modutherm

Genesis WM

Wall hung condensing boiler

MODELS

5

OUTPUT (kW)

41 - 149

Genesis WM

The Genesis wall-mounted condensing boiler is available in a range of 5 models from 41kW - 149kW, with a highly durable stainless steel heat exchanger offering an efficiency of up to 108% net.

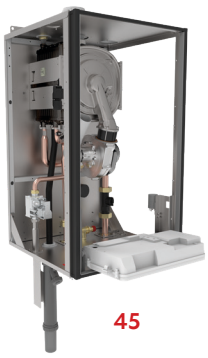
The Genesis WM boiler has a modulation range of up to 10:1 and is complete with a flue gas non-return valve, removing the need for external valves and reducing the height when installed in a modular configuration. Cascade kits are available up to 6 boilers and 900kW output.

5 5 Year Heat Exchanger Warranty*

2 2 Year Parts Warranty*

ErP ErP Part L Compliant

- Stainless steel heat exchanger
- Natural gas or LPG
- Cascade installations up to 900kW
- Class 6 NOx emissions
- High modulation ratios up to 10:1
- 0-10V control
- Integrated flue gas non-return valve
- Single boiler pipework kit - integrated low loss header
- Cascade kits from 2-6 boilers that can either be free standing or secured to a wall
- Low height frame kit for all outputs
- Balance flue wall & roof terminals
- Twin pipe flue installations
- PPS cascade flue installations
- Ability to connect up to 6 boilers in cascade, with Master-Slave logic



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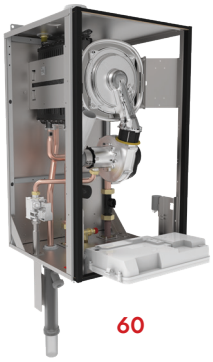

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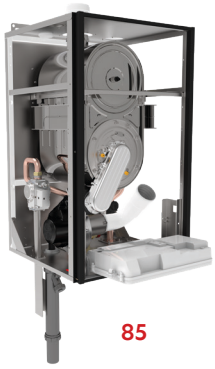

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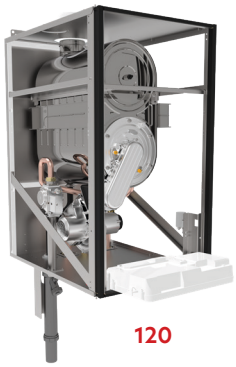

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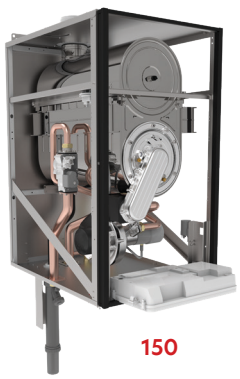
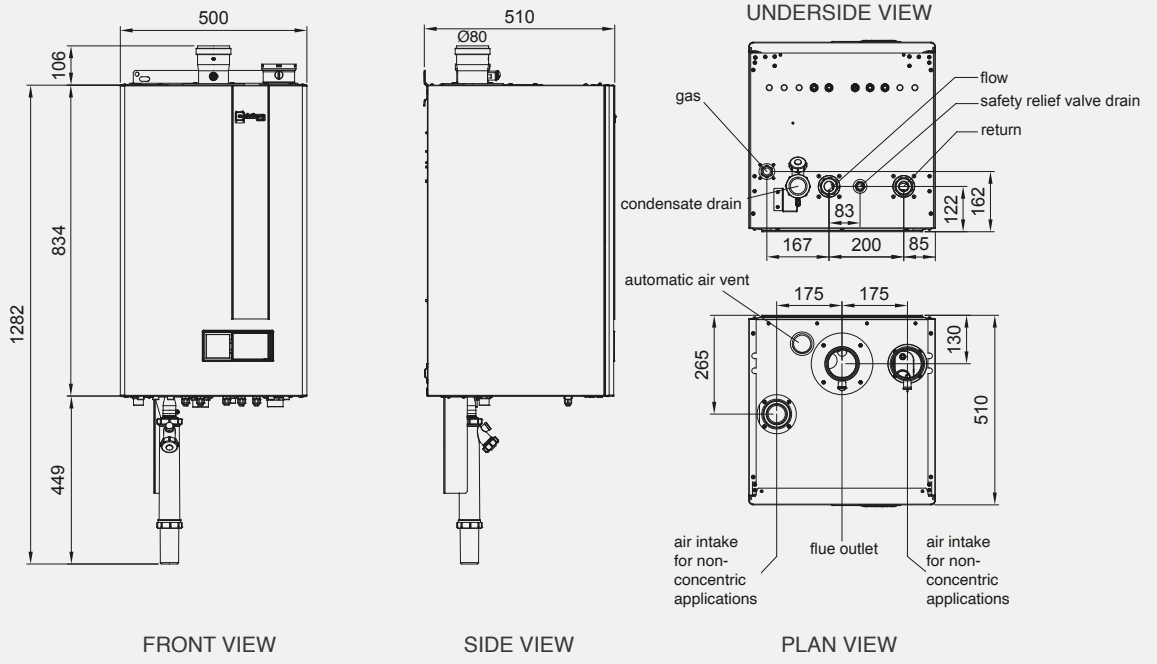


150

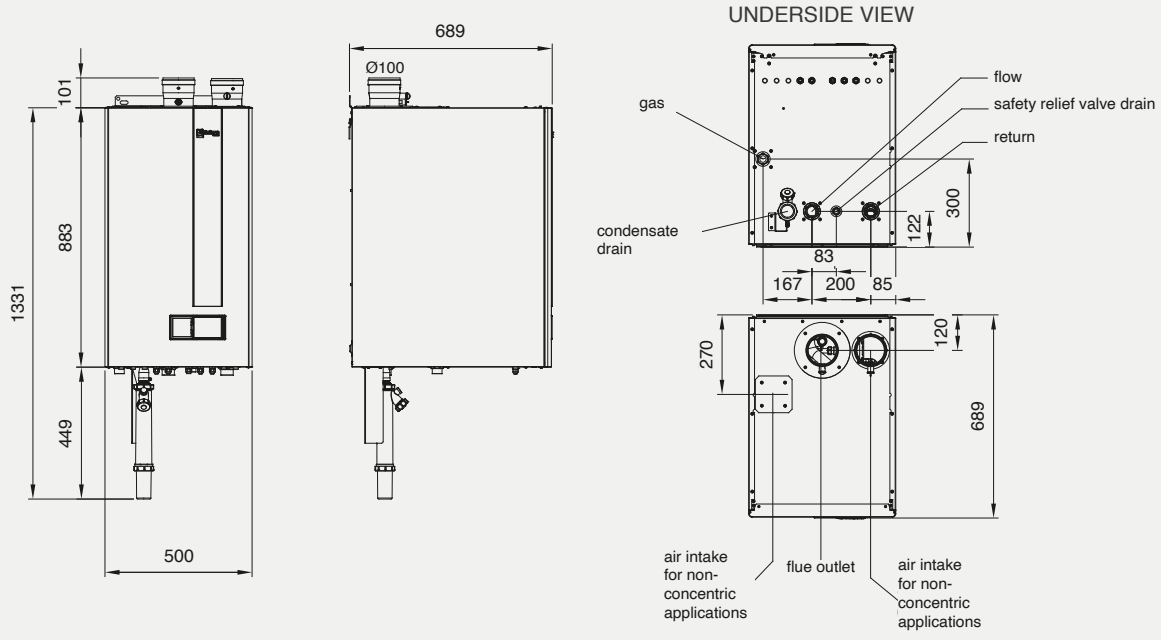
**Subject to Terms & Conditions*

Dimensions

45 - 85



120 - 150



		45	60	85	120	150
Height of boiler	mm	834	834	834	883	883
Width of boiler	mm	500	500	500	500	500
Depth of boiler	mm	510	510	510	689	689
Height to top of concentric flue adaptor	mm	920	920	920	995	995
Height to top of twin pipe	mm	940	940	940	984	984
Heating return connection	inches	1¼	1¼	1¼	1¼	1¼
Heating flow connection	inches	1¼	1¼	1¼	1¼	1¼
Gas connection	inches	¾	¾	¾	1	1
Concentric flue size	mm	80/125	80/125	80/125	100/150	100/150

Clearances		**45 - 85**	**120 - 150**
Front	mm	800	1000
Sides	mm	25	25

Performance data

		45	60	85	120	150
Power						
ErP efficiency rating (modules ≤ 70kW only)		A	A	-	-	-
Maximum boiler output (80-60°C) - NG & LPG	kW	38.5	58.3	77.8	111.3	135.7
Maximum boiler output (50-30°C) - NG & LPG	kW	41.5	62.8	84.8	122	148.7
Minimum boiler output (80-60°C) - NG & LPG	kW	3.8	5.8	8.5	11.1	21.6
Minimum boiler output (50-30°C) - NG & LPG	kW	4 3	0.3	07	12.4	23 9
Maximum boiler input (gross) - NG & LPG	kW	40	60	81	115	140
Heat efficiency (50-30°C) - maximum output	%	105.3	104.6	104.8	106.1	106.2
Standby losses	kW	0.085	0.099	0.114	0.097	0.127
Modulation		1:9	1:9	1:9	1:10	1:6
Building regulations Part L seasonal efficiency {Non Domestic Building}	% gross	95.6	95.9	95.8	96.3	95.8
SAP 2009 Annual efficiency {Natural Gas}	%	88.9	89.0	89.0	89.3	89.0
Sound power level indoors	dB(A)	54	59	63	63	61
Hydraulic						
Water content	litres	2.2	3.3	4.3	6.7	9.2
System design flow rate (30°C AT rise) single boiler	ls	0.33	0.50	0.68	0.97	1.18
Water side pressure loss (30°C AT rise) single boiler	kPa	18.3	19.6	21.7	21.9	24.4
System design flow rate (20°C AT rise) cascade	ls	0.50	0.75	1.01	1.46	1.78
Water side pressure loss (20°C AT rise) cascade	kPa	36.5	37.5	44.7	42.9	50.4
Minimum water pressure	bar	0.8	0.8	0.8	0.8	0.8
Maximum water pressure	bar	3.0	3.5	5.0	5.0	5.0
Maximum flow temperature setting	°C			80*		
Gas						
Gas flow rate, NG (G20) - maximum	m3/hr	4.23	6.35	8.57	12.17	14.81
Maximum gas inlet pressure - NG	mbar	25	25	25	25	25
Nominal gas inlet pressure - NG	mbar	20	20	20	20	20
Minimum gas inlet pressure - NG	mbar	17	17	17	17	17
Gas flow rate - LPG (G31) - maximum	m3/hr	1.64	2.45	3.31	4.70	5.73
Nominal gas inlet pressure - LPG	mbar	37	37	37	37	37
Flue						
Approx. flue gas volume - NG @ 15°C, 9.1-9.3% CO2, @ N.T.P { dry }	m3/hr	46.0	69.8	95.3	135.2	164.7
Approx. flue gas volume - NG @ 15°C, 9.1-9.3% CO2, @ N.T.P { wet }	m3/hr	54.5	82.5	112.4	159.6	194.3
Maximum flue gas temperature (80-60°C) - NG { Inlet Air at 20°C}	°C	77.0	77.0	65.3	74.0	72.6
Pressure at boiler flue spigot (80-60°C) - NG *Single boiler/individual flue applications*	Pa	190	150	194	275	290
Pressure at boiler flue spigot (80-60°C) - NG** *Multiple boiler/combined flue applications*	Pa	30	30	30	30	30
Approx. flue gas volume - LPG (15°C, 10.3-10.5% CO) @ N.T.P { dry }	m3/hr	47.7	71.5	99.4	138.4	168.5
Approx. flue gas volume - LPG (15°C, 10.3-10.5% CO) @ N.T.P { wet }	m3/hr	54.2	81.3	112.7	157.2	194.8
Maximum flue gas temperature (80-60°C) - LPG { Inlet Air at 20°C}	°C	77.0	77.0	65.3	74.0	72.6
Pressure at boiler flue spigot (80-60°C) - LPG *Single boiler/individual flue applications*	Pa	190	150	194	275	290
Pressure at boiler flue spigot (80-60°C) - LPG** *Multiple boiler/combined flue applications*	Pa	30	30	30	30	30
Dry NOx emmision (0% excess oxygen, mg/kWh dry air free)	mg/kWh	23	39	36	30	40
Electric						
Electrical supply				230-250V		
Power consumption - maximum boiler modulation	W	94	119	156	251	310
Start current (per module)	Amp			4.0		
Run current (per module)	Amp			4.0		
Other						
Dry weight	kg	45.5	50.0	74.5	84.5	106

**85°C for single boiler applications available on request **Consider the use of Non Return Valves*

Pipe kits

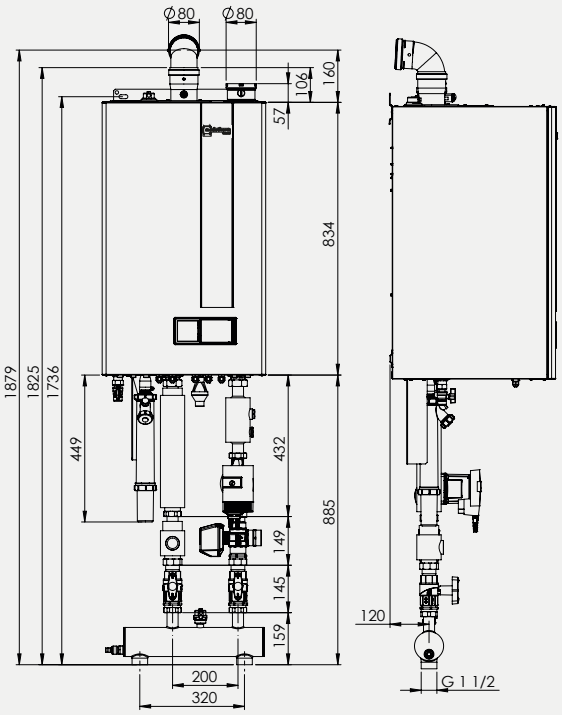
Single boiler pipework kit with low loss header

For single boiler applications where the pipework is underneath, frame kits cannot be used, and boilers need to be mounted to the wall.

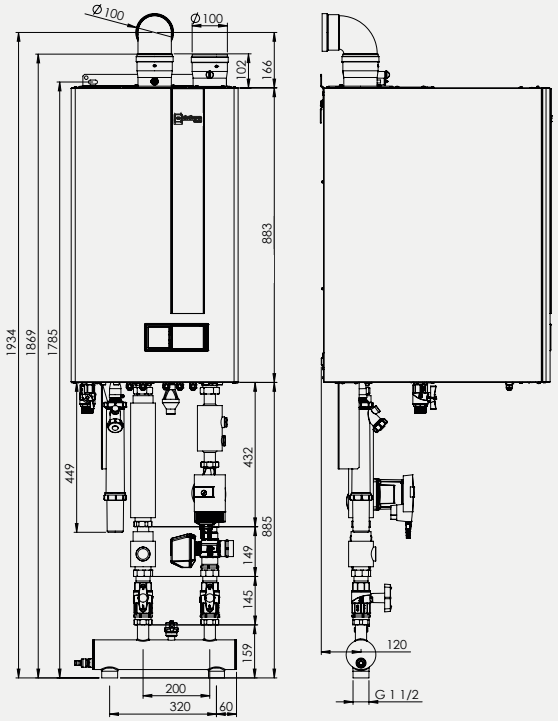
Kit comprises of:

- 1½" secondary flow/return connections
- Low loss header
- ErP compliant pump
- Automatic air vent
- 3 way valve for domestic HWS
- Isolation valves
- Insulated header

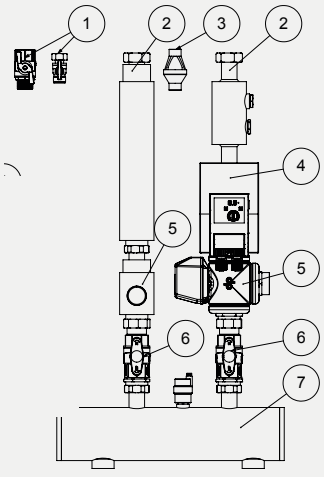
45 / 60 / 85



120 / 150



Components



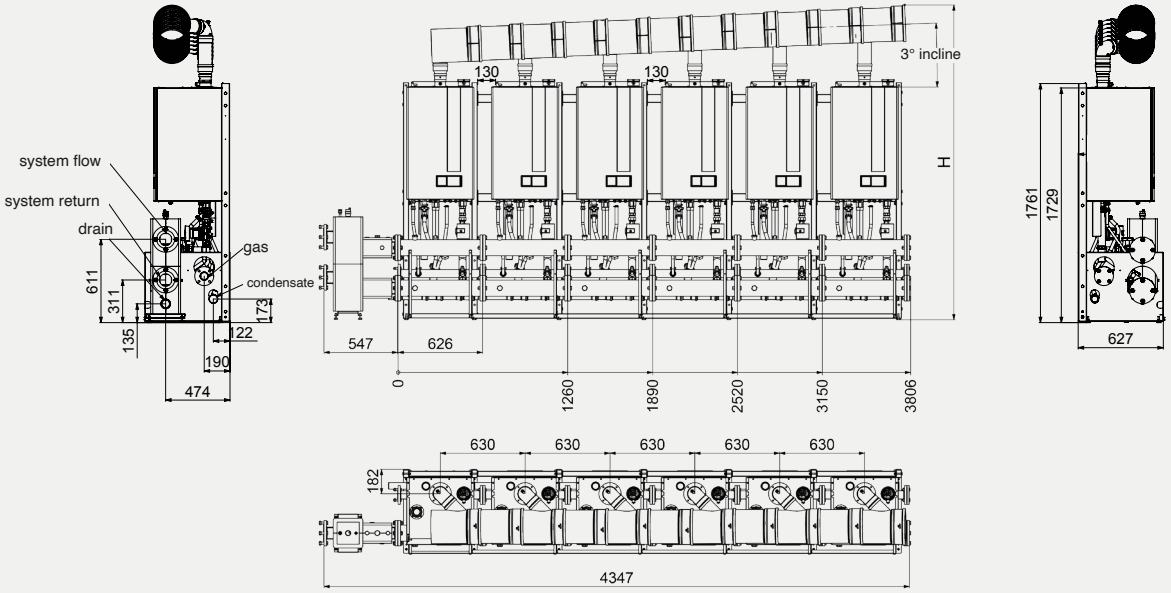
1	Gas cock (by others)
2	Hydraulic connection with expansion and drain connections
3	Tundish
4	ErP compliant pump
5	Three-way valve kit for DHW tank
6	Isolation valves
7	Insulated low loss header

Cascade kits

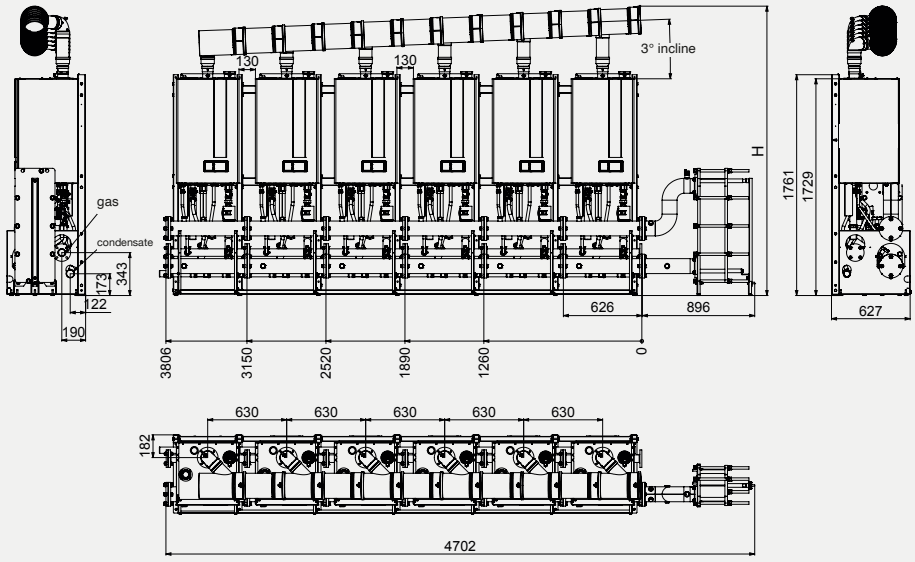
In-line cascade arrangement

For modular installations, our cascade kits are available from 2-6 boilers, with the low loss header or plate heat exhanger option on the right or the left side.

With low loss header



With plate heat exchanger



		45 / 60 / 85		120 / 150		
Power	kW	<300	<600	<300	<600	<900
Flue diameter	mm	160	200	160	200	250
Cascade flue height (H)						
2 boilers	mm	2160	-	2085	2100	-
3 boilers	mm	2185	-	2109	2134	-
4 boilers	mm	2205	2241	-	2167	-
5 boilers	mm	2230	2275	-	2200	2228
6 boilers	mm	2255	2308	-	-	2258

Cascade kits

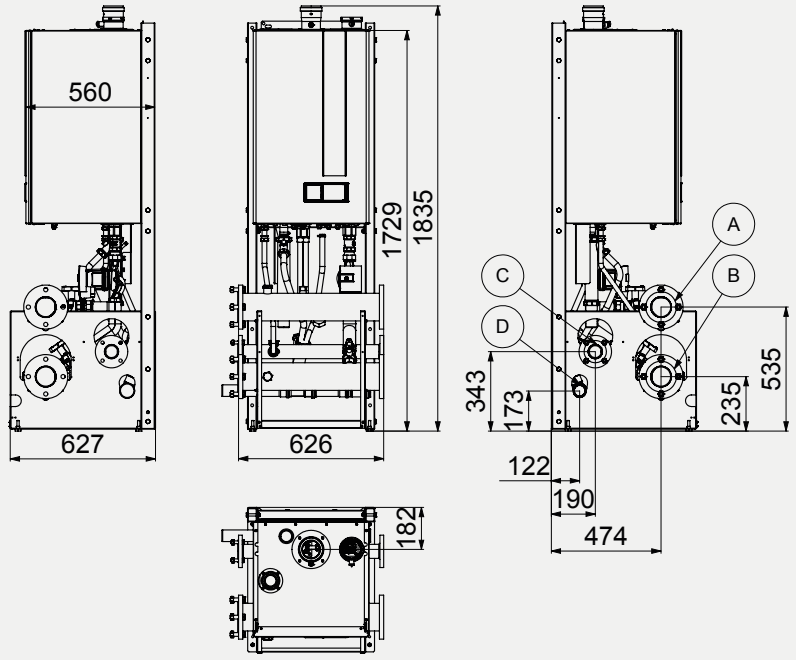
In-line cascade frame

(up to 6 boilers)

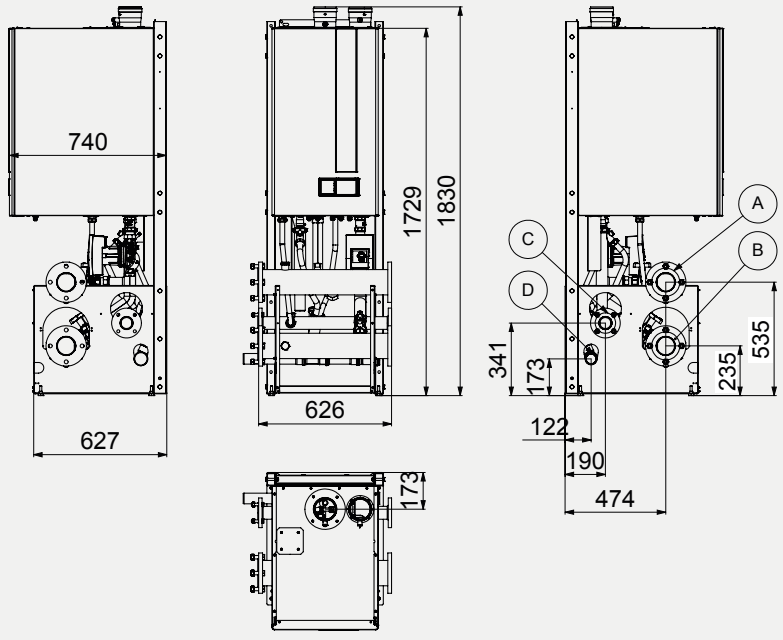
For modular installations, our pipe sets are available from 2-6 boilers, giving a maximum output of 900kW.

Each set is individual, and can therefore be bolted together. Flow & return headers are DN80 and insulated.

45 / 60 / 85



120 / 150



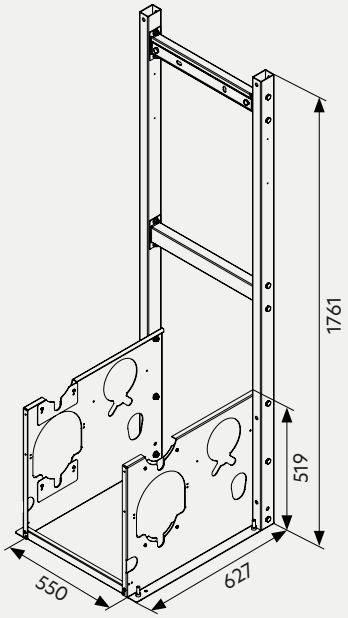
A	Main flow header *DN80 Pn6*
B	Return flow header *DN80 Pn6*
C	Gas inlet header *DN50 Pn6*
D	Condensate drain system *50Ø plastic*

Cascade kits

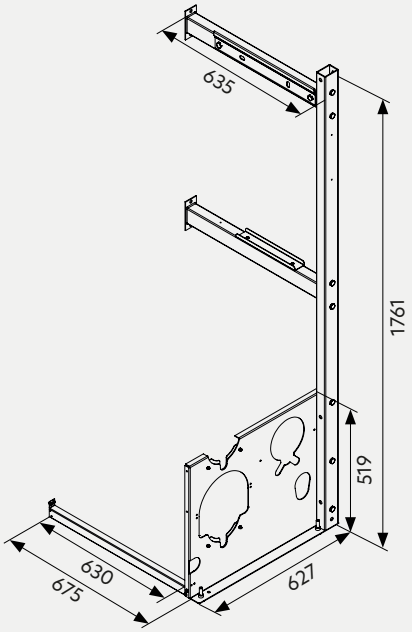
Free standing frames

Frames can be placed anywhere in the plantroom or against the wall.

Starting frame
(first boiler)

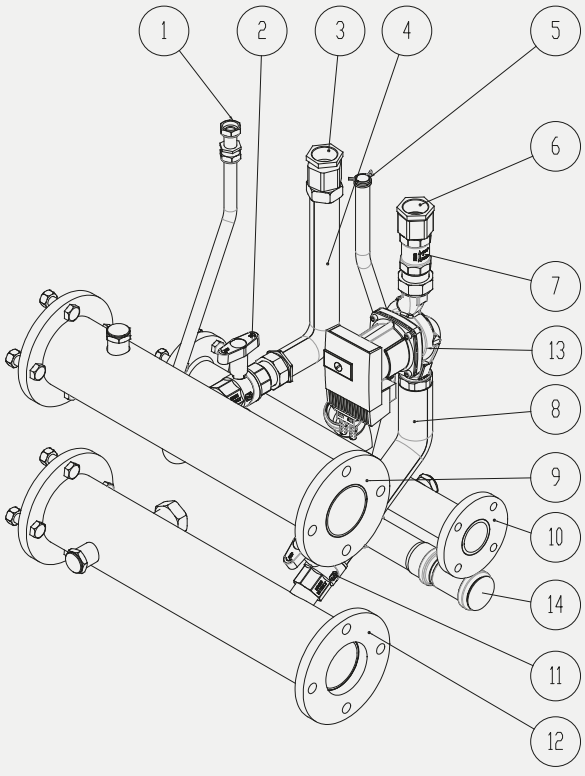


Expansion frame
(second-sixth boiler)



Hydraulic group

Supplied for each boiler



1	Gas connection
2	Isolation valve flow
3	Main flow connection
4	Main flow pipe insulation
5	Flexible hose for safety valve
6	Return flow connection
7	Check valve
8	Return flow pipe insulation
9	Flow header
10	Gas header
11	Isolation valve return
12	Return header
13	High efficiency pump
14	Condensate drain manifold

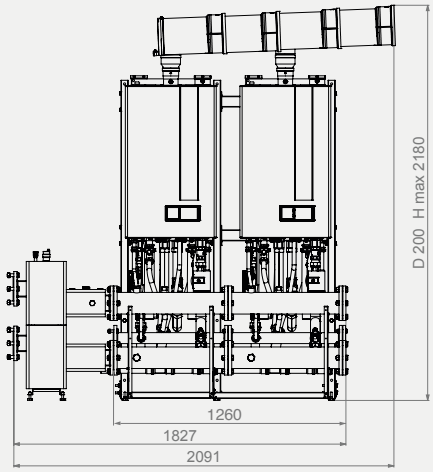
Cascade kits

Back to back cascade installation

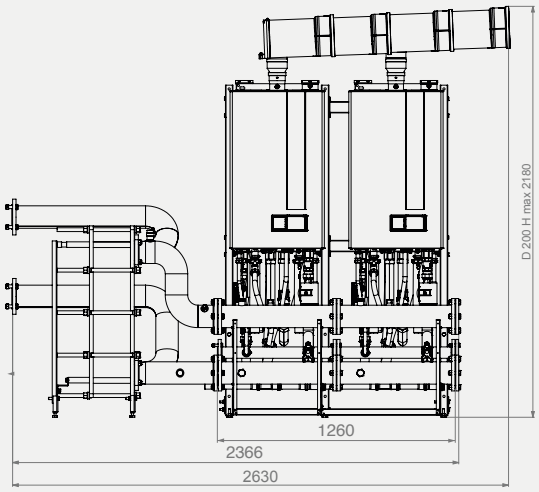
The low loss header and the plate heat exchanger can be installed on the left or right side. The 45/60/85 models can be configured with 2-4 boilers, whereas the 120/150 models can be configured with 2-6 boilers.

45 / 60 / 85

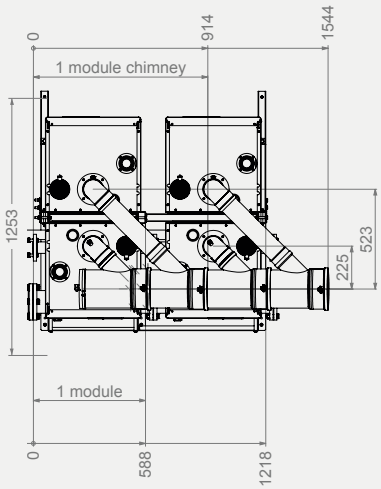
With low loss header



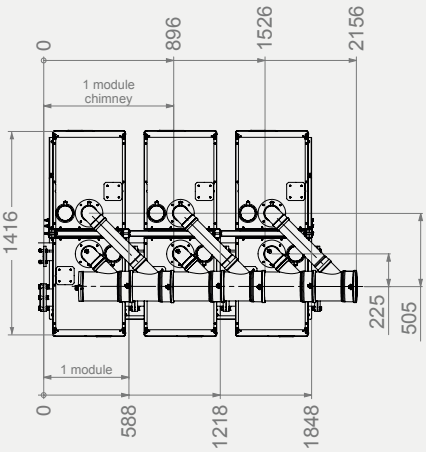
With plate heat exchanger



45 / 60 / 85

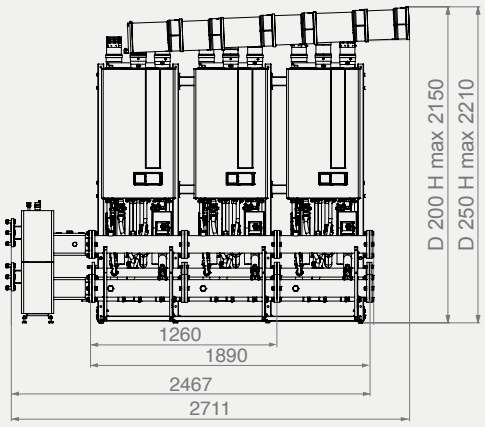


120 / 150

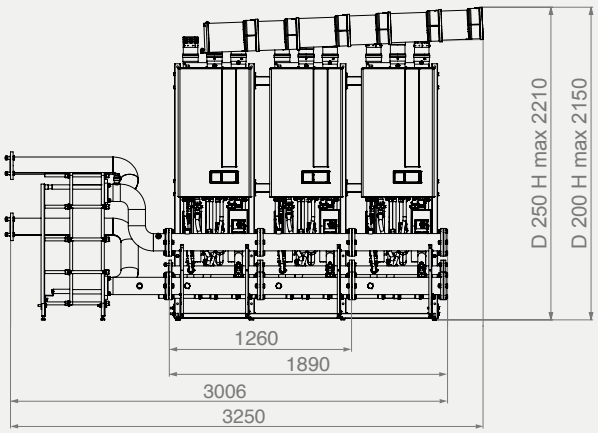


120 / 150

With low loss header



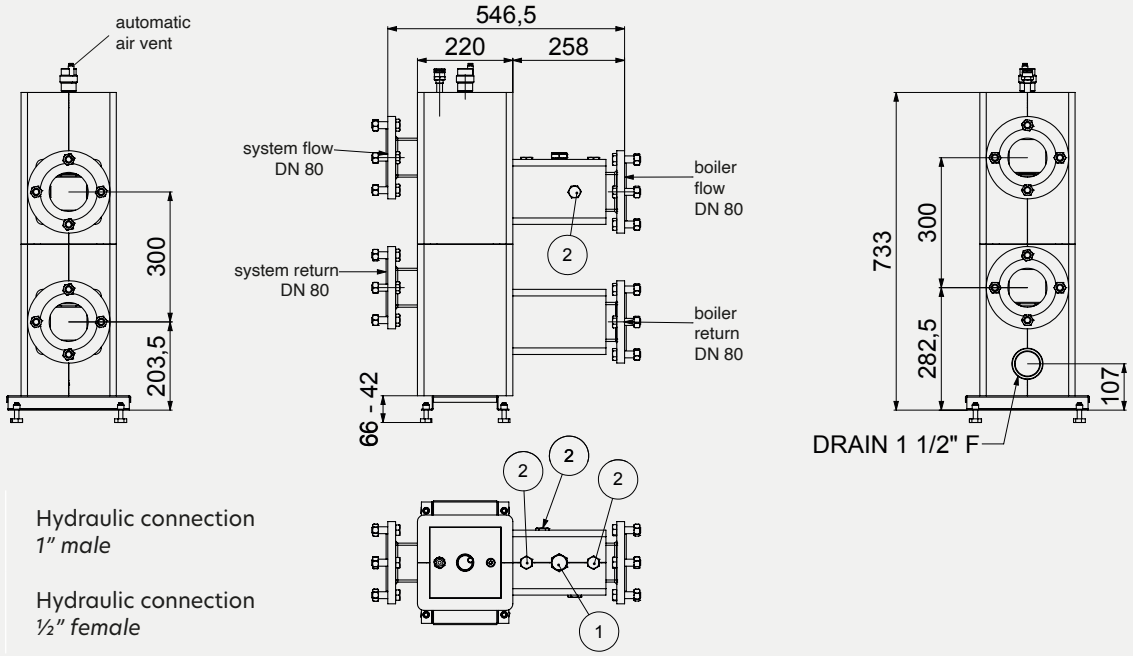
With plate heat exchanger



Cascade kits

Low loss header

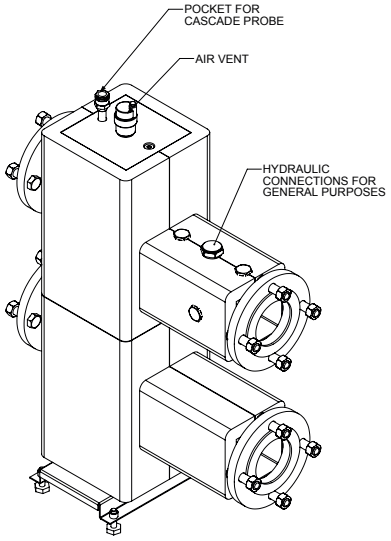
Optional low loss headers can be utilised when selecting pipework kits. The headers are supplied insulated as standard.



1	Hydraulic connection *1" male*
2	Hydraulic connection *½" female*

Pump selection

When selecting either a low loss header or a separation plate heat exchanger, the table below details the boiler pump for the correct application.

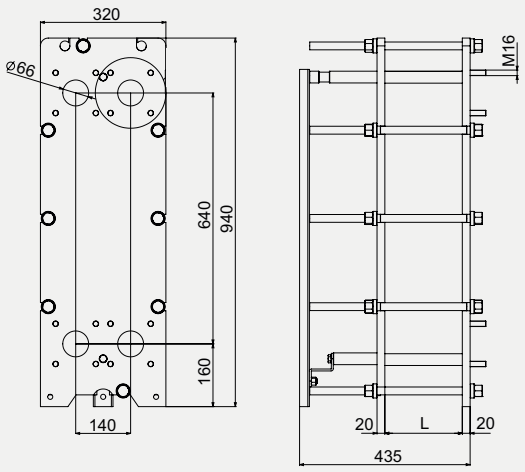


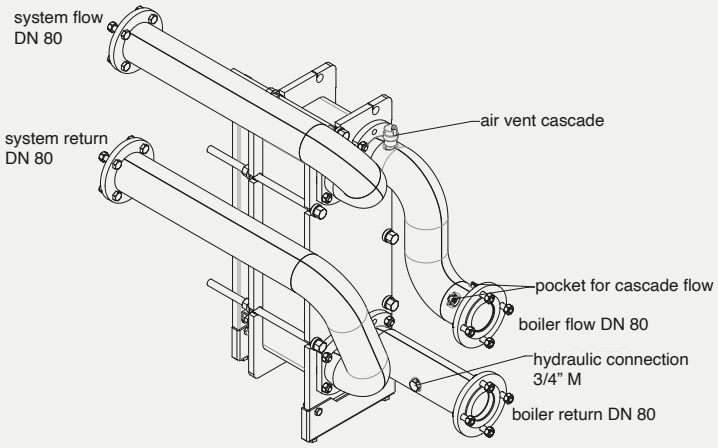
BOILER MODEL	PUMP MODEL	CODE	SINGLE BOILER	LOW LOSS HEADER	PLATE HEAT EXCHANGER
45	Yonos para 25/7.5 PWM	PUMP-01	✓	✓	✓
60	Yonos para 25/7.5 PWM	PUMP-01	✓	✓	
60	UPML25-105-180 PW	PUMP-05			✓
85	UPML25-105-180 PW	PUMP-05	✓	✓	✓
120	UPML25-105-180 PW	PUMP-05	✓	✓	
120	UPMXL25-125-180 PWM	PUMP-07			✓
150	UPMXL25-125-180 PWM	PUMP-07	✓	✓	
150	UPMXXL25-120-180 PWM	PUMP-08			✓

Cascade kits

Separation plate heat exchanger

A separation plate heat exchanger can be used on old or dirty systems to protect the boiler's heat exchanger. It is designed as a kit, to bolt onto the flow and return of the cascade manifold.





Selection table

PART NUMBER	POWER SIZE	PLATES QUANTITY	DIMENSION L	MAX WORKING PRESSURE	WATER VOLUME HEADERS SIDE	WATER VOLUME SYSTEM SIDE	WEIGHT EMPTY	WEIGHT FULL
	kW		mm	bar	litres	litres	kg	kg
PLATE-01	up to 120	11	27.5	10	1.4	1.4	110	115
PLATE-02	up to 205	21	52.5	10	2.79	2.79	117	124
PLATE-03	up to 300	27	67.5	10	3.63	3.63	121	130
PLATE-04	up to 360	35	87.5	10	4.74	4./4	128	140
PLATE-05	up to 450	41	102.5	10	5.58	5.58	133	146
PLATE-06	up to 540	51	127.5	10	6.98	6.98	141	157
PLATE-07	up to 600	57	142.5	10	7.81	7.81	145	163
PLATE-08	up to 690	63	157.5	10	8.65	8.65	151	171
PLATE-09	up to 780	71	177.5	10	9.76	9.76	157	179
PLATE-10	up to 900	79	197.5	10	10.88	10.88	163	187

PART NUMBER	POWER SIZE	HEAT EXCHANGER SURFACE AREA	HEADERS SIDE		SYSTEM SIDE		HEADERS SIDE	SYSTEM SIDE
	kW	m²	°C		°C		kPa	kPa
PLATE-01	up to 120	1.35					20	20
PLATE-02	up to 205	2.85					20	20
PLATE-03	up to 300	3.75					20	20
PLATE-04	up to 360	4.95					21	21
PLATE-05	up to 450	5.85	IN	OUT	IN	OUT	21	21
PLATE-06	up to 540	7.35	80	60	50	70	21	21
PLATE-07	up to 600	8.25					21	21
PLATE-08	up to 690	9.15					25	25
PLATE-09	up to 780	10.35					27	27
PLATE-10	up to 900	11.55					34	34

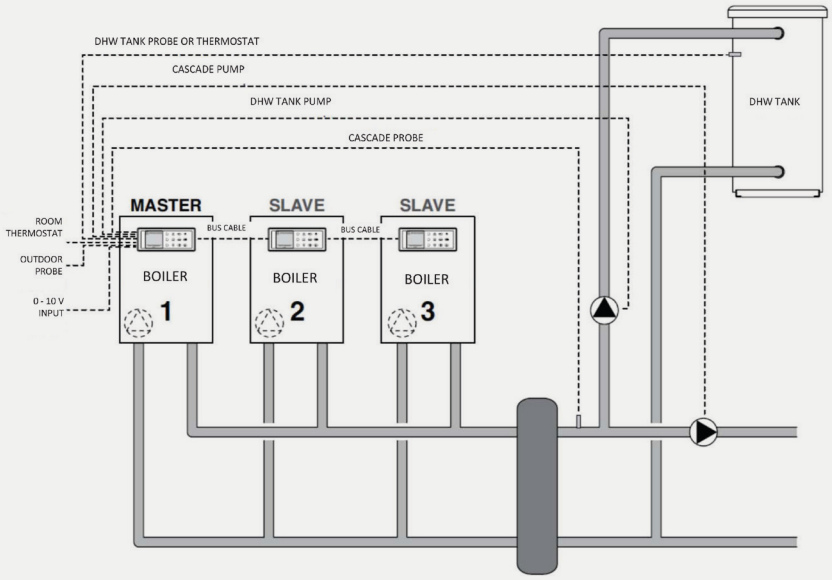
Controls

Cascade control

It is possible to connect up to 6 boilers in a cascade system. The system operates with a master-slave logic: the first boiler (master) controls the entire cascade.

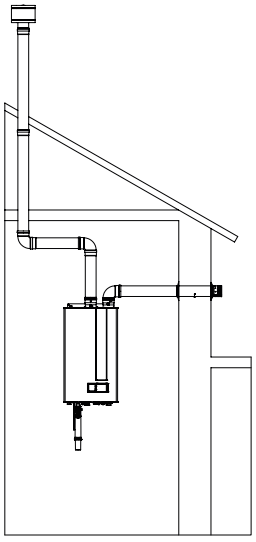
0-10V

The boiler can be controlled by an external 0-10VDC signal. Control can be performed in terms of power or temperature.



Twin pipe flue system

The twin pipe flue system contains two separate PPS pipes. One brings in the combustion air from outside, the other exhausts the flue gases. The table below details the maximum flue lengths that can be achieved with the components and their measurements.



Using the drawing & a Genesis 60 boiler as an example:

A Air intake terminal (1x) - 8.5m reduction

B 1 metre length (5x) - 5 × 1m reduction

C 90°C elbow (3x) - 3 × 3m reduction

D Roofterminal (1x) - 6m reduction

Total reduction is 28.5m, which is less than the maximum length of 75m.

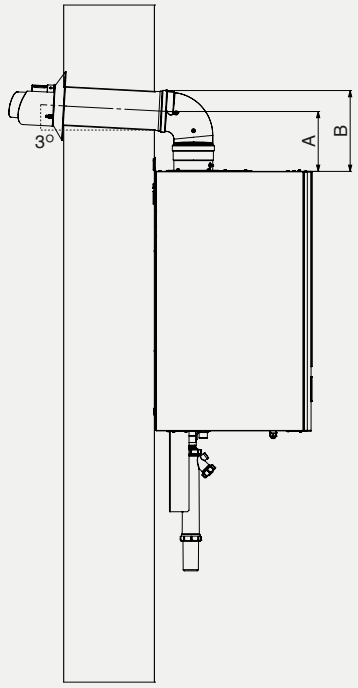
The figures in the table are measured in metres and should be deducted from the max pipe length.

	CODE	45		60		85		120		150	
Max pipe length (m)		169		75		62		43		34	
		FLUE	**AIR**	**FLUE**	**AIR**	**FLUE**	**AIR**	**FLUE**	**AIR**	**FLUE**	**AIR**
80/100 adaptor	PPS-80/100AD	0	1.5	0	2	2	0	-	-	-	-
Air intake terminal Ø100 - 1 metre	PDS-100AIT	-	7.5	-	8.5	-	9	-	10	-	10.5
Flue vent terminal Ø100 - 1 metre	PPS-100FVT	6.5	-	7	-	7.5	-	-	0	-	-
Roof terminal Ø100	PPS-100RT	5.5	-	7	-	6.5	-	7	0	7.5	-
45° elbow Ø100	PDS-100-45B	1.5	2.5	1.5	2.5	3	2	3	2	3	2
90° elbow Ø100	PDS-100-90B	2	3	2	3	2	3.5	3.5	2.5	4	2.5
1 metre length Ø100	PDS-100-1MI	0.5	1	0.5	1	1	0.5	1	0.5	1	0.5

Flue systems

Wall terminal

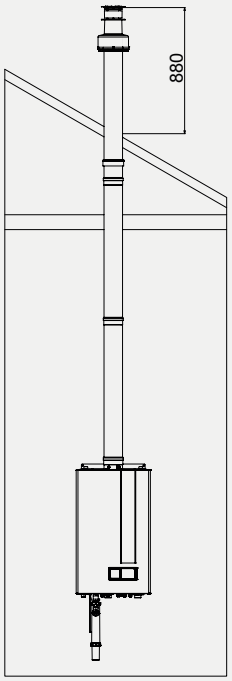
The balance flue wall terminal is either Ø80/125 or Ø100/150 depending on the boiler model. It is designed to terminate horizontally through an external wall, bringing in the combustion air from outside and exhausting the flue gases.



	Ø80/125	Ø100/150
A	195	220
B	260	300

Roof terminal

The balance flue roof terminal is either Ø80/125 or Ø100/150 depending on the boiler model. It is designed to terminate vertically through the roof, bringing in the combustion air from outside and exhausting the flue gases.



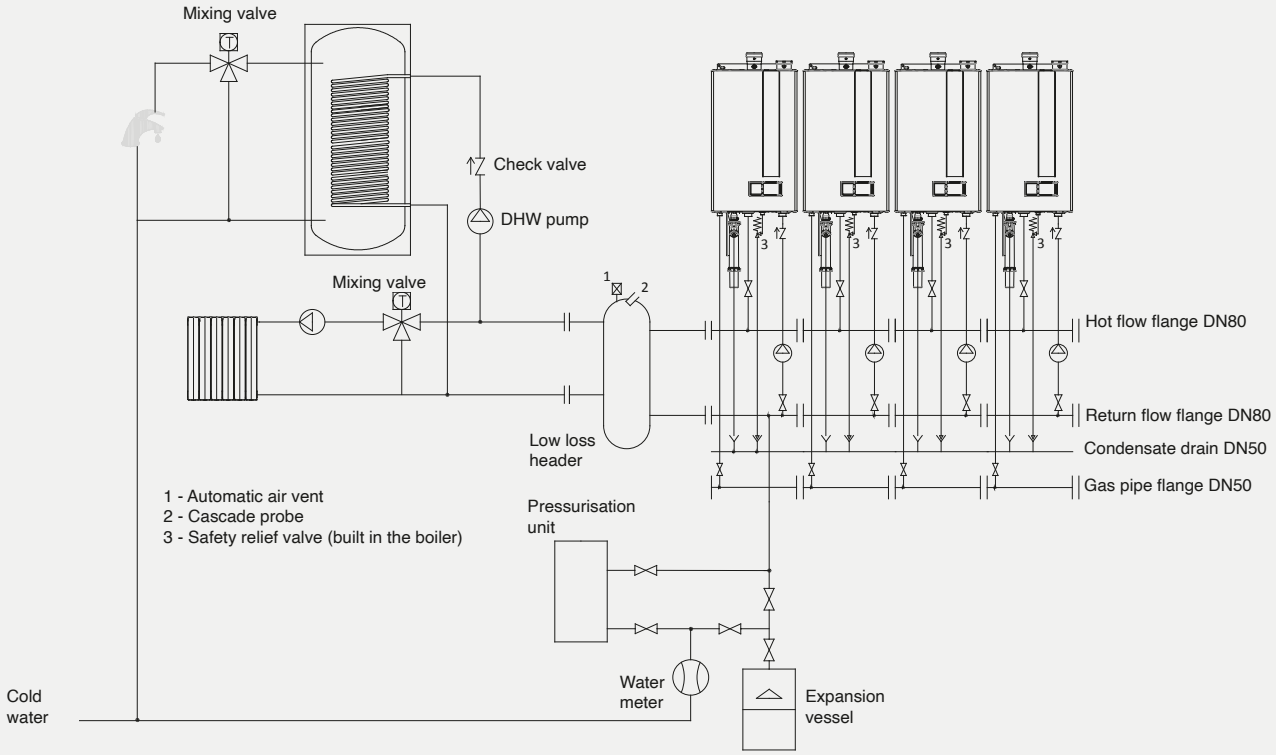
The figures in the table are measured in metres and should be deducted from the maximum pipe length, not to exceed the length.

	CODE	SIZE Ø80/125			SIZE Ø100/150				
Max pipe length		16	14	13	39	33	30	30	17
MODEL		**45**	**60**	**85**	**45**	**60**	**85**	**120**	**150**
Ø80/125 concentric adaptor	CE-80/125CA	0.5	0.5	0	-	-	-	-	-
Ø80/125 to Ø100/150 concentric adaptor	CF-80-100/150CA	-	-	-	1.5	1.5	1.5	-	-
Ø100/150 concentric adaptor	CF-100/150CA	-	-	-	-	-	-	0	0
Ø80/125 wall terminal	CF-80/125WT	6	6.5	7	-	-	-	-	-
Ø100/150 wall terminal	CE-100/150WT	-	-	-	6.5	7	7.5	8	8.5
Ø80/125 roof terminal	CF-80/125RT	6.5	7	7.5	-	-	-	-	-
Ø100 150 roof terminal	CF-100/150RT	-	-	-	6.5	7	7.5	8	8.5
Ø80/125 45° elbow	CF-80/125-45B	1	1	1	-	-	-	-	-
Ø100/150 45° elbow	CF-100/150-45B	-	-	-	0.5	1	1	1	1
Ø80/125 90° elbow	CF-80/125-90B	1	1	1.5	-	-	-	-	-
Ø100/150 90° elbow	CF-100/150-90B	-	-	-	2.5	2.5	3	3	3
Ø80/125 0.5m length	CF-80/125-05ML	0.5	0.5	0.5	-	-	-	-	-
Ø100/150 0.5m length	CF-100/150-05ML	-	-	-	0.3	0.5	0.5	0.5	0.5
Ø80/125 1m length	CF-80/125-1ML	1	1	1	-	-	-	-	-
Ø100/150 1m length	CF-100/150-1ML	-	-	-	1	1	1	1	1

For an example calculation, refer to page 12.

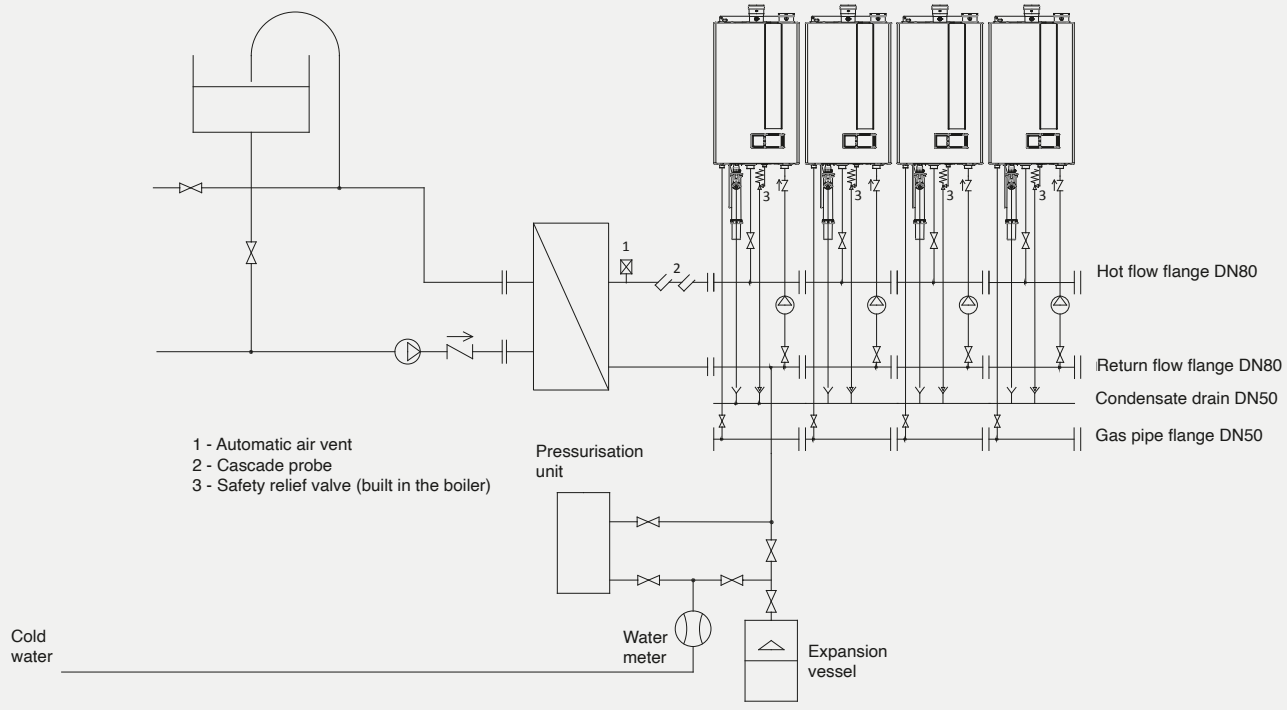
System schematics

Sealed system with low loss header



Sealed system with plate heat exchanger

Sealed primary and open-vented secondary system with plate heat exchanger separation.



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