



Boiler systems **Upsilon Cascade**

Easy assembly • Configurations up to 8 boilers • Wall hung, free standing – in line or free standing – back to back • Maximize the use of available plant room space • Intelligent cascade manager • Delivery of complete system • Combined flue gas discharge channel

Intelligent controls

The boiler is equipped with its own controller per heat exchanger and is fitted with an integrated cascade manager. The control unit allows central read-outs of settings. Each boiler anticipates the heat demands of the CH-installation. Consequently, the boiler modulates its capacity to the installation. As a result, the boiler will be operational longer at a lower level. The cascade manager controls the boiler order and even allocation of burning hours.

Connected to an external sensor, the control can operate weather dependent. This means that the control system measures outside temperatures and water flow temperatures. Using these data, the control system works out the optimum water flow temperature required for the installation

The Upsilon control shows the actual date and time which enables programs to start at the requested date and time.

The Upsilon can be connected to 0 – 10 volt, Volt Free on/off or OpenTherm signals. This makes it very easy to connect the Upsilon to a building management system. An On-Off contact is a volt-free switch to create a heat demand with closed contact.

An OpenTherm-control is a digital controller which is communicating with the boiler according the OpenTherm-protocol. The controller calculates continuously the desired flow water temperature and sends this to the boiler(s).

At a heat demand of the 0-10 Volt controller a signal is sent out and varies from 0-10 Volt. This signal is translated by the Upsilon boiler to a set value (desired flow water temperature or load) which is send via the data bus to the boiler(s). Depending on the Voltage the set value becomes higher or lower.



Boiler configurations and easy assembly

The Upsilon cascade system is quick and easy to install thanks to the Plug & Play – principle. The diversity in configuration options enables the installation to be placed almost anywhere, whether it is an existing location or a new built.

A.O. Smith delivers the entire package; it just needs to be put together. The quick fit hydraulic pipe work header fixes the boiler support frames with all the interconnecting pipework. Dependent on the installation a DN65 or DN100 low loss header will be supplied. Insulation sets are available for the flow and return pipes.

The Upsilon cascade system can be wall or frame mounted. In the frame mounted option it is possible to place the boilers in line or back to back. A.O. Smith will provide you with the required mounting set together with all the other parts used in the cascade installation.

The hydraulic systems are available in modules for 2 or 3 boilers fitted with double connections for back-to-back assemblies. The connection sets between the boiler and pipe work headers are fitted with gas insulation valves and service valves.

The Upsilon cascade system is designed to fit into multiple layout options. This allows the designer to maximize the use of the available plant room space for other installations.

On the following pages you can find some of the available configuration options.

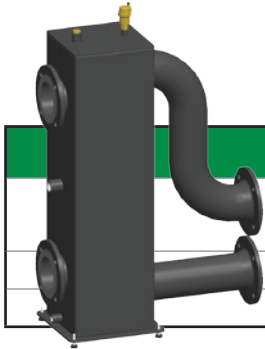


Header configurations

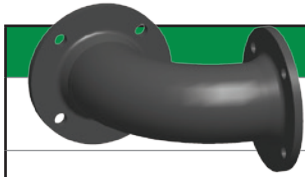
A low loss header is always part of a cascade configuration. Selecting one is dependent on the capacity of the installation. A.O. Smith delivers a DN65 low loss header up to 452 kW and a DN100 low loss header up to 960 kW.

The header can be placed on the right hand side or on the left hand side of the cascade installation. Usually the header is placed in a straight line from the installation. As an option the low loss header can be placed in a forward or backward angle of 90° (optional bend set for DN65 or DN100).

Low loss headers come standard with adjustable feet, automatic air vent, assembly materials, drain valve, pocket for temperature sensor and a connection for a water pressure gauge or temperature sensor.



	Art. No.	
	0310272	Low loss header DN65 to 452kW
	0310273	Low loss header DN100 to 960kW



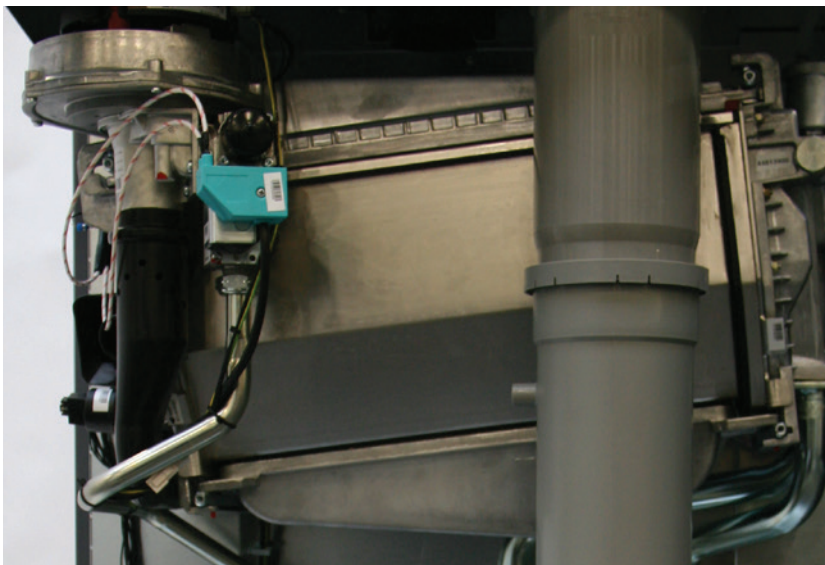
	Art. No.	
	0310274	Bends set DN65 flow/return
	0310275	Bends set DN100 flow/return

The low loss header can be positioned at a 90° angle. A set of bends may be used for that purpose.

Heat exchanger

The heat exchanger in the Upsilon boiler is made with stainless steel tubes. Thanks to the large number of tubes a high level of condensation is possible. The slightly tilted position of the heat exchanger ensures the disposal of the condensate water. The smoothness and the assembly of the tubes prevent pollution of the heat exchanger. In addition, stainless steel does not pollute as much as aluminum and hardly requires cleaning.

The ceramic burner is mounted upside down. This prevents burner pollution and has an insulating effect on the heat exchanger. Intrusive boiler maintenance is only required once every four years, or after 16000 operating hours, whichever comes first. This maintenance can be carried out easily and quickly. During the entire period, efficiency remains at its high level and emissions are very low



Technical specifications

		UB 70	UB 110	UB 140
Gas data natural gas G20				
Input (gross value)	kW	68.5	107.9	136.4
Inlet pressure	mbar	20	20	20
Gas consumption	m ³ /h	6.5	10.3	13.0
Modulation range CH (capacity 80/60°C)	kW	8.8 - 60.1	14.8 - 95.0	17.6 - 120.0
Modulation range CH (capacity 50/30°C)	kW	9.9 - 65.0	16.8 - 102.3	19.8 - 130.0
Gas data propane gas G31				
Input (gross value)	kW	67.2	103.1	133.7
Inlet pressure	mbar	37	37	37
Gas consumption	kg/h	4.8	7.4	9.5
Modulation range CH (capacity 80/60°C)	kW	19.5 - 60.1	35.1 - 95.0	39.0 - 120.0
Modulation range CH (capacity 50/30°C)	kW	22.0 - 65.0	39.7 - 102.3	44.0 - 130.0
General data				
Nox class		5	5	5
Efficiency class according BED		****	****	****
Efficiency according to EN 677 (36/30°C part load, Hi)	%	109.8	109.2	108.9
Efficiency according to EN 677 (80/60°C full load, Hi)	%	97.3	97.6	97.6
Efficiency according to EN 677 (50/30°C, low load, Hi)	%	110.2	110.3	110.2
Efficiency according to EN 677 (36/30°C part load, Hs)	%	98.9	98.3	98.1
Efficiency according to EN 677 (80/60°C full load, Hs)	%	87.6	87.9	87.9
Efficiency according to EN 677 (50/30°C, low load, Hs)	%	99.2	99.3	99.2
Weight empty	kg	65	83	87
Maximum working pressure	kPa (bar)	400 (4)	400 (4)	400 (4)
Flue gas discharge temperature (50/30°C, part load, Hi)	°C	30	30	30
Flue gas discharge temperature (80/60°C, full load, Hi)	°C	76	73	77
Electrical data				
Power consumption maximum	W	161	250	322
Power consumption stand-by	W	2.5	3.7	3.7
Power supply	VAC/Hz	230 (-15% +10%)/50 (±1)		
Degree of protection acc. EN 60529		IPX4D		
Shipping data				
Weight (incl. packaging)	kg	90	108	112
Width packaging	mm	800	800	800
Height packaging	mm	670	670	670
Depth packaging	mm	1200	1200	1200

* Gas data on gross value

** Gas consumption at 15°C and 1013.25 mbar

*** Based on natural gas

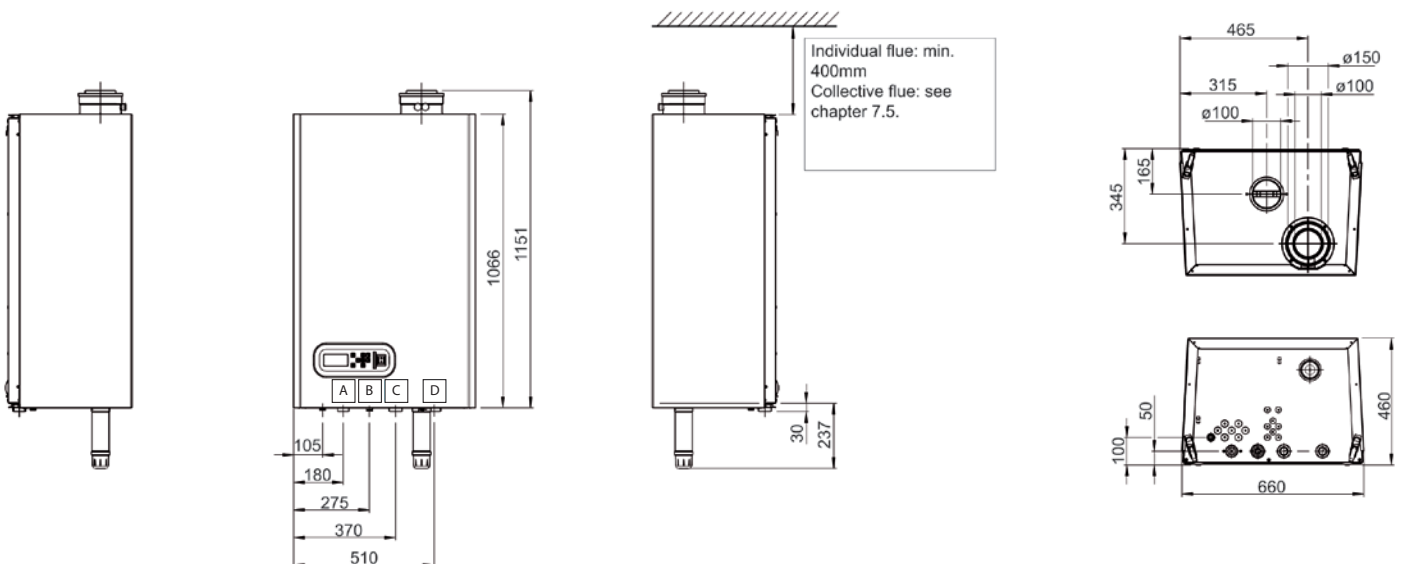
Ecodesign specifications

		UB 70	UB 110	UB 140
Energy labeling				
Seasonal space heating energy efficiency class	-	A	-	-
Rated heat output	kW	60	t.b.d.	t.b.d.
Seasonal space heating energy efficiency	%	94	t.b.d.	t.b.d.
Annual space heating energy consumption	GJ	20	-	-
Indoor sound power level	dB	51	-	-

Dimensions

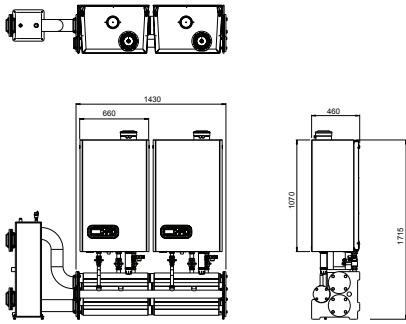
		UB 70	UB 110	UB 140
Height	mm	1065	1065	1065
Width	mm	660	660	660
Depth	mm	460	460	460
Left side / flue gas connection	mm	465	465	465
Back / flue gas connection	mm	345	345	345
Left side / gas connection	mm	180	180	180
Left side / flow pipe	mm	275	275	275
Left side / return pipe	mm	510	510	510
Left side / condensate drain	mm	370	370	370
Back / centre of condensate drain	mm	50	50	50
Back / centre of gas connection	mm	50	50	50
Back / centre of flow pipe & return pipe	mm	50	50	50
Standard UB connections				
A Gas pipe		1¼"	1¼"	1¼"
B Flow pipe		1½"	1½"	1½"
C Return pipe		1½"	1½"	1½"
D Condensate drain pipe	mm	26	26	26
Connections in solo configuration*				
A Gas pipe	mm	22	22	22
B Flow pipe	mm	35	35	35
C Return pipe	mm	35	35	35
D Condensate drain pipe	mm	26	26	26

* When UB boilers are used in a solo configuration, installation requires a boiler connection set. All connections are compression fittings. This set (art. nr. 0310286) is standard delivered.

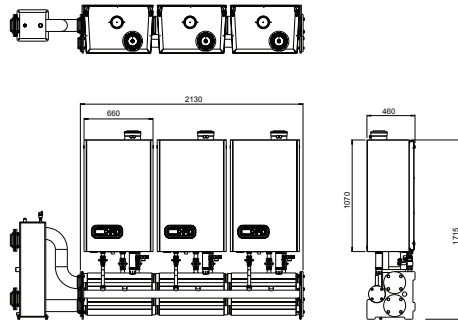


Examples wall-mounted

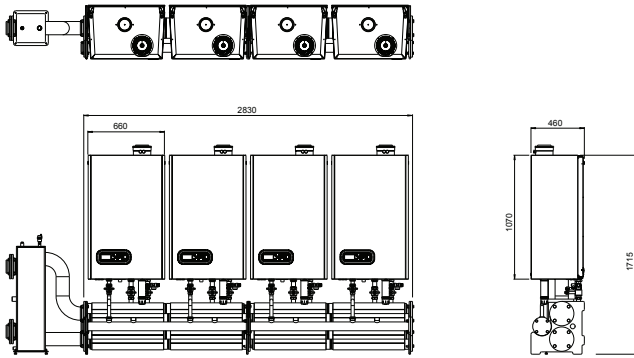
UPSILON CASCADE 2 BOILERS WALL-MOUNTED



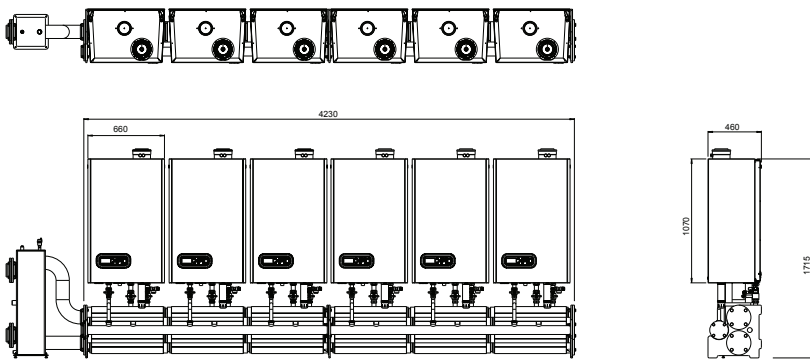
UPSILON CASCADE 3 BOILERS WALL-MOUNTED



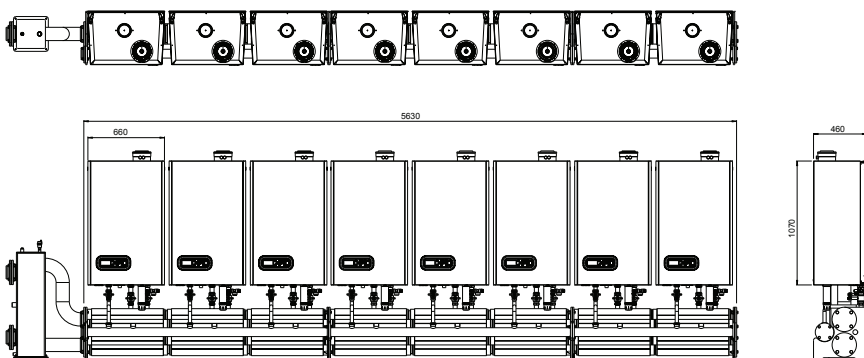
UPSILON CASCADE 4 BOILERS WALL-MOUNTED



UPSILON CASCADE 6 BOILERS WALL-MOUNTED

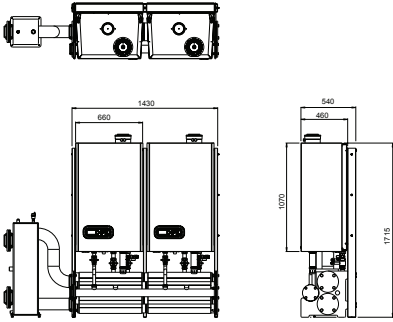


UPSILON CASCADE 8 BOILERS WALL-MOUNTED

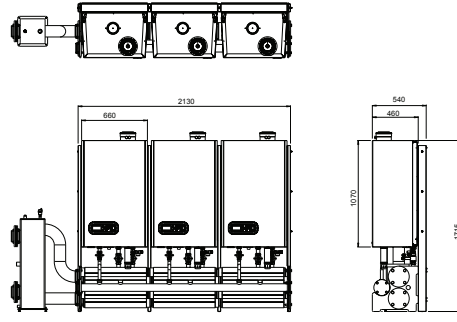


Examples standing in line

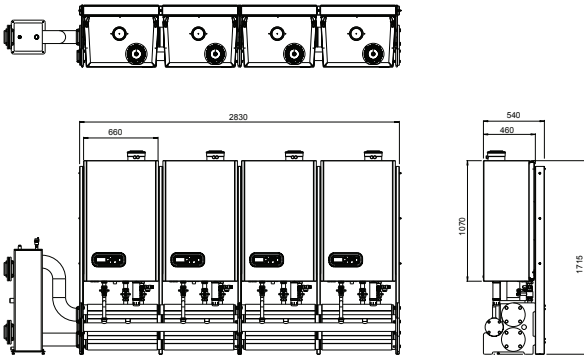
UPSILON CASCADE 2 BOILERS STANDING IN LINE



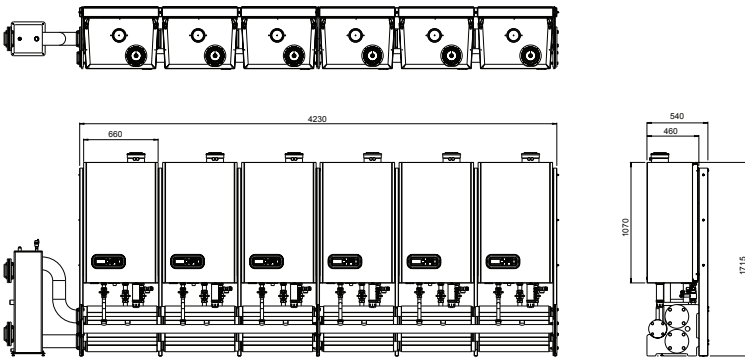
UPSILON CASCADE 3 BOILERS STANDING IN LINE



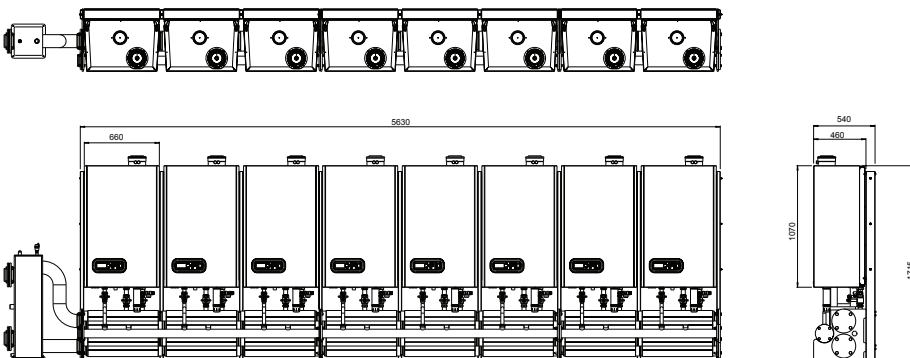
UPSILON CASCADE 4 BOILERS STANDING IN LINE



UPSILON CASCADE 6 BOILERS STANDING IN LINE

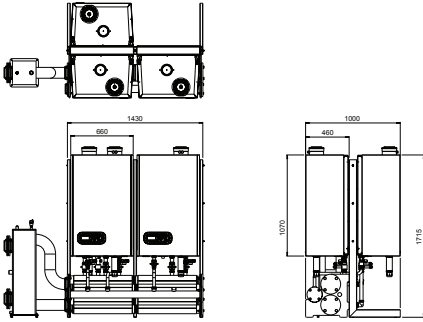


UPSILON CASCADE 8 BOILERS STANDING IN LINE

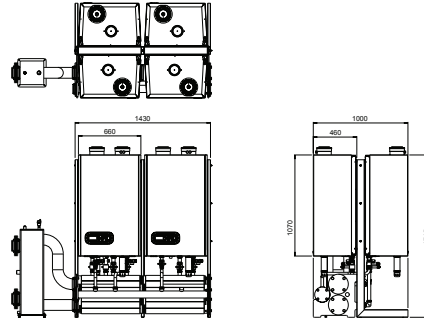


Examples standing back to back

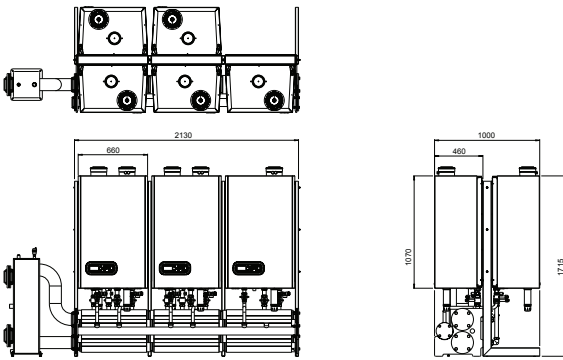
UPSILON CASCADE 3 BOILERS STANDING BACK TO BACK



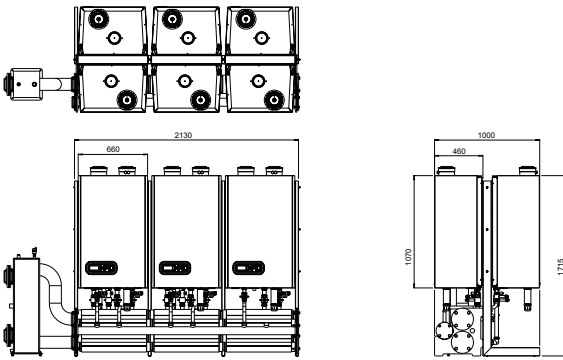
UPSILON CASCADE 4 BOILERS STANDING BACK TO BACK



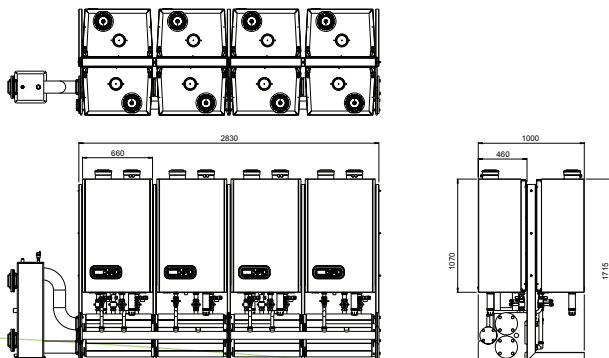
UPSILON CASCADE 5 BOILERS STANDING BACK TO BACK



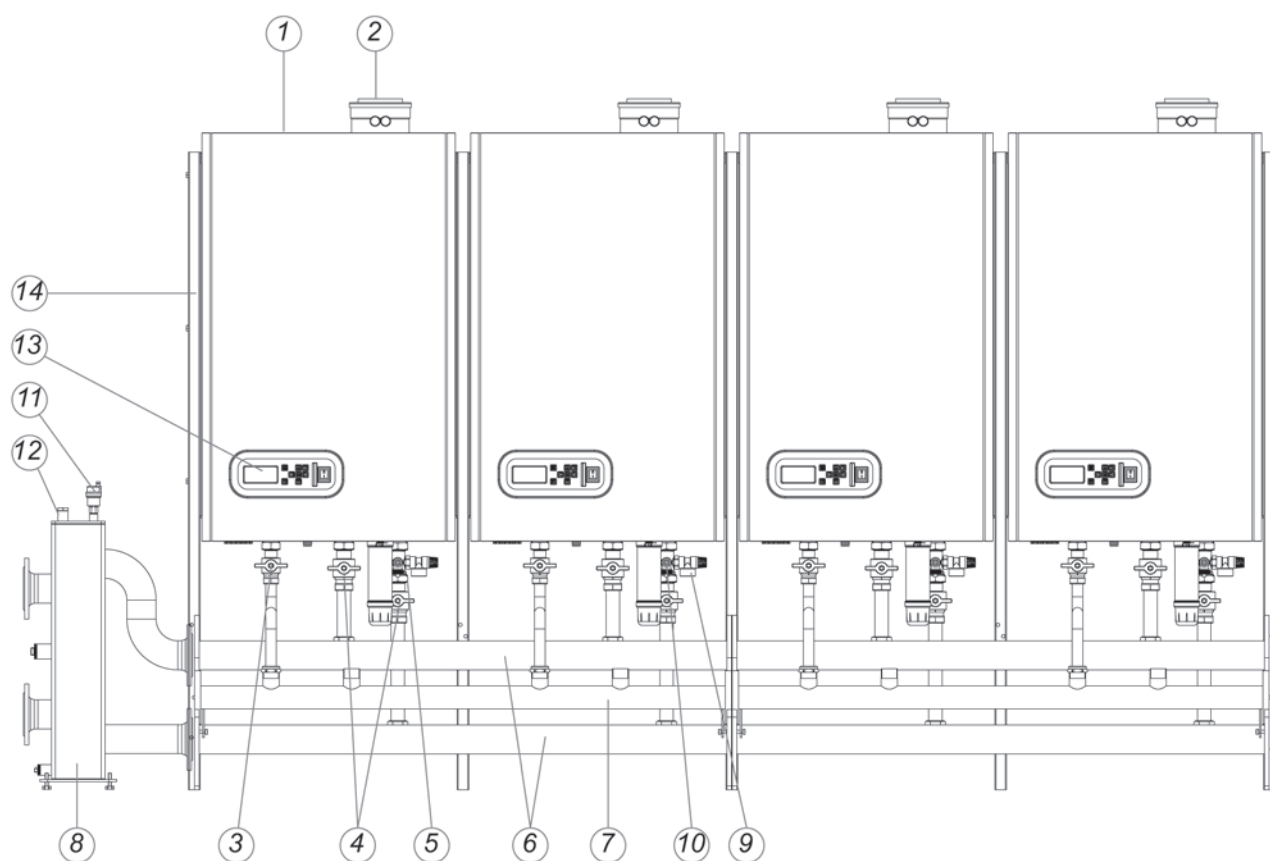
UPSILON CASCADE 6 BOILERS STANDING BACK TO BACK



UPSILON CASCADE 8 BOILERS STANDING BACK TO BACK



Installation diagrams



1	Air supply (for parallel flue connection)
2	Flue/air supply (concentric)
3	Gas isolation valve
4	Service valves flow and return
5	Non-return valve
6	Flow/return header
7	Gas line
8	Low loss header
9	Safety valve
10	Fill and drain valve
11	Automatic vent low loss header
12	Pocket for temperature sensor T10
13	Cascade manager
14	Frame

Contact information

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OFFERING & ADVICE

A.O. Smith Water Heaters can provide you with a tailor made offer for you application. This offer includes; the boiler(s), the cascade parts (if necessary), insulation and the flue gas discharge materials.

For more information, an advice or a detailed offer, please contact A.O. Smith Water Heaters at sales@aosmith.co.uk or 0870 2676484.



For a more detailed map, please refer to www.aosmith.co.uk

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