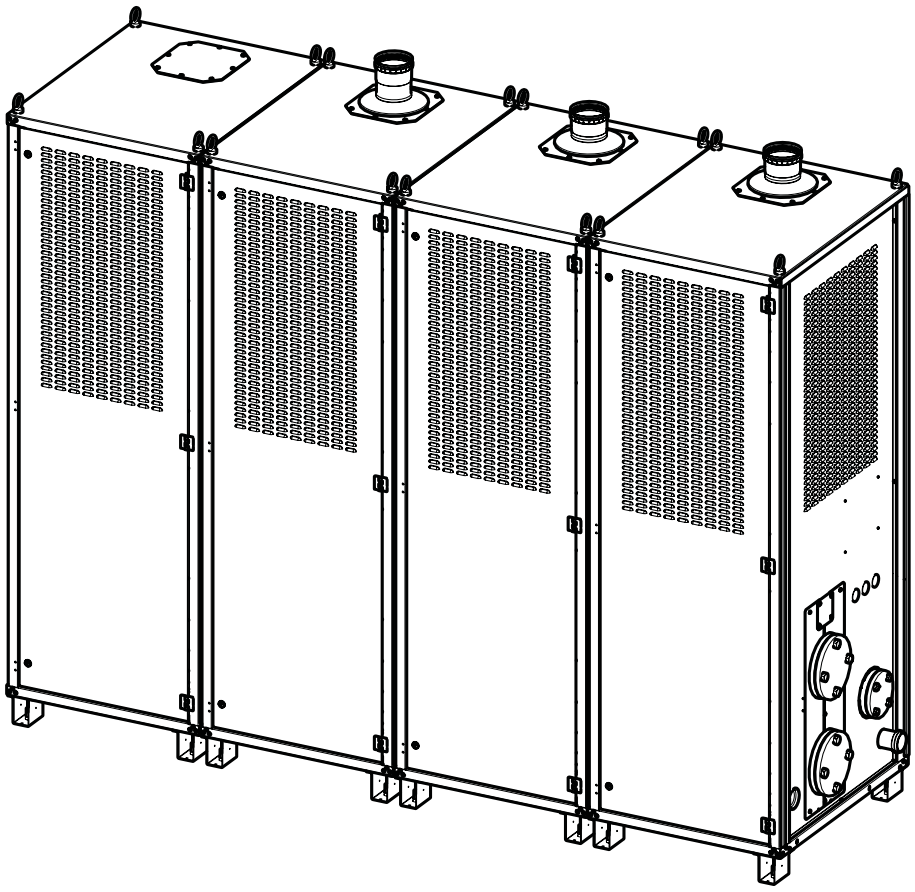
fondital

MODULAR HEAT GENERATORS
ITACA CH KR
CABINET MODULE
OUTDOOR INSTALLATION

IST 03 C 1328 - 05

INSTALLATION, USE



It is compulsory to read this manual before proceeding with the product installation, use and maintenance operations.
This system is intended for production of hot technical water only:

- For heating of residential, commercial and industrial rooms.
- For heating of industrial process water.
- For indirect production of domestic hot water.

Any other use is forbidden.

EN

Dear Sirs,
thank You for choosing and buying one of our products. Please read these instructions carefully in order to properly install, operate, and maintain the product.

WARNING

We inform users that:

- **Boilers shall be installed by an authorised company under the requirements set forth by the prevailing rules, in full compliance with the prevailing regulations and standards.**
- **Anyone entrusting installation to an unqualified installer will be subject to administrative sanctions.**
- **Boilers must be maintained by qualified personnel only, under the requirements set forth by the prevailing rules.**

We hereby inform you that certain models, versions and/or accessories relevant to the products this manual refers to, might not be available in some countries.

Therefore, it is recommended to contact the manufacturer or the importer in order to get the necessary information about the actual availability of such models, versions and/or accessories.

The manufacturer reserves the right to modify the products and/or its components as deemed necessary, in any moment and without prior notice.

This instruction manual is available in two languages, Italian and English, without prejudice to the prevalence of Italian language in case of differences in translation and/or dispute on construction of the text.

General notes for installing and maintenance technicians, and users

This instruction manual is an integral and essential part of the product. It shall be supplied by the installer to the user who shall keep it carefully to consult it whenever necessary.

This document shall be supplied together with the equipment in case the latter is sold or transferred to others.

WARNING

This boiler is intended for production of hot technical water only:

- **For heating of residential, commercial and industrial rooms.**
- **For heating of industrial process water.**
- **For indirect production of domestic hot water.**

Any other use is forbidden.

DANGER

This boiler must be installed by qualified personnel.

The installation by unqualified personnel is forbidden.

DANGER

This boiler must be installed in compliance with the requirements of the technical standards and legislation in force relating to gas appliances, particularly with reference to ventilation of the premises.

Any installation that does not comply with the requirements of the technical standards and legislation in force is forbidden.

DANGER

This boiler must be installed according to the manufacturer's instructions given in this manual. Incorrect installation may cause injury to persons and/or animals and damage to property. The manufacturer shall not be held liable for any such injury and/or damage.

WARNING

This boiler must be installed inside the building or in a partially sheltered place.

A partially sheltered place is a place which is not directly exposed to atmospheric agents.

Any installation in a place that is not partially sheltered is forbidden.

DANGER

This boiler must be correctly and safely connected to an electrical system compliant with the existing technical standards.

Any incorrect and unsafe connection to the electrical system is forbidden.

It is forbidden to connect the boiler to an electrical system lacking a differential switch to protect the boiler power line.

Any connection to an electrical system lacking a proper grounding system is forbidden.

WARNING

The boiler is supplied with a three-pole power cable, already connected to the electronic board and it is provided with a safety clamp.

This boiler must be connected to a 230V power supply network, as indicated on the label affixed to the power cable.

DANGER

Carefully read the instructions relating to air intake and flue gas venting systems in the specific section of this manual.

DANGER

This boiler must be connected to a gas distribution system which complies with the existing technical standards.
Check the gas system state of conservation before installing the boiler.
Any connection to a gas system which does not comply with the existing technical standards is forbidden.
When connecting the boiler to gas supply network, it is compulsory to install an appropriately sized gasket made from suitable material.
The boiler gas inlet coupling is not suitable for hemp, teflon tape or similarly made gaskets.
After connecting the boiler, check the connection for tightness.
Once gas is in the pipes, leak test by a naked flame is forbidden; use specific products available on the market.

DANGER

With gas fired boilers, take the following measures if you smell gas:
- **Do not turn on or off electric switches and do not turn on electric appliances.**
- **Do not ignite flames and do not smoke.**
- **Close the main gas cock.**
- **Open doors and windows.**
- **Contact a Service Centre, a qualified installer or the gas supply company.**

Never use a flame to locate a gas leak.
The boiler is designed for installation in the countries indicated on the technical data plate applied both to the package and to the boiler itself: installation in any other country may be a source of danger for people, animals and/or property.
The manufacturer will bear no contractual and tortious liability for failure to comply with all the instructions above.

Before installing the boiler, check that the technical data correspond to the requirements for its correct use in the system.
Check that the boiler is intact and it has not been damaged during transport and handling. Do not install equipment which is clearly damaged and/or faulty.

Damage and/or injury caused by incorrect installation or use and/or damage and/or injury due to non-observance of the manufacturer's instructions shall release the manufacturer from any and all contractual and extra-contractual liability.

Do not obstruct the air intake openings.

Only original accessories or optional kits (including the electric ones) are to be installed.
Properly dispose of the packaging as all the materials can be recycled. The packaging must therefore be sent to specific waste management sites.
After removing the packaging, make sure that its elements (clips, plastic bags, foam polystyrene etc.) are not left within the reach of children as they are potential hazard sources.
In the event of failure and/or faulty functioning, switch off the boiler. Do not attempt to make repairs: contact qualified technicians.
Original parts must be used for all repairs to the boiler.
Non-observance of the above requirements may affect the safety of the boilers and endanger people, animals and/or property.

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
Children should be supervised to ensure that they do not play with the appliance.

DANGER

Before starting the boiler, and each time it is at a standstill for several days, make sure the trap is full of water.
If the trap is empty, fill it by pouring water into the boiler through the flue gas venting duct.

WARNING

The boiler must be serviced periodically as indicated in the relevant section of this manual.
Appropriate boiler maintenance ensures efficient operation, environment preservation, and safety for people, animals and objects.
Incorrect and irregular maintenance can be a source of danger for people, animals and property.

The user is strongly advised to have the system serviced and repaired by qualified personnel, satisfying all prevailing law requirements, and trained to properly carry out these operations.

In the event of long periods of inactivity of the boiler, disconnect it from the electrical power mains and close the gas cock.

WARNING

With the electrical power disconnected and the gas cock closed, the device's electrical anti-freeze function does not work.

Should there be a risk of freezing, add antifreeze: it is not advisable to drain the system as this may result in damage; use specific anti-freeze products suitable for multi-metal heating systems.

DANGER

Damage and/or injury caused by incorrect installation and/or incorrect use and/or unauthorized changes to the boiler and/or non-observance of the manufacturer’s instructions and/or of the relative standards/laws in force in the country of installation, shall release the manufacturer from any and all liability.

1.1 Warning on modular generator configuration

The installation configuration of modular heat generators allows to install:

- A maximum number of 6 modules in series.
- Combine modules with the same output.
- As an alternative, combine modules with ‘adjacent’ outputs, i.e. module combinations as follows
  - » (45 - 60)
  - » (60 - 85)
  - » (85 - 120)
  - » (120 - 150)

1.2 Direct left/right collector configuration

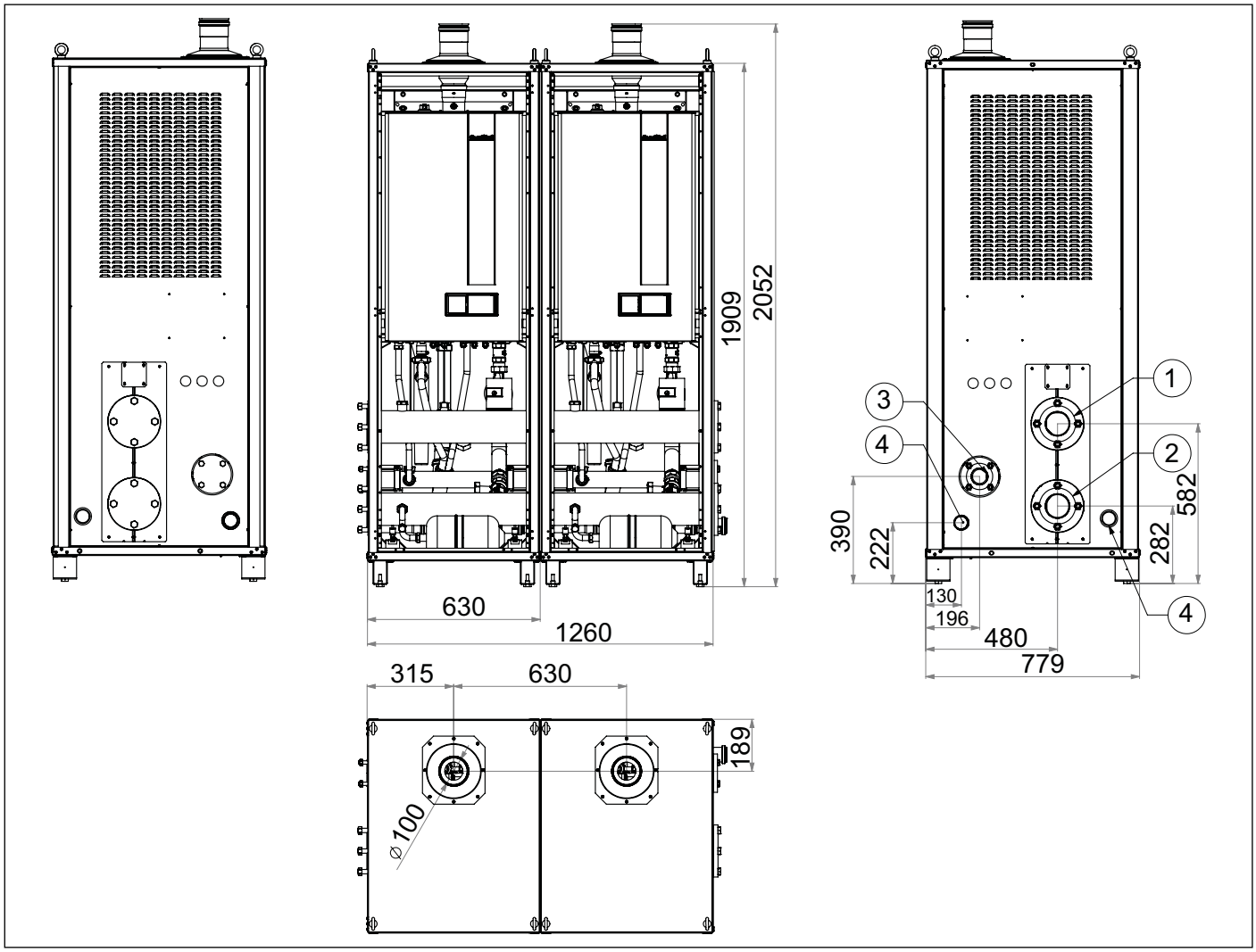


Fig. 1 Combination of left 45-60 direct collectors in cabinet

Ref	Description
1	DN 80 PN 6 flanged primary circuit flow
2	DN 80 PN 6 flanged primary circuit return
3	DN 50 PN 6 flanged gas inlet
4	DN 50 condensate drain

MODULAR GENERATOR MODEL	CH KR HEAT GENERATORS		MAXIMUM SYSTEM PRESSURE	FLUE GAS VENT MINIMUM DIAMETER
	45	60		
-	-	-	bar	mm
45	x1	-	3	160
60	-	x1		
105	x1	x1		

WARNING

FOR ALL 'DIRECT COLLECTOR' CONFIGURATIONS, IT IS MANDATORY TO SEPARATE THE PRIMARY CIRCUIT FROM THE SECONDARY CIRCUIT USING A HYDRAULIC SEPARATOR OR A PLATE EXCHANGER, AFTER CHECKING THAT HYDRAULIC CONNECTIONS AND FLOW RESISTANCES ARE NOT GREATER THAN THOSE INDICATED IN PARAGRAPH *Pressure loss* **ON PAGE** *66*

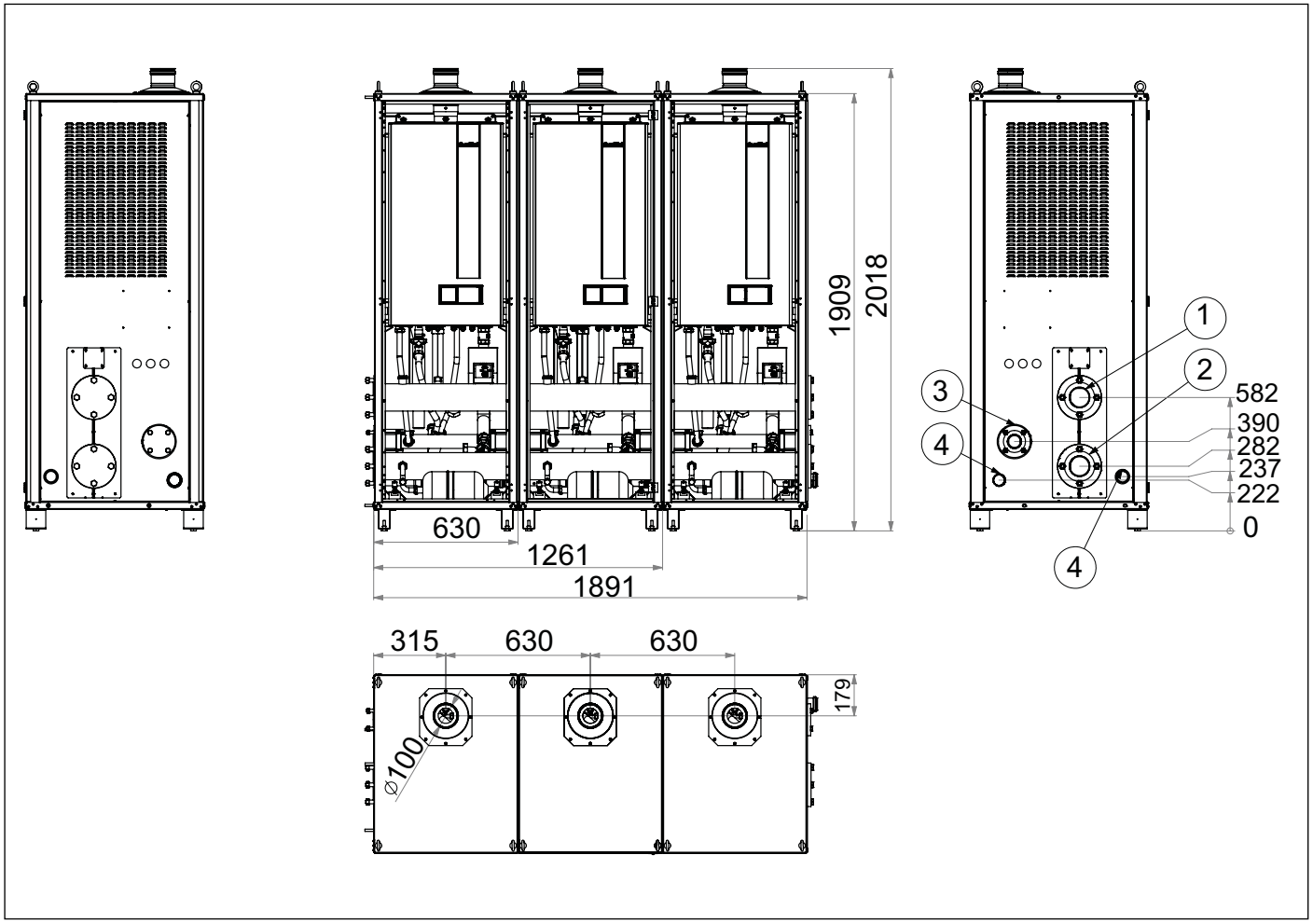


Fig. 2 Combination of left 85-120 direct collectors in cabinet

Ref	Description
1	DN 80 PN 6 flanged primary circuit flow
2	DN 80 PN 6 flanged primary circuit return
3	DN 50 PN 6 flanged gas inlet
4	DN 50 condensate drain

MODULAR GENERATOR MODEL	CH KR HEAT GENERATORS		MAXIMUM SYSTEM PRESSURE	FLUE GAS VENT MINIMUM DIAMETER
	85	120		
-	-	-	bar	mm
85	x1	-	5	160
120	-	x1		
170	x2	-		
205	x1	x1		
240	-	x2		
325	x1	x2	5	200

WARNING

FOR ALL 'DIRECT COLLECTOR' CONFIGURATIONS, IT IS MANDATORY TO SEPARATE THE PRIMARY CIRCUIT FROM THE SECONDARY CIRCUIT USING A HYDRAULIC SEPARATOR OR A PLATE EXCHANGER, AFTER CHECKING THAT HYDRAULIC CONNECTIONS AND FLOW RESISTANCES ARE NOT GREATER THAN THOSE INDICATED IN PARAGRAPH *Pressure loss* **ON PAGE** *66*

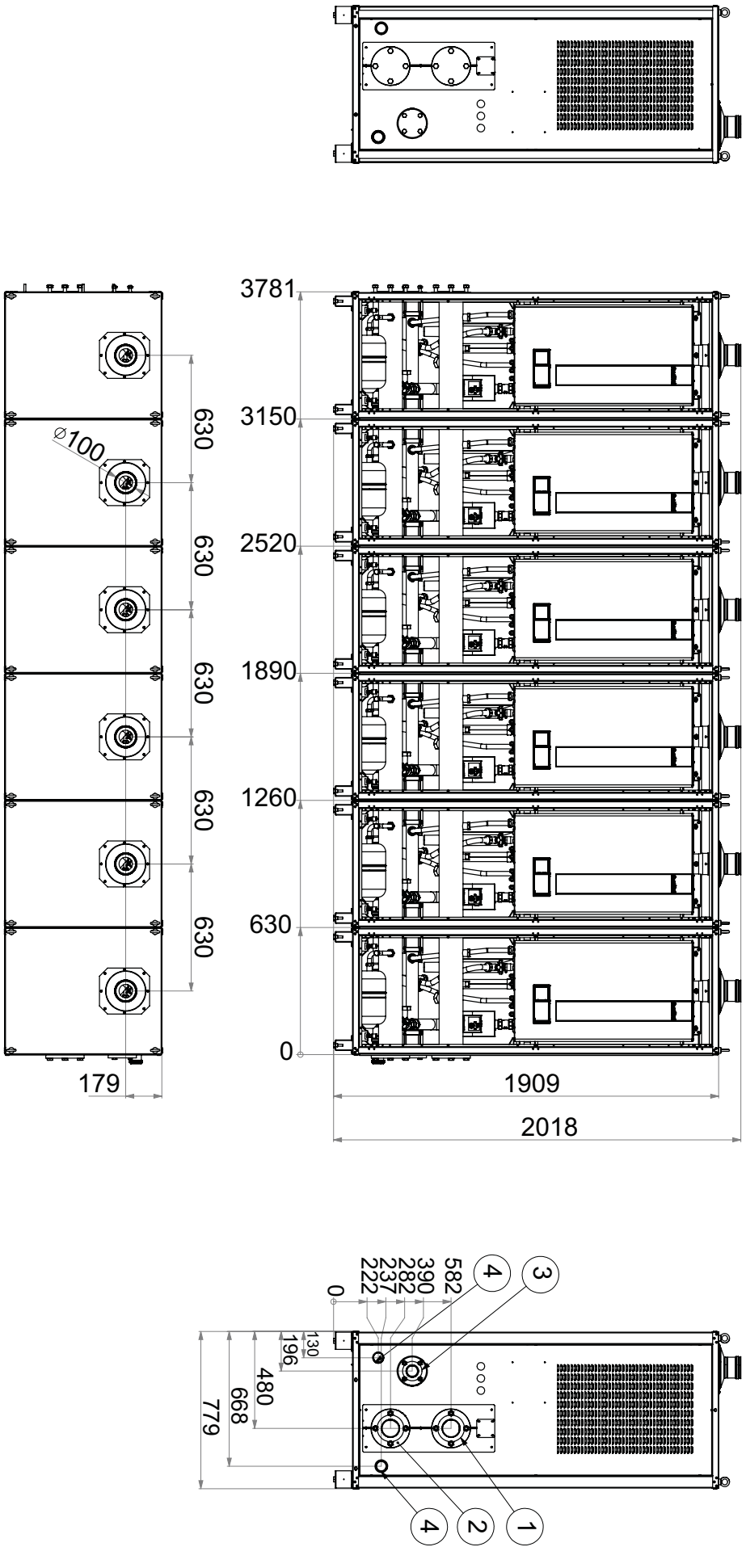


Fig. 3 Combination of left 120-150 direct collectors in cabinet

Ref	Description
1	DN 80 PN 6 flanged primary circuit flow
2	DN 80 PN 6 flanged primary circuit return
3	DN 50 PN 6 flanged gas inlet
4	DN 50 condensate drain

MODULAR GENERATOR MODEL	CH KR HEAT GENERATORS		MAXIMUM SYSTEM PRESSURE	FLUE GAS VENT MINIMUM DIAMETER
	120	150		
-	-	-	bar	mm
150	-	x1	5	160
270	x1	x1		
300	-	x2		
360	x3	-	5	200
390	x2	x1		
420	x1	x2		
450	-	x3		
480	x4	-		
510	x3	x1		
540	x2	x2		
570	x1	x3		
600	-	x4		
630	x4	x1	5	250
660	x3	x2		
690	x2	x3		
720	x1	x4		
750	-	x5		
780	x4	x2		
810	x3	x3		
870	x1	x5		
900	-	x6		

WARNING

FOR ALL 'DIRECT COLLECTOR' CONFIGURATIONS, IT IS MANDATORY TO SEPARATE THE PRIMARY CIRCUIT FROM THE SECONDARY CIRCUIT USING A HYDRAULIC SEPARATOR OR A PLATE EXCHANGER, AFTER CHECKING THAT HYDRAULIC CONNECTIONS AND FLOW RESISTANCES ARE NOT GREATER THAN THOSE INDICATED IN PARAGRAPH *Pressure loss* **ON PAGE** *66*

1.3 Left/right hydraulic separator configuration

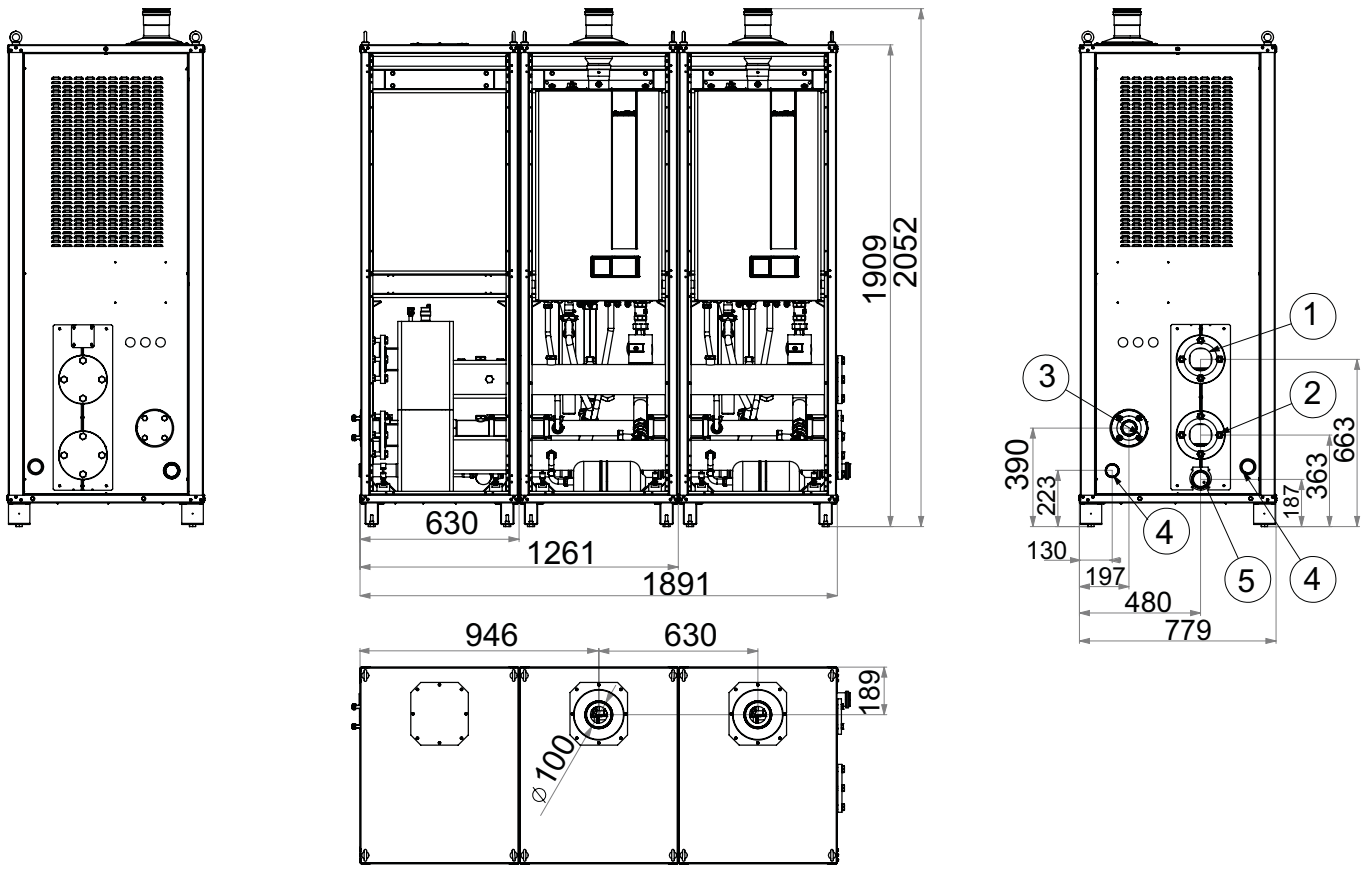


Fig. 4 Combination of left 45-60 hydraulic separator in cabinet

Ref	Description
1	DN 80 PN 6 flanged secondary circuit flow
2	DN 80 PN 6 flanged secondary circuit return
3	DN 50 PN 6 flanged gas inlet
4	DN 50 condensate drain
5	Circuit breaker drain G 1 1/2 F

MODULAR GENERATOR MODEL	CH KR HEAT GENERATORS		MAXIMUM SYSTEM PRESSURE	FLUE GAS VENT MINIMUM DIAMETER
	45	60		
-	-	-	bar	mm
45	x1	-	3	160
60	-	x1		
105	x1	x1		

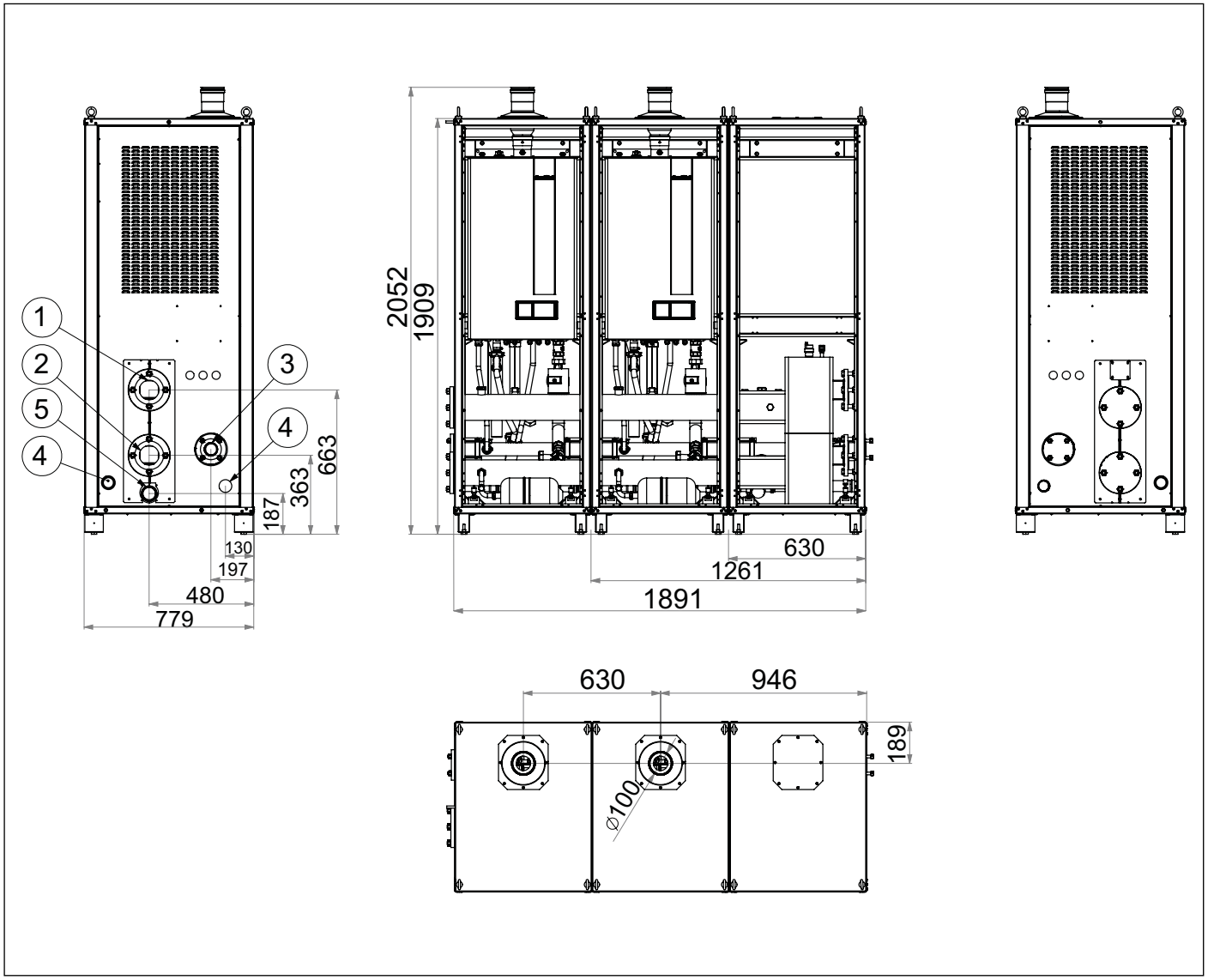


Fig. 5 Combination of right 45-60 hydraulic separator in cabinet

Ref	Description
1	DN 80 PN 6 flanged secondary circuit flow
2	DN 80 PN 6 flanged secondary circuit return
3	DN 50 PN 6 flanged gas inlet
4	DN 50 condensate drain
5	Circuit breaker drain G 1 1/2 F

MODULAR GENERATOR MODEL	CH KR HEAT GENERATORS		MAXIMUM SYSTEM PRESSURE	FLUE GAS VENT MINIMUM DIAMETER
	45	60		
-	-	-	bar	mm
45	x1	-	3	160
60	-	x1		
105	x1	x1		

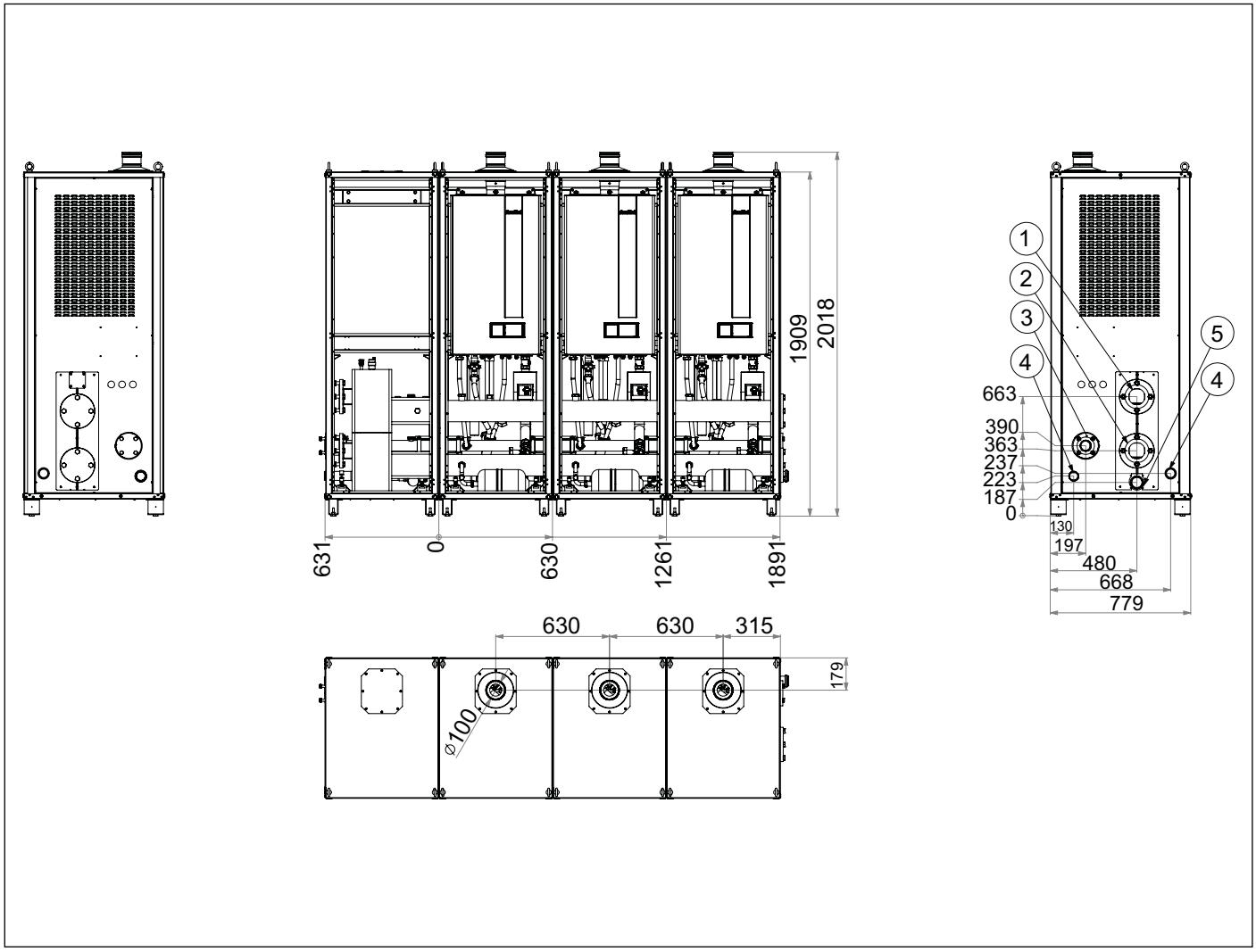


Fig. 6 Combination of left 85-120 hydraulic separator in cabinet

Ref	Description
1	DN 80 PN 6 flanged secondary circuit flow
2	DN 80 PN 6 flanged secondary circuit return
3	DN 50 PN 6 flanged gas inlet
4	DN 50 condensate drain
5	Circuit breaker drain G 1 1/2 F

MODULAR GENERATOR MODEL	CH KR HEAT GENERATORS		MAXIMUM SYSTEM PRESSURE	FLUE GAS VENT MINIMUM DIAMETER
	85	120		
-	-	-	bar	mm
85	x1	-	5	160
120	-	x1		
170	x2	-		
205	x1	x1		
240	-	x2		
325	x1	x2	5	200

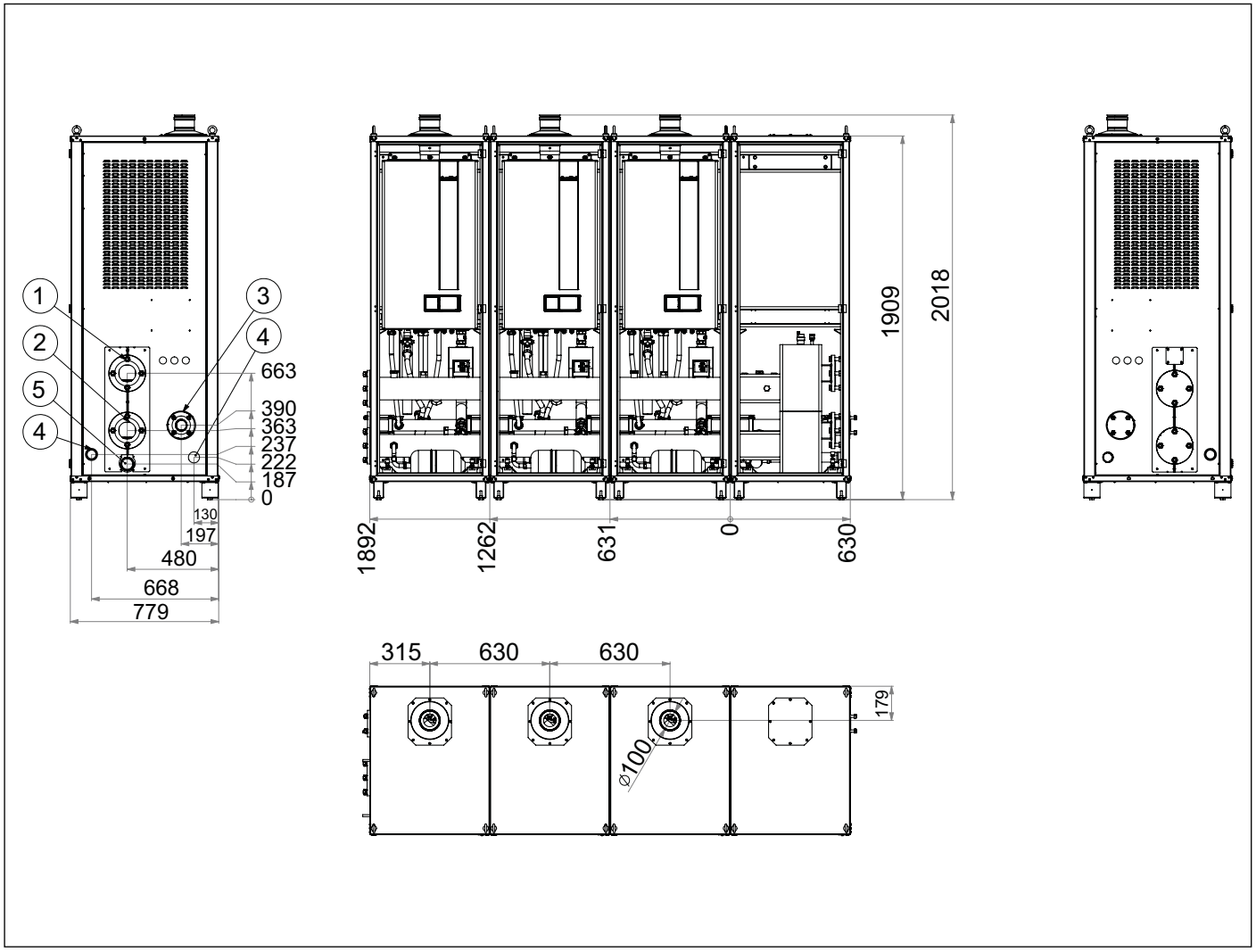


Fig. 7 Combination of right 85-120 hydraulic separator in cabinet

Ref	Description
1	DN 80 PN 6 flanged secondary circuit flow
2	DN 80 PN 6 flanged secondary circuit return
3	DN 50 PN 6 flanged gas inlet
4	DN 50 condensate drain
5	Circuit breaker drain G 1 1/2 F

MODULAR GENERATOR MODEL	CH KR HEAT GENERATORS		MAXIMUM SYSTEM PRESSURE	FLUE GAS VENT MINIMUM DIAMETER
	85	120		
-	-	-	bar	mm
85	x1	-	5	160
120	-	x1		
170	x2	-		
205	x1	x1		
240	-	x2		
325	x1	x2	5	200

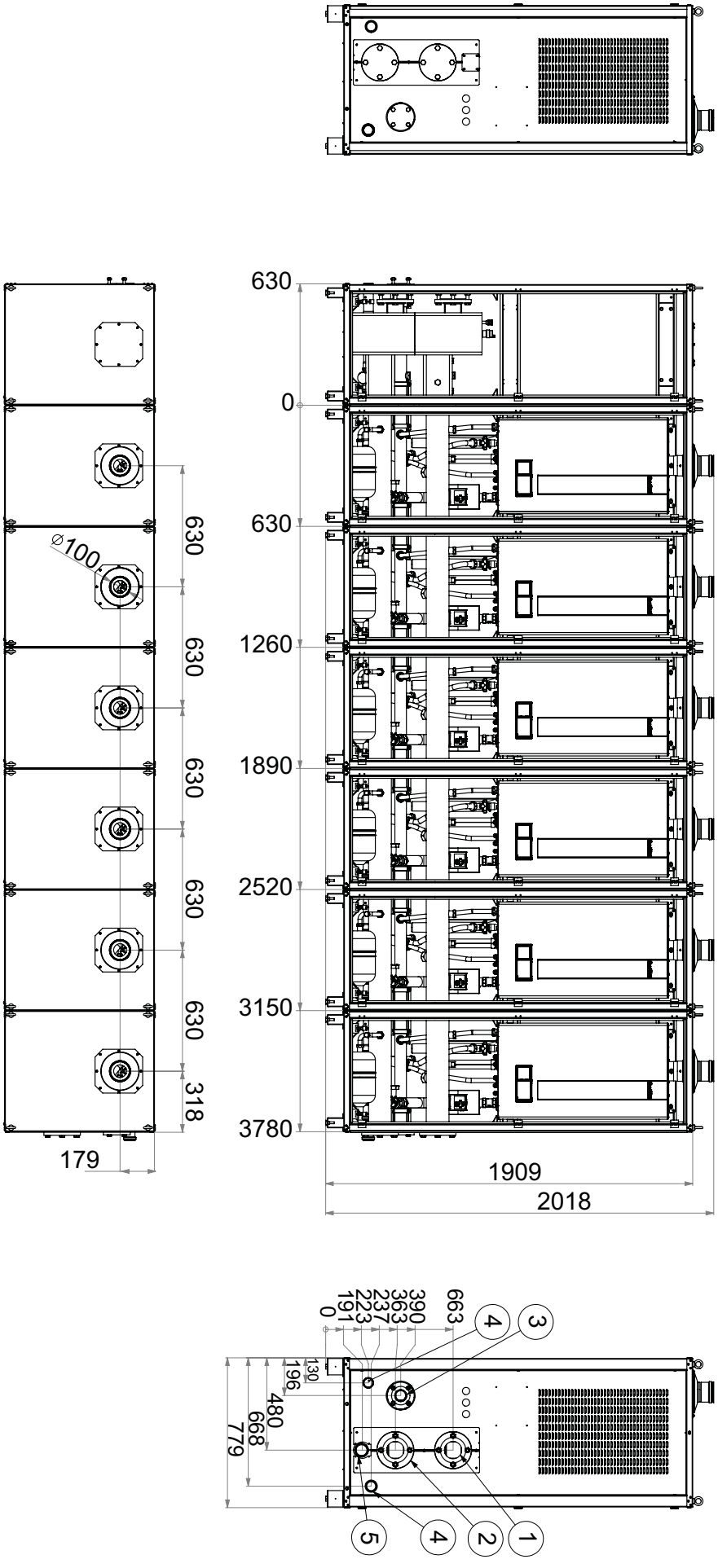


Fig. 8 Combination of left 120-150 hydraulic separator in cabinet

Ref	Description
1	DN 80 PN 6 flanged secondary circuit flow
2	DN 80 PN 6 flanged secondary circuit return
3	DN 50 PN 6 flanged gas inlet
4	DN 50 condensate drain
5	Circuit breaker drain G 1 1/2 F

MODULAR GENERATOR MODEL	CH KR HEAT GENERATORS		MAXIMUM SYSTEM PRESSURE	FLUE GAS VENT MINIMUM DIAMETER
	120	150		
-	-	-	bar	mm
150	-	x1	5	160
270	x1	x1		
300	-	x2		
360	x3	-	5	200
390	x2	x1		
420	x1	x2		
450	-	x3		
480	x4	-		
510	x3	x1		
540	x2	x2		
570	x1	x3		
600	-	x4		
630	x4	x1	5	250
660	x3	x2		
690	x2	x3		
720	x1	x4		
750	-	x5		
780	x4	x2		
810	x3	x3		
870	x1	x5		
900	-	x6		

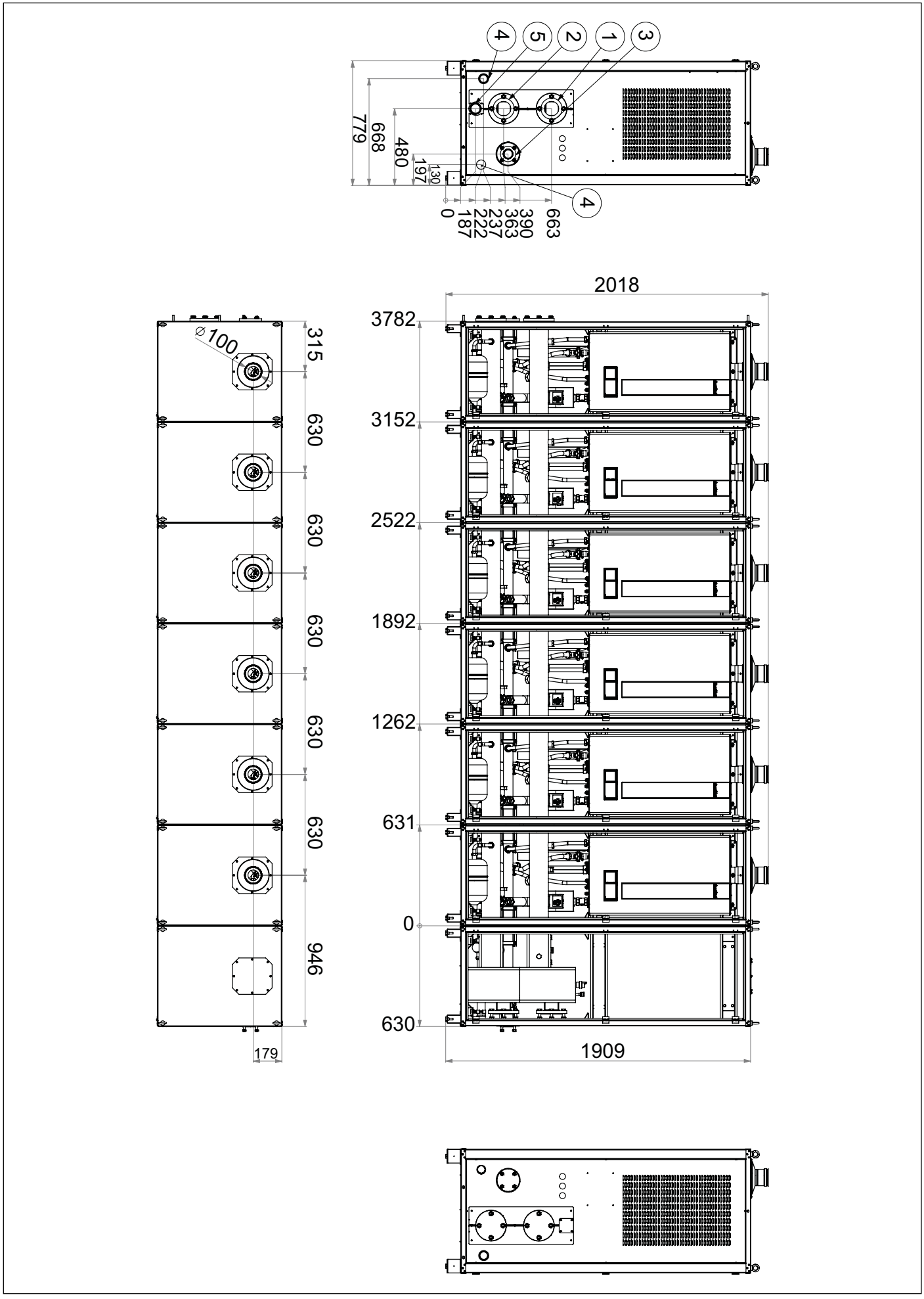


Fig. 9 Combination of right 120-150 hydraulic separator in cabinet

Ref	Description
1	DN 80 PN 6 flanged secondary circuit flow
2	DN 80 PN 6 flanged secondary circuit return
3	DN 50 PN 6 flanged gas inlet
4	DN 50 condensate drain
5	Circuit breaker drain G 1 1/2 F

MODULAR GENERATOR MODEL	CH KR HEAT GENERATORS		MAXIMUM SYSTEM PRESSURE	FLUE GAS VENT MINIMUM DIAMETER
	120	150		
-	-	-	bar	mm
150	-	x1	5	160
270	x1	x1		
300	-	x2		
360	x3	-	5	200
390	x2	x1		
420	x1	x2		
450	-	x3		
480	x4	-		
510	x3	x1		
540	x2	x2		
570	x1	x3		
600	-	x4		
630	x4	x1	5	250
660	x3	x2		
690	x2	x3		
720	x1	x4		
750	-	x5		
780	x4	x2		
810	x3	x3		
870	x1	x5		
900	-	x6		

1.4 Left/right plate exchanger configuration

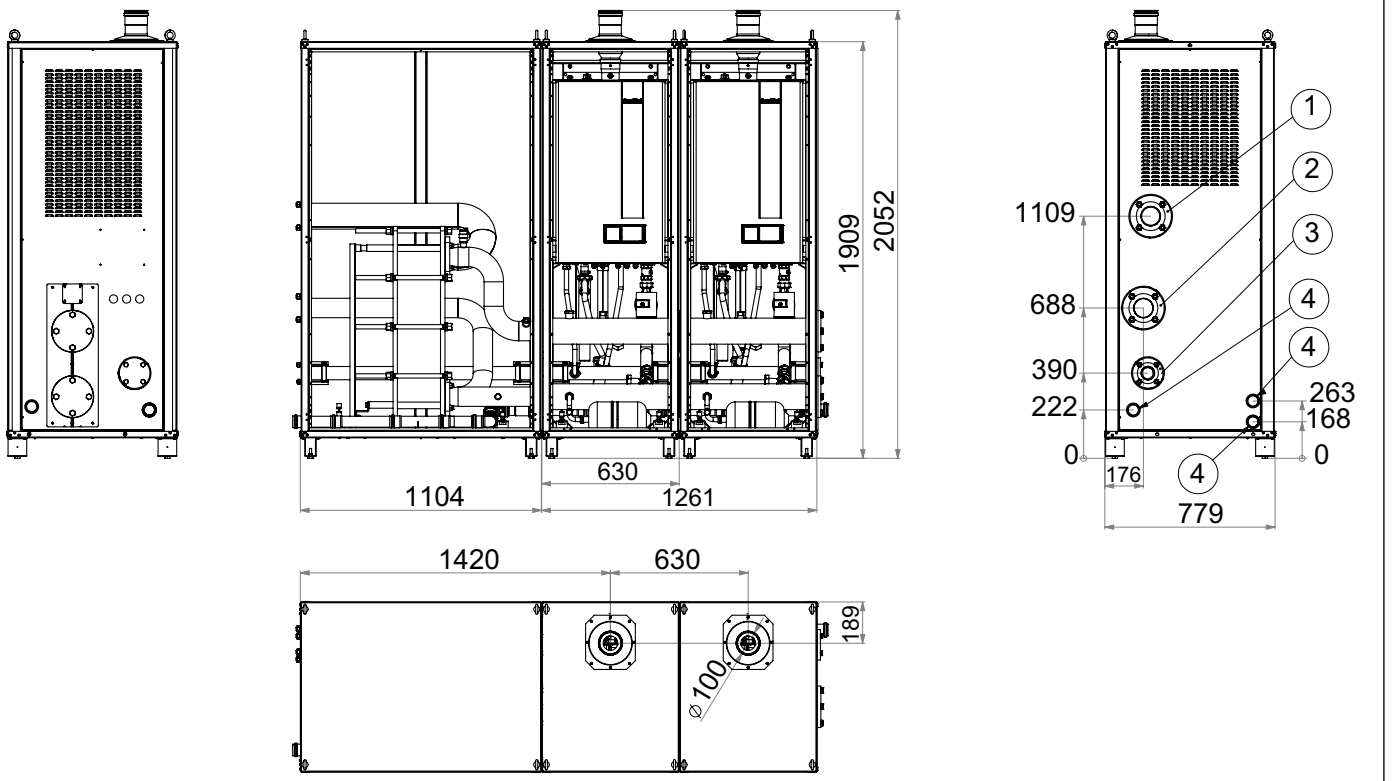


Fig. 10 Combination of left 45-60 plate exchanger in cabinet

Ref	Description
1	DN 80 PN 6 (**) flanged secondary circuit flow
2	DN 80 PN 6 (**) flanged secondary circuit return
3	DN 50 PN 6 flanged gas inlet
4	DN 50 condensate drain
(**)	**ATTENTION: flow and return manifolds to be connected to the secondary circuit of the plate exchanger are optional**

MODULAR GENERATOR MODEL	CH KR HEAT GENERATORS		MAXIMUM SYSTEM PRESSURE	FLUE GAS VENT MINIMUM DIAMETER
	45	60		
-	-	-	bar	mm
45	x1	-	3	160
60	-	x1		
105	x1	x1		

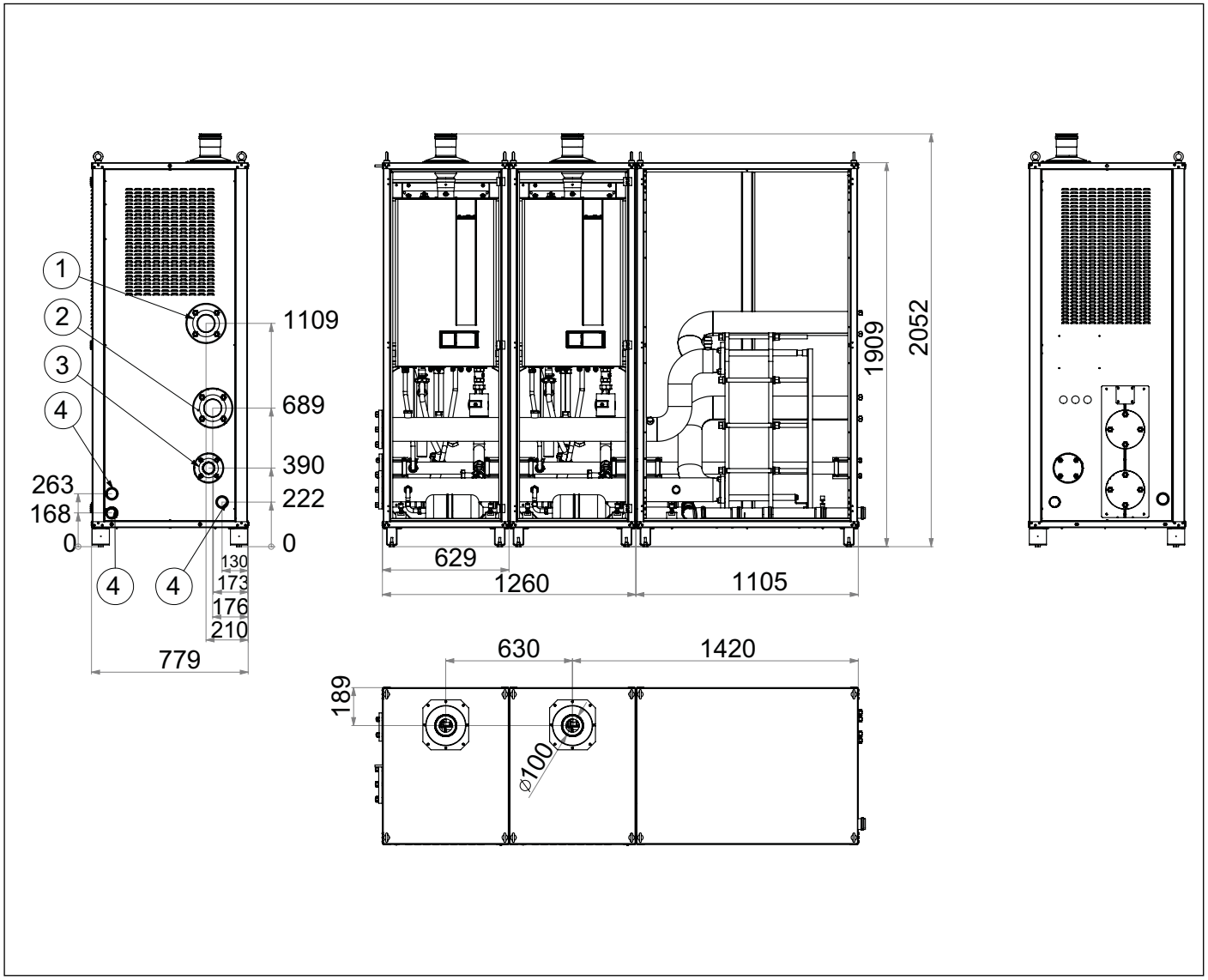


Fig. 11 Combination of right 45-60 plate exchanger in cabinet

Ref	Description
1	DN 80 PN 6 (**) flanged secondary circuit flow
2	DN 80 PN 6 (**) flanged secondary circuit return
3	DN 50 PN 6 flanged gas inlet
4	DN 50 condensate drain
(**)	**ATTENTION: flow and return manifolds to be connected to the secondary circuit of the plate exchanger are optional**

MODULAR GENERATOR MODEL	CH KR HEAT GENERATORS		MAXIMUM SYSTEM PRESSURE	FLUE GAS VENT MINIMUM DIAMETER
	45	60		
-	-	-	bar	mm
45	x1	-	3	160
60	-	x1		
105	x1	x1		

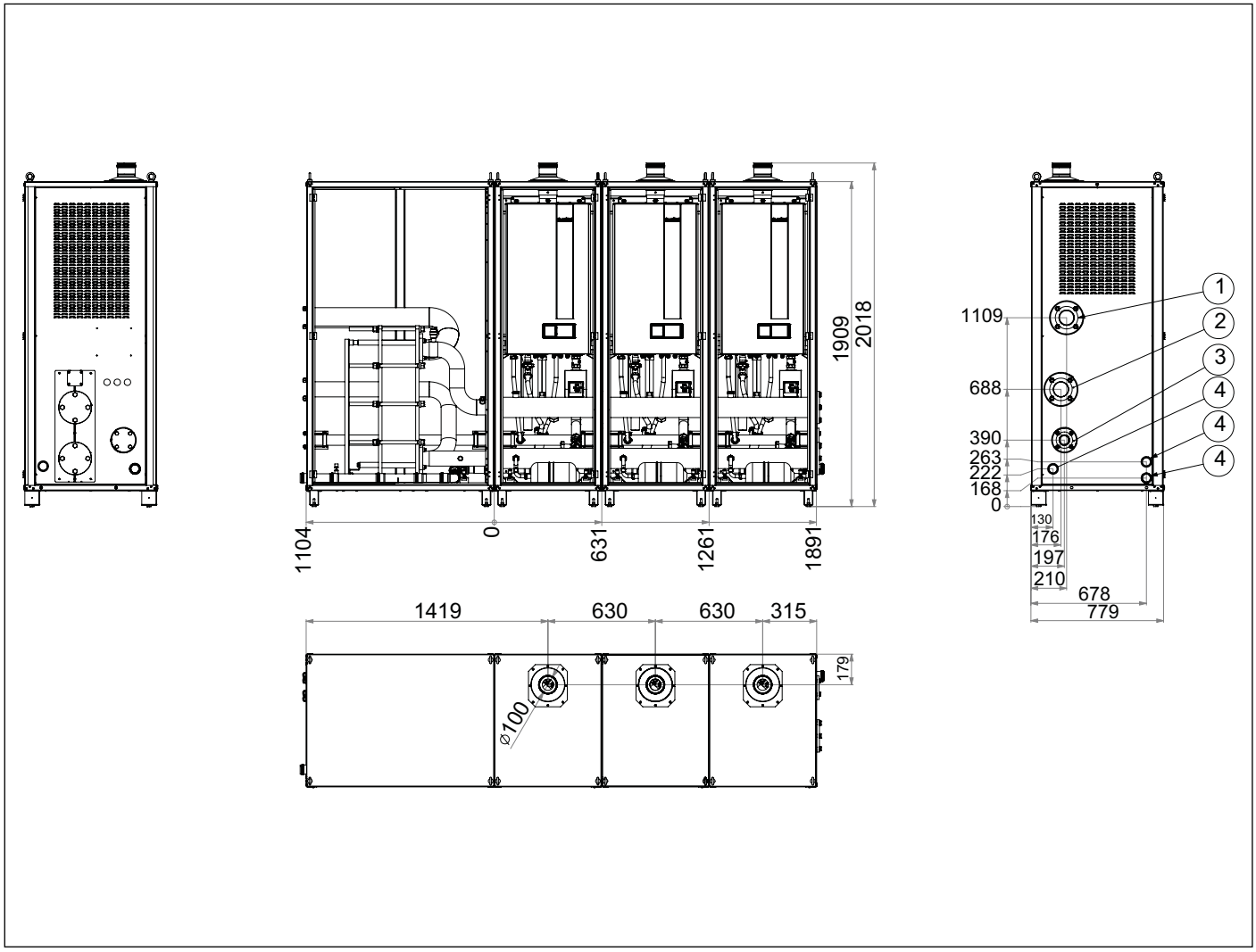


Fig. 12 Combination of left 85-120 plate exchanger in cabinet

Ref	Description
1	DN 80 PN 6 (**) flanged secondary circuit flow
2	DN 80 PN 6 (**) flanged secondary circuit return
3	DN 50 PN 6 flanged gas inlet
4	DN 50 condensate drain
(**)	**ATTENTION: flow and return manifolds to be connected to the secondary circuit of the plate exchanger are optional**

MODULAR GENERATOR MODEL	CH KR HEAT GENERATORS		MAXIMUM SYSTEM PRESSURE	FLUE GAS VENT MINIMUM DIAMETER
	85	120		
-	-	-	bar	mm
85	x1	-	5	160
120	-	x1		
170	x2	-		
205	x1	x1		
240	-	x2		
325	x1	x2	5	200

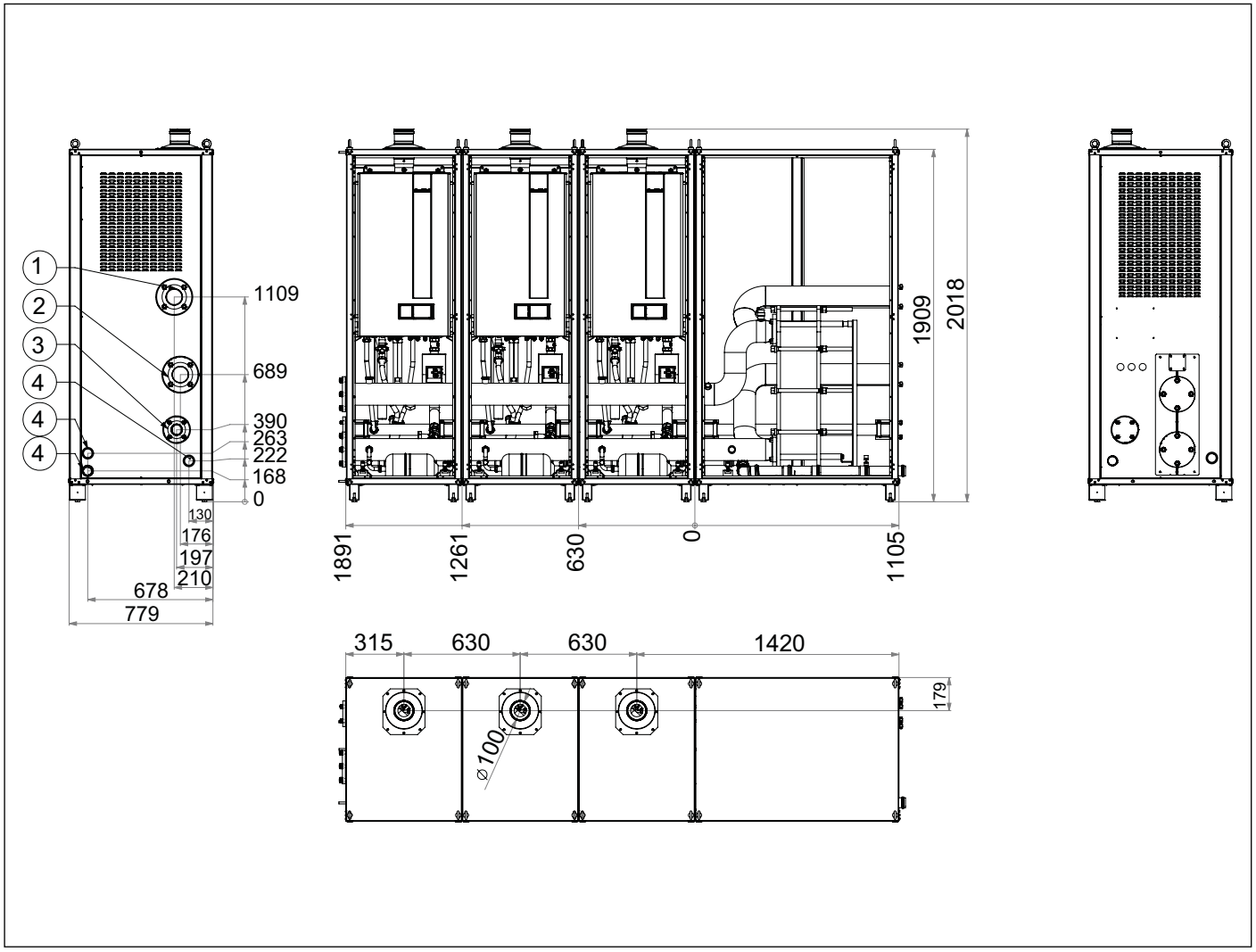


Fig. 13 Combination of right 85-120 plate exchanger in cabinet

Ref	Description
1	DN 80 PN 6 (**) flanged secondary circuit flow
2	DN 80 PN 6 (**) flanged secondary circuit return
3	DN 50 PN 6 flanged gas inlet
4	DN 50 condensate drain
(**)	**ATTENTION: flow and return manifolds to be connected to the secondary circuit of the plate exchanger are optional**

MODULAR GENERATOR MODEL	CH KR HEAT GENERATORS		MAXIMUM SYSTEM PRESSURE	FLUE GAS VENT MINIMUM DIAMETER
	85	120		
-	-	-	bar	mm
85	x1	-	5	160
120	-	x1		
170	x2	-		
205	x1	x1		
240	-	x2		
325	x1	x2	5	200

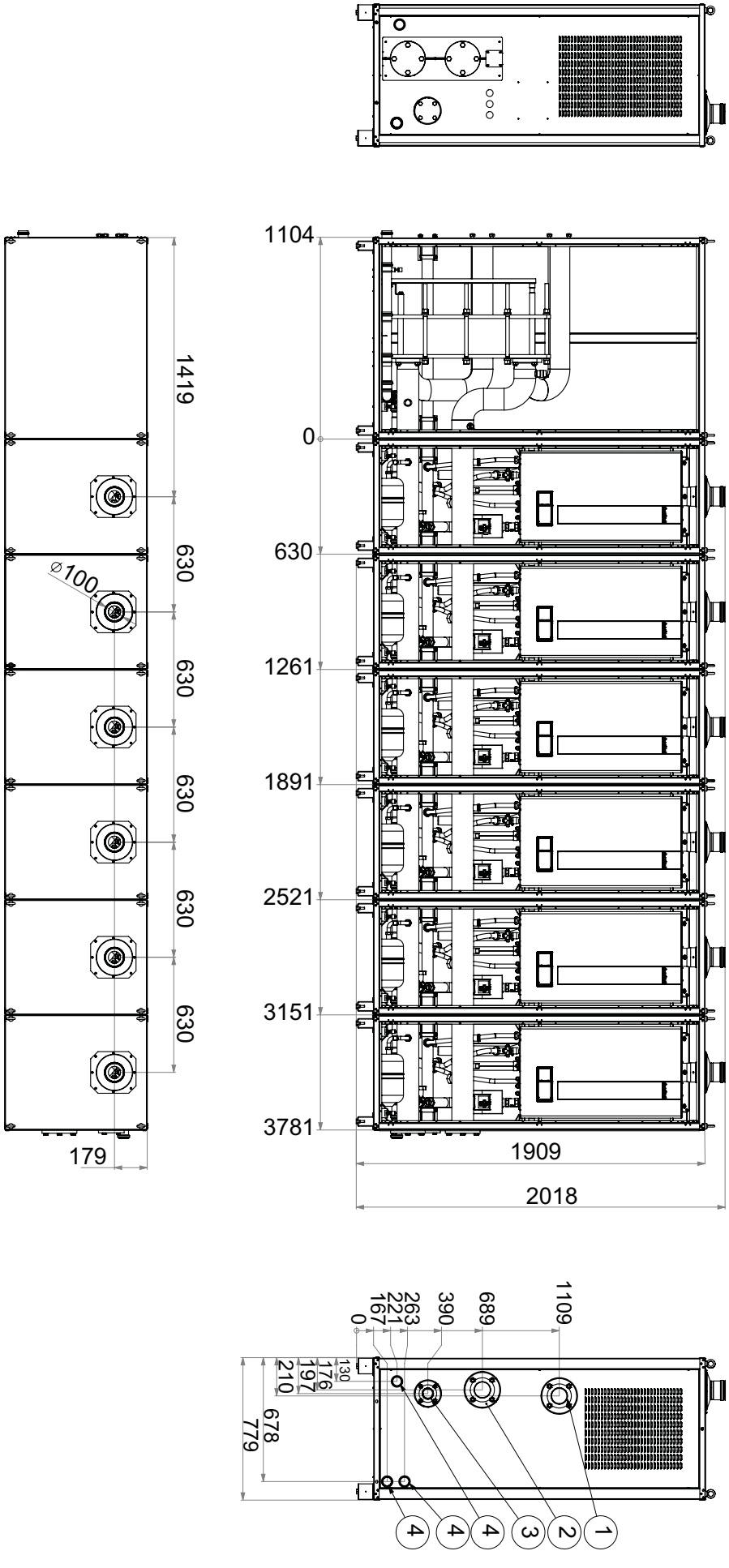


Fig. 14 Combination of left 120-150 plate exchanger in cabinet

Ref	Description
1	DN 80 PN 6 (**) flanged secondary circuit flow
2	DN 80 PN 6 (**) flanged secondary circuit return
3	DN 50 PN 6 flanged gas inlet
4	DN 50 condensate drain
(**)	**ATTENTION: flow and return manifolds to be connected to the secondary circuit of the plate exchanger are optional**

MODULAR GENERATOR MODEL	CH KR HEAT GENERATORS		MAXIMUM SYSTEM PRESSURE	FLUE GAS VENT MINIMUM DIAMETER
	120	150		
-	-	-	bar	mm
150	-	x1	5	160
270	x1	x1		
300	-	x2		
360	x3	-	5	200
390	x2	x1		
420	x1	x2		
450	-	x3		
480	x4	-		
510	x3	x1		
540	x2	x2		
570	x1	x3		
600	-	x4		
630	x4	x1	5	250
660	x3	x2		
690	x2	x3		
720	x1	x4		
750	-	x5		
780	x4	x2		
810	x3	x3		
870	x1	x5		
900	-	x6		

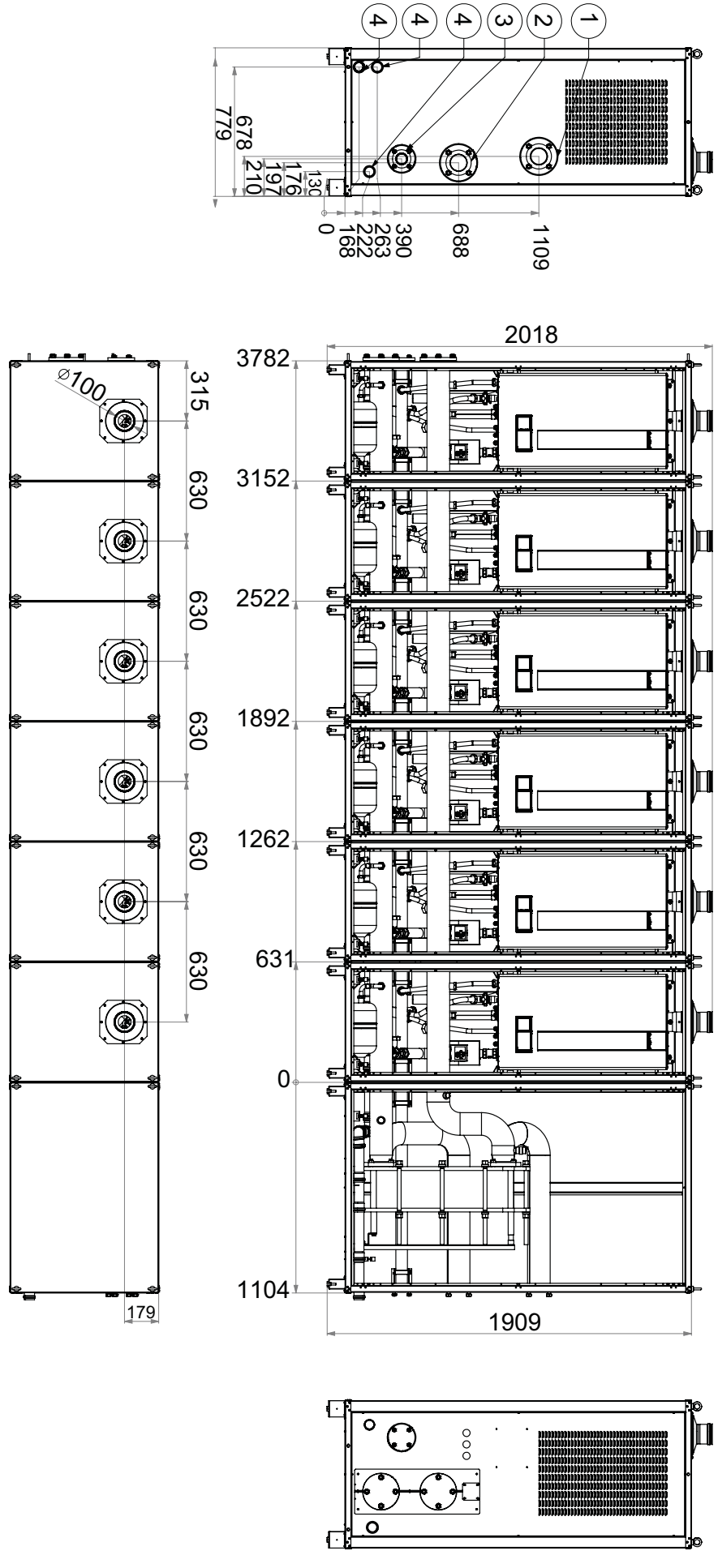


Fig. 15 Combination of right 120-150 plate exchanger in cabinet

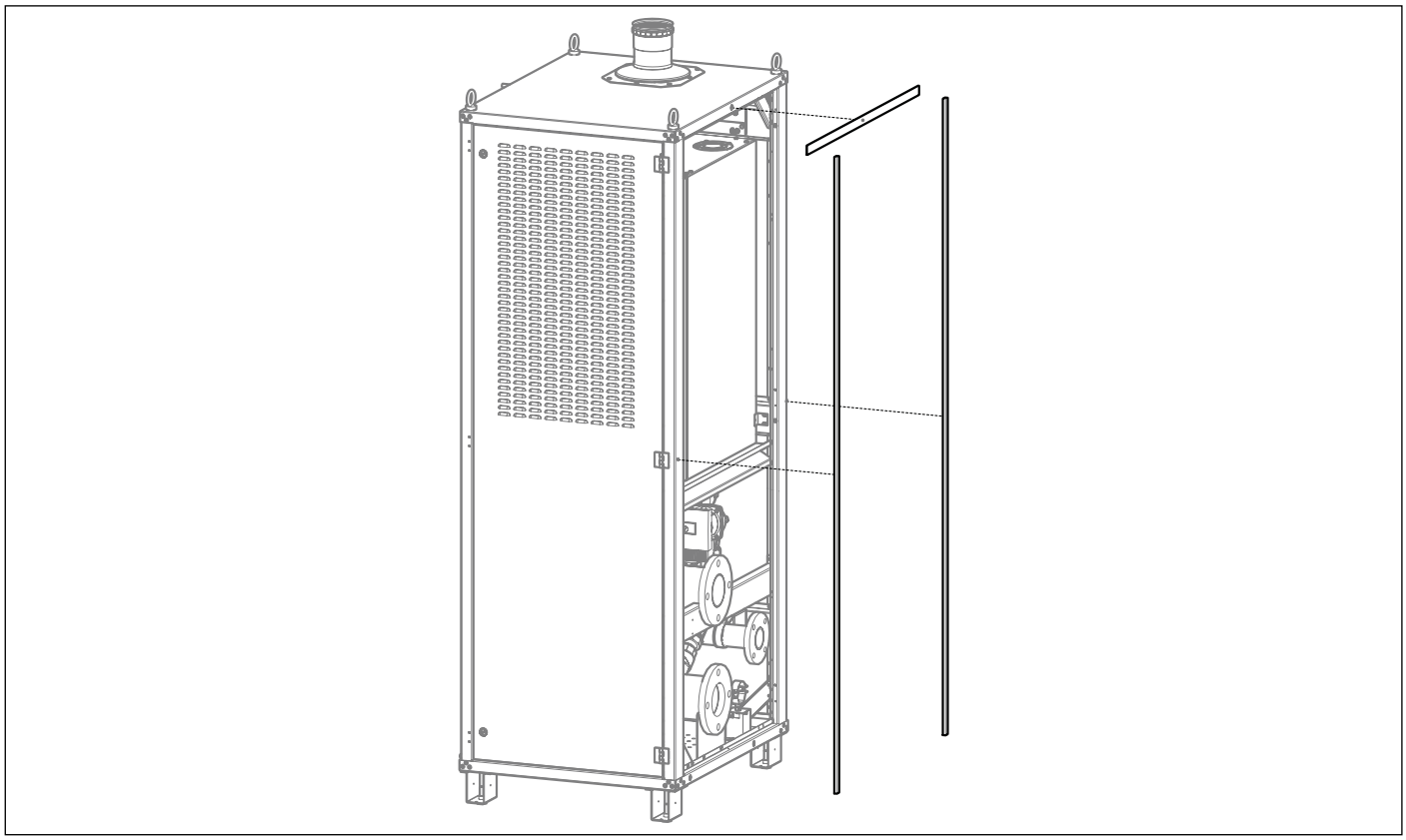
Ref	Description
1	DN 80 PN 6 (**) flanged secondary circuit flow
2	DN 80 PN 6 (**) flanged secondary circuit return
3	DN 50 PN 6 flanged gas inlet
4	DN 50 condensate drain
(**)	**ATTENTION: flow and return manifolds to be connected to the secondary circuit of the plate exchanger are optional**

MODULAR GENERATOR MODEL	CH KR HEAT GENERATORS		MAXIMUM SYSTEM PRESSURE	FLUE GAS VENT MINIMUM DIAMETER
	120	150		
-	-	-	bar	mm
150	-	x1	5	160
270	x1	x1		
300	-	x2		
360	x3	-	5	200
390	x2	x1		
420	x1	x2		
450	-	x3		
480	x4	-		
510	x3	x1		
540	x2	x2		
570	x1	x3		
600	-	x4		
630	x4	x1	5	250
660	x3	x2		
690	x2	x3		
720	x1	x4		
750	-	x5		
780	x4	x2		
810	x3	x3		
870	x1	x5		
900	-	x6		

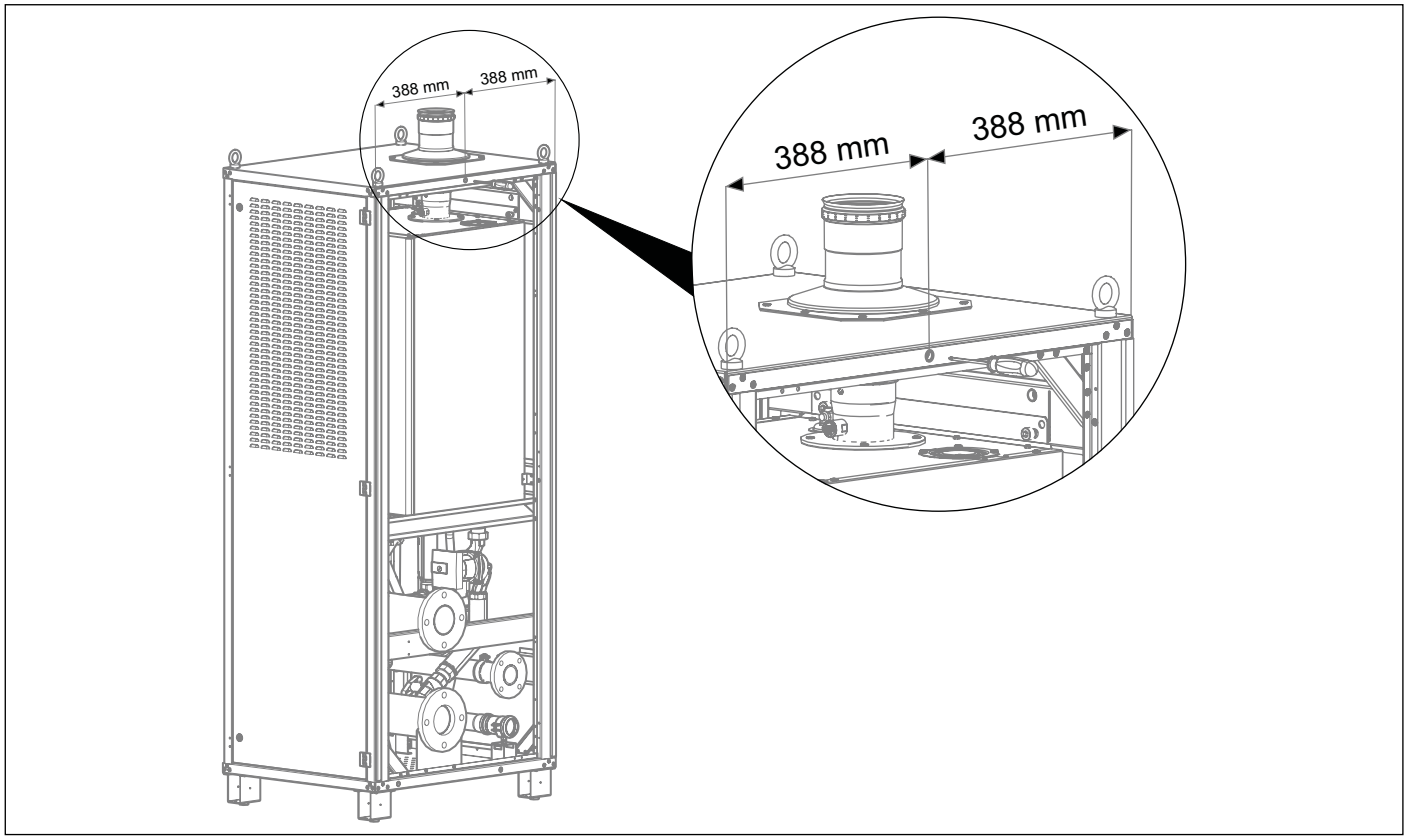
1.5 Installation of thermal modules composing the modular generator

The following instructions refer to the version with direct collectors on the left. The assembly operations are valid also for versions with collectors on the right.

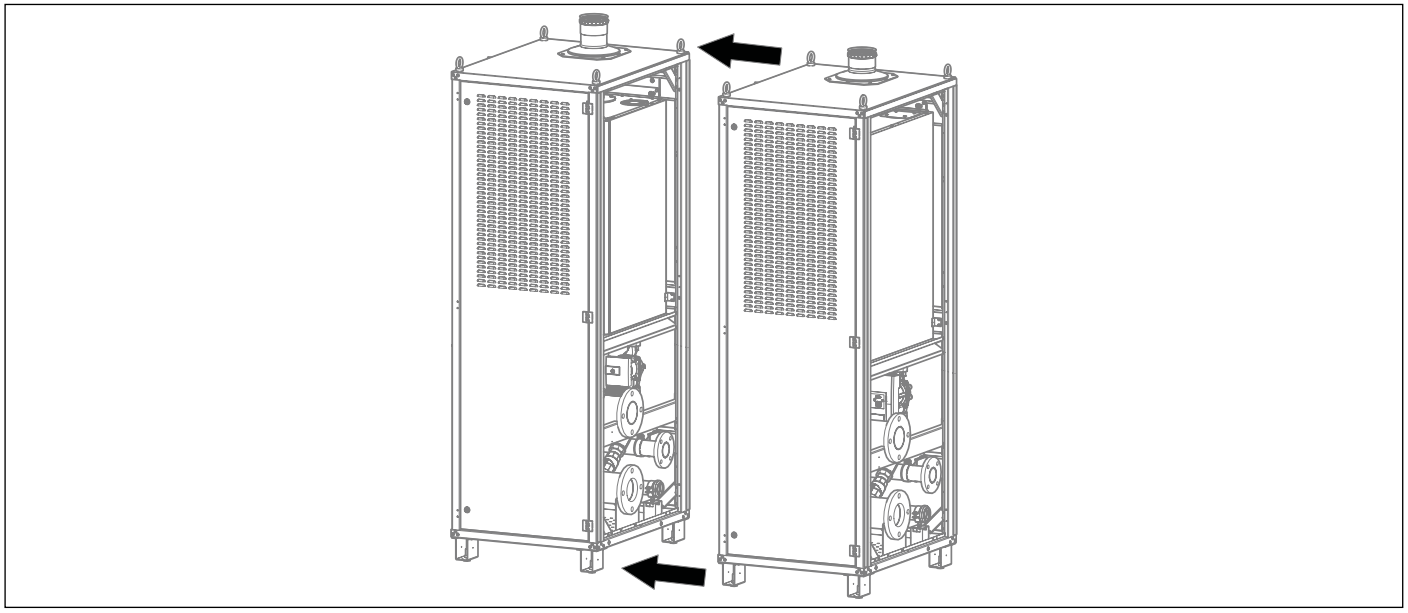
The modular generator consists of modules in cabinets that must be in-line connected in order to be adjacent to one another. They are fastened by means of screws that allow fixing each cabinet to the next one in the cascade. Only the cabinets to be positioned at the ends of the cascade line are equipped with closing side panels.



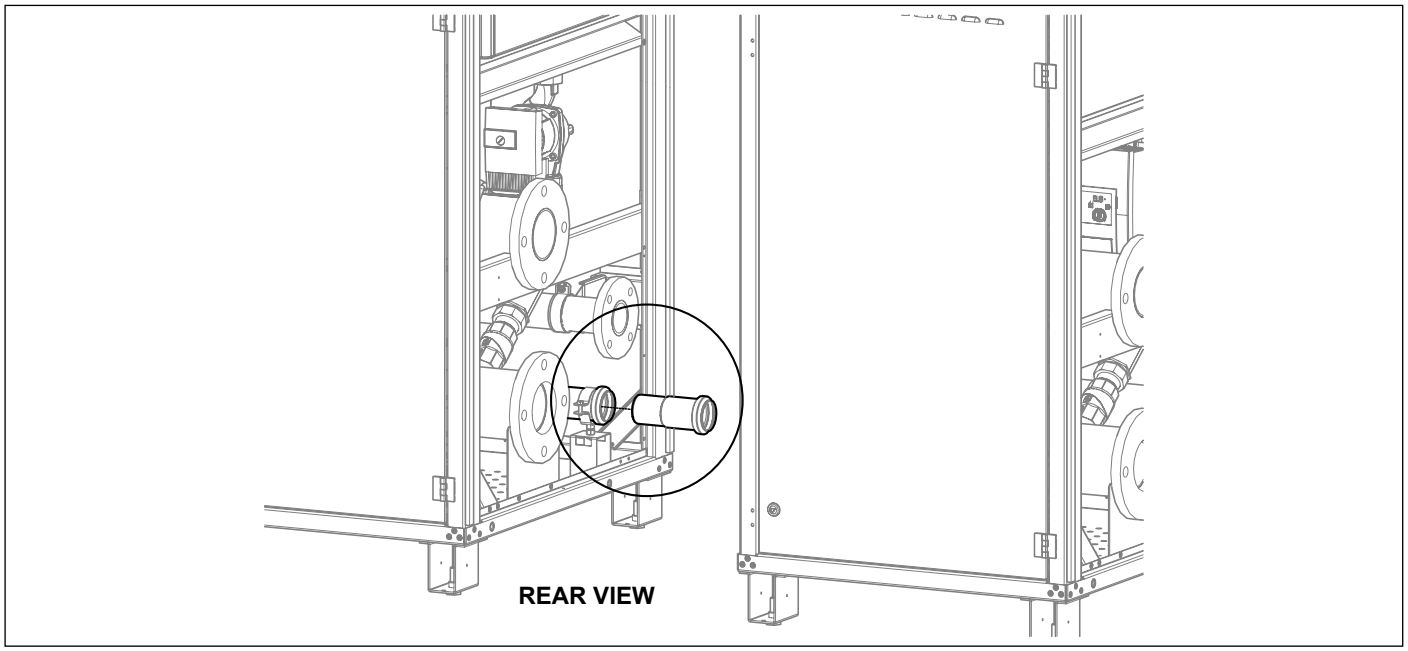
Glue gaskets as shown in the image.

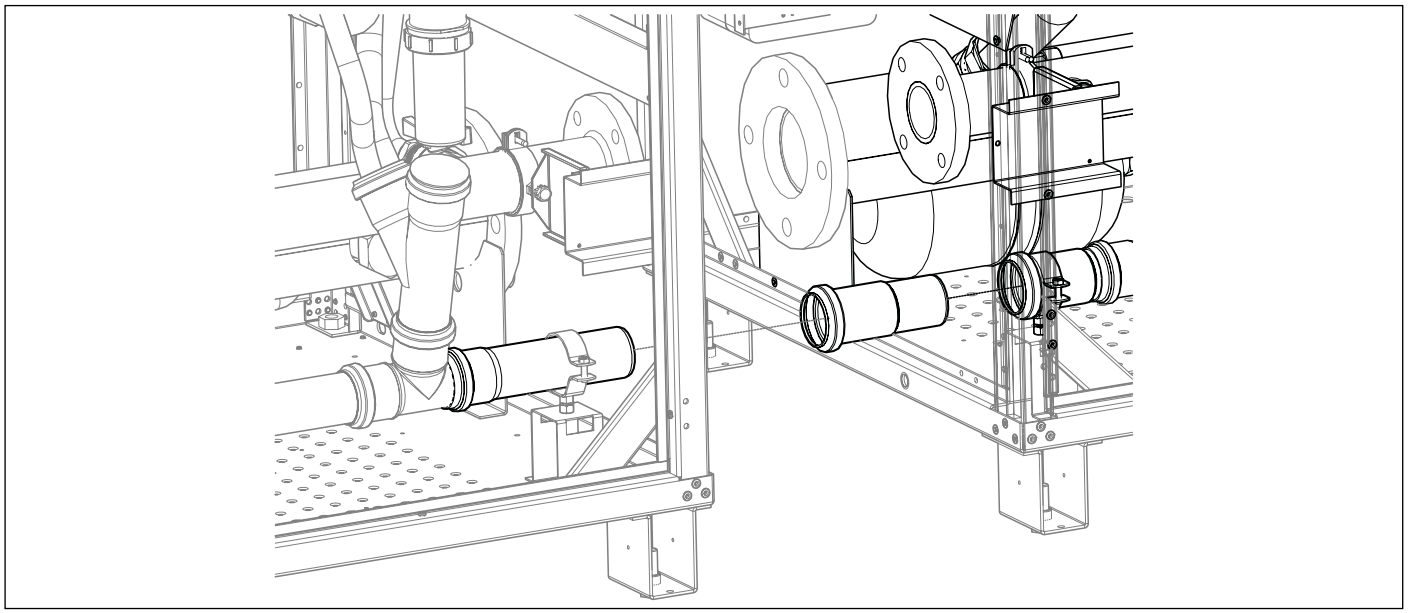


Use an awl to make a hole in the upper gasket at the opening for the screw.

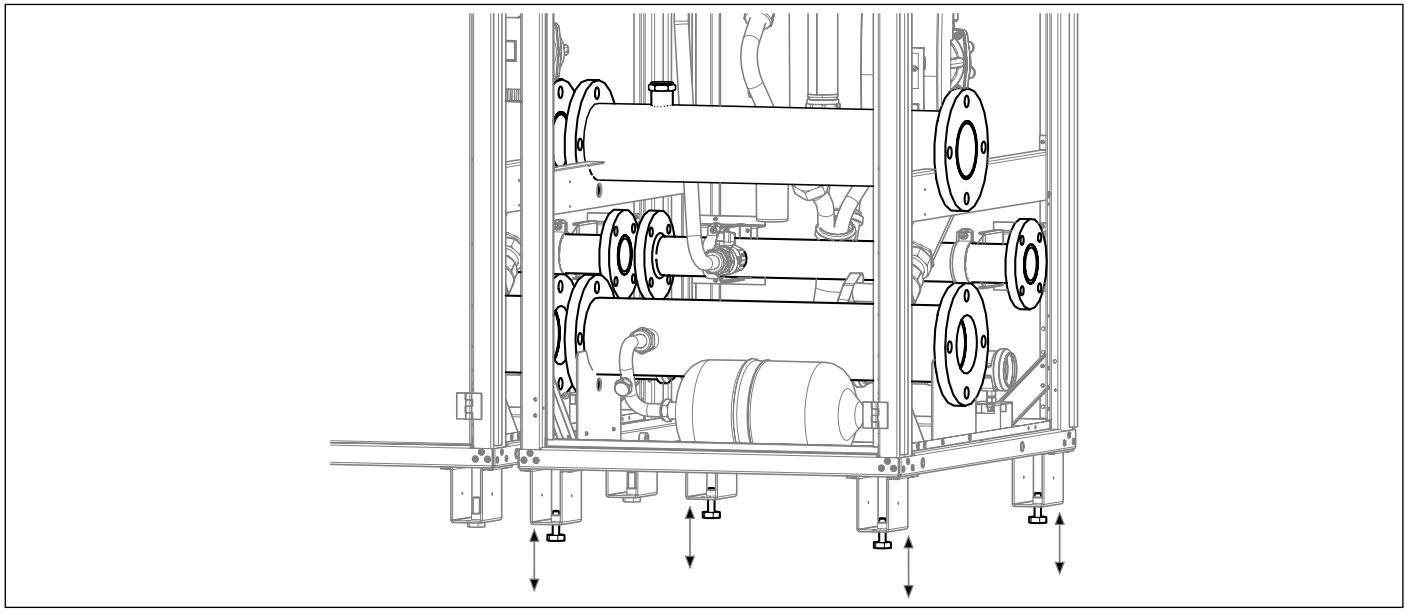


Move the intermediate cabinet closer to the first cabinet.

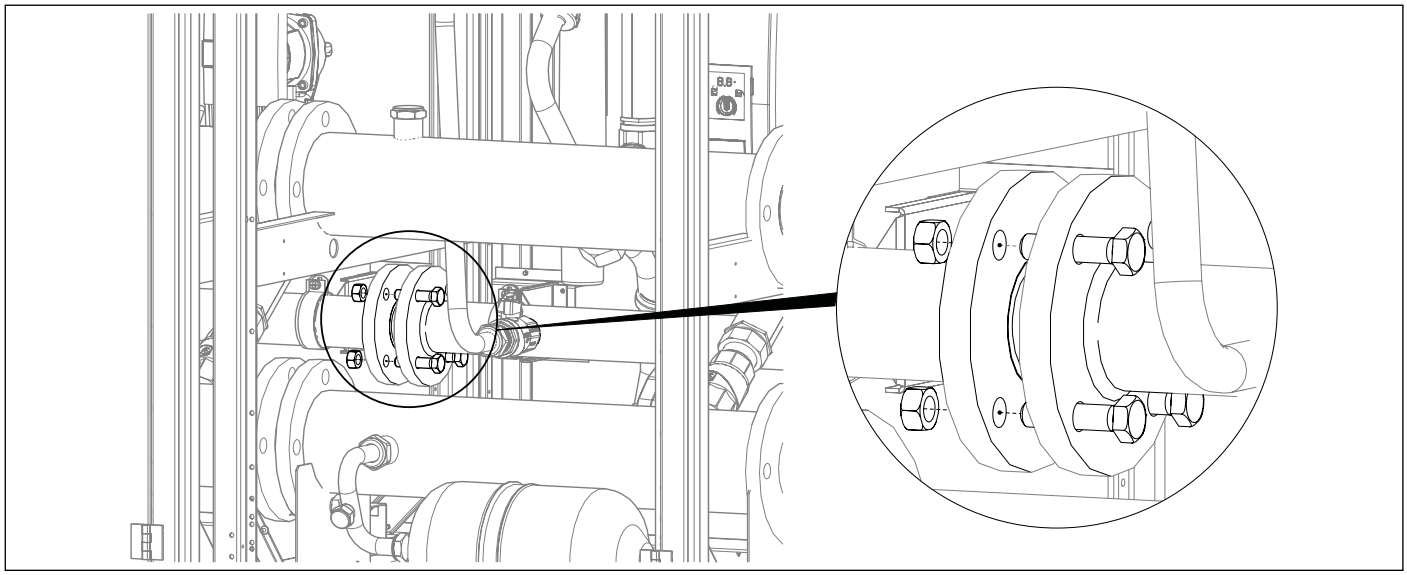


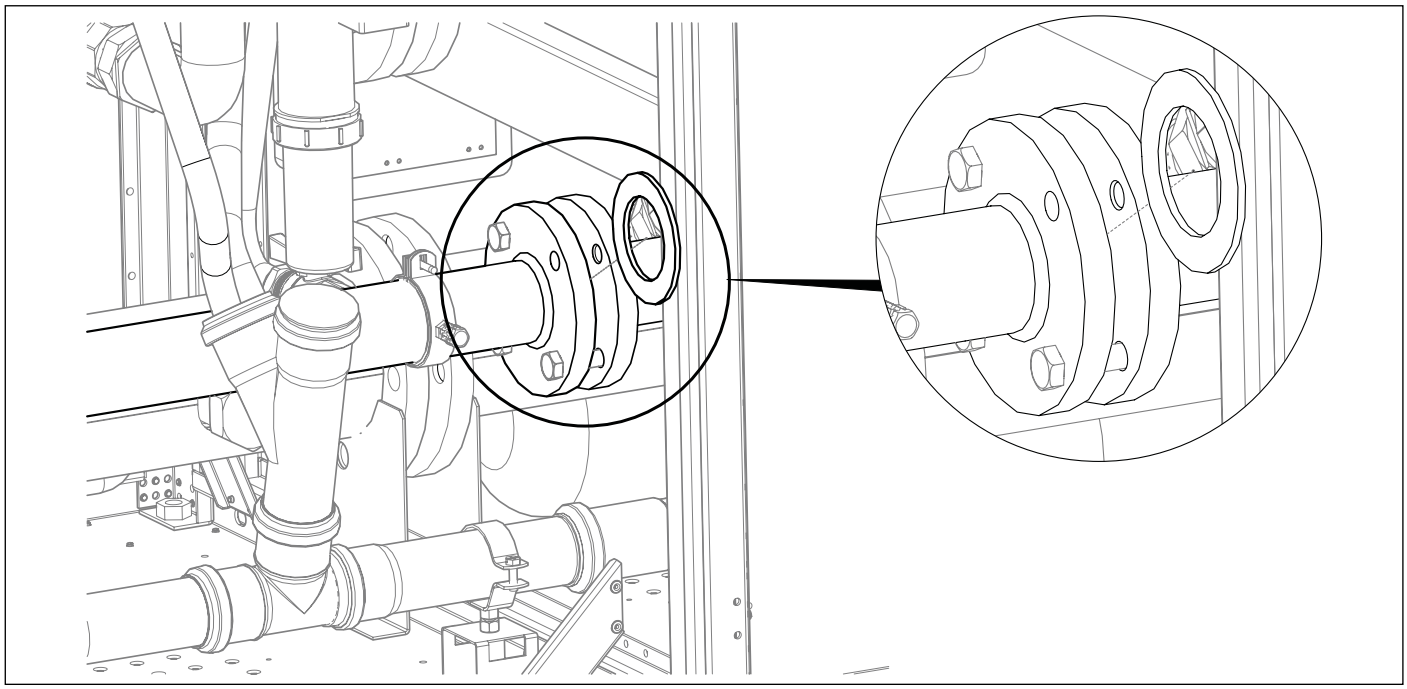


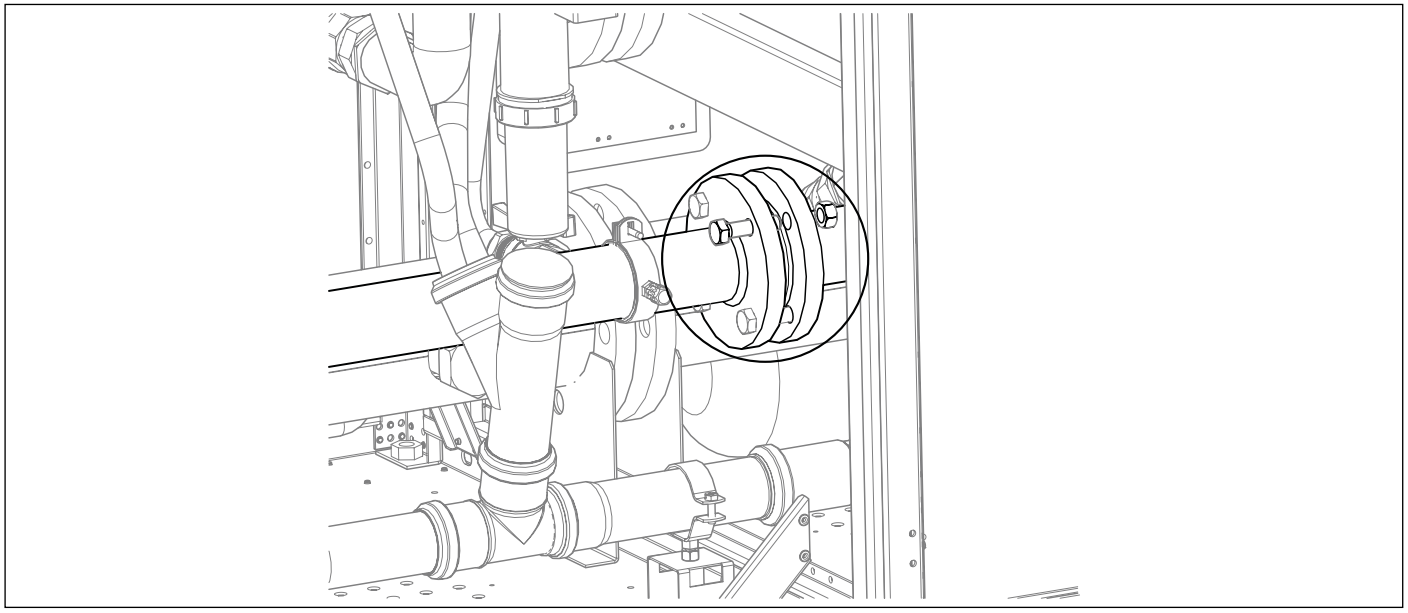
Assemble the supplied pipe on the condensate drain as shown in the image.



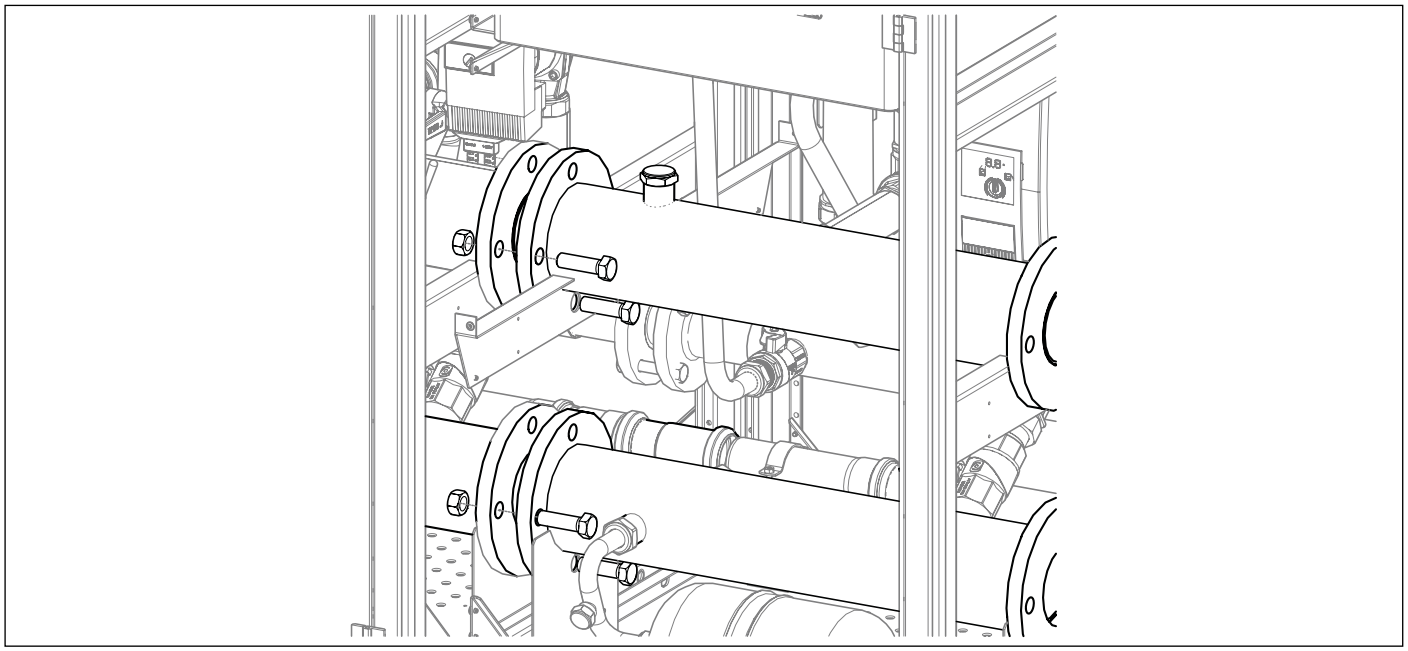
Use the four feet of the intermediate cabinet to align the flow collector, the return collector and the gas pipe to the collectors located inside the adjacent cabinet.

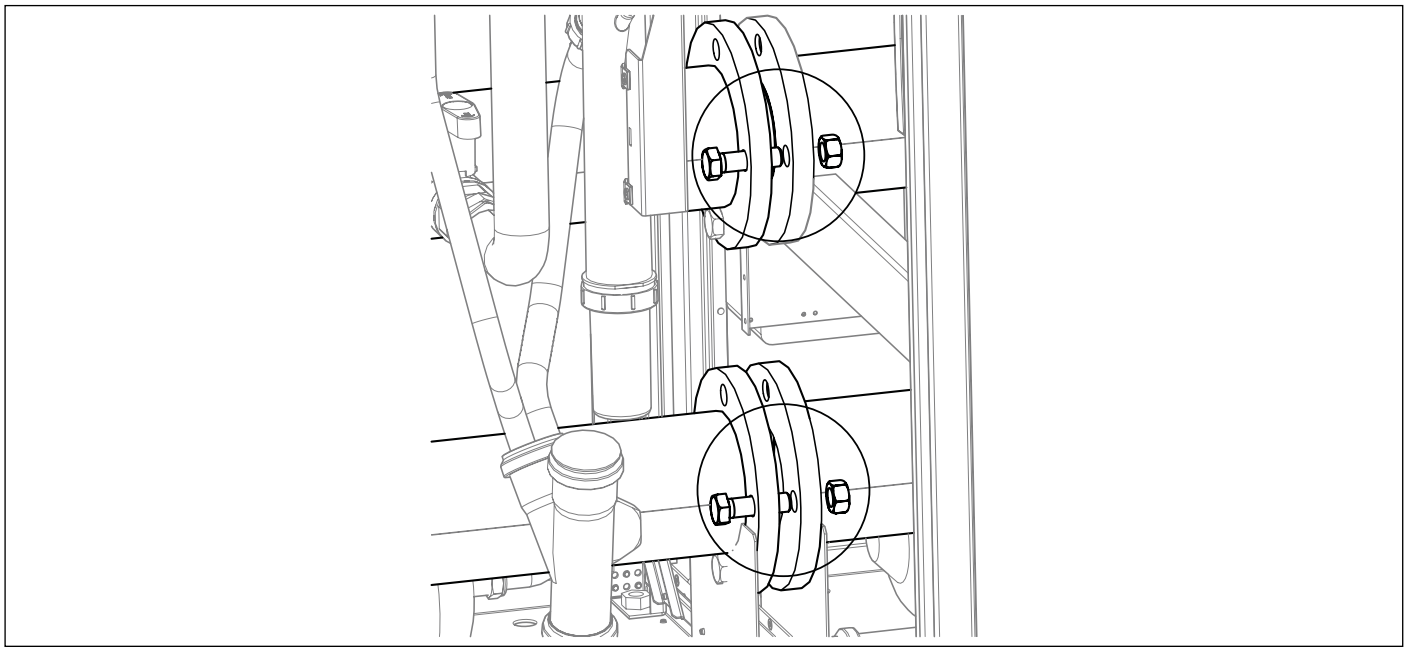


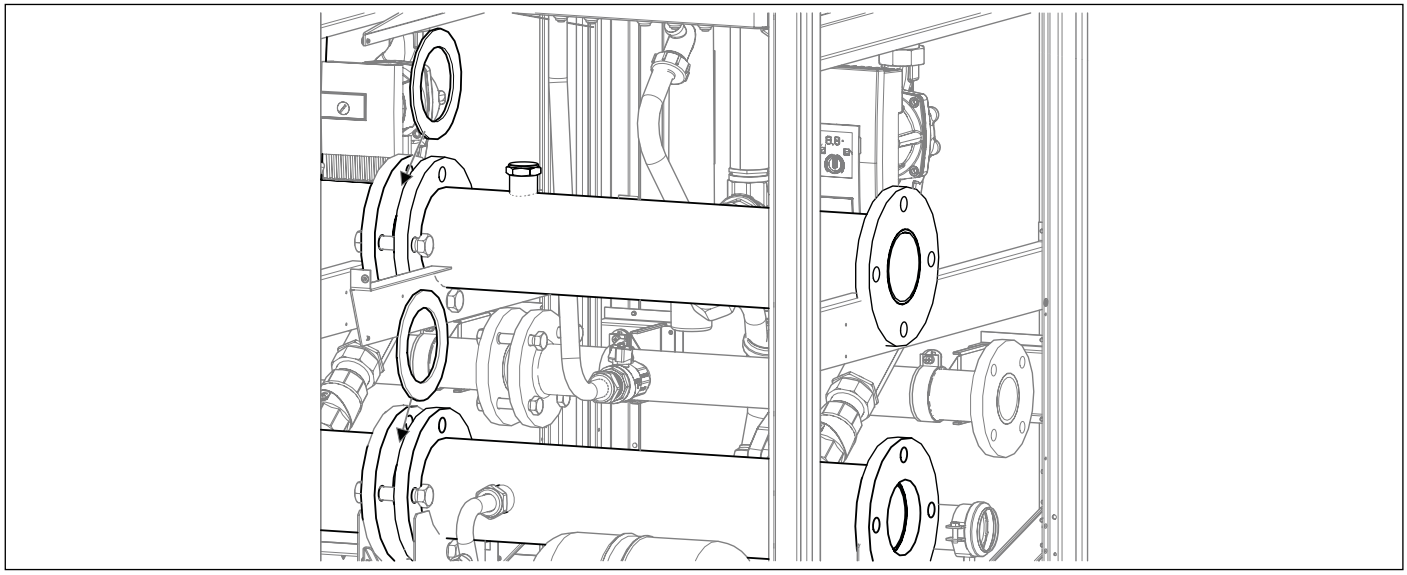


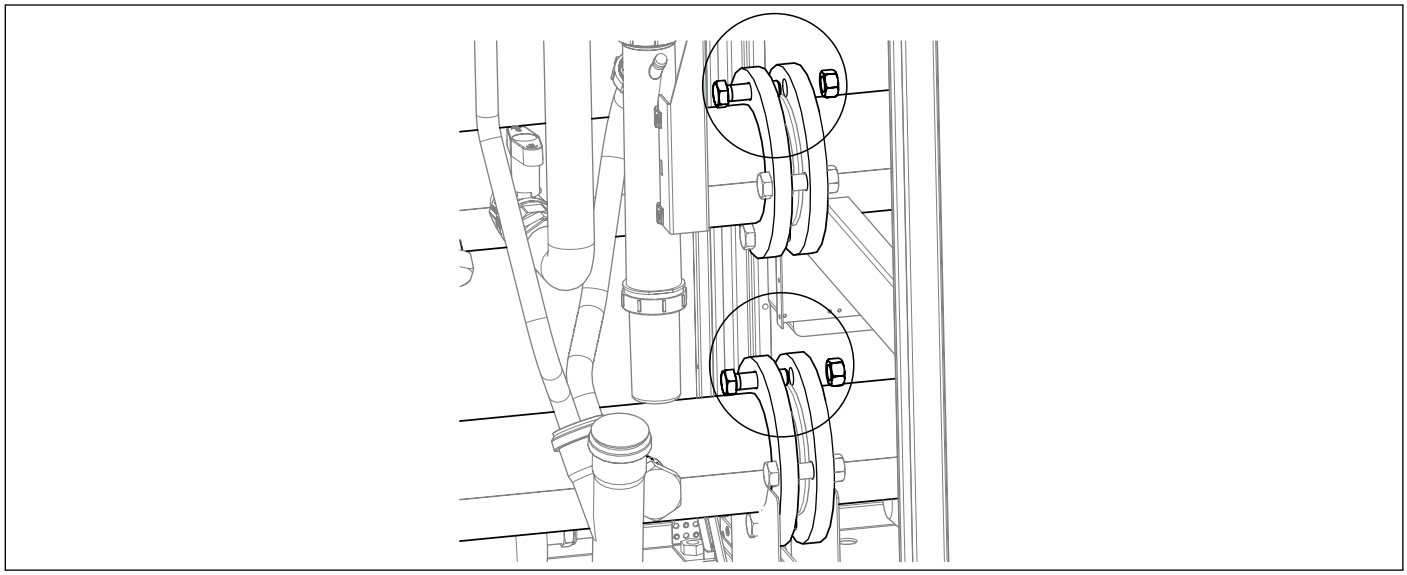


Fasten the gas collector with screws and nuts by placing the gasket between the two collectors.

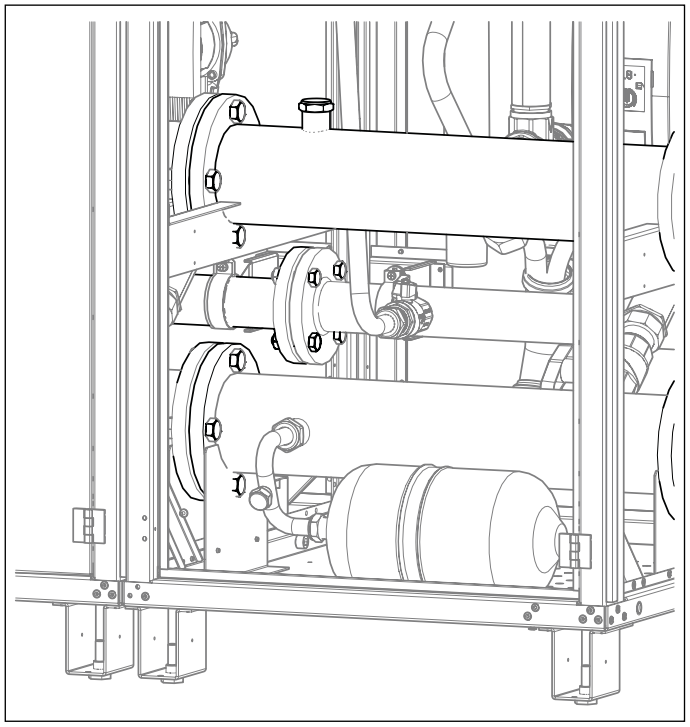


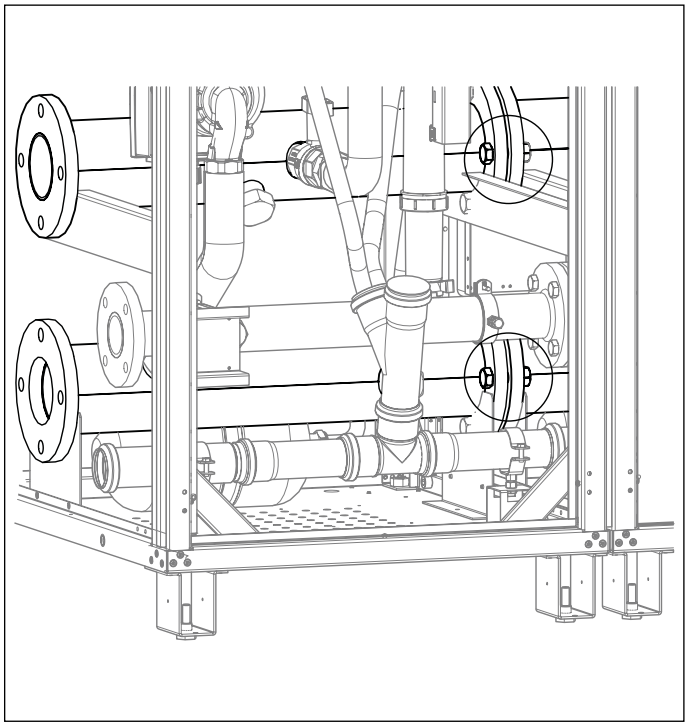




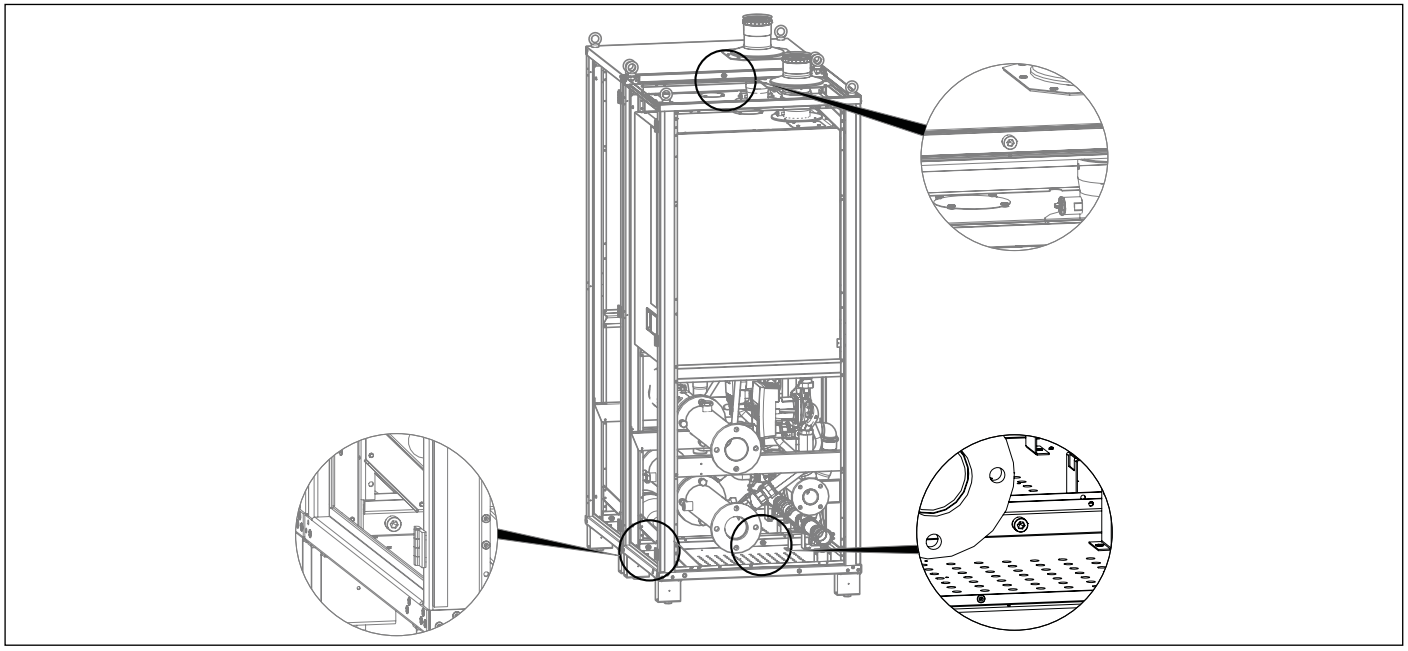


Fasten the flow and return collectors with screws and nuts by placing the gaskets in-between.

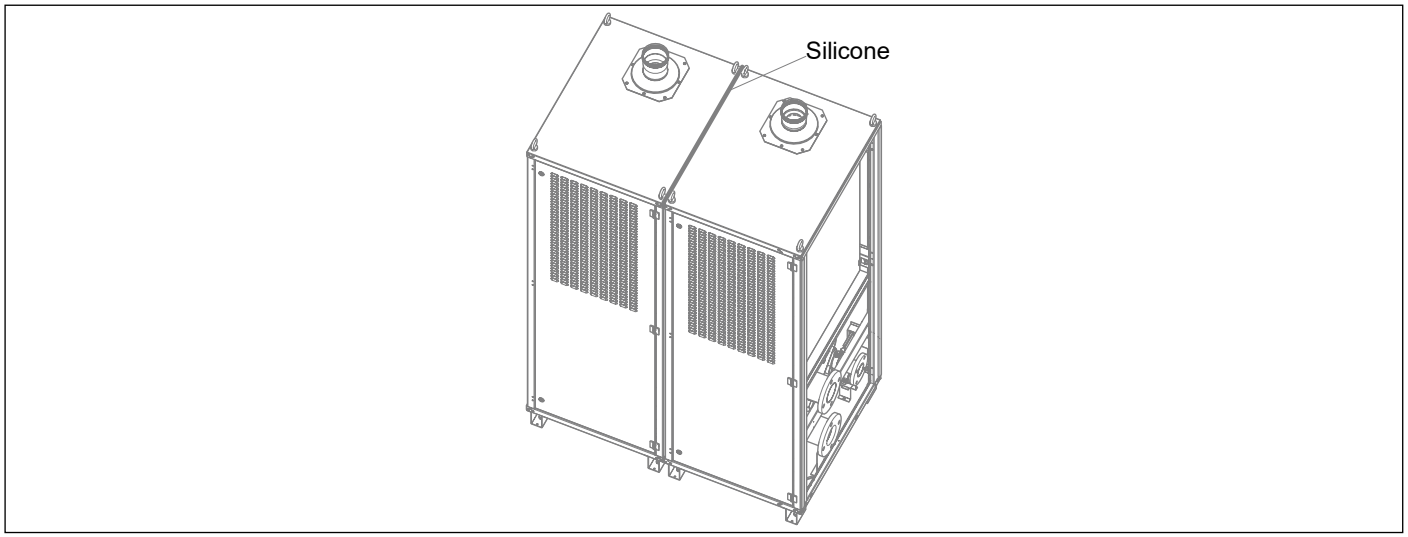




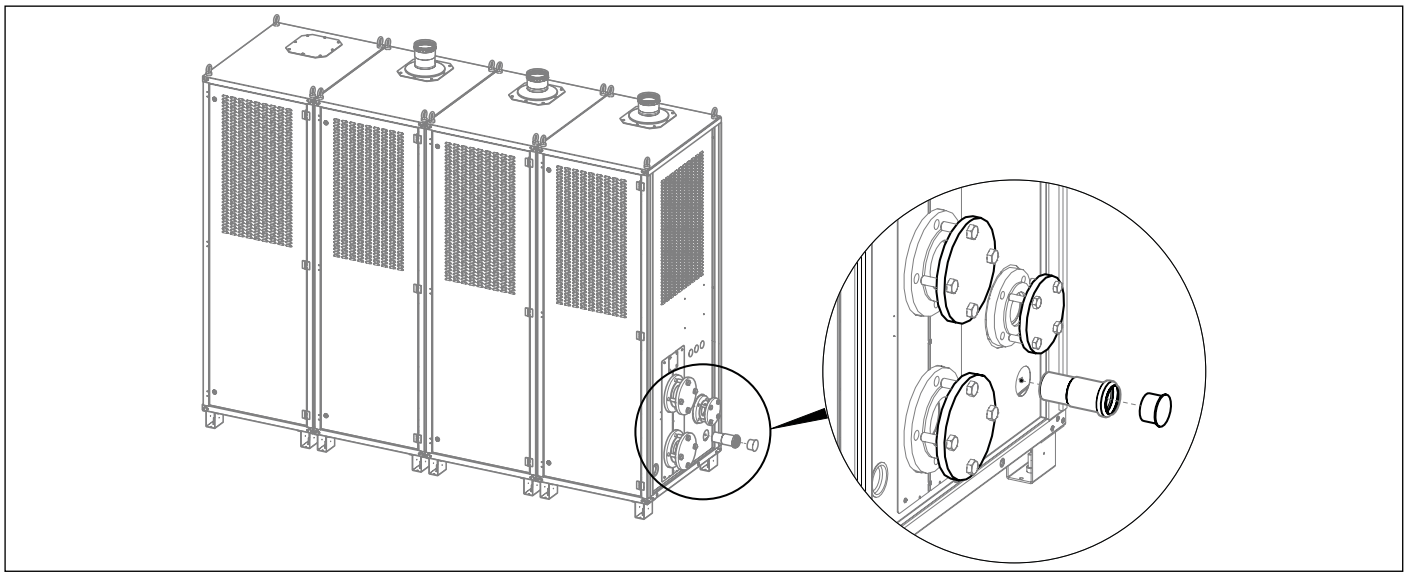
Tighten the screws on the collectors of the intermediate cabinet.



Lock the first cabinet to the intermediate cabinet using the supplied screws.

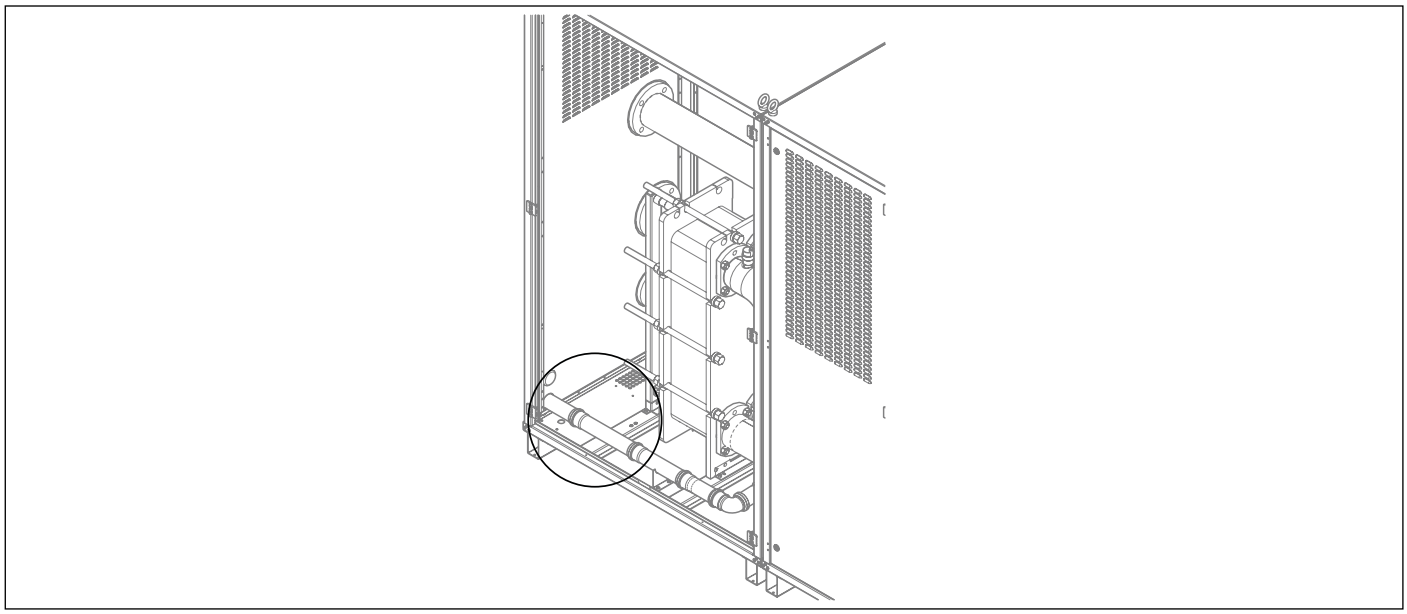


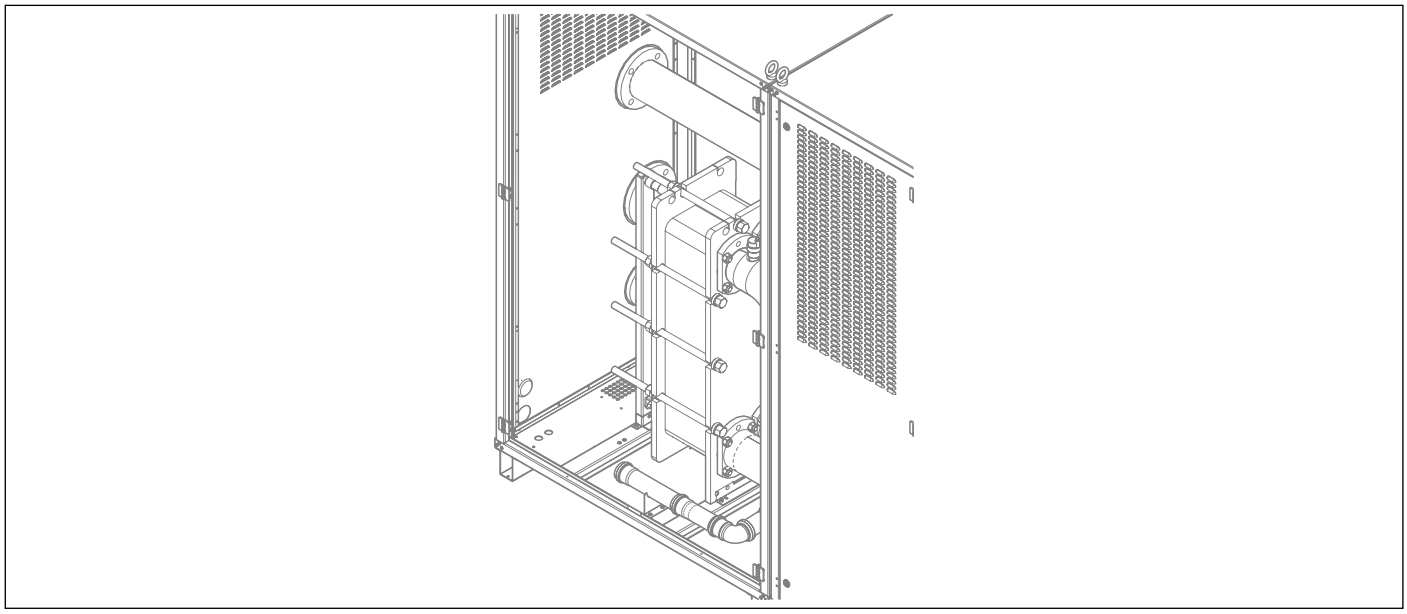
Apply a layer of silicone (not supplied) on the upper joint between the two cabinets.
If other intermediate cabinets are to be installed, repeat the operation starting from page *30*.



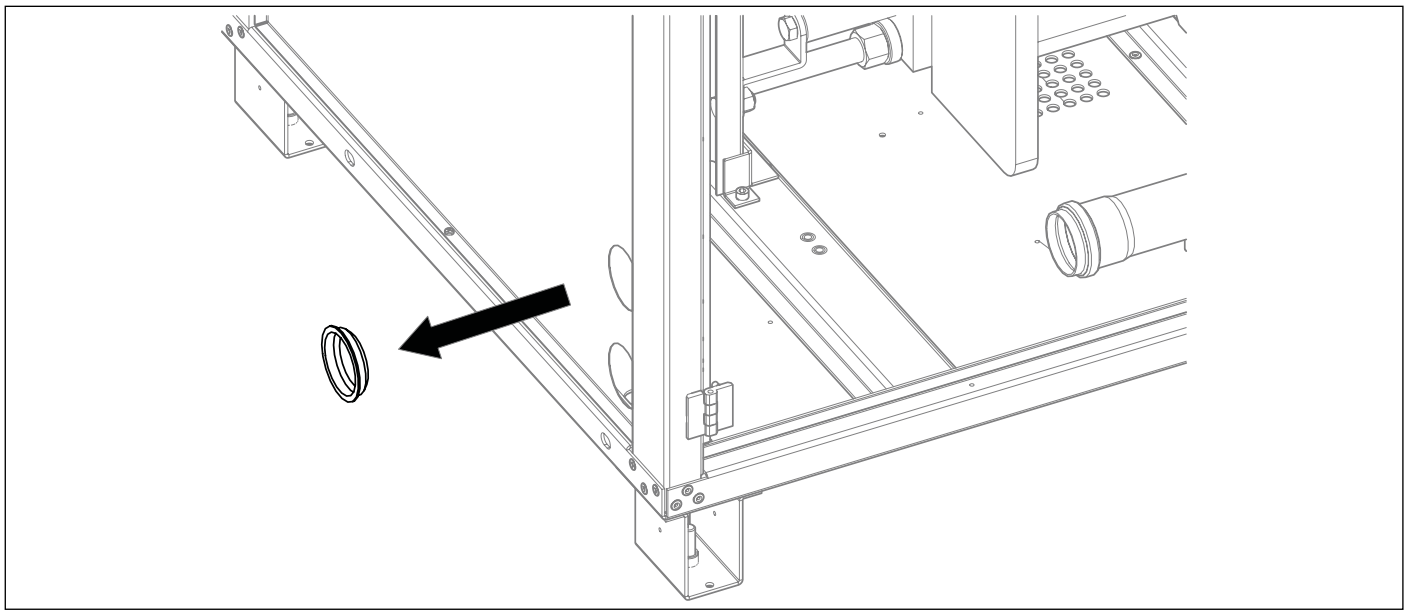
For the final assembly of the cabinet, repeat the operation starting from page *30*.
Close the flow and return collectors, the gas collector and the condensate drain with the components shown in the image.

1.6 Assembling the condensate neutralising filter for plate exchanger

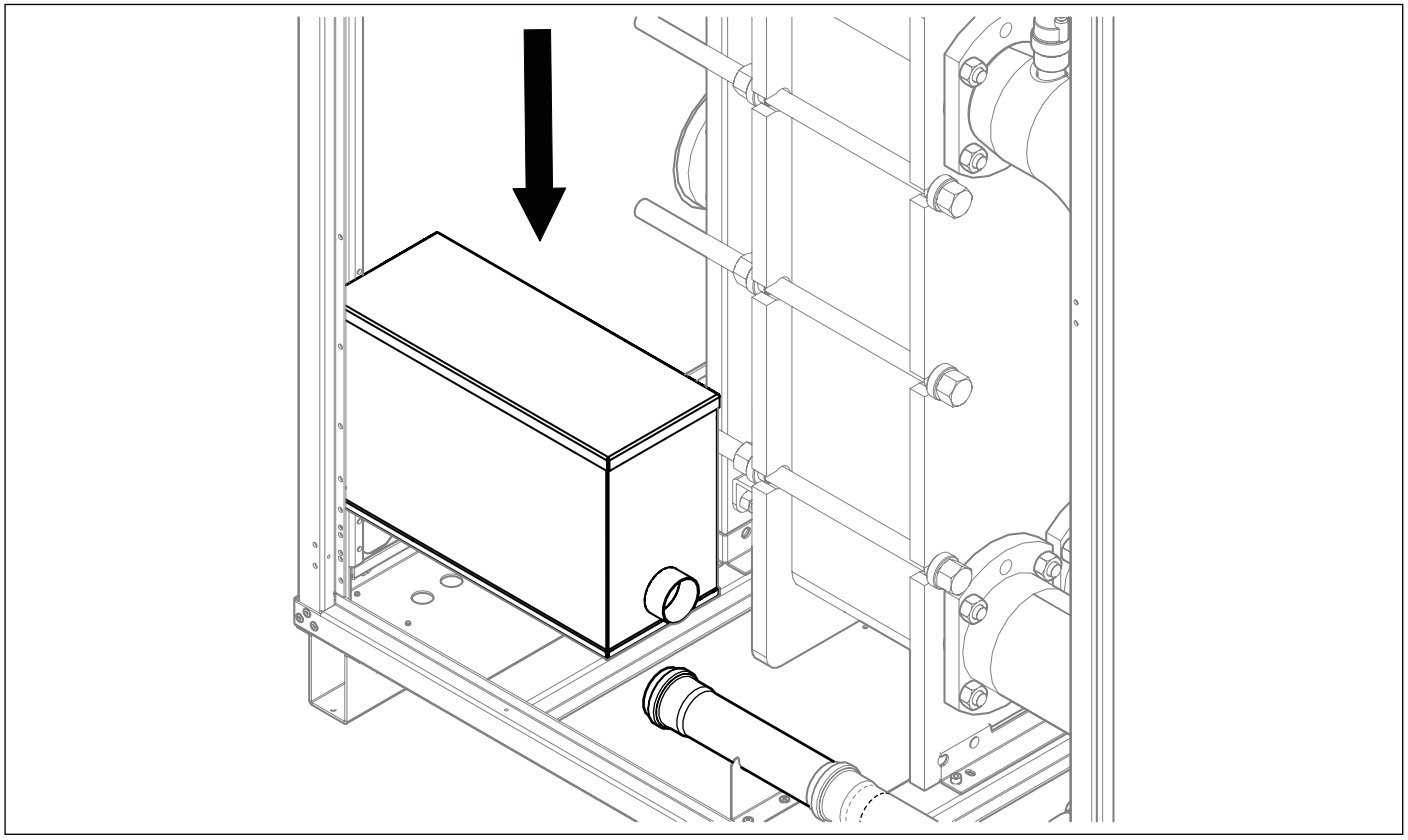


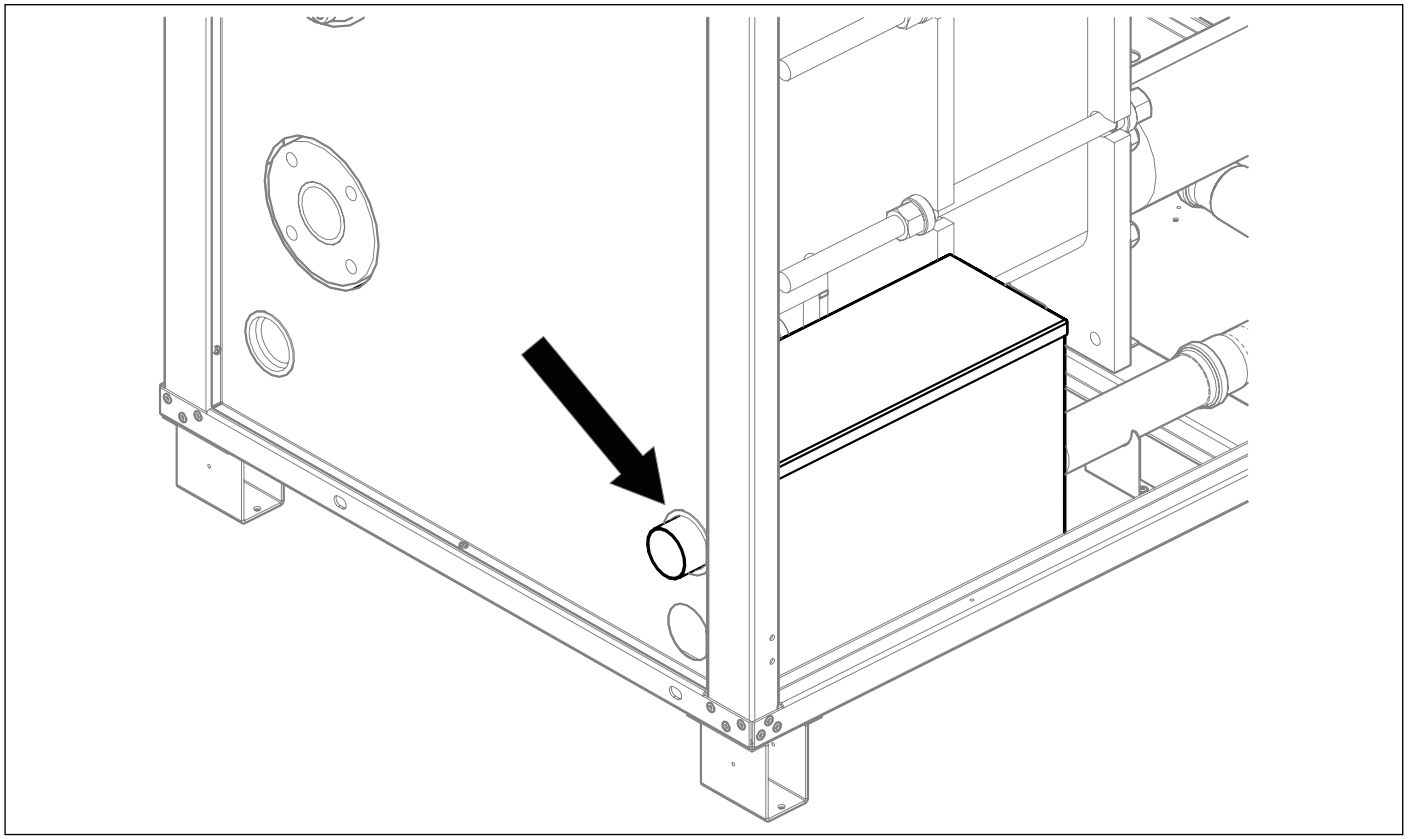


Remove the condensate drain section shown in the image.



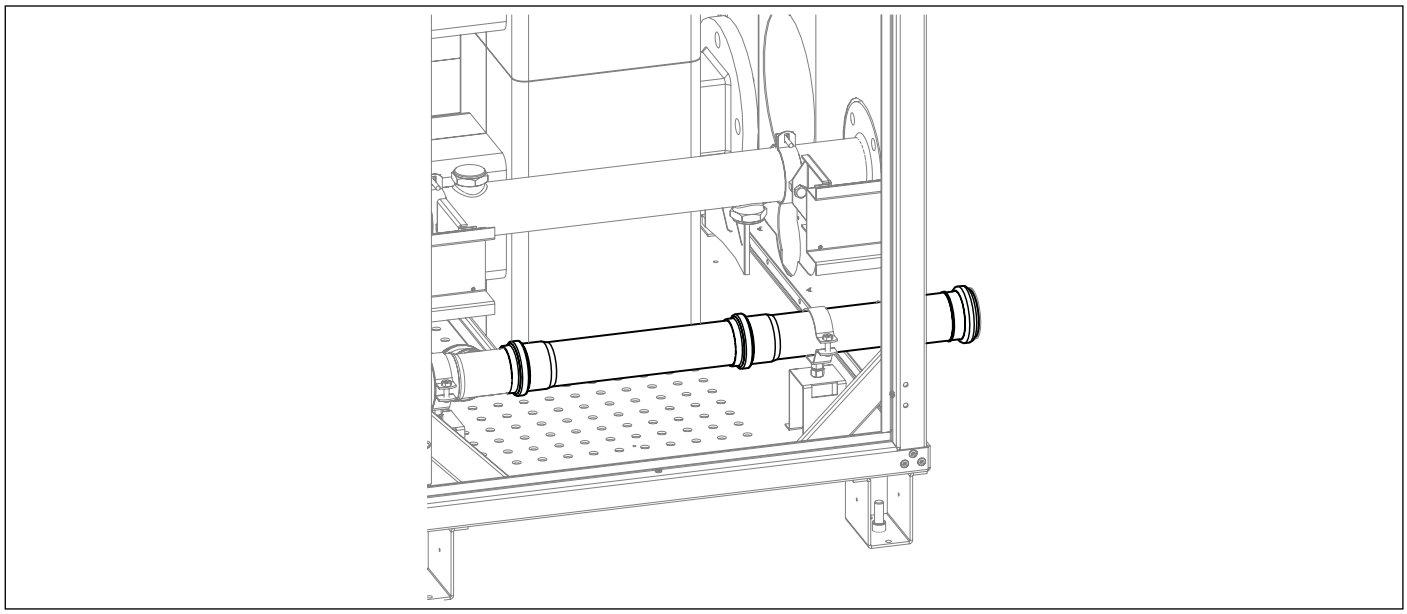
Remove the plug shown in the image.

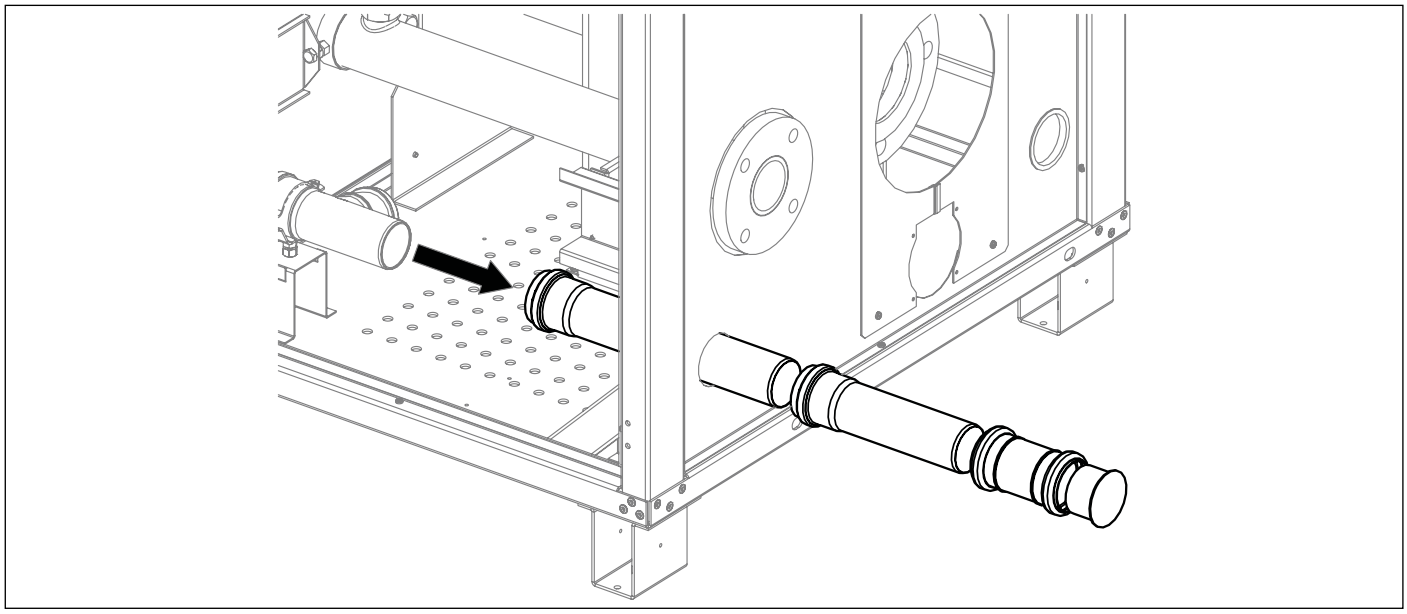




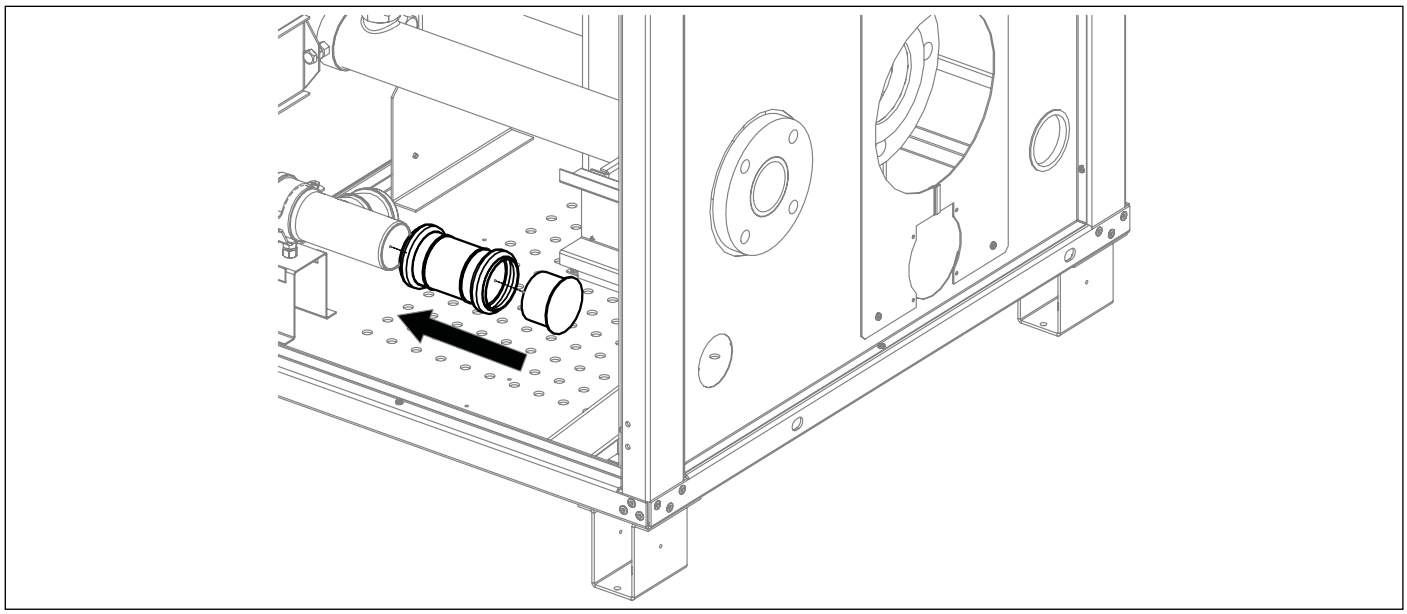
Fix the condensate neutraliser as shown in the image.

1.7 Assembling the condensate neutralising filter for hydraulic separator

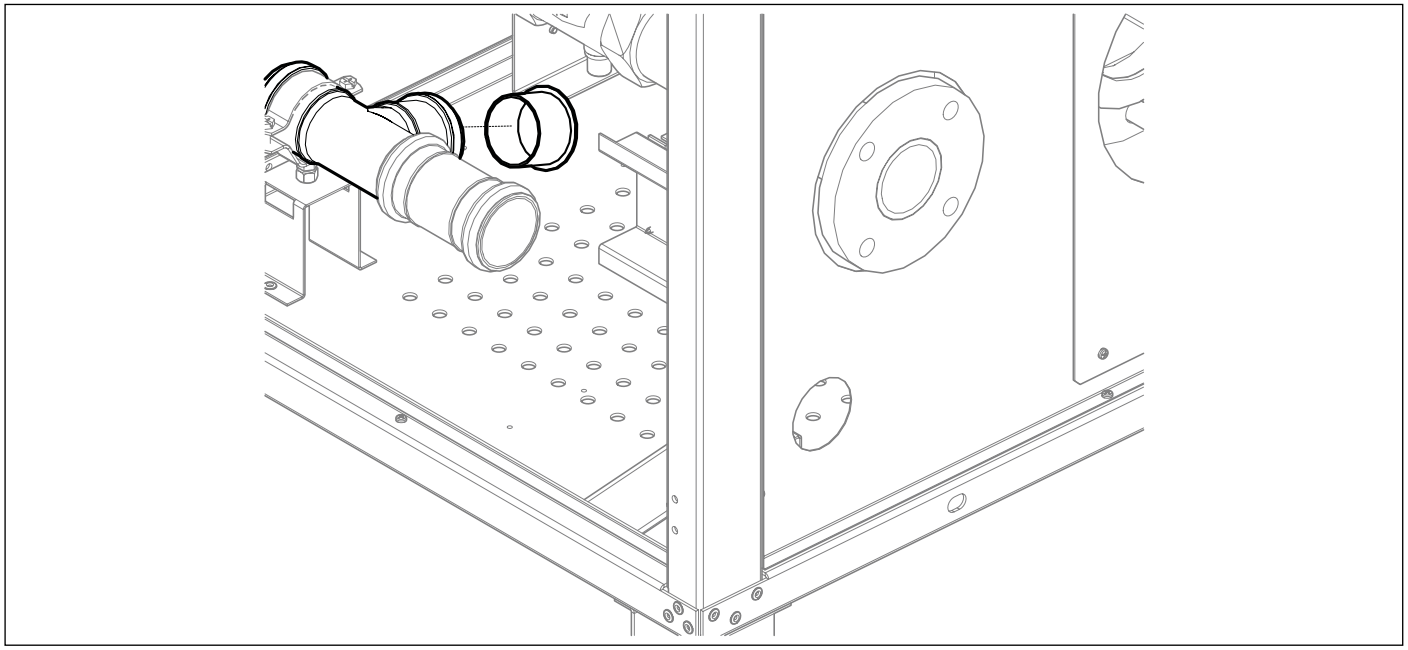




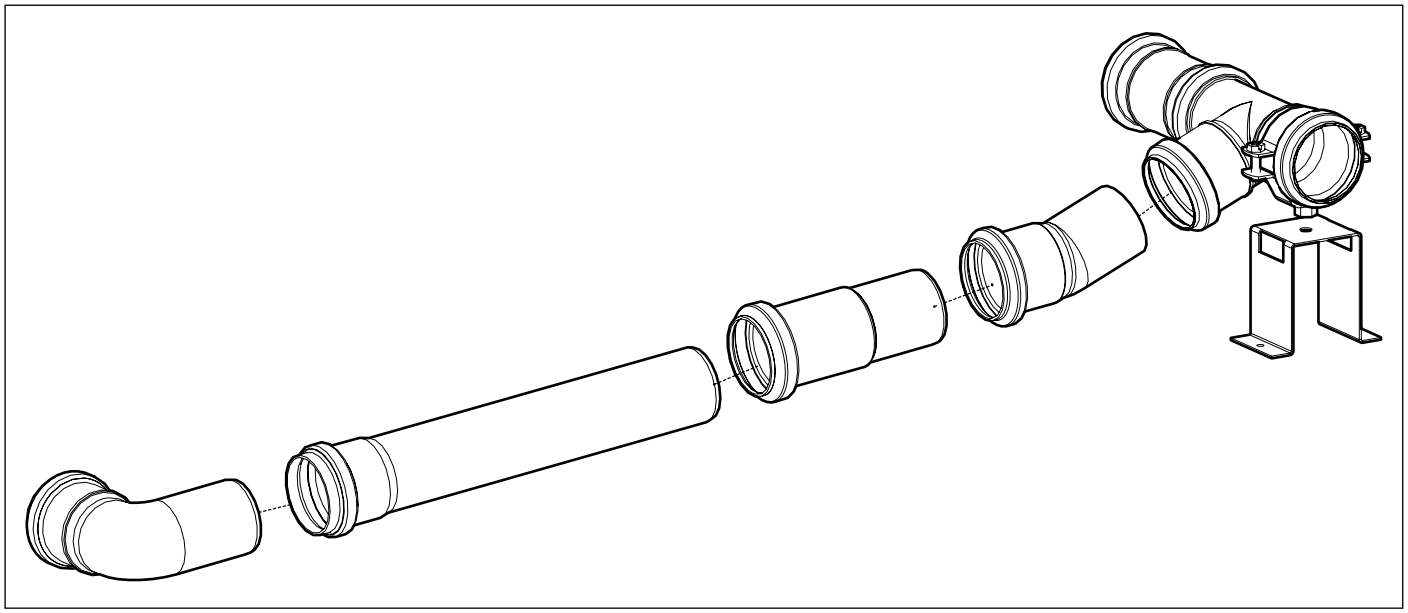
Remove the condensate drain section shown in the image.

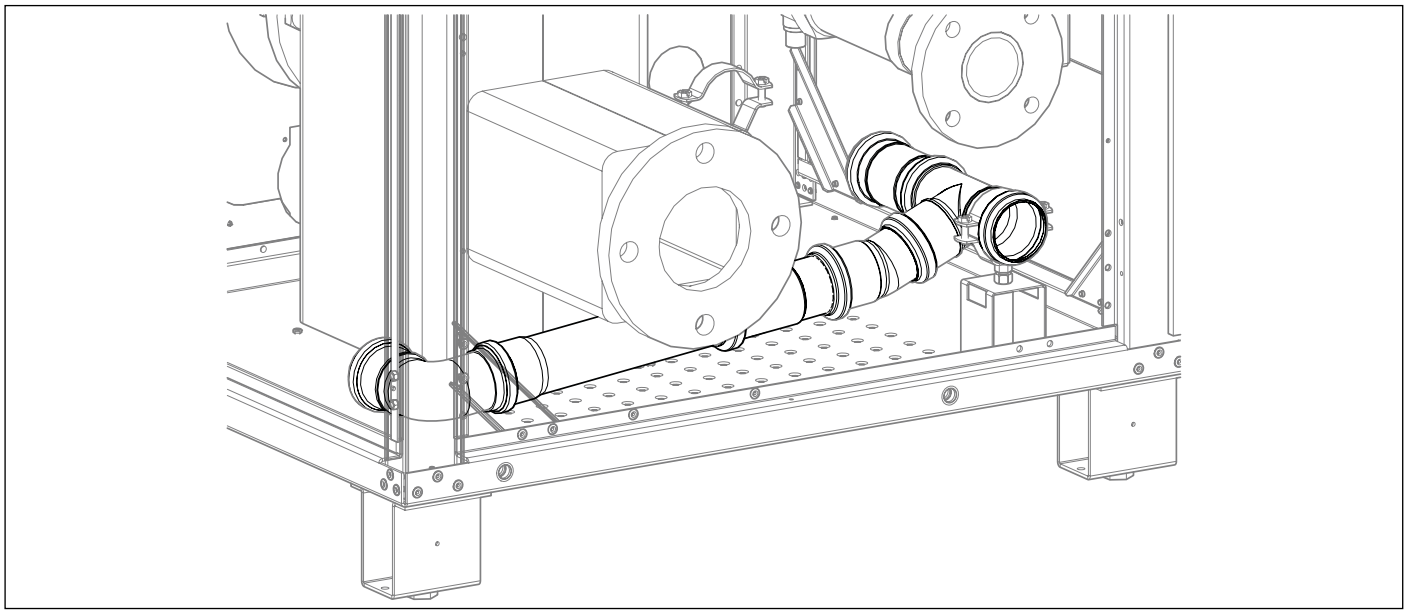


Fit the condensate drain pipe section and relevant closing plug as shown in the image.

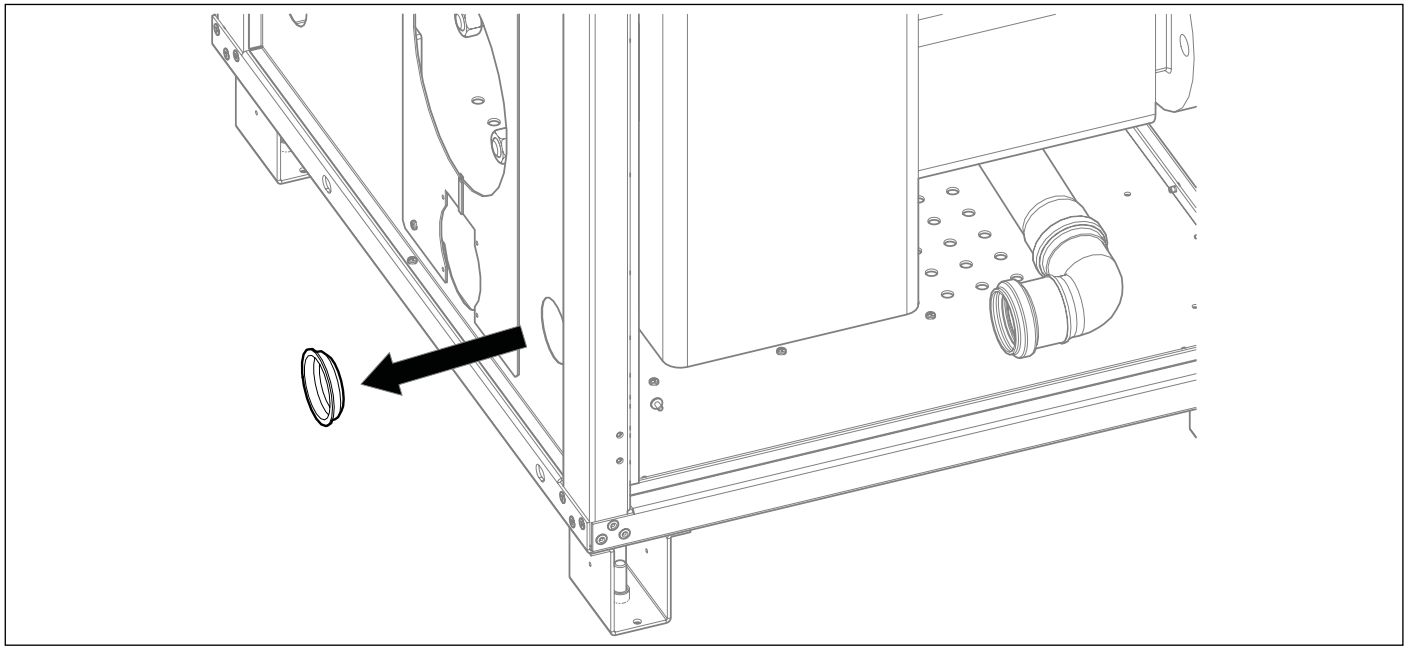


Remove the closing plug shown in the image.

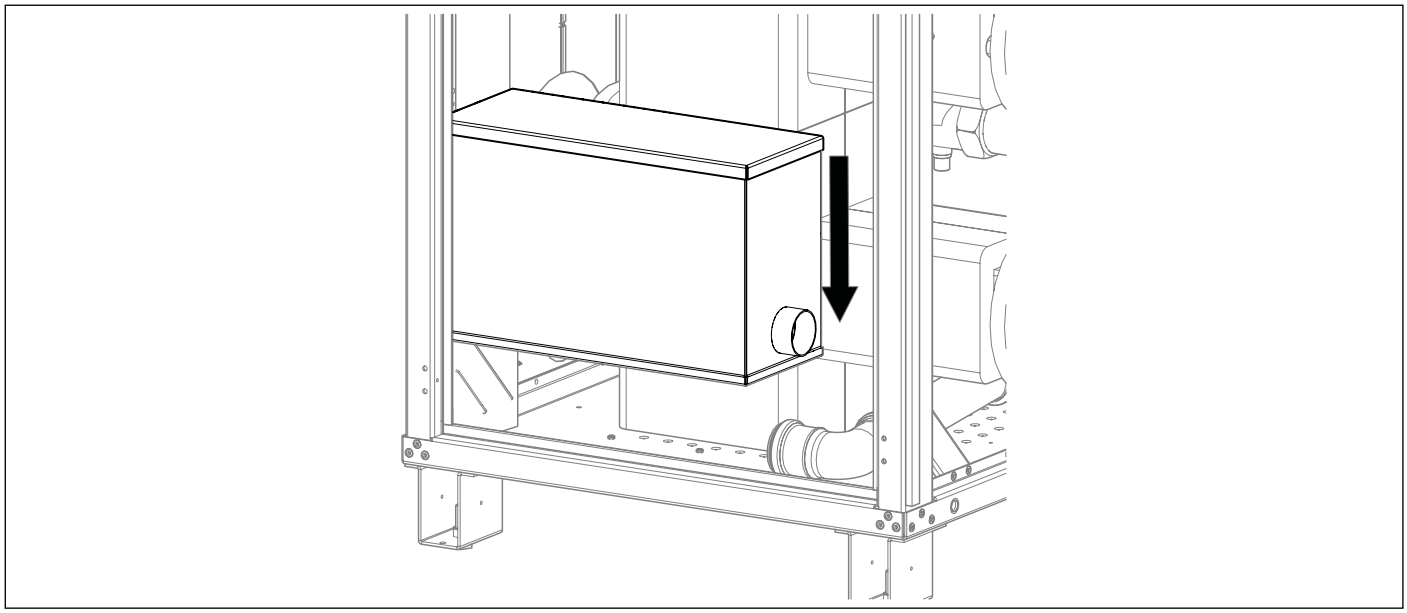


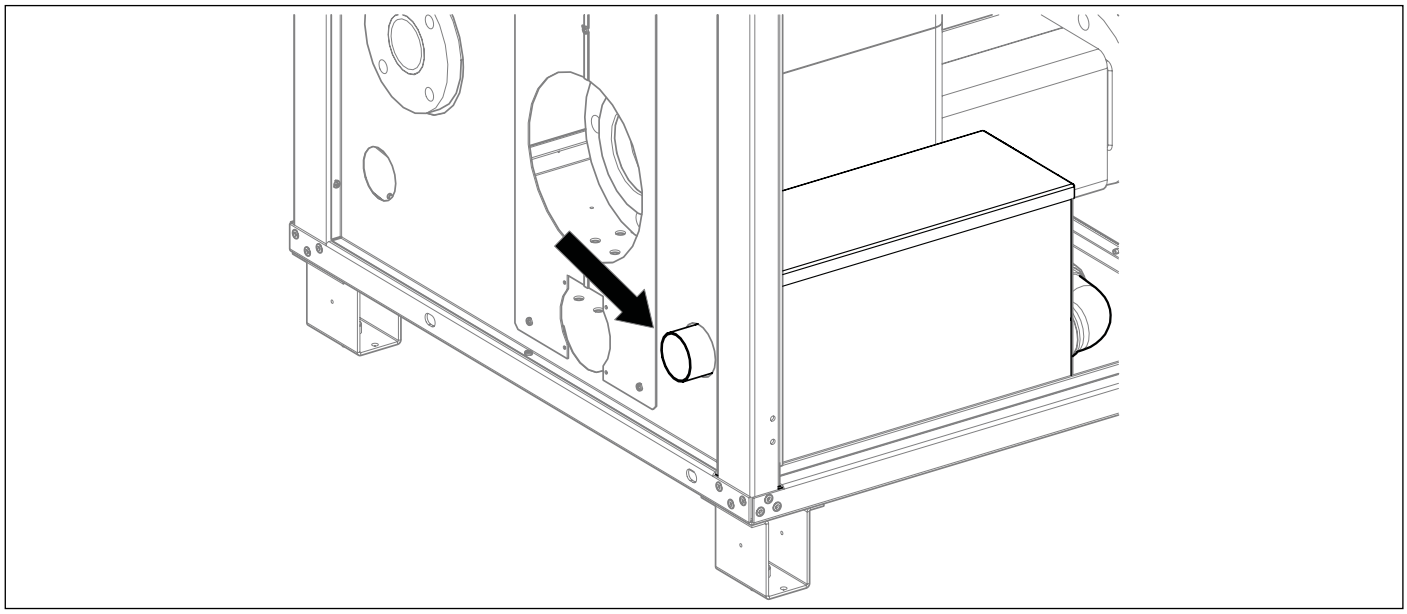


Assemble the condensate drain following the instructions in the figure above.



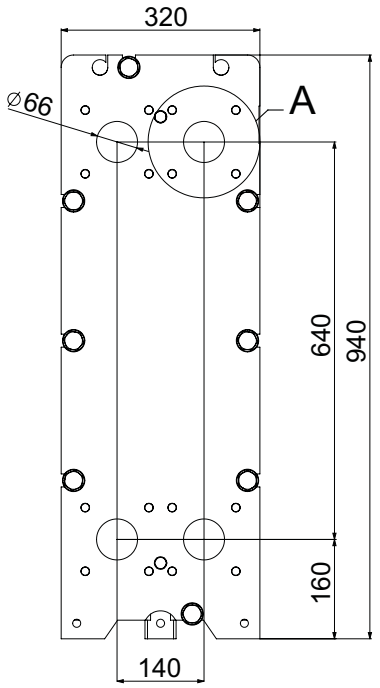
Remove the plug shown in the image.

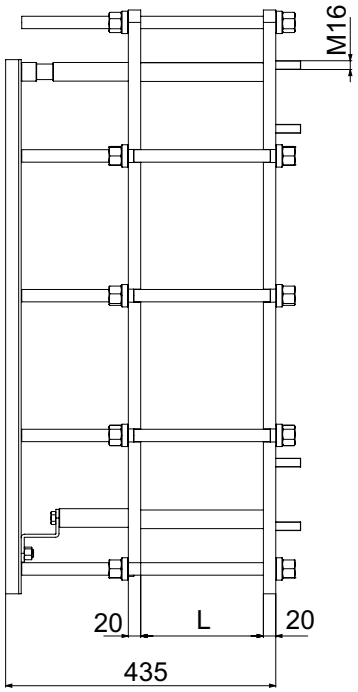




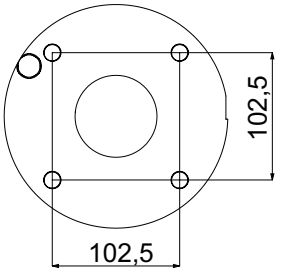
Fix the condensate neutraliser as shown in the image.

1.8 Plate exchanger technical data





POSITION FOR CONNECTION DN 65 FLANGED



A (2 : 5)

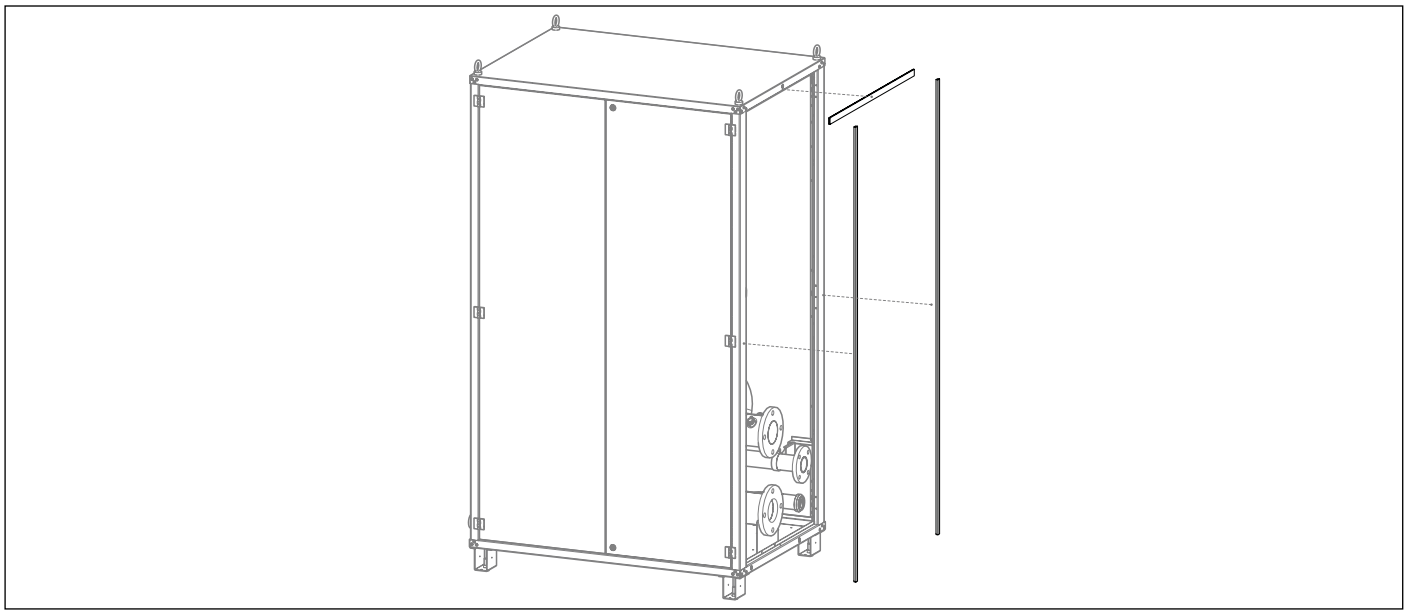
ACCESSORY CODE	PLATE EXCHANGER	PLATES	TIGHTENING L VALUE	PN	PRIMARY WATER VOLUME	SECONDARY WATER VOLUME	EMPTY WEIGHT	WEIGHT AT FULL LOAD
		No.	mm	bar	l	l	kg	kg
0SCAMPIA27	UP TO 120 KW	11	27,5	10	1,4	1,4	110	115
0SCAMPIA28	UP TO 205 KW	21	52,5		2,79	2,79	117	124
0SCAMPIA29	UP TO 300 KW	27	67,5		3,63	3,63	121	130
0SCAMPIA30	UP TO 360 KW	35	87,5		4,74	4,74	128	140
0SCAMPIA31	UP TO 450 KW	41	102,5		5,58	5,58	133	146
0SCAMPIA32	UP TO 540 KW	51	127,5		6,98	6,98	141	157
0SCAMPIA33	UP TO 600 KW	57	142,5		7,81	7,81	145	163
0SCAMPIA34	UP TO 690 KW	63	157,5		8,65	8,65	151	171
0SCAMPIA35	UP TO 780 KW	71	177,5		9,76	9,76	157	179
0SCAMPIA36	UP TO 900 KW	79	197,5		10,88	10,88	163	187

ACCESSORY CODE	PLATE EXCHANGER	EXCHANGE SURFACE	PRIMARY		SECONDARY		ΔP	
			IN	OUT	IN	OUT	PRIMARY	SECONDARY
		m²	°C	°C	°C	°C	kPa	kPa
0SCAMPIA27	UP TO 120 KW	1,35	80	60	50	70	20	20
0SCAMPIA28	UP TO 205 KW	2,85						
0SCAMPIA29	UP TO 300 KW	3,75						
0SCAMPIA30	UP TO 360 KW	4,95					21	21
0SCAMPIA31	UP TO 450 KW	5,85						
0SCAMPIA32	UP TO 540 KW	7,35						
0SCAMPIA33	UP TO 600 KW	8,25						
0SCAMPIA34	UP TO 690 KW	9,15					25	25
0SCAMPIA35	UP TO 780 KW	10,35					27	27
0SCAMPIA36	UP TO 900 KW	11,55					34	34

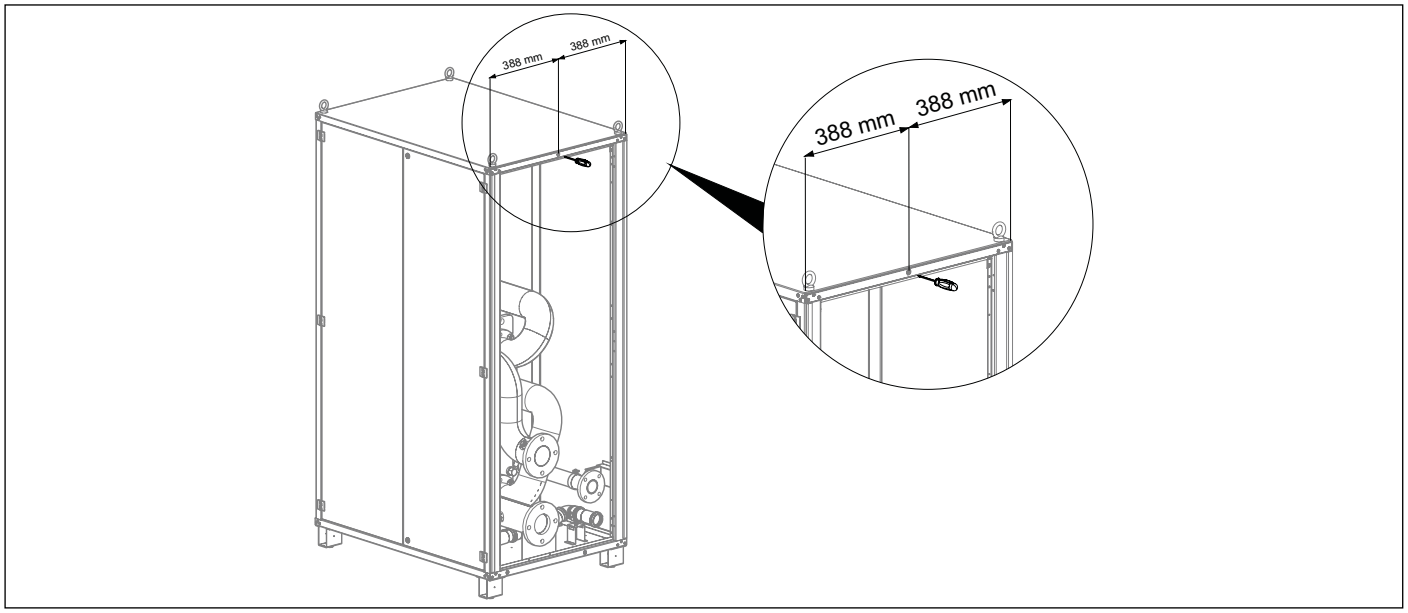
Tab. 1 Plate exchanger dimensions

MATERIALS AND CONNECTIONS	
Frame	P355NH
Plates	AISI304
Gaskets	EPDM
Primary connections	P355NH
Secondary connections	P355NH
Tie rods	A193B7
Plate thickness [mm]	0,5
Primary and secondary connections	Flanged DN 65 – M16 tie rods

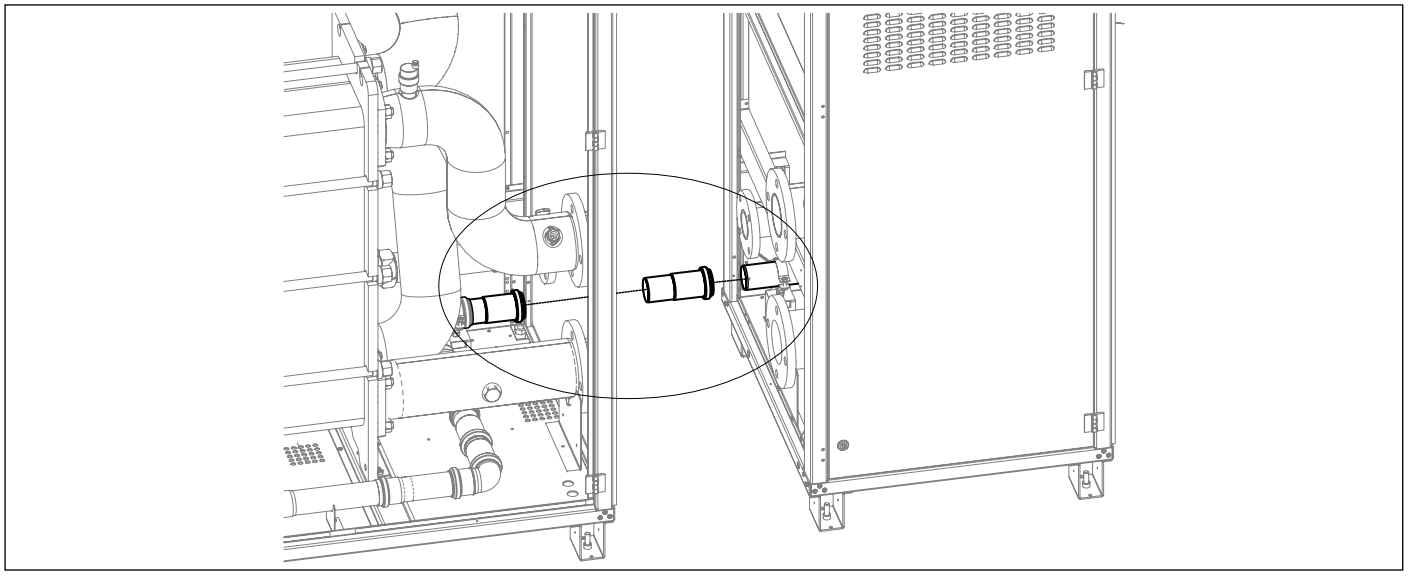
1.9 Assembling the cabinet with plate exchanger



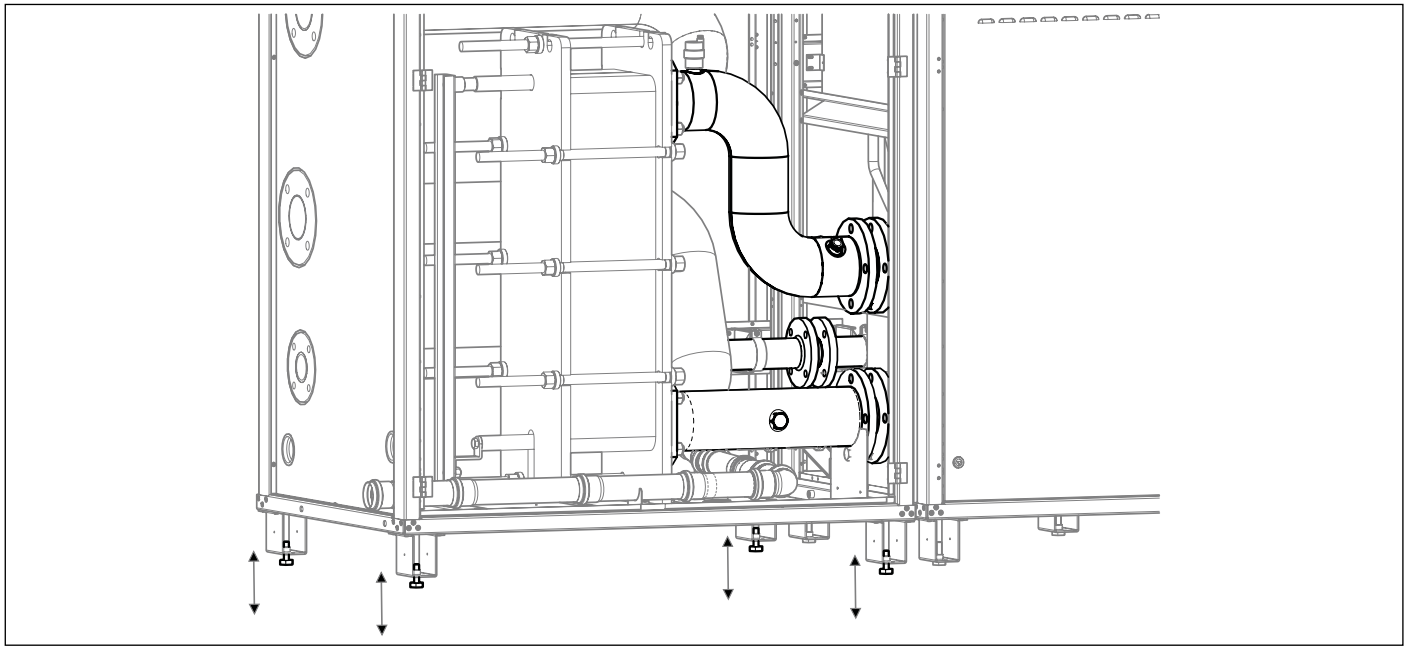
Glue gaskets as shown in the image.



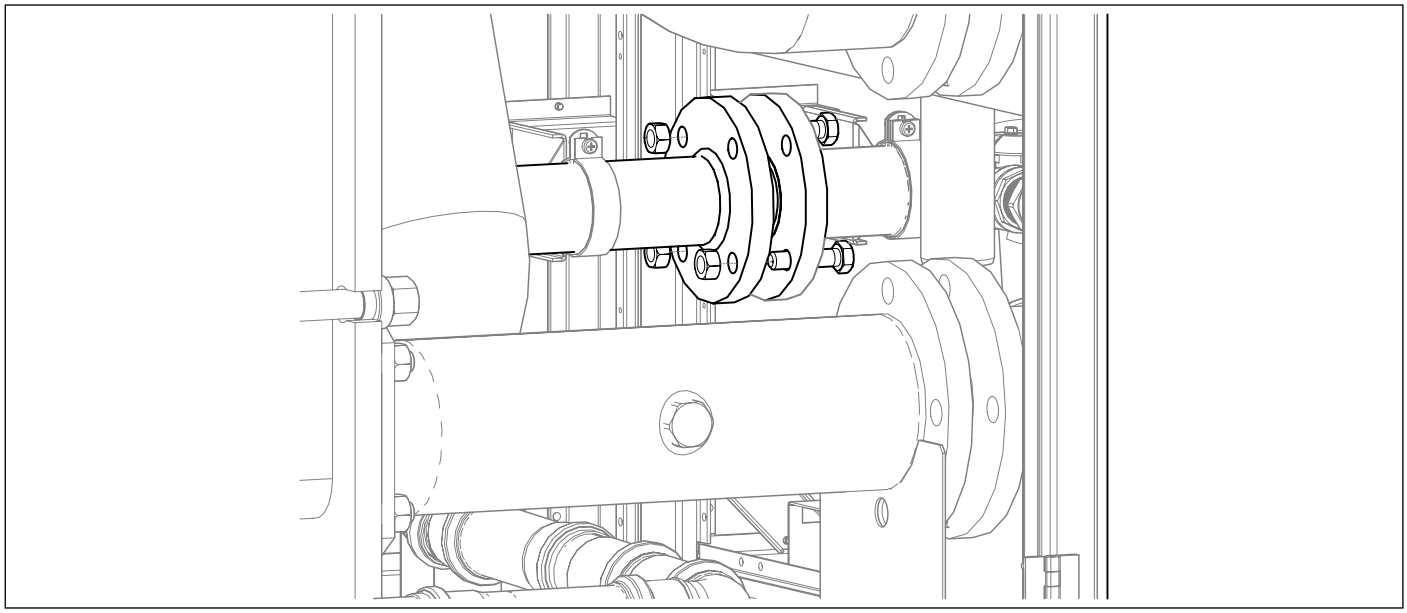
Use an awl to make a hole in the upper gasket at the opening for the screw.

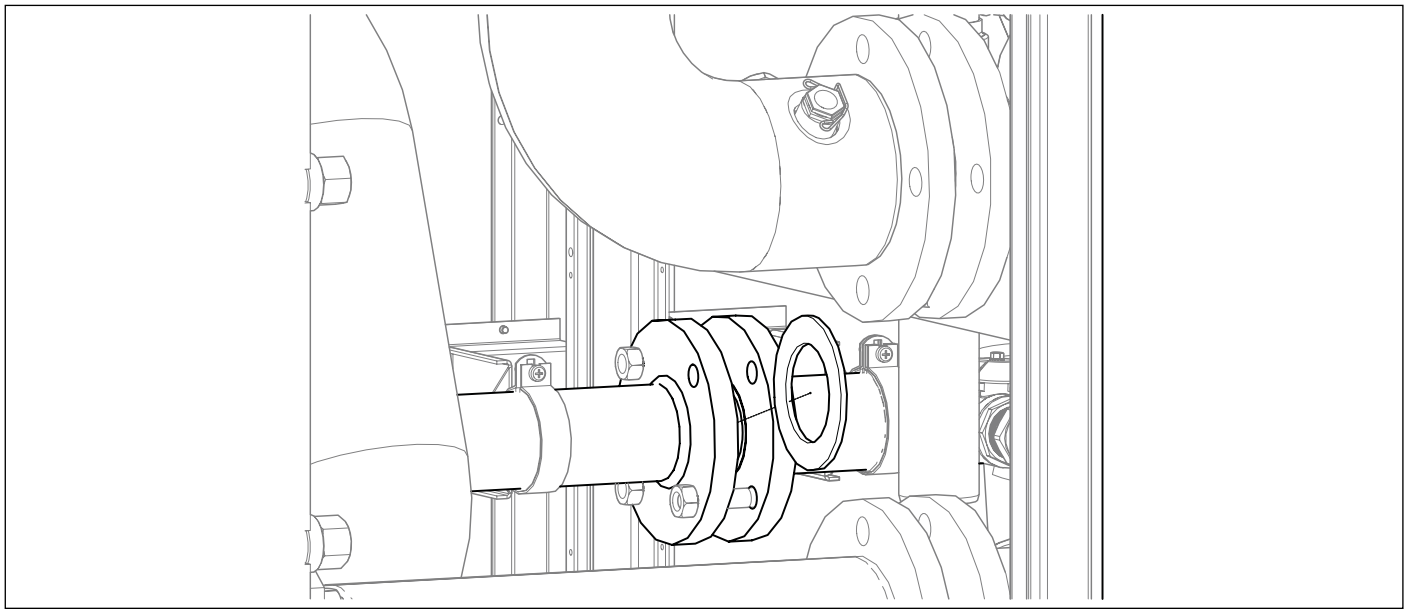


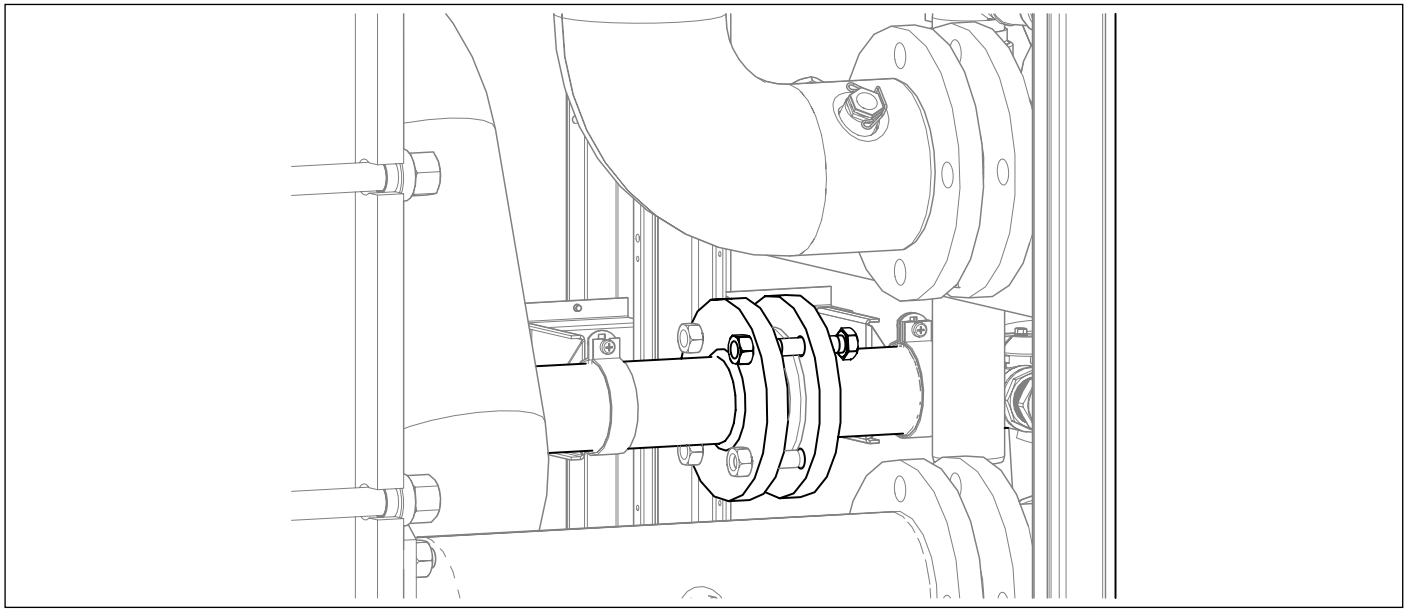
Assemble the supplied pipe on the condensate drain as shown in the image.



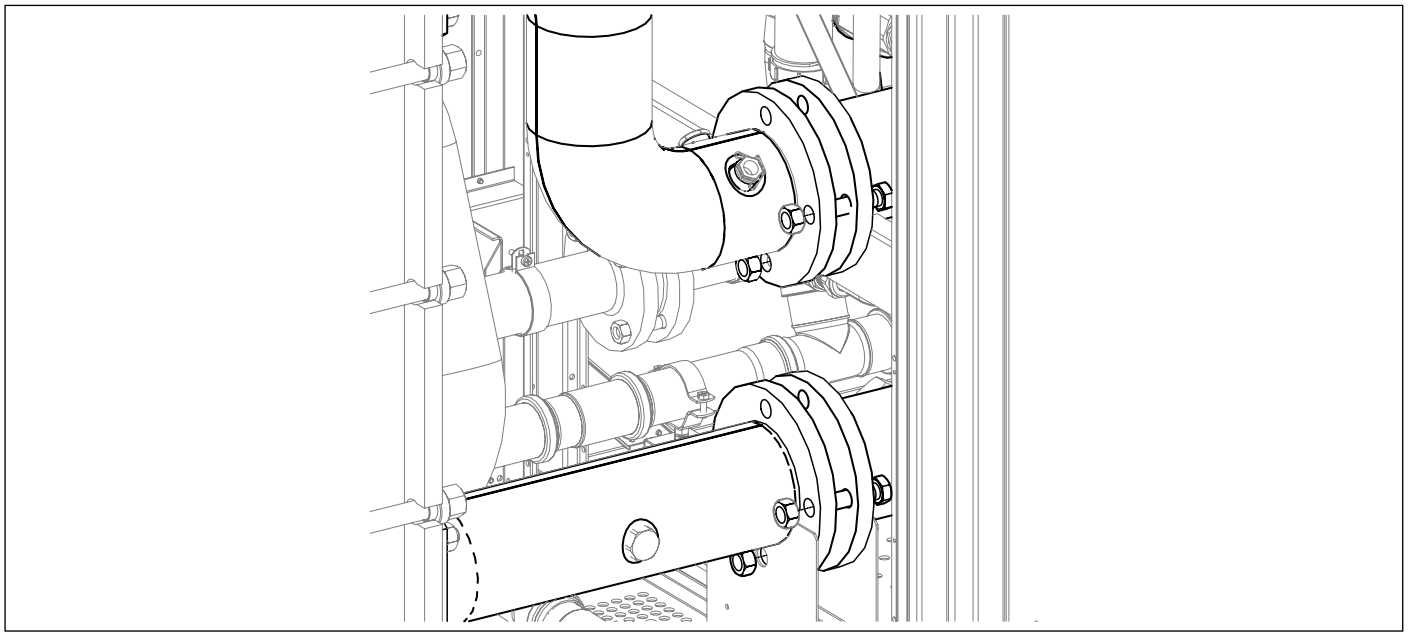
Use the four feet of the cabinet containing the plate exchanger to align the flow collector, the return collector and the gas pipe to the collectors located inside the adjacent cabinet.

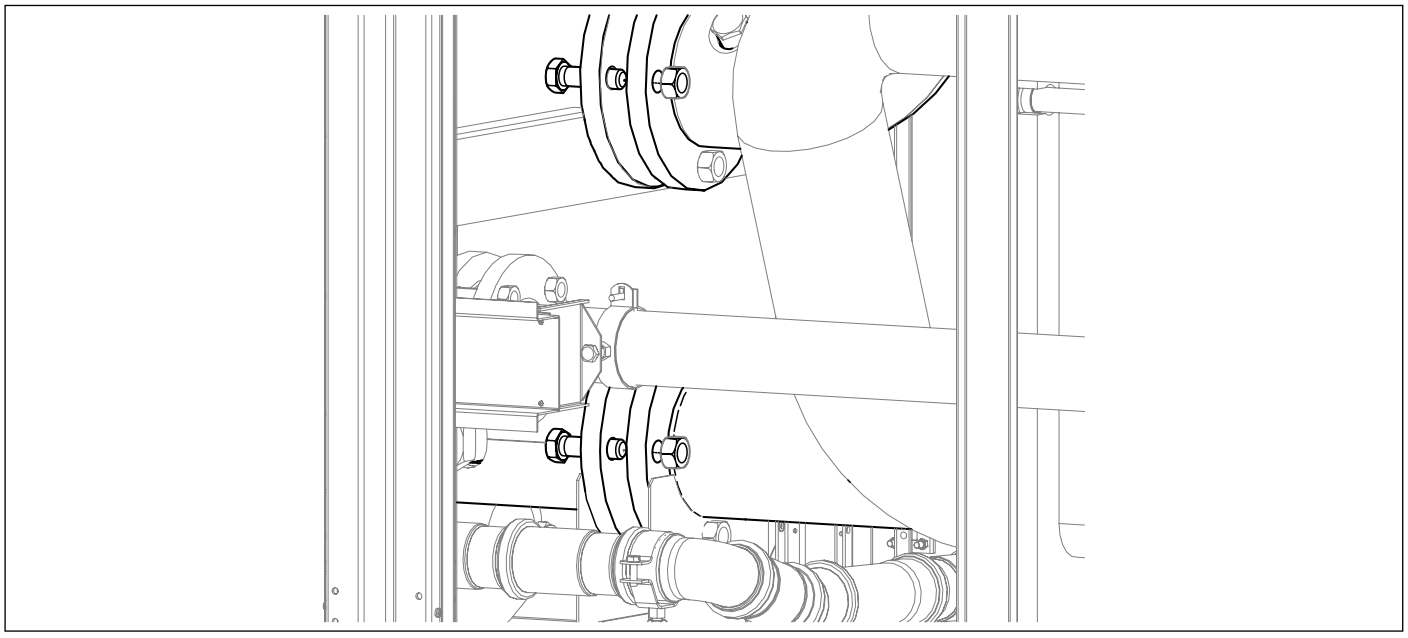


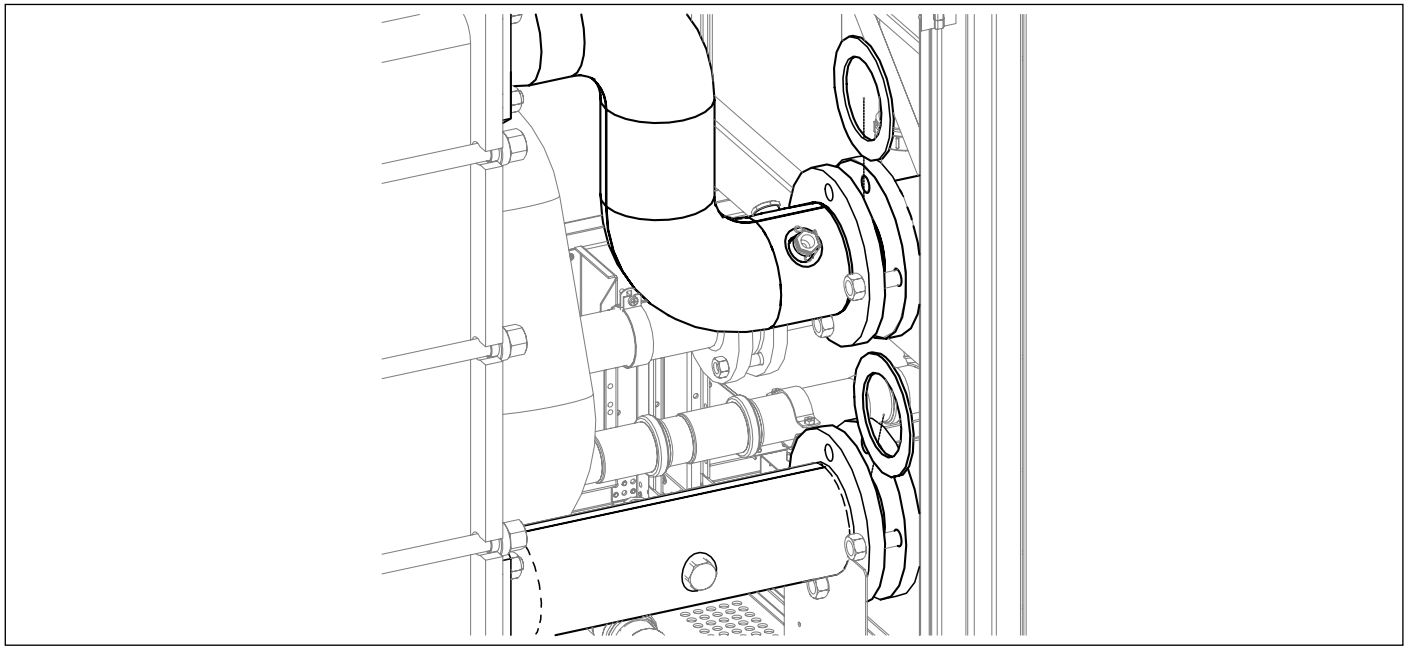


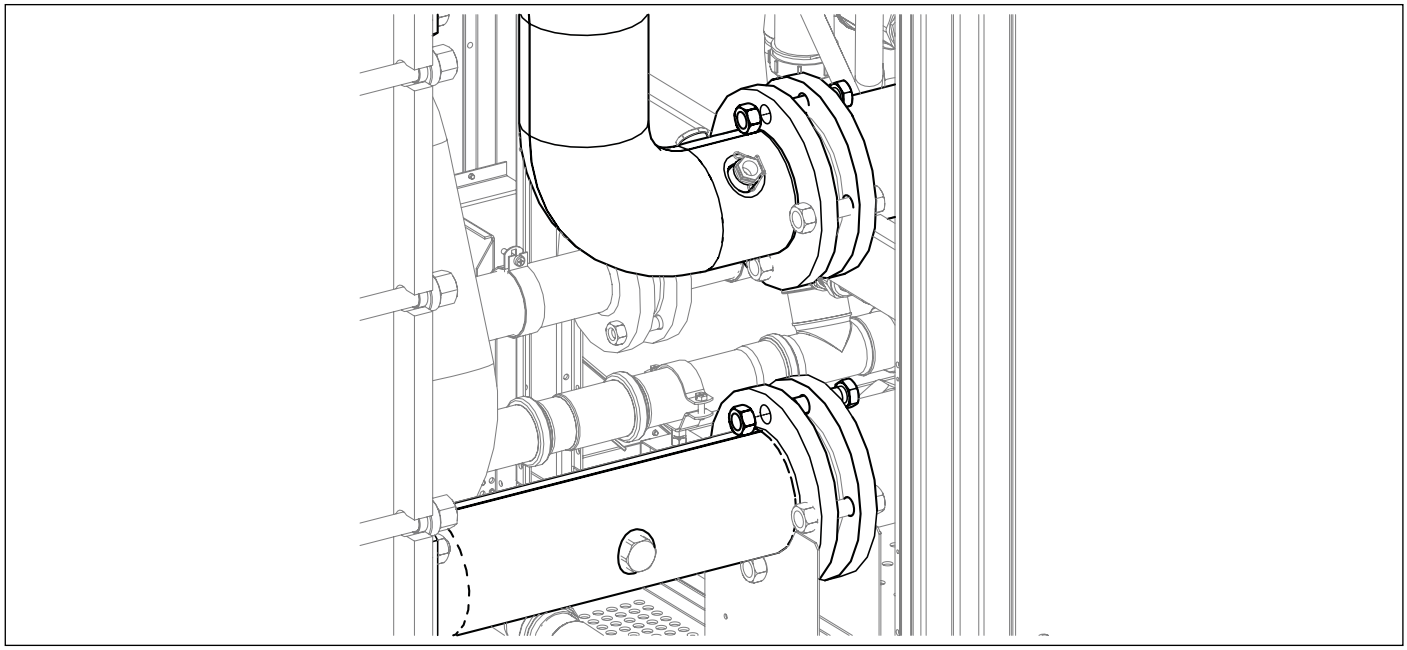


Fasten the gas collector with screws and nuts by placing the gasket between the two collectors.

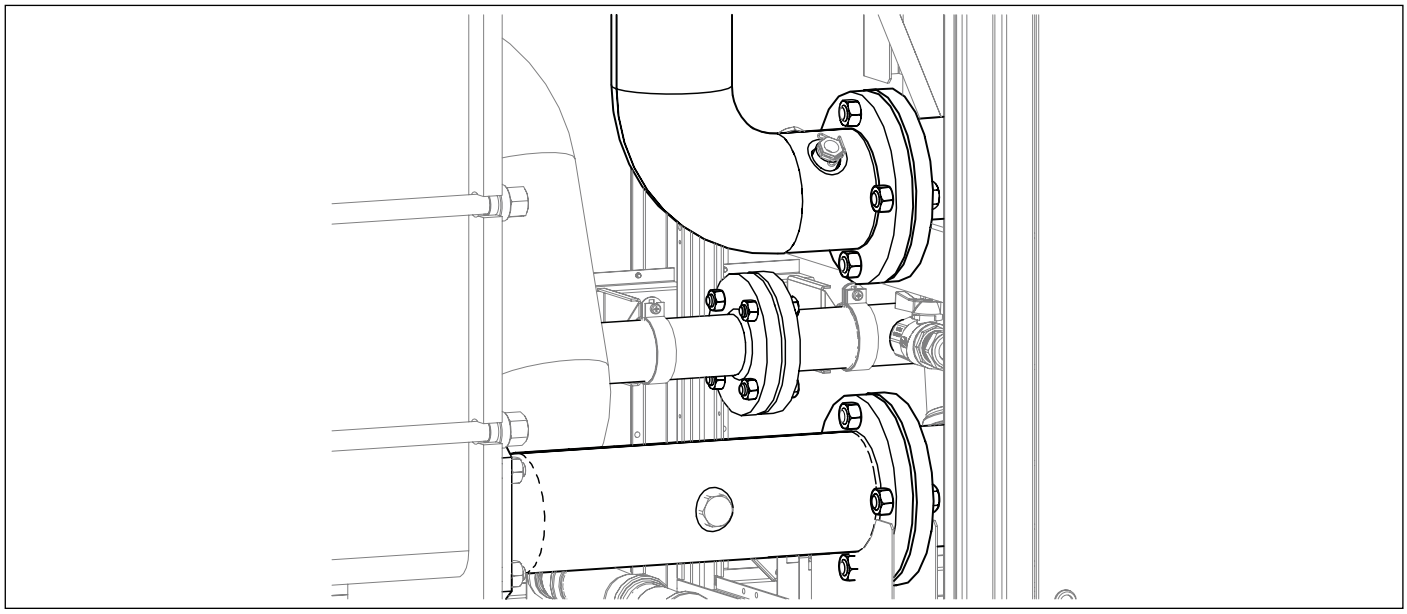


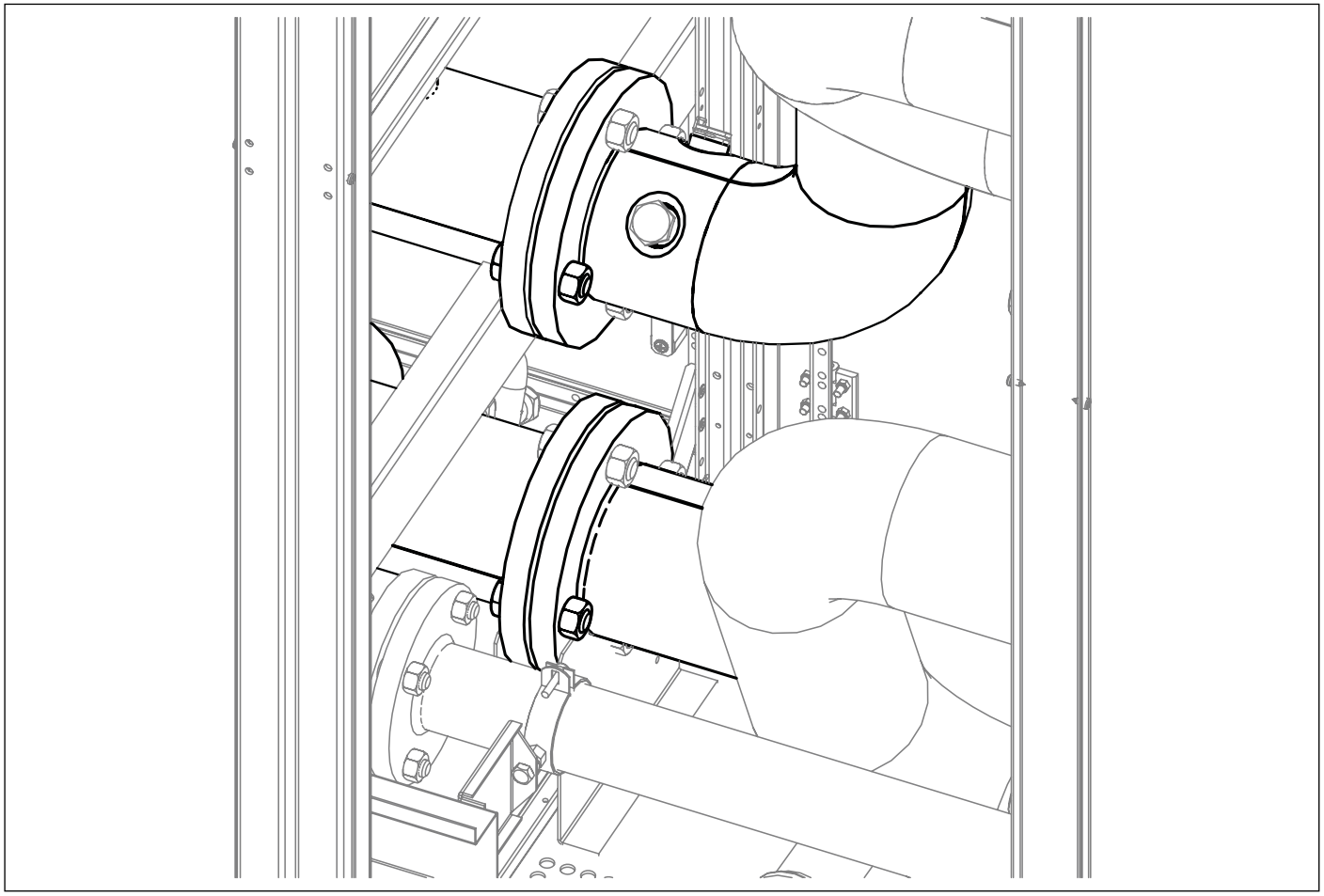




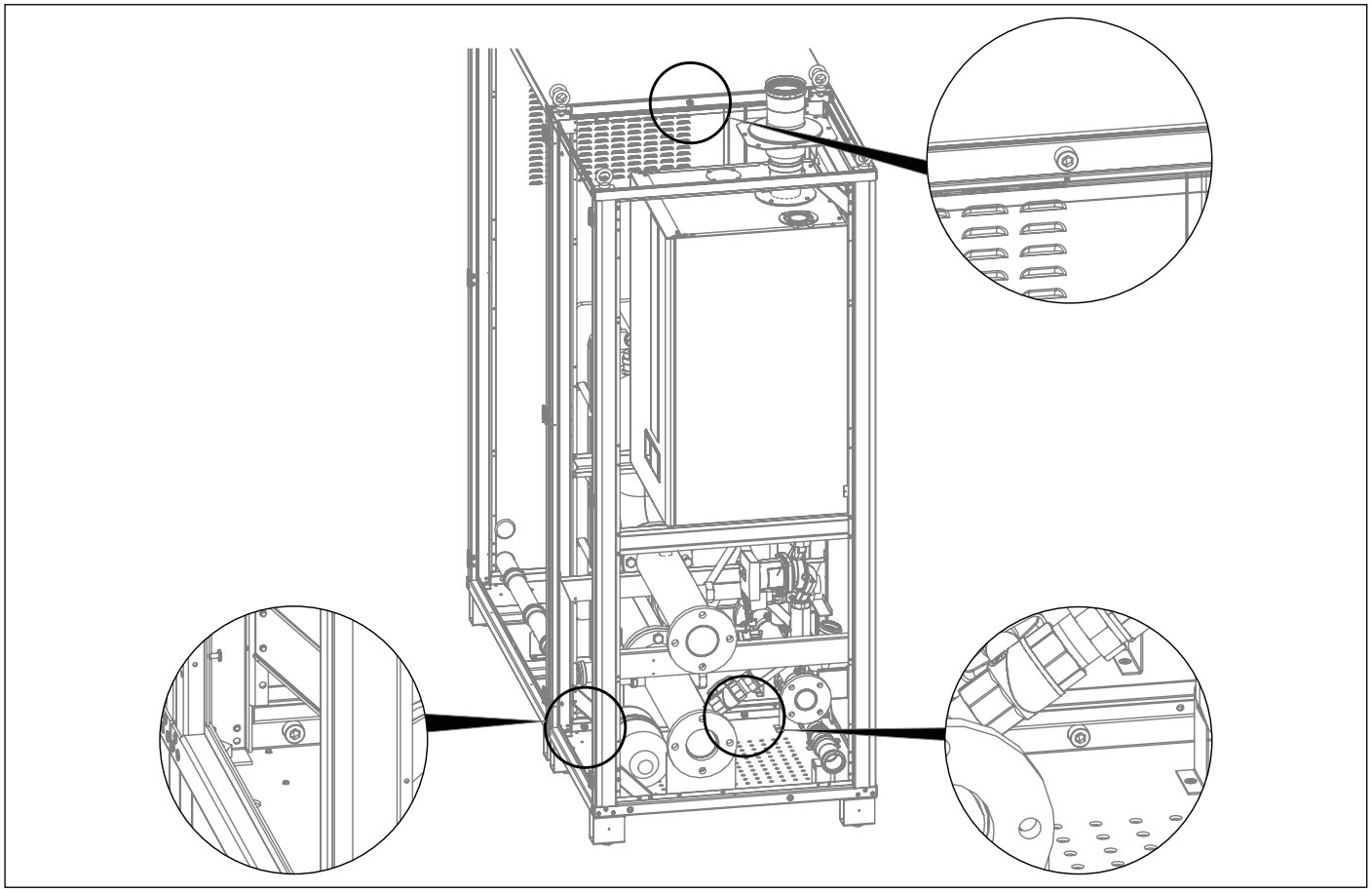


Fasten the flow and return collectors with screws and nuts by placing the gaskets in-between.

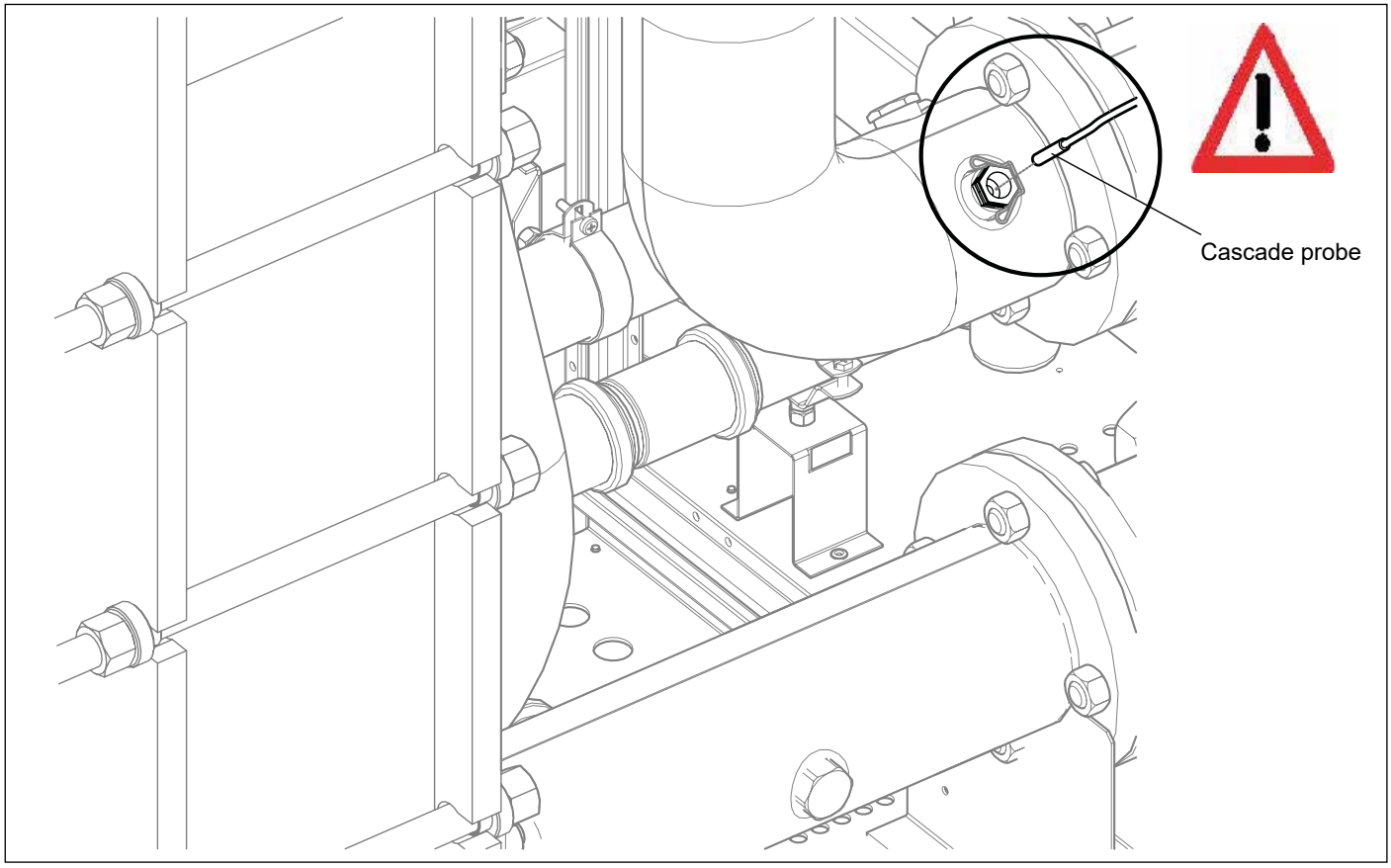




Tighten the screws on the collectors of the intermediate cabinet.



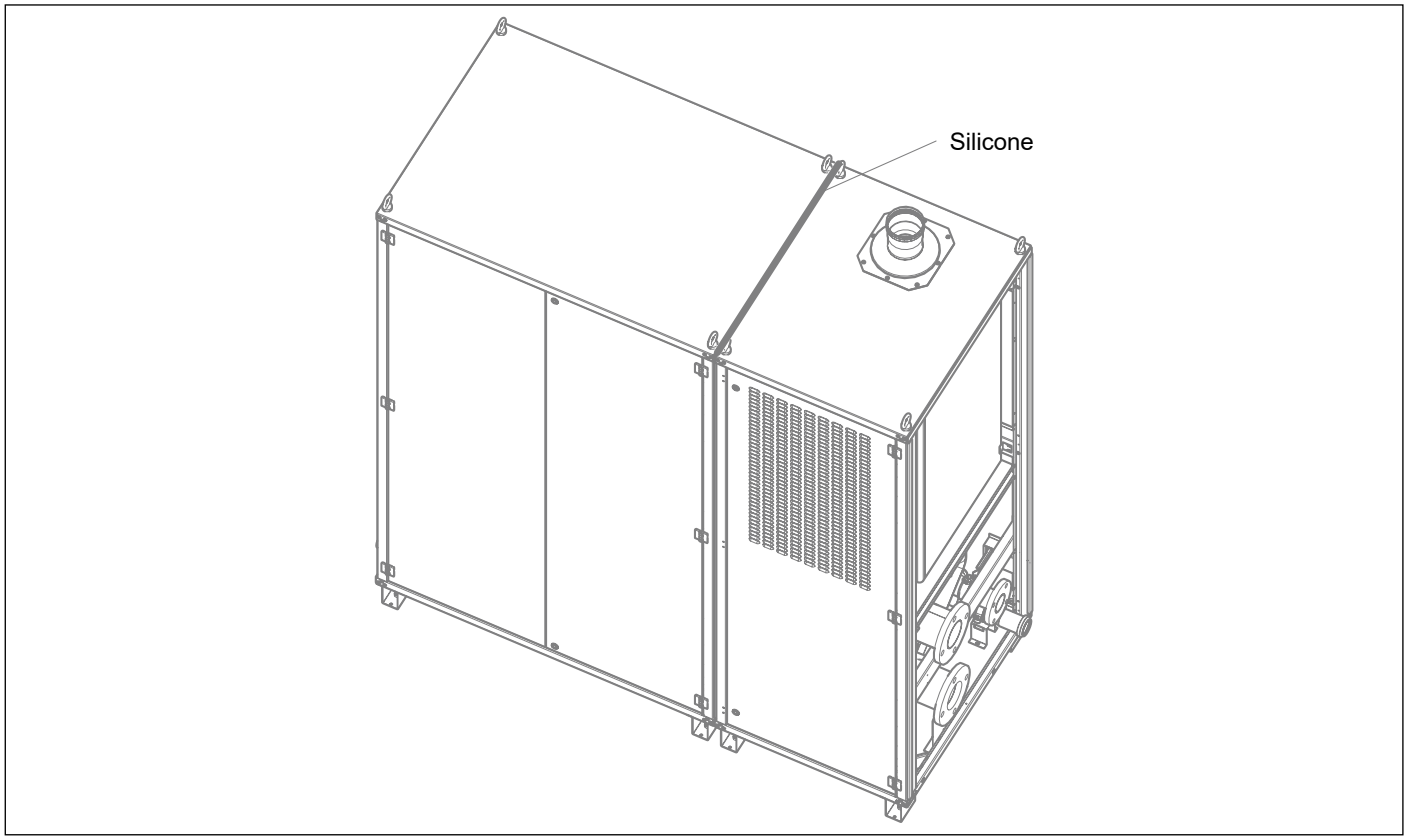
Lock the first cabinet to the cabinet containing the plate exchanger using the supplied screws.



Place the cascade probe in the position shown in the image.

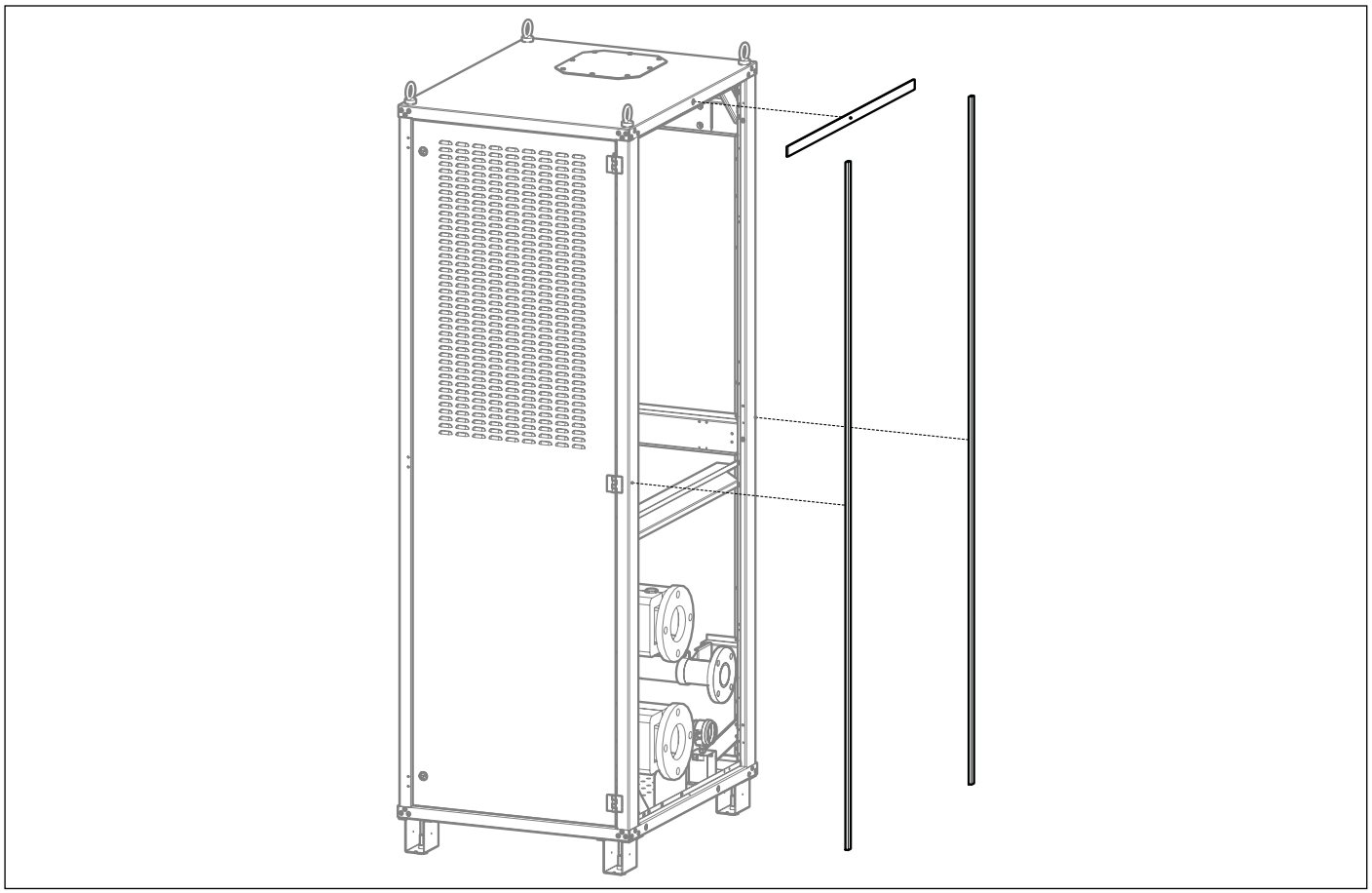
WARNING

Apply the supplied conductive paste to the surface of the component sensitive element.

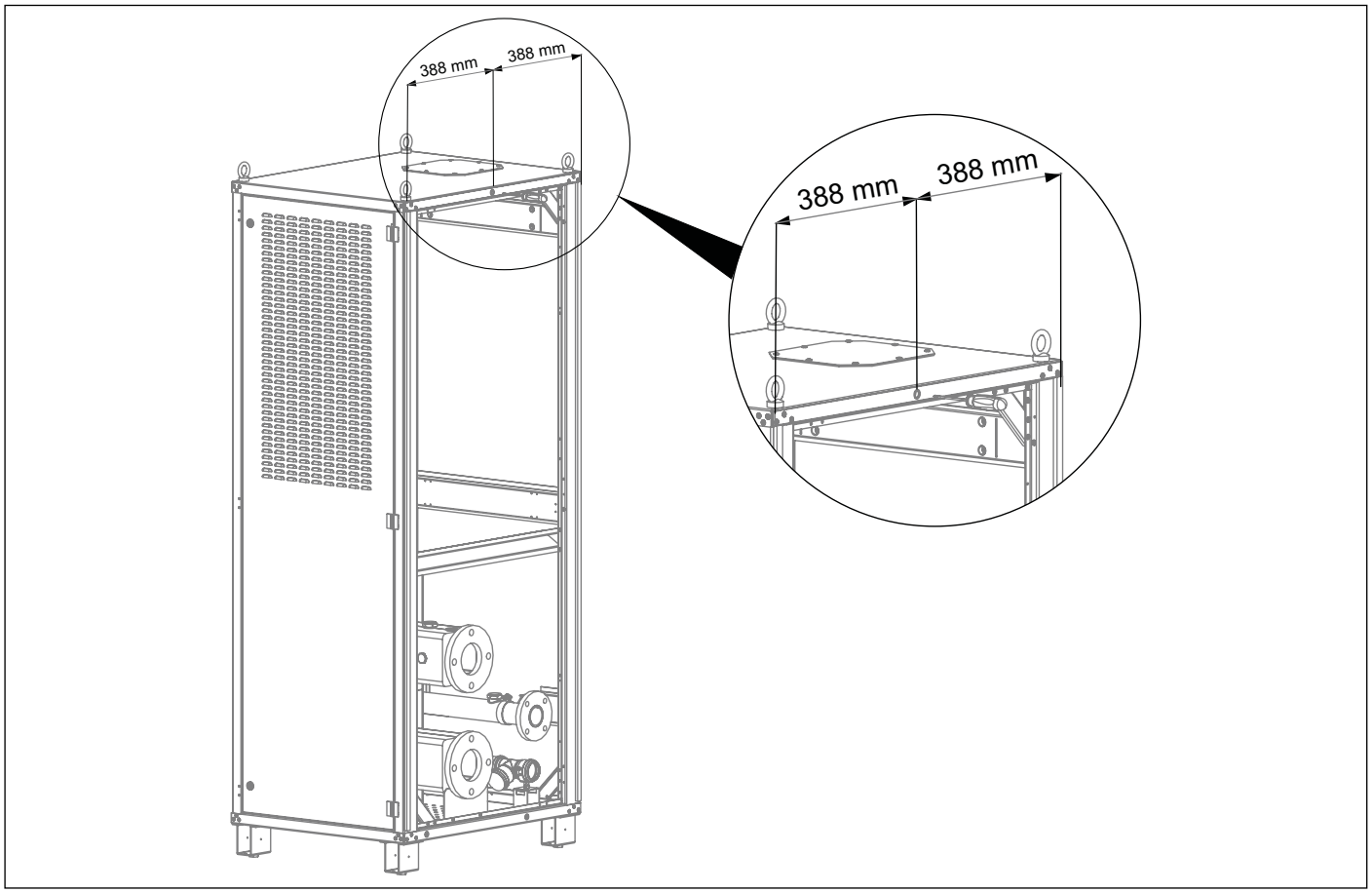


Apply a layer of silicone (not supplied) on the upper joint between the two cabinets.

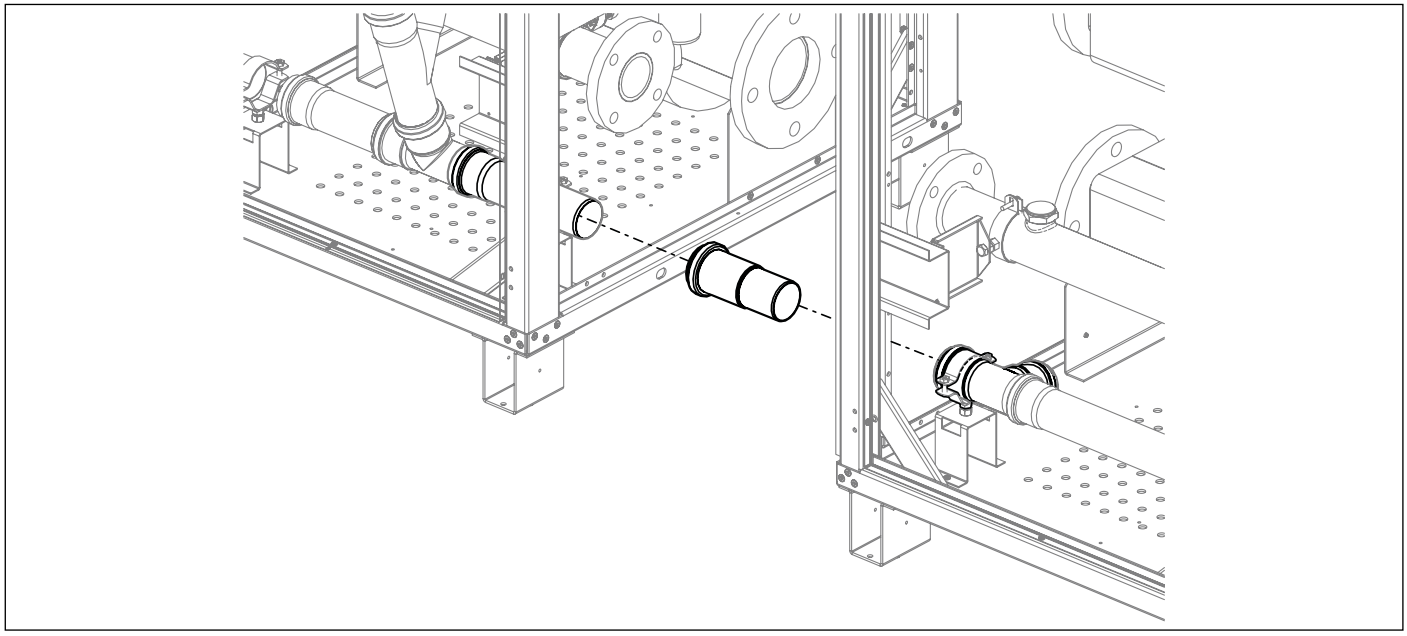
1.10 Assembling the cabinet with hydraulic separator



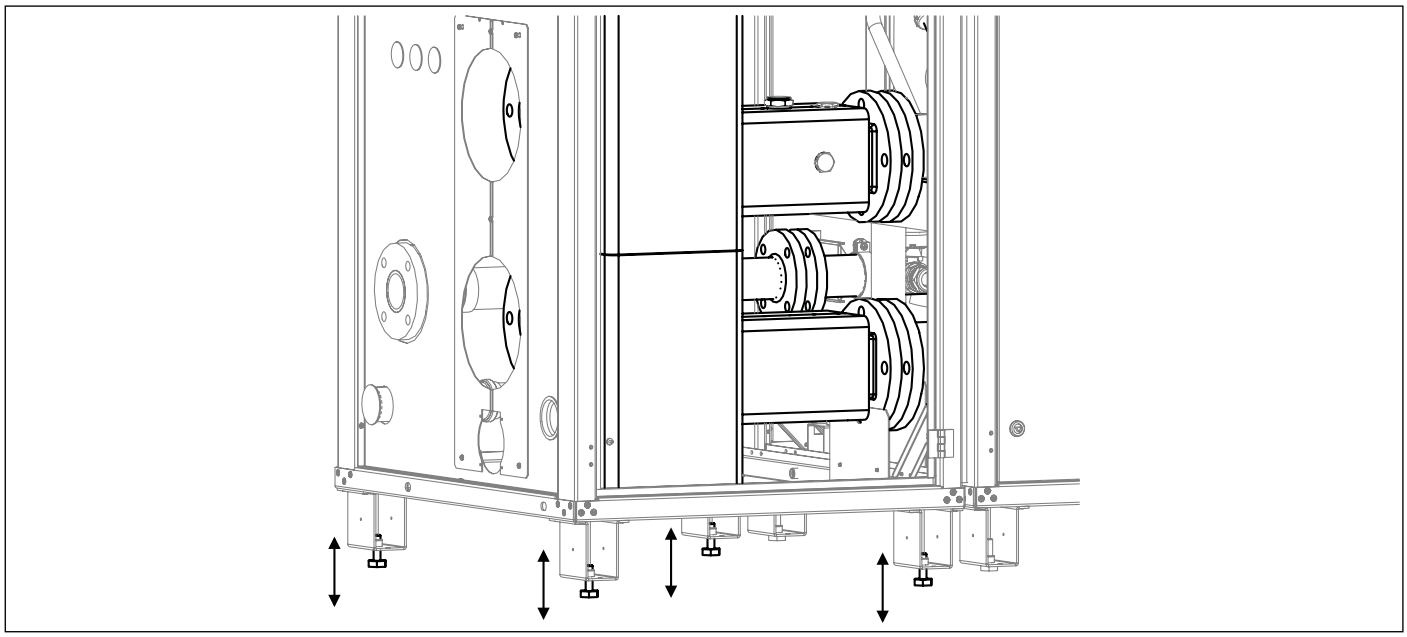
Glue gaskets as shown in the image.



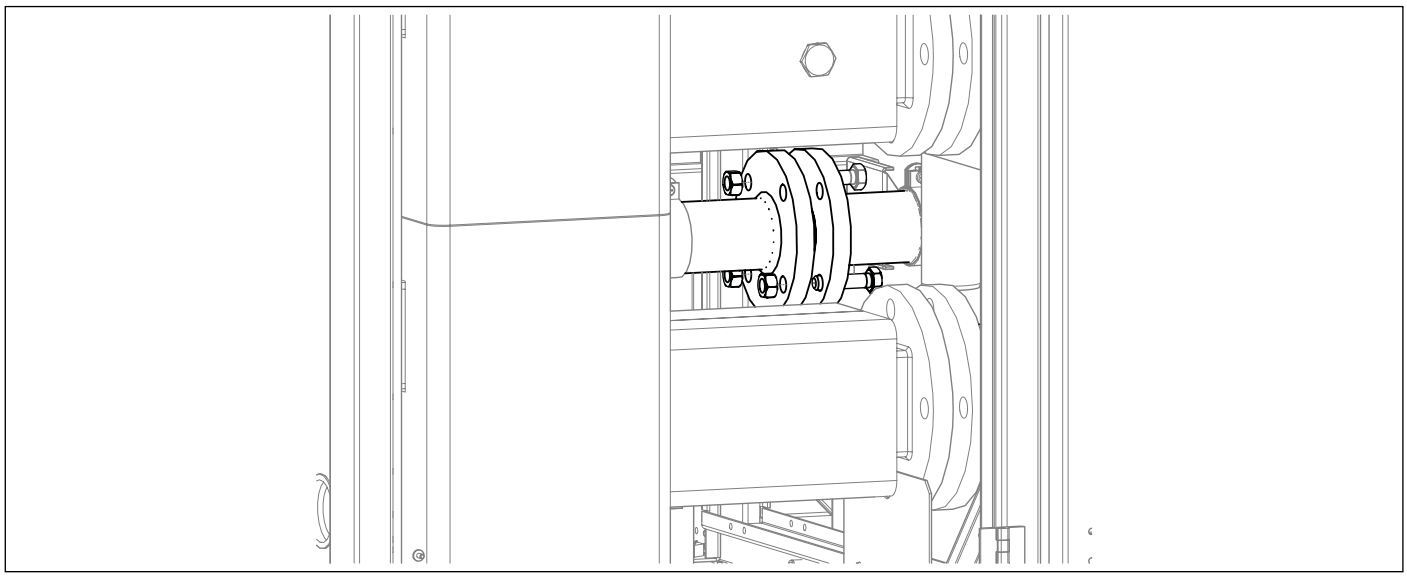
Use an awl to make a hole in the upper gasket at the opening for the screw.

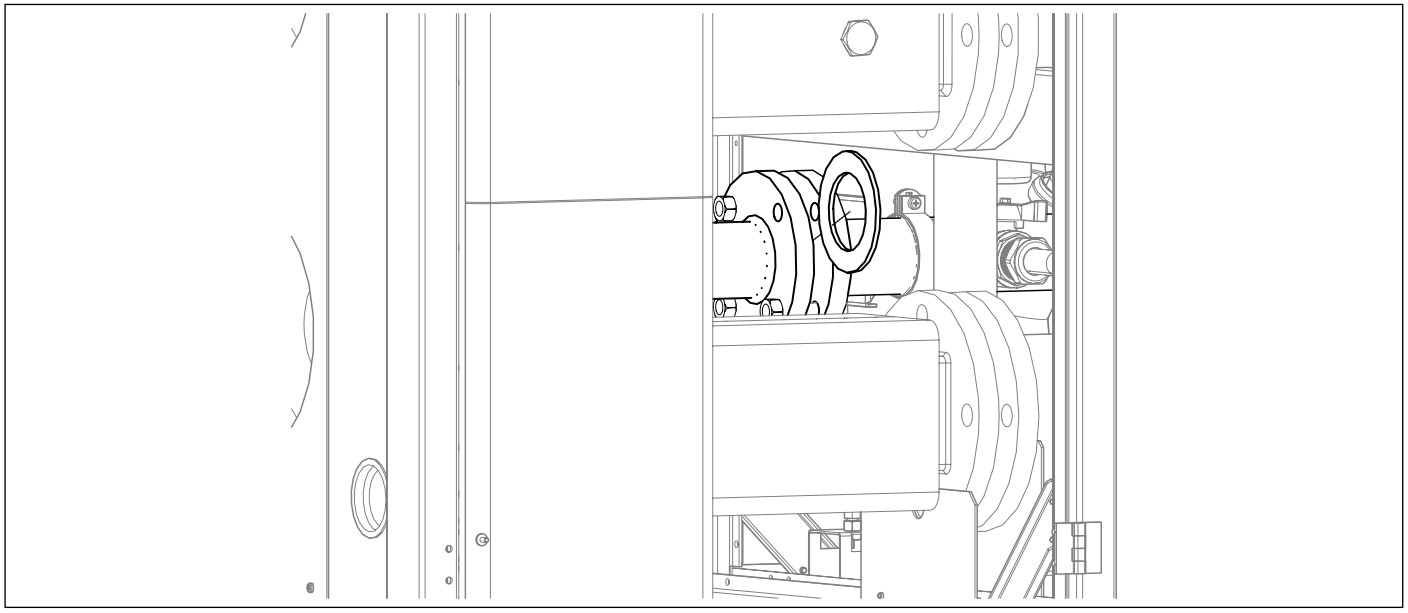


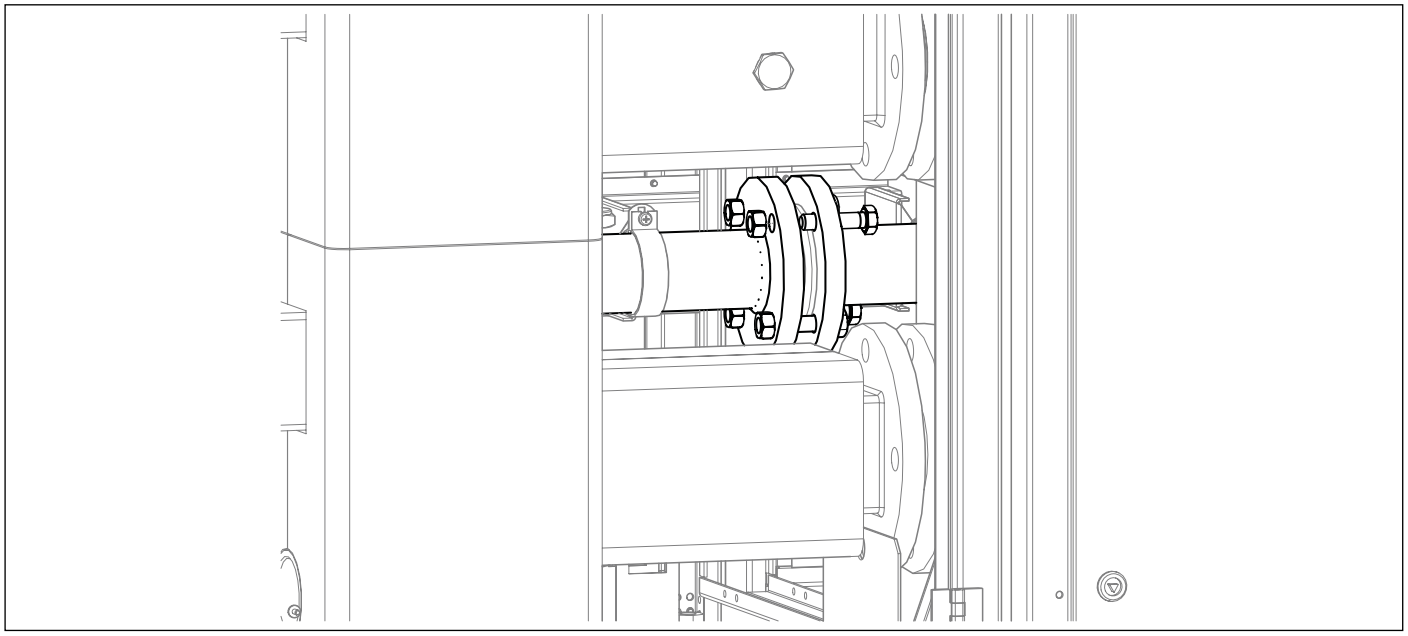
Assemble the supplied pipe on the condensate drain as shown in the image.



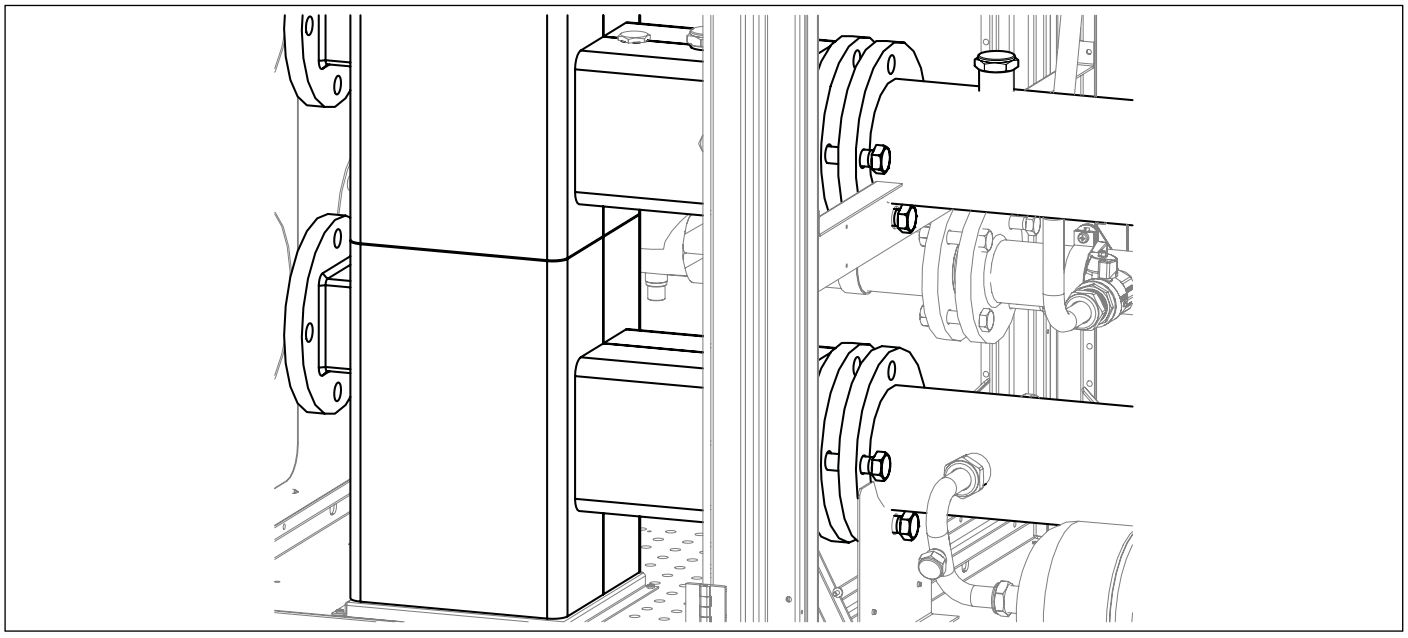
Use the four feet of the cabinet containing the hydraulic separator to align the flow collector, the return collector and the gas pipe to the collectors located inside the adjacent cabinet.

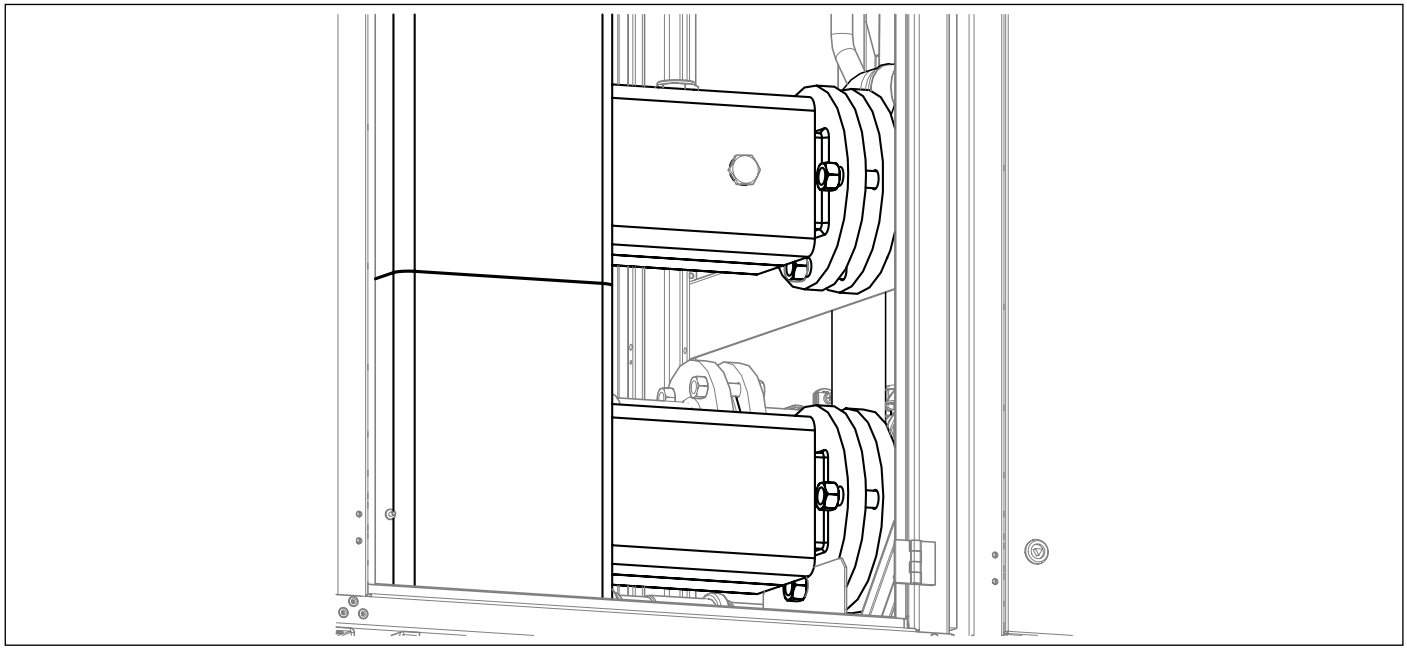


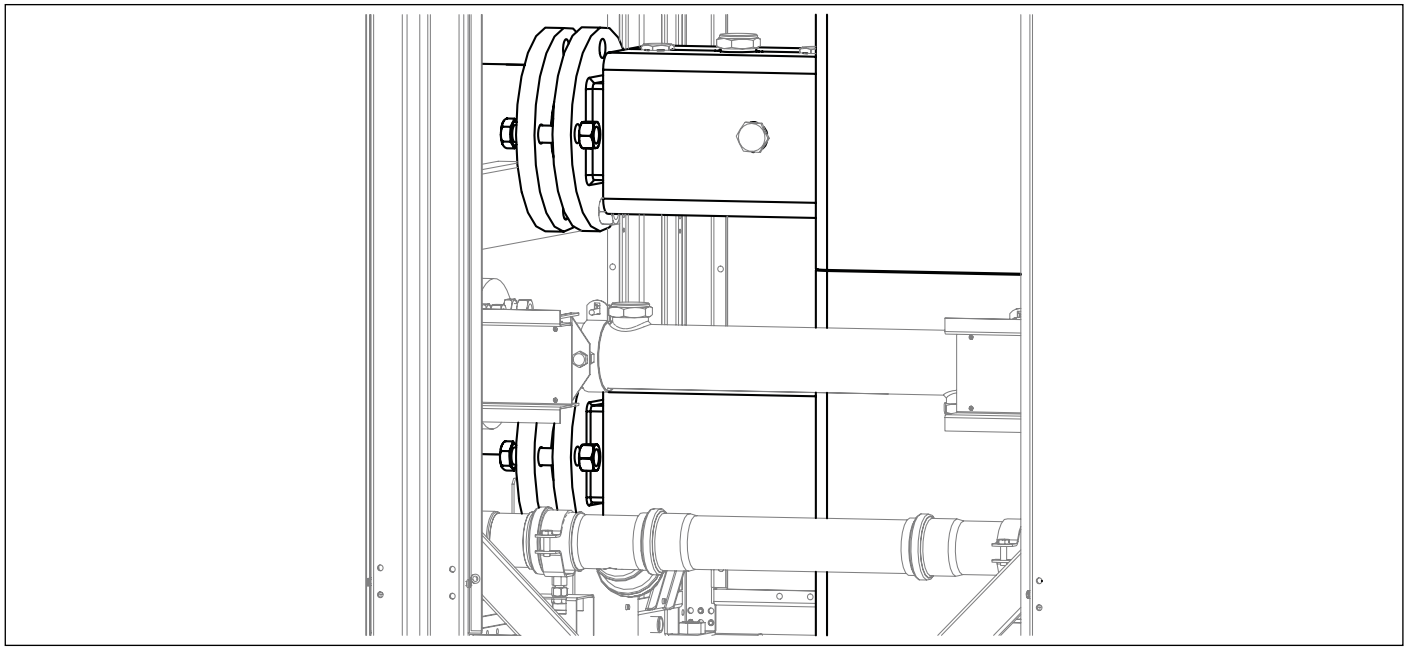


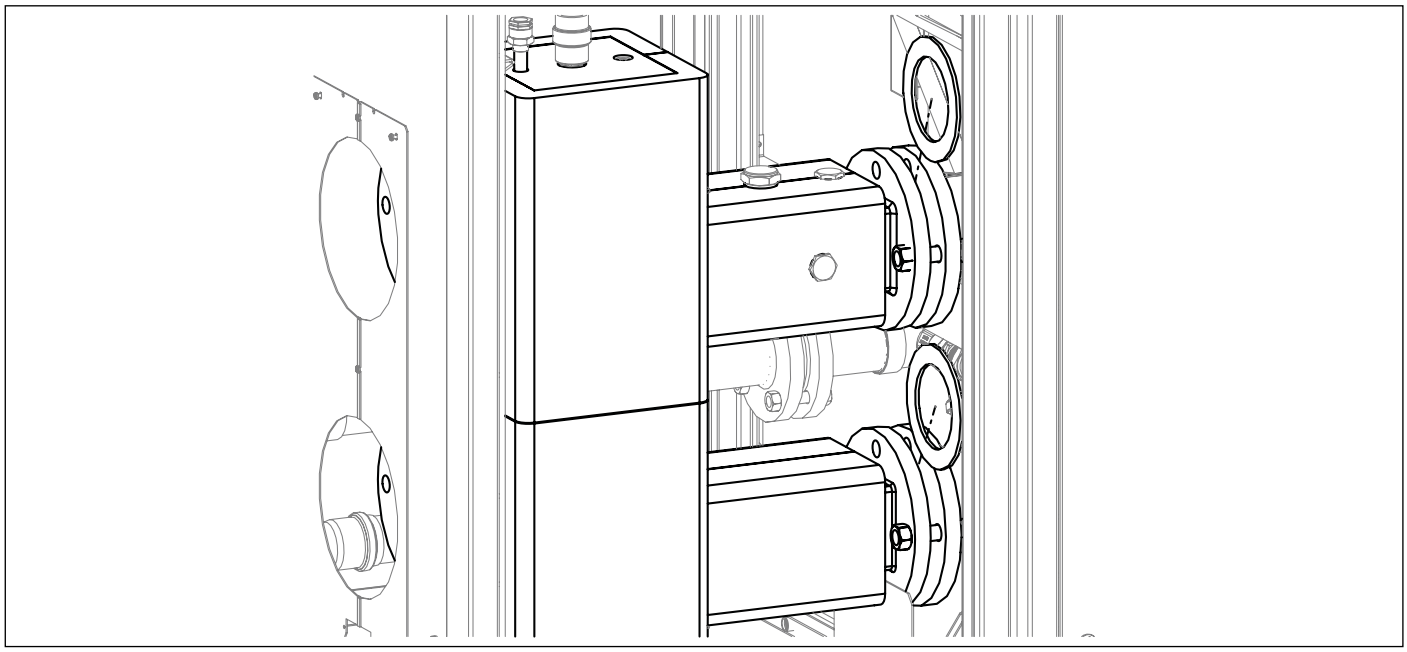


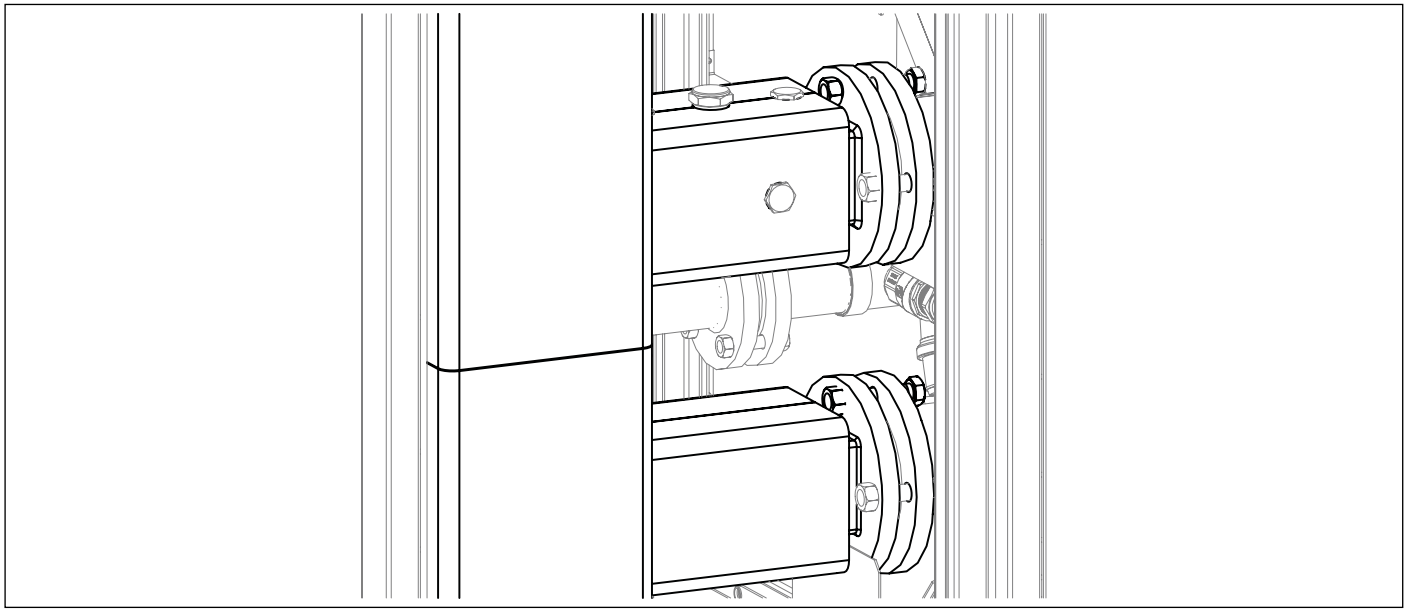
Fasten the gas collector with screws and nuts by placing the gasket between the two collectors.



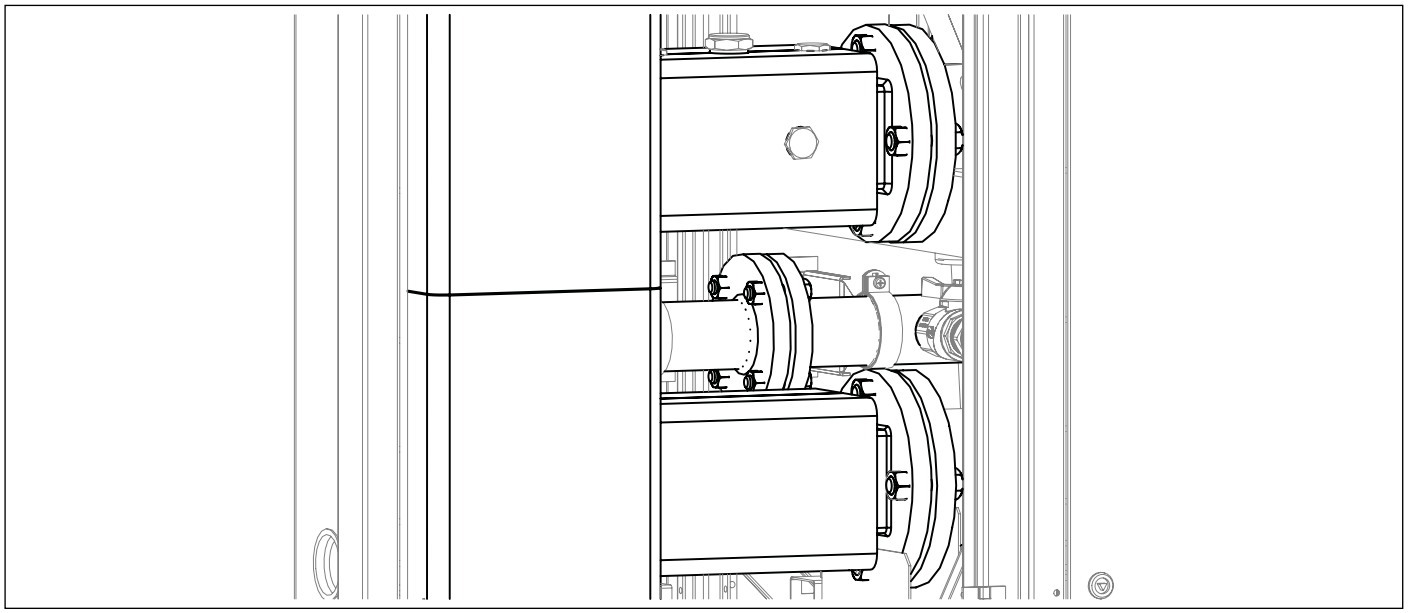


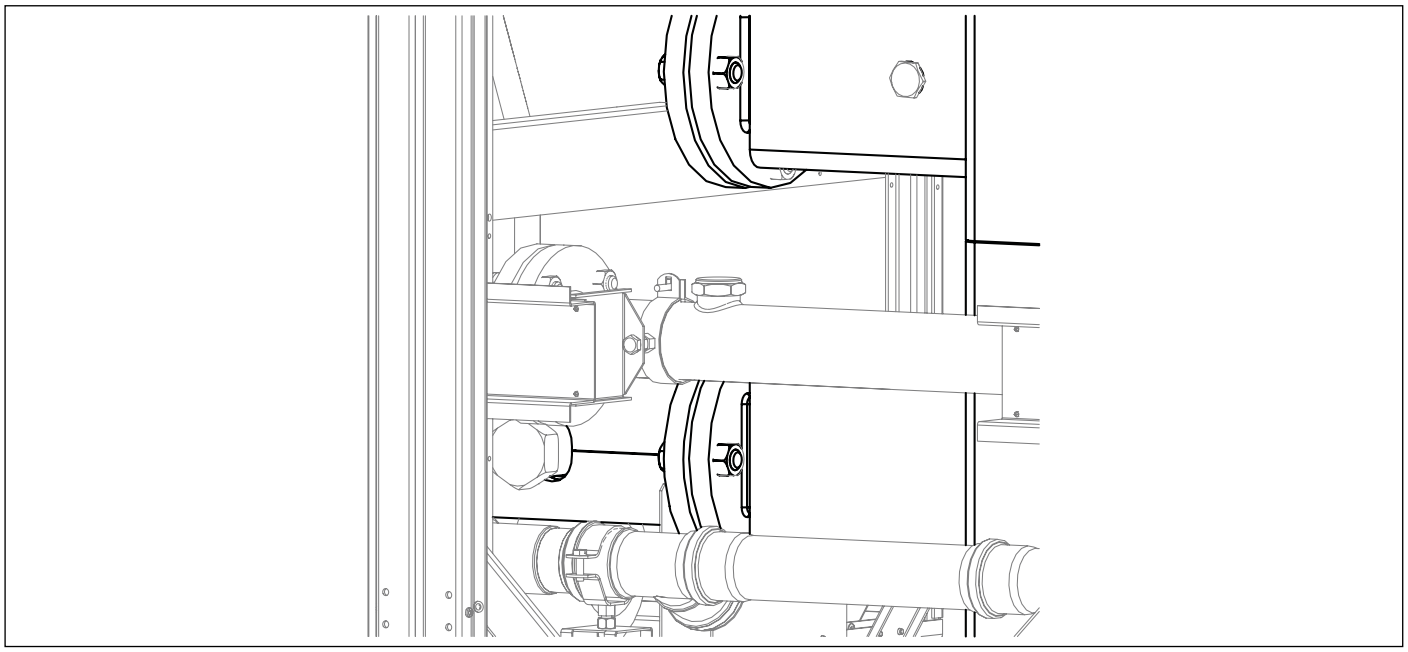




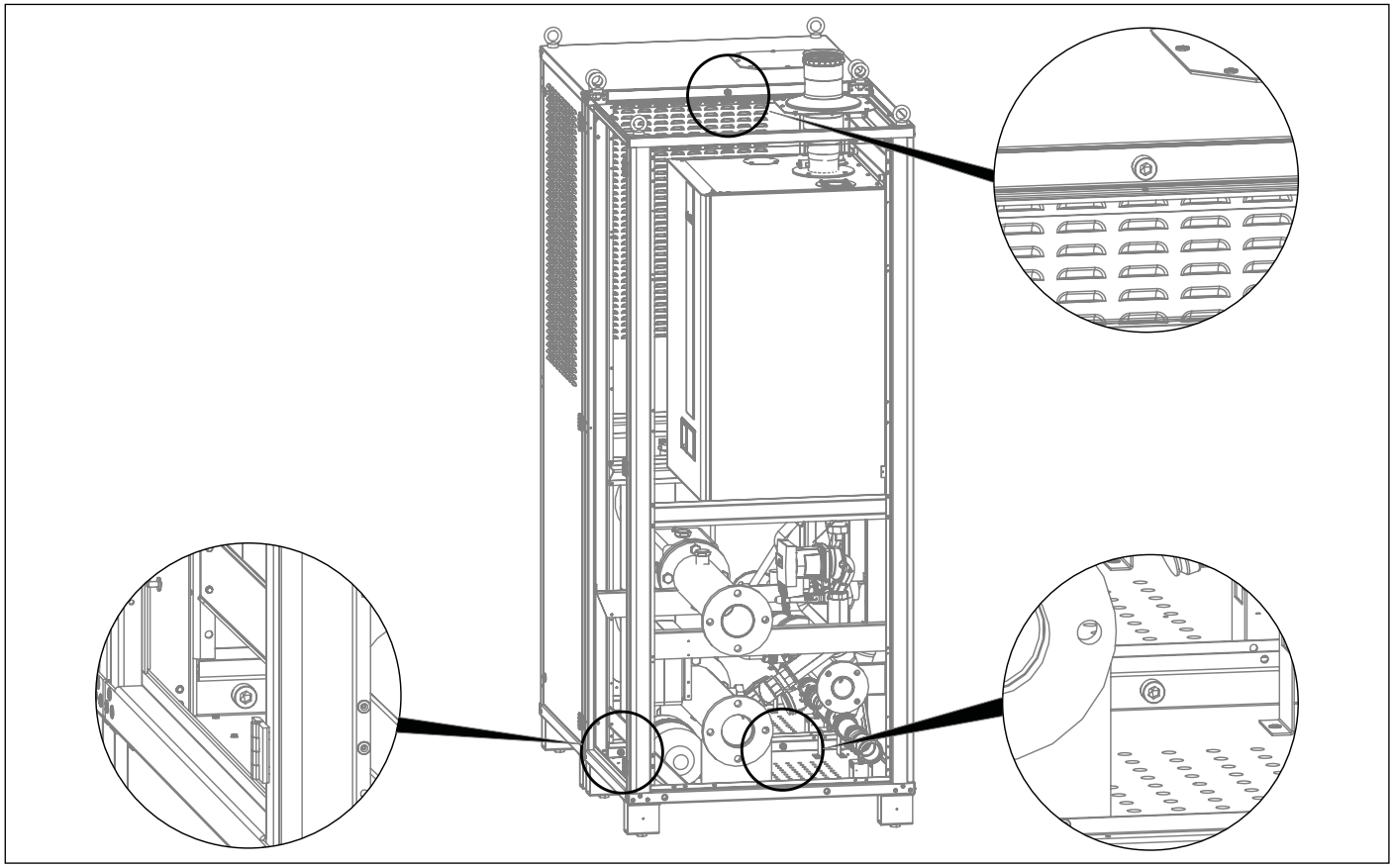


Fasten the flow and return collectors with screws and nuts by placing the gaskets in-between.

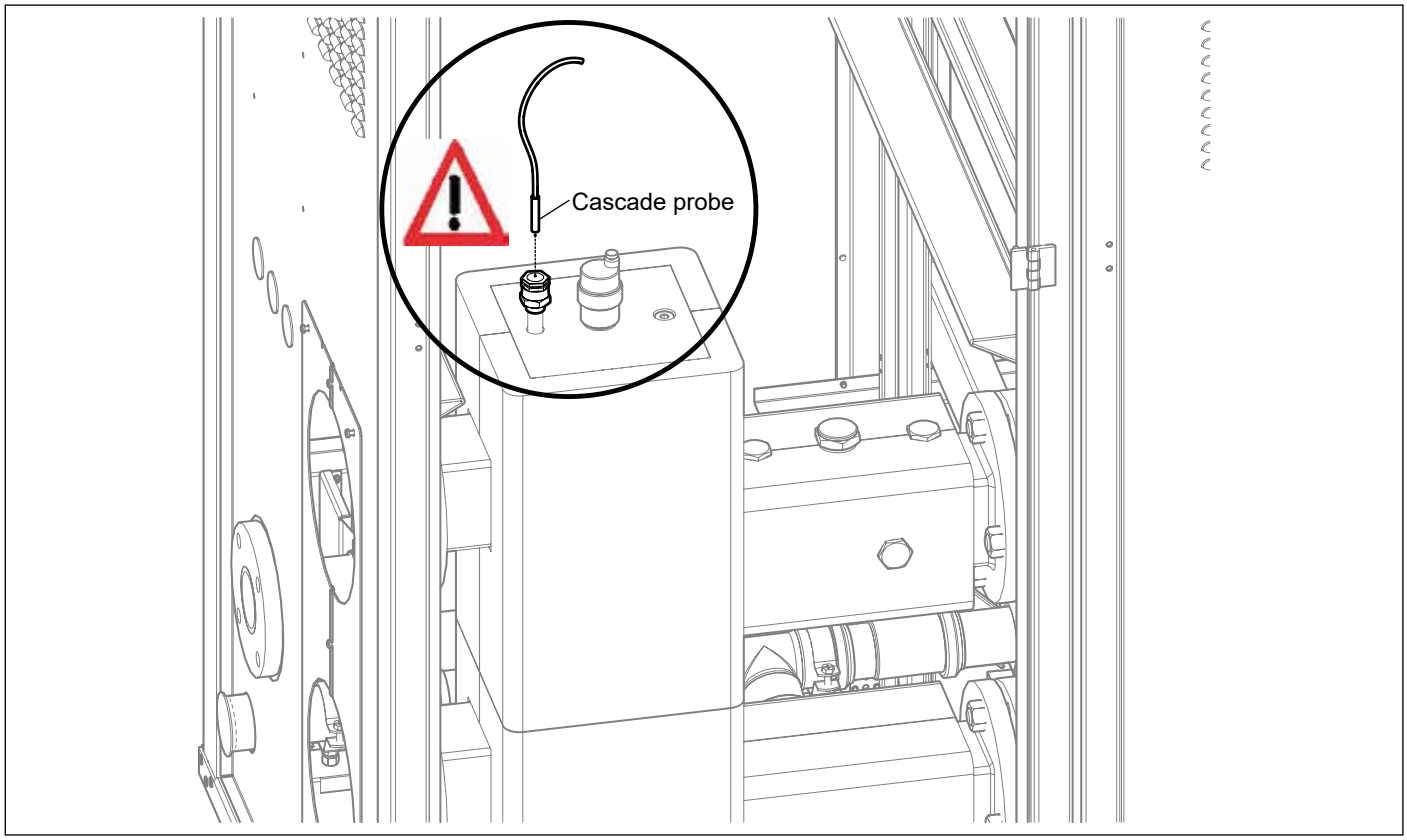




Tighten the screws on the collectors of the intermediate cabinet.



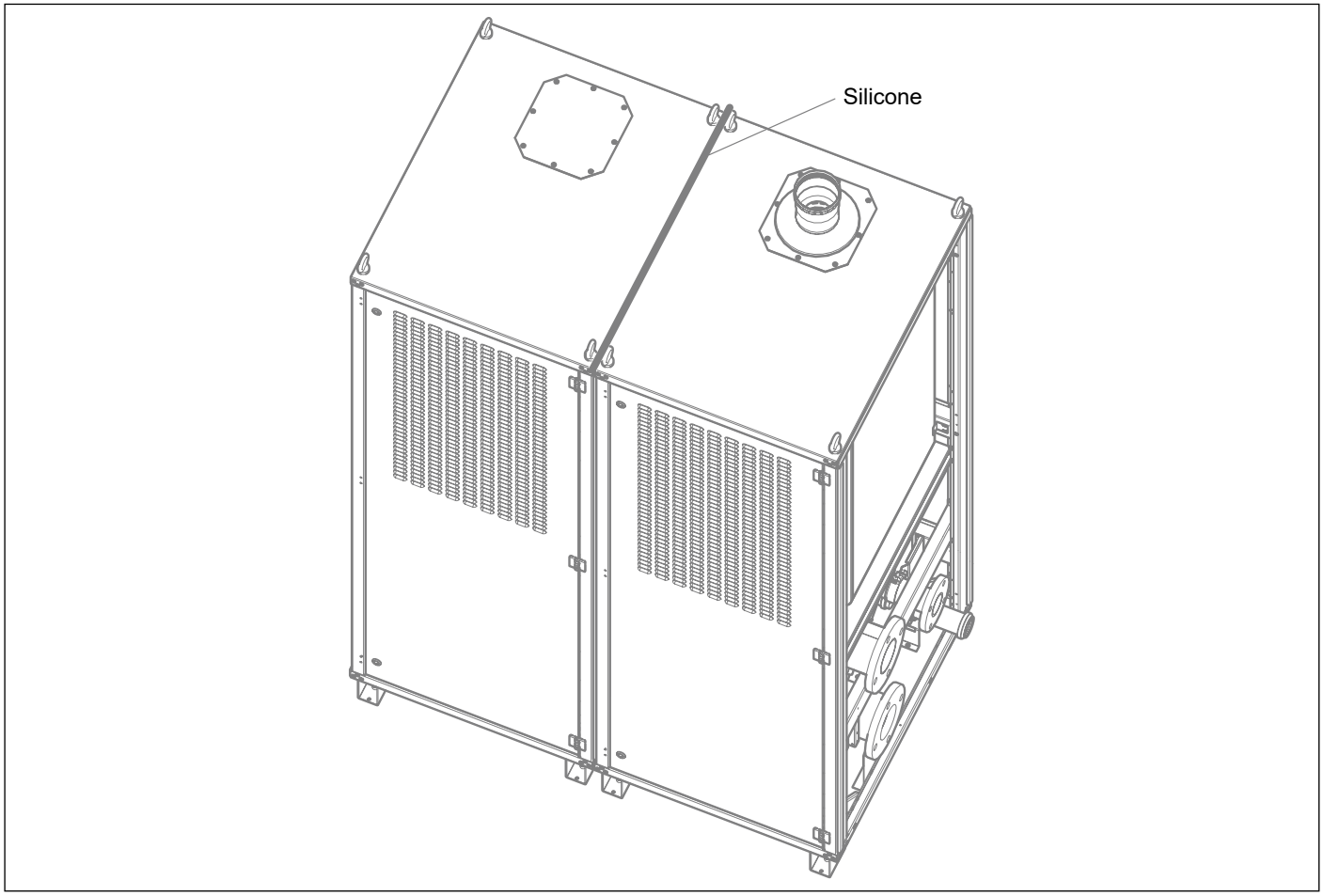
Lock the first cabinet to the cabinet containing the hydraulic separator using the supplied screws.



Place the cascade probe in the position shown in the image.

WARNING

Apply the supplied conductive paste to the surface of the component sensitive element.

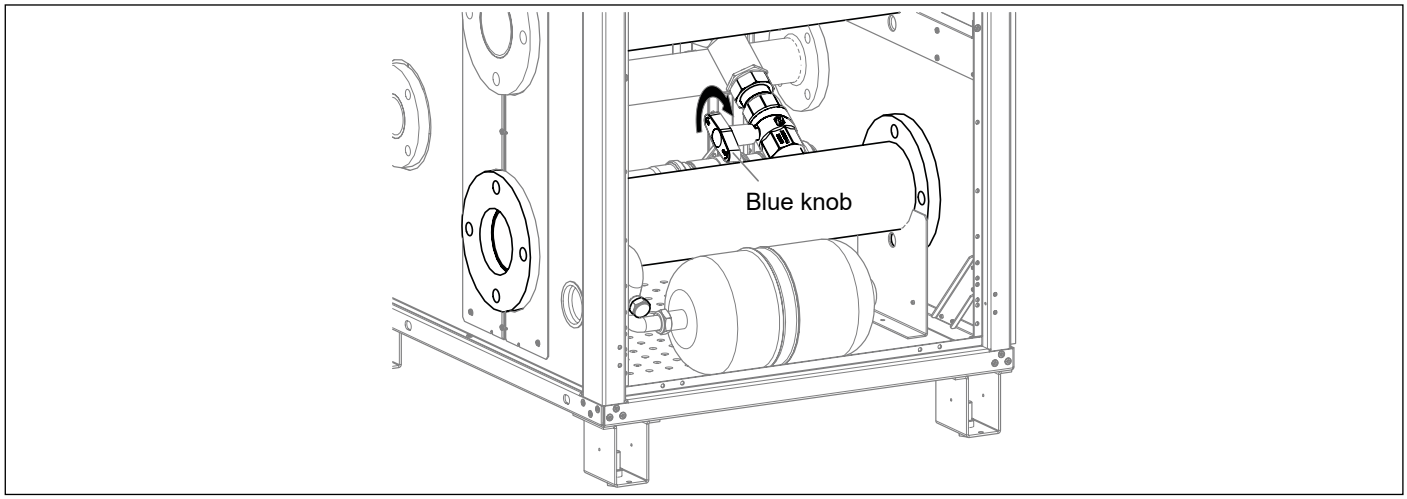


Apply a layer of silicone (not supplied) on the upper joint between the two cabinets.

1.11 Operations to close flow and return taps

To close the flow-return circuit between collectors and boiler, proceed as follows:

- Reach the control panel of the 'Master' boiler of the cascade.
- Set the system to 'OFF' to turn off the boiler burner.
- Close the gas tap.
- Wait the end of the post-circulation step of the pumps.
- With pumps stopped, turn the tap with blue knob on the return collector - boiler return section clockwise.
- With pumps stopped, turn the tap with red knob on the flow collector - boiler flow section clockwise.
- **The knobs must be fully rotated**.
- Now the system between collectors and boiler can be considered as disconnected.



1.12 Pump matching

-	Generator model				
-	45	60	85	120	150
Yonos para RS 25/7.5 PWM - 7.5 m	**X**	-	-	-	-
Stratos para 25-1 / 8 T10 PWM - 8 m	ok	**X**	-	-	-
Stratos para 25 1-11 PWM - 11 m	ok	ok	**X**	-	-
Yonos para HF 25 - 12 AUTO - 12 m	ok	ok	ok	**X**	**X**
UPML 25 - 105 - 180 PWM	-	**X**	**X**	-	-
UPMXL 25 - 125 - 180 PWM	-	ok	ok	**X**	**X (*)**
UPMXXL 25 - 120 - 180 PWM	-	ok	ok	**X**	**X**

Tab. 2 Pump matching

X = **minimum recommended matching (standard supply with the hydraulic unit)**
ok = possible matching

1.13 Nominal data tables

NOMINAL DATA						
-		45	60	85	90	105
Type of installation	-	C13-C33-C43-C53-C63-C83-C93-C13X-C33X-C43X-C63X-C93X-B23-B23P-C(10)-C(11)				
Nominal heat input Qn	kW	40	60	81	80	100
Nominal heat output (80 – 60 °C) Pn	kW	38,5	58,3	78,5	77	96,8
Nominal heat output (50 – 30 °C) Pn	kW	41,5	62,8	84,8	83	104,3
Reduced heat input Qr	kW	4	6	9	4	4
Reduced heat output (80 – 60 °C) Pr	kW	3,8	5,8	8,5	3,8	3,8
Reduced heat output (50 – 30 °C) Pr	kW	4,3	6,5	9,7	4,3	4,3
Efficiency at 100% (80 – 60 °C)	%	97,1	97,1	96,9	97,1	97,1
Efficiency at 100% (50 – 30 °C)	%	105,3	104,6	104,8	105,3	105
Efficiency at 30% Qn - 30 °C Return	%	108,2	108,4	108,3	108,2	108,3
Efficiency at reduced heat input (80 – 60 ° C)	%	96,8	97	94,8	96,8	96,8
Efficiency at reduced heat input (50 – 30 ° C)	%	108,2	108,5	107,6	108,2	108,2
Central heating setting range	°C	20 ÷ 80				
CH maximum temperature	°C	80 + 3				
Exchanger maximum temperature (TMS)	°C	110				
NOx class (EN 15502-1:2012+A1:2015)	1..6	6	6	6	6	6
Heating water max hydraulic pressure (PMS)	bar	3,6	4,2	6	3,6	3,6
Safety valve calibration pressure	bar	3	3,5	5	3	3
Heating water minimum pressure	bar	0,8	0,8	0,8	0,8	0,8
DHW temperature setting range	°C	65 ÷ 35				
DHW maximum temperature	°C	65				

Tab. 3 Nominal data for configurations from 45 to 105

NOMINAL DATA								
-		120	150	170	205	240	270	300
Type of installation	-	C13-C33-C43-C53-C63-C83-C93-C13X-C33X-C43X-C63X-C93X-B23-B23P-C(10)-C(11)						
Nominal heat input Qn	kW	115	140	162	196	230	255	280
Nominal heat output (80 – 60 °C) Pn	kW	112	136,3	157	190,5	224	248,3	272,6
Nominal heat output (50 – 30 °C) Pn	kW	122	148,7	169,6	206,8	244	270,7	297,4
Reduced heat input Qr	kW	11,5	22,5	9	9	11,5	11,5	22,5
Reduced heat output (80 – 60 °C) Pr	kW	11,1	21,6	8,5	8,5	11,1	11,1	21,6
Reduced heat output (50 – 30 °C) Pr	kW	12,4	23,9	9,7	9,7	12,4	12,4	23,9
Efficiency at 100% (80 – 60 °C)	%	97,4	97,3	96,9	97,2	97,4	97,4	97,3
Efficiency at 100% (50 – 30 °C)	%	106,1	106,2	104,8	105,5	106,1	106,2	106,2
Efficiency at 30% Qn - 30 °C Return	%	108,6	108,4	108,3	108,5	108,6	108,5	108,4
Efficiency at reduced heat input (80 – 60 ° C)	%	96,2	96	94,8	94,8	96,2	96,2	96
Efficiency at reduced heat input (50 – 30 ° C)	%	108,2	106,3	107,6	107,6	108,2	108,2	106,3
Central heating setting range	°C	20 ÷ 80						
CH maximum temperature	°C	80 + 3						
Exchanger maximum temperature (TMS)	°C	110						
NOx class (EN 15502-1:2012+A1:2015)	1..6	6	6	6	6	6	6	6
Heating water max hydraulic pressure (PMS)	bar	6	6	6	6	6	6	6
Safety valve calibration pressure	bar	5	5	5	5	5	5	5
Heating water minimum pressure	bar	0,8	0,8	0,8	0,8	0,8	0,8	0,8
DHW temperature setting range	°C	65 ÷ 35						
DHW maximum temperature	°C	65						

Tab. 4 Nominal data for configurations from 120 to 300

NOMINAL DATA								
-		325	360	390	420	450	480	510
Type of installation	-	C13-C33-C43-C53-C63-C83-C93-C13X-C33X-C43X-C63X-C93X-B23-B23P-C(10)-C(11)						
Nominal heat input Qn	kW	311	345	370	395	420	460	485
Nominal heat output (80 – 60 °C) Pn	kW	302,5	336	360,3	384,6	408,9	448	472,3
Nominal heat output (50 – 30 °C) Pn	kW	328,8	366	392,7	419,4	446,1	488	514,7
Reduced heat input Qr	kW	9	11,5	11,5	11,5	22,5	11,5	11,5
Reduced heat output (80 – 60 °C) Pr	kW	8,5	11,1	11,1	11,1	21,6	11,1	11,1
Reduced heat output (50 – 30 °C) Pr	kW	9,7	12,4	12,4	12,4	23,9	12,4	12,4
Efficiency at 100% (80 – 60 °C)	%	97,2	97,4	97,4	97,3	97,3	97,4	97,4
Efficiency at 100% (50 – 30 °C)	%	105,7	106,1	106,1	106,2	106,2	106,1	106,1
Efficiency at 30% Qn - 30 °C Return	%	108,5	108,6	108,5	108,5	108,4	108,6	108,6
Efficiency at reduced heat input (80 – 60 ° C)	%	94,8	96,2	96,2	96,2	96	96,2	96,2
Efficiency at reduced heat input (50 – 30 ° C)	%	107,6	108,2	108,2	108,2	106,3	108,2	108,2
Central heating setting range	°C	20 ÷ 80						
CH maximum temperature	°C	80 + 3						
Exchanger maximum temperature (TMS)	°C	110						
NOx class (EN 15502-1:2012+A1:2015)	1..6	6	6	6	6	6	6	6
Heating water max hydraulic pressure (PMS)	bar	6	6	6	6	6	6	6
Safety valve calibration pressure	bar	5	5	5	5	5	5	5
Heating water minimum pressure	bar	0,8	0,8	0,8	0,8	0,8	0,8	0,8
DHW temperature setting range	°C	65 ÷ 35						
DHW maximum temperature	°C	65						

Tab. 5 Nominal data for configurations from 325 to 510

NOMINAL DATA								
-		540	570	600	630	660	690	720
Type of installation	-	C13-C33-C43-C53-C63-C83-C93-C13X-C33X-C43X-C63X-C93X-B23-B23P-C(10)-C(11)						
Nominal heat input Qn	kW	510	535	560	600	625	650	675
Nominal heat output (80 – 60 °C) Pn	kW	496,6	520,9	545,2	584,3	608,6	632,9	657,2
Nominal heat output (50 – 30 °C) Pn	kW	541,4	568,1	594,8	636,7	663,4	690,1	716,8
Reduced heat input Qr	kW	11,5	11,5	22,5	11,5	11,5	11,5	11,5
Reduced heat output (80 – 60 °C) Pr	kW	11,1	11,1	21,6	11,1	11,1	11,1	11,1
Reduced heat output (50 – 30 °C) Pr	kW	12,4	12,4	23,9	12,4	12,4	12,4	12,4
Efficiency at 100% (80 – 60 °C)	%	97,4	97,3	97,3	97,4	97,4	97,3	97,3
Efficiency at 100% (50 – 30 °C)	%	106,2	106,2	106,2	106,1	106,1	106,2	106,2
Efficiency at 30% Qn - 30 °C Return	%	108,5	108,5	108,4	108,6	108,5	108,5	108,4
Efficiency at reduced heat input (80 – 60 ° C)	%	96,2	96,2	96	96,2	96,2	96,2	96,2
Efficiency at reduced heat input (50 – 30 ° C)	%	108,2	108,2	106,3	108,2	108,2	108,2	108,2
Central heating setting range	°C	20 ÷ 80						
CH maximum temperature	°C	80 + 3						
Exchanger maximum temperature (TMS)	°C	110						
NOx class (EN 15502-1:2012+A1:2015)	1..6	6	6	6	6	6	6	6
Heating water max hydraulic pressure (PMS)	bar	6	6	6	6	6	6	6
Safety valve calibration pressure	bar	5	5	5	5	5	5	5
Heating water minimum pressure	bar	0,8	0,8	0,8	0,8	0,8	0,8	0,8
DHW temperature setting range	°C	65 ÷ 35						
DHW maximum temperature	°C	65						

Tab. 6 Nominal data for configurations from 540 to 720

NOMINAL DATA						
-		750	780	810	870	900
Type of installation	-	C13-C33-C43-C53-C63-C83-C93-C13X-C33X-C43X-C63X-C93X-B23-B23P-C(10)-C(11)				
Nominal heat input Qn	kW	700	740	765	815	840
Nominal heat output (80 – 60 °C) Pn	kW	681,5	720,6	744,9	793,5	817,8
Nominal heat output (50 – 30 °C) Pn	kW	743,5	785,4	812,1	865,5	892,2
Reduced heat input Qr	kW	22,5	11,5	11,5	11,5	22,5
Reduced heat output (80 – 60 °C) Pr	kW	21,6	11,1	11,1	11,1	21,6
Reduced heat output (50 – 30 °C) Pr	kW	23,9	12,4	12,4	12,4	23,9
Efficiency at 100% (80 – 60 °C)	%	97,3	97,4	97,4	97,3	97,3
Efficiency at 100% (50 – 30 °C)	%	106,2	106,1	106,2	106,2	106,2
Efficiency at 30% Qn - 30 °C Return	%	108,4	108,5	108,5	108,4	108,4
Efficiency at reduced heat input (80 – 60 ° C)	%	96	96,2	96,2	96,2	96
Efficiency at reduced heat input (50 – 30 ° C)	%	106,3	108,2	108,2	108,2	106,3
Central heating setting range	°C	20 ÷ 80				
CH maximum temperature	°C	80 + 3				
Exchanger maximum temperature (TMS)	°C	110				
NOx class (EN 15502-1:2012+A1:2015)	1..6	6	6	6	6	6
Heating water max hydraulic pressure (PMS)	bar	6	6	6	6	6
Safety valve calibration pressure	bar	5	5	5	5	5
Heating water minimum pressure	bar	0,8	0,8	0,8	0,8	0,8
DHW temperature setting range	°C	65 ÷ 35				
DHW maximum temperature	°C	65				

Tab. 7 Nominal data for configurations from 750 to 900

1.14 Nominal electrical data tables

NOMINAL ELECTRICAL DATA						
-		45	60	85	90	105
Input voltage	V	230				
Frequency	Hz	50				
Module power consumption	W	94	119	156	188	213
Module power consumption in standby condition	W	2	2	3,5	4	4
Degree of electrical protection of cabinet modules	IP	X5D				

Tab. 8 Nominal electrical data for configurations from 45 to 105

NOMINAL ELECTRICAL DATA								
-		120	150	170	205	240	270	300
Input voltage	V	230						
Frequency	Hz	50						
Module power consumption	W	251	310	312	407	502	561	620
Module power consumption in standby condition	W	3,5	3,5	7	7	7	7	7
Degree of electrical protection of cabinet modules	IP	X5D						

Tab. 9 Nominal electrical data for configurations from 120 to 300

NOMINAL ELECTRICAL DATA								
-		325	360	390	420	450	480	510
Input voltage	V	230						
Frequency	Hz	50						
Module power consumption	W	658	753	812	871	930	1004	1063
Module power consumption in standby condition	W	10,5	10,5	10,5	10,5	10,5	14	14
Degree of electrical protection of cabinet modules	IP	X5D						

Tab. 10 Nominal electrical data for configurations from 325 to 510

NOMINAL ELECTRICAL DATA								
-		540	570	600	630	660	690	720
Input voltage	V	230						
Frequency	Hz	50						
Module power consumption	W	1122	1181	1240	1314	1373	1432	1491
Module power consumption in standby condition	W	14	14	14	17,5	17,5	17,5	17,5
Degree of electrical protection of cabinet modules	IP	X5D						

Tab. 11 Nominal electrical data for configurations from 540 to 720

NOMINAL ELECTRICAL DATA						
-		750	780	810	870	900
Input voltage	V	230				
Frequency	Hz	50				
Module power consumption	W	1550	1624	1683	1801	1860
Module power consumption in standby condition	W	17,5	21	21	21	21
Degree of electrical protection of cabinet modules	IP	X5D				

Tab. 12 Nominal electrical data for configurations from 750 to 900

1.15 Tables of dimensions, weights, connections and volumes

DIMENSIONS – WEIGHTS – CONNECTIONS – VOLUMES						
-		45	60	85	90	105
Cabinet height (without flue gas vent)	mm	1909				
Cabinet depth	mm	779				
Cabinet width with separator	mm	1290	1290	1290	1920	1920
Cabinet width with exchanger	mm	1764	1764	1764	2394	2394
Total empty weight with direct collectors in the cabinet	kg	187	191	216	357	361
Total empty weight with hydraulic separator in the cabinet	kg	303	307	332	473	477
Total empty weight with matched plates and collectors in the cabinet	kg	507	511	536	677	681
Flow flange connection	-	DN 80 PN6				
Return flange connection	-	DN 80 PN6				
Gas flange connection	-	DN 50 PN6				
Hydraulic separator drain connection	-	1 ½" F				
Condensate drain connection	-	DN 50				
Total content with direct collectors	l	11	12	13	21	22
Total content with separator	l	31	32	33	41	42
Exchanger cut	kW	120	120	120	120	120
Total content with matched plates	l	12	13	14	22	23
Total content with matched plates and connection collectors	l	23	24	25	33	34
Expansion tank of cascade hydraulic kit	l	5	5	5	10	10

Tab. 13 Dimensions, weights, connections and volumes for configurations from 45 to 105

DIMENSIONS – WEIGHTS – CONNECTIONS – VOLUMES								
-		120	150	170	205	240	270	300
Cabinet height (without flue gas vent)	mm	1909						
Cabinet depth	mm	779						
Cabinet width with separator	mm	1290	1290	1920	1920	1920	1920	1920
Cabinet width with exchanger	mm	1764	1764	2394	2394	2394	2394	2394
Total empty weight with direct collectors in the cabinet	kg	226	247	415	425	435	456	478
Total empty weight with hydraulic separator in the cabinet	kg	342	363	531	541	551	572	594
Total empty weight with matched plates and collectors in the cabinet	kg	546	574	742	752	767	788	810
Flow flange connection	-	DN 80 PN6						
Return flange connection	-	DN 80 PN6						
Gas flange connection	-	DN 50 PN6						
Hydraulic separator drain connection	-	1 ½" F						
Condensate drain connection	-	DN 50						
Total content with direct collectors	l	15	18	26	28	30	33	35
Total content with separator	l	35	38	46	48	50	53	55
Exchanger cut	kW	120	205	205	205	300	300	300
Total content with matched plates	l	16	21	29	31	34	37	39
Total content with matched plates and connection collectors	l	27	31	39	41	44	47	49
Expansion tank of cascade hydraulic kit	l	5	5	10	10	10	10	10

Tab. 14 Dimensions, weights, connections and volumes for configurations from 120 to 300

DIMENSIONS – WEIGHTS – CONNECTIONS – VOLUMES								
-		325	360	390	420	450	480	510
Cabinet height (without flue gas vent)	mm	1909						
Cabinet depth	mm	779						
Cabinet width with separator	mm	2550	2550	2550	2550	2550	3180	3180
Cabinet width with exchanger	mm	3024	3024	3024	3024	3024	3654	3654
Total empty weight with direct collectors in the cabinet	kg	633	643	665	686	708	852	874
Total empty weight with hydraulic separator in the cabinet	kg	749	759	781	802	824	968	990
Total empty weight with matched plates and collectors in the cabinet	kg	973	983	1009	1030	1052	1208	1230
Flow flange connection	-	DN 80 PN6						
Return flange connection	-	DN 80 PN6						
Gas flange connection	-	DN 50 PN6						
Hydraulic separator drain connection	-	1 ½" F						
Condensate drain connection	-	DN 50						
Total content with direct collectors	l	43	46	48	51	53	61	63
Total content with separator	l	63	66	68	71	73	81	83
Exchanger cut	kW	360	360	450	450	450	600	600
Total content with matched plates	l	48	51	54	57	59	69	71
Total content with matched plates and connection collectors	l	58	61	65	68	70	79	81
Expansion tank of cascade hydraulic kit	l	15	15	15	15	15	20	20

Tab. 15 Dimensions, weights, connections and volumes for configurations from 325 to 510

DIMENSIONS – WEIGHTS – CONNECTIONS – VOLUMES								
-		540	570	600	630	660	690	720
Cabinet height (without flue gas vent)	mm	1909						
Cabinet depth	mm	779						
Cabinet width with separator	mm	3180	3180	3180	3810	3810	3810	4440
Cabinet width with exchanger	mm	3654	3654	3654	4284	4284	4284	4914
Total empty weight with direct collectors in the cabinet	kg	895	917	938	1083	1104	1126	1270
Total empty weight with hydraulic separator in the cabinet	kg	1011	1033	1054	1199	1220	1242	1386
Total empty weight with matched plates and collectors in the cabinet	kg	1251	1273	1294	1446	1467	1489	1638
Flow flange connection	-	DN 80 PN6						
Return flange connection	-	DN 80 PN6						
Gas flange connection	-	DN 50 PN6						
Hydraulic separator drain connection	-	1 ½" F						
Condensate drain connection	-	DN 50						
Total content with direct collectors	l	66	68	71	79	81	84	86
Total content with separator	l	86	88	91	99	101	104	106
Exchanger cut	kW	600	600	600	690	690	690	780
Total content with matched plates	l	74	76	79	88	90	93	96
Total content with matched plates and connection collectors	l	84	86	89	98	100	103	106
Expansion tank of cascade hydraulic kit	l	20	20	20	25	25	25	30

Tab. 16 Dimensions, weights, connections and volumes for configurations from 540 to 720

DIMENSIONS – WEIGHTS – CONNECTIONS – VOLUMES						
-		750	780	810	870	900
Cabinet height (without flue gas vent)	mm	1909				
Cabinet depth	mm	779				
Cabinet width with separator	mm	3810	4440	4440	4440	4440
Cabinet width with exchanger	mm	4284	4914	4914	4914	4914
Total empty weight with direct collectors in the cabinet	kg	1169	1313	1334	1377	1399
Total empty weight with hydraulic separator in the cabinet	kg	1285	1429	1450	1493	1515
Total empty weight with matched plates and collectors in the cabinet	kg	1537	1681	1707	1750	1772
Flow flange connection	-	DN 80 PN6				
Return flange connection	-	DN 80 PN6				
Gas flange connection	-	DN 50 PN6				
Hydraulic separator drain connection	-	1 ½" F				
Condensate drain connection	-	DN 50				
Total content with direct collectors	l	89	96	99	104	106
Total content with separator	l	109	116	119	124	126
Exchanger cut	kW	780	780	900	900	900
Total content with matched plates	l	99	106	110	115	117
Total content with matched plates and connection collectors	l	109	116	120	125	127
Expansion tank of cascade hydraulic kit	l	25	30	30	30	30

Tab. 17 Dimensions, weights and volumes for configurations from 750 to 900

1.16 Tables of flue - shared collector dimensioning

FLUE - SHARED COLLECTOR DIMENSIONING						
-		45	60	85	90	105
Drain rating	-	B23P				
Qn - CO2	%	9,2	9,1	9	9,2	9,1
Qn - Flue gas temperature - Air temperature	°C	57	57,0	45,3	57	57
Qn - Flue mass flow	g/sec	19	27,3	37,2	38	46,2
Qn - Residual head available	Pa	30	30	30	30	30
Qr - CO2	%	8,9	8,9	9	8,9	8,9
Qr - Flue gas temperature - Air temperature	°C	42	39	31,2	42	39
Qr - Flue mass flow	g/sec	1,9	2,8	4,1	1,9	1,9
Qr - Residual head available	Pa	5	5	5	5	5
Connection diameter to flue gas collector	mm	160	160	160	160	160

Tab. 18 Flue - shared collector dimensioning for configurations from 45 to 105

FLUE - SHARED COLLECTOR DIMENSIONING								
-		120	150	170	205	240	270	300
Drain rating	-	B23P						
Qn - CO2	%	9	9	9	9	9	9	9
Qn - Flue gas temperature - Air temperature	°C	54,0	52,6	45,3	50,4	54,0	53,2	52,6
Qn - Flue mass flow	g/sec	52,7	64,2	74,4	89,9	105,4	116,9	128,4
Qn - Residual head available	Pa	30	30	30	30	30	30	30
Qr - CO2	%	9	9	9	9	9	9	9
Qr - Flue gas temperature - Air temperature	°C	35,4	35,4	31,2	31,2	35,4	35,4	35,4
Qr - Flue mass flow	g/sec	5,3	10,3	4,1	4,1	5,3	5,3	10,3
Qr - Residual head available	Pa	5	10	5	5	5	5	10
Connection diameter to flue gas collector	mm	160	160	160	160	160	160	160

Tab. 19 Flue - shared collector dimensioning for configurations from 120 to 300

FLUE - SHARED COLLECTOR DIMENSIONING								
-		325	360	390	420	450	480	510
Drain rating	-	B23P						
Qn - CO2	%	9	9	9	9	9	9	9
Qn - Flue gas temperature - Air temperature	°C	51,7	54,0	53,5	53,0	52,6	54,0	53,6
Qn - Flue mass flow	g/sec	142,6	158,1	169,6	181,1	192,6	210,8	222,3
Qn - Residual head available	Pa	30	30	30	30	30	30	30
Qr - CO2	%	9	9	9	9	9	9	9
Qr - Flue gas temperature - Air temperature	°C	31,2	35,4	35,4	35,4	35,4	35,4	35,4
Qr - Flue mass flow	g/sec	4,1	5,3	5,3	5,3	10,3	5,3	5,3
Qr - Residual head available	Pa	5	5	5	5	10	5	5
Connection diameter to flue gas collector	mm	200	200	200	200	200	200	200

Tab. 20 Flue - shared collector dimensioning for configurations from 325 to 510

FLUE - SHARED COLLECTOR DIMENSIONING								
-		540	570	600	630	660	690	720
Drain rating	-	B23P						
Qn - CO2	%	9	9	9	9	9	9	9
Qn - Flue gas temperature - Air temperature	°C	53,2	52,9	52,6	53,7	53,4	53,1	52,8
Qn - Flue mass flow	g/sec	233,8	245,3	256,8	275	286,5	298	309,5
Qn - Residual head available	Pa	30	30	30	30	30	30	30
Qr - CO2	%	9	9	9	9	9	9	9
Qr - Flue gas temperature - Air temperature	°C	35,4	35,4	35,4	35,4	35,4	35,4	35,4
Qr - Flue mass flow	g/sec	5,3	5,3	10,3	5,3	5,3	5,3	5,3
Qr - Residual head available	Pa	5	5	10	5	5	5	5
Connection diameter to flue gas collector	mm	200	200	200	250	250	250	250

Tab. 21 Flue - shared collector dimensioning for configurations from 540 to 720

FLUE - SHARED COLLECTOR DIMENSIONING						
-		750	780	810	870	900
Drain rating	-	B23P				
Qn - CO2	%	9	9	9	9	9
Qn - Flue gas temperature - Air temperature	°C	52,6	53,5	53,2	52,8	52,6
Qn - Flue mass flow	g/sec	321	339,2	350,7	373,7	385,2
Qn - Residual head available	Pa	30	30	30	30	30
Qr - CO2	%	9	9	9	9	9
Qr - Flue gas temperature - Air temperature	°C	35,4	35,4	35,4	35,4	35,4
Qr - Flue mass flow	g/sec	10,3	5,3	5,3	5,3	10,3
Qr - Residual head available	Pa	10	5	5	5	10
Connection diameter to flue gas collector	mm	250	250	250	250	250

Tab. 22 Flue - shared collector dimensioning for configurations from 750 to 900

1.17 Design data tables

DESIGN DATA						
-		45	60	85	90	105
Qn - Casing heat loss with burner on	%	0,15	0,25	0,33	0,15	0,21
Qn - Casing heat loss with burner off	%	0,21	0,17	0,14	0,21	0,19
Qn - Flue system heat loss with burner on	%	2,8	2,65	2,8	2,8	2,71
Qn - Flue system heat loss with burner off	%	---	---	---	---	---
Qn - WILO pump absorption with hydraulic separator	W	75	130	120	150	205
Qn - WILO pump absorption with plate exchanger	W	75	130	120	150	205
Qn - GRUNDFOS pump absorption with hydraulic separator	W	75	140	180	150	215
Qn - GRUNDFOS pump absorption with plate exchanger	W	75	140	180	150	215
Qr - Casing heat loss with burner on	%	1,05	1,06	3,31	1,05	1,05
Qr - Casing heat loss with burner off	%	0,21	0,17	0,141	0,21	0,17
Qr - Flue system heat loss with burner on	%	2,19	1,98	1,87	2,19	1,98
Qr - Flue system heat loss with burner off	%	---	---	---	---	---
Qr - WILO pump absorption with hydraulic separator	W	75	130	120	150	205
Qr - WILO pump absorption with plate exchanger	W	75	130	120	150	205
Qr - GRUNDFOS pump absorption with hydraulic separator	W	75	140	180	150	215
Qr - GRUNDFOS pump absorption with plate exchanger	W	75	140	180	150	215

Tab. 23 Design data for configurations from 45 to 105

DESIGN DATA								
-		120	150	170	205	240	270	300
Qn - Casing heat loss with burner on	%	0	0,38	0,33	0,14	0	0,21	0,38
Qn - Casing heat loss with burner off	%	0,08	0,09	0,14	0,11	0,08	0,09	0,09
Qn - Flue system heat loss with burner on	%	2,59	2,27	2,8	2,68	2,59	2,41	2,27
Qn - Flue system heat loss with burner off	%	---	---	---	---	---	---	---
Qn - WILO pump absorption with hydraulic separator	W	260	260	240	380	520	520	520
Qn - WILO pump absorption with plate exchanger	W	260	260	240	380	520	520	520
Qn - GRUNDFOS pump absorption with hydraulic separator	W	180	182	360	360	360	362	364
Qn - GRUNDFOS pump absorption with plate exchanger	W	180	182	360	360	360	362	364
Qr - Casing heat loss with burner on	%	2,06	2,17	3,31	2,06	2,06	2,06	2,17
Qr - Casing heat loss with burner off	%	0,084	0,09	0,141	0,084	0,084	0,084	0,09
Qr - Flue system heat loss with burner on	%	1,7	1,83	1,87	1,7	1,7	1,7	1,83
Qr - Flue system heat loss with burner off	%	---	---	---	---	---	---	---
Qr - WILO pump absorption with hydraulic separator	W	260	260	240	380	520	520	520
Qr - WILO pump absorption with plate exchanger	W	260	260	240	380	520	520	520
Qr - GRUNDFOS pump absorption with hydraulic separator	W	180	182	360	360	360	362	364
Qr - GRUNDFOS pump absorption with plate exchanger	W	180	182	360	360	360	362	364

Tab. 24 Design data for configurations from 120 to 300

DESIGN DATA								
-		325	360	390	420	450	480	510
Qn - Casing heat loss with burner on	%	0,09	0	0,14	0,27	0,38	0	0,11
Qn - Casing heat loss with burner off	%	0,1	0,08	0,09	0,09	0,09	0,08	0,09
Qn - Flue system heat loss with burner on	%	2,64	2,59	2,47	2,36	2,27	2,59	2,5
Qn - Flue system heat loss with burner off	%	---	---	---	---	---	---	---
Qn - WILO pump absorption with hydraulic separator	W	640	780	780	780	780	1040	1040
Qn - WILO pump absorption with plate exchanger	W	640	780	780	780	780	1040	1040
Qn - GRUNDFOS pump absorption with hydraulic separator	W	540	540	542	544	546	720	722
Qn - GRUNDFOS pump absorption with plate exchanger	W	540	540	542	544	546	720	722
Qr - Casing heat loss with burner on	%	2,06	2,06	2,06	2,06	2,17	2,06	2,06
Qr - Casing heat loss with burner off	%	0,084	0,084	0,084	0,084	0,09	0,084	0,084
Qr - Flue system heat loss with burner on	%	1,7	1,7	1,7	1,7	1,83	1,7	1,7
Qr - Flue system heat loss with burner off	%	---	---	---	---	---	---	---
Qr - WILO pump absorption with hydraulic separator	W	640	780	780	780	780	1040	1040
Qr - WILO pump absorption with plate exchanger	W	640	780	780	780	780	1040	1040
Qr - GRUNDFOS pump absorption with hydraulic separator	W	540	540	542	544	546	720	722
Qr - GRUNDFOS pump absorption with plate exchanger	W	540	540	542	544	546	720	722

Tab. 25 Design data for configurations from 325 to 510

DESIGN DATA								
-		540	570	600	630	660	690	720
Qn - Casing heat loss with burner on	%	0,21	0,3	0,38	0,09	0,17	0,25	0,32
Qn - Casing heat loss with burner off	%	0,09	0,09	0,09	0,09	0,09	0,09	0,09
Qn - Flue system heat loss with burner on	%	2,41	2,34	2,27	2,52	2,45	2,38	2,32
Qn - Flue system heat loss with burner off	%	---	---	---	---	---	---	---
Qn - WILO pump absorption with hydraulic separator	W	1040	1040	1040	1300	1300	1300	1300
Qn - WILO pump absorption with plate exchanger	W	1040	1040	1040	1300	1300	1300	1300
Qn - GRUNDFOS pump absorption with hydraulic separator	W	724	726	728	902	904	906	908
Qn - GRUNDFOS pump absorption with plate exchanger	W	724	726	728	902	904	906	908
Qr - Casing heat loss with burner on	%	2,06	2,06	2,17	2,06	2,06	2,06	2,06
Qr - Casing heat loss with burner off	%	0,084	0,084	0,09	0,084	0,084	0,084	0,084
Qr - Flue system heat loss with burner on	%	1,7	1,7	1,83	1,7	1,7	1,7	1,7
Qr - Flue system heat loss with burner off	%	---	---	---	---	---	---	---
Qr - WILO pump absorption with hydraulic separator	W	1040	1040	1040	1300	1300	1300	1300
Qr - WILO pump absorption with plate exchanger	W	1040	1040	1040	1300	1300	1300	1300
Qr - GRUNDFOS pump absorption with hydraulic separator	W	724	726	728	902	904	906	908
Qr - GRUNDFOS pump absorption with plate exchanger	W	724	726	728	902	904	906	908

Tab. 26 Design data for configurations from 540 to 720

DESIGN DATA						
-		750	780	810	870	900
Qn - Casing heat loss with burner on	%	0,38	0,14	0,21	0,33	0,38
Qn - Casing heat loss with burner off	%	0,09	0,09	0,09	0,09	0,09
Qn - Flue system heat loss with burner on	%	2,27	2,47	2,41	2,32	2,27
Qn - Flue system heat loss with burner off	%	---	---	---	---	---
Qn - WILO pump absorption with hydraulic separator	W	1300	1560	1560	1560	1560
Qn - WILO pump absorption with plate exchanger	W	1300	1560	1560	1560	1560
Qn - GRUNDFOS pump absorption with hydraulic separator	W	910	1084	1086	1090	1092
Qn - GRUNDFOS pump absorption with plate exchanger	W	910	1084	1086	1090	1092
Qr - Casing heat loss with burner on	%	2,17	2,06	2,06	2,06	2,17
Qr - Casing heat loss with burner off	%	0,09	0,084	0,084	0,084	0,09
Qr - Flue system heat loss with burner on	%	1,83	1,7	1,7	1,7	1,83
Qr - Flue system heat loss with burner off	%	---	---	---	---	---
Qr - WILO pump absorption with hydraulic separator	W	1300	1560	1560	1560	1560
Qr - WILO pump absorption with plate exchanger	W	1300	1560	1560	1560	1560
Qr - GRUNDFOS pump absorption with hydraulic separator	W	910	1084	1086	1090	1092
Qr - GRUNDFOS pump absorption with plate exchanger	W	910	1084	1086	1090	1092

Tab. 27 Design data for configurations from 750 to 900

1.18 Pressure loss

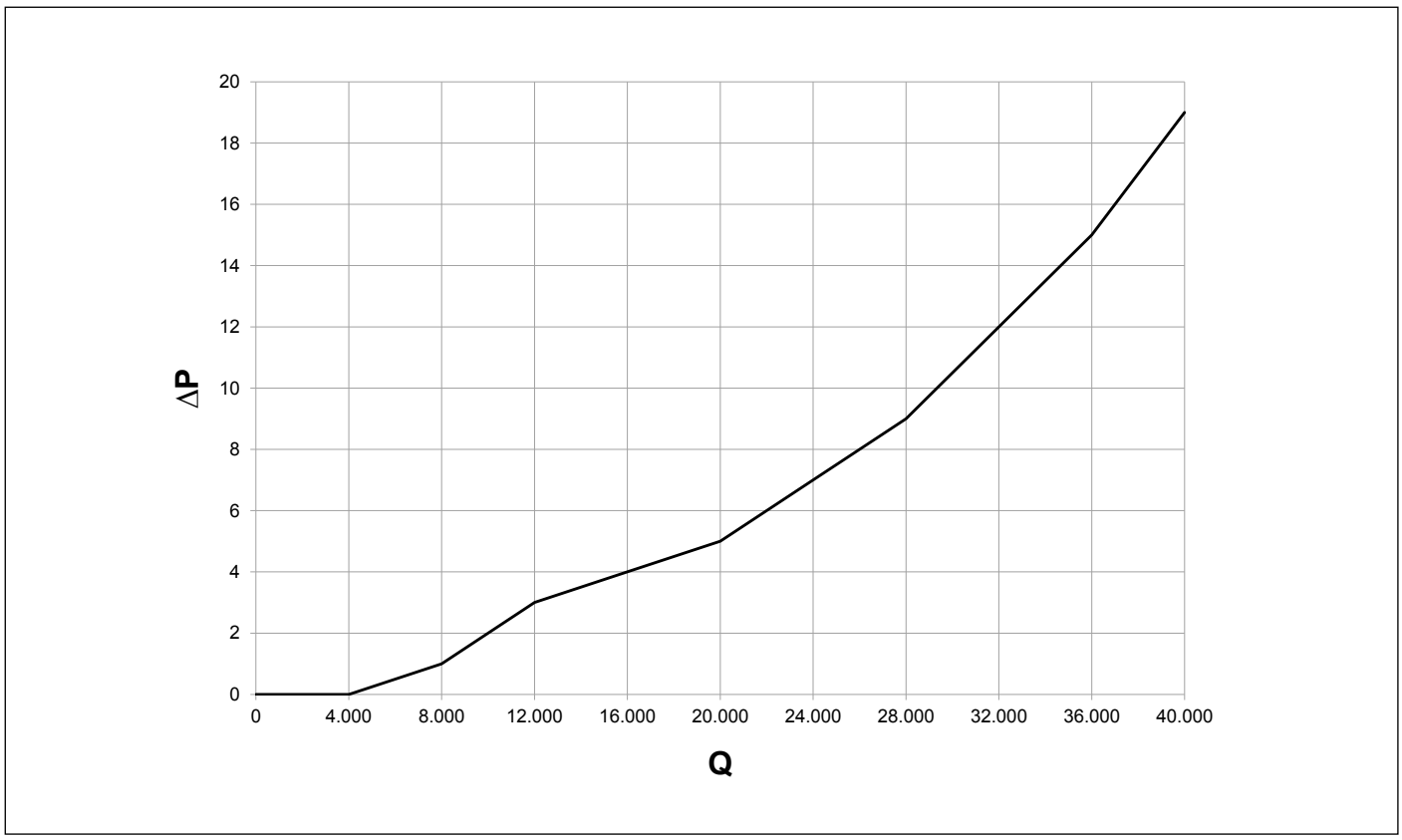


Fig. 16 Hydraulic separator flow resistance on system side

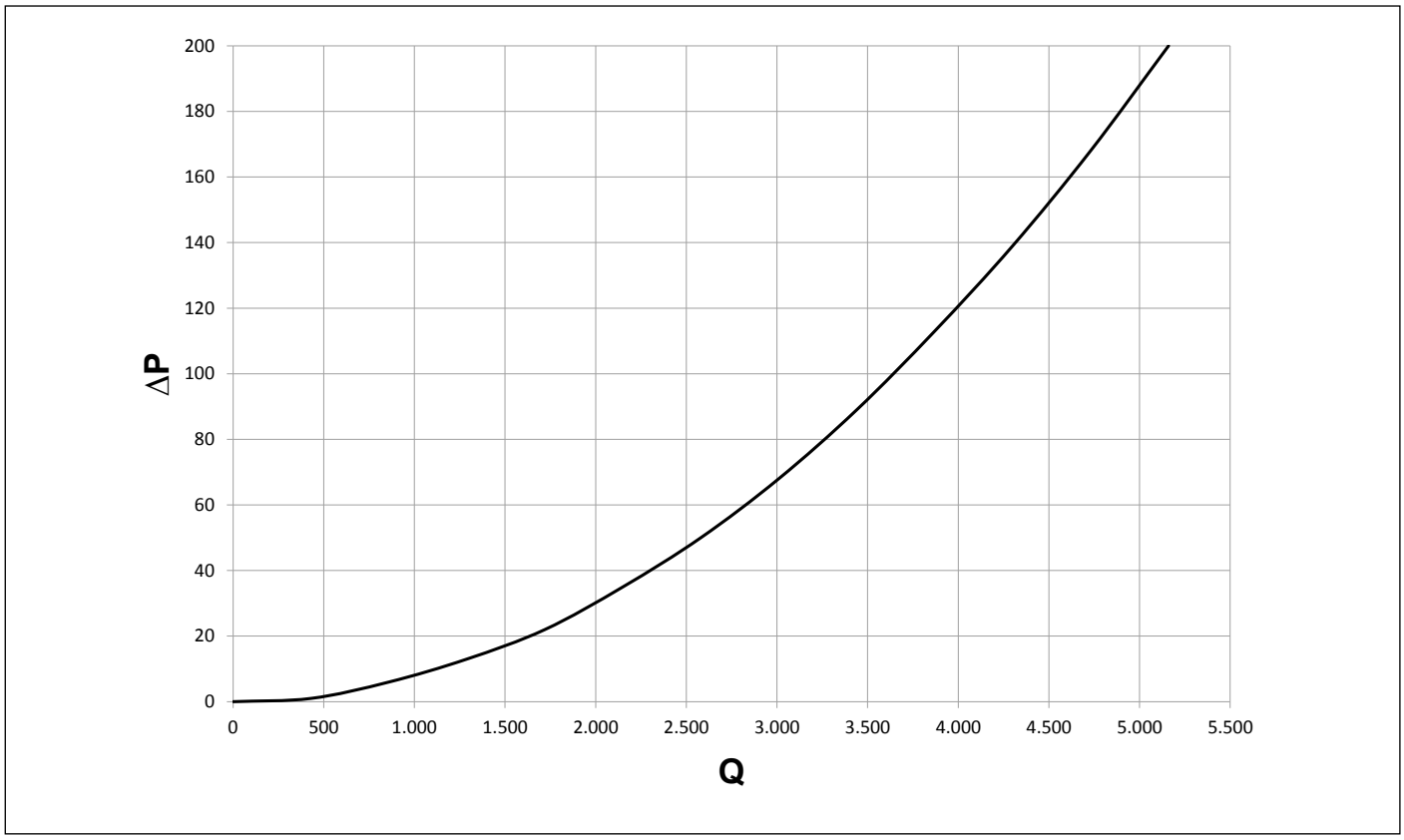


Fig. 17 120 kW plate exchanger flow resistance on primary side and secondary side

ΔP . . . . . Hydraulic resistance (mbar)
Q . . . . . Flow rate (dm³/h)

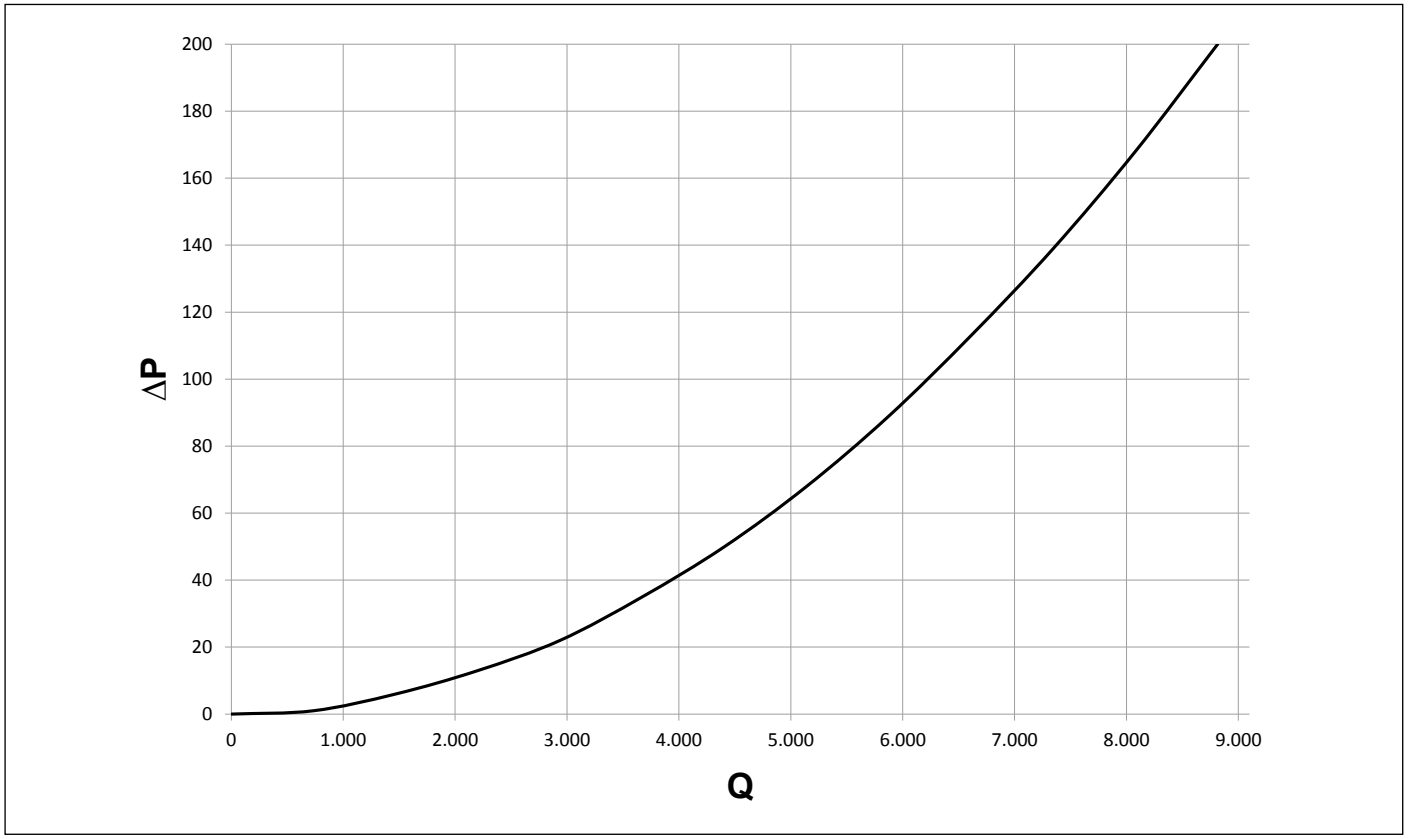


Fig. 18 205 kW plate exchanger flow resistance on primary side and secondary side

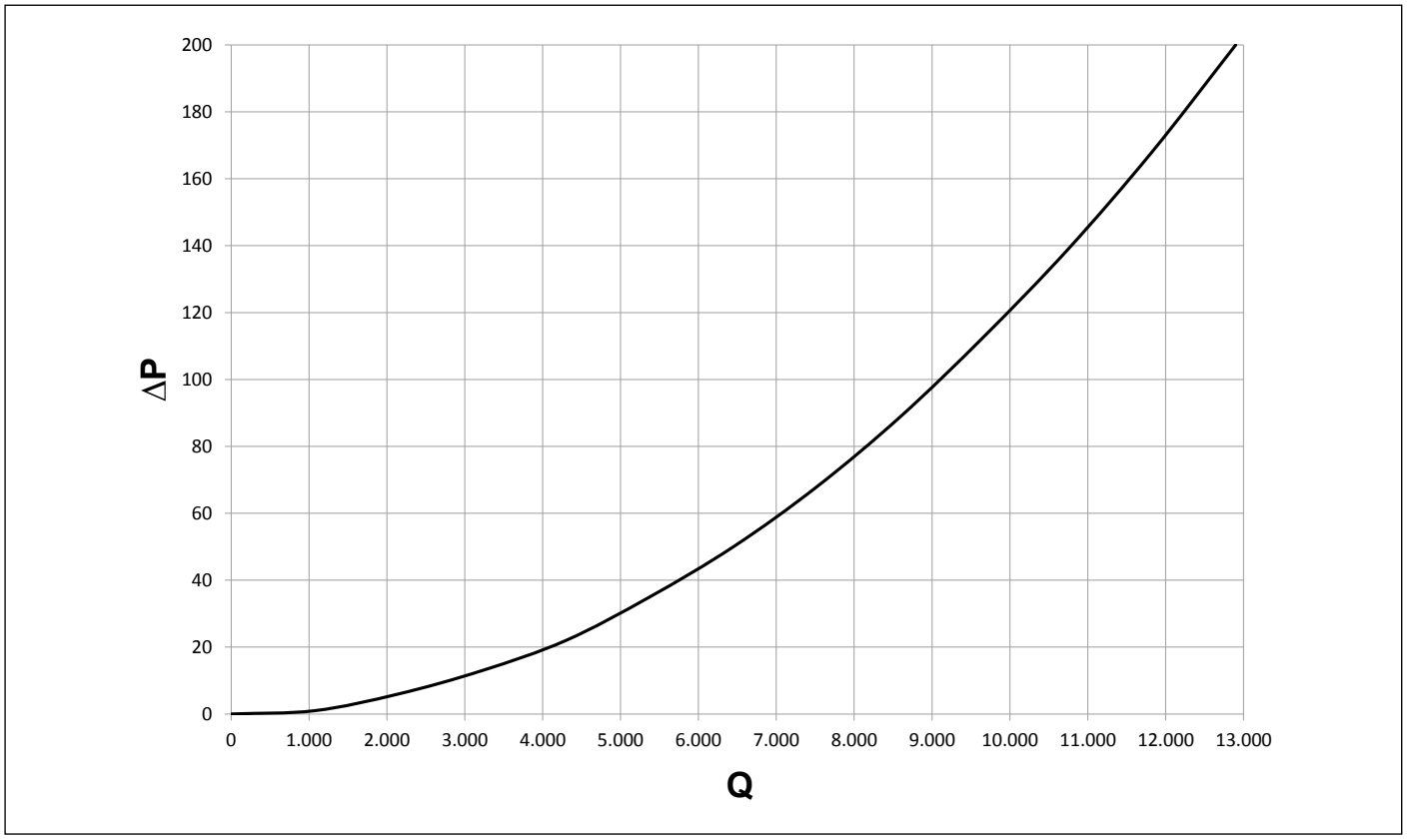


Fig. 19 300 kW plate exchanger flow resistance on primary side and secondary side

ΔP . . . . . Hydraulic resistance (mbar)
Q . . . . . Flow rate (dm³/h)

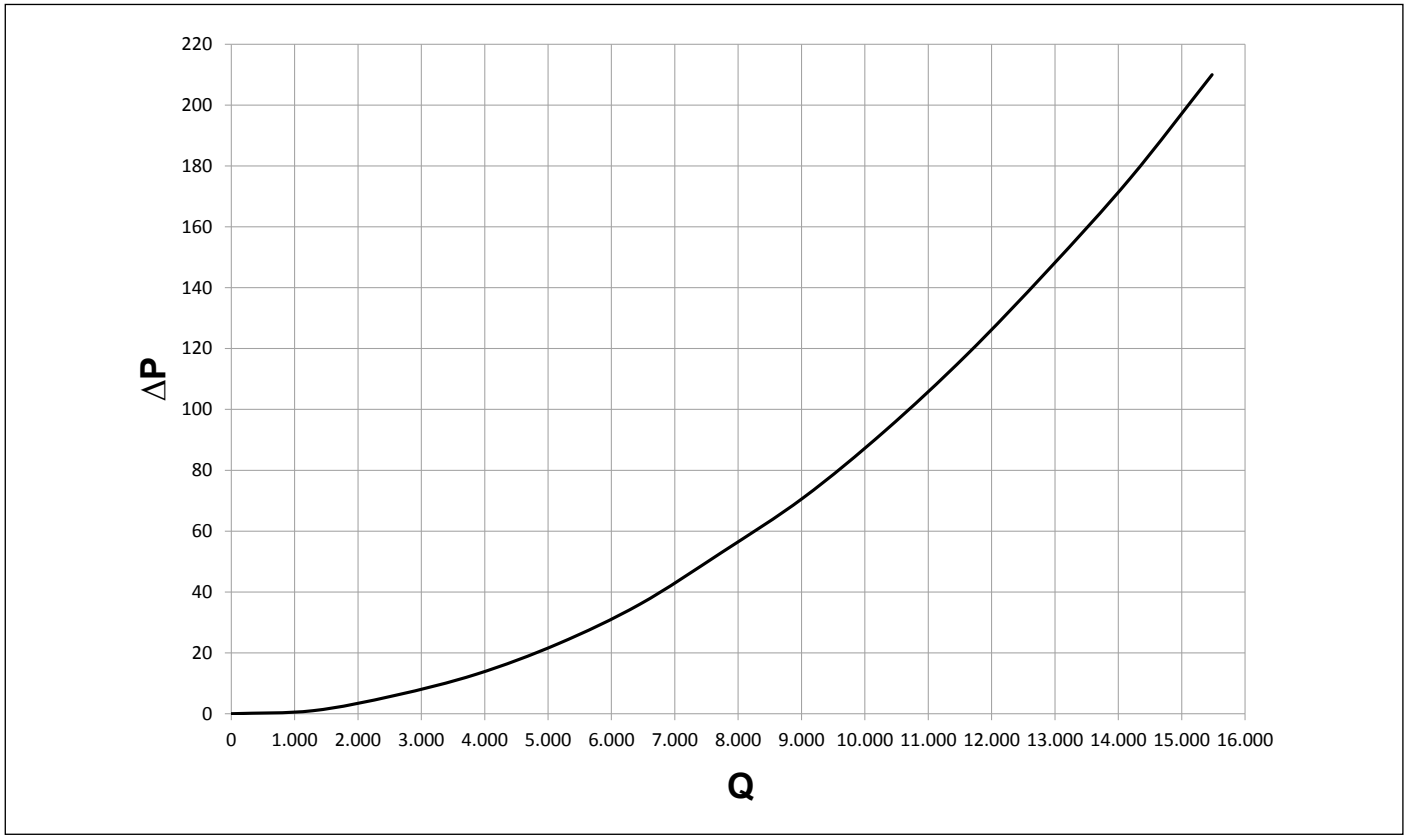


Fig. 20 360 kW plate exchanger flow resistance on primary side and secondary side

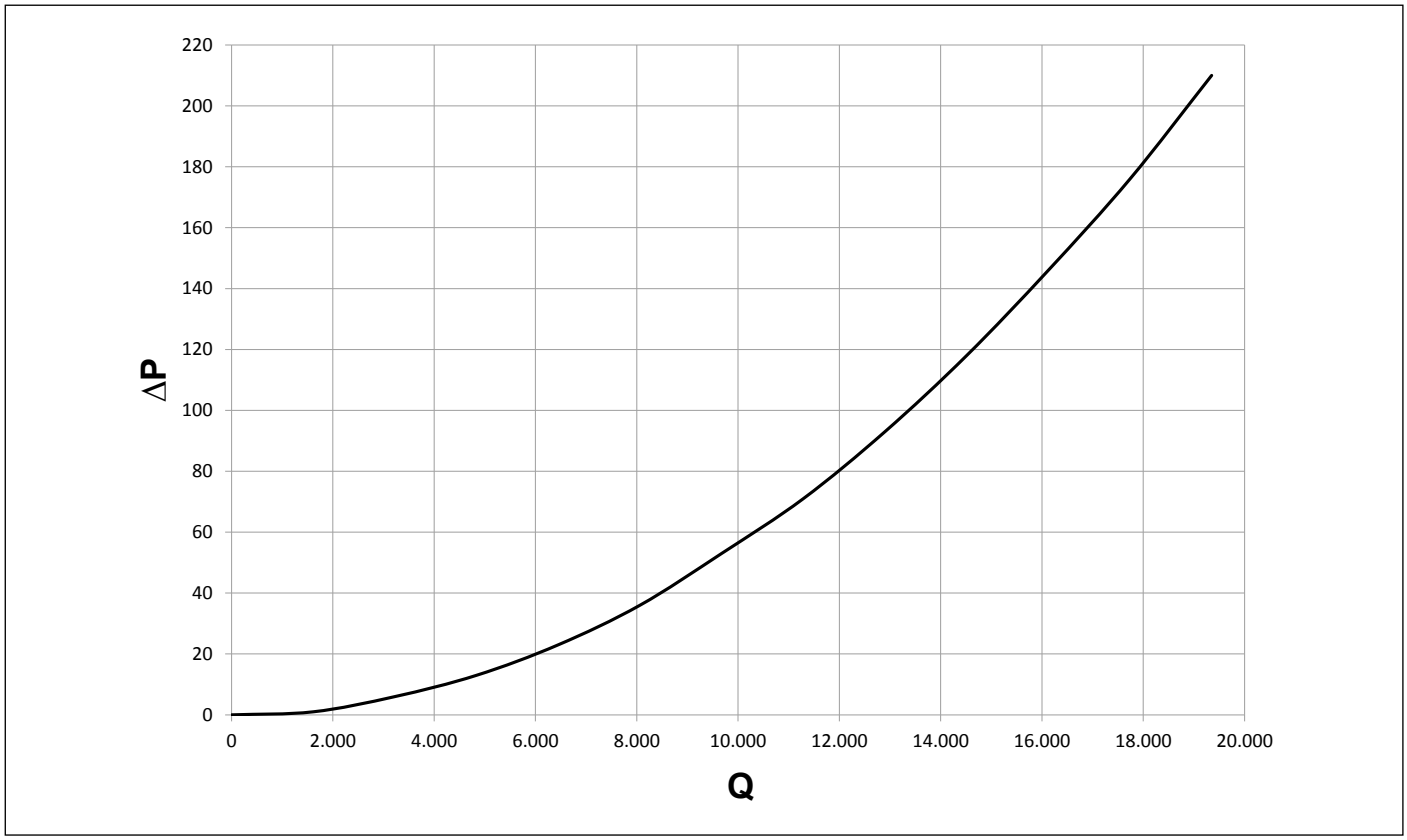


Fig. 21 450 kW plate exchanger flow resistance on primary side and secondary side

ΔP . . . . . Hydraulic resistance (mbar)
Q . . . . . Flow rate (dm³/h)

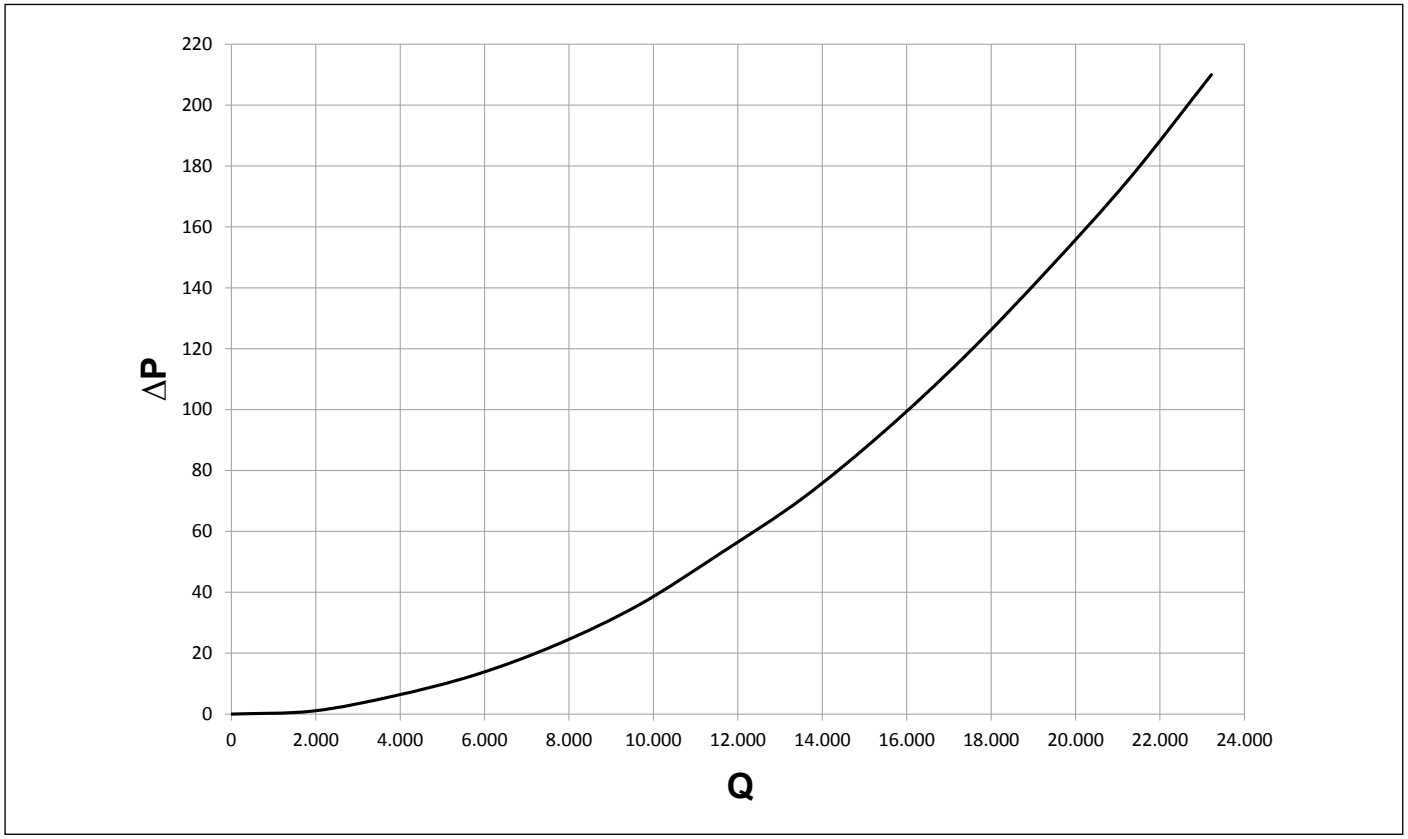


Fig. 22 540 kW plate exchanger flow resistance on primary side and secondary side

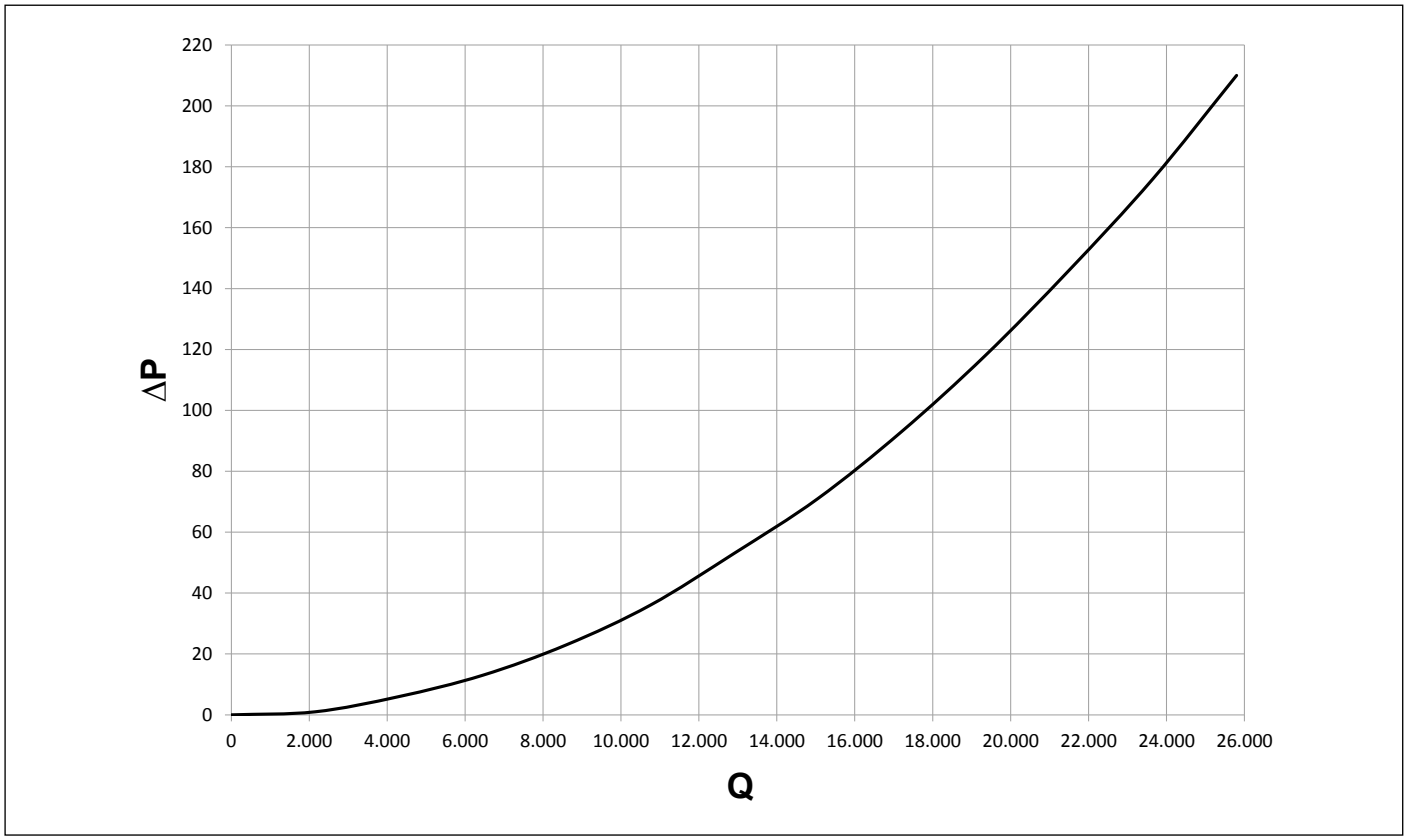


Fig. 23 600 kW plate exchanger flow resistance on primary side and secondary side

ΔP . . . . . Hydraulic resistance (mbar)
Q . . . . . Flow rate (dm³/h)

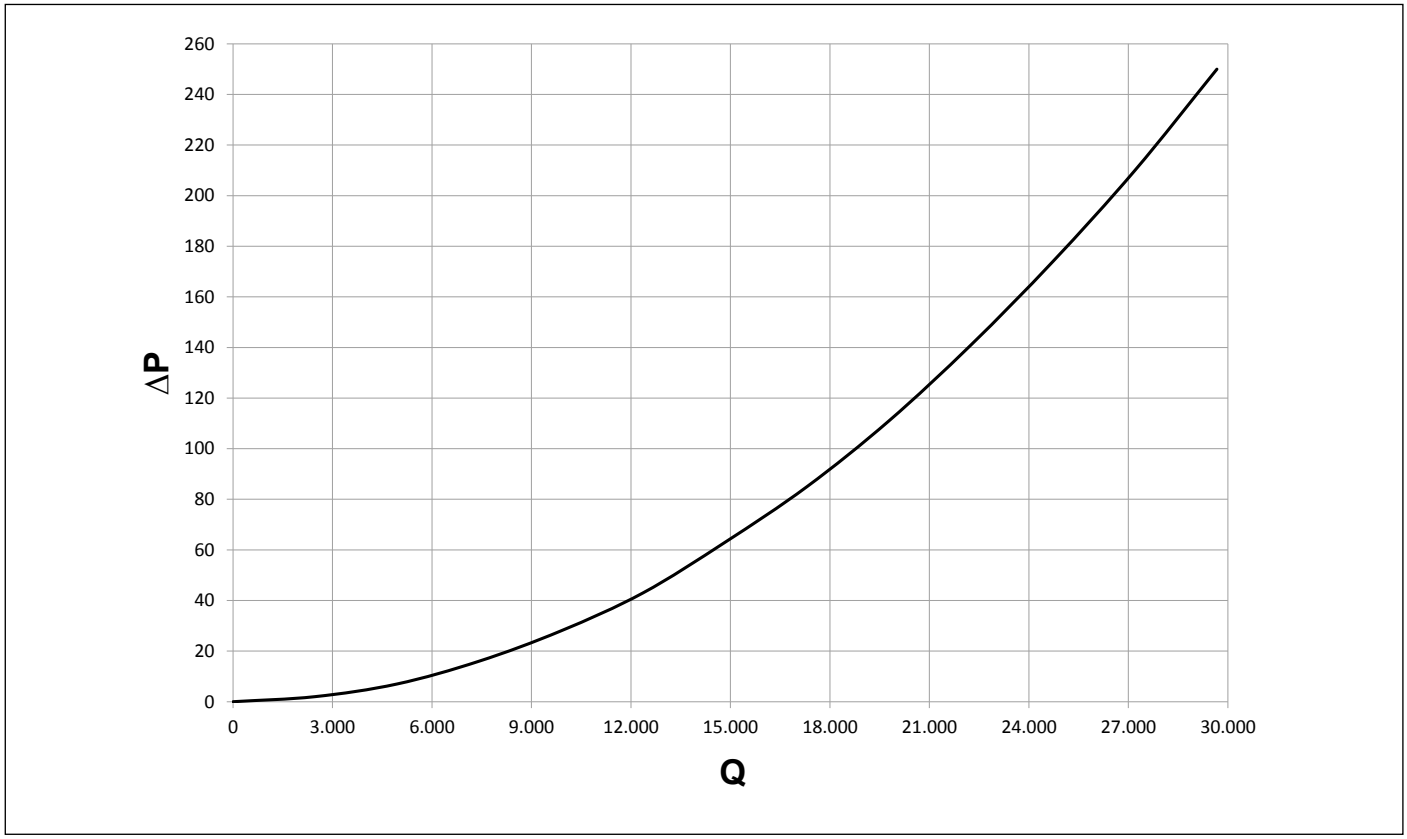


Fig. 24 690 kW plate exchanger flow resistance on primary side and secondary side

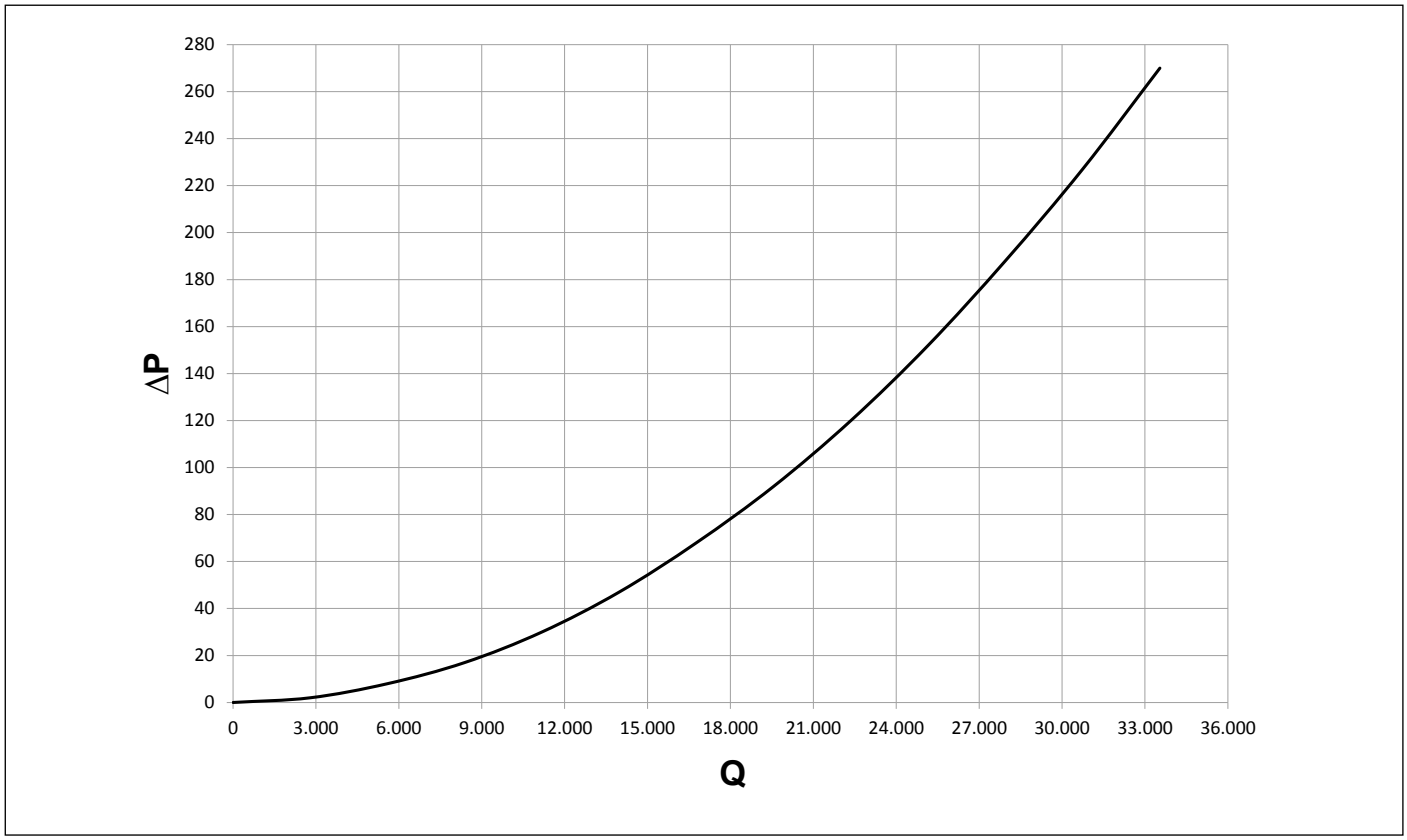


Fig. 25 780 kW plate exchanger flow resistance on primary side and secondary side

ΔP . . . . . Hydraulic resistance (mbar)
Q . . . . . Flow rate (dm³/h)

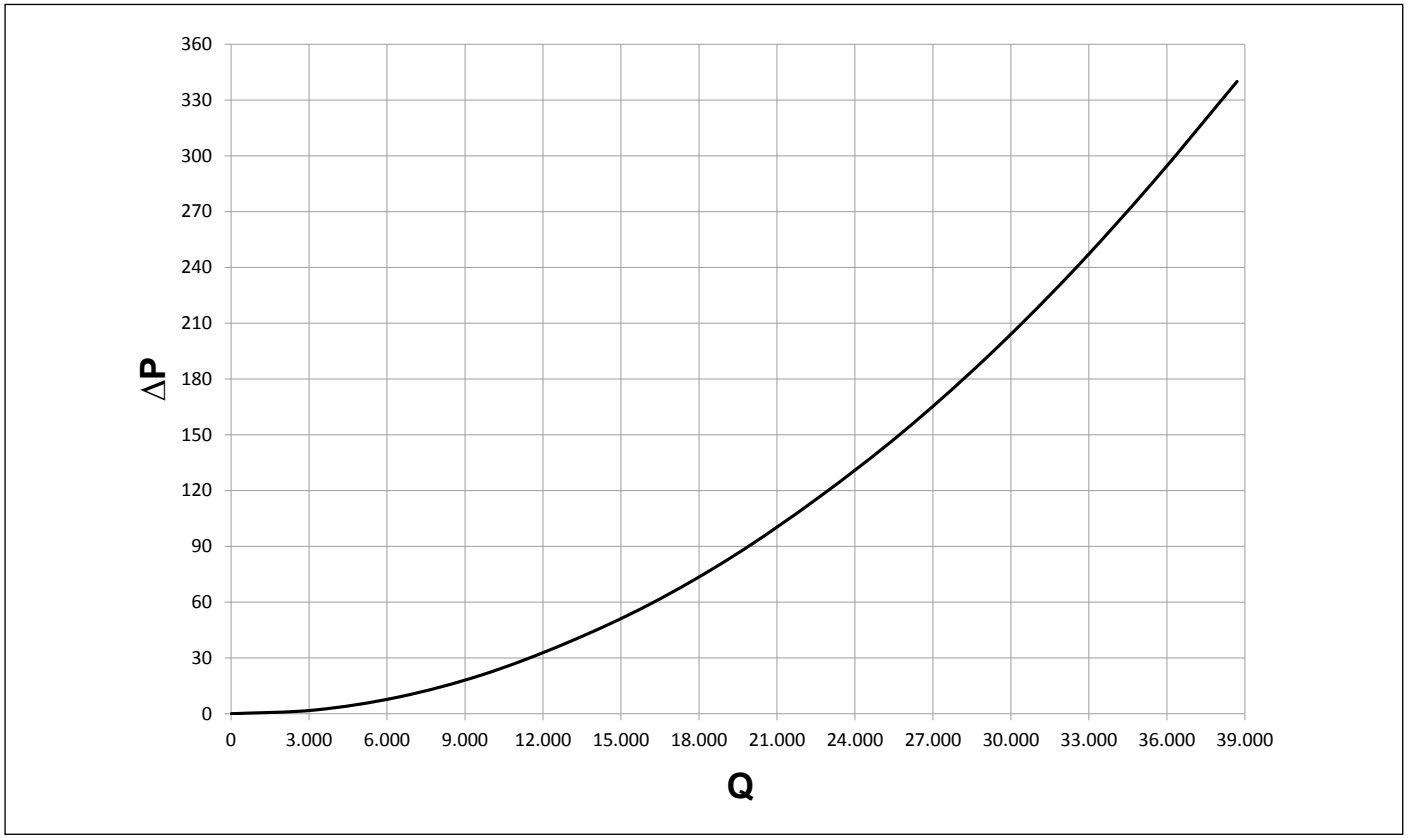


Fig. 26 900 kW plate exchanger flow resistance on primary side and secondary side

ΔP . . . . . Hydraulic resistance (mbar)
Q . . . . . Flow rate (dm³/h)

1.19 Wiring diagrams

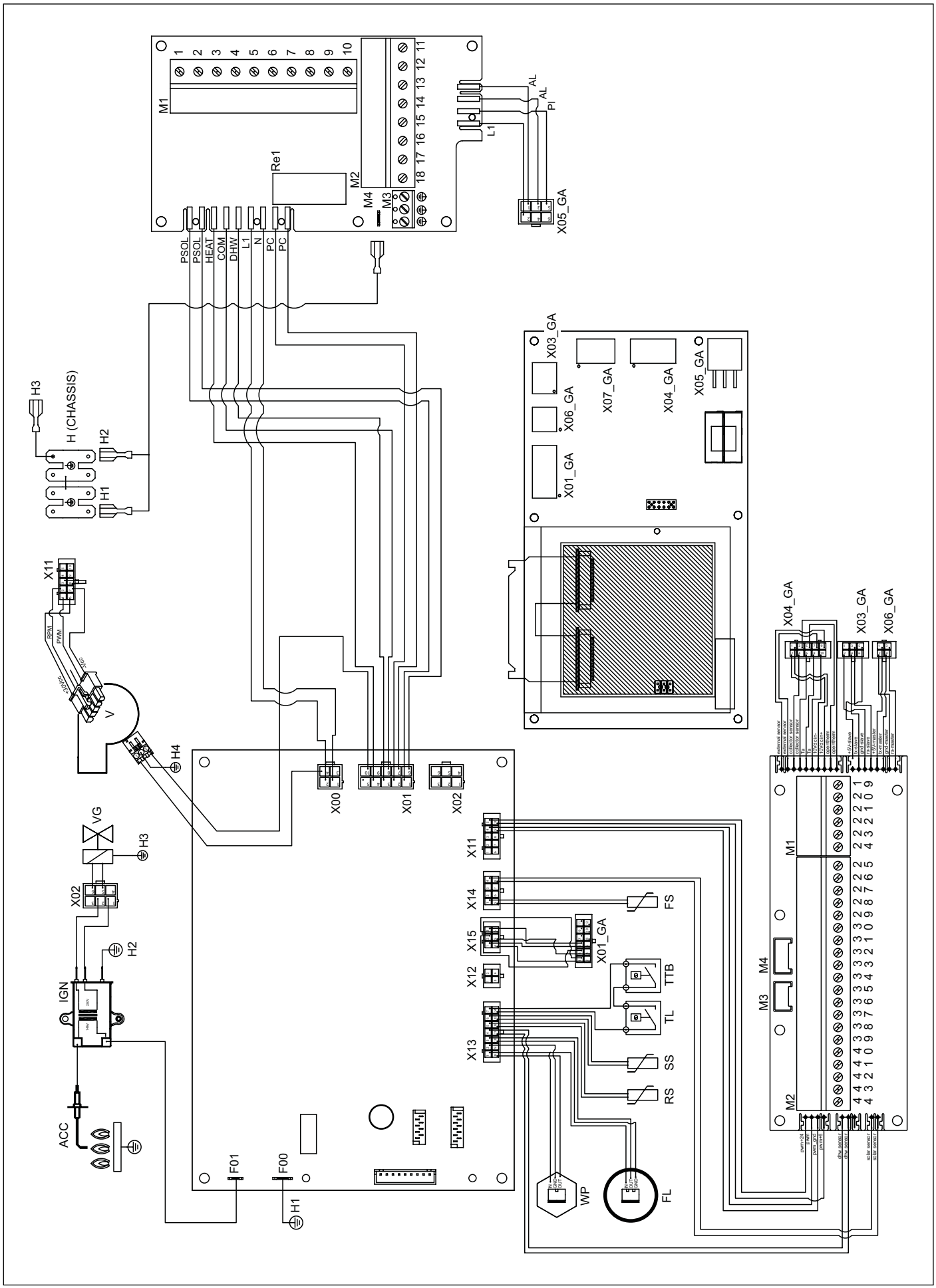


Fig. 27 Wiring diagram for models from 45 to 60

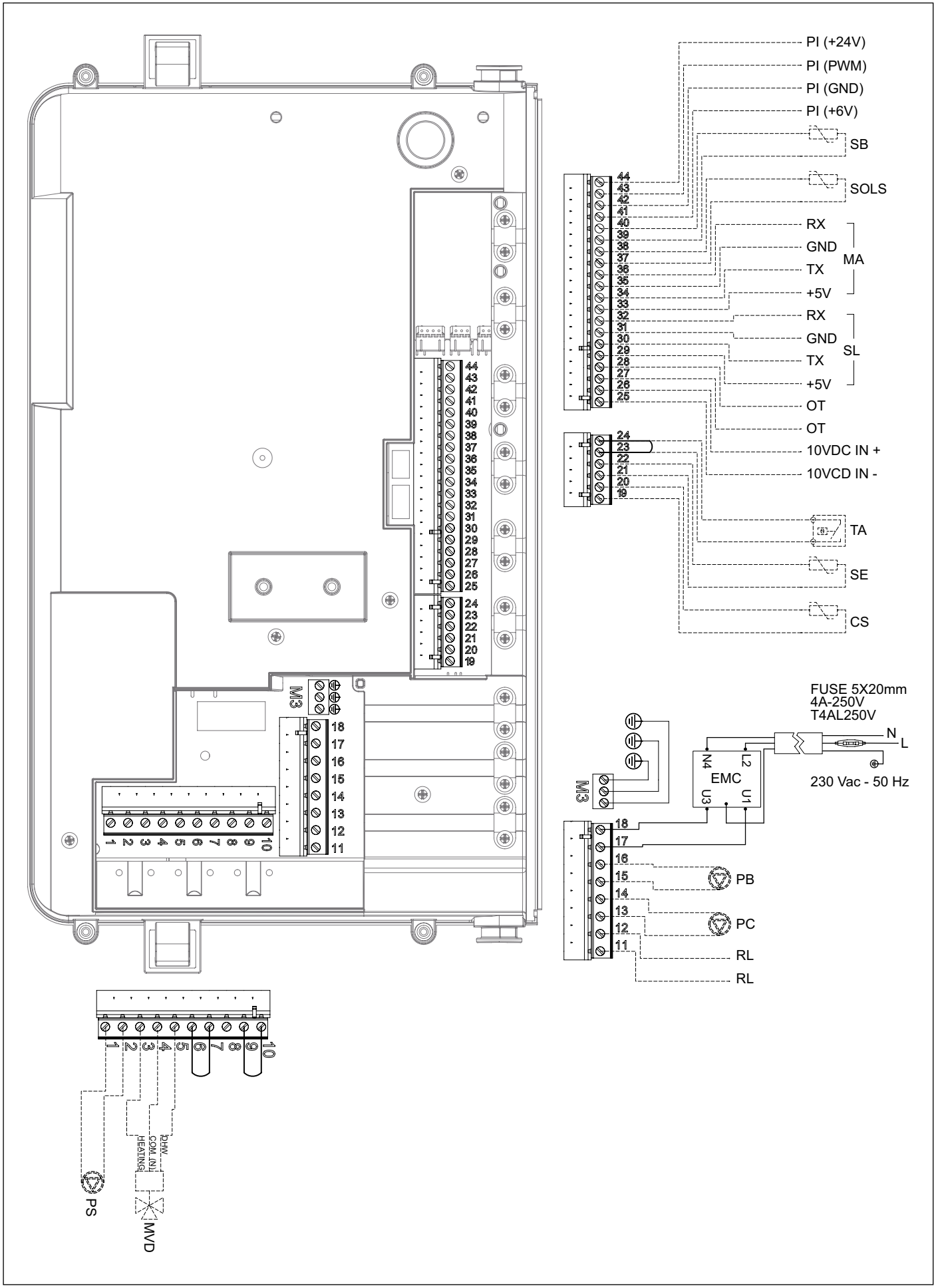


Fig. 28 Connections performed by the installer

Internal connections

ACC: . . . . . Ignition/detection electrode
IGN: . . . . . ignition transformer
VG: . . . . . gas valve
V: . . . . . Modulating fan
FS: . . . . . Flue gas probe on heat exchanger
TTB: . . . . . safety thermal fuse (115°C)
TL: . . . . . Safety thermostat on CH flow
FL: . . . . . Flow meter
WP: . . . . . Heating circuit pressure sensor
SS: . . . . . CH NTC flow probe 10k Ohm at 25°C B=3435
RS: . . . . . CH NTC return probe 10k Ohm at 25°C B=3435
EMC: . . . . . EMC filter
X00-X15: . . . . . Load/signal connectors
H0-H3: . . . . . ground connectors

Electrical connections to be made by the installer

1-2: . . . . . PS - Solar pump (max 0.8 A@cosφ>0.6)
3-4-5: . . . . . MDV - Electric 3-way valve
  3: . . . . . Heating (phase)
  4: . . . . . Common (neutral)
  5: . . . . . DHW (phase)
6-7-8-9-10: . . . . . Do not use
11-12: . . . . . RL - Auxiliary relay (remote alarm or external LPG valve manager)
13-14: . . . . . PC - Cascade pump (max 0.8 A@cosφ>0.6)
15-16: . . . . . PB - Boiler pump (max 1.5 A@cosφ>0.6)
17-18-M3: . . . . . Electric power supply 230V-50Hz (already connected)
  17: . . . . . Phase
  18: . . . . . Neutral
  M3: . . . . . Ground
19-20: . . . . . CS - Cascade probe
21-22: . . . . . SE - External probe
23-24: . . . . . TA – Ambient thermostat
25-26: . . . . . 10 VDC input
  25: . . . . . IN-
  26: . . . . . IN+
27-28: . . . . . OT - Remote Control
29-30-31-32: . . . SL - Slave (connections for cascade systems)
  29: . . . . . +5V
  30: . . . . . TX
  31: . . . . . GND
  32: . . . . . RX
33-34-35-36: . . . MA - Master (connections for cascade systems)
  33: . . . . . +5V
  34: . . . . . TX
  35: . . . . . GND
  36: . . . . . RX
37-38: . . . . . SOLS - Solar collector probe
39-40: . . . . . SB - Water heater probe
41-42-43-44: . . . PI - PMW signal (for system circulation pump)
  41: . . . . . +6V
  42: . . . . . GND
  43: . . . . . PWM
  44: . . . . . +24V

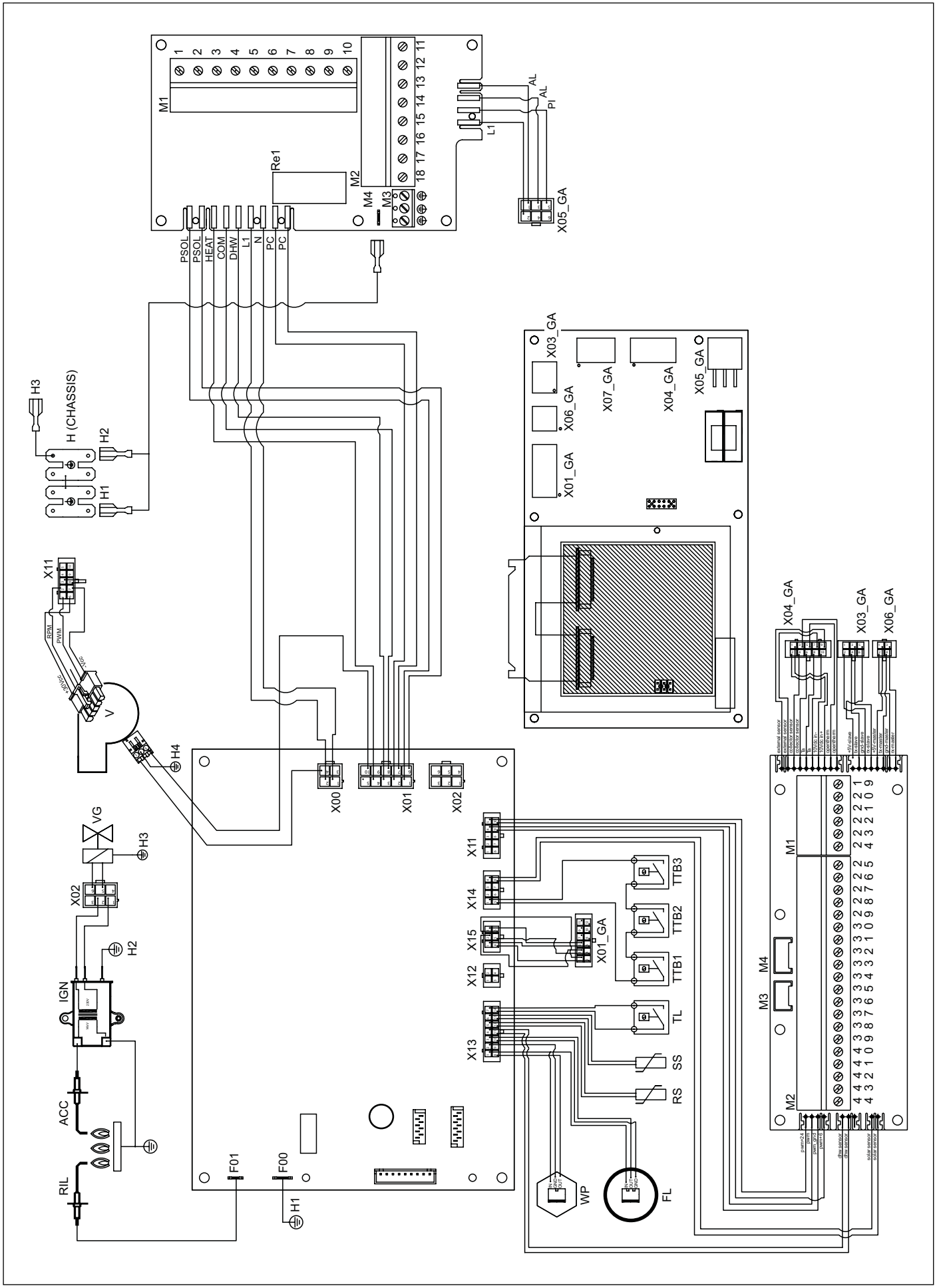


Fig. 29 Wiring diagram for models from 85 to 120

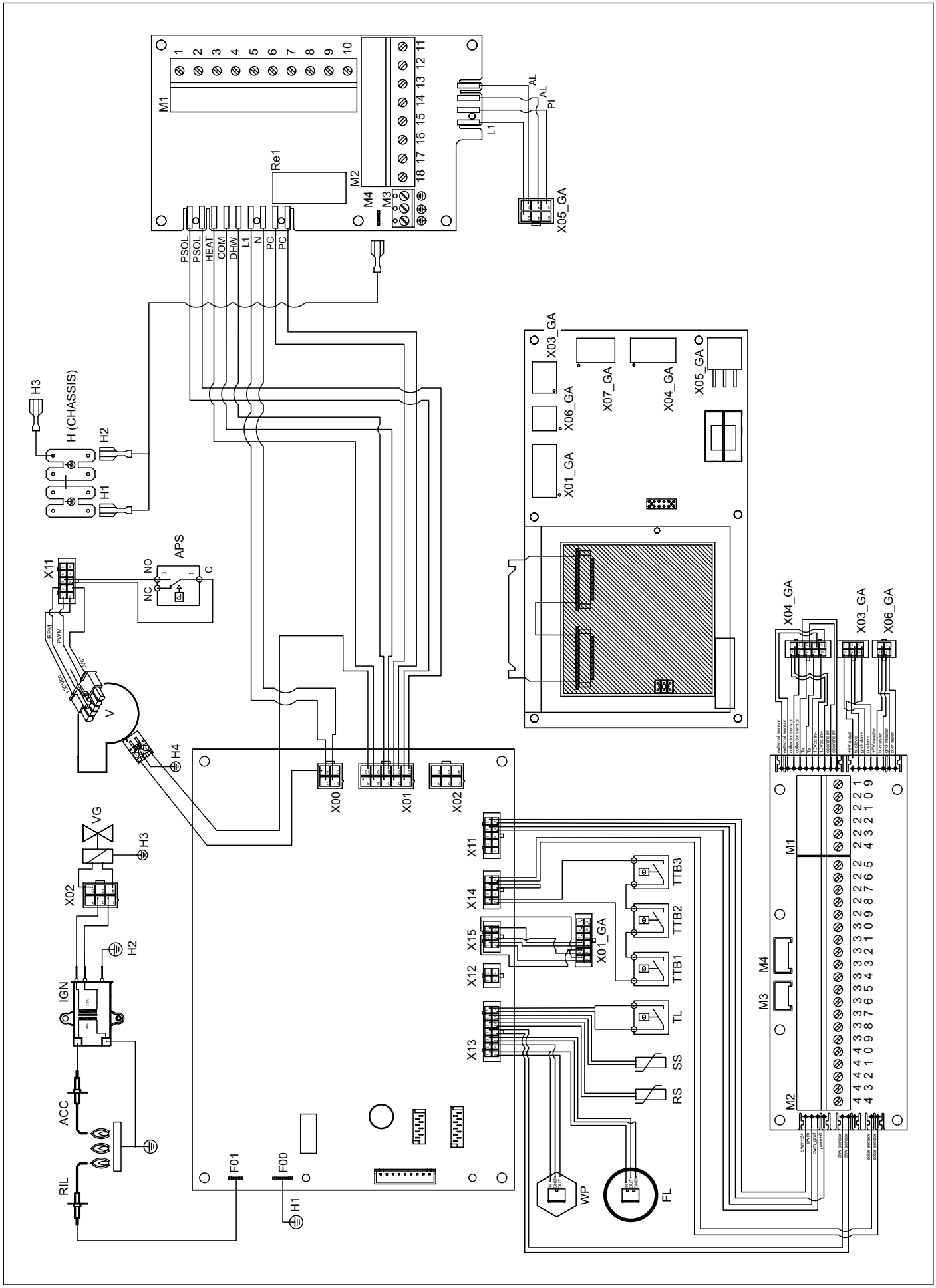


Fig. 30 Wiring diagram for models from 150

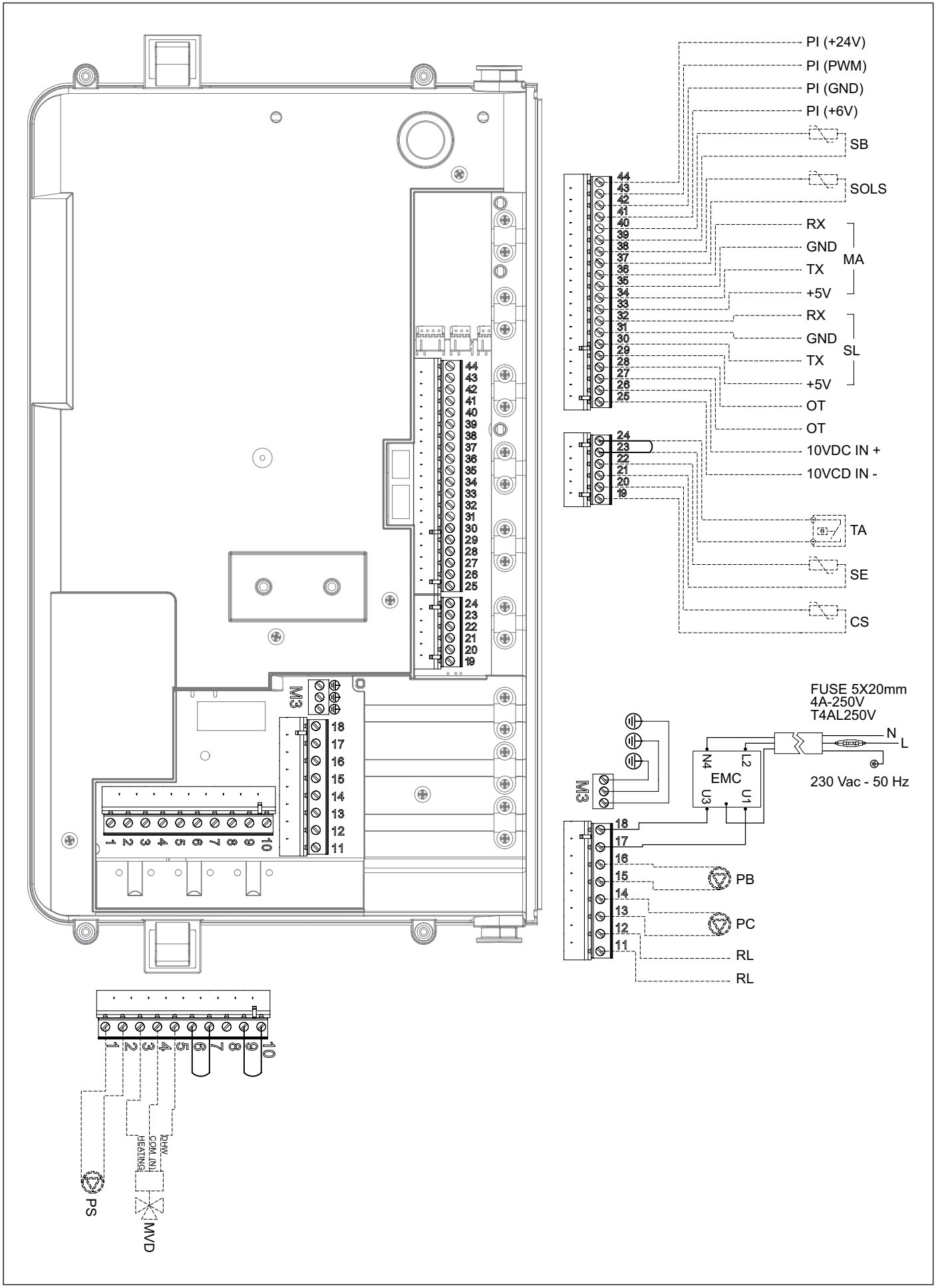


Fig. 31 Connections performed by the installer

Internal connections

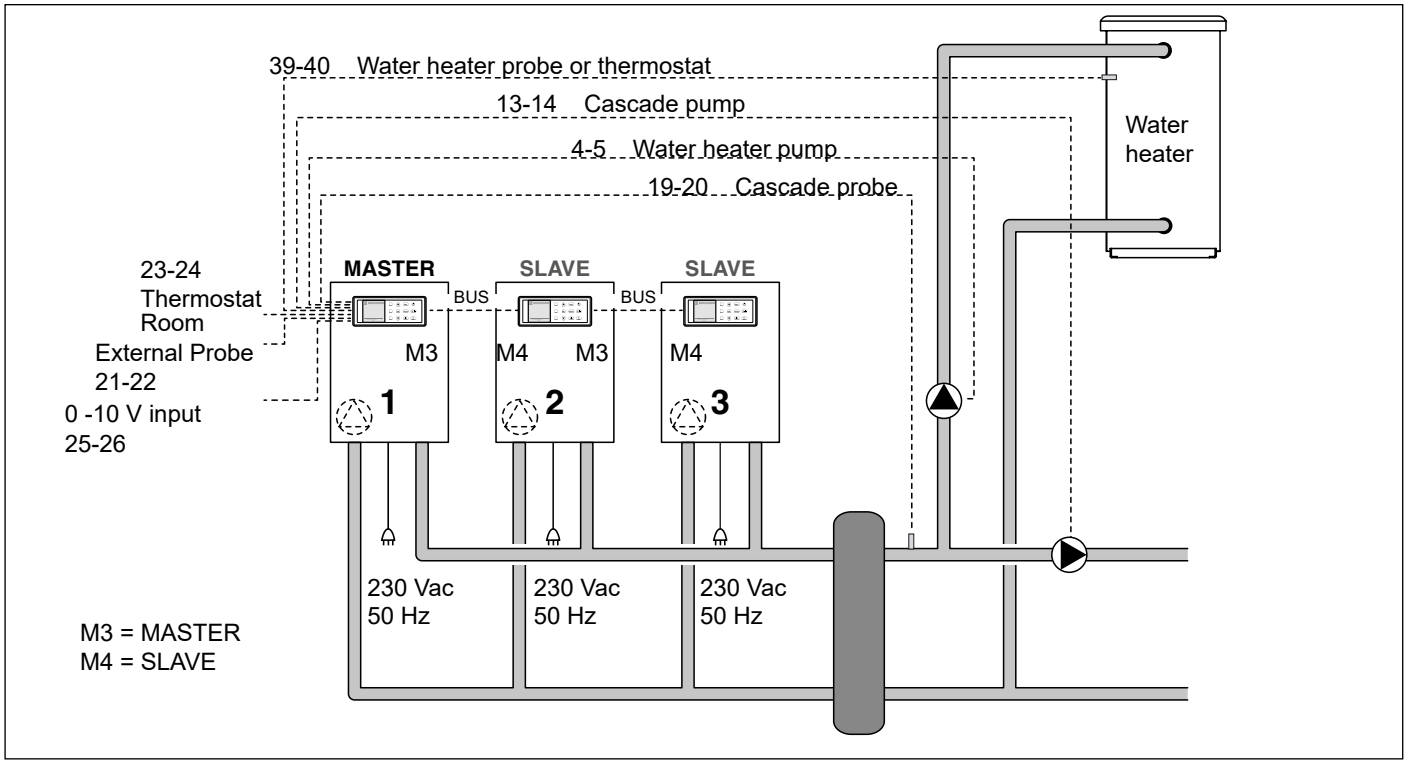
ACC: . . . . . Ignition electrode
RIL: . . . . . Detection electrode
IGN: . . . . . ignition transformer
VG: . . . . . gas valve
V: . . . . . Modulating fan
APS: . . . . . Air pressure switch (KR 150 only)
TTB1: . . . . . Limit thermostat (260 °C)
TTB2: . . . . . Thermofuse
TTB3: . . . . . Thermofuse
TL: . . . . . Safety thermostat on CH flow
FL: . . . . . Flow meter
WP: . . . . . Heating circuit pressure sensor
SS: . . . . . CH NTC flow probe 10k Ohm at 25°C B=3435
RS: . . . . . CH NTC return probe 10k Ohm at 25°C B=3435
EMC: . . . . . EMC filter
X00-X15: . . . . . Load/signal connectors
H0-H3: . . . . . ground connectors

Electrical connections to be made by the installer

1-2: . . . . . PS - Solar pump (max 0.8 A@cosφ>0.6)
3-4-5: . . . . . MDV - Electric 3-way valve
  3: . . . . . Heating (phase)
  4: . . . . . Common (neutral)
  5: . . . . . DHW (phase)
6-7-8-9-10: . . . . . Do not use
11-12: . . . . . RL - Auxiliary relay (remote alarm or external LPG valve manager)
13-14: . . . . . PC - Cascade pump (max 0.8 A@cosφ>0.6)
15-16: . . . . . PB - Boiler pump (max 1.5 A@cosφ>0.6)
17-18-M3: . . . . . Electric power supply 230V-50Hz (already connected)
  17: . . . . . Phase
  18: . . . . . Neutral
  M3: . . . . . Ground
19-20: . . . . . CS - Cascade probe
21-22: . . . . . SE - External probe
23-24: . . . . . TA – Ambient thermostat
25-26: . . . . . 10 VDC input
  25: . . . . . IN-
  26: . . . . . IN+
27-28: . . . . . OT - Remote Control
29-30-31-32: . . . SL - Slave (connections for cascade systems)
  29: . . . . . +5V
  30: . . . . . TX
  31: . . . . . GND
  32: . . . . . RX
33-34-35-36: . . . MA - Master (connections for cascade systems)
  33: . . . . . +5V
  34: . . . . . TX
  35: . . . . . GND
  36: . . . . . RX
37-38: . . . . . SOLS - Solar collector probe
39-40: . . . . . SB - Water heater probe
41-42-43-44: . . . PI - PMW signal (for system circulation pump)
  41: . . . . . +6V
  42: . . . . . GND
  43: . . . . . PWM
  44: . . . . . +24V

1.20 Cascade connections

It is possible to connect up to 6 boilers in a cascade-type connection.
The boilers connected with a cascade-type connection work with the MASTER-SLAVE logic: the first boiler (MASTER) controls the entire cascade.
The cascade operating devices (optional) must be connected to the MASTER boiler: cascade pump, cascade probe, external probe, ambient thermostat, 0-10V input, water heater pump, water heater probe.



1.20.1 Electrical connections

For electrical connection of cascade boilers, use the cables supplied with the proper cable glands that must be fastened to the boiler bottom.
For the electric cascade connection of the boilers, refer to the following diagram:

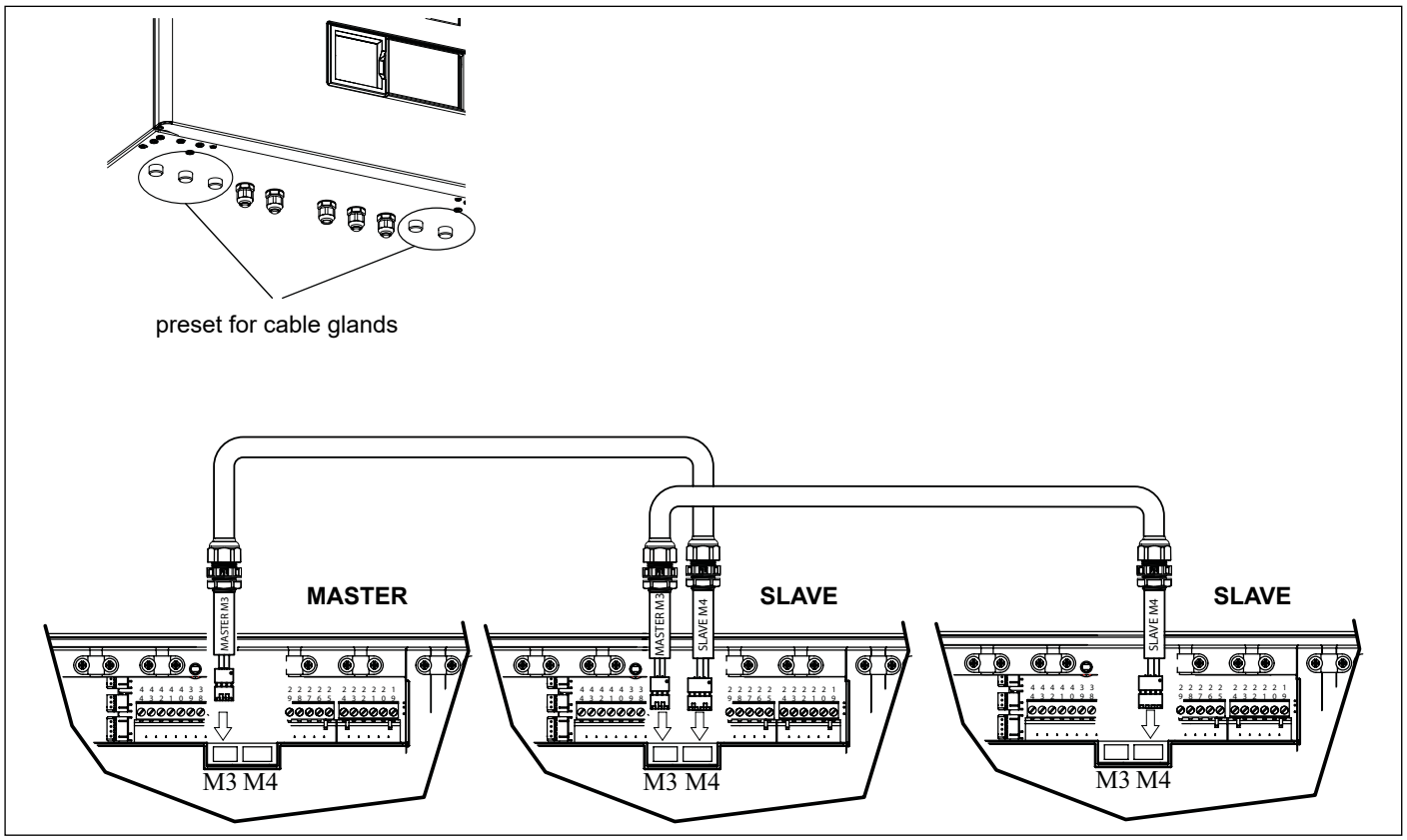


Fig. 32 Cascade connection

1.20.2 Cascade programming

Once the electrical connections are ready, proceed with the cascade system configuration.

- Reach the control panel of the MASTER boiler.
- Access the TECHNICIAN MENU (see TECHNICIAN MENU in the boiler manual).
- Select "6. CASCADE” and press ok.
- Select "1. Cascade settings" and press ok.

Technician menu	Sub-menu 1	Sub-menu 2	Factory value	Settable values
6. CASCADE	1. Cascade set	1. Cascade switch delay	30 sec	0 ÷ 255 sec
		2. Cascade min power	10% min	0 ÷ 100%
		3. Single burner power	According to the model	0 ÷ 2550 kW
		4. Boiler for DHW	0	0 ÷ 6
		5. PI loop time	5 sec	1 ÷ 15 sec
	2. Cascade info	Displaying the cascade system information. Where “*” symbol is present press ok to display the parameter time chart.		
	3. Cascade autodetect	Press ok to activate cascade system self-configuration.		

Description of TECHNICIAN MENU lines

Ref.	Description
6. CASCADE	
6.1. Cascade set	
6.1.1. Cascade switch delay	Time interval range between a boiler ignition and the following one.
6.1.2. Cascade min power	Minimum available cascade output.
6.1.3. Single burner power	Maximum heat output of an individual burner.
6.1.4. Boiler for DHW	Number of boilers in the cascade dedicated both to CH function and to DHW function.
6.1.5. PI loop period	Time range to recalculate the power required by the system.
6.2. Cascade info	Displaying the cascade system information. Where “*” symbol is present press ok to display the parameter time chart.
6.3. Cascade autodetect	Press ok to activate cascade system self-configuration.

It is recommended to set the parameter [6.1.2. Minimum modulation heat output] as defined in the table below.
Parameter [6.1.3. Individual burner heat output] must be equal to the greatest generator heat output value of the cascade.

Value of parameter 6.1.2 [%]	Cascade system heat configuration
10	45; 60; 90; 105; 120; 205; 240; 325; 360; 480
11	85; 170
16	150; 270; 300; 390; 420; 450; 510; 540; 570; 600; 630; 660; 690; 720; 750; 780; 810; 870; 900

Tab. 28 Minimum modulation head output setting

WARNING

IN CASE OF SYSTEM CASCADE-TYPE INSTALLATION WITH PLATE EXCHANGER IT IS NECESSARY TO SET THE 3.1.5 PARAMETER [BOILER PUMP MINIMUM SPEED] OF THE TECHNICAL MENU TO 30%.
IT MUST BE SET ON ALL MODULES OF THE CASCADE SYSTEM.

Access the technical menu, parameter 3.1.5:

Technician menu	Sub-menu 1	Sub-menu 2	Factory value	Settable values
3. SYSTEM SETTINGS	1. Boiler parameters	5. Pump speed min	15%	15 ÷ 100%

Change the 3.1.5 parameter on each module of the cascade system according to the table:

-	CASCADE GENERATOR				
	45	60	85	120	150
PARAMETER 3.1.5	30%	30%	30%	30%	30%

1.20.3 Self-configuration

Once the parameter setting is ready, proceed with the cascade system self-configuration.

- Reach the control panel of the MASTER boiler.
- Access the TECHNICIAN MENU (see TECHNICIAN MENU in the boiler manual).
- Select "6. CASCADE" and press ok.
- Select "3. Autodetect cascade" and press ok.
- Press ok to activate cascade system self-configuration.

WARNING

At the end of this procedure, the MASTER boiler display will show an informative message about the number of boilers connected in cascade.
If this value does not correspond to the number of present generators, electrical connections must be checked and the auto-configuration procedure must be repeated.

WARNING

The auto-configuration procedure must be carried out upon first installation, after a change in the number of generators or in their order within the cascade sequence, or after a change in the MASTER generator parameter configuration.

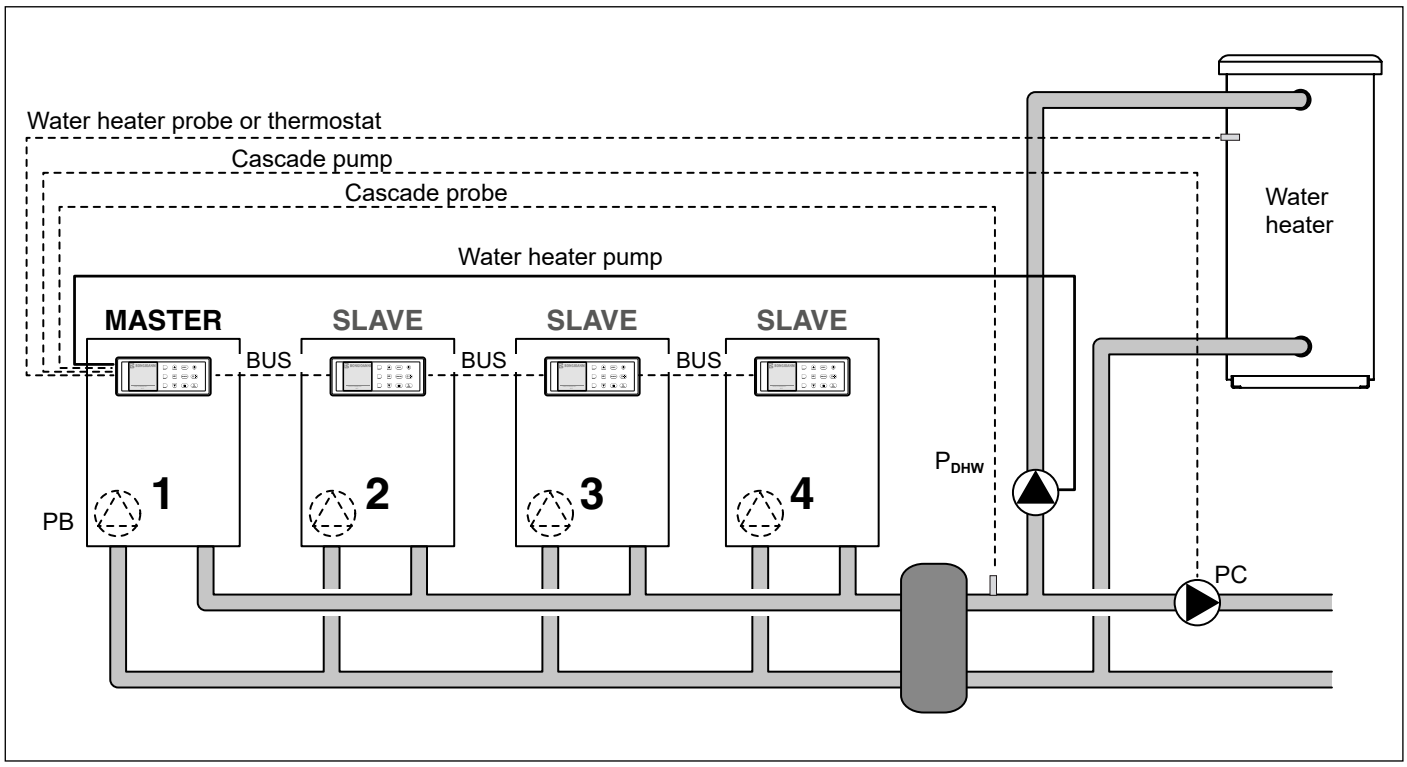
1.20.4 Examples of cascade systems

The operating logic of the cascade system is as follows: keep as many generators on as possible at the lowest possible heat output. To achieve this, ALL generators must be IDENTICAL (same Nominal Heat Output and Minimum Heat Output). In this case all generators in the cascade sequence respond to CH and DHW requests, with the suitable priority.

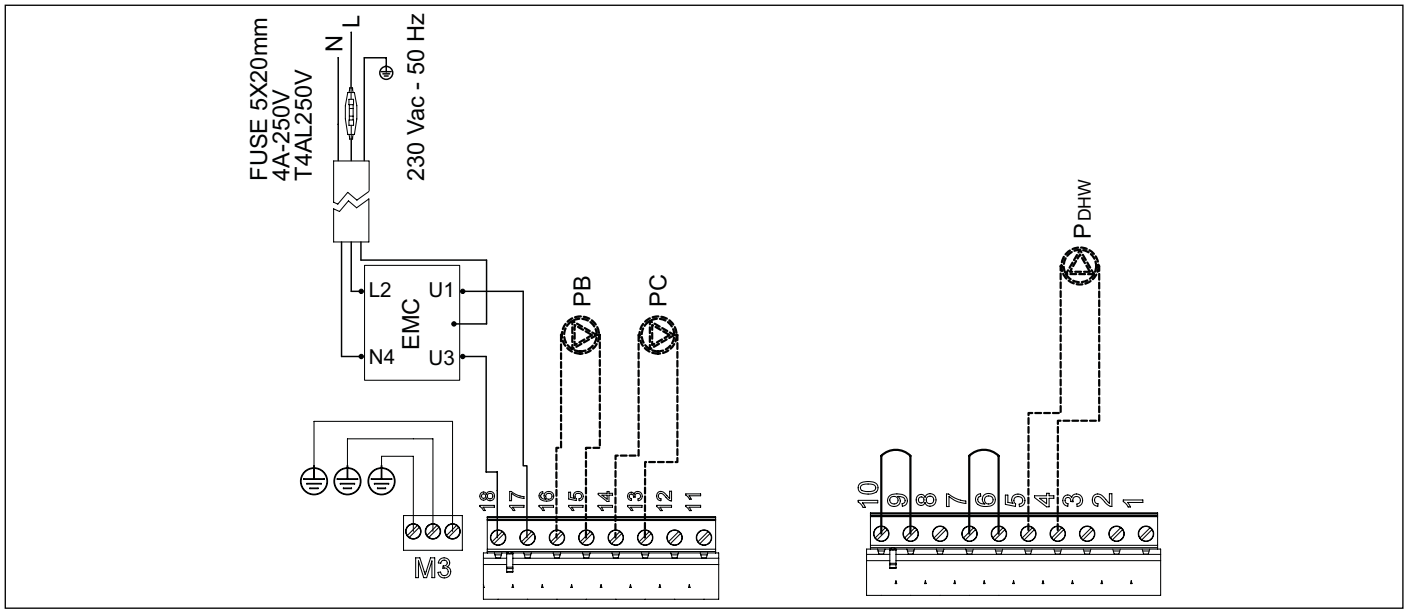
Below is an example of operation, considering a cascade sequence of 4 generators. The application of each operating logic requires that the relevant hydraulic configuration has been correctly implemented.

Example 1

4 generators having the same heat output (No 150 kW) and allocated to CH requests.



MASTER boiler electrical connections (loads):



Master boiler cascade configuration parameters:

- 6.1.2 Minimum modulation heat output: as defined in the table Tab. 28 Minimum modulation head output setting on page *80*
- 6.1.3 Individual burner heat output: 150
- 6.1.4 DHW boiler: 0

WARNING

In presence of boilers having different outputs, indicate the highest generator heat output in parameter 6.1.3.

1.20.5 Faulty cascade

In case of “failure” of one of the two SLAVE generators, which causes a lack of communication among the various boilers, it is necessary to exclude the generator from the cascade and restore the sequence by connecting the generator before the faulty one to the generator subsequent to the faulty one.

If MASTER generator needs to be excluded, disconnect the connection with the second generator (which is the first SLAVE), which will become the new MASTER.

All connections for cascade management (cascade thermostat and probe, water heater thermostat/probe etc.) must be moved onto it.

Once the electrical connections have been changed, proceed with the cascade system auto-configuration (see *Self-configuration*).

1.21 Decommissioning, disassembly and disposal

Warning

If you decide to definitively decommission the boiler, have decommissioning, disassembly and disposal procedures carried out by qualified personnel, only.
The user is not authorised to carry out such operations.

Decommissioning, disassembly and disposal operations must be performed with boiler cold and disconnected from gas and power mains.

The materials the boiler is made of can all be recycled.

Once disassembled, boiler must be disposed of in accordance with the national prevailing regulations.

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