

POWER EVO-X

Modular condensing high power boilers



Table of contents

POWER EVO-X (stand alone)	4
Technical data	4
Description and use of the boiler	9
Control panel	16
Flues gas discharge and air intake	17
POWER EVO-X system (cascade modules)	19
Minimum distances	30
Guide to the specifications	33

POWER EVO-X (stand alone)

POWER EVO-X is the wall-mounted modular condensing system that makes compactness its strong point. The horizontally developed stainless steel primary exchanger, with front accessibility to the combustion chamber, ensures high performance in terms of efficiency and reliability over time.

The range consists of 4 models in heating-only versions, with thermal modules from 34.9 up to 70 kW.

POWER EVO-X can be installed individually indoors or outdoors in a partially protected location, while up to 4 modules can be installed in cascade in the thermal system, either in a linear or back-to-back configuration.

The cascade system is managed by means of a simple and intuitive remote control that can manage, parameterize and display up to 4 cascaded modules and up to 6 additional independent zones.

- Designed to operate with mixtures of natural gas and hydrogen, up to a maximum of 20%.
- Modulation ratio 1:8 in single installation, up to 1:32 in battery installation.
- Modulating circulator with high head and low consumption.
- Maximum operating pressure 5 bar.
- Ease of installation.
- Wide range of accessories to complete single and cascade installation in both linear and back-to-back configurations.

Technical data

DESCRIPTION	U.M.	POWER EVO-X							
		50 DEP		50		65		80	
Type of gas		G20	G31	G20	G31	G20	G31	G20	G31
Gas category		II 2H3P appliance		II 2H3P appliance		II 2H3P appliance		II 2H3P appliance	
Destination country		IT		IT		IT		IT	
Installation type flue gas systems		B23P; B53P; C13,C13x; C33,C33x; C43,C43x; C53,C53x; C63,C63x; C83,C83x; C93,C93x							
HEATING									
Nominal heat flow rate (Hi)	kW	34,90		45,00		55,00		70,00	
Nominal heat output (80÷60°C)	kW	34,00		43,88		53,60		68,22	
Nominal heat output (50÷30°C)	kW	37,31		47,30		58,25		74,19	
Reduced heat flow rate (Hi)	kW	5,20	-	5,20	-	8,20	-	8,20	-
Reduced heat output (80÷60°C)	kW	4,98	-	4,98	-	7,87	-	7,87	-
Reduced heat output (50÷30°C)	kW	5,57	-	5,57	-	8,78	-	8,78	-
DOMESTIC WATER									
Nominal heat flow rate (Hi)	kW	34,90		45,00		55,00		70,00	
Nominal heat output	(*) kW	34,90		45,00		55,00		70,00	
Reduced heat flow rate (Hi)	kW	5,20	-	5,20	-	8,20	-	8,20	-
Reduced heat output	(*) kW	5,20	-	5,20	-	8,20	-	8,20	-
Modulating ratio		1:7		1:8		1:7		1:8	
EFFICIENCY									
Useful efficiency P max (80÷60°C)	%	97,4		97,5		97,5		97,5	
Useful efficiency P min (80÷60°C)	%	95,8		95,8		96,0		96,0	
Useful efficiency Pn max (50÷30°C)	%	106,9		105,1		105,9		106,0	
Useful efficiency Pn min (50÷30°C)	%	107,2		107,2		107,0		107,0	
Useful efficiency 30% (return 30°C)	%	108,2		107,9		107,6		107,5	
Chimney losses with burner on (Pn max)	%	2,38		2,35		2,41		2,44	
Chimney losses with burner off	%	0,06		0,05		0,04		0,03	
Shell losses with burner on (Pn max)	%	0,22		0,15		0,09		0,06	

DESCRIPTION	U.M.	POWER EVO-X							
		50 DEP		50		65		80	
Type of gas		G20	G31	G20	G31	G20	G31	G20	G31
FLUE GAS SYSTEMS									
NOx class - UNI EN 15502		6		6		6		6	
Residual head of concentric tubes 0,85 m Ø 60-100 mm	Pa	60		60		ND		ND	
Residual head of separate flues gas 0,5 m Ø80 mm	Pa	160		192		172		197	
Residual boiler head without pipes and without flange	Pa	166		198		180		200	
ELECTRICAL CHARACTERISTICS									
Max heating electric power	W	158		175		201		284	
Burner electrical power P max	W	60		77		113		196	
Electric power circulator max	W	98		98		88		88	
Electrical power circulator min	W	3		3		5		5	
Power supply	V - Hz	230-50		230-50		230-50		230-50	
Electrical protection level	IP	X5D		X5D		X5D		X5D	
HEATING OPERATION									
Maximum pressure	bar	5		5		5		5	
Minimum pressure for standard operation	bar	0,8		0,8		0,8		0,8	
Maximum temperature:	°C	90		90		90		90	
H ₂ O heating temperature selection range.	°C	20/45 - 20/90		20/45 - 20/90		20/45 - 20/90		20/45 - 20/90	
Pump: max head available to the system at flow rate of	mbar l/h	820 1000		820 1000		430 2500		430 2500	
AIR AND FLUES FLOW RATES									
Heating									
Air flow rate	Nm ³ /h	42,4	43,3	54,7	55,8	66,8	68,2	85,0	86,9
Flues flow rate	Nm ³ /h	45,9	46,0	59,2	59,3	72,3	72,5	92,0	92,3
Flue gas mass flow rate (max-min)	g / s	15,8-2,4	16,2-2,4	20,4-2,4	20,9-2,4	24,9-3,7	25,5-3,8	31,8-3,7	32,5-3,8
DOMESTIC WATER									
Air flow rate	Nm ³ /h	42,4	43,3	54,7	55,8	66,8	68,2	85,0	86,9
Flues flow rate	Nm ³ /h	45,9	46	59,2	59,3	72,3	72,5	92	92,3
Flue gas mass flow rate (max-min)	g / s	15,8-2,4	16,2-2,4	20,4-2,4	20,9-2,4	24,9-3,7	25,5-3,8	31,8-3,7	32,5-3,8
EMISSION VALUES AT MAX AND MIN FLOW RATE WITH G20 GAS (**)									
Maximum									
CO s.a. less than	p.p.m	120	130	150	160	170	170	220	230
CO ₂	%	9,0	10,0	9,0	10,0	9,0	10,0	9,0	10,0
NOx s.a. less than	p.p.m	50	50	60	60	50	50	60	60
Flues temperature	°C	68	66	71	73	66	70	70	76
Minimum									
CO s.a. less than	p.p.m	30	30	30	30	40	20	40	20
CO ₂	%	9,0	10,0	9,0	10,0	9,0	10,0	9,0	10,0
NOx s.a. less than	p.p.m	40	45	40	45	40	60	40	60
Flues temperature	°C	60	58	60	58	57	58	57	58

(*) Average value among the various operating conditions in DHW.

(**) Test performed with concentric flue gas Ø60-100 mm long. 0,85 m - water temperature 80±60°C.

Note

With reference to the Delegated Regulation (EU) No. 811/2013, the data represented in the table can be used for the completion of the product data sheet and labeling for room heating appliances, mixed heating appliances, assemblies of room heating appliances, temperature control devices and solar devices:

	BONUS	CLASS
EXTERNAL PROBE	2%	II
REMOTE CONTROL OT+	3%	V
OUTDOOR PROBE + REMOTE CONTROL OT+	4%	VI

ErP regulations technical data table

Parameter	Symbol	Unit	POWER EVO-X			
			50 DEP	50	65	80
Seasonal efficiency class in central heating mode	-	-	A	A	A	A
Seasonal efficiency class in water heating	-	-	ND	ND	ND	ND
Useful (rated) heat output	Pn	kW	34	44	54	68
Seasonal efficiency class in room heating mode	η_s	%	93	92	92	92
Useful heat output Pn						
At useful heat output and at high temperature capacity (*)	P4	kW	34,0	43,9	53,6	68,2
At 30% of useful heat output and at low temperature capacity P1 (HHV)	P1	kW	11,3	14,6	17,8	22,6
EFFICIENCY						
At useful heat output and at high temperature capacity (*)	η_4	%	87,7	87,8	87,8	87,8
At 30% of useful heat output and at low temperature capacity P1 (HHV)	η_1	%	97,4	97,2	96,9	96,8
Other parameters						
Thermal losses in Stand-by mode	Pstby	W	36,8	34,7	34,5	34,5
Pilot flame energy consumption	Pign	W	-	-	-	-
Yearly energy consumption	QHE	GJ	105	137	168	214
Noise level, indoor (sound power)	LWA	dB	57	60	57	61
Nitrogen oxide emissions (NOx)	NOx	mg/kWh	30	33	41	48
Domestic hot water						
Declared load profile			ND	ND	ND	ND
Energy efficiency class in water heating	η_{wh}	%	ND	ND	ND	ND
Daily electrical energy consumption	Qelec	kWh	ND	ND	ND	ND
Daily fuel consumption	Qfuel	kWh	ND	ND	ND	ND
Annual electrical energy consumption	AEC	kWh	ND	ND	ND	ND
Annual fuel consumption	AFC	GJ	ND	ND	ND	ND

(*) High temperature regime: 60°C return and 80°C boiler flow.

(*) Low temperature regime: for condensing boilers 30°C, for low temperature boilers 37°C, for other heating appliances 50°C return temperature.

11300-2 data - determination of generation losses - calculation method directive 92/42 EEC

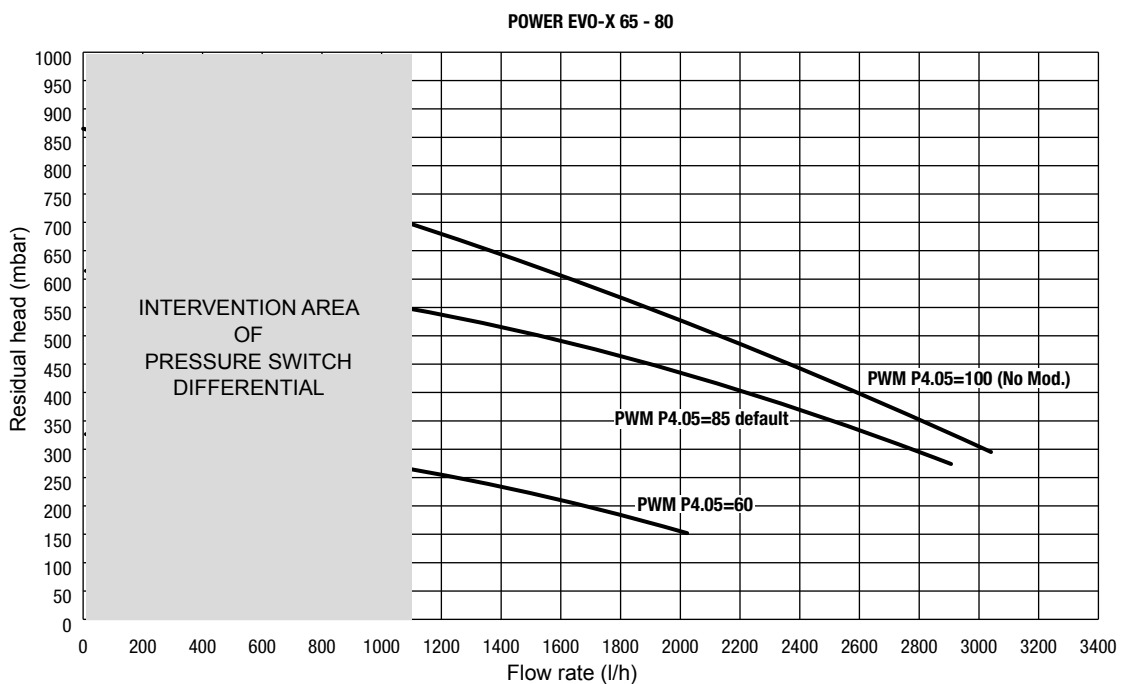
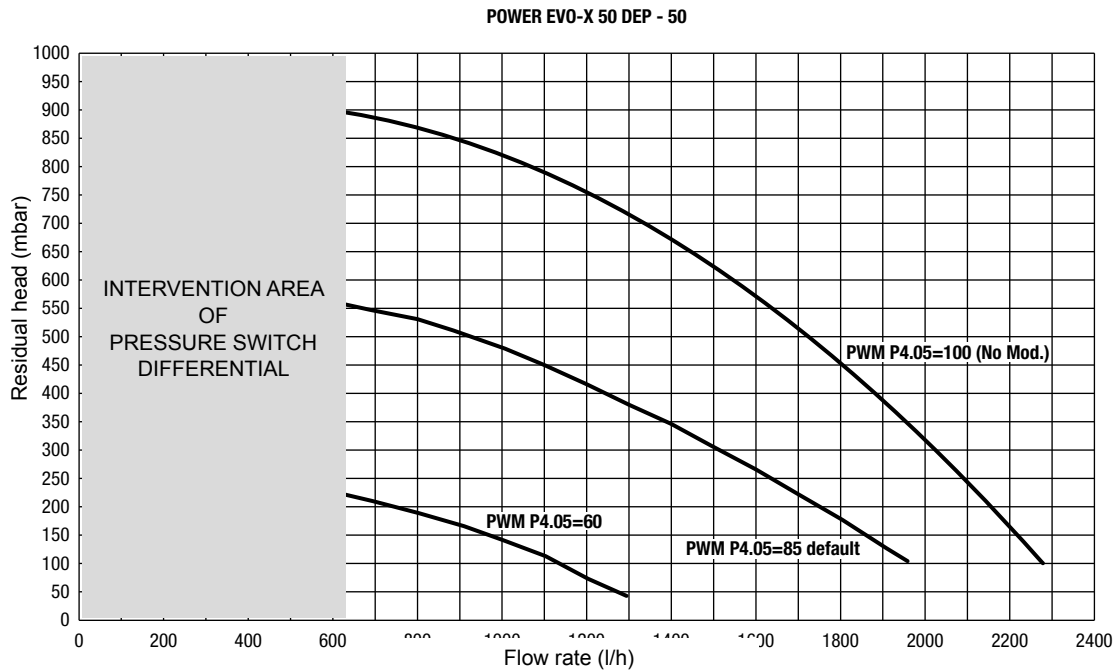
DESCRIPTION	SYMBOL	U.M.	POWER EVO-X			
			50 DEP	50	65	80
Nominal heat output	Fgn, Pn	kW	34,00	43,88	53,60	68,22
Efficiency at nominal power	hgn, pn	-	97,4	97,5	97,5	97,5
Average temperature at Pn	qgn,test,pn	°C	70	70	70	70
Useful heat output at 30%	Fint	kW	5,20	5,20	8,20	8,20
Efficiency at 30% heat output	hgn,Pint	-	108,2	107,9	107,6	107,5
Average temperature at intermediate P	qgn,test,Pint	°C	40	40	40	40
Power lost at zero load with Dqgn,test	Fgn,1,P0	W	36,8	34,7	34,5	34,5
Auxiliary power absorbed at nominal load	Wgn,aux,Pn	W	48	86	103,4	184,9
Auxiliary power input at intermediate load	Wgn,aux,Pint	W	13	15	21,1	25,6
Auxiliary power input at zero load	Wgn,aux,P0	W	3,8	3,8	3,8	3,8
Minimum generator return temperature	qgn,min	°C	20	20	20	20

Table Law 10

Description	Unit	POWER EVO-X			
		50 DEP	50	65	80
Maximum heating output					
Useful (80÷60°C)	kW	34,00	43,88	53,60	68,22
Useful (50÷30°C)	kW	37,31	47,30	58,25	74,19
Furnace	kW	34,90	45,00	55,00	70,00
Minimum heat output					
Useful (80÷60°C)	kW	4,98	4,98	7,87	7,87
Useful (50÷30°C)	kW	5,57	5,57	8,78	8,78
Furnace	kW	5,20	5,20	8,20	8,20
Efficiency					
Useful Pn max - Pn min (80÷60°C)	%	97,4	97,5	97,5	97,5
Useful Pn max - Pn min (50÷30°C)	%	106,9	105,1	105,9	106
Useful 30% Pn max (return 30°C)	%	108,2	107,9	107,6	107,5
Chimney losses with burner on (Pn max)	%	2,38	2,35	2,41	2,44
Chimney losses with burner off	%	0,06	0,05	0,04	0,03
Shell losses with burner on (Pn max)	%	0,22	0,15	0,09	0,06
Emission values at max and min flow rate with G20-G31 gas(*)					
Maximum					
CO s.a. less than	p.p.m.	120 - 130	150 - 160	170 - 170	220 - 230
CO ₂	%	9,0 - 10,0	9,0 - 10,0	9,0 - 10,0	9,0 - 10,0
NOx (EN 677)	p.p.m	50 - 50	60 - 60	50 - 50	60 - 60
Flues temperature	°C	68 - 66	71 - 73	66 - 70	70 - 76
Minimum					
CO s.a. less than	p.p.m.	30 - 30	30 - 30	40 - 20	40 - 20
CO ₂	%	9,0 - 10,0	9,0 - 10,0	9,0 - 10,0	9,0 - 10,0
NOx (EN 677)	p.p.m	40 - 45	40 - 45	40 - 60	40 - 60
Flues temperature	°C	60 - 58	60 - 58	57 - 58	57 - 58
NOx class		6	6	6	6
Electrical power (Pel max heating-Pel max san.)	W	158	158	201	284

(**) Test performed with concentric flue gas ø60-100 mm long. 0,85 m - water temperature 80÷60°C.

Flow rate-head diagrams



Water in the heating systems

CHEMICAL-PHYSICAL CHARACTERISTICS

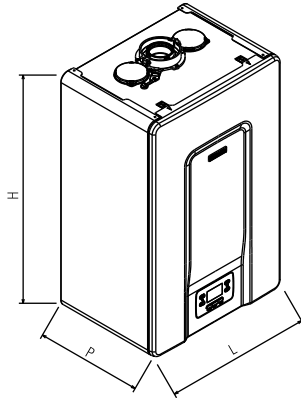
The chemical and physical characteristics of water must comply with European standard EN 14868 and the following table:

Parameters	U.M.	HEATING SYSTEM WATER	WATER FILLING
PH value		7-8	-
Hardness	°F	-	<15
appearance		-	clear
Fe	mg/kg	<0,5	-
Cu	mg/kg	<0,1	-

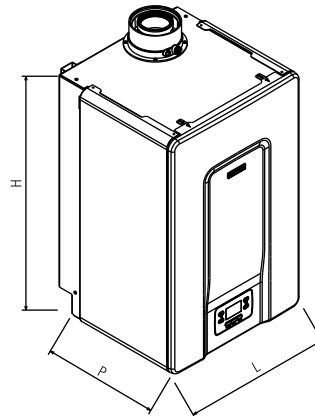
Description and use of the boiler

Overall dimensions and weights

POWER EVO-X 50 DEP - 50



POWER EVO-X 65 - 80



DESCRIPTION	U.M.	POWER EVO-X			
		50 DEP	50	65	80
L	mm	470	470	470	470
P	mm	350	350	443	443
H	mm	740	740	740	740
Net weight	kg	35	35	53,5	53,5

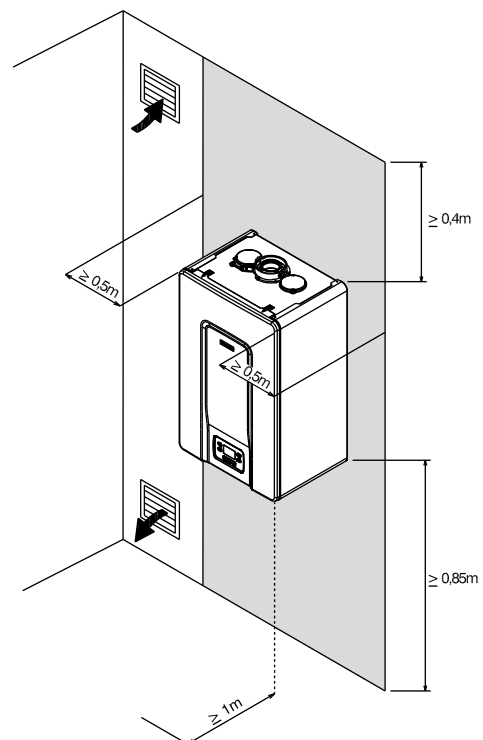
Minimum installation distances

The POWER EVO-X boiler can be installed in permanently ventilated rooms equipped with adequately sized ventilation openings that comply with the Technical Standards and Regulations in force at the site of installation.

The boiler can be installed indoors or outdoors in a partially protected place, i.e. in a place where it is not exposed to the direct action and infiltration of rain, snow or hail.

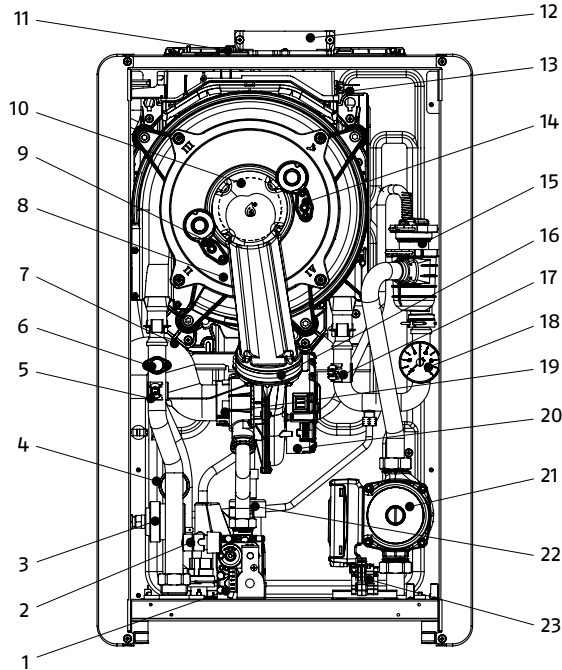
The temperature range in which it can operate is 0÷60°C.

Take into consideration the space required for accessibility to safety and adjustment devices and for carrying out maintenance operations.

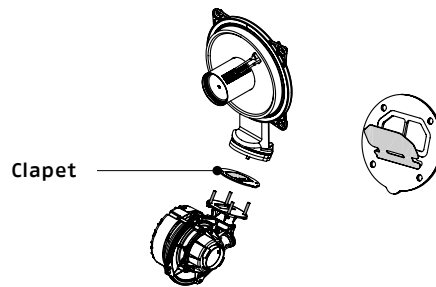


System layout

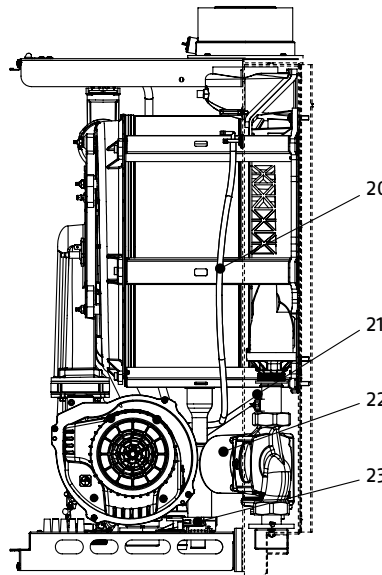
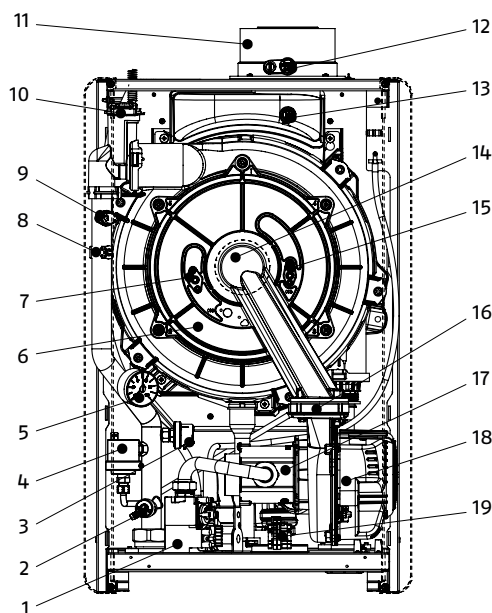
POWER EVO-X 50 DEP



- 1. Gas valve
- 2. air-vent clog
- 3. Differential heating pressure switch
- 4. Pressure transducer with minimum pressure function
- 5. Safety thermostat with manual reset via card reset
- 6. NTC flow probe
- 7. Air suction pipe
- 8. Heat exchanger
- 9. Detection electrode
- 10. Burner
- 11. Flue gas analysis socket cap
- 12. Flue gas exhaust
- 13. Flue gas probe
- 14. Ignition electrode
- 15. Air vent valve
- 16. Clapet
- 17. NTC return probe
- 18. Pressure gauge
- 19. Mixer
- 20. Fan
- 21. Pump
- 22. Siphon
- 23. Power connector



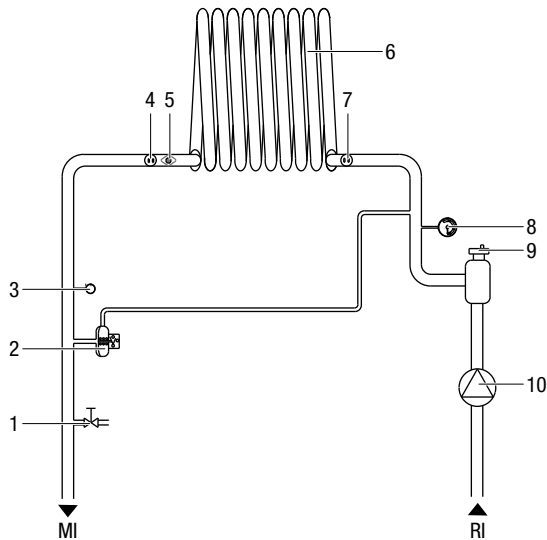
POWER EVO-X 65 - 80



- 1. Gas valve
- 2. air-vent clog
- 3. Pressure transducer with minimum pressure function
- 4. Heating pressure switch
- 5. Pressure gauge
- 6. Heat exchanger
- 7. Detection electrode
- 8. NTC flow probe
- 9. Safety thermostat with manual reset via card reset
- 10. Air vent valve
- 11. Flue gas exhaust
- 12. Flue gas analysis socket cap
- 13. Flue gas probe
- 14. Burner
- 15. Ignition electrode
- 16. Clapet
- 17. Mixer
- 18. Fan
- 19. Power wiring
- 20. Atmospheric tube
- 21. NTC return probe
- 22. Pump
- 23. Siphon

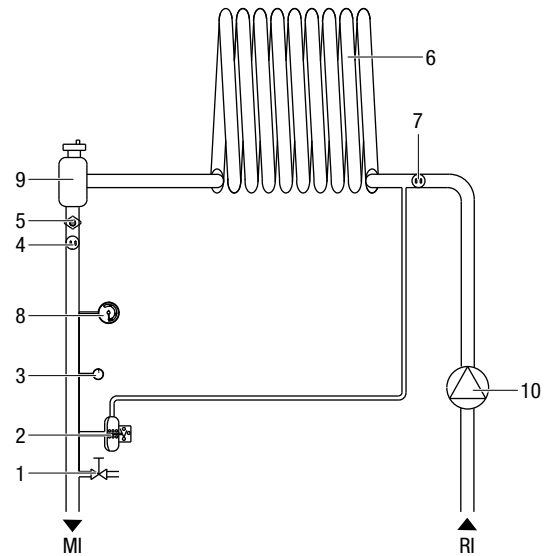
Hydraulic circuit and connections

POWER EVO-X 50 DEP - 50



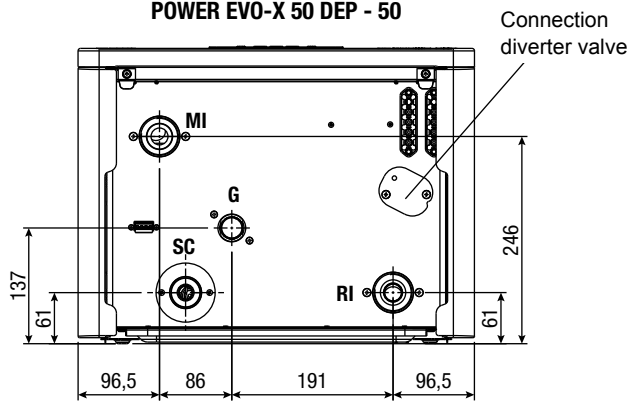
- RI - Heating return
- MI - Heating flow
- 1 - air-vent cock/boiler drain
- 2 - Heating pressure switch
- 3 - Pressure transducer
- 4 - Delivery probe

POWER EVO-X 65 - 80

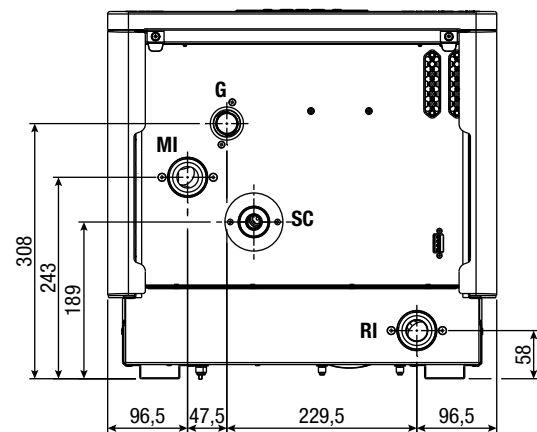


- 5 - Safety Thermostat
- 6 - Heat exchanger
- 7 - Return probe
- 8 - Pressure gauge
- 9 - Air vent valve
- 10 - Pump

POWER EVO-X 50 DEP - 50



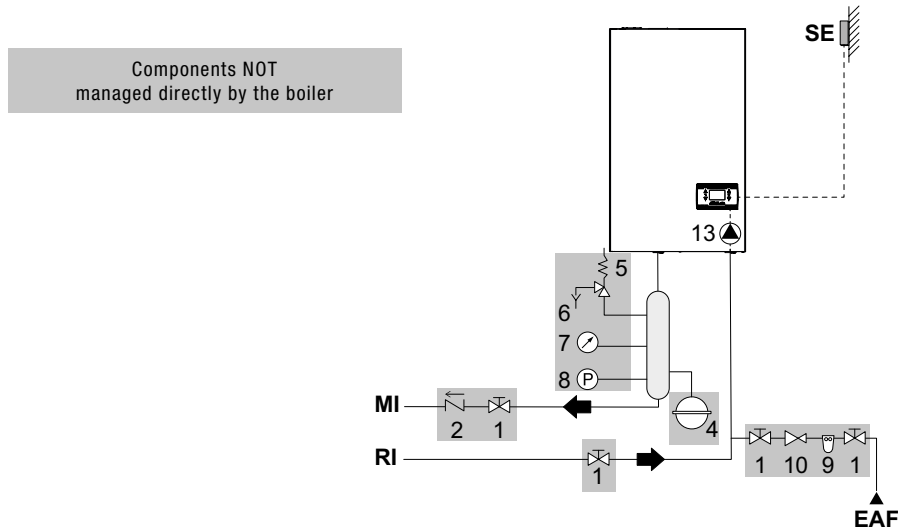
POWER EVO-X 65 - 80



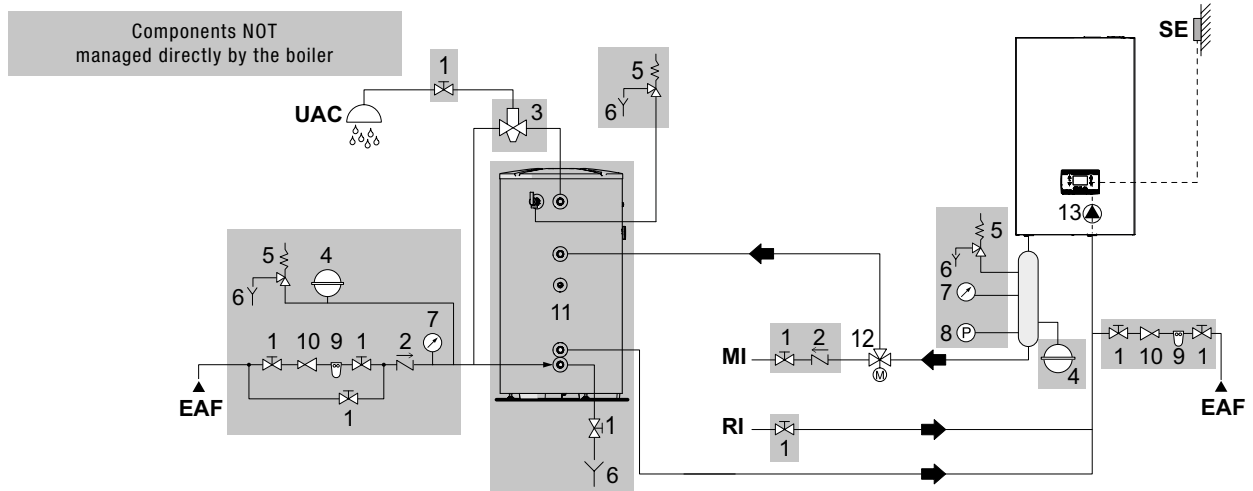
DESCRIPTION	U.M.	POWER EVO-X			
		50 DEP	50	65	80
MI (heating flow)	∅	G 1" 1/2 M	G 1" 1/2 M	G 1" 1/2 M	G 1" 1/2 M
RI (heating return)	∅	G 1" 1/2 M	G 1" 1/2 M	G 1" 1/2 M	G 1" 1/2 M
SC (condensate drain)	∅ mm	25	25	25	25
G (gas inlet)	∅	G 3/4" M	G 3/4" M	G 3/4" M	G 3/4" M
Diverter valve connection	∅	G 1" 1/2 M	G 1" 1/2 M	-	-

Principle plumbing systems

Scheme 1: circuit with boiler connected directly with heating system (check that the pump head is sufficient to ensure adequate circulation)



Scheme 2: circuit with boiler connected directly with heating system and DHW tank (check that the pump head is sufficient to ensure adequate circulation)



- 1. Sectioning valve
- 2. Non-return valve
- 3. Anti-burn mixing valve
- 4. Expansion vessel
- 5. Safety valve
- 6. Discharge
- 7. Pressure gauge
- 8. Minimum pressure switch
- 9. Softener filter
- 10. Pressure reducer
- 11. Tank
- 12. Diverter valve
- 13. Boiler pump
- SE External probe
- MI High temperature system flow
- RI High temperature system return
- EAF Cold water inlet
- UAC Domestic hot water outlet

⚠ The DHW and heating systems must be completed with expansion vessels of adequate capacity and appropriate safety valves correctly sized. The discharge of the safety valves and appliances must be connected to an appropriate collection and evacuation system (see the Product Catalog for matching accessories).

⚠ The choice and installation of the system components is in charge to the installer, who must operate according to the rules of good technique and regulations in force.

⚠ Particular supply/replenishment waters must be conditioned with appropriate treatment systems.

⊖ It is forbidden to operate the boiler and circulators without water.

⚠ Diverter valve (12) in POWER EVO X 50 DEP-50 models can be installed in the boiler

Diagram 3: circuit with boiler connected to the heating system via separator.

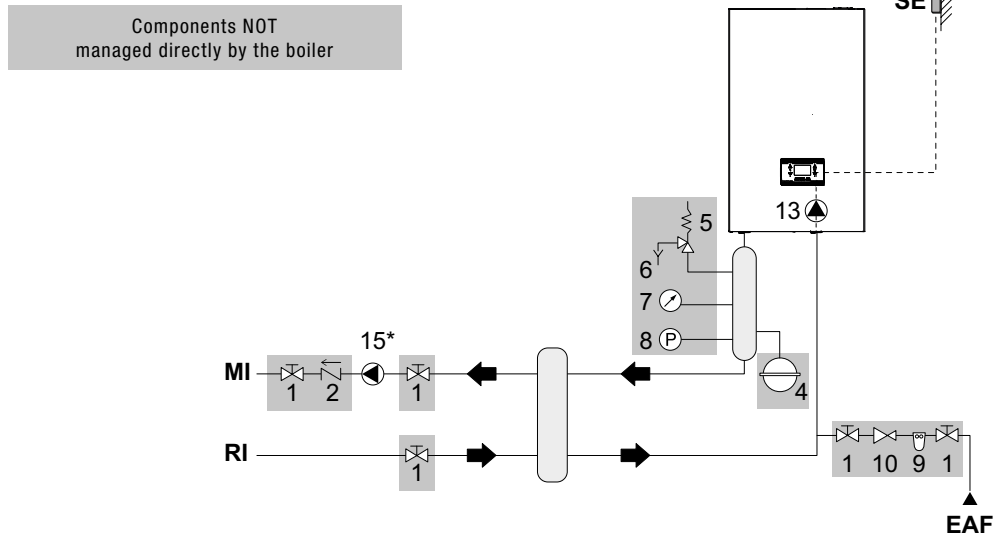
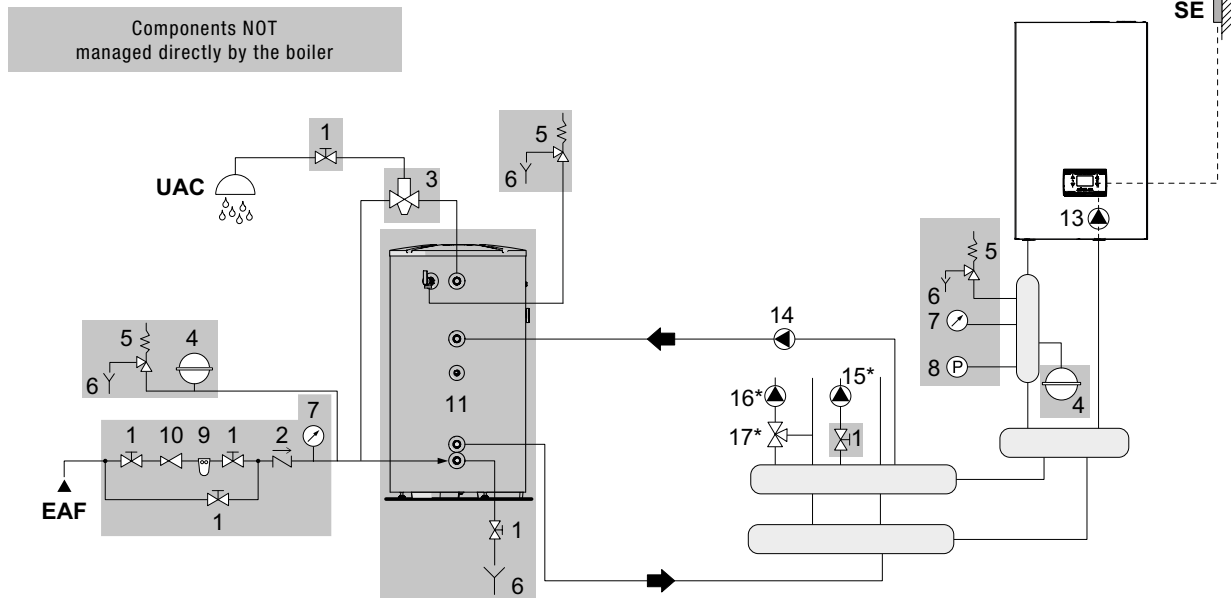


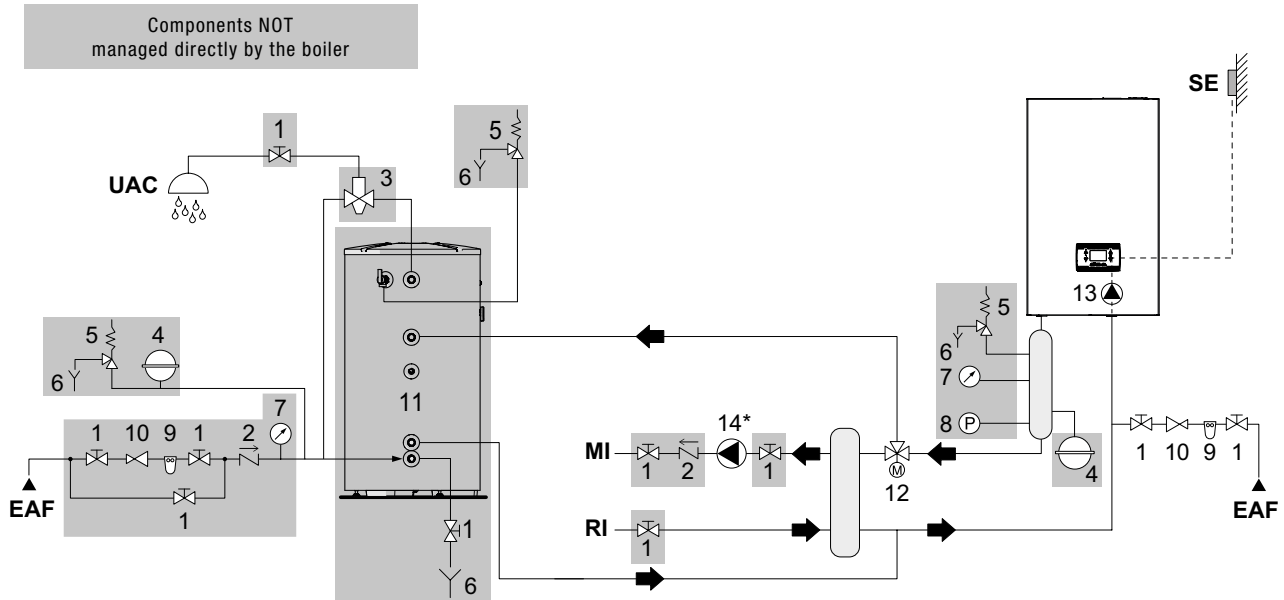
Diagram 4: circuit with boiler connected to DHW tank and with heating system via separator.



- | | |
|-----|---|
| 1. | Sectioning valve |
| 2. | Non-return valve |
| 3. | Anti-burn mixing valve |
| 4. | Expansion vessel |
| 5. | Safety valve |
| 6. | Discharge |
| 7. | Pressure gauge |
| 8. | Minimum pressure switch |
| 9. | Softener filter |
| 10. | Pressure reducer |
| 11. | Tank |
| 12. | Diverter valve |
| 13. | Boiler pump |
| 14. | Tank circulator |
| 15. | Direct zone circulator (*managed by boiler with specific accessory) |
| 16. | Mixed zone circulator (*managed by boiler with specific accessory) |
| 17. | Mixer valve (*managed by boiler with specific accessory) |
| SE | External probe |
| MI | High temperature system flow |
| RI | High temperature system return |
| EAF | Cold water inlet |
| UAC | Domestic hot water outlet |

- The DHW and heating systems must be completed with expansion vessels of adequate capacity and appropriate safety valves correctly sized. The discharge of the safety valves and appliances must be connected to an appropriate collection and evacuation system (see the Product Catalog for matching accessories).
- The choice and installation of the system components is in charge to the installer, who must operate according to the rules of good technique and regulations in force.
- Particular supply/replenishment waters must be conditioned with appropriate treatment systems.
- It is forbidden to operate the boiler and circulators without water.

Diagram 5: circuit with boiler connected to heating system and DHW tank via separator.



- | | |
|-----|---|
| 1. | Sectioning valve |
| 2. | Non-return valve |
| 3. | Anti-burn mixing valve |
| 4. | Expansion vessel |
| 5. | Safety valve |
| 6. | Discharge |
| 7. | Pressure gauge |
| 8. | Minimum pressure switch |
| 9. | Softener filter |
| 10. | Pressure reducer |
| 11. | Tank |
| 12. | Diverter valve |
| 13. | Pump |
| 14. | High temperature system circulator (*managed by boiler with specific accessory) |
| SE | External probe |
| MI | High temperature system flow |
| RI | High temperature system return |
| EAF | Cold water inlet |
| UAC | Domestic hot water outlet |

- The DHW and heating systems must be completed with expansion vessels of adequate capacity and appropriate safety valves correctly sized. The discharge of the safety valves and appliances must be connected to an appropriate collection and evacuation system (see the Product Catalog for matching accessories).
- The choice and installation of the system components is in charge to the installer, who must operate according to the rules of good technique and regulations in force.
- Particular supply/replenishment waters must be conditioned with appropriate treatment systems.
- It is forbidden to operate the boiler and circulators without water.
- Diverter valve (12) in POWER EVO X 50 DEP-50 models can be installed in the boiler

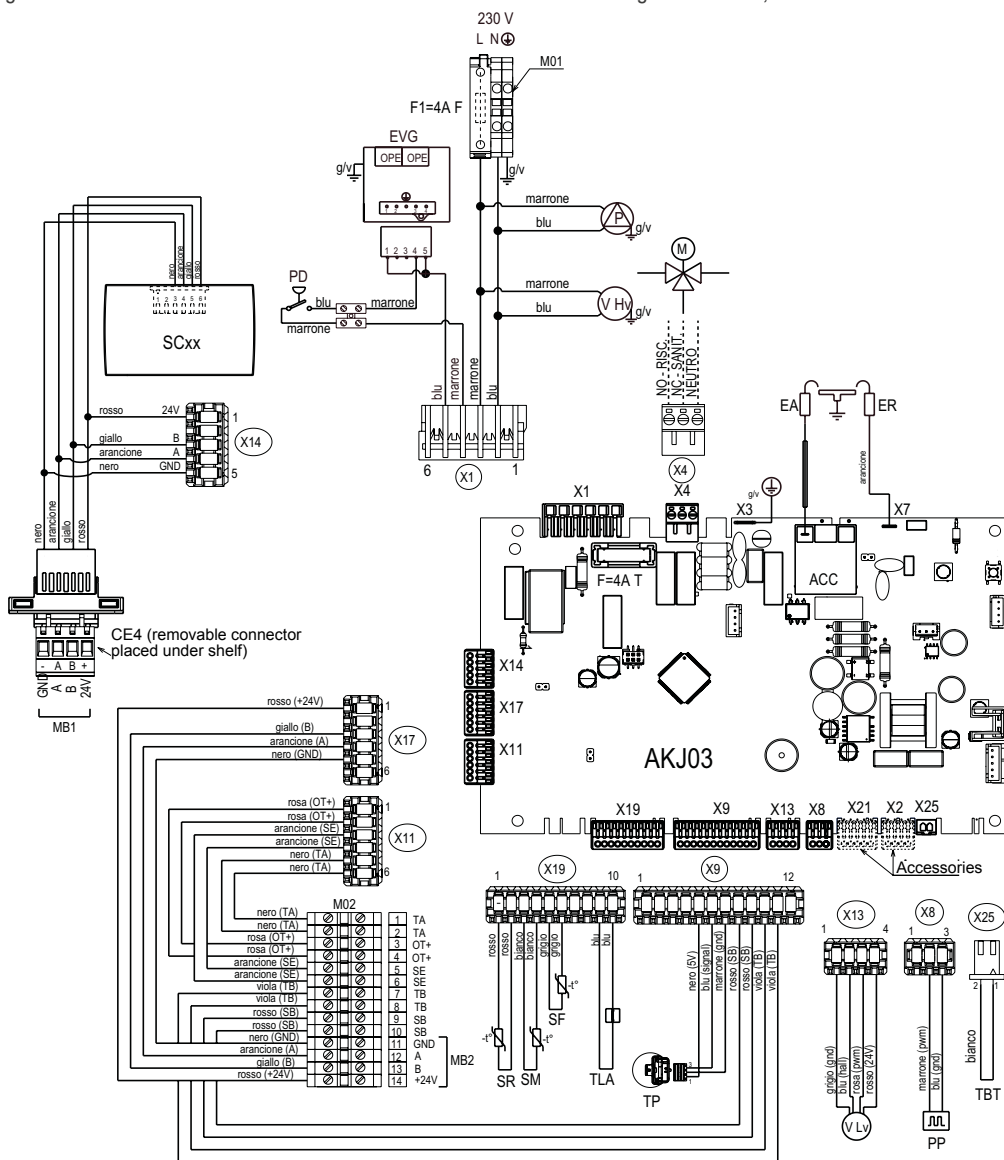
Electrical wiring

The POWER EVO-X thermal module is supplied completely wired and only requires connection to the electrical power supply and to the system components.

The use of an omnipolar magnetothermic switch, line disconnector, compliant with CEI-EN Standards (contact opening of at least 3 mm) is mandatory. The power cable is not supplied as standard. The connection to the electricity network must be made using cables (harmonized by CEI 20-27 standard) of the FROR 3G1.5 type or equivalent.

It is also recommended to respect the phase-neutral (LN) connection.

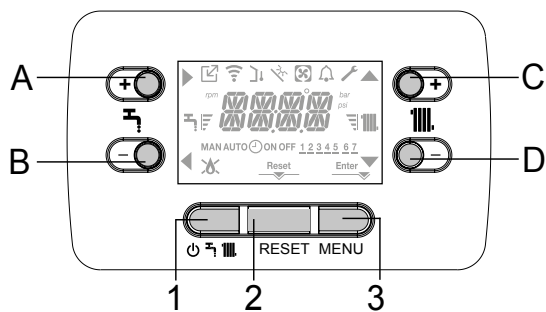
For low voltage connections it is recommended to use conductors with a section no greater than 0,5 mm².



- | | | | | | |
|-------|--|------|--|-----|--|
| AKJ03 | Control board with integrated ignition transformer | V Lv | PWM signal for fan control | SB | Storage tank probe |
| SC | User interface | TP | Pressure transducer | TB | Storage tank thermostat |
| F | 4A T fuse | SR | Return Probe | TA | Room thermostat |
| F1 | External fuse 4A F | SM | Flow probe | OT+ | Open Therm |
| X | Connection connectors | TLA | Safety thermostat | SE | External probe |
| ACC | Ignition transformer | SF | Flue gas probe | CE4 | Modbus connector 1 |
| EA | Ignition electrode | EVG | Gas valve | X4 | Connection for three-way hydraulic (can be supplied on request from Beretta Product Catalog) |
| ER | Detection electrode | M | Three-way valve | X2 | Alarm remoting (accessory) |
| PD | Differential pressure switch | M01 | Power terminal block (high) | X21 | Zone valve or additional pump (accessory) |
| V Hv | 230 V fan power supply | M02 | Terminal block connecting external (low) utilities | | |
| P | Pump | MB1 | Modbus 1: controls/wifi key | | |
| PP | PWM signal for pump control | MB2 | Modbus 2: cascades | | |

Control panel

The control panel has the function of a machine interface, displaying system-related settings and making it possible to access parameters. The display normally shows the temperature of the delivery probe unless a DHW request is in progress, in this case the DHW probe temperature is displayed; after 60 seconds of not touching any button the interface displays the current time (backlighting off). The configuration MENU is organized according to a multi-level tree structure. An access level has been defined for each sub-menu: USER level always available; TECHNICAL level protected by password. Some of the information may not be available depending on access level, machine status or system configuration.



- A** It is normally used to increase the domestic hot water temperature value, when the arrow is highlighted ► instead it performs the confirmation function
- B** It is normally used to decrease the domestic hot water temperature value, when the arrow is highlighted ◀ performs the back\cancel function
- C** It is normally used to increase the heating water temperature value, when highlighted the arrow ▲ allows you to move within the P1 menu
- D** It is normally used to decrease the heating water temperature value, when highlighted the arrow ▼ allows you to move within the P1 menu
- A+C** Access the clock setting menu
- 1** Used to change the operating status of the boiler (OFF, SUMMER and WINTER)
- 2** Used to reset the alarm state or to interrupt the venting cycle
- 3** Used to access the INFO and menus **P1**. When the Enter icon appears on the display the key assumes the ENTER function and is used to confirm the value set during programming of a technical parameter
- 1+3** Key lock and unlock
- 2+3** When the boiler is in the OFF state it is used to activate the combustion analysis function (CO)

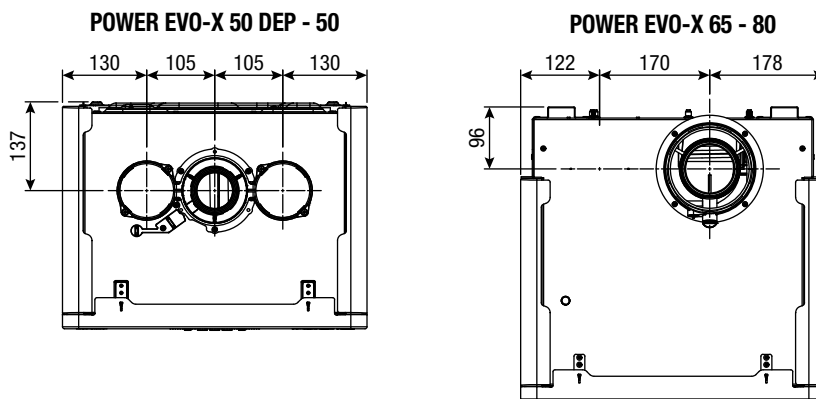
- Indicates connection to a remote device (OT+ or RS485)
- indicate connection to a WIFI device
- Indicates the presence of an external probe
- Indicates the activation of special DHW functions or the presence of a solar thermal system
- Icon that lights up when an alarm occurs
- In case of anomaly together with the icon , excluding flame and water alarms
- Indicates presence of flame, in case of flame block the icon appears
- Lights up in the presence of alarms that require manual unlocking by the operator
- Lights up when a confirmation operation is required
- When the icon is active, it indicates that the "confirm" function of the A button is active
- When the icon is active, it indicates that the "back\cancel" function of the B key is active
- When the icon is active, it is possible to navigate the menu or increase the value of the selected parameter
- When the icon is active, it is possible to navigate the menu or decrease the value of the selected parameter
- The icon lights up if heating is active, flashes if heating request is in progress
- The icon lights up if DHW is active, flashes if DHW request in progress (*)
- They indicate the set set point level (1 notch minimum value, 4 notches maximum value)
- 1 2 3 4 5 6 7** Indicates the days of the week
- Not available on this model
- MAN ON** Not available on this model
- MAN OFF** Not available on this model

(*) with external DHW cylinder

Flues gas discharge and air intake

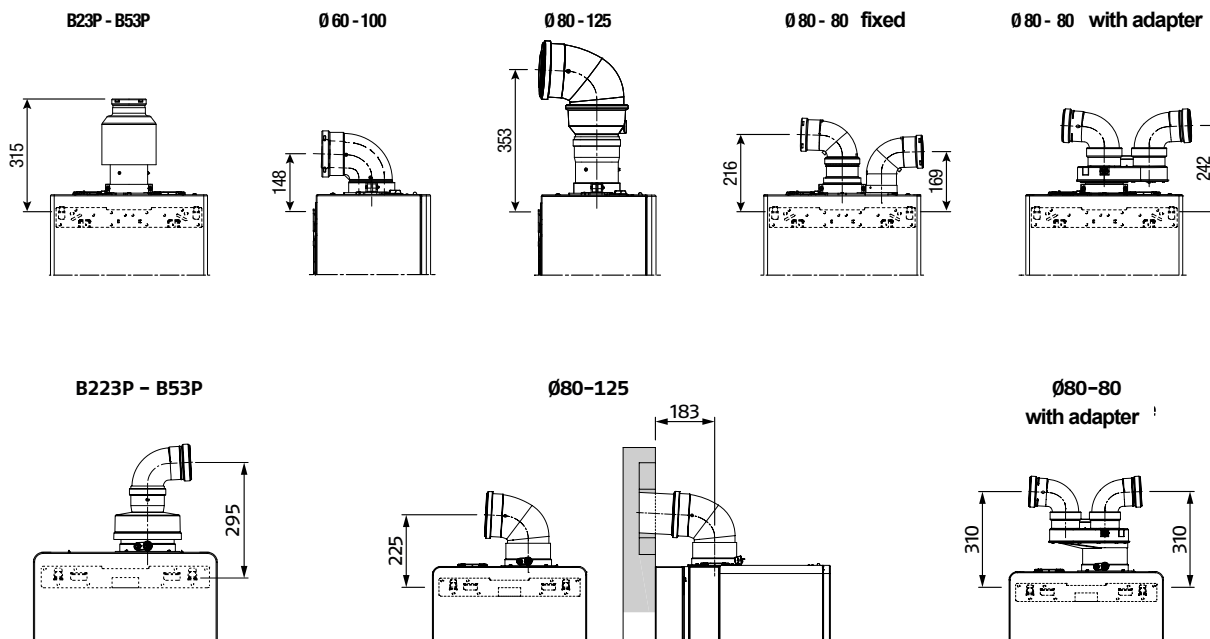
For the evacuation of burnt products, refer to the UNI7129-7131 standard. Furthermore, you must always comply with the local regulations of the Fire Brigade, the Gas Company and any municipal provisions.

It is essential for the extraction of fumes and the supply of combustion air to the boiler that only original pipes are used (except type C6 as long as they are certified) and that the connection is carried out correctly as indicated in the instructions supplied with the flue accessories. Multiple appliances can be connected to a single flue provided that they are all of the condensing type.



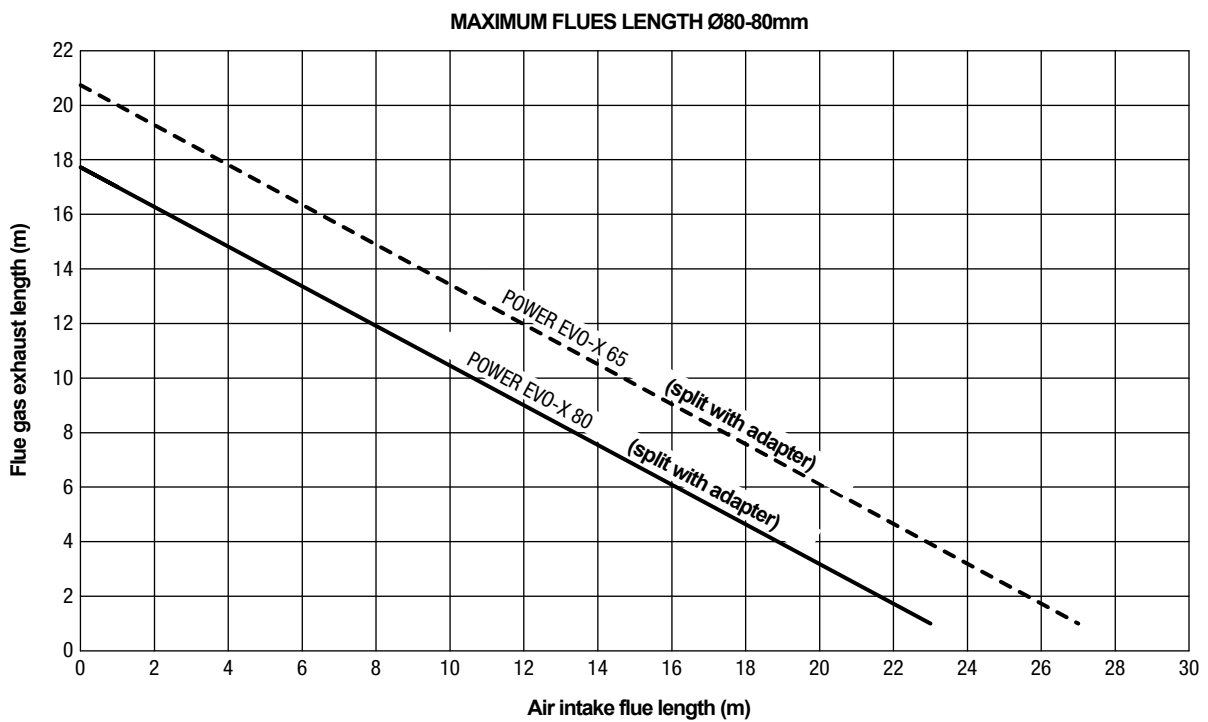
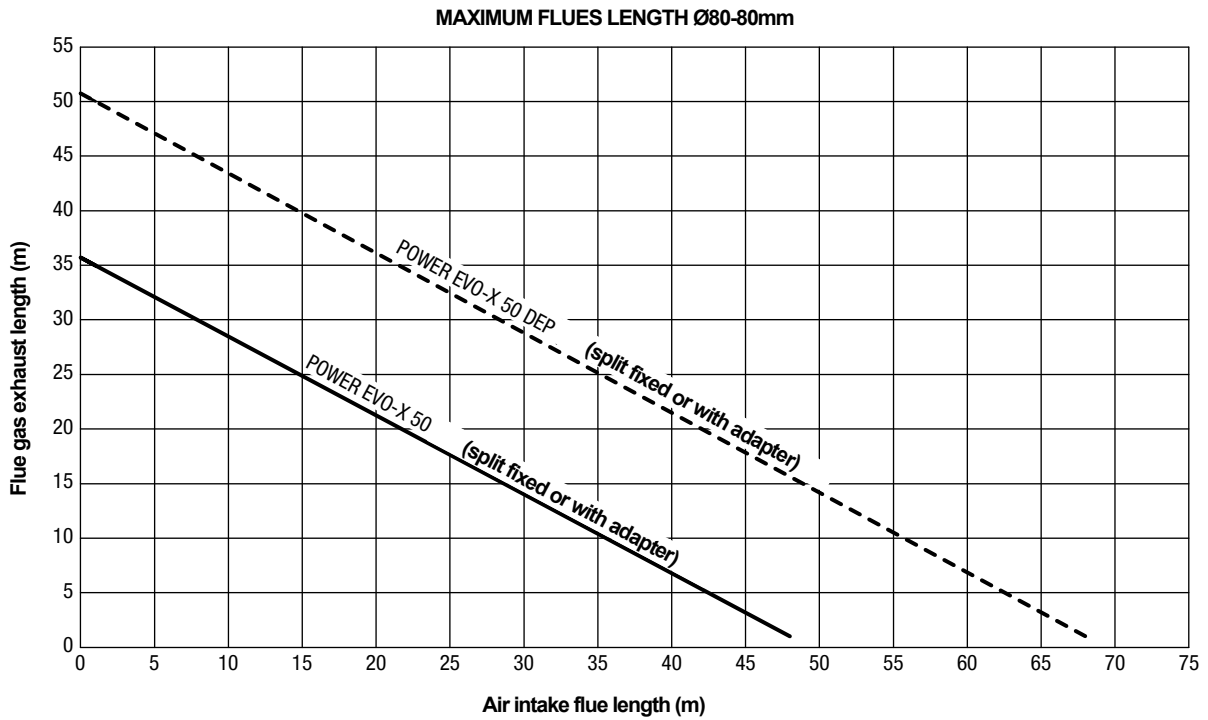
Types of discharge	Maximum straight length (m)				Pressure drops for insertion of each curve (m)	
	50 DEP	50	65	80	45°	90°
Pipes Ø 80 mm flue outlet ("forced open" installation) (type B23P-B53P)	48	33	17	13	1	1,5
Concentric flue Ø60-100 mm	10	10	10	10	1,3	1,6
Coaxial flue Ø80-125 mm	25	25	12+12	10+10	1	1,5
Twin flue Ø80 mm (fixed or with adapter)	30+30	21+21	-	-	1	1,5

POWER EVO-X 50 DEP - 50



Control panel

For the indication of the maximum lengths with SEPARATE FLUES Ø80-80 mm of the single pipe, refer to the following graphs.



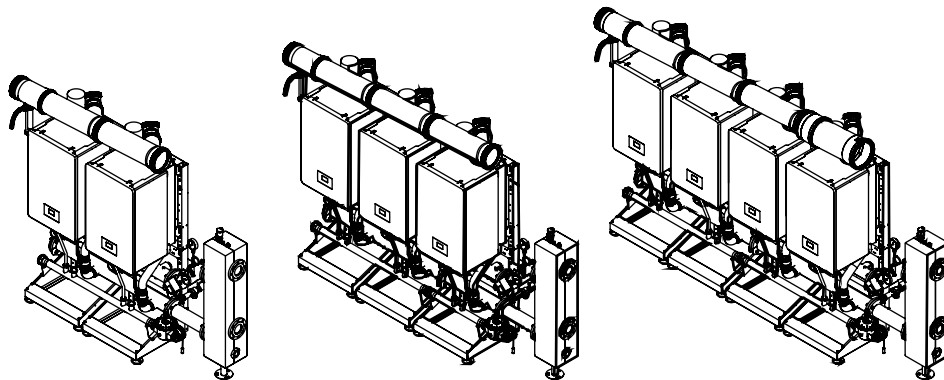
POWER EVO-X system (cascade modules)

POWER EVO-X can be cascaded with other generators to create modular thermal power plants, consisting of hydraulically connected thermal modules whose electronic controls communicate via bus. In fact, each thermal module is designed to be combined with other identical units, up to a maximum of 4 units and 272kW.

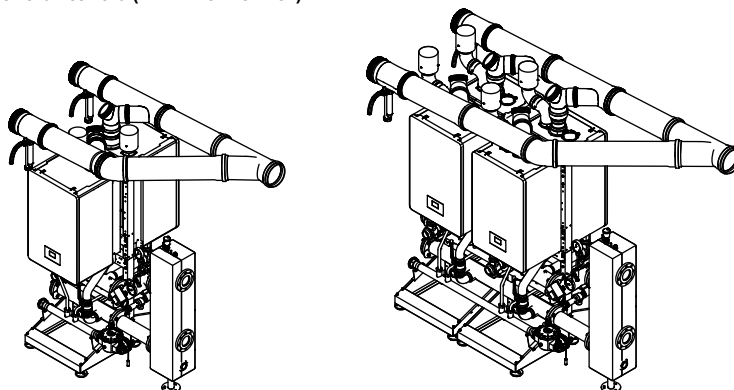
For each thermal module it is possible to configure the different types of installation linear (i.e. Front) or back to back (i.e. Back to Back). POWER EVO-X, in any power variant and number of thermal modules, can be assembled in left or right configuration.

- Service continuity is guaranteed by the system modularity: even in the case of a module failure, the overall operation it is not prejudiced
- The anti-freeze and anti-seize functions ensure operation in all weather conditions
- Maximum operating pressure: 5 bar.
- A wide range of accessories is available to ensure a simple, fast and complete cascade installation.

Disposizione in linea (FRONT)



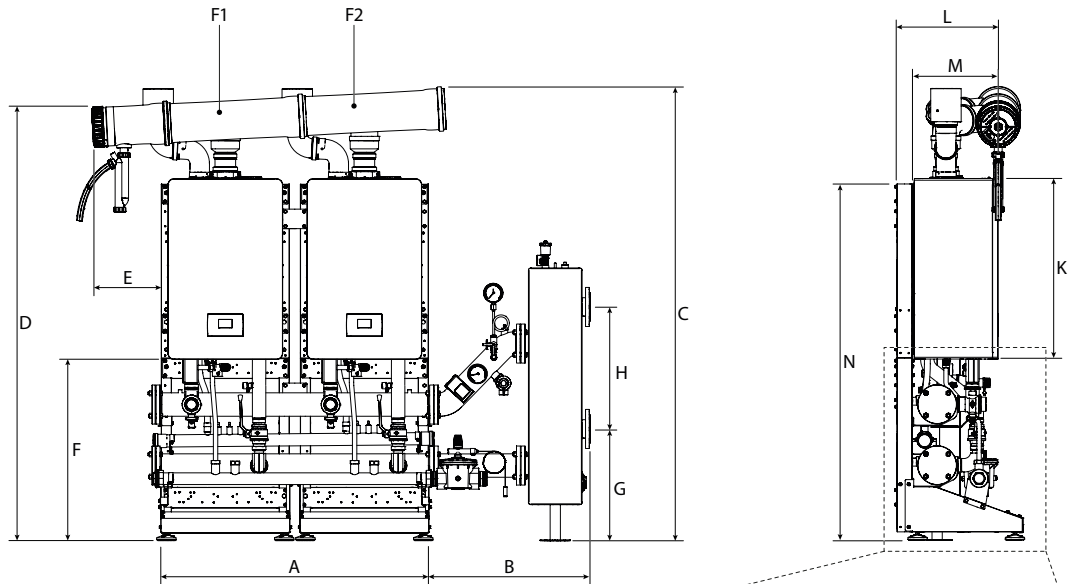
Disposizione schiena - schiena (B2B - BACK TO BACK)



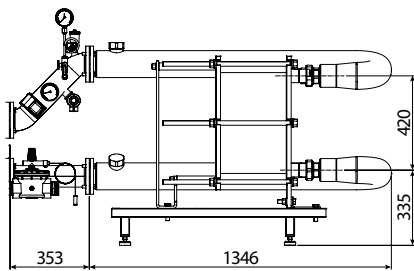
Model	POWER EVO-X			
	50 DEP	50	65	80
No. thermal modules	Total Cascade Power (kW)			
1	34,9	45	57	68
2	70	90	114	136
3	105	135	171	204
4	140	180	228	272

Cascade configurations

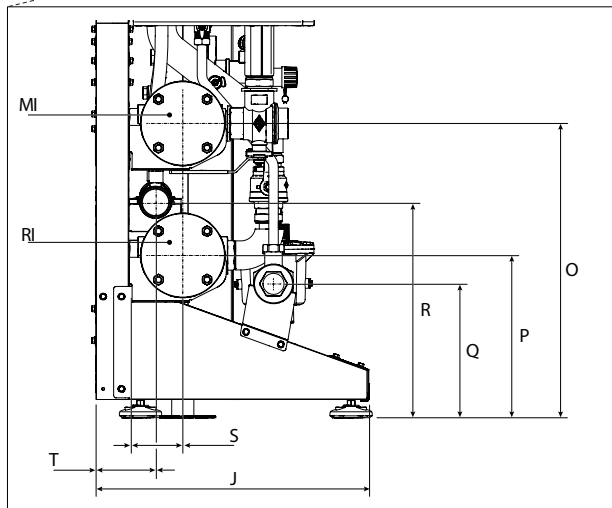
Linear cascade (FRONT) 2 modules - [35-45kW]



If the plate exchanger is present (instead of the hydraulic compensator), the reference dimensions are:



dimension B = 1,699 mm (instead of 658 mm).

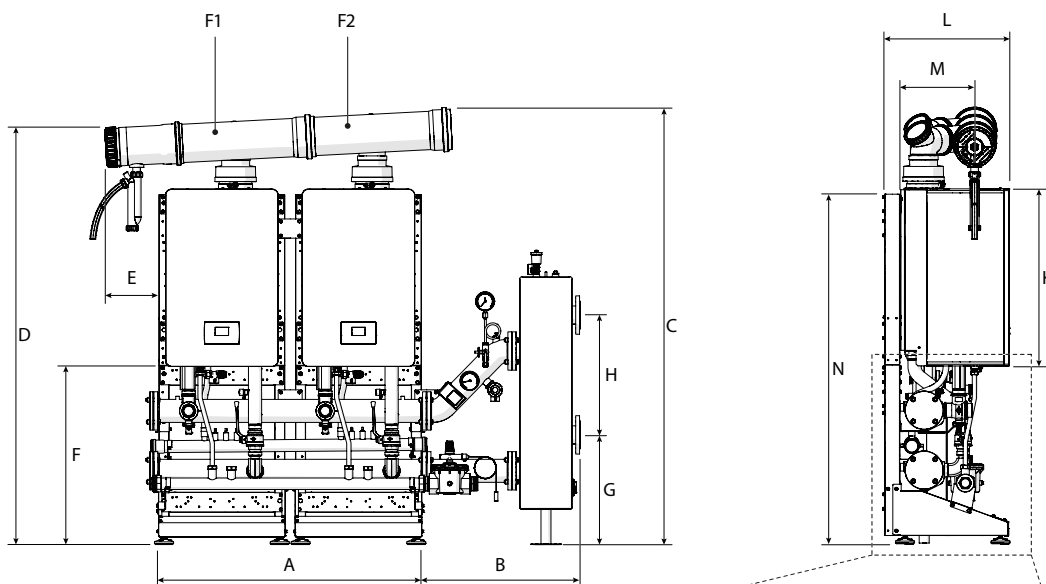


DESCRIPTION	A	B	C	D	E	F	G	H	J	K	L	M
POWER EVO-X 50 DEP	1100	658	1860	1777	285	743	457	500	525	740	423	351
POWER EVO-X 50	1100	658	1860	1777	285	743	457	500	525	740	423	351
UOM	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm

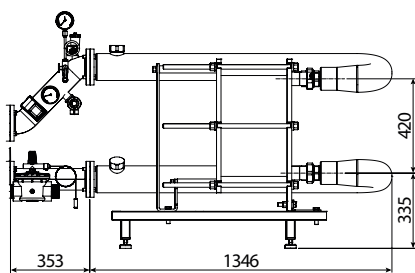
DESCRIPTION	N	O	P	Q	R	S	T	F1	F2	RI*	MI*
POWER EVO-X 50 DEP	1483	558	308	254	408	103	113	Ø160	Ø160	Ø2" ½	Ø2" ½
POWER EVO-X 50	1483	558	308	254	408	103	113	Ø160	Ø160	Ø2" ½	Ø2" ½
UOM	mm	mm	mm	mm	mm	mm	mm	mm	mm	inch	inch

* Primary and secondary flanges DN65 PN6 4 holes.

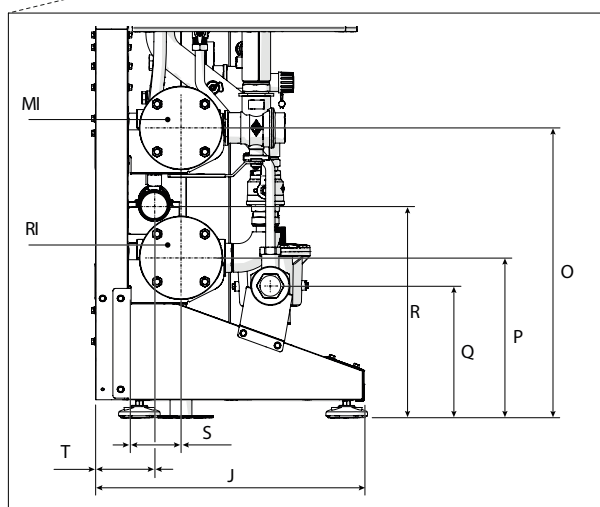
Linear cascade (FRONT) 2 modules - [55-70kW]



If the plate exchanger is present (instead of the hydraulic compensator), the reference dimensions are:



dimension B = 1,699 mm (instead of 658 mm).

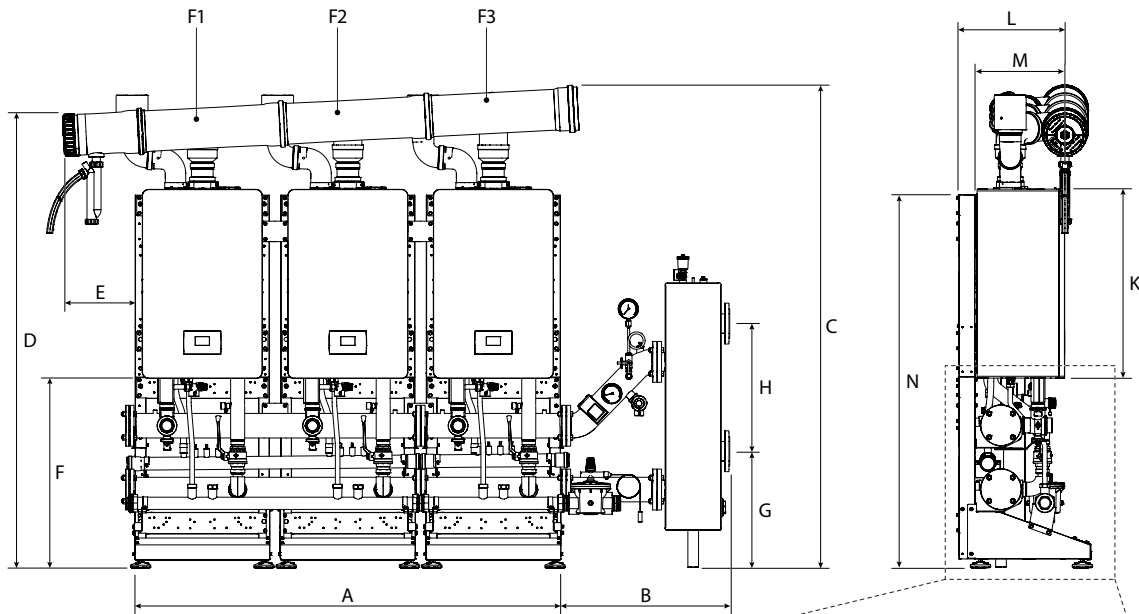


DESCRIPTION	A	B	C	D	E	F	G	H	J	K	L	M
POWER EVO-X 65	1100	658	1824	1740	226	743	457	500	525	740	516	312
POWER EVO-X 80	1100	658	1824	1740	226	743	457	500	525	740	516	312
UOM	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm

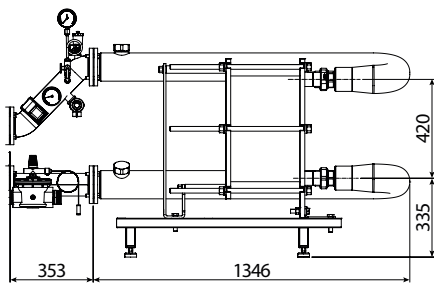
DESCRIPTION	N	O	P	Q	R	S	T	F1	F2	RI*	MI*
POWER EVO-X 65	1481	558	228	254	408	103	113	Ø160	Ø160	Ø2" ½	Ø2" ½
POWER EVO-X 80	1481	558	228	254	408	103	113	Ø160	Ø160	Ø2" ½	Ø2" ½
UOM	mm	mm	mm	mm	mm	mm	mm	mm	mm	inch	inch

* Primary and secondary flanges DN65 PN6 4 holes.

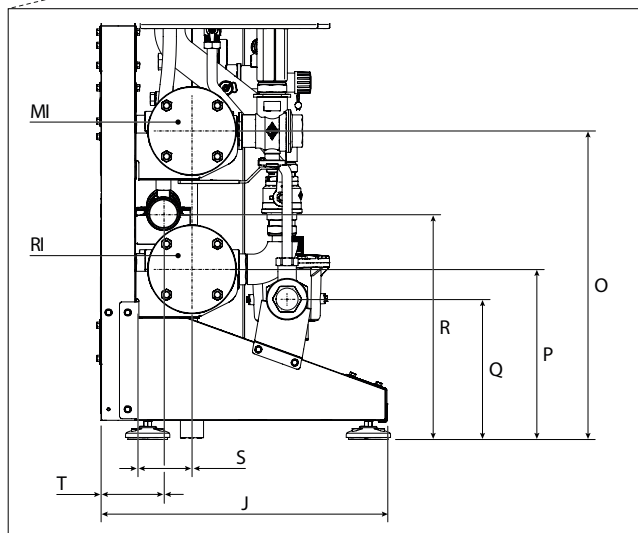
Linear cascade (FRONT) 3 modules - [35-45kW]



If the plate exchanger is present (instead of the hydraulic compensator), the reference dimensions are:



dimension B = 1,699 mm (instead of 658 mm).

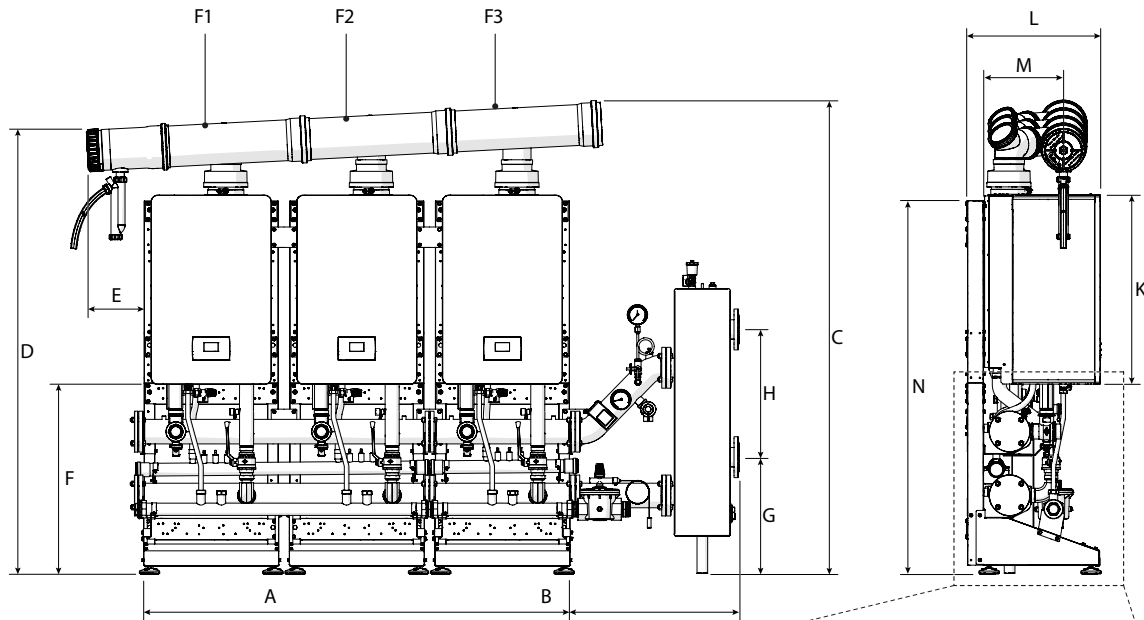


DESCRIPTION	A	B	C	D	E	F	G	H	J	K	L	M
POWER EVO-X 50 DEP	1670	658	1891	1777	285	743	457	500	525	740	423	351
POWER EVO-X 50	1670	658	1891	1777	285	743	457	500	525	740	423	351
UOM	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm

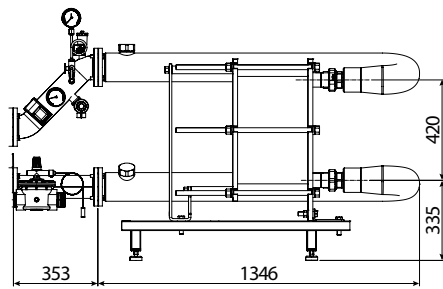
DESCRIPTION	N	O	P	Q	R	S	T	F1	F2	F3	RI*	MI*
POWER EVO-X 50 DEP	1483	558	308	254	408	103	113	Ø160	Ø160	Ø160	Ø2" ½	Ø2" ½
POWER EVO-X 50	1483	558	308	254	408	103	113	Ø160	Ø160	Ø160	Ø2" ½	Ø2" ½
UOM	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	inch	inch

* Primary and secondary flanges DN65 PN6 4 holes.

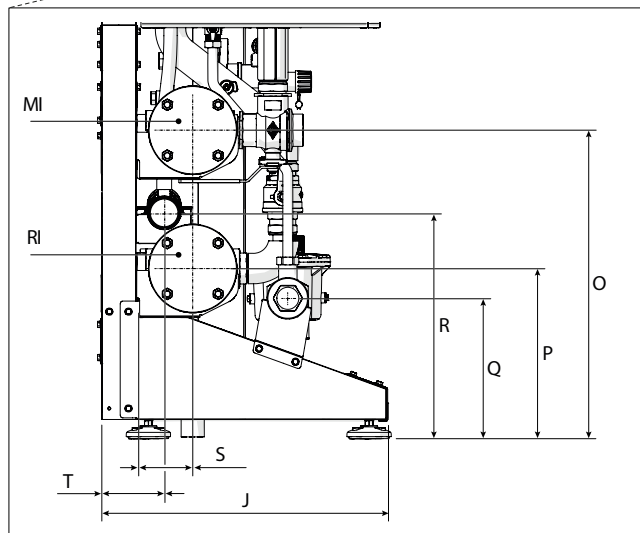
Linear cascade (FRONT) 3 modules - [55-70kW]



If the plate exchanger is present (instead of the hydraulic compensator), the reference dimensions are:



dimension B = 1,699 mm (instead of 658 mm).

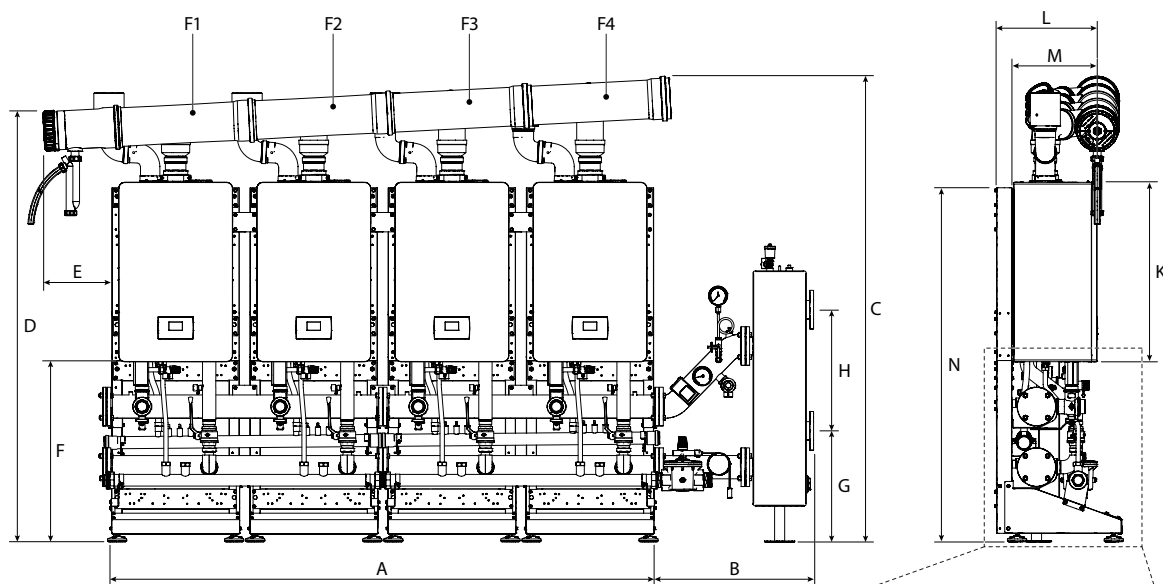


DESCRIPTION	A	B	C	D	E	F	G	H	J	K	L	M
POWER EVO-X 65	1670	658	1854	1740	226	743	457	500	525	740	516	312
POWER EVO-X 80	1670	658	1854	1740	226	743	457	500	525	740	516	312
UOM	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm

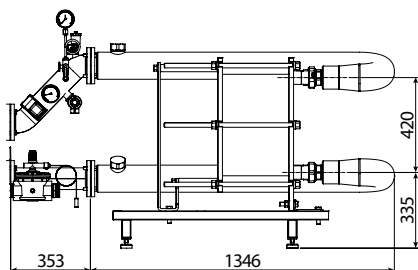
DESCRIPTION	N	O	P	Q	R	S	T	F1	F2	F3	RI*	MI*
POWER EVO-X 65	1481	558	228	254	408	103	113	Ø160	Ø160	Ø160	Ø2" ½	Ø2" ½
POWER EVO-X 80	1481	558	228	254	408	103	113	Ø160	Ø160	Ø160	Ø2" ½	Ø2" ½
UOM	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	inch	inch

* Primary and secondary flanges DN65 PN6 4 holes.

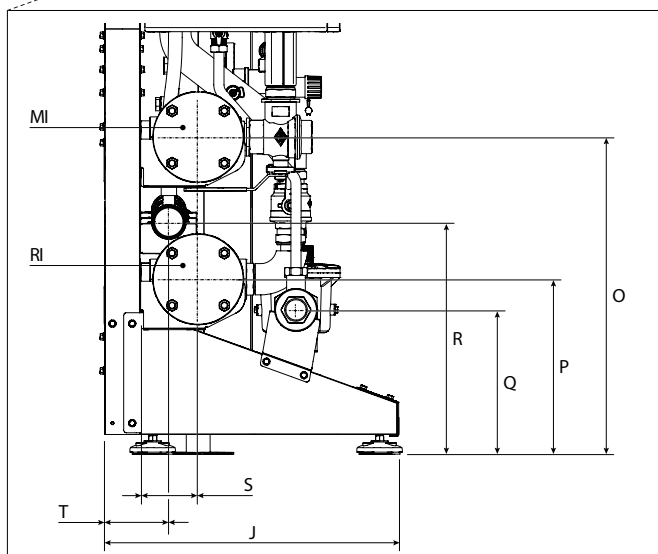
Linear cascade (FRONT) 4 modules - [35-45kW]



If the plate exchanger is present (instead of the hydraulic compensator), the reference dimensions are:



dimension B = 1,699 mm (instead of 658 mm).

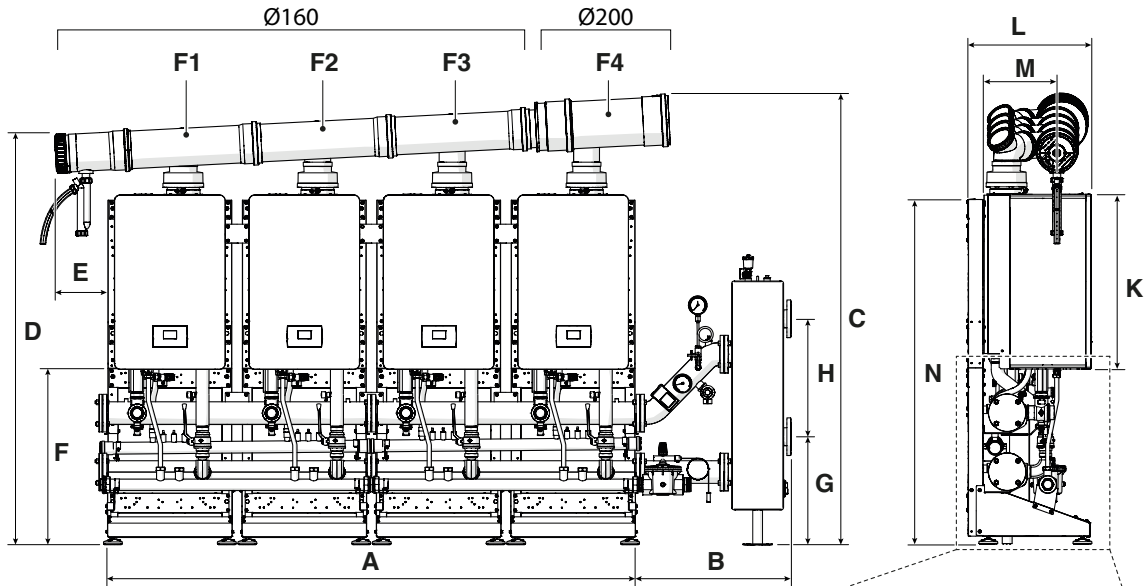


DESCRIPTION	A	B	C	D	E	F	G	H	J	K	L	M
POWER EVO-X 50 DEP	2240	658	1921	1777	285	743	457	500	525	740	423	351
POWER EVO-X 50	2240	658	1921	1777	285	743	457	500	525	740	423	351
UOM	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm

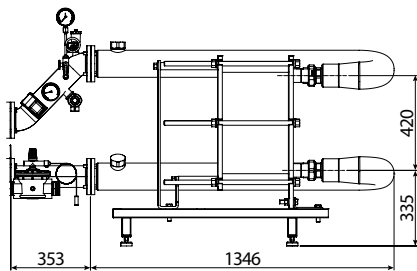
DESCRIPTION	N	O	P	Q	R	S	T	F1	F2	F3	F4	RI*	MI*
POWER EVO-X 50 DEP	1483	558	308	254	408	103	113	Ø160	Ø160	Ø160	Ø160	Ø2" ½	Ø2" ½
POWER EVO-X 50	1483	558	308	254	408	103	113	Ø160	Ø160	Ø160	Ø160	Ø2" ½	Ø2" ½
UOM	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	inch	inch

* Primary and secondary flanges DN65 PN6 4 holes.

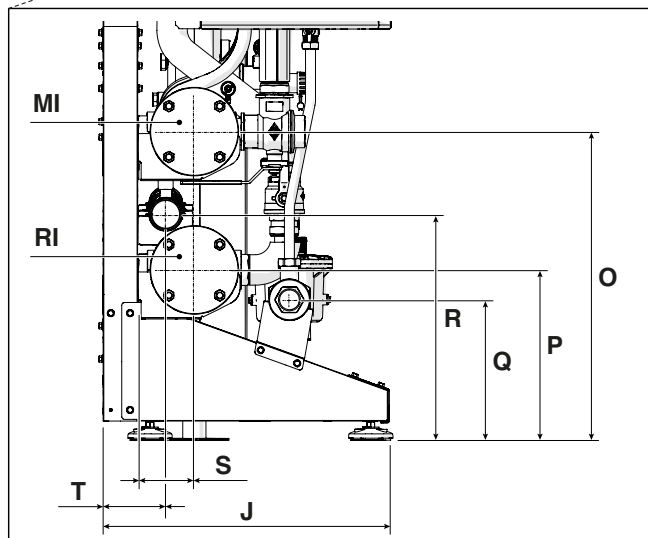
Linear cascade (FRONT) 4 modules - [55-70kW]



If the plate exchanger is present (instead of the hydraulic compensator), the reference dimensions are:



dimension B = 1,699 mm (instead of 658 mm).

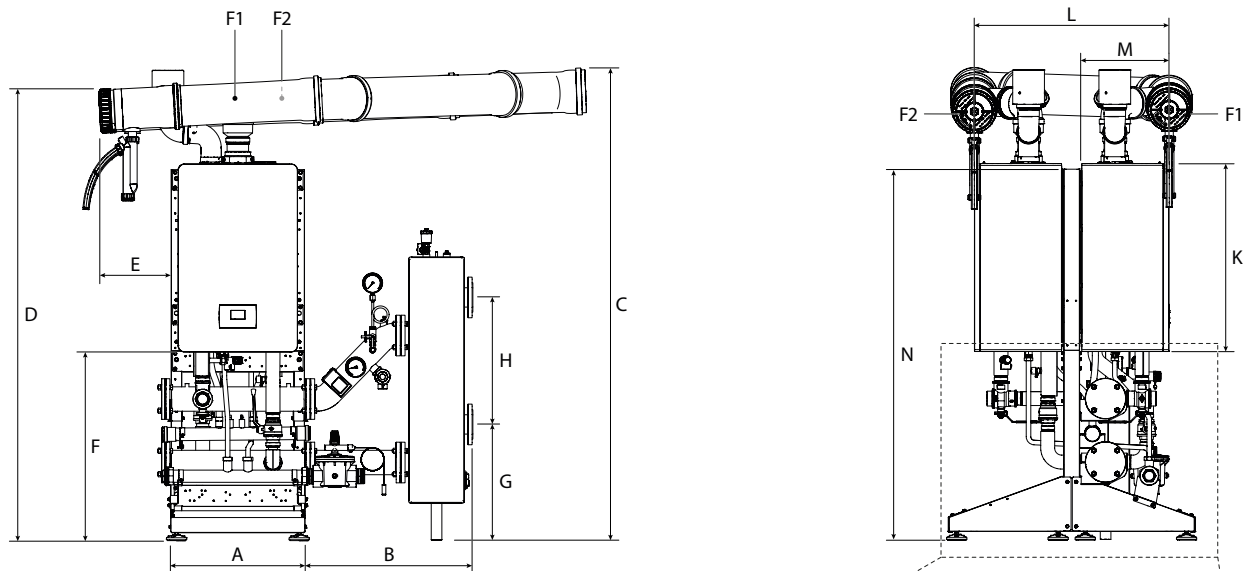


DESCRIPTION	A	B	C	D	E	F	G	H	J	K	L	M
POWER EVO-X 65	2240	658	1892	1740	226	743	457	500	525	740	516	312
POWER EVO-X 80	2240	658	1892	1740	226	743	457	500	525	740	516	312
UOM	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm

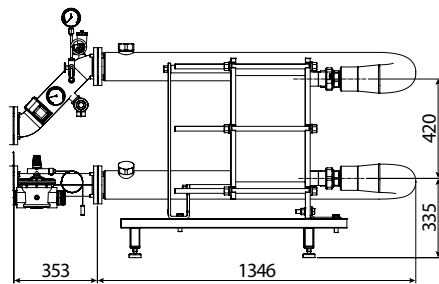
DESCRIPTION	N	O	P	Q	R	S	T	F1	F2	F3	F4	RI*	MI*
POWER EVO-X 65	1481	558	228	254	408	103	113	Ø160	Ø160	Ø160	Ø200	Ø2" ½	Ø2" ½
POWER EVO-X 80	1481	558	228	254	408	103	113	Ø160	Ø160	Ø160	Ø200	Ø2" ½	Ø2" ½
UOM	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	inch	inch

* Primary and secondary flanges DN65 PN6 4 holes.

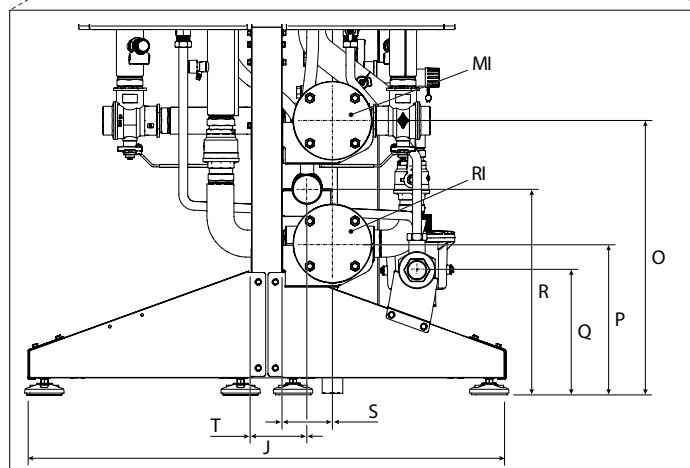
B2B cascade (BACK TO BACK) 2 modules - [35-45kW]



If the plate exchanger is present (instead of the hydraulic compensator), the reference dimensions are:



dimension B = 1,699 mm (instead of 658 mm).

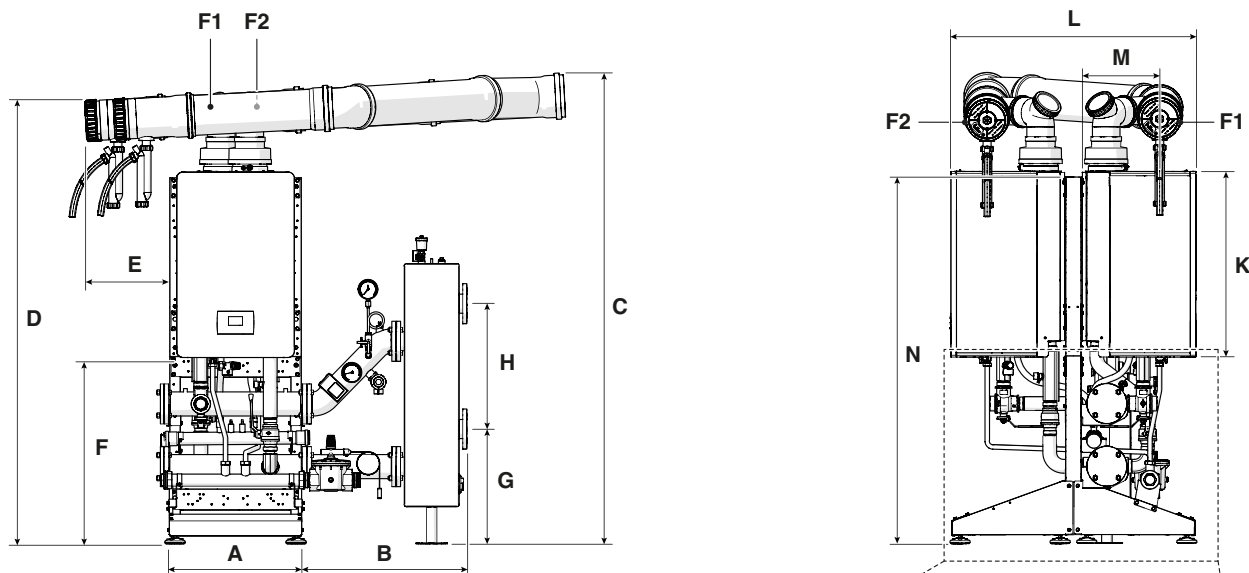


DESCRIPTION	A	B	C	D	E	F	G	H	J	K	L	M
POWER EVO-X 50 DEP	529	658	1861	1777	285	743	457	500	972	740	764	351
POWER EVO-X 50	529	658	1861	1777	285	743	457	500	972	740	764	351
UOM	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm

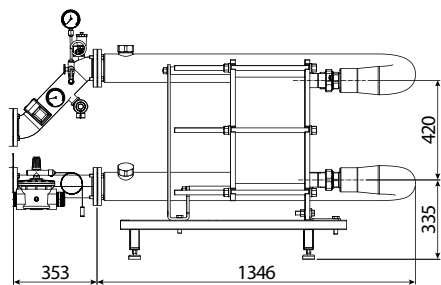
DESCRIPTION	N	O	P	Q	R	S	T	F1	F2	RI*	MI*
POWER EVO-X 50 DEP	1483	558	308	254	408	103	113	Ø160	Ø160	Ø2" ½	Ø2" ½
POWER EVO-X 50	1483	558	308	254	408	103	113	Ø160	Ø160	Ø2" ½	Ø2" ½
UOM	mm	mm	mm	mm	mm	mm	mm	mm	mm	inch	inch

* Primary and secondary flanges DN65 PN6 4 holes.

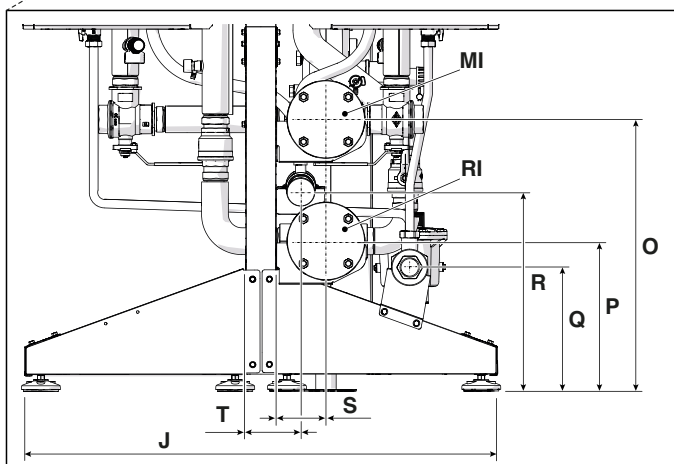
B2B cascade (BACK TO BACK) 2 modules - [55-70kW]



If the plate exchanger is present (instead of the hydraulic compensator), the reference dimensions are:



dimension B = 1,699 mm (instead of 658 mm).

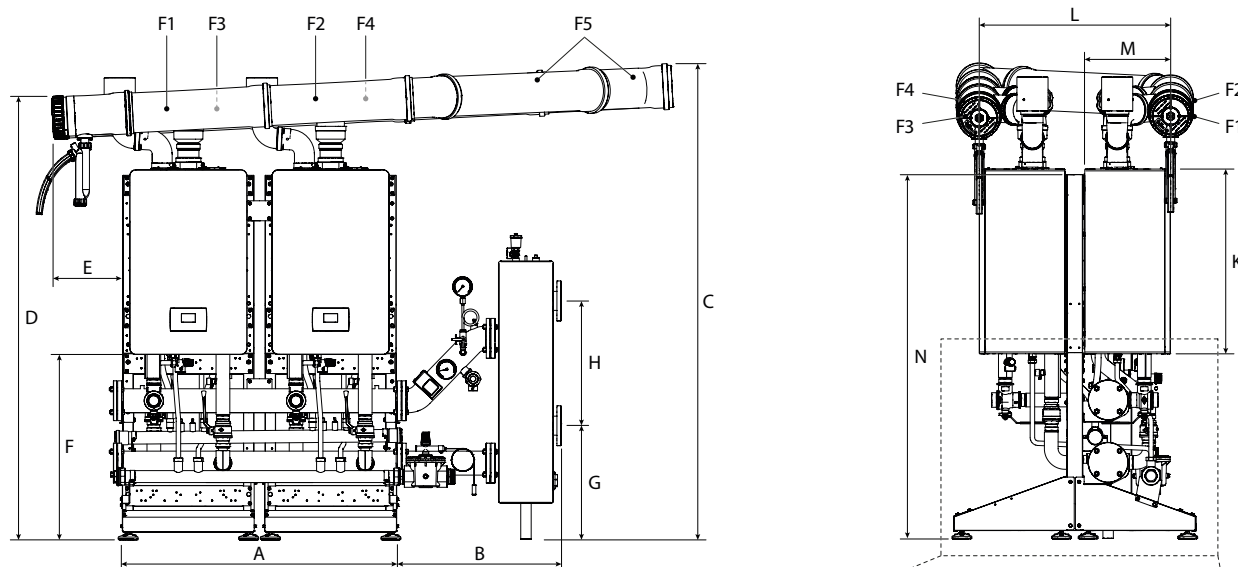


DESCRIPTION	A	B	C	D	E	F	G	H	J	K	L	M
POWER EVO-X 65	529	658	1843	1736	338	743	457	500	972	740	982	312
POWER EVO-X 80	529	658	1843	1736	338	743	457	500	972	740	982	312
UOM	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm

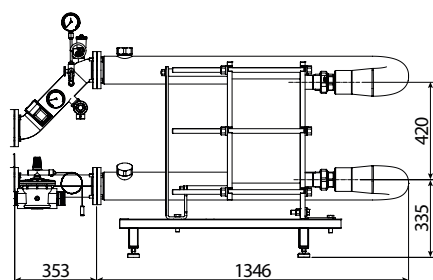
DESCRIPTION	N	O	P	Q	R	S	T	F1	F2	RI*	MI*
POWER EVO-X 65	1481	558	228	254	408	103	113	Ø160	Ø160	Ø2" ½	Ø2" ½
POWER EVO-X 80	1481	558	228	254	408	103	113	Ø160	Ø160	Ø2" ½	Ø2" ½
UOM	mm	mm	mm	mm	mm	mm	mm	mm	mm	inch	inch

* Primary and secondary flanges DN65 PN6 4 holes.

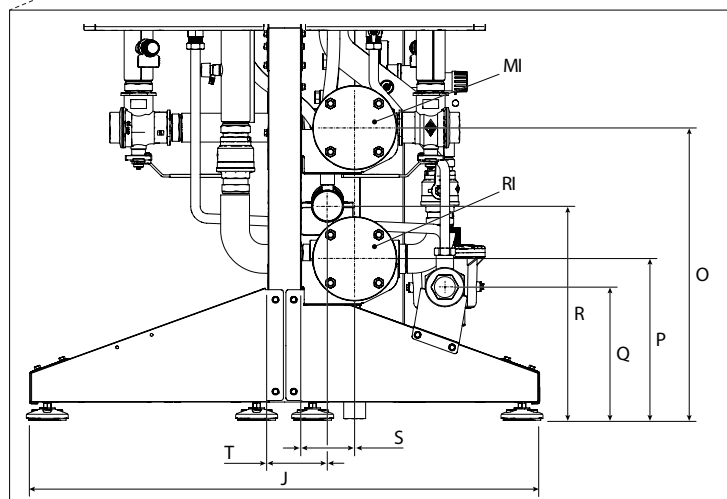
B2B cascade (BACK TO BACK) 3 and 4 modules - [35-45kW]



If the plate exchanger is present (instead of the hydraulic compensator), the reference dimensions are:



dimension B = 1,699 mm (instead of 658 mm).

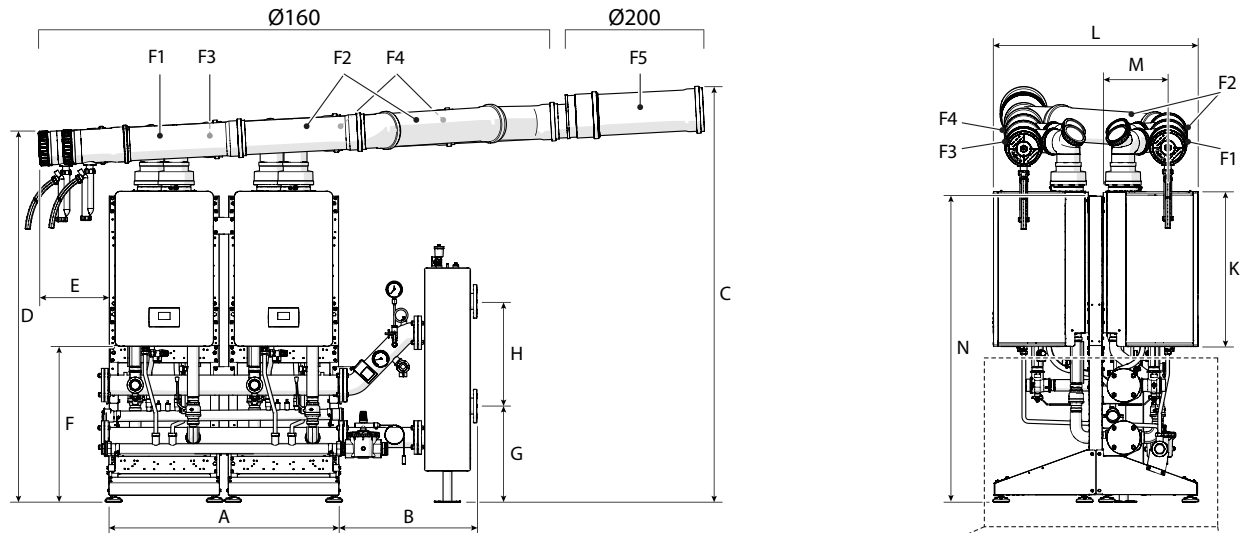


DESCRIPTION	A	B	C	D	E	F	G	H	J	K	L	M	N
POWER EVO-X 50 DEP	1100	658	1908	1777	285	743	457	500	972	740	764	351	1483
POWER EVO-X 50	1100	658	1908	1777	285	743	457	500	972	740	764	351	1483
UOM	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm

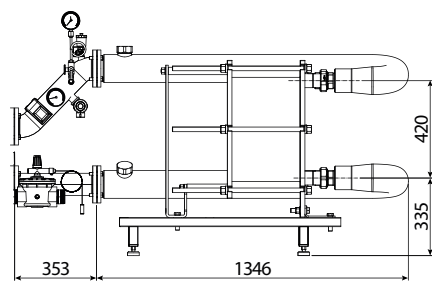
DESCRIPTION	O	P	Q	R	S	T	F1	F2	F3	F4	F5	RI*	MI*
POWER EVO-X 50 DEP	558	308	254	408	103	113	Ø160	Ø160	Ø160	Ø160	Ø160	Ø2" ½	Ø2" ½
POWER EVO-X 50	558	308	254	408	103	113	Ø160	Ø160	Ø160	Ø160	Ø160	Ø2" ½	Ø2" ½
UOM	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	inch	inch

* Primary and secondary flanges DN65 PN6 4 holes.

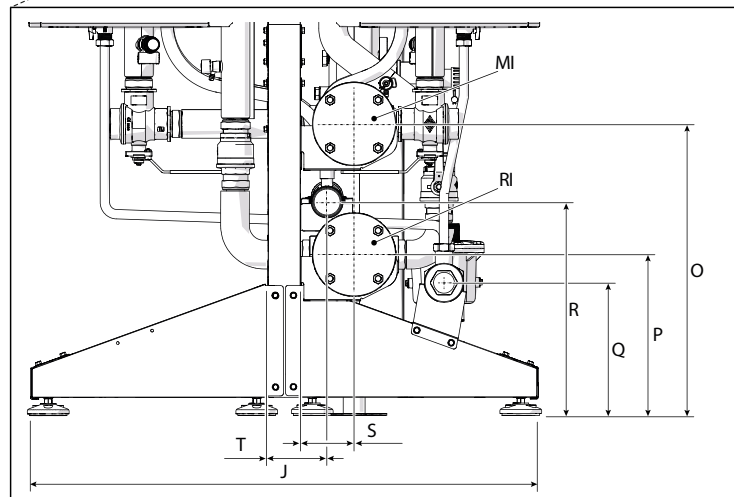
B2B cascade (BACK TO BACK) 3 and 4 modules - [55-70kW]



If the plate exchanger is present (instead of the hydraulic compensator), the reference dimensions are:



dimension B = 1,699 mm (instead of 658 mm).



DESCRIPTION	A	B	C	D	E	F	G	H	J	K	L	M	N
POWER EVO-X 65	1100	658	1966	1736	338	743	457	500	972	740	982	312	1481
POWER EVO-X 80	1100	658	1966	1736	338	743	457	500	972	740	982	312	1481
UOM	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm

DESCRIPTION	O	P	Q	R	S	T	F1	F2	F3	F4	F5	RI*	MI*
POWER EVO-X 65	558	228	254	408	103	113	Ø160	Ø160	Ø160	Ø160	Ø200	Ø2" ½	Ø2" ½
POWER EVO-X 80	558	228	254	408	103	113	Ø160	Ø160	Ø160	Ø160	Ø200	Ø2" ½	Ø2" ½
UOM	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	inch	inch

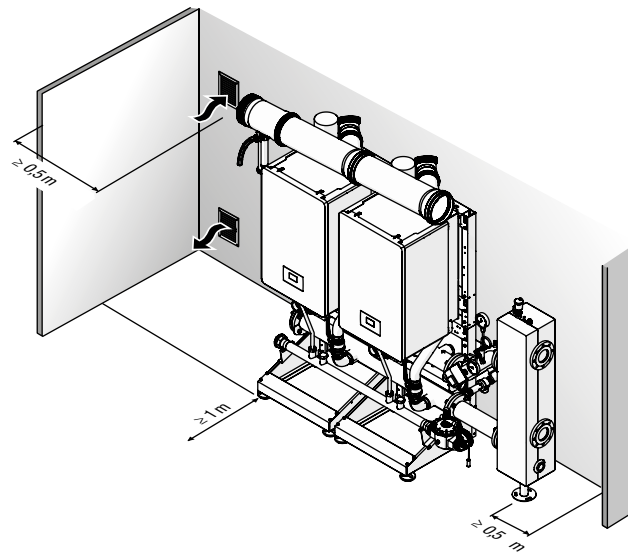
* Primary and secondary flanges DN65 PN6 4 holes.

Minimum distances

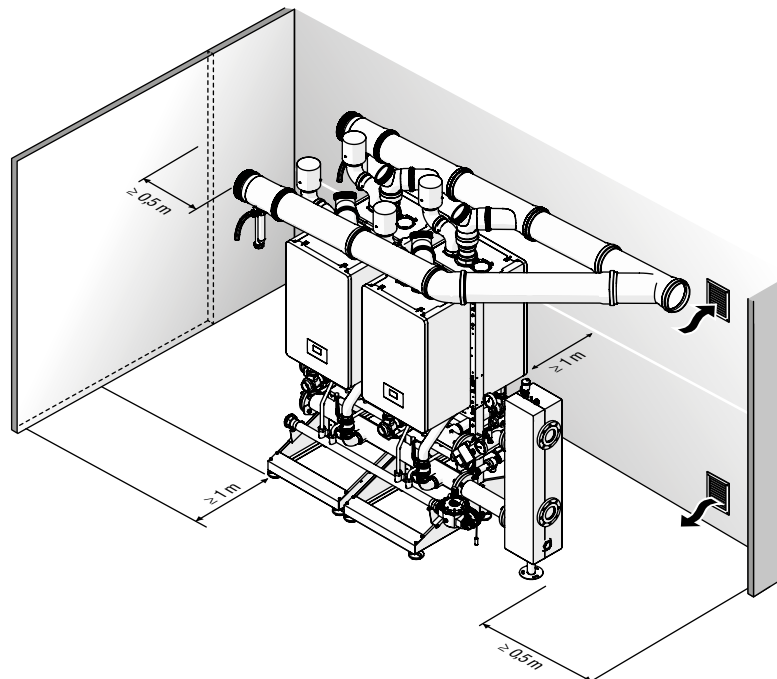
The thermal module must be installed in rooms for exclusive use that comply with the Technical Standards and current legislation and in which the exhaust of combustion products and the intake of combustion air are carried outside the room itself.

If, however, the combustion air is taken from the installation room, this must be equipped with ventilation openings compliant with the Technical Standards and adequately sized.

Spazio necessario disposizione in linea (FRONT)



Spazio necessario disposizione schiena - schiena (B2B - BACK TO BACK)



Principle plumbing systems

- ⚠ The domestic hot water and heating circuits must be completed with expansion vessels of adequate capacity and appropriate safety valves correctly sized. The discharge of the safety valves and devices must be connected to a collection and evacuation system.
- ⚠ The choice and installation of the system components is in charge to the installer, who must operate according to the rules of good technique and regulations in force.
- ⚠ Particular supply/replenishment waters must be conditioned with appropriate treatment systems.
- ⚠ For electrical power connections, use H05-VV-F cables with a minimum conductor section of 1.5 mm², complete with cable lugs. For low voltage connections, use H05-VV-F cables with a section between 0.5 and 1 mm², complete with terminal ferrules.
- ⚠ For connection of devices connected to the power terminal block (pumps, circulators and also diverter/mixing valves) use interposed relays unless it is verified that the maximum absorption of all components connected to the board (including the module circulator) is less than or equal to 1.5 A. The choice and sizing of such relays is left to the installer depending on the type of device connected.
- ⊘ It is forbidden to operate the thermal module and the circulators without water.

Cascade remote control

The cascade remote control (REC12) is mandatory to manage cascade configurations, together with a dedicated board (MSC) connecting the thermal modules and the REC12 itself. It allows access and management of all managed parameters (of the cascade, individual boiler and system).

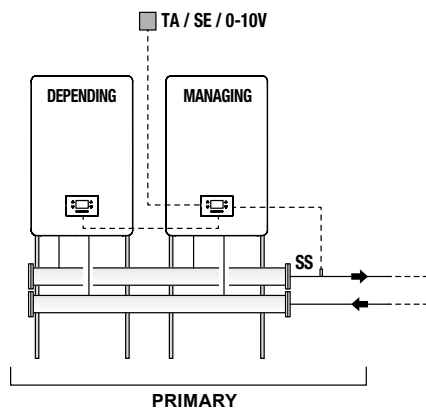
In particular, it enables the management of:

- Up to No. 4 POWER EVO-X in cascade (all of the same power), with settable strategy
- multizone systems up to 6 zones, direct or mixed, adding as many dedicated kits (available as an accessory), in climate mode by connecting the external probe available as an accessory and with independent climate curves
- An external storage tank for DHW production by means of kettle pump + kettle probe (and subsequent management of anti-legionella function), or with kettle thermostat
- a solar thermal system for DHW preheating on the boiler.

The alternative strategies that can be set for cascade operation are:

- parallel management of all the generators with modulation based on the request (the boilers work as if they were a single unit and the same control signal is sent to all);
- the boilers are turned on one after the other and turned off backwards when the set-point is reached (with rotation of the leader module and/or ignition transferred to another module in the cascade if the leader module was faulty at that moment).

You can choose whether to do temperature control for the cascade with a probe on the primary loop, or with a secondary probe to be placed downstream of the hydraulic compensator/plate heat exchanger.

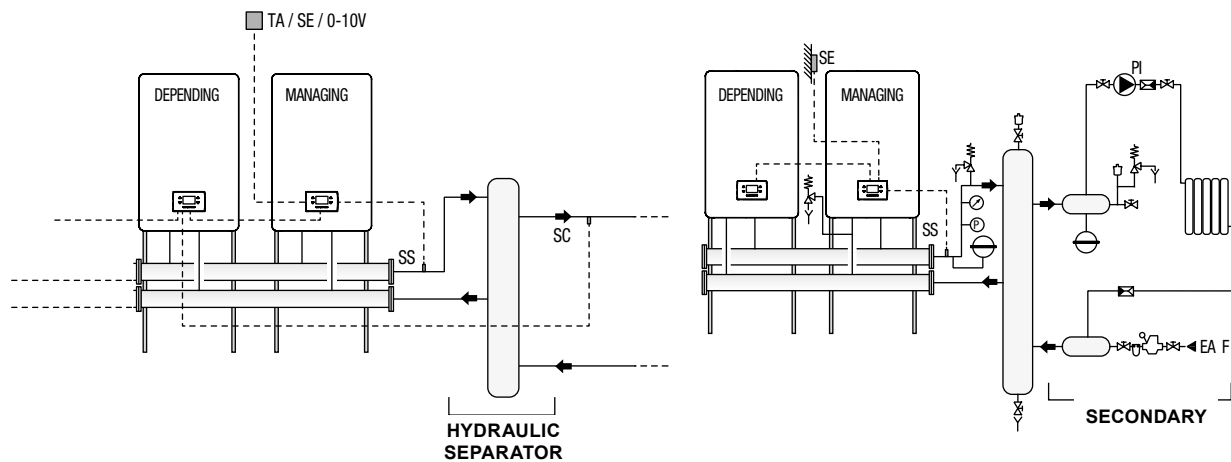


Heat demand from the system can come:

- by room thermostat (using input TA1 on the zone card in the case of a single-zone system; up to No. 6 plant zones can be managed by adding as many zone cards and using the respective inputs TA1, TA2 ... TA6);
- or by room probe (not supplied), also to be connected on the zone board
- or by analog voltage signal 0-10 (heat demand in temperature), using the dedicated input on the cascade management MSC board
- or by REC12 itself (with the possibility of setting from parameter the room influence in the temperature control algorithm) - it is recommended not to exceed a length of 5 m (for the connection between REC12 and MSC board). There is also a TA input on the MSC board (the closing of which activates a request in cascade system heating), to be used, for example, when the POWER EVO-X system is controlled by a heat pump (which requires integration on the room heating system). It is possible to enable and set by parameter the heating time schedule for the relevant zone, or for the whole system.

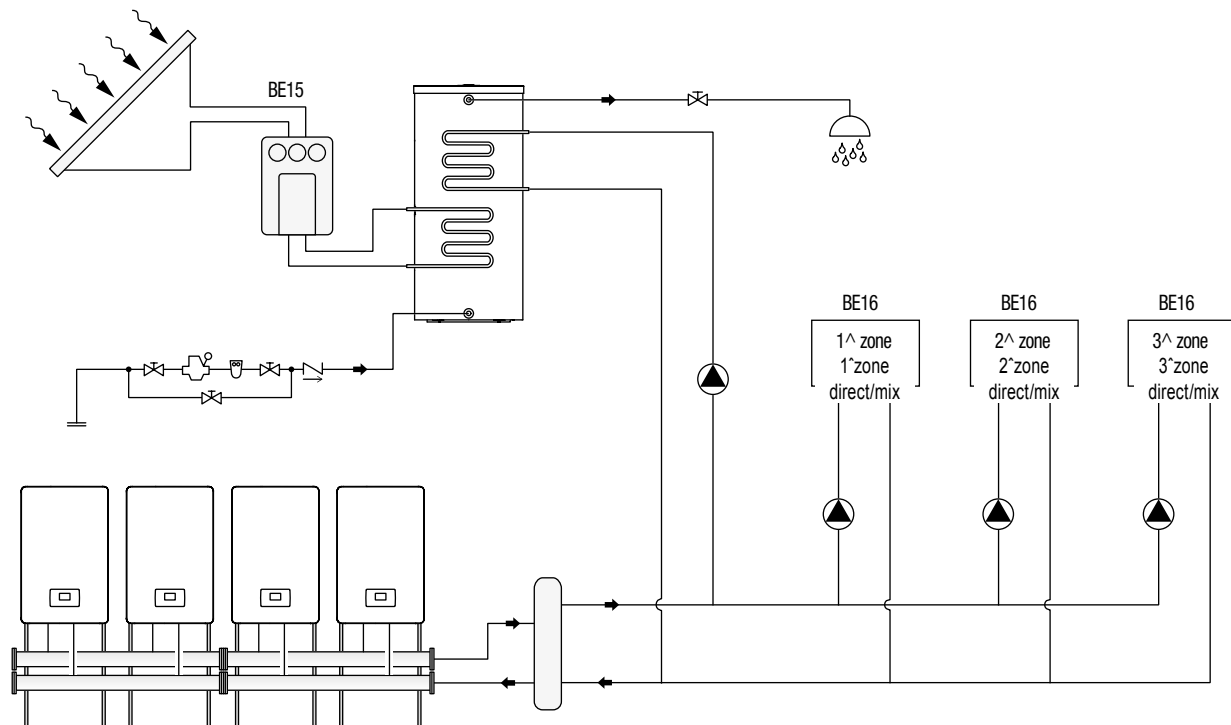
Secondary system configuration

The best use of cascade modules is achieved by interposing a hydraulic separator (available as an accessory) between the primary (cascade thermal modules for thermal generation) and secondary (users, such as heat distribution systems for heating, domestic water production system). This device makes it possible to compensate for a different flow rate between primary and secondary.



For simplicity, we identify the hydraulic circuitry downstream of the separator as secondary.

The basic secondary configuration is done with the use of a plant circulator (PI). This circulator, connected to the cascade modules, allows the transfer of thermal energy to a user circuit, such as a direct zone for high-temperature space heating.



Guide to the specifications

Construction description for synthetic specification

POWER EVO-X is a condensing, premixed thermal module consisting of a modulating thermal element.

It is available in 4 models, starting from 35kW up to 70kW.

The optimal combustion management allows high efficiency up to over 109%, value calculated on the PCI, in the condensation regime, and low polluting emissions - Class 6 according to UNI EN 15502-1.

The thermal module is designed with open chamber operation, but can be converted to a sealed chamber with the use of the appropriate flue. The standard configuration of the device has an IPX5D protection rating intended for installation indoors or outdoors in partially protected places.

It is possible to connect the Power Evo-X appliances in cascade up to a maximum power of 280 kW.

The electronics of the POWER EVO-X generator can be expanded thanks to the use of appropriate kits to govern hybrid systems or solar thermal systems.

The main technical features of the appliance are:

- Premix burner with constant air-gas ratio and dual electrode, ignition and flame detection.
- Single pass AISI 441 stainless steel heat exchanger, designed to maximize the exchange surface and offer maximum resistance to corrosion.
- Module heat output from 35 to 70kW, with possible cascades of modules of the same power.
- Maximum flue gas outlet temperature 100°C.
- Microprocessor management and control with self-diagnosis shown through display and recording of the main errors;.
- Antifreeze function.
- External probe enabling the climate control function (accessory).
- Provision for room thermostat/heat request on high and low temperature zones.
- Each generator can manage as standard in stand-alone configuration a direct heating circuit and a circuit for domestic hot water production with external storage; it is possible to expand the electronics up to a maximum of three direct or mixed zones on the secondary and solar thermal.
- In the cascade configuration, it can handle up to a maximum of 6 direct or mixed zones on the secondary.
- Modulating circulator as standard with high efficiency and high residual head; modulation occurs only on the plant side in a manner proportional to the power delivered by the boiler; in DHW mode the circulator will run at maximum speed.
- For heat outputs ratings above 35kW, INAIL accessories and devices complete with certificate are available.
- Cascade configurations of up to 4 modules, linear and back-to-back, complete with all plumbing, electrical and flue accessories.
- Both in the stand-alone and cascade versions, hydraulic separators or plate heat exchangers are available as accessories for the interface with the systems.

Safety devices

All the functions of the device are electronically controlled by a card approved to perform safety functions by means of a dual processor technology. Any anomaly causes the appliance stop and the gas valve automatic shutdown.

The following are installed on the water circuit:

- Safety thermostat $102 \pm 3^\circ\text{C}$.
- Pressure transducer with minimum pressure control function of 0,8 bar.
- Differential pressure switch for continuous control of the minimum flow rate on the primary circuit.
- Temperature probes on the flow and return that continuously measure the temperature difference between the flow and return fluid and allow the control to intervene.

The following are installed on the combustion circuit:

- Gas solenoid valve with pneumatic compensation of gas flow according to intake air flow rate.
- Two separate electrodes, one for ignition and one for detection.
- Flue temperature probe.
- Non-return valve (clapet) for connecting generators to positive pressure flues.

Guide to the specifications

Functions

- date and time setting.
- Heating system setting with 4 modes:
 - Operation with room thermostat/heat request and fixed setpoint.
 - Operation with room thermostat/heat request and variable set point based on the external temperature.
 - Operation with OT+ input with heat request and fixed setpoint.
 - Operation with OT+ input with heat request and variable setpoint depending on the external temperature.
- DHW production setting in 3 modes:
 - No production of Domestic Hot Water.
 - Production of Domestic Hot Water with storage, regulated by cylinder probe.
 - Production of Domestic Hot Water with storage, regulated by thermostat.
- Anti-legionella function.
- Time schedule: seasonal, holiday, in groups of homogeneous areas.
- Screen views:
 - Flow temperature.
 - Return temperature.
 - DHW temperature (the sensor must be connected to show a value, if it is not present the default value will appear).
 - Outdoor temperature.
 - Flues temperature.
 - System temperature (the sensor must be connected to show a value, if it is not present the default value will appear).
 - Fan speed.
 - Ionization.
 - Status.
 - Error.

Accessories on-board

- Documents:
 - Instruction booklet.
 - Hydraulic test certificate.
 - Energy Label.
- Other supplied accessory:
 - Bracket for wall fixing with dowels (4 dowels $\varnothing=10$ mm suitable for concrete walls, bricks, compact stone, perforated concrete block).

Compliance

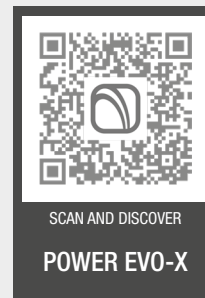
POWER EVO-X boilers comply with:

- Regulation (EU) 2016/426.
- Efficiency Directive 92/42/EEC and Annex E of Presidential Decree 26 August 1993 n° 412.
- Electromagnetic Compatibility Directive 2014/30/EU.
- Low Voltage Directive 2014/35/EU.
- Ecodesign of energy-related products Directive 2009/125/EC.
- Regulation (EU) 2017/1369 Energy Labeling.
- Delegated Regulation (EU) No. 811/2013.
- Delegated Regulation (EU) No. 813/2013.
- Gas heating boiler regulations - General requirements and tests EN 15502-1.
- Specific regulation for type C appliances and type B2, B3 and B5 appliances with a nominal heat input not exceeding 1000 kW EN 15502-2/1.
- SSIGA gas directives G1.
- AICAA Fire prevention regulations.
- CFST LPG Directive Part 2.
- DIFFERENT Cantonal and municipal regulations on air quality on energy saving.



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