	950 (59 °C)	1350 (61 °C)

Table 8 – Primary circuit data for radiator heating.

Heating - Radiant floor			Flowrate [l/h] and primary outlet temperature (radiators 45-38 °C)		
Circulator speed	Flowrate [m³/h]	Power [kW]	70 °C	65 °C	60 °C
Max	1,2	10,0	280 (39 °C)	340 (39 °C)	430 (40 °C)

Table 9 – Primary circuit data for floor radiant heating.

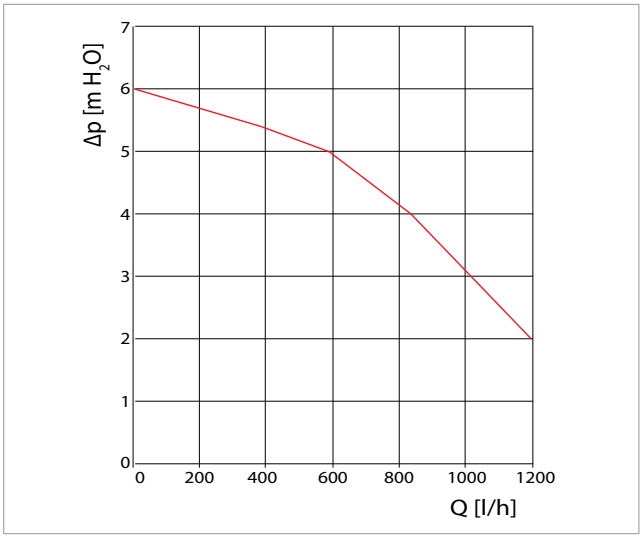
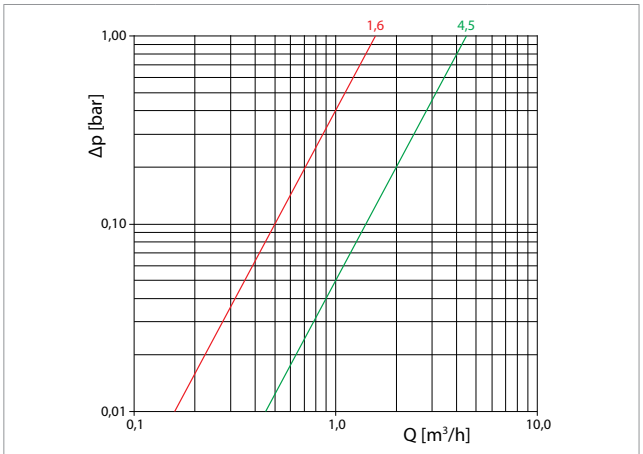


Figure 15 – Heating flow rate diagram.

Sanitary hot water production

SHW			Flowrate [l/h] and primary outlet temperature (SHW 10-50 °C)				
l/min	l/h	kW	80 °C	75 °C	70 °C	65 °C	60 °C
12	720	33	450 (15,4 °C)	495 (16,9 °C)	565 (18,7 °C)	660 (21,3 °C)	825 (24,9 °C)
15	900	42	575 (16,8 °C)	640 (18,3 °C)	730 (20,4 °C)	870 (23,3 °C)	1105 (27,2 °C)
17	1020	47	660 (17,7 °C)	740 (19,4 °C)	850 (21,6 °C)	1010 (24,4°C)	1300 (28,5 °C)
20	1200	56	790 (18,9 °C)	890 (20,7 °C)	1030 (23,1 °C)	1050 (26,3 °C)	
24	1430	67	970 (20,6 °C)	1100 (22,6 °C)	1280 (25,1 °C)		

Table 10 – Primary circuit data for sanitary hot water production.



Kv	Description	Ref. figure 2
1,6	Sanitary hot water	A-E
4,5	Sanitary cold water	A-B

Figure 16 – Hydraulic data for hot and cold sanitary water circuits.

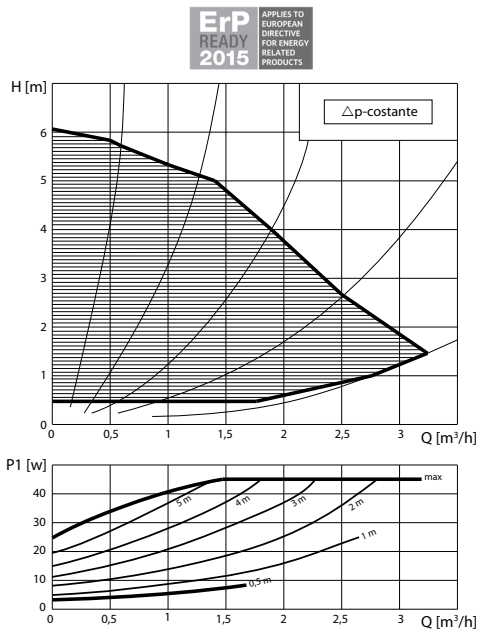
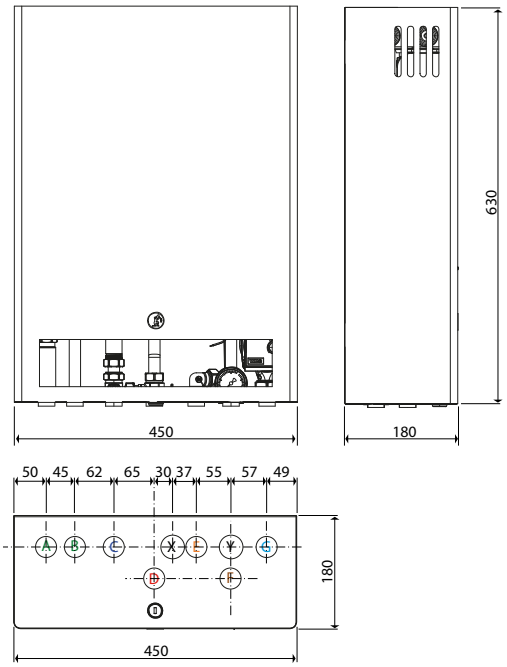
Electronically controlled high-efficiency pump 15/6 (230 V)	Pump operating	
		Automatic constant pressure difference (recommended).
		Automatic variable pressure difference.
		Automatic air vent routine (10 min duration): the pump runs alternatively with high and low speeds to help air bubbles to collect and to go to the air vent in the installation.
	LED - errors	
	green continuous	Normal running.
	green flashing	Automatic operation for air elimination.
	green/red flashing	Abnormal situation (pump functional but stopped): 1) Undervoltage or overvoltage 2) Wrong temperature (fluid or room temperature)
	red flashing	Pump stopped (permanent error: the pump need a manual reset). It can be necessary to change the pump.
	NO LED	No power supply: 1) Pump is not connected to power supply: check cable connection. 2) LED is damaged: check if pump is running. 3) Electronics are damaged: change pump.

Figure 17 - Circulator features

Dimensions



Legend	
A: Cold water inlet B: Cold water outlet C: Primary outlet D: Primary inlet	E: Hot water outlet F: Heating outlet G: Heating inlet X: Hole for safety valve drain Y: Hole for electrical cables

Figure 18 – Dimensions in mm

Normative references

- UNI EN 1434
- EN 60751
- EN 61107
- Measuring Instruments Directive 2004/22/CE (MID)
- ErP Directive 2004/22/CE

WRAS approvals

Ref. fig. 2	Components	Certificate number
-	Gaskets	0512513
9, 14	Heat exchanger	0712063
11	Thermostatic mixing valve	0904086
13	Check valve	0907056
Ref. fig. 4	**Components**	**Certificate number**
3	Filter and gaskets	1102515

Table 11 – WRAS approvals.