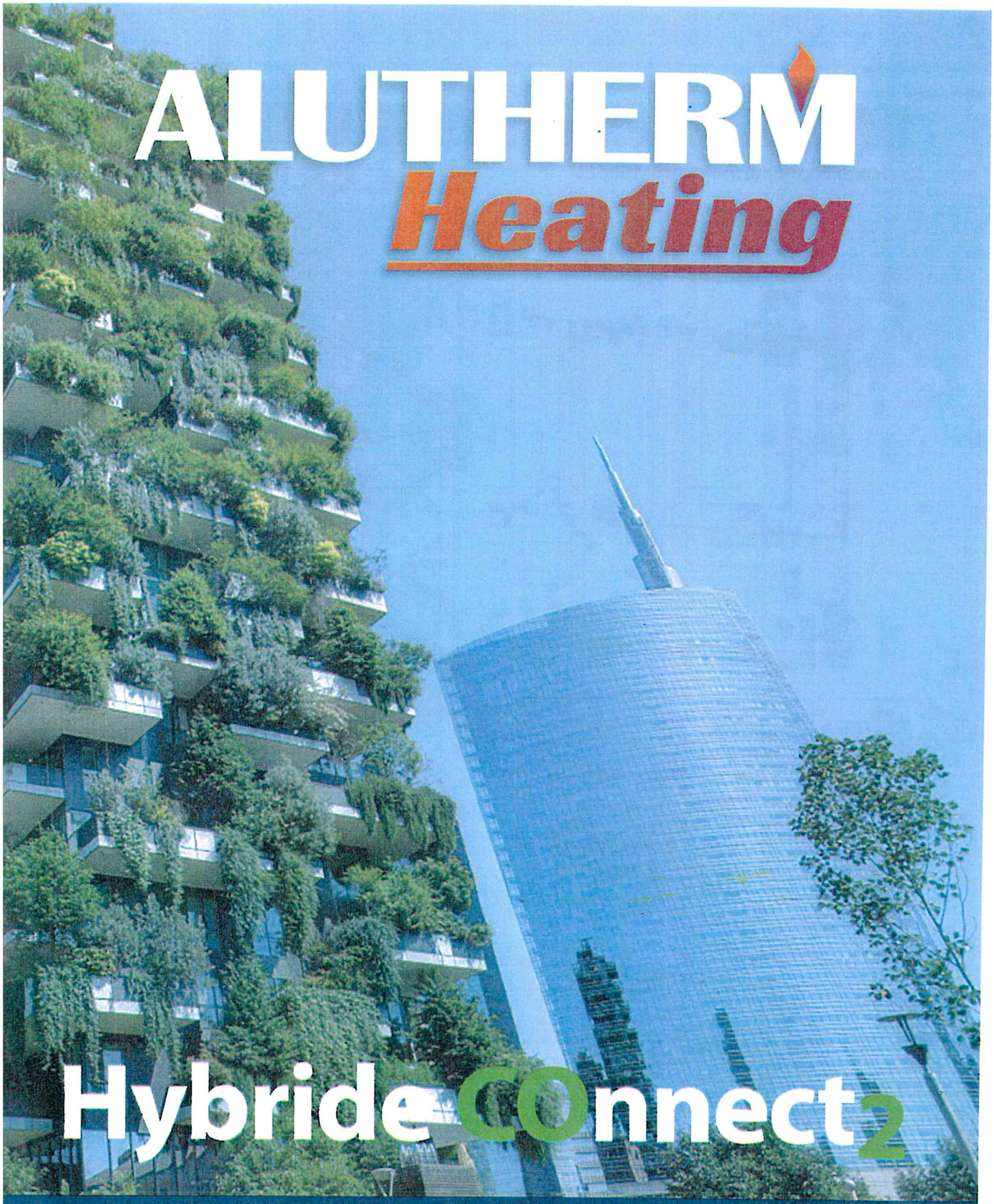


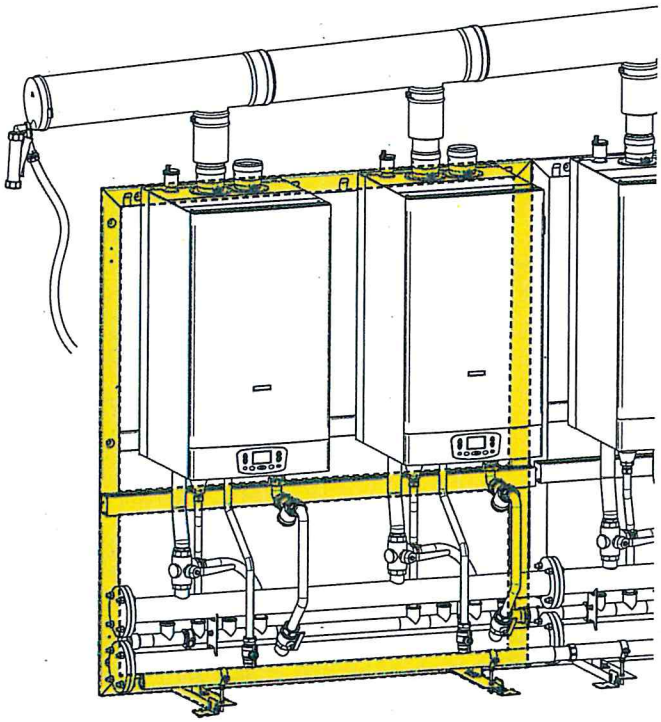
ALUTHERM
Heating

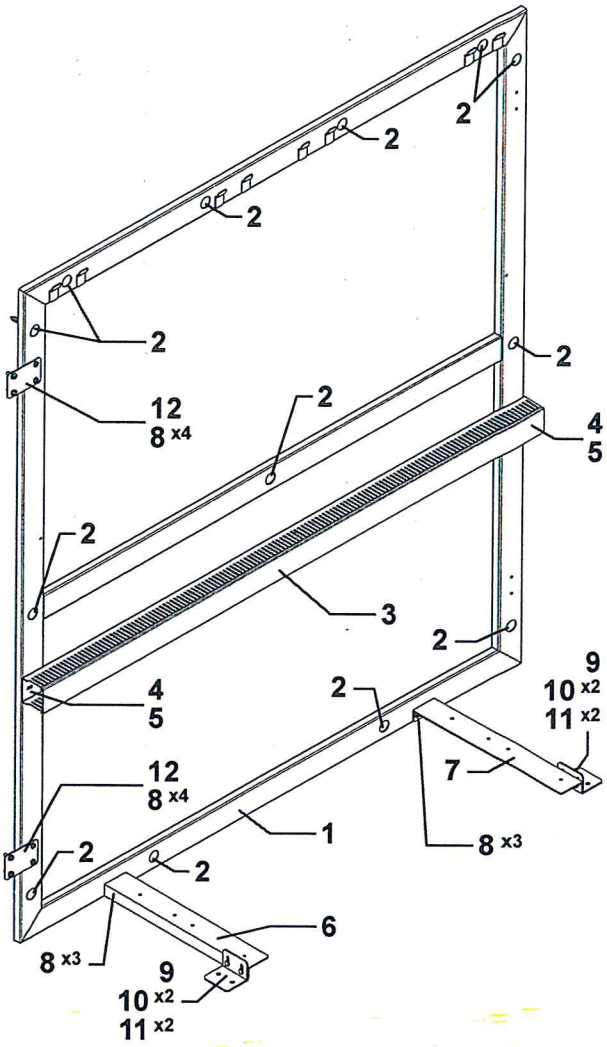
Hybride-COnnect2

Alutherm type A 90 / A 115 Cascade.

Belangrijke opmerking:
deze handleiding is een vertaling van de oorspronkelijke instructies van de fabrikant

2-elements counterframe - 401150014





pos.	qty.	Description
1	1	Main structure
2	13	Expansion block
3	1	Slotted electrical raceway L=1400 (60x60)
4	2	CH Screw M5x12
5	2	Flat washer 5.5x15
6	1	Collector support LH bracket *(ref. note A)*
7	1	Collector support RH bracket *(ref. note A)*
8	14	CH Screw M6x16
9	2	Adjustable support bracket *(ref. note B)*
10	4	HH Screw M6x16
11	4	Nut M6
12	2	Frame union plate *(ref. note C)*

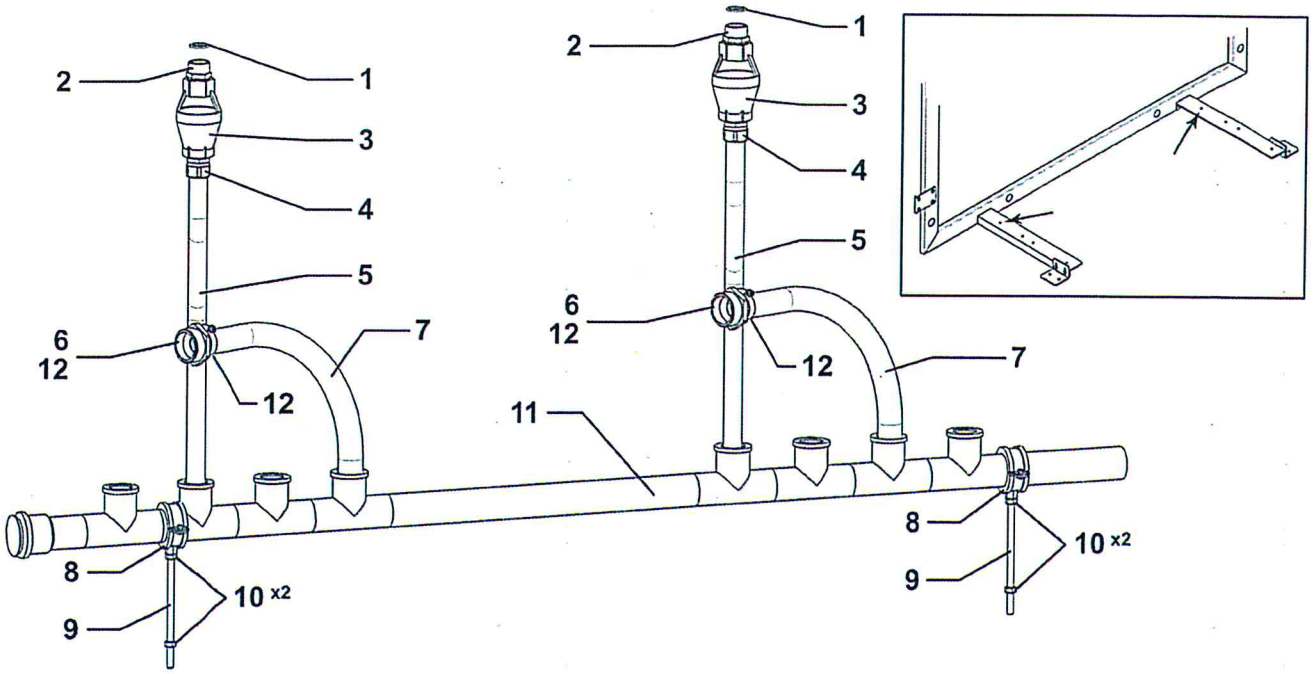
Note:

A Secure support brackets of collectors **6** and **7** to the structure **1**, using screws **8**, ***before*** securing the structure to the wall.

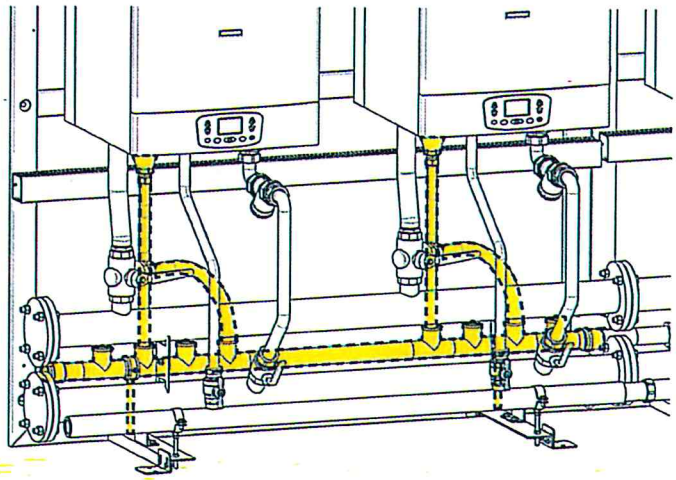
B Height adjustment until the collector support brackets are flush with each other. Adjust to the final position after all kits have been installed.

C Install plates on the side in which next modules are present.

2-elements condensation discharge collector - 401150034



pos.	qty.	Description
1	2	Klinger seal 3/4" 17x24x2
2	2	Connection 3/4"G M-M
3	2	Sight funnel 3/4" F
4	2	Iron/copper connection 3/4" x Ø22
5	2	Safety valve discharge copper pipe
6	2	Rubber hose holder 1"¼ - Ø25 mm *(ref. note B)*
7	2	Cascade 3-way valve rubber hose
8	2	Fastening clamp
9	2	Threaded frame M8 x 153 mm *(ref. note A and C)*
10	4	Nut M8 *(ref. note C)*
11	1	2-elements condensation discharge collector
12	2	Pipe holder clamp Ø30

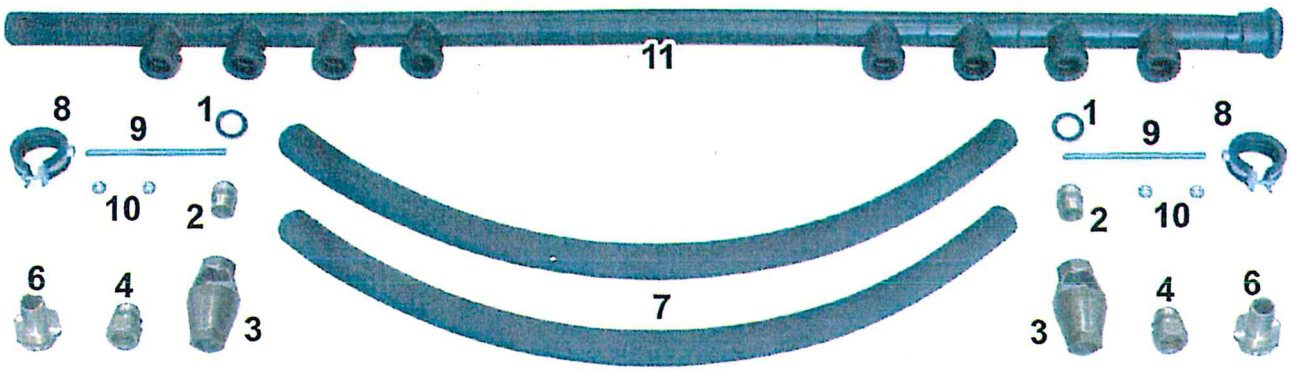


Note:

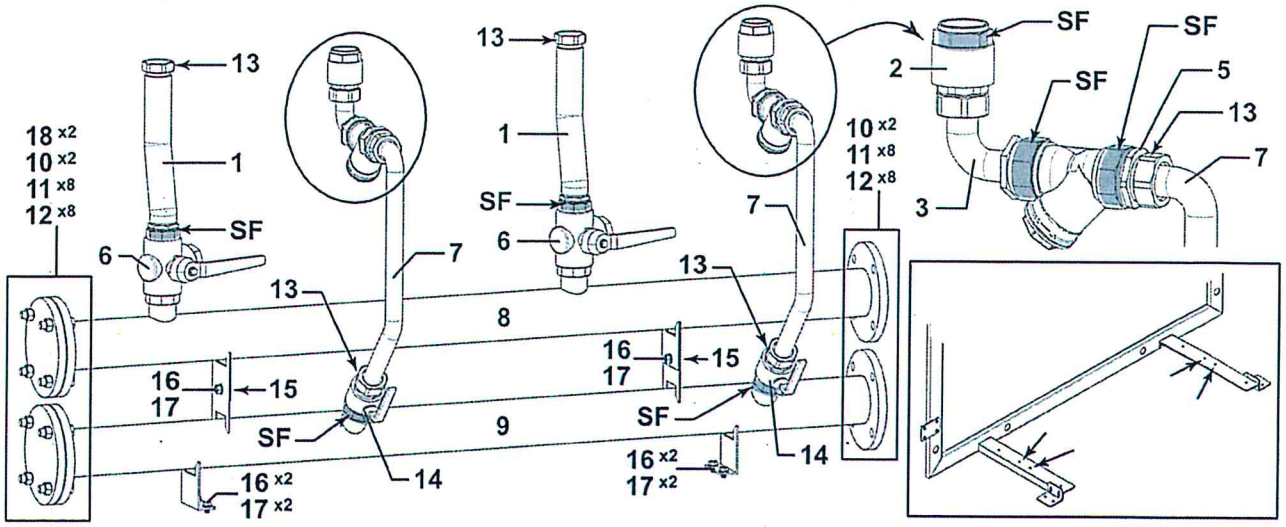
A Screw in the holes, shown in the figure, of the counterframe collector support brackets.

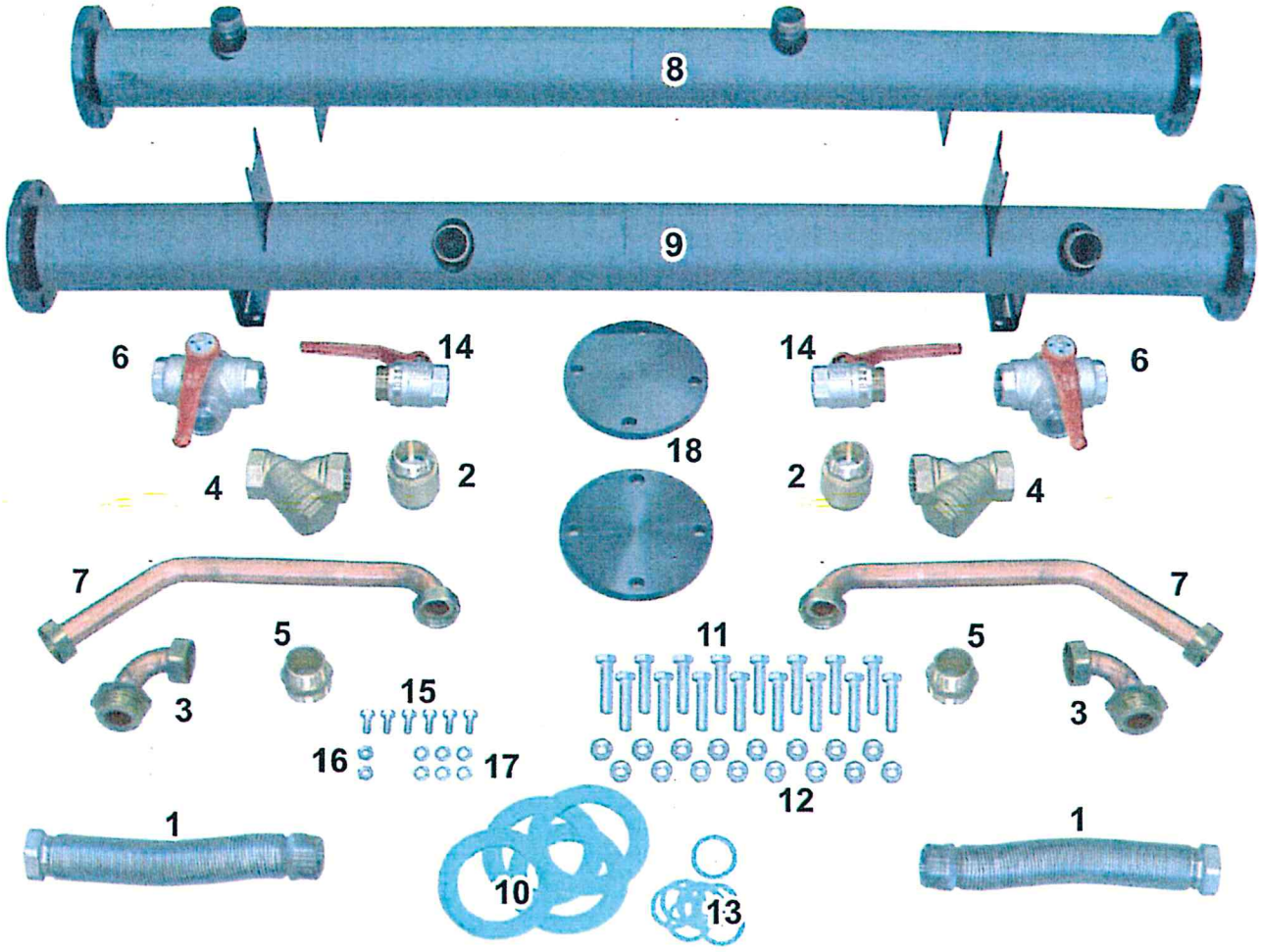
B Connect the lateral way of the 3-way lateral manual valve of the system delivery/return collector kit (seal the thread).

C Place the nut along the threaded bar 9 in order to determine the slope of the collector to ensure that condensation is drained away properly.



2-elements system delivery/return collector - 401150024





pos.	qty.	Description
1	2	Flexible hose 1"¼ M-F
2	2	Check valve 1"¼G
3	2	Pipe (from filter to check)
4	2	Inspectable filter 1"½G
5	2	Connection 1"½G - 1"¼G M-M
6	2	Ball 3-way manual valve 1"¼ F *(ref. note C)*
7	2	Pipe (from valve to filter)
8	1	2-elements delivery collector
9	1	2-elements return collector *(ref. note A)*
10	4	Fasit seal DN65 77x115x2
11	16	HH Screw M12x50
12	16	Nut M12
13	8	Klinger seal 1"¼ 30x39x2

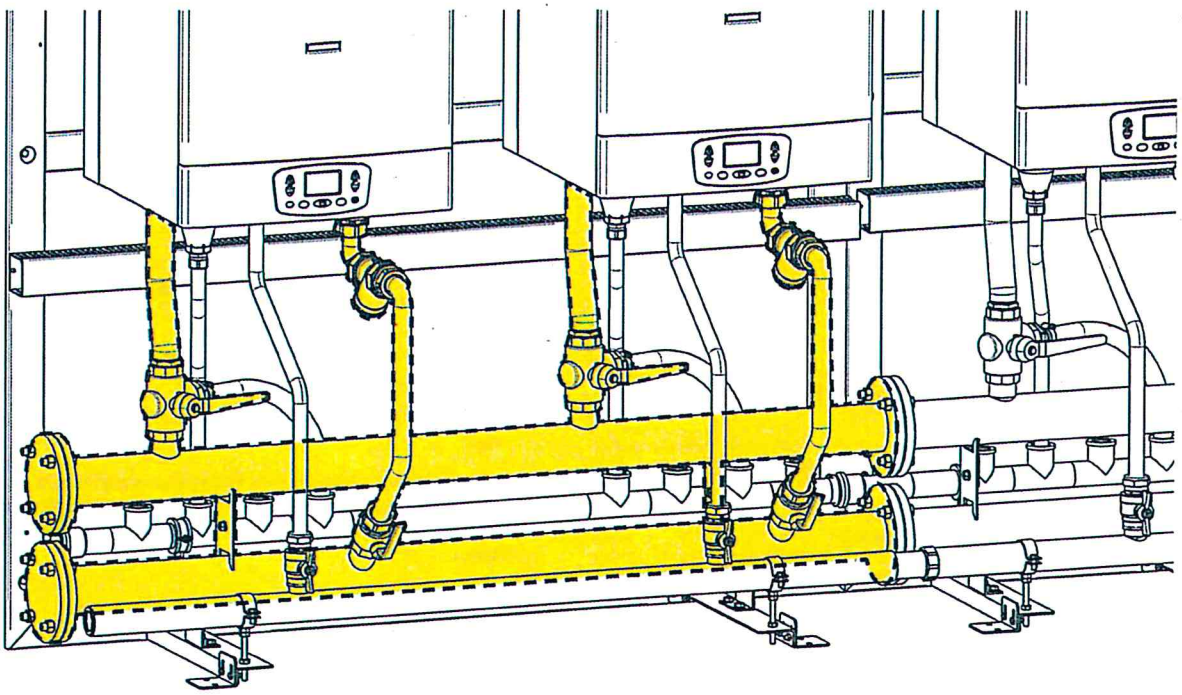
pos.	qty.	Description
14	2	Ball manual valve 1"¼ M-F
15	6	HH Screw M8x14
16	2	Nut M8
17	6	Flat washer 8.4x16
18	2	Termination flange *(ref. note B)*
SF	—	*Parts to connect by sealing the thread*

Note:

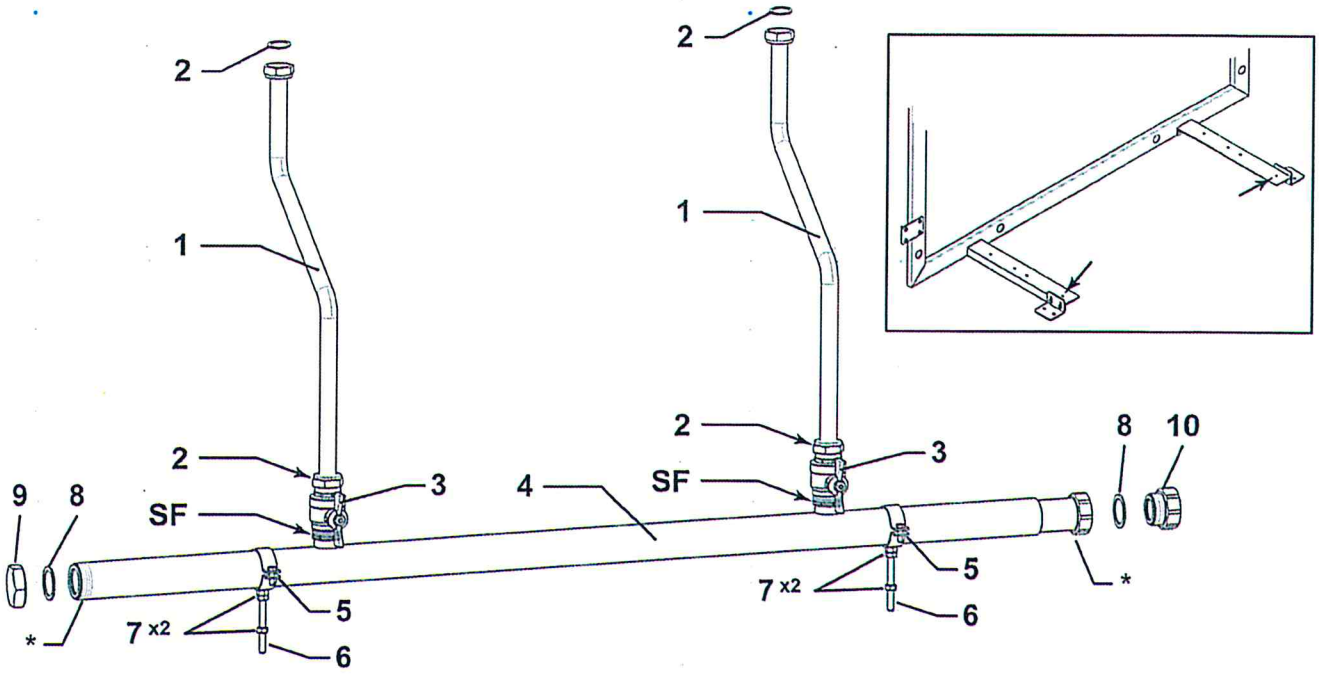
A Secure counterframe collectors to support brackets through the holes shown in the figure

B Use only if the kit is installed on top of the cascade on the suitable side.

C Handle the command lever of the valve **6** quickly in order to avoid that system pressure downstream of the boiler is discharged through the condensation collector, bringing it to a positive pressure and causing possible liquid leakage.



2-elements GAS collector - 401150020



pos.	qty.	Description
1	2	Boiler GAS supply pipe
2	4	Klinger seal 1" 22x30x2
3	2	GAS cock 1" M-F
4	1	2-elements GAS collector 1"½ *(ref. note *C)*
5	2	Collar for pipe 1"½
6	2	Threaded frame M8 x 85mm *(ref. note A)*
7	4	Nut M8
8	2	Klinger seal 1" ½ 34x44x2
9	1	Female termination cap 1"½G *(ref. note B)*
10	1	Male termination cap 1"½G *(ref. note B)*

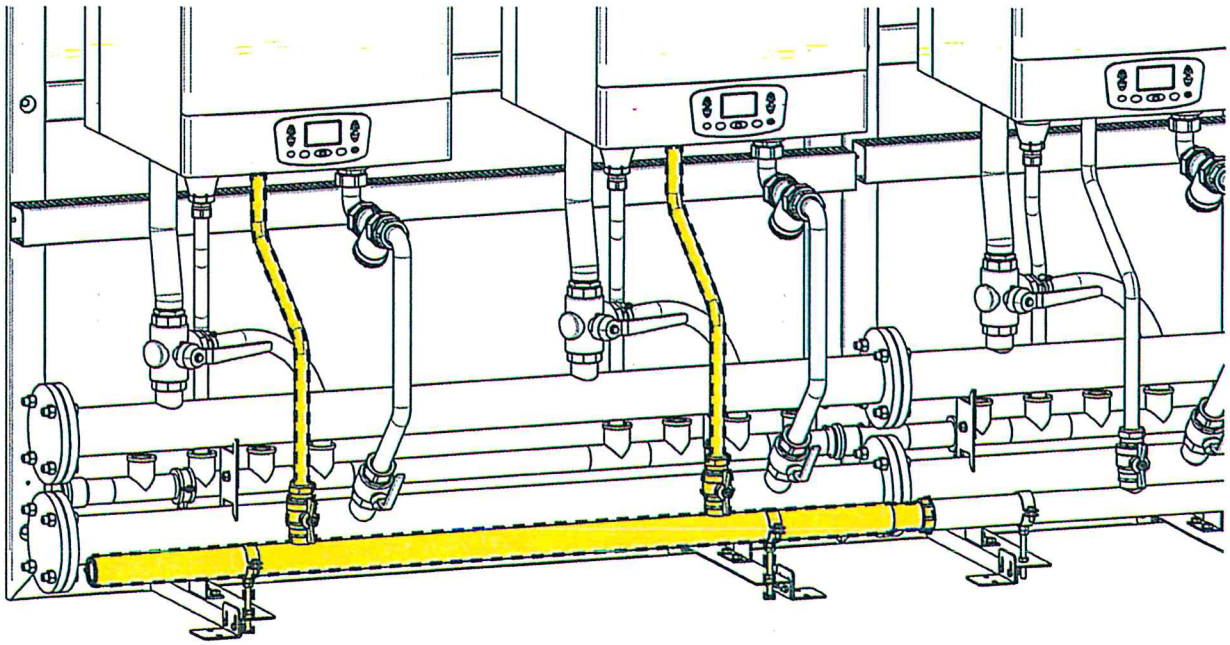
pos.	qty.	Description
SF	—	*Parts to connect by sealing the thread*

Note:

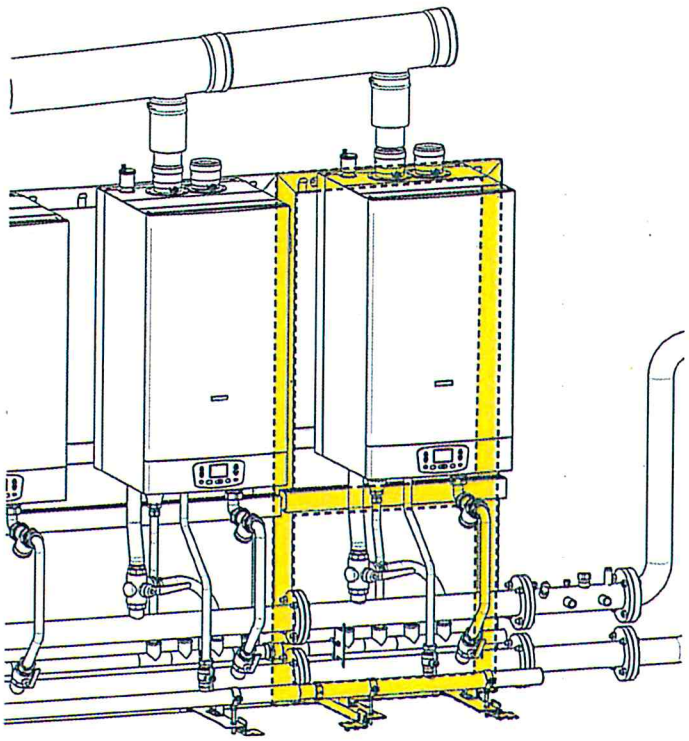
A Screw in the holes, shown in the figure, of the counterframe collector support brackets

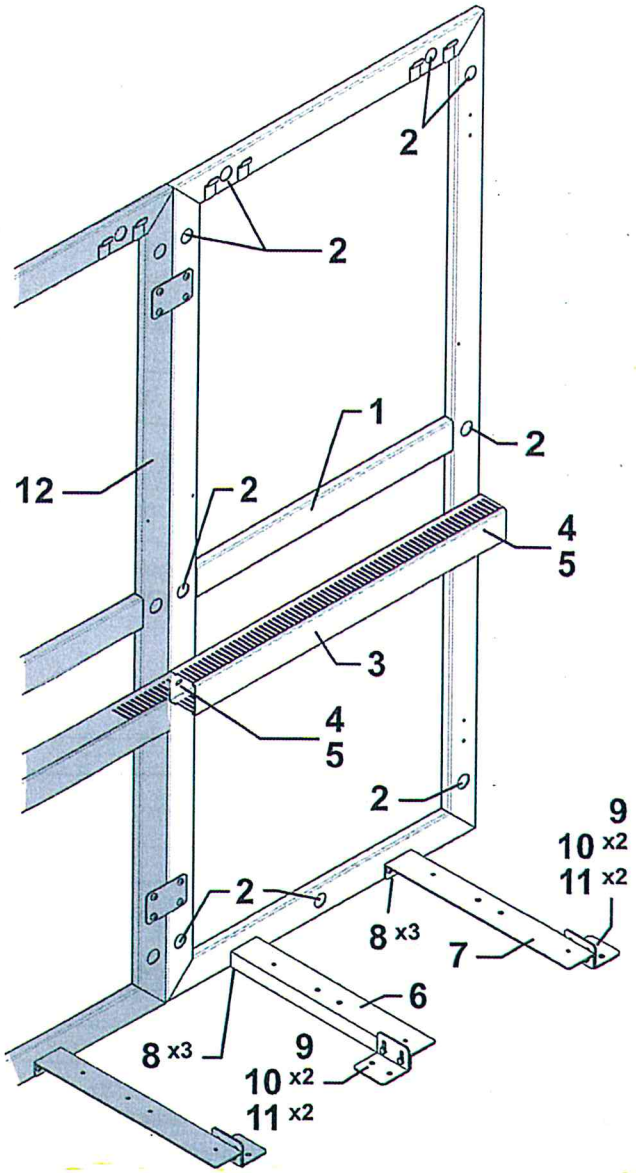
B Use only if the kit is installed on top of the cascade on the suitable side.

***C** The collector can also be installed with male thread on the right and ring nut on the left, in order to enable gas supply (through fuel shut-off valve, which has a female connector) from both sides.



1-element counterframe - 401150013



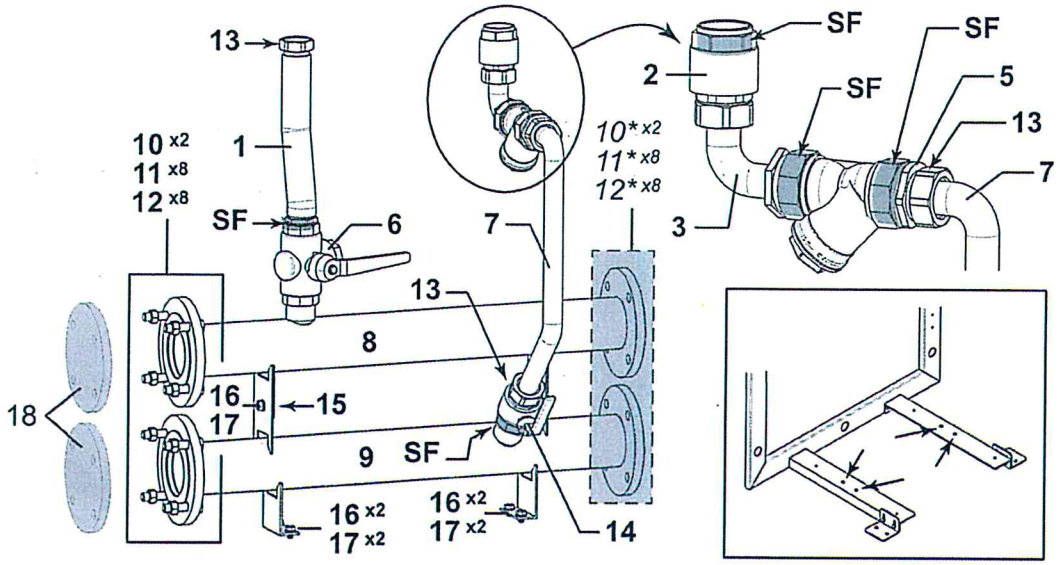


pos.	qty.	Description
1	1	Main structure
2	9	Expansion block
3	1	Slotted electrical raceway L=700 (60x60)
4	2	CH Screw M5x12
5	2	Flat washer 5.5x15
6	1	Collector support LH bracket
7	1	Collector support RH bracket
8	6	CH Screw M6x16
9	2	Adjustable support bracket *(ref. note A)*
10	4	HH Screw M6x16
11	4	Nut M6
12	—	*2-elements counterframe kit including frame union plates and relevant screws*

Note:

A Height adjustment until the level of the collector support brackets is reached. Adjust to the final position after all kits have been installed.

1-element system delivery/return collector - 401150023



pos.	qty.	Description
1	1	Flexible hose 1"¼ M-F
2	1	Check valve 1"¼G
3	1	Pipe (from filter to check)
4	1	Inspectable filter 1"½G
5	1	Connection 1"½G - 1"¼G M-M
6	1	Ball 3-way manual valve 1"¼ F *(ref. note D)*
7	1	Pipe (from valve to filter)
8	1	1-element delivery collector
9	1	1-element return collector *(ref. note A)*
10	2	Fasit seal DN65 77x115x2 *(*ref. note C)*
11	8	HH screw M12x50 *(*ref. note C)*
12	8	Nut M12 *(*ref. note C)*
13	4	Klinger seal 1"¼ 30x39x2
14	1	Ball manual valve 1"¼ M-F
15	6	HH Screw M8x14

pos.	qty.	Description
16	2	Nut M8
17	6	Flat washer 8.4x16
18	—	Termination flange *(ref. note B)*
SF	—	*Parts to connect by sealing the thread*

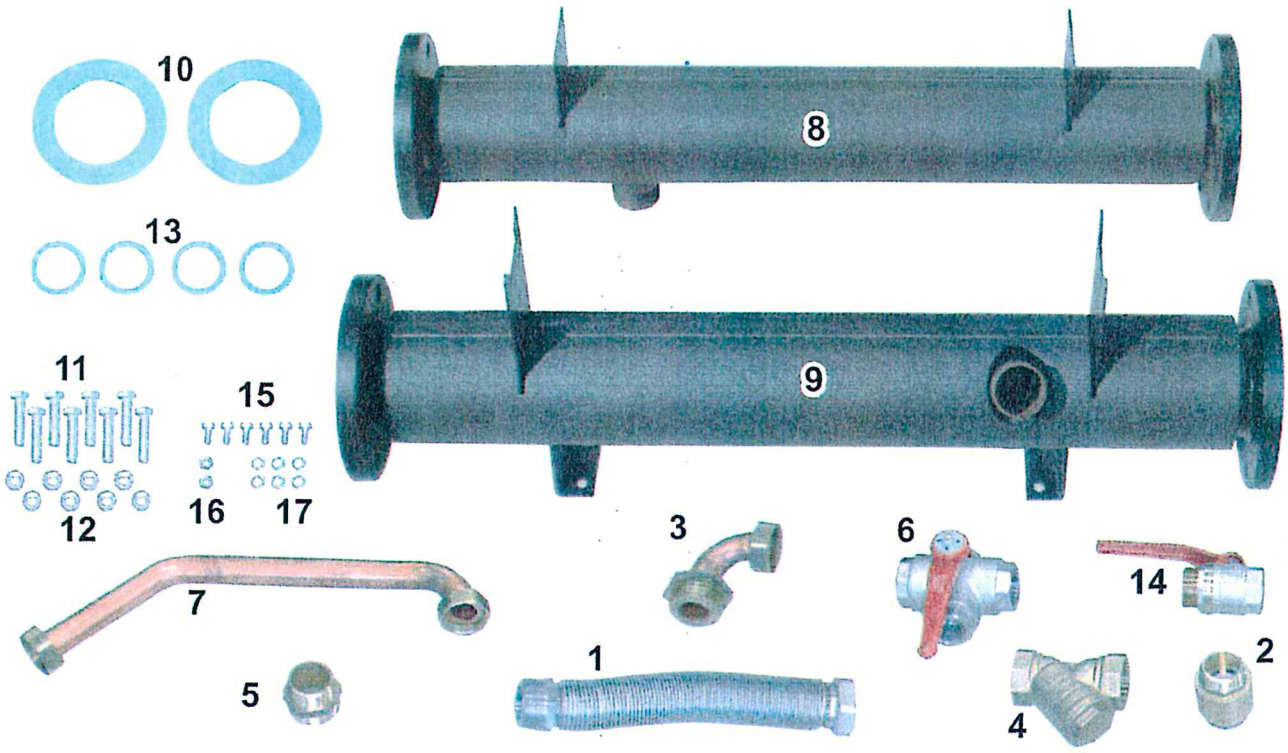
Note:

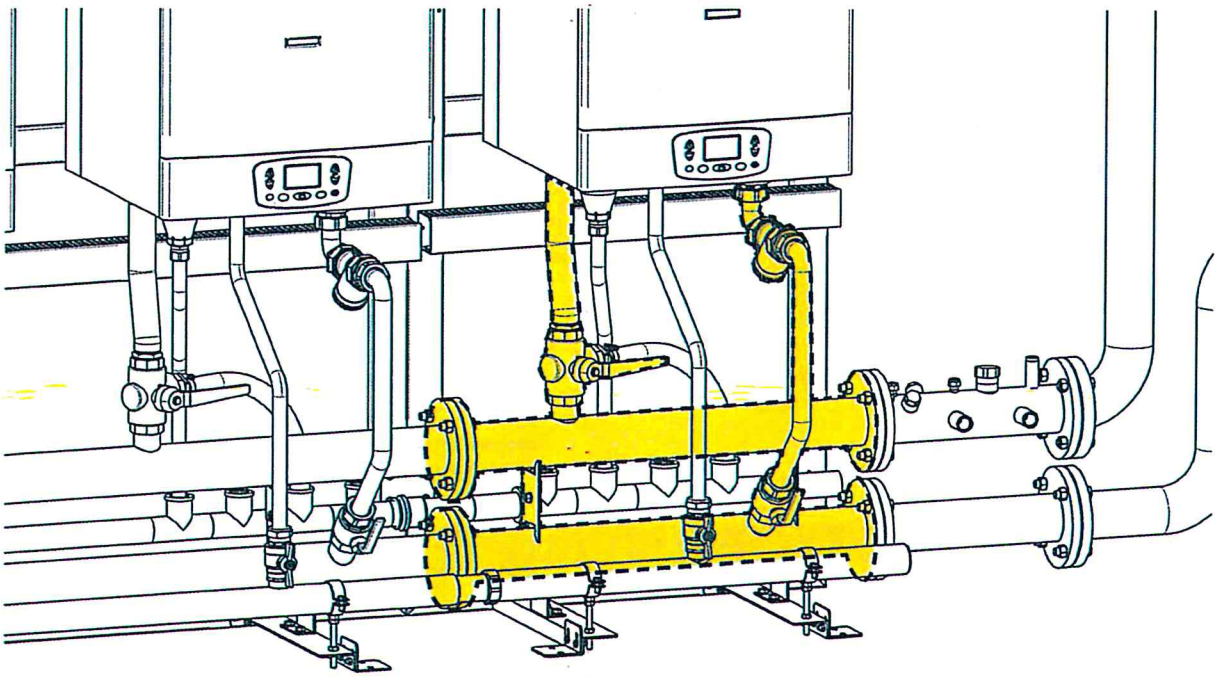
A Secure counterframe collectors to support brackets through the holes shown in the figure

B Use only if the 1-element kit is installed on top of the cascade. Flanges are supplied with the ***2-elements*** delivery/return collector kit.

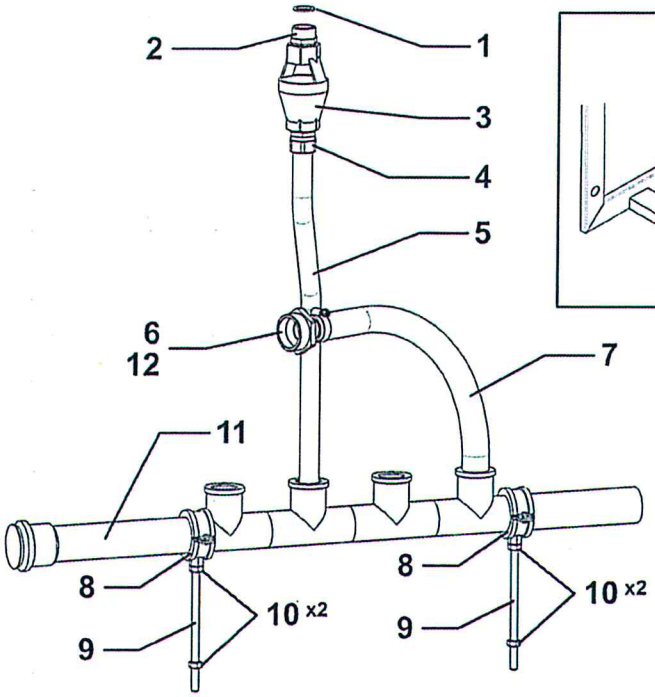
C Only the parts for the coupling of collectors from one side only are supplied, since the other necessary parts are already contained in the 2-elements system delivery/return kit or in the adjacent kit.

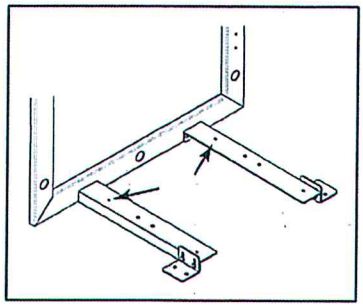
D Handle the command lever of the valve 6 quickly in order to avoid that system pressure downstream of the boiler is discharged through the condensation collector, bringing it to a positive pressure and causing possible liquid leakage.

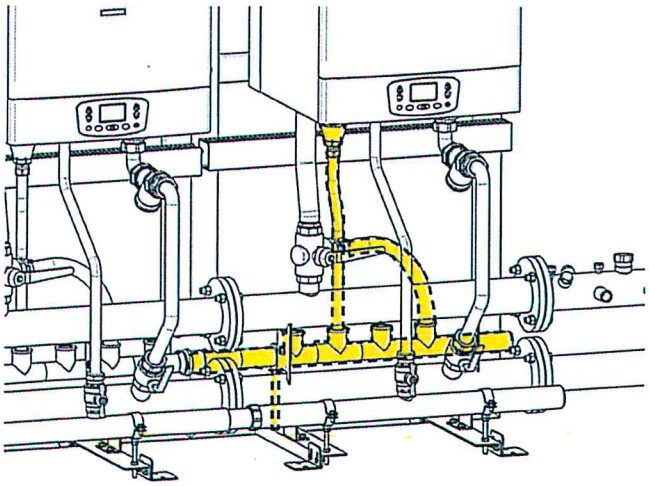

10
13
11
12
15
16
17
8
9
3
6
14
7
1
2
5
4



1-element condensation discharge collector - 401150033







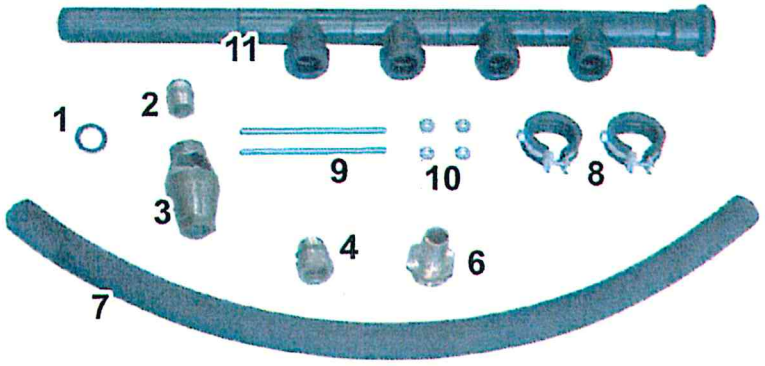
pos.	qty.	Description
1	1	Klinger seal 3/4" 17x24x2
2	1	Connection 3/4"G M-M
3	1	Sight funnel 3/4" F
4	1	Iron/copper connection 3/4" x Ø22
5	1	Safety valve discharge copper pipe
6	1	Rubber hose holder 1"¼ - Ø25 mm *(ref. note B)*
7	1	Cascade 3-way valve rubber hose
8	2	Fastening clamp
9	2	Threaded frame M8 x 153 mm *(ref. note A and C)*
10	4	Nut M8 *(ref. note C)*
11	1	1-element condensation discharge collector
12	2	Pipe holder clamp Ø30

Note:

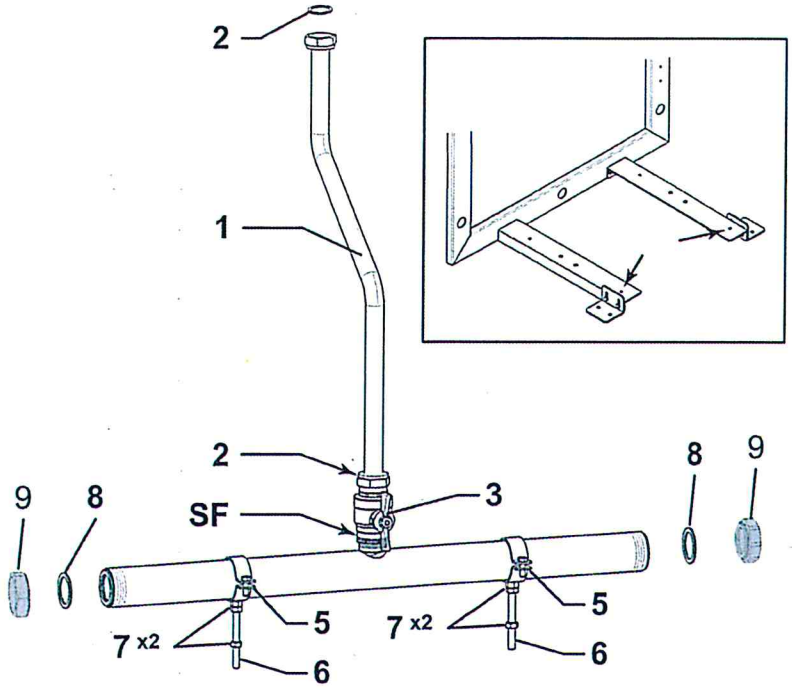
A Screw in the holes, shown in the figure, of the counterframe collector support brackets.

B Connect the lateral way of the 3-way lateral manual valve of the system delivery/return collector kit (seal the thread).

C Place the nut along the threaded bar **9** in order to determine the slope of the collector to ensure that condensation is drained away properly.



1-element GAS collector - 401150019



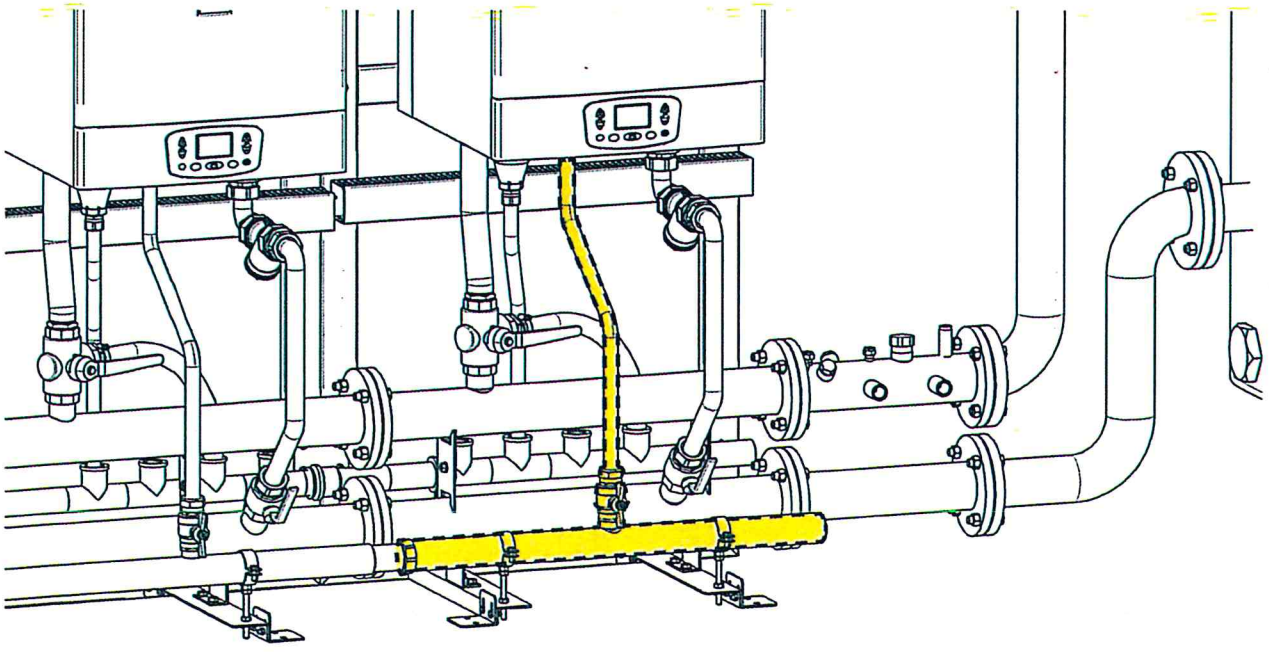
pos.	qty.	Description
1	1	Boiler GAS supply pipe
2	2	Klinger seal 1" 22x30x2
3	1	GAS cock 1" M-F
4	1	1-element GAS collector 1"½
5	2	Collar for pipe 1"½
6	2	Threaded frame M8 x 85mm *(ref. note A)*
7	4	Nut M8
8	2	Klinger seal 1" ½ 34x44x2

pos.	qty.	Description
9	—	Female termination cap 1"½G *(ref. note B)*
SF	—	*Parts to connect by sealing the thread*

Note:

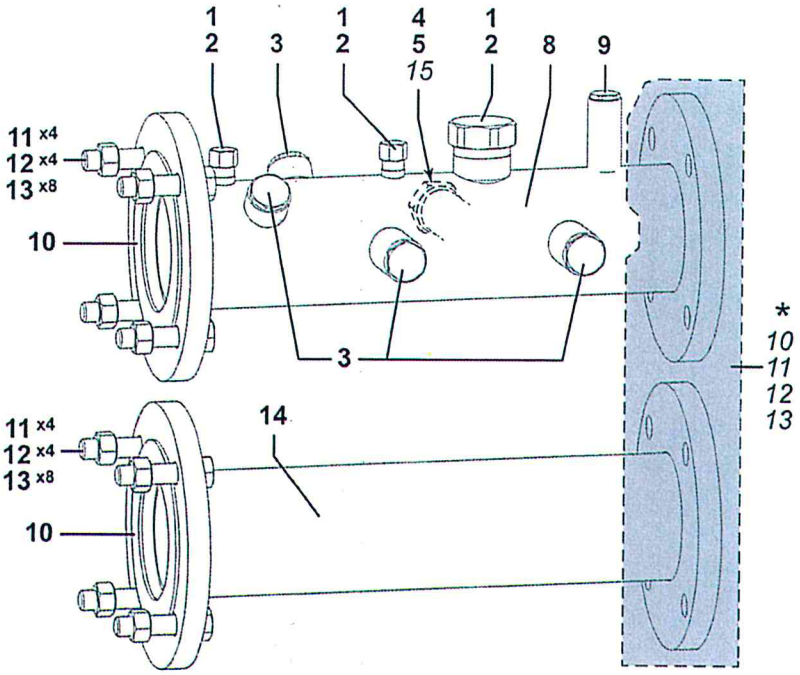
A Screw in the holes, shown in the figure, of the counterframe collector support brackets

B Use only if the 1-element kit is installed on top of the cascade, on the correct side. The part is supplied with the ***2-elements*** GAS kit



Collector kit - 401150094

pos.	qty.	Description
1	2	Female cap 1/4" *(ref. note A)*
2	2	Klinger seal 1/4" 5x11x2 *(ref. note A)*
3	4	Male cap 1/2" *(ref. note A)*
4	1	Female cap 3/4" *(ref. notes A and C)*
5	1	Klinger seal 3/4" 17x24x2 *(rif. note A e C)*
6	1	Female cap 1" *(ref. note A)*
7	1	Klinger seal 1" 22x30x2 *(ref. note A)*
8	1	Delivery collector
9	1	Male cap 1/4" *(ref. note A)*
10	2	Fasit seal DN65 77x115x2 *(*ref. note B)*
11	8	HH screw M12x50 *(*ref. note B)*
12	8	Nut M12 *(*ref. note B)*
13	16	Plain washer 13x24x2.5 *(*ref. note B)*
14	1	Return collector
15	—	Expansion tank connector (suggested) *(ref. note C)*



Notes:

A All caps are factory fitted with relevant seals (female caps) or with thread sealant (male caps). In case of removal, restore the tightness by replacing the seal or by sealing the thread again, respectively. In the photo, all items said above are shown disassembled, to better show the kit content.

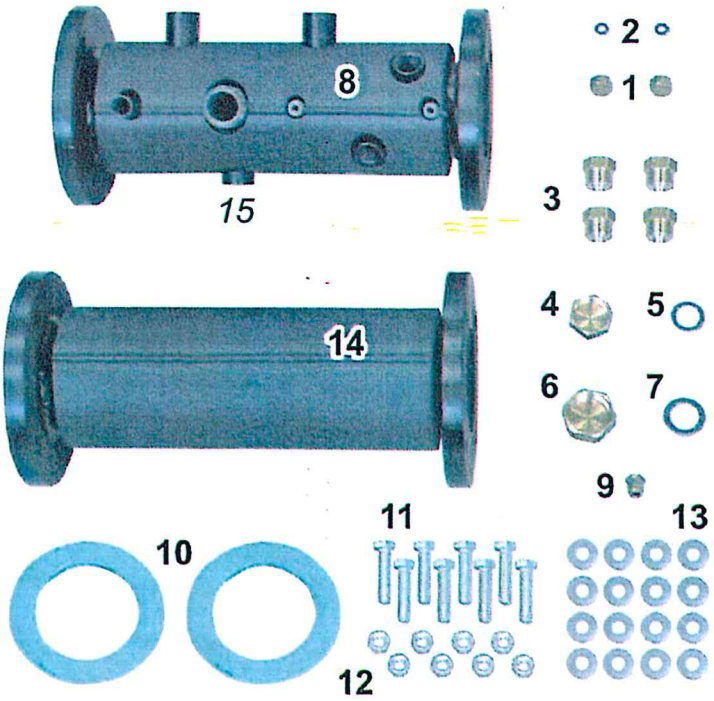
B Only the parts for the coupling of collectors from one side only are supplied, since the other necessary parts are already contained in the 2-elements system delivery/return kit or in the adjacent kit.

C Parts 4 and 5 are factory fitted to close the connector for the system expansion tank connection (pos. 15) if it is not used.

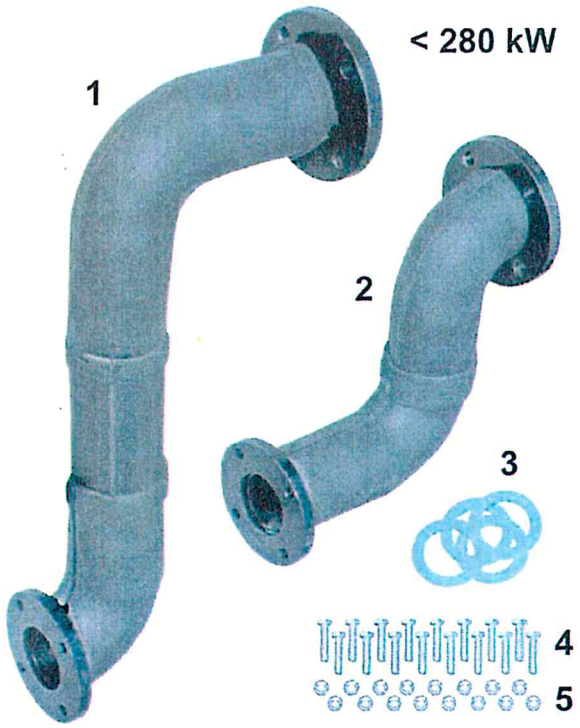
WARNING - For systems installed in ITALY:

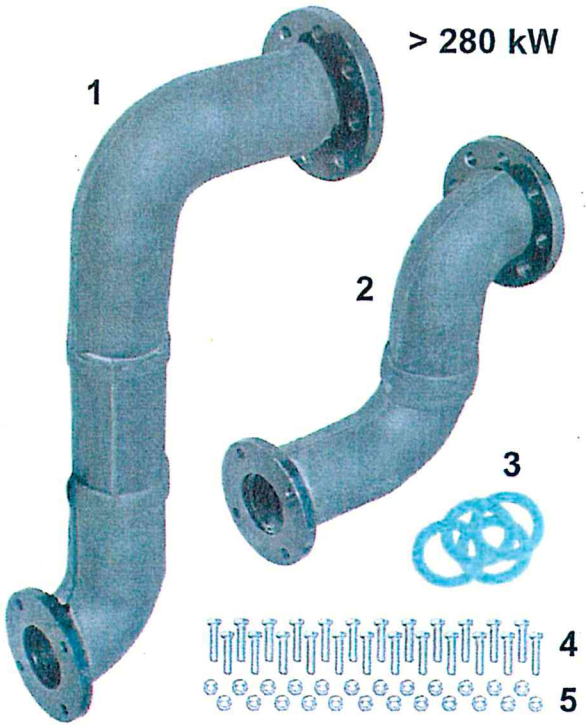
This kit is not suitable because of the Italian's INAIL regulation.

Use the INAIL kit for cascade systems code 401150027.



Balancer connection kit - up to 280 kW - 401150037
Balancer connection kit - above 280 kW - 401150049

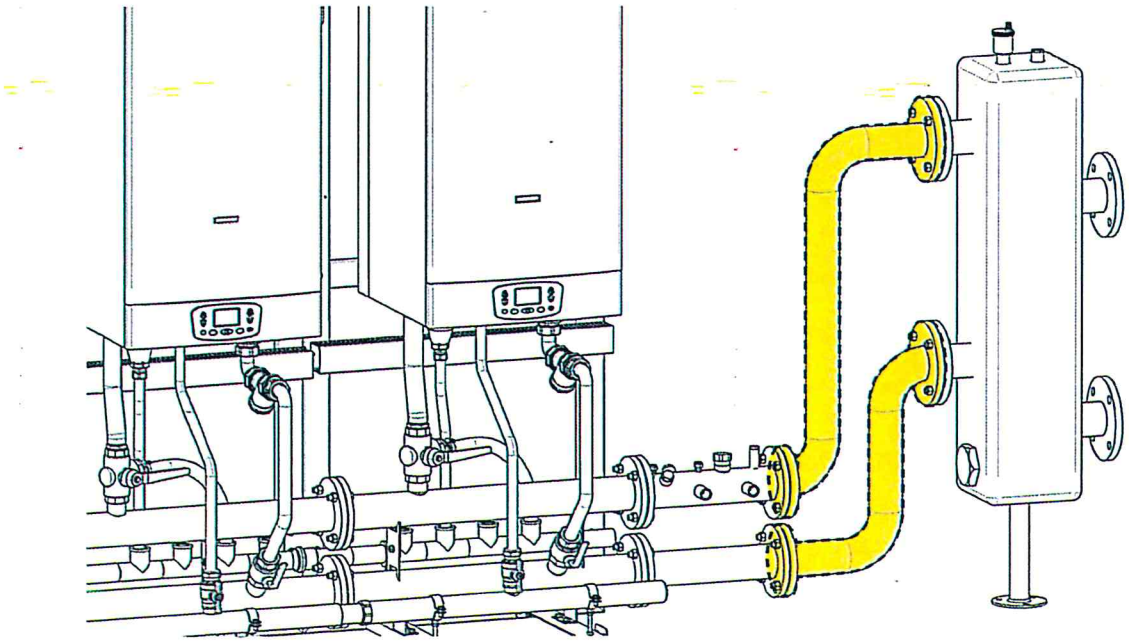




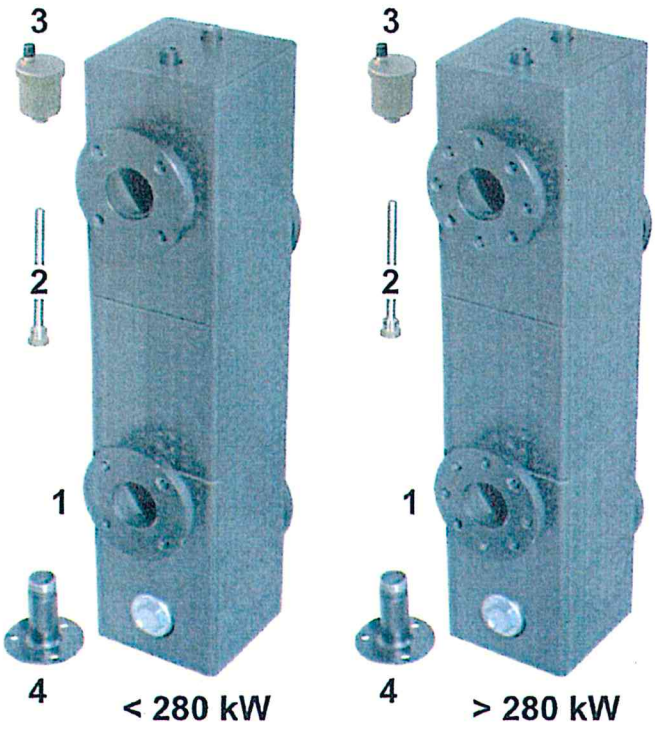
pos.	qty.	Description
1	1	Flow pipe *(ref. note A)*
2	1	Return pipe *(ref. note A)*
3	4	Fasit seal DN65 77x115x2
4	16 24	HH screw M12x50 *(ref. note A)*
5	16 24	Nut M12 *(ref. note A)*

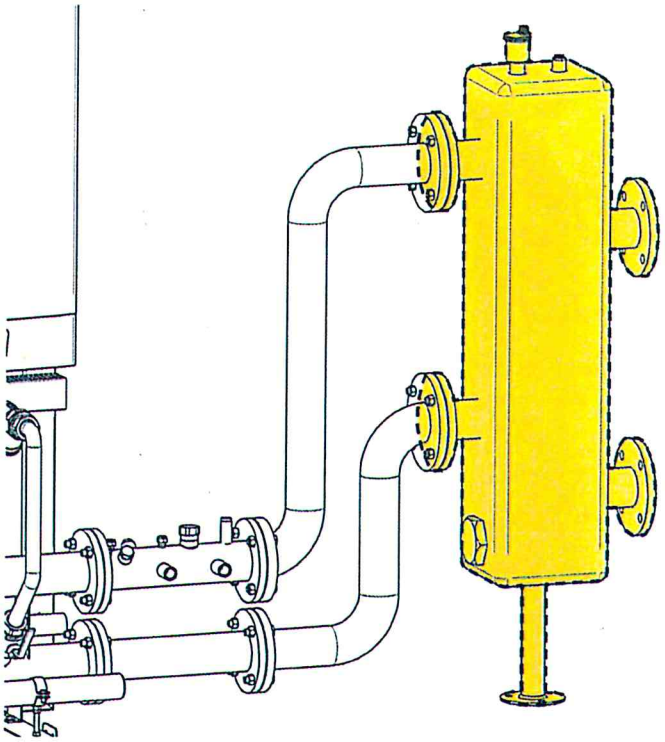
Notes:

A The Balancer Connection Kit for cascade systems having power above 280kW differs from the lower power one by the flanges, at one end of the pipes, having 8 holes instead of 4, and consequently by the different number of screws and nuts.



Balancer kit - up to 280 kW - 401150031
Balancer kit - above 280 kW - 401150048

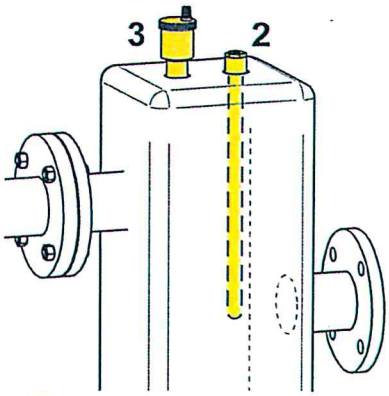




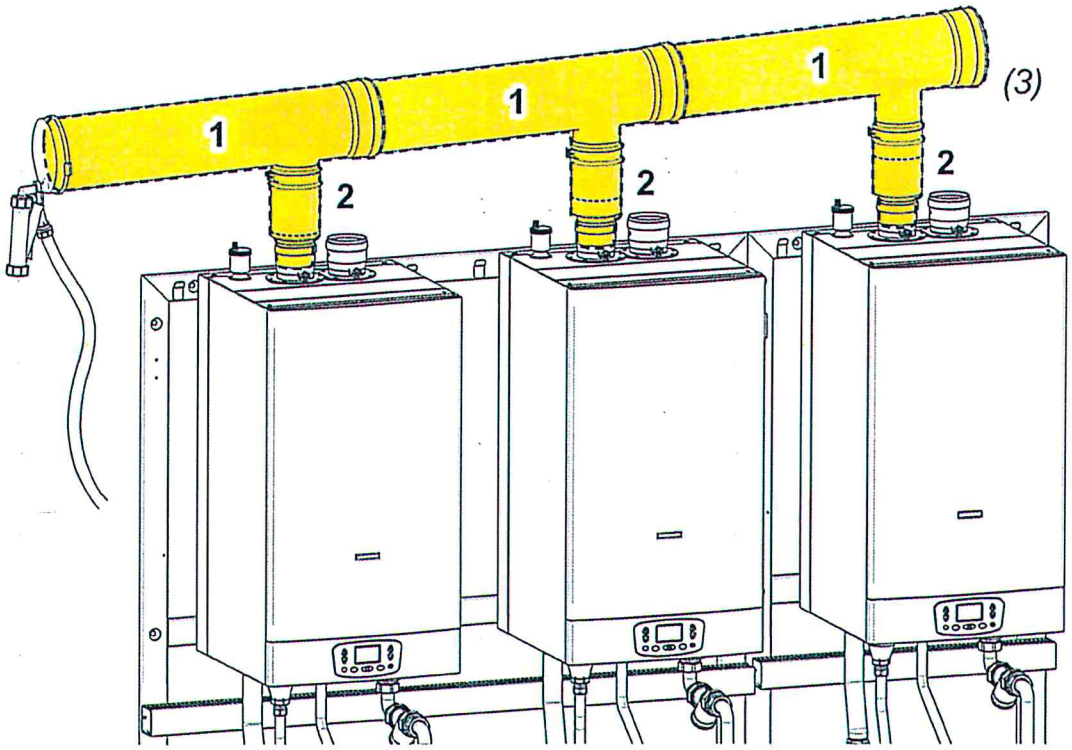
The Balancer Kit for cascade systems having total power above 280kW differs from the lower power one mainly by the flanges having 8 holes instead of 4.

For this reason, the relevant connection kit differs as well and should be chosen similarly. All screws and gaskets are supplied with the connection kit.

1. Screw support **4** in the suitable threaded seating on the lower side of the body **1**. Do NOT seal the thread.
2. Arrange the Balancer Connection Kit (suitable version) without tightening the flanges' bolts.
3. Adjust the support **4** up to align correctly in height of the flanges' holes. This will avoid the mechanical stress to hydraulic connections because the support stands the balancer weight.
4. Tighten the flanges' bolts. Fasten the support **4** to the floor, using expansion screws (not supplied).
5. Fit the sensor trap **2** and the automatic venting valve **3** in the stubs on the upper side of the body **1**, ***as shown in the picture***, sealing the threads.

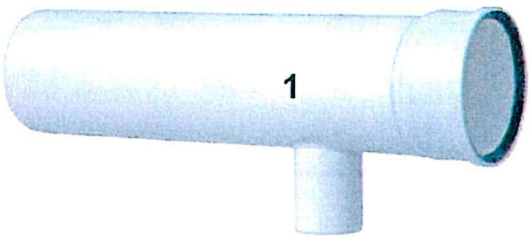


Fume collector kit for cascade in line - (codes in the table)



Fume collector kits are available in various versions to realise all the combinations between module thermal modules and total installed power. Depending on the kit type:

- Collectors **1** can be Ø125, Ø160 and Ø200 (main diameter) according to the total cascade power, and their vertical shunt is always Ø100 mm.
- The adjustable telescopic adapter **2** incorporates the fume non-return valve in the boiler (clapet) and can be Ø100/80 mm or Ø100/100 mm according to the fume connector diameter of the relevant thermal module.
- There is a kit, with specific code, suitable for all possible combinations: see table.



Once all fume system kits are installed and the main collector correct slope is defined, adjust the length of all adapters **2** in order to ensure the complete insertion of the shunt of the collector **1** and of the thermal module fume connector. Block the adapter using the screw.

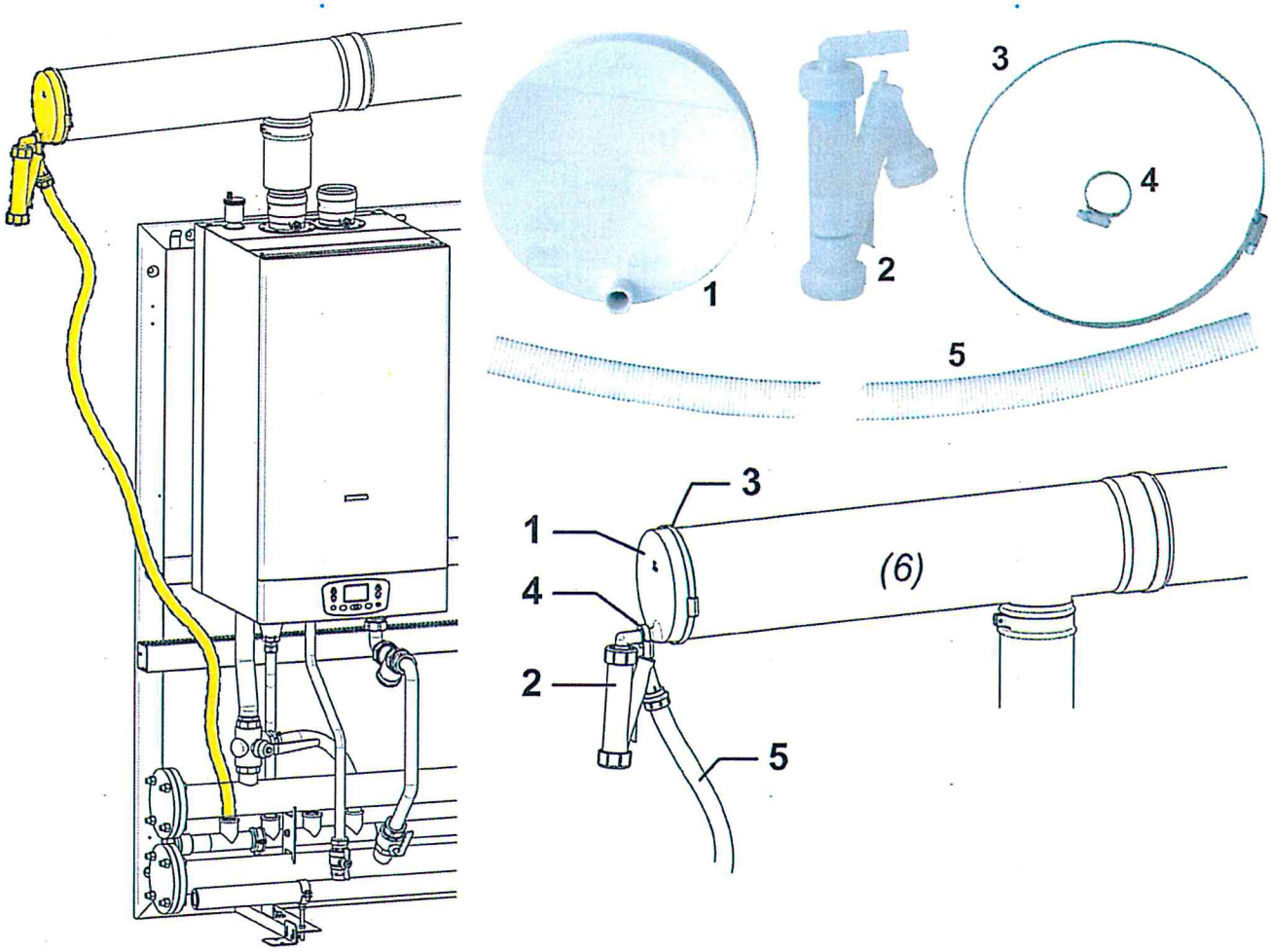
Attention: Every time condensation can form, **install a condensation recovery device** (by the installer) **downstream of the fume collector** *(pos. 3)*.

Attention: With the cascade installation, the rpm of each thermal module fan at minimum flow rate (Qr) must be modified according to the values reported in the table. Refer to the technical documentations and to the instruction booklet of the boiler. *The rpm at maximum rated flow rate (Qn) does **not** have to be modified.*

Connected thermal module model	Cascade total power Kit Code (collector **1** main Ø / Ø connector in boiler of adapter **2** - mm)			Fan rpm, at Qr, of the single thermal module
	up to 160 kW	from 160 kW to 270 kW	from 270 kW to 460 kW (max*)	
50 kW	**401007001** (125/80)	**401007002** (160/80)	**401007007** (200/80)	**1500** (G20 and G31)
70 kW	**401007001** (125/80)	**401007002** (160/80)	**401007007** (200/80)	**1500** (G20 and G31)
90 kW	–	**401007006** (160/100)	**401007008** (200/100)	**1600** (G20 and G31)
115 kW	–	**401007006** (160/100)	**401007008** (200/100)	**1600** (G20 and G31)
160 kW	–	**401007006** (160/100)	**401007008** (200/100)	**1600** (G20 and G31)

* ***Attention:*** the **maximum number of thermal modules** which can be installed in a single cascade is **4. If all the modules are 160 kW power, the maximum is 3.** It is not possible to install more thermal modules in the same cascade, even if the total power value is lower than the maximum indicated value.

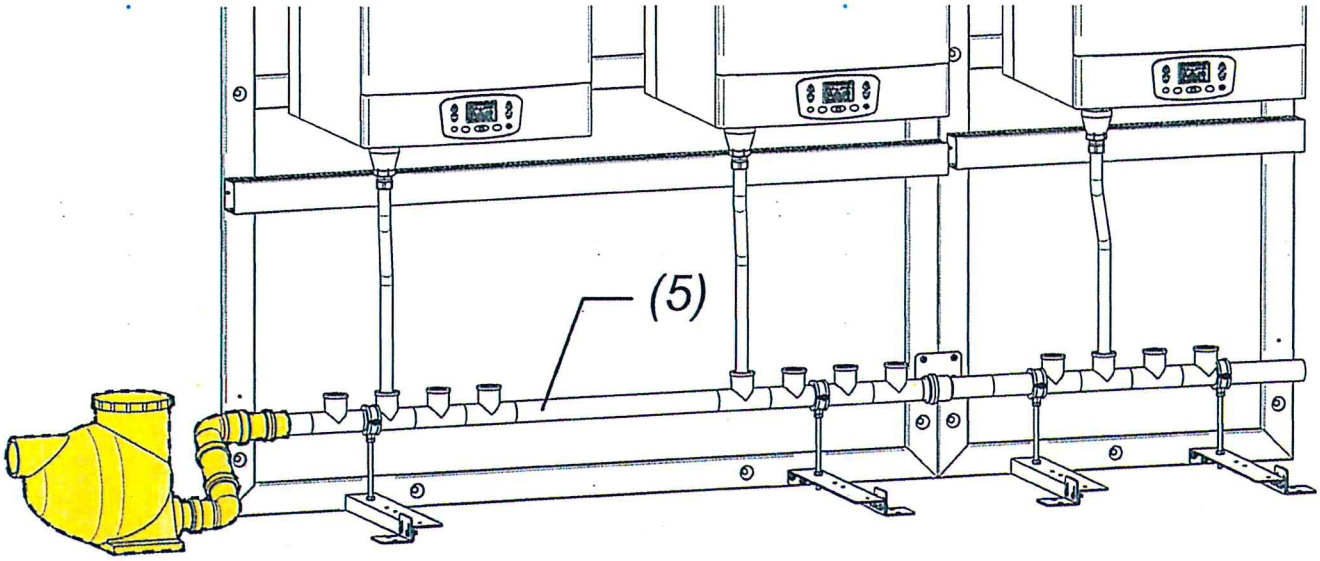
Fume collector cap kit - (codes in the table)

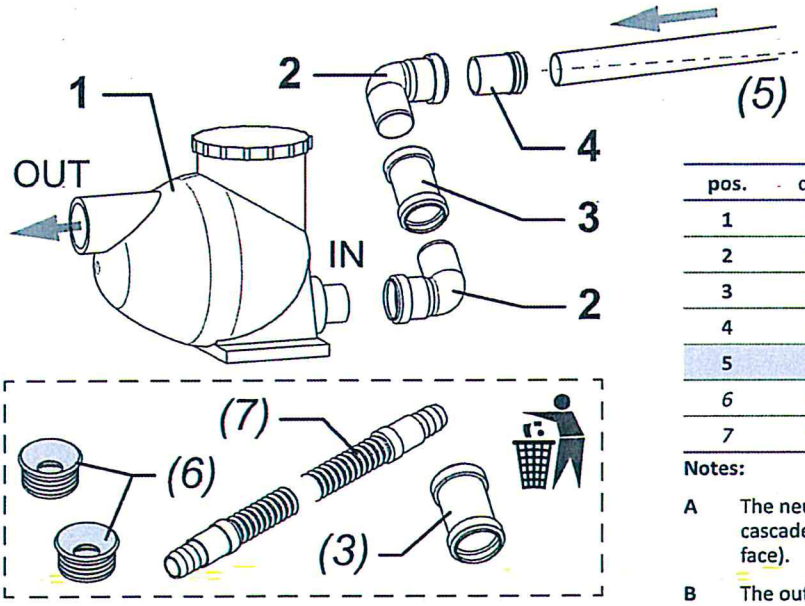


Cascade total power Kit code (cap for fume collector main Ø pos. 6)		
up to 160 kW	**from 160 kW to 270 kW**	**more than > 270 kW**
401007003 (Ø125mm)	**401007004** (Ø160mm)	**401007005** (Ø200mm)

- Install cap **1** at the beginning (lowest point) of the cascade fume collector, with exhaust connector downward. Secure the cap to the collector using the pipe holder big clamp **3**.
- Fitting the pipe holder small clamp **4**, insert and secure the siphon **2** to the exhaust connector of the cap **1**.
- Insert an end of the corrugated pipe **5** in the outlet connection of the siphon **2**, blocking it by tightening the ring nut.
- Insert the other end of the corrugated pipe **5** in the first available pipe union of the condensation discharge collector kit.

Condense neutralization kit - 401150015





pos.	qty.	Description
1	1	Neutralizer *(ref. notes A and B)*
2	2	Bend 90° M-F Ø50mm PP-H
3	2	Extension F-F Ø50mm PP-H *(ref. note D)*
4	1	Adapter Ø50mm M - Ø40mm F PP-H
5	—	Condensation discharge collector kit *(ref. note C)*
6	2	Pipe rubber adapter *(ref. note D)*
7	1	Extensible hose L max. 2.5m *(ref. note D)*

Notes:

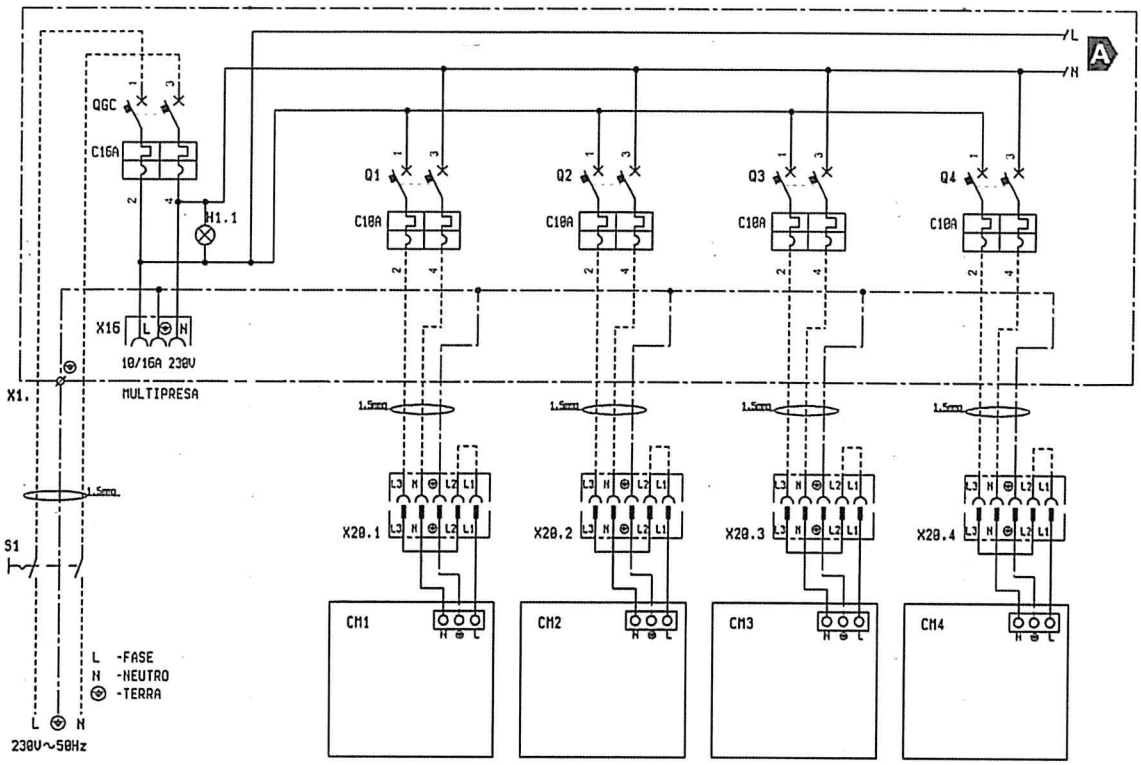
A The neutralizer should be installed on the floor on the side of the cascade termination (i.e. on the opposite side of the system interface).

B The outlet (OUT) should be located below the level of the condensation discharge collector 5.

C Adjust the slope of the condensation discharge collector 5 in a way that the condense flows towards the neutralizer, so the end connected to the neutralizer should be lower. Use collector's support nuts and threaded bars: see page 3 for the 2-modules collector and page 10 for the 1-module collector.

D Some items supplied in the kit are intended for other applications: don't use them (see picture)

Electrical connections



Legend:

A Power supply to Sequence Controller
CM*n* Thermal module (boiler)
H1.1 Cascade supply indicator
Q*n* Single thermal module supply switch *(ref. note 1)*
QGC Cascade panel general switch
S1 Line general switch *(ref. note 1)*
X16 Service connection point
X20.*no.* Thermal module supply connector

Note:

1 Component not included (to be provided by the installer)

Technical characteristics

Data referring to thermal module single models		50 kW	70 kW	90 kW	115 kW	160 kW
Rated thermal flow	kW	47.5	63.0	85.0	108.0	150
Rated thermal power (80/60°C)	kW	46.0	61.1	82.4	104.9	144.6
Rated thermal power (50/30°C)	kW	49.2	65.6	89.3	113.5	157.5
Maximum working pressure	Bar	3.0	3.0	4.5	4.5	4.5
Water content of individual thermal modules	l	3.5	4.0	9	11.5	14
Water content of the collector part for each thermal module	l	6	6	6	6	6
Electrical power absorbed	W	145	190	255	315	480
Maximum working temperature	°C	95	95	95	95	95
Maximum project temperature	°C	100	100	100	100	100
GAS connector diameter on thermal module	inch	1" M				
Connector diameter on cascade GAS collector	inch	1" Gas M				
Cascade GAS collector diameter	inch	1¼"				
System delivery/return connector diameter on thermal module	inch	1¼" M				
Diameter of connector on cascade system delivery/return collectors	inch	1¼" Gas M				
Cascade system delivery/return collector diameter	mm	65				

Data related to other modular generator components		< 280 kW tot.	> 280 kW tot.
Water content of the collector kit	l	6	
Water content of the balancer connection kit	l	7	9
Water content of the sludge remover/deaerator kit for cascade	l	16	35
Water content of the balancer kit	l	21	46

Expansion systems

Considering the possible dimension range of the system of the modular generator, the installation of the suitable expansion systems has to be carried out by the installer.

The collector kit has a specific connector for expansion tank (see "Collector kit - 401150094" on page 12), which has to be used as follows:

- **in case of a system with hydraulic balancer** which does not perform a physical separation between the generator hydraulic circuit and the one of the rest of the system, the connector on the collector kit can be used for the connection of a single expansion system of the whole hydraulic system. The tank volume must be calculated according to the system water content, to which the modular generator total water content value must be added. The value of this last one must be calculated referring to the tables of the technical specifications listed above:
  - water content of individual thermal modules + water content of the collector part for each thermal module + water content of the collector kit + water content of the balancer connection kit + water content of the sludge remover/deaerator kit for cascade + water content of the balancer kit.
- **in case of a system with plate exchanger** or with separated circuits, two expansion systems **must be installed:**
  - **the first one, for the circuit mounted upstream of the exchanger** (modular generator) with **12 litres volume** and **to connect to the specific connector on the collector kit** of the modular generator itself;
  - **the second one, for the circuit mounted downstream of the exchanger,** the volume of which will have to be evaluated and dimensioned according to the system features and dimensions. This expansion system will have to be connected to the circuit downstream of the exchanger.

Functional diagrams of various modular generator configurations

General legend

GAS GAS inlet G 1"1/4 (on left or right; shown on right)

MI Heating System flow - Ø 65mm (on left or right; shown on right)

RI Heating System return - Ø 65mm (on left or right; shown on right)

SC Condense or water drain Ø 40mm (on left or right; shown on right)

1) Thermal Module

2) 3-way system flow shutting manual valve (with minimum inner diameter 18mm, central way in connection with atmosphere)

3) System return shutting manual valve

4) GAS shutting manual valve

5) System flow collector

6) System return collector

7) GAS collector

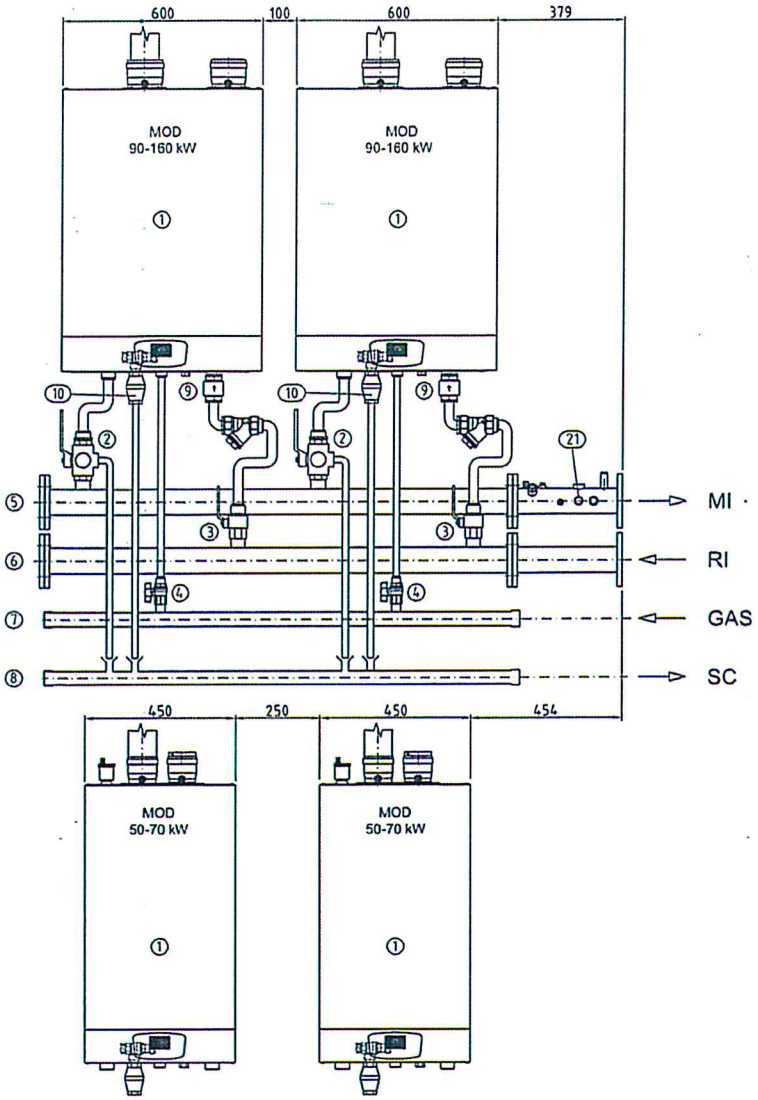
8) Water drain collector

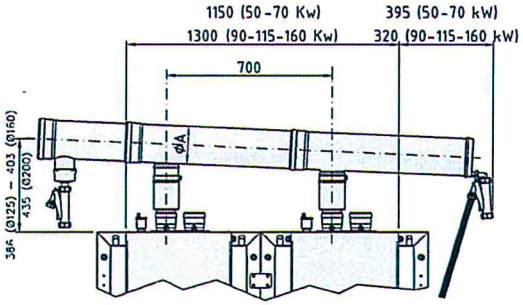
9) Check valve

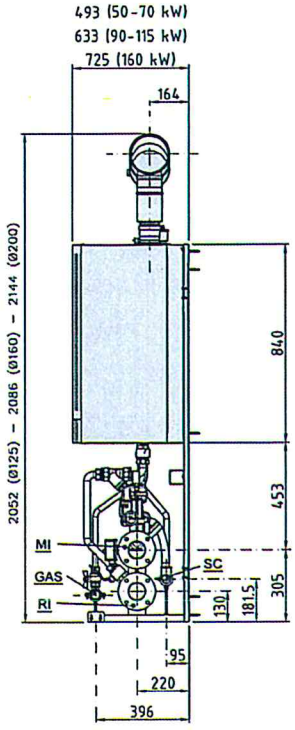
10) Drain funnel for safety valve (with minimum inner diameter 18mm)

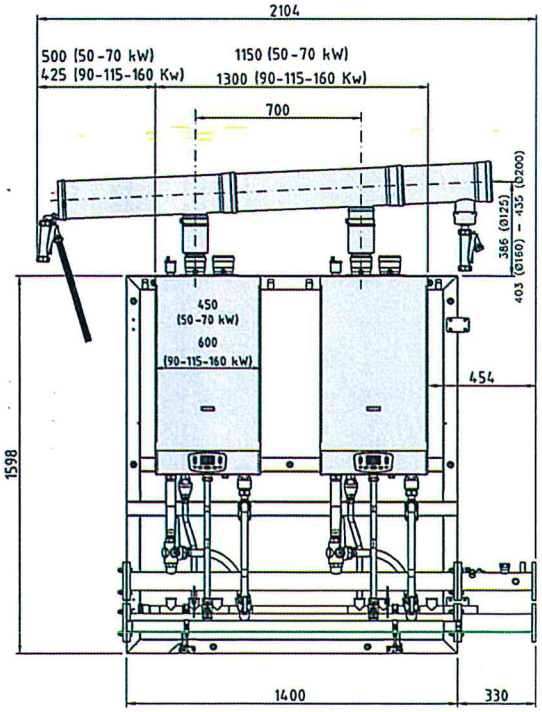
21) Expansion tank connection

2 thermal modules

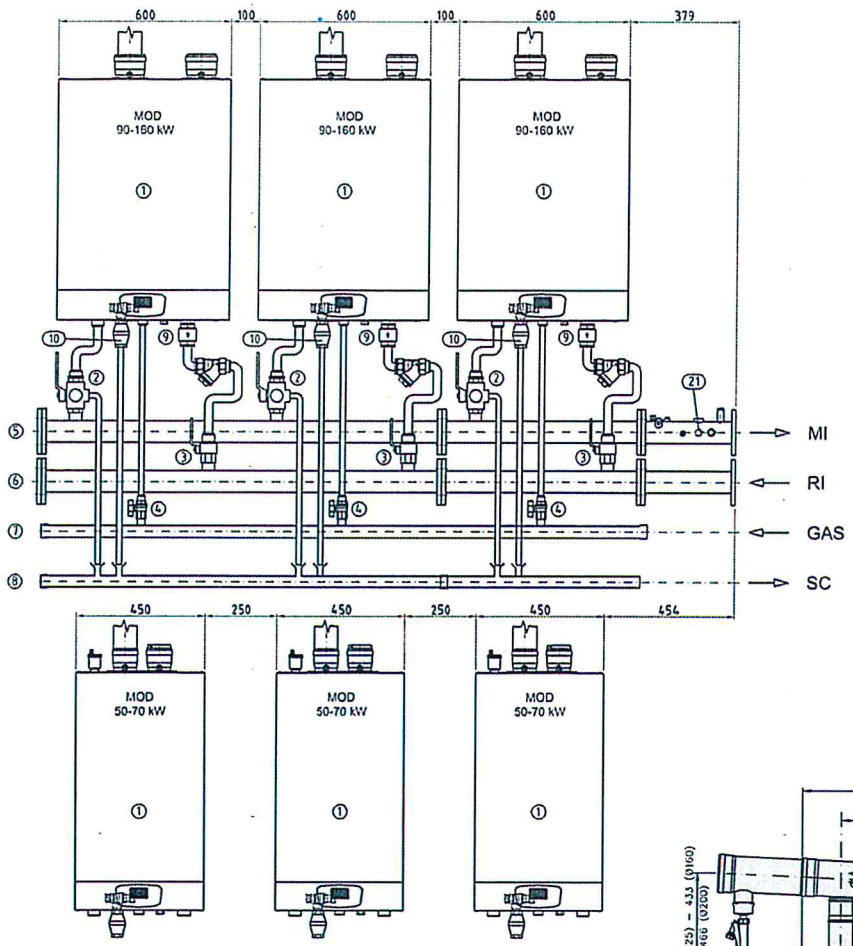


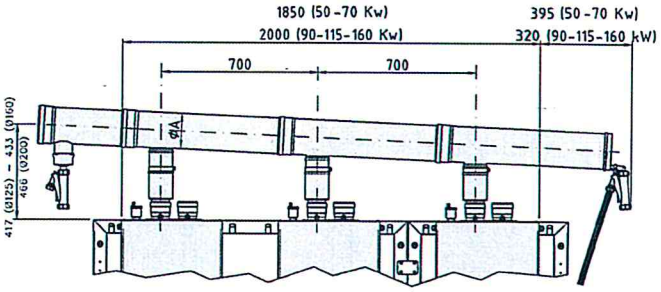


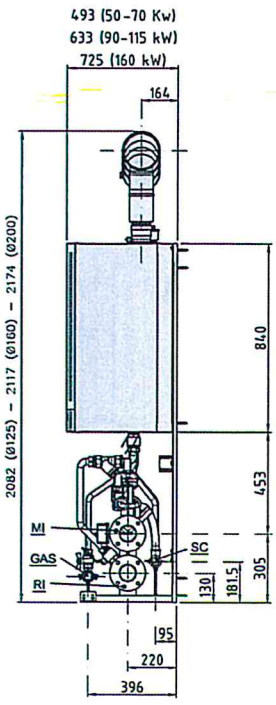


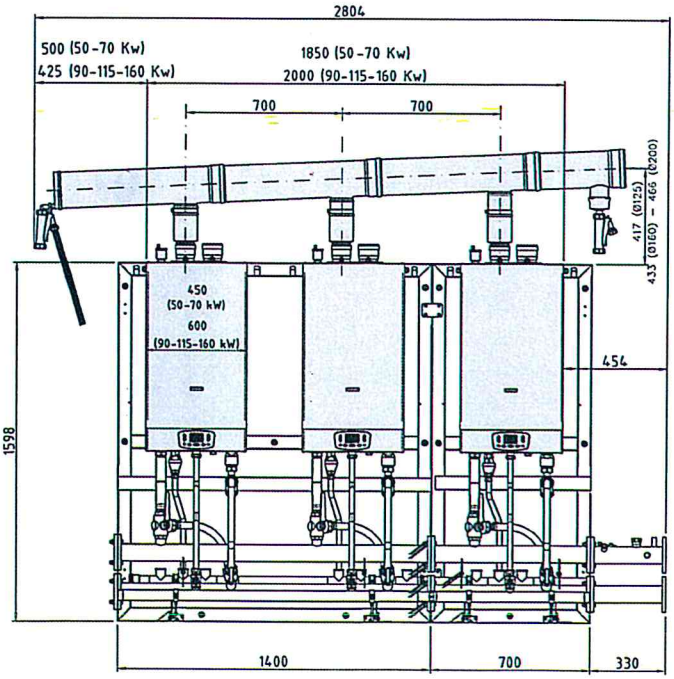


3 thermal modules

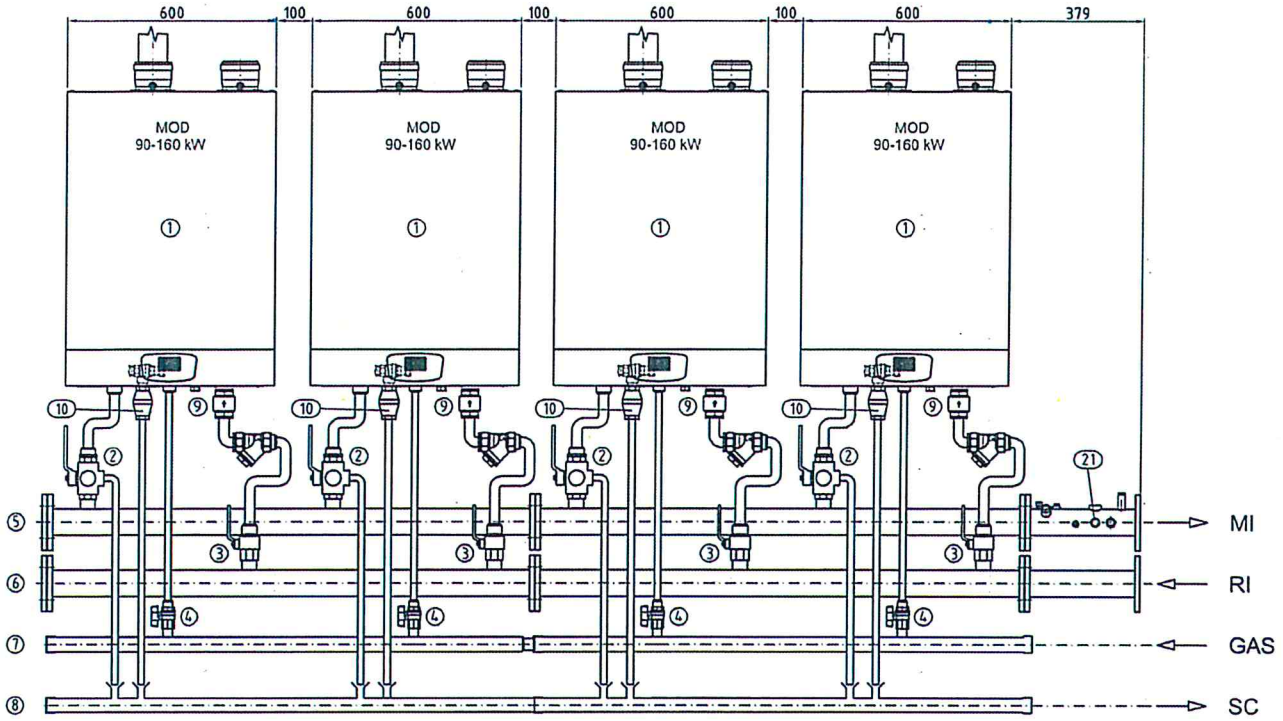


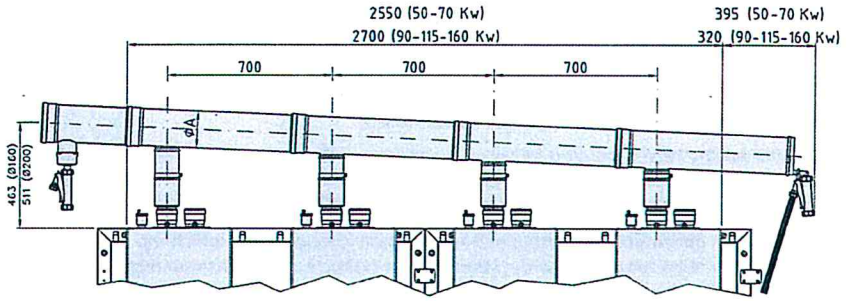


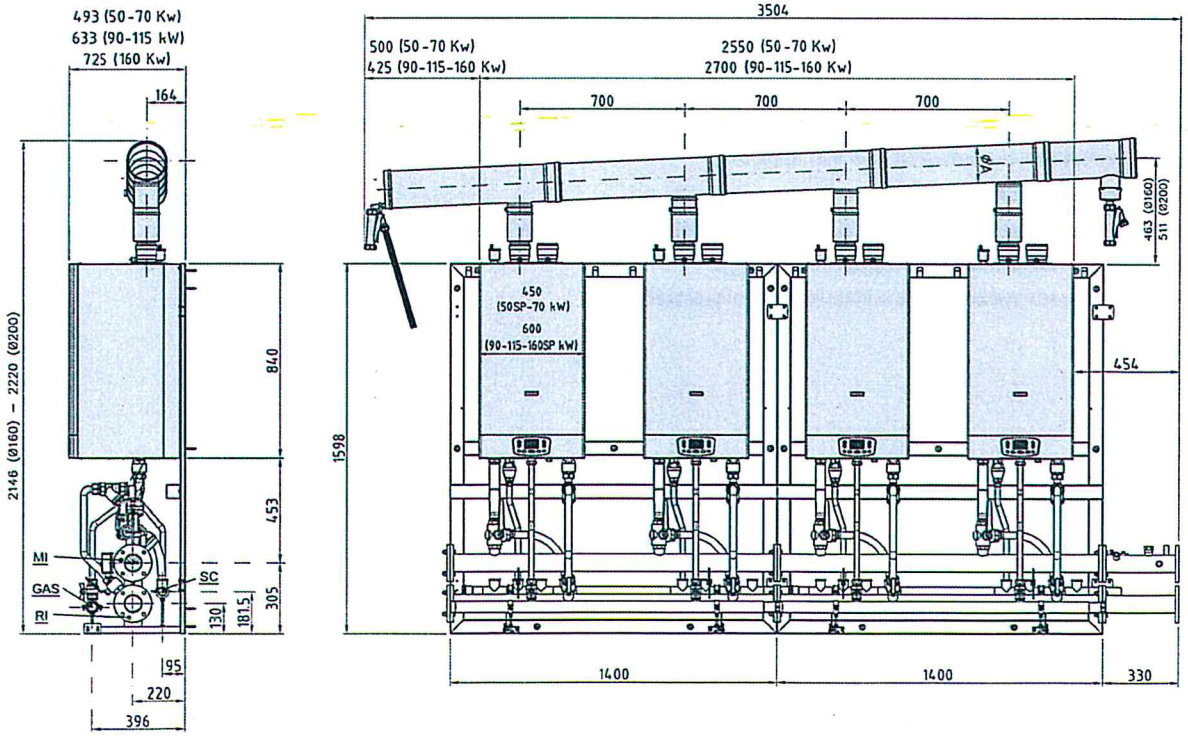




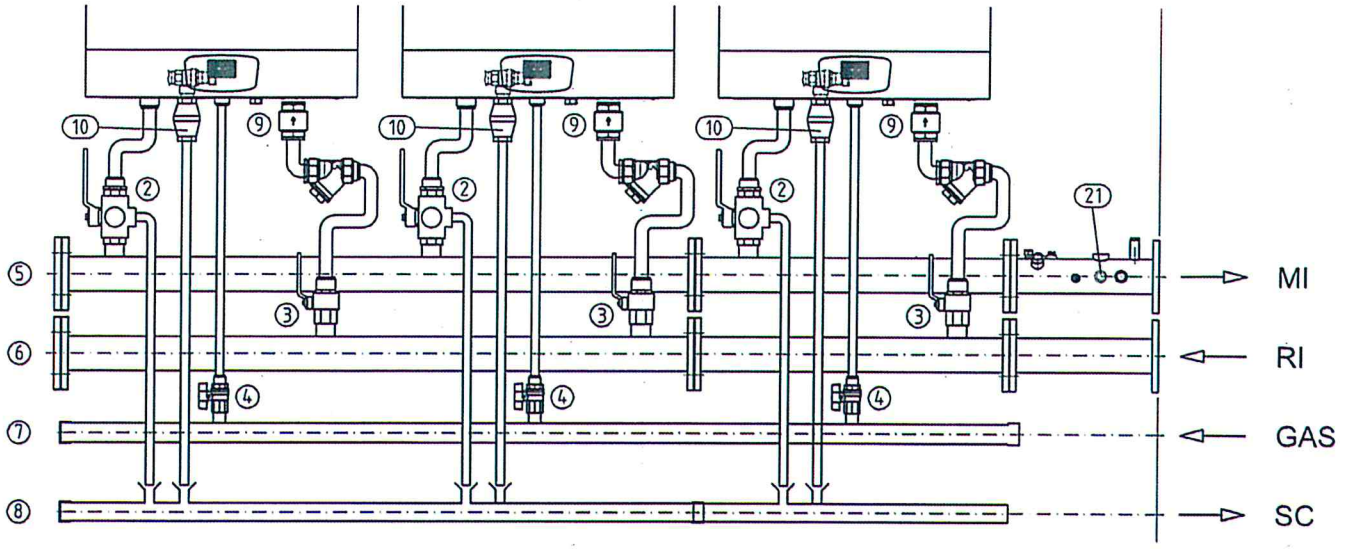
4 thermal modules







Deactivation (for servicing) and reactivation of a thermal module



1. Set the concerned thermal module to stand-by by pressing the key ⏻: display shows the writing **OFF**;
2. cut concerned thermal module power supply off using the relevant power supply switch **Q*n*** located on the system main electric panel (see "Electrical connections" on page 18);
3. close the relevant Gas shut-off valve (pos. 4);
4. close the shut-off valve on the **System Return** (pos. 3);
5. *only after having closed the shut-off valve on the System Return*, close firmly and ***without pausing on intermediate positions*** place the three-way manual valve on the System Delivery (pos. 2) bringing the lever to a horizontal position. The thermal module primary circuit pressure will be released and the thermal fluid will be disposed of through the condensation discharge system;

(i) There is an intermediate position of the three-way valve pos. **2** in which the cascade system delivery is connected to the condensation discharge system (at atmospheric pressure), therefore, a passage for an extended period of time in this position would lead to a pressure loss of the cascade system and to a loss of liquid coming out of the condensation discharge system. This is imposed by the applicable regulations which expressly require that this deviation device does not have an intermediate position which does not ensure either the tank expansion or the expansion in atmosphere.

6. carry out thermal module servicing operations, referring to the relevant use and servicing manual;
   - in order to re-connect the thermal module primary circuit to the cascade hydraulic system and bring it back to pressure:
7. position firmly and ***without pausing on intermediate positions*** the three-way manual lever on the System Delivery (pos. **2**) in vertical upward position. Pressure to the cascade hydraulic system will bring the thermal module primary circuit to pressure;
8. open the shut-off valve on the System Return (pos. **3**);
9. open the Gas shut-off valve (pos. 4);
10. restore power supply to the thermal module using the relevant power supply switch located on the main electric panel;
11. activate the thermal module by pressing the key ⏻;
12. verify the cascade system pressure and restore it, if necessary.

Notes

ALUTHERM
Heating

Alutherm Heating Belfeld B.V.
Craenakker 5 | 5951 CC Belfeld | Nederland
Telefoon +31 (0)77 303 19 76
E-mail info@aluthermheating.nl
Website www.aluthermheating.nl