

FLOOR STANDING CONDENSING BOILERS FOR OUTDOOR CASCADE INSTALLATION

1. GENERAL FEATURES



The range of thermal generators of the “High Power” series for outdoor installation is available in the following three outputs 50 and 100 kW, with $\varnothing$ 28 mm stainless steel heat exchanger, to satisfy the power increase requests in an extremely limited space. Boilers are designed to suit individual or cascade installations, one independent of each other.

The FCM 50 model is a boiler equipped with one heat exchanger, while the FCM 100 model is boiler equipped with two heat exchangers made by a $\varnothing$ 28 mm stainless steel spiral single pipe, fitted in a single casing. This boiler, in addition to a size advantage, 70 cm wide (100 kW), also offers advantages in terms of power. It can be set up as 100 kW (50 + 50 kW), by offering a great flexibility for the installation of high power cascade systems. It also offers advantages in terms of performances such as a 1:20 (100 kW) modulation, the possibility of excluding one boiler and, in case of one boiler failure, the ability to never leave the system shut down with the other boiler functioning.

The cascade system provides a wide range of heat outputs, from 50 to 500 kW already configured. For outputs higher than 500 kW, please contact our technical department.

The composition of the cascade system provides for the free combination of the individual boilers connected by means of hydraulic manifolds for the gas, flow and return connections.

The F series can be installed either in a boiler room or outside, thus allowing to solve more complex building situations where it is not possible to have a dedicated room that complies with standards in force.

2. PRODUCTS TYPE

GENERAL INDICATIONS

By using the FCM series solution, which previews a cascade installation, the system offers the ideal output solution according to the different needs.

Boilers are in fact designed to suit cascade installations, up to a maximum of 8 boilers for a total output of 800 kW allowing a continuous output modulation, a continuous linear power modulation within a very low percentage of minimum power (depending on the type of boilers adopted and of the system maximum power) and the 100% of the installed power.

POSSIBLE CONFIGURATIONS

Boiler version	FCM 50	FCM 100	HEAT OUTPUT [KW]	
			Min.	Max
F 150	1	1	5	150
F 200		2	5	200
F 250	1	2	5	250
F 300		3	5	300
F 350	1	3	5	350
F 400		4	5	400
F 450	1	4	5	450
F 500		5	5	500

Attention: For outputs higher than 500 kW, please contact our technical department.

3. TECHNICAL DATA

model		F 150	F 200	F 250	F 300
Compositions	kW	1x50+1x100	2x100	1x50+2x100	3x100
Weight	kg	219	266	350	397
Capacity	litri	23	29	37	43
Heat Input max.	kW	150	200	250	300
Heat Input min.	kW	5	5	5	5
Heat Output max. - 80/60°C	kW	147.56	196.74	245.93	295.11
Heat Output min. - 80/60°C	kW	4.83	4.83	4.83	4.83
Heat Output max. - 50/30°C	kW	160.20	213.60	267.00	320.40
Efficiency 100% Pn - 60/80°C	%	98.37	98.37	98.37	98.37
Average efficiency 100% Pn - 60/80°C	kW	97.88	97.88	97.88	97.88
Efficiency 100% Pn - 30/50°C	%	106.80	106.80	106.80	106.80
Efficiency 30% Pn - return 47°C	%	102.80	102.80	102.80	102.80
Efficiency 30% Pn - return 30°C	%	108.83	108.83	108.83	108.83
Heating circuit					
Adjustable heating temperature	°C	30-80/25-45	30-80/25-45	30-80/25-45	30-80/25-45
Maximum operating temperature for heating circuit	°C	80	80	80	80
Maximum operating pressure for heating circuit	bar	3	3	3	3
Minimum operating pressure for heating circuit	bar	0.3	0.3	0.3	0.3
Primary circuit water content	litres	23	29	37	43
Electrical specifications					
Voltage-frequency	V/Hz	230/50	230/50	230/50	230/50
Max Absorbed Power	W	324	432	540	648
Pump electrical power consumption 100%	W	165	220	275	330
Electrical power consumption - boiler OFF	W	10.5	14	17.5	21
Electrical protection	IP	X5D	X5D	X5D	X5D
Gas supply					
Nominal supply pressure - Natural Gas	kPa	1.13	1.13	1.13	1.13
Fuel consumption - Natural Gas	MJ/h	594	792	990	1188
Nominal Supply pressure - Universal LPG	kPa	2.75	2.75	2.75	2.75
Fuel consumption - Universal LPG	MJ/h	594	792	990	1188

MODULO		F 350	F 400	F 450	F 500
CE certification	n°	0476CQ0134	0476CQ0134	0476CQ0134	0476CQ0134
Gas category		II _{2H3B/P}	II _{2H3B/P}	II _{2H3B/P}	II _{2H3B/P}
Flue type	type	B23p-B33-C13-C33-C43-C53-C63-C83-C93			
Compositions	kW	1x50+3x100	4x100	1x50+4x100	5x100
Weight	kg	530	576	673	719
Capacity	litri	62	68	79	85
Heat Input max.	kW	350	400	450	500
Heat Input min.	kW	5	5	5	5
Heat Output max. - 80/60°C	kW	344.30	393.48	442.67	491.85
Heat Output min. - 80/60°C	kW	4.83	4.83	3,50	4.83
Heat Output max. - 50/30°C	kW	373.80	427.20	480.60	534.00
Efficiency 100% Pn - 60/80°C	%	98.37	98.37	98.37	98.37
Average efficiency 100% Pn - 60/80°C	%	97.88	97.88	97.88	97.88
Efficiency 100% Pn - 30/50°C	%	106.80	106.80	106.80	106.80
Efficiency 30% Pn - return 47°C	%	102.80	102.80	102.80	102.80
Efficiency 30% Pn - return 30°C	%	108.83	108.83	108.83	108.83
Heating circuit					
Adjustable heating temperature	°C	30-80/25-45	30-80/25-45	30-80/25-45	30-80/25-45
Maximum operating temperature for heating circuit	°C	80	80	80	80
Maximum operating pressure for heating circuit	bar	3	3	3	3
Minimum operating pressure for heating circuit	bar	0.3	0.3	0.3	0.3
Primary circuit water content	litri	62	68	79	85
Electrical specifications					
Voltage-frequency	V/Hz	230/50	230/50	230/50	230/50
Max Absorbed Power	W	756	864	972	1080
Pump electrical power consumption 100%	W	385	440	495	550
Electrical power consumption - boiler OFF	W	24.5	28	31.5	35
Electrical protection	IP	X5D	X5D	X5D	X5D
Gas supply					
Nominal supply pressure - Natural Gas	kPa	1.13	1.13	1.13	1.13
Fuel consumption - Natural Gas	MJ/h	1386	1584	1782	1980
Nominal Supply pressure - Universal LPG	kPa	2.75	2.75	2.75	2.75
Fuel consumption - Universal LPG	MJ/h	1386	1584	1782	1980

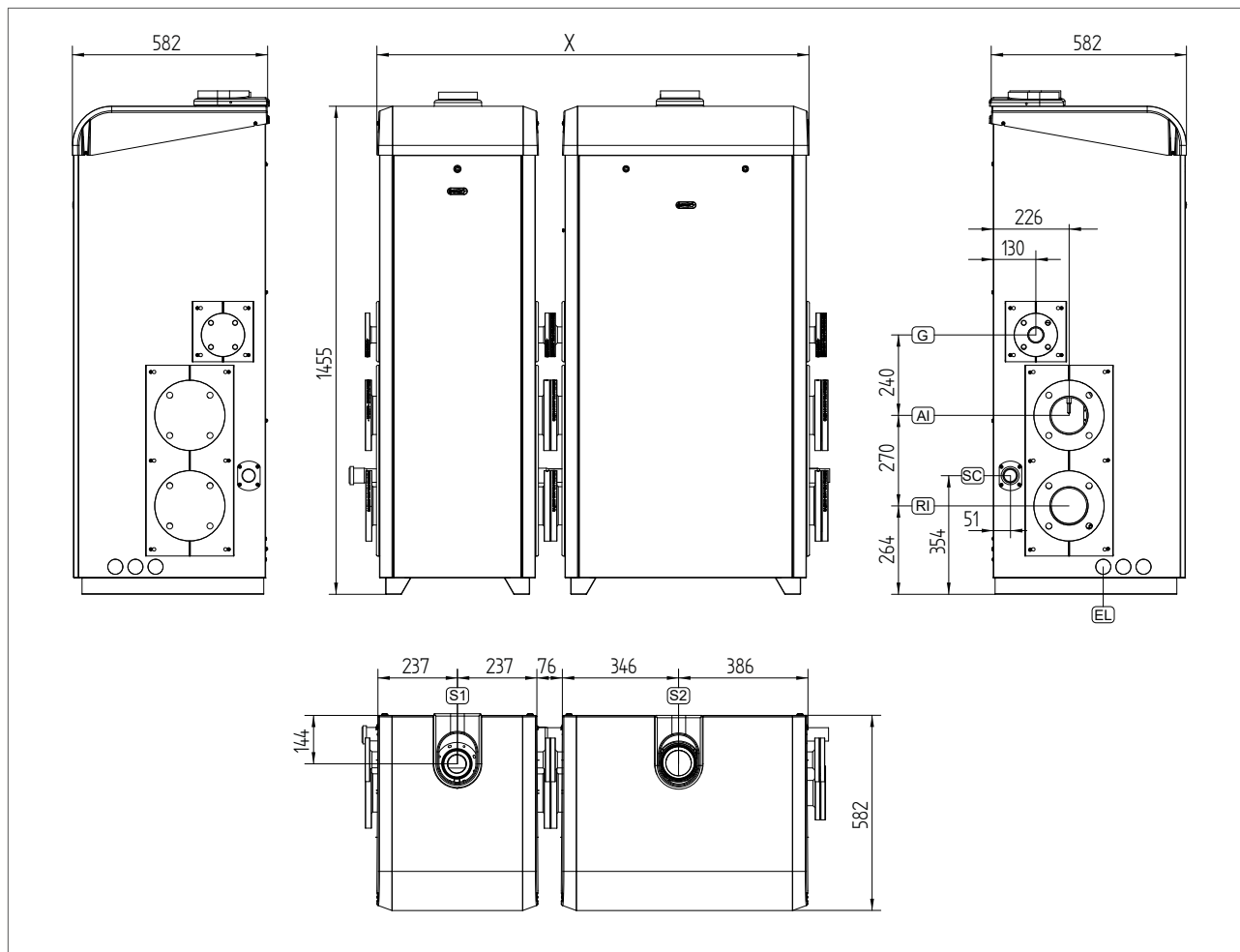
4. COMBUSTION DATA

model		F 150	F 200	F 250	F 300
Maximum combustion Performance	%	97.9	97.9	97.9	97.9
Minimum combustion Performance	%	98	98	98	98
Flue efficiency losses with burner on (full load)	%	2.1	2.1	2.1	2.1
Flue efficiency losses with burner on (minimum load)	%	2	2	2	2
Flue efficiency losses with burner off	%	0.02	0.02	0.02	0.02
Casing efficiency losses (full load)	%	0.47	0.47	0.47	0.47
Casing efficiency losses (minimum load)	%	1.49	1.49	1.49	1.49
Casing efficiency losses with burner off	%	0.03	0.03	0.03	0.03
Fumes temperature at nominal heat capacity	°C	66.4	66.4	66.4	66.4
Fumes temperature at minimum heat capacity	°C	56.8	56.8	56.8	56.8
Fumes mass at nominal heat capacity	g/s	66.83	89.28	111.47	133.92
Fumes mass at minimum heat capacity	g/s	2.28	2.31	2.28	2.31
CO ₂ at nominal heat capacity G20	%	9.3-9.0	9.2-9.0	9.3-9.0	9.2-9.0
CO ₂ at minimum heat capacity G20	%	9.0-8.8	9.0-8.8	9.0-8.8	9.0-8.8
CO ₂ at nominal heat capacity - G30	%	11.3-11.1	11.3-11.1	11.3-11.1	11.3-11.1
CO ₂ at minimum heat capacity - G30	%	10.9-10.7	10.9-10.7	10.9-10.7	10.9-10.7
CO ₂ at nominal heat capacity - G31	%	10.3-10.1	10.3-10.1	10.3-10.1	10.3-10.1
CO ₂ at minimum heat capacity - G31	%	9.9-9.6	9.8-9.6	9.9-9.6	9.8-9.6
CO at nominal heat capacity	ppm	68	68	68	68
CO at minimum heat capacity	ppm	1	1	1	1
Weighted CO [0% O ₂]	ppm	9	9	9	9
NO _x class	class	6	6	6	6
NO _x	ppm	-	33	-	33
NO _x	mg/kWh	52	52	52	52

MODULO		F 350	F 400	F 450	F 500
Maximum combustion Performance	%	97.9	97.9	97.9	97.9
Minimum combustion Performance	%	98	98	98	98
Flue efficiency losses with burner on (full load)	%	2.1	2.1	2.1	2.1
Flue efficiency losses with burner on (minimum load)	%	2	2	2	2
Flue efficiency losses with burner off	%	0.02	0.02	0.02	0.02
Casing efficiency losses (full load)	%	0.47	0.47	0.47	0.47
Casing efficiency losses (minimum load)	%	1.49	1.49	1.49	1.49
Casing efficiency losses with burner off	%	0.03	0.03	0.03	0.03
Fumes temperature at nominal heat capacity	°C	66.4	66.4	66.4	66.4
Fumes temperature at minimum heat capacity	°C	56.8	56.8	56.8	56.8
Fumes mass at nominal heat capacity	g/s	156.11	178.56	200.75	223.20
Fumes mass at minimum heat capacity	g/s	2.28	2.31	2.28	2.31
CO ₂ at nominal heat capacity G20	%	9.3-9.0	9.2-9.0	9.3-9.0	9.2-9.0
CO ₂ at minimum heat capacity G20	%	9.0-8.8	9.0-8.8	9.0-8.8	9.0-8.8
CO ₂ at nominal heat capacity - G30	%	11.3-11.1	11.3-11.1	11.3-11.1	11.3-11.1
CO ₂ at minimum heat capacity - G30	%	10.9-10.7	10.9-10.7	10.9-10.7	10.9-10.7
CO ₂ at nominal heat capacity - G31	%	10.3-10.1	10.3-10.1	10.3-10.1	10.3-10.1
CO ₂ at minimum heat capacity - G31	%	9.9-9.6	9.8-9.6	9.9-9.6	9.8-9.6
CO at nominal heat capacity	ppm	68	68	68	68
CO at minimum heat capacity	ppm	1	1	1	1
Weighted CO [0% O ₂]	ppm	9	9	9	9
NO _x class	class	6	6	6	6
NO _x	ppm	-	33	-	33
NO _x	mg/kWh	52	52	52	52

5. DIMENSIONS

F 150 - F 250 - F 350 - F 450

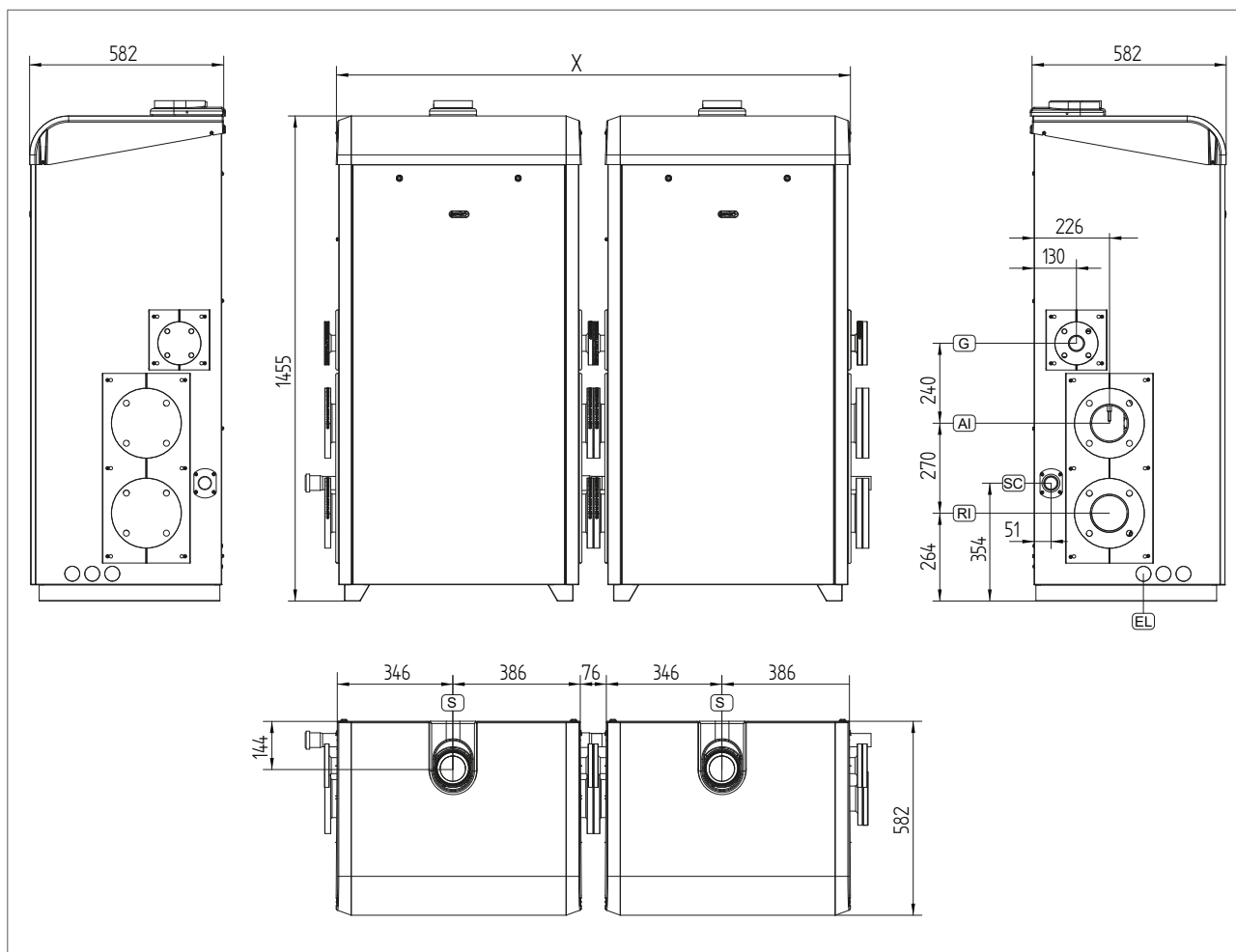


AI	HEATING FLOW	DN100-PN6
RI	HEATING RETURN	DN100-PN6
G	GAS	DN40-PN6
S1	FLUE OUTLET	Ø80
S2	FLUE OUTLET	Ø100
SC	CONDENSATE DRAIN	Ø40
EL	ELECTRICAL CABLES PASSAGE POINTS	Ø40

model	compositions	X mm
F 150	1 x FCM 50 + 1 x FCM 100	1289
F 250	1 x FCM 50 + 2 x FCM 100	2096
F 350	1 x FCM 50 + 3 x FCM 100	2903
F 450	1 x FCM 50 + 4 x FCM 100	3710

ATTENTION: For outputs higher than 500 kW, please contact our technical department.

F 200 - F 300 - F 400 - F 500

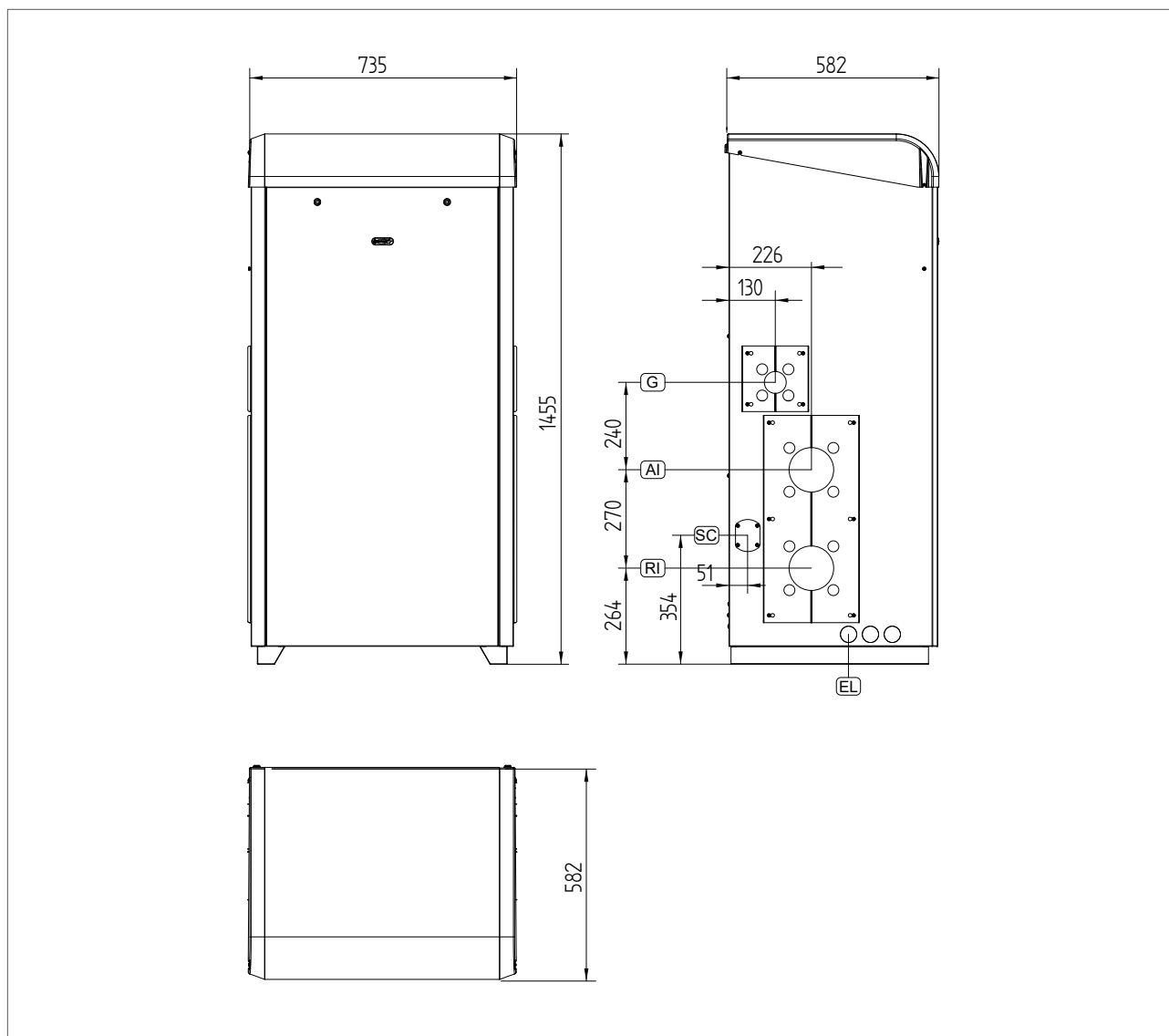


AI	HEATING FLOW	DN100-PN6
RI	HEATING RETURN	DN100-PN6
G	GAS	DN40-PN6
S	FLUE OUTLET	Ø100
SC	CONDENSATE DRAIN	Ø40
EL	ELECTRICAL CABLES PASSAGE POINTS	Ø40

model	compositions	X mm
F 200	2 x FCM 100	1542
F 300	3 x FCM 100	2349
F 400	4 x FCM 100	3159
F 500	5 x FCM 100	3963

ATTENTION: For outputs higher than 500 kW, please contact our technical department.

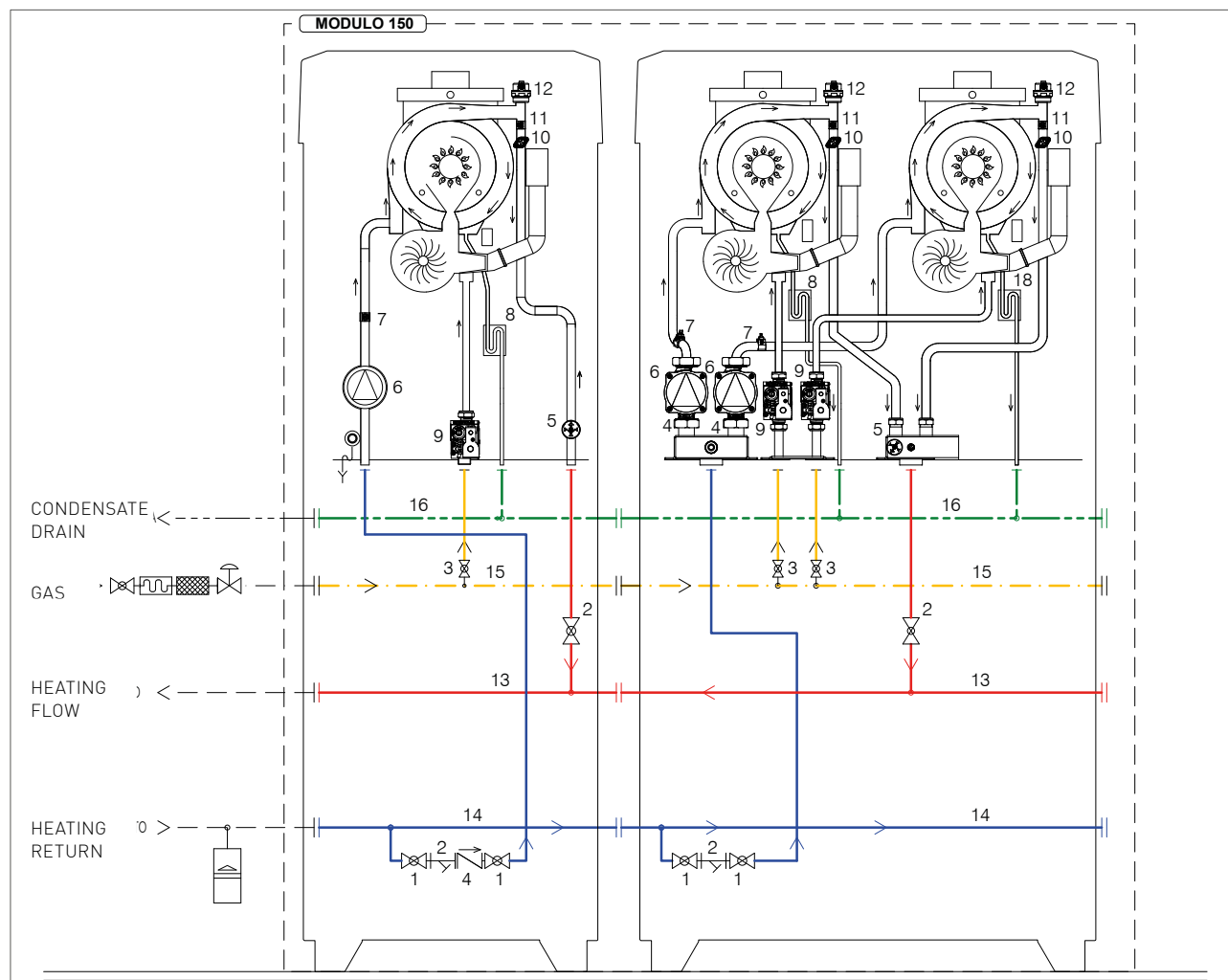
DOUBLE BOX EMPTY for accessories



AI	HEATING FLOW MANIFOLD PASSAGE POINT
RI	HEATING RETURN MANIFOLD PASSAGE POINT
G	GAS MANIFOLD PASSAGE POINT
SC	CONDENSATE DRAIN MANIFOLD PASSAGE POINT
EL	ELECTRICAL CABLES PASSAGE POINTS

6. WATER CIRCUIT

F 150 (output 150Kw) Cascade installation example.

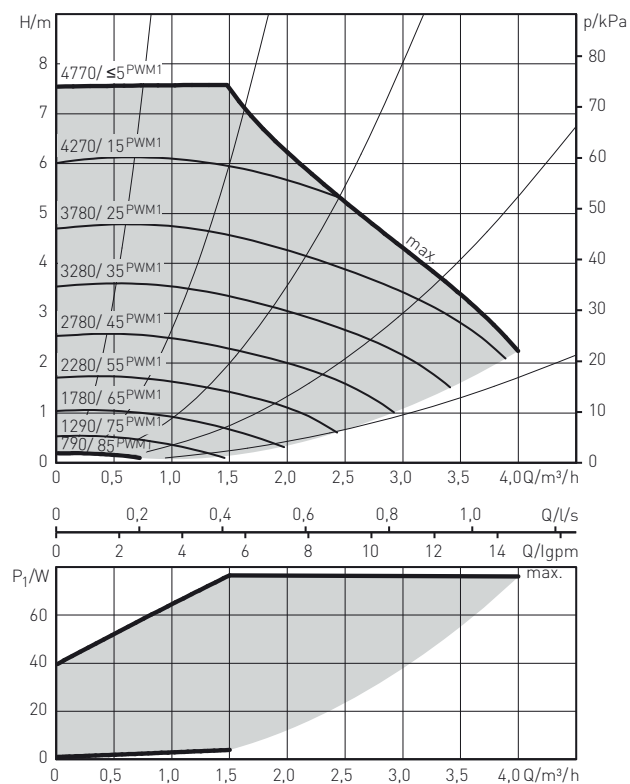


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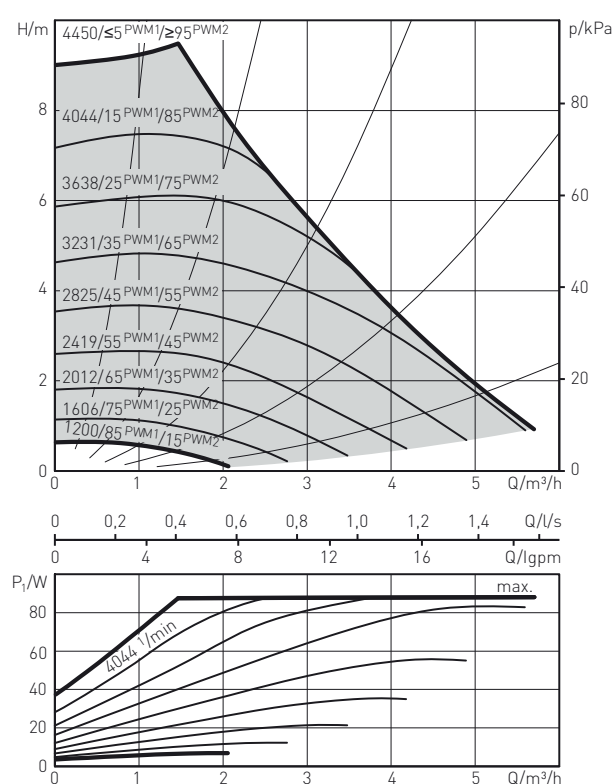
- | | |
|---------------------------------|---|
| 1. ISOLATING VALVE | 9. ELECTRONIC GAS VALVE |
| 2. STRAINER | 10. HEATING SAFETY THERMOSTAT 95°C |
| 3. GAS VALVE | 11. HEATING PROBE |
| 4. NO RETURN VALVE | 12. AIR RELIEF VALVE |
| 5. WATER PRESSURE SWITCH | 13. HYDRAULIC MANIFOLD HEATING FLOW |
| 6. CIRCULATOR | 14. HYDRAULIC MANIFOLD HEATING RETURN |
| 7. HEATING RETURN PROBE | 15. HYDRAULIC MANIFOLD GAS |
| 8. CONDENSATE COLLECTION SIPHON | 16. HYDRAULIC MANIFOLD CONDESANTE DRAINER |

7. HEAD/FLOW DIAGRAM*

CIRCULATOR

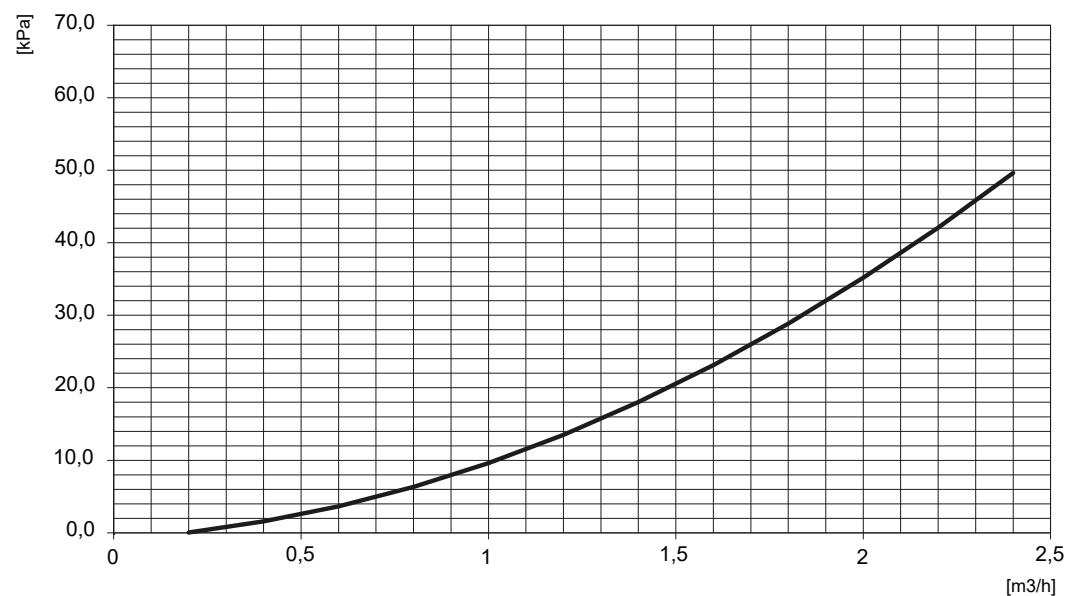


YP RS 15/7.5 - Standard head



SP 15/1.9 - Higher head (option)

INDIVIDUAL BOILER



* FOR FCM 100 BOILER, SINGLE THERMAL UNIT

8. ACCESSORIES

PLATE HEAT EXCHANGER

In case of a standard boiler's replacement in an old system with impurities and in case of problems during the system flushing, the installation of a heat exchanger is recommended to prevent boiler's obstructions that might compromise

its functioning. The heat exchanger, interface between the primary circuit which includes the boiler and the secondary circuit, guarantees a real separation of thermal carriers flows and the consequently boiler safeguard.

EXCHANGER TABLE

BOILER version	Primary circuit				Secondary circuit					Plate heat exchanger		
	Q	T _{IN}	T _{OUT}	H _{MAX}	Q	T _{IN}	T _{OUT}	H _{MAX}				
kW	littres/h	°C	°C	kPa	littres/h	°C	°C	kPa	code	model	plates	type
F 150	6450	80	60	5,49	8600	55	75	9,46	25-00710	Z3	29	inspected
				4,11				7,07	25-00702	ZB400	80	brazed
F 200	8600			5,32	11467			9,16	25-00476	Z3	39	inspected
				6,00				10,34	25-00703	ZB450	80	brazed
F 250	10750			5,22	14333			8,99	25-00534	Z3	49	inspected
				5,97				10,29	25-00704	ZB450	100	brazed
F 300	12900			5,49	17200			9,46	25-00712	Z3	57	inspected
				5,95				10,26	25-00705	ZB450	120	brazed
F 350	15050			5,39	20067			9,29	25-00713	Z3	67	inspected
				5,24				9,02	25-00706	ZB450	150	brazed
F 400	17200			5,32	22933			9,16	25-00715	Z3	77	inspected
				6,67				11,50	25-00706	ZB450	150	brazed
F 450	19350			5,49	25800			9,46	25-00716	Z3	85	inspected
				4,55				7,84	25-00707	ZB700	100	brazed
F 500	21500			5,42	28667			9,34	25-00717	Z3	95	inspected
				5,51				9,50	25-00707	ZB700	100	brazed

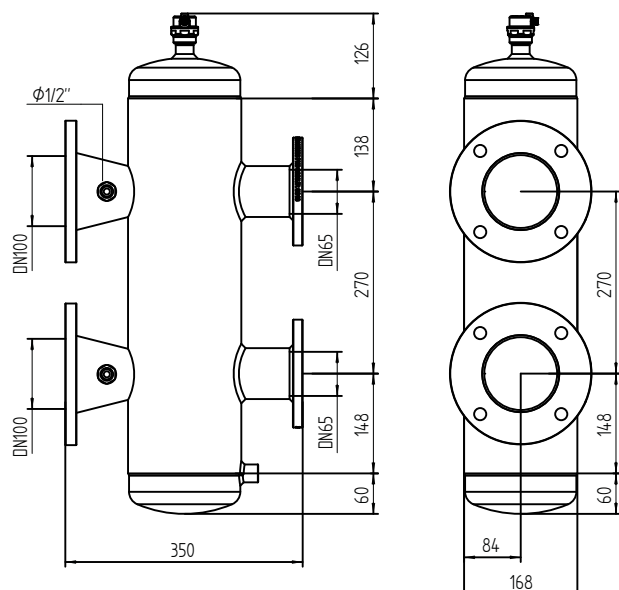
NOTES: The dimensions shown in the table must be considered as purely indicative and are therefore subject to design verification by the professional who draws up the project and are to be considered rough.

HYDRAULIC COMPENSATOR

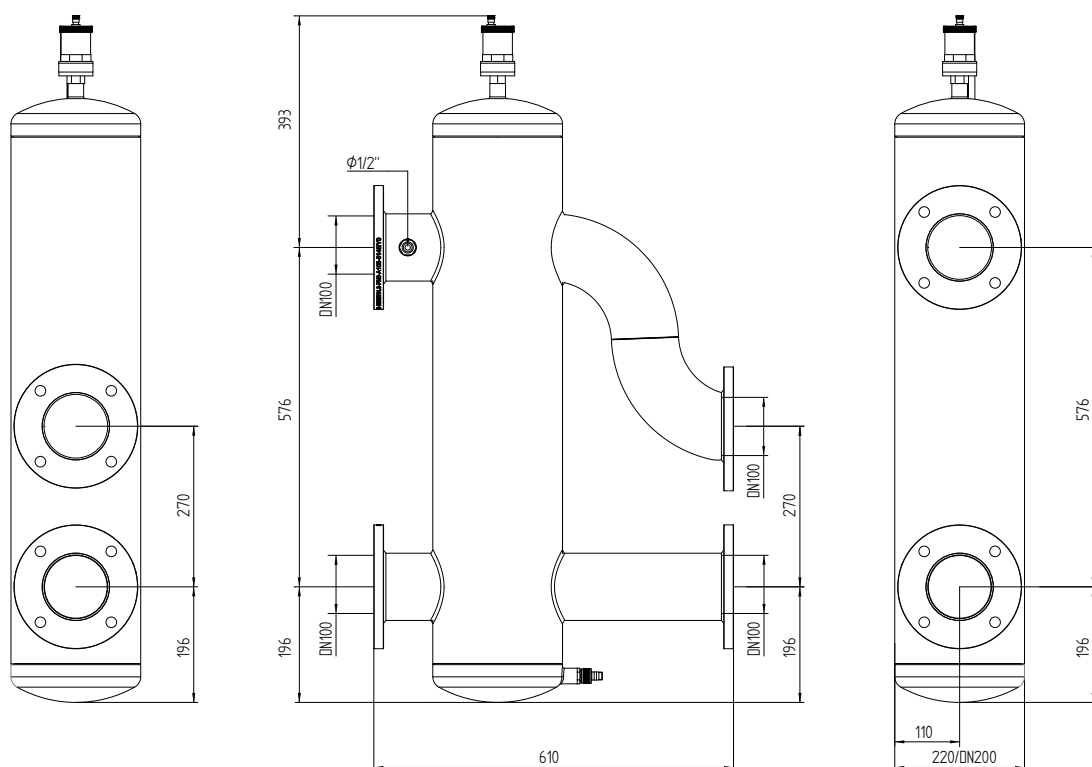
In order to guarantee that the boiler is always functioning without problems related to the flow rates variability on the secondary circuit, it is absolutely necessary to install a hydraulic compensator.

code 26285LP - **DN 150 - DN100/65-PN6 connections**

for condensing boilers with power up to 300 kW



code 26212LP - **DN 200 - DN100-PN6 connections**



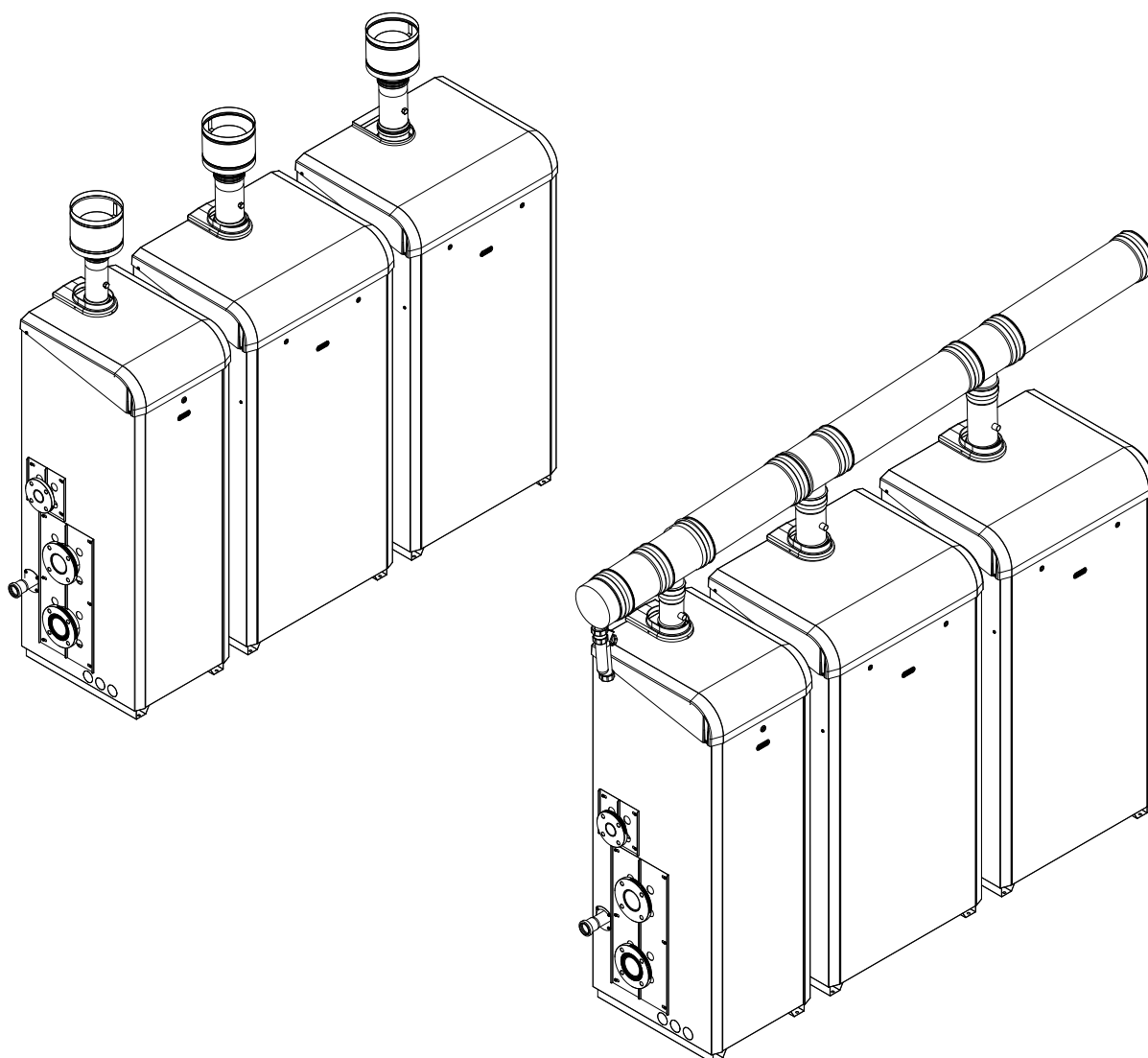
9. TYPES OF FUME EXHAUST SYSTEMS

With cascade installation systems it is possible to discharge combustion emissions in only one flue duct using flue manifold kit.

Flue manifold are in stainless steel to guarantee the highest mechanical resistance to the chemical action of the condensate and an easy installation.

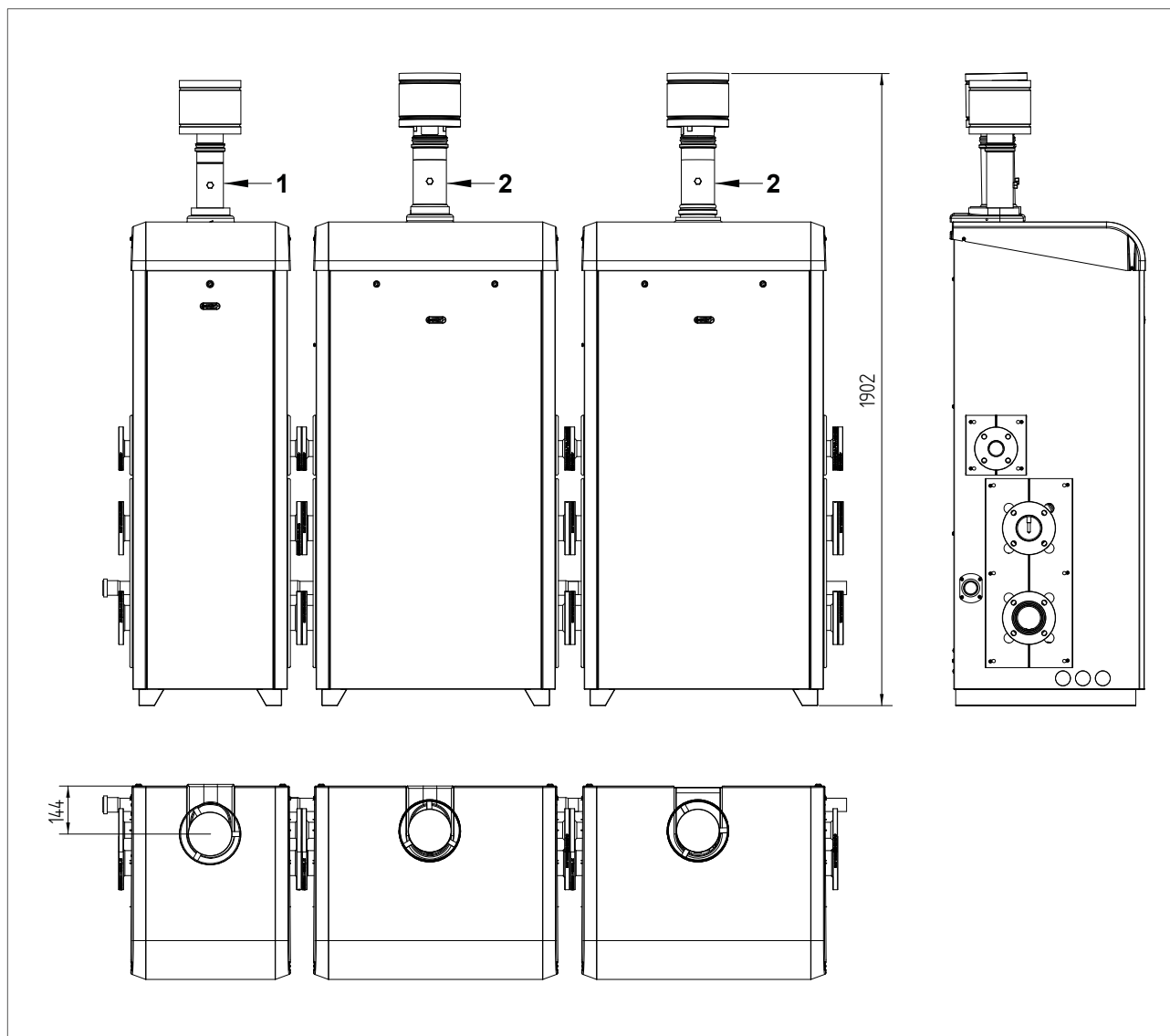
Each individual boiler can be connected to the main manifold through the appropriate connector equipped with a mechanical non-return damper to avoid a flow back of combustion products when one or more boilers are not in operation.

In case of roof installation, single flue kits complete with wind-proof head for the direct flues exhaust are also available.



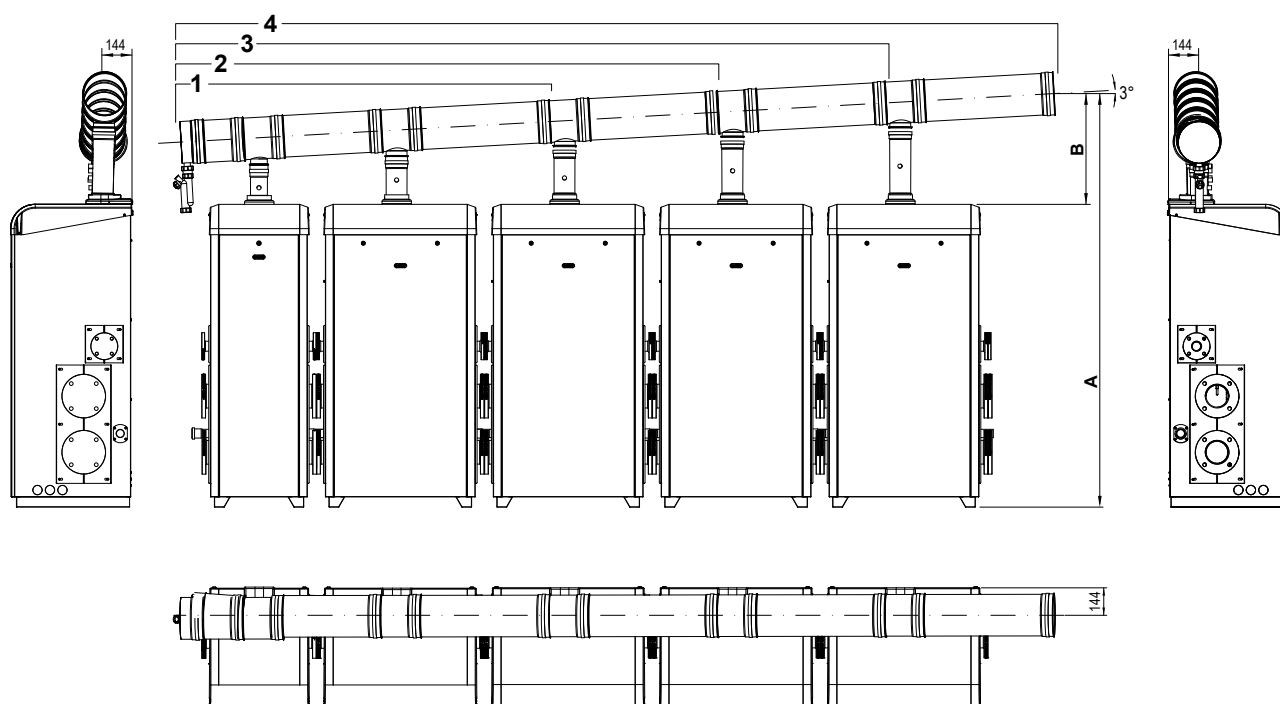
STAINLESS STEEL VERTICAL FLUE WITH TERMINAL

It allows fumes discharge directly from roof and draws air from atmosphere.



pos	code	description
1	50-00377	STAINLESS STEEL VERTICAL FLUE KIT Ø80 W/FLUE TERMINAL
2	80019LA	STAINLESS STEEL VERTICAL FLUE KIT Ø100 W/FLUE TERMINAL

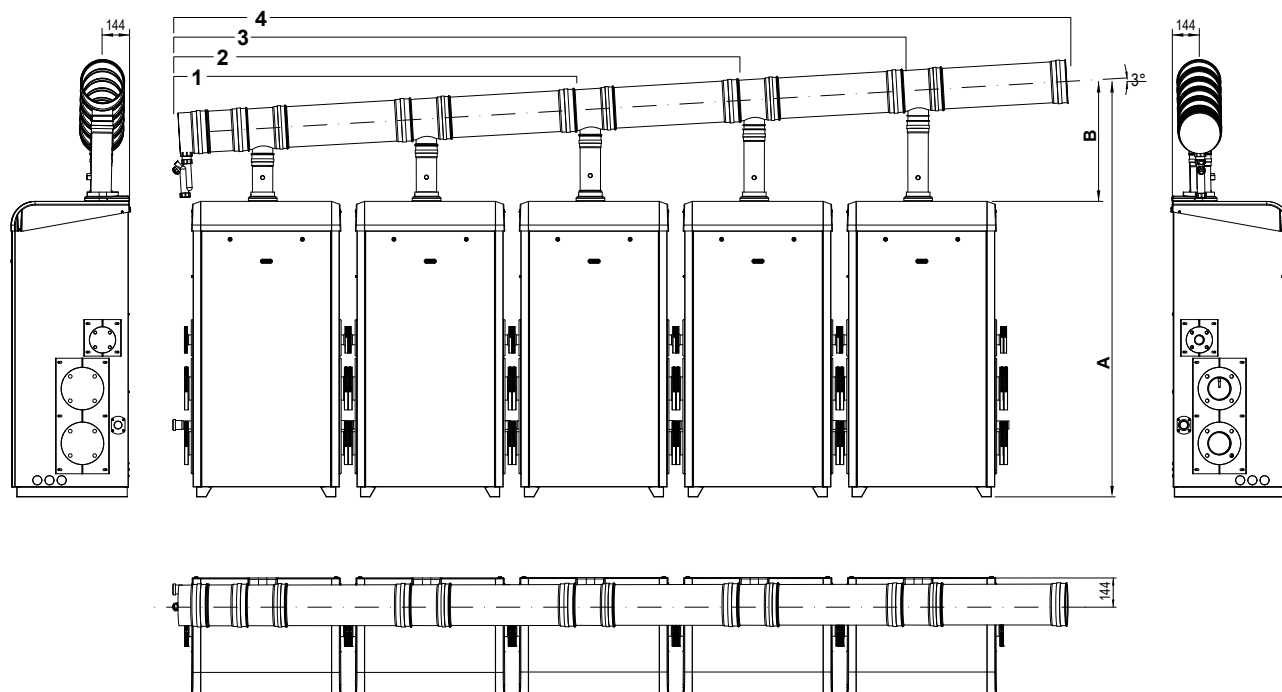
STAINLESS STEEL FLUE MANIFOLD - F 150 - F 250 - F 350 - F 450



Boiler version	flue manifold Ø160		flue manifold Ø200	
	A mm	B mm	A mm	B mm
F 150	1833	377	1853	397
F 250	1877	423	1897	442
F 350	1922	468	1942	487
F 450	1967	512	1987	532

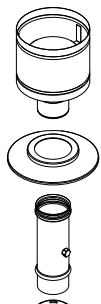
pos	code	description
1	50-00426	STAINLESS STEEL FLUE MANIFOLD KIT Ø160 FOR MODULO 125-150 BOILER
2	50-00427	STAINLESS STEEL FLUE MANIFOLD KIT Ø160 FOR MODULO 250 BOILER
3	50-00428	STAINLESS STEEL FLUE MANIFOLD KIT Ø200 FOR MODULO 350 BOILER
4	50-00429	STAINLESS STEEL FLUE MANIFOLD KIT Ø200 FOR MODULO 450 BOILER

STAINLESS STEEL FLUE MANIFOLD - F 200 - F 300 - F 400 - F 500



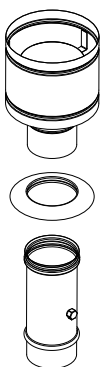
Boiler version	flue manifold Ø160		flue manifold Ø200	
	A mm	B mm	A mm	B mm
F 200	1884	429	1904	449
F 300	1932	477	1952	497
F 400	1979	524	1991	544
F 500	2026	571	2046	591

pos	code	description
1	50-00430	STAINLESS STEEL FLUE MANIFOLD KIT Ø160 FOR MODULO 175-200 BOILER
2	50-00431	STAINLESS STEEL FLUE MANIFOLD KIT Ø160 FOR MODULO 275-300 BOILER
3	50-00432	STAINLESS STEEL FLUE MANIFOLD KIT Ø200 FOR MODULO 375-400 BOILER
4	50-00433	STAINLESS STEEL FLUE MANIFOLD KIT Ø200 FOR MODULO 475-500 BOILER



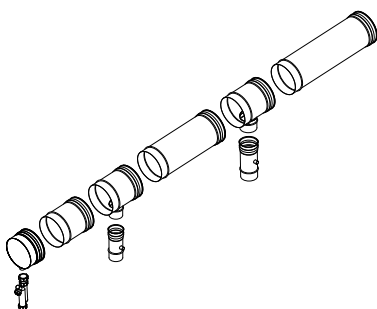
STAINLESS STEEL VERTICAL FLUE KIT
Ø80 W/FLUE TERMINAL

code 50-00377



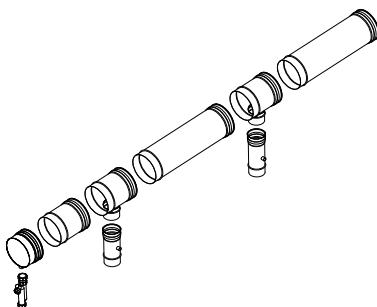
STAINLESS STEEL VERTICAL FLUE KIT
Ø100 W/FLUE TERMINAL

code 80019LA



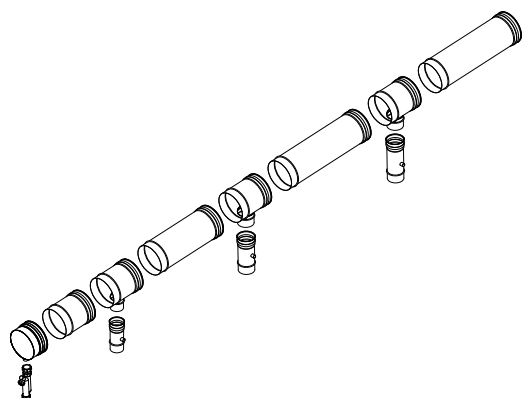
STAINLESS STEEL FLUE MANIFOLD
KIT FOR F 150 BOILER - CASCADE
INSTALLATION

code 50-00426



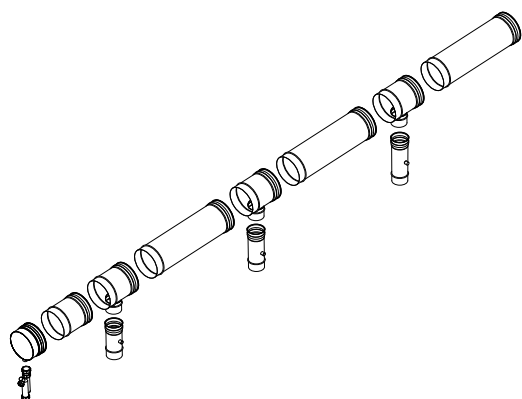
STAINLESS STEEL FLUE MANIFOLD
KIT FOR F 200 BOILER - CASCADE
INSTALLATION

code 50-00430



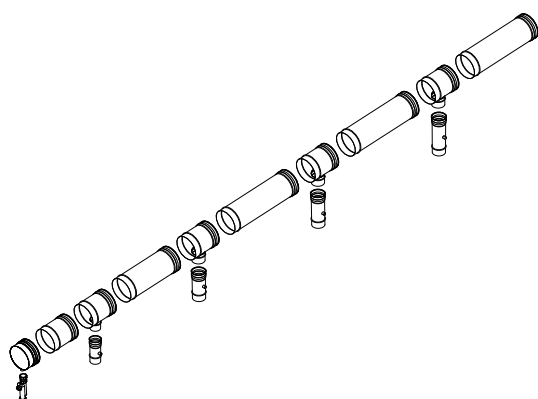
STAINLESS STEEL FLUE MANIFOLD
KIT FOR F 250 BOILER - CASCADE
INSTALLATION

code 50-00427



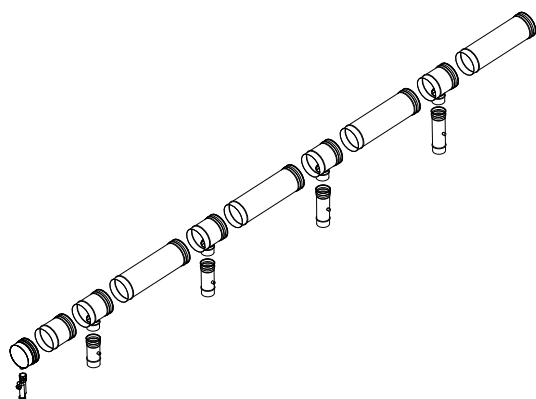
STAINLESS STEEL FLUE MANIFOLD
KIT FOR F 300 BOILER - CASCADE
INSTALLATION

code 50-00431



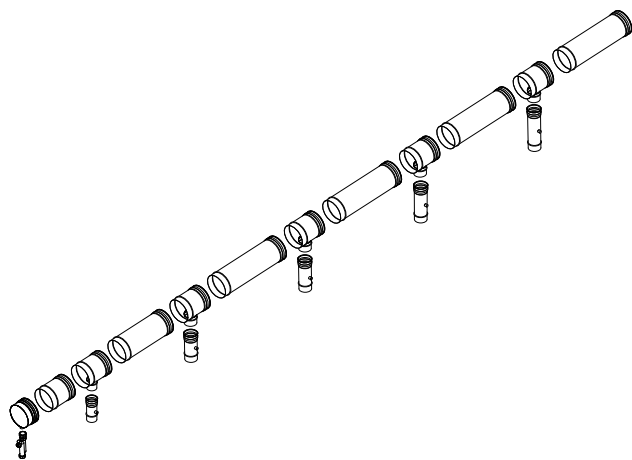
STAINLESS STEEL FLUE MANIFOLD
KIT FOR F 350 BOILER - CASCADE
INSTALLATION

code 50-00428



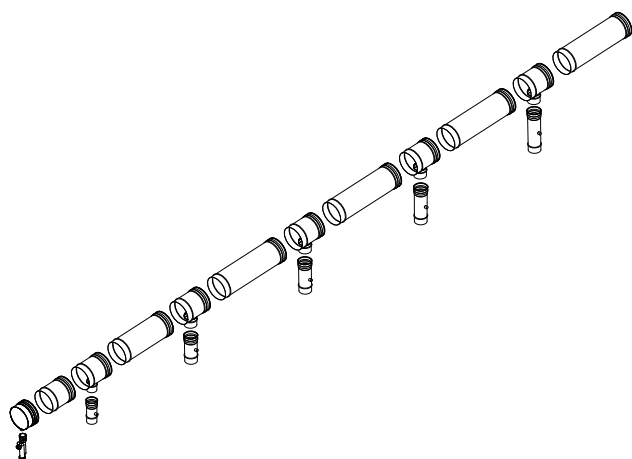
STAINLESS STEEL FLUE MANIFOLD
KIT FOR F 400 BOILER - CASCADE
INSTALLATION

code 50-00432



STAINLESS STEEL FLUE MANIFOLD
KIT FOR F 450 BOILER - CASCADE
INSTALLATION

code 50-00429

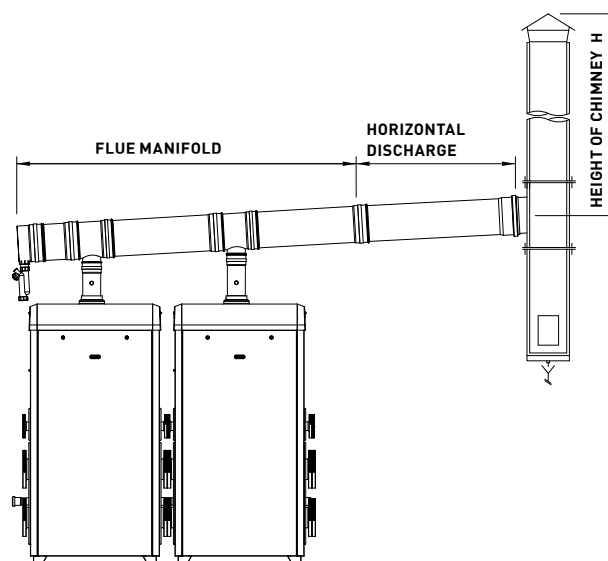


STAINLESS STEEL FLUE MANIFOLD
KIT FOR F 500 BOILER - CASCADE
INSTALLATION

code 50-00433

FLUE MANIFOLD

		FCM50	FCM100
Maximum electric fan pressure available	Pa	100	100
Minimum electric fan pressure available	Pa	30	30



Boiler version	Maximum height of chimney H = 10 mt			Maximum height of chimney H = 20 mt		
	flue manifold diameter Ø	horizontal discharge Ø ⁽¹⁾	chimney diameter Ø	flue manifold diameter Ø	horizontal discharge Ø ⁽¹⁾	chimney diameter Ø
F 150	160	160	160	160	160	160
F 200	160	160	160	160	160	160
F 250	160	160	200	160	160	200
F 300	160	200	200	160	200	200
F 350	160	200	200	160	200	250
F 400	200	200	250	200	200	250
F 450	200	200	250	200	200	250
F 500	200	250	250	200	250	250

⁽¹⁾ Horizontal discharge length: 2.5 mt

NOTES: The dimensions shown in the table must be considered as purely indicative and are therefore subject to design verification by the professional who draws up the project and are to be considered rough.

10. CASCADE REGULATION

This device is a climatic regulator and a digital cascade/sequence regulator. It manages cascade systems made by maximum 8 boilers and controls thermal systems made by different circuits such as two mixed circuits, a DHW circuit, a loop circuit and a solar circuit. The ModBus unit allows the regulator to control all functions and to guarantee a total electronic modulation of boilers according to the requested output.



code 40-00337

CASCADE REGULATOR MODBUS DDC-mPID4DSP2 (MASTER)



code 65-00691

SOLAR ELECTRONIC BOARD (SLAVE)



code 65-00544

CONTROL BOX OT/ModBus



code 40-00344

HEATING CIRCUIT ROOM TEMPERATURE CONTROLLER



code 73518LA

OUTDOOR TEMPERATURE SENSOR



code 40-00355

WEB VISOR - CASCADE SYSTEM REMOTE CONTROLLER

-

code 40-00345

MANIFOLD / MIXING CIRCUIT SENSOR

-

code 40-00346

D.H.W. STORAGE CYLINDER / SOLAR STORAGE CYLINDER
SENSOR CABLE SBS - SBI2

-

code 40-00347

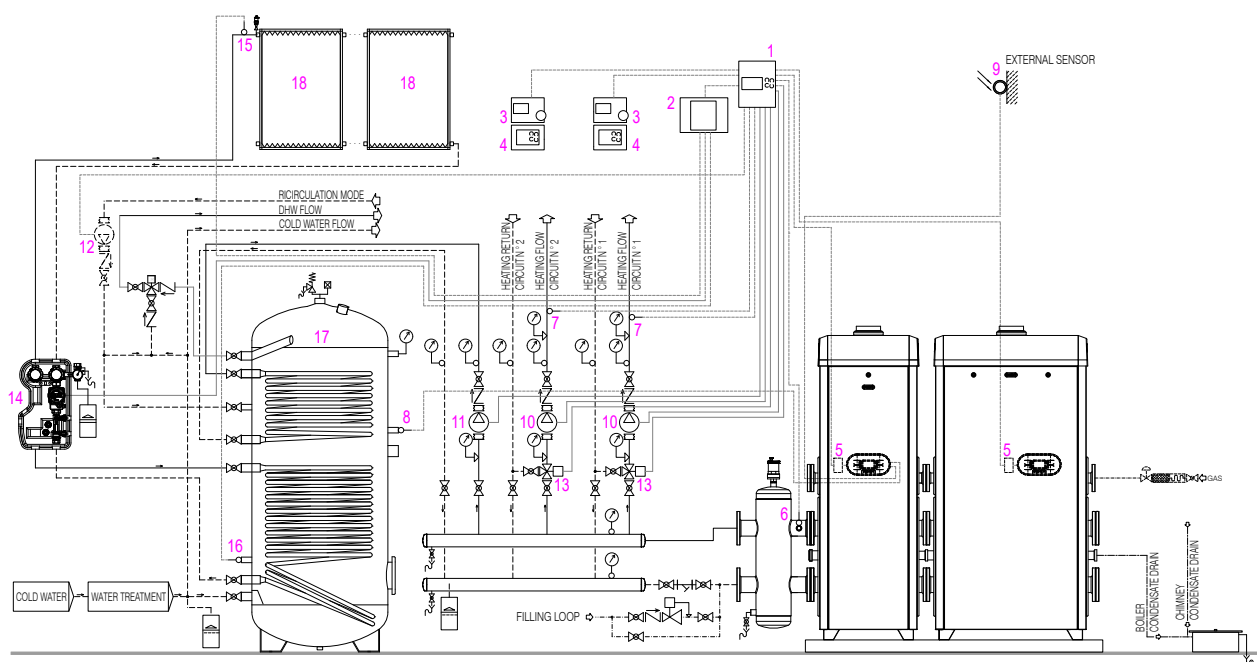
SOLAR STORAGE CYLINDER SENSOR CABLE SBI

-

code 31409LA

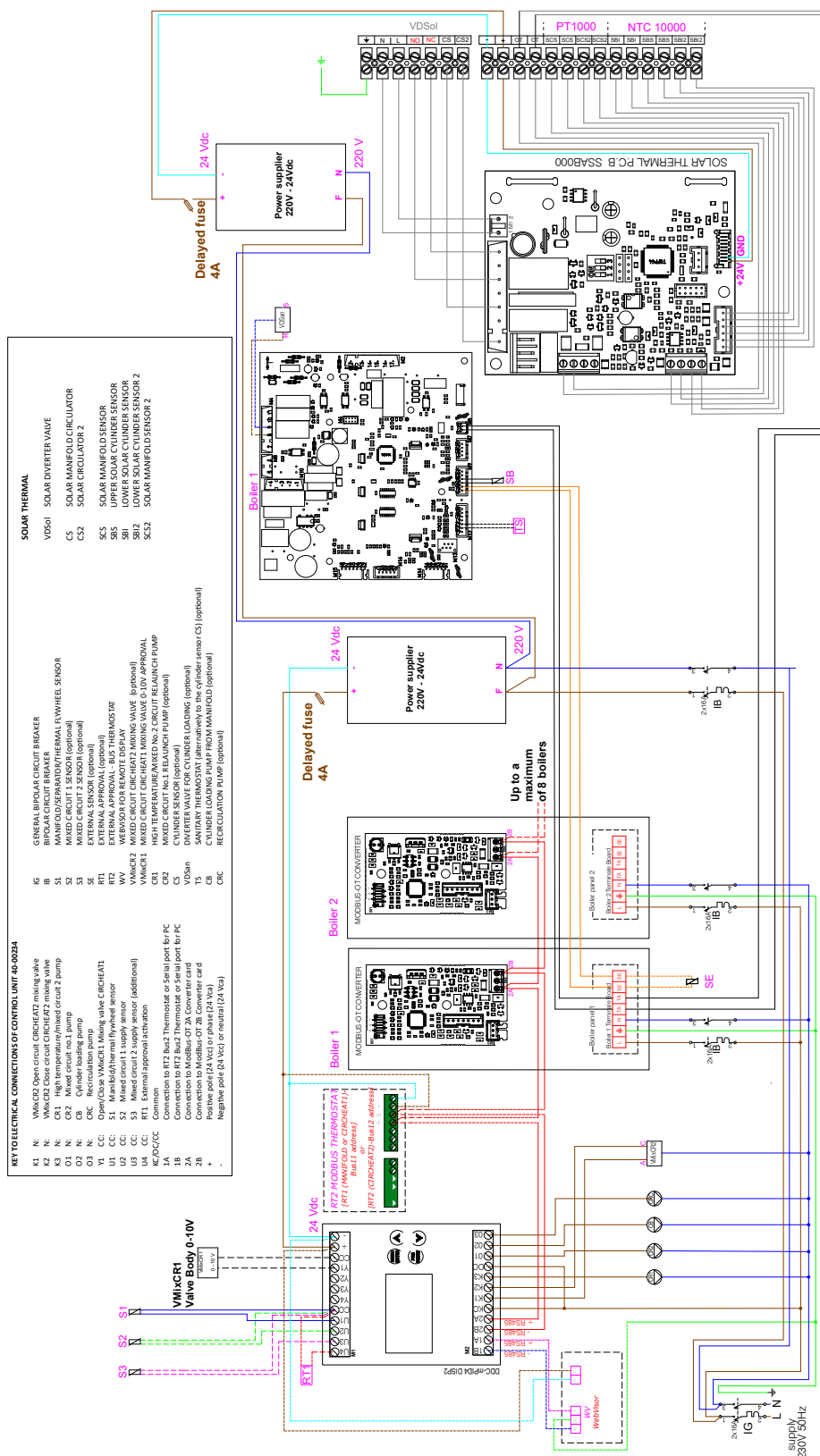
SOLAR COLLECTOR SENSOR SBS

11. SYSTEM MECHANICAL CIRCUIT



POSITION	DESCRIPTION	CODE
1	CASCADE REGULATOR MODBUS DDC-mPID4DSP2 (MASTER)	40-00337
2	SOLAR ELECTRONIC BOARD (SLAVE)	65-00691
3	HEATING CIRCUIT ROOM THERMOSTAT	-
4	HEATING CIRCUIT ROOM TEMPERATURE CONTROLLER (IN ALTERNATIVE TO HEATING CIRCUIT ROOM THERMOSTAT)	40-00344
5	CONTROL BOX OT/ModBus	65-00544
6	MANIFOLD SENSOR (MANIFOLD / MIXING CIRCUIT SENSOR)	40-00345
7	HEATING FLOW SENSOR MIXING HEATING CIRCUIT (MANIFOLD / MIXING CIRCUIT SENSOR)	40-00345
8	D.H.W. STORAGE CYLINDER / SOLAR STORAGE CYLINDER SENSOR CABLE SBS - SBI2	40-00346
9	OUTDOOR TEMPERATURE SENSOR	73518LA
10	MIXING HEATING CIRCUIT PUMP	-
11	D.H.W. CIRCUIT PUMP	-
12	FILLING LOOP PUMP	-
13	3-WAY MIXING VALVE HEATING CIRCUIT	-
14	SOLAR CIRCUIT PUMP	-
15	SOLAR COLLECTOR SENSOR SBS	31409LA
16	SOLAR STORAGE CYLINDER SENSOR CABLE SBI	40-00347
17	D.H.W. STORAGE CYLINDER	-
18	SOLAR COLLECTOR	-

The following electric diagrams are to be considered purely informative. For electrical connections of the various cascade systems, always refer to the wiring diagram provided by the system designer .



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