

ACV UK product guide

- > Stainless steel tank-in-tank technology
- > Combined heating and hot water products
- > Water heaters
- > Electric boilers
- > Cylinders
- > Wall hung condensing gas boilers





KEEPING THE FLAMES ALIVE **SINCE 1922**

Who are we?

ACV has been designing, manufacturing and distributing heating and hot water products for commercial and residential applications since 1922.

In the UK, we formed in 1991, providing and servicing the range of tank-in-tank products to the UK and ROI. Based in Dalgety Bay, Scotland, we supply and support ACV products across the country.

Specialists in stainless steel and home of the patented tank-in-tank concept, we've been developing and manufacturing our range of high performance heating and hot water products for 100 years.

What makes our products different?

Stainless steel

This material, which resists corrosion in the most aggressive water, has given our products an exceptional lifetime with minimal maintenance.

Tank-in-tank

The patented tank within a tank is a simple and effective concept that gives you a reliable DHW performance to match the largest of hot water demands. You can read more about this on page 6.

Excellence in hot water

Whilst heating requirements have decreased over the years, the demands of modern life have increased the need for a reliable but at the same time economical and environmentally friendly hot water supply.

Our mission is to use our experience to give you the best technology for generating the hot water you need.

Our motto 'Excellence in hot water' reflects the ambition of our team and partners to fulfil our mission and meet your expectations.

All our hot water products are KIWA approved demonstrating our compliance with UK Water Regulation 4 of the Water Supply (Water Fittings) Regulations 1999.



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Easily compare and select the products to suit your needs.

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Discover the patented design that gives our products the best performance.

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View our most popular product – a combined gas fired condensing boiler and water heater.

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Choose from over 40 products in our range.

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Prepare for a carbon free future by going electric – floor standing and wall hung options.

45 Flues, controls and accessories

Complete your system with a large range of controls, accessories and flues to choose from.



Product Selector

Compare and select the products you need to suit your heating and hot water demands.

Cylinders

Domestic/Commercial		Domestic/ Commercial	Domestic/ Commercial	Domestic/ Commercial	Domestic/ Commercial	Commercial	Commercial
Number of models		2	3	3	5	3	2
Product type		Cylinder	Cylinder	Cylinder	Cylinder	Cylinder	Cylinder
Peak flow 1st hour (l/60') @40°C	Min	384	549	689	536	1368	2124
	Max	549	913	1100	1368	1733	2438
Continuous flow (l/h) @60°C	Min	320	465	576	450	1037	1395
	Max	465	769	970	1037	1232	1562
Storage capacity (DHW) – (l)	Min	75	99	126	107	263	675
	Max	99	164	200	283	445	840
Energy efficiency class - Storage		B	A	B	B/C	C	B/C
Supplied with Unvented kit?		Y	Y	Y	Y*	N	N
		Smart E	Smart Green	Smart E plus	Smart ME	Smart L	HRs



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*Except SLME800

Note: Continuous flow data assumes incoming mains water temperature of 10°C.

Boilers and water heaters

Domestic/Commercial		Domestic/ Commercial	Domestic/ Commercial	Domestic/ Commercial	Domestic/ Commercial	Domestic/ Commercial	Commercial
Number of models		1	6	6	7	3	5
Product type		Heating & hot water combi boiler	Heating & hot water combi boiler	Water heater	Electric system boiler	Heating & hot water electric boiler	Heat only electric boiler
Floor standing (FS) or Wall hung (WH)		FS	FS	FS	WH	FS	FS
Continuous flow (l/h) @60°C	Min	400	473	473	N/A	248	N/A
	Max	400	1754	1754	N/A	408	N/A
Storage capacity (DHW) – (l)	Min	80	96	96	N/A	99	N/A
	Max	80	190	190	N/A	164	N/A
Energy efficiency class - Heating		A	A	N/A	D	D	D
Energy efficiency class - Hot water		B	A	A	N/A	C	N/A
Outputs (kW) @ 80/60°C		24.3	24.3 - 111.6	24.3 - 111.6	8.4 - 36	14.4 - 28.8	14.4 - 259.2
Supplied with Unvented kit?		Y	N	N	N/A	Y	N/A
Fuel	Nat gas	.	.	.			
	LPG	.	.	.			
	Electric				.	.	.
		HeatMaster® C Evo	HeatMaster® TC Evo	WaterMaster Evo	E-Tech W	E-Tech S	E-Tech P



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Tank-in-tank design

Most of our products feature the patented tank-in-tank-concept.

What is it?

The tank-in-tank is a Domestic Hot Water (DHW) storage exchanger completely immersed in a steel outer tank that contains primary water from the heating circuit. The inner tank is always made of stainless steel.

How does it work?

The wall of the inner tank acts as the heat exchanger between the primary circuit (connected to the boiler) and the DHW storage tank.

What are the benefits?



Minimum hot water storage, low heat losses and reduced footprint

Thanks to the exceptional heat transfer and high storage temperature of the tank-in-tank system, the volume of hot water stored can be reduced. This gives a more compact water heater design and reducing static heat losses via the exterior walls: both attributes combine to cut initial investment as you can choose a smaller cylinder and reduce operating expenses. To take full advantage of this capability, a TMV (thermostatic mixing valve) is used on the cylinder outlet.



Reduced scale build-up

The inner tank is made of stainless steel, which means no anode protection is needed and no contamination, leaking or sludging occurs.

The corrugated design of the tank also reduces scale build up. How? Each DHW draw-off creates a brief under pressure in the tank (at the moment that the draw-off tap is opened), followed by a slight overpressure (upon closure of the draw-off tap). As the inner tank is free to move, its walls expand and contract very slightly under the influence of these pressure changes and prevent the formation of lime scale on the exchanger surface.



Legionella protection

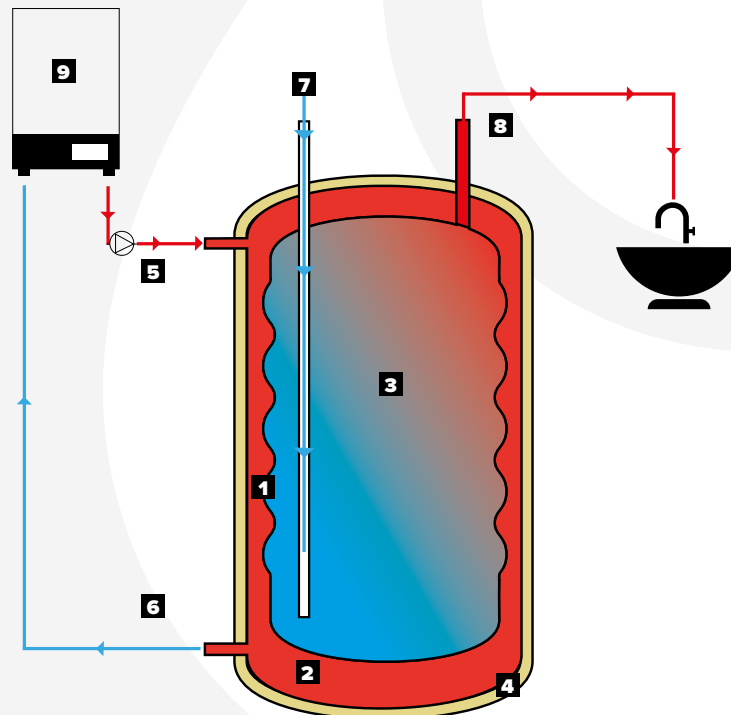
Legionella bacteria proliferate in warm water (from 20°C up to 45°C). However, they can be eliminated within a few hours (>50°C) or even minutes (>60°C). The tank-in-tank system prevents the formation of warm pockets because even the base of the inner tank is a heat exchanger that remains at the temperature of the boiler (typically from 60 to 80°C). When our water heater is operating at 60°C and above it ensures that the hot water remains free of legionella bacteria.



Fast heat up and rapid recovery

The larger surface area enables quick heat up and fast recovery, as well as providing a continuous flow of hot water under stable conditions.

Tank-in-tank scheme



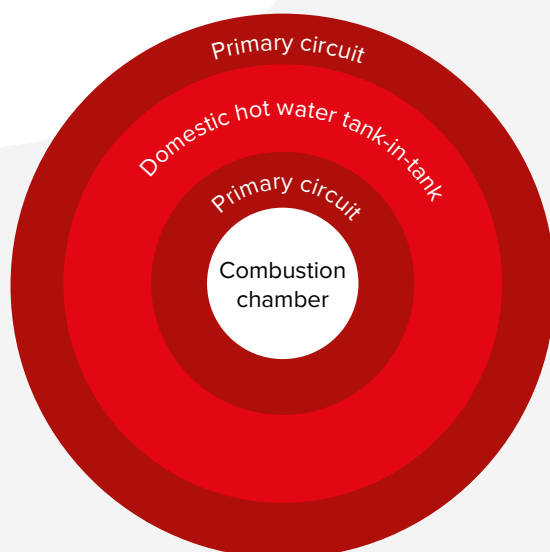
- 1. Corrugated inner wall – reduces scale build up
- 2. Primary water for heating – surrounds the inner vessel DHW to reduce heat losses
- 3. Domestic hot water (DHW)
- 4. Insulation – high level of insulation to further reduce heat loss

- 5. Primary flow
- 6. Primary return
- 7. Cold water inlet
- 8. DHW outlet
- 9. Boiler

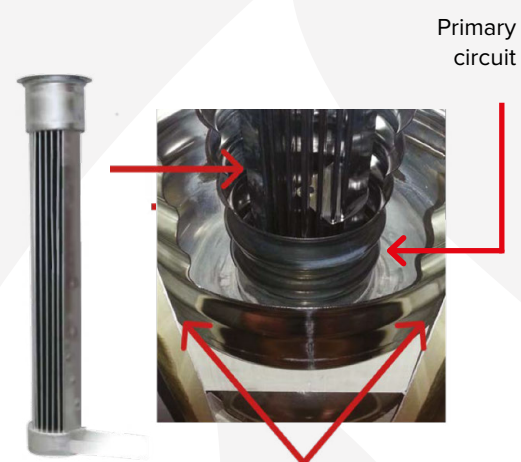
Note: Simplified drawing not representing actual connection positions.

Double primary circuit

The HeatMaster® Evo and WaterMaster Evo products benefit from a double primary circuit. You can read more about it on the next page.



Birds eye view of product



Heat exchanger

Primary circuit

Cutaway view of side of product

HeatMaster® Evo

A commercial combi boiler and water heater

Provides heating and hot water from one unit using the patented tank-in-tank concept. The tank is ring-shaped with flue pipes running through its centre. The stainless steel tank holds a limited volume of water to meet short term demand. The wall of the tank becomes an indirect heat exchanger for DHW generation.

Double primary circuit

The primary circuit of the boiler provides heat during the heating season. The boiler operates in heating mode just like any traditional boiler. The boiler thermostat controls the burner and lights it when the boiler temperature drops below the set-point.

In hot water draw-off mode, a domestic water thermostat senses the introduction of cold water to the tank and cuts off the heating pump in order to save all the boiler's output for heating. Its large heat exchange surface area allows the tank to absorb the generated heat from the burner to gradually warm up the water as it enters the tank.

Benefit from

- > **Quick reheat time** – due to a large heat surface area
- > **Safe and hygienic** – no direct flame contact and stainless steel resistant to corrosion
- > **High efficiency** – condenses in both heating and hot water (TC models)
- > **Minimal heat loss** – highly insulated and DHW inner vessel is surrounded by hot primary water
- > **Small footprint** – less hot water required to reach the desired temperature when mixed with cold water, resulting in reduced product size needed



Combined heating and hot water boilers



10 HeatMaster® C Evo
Combined gas fired condensing boiler & water heater with stainless steel heat exchanger.

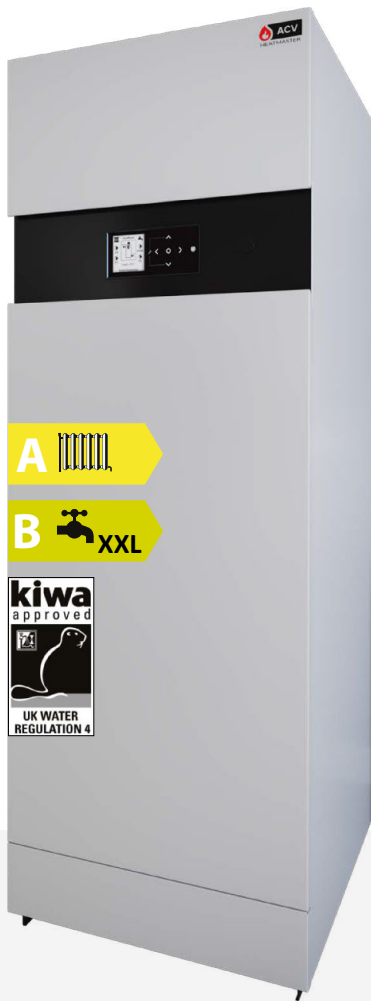


12 HeatMaster® TC Evo
Combined gas fired total condensing boiler and water heater with stainless steel heat exchanger.

HeatMaster 25C Evo

MODELS 1

Combined gas fired condensing boiler and water heater with stainless steel heat exchanger.



Features

- > Heating and hot water from one unit saves space, reduces energy use and speeds up installation
- > Operates in most efficient mode (condensing) for heating
- > Low maintenance with no anode protection required
- > Easy to use standardised controls using ACVMax control system
- > Suited to smaller premises and lower flow rate requirements (smaller DHW tank than 25TC)
- > Corrosion-resistant stainless steel heat exchanger and tank reduces maintenance and increases system lifespan
- > Suitable for unvented systems – supplied with Systempak 1 including 3.5 bar mains unvented kit and DHW mixing valve
- > Supplied with LPG kit for on-site conversion
- > Reduces legionella risk due to water stored at > 60°C
- > Supplied with factory fitted T&P relief valve
- > 5-year warranty
- > Improved access for service and maintenance

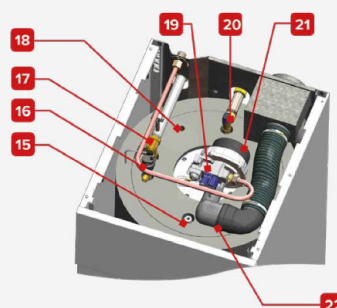
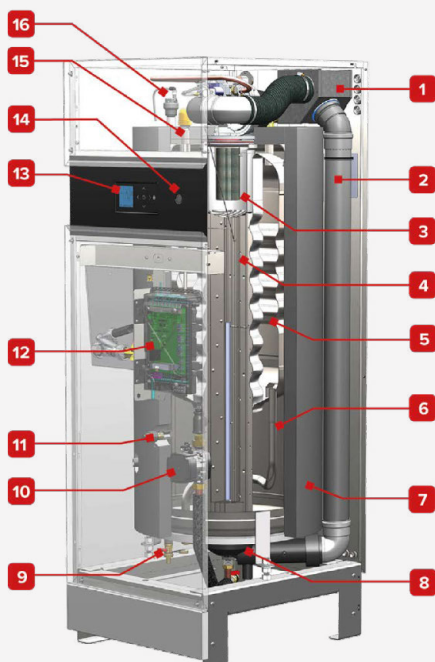
Tank-in-tank technology

- > **Fast** heat up
- > **Rapid** recovery
- > **Reduced** footprint
- > **Reduced** scale
- > **Low** storage required
- > **Minimal** heat loss



Anatomy

1. Concentric flue gas/air inlet box
2. Flue gas exhaust tube
3. Combustion chamber
4. Stainless steel heat exchanger
5. Stainless steel Tank-in-Tank hot water production tank
6. DHW circuit tube
7. Insulation
8. Condensate Recovery Dish
9. Drain Valve
10. De-stratification pump
11. NTC Sensor
12. Electrical panel (with spare fuses at back)
13. ACV =Max Touch Control Panel
14. On/Off Switch
15. DHW Tank Dry Well (Dip tube with temperature sensor)
16. Automatic air vent
17. Gas pipe
18. NTC1 Sensor (CH Supply)
19. Air inlet
20. T&P Relief Valve
21. Modulating air/gas premix burner with fan
22. Gas Valve



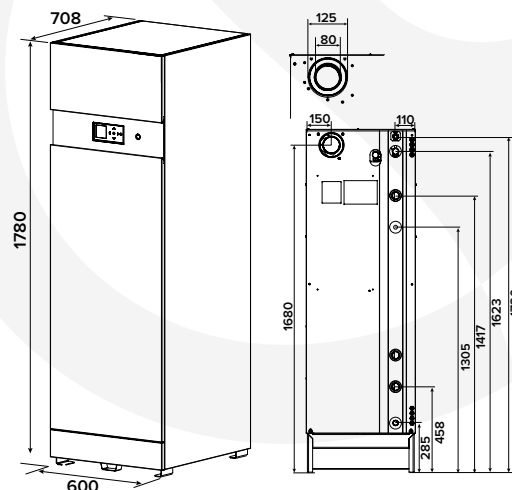
In line with the recommendations specified in UK Building Regulations (2016) Part G, ACV UK Ltd advise the installation of a suitable domestic hot water thermostatic mixing valve on the hot flow immediately after the appliance.

For rear connections see HeatMaster TC Evo

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Dimensions

All dimensions in mm.



Technical data

Type	Unit	HM25C Evo
Part number		XB550000
Fuel		Natural gas
Input max (heating) HCV	kW	27.8
Input min (heating) G20	kW	5
Output power max (80/60°C)	kW	24.3
Efficiency at 100% load (80/60)	%	98.0
Efficiency at 100% load (50/30°C)	%	103.9
Efficiency at 30% load (EN15502-1) – nett	%	109.0
Seasonal space heating efficiency	%	96.7
Capacity (domestic hot water)	L	80
Capacity (total)	L	200
Connection - heating	Ø"	1F
Connection - DHW	Ø"	1M
Connection gas	Ø"	¾ M
Flue connection	Ømm	80/125
Water pressure drop boiler at Δt = 20°C	mbar	3
Gas flow rate (max output)	m³/h	2.66
Weight (empty)	kg	174
Max operating temperature	°C	87
Max service pressure heating (primary)	bar	3
Max service pressure (DHW)	bar	8.6
Voltage	V	230
Declared load profile		XXL
NOx class (EN15502)		6
NOx weighted (GCV) (EN15502)	mg/kWh	26.3
Space heating energy efficiency class		A
Water heating energy efficiency class		B
Standby loss ΔT 30K	W	79
Standby loss ΔT 45K	W	124

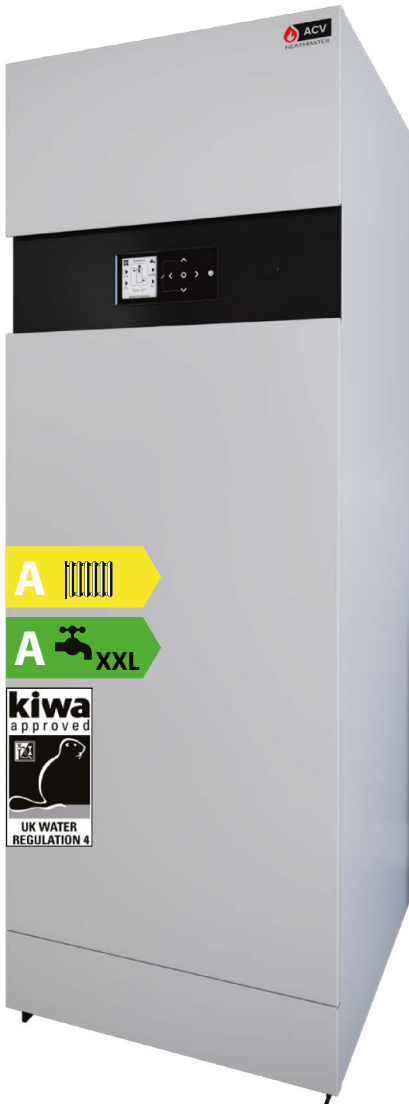
Domestic hot water performance

Type	Unit	HM25C Evo
Peak flow at 40°C	L/10'	233.5
Peak flow 1st hour at 40°C	L/60'	748
Continuous flow at 40°C	L/h	617
Peak flow at 60°C	L/10'	145
Peak flow 1st hour at 60°C	L/60'	478
Continuous flow at 60°C	L/h	400

This data assumes an incoming mains water temperature of 10°C.

For flue accessories and controls see page 46.

HeatMaster® 25TC - 120TC Evo MODELS 6



Combined gas fired condensing boiler and water heater with stainless steel heat exchanger.

Features

- > Heating and hot water from one unit saves space, reduces energy use and speeds up installation
- > Operates in most efficient mode (condensing) for both heating and hot water
- > Low maintenance with no anode protection required
- > Reduces legionella risk due to water stored at > 60°C
- > Corrosion-resistant stainless steel heat exchanger and tank reduces maintenance and increases system lifespan
- > Suited to high demand and critical hot water premises such as hotels and hospitals
- > Easy to use standardised controls using ACVMax control system
- > Combine with Smart cylinders for highly efficient heating and hot water performance all from one manufacturer
- > Suitable for vented or unvented systems (optional Systempak 3 unvented kit required. Kit includes 25l expansion vessel, tundish, pressure control valve, combined pressure reducing valve and mounting bracket)
- > Supplied with LPG kit for simple on-site conversion
- > Supplied with factory fitted T&P relief valve
- > Improved access for service and maintenance
- > 5-year warranty

Tank-in-tank technology

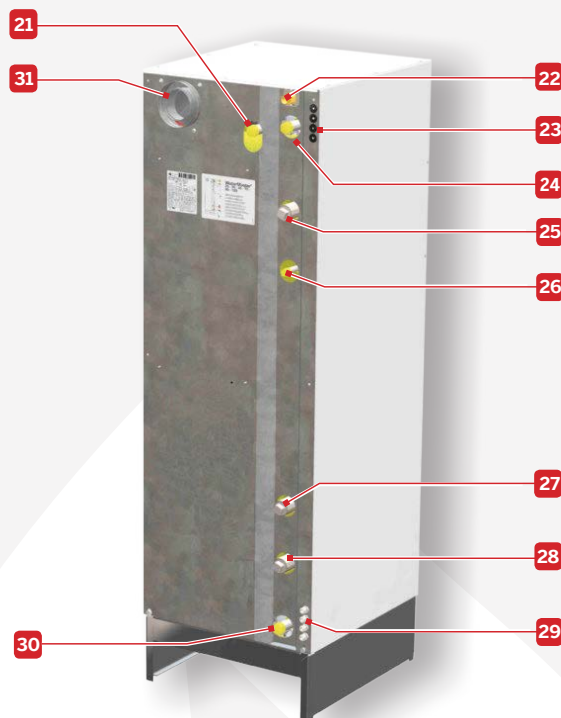
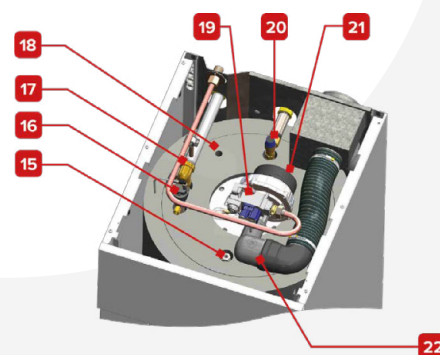
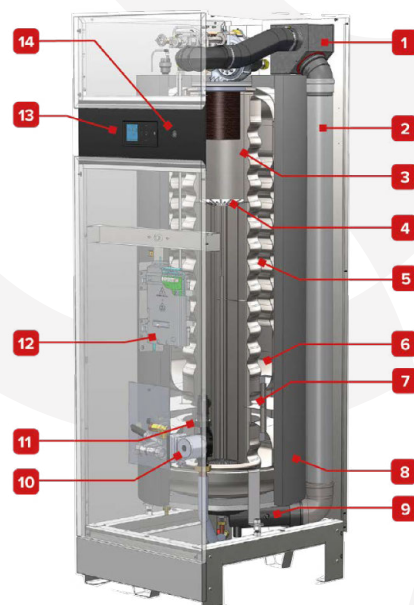
- > **Fast** heat up
- > **Rapid** recovery
- > **Reduced** footprint
- > **Reduced** scale
- > **Low** storage required
- > **Minimal** heat loss



Anatomy

1. Concentric flue gas/air inlet box
2. Flue gas exhaust tube
3. Combustion chamber
4. Stainless steel heat exchanger
5. Stainless steel "Tank-in-Tank" hot water production tank
6. Primary circuit separation disc
7. Indirect water pre-heater
8. Insulation
9. Condensate recovery dish + NTC5 sensor (flue gas)
10. High efficiency circulator pump
11. NTC2 sensor (CH return)
12. Electrical panel (with spare fuses at the back)
13. ACVMax Touch Control panel
14. On-Off switch
15. DHW tank dry well (Dip tube with temperature sensor)
16. Automatic air vent
17. Gas pipe
18. NTC1 sensor (CH supply)
19. Gas valve
20. DHW safety valve / (T&P relief valve - UK only)
21. Modulating air/gas premix burner with fan
22. Air inlet
23. Grommets for electrical wires (low voltage control)
24. Domestic Hot Water outlet* [M]
25. Heating supply connection [F]
26. Connection for provided heating safety valve (to be installed)
27. Connection for low temperature heating circuit return (HM 70 - 85 - 120 TC only)
28. Heating return connection [F]
29. Grommets for electrical wires (230 V)
30. Domestic Hot Water inlet [M]
31. Flue connection

*In line with the recommendations specified in UK Building Regulations (2016) Part G, ACV UK Ltd advise the installation of a suitable domestic hot water thermostatic mixing valve on the hot flow immediately after the appliance.

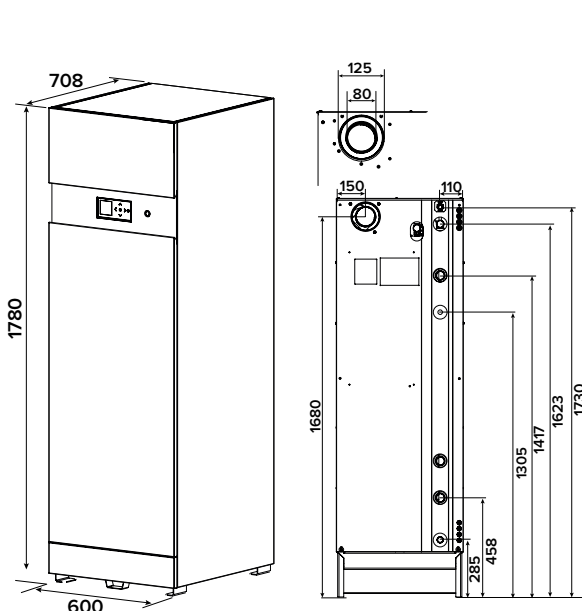


HeatMaster Evo 25-35-45 TC.
Please refer to the installation manual for other sizes.

HeatMaster 25TC - 120TC Evo

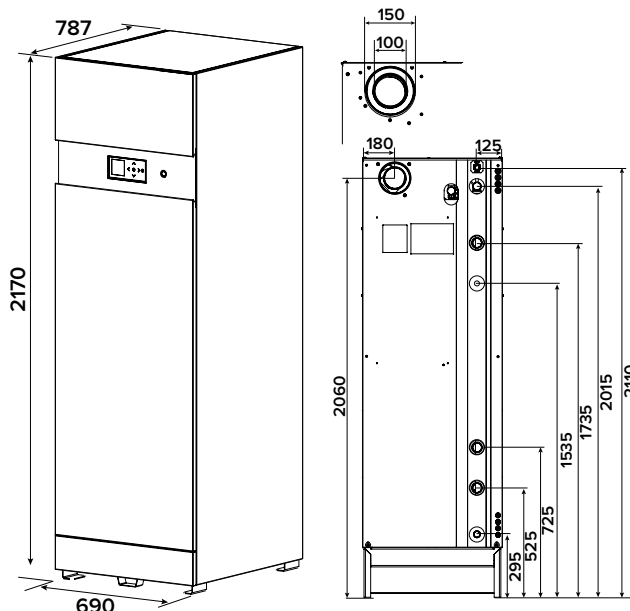
Dimensions - 25TC - 45TC Evo

All dimensions in mm.



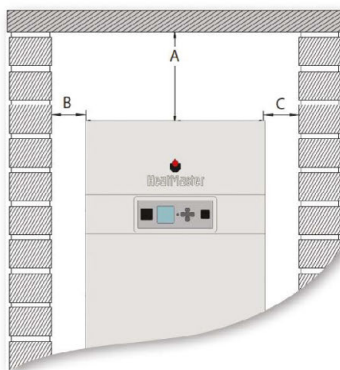
Dimensions -70TC - 120TC Evo

All dimensions in mm.

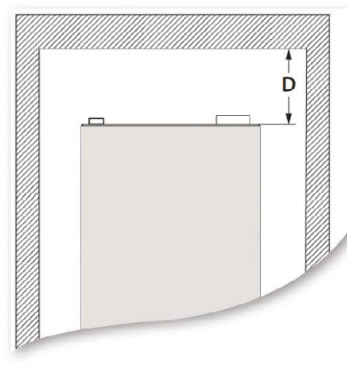


Clearances

All dimensions in mm.



Front view



View from the top

Boiler Clearance		HeatMaster® 25 - 35 - 45 - 70 - 85 - 120 TC Evo
A (mm)	Recommended	400
	Minimum	300
B (mm)	Recommended	800
	Minimum	600
C (mm)	Recommended	400
	Minimum	250
D (mm)	Recommended	600
	Minimum	400

Technical data

Type	Unit	HM25TC	HM35TC	HM45TC	HM70TC	HM85TC	HM120TC
Part number		XB550001	XB550002	XB550003	XB550004	XB550005	XB550006
Input max (heating) HCV	kW	27.8	38.7	50.6	77.6	94.4	127.7
Input min (heating)	kW	5	7	9	21.5	21	25
Output power min (80/60°C) G20	kW	4.9	6.8	8.8	20.9	20.5	22.9
Output power max (80/60°C)	kW	24.3	34.2	44.7	68.0	82.5	111.6
Output at 100% (50/30°C) G20	kW	26.0	36.4	46.8	74.0	89.9	121.7
Efficiency at 100% load (80/60)	%	98.0	98.0	98.0	97.3	97.0	97.0
Efficiency at 100% load (50/30°C)	%	103.9	103.9	103.9	103.9	103.9	103.9
Efficiency at 30% load (EN15502-1) – nett	%	109.0	109.0	109.0	109.0	109.0	109.0
Seasonal space heating efficiency	%	96.7	96.7	96.7	96.6	95.8	95.8
Capacity (total)	L	196	196	196	315	315	315
Capacity (DHW)	L	96	96	96	190	190	190
Connection - heating	Ø"	1 F	1 F	1 F	1½ F	1½ F	1½ F
Connection - DHW	Ø"	1 M	1 M	1 M	1 M	1 M	1 M
Connection - gas	Ø"	¾ M	¾ M	¾ M	¾ M	¾ M	¾ M
Flue connection	Ømm	80/125	80/125	80/125	100/150	100/150	100/150
Water pressure drop boiler at Δt = 20°C	mbar	3	6	10	9	14	27
Gas flow rate (max output)	m³/h	2.66	3.64	4.67	7.2	8.6	12
Weight (empty)	kg	177	177	177	298	298	299
Max operating temperature	°C	87	87	87	87	87	87
Max service pressure heating (primary)	bar	3	3	3	3	3	3
Max service pressure (DHW)	bar	8.6	8.6	8.6	8.6	8.6	8.6
Voltage	V	230	230	230	230	230	230
Pre-heating time from 10 to 80°C (Heat source: boiler)	min	35	26	23	27	24	23
Standby loss ΔT 30K	kWh/day	1.9	1.9	1.9	2.64	2.64	2.64
Standby loss ΔT 45K	kWh/day	2.98	2.98	2.98	3.94	3.94	3.94
Standby loss ΔT 30K	W	79	79	79	110	110	110
Standby loss ΔT 45K	W	124	124	124	164	164	164
Declared load profile		XXL	XXL	XXL	XXL	XXL	XXL
Water heating energy efficiency class		A	A	A	A	A	A
Space heating energy efficiency class		A	A	A	A	A	A
NOx class (EN15502)		6	6	6	6	6	6
NOx weighted (GCV) (EN15502)	mg/kWh	24.6	29.5	33.2	33.1	29.3	39.8
Sound power level indoors LWA (BS EN15036-1)	dB	60	60	59	60	61	62

Domestic hot water performance

TYPE	UNIT	HM25TC	HM35TC	HM45TC	HM70TC	HM85TC	HM120TC
Peak flow at 40°C	L/10'	361	408	451	716	783	900
Peak flow 1st hour at 40°C	L/60'	1018	1328	1610	2455	2895	3620
Continuous flow at 40°C	L/h	788	1104	1390	2087	2534	3402
Peak flow at 45°C	L/10'	301	339	373	592	646	676
Peak flow 1st hour at 45°C	L/60'	865	1127	1366	2083	2456	3098
Continuous flow at 45°C	L/h	676	946	1192	1789	2172	2928
Peak flow at 60°C	L/10'	183	197	224	348	371	440
Peak flow 1st hour at 60°C	L/60'	577	749	894	1391	1638	1847
Continuous flow at 60°C	L/h	473	662	820	1252	1520	1754

This data assumes an incoming mains water temperature of 10°C.

For flue accessories and controls see page 46.

Archimedes

Sizing your hot water system

Archimedes: Greek mathematician, physicist, engineer, inventor, and astronomer? Or our tool to support you.

Easy to use

This easy to use programme will help you calculate the hot water capacity for a wide range of applications (hotels, hospitals, sports facilities).

Detailed output

You will get several configurations and technical files to help you with project specification.

In-house support

Our technical support can back up the software, we are just a phone call away to advise you in choosing the most suitable equipment for your project.

archimedes.acv.com/en-GB/home



Water heaters and cylinders



18 WaterMaster Evo
Direct gas fired condensing water heater.



22 Smart E
Stainless steel indirect cylinder.



24 Smart Green
Stainless steel indirect cylinder with A rated storage class.



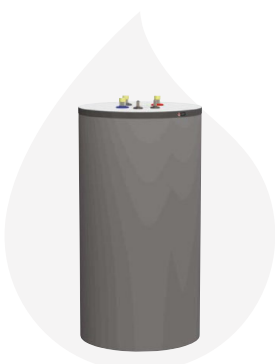
26 Smart E Plus
Stainless steel indirect cylinder with additional ports for connection to other heat sources such as heat pumps. Includes immersion heater backup.



28 Smart ME
Stainless steel indirect cylinder with additional coil for use with multiple energy sources. Includes immersion heater backup. (except SLME800)



32 Smart L
Stainless steel indirect cylinder.



34 HRs
Stainless steel indirect cylinder with enhanced DHW performance and flow rates.

WaterMaster 25 - 120 Evo

MODELS 6

Direct gas fired water heater.



Features

- > Can deliver large peak and continuous volumes of hot water
- > Operates in most efficient mode (fully condensing)
- > Reduces legionella risk due to temperature stored at > 60°C
- > Small footprint allows installation in tight plant rooms
- > Low maintenance with no anode protection required
- > Compliant with latest Ecodesign regulations for DHW
- > Corrosion-resistant stainless steel heat exchanger and tank reduces maintenance and increases system lifespan
- > Suitable for vented or unvented systems (optional Systempak 3 unvented kit required. Kit includes 25l expansion vessel, tundish, pressure control valve, combined pressure reducing set, and vessel mounting bracket.)
- > Easy to use standardised controls using ACVMax control system
- > Compatible for use with LPG and natural gas
- > 5-year warranty
- > Supplied with factory fitted T&P relief valve for ease of installation
- > Improved access for service and maintenance

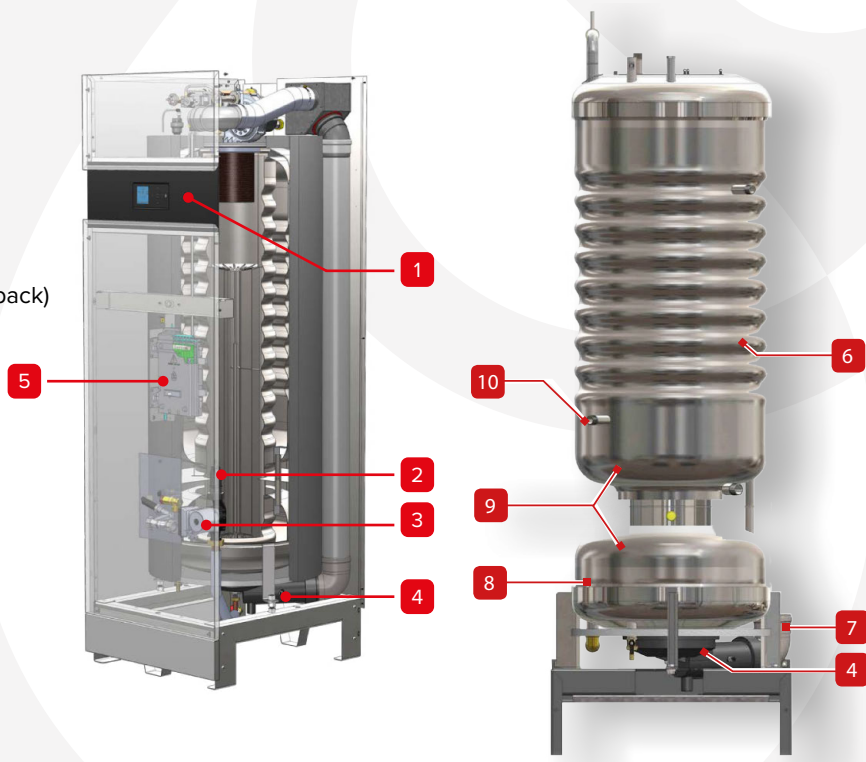
Tank-in-tank technology

- > **Fast** heat up
- > **Rapid** recovery
- > **Reduced** footprint
- > **Reduced** scale
- > **Low** storage required
- > **Minimal** heat loss

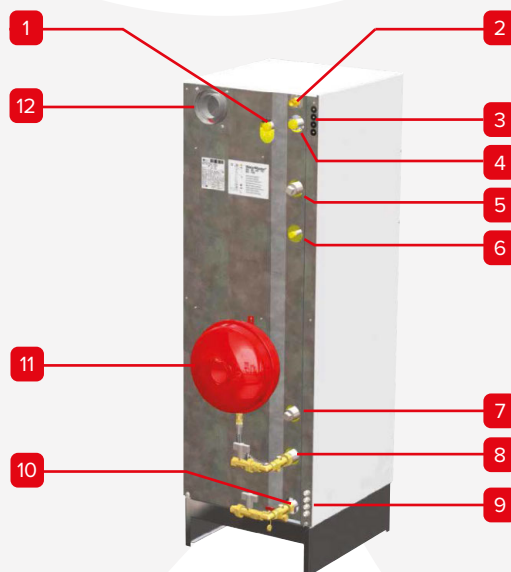


Anatomy

1. ACVMax control panel
2. NTC sensor (primary circuit)
3. De-stratification pump
4. Condensate recovery dish
5. Electrical panel (with spare fuses at the back)
6. Tank-in-tank hot water production tank
7. Flue gas exhaust tube
8. Indirect water pre-heater
9. Primary circuit
10. Pressure sensor



1. Discharge for built-in DHW safety valve / (T & P relief valve - UK only) outlet to be connected to the waste system
2. Gas connection [M]
3. Grommets for electrical wires (low voltage control)
4. Domestic Hot Water outlet*
5. Primary circuit supply connection (not used)
6. Connection for provided primary circuit safety valve (to be installed)
7. Auxiliary connection loop (not used)
8. Primary circuit fill connection
9. Grommets for electrical wires (230 V)
10. Domestic Hot Water inlet
11. Expansion vessel kit
12. Flue connection

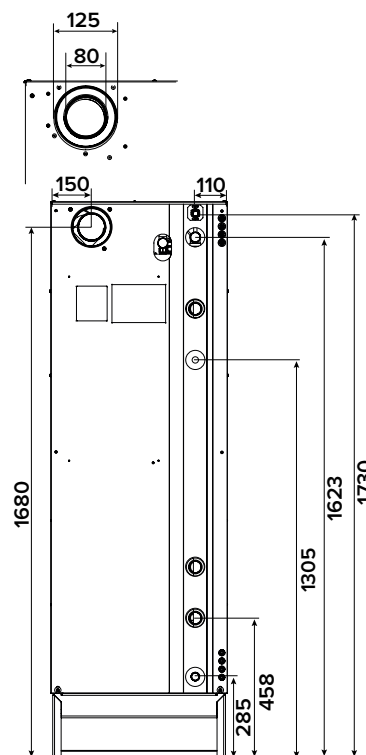
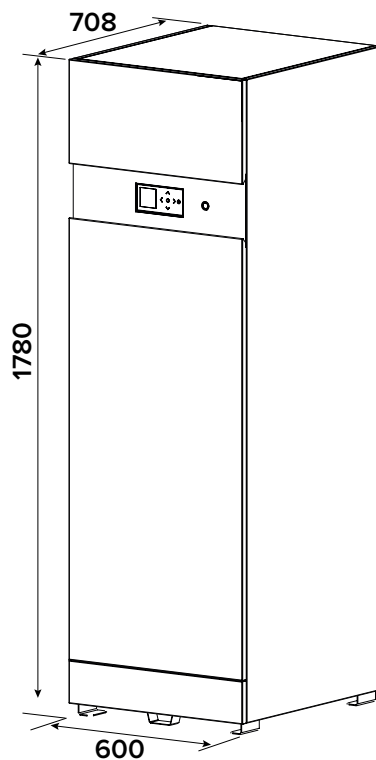


*In line with the recommendations specified in UK Building Regulations (2016) Part G, ACV UK Ltd advise the installation of a suitable domestic hot water thermostatic mixing valve on the hot flow immediately after the appliance.

WaterMaster 25 - 120 Evo

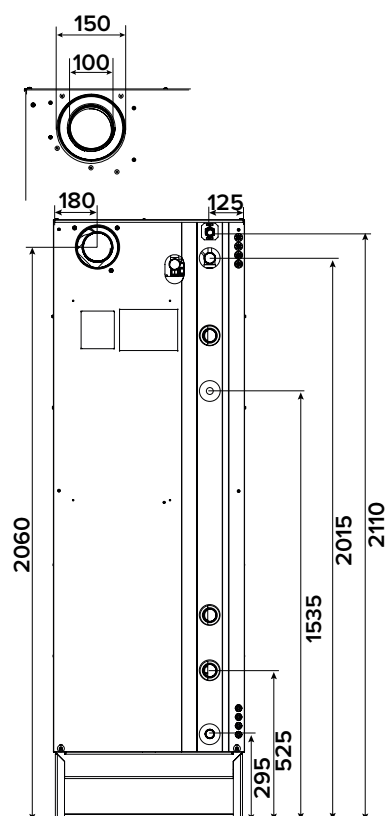
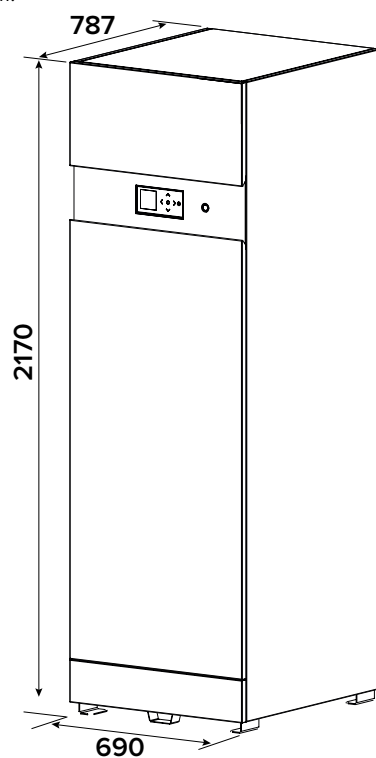
Dimensions - WM25 - WM45 Evo

All dimensions in mm.



Dimensions -WM70 - WM120 Evo

All dimensions in mm.



For clearances,
please refer
to HeatMaster Evo.

Technical data

TYPE	UNIT	WM25	WM35	WM45	WM70	WM85	WM120
Part number		XB660001	XB660002	XB660003	XB660004	XB660005	XB660006
Fuel		Natural gas	Natural gas	Natural gas	Natural gas	Natural gas	Natural gas
Input max (heating) HCV	kW	27.8	38.9	50.0	77.6	95.3	127.7
Input min (heating)	kW	5	7	9	24.5	24.5	23.2
Capacity (total)	L	196	196	196	315	315	315
Capacity (domestic hot water)	L	96	96	96	190	190	190
Efficiency at 100% load (gross) (EN89)	%	98.2	98.2	97.9	98.1	98.0	97.5
Efficiency at 100% load (nett) (EN89)	%	108.5	108.5	108.5	107.7	107.7	107.7
Efficiency at 30% load	%	105.4	105.4	103.1	103.9	103.9	102.2
Connection - heating	Ø"		1 F				
Connection - DHW	Ø"	1 M	1 M	1 M	1 M	1 M	1 M
Connection - gas	Ø"	¾ M	¾ M	¾ M	¾ M	¾ M	¾ M
Flue connection	Ømm	80/125	80/125	80/125	100/150	100/150	100/150
Water pressure drop boiler at $\Delta t = 20^{\circ}\text{C}$	mbar	3	6	10	9	14	27
Gas flow rate (max output)	m³/h	2.66	3.64	4.67	7.4	9.0	12.2
Gas flow rate (min output)	m³/h	0.5	0.7	0.9	2.6	2.6	2.5
Max operating temperature	°C	87	87	87	87	87	87
Max service pressure heating (primary)	bar	3	3	3	3	3	3
Max service pressure (DHW)	bar	8.6	8.6	8.6	8.6	8.6	8.6
Weight (empty)	kg	177	177	177	298	298	299
Voltage	V	230	230	230	230	230	230
Pre-heating time from 10 to 80°C (Heat source: boiler)	min	35	26	23	27	24	23
Standby loss ΔT 30K	kWh/day	1.9	1.9	1.9	2.64	2.64	2.64
Standby loss ΔT 45K	kWh/day	2.98	2.98	2.98	3.94	3.94	3.94
Standby loss ΔT 30K	W	79	79	79	110	110	110
Standby loss ΔT 45K	W	124	124	124	164	164	164
Declared load profile		L	L	L	XXL	XXL	XXL
Water heating efficiency class		A	A	A	A		
Water heating energy efficiency (EU 814/2013)	%	87.2	87.2	87.2	85	85	85
NOx class (EN15502)		6	6	6	6	6	6
NOx weighted (GCV) (EN15502)	mg/kWh	21.5	26.7	30.2	30.3	27.0	37.4
Sound power level indoors LWA (BSEN15036-1)	dB	60	60	59	60	61	62

Domestic hot water performance

TYPE	UNIT	WM25	WM35	WM45	WM70	WM85	WM120
Peak flow at 40°C	L/10'	361	408	451	716	783	900
Peak flow 1st hour at 40°C	L/60'	1018	1328	1610	2455	2895	3620
Continuous flow at 40°C	L/h	788	1104	1390	2087	2534	3402
Peak flow at 45°C	L/10'	301	339	373	592	646	676
Peak flow 1st hour at 45°C	L/60'	865	1127	1366	2083	2456	3098
Continuous flow at 45°C	L/h	676	946	1192	1789	2172	2928
Peak flow at 60°C	L/10'	183	197	224	348	371	440
Peak flow 1st hour at 60°C	L/60'	577	749	894	1391	1638	1847
Continuous flow at 60°C	L/h	473	662	820	1252	1520	1754

*This data assumes an incoming mains water temperature of 10°C.
For flue accessories and controls see page 46.

Smart E 130 - 160

MODELS 2

Stainless steel indirect cylinder for domestic hot water.



Features

- > Low cost solution, simple installation with no de-stratification kit needed and no flue requirements
- > Minimal standing losses – cylinder comes with polyurethane foam insulation and thick polypropylene jacket
- > Reduces legionella risk due to temperature: hot water stored at > 60°C
- > Low maintenance with no anode protection required
- > Fits through a standard doorway for access to plant room
- > Long life – corrosion resistant stainless steel cylinder
- > Can easily be coupled to a condensing boiler
- > Simplified wiring with 'plug and play' electrical connection
- > Supplied with 3kW immersion heater (6kW option available)
- > Suitable for unvented systems – supplied as a complete package with Smartpak 1 including 3.5 bar mains unvented kit
- > Maximise capacity of the cylinder with DHW mixing valve and 2 port valve supplied as standard

Tank-in-tank technology

- > **Fast** heat up
- > **Rapid** recovery
- > **Reduced** footprint
- > **Reduced** scale
- > **Low** storage required
- > **Minimal** heat loss

Anatomy

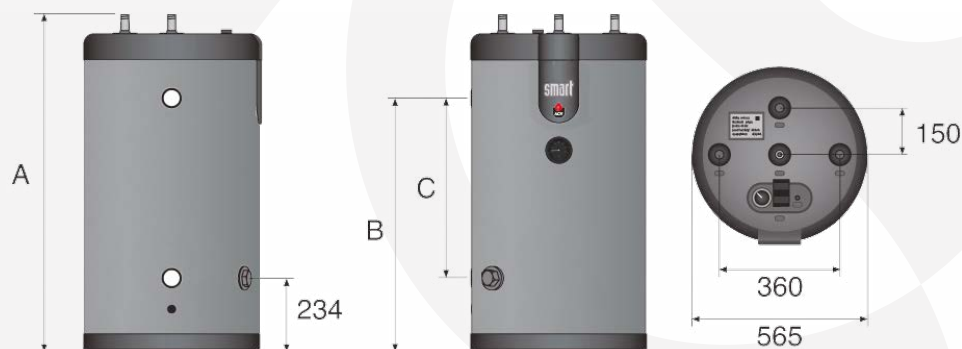
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|--|--|
| 1. Auxiliary connection DHW/T&P relief valve connection (UK) | 7. Immersion heater connection |
| 2. Domestic cold water inlet connection | 8. Primary air vent |
| 3. Flow connection (primary circuit) | 9. Hot water outlet connection |
| 4. Polypropylene shell | 10. Rigid polypropylene top cover |
| 5. Internal stainless steel tank. | 11. Thermostat pocket |
| 6. Return connection (primary circuit) | 12. Polyurethane foam insulation |
| | 13. Outer steel tank (primary circuit) |
| | 14. Polypropylene base |

*In line with the recommendations specified in UK Building Regulations (2016) Part G, ACV UK Ltd advise the installation of a suitable domestic hot water thermostatic mixing valve on the hot flow immediately after the appliance.



Dimensions

All dimensions in mm.



TYPE	UNIT	SLE130	SLE160
Dimensions A	mm	1024	1225
Dimensions B	mm	759	959
Dimensions C	mm	525	725

Technical data

TYPE	UNIT	SLE130	SLE160
Part number		XB301300	XB301600
Capacity (total)	L	130	161
Capacity (DHW)	L	75	99
Connection - primary	Ø"	1 F	1 F
Connection - DHW	Ø"	3/4 M	3/4 M
Connection - re-circulation / safety valve	Ø"	3/4 M	3/4 M
Max operating temperature	°C	90	90
Max operating pressure heating (primary)	bar	3	3
Max operating pressure (DHW)	bar	8.6	8.6
Weight (empty)	kg	45	54
Energy efficiency storage class		B	B
Voltage	V	230	230
Electrical consumption	W	220	230
Declared load profile		XXL	XXL
Standing loss	W	40	47
Standing loss	kWh/day	0.96	1.128

Domestic hot water performance

TYPE	UNIT	SLE130	SLE160
Peak flow at 40°C	L/10'	236	321
Peak flow 1st hour at 40°C	L/60'	784	1063
Continuous flow at 40°C	L/h	658	890
Peak flow at 45°C	L/10'	202	275
Peak flow 1st hour at 45°C	L/60'	672	911
Continuous flow at 45°C	L/h	564	763
Peak flow at 60°C	L/10'	117	161
Peak flow 1st hour at 60°C	L/60'	384	549
Continuous flow at 60°C	L/h	320	465
Reheat time (EN 12897)	min	10	10
Max absorbed heat (Heat source: boiler)	kW	23	31

This data assumes an incoming mains water temperature of 10°C.

Options

Reference	Description
XB080600	6 kW single phase immersion heater (1 x 230V)
10800084	6 kW Three phase immersion heater (3 x 400V+N)

Smart Green 130 - 210

MODELS 3



Stainless steel indirect cylinder with A rated storage class for domestic hot water.

Features

- > Cost effective solution, simple installation with no de-stratification kit needed and no flue requirements
- > Exceptionally low standing losses – cylinder comes with polyurethane foam insulation and thick polypropylene jacket
- > Fast heat up and recovery using the unique tank-in-tank design
- > Reduces legionella risk due to temperature: stored at > 60°C
- > Low maintenance with no anode protection required
- > Exceeds regulations with Class A energy rating
- > Long life corrosion resistant stainless steel cylinder
- > Simplified wiring with 'plug and play' electrical connection
- > Fits through a standard doorway for access to plant room
- > Can easily be coupled to a condensing boiler
- > Easy to control using integrated thermostat or option to use boiler controls
- > Maximise capacity of the cylinder with DHW mixing valve and 2 port valve supplied as standard
- > Suitable for unvented systems – supplied as a complete package with Smartpak 1 including 3.5 bar mains unvented kit

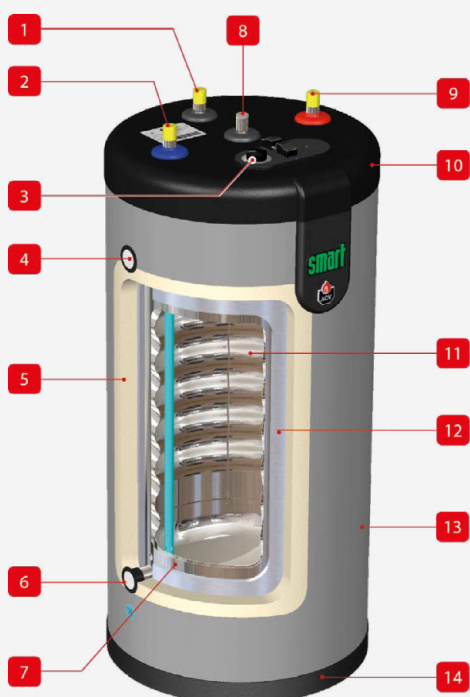
Tank-in-tank technology

- > **Fast** heat up
- > **Rapid** recovery
- > **Reduced** footprint
- > **Reduced** scale
- > **Low** storage required
- > **Minimal** heat loss

Anatomy

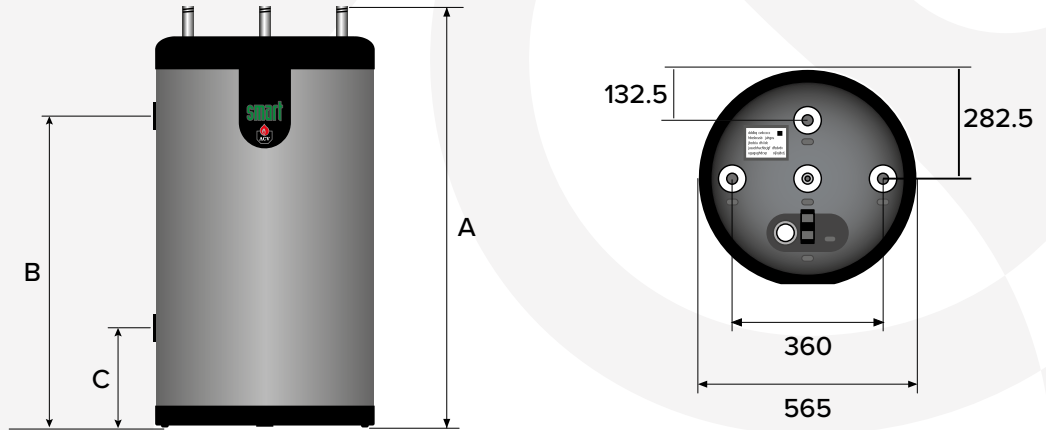
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|--|--------------------------------|
| 1. Auxiliary connection DHW/T&P relief valve connection (UK) | 8. Manual air bleed valve |
| 2. Cold water inlet connection | 9. Hot water outlet connection |
| 3. Control thermostat | 10. Polypropylene top lid |
| 4. Flow connection (primary circuit) | 11. Stainless steel tank (DHW) |
| 5. Polyurethane foam insulation | 12. Vacuum insulation panel |
| 6. Return connection (primary circuit) | 13. Polypropylene shell |
| 7. Outer steel tank (primary circuit) | 14. Polypropylene base |

*In line with the recommendations specified in UK Building Regulations (2016) Part G, ACV UK Ltd advise the installation of a suitable domestic hot water thermostatic mixing valve on the hot flow immediately after the appliance.



Dimensions

All dimensions in mm.



TYPE	UNIT	SL130G	SL160G	SL210G
Dimensions A	mm	1025	1225	1497
Dimensions B	mm	750	960	1232
Dimensions C	mm	235	235	235

Technical data

TYPE	UNIT	SL130G	SL160G	SL210G
Part number		XB321300	XB321600	XB322100
Capacity (total)	L	130	161	203
Capacity (domestic hot water)	L	99	126	164
Connection - primary	Ø"	1 F	1 F	1 F
Connection - DHW	Ø"	¾ M	¾ M	¾ M
Connection - re-circulation / safety valve	Ø"	¾ M	¾ M	¾ M
Max operating temperature	°C	90	90	90
Max operating pressure (DHW)	bar	8.6	8.6	8.6
Max operating pressure heating (primary)	bar	3	3	3
Weight (empty)	kg	55	65	75
Energy efficiency storage class		A	A	A
Standing loss (Energy Label)	W	35	38	41
Standing loss	kWh/day	0.84	0.912	0.984

Domestic hot water performance

TYPE	UNIT	SL130G	SL160G	SL210G
Peak flow at 40°C	L/10'	321	406	547
Peak flow 1st hour at 40°C	L/60'	1063	1349	1820
Continuous flow at 40°C	L/h	890	1132	1527
Peak flow at 45°C	L/10'	275	348	469
Peak flow 1st hour at 45°C	L/60'	911	1156	1560
Continuous flow at 45°C	L/h	763	970	1309
Peak flow at 60°C	L/10'	161	209	272
Peak flow 1st hour at 60°C	L/60'	549	689	913
Continuous flow at 60°C	L/h	465	576	769
Reheat time (EN 12897)	min	10	10	9

This data assumes an incoming mains water temperature of 10°C.

Smart E Plus 210 - 300

MODELS 3



Stainless steel indirect cylinder with the addition of multiple ports for use with multi energy sources for domestic hot water.

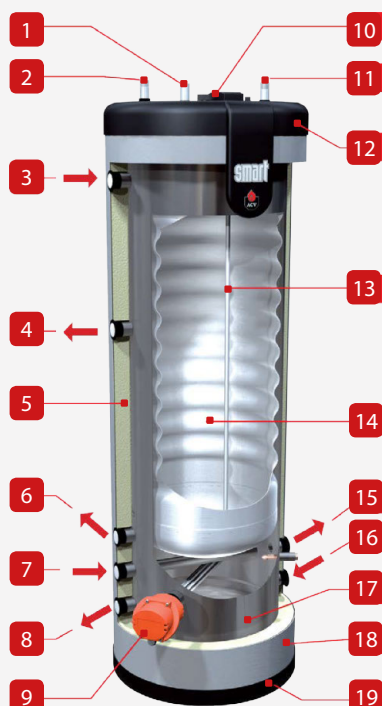
Features

- > Cost effective solution, simple installation with no de-stratification kit needed and no flue requirements
- > Low standing losses – cylinder comes with polyurethane foam insulation and thick polypropylene jacket
- > Reduces legionella risk due to temperature: hot water stored at > 60°C
- > Low maintenance with no anode protection required
- > Long life corrosion resistant stainless steel cylinder
- > Simplified wiring with 'plug and play' electrical connection
- > Can easily be connected to multiple heat sources including heat pumps and condensing boilers
- > Suitable for unvented systems – supplied as a complete package with Smartpak 1 or 2 including 3.5 bar mains unvented kit
- > Maximise capacity of the cylinder with DHW mixing valve and 2 port valve supplied as standard
- > Supplied with 3kW immersion heater (6kW option available)
- > Most models fit through a standard doorway for access to plant room

Tank-in-tank technology

- > **Fast** heat up
- > **Rapid** recovery
- > **Reduced** footprint
- > **Reduced** scale
- > **Low** storage required
- > **Minimal** heat loss

Anatomy

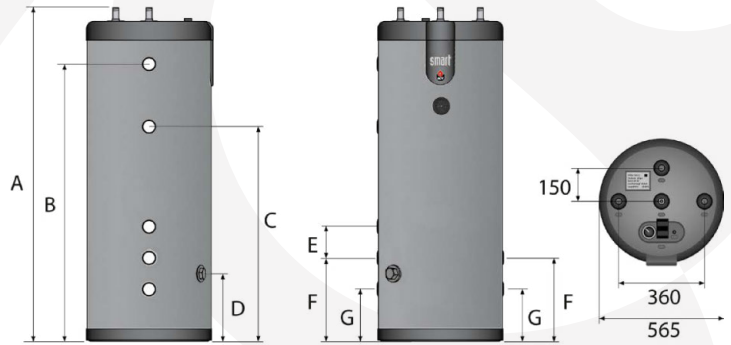


- | | |
|--|---|
| 1. Auxiliary connection DHW/T&P relief valve connection (UK) | 10. Manual air vent |
| 2. Domestic cold water inlet | 11. Domestic Hot Water outlet |
| 3. Flow connection (primary circuit) | 12. Rigid polypropylene cover |
| 4. Auxiliary heating return | 13. Stainless steel drywell |
| 5. 50 mm insulation rigid polyurethane | 14. Stainless steel (DHW) inner tank |
| 6. Auxiliary heating return | 15. Heating circuit flow |
| 7. Flow primary for heat pump connection | 16. Heating circuit return |
| 8. Return primary for heat pump connection | 17. Outer steel tank containing the primary fluid |
| 9. Immersion Heater | 18. Polypropylene shell |
| | 19. Polypropylene base cover |

*In line with the recommendations specified in UK Building Regulations (2016) Part G, ACV UK Ltd advise the installation of a suitable domestic hot water thermostatic mixing valve on the hot flow immediately after the appliance.

Dimensions

All dimensions in mm.



TYPE	UNIT	SLE+210	SLE+240	SLE+300
Dimensions A	mm	1489	1738	2050
Dimensions B	mm	1225	1473	1783
Dimensions C	mm	933	1064	1278
Dimensions D	mm	288	264	329
Dimensions E	mm	130	135	145
Dimensions F	mm	338	314	375
Dimensions G	mm	228	229	233

Technical data

TYPE	UNIT	SLE+210	SLE+240	SLE+300
Part number		XB302100	XB302400	XB303000
Capacity (total)	L	203	242	293
Capacity (domestic hot water)	L	126	164	200
Connection - primary	Ø"	1 F	1 F	1 F
Connection - DHW	Ø"	¾ M	¾ M	¾ M
Connection - re-circulation / safety valve	Ø"	¾ M	¾ M	¾ M
Max operating temperature (DHW)	°C	80	80	80
Max operating pressure heating (primary)	bar	3	3	3
Weight (empty)	kg	66	76	87
Energy efficiency storage class		B	B	B
Pre-heating time from 10 to 80°C (Heat source: boiler)	min	20	20	22
Standing loss	W	54	59	69

Domestic hot water performance

TYPE	UNIT	SLE+210	SLE+240	SLE+300
Peak flow at 40°C	L/10'	406	547	800
Peak flow 1st hour at 40°C	L/60'	1349	1820	2360
Continuous flow at 40°C	L/h	1132	1527	2100
Peak flow at 45°C	L/10'	348	469	640
Peak flow 1st hour at 45°C	L/60'	1156	1560	1920
Continuous flow at 45°C	L/h	970	1309	1710
Peak flow at 60°C	L/10'	209	272	370
Peak flow 1st hour at 60°C	L/60'	689	913	1100
Continuous flow at 60°C	L/h	576	769	970
Max absorbed heat (Heat source: boiler)	kW	39	53	68
Reheat time (EN 12897)	min	9	9	9

This data assumes an incoming mains water temperature of 10°C.

Options

Reference	Description
XB080600	6 kW single phase immersion heater (1 x 230V)
10800084	6 kW Three phase immersion heater (3 x 400V+N)



Stainless steel indirect cylinder with additional coil for use with multi-energy sources to produce domestic hot water.

Features

- > Ideal for use with renewable energy such as heat pumps, solar, heat recovery and in district heating schemes due to large primary store
- > Reduces legionella risk due to temperature: hot water stored at > 60°C
- > Low maintenance with no anode protection required
- > The carbon steel coil enables this product to be used in a variety of installations including system separation for a heating circuit
- > Long life corrosion resistant stainless steel cylinder
- > Low standing losses – cylinder comes with thick polypropylene jacket (100mm Polyurethane mattress for models SLME600 and SLME800)
- > Can provide dual temperature outputs for different circuits such as underfloor heating (low temperature) and DHW (high temperature)
- > Suitable for unvented systems – supplied as a complete package including 3.5 bar mains unvented kit*
- > Maximise capacity of the cylinder with DHW mixing valve and 2 port valve supplied as standard*
- > Supplied with 3kW immersion heater* (6kW option available)
- > Smaller models (SLME 400-600) fit through a standard doorway for access to plant room
- > Cost effective solution, simple installation with no de-stratification kit needed and no flue requirements *except SLME800



Tank-in-tank technology

- > **Fast** heat up
- > **Rapid** recovery
- > **Reduced** footprint
- > **Reduced** scale
- > **Low** storage required
- > **Minimal** heat loss

Anatomy

- | | |
|---------------------------|---|
| 1. Primary hot water flow | 7. Drywell pocket for sensors |
| 2. Primary return | 8. Immersion heater connection (not available on SLME800) |
| 3. Coil flow | 9. Cold water inlet connection |
| 4. Coil return | 10. Auxiliary connection (DHW) |
| 5. Heating circuit flow | 11. Domestic hot water connection |
| 6. Heating circuit return | |

*In line with the recommendations specified in UK Building Regulations (2016) Part G, ACV UK Ltd advise the installation of a suitable domestic hot water thermostatic mixing valve on the hot flow immediately after the appliance.

Technical data

TYPE	UNIT	SLME 200	SLME 300	SLME 400	SLME 600	SLME 800
Part number		XB312000	XB313000	XB314000	XB316000	06625301
Capacity (domestic hot water)	L	99	126	164	225	263
Capacity (total)	L	203	303	395	606	800
Max operating pressure (coil)	bar	10	10	10	10	10
Max operating temperature (DHW)	°C	80	80	80	80	80
Max operating pressure heating (primary)	bar	3	4	4	4	4
Max operating pressure (DHW)	bar	8.6	8.6	8.6	8.6	8.6
Connection - heating element	Ø"	1 ½ F	1 ½ F	1 ½ F	1 ½ F	-
Connection - DHW	Ø"	¾ M	¾ M	¾ M	¾ M	1 ½ M
Connection - primary	Ø"	1 F	1 F	1 F	1 F	1 F
Connection - re-circulation / safety valve	Ø"	¾ M	¾ M	¾ M	¾ M	1 ½ M
Corresponding flow in coil	L/h	3000	3000	3000	3000	3000
Max absorbed heat (Heat source: coil)	kW	16.3	19	25	29	35
Weight (empty)	kg	68	99	120	180	220
Energy efficiency storage class		B	C	C	N/A	N/A
Primary heater pressure drop (EN12897:2016)	mbar	41.6	51.2	53.5	55.6	58.5
Standing losses (energy label)	W	57	77	87	120	134
Standing losses	kWh/day	1.368	1.848	2.088	2.88	3.216

Domestic hot water performance

TYPE	UNIT	SLME 200	SLME 300	SLME 400	SLME 600	SLME 800
Peak flow at 40°C	L/10'	321	418	558	686	922
Peak flow 1st hour at 40°C	L/60'	1063	1225	1633	1872	2666
Continuous flow at 40°C	L/h	890	967	1289	1423	2093
Peak flow at 45°C	L/10'	275	348	464	582	790
Peak flow 1st hour at 45°C	L/60'	911	1003	1338	1559	2285
Continuous flow at 45°C	L/h	763	786	1048	1172	1794
Peak flow at 60°C	L/10'	161	206	274	358	504
Peak flow 1st hour at 60°C	L/60'	536	590	786	935	1368
Continuous flow at 60°C	L/h	450	461	614	693	1037
Heating surface area	m²	1.4	1.8	1.8	2.5	3
Max absorbed heat (Heat source: boiler)	kW	31	32	43	48	73
Reheat time (EN 12897)	min	10	10	10	10	10

This data assumes an incoming mains water temperature of 10°C.

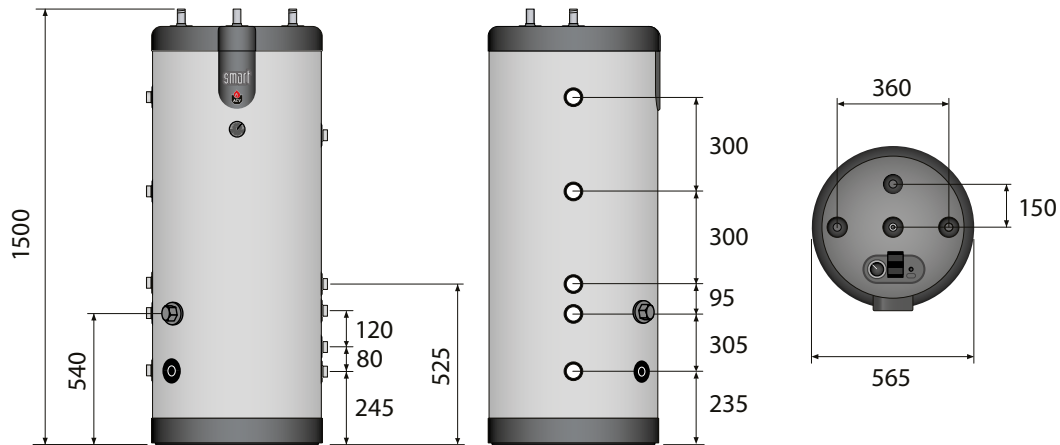
Options

Reference	Description
XB080600	6 kW single phase immersion heater (1 x 230V)
10800084	6 kW Three phase immersion heater (3 x 400V+N)

Smart ME 200 - 800

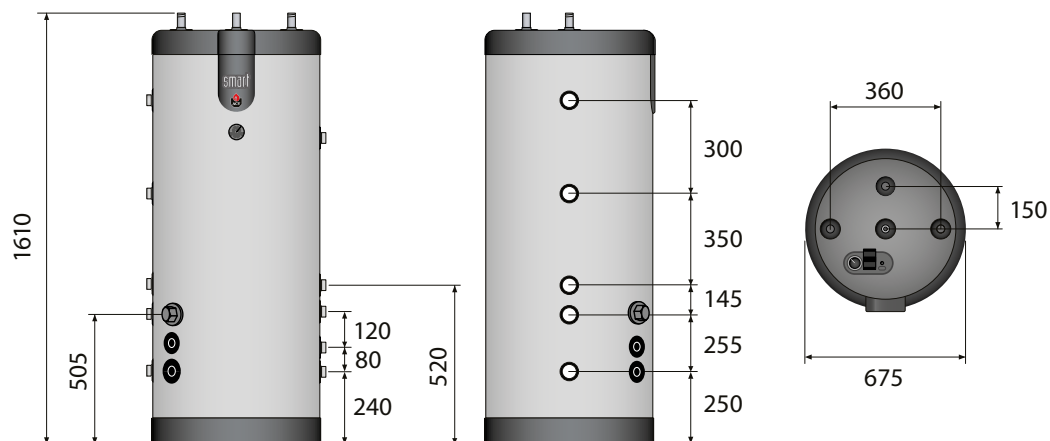
Dimensions - Smart ME200

All dimensions in mm.



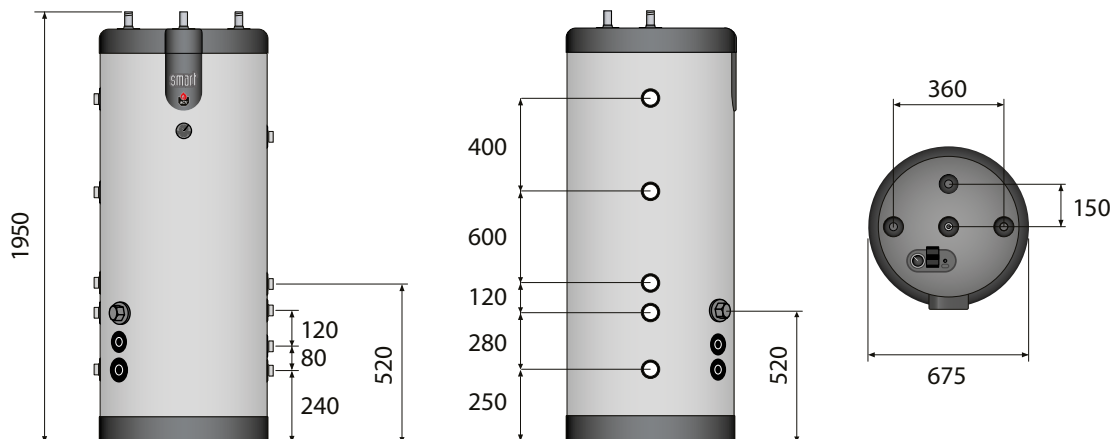
Dimensions - Smart ME300

All dimensions in mm.



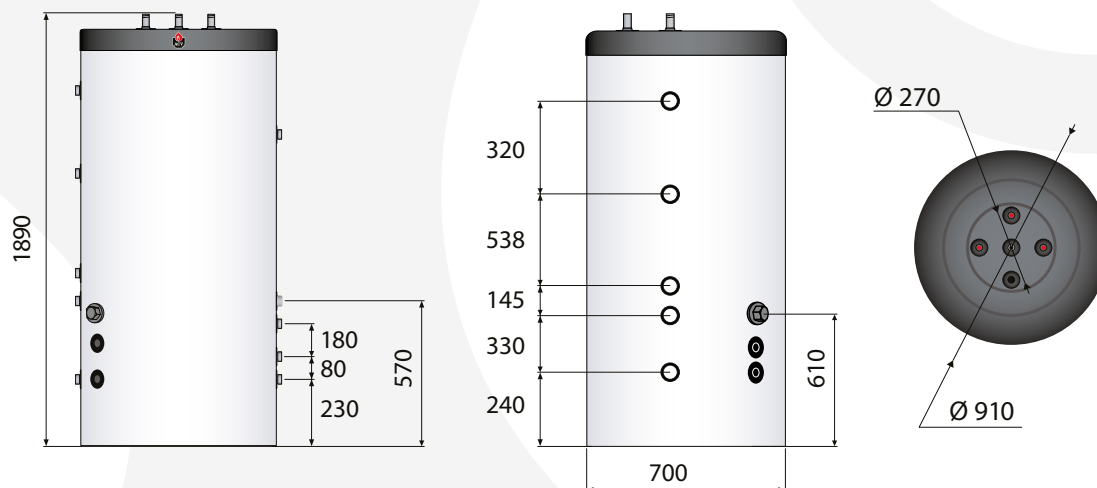
Dimensions - Smart ME400

All dimensions in mm.



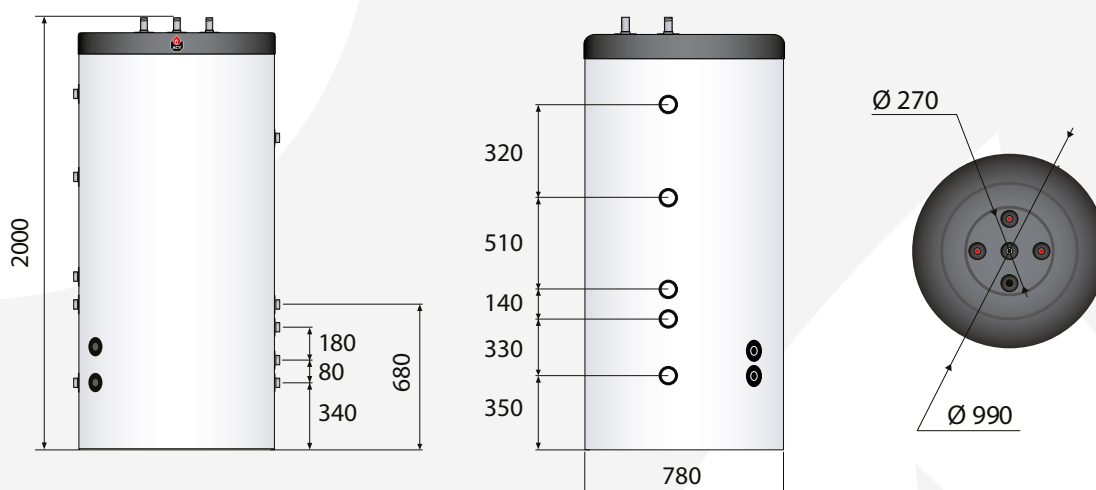
Dimensions - Smart ME600

All dimensions in mm.



Dimensions - Smart ME800

All dimensions in mm.



Smart L 320 - 600

MODELS 3

Stainless steel indirect cylinder for domestic hot water.

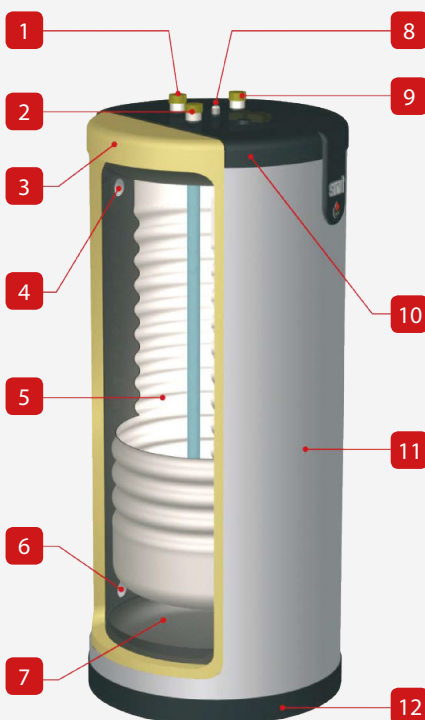


Features

- > Cost effective solution, simple installation with no de-stratification kit needed and no flue requirements
- > Long life corrosion resistant stainless steel cylinder
- > Low maintenance with no anode protection required
- > Simplified wiring with 'plug and play' electrical connection
- > Low standing losses – cylinder comes with polyurethane foam insulation and hard-wearing polypropylene finish
- > Suitable for vented or unvented systems (optional Systempak unvented kit required)
- > Reduces legionella risk due to temperature: hot water stored at > 60°C
- > Smaller models (SL 320-420) fit through a standard doorway for ease of access to plant room

Tank-in-tank technology

- > **Fast** heat up
- > **Rapid** recovery
- > **Reduced** footprint
- > **Reduced** scale
- > **Low** storage required
- > **Minimal** heat loss



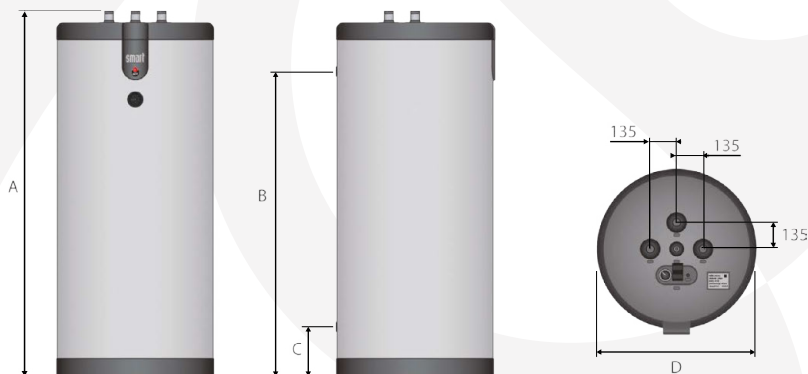
Anatomy

1. Auxiliary connection DHW/T&P relief valve connection (UK)
2. Domestic cold water inlet
3. 50mm rigid polyurethane insulation
4. Flow connection (primary circuit)
5. Internal stainless steel tank
6. Return connection (primary circuit)
7. Outer steel tank containing the primary fluid
8. Manual air vent
9. Domestic hot water outlet
10. Polypropylene lid
11. Outer jacket, thick polypropylene shell
12. Polypropylene reinforced base

*In line with the recommendations specified in UK Building Regulations (2016) Part G, ACV UK Ltd advise the installation of a suitable domestic hot water thermostatic mixing valve on the hot flow immediately after the appliance.

Dimensions

All dimensions in mm.



TYPE	UNIT	SL 320	SL 420	SL 600
Dimensions A	mm	1602	2024	1901
Dimensions B	mm	1280	1705	1583
Dimensions C	mm	250	250	255
Dimensions D	mm	673	673	817

Technical data

TYPE	UNIT	SL 320	SL 420	SL 600
Part number		06618594	06618694	06619301
Capacity (domestic hot water)	L	263	358	445
Capacity (total)	L	318	413	606
Connection - primary	Ø"	1 ½ F	1 ½ F	2 F
Connection - DHW	Ø"	1 ½ M	1 ½ M	1 ½ M
Connection - re-circulation / safety valve	Ø"	1 ½ M	1 ½ M	1 ½ M
Max operating temperature	°C	90	90	90
Max operating pressure heating (primary)	bar	4	4	4
Max design pressure (DHW)	bar	10	10	10
Energy efficiency storage class		C	C	N/A
Weight (empty)	kg	141	167	238
Standing loss (Energy label)	W	76	84	110
Standing loss	kWh/day	1.824	2.016	2.64

Domestic hot water performance

TYPE	UNIT	SL 320	SL 420	SL 600
Peak flow at 40°C	L/10'	922	1195	1345
Peak flow 1st hour at 40°C	L/60'	2666	3151	3437
Continuous flow at 40°C	L/h	2093	2536	2511
Peak flow at 45°C	L/10'	790	1012	1153
Peak flow 1st hour at 45°C	L/60'	2285	2608	2946
Continuous flow at 45°C	L/h	1794	2058	2152
Peak flow at 60°C	L/10'	504	620	706
Peak flow 1st hour at 60°C	L/60'	1368	1513	1733
Continuous flow at 60°C	L/h	1037	1153	1232
Heating surface area	m ²	1.4	1.8	2.5
Max absorbed heat (Heat source: boiler)	kW	73	88	88
Pre-heating time from 10 to 80°C (Heat source: boiler)	min	23	24	35

This data assumes an incoming mains water temperature of 10°C.

Options

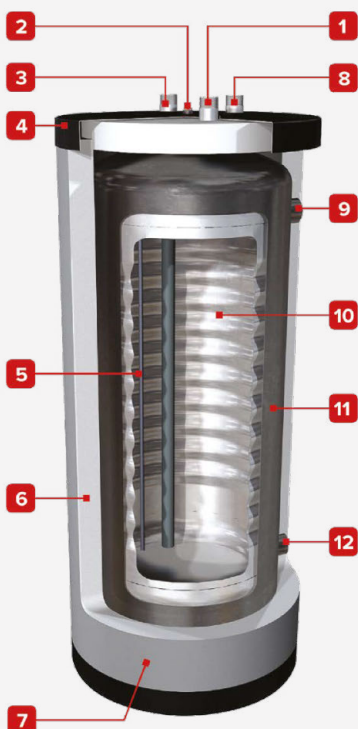
Reference	Description
XB050019	Unvented kit Systempak No.3 including 25 litre vessel & mounting kit
XB050020	Unvented kit Systempak No.4 including 60 litre vessel
XB050033	Mixcal Mixpro® thermostatic mixing valve 1"

Stainless steel indirect cylinder for domestic hot water.



Features

- > Low maintenance with no anode protection required
- > Fast heat up and recovery using the unique tank-in-tank design
- > Low standing losses – cylinder comes with polyurethane foam insulation and hard-wearing polypropylene finish
- > Large heating surface area reduces boiler cycling
- > Reduces Legionella risk due to temperature: hot water stored at > 60°C
- > Long life corrosion resistant stainless steel cylinder
- > Suitable for vented or unvented systems (optional Systempak unvented kit required)
- > Cost effective solution, simple installation with no de-stratification kit needed and no flue requirements



Tank-in-tank technology

- > **Fast** heat up
- > **Rapid** recovery
- > **Reduced** footprint
- > **Reduced** scale
- > **Low** storage required
- > **Minimal** heat loss

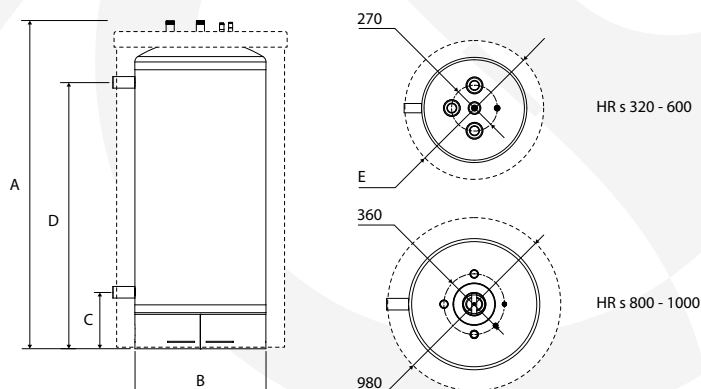
Anatomy

- | | |
|--|---------------------------------------|
| 1. DHW return or temp/pressure relief valve connection | 7. Outer shell vinyl jacket |
| 2. Manual air vent | 8. DHW return connection |
| 3. Cold water inlet connection | 9. Primary flow connection |
| 4. Rigid top case | 10. Internal stainless steel DHW tank |
| 5. Stainless steel thermostat pocket | 11. External Tank (primary) steel |
| 6. 100mm flexible polyurethane foam insulation | 12. Primary return connection |

*In line with the recommendations specified in UK Building Regulations (2016) Part G, ACV UK Ltd advise the installation of a suitable domestic hot water thermostatic mixing valve on the hot flow immediately after the appliance.

Dimensions

All dimensions in mm.



TYPE	UNIT	HRs 800	HRs 1000
Dimensions A	mm	1955	2355
Dimensions B	mm	780	780
Dimensions C	mm	335	335
Dimensions D	mm	1585	1985

Technical data

TYPE	UNIT	HRs 800	HRs 1000
Part number		06633001	06633101
Capacity (domestic hot water)	L	675	840
Capacity (total)	L	800	1000
Connection - primary	Ø"	2 F	2 F
Connection - DHW	Ø"	1½ M	1½ M
Connection - re-circulation / safety valve	Ø"	1½ M	1½ M
Max operating temperature (DHW)	°C	80	80
Max operating pressure (DHW)	bar	8.6	8.6
Weight (empty)	kg	261	308
Standing loss (Energy label)	W	137	146

Domestic hot water performance

TYPE	UNIT	HRs 800	HRs 1000
Peak flow at 40°C	L/10'	1881	2265
Peak flow 1st hour at 40°C	L/60'	4270	4940
Continuous flow at 40°C	L/h	2868	3210
Peak flow at 45°C	L/10'	1612	1941
Peak flow 1st hour at 45°C	L/60'	3660	4234
Continuous flow at 45°C	L/h	2458	2751
Peak flow at 60°C	L/10'	961	1145
Peak flow 1st hour at 60°C	L/60'	2124	2438
Continuous flow at 60°C	L/h	1395	1562
Max absorbed heat (Heat source: boiler)	kW	100	112

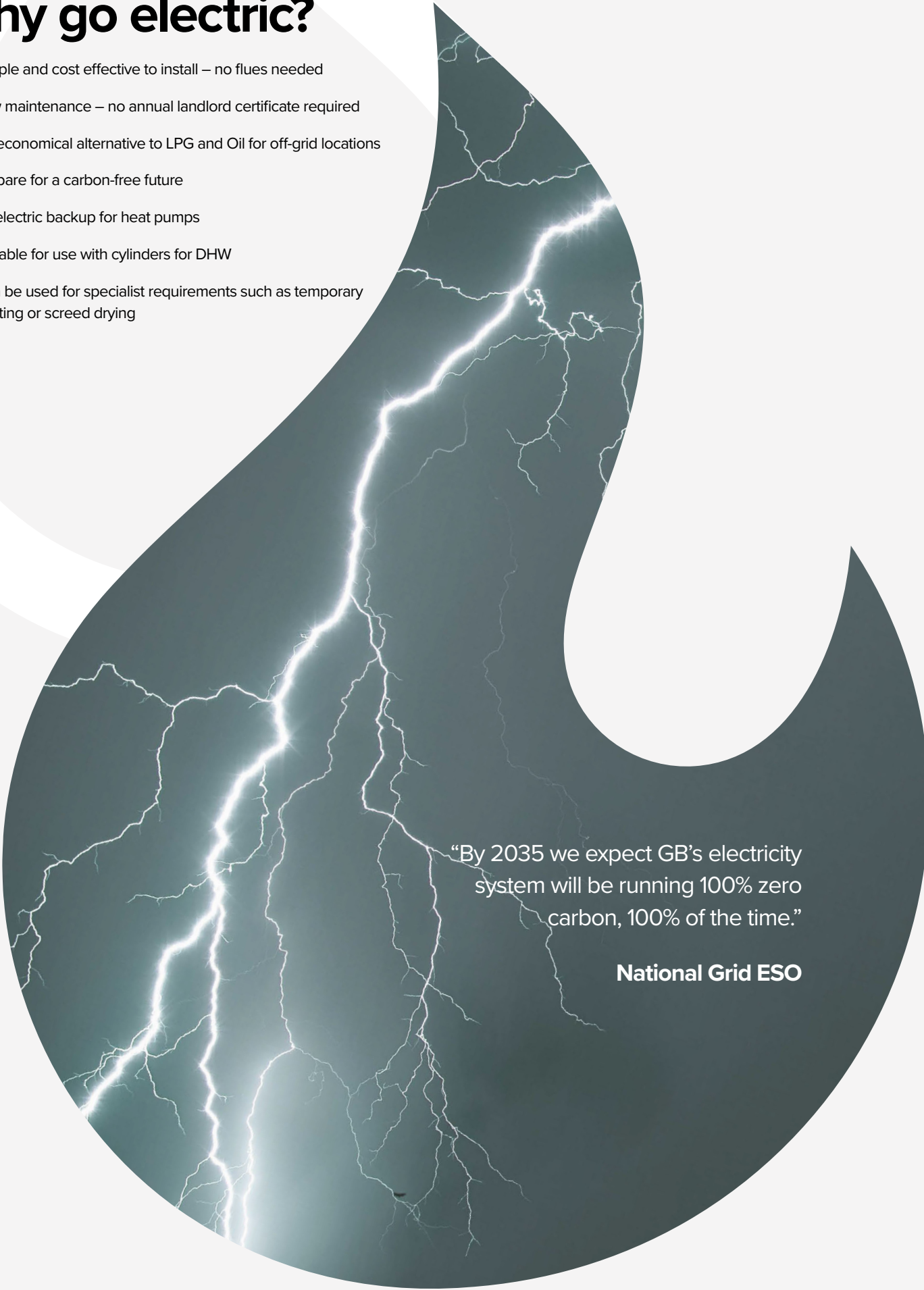
This data assumes an incoming mains water temperature of 10°C.

Options

Reference	Description	Reference	Description
XB090017	Unvented kit Systempak No.5	XB090016	80 Litre Expansion Vessel
XB090018	Unvented kit Systempak No.6	XB090009	100 Litre Expansion Vessel
XB050034	Mixcal Mixpro® thermostatic mixing valve 1¼"	XB090003	1" Temp/Pressure Relief Valve
XB050035	Mixcal Mixpro® thermostatic mixing valve 1½"		

Why go electric?

- > Simple and cost effective to install – no flues needed
- > Low maintenance – no annual landlord certificate required
- > An economical alternative to LPG and Oil for off-grid locations
- > Prepare for a carbon-free future
- > All-electric backup for heat pumps
- > Suitable for use with cylinders for DHW
- > Can be used for specialist requirements such as temporary heating or screed drying



“By 2035 we expect GB’s electricity system will be running 100% zero carbon, 100% of the time.”

National Grid ESO

Electric boilers



38 E-Tech W
15-36
Wall hung electric
sealed system boiler.



40 E-Tech S
160-240
Floor standing electric
combination boiler.



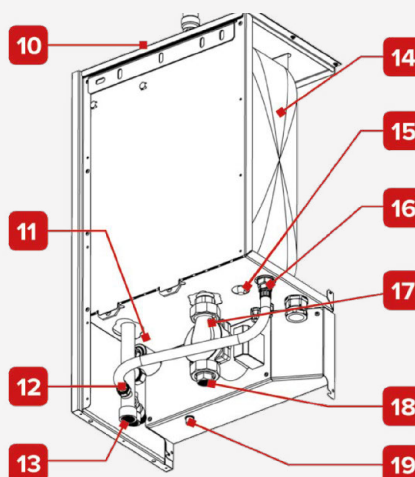
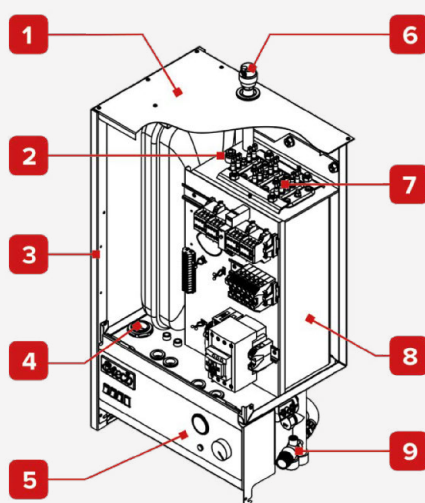
42 E-Tech P
57-259
Floor standing heat
only electric boiler.

Wall hung electric sealed system boiler.



Features

- > Prepare for a carbon-free future with electric
- > Reduced maintenance – no annual landlord certification
- > Simple installation anywhere in the building due to no flues needed and quiet operation
- > Can provide dual temperature outputs for different circuits such as radiators and underfloor heating*
- > All components integrated in one unit (10 litre expansion tank, pressure gauge, safety valve, low water pressure switch, pump and automatic air vent)
- > Long life high grade incoloy 800 stainless steel heating element
- > Protection from electrical surges due to built-in 3 amp MCB
- > Integrated circulating pump for speed of installation
- > An economical alternative to LPG and Oil for off-grid locations
- > Compatible with different electrical system types
- > Perfect match for use with external cylinders for DHW
- > Available in 3 power output levels to match your demand



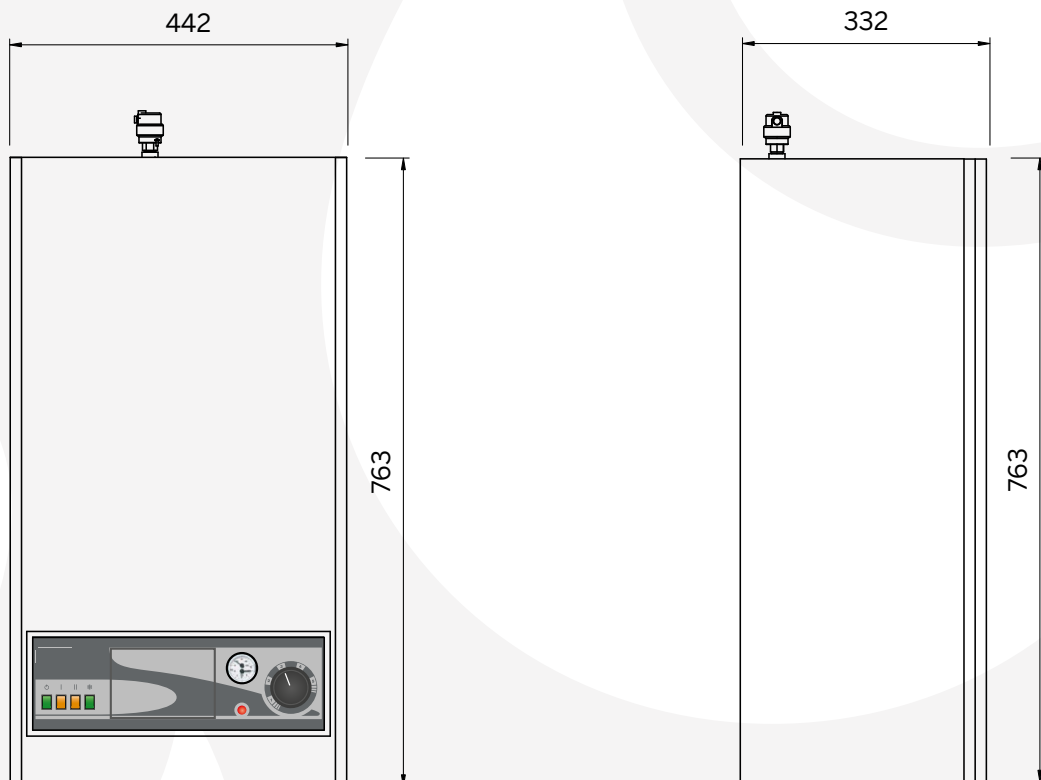
Anatomy

1. Top panel
2. Brass pocket
3. Side panel
4. Cable gland
5. Control panel
6. Automatic air vent
7. Heating elements
8. Heating body
9. Pressure safety valve
10. Rear panel
11. Water pressure switch
12. Expansion vessel connection
13. Heating return
14. Expansion vessel
15. Expansion vessel valve
16. Expansion vessel connection
17. Circulating pump
18. Heating flow
19. Manual reset high limit pressure gauge

*Always ensure a safety thermostat is fitted to the underfloor heating circuit.

Dimensions

All dimensions in mm.



Technical data

Name	UNIT	E-Tech W 09 single phase	E-Tech W 09 three phase	E-Tech W 15 single phase	E-Tech W 15 three phase	E-Tech W 22 three phase	E-Tech W 28 three phase	E-Tech W 36 three phase
Part number		A1002095	A1002092	A1002096	A1002090	A1002091	A1002093	A1002094
Output power max (80/60°C)	kW	8.4	8.4	14.4	14.4	21.6	28.8	36.0
Output power min (80/60°C)	kW	5.6	5.6	9.6	9.6	14.4	14.4	18.0
Connection - heating	Ø"	¾	¾	¾	¾	¾	¾	¾
Weight (empty)	kg	45	45	45	45	45	45	45
Max operating temperature	°C	85	85	85	85	85	85	85
Max service pressure heating (primary)	bar	3	3	3	3	3	3	3
Voltage	V	1x230	3x400 (+N)	1x230	3x400 (+N)	3x400 (+N)	3x400 (+N)	3x400 (+N)
Electrical power requirements	A	36	12	63	21	32	42	52
Space heating energy efficiency class		D	D	D	D	D	D	D
Seasonal space heating efficiency	%	37	37	37	37	37	37	37
Sound power level indoors LWA	dB	15	15	15	15	15	15	15
Number of heating elements		3	3	3	3	5	6	6



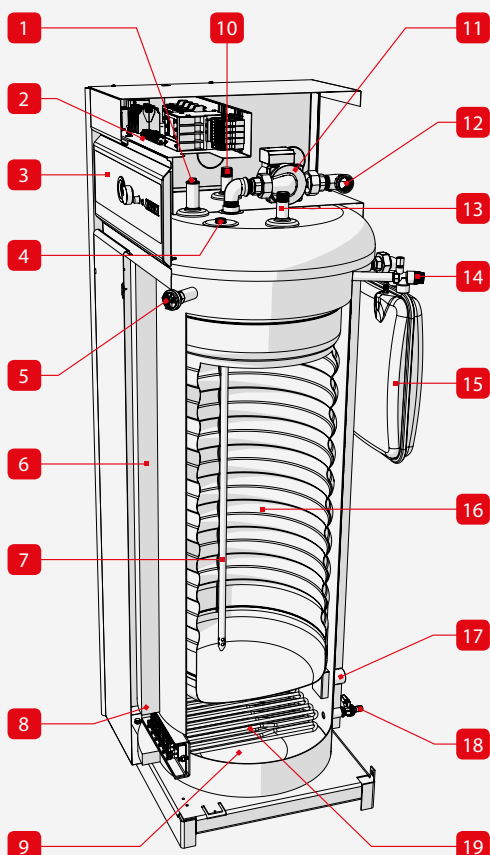
Floor standing electric combination boiler.

Features

- > Prepare for a carbon-free future with electric
- > Heating and hot water from unit saves space, money, and speeds up installation
- > Simple installation anywhere in the building due to no flues needed and quiet operation
- > Low maintenance (no annual landlord certification)
- > Can be used as a stand alone water heater
- > Low standing losses – boiler insulated with rigid polyurethane foam without CFC projected 70 mm
- > Long life corrosion resistant stainless steel cylinder
- > An economical alternative to LPG and Oil for off-grid locations
- > Supplied with a Smartpak including a mixing valve

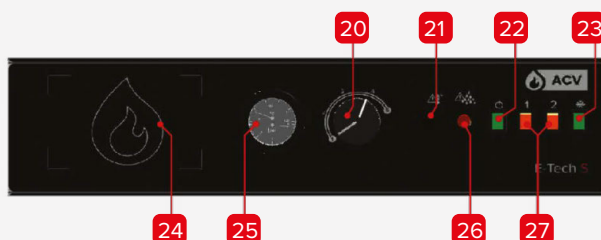
Tank-in-tank technology

- > **Fast** heat up
- > **Rapid** recovery
- > **Reduced** footprint
- > **Reduced** scale
- > **Low** storage required
- > **Minimal** heat loss



Anatomy

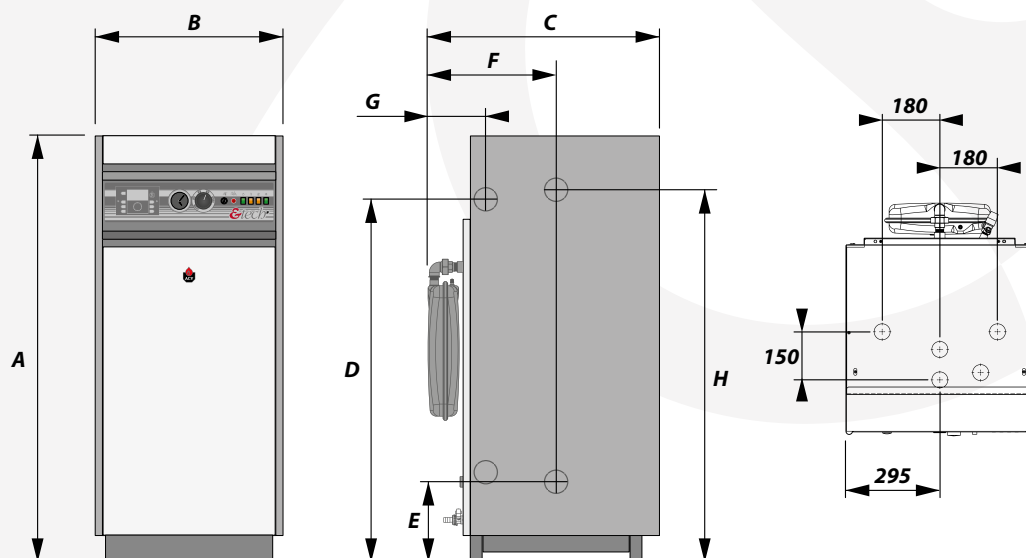
1. Auxiliary connection DHW/T&P relief valve connection (UK)
2. Electrical support
3. Control panel
4. Dry well for limit thermostats (90°C max) and thermometer bulbs
5. Low-water pressure switch
6. Thermal insulation
7. Dip tube
8. Dry well for control thermostat, safety thermostat (103°C) and bulbs.
9. Primary circuit
10. Cold water inlet
11. Heating pump
12. Heating circuit outlet
13. DHW outlet
14. Safety valve (3 bar)
15. Primary expansion vessel
16. Stainless steel tank (DHW)
17. Heating circuit return
18. Drain valve
19. Electrical heating elements
20. Control thermostat (60-85 °C)
21. Safety thermostat
22. ON/OFF switch
23. Summer/winter selector switch
24. Controller (option)
25. Combined temperature and pressure gauge
26. Safety indicator light
27. Power selection switch



*In line with the recommendations specified in UK Building Regulations (2016) Part G, ACV UK Ltd advise the installation of a suitable domestic hot water thermostatic mixing valve on the hot flow immediately after the appliance.

Dimensions

All dimensions in mm.



Name	UNIT	E-Tech S 160 single phase	E-Tech S 160 three phase	E-Tech S 240 three phase
Dimensions A	mm	1342	1342	1818
Dimensions B	mm	590	590	590
Dimensions C	mm	728	728	728
Dimensions D	mm	928	928	1403
Dimensions E	mm	249	249	249
Dimensions F	mm	402	402	402
Dimensions G	mm	181	181	181

Technical data

Name	UNIT	E-Tech S 160 single phase	E-Tech S 160 three phase	E-Tech S 240 three phase
Part number		XB501600	XB501601	XB502400
Output power max (80/60°C)	kW	14.4	14.4	28.8
Capacity (total)	L	167	167	250
Capacity (domestic hot water)	L	99	99	164
Connection - heating	Ø"	1 F	1 F	1 M
Connection - DHW	Ø"	¾ M	¾ M	¾ F
Weight (empty)	kg	115	115	155
Max operating temperature	°C	85	85	85
Max service pressure heating (primary)	bar	3	3	3
Max service pressure (DHW)	bar	10	10	10
Voltage	V	1x230 + N	3x400 + N	3x400 + N
Space heating energy efficiency class		D	D	D
Water heating energy efficiency class		C	C	C
Seasonal space heating efficiency	%	37	37	37
Sound power level indoors LWA	dB	30	30	30
Declared load profile		XL	XL	XXL
Standby loss	kWh/day	1.32	1.37	5.35
Number of heating elements		6 x 2	6 x 2	6 x 2

Domestic hot water performance

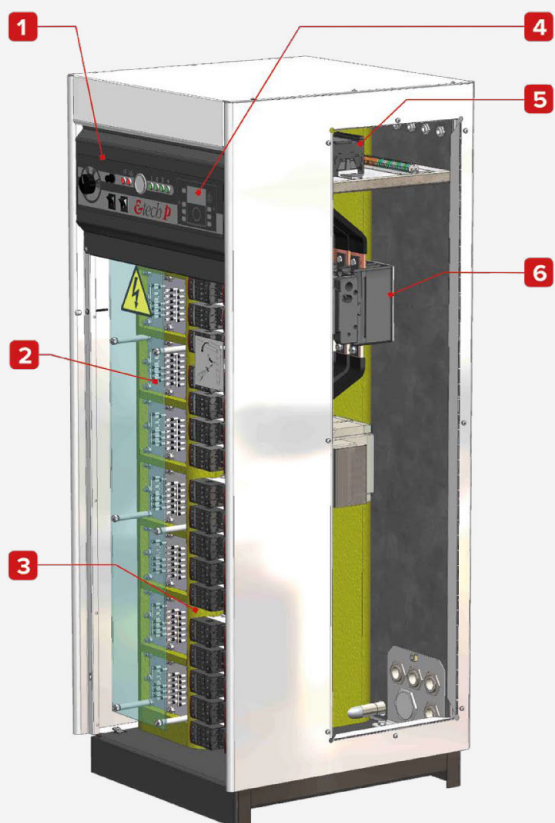
Name	UNIT	E-Tech S 160 single phase	E-Tech S 160 three phase	E-Tech S 240 three phase
Peak flow at 40°C	L/10'	356	356	545
Peak flow 1st hour at 40°C	L/60'	700	700	1234
Continuous flow at 40°C	L/h	413	413	827

Floor standing, heat only electric boiler.



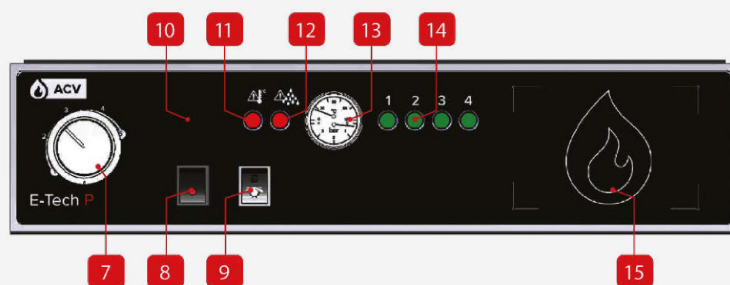
Features

- > Prepare for a carbon free future with electric
- > Quick installation with no flues required
- > Close load matching with four power stages controlled by stage delay timer
- > Robust stove enamelled casing
- > Easy to use controls interface – plug and play setup with pre-wired integrated control circuits
- > Low maintenance
- > Long life high grade incoloy 800 stainless steel heating element
- > An economical alternative to LPG and oil for off-grid locations
- > Ideal to be used as a temporary heat source or mobile heating
- > Suitable to connect to external storage cylinders to produce DHW



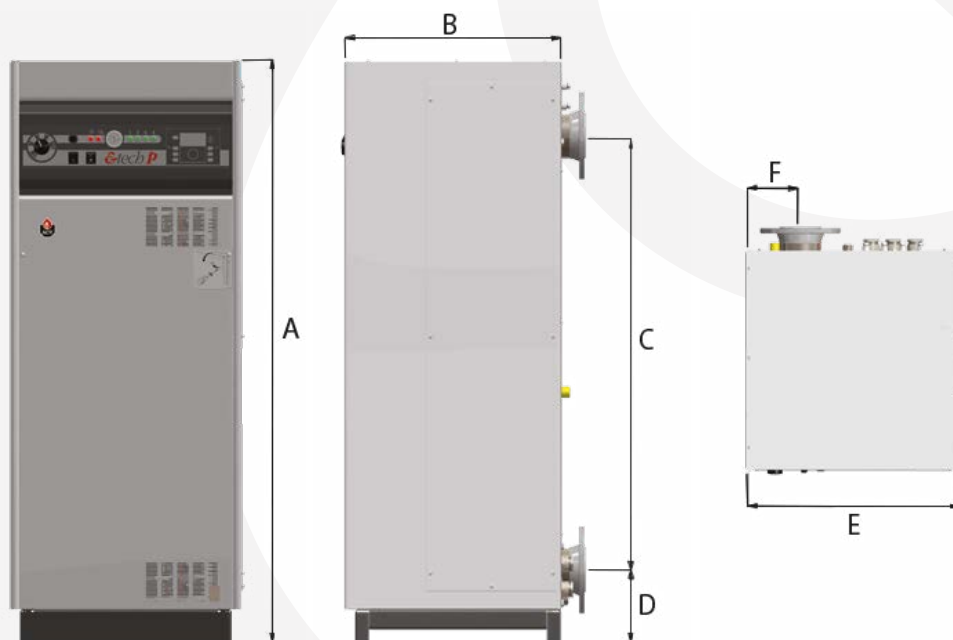
Anatomy

1. Control panel
2. Heating elements
3. Contactor and safety relays
4. Optional controller
5. Control circuit
6. Main fuses and power connections
7. Control thermostat
8. ON/OFF switch
9. Summer/winter switch
10. Manual reset high limit thermostat
11. Overheating warning light
12. Minimum water pressure warning light
13. Combined temperature and pressure gauge
14. Power level indicators
15. Optional internal controller



Dimensions

All dimensions in mm.



Name	UNIT	E-Tech P 57 three phase	E-Tech P 115 three phase	E-Tech P 144 three phase	E-Tech P 201 three phase	E-Tech P 259 three phase
Dimensions A	mm	1495	1495	1495	1495	1495
Dimensions B	mm	567	567	567	567	567
Dimensions C	mm	550	550	550	1100	1100
Dimensions D	mm	183	183	183	183	183
Dimensions E	mm	542	542	542	542	542
Dimensions F	mm	125	125	125	125	125

Technical data

Name	UNIT	E-Tech P 57 three phase	E-Tech P 115 three phase	E-Tech P 144 three phase	E-Tech P 201 three phase	E-Tech P 259 three phase
Part number		00624201	00624301	00624401	00624801	00624501
Connection - heating	Ø"	2 F	2 F	2 F	DN100	DN100
Weight (empty)	kg	110	123	131	187	200
Max operating temperature	°C	90	90	90	90	90
Max service pressure heating (primary)	bar	4	4	4	4	4
Voltage	V	3x400	3x400	3x400	3x400	3x400
Capacity (total)	L	60	60	60	102	102
Electrical power (min/max)	kW	14.4 / 57.6	28.8 / 115.2	36.0 / 144.0	50.4 / 201.6	64.8 / 259.2
Number of heating elements		2	4	5	7	9
Heating element type		4 x 3 x 2.4 kW	4 x 3 x 2.4 kW	4 x 3 x 2.4 kW	4 x 3 x 2.4 kW	4 x 3 x 2.4 kW

Cascade

The HeatMaster® Evo boilers can be installed in a cascade to offer highly flexible output to meet your building's demand.

Efficiency

A cascade system allows modulation of heating power, from the minimum output of one boiler up to the maximum output of all the boilers. In a four-boiler cascade, this would give a turndown ratio of at least 16:1. This means heating loads are matched with little wastage, minimising energy usage and carbon emissions.

Back-up

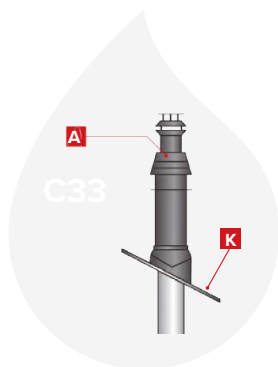
The ACV cascade controllers optimise the potential of the available boilers. If one of the boilers fail, the controller simply adjusts the power of the remaining boilers to compensate.

Easy maintenance

A boiler in a cascade can be serviced and maintained easily whilst the other boilers operate to meet the demand. This enables the servicing to be carried out at any time of the year and not just during the traditional summer shut-down period.

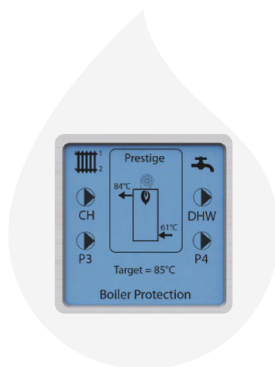


Flues, controls and accessories



46 Flues

See flue components for the HeatMaster® Evo and WaterMaster Evo ranges.



49 Controls

Understand your control options for the HeatMaster® Evo and E-tech ranges.



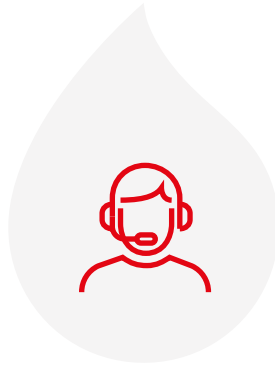
52 Accessories

Unvented kits, immersion elements, system valves.



54 Schemes

Example schemes to help with your system design.



56 Our support

Commissioning, spare parts and training.



57 Case studies

See our products in action.

Flue components

COMPATIBLE WITH

HeatMaster® 25c* Evo,
HeatMaster® 25 - 45 TC* Evo,
WaterMaster 25 - 45 Evo,

Flue diameter 80/125mm

Terminals

	PART NUMBER	DESCRIPTION
A	537D6184	Vertical terminal
B	537D6185	Horizontal terminal

Flue extensions

	PART NUMBER	DESCRIPTION
C	537D6187	500 mm cuttable length
D	537D6188	1000 mm cuttable length

Elbows

	PART NUMBER	DESCRIPTION
F	537D6190	43° - 45° bend
G	537D6191	87° - 90° bend

Measurement tube

	PART NUMBER	DESCRIPTION
H	537D6193	Measuring tube for flue gas analysis
J	537D6229	Measurement T-piece with inspection panel (not shown)

Accessories

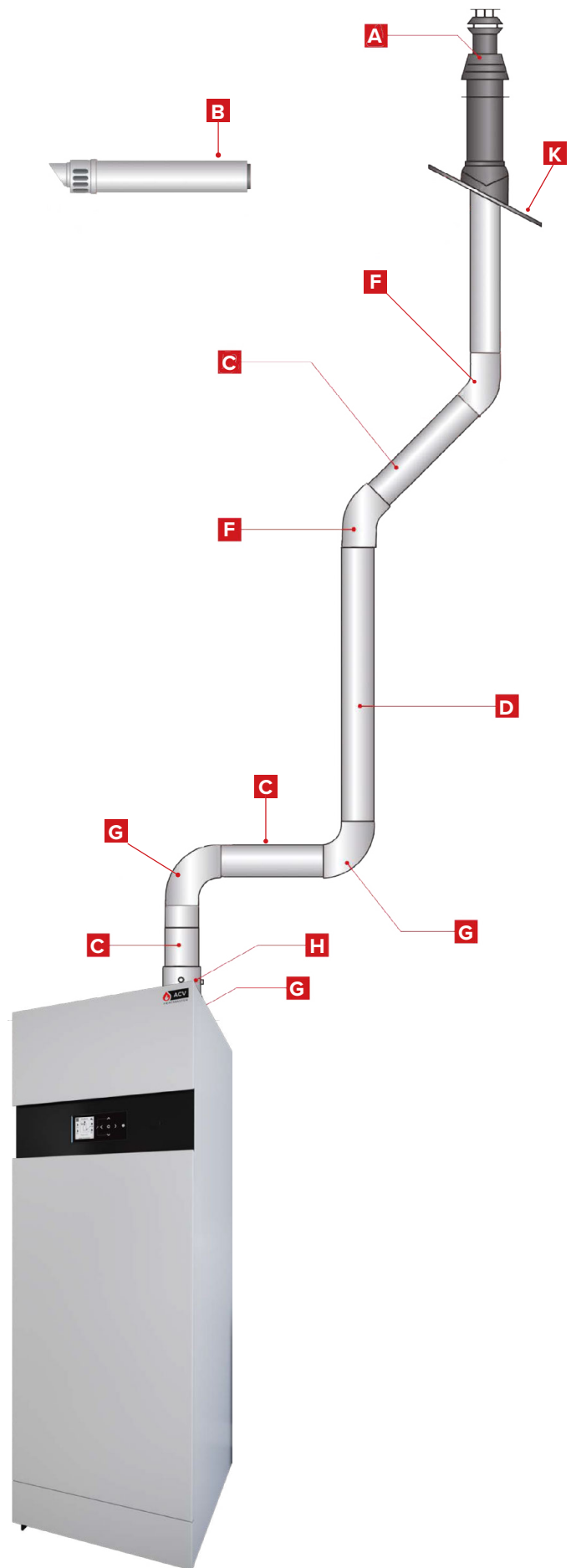
	PART NUMBER	DESCRIPTION
K	537D6182	Adjustable roof flashing
	537D6183	Wall bracket ø125mm
	537D6194	Flat roof flashing

Plume kits

Use of the ACV plume kit is permitted and must be installed in accordance with the maximum permitted flue lengths in the appliance installation manual.

The flue pipe length can be calculated using the method shown in the manual.

When connecting the flue pipes, make sure not to exceed the maximum flue pipe length recommended for the product, otherwise the system pressure might decrease which may result in a decreased system power.



COMPATIBLE WITH

HeatMaster® 70 - 85 - 120 TC* Evo, WaterMaster 70 - 85 - 120 Evo,

Flue diameter 100/150mm

Terminals

	PART NUMBER	DESCRIPTION
A	537D6300	Vertical terminal
B	537D6301	Wall terminal

Flue extensions

	PART NUMBER	DESCRIPTION
C	537D6303	500 mm cuttable length
D	537D6304	1000 mm cuttable length

Elbows

	PART NUMBER	DESCRIPTION
F	537D6306	43° - 45° bend
G	537D6307	87° - 90° bend

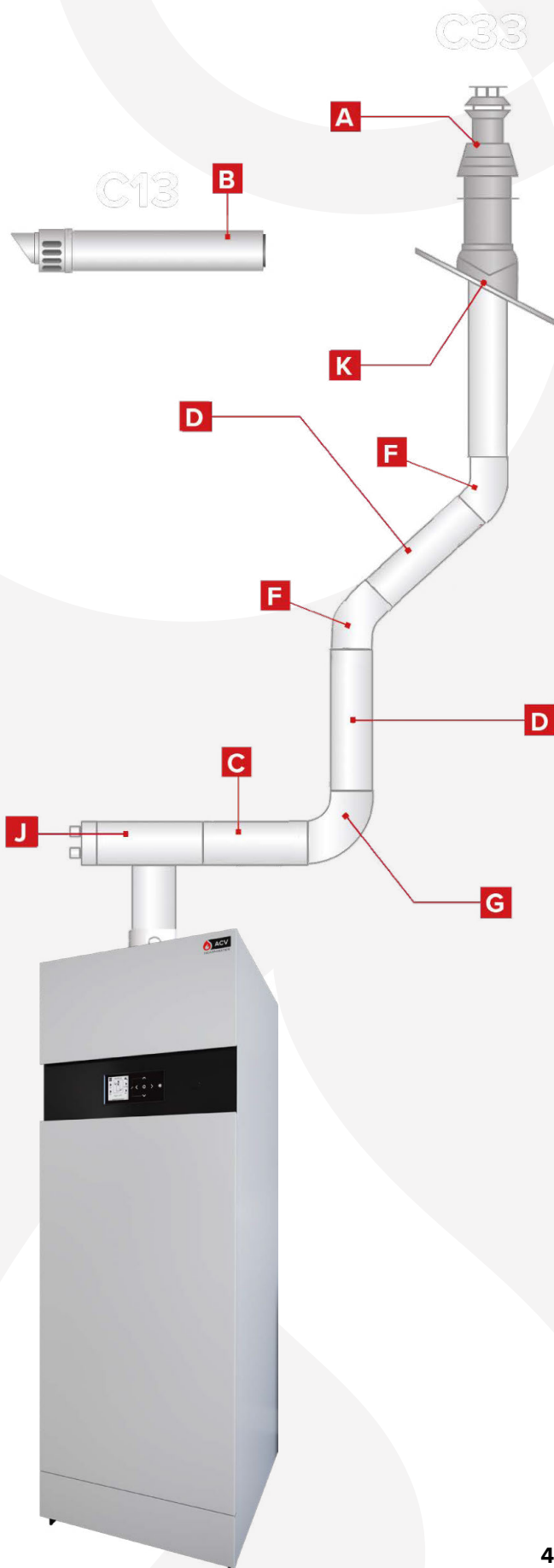
Measurement tube

	PART NUMBER	DESCRIPTION
H	537D6308	Measuring tube (Not Shown)
J	537D6310	Measurement T-piece with inspection panel

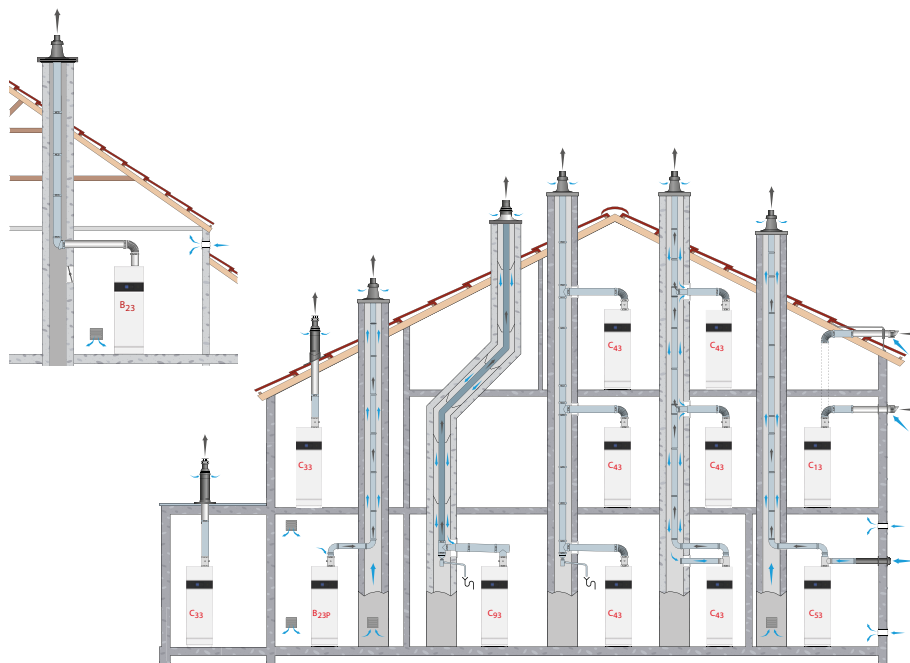
Accessories

	PART NUMBER	DESCRIPTION
	537D6208	Flat roof collar
K	537D6209	Adjustable roof flashing
	537D6210	Bracket ø150mm

*These boiler models are supplied with an external measuring tube for flue gas analysis as one is not incorporated within the boiler.
The manufacturer reserves the right to modify manufacture.



Flue configurations

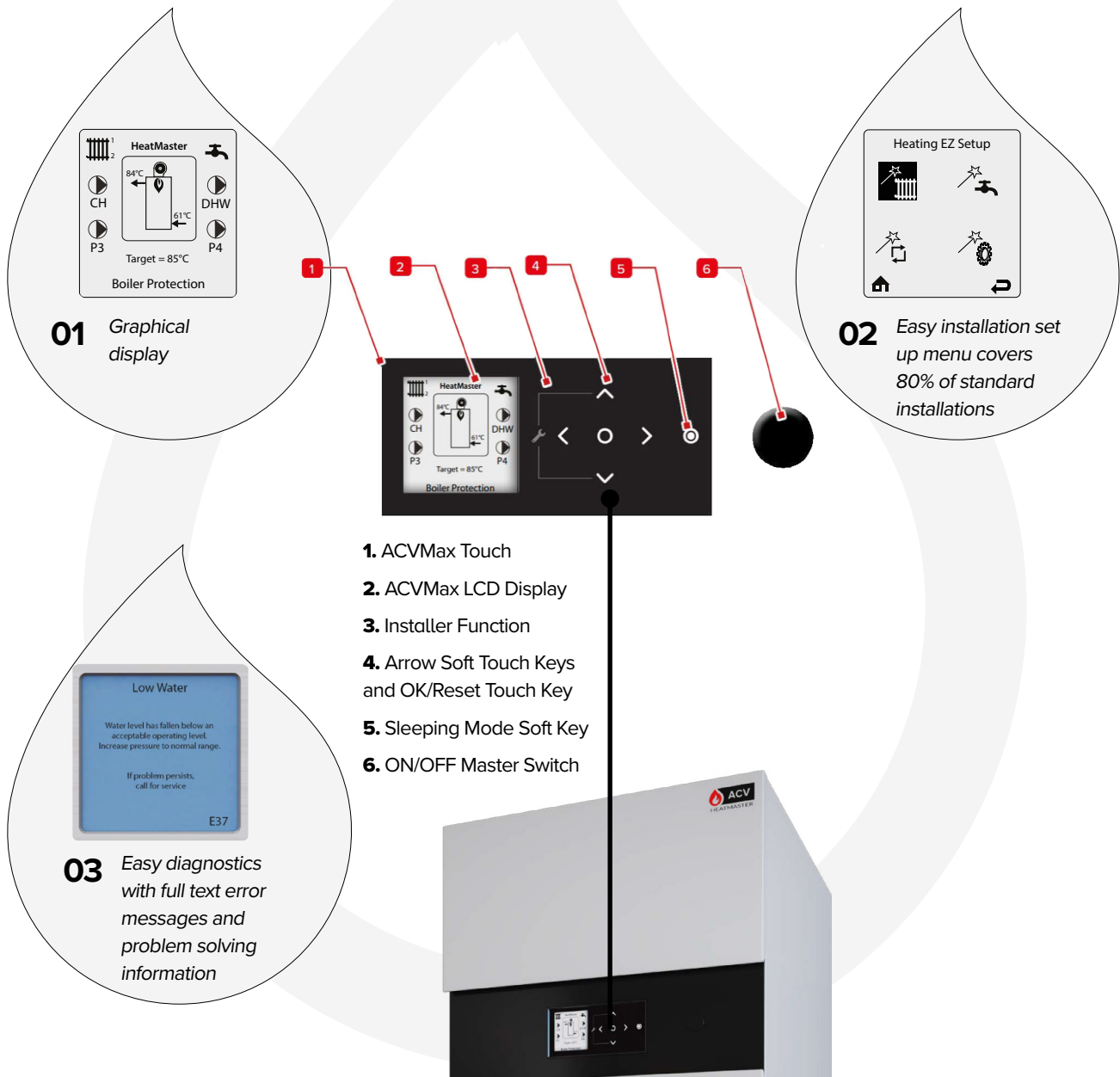


Terminals

REFERENCE	DESCRIPTION
B23P	Connection to a combustion product exhaust system designed to operate with positive pressure.
B23	Connection to an exhaust duct that discharges the combustion products outside the room where it is installed, with the combustion air being drawn directly from the boiler room.
C13(x)	Connection using pipes fitted with a horizontal terminal that simultaneously takes in combustion air for the burner and discharges combustion products outside through openings that are either concentric or close enough together to be subjected to similar wind conditions, i.e. openings shall fit inside a square of 50 cm for boilers up to 70 kW and inside a square of 100 cm for boilers above 70 kW.
C33(x)	Connection using pipes fitted with a vertical terminal that simultaneously takes in fresh air for the burner and discharges combustion products outside through openings that are either concentric or close enough together to be subjected to similar wind conditions, i.e. openings shall fit inside a square of 50 cm for boilers up to 70 kW and inside a square of 100 cm for boilers above 70 kW.
C43(x)	Connection using two pipes to a collective duct system serving more than one appliance; this system of collective ducts features two pipes connected to a terminal unit that simultaneously takes in fresh air for the burner and discharges the combustion products outside through openings that are either concentric or close enough together to be subjected to similar wind conditions.
C43(x)	Boilers are suitable for a connection to a natural draught chimney only.
C53(x)	Connection to separate ducts for supplying combustion air and discharging combustion products; these ducts may end in zones with different pressure levels, but are not allowed to be installed on opposite walls of the building.
C63(x)	<p>Type C boiler meant to be connected to a system for supplying combustion air and discharging combustion products, that is approved and sold separately (Prohibited in some countries (e.g. Belgium) - refer to local regulations and standards in force). Terminals for the supply of combustion air and for the evacuation of combustion products are not allowed to be installed on opposite walls of the building. See also the following additional specifications:</p> <ul style="list-style-type: none"> • Maximum allowable draught is 200 Pa. • Maximum allowable pressure difference between combustion air inlet and flue gas outlet (including wind pressures) is as follows: 95 Pa (HM 25 TC), 130 Pa (HM 35- 45 TC), 110 Pa (HM 70 TC), 160 Pa (HM 85 TC) and 170 Pa (HM 120 TC). 150 Pa (for P42/P50/P75) and 180 Pa (for P100/P120). • Condensate flow is allowed into the appliance. • Maximum allowable recirculation rate of 10% under wind conditions.
C83(x)	Connection using a single or double duct system. The system is made of a normal exhaust flue duct that discharges the combustion products. The appliance is also connected through a second duct fitted with a terminal, that supplies the burner with fresh outdoor air. Please contact your ACV representative for the meters of flue pipes that can be used to connect the appliance(s).
C93(x)	<p>Connection using an individual system whose combustion product exhaust duct is installed in an exhaust duct that is integral with the building. The appliance, the exhaust duct and the terminal units are certified as an inseparable assembly. Minimum usable diameter for the vertical duct supplying the combustion air is 100 mm. The C93 configuration enables airtight operation in a pre-existing chimney.</p> <p>The combustion air crosses the space between the tubing and the pre-existing chimney. Make sure to clean the pre-existing chimney thoroughly prior to installation, especially if there is soot or tar residue. Make sure that there is a clearance area for the combustion air at least equivalent to the area that would have been provided by separate concentric ducts or air intake ducts.</p>

ACVMax controls

ACVMax controls are integrated into the HeatMaster® Evo and WaterMaster® Evo range of condensing products.



- > **Quick to setup** – graphical display shows instructions clearly on screen
- > **Easy to use** – all the necessary information available with the push of a button
- > **Familiarity** – same control interface across entire condensing range
- > **Maintenance** – easy diagnostics with text error messages and problem solving information

- > **Efficiency** – make best use of your system through sequencing of up to 4 boilers in a cascade without separate controls
- > **Compatibility** – advanced control options, and native support for open protocols such as OpenTherm and Modbus, enabling easy integration to BMS.

Controls

Each HeatMaster® Evo boiler is controlled by an integrated ACVMAX boiler controller.

The controller functions, settings and configurations are accessed via the positive press buttons on the individual fascia panels.

A concise user instructions guide is supplied with each boiler. This guide gives details on initial set up as well as a list of possible error codes.

Controls for single boilers

All functions are easily setup with the EZ WIZARD including control of two heating circuits, one high temp and the other low temp (e.g. underfloor heating).



Control features

- > Large backlit display – adjustable contrast
- > Text and graphical interface
- > Configurable DHW priority
- > Central heating setpoint adjustment
- > Heating circuit 1 (27°C to 82°C on setpoint 1)
- > Heating circuit 2 (27°C – 60°C)
- > DHW temp adjustment
- > Frost protection (raise water temp to 16°C)
- > Fault code display
- > Lockout
- > Incoming supply voltage error
- > Low water pressure
- > 0-10v input for heating
- > Weather compensation when the outside sensor is connected
- > Anti-legionella function
- > Plain text status screen

	CODE	NAME	DESCRIPTION	PRODUCT COMPATIBILITY
Time & Temperature Control	100095000300	RC 40 Wired, On/Off, Programmable Room Thermostat	Wired, On/Off, programmable room thermostat Affordable / easy to use On / Off 7 day - 4 changes per day 2 cable connection, Powered by 2 x AA batteries	HeatMaster® Evo* E Tech (room thermostat only) <i>*one required per Heat Circuit used HC1 or HC2 Programmable room thermostat on any MAX control</i>
	100095000400	RC 45, Wired, Modulating, OpenTherm, Programmable Room Thermostat	Wired, Modulating, OpenTherm, Programmable room thermostat Improves energy efficiency by up to 15% 7 day - 6 changes per day Data and power via 2 wire OpenTherm connection	HeatMaster® Evo* <i>*one required per Heat Circuit, HC1 or HC2 Programmable room thermostat on any MAX control boiler</i>



For help and advice on control options for your project, speak to your local ACV contact
acv.com/gb/contact

Theta control options

Theta Control - HeatMaster® Cascade	CODE	NAME	DESCRIPTION	PRODUCT COMPATIBILITY
	10800188	Theta Control Unit	Cascade up to 8 boilers per unit Time and temperature control Control 3 heating circuits and DHW 1 x Constant temperature circuit 2 x Variable temperature circuit 1 x DHW circuit primary and secondary pumps Comes with AF200 (external sensor) & Header Sensor, (Requires a pocket)	HeatMaster® Evo WaterMaster Evo
	10800121	MSK Wall unit	Wall housing for Theta control unit (10800188) For wall mounting and wiring Theta	HeatMaster® Evo WaterMaster Evo <i>Used in conjunction with Theta</i>
	10800354	Clip In Interface (One per boiler)	For Modbus connection from boilers to the Control Unit & Room Unit. One required per boiler	HeatMaster® Evo <i>Used in conjunction with Theta</i>
	10800120	RFF Room Sensor	One per heating circuit connected to the Theta. Monitor room temperature for heat circuit control & information. Remote control of operation mode between automatic, constant & setback. Increase or decrease the heat circuit setpoint + or – 6°C. 2 wire bus communication	HeatMaster® Evo
	10800108	External Sensor	AF120 sensor for (use + ACV 22)	HeatMaster® Evo
	10800044	DHW Sensor KVT	Use with Control Unit	HeatMaster® Evo WaterMaster
	10800045	Contact Sensor VF202	Use with ZMC-1 module & Control Unit	HeatMaster® Evo
	10510900	Contact Sensor	RAM5109 UFH Safety Sensor	HeatMaster® Evo

Control features – parallel modulation

- Parallel modulation acts as early on/late off to ensure the highest number of appliances are running at low outputs
- Master boiler controls the total system output, all low voltage controls wired to this boiler
- When the master boiler reaches twice the minimum output the first slave will be activated, (provided the adjustable stage delay has expired). Both appliances then reduce to minimum output
- The third appliance will be started when the output reaches three times the minimum output with all three, then reducing to minimum output
- The fourth would follow the same pattern
- All appliances then modulate together as one
- Ensures each appliance is always firing at its lowest output ensuring maximum efficiency
- Temperature control is governed by an external system sensor, with the boiler temp control acting as a safety limit
- The auto rotation function ensures that all appliances are run for an even time

Accessories

Unvented kits (Systempaks or Smartpaks)

For installation of our products directly on to the mains supply of water we offer bespoke unvented kits which have been sized to the requirements of each individual appliance, and contain all of the mandatory components

you need to comply with Building Regulations. Some of our appliances already include an unvented kit as standard, for others it is a recommended extra. Please refer to the table below for more details.

Part Number	Name	Kit includes	Product compatibility
XB050015	Smartpak 1	Combined pressure reducing valve 3.5 bar & expansion relief valve 6 bar • 12L expansion vessel & mounting bracket Thermostatic mixing valve Temperature & pressure relief valve Tundish • Auto air vent • Pipe & fittings	Smart Green (supplied with product as standard) Smart E (supplied with product as standard) Smart E Plus (supplied with SLE+ 210 and SLE+ 240 as standard) Smart ME (supplied with SLME 200 -600 as standard) E-Tech S (supplied with ETS 160 as standard)
XB050016	Smartpak 2	Combined pressure reducing valve 3.5 bar & expansion relief valve 6 bar 18L expansion vessel & mounting bracket Thermostatic mixing valve Temperature & pressure relief valve Tundish • Auto air vent • Pipe & fittings	Smart E Plus (supplied with SLE+ 300 as standard) E-Tech S (supplied with ETS 240 as standard)
XB050017	Systempak 1	8L expansion vessel & mounting bracket, 22mm combined pressure reducing valve 3.5 bar & expansion relief valve 6 bar 22mm temperature & pressure relief valve • Tundish • Flexi hose • Fittings	HeatMaster C Evo (Supplied with HM25C as standard)
XB050018	Systempak 2	18L expansion vessel & mounting bracket 22mm combined pressure reducing valve 3.5 bar & expansion relief valve 6 bar 22mm temperature & pressure relief valve • Tundish • Flexi hose • Fittings	
XB050019	Systempak 3 (Flowthrough version also available)	25L expansion vessel & mounting bracket 28mm combined pressure reducing valve 3.5 bar & expansion relief valve 6 bar 22mm temperature & pressure relief valve • Tundish • Flexi Hose	HeatMaster TC Evo (optional extra for all models) WaterMaster Evo (optional extra for all models) Smart ME (optional extra for SLME 800) Smart L (optional extra for SL 320)
XB050032	Systempak 3 - Flowthrough type	25L Flowthrough expansion vessel & mounting bracket ¾" Flowjet valve ¾" Temperature & pressure relief valve (7 bar/90°C) 1" Pressure reducing valve set (including expansion relief valve) 22 x 28mm Tundish	HeatMaster TC Evo (optional extra for all models) WaterMaster Evo (optional extra for all models) Smart ME (optional extra for SLME 800) Smart L (optional extra for SL 320)
XB050020	Systempak 4	60L expansion vessel & bracket, 28mm combined pressure reducing valve 3.5 bar & expansion relief valve 6 bar • 22mm temperature & pressure relief valve Tundish • Flexi hose	Smart L (optional extra for SL 420 and SL600)
XB090017	Systempak 5	1 ¼" pressure reducing valve 3.5 bar 1 ¼" check valve 1" expansion relief valve 6 bar ¼" pressure gauge	HRs (optional extra for HRs 800)
XB090018	Systempak 6	1 ½" pressure reducing valve 3.5 bar 1 ½" check valve 1" expansion relief valve 6 bar ¼" pressure gauge	HRs (optional extra for HRs 1000)
XB090019	Systempak 7	2" pressure reducing valve 3.5 bar 2" check valve 1 ¼" expansion relief valve 6 bar ¼" pressure gauge	

A range of expansion vessels and combined temperature & pressure relief valves are available to be purchased with Systempaks 5, 6 & 7.

Flow through expansion vessels

For many projects, particularly in healthcare premises, you may choose to specify a flow through expansion vessel. The benefits of using one of these over a standard expansion vessel are:

- Continuous water flow through the bladder minimises stagnation of water
- An internal bladder manufactured in butyl rubber for reduced risk of microorganism growth, including Legionella
- Complies with BS 6920 and the recommendations made in HTM 04-01 Part A: 2016
- Kit comes with Flowjet valve to encourage more cold water into the vessel as hot water is drawn off

Robokits

These sealed system kits are supplied as standard with our WaterMaster Evo hot water heaters. It is compulsory to fit these when installing the water heater as they are essential to the safe running of the appliance.

Robokits include an expansion vessel with mounting bracket, filling loop, safety relief valve and a manifold fitting.

Anti-vacuum valve

It is recommended that an anti-vacuum valve is installed if there is a risk of low pressure in the system or if the system has a boosted cold feed. It is not necessary to install an anti-vacuum valve if running on mains water.

Thermostatic mixing valves

In line with the recommendations specified in Part G of the UK Building Regulations (2016), it is recommended to install a mixing valve directly after the appliance to ensure that the temperature supplied to the domestic hot water distribution system does not exceed 60°C. ACV offer a choice of mixing valves to suit the requirement of your system.

Immersion kits

Electrical heating elements are available to provide back up heating for a cylinder to ensure continuous supply of hot water if there is a failure on the heating source, i.e. boiler or solar panels.

A 3kW element is included in our Systempak kits (when supplied with the tanks). We can supply these for our Smart tanks on their own if a higher kW input is required.



Flowjet



T-piece



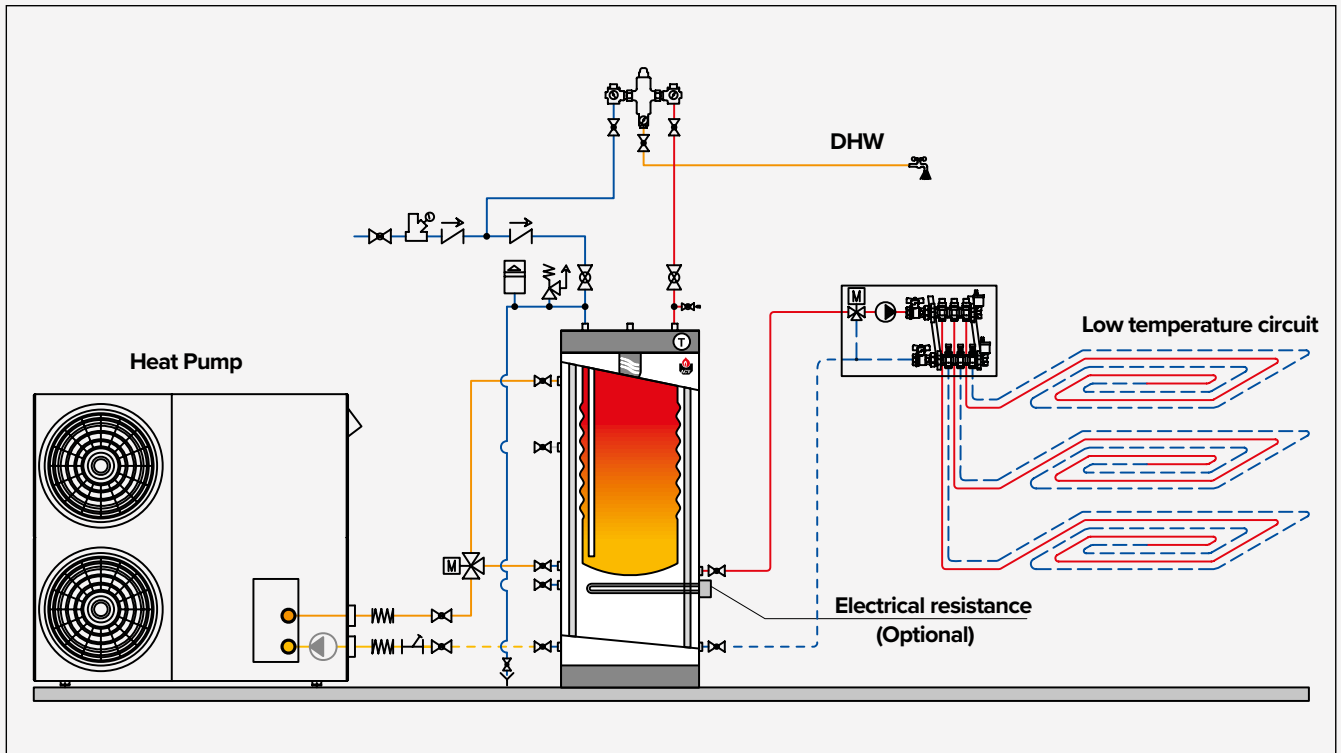
Part of the Systempak 3FT
available from ACV



Smart tank with unvented kit

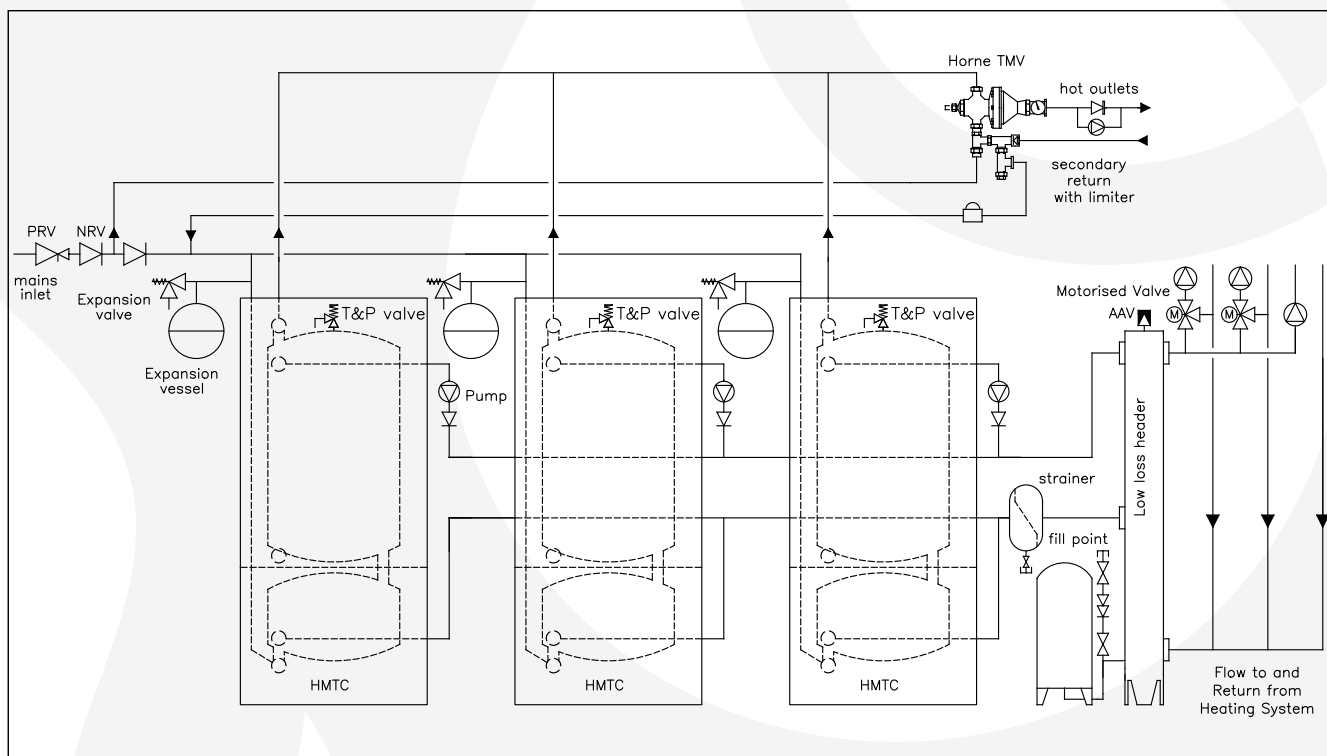
Schematics

Scheme 1 - Unvented system showing a variable temperature circuit with heat pump and underfloor heating.

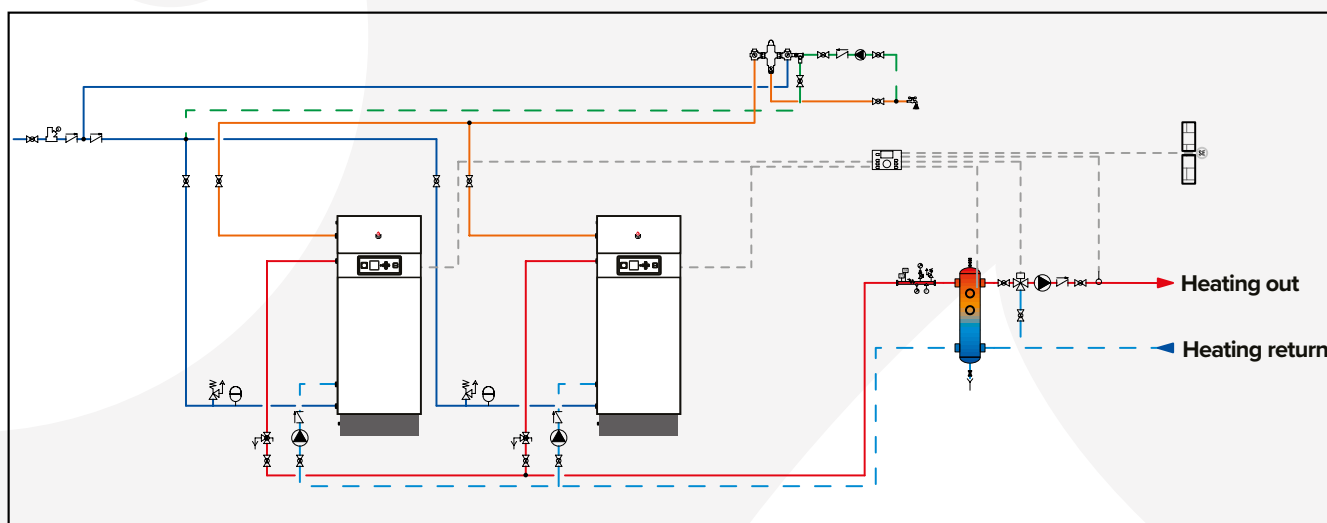


Note: These schematics have been provided for guidance only.

Scheme 2 - HeatMaster® hydraulic cascade with low loss header providing domestic hot water and space heating.



Scheme 3 - HeatMaster® cascade system with control wiring.



Note: These schematics have been provided for guidance only.

Our support

Our support doesn't stop once products are delivered to site. We can assist you after sale with the following services:

Commissioning

We offer commissioning for all our products. Commissioning by our service agents is a great way to check that your installation is set up and operating in its most efficient state. Ask us about commissioning when you place your order.

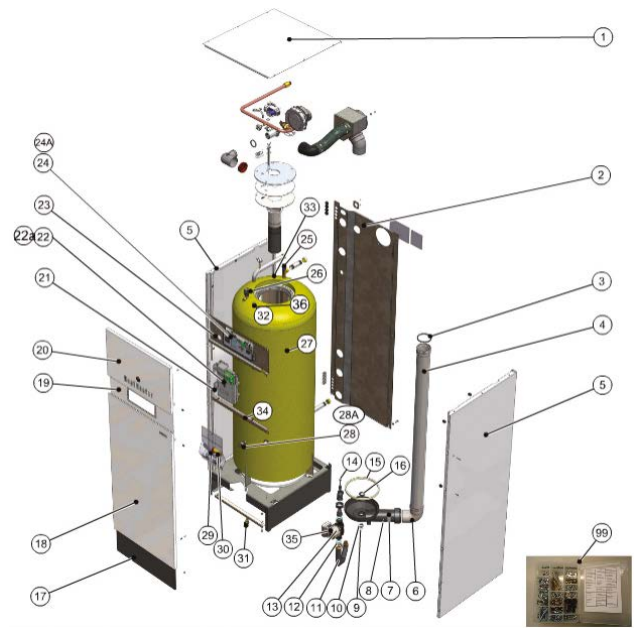
Spare parts

To help you look after your ACV products we keep spare parts available for a minimum of 10 years after end of sales of a product.

Our large online catalogue holds details of spare parts, both for current products and for discontinued products. With simple to follow exploded diagrams, you can easily identify the spare part you need.

If you need advice on your product and purchasing spares items, get in touch.

spareparts.acv.com



Hands-on product training

Delivered by ACV UK engineers with years of product knowledge and industry experience. By attending our training you'll be more confident in specifying and operating our equipment.

CPD Seminars

We've been delivering CIBSE-accredited CPD seminars for many years, sharing our specialist hot water knowledge.

This CPD training is suitable for anyone involved in the management of hot water in commercial buildings, including consultants, contractors, public health engineers and specifiers.

You can choose from the following courses:

- > Domestic Hot Water (DHW) Sizing Principles
- > Tank-in-tank Technology Explained

What have previous attendees said about our course?

"Thorough overview of industry standards."

"Very informative & useful content. The calculations shown were very useful."



Talk to us today 01383 820100

Case study - Hardman House

Sector:

Residential

Location:

Liverpool

Type of project:

New Build

Products:

HeatMaster® TC

HRs cylinders

Application:

Hot water

Challenge

An efficient system to meet the high hot water requirements of this new build student accommodation block consisting of 126 apartments with options of two and four bedrooms including ensuite bathrooms.

Hardman House is a new build student accommodation in Liverpool city centre which caters to students from the University of Liverpool and Liverpool John Moores University Mount Pleasant Campus.

Solution

Specifiers and installers Carpenter Build Ltd chose two HeatMaster® HM120 and two HM85 combination boilers plus two HR1000 cylinders which are directly heated via the HeatMaster® boilers to supplement hot water production, to provide hot water to the building.

The units operate in their most efficient (condensing) mode when providing heating and hot water with an energy rating of A for both. Water reheats within 30/36 minutes from 40 to 87°C (HM120/HM85). Due to the stainless steel tank, they do not require anode protection to prevent corrosion and are low maintenance. As water is stored above 60°C, they also provide protection against Legionella bacteria.

Benefiting from tank-in-tank technology

Thanks to the short recovery time less hot water is required to reach the desired output temperature when it is mixed with cold water. Heat losses are also minimised, as the DHW in the inner vessel is surrounded by hot primary water, lowering energy wastage.

uk.sales@acvuk.com | acv.com



Hardman House is a new build student accommodation in the centre of Liverpool.

Suitable for hard water areas

When domestic hot water is drawn off the HeatMaster, a brief underpressure in the tank is created, followed by a slight overpressure when the draw-off tap is closed again. As the inner tank is free to move, its walls expand and contract slightly under the influence of these pressure changes which effectively prevents the formation of limescale on the heat exchanger surface.

On his choice, Mike Ingram from Carpenter Build who installed the combi boilers, commented,

"We've chosen them for various reasons. The hot water demand is split between the differently sized apartments (studio/2- and 4-bedroom ensembles) which determined the volume requirement. The units have great recovery rates, the same goes for the energy performance."

"Thanks to the tank-in-tank principle we can also save on installation materials and plant room space which our client The University of Liverpool also appreciates. Lastly, it's very important to us to have a self-contained unit for space-saving, ease of servicing and maintenance."

"We've used the HeatMaster in eight of our previous schemes which comprise of more student accommodation but also in a Grade II listed project for a small private rented sector refurbishment. It is a reliable design and we have very little problems, so the model is maintenance and trouble free. ACV has provided good ongoing support and technical assistance throughout the project. We've already discussed projects leading into the near future."

Hardman House was opened in September 2019, is fully booked with no complaints of hot water running out even during peak periods which proves the design is working well.



HR cylinders (grey) and HeatMaster® combi boilers provide hot water to the student accommodation.

Case study - Regents House

Sector:

Commercial office block

Location:

Newcastle

Type of project:

Refurbishment

Products:

E-Tech W boiler

Smart cylinder

Application:

Off-grid hot water

Challenge

Find a reliable way to supply hot water in a 5-storey office block to 200 outlets, including toilets, showers, basins and kitchenettes, without access to gas.

The Regents Centre office block was previously using a hot water cylinder and inefficient immersion heaters to supply hot water round the building. Due to the demand placed on the system the immersion elements couldn't handle the work and kept burning out.

Solution

An electric wall hung boiler and fast recovery cylinder combination. The chosen system consisted of an ACV E-tech 36kW three phase electric wall hung boiler providing the heat to a Smart 600 litre tank-in-tank calorifier.

Craig Firth, Director at GasTech – a growing business for HVAC Design, Installation, Service and Repair - reviewed the system and offered a solution using ACV products.

Craig commented, "The plant room has no access to natural gas so we wanted to explore all the options to overcome the client's problems. We did look at running gas to the plant room but that was too cost prohibitive, so an electric boiler seemed like the ideal solution."

GasTech are approved ACV engineers and have worked with their products for many years.

Craig went on to say, "ACV is a brand we trust and we're familiar with their product range. There aren't many electric boilers on the market suitable for commercial applications, so being able to choose one from a company we know suited us."



The Regents Centre 5-storey office block in Gosforth, Newcastle

With continuous flow rates at 45°C of 2,152 l/h the tank-in-tank design provides fast heat up and quick recovery to meet the hot water requirements of the offices.

ACV provided the DHW calculations for the building demands to assist in the product specification and system design.

Craig continued, "This was a simple and straight forward installation to complete as there were no flues or gas pipes to be connected up. The products are performing as expected and the system is much more efficient than the previous one. The client is very happy with the project."

ACV manufacture reliable products that are easy to use, with easy controls to setup, and good backup from their teams."

The client will benefit from reduced ongoing costs and maintenance as the stainless steel tanks require no anode protection. The tank-in-tank design reduces scale build up and legionella risk as the hot water is stored at higher temperatures, above 60°C. The electric boiler is less complex with fewer components compared to gas so will save time and money in servicing.



The ACV electric boiler and Smart tank combination provide a compact and efficient solution with no gas required.

Green electricity

Electricity is becoming a popular and greener way to provide heat and hot water, particularly for sites with no access to gas. In the first three months of 2020, 62.1% of UK electricity generation was made from renewables and nuclear¹. Given this progress, BEIS is forecasting that electricity will become greener than oil, LPG and even natural gas per kWh of heat within five years².

1. <https://www.theguardian.com/business/2020/jun/25/renewable-energy-breaks-uk-record-in-first-quarter-of-2020>

2. <https://energysavingtrust.org.uk/decarbonisation-heat-crossroads/>

Case study - Longwood Primary Academy and Nursery

Sector:

Educational

Location:

Harlow

Type of project:

Refurbishment

Products:

Smart cylinders

Evomax boilers (Ideal Heating)

Application:

Heating and Hot water

Challenge

Replace the heating and hot water equipment across three plant rooms at two schools. The refurbishment had to be completed in a short space of time to accommodate students returning to school.

Solution

A combination of Ideal Heating Evomax wall hung boilers with ACV Smart tank-in-tank cylinders.

A walkthrough of Longwood Primary Academy

The installation at Longwood Primary Academy, Harlow, features two Ideal Heating Evomax wall hung boilers with a combined output of 300kW, plus header kits, plate heat exchanger, pump sets, and cascade flue kit all from Ideal Heating. The boilers provide the heating for three different zones at the school as well as heat to the ACV Smart tank for domestic hot water. The boilers are protected with a plate heat exchanger to separate the primary and secondary circuits and stop sludge from the old school heating system from entering the boilers.

The Smart 320 unvented cylinder provides quick recovery domestic hot water to meet the needs of the schools' bathrooms. The tanks have continuous flows at 40°C of 2093 l/h and very low standing losses of as little as 1.824 kWh/day.



One of the completed plantrooms at Longwood Primary Academy and Nursery

A history of working with ACV

Bhavik Makwana from MAK Gas Ltd has been installing ACV product for many years. He is passionate about his job and his philosophy of carrying out quality work with premium equipment. We spoke to MAK Gas to find out how he got into the industry and run through some recent projects he's completed with ACV Smart tanks and Ideal Heating Evomax wall hung boilers.

Bhavik Makwana, Director of MAK Gas Ltd commented, "I started out in the industry at age 14 as an apprentice for Village Heating, worked my way up to project manager and looking after new apprentices. I setup my own business, MAK Gas Ltd, four years ago."

MAK Gas Ltd carry out a wide range of projects including high-end domestic (often installations for celebrities) and commercial installations. Bhavik has created his own walkthrough video for two recent projects that feature ACV Smart tanks and boilers from their sister brand Ideal Heating, both experts in heating.

Bhavik went on to say, "I choose the ACV tanks as they are high quality cylinders with fast recovery. The tank-in-tank design is more effective than traditional coil cylinders and with the connections being on top it provided more flexibility in the installation."

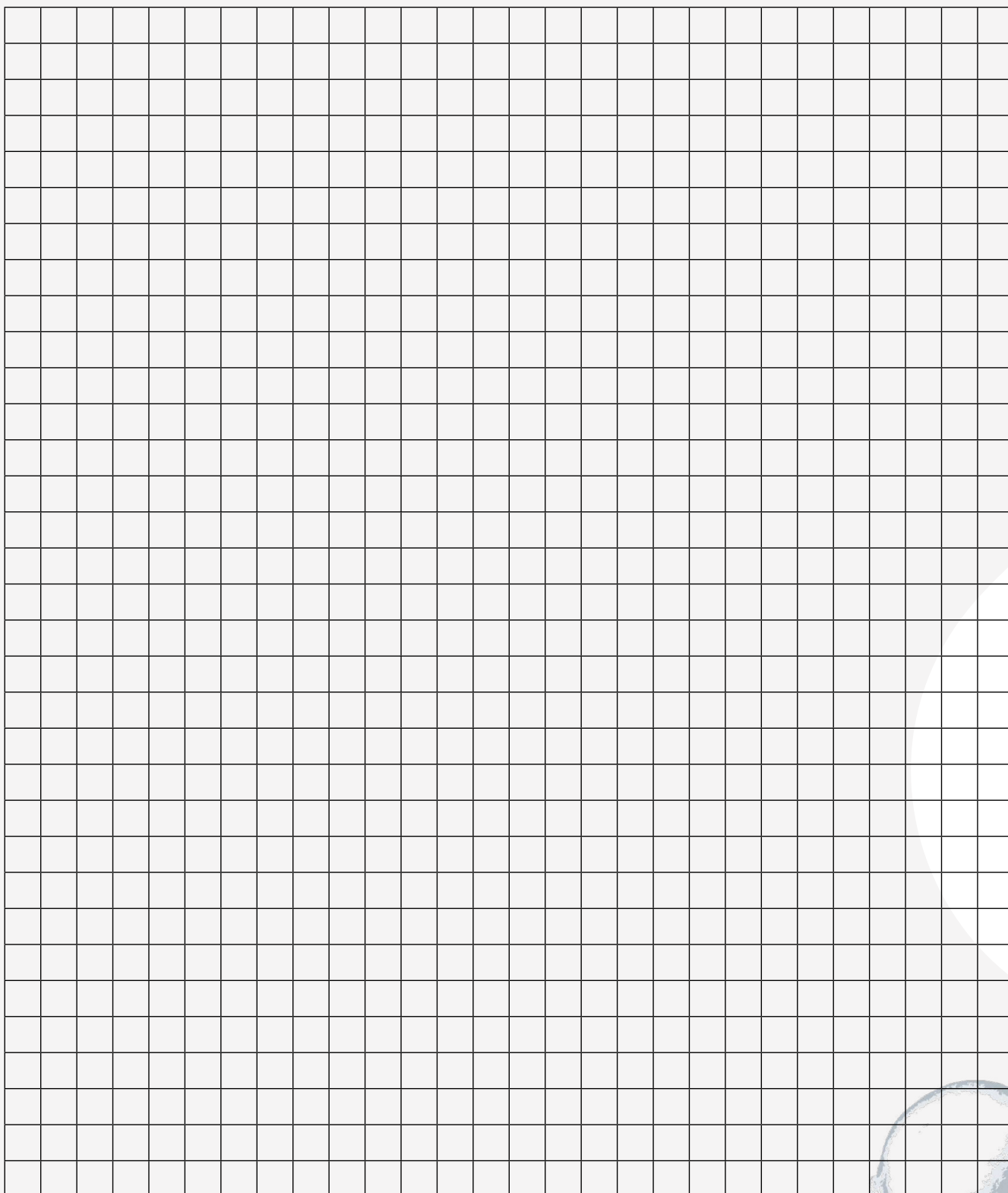
I have been installing these for many years, the long warranties plus the support from their local Business Development Manager is amazing.

Working with Ideal Heating is very similar. I am confident in choosing Evomax boilers as they are reliable and straightforward to install. The plate heat exchangers help to protect them from older, dirty systems. I also know that their support is always on hand."



The Smart tank-in-tank cylinder provides quick recovery domestic hot water to meet the needs of the schools' bathrooms

Calculations



Sizing?

Need help sizing your hot water system, take a look at Archimedes on **page 16**.



Notes

[illegible]

CPD training

Learn more about hot water sizing principles and gain CIBSE CPD points. **See page 56 for more details.**

Calculations

This image shows a full page of graph paper. The background is white, covered by a uniform grid of thin, light gray horizontal and vertical lines that form small squares. In the bottom right corner, there is a faint, partially cut-off blue circular logo or watermark. The rest of the page is empty except for the grid lines.

Sizing?

Need help sizing your hot water system, take a look at Archimedes on **page 16**.



Notes

[illegible]

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[illegible]

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How can we help?

Site survey

Book one of our hot water experts to visit your site and advise on the best solution.

acv.com/gb/contact

Training



View our full CIBSE-accredited CPD and product training offer online.

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E: uk.sales@acvuk.com

Your local contact

Book one of our hot water experts to visit your site and advise on the best solution.

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Technical support

You can call our in-house technical support team to help solve your queries from design to after-care.

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EXCELLENCE IN HOT WATER



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