Why Vaillant Commercial Systems?
Because we have solutions
for every specification.

Contents

Why Vaillant Commercial Systems?

Family-owned

For over 140 years, Vaillant has been leading the way in the development of domestic heating and hot water technology.

As a renowned family-owned global company, we have pioneered in manufacturing products that have revolutionised the heating industry and today, our innovative solutions are still setting the standards in the heating marketplace. The world is changing and just as we recognise the importance of developing evermore sustainable heating solutions for the home, Vaillant is also harnessing its unrivalled expertise to deliver these same technological advances to the commercial heating environment. Our customers can be assured they are installing the very best solution for their heating and hot water requirements.

Dedicated service and support

For as long as we've been creating appliances that transform the heating industry, we've also been focusing on developing better and more productive relationships with our customers. That's because we know that the partnerships we establish with specifiers, consultants, engineers and installers, are key to our continued future success and the success of our partners' businesses.

At Vaillant there's an unwavering commitment to providing service excellence before, during and after the installation of the Vaillant appliance. In fact, we look after the project from conception to solution and, through our unrivalled service support, we can support both installers and customers with ongoing maintenance, repairs and servicing.

Delivering the best products and providing the best service to our customers are the twin driving forces that keep Vaillant in front as a market leading heating technology manufacturer.
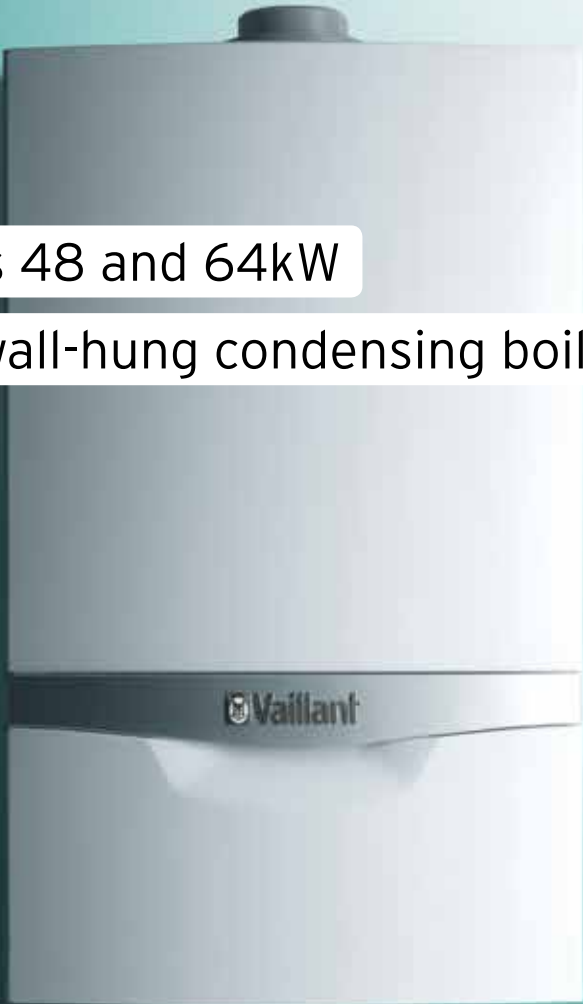
Product innovation

Vaillant offers a vast selection of products to cater for many applications. Our portfolio consists of large output wall-hung and floor-standing condensing commercial boilers with compatible cascade rigs and accessories to cater for simple and large scale projects.

For those seeking alternative renewable offerings, our commercial renewable solutions consist of solar thermal and heat pumps, capable of providing heating and hot water to large-scale commercial applications, please see our renewable product range for further information.

Please note all Vaillant ecoTEC plus 48, 64, 80, 100 and 120kW boilers, and ecoCRAFT boiler systems will require appropriately sized expansion vessels to be fitted to accommodate thermal expansion of the system water. In addition Vaillant requires the use of system separation by the use of a plate heat exchanger where any boiler or multiple smaller boilers have a total net output exceeding 70kW.

ecoTEC plus 48 and 64kW

wall-hung condensing boiler range

Overview

The brand new, ecoTEC plus 48 and 64kW boilers are compact in size and much lighter than their predecessors, with the 48kW weighing as little as 38kg. These compact boilers are a great solution for both light commercial and large domestic projects that have tight, restrictive spaces to work in, especially as both the front and side panels can be removed, for much easier access. They can also be cascaded on a wall or rig system, so offer a range of solutions for commercial installers who need a compact alternative to a much larger commercial boiler.

The internal ducted rain collector prevents rain ingress from the flue system depositing in the boiler casing, and the new gunmetal air separation device prevents unwanted vented emissions within the case, both of which help to protect the internal electronics within the boiler.

ecoTEC plus 48 and 64kW can also be converted to LPG to cater for projects that are unable to use a natural gas supply. A plate heat exchanger must be fitted when installing in cascade and the net output exceeds 70kW.

Key features and benefits

▌ **Compact dimensions**
For easy siting in tight spaces, the boilers have dimensions of 720mm high x 440mm wide

▌ **Highly efficient stainless steel heat exchanger**
Allows lower running costs for consumers whilst using the familiar, reliable and robust heat exchanger design

▌ **ErP A+ rated**
When installed with a class VI control , such as our VRC 700

▌ **High efficiency pump**
The in-built ErP pump is able to match the high performance of the boiler

▌ **Low NOx burner system**
Levels as low as 31 and 29mg/kWh minimises environmental impact

▌ **Ability to cascade**
Allows a number of boilers to be combined to achieve high system outputs with greater flexibility of use. These models are able to operate up to 4bar
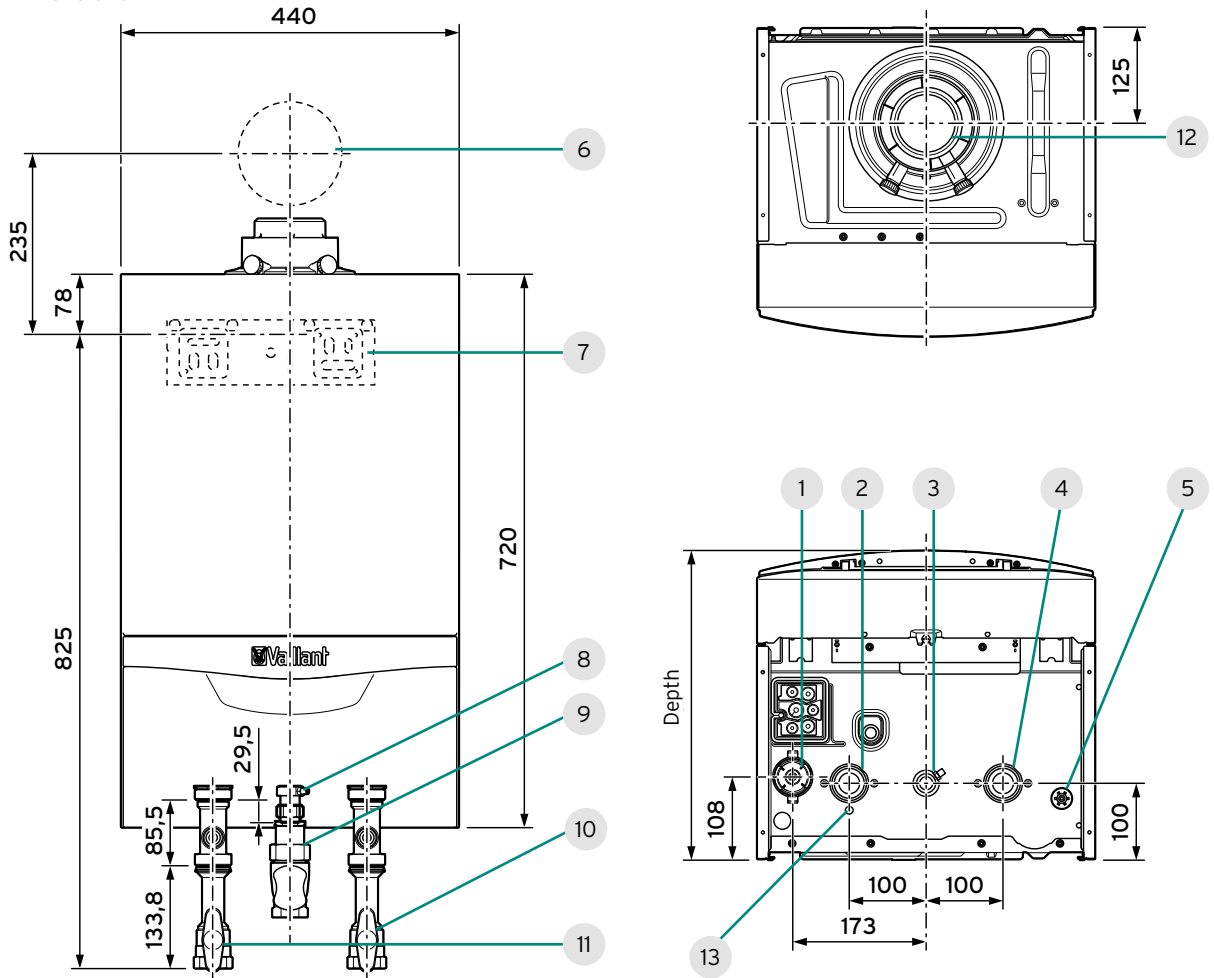
NOTE: A five-year guarantee (subject to conditions and registration within 30 days) comes as standard on our Commercial Systems boilers, with two years available on Vaillant rigs and accessories.
A full commissioning service is available. Speak to your Vaillant Regional Business Manager for more details.

ecoTEC plus 48 and 64kW technical data

Dimensions

Clearances

A minimum of 500mm clearance in front of the boiler is required to enable easy access for servicing. This may be provided by an accessible door.
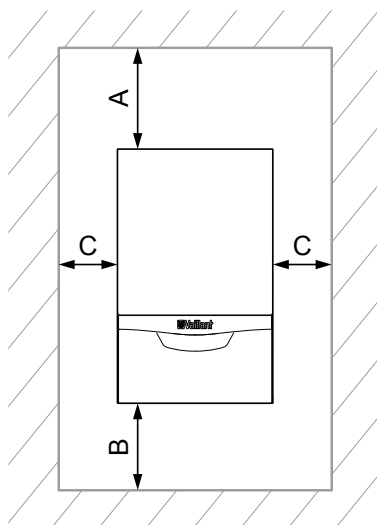
A	B	C
≥ 275mm	≥ 280mm*	≥ 5mm

*Additional room required if fitting the WH40/2 low-loss header below the boiler.

Dimensions	Model	mm
Depth	48kW	405
	64kW	473

Connections

Connections	Description
1	Condensate siphon
2	Heating flow connection
3	Gas connection
4	Heating return connection
5	Drain for the rainwater collecting device
6	Flue duct position
7	Wall hanging bracket
8	Gas pressure test point connection
9	Gas stopcock
10	Heating return stopcock
11	Heating flow stopcock
12	Air/flue pipe connection
13	Drain for the dynamic air separation system

ecoTEC plus 48 and 64kW key components
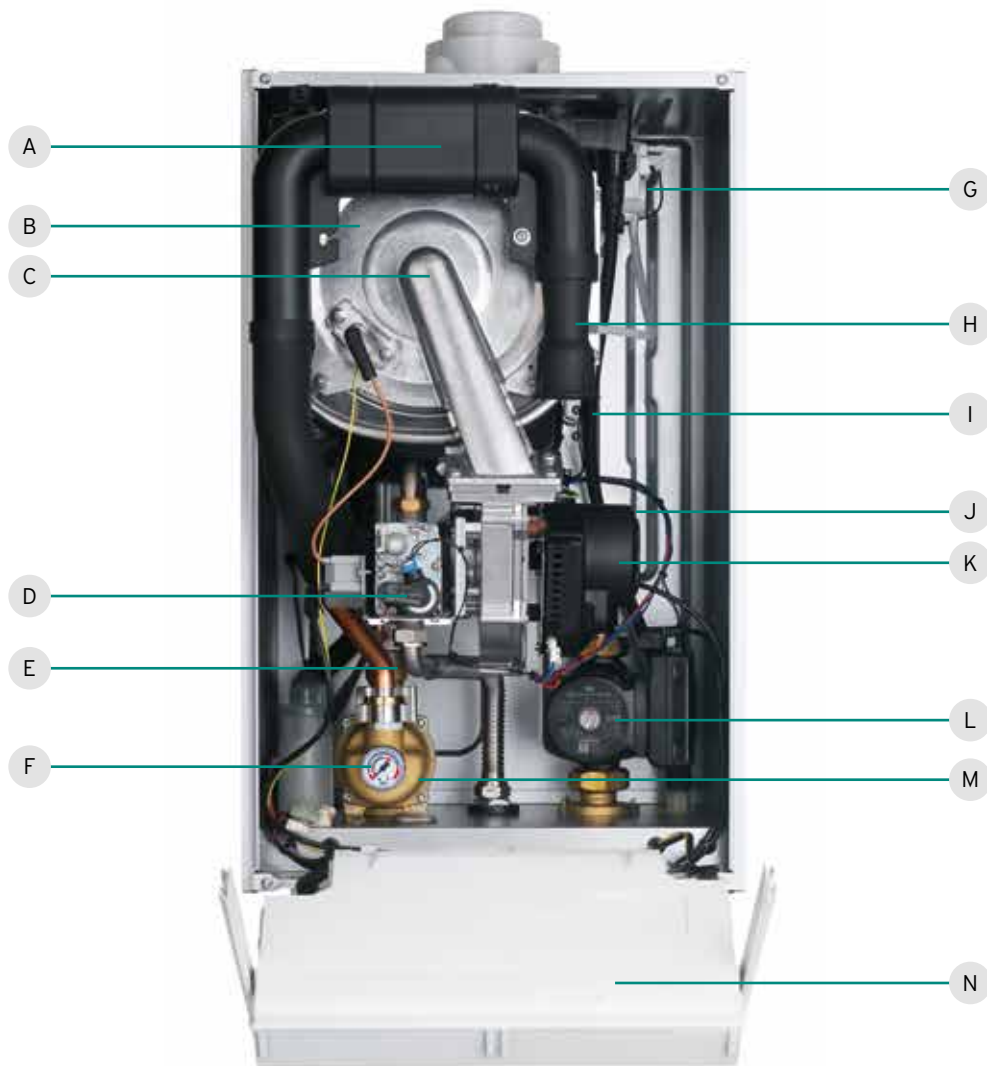
Key	Description
A	Silencer
B	Heat exchanger
C	Burner
D	Gas valve
E	Automatic air vent
F	Analogue manometer
G	Air pressure switch
H	Air intake
I	Rain discharge drain
J	Pressure sensor
K	Fan
L	High efficiency pump
M	Air separator
N	Electronics/PCB

Service valves

All ecoTEC plus boilers are supplied with the following

Flow and return isolation valve

Gas isolation valve

Pressure relief valve

ecoTEC plus 48 and 64kW technical data

ecoTEC plus		Unit	48kW	64kW
Article number			0010021520	0010021521
Gas council number		G.C	41-694-28	41-694-29
Heat output range	80/60	kW	7.8 - 44.1	11.0 - 58.7
Natural gas G20 at 20mb	50/30	kW	8.7 - 48.0	12.2 - 63.5
Conversion to LPG G31 at 37mb	80/60	kW	7.8 - 44.0	11.1 - 58.4
(conversion kit by installer on site necessary)	50/30	kW	8.6 - 46.6	12.0 - 62.1
Maximum heat input (net)		kW	45.2	60
Modulation ratio - N:1		%	5.5 : 1 (18%)	5.2 : 1 (19%)
Energy-related Products (ErP rated)*			A+	
PCDB seasonal efficiency		%	58.3 - 90.7	58.2 - 90.4
Energy-related products efficiency		%	94	94
Part L2 seasonal efficiency **	NG	%	95.9	95.6
Net efficiency 100%	80/60	%	98.2	98.2
Net efficiency 30%	50/30	%	109.2	109.4
Gas working pressure	NG	mbar	20	20
	LPG	mbar	37	37
Nominal gas consumption at 15˚C 1013mb	NG	m³/h	4.8	6.3
	LPG	kg/h	3.5	4.6
NOx class 6 - 0% oxygen - Dry		mg/kWh	30.8	29.1
Minimum / maximum flow temperature		˚C	30 / 80	
Nominal CH flow rate Δ t = 20 K		l/hr	1900	2500
Pump head in DHW mode - Minimum / maximum / default		mbar	100 / 400 / 200	100 / 400 / 200
Pump head in CH mode - Minimum / maximum / default		mbar	100 / 400 / 200	100 / 400 / 200
Condensate (PH range 3.5 - 4.0)		l/h	5.0	6.9
Standby loss Δ t = 30 K		W	25	32
Maximum power consumption		W	162	250
Standby power consumption		W	‹ 2	
Supply voltage / frequency / current			230V / 50Hz / 3A	
IP rating			IP X4D	
Noise level - load EN 15036-1 re1pW		dB(A)	56.5	56.6
Dimensions (H x W x D)		mm	720 x 440 x 405	720 x 440 x 473
Dry weight (includes pump)		kg	38	48
Internal water capacity (PH range 6.5 - 8.5)		l	3.5	4.4
Concentric air flue duct		Ø mm	80 / 125	
Connection size (B23p)		Ø mm	80	
Flue certification for GB			C13, C33, C43, C53, C93, B23, B23p, B33, B53, B53p	
Maximum horizontal flue length		m	18	15
Maximum vertical flue length		m	21	18
Flue mass flow Qmax	NG	g/s	20.3	27.0
Minimum / maximum flue gas temperature		˚C	40 / 78	
Fan pressure B23p in single		Pa	125	187
Maximum flue resistance in cascade		Pa	50	
Flow and return connections		BSP	1 ¼"	
Gas connection		BSP	1"	
Condensate connection pipe		Ø mm	19 ID	
Pressure relief valve size		BSP	1"	
Minimum / maximum operating pressure		bar	0.8 / 4.0	
High efficiency pump (built-in)		EEI ≥ 0.23	UPMM 25-85	UPML 25-105

*When installed with a class VI control

**In accordance with the non-domestic compliance guide 2013

ecoTEC plus 80, 100 and 120kW

wall-hung condensing boiler range

Overview

These larger ecoTEC plus models offer superb outputs of 80, 100 and 120kW with the ability to cascade up to 960kW. A wall-to-wall solution for every commercial specification.

A full range of compatible flues and accessories are available to complete the perfect system solution. Most importantly, a plate heat exchanger must be fitted with the ecoTEC 80, 100 and 120kW for available sizes please see pages 34 and 59.

Key features and benefits

❚ **High-quality stainless steel heat exchangers**
   Offers more resistance to oxidation, seizing, corrosion and are easily accessed for future maintenance.

❚ **Fully modulating low NOx burner**
   Lower NOx emissions are achieved minimising environmental impact

❚ **Easy access to all components from the front, along with a single electronic circuit board and flue gas analysis point**
   Repairs and servicing are made easier than ever

❚ **0 - 10V compatible**
   Suitable for BEMS applications when using VR 34 accessory

❚ **High efficiency pump supplied as accessory and must be fitted**
   Supplied with purpose made insulation for mounting directly beneath the boiler case

❚ **Individual and cascade flue systems available**
   Allows easy flue installation in multiple locations

❚ **ErP A rated**
   When installed with a class VI control, such as our VRC 700

NOTE: A five-year guarantee (subject to conditions and registration within 30 days) comes as standard on our Commercial Systems boilers, with two years available on Vaillant rigs and accessories.
A full commissioning service is available. Speak to your Vaillant Regional Business Manager for more details.

ecoTEC plus 80, 100 and 120kW technical data

Dimensions
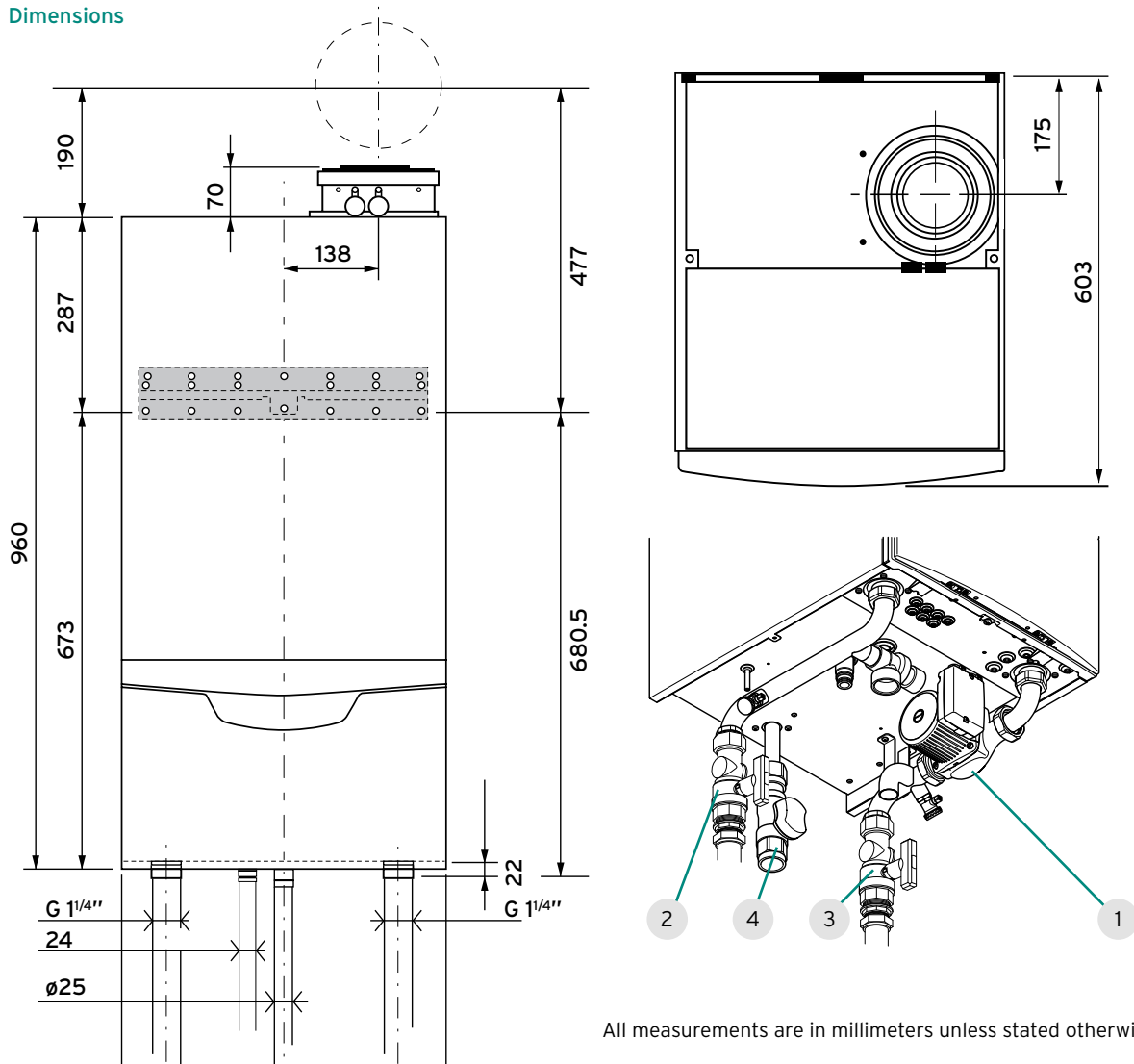
All measurements are in millimeters unless stated otherwise

Clearances

A minimum of 500mm clearance in front of the boiler is required to enable easy access for servicing. This may be provided by an accessible door.
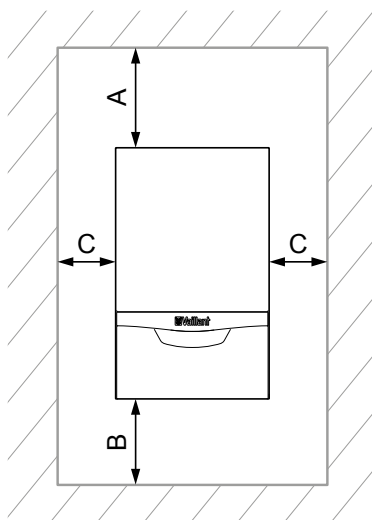
A	B	C
≥ 350mm	≥ 400mm	≥ 5mm

Connections

Connections	Description
1	Pump group
2	Heating flow
3	Heating return
4	Gas valve

ecoTEC plus 80kW key components
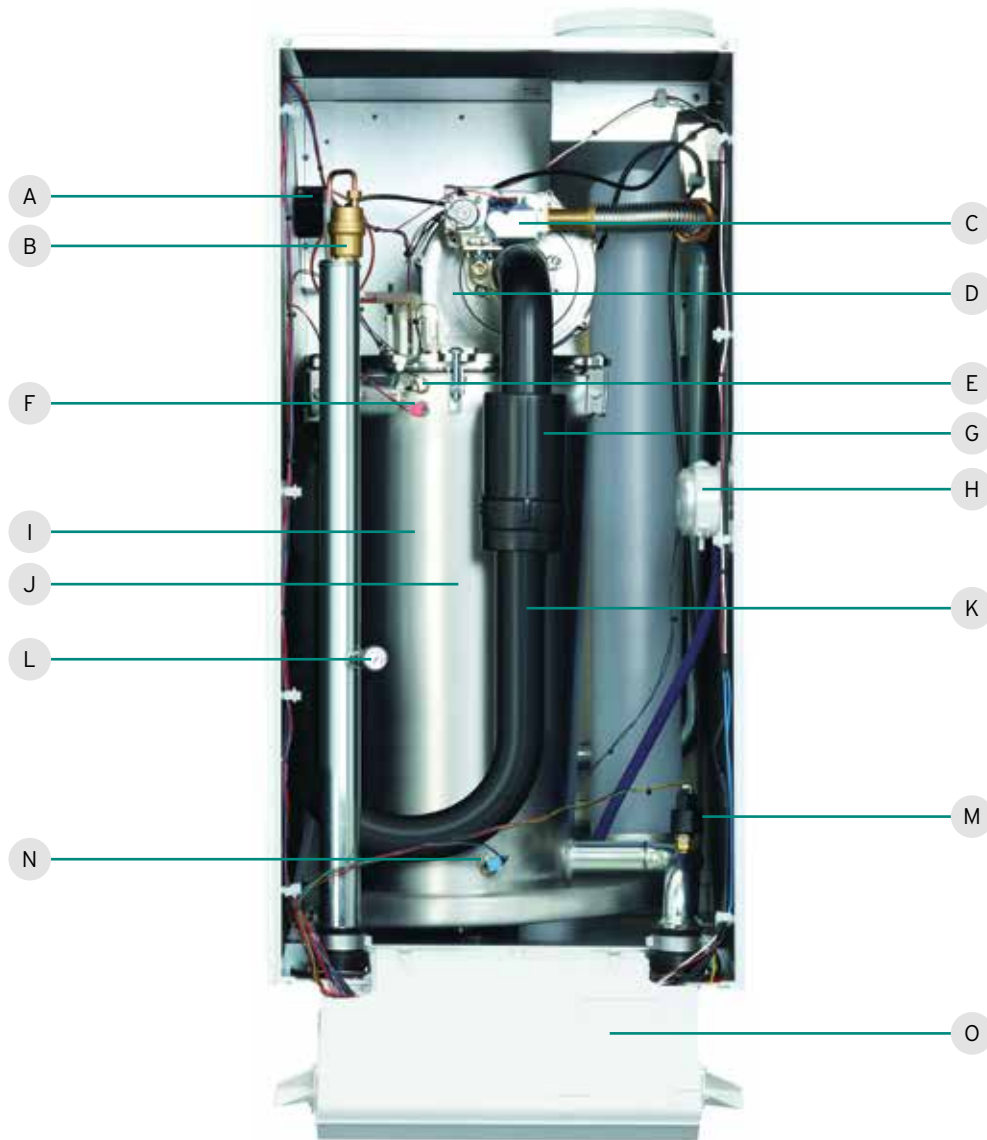
Key	Description
A	Ignition transformer
B	Automatic air vent
C	Gas valve
D	Fan
E	Flow STL
F	Flow NTC
G	Silencer
H	Flue gas pressure switch
I	Burner (inside heat exchanger)
J	Heat exchanger
K	Air intake
L	Pressure gauge
M	Water pressure sensor
N	Return NTC
O	Electronics/PCB

ecoTEC plus 100 and 120kW key components

K
A
B
F
I
J
L
N

D
C
E
H
M
O
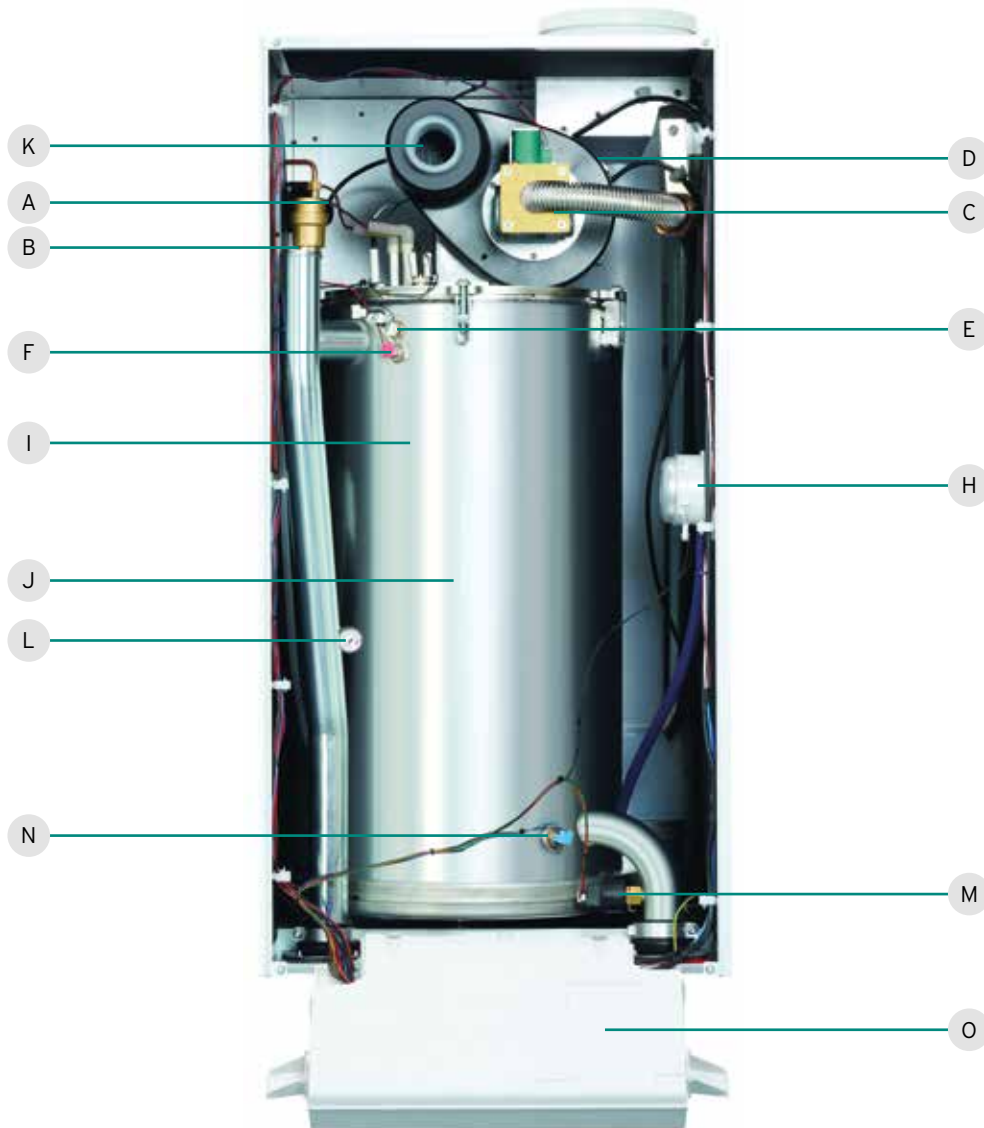
Service valves

All ecoTEC plus 80, 100 and 120kW boilers are supplied with the following

Flow and return isolation valve

Gas isolation valve   Pressure relief valve

Pump group

Description	Article number
Pump group, includes pump and insulation	0020175314

NOTE: available as an accessory but must be used with all ecoTEC plus 80, 100 and 120kW

ecoTEC plus 80, 100 and 120kW technical data

ecoTEC plus		Unit	80kW	100kW	120kW
Article number			0010010767	0010010780	0010010791
Gas council number		G.C	41-044-68	41-044-69	41-044-70
Heat output range	80/60	kW	14.9 - 74.7	18.7 - 93.3	22.4 - 112.0
Natural gas G20 at 20mb	50/30	kW	16.5 - 82.3	20.7 - 102.8	24.7 - 123.4
Conversion to LPG G31 at 37mb	80/60	kW	37.4 - 74.7	46.7 - 93.3	56.0 - 112.0
(conversion kit available from Vaillant)	50/30	kW	41.2 - 82.3	51.4 - 102.8	61.7 - 123.4
Maximum heat input (net)		kW	76.2	95.2	114.3
Modulation ratio - N:1		%	5 : 1 (20%)	5 : 1 (20%)	5 : 1 (20%)
Energy-related Products (ErP rated)*				A	
Energy-related products efficiency		%	92	92	93
Part L2 seasonal efficiency **	NG	%	95.6	95.9	96.0
Net efficiency 100%	80/60	%	97.0	98.0	98.0
Net efficiency 30%	50/30	%	108	108	108
Gas working pressure	NG	mbar		20	
	LPG	mbar		37	
Nominal gas consumption	NG	m³/h	8.1	10.1	12.1
at 15˚C 1013mb	LPG	kg/h	5.92	7.40	8.88
NOx class 5 - 0% oxygen - Dry		mg/kWh	39	36	38
Minimum / maximum flow temperature		˚C		35 / 85	
Nominal CH flow rate Δ t = 20 K		l/hr	3440	4300	5160
Nominal CH flow rate Δ t = 11 K Only via plate heat exchanger		l/hr	6190	7719	9247
Pump head without check valve		mbar	600	480	320
Pump head with check valve		mbar	520	400	240
Condensate (PH range 3.5 - 4.0)		l/h	12.8	16	19.2
Standby loss Δ t = 50 K		%	‹ 2	‹ 2	‹ 2
Maximum power consumption		W	345	355	355
Standby power consumption		W	‹ 2	‹ 2	‹ 2
Supply voltage / frequency / current				230V / 50Hz / 4A	
IP rating				IP X4D	
Noise level - load EN 15036-1 dB(A) re1pW	Full		54.4	62.3	60.6
	Part		33.8	36.3	37.8
Dimensions (H x W x D)		mm		960 x 480 x 603	
Dry weight		kg	68	86	90
Internal water capacity (PH range 6.5 - 8.5)		l	17.0	23.7	22.5
Concentric air flue duct		mm		110 / 160	
Connection size (B23p)		mm	110	110	110
Flue certification for GB				C13, C33, C43, C53, C93, B23, B23p, B53, B53p	
Maximum horizontal flue length		m	22	20	11
Maximum vertical flue length		m	24	18	9
Flue mass flow Qmax	NG	g/s	34.7	43.4	52.1
Minimum / maximum flue gas temperature		˚C	40 / 85	40 / 85	40 / 85
Fan pressure B23p in single		Pa	150	200	200
Maximum flue resistance in cascade		Pa	50	50	50
Flow and return connections		BSP	1 ¼″	1 ¼″	1 ¼″
Gas connection		BSP	1″	1″	1″
Condensate connection pipe		Ø mm		19 ID / 24 OD	
Pressure relief valve size		BSP		1″	
Minimum / maximum operating pressure		bar		0.8 / 6.0	
High efficiency pump (available as an accessory)		EEI ›= 0.23		0020175314 (required for each boiler)	

*When installed with a class VI control

**In accordance with the non-domestic compliance guide 2013

ecoCRAFT 80 - 280kW
floor-standing condensing boiler range

Overview

Vaillant's ecoCRAFT floor standing boiler is available in six impressive outputs - 80, 120, 160 200, 240 and 280kW, and is suitable for use with natural gas only. ecoCRAFT is a floor standing boiler, which can be installed either as a standalone unit or in cascade to meet your design requirements.

This commercial boiler enables the closest load matching with modulation ranging from 17% to 100% on the 160kW boiler. The modular heat exchanger design utilises a single pre-mix burner and fan to achieve part load efficiencies as high as 108.4% (net) and a rating of NOx class 5, maximising your building regulations rating. A plate heat exchanger must be fitted with all ecoCRAFT boilers, standalone and cascade installs, for more information on the plate heat exchanger product range please see pages 34 and 59.

Key features and benefits

▮ **Sectional heat exchanger with single pre-mix burner control**
To achieve part load efficiencies as high as 108.4%
▮ **Plain text interface**
Enables the install to be simply and easily completed from in front of the boiler
▮ **Simple case assembly and removal**
To enable easy servicing and quick repairs
▮ **Modulation ranges as wide as 17% to 100%**
To help drive down running costs
▮ **NOx class 5 rating**
Minimising environmental impact whilst maximising building regulations rating
▮ **ErP A rated**
Higher efficiencies to help lower running costs when installed with a class VI control, such as our VRC 700

NOTE: ecoCRAFT boilers are compatible with many third party flues. Please contact a specialist flue manufacturer for suitable flue systems for these models of floor standing boilers.
A five-year guarantee (subject to conditions and registration within 30 days) comes as standard on our Commercial Systems boilers, with two years available on Vaillant rigs and accessories.
A full commissioning service is available. Speak to your Vaillant Regional Business Manager for more details.

ecoCRAFT 80 - 280kW technical data
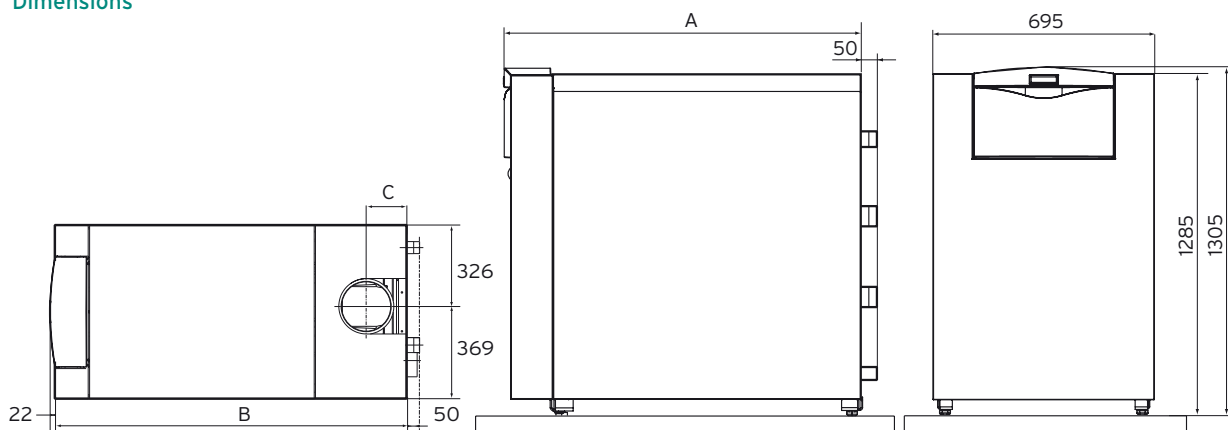
Dimensions

Connections
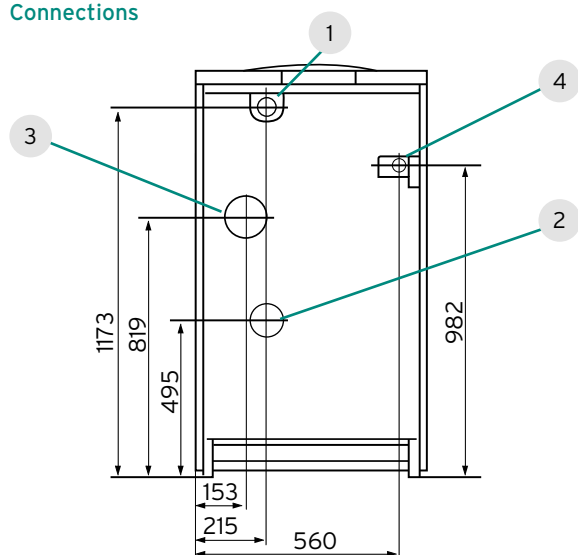
Dimensions	ecoCRAFT 80 - 160kW	ecoCRAFT 200 - 280kW
A	1240	1550
B	1168	1478
C	165	200

Connections	Description
1	Flow connection
2	Return connection
3	Air inlet connector
4	Gas inlet connection
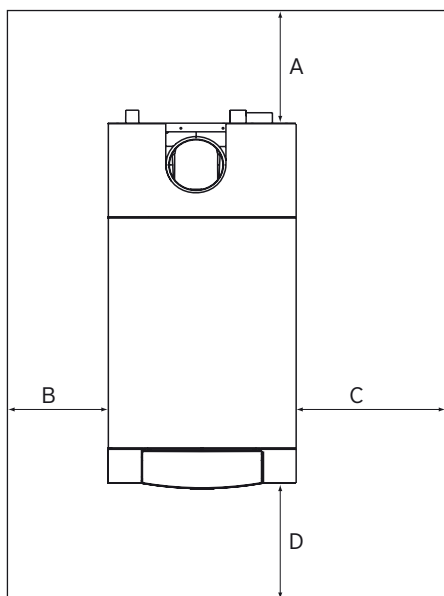
Clearances

It is recommended that a minimum of 500mm clearance is provided in front of the boiler and side panels are removable with clearances to ensure easy access for servicing.

A	B	C	D
≥ 500mm	≥ 50mm	≥ 300mm	≥ 500mm

Recommended minimum distances for installation.

NOTE: Heights are approximate and can vary with foot adjustment (-5mm to +10mm)

ecoCRAFT 80 - 280kW key components
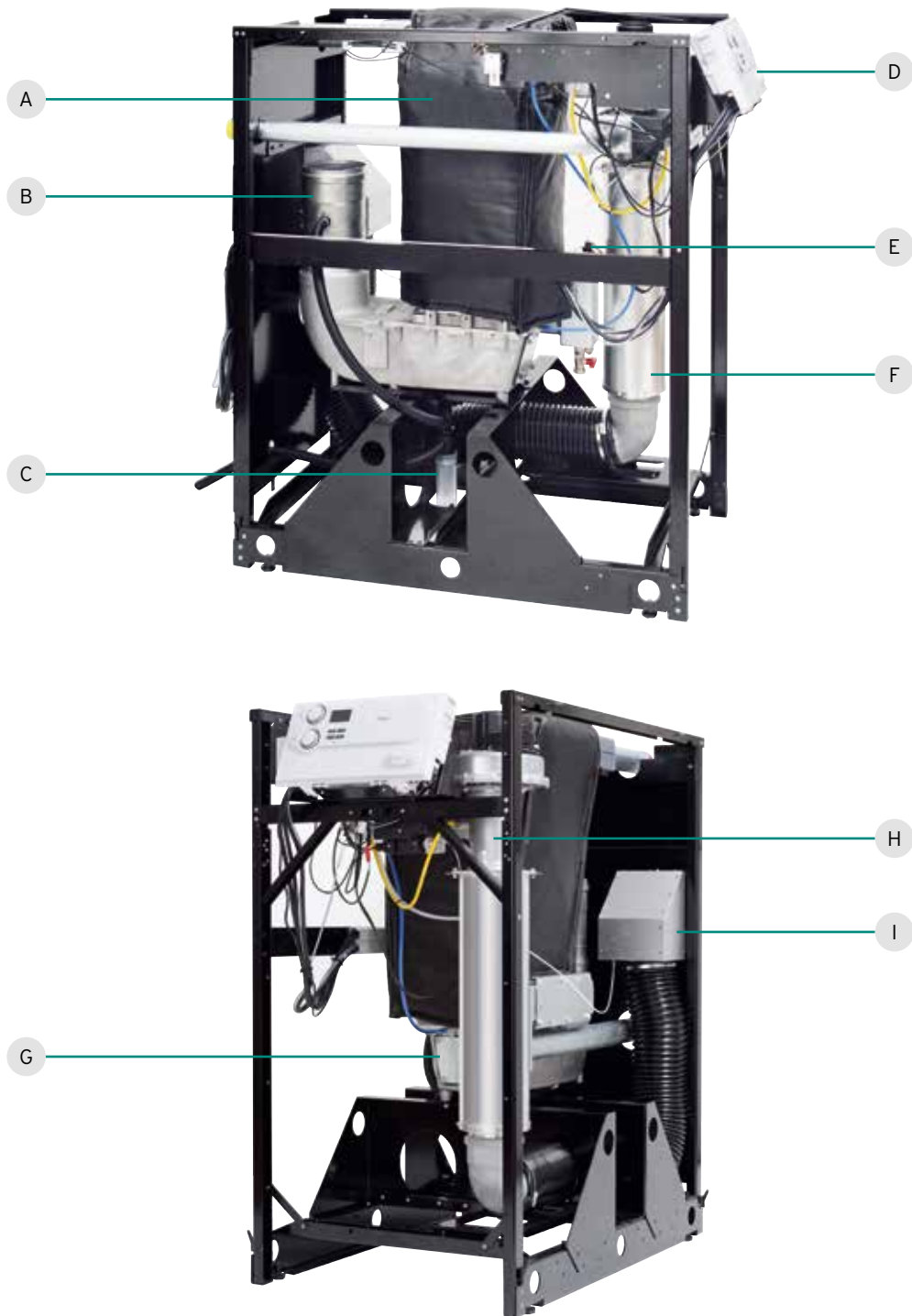
Key	Description
A	Insulated heat exchanger
B	Flue adapter
C	Condensate trap
D	Control box
E	Water pressure sensor
F	Air supply tube
G	Inspection cover
H	Venturi
I	Air inlet filter

ecoCRAFT 80, 120 and 160kW technical data

ecoCRAFT		Unit	80kW	120kW	160kW
Article number			0010014388	0010014389	0010014390
Heat output range	80/60	kW	13.6 - 78.2	21.3 - 113.4	26.2 - 156.8
Natural gas G20 at 20mb	50/30	kW	14.4 - 82.4	22.7 - 119.4	27.8 - 164.8
Maximum heat input (net)		kW	80	115.9	160
Modulation ratio - N:1			5.7 : 1 (17%)	5.3 : 1 (19%)	5.9 : 1 (17%)
Energy-related Products (ErP rated)*			A		
Energy-related products efficiency		%	93		
Part L2 seasonal efficiency **	NG	%	95.85	95.85	95.85
Net efficiency 100%	80/60	%	97.8	97.8	97.8
Net efficiency 30%	50/30	%	108.4	108.4	108.4
Gas working pressure	NG	mbar	20		
Nominal gas consumption at 15˚C 1013mb	NG	m³/h	8.5	12.3	16.9
NOx class 6 - 0% oxygen - Dry		mg/kWh	<= 40		
Minimum / maximum flow temperature		˚C	35 / 85		
Nominal CH flow rate Δ t = 20 K		l/h	3440	4990	6880
		l/s	0.96	1.39	1.91
Loss across heat exchanger		mbar	80	85	90
Pump head		mbar	550	410	210
Condensate (PH range 3.5 - 4.0)		l/h	13	20	27
Standby loss Δ t = 50 K		%	< 4		
Maximum power consumption		W	260	260	320
Standby power consumption		W	< 8		
Supply voltage / frequency / current			230V / 50Hz / 4A		
IP rating			IP 20		
Noise level - load EN 15036-1 dB(A) re1pW	Full		61.9	61	69.1
Dimensions (H x W x D)		mm	1285 x 695 x 1240		
Dry weight		kg	200	220	235
Internal water capacity (PH range 6.5 - 8.5)		l	5.74	8.07	10.4
Concentric air flue duct		mm	150 / 130		
Connection size (B23p)		mm	150		
Flue certification for GB			C33, C43, C53, C93, C63, C83, B23, B23p		
Maximum horizontal flue length		m	3		
Maximum vertical flue length	Ø 130mm	m	33		
	Ø 160mm	m	50		
	Ø 200mm	m	N/A		
Flue mass flow Qmax	NG	g/s	35.4	51.2	70.7
Minimum / maximum flue gas temperature		˚C	60 / 70		
Fan pressure B23p in single		Pa	100	100	150
Maximum flue resistance in cascade			50		
Flow and return connections		BSP	2"		
Gas connection		BSP	1½"		
Condensate connection pipe		Ø mm	19 ID / 24 OD		
Minimum / maximum operating pressure		bar	6		
High efficiency pump (available as an accessory)		EEI ≥ 0.23	0020180027		

*When installed with a class VI control

**In accordance with the non-domestic compliance guide 2013

ecoCRAFT 200, 240 and 280kW technical data

ecoCRAFT		Unit	200kW	240kW	280kW
Article number			0010014391	0010014392	0010014393
Heat output range	80/60	kW	43.1 - 196.8	47.0 - 236.2	51.0 - 275.5
Natural gas G20 at 20mb	50/30	kW	45.3 - 206.0	48.2 - 241.2	53.6 - 288.4
Maximum heat input (net)		kW	200	240	280
Modulation ratio - N:1			4.6 : 1 (22%)	5 : 1 (20%)	5.4 : 1 (19%)
Energy-related Products (ErP rated)*				A	
Energy-related products efficiency		%		93	
Part L2 seasonal efficiency **	NG	%	95.81	95.81	96.2
Net efficiency 100%	80/60	%	98.4	98.4	98.4
Net efficiency 30%	50/30	%	108.2	108.2	108.2
Gas working pressure	NG	mbar		20	
Nominal gas consumption at 15°C 1013mb	NG	m³/h	21.2	25.4	29.6
NOx class 6 - 0% oxygen - Dry		mg/kWh		<= 40	
Minimum / maximum flow temperature		°C		35 / 85	
Nominal CH flow rate Δ t = 20 K		l/h	8600	10330	12050
		l/s	2.39	2.87	3.35
Loss across heat exchanger		mbar	95	100	105
Pump head		mbar	610	500	320
Condensate (PH range 3.5 - 4.0)		l/h	34	40	47
Standby loss Δ t = 50 K		%		< 4	
Maximum power consumption		W		320	
Standby power consumption		W		< 8	
Supply voltage / frequency / current				230V / 50Hz / 4A	
IP rating				IP 20	
Noise level - load EN 15036-1 dB(A) re1pW	Full		68.5	69.8	74.8
Dimensions (H x W x D)		mm		1285 x 695 x 1550	
Dry weight		kg	275	295	310
Internal water capacity (PH range 6.5 - 8.5)		l	12.73	15.05	17.37
Concentric air flue duct		mm		200 / 130	
Connection size (B23p)		mm		200	
Flue certification for GB				C33, C43, C53, C93, C63, C83, B23, B23p	
Maximum horizontal flue length		m		3	
Maximum vertical flue length	Ø 130mm	m		N/A	
	Ø 160mm	m		N/A	
	Ø 200mm	m		50	
Flue mass flow Qmax	NG	g/s	88.4	106.1	123.8
Minimum / maximum flue gas temperature		°C		60 / 70	
Fan pressure B23p in single		Pa		150	
Maximum flue resistance in cascade				50	
Flow and return connections		BSP		2″	
Gas connection		BSP		1½″	
Condensate connection pipe		Ø mm		19 ID / 24 OD	
Minimum / maximum operating pressure		bar		6	
High efficiency pump (available as an accessory)		EEI ≥ 0.23		0020180028	

*When installed with a class VI control

**In accordance with the non-domestic compliance guide 2013

ecoTEC plus 48 and 64kW

single appliance flue accessories

Overview

To complement the wide range of wall-hung boilers available, Vaillant offers a selection of flue system components that can be specified according to the requirements of the installation. Vaillant's proprietary components have been designed to perfectly match each model of boiler and should be used to ensure full compliance with the necessary certification for each installation.

The 80/125mm size is suitable for the ecoTEC plus 48 and 64kW vertical and horizontal terminals along with 87° and 45° elbows.

For terminations requiring an outdoor run of flue pipe, Vaillant also supply a vertical facade flue system with the external components manufactured in stainless steel.

Compatibility matrix

ecoTEC plus	48kW	64kW
Single boiler install	80/125mm Concentric	
Multiple boilers on a cascade flue system	See page 49	

Flue accessories

Description	Article number
Horizontal air/flue duct includes elbow and terminal	303209
Vertical air/flue duct and terminal	303200
87° elbow (pack of 1)	303210
45° elbow (pack of 2)	303211
Air/flue duct extension (470mm)	303202
Air/flue duct extension (970mm)	303203
Air/flue duct extension (1970mm)	303205
Sliding sleeve	303215
Flue support clips (pack of 5)	303616
Pitched roof adjustable roof tile	009076
Flexible roof seal	303980
Flat roof penetration collar	009056

NOTE: Adequate provision must be made by the flue provider and the installer to allow removable access of flue components for repairs and servicing. If no means of access or removal is provided, responsibility lies with the flue provider.

Horizontal 80/125mm flue

Maximum horizontal flue length

ecoTEC plus	48kW	64kW
Maximum permissible length of concentric flue	18.0m (includes 1 x 87° elbow)	15.0m (includes 1 x 87° elbow)

Maximum length of flue is reduced by 2.5m for each additional 87° elbow

Maximum length of flue is reduced by 1.0m for each additional 45° elbow
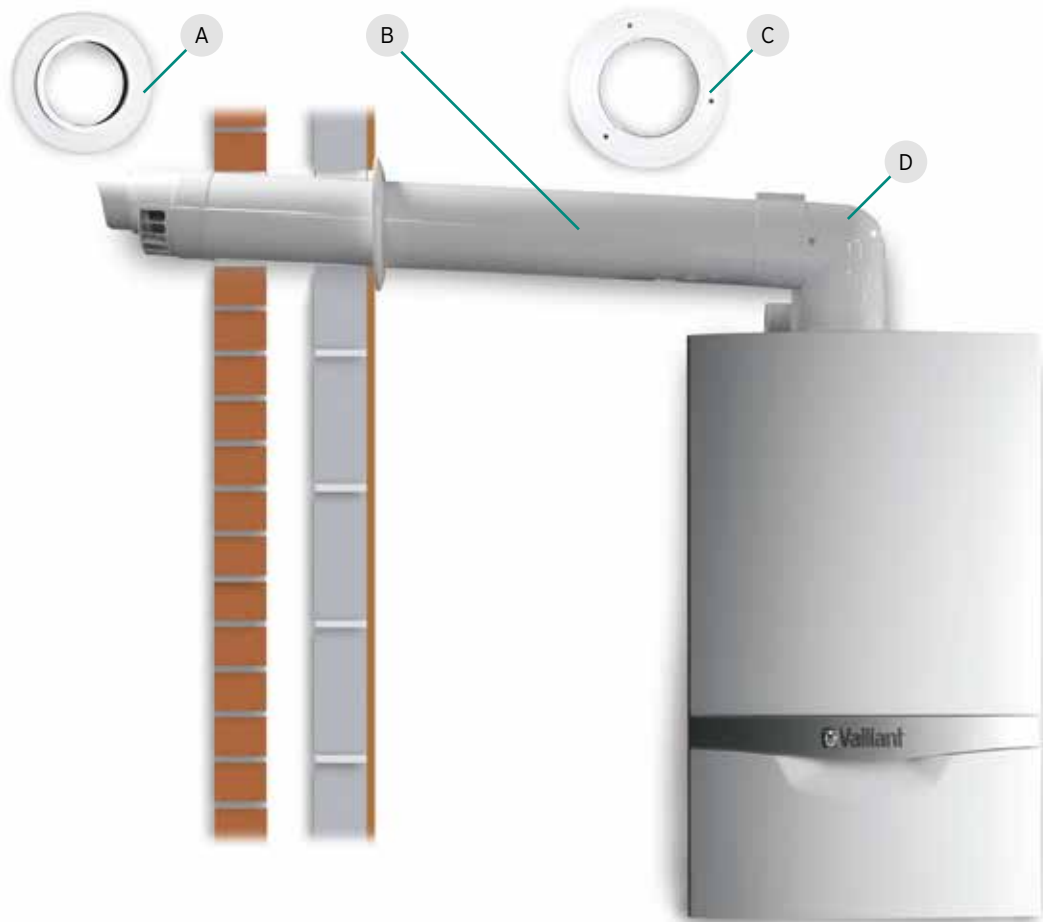
80/125mm concentric horizontal flue

Key	80/125mm horizontal flue	Article number
A	Outer rosette	
B	Terminal duct - 970mm to face of outer wall	303209
C	Inner rosette	
D	87° elbow	

Vertical 80/125mm flue
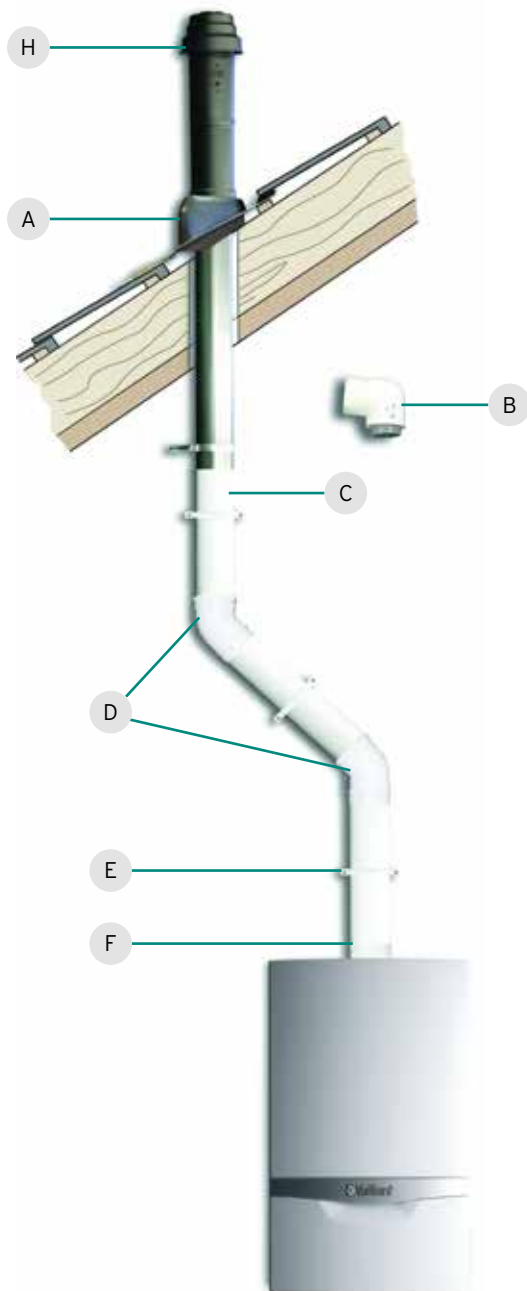
80/125mm concentric vertical flue

Maximum vertical flue length

ecoTEC plus	48kW	64kW
Maximum permissible length of concentric flue	21.0m (excludes elbow)	18.0m (excludes elbow)

Maximum length of flue is reduced by 2.5m for each additional 87° elbow.

Maximum length of flue is reduced by 1.0m for each additional 45° elbow.
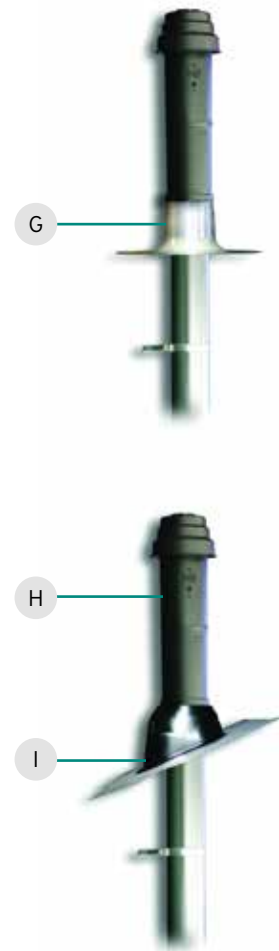
Key	125mm vertical flue	Article number
A	Pitched roof adjustable roof tile	009076
B	87° elbow (pack of 1)	303210
C	Air/flue duct extension (470mm)	303202
	Air/flue duct extension (970mm)	303203
	Air/flue duct extension (1970mm)	303205
D	45° elbow (pack of 2)	303211
E	Flue support clips (pack of 5)	303616
F	Sliding sleeve	303215
G	Flat roof penetration collar	009056
H	Vertical air/flue duct and terminal	303200
I	Lead slate penetration seal for pitched roofs	303980

Stainless steel 80/125mm facade flue

Maximum facade flue length

ecoTEC plus	48kW	64kW
Maximum permissible length of concentric flue gas pipe	22.0m (includes 3 x 87° elbows and support elbow)	22.0m (includes 3 x 87° elbows and support elbow)

Air intake piece must be positioned no further than 4m from the connection with the boiler.
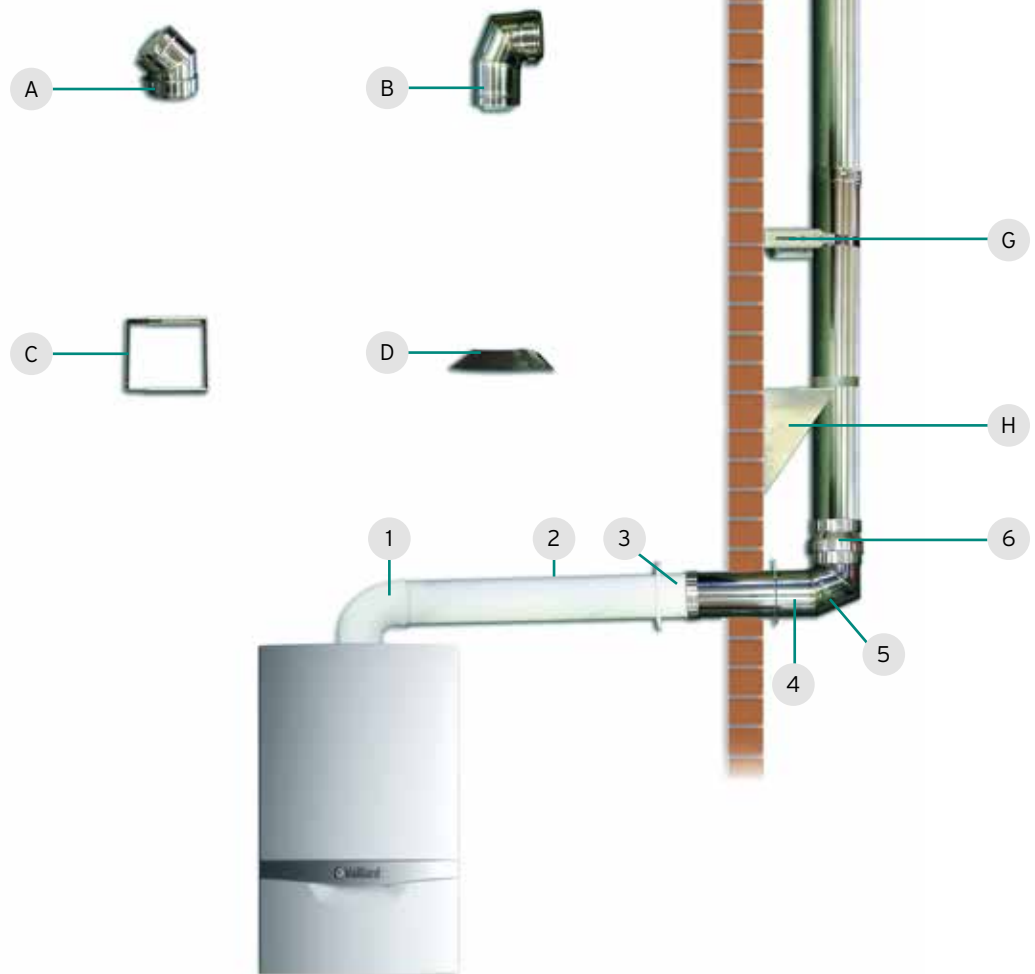
80/125mm concentric stainless steel facade flue

Key	80/125mm facade flue	Article number
A	45° elbow (pack of 2)*	0020042757
B	87° elbow (pack of 1)*	0020042756
C	Fixing bracket extension	0020042752
D	Rain collar	0020042760
E	1.0m extension	0020042754
E	0.5m extension	0020042753
E	0.5m adjustable extension	0020042755
F	Fixing bracket	0020042751
G	Fixing bracket	0020042751
H	Adjustable wall support for heights over 4m	0020042749

Key	Facade basic connection set	Article number
1	87° elbow	
2	Transition piece	
3	Inner wall rosette	
4	Outer wall rosette	0020042748
5	Wall penetration elbow	
6	Air intake piece	
7	Bird guard terminal	

*Can be used to terminate horizontally

Flue termination for outputs below 70kW

Flue termination

When considering flue termination options, there are many factors to take into account, particularly with regards to clearances and discharge of condensate and combustion gases into the external atmosphere. Systems up to 70kW net must comply with British Standards, which recommends that all fanned flue terminals should be a minimum distance from any openings into a building. Also, consideration must be given to buildings directly opposite or adjacent to a flue termination. When siting a flue terminal, the products of combustion must not be discharged straight across a boundary and there are minimum distances for terminating beside a boundary. In all cases, the possibility of the plume of condensate touching building fabric or discharging where it may be considered a nuisance or where they may not freely disperse, must be avoided.

The following diagram and corresponding tables show the minimum clearance requirements for ecoTEC plus 48 and 64kW models. Given the number of acts and

regulations that are in force regarding the siting of flues, Vaillant always recommends that advice is sought from a flue specialist who can advise on the installation to ensure all national and local regulations and requirements are closely observed.

The most important acts and regulations that affect the installation of commercial gas boiler systems are:
• BS5440-1
• IS813

All flue terminations must be positioned so that the flue products can discharge freely from the terminal for dispersal and cannot enter or re-enter a building. Also, it must be ensured that the products disperse in a way in which they do not come into contact with objects or building fabrics as these could be damaged by the condensate.
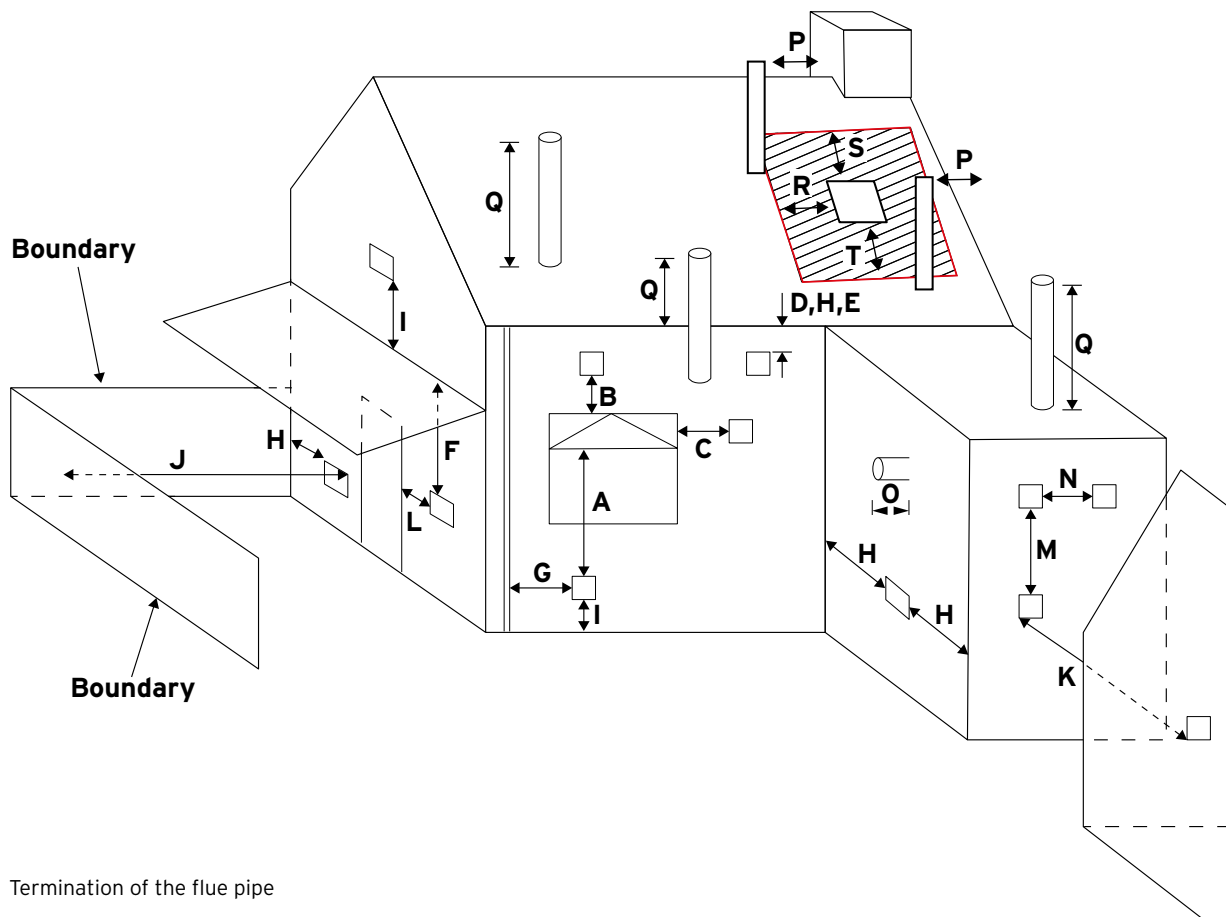
Termination of the flue pipe

NOTE: Where boilers are combined in cascade and the total installed net output exceeds 70kW then the current edition of the flue standard IGEM/UP/10 must be followed. See page 30 for more details.

Key	Location	Minimum dimensions (mm)
A	Directly below openings into the building i.e. windows or air bricks	300
B	Above openings into the building i.e. windows or air bricks	300
C	Horizontally to openings into the building i.e. windows or air bricks	300
D	Below gutters, soil pipes or drain pipes (consider extending out*)	75
E	Below eaves (if ventilated, extend out to prevent entry of products)	200
F	Below balconies or car port roofs	200
G	From vertical soil pipes or waste pipes and gutter downpipes	25
H	From internal or external corners or a boundary alongside the terminal	300
I	Above ground, roof or balcony level	300
J	From a surface facing a terminal	600
K	From a terminal facing a terminal	1200
L	From an opening under the car port leading into the building	1200
M	Vertical from a terminal on the same wall	1500
N	Horizontal from a terminal on the same wall	300
O	Air duct rosette to face of wall (Flue can be extended out up to 500mm)*	0 (face of wall)
P	From nearby structure or neighbouring (taller) building**	300
Q	Above flat roof or intersection with pitched roof	300
R	Horizontal from opening roof lights and windows on pitched or flat roofs	600
S	Above an opening roof light or windows on pitched roofs	600
T	Below an opening roof light or windows on pitched roofs	2000

* Ensure terminal is sealed to air duct to prevent water ingress
** Ensure products disperse freely and do not contact building surfaces

NOTE: All flue terminations must be positioned such that the flue products can discharge freely from the terminal for dispersal and cannot enter or re-enter a building. Also, it must be ensured that the products disperse in a way that they do not come into contact with objects or building fabrics as these could be damaged by the condensate.

ecoTEC plus 80, 100 and 120kW
single appliance flue accessories

Overview

Vaillant offer a range of flue system options for the ecoTEC plus 80, 100 and 120kW boilers, which utilise a 110/160mm concentric flue system. Standard concentric flue pipes can be purchased with a range of fittings to easily construct the appropriate flue system with either horizontal or vertical terminations. These flues comprise of a 160mm white coated steel outer air duct with a 110mm PP inner flue. A variety of stainless steel facade flues and additional accessories including brackets, rain collars, sleeves and terminals are also available to complement all flue system arrangements.

The single appliance flue range and accessories have been designed to cater for a range of project requirements and appliance locations to be used with maximum flue lengths.

Compatibility matrix

ecoTEC plus	80kW	100kW	120kW
Single boiler install	110/160mm Concentric		
Multiple boilers on a cascade flue system	See page 49		
	For B23 flue use PP flue and terminate via facade system		

Flue accessories

Description	Article number
Vertical terminal, concentric, black	0020166853
Horizontal terminal, elbow and collar	0020166854
0.5m extension (110/160mm PP)	0020106376
1.0m extension (110/160mm PP)	0020106377
2.0m extension (110/160mm PP)	0020106378
45° elbow (110/160mm PP)	0020106379
87° elbow (110/160mm PP)	0020106380
Fastening clamps (pack of 5) with S & P (160mm)	0020106381
110/160mm flexible lead pitched roof seal	0020106409
110/160mm flat roof penetration collar	0020106411

NOTE: Adequate provision must be made by the flue provider and the installer to allow removable access of flue components for repairs and servicing. If no means of access or removal is provided, responsibility lies with the flue provider. Where boilers that exceed 70kW net output must refer to the current edition of the flue standard IGEM/UP/10.

Horizontal 110/160mm flue

Maximum horizontal flue length

ecoTEC plus	80kW	100kW	120kW
Maximum permissible length of concentric flue	22.0m (includes 1 x 87° elbow)	18.0m (includes 1 x 87° elbow)	9.0m (includes 1 x 87° elbow)

Maximum length of flue is reduced by 1.5m for each additional 87° elbow

Maximum length of flue is reduced by 1.0m for each additional 45° elbow
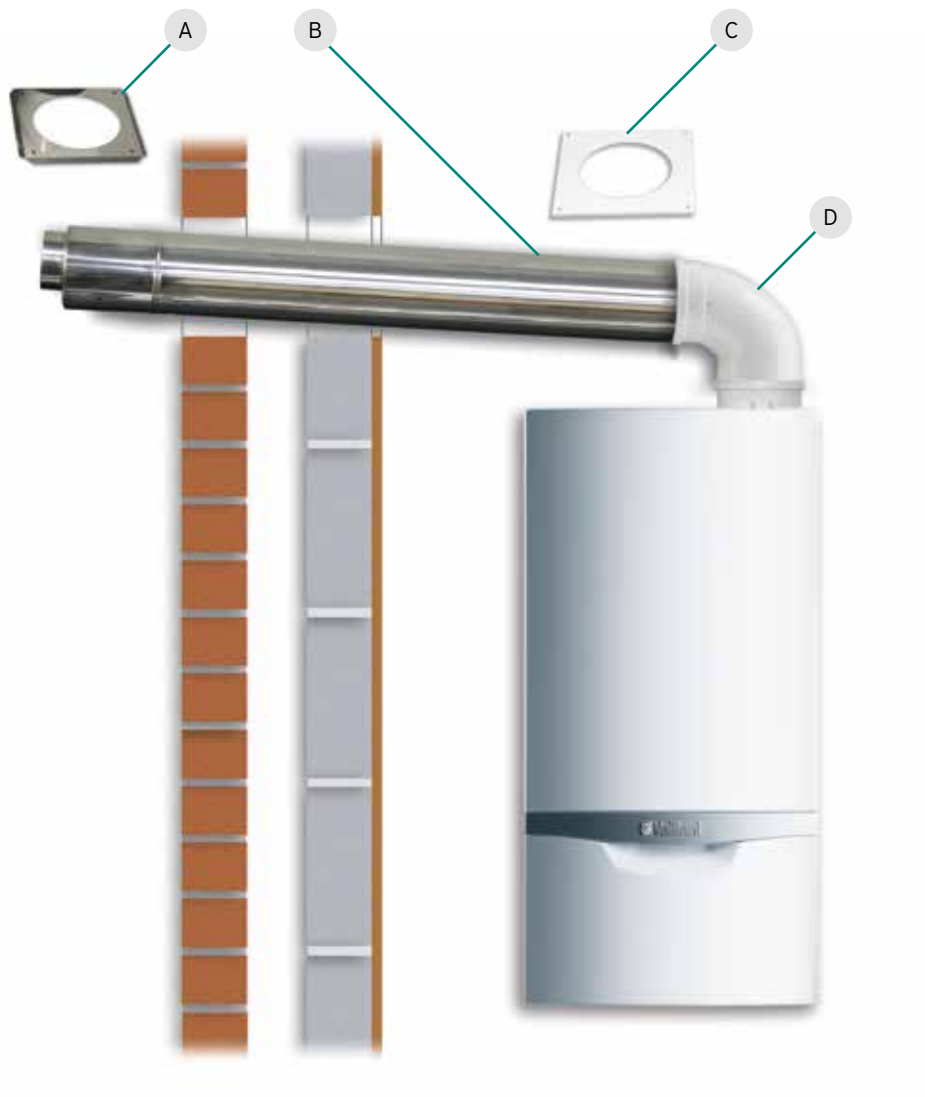
110/160mm concentric horizontal flue

Key	110/160mm horizontal flue	Article number
A	Outer rosette	
B	Terminal duct - 910mm to face of outer wall	0020166854
C	Inner rosette	
D	87° elbow	

Vertical 110/160mm flue
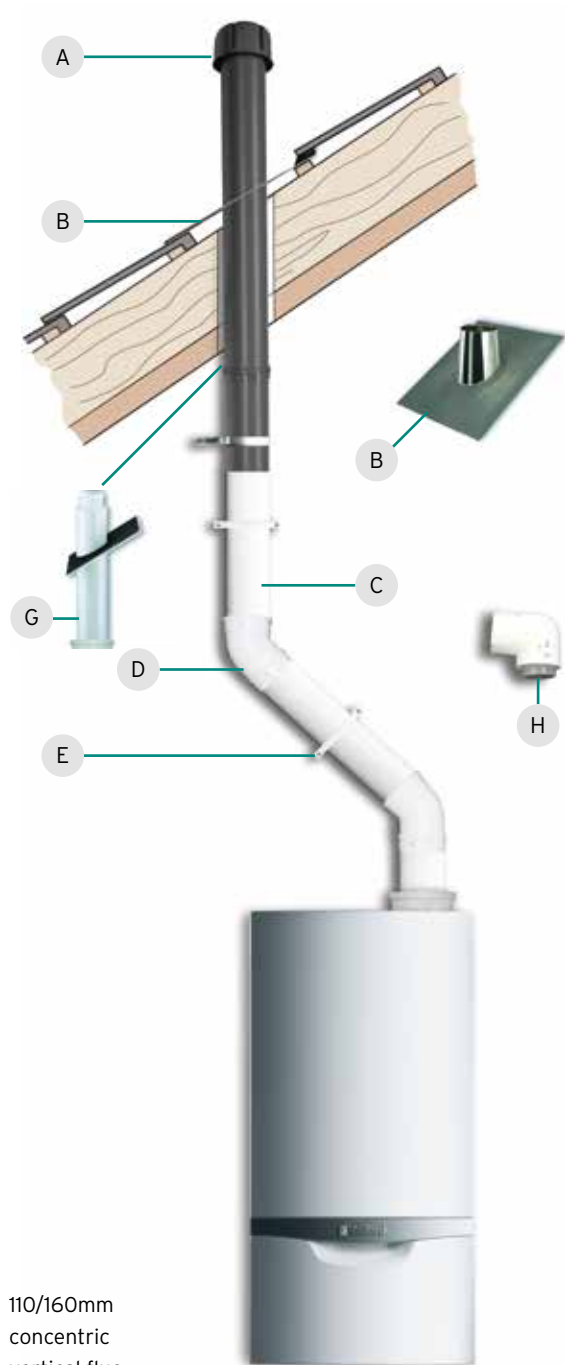
Maximum vertical flue length

ecoTEC plus	80kW	100kW	120kW
Maximum permissible length of concentric flue	24.0m (includes 2 x 87º elbows)	20.0m (includes 2 x 87º elbows)	11.0m (includes 2 x 87º elbows)

Maximum length of flue is reduced by 1.5m for each additional 87º elbow

Maximum length of flue is reduced by 1.0m for each additional 45º elbow

110/160mm concentric vertical flue
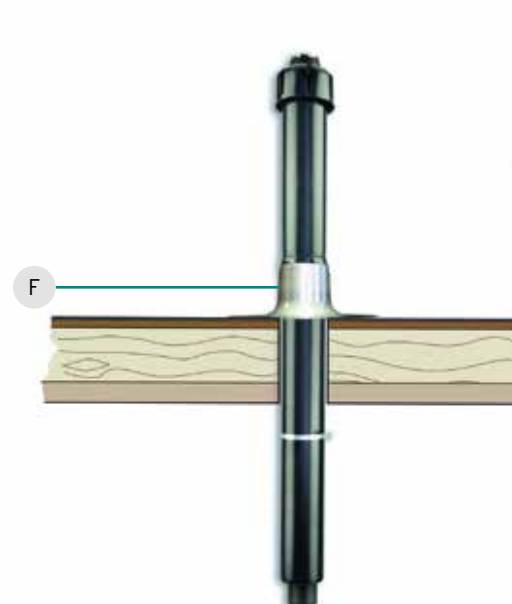
Key	110/160mm vertical flue	Article number
A	Vertical flue duct and terminal (includes item G)	0020166853
B	Pitched roof flashing	0020106409
C	500mm extension	0020106376
C	1000mm extension	0020106377
C	2000mm extension	0020106378
D	45º elbow (pack of 2)	0020106379
E	Flue support clips (pack of 5)	0020106381
F	Flat roof penetration collar	0020106411
G	Internal decorative cover	included with A
H	87º elbow (pack of 1)	0020106380

Stainless steel 110/160mm facade flue

Maximum facade flue length

ecoTEC plus	80kW	100kW	120kW
Internal flue length			
Maximum permissible internal flue length	3m (includes 3 x 87° elbows only available in white plastic and support elbow)	3m (includes 1 x 87° elbow only available in white plastic and support elbow)	2m (includes 1 x 87° elbow only available in white plastic and support elbow)
Reduction to outer flue length for additional 87° internal elbows	5.3m	5.3m	5.3m
Reduction to outer flue length for additional 45° internal elbows	3.2m	3.2m	3.2m
Reduction to outer flue length for additional 1m extensions	3.2m	3.2m	3.2m
External flue length			
Maximum permissible external flue length	50m	50m	29m
Reduction to outer flue length for additional 45° external elbows	0.5m	0.5m	0.5m

110/160mm concentric facade flue

Key	110/160mm Stainless facade flue	Article number
1	Basic facade kit 110/160mm	0020166855
Additional items		
A	45° elbow	0020106405
B	External wall bracket (50 - 90mm)	0020106400
C	External wall bracket extension (50 - 90mm)	0020106401
D	Stainless pipe 500mm	0020106402
D	Stainless pipe 1000mm	0020106403
E	Flue band - Pipe clamp 160mm (1 required per extension and bend)	0020143394

Flue termination for single installations above 70kW

Flue termination

For the installation of boilers with a heat input more than 70kW net but less than 333kW net. Guidance should be taken from the current IGEM UP/10 installation of flued gas appliances in industrial and commercial premises. It is also important to refer to the risk assessment appendix within the document for guidance on suitable flue terminal locations.

For installations above 333kW net input, refer to the "Clean Air Act," as the discharge of flue products must comply with the stated and calculated distances above ground (see note 3).

It is essential to ensure that discharged flue products do not create any hazard or nuisance to persons within the discharge area and do not come into contact with building surfaces or build-up within an area where they may re-enter a building.

The information below for guidance on single boiler concentric flues. All flue installations over 70kW must fully comply with;
- **The current edition of IGEM/UP/10 (boilers or combinations of boiler exceeding 70kW net)**
- **IS813**
- **The Clean Air Act (boilers or combinations of boiler exceeding 333kW net)**
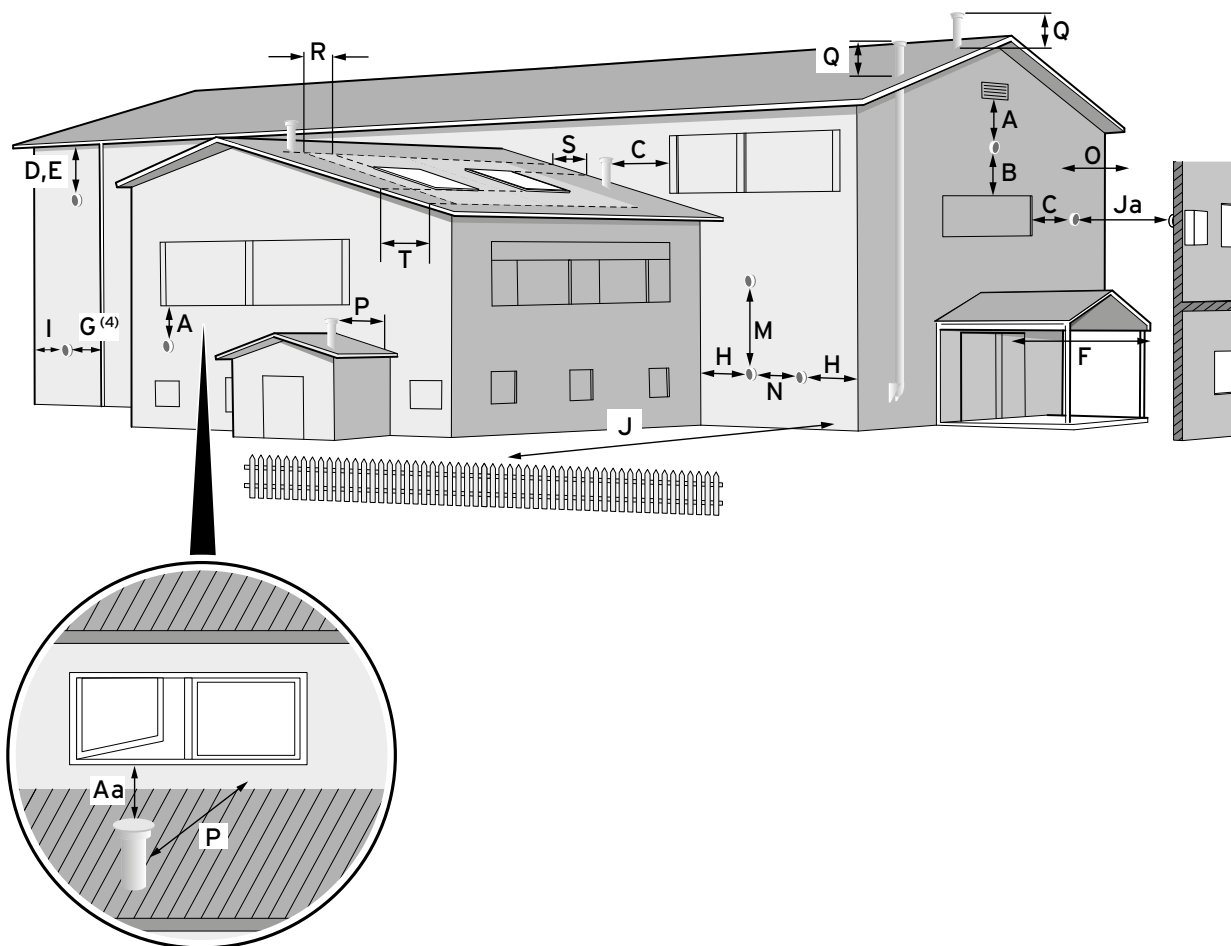
Termination of flue pipe

NOTES:
1. None of the above should discharge into a courtyard, light well, car port or enclosed environment.
2. Care should be taken to ensure that even if the installation complies with the minimum dimensions shown below, that all site conditions are taken into consideration to avoid the plume becoming a nuisance or causing wall staining.
3. The height and termination of flues will require approval from the local authority.

Key	Minimum clearances for concentric terminations	mm
	Horizontal (70kW and up to 120kW)	
A	Directly below an opening, air brick, opening windows	2500
B	Above an opening, air brick, opening windows	900
C	Horizontal to an opening, air brick, opening windows	900
D (1,4,9)	Below gutter, drain/soil pipe (extending out to clear)	75
E (1,4,9)	Below eaves, adjacent to drain pipes	200*
F (6)	Below balcony or car port (should be extended to clear air)	25
G (4,9)	From a vertical drain pipes and soil pipes	50
H (7,9)	From internal/external corner	300
I (2,7)	To a boundary alongside the terminal/external corner	300
J	Facing a boundary or surface opposite	2200
J	From a terminal opposite facing the terminal	3000
M (7)	Vertical from a terminal	1500
N (7)	Horizontal from a terminal	300
O	Rosette to face of wall (can be extended up to 500mm*)	0
	Vertical flues 70kW up to 120kW	
Aa (8,9)	Within 2000mm horizontally of an opening window	2500
C (3)	From adjacent opening window	1000
P (3,8,9)	From nearby structure or neighbouring (taller) building	300**
P (3,8,9)	From adjacent opening window (extended above opening)	1500
P (3,8,9)	From adjacent wall to flue	300
Q	Above flat roof or intersection with pitched roof	600
R (5)	Horizontal from opening windows on pitched or flat roofs	900
S (5)	Above an opening roof light or windows on pitched roofs	600
T	Below an opening roof light or windows on pitched roofs	2000

*Terminal and wall entry must be sealed to prevent water ingress

**Products must disperse freely and not contact building surfaces

1. There should be no ventilation/opening in the eaves within 900mm of the terminal.
2. These dimensions comply with the building regulations, but they may need to be increased to avoid wall staining and nuisance from pluming depending on site conditions.
3. It is recommended that an elbow termination is fitted to direct the plume away from the window.
4. If the pipe is shielded from the heat, this dimension may be reduced to 25mm.
5. The flue through the roof should not be located within the shaded area.
6. It is recommended that the terminal should not be located below 2m in any occupied space.
7. Terminals below 2m must be fitted with a suitable terminal guard and should be a minimum of 300mm above surface level.
8. It is the installer's responsibility to carry out a suitable risk assessment to ensure the location of the terminal is safe and products can freely disperse without causing nuisance or harm to persons. Refer to IGEM/UP/10.
9. All flue terminations must be positioned such that the flue products can discharge freely from the terminal for rapid dispersal and cannot enter or re-enter a building, whilst ensuring they do not come into contact with objects or building fabrics as these could be damaged by the condensate.

NOTE: Systems above 70kW must be designed and installed according to IGEM UP/10. Above 333kW net heat input the Clean Air Act must also be adhered to and system will need approval of local authority.

Low-loss headers
for standalone installations

Overview

Low-loss headers maintain the correct flow of water through the boiler and allow a constant temperature supply of water to reach multiple heating circuits downstream of the low-loss header connection. An example of this would be heating circuits that require different temperature and flow-rate requirements (e.g. underfloor heating and radiator circuits).

During operation, cooler return water from the heating circuits is mixed with water from the boiler in the low-loss header. An NTC is used to monitor the temperature of the water supplied by the boiler.* It is highly recommended that a suitable dirt filter is fitted in the return pipework between the low-loss header and the heating circuits as a precaution to prevent system dirt from entering the boiler.

Vaillant low-loss headers are only suitable for new clean systems up to 70kW net input with correctly inhibited water. Vaillant offers a freestanding low-loss header for use with ecoTEC plus 48 or 64kW boilers, along with a new additional model – the WH40/2. WH40/2 is a compact low-loss header that can be mounted horizontally underneath the boiler, making it a great solution for restrictive spaces.

For low-loss solutions for ecoTEC 80, 100 and 120kW, ecoCRAFT and all cascade systems please see pages 34 and 59 for plate heat exchangers.

*NTC is only relevant when used with Vaillant controls.

Low-loss headers for standalone installations under 70kW technical data

WH95
WH40

WH40/2

Technical data	Unit	WH40	WH40/2	WH95
Article number		306720	0020248932	306721
kW at 20K		70	70	190
kW at 11K		40	40	102
Connections	BSP female	1 ¼"	1 ¼"	2"
Flow rates	m³/hr	3.5	3.5	8
	l/hr	3500	3500	8000
Pressure drop	mbar	1.4	1.4	7.4

D= Boiler side
E= System side
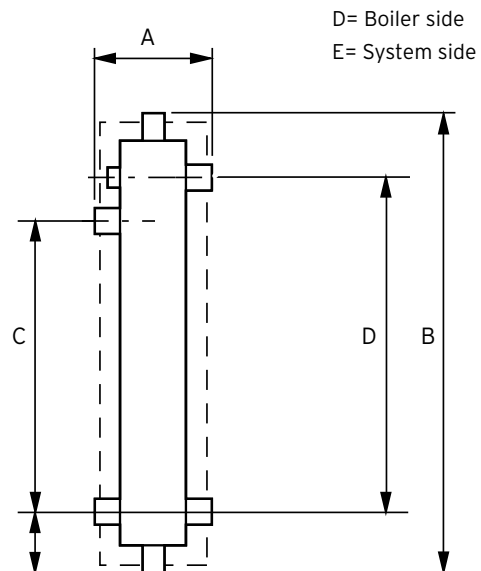
Dimensions	Unit	WH40	WH40/2	WH95
A	mm	115	114	155
B	mm	500	342	750
C	mm	280	200	470
D	mm	340	260	540

Plate heat exchangers
for standalone installations

Overview

Manufactured to the highest of standards, a Vaillant plate heat exchanger is the ideal solution for installations that are impossible to guarantee system cleanliness and therefore water quality flowing through the boiler. It is mandatory to install a plate heat exchanger on ecoTEC plus 80, 100, 120kW, ecoCRAFT, and any single boiler installs or cascade systems over 70kW net.

The plate heat exchanger operates by separating the boiler water from the system water and is particularly beneficial for older applications where the systems cannot be pressurised. By separating the boiler from the system, the integrity of the boiler is maintained and it can operate as a pressurised system, whilst still allowing the boiler to operate on the existing open-vented system. However, care must be taken to ensure that the system water circulating through the plate is filtered and treated accordingly. Using a plate heat exchanger will not only protect the boiler, but also minimises possible down time and helps to maintain the boiler so that it operates at its highest efficiency throughout its life span.

For flow rates and pressure loss charts see pages 62 and 63.

Plate heat exchangers for standalone installations technical data

Technical data	Unit	PHE S 120-70
Article number		0020137069
Article number including insulation and connection set		0010025676
Flat faced connection set 1¼" article number	(pack of 4)	0020248931
120kW insulation article number		0020248922
Output	kW	115
Connections	BSP male	40
Flow rates	l/hr	5169
Pressure drop	mbar	108
Temperature differential	°C	10
Plate depth (distance between connections)	mm	186
Material		Stainless steel
Connection		1¼" screw connection
Weight	kg	10.70
Plates		70
Volume (primary side)	litres	2.21
Volume (secondary side)	litres	2.28
Maximum operating pressure	MPa (bar)	3.0 (30)

Dimensions
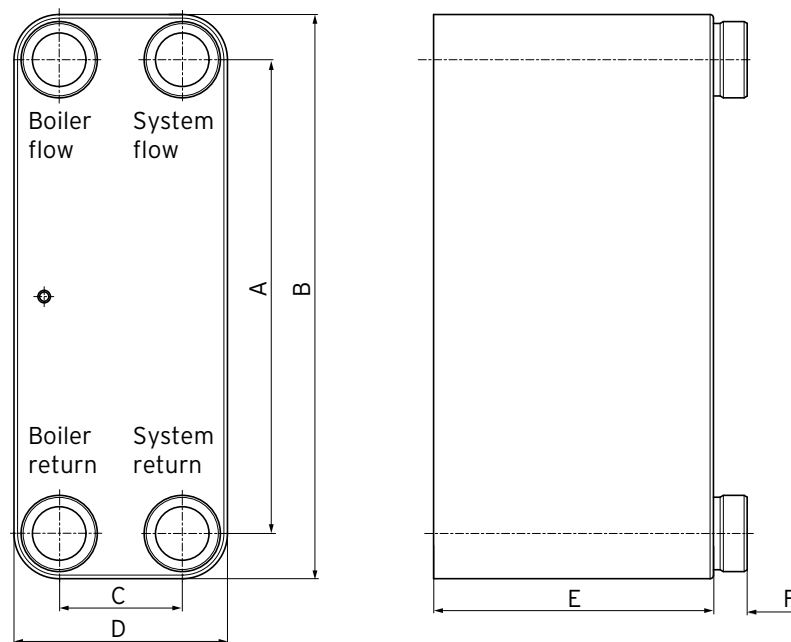
Model	Unit	A	B	C	D	E	F
PHE S 120-70	mm	281	335	73	124	166	20

Cascade rig systems

Overview

Vaillant cascade rigs offer greater flexibility when designing and specifying commercial heating systems. Cascade rigs are an easily expandable modular system, which can provide up to 960kW of energy and can be configured to fit any plant room. They can accommodate from one to eight boilers in various configurations either inline, back-to-back or around a corner, utilising any of our ecoTEC plus wall-hung commercial boilers, from 48kW to 120kW.

Cascade rigs are suitable for a range of projects and can be particularly useful when modifying existing freestanding systems, especially when the walls of a project may not be suitable for the installation of wall-hung boilers.

Cascade rigs are supplied in comprehensive sets that include all frames, gas, flow, return and header hydraulics insulation, all of which are easily transported and assembled on site.

A large range of accessories and flueing options ensures there is a Vaillant cascade solution for every kind of commercial installation.

When using cascade rigs, a plate heat exchanger must be installed to separate the boiler from the larger volume of system water. Designers and installers must ensure that all systems are clean and water quality is maintained to a high standard from first ignition for the whole life of the system. Cascade rigs are available with DN65 headers for systems up to 400kW - when larger systems are being designed, options include DN100 headers, which with the correct design, can be used for systems up to 960kW.

Around corner rig fittings are compatible with DN100 fittings and inline rigs only. For more complex situations where an installer wishes to create their own pipework configurations, rig only kits are also available.

Inline cascade rigs

Inline cascade rigs for 1 to 8 boilers dimensions

Key	ecoTEC plus 48kW	ecoTEC plus 64kW	ecoTEC plus 80kW	ecoTEC plus 100kW	ecoTEC plus 120kW
A	1650mm (for mechanical NRV add 130mm)		1750mm (for mechanical NRV add 200mm, for motorised NRV add 130mm)		
B	900mm (If no NRV, header size needs to be increased)		750mm (If no NRV, header size needs to be increased)		
C	760mm including insulation (If rear feet required add 480mm)				
D	240mm (+/- 10mm)				

Clearances

600mm in front of each boiler for service access.

End cap insulation + 70mm.

Plate heat exchangers - dimensions according to model.

All dimensions +/- 20mm

Inline cascade rigs for ecoTEC plus 48 and 64kW with DN65 hydraulics

Compatibility matrix

Model	1 x boiler	2 x boiler	3 x boiler	4 x boiler
ecoTEC plus 48 and 64kW	VCR-461 0020201762	VCR-462 0020201763	VCR-463 0020201764	VCR-464 0020201765
Plate heat exchanger	VCP2 PHE – C 240-40 0020175315			

Pack contents

Cascade 1 x boiler inline VCR-461 0020201762	Cascade 2 x boiler inline VCR-462 0020201763	Cascade 3 x boiler inline VCR-463 0020201764	Cascade 4 x boiler inline VCR-464 0020201765
Cascade frame support 0020151805	Frame support cascade 0020151805	Frame support cascade 0020151805	Frame support cascade 0020151805
Frame support for 1 or 2 boilers 0020151813	Hydraulic block, start up module 0020151816	Frame support for 1 or 2 boilers 0020151813	Hydraulic block, start up module 0020151816
Hydraulic block, start up module 0020151816	Frame support for 2 or 4 boilers 0020151814	Hydraulic block, start up module 0020151816	2 x frame support for 2 or 4 boilers 0020151814
Hydraulic block for 1 or 2 boilers 0020151818	Hydraulic block for 2 or 4 boilers 0020151820	Hydraulic block for 1 or 2 boilers 0020151818	2 x hydraulic block for 2 or 4 boilers 0020151820
Connector, pipe front 45 0020151823	2 x connector, pipe front 45 0020151823	Frame support for 2 or 4 boilers 0020151814	4 x connector, pipe front 45 0020151823
Fittings pack, gas front 45 0020151839	2 x fittings pack, gas front 45 0020151839	Hydraulic block for 2 or 4 boilers 0020151820	4 x fittings pack, gas front 45 0020151839
Gas pipe, DN50 for 1 or 2 boilers 0020107866	Gas pipe, DN50 for 2 or 4 boilers 0020107867	3 x connector, pipe front 45 0020107823	2 x gas pipe, DN50 for 2 or 4 boilers 0020107867
Flange (blank) gas DN50 0020151835	Flange (blank) gas DN50 0020151835	3 x fittings pack, gas front 45 0020151839	Flange (blank) gas DN50 0020151835
Heat insulation straight 0020151853	2 x heat insulation straight 0020151853	Gas pipe, DN50 for 1 or 2 boilers 00201078676	4 x heat insulation straight 0020151854
Heat insulation, end cap 0020151854	Heat insulation, end cap 0020151854	Gas pipe, DN50 for 2 or 4 boilers 0020107867	Heat insulation, end cap 0020151854
		Flange (blank) gas DN50 0020151835	
		3 x heat insulation straight 0020151853	
		Heat insulation, end cap 0020151854	

Inline cascade rigs for ecoTEC plus 80, 100 and 120kW with DN65 hydraulics

Compatibility matrix

Model	1 x boiler	2 x boiler	3 x boiler	4 x boiler
ecoTEC plus 80kW	VCR-51 0020175291	VCR-52 0020175292	VCR-53 0020175293	VCR-54 0020175294
Plate heat exchanger		VCP2 PHE – C 240-40 0020175315		VCP3 PHE-C 360-70 002015316
ecoTEC plus 100kW	VCR-51 0020175291	VCR-52 0020175292	VCR-53 0020175293	#
Plate heat exchanger	VCP2 PHE – C 240-40 0020175315		VCP3 PHE-C 360-70* 002015316	#
ecoTEC plus 120kW	VCR-51 0020175291	VCR-52 0020175292	VCR-53 0020175293	#
Plate heat exchanger	VCP2 PHE – C 240-40 0020175315		VCP3 PHE-C 360-70 002015316	#

When cascading projects over 360kW please use DN100 rigs

* Check the required water flow volumes

Pack contents

Cascade 1 x boiler inline	Cascade 2 x boiler inline	Cascade 3 x boiler inline	Cascade 4 x boiler inline
VCR-51 0020175291	VCR-52 0020175292	VCR-53 0020175293	VCR-54 0020175294
Frame support cascade 0020151805	Frame support cascade 0020151805	Frame support cascade 0020151805	Frame support cascade 0020151805
Frame support for 1 or 2 boilers 0020151813	Hydraulic block, start up module 0020151816	Frame support for 1 or 2 boilers 0020151813	Hydraulic block, start up module 0020151816
Hydraulic block, start up module 0020151816	Frame support for 2 or 4 boilers 0020151814	Hydraulic block, start up module 0020151816	2 x frame support for 2 or 4 boilers 0020151814
Hydraulic block, extension 1 or 2 boilers 0020151818	Hydraulic block for 2 or 4 boilers 0020151820	Hydraulic block, extension 1 or 2 boilers 0020151818	2 x hydraulic block for 2 or 4 boilers 0020151820
Connector, pipe front 80/100/120 0020151822	2 x connector, pipe front 80/100/120 0020151822	Frame support for 2 or 4 boilers 020151814	4 x connector, pipe front 80/100/120 0020151822
Fittings pack, gas front 80/100/120 0020151838	2 x fittings pack, gas front 80/100/120 0020151838	Hydraulic block, extension 2 or 4 boilers 0020151820	4 x fittings pack, gas front 80/100/120 0020151838
Gas pipe DN50 for 1 or 2 boilers 0020107866	Gas pipe DN50 for 2 or 4 boilers 0020107867	3 x connector, pipe front 80/100/120 0020151822	2 x gas pipe DN50 for 2 or 4 boilers 0020107867
Flange (blank) gas DN50 0020151835	Flange (blank) gas DN50 0020151835	3 x fittings pack, gas front 80/100/120 0020151838	Flange (blank) gas DN50 0020151835
Heat insulation straight 0020151853	2 x heat insulation straight 0020151853	Gas pipe DN50 for 1 or 2 boilers 0020107866	4 x heat insulation straight 0020151853
Heat insulation, end cap 0020151854	Heat insulation, end cap 0020151854	Gas pipe DN50 for 2 or 4 boilers 0020107867	Heat insulation, end cap 0020151854
		Flange (blank) gas DN50 0020151835	
		3 x heat insulation, Hydraulic straight 0020151853	
		Heat insulation, end cap 0020151854	

NOTE: Dirt filtration and fully inhibited water quality must be maintained

Inline cascade rigs for ecoTEC plus 80, 100 and 120kW with DN100 hydraulics

Compatibility matrix

Model	1 x boiler	2 x boiler	3 x boiler	4 x boiler	5 x boiler	6 x boiler	7 x boiler	8 x boiler
ecoTEC plus 80kW	VCR-101 0020175298	VCR-102 0020175299	VCR-103 0020175300	VCR-104 0020175301	VCR-105 0020175302	VCR-106 0020175303	VCR-107 0020175304	VCR-108 0020175305
Plate heat exchanger	VCP4 PHE – C 480-90 0020175317						VCP5 PHE – C 600-120 0020175318	VCP6 PHE – C 720-170 0020175319
ecoTEC plus 100kW	VCR-101 0020175298	VCR-102 0020175299	VCR-103 0020175300	VCR-104 0020175301	VCR-105 0020175302	VCR-106 0020175303	VCR-107 0020175304	VCR-108 0020175305
Plate heat exchanger	VCP4 PHE – C 480-90 0020175317				VCP5 PHE – C 600-120 0020175318		VCP6 PHE – C 720-170 0020175319	#
ecoTEC plus 120kW	VCR-101 0020175298	VCR-102 0020175299	VCR-103 0020175300	VCR-104 0020175301	VCR-105 0020175302	VCR-106 0020175303	VCR-107 0020175304	VCR-108 0020175305
Plate heat exchanger	VCP4 PHE – C 480-90 0020175317				VCP5 PHE – C 600-120 0020175318	VCP6 PHE – C 720-170 0020175319	#	#

Contact your Regional Business Manager

Pack contents

Cascade 1 x boiler inline	Cascade 2 x boiler inline	Cascade 3 x boiler inline	Cascade 4 x boiler inline
VCR-101 0020175298	VCR-102 0020175299	VCR-103 0020175300	VCR-104 0020175301
Frame support cascade 0020151805	Frame support cascade 0020151805	Frame support cascade 0020151805	Frame support cascade 0020151805
Frame support for 1 or 2 boilers 0020151813	Frame support for 2 or 4 boilers 0020151817	Frame support for 2 or 4 boilers 0020151813	2 x frame support for 2 or 4 boilers 0020151814
Hydraulic block, start up module 0020151817	Hydraulic block, start up module 0020151814	Hydraulic block, start up module 0020151817	Hydraulic block, start up module 0020151817
Hydraulic block for 1 or 2 boilers 0020151819	Hydraulic block for 2 or 4 boilers 0020151821	Hydraulic block, extension 2 or 4 boilers 0020151819	2 x hydraulic block for 2 or 4 boilers 0020151821
Connector, pipe front 80/100/120 0020151822	2 x connector, pipe front 80/100/120 0020151822	Frame support for 1 or 2 boilers 0020151814	4 x connector, pipe front 80/100/120 0020151822
Fittings pack, gas front 80/100/120 0020151838	2 x fittings pack, gas front 80/100/120 0020151838	Hydraulic block for 1 or 2 boilers 0020151821	4 x fittings pack, gas front 80/100/120 0020151838
Gas pipe DN80 connection 1 or 2 boilers 0020107869	Gas pipe DN80 for 2 or 4 boilers 0020107870	3 x connector, pipe front 80/100/120 0020151822	2 x gas pipe DN80 for 2 or 4 boilers 0020107870
Flange (blank) gas DN80 0020151836	Flange (blank) gas DN80 0020151836	3 x fittings pack, gas front 80/100/120 0020151838	Flange (blank) gas DN80 0020151836
Heat insulation straight 0020151853	2 x heat insulation straight 0020151853	Gas pipe DN80 connection 1 or 2 boilers 0020107869	Heat insulation straight 0020151853
Heat insulation, end cap 0020151854	Heat insulation, end cap 0020151854	Gas pipe DN80 connection 2 or 4 boilers 0020107870	Heat insulation, end cap 0020151854
		Flange (blank) gas DN80 0020151836	
		3 x heat insulation straight 0020151853	
		Heat insulation, end cap 0020151854	

Pack contents continued

Cascade 5 x boiler inline	Cascade 6 x boiler inline	Cascade 7 x boiler inline	Cascade 8 x boiler inline
VCR-105 **0020175302**	**VCR-106** **0020175303**	**VCR-107** **0020175304**	**VCR-108** **0020175305**
Frame support cascade 0020151805	Frame support cascade 0020151805	Frame support cascade 0020151805	Frame support cascade 0020151805
Frame support for 1 or 2 boilers 0020151813	Hydraulic block, start up module 0020151817	Frame support for 1 or 2 boilers 0020151813	Hydraulic block, start up module 0020151817
Hydraulic block, start up module 0020151817	3 x frame support for 2 or 4 boilers 0020151814	Hydraulic block, start up module 0020151817	4 x frame support for 2 or 4 boilers 0020151814
Hydraulic block for 1 or 2 boilers 0020151819	3 x hydraulic block for 2 or 4 boilers 0020151821	Hydraulic block, extension 1 or 2 boilers 0020151819	4 x hydraulic block for 2 or 4 boilers 0020151821
2 x frame support for 2 or 4 boilers 0020151814	6 x connector, pipe front 80/100/120 0020151822	3 x frame support for 1 or 2 boilers 0020151814	8 x connector, pipe front 80/100/120 0020151822
2 x hydraulic block for 2 or 4 boilers 0020151821	6 x fittings pack, gas front 80/100/120 0020151838	3 x hydraulic block for 1 or 2 boilers 0020151821	8 x fittings pack, gas front 80/100/120 0020151838
5 x connector, pipe front 80/100/120 0020151822	3 x gas pipe DN80 for 2 or 4 boilers 0020107870	7 x connector, pipe front 80/100/120 0020151822	4 x gas pipe DN80 for 2 or 4 boilers 0020107870
5 x fittings pack, gas front 80/100/120 0020151838	Flange (blank) gas DN80 0020151836	7 x fittings pack, gas front 80/100/120 0020151838	Flange (blank) gas DN80 0020151836
Gas pipe DN80 connection 1 or 2 boilers 0020107869	6 x heat insulation straight 0020151853	Gas pipe DN80 connection 1 or 2 boilers 0020107869	8 x heat insulation straight 0020151853
2 x gas pipe DN80 connection 2 or 4 boilers 0020107870	Heat insulation, end cap 0020151854	3 x gas pipe DN80 connection 2 or 4 boilers 0020107870	Heat insulation, end cap 0020151854
Flange (blank) gas DN80 0020151836		Flange (blank) gas DN80 0020151836	
5 x heat insulation straight 0020151853		7 x heat insulation straight 0020151853	
Heat insulation, end cap 0020151854		Heat insulation, end cap 0020151854	

Back-to-back rigs

Key	ecoTEC plus 48kW	ecoTEC plus 64kW	ecoTEC plus 80kW	ecoTEC plus 100kW	ecoTEC plus 120kW
A	1650mm (for mechanical NRV add 130mm)		1750mm (for mechanical NRV add 200mm, for motorised NRV add 130mm)		
B	900mm (if no NRV, header size needs to be increased)		750mm (if no NRV, header size needs to be increased)		
C	760mm including insulation				

Clearances

600mm in front of each boiler for service access.

End cap insulation + 70mm.

Low-loss header or Plate heat exchangers - dimensions according to model.

All dimensions +/- 20mm

Back-to-back rigs for ecoTEC plus 48 and 64kW with DN65 hydraulics

Compatibility matrix

Model	2 x boiler	3 x boiler	4 x boiler
ecoTEC plus 48 and 64kW	VCBB-462 0020201766	N/A	VCBB-464 0020201767
Plate heat exchanger	VCP2 PHE – C 240-40 0020175315	N/A	VCP2 PHE – C 240-40 0020175315

Pack contents

Cascade 2 x boiler back-to-back		Cascade 4 x boiler back-to-back	
VCBB-462 0020201766		VCBB-464 0020201767	
Frame support cascade	0020151805	Frame support cascade	0020151805
Frame support for 1 or 2 boilers	0020151813	Hydraulic block, start up module	0020151814
Hydraulic block, start up module	0020151816	Frame support for 2 or 4 boilers	0020151816
Hydraulic block for 1 or 2 boilers	0020151818	Hydraulic block for 2 or 4 boilers	0020151820
Connector, pipe front 45	0020151823	2 x connector, pipe front 45	0020151823
Fittings pack, gas front 45	0020151839	2 x fittings pack, gas front 45	0020151839
Fittings pack, gas back 45	0020151825	2 x fittings pack, gas back 45	0020151825
Connector, pipe back 45	0020151845	2 x connector, pipe back 45	0020151845
Gas pipe, DN50 for 1 or 2 boilers	0020107866	Gas pipe, DN50 for 2 or 4 boilers	0020107867
Flange (blank) gas DN50	0020151835	Flange (blank) gas DN50	0020151835
Heat insulation straight	0020151853	2 x heat insulation straight	0020151853
Heat insulation, end cap	0020151854	Heat insulation, end cap	0020151854
Feet pair B	0020151815	Feet pair B	0020151815

Back-to-back rigs for ecoTEC plus 80, 100 and 120kW with DN65 hydraulics

Compatibility matrix

Model	2 x boiler	3 x boiler	4 x boiler
ecoTEC plus 80kW	VCBB-52 0020175315	VCBB-53 0020175296	VCBB-54 0020175297
Plate heat exchanger	VCP2 PHE – C 240-40 0020175315	VCP2 PHE - C 240-40 0020175315	VCP3 PHE - C 360-70 0020175316
ecoTEC plus 100kW	VCBB-52 0020175295	VCBB-53 0020175296	*
Plate heat exchanger	VCP2 PHE – C 240-40 0020175315	VCP3 PHE - C 360-70 002015316	*
ecoTEC plus 120kW	VCBB-52 0020175295	VCBB-53 0020175296	*
Plate heat exchanger	VCP2 PHE - C 240-40 0020175315	VCP3 PHE - C 360-70 002015316	*

* When cascading projects over 360kW please use DN100 rigs

Pack contents

Cascade 2 x boiler back-to-back	Cascade 3 x boiler back-to-back	Cascade 4 x boiler back-to-back
VCBB-52 0020175295	VCBB-53 0020175296	VCBB-54 0020175297
Frame support cascade 0020151805	Frame support cascade 0020151805	Frame support cascade 0020151805
Frame support for 1 or 2 boilers 0020151813	Support for 2 or 4 boilers 0020151814	Support for 2 or 4 boilers 0020151814
Hydraulic block, start up module 0020151816	Hydraulic block, start up module 0020151816	Hydraulic block, start up module 0020151816
Hydraulic block for 1 or 2 boilers 0020151818	Hydraulic block for 2 or 4 boilers 0020151820	Hydraulic block for 2 or 4 boilers 0020151820
Connector, pipe front 80/100/120 0020151822	2 x connector, pipe front 80/100/120 0020151822	2 x connector, pipe front 80/100/120 0020151822
Fittings pack, gas front 80/100/120 0020151838	2 x fittings pack, gas front 80/100/120 0020151838	2 x fittings pack, gas front 80/100/120 0020151838
Fittings pack, gas back 80/100/120 0020151844	Fittings pack, gas back 80/100/120 0020151844	2 x fittings pack, gas back 80/100/120 0020151844
Connector, pipe back 80/100/120 0020151824	Connector, pipe back 80/100/120 0020151824	2 x connector, pipe back 80/100/120 0020151824
Gas pipe DN50 for 1 or 2 boilers 0020107866	Gas pipe DN50 for 2 or 4 boilers 0020107867	Gas pipe DN5 for 2 or 4 boilers 0020107867
Flange (blank) gas DN50 0020151835	Flange (blank) gas DN50 0020151835	Flange (blank) gas DN50 0020151835
Heat insulation straight 0020151853	2 x heat insulation straight 0020151853	2 x heat insulation straight 0020151853
Heat insulation, end cap 0020151853	Heat insulation, end cap 0020151853	Heat insulation, end cap 0020151853
Feet pair B 0020151815	Feet pair B 0020151815	Feet pair B 0020151815

Back-to-back rigs for ecoTEC plus 80, 100 and 120kW with DN100 hydraulics

Compatibility matrix

Model	2 x boiler	4 x boiler	6 x boiler	8 x boiler
ecoTEC plus 80kW	VBB-102 0020175306	VBB-104 0020175307	VBB-106 0020175308	VBB-108 0020175309
Plate heat exchanger	VCP4 PHE - C 480-90 0020175317			VCP6 PHE - C 720-170 0020175319
ecoTEC plus 100kW	VBB-102 0020175306	VBB-106 0020175308	VBB-108 0020175309	VBB-108 0020175309
Plate heat exchanger	VCP4 PHE - C 480-90 0020175317		VCP5 PHE – C 600-120 0020175318	#
ecoTEC plus 120kW	VBB-102 0020175306	VBB-104 0020175307	VBB-106 0020175308	VBB-108 0020175309
Plate heat exchanger	VCP4 PHE - C 480-90 0020175317		VCP6 PHE - C 720-170 0020175319	#

Contact your Regional Business Manager

Pack contents

Cascade 2 x boiler back-to-back	Cascade 4 x boiler back-to-back	Cascade 6 x boiler back-to-back	Cascade 8 x boiler back-to-back
VBB-102 0020175306	VBB-104 0020175307	VBB-106 0020175308	VBB-108 0020175309
Frame support cascade 0020151805	Frame support cascade 0020151805	Frame support cascade 0020151805	Frame support cascade 0020151805
Frame support for 1 or 2 boilers 0020151813	Support for 2 or 4 boilers 0020151814	Support for 1 or 2 boilers 0020151813	2 x support for 2 or 4 boilers 0020151814
Hydraulic block, start up module 0020151817	Hydraulic block, start up module 0020151817	Hydraulic block, start up module 0020151817	Hydraulic block, start up modules 0020151817
Hydraulic block for 1 or 2 boilers 0020151819	Hydraulic block for 2 or 4 boilers 0020151821	Frame support for 2 or 4 boilers 0020151814	2 x hydraulic block for 2 or 4 boilers 0020151821
Connector, pipe front 80/100/120 0020151822	2 x connector, pipe front 80/100/120 0020151822	Hydraulic block for 1 or 2 modules 0020151819	4 x connector, pipe front 80/100/120 0020151822
Fittings pack, gas front 80/100/120 0020151838	2 x fittings pack, gas front 80/100/120 0020151838	Hydraulic block for 2 or 4 boilers 0020151821	4 x fittings pack, gas front 80/100/120 0020151838
Fittings pack, gas back 80/100/120 0020151844	2 x fittings pack, gas back 80/100/120 0020151844	3 x connector, pipe front 80/100/120 0020151822	4 x fittings pack, gas back 80/100/120 0020151844
Connector, pipe back 80/100/120 0020151824	2 x connector, pipe back 80/100/120 0020151824	3 x fittings pack, gas front 80/100/120 0020151838	4 x connector, pipe back 80/100/120 0020151824
Gas pipe DN80 for 1 or 2 boilers 0020107869	Gas pipe DN80 for 2 or 4 boilers 0020107870	3 x fittings pack, gas back 80/100/120 0020151844	2 x gas pipe DN80 for 2 or 4 boilers 0020107870
Flange (blank) gas DN80 0020151836	Flange (blank) gas DN80 0020151836	3 x connector, pipe back 80/100/120 0020151824	Flange (blank) gas DN80 0020151836
Heat insulation straight 0020151853	2 x heat insulation straight 0020151853	Gas pipe DN80 for 2 or 4 boilers 0020107870	4 x heat insulation straight 0020151853
Heat insulation, end cap 0020151854	Heat insulation, end cap 0020151854	Flange (blank) gas DN80 0020151836	Heat insulation, end cap 0020151854
Feet pair B 0020151815	Feet pair B 0020151815	Heat insulation straight 0020151853	2 x feet pair B 0020151815
		Feet pair B 0020151815	

Cascade rigs around corner systems adapters

Heat insulation, module corner

Breakdown of items included in an around a corner pipe kit for 80 - 120 rigs with DN100 hydraulics

Around corner pipe kit for DN100 hydraulics	Article number
DN100 Around corner pipe kit and insulation set	0020176695
Pack contents	
Pipe elbows DN100 flow and return	0020151834
Heat insulation, module corner	0020151856
Pipe elbow DN80/PN16 gas	0020151837

Cascade rigs without hydraulics

Model	Article number	Dimensions mm		
		H	W	D
VCR x 1	0020175287	1750	630	540 (Allow 480mm behind if rear feet are to be fitted)
VCR x 2	0020175288		1210	
VCR x 3	0020175289		1790	
VCR x 4	0020175290		2370	

Pack contents

Cascade 1 x boiler inline (no hydraulic)	Cascade 2 x boiler inline (no hydraulic)	Cascade 3 x boiler inline (no hydraulic)	Cascade 4 x boiler inline (no hydraulic)
VCR x 1 0020175287	VCR x 2 0020175288	VCR x 3 0020175289	VCR x 4 0020175290
Frame support cascade 0020151805	Frame support cascade 0020151805	Frame support cascade 0020151805	Frame support cascade 0020151805
Frame support with extension for 1 inline 0020151813	Frame support with extension for 2 inline 0020151814	Frame support with extension for 1 inline 0020151813	2 x frame support with extension for 2 inline 0020151814
Feet pair 0020151815	Feet pair 0020151815	Frame support with extension for 2 inline 0020151814	2 x feet pair 0020151815
		2 x feet pair 0020151815	

NOTE: Boilers can be mounted back-to-back doubling the number of boilers that each rig can support.
Additional feet can be fitted at the rear of the frames when free standing (applies to all Vaillant cascade rigs).

Cascade flue systems

Overview

When specifying and installing a cascade rig system, it is important that the system accessories and components offer the same level of versatility and compatibility. The extensive selection of flue accessories enable systems to be designed in a variety of configurations: inline, around a corner and back-to-back and perfectly compliment the cascade rig range. The flue accessories portfolio also enables installers and specifiers to choose whether a system can exit to the left or the right of the rig, depending on the space available.

All flue installations must comply with the current Gas Safety (Installation and Use) regulations. Vaillant strongly recommends advice should be sought from a specialist flue installation company to ensure that each installation fulfils all pertinent national and local regulations, codes and standards.

NOTE: For all systems above 70kW, flue systems must be designed and installed according to IGEM UP/10. Above 333kW net heat input the Clean Air Act must be adhered to and system will need approval of local authority.

Flue gas non-return valves for ecoTEC plus 48 and 64kW

ecoTEC 48 and 64kW non-return valves

When the ecoTEC plus 48 and 64W boilers are installed in any cascade formation, it is vital that a flue gas non-return flap valve is fitted to each boiler, to ensure that gas does not re-enter the boiler. The only circumstances where a non-return flap is not necessary is if the chimney is designed to EN 13384-2 and the natural draught is greater than the pressure losses. A mechanical 80mm non-return flap valve is available as an accessory for third party flues working in conjunction with the ecoTEC plus 48 and 64kW boilers.

When connecting the ecoTEC plus 48 and 64kW boilers to Vaillant's 80/110mm cascade flueing accessories, a non-return flap valve adapter is required. An adapter without NRV will also be available from July 2018.
See page 53 for installation details.

80/80mm NRV for connection to third party flues
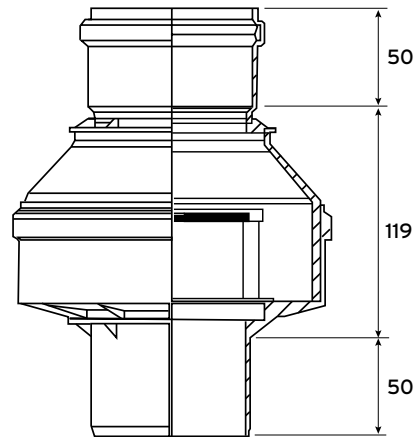
Model	Article number
80/80mm	303960

80/110mm NRV for connection to Vaillant cascade flue systems
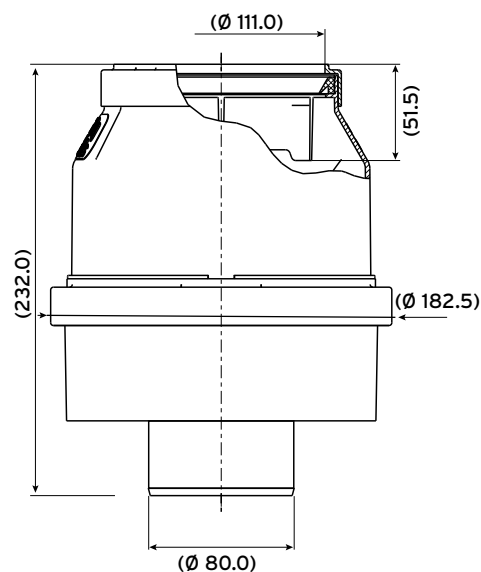
Model	Article number
80/110mm	002025899

Flue gas non-return valves for ecoTEC plus 80, 100 and 120kW

ecoTEC plus 80, 100 and 120kW non-return valves

When installing ecoTEC plus 80, 100 and 120kW in cascade, a flue non-return flap valve will need to be fitted as part of the installation. The 110mm mechanical flue non-return flap valve or the shorter motorised non-return flap valve are easily installed on top of each boiler prior to connecting the flue header. When dealing with plantrooms with restricted heights, the motorised non-return flap valve kit has a lower profile and can be specified in place of the mechanical flap valve, however, these should not be mixed within an array. The motorised flap valve comes supplied with VR 40 multi-functional 2-in-7 module. See page 53 for installation details.

Flue systems for high-output cascades may require guidance from a specialist flue company to ensure that a system is designed and sized correctly in accordance with all relevant regulations, codes and standards. For systems over 70kW, the current edition of the IGEM/UP/10 guide should be followed and for larger systems over 333kW net, the Clean Air Act and any local council approvals that may be required should be followed.

The IGEM/UP/10 risk assessment can be used to determine the most suitable position for larger flue system termination positions.

110mm/110mm mechanical NRV
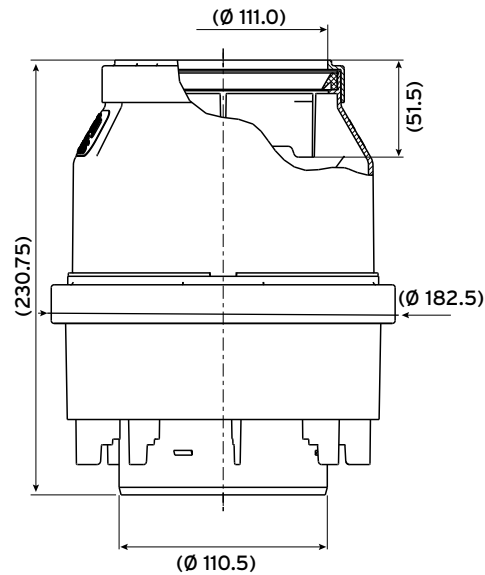
Model	Article number
110/110mm mechanical	0020207200

110mm/110mm motorised NRV
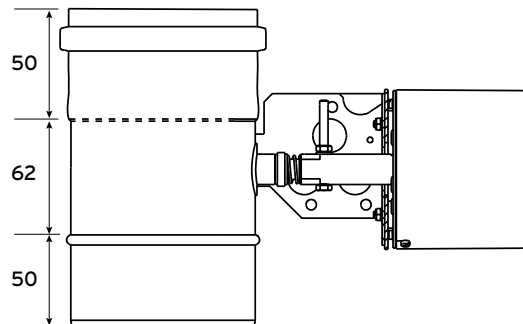
Model	Article number
110/110mm motorised	0020177845

Cascade flue headers for inline rigs

When ecoTEC plus boilers are fitted and flued in cascade formation, a flue gas non-return flap valve should be fitted to each boiler to ensure that flue gas products cannot re-enter and escape via other boilers, which may not be running. See pages 49 and 50 for non-return flap valve options.

Requirements for cascade flue with an NRV

Maximum cascade flue length with NRV						
Number of boilers	Diameter (mm)	Entire flue length (m)				
		ecoTEC plus 48kW	ecoTEC plus 64kW	ecoTEC plus 80kW	ecoTEC plus 100kW	ecoTEC plus 120kW
2	160	2 - 50	2 - 50	2 - 50	2 - 50	2 - 50
3	160	2 - 50	2 - 50	2 - 50	N/A	N/A
	200	N/A	N/A	N/A	2 - 50	2 - 50
4	160	2 - 50	2 - 35	N/A	N/A	N/A
	200	N/A	2 - 50	2 - 50	2 - 50	N/A
	250	N/A	N/A	N/A	N/A	2 - 50
5	160	2 - 33	N/A	N/A	N/A	N/A
	200	2 - 50	2 - 50	N/A	N/A	N/A
	250	N/A	N/A	2 - 50	2 - 50	2 - 50
6	200	2 - 50	2 - 50	N/A	N/A	N/A
	250	N/A	N/A	2 - 50	2 - 50	2 - 50

The only circumstances where a flue non-return flap may not be necessary is where the chimney is designed to EN 13384-2, and the natural draught is greater than the pressure losses. For these bespoke systems the flue design engineer must provide certification of flue suitability to be affixed within the plant room before first ignition of the boilers.

Vaillant requires that the flue design is such that each individual boilers flue enters the flue header at the side and angled into the header, so that the output from each appliance will assist the flow of flue products towards the flue termination. The header then needs only one condensate disposal connection at the low point of the flue header. Thus, preventing any single boiler from being the exit route for high volumes of condensate from the flue system.

Individual disconnection of any single boiler should be provided to allow for future maintenance works without intervention of specialist services.

Vaillant offers mechanical 80/80mm as well as 80/110mm flap valves for use with the ecoTEC plus 48 and 64kW models as well as either mechanical or electrical 110mm flaps for the ecoTEC plus 80, 100 and 120kW models.

Cascade flue headers for inline rigs
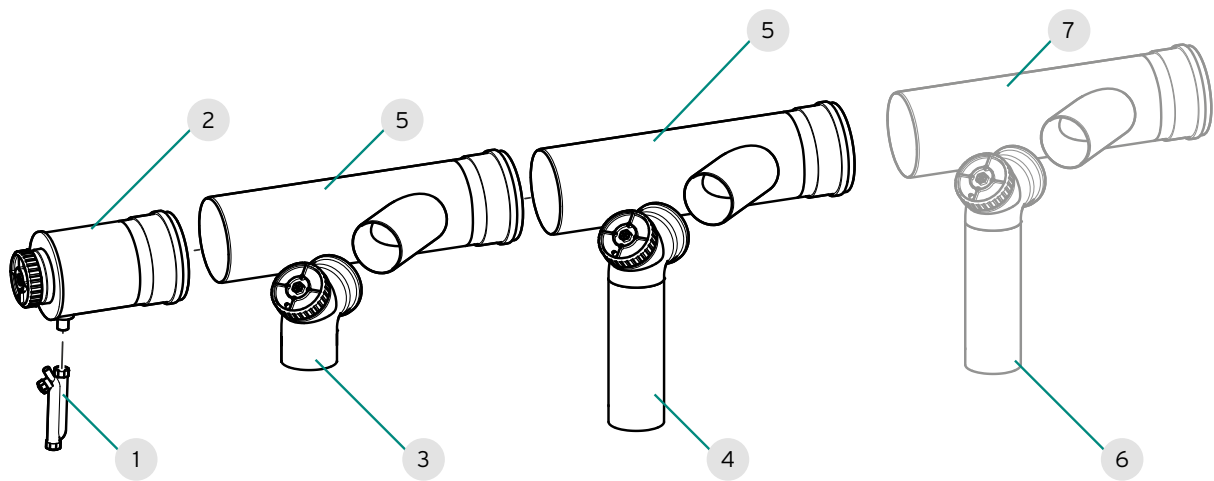
Key	Basic connection set - in-line
1	Siphon (1 pc)
2	Terminal with condensate discharge
3	Inspection elbow, 110mm (W) x 140mm (H)
4	Inspection elbow, 110mm (W) x 390mm (H)
5	Flue pipe with oblique entry (2 pcs)

Key	Expansion set - additional boilers in-line
6	Inspection elbow, 110mm (W) x 390mm (H)
7	Flue pipe with oblique entry (1 pc)

NOTE: Increase 110mm pipe by 30mm per boiler to gain minimum fall

Inline flue kits

Basic connection set - inline	Article number
160mm / 225mm up to 240kW	0020106412
200mm / 300mm up to 400kW	0020106428
250mm / 350mm over 400kW - 720kW	0020106553

Expansion set - additional boilers inline	Article number
160mm / 225mm up to 240kW	0020106413
200mm / 300mm up to 400kW	0020106429
250mm / 350mm over 400kW - 720kW	0020106554

Accessories	Article number
Bracket for cascade flue header	0020107879

Cascade flue header bracket requirements - inline cascades							
Number of boilers Maximum 720kW	2	3	4	5	6	7	8
Number of brackets required	2	3	3	4	4	5	5

Cascade flue headers for inline rigs

For inline flue systems, the cascade flue and header must be installed with a minimum fall back to the boilers of 3° (50mm per metre); this means that the 110mm pipe from each boiler needs to increase in length by 33mm.

ecoTEC plus 80, 100 and 120kW

Motorised flap 110/110mm
0020177845

Mechanical flap 110/110mm
0020177845
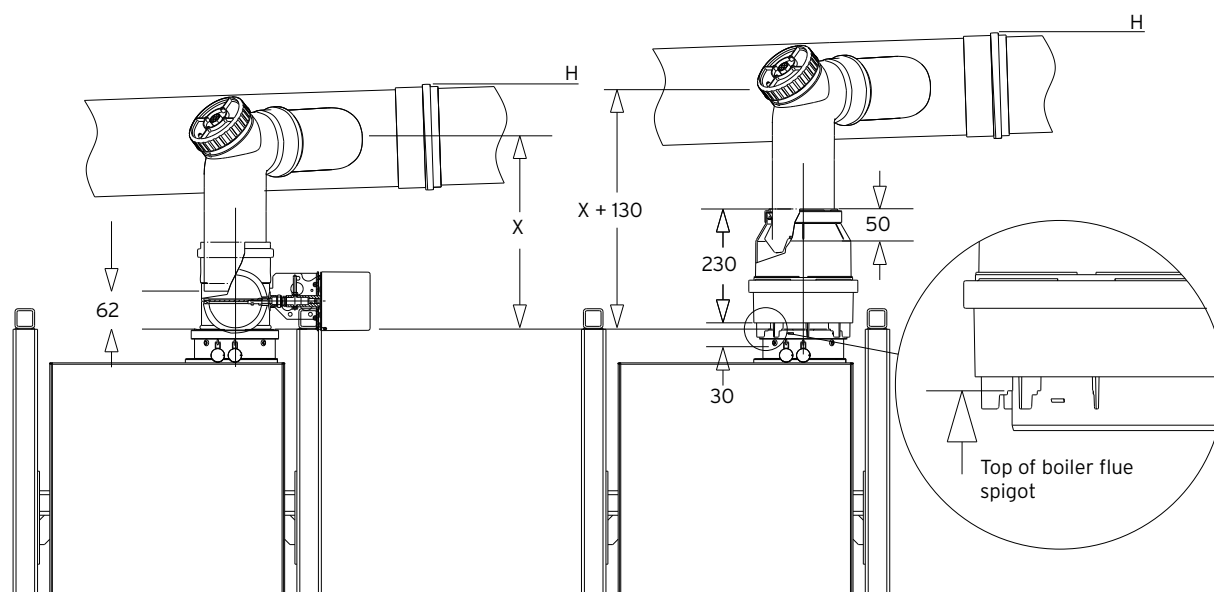
X is the minimum height of the first boiler flue. When fitted with the shortest 87° 110mm elbow and the electrical flap, this is 300mm. The mechanical flap is 100mm taller. This height will increase with each additional boiler to create the required 3° (50mm per metre) fall.

ecoTEC plus 48 and 64kW

Motorised flap 80/110mm
002025899
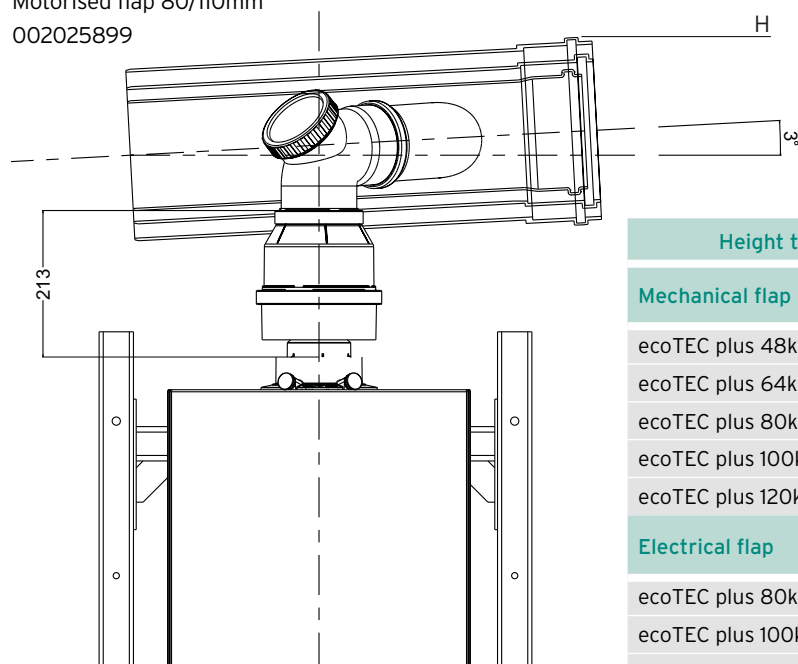
Height to top of flue header from floor (H)			
Mechanical flap	Header 160mm	Header 200mm	Header 250mm
ecoTEC plus 48kW	2040	2060	2085
ecoTEC plus 64kW	2040	2060	2085
ecoTEC plus 80kW	2120	2142	2165
ecoTEC plus 100kW	2120	2142	2165
ecoTEC plus 120kW	2120	2142	2165
Electrical flap	Header 160mm	Header 200mm	Header 250mm
ecoTEC plus 80kW	2065	2085	2110
ecoTEC plus 100kW	2065	2085	2110
ecoTEC plus 120kW	2065	2085	2110

NOTE: For inline cascade formations add 30mm per boiler.
For additional flue sections add 50mm per metre

53

Cascade flue headers for back-to-back rigs

Key	Basic connection set - back-to-back
1	Terminal with condensate discharge
2	Siphon (1 pc)
3	45° elbow, 110mm diameter
4	Inspection elbow, 110mm (W) x 140mm (H)
5	Inspection elbow, 110mm (W) x 390mm (H)
6	Flue pipe with two oblique entries
7	Flue pipe, 110mm x 250mm (L)
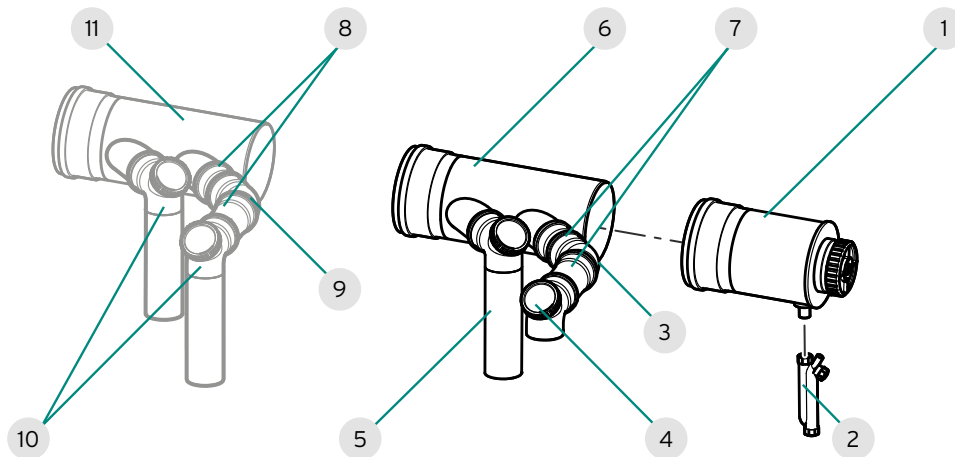
Key	Expansion set - boilers back-to-back
8	Flue pipe, 110mm x 250mm (L)
9	45° elbow, 110mm diameter
10	Inspection elbow, 110mm (W) x 390mm (H)
11	Flue pipe with two oblique entries

Required length for the 110mm diameter flue pipes
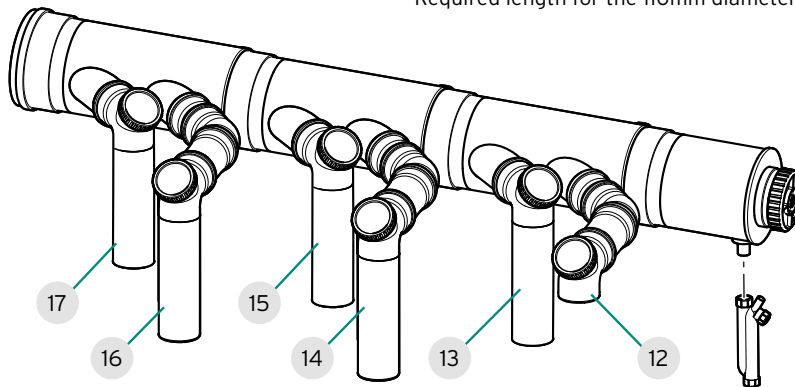
Unit 12 has the shortest elbow with length A. The other inspection elbow lengths are indicated in the following table.

Unit	Length of flue pipe (mm)
12	A
13	A + 62
14	A + 30
15	A + 92
16	A + 61
17	A + 123

Length differences for 110mm diameter flue pipes

Cascade flue headers for back-to-back rigs

Back-to-back flue kits

Basic connection set - back-to-back	Article number
160mm / 225mm up to 240kW	0020106414
200mm / 300mm up to 400kW	0020106430
250mm / 350mm over 400kW - 720kW	0020106555

Expansion set - additional boilers back-to-back	Article number
160mm / 225mm up to 240kW	0020106415
200mm / 300mm up to 400kW	0020106431
250mm / 350mm over 400kW - 720kW	0020106556

NOTE: For odd number boilers using back to back rigs e.g. 3, a single inline expansion set should be used instead of an additional back to back expansion set.

Cascade flue header bracket requirements - back-to-back cascades							
Number of boilers Maximum 720kW	2	3	4	5	6	7	8
Number of brackets required	2	2	2	3	3	3	3

Cascade flue accessories

Internal flue pipe 110mm PP - Boiler to header (if required)

Description	Article number
500mm extension	0020106384
1000mm extension	0020106385
2000mm extension	0020106386
45° elbow (pack of 1)	0020106391
Fastening clamps (pack of 5)	0020106395

Internal flue pipe 160mm PP - Header to flue system (if required)

Description	Article number
Cascade flue 500mm extension	0020095545
Cascade flue 1000mm extension	0020095546
Cascade flue 2000mm extension	0020095547
Cascade flue 87° elbow (pack of 1)	0020095552
Cascade flue 45° elbow (pack of 1)	0020095556
Flue clips (including 400mm stud)	0020151162

Internal flue pipe 200mm PP - Header to flue system (if required)

Description	Article number
Cascade flue 500mm extension	0020095549
Cascade flue 1000mm extension	0020095550
Cascade flue 2000mm extension	0020095551
Cascade flue 87° elbow (pack of 1)	0020095553
Cascade flue 45° elbow (pack of 1)	0020095557
Flue clips (including 400mm stud)	0020151163

Internal flue pipe 250mm PP - Header to flue system (if required)

Description	Article number
Cascade flue 500mm extension (250mm Dia) - PP	0020145507
Cascade flue 1000mm extension	0020106566
Cascade flue 2000mm extension	0020106567
Cascade flue 87° elbow (pack of 1)	0020106563
Cascade flue 45° elbow (pack of 1)	0020106564
Flue clips (including 400mm stud)	0020151164

Corner cascade flues

Once the output of a cascade system has been ascertained, the specification of the internal and external flue requirements can be determined. Vaillant supplies a variety of diameters in its flue components range, including all appropriate fixings, tiles, collars and pipes. It is vital that the diameter of the flue components is correctly matched to the outputs required. Please refer to the flue table to ensure correct components are selected to complete the flue to the necessary dimensions.

Diameter	Components	Geometry
160mm Up to 240kW	2 x 45° elbow Article number: 0020095556 1 x 500mm extension Article number: 0020095545 1 x 1000mm extension Article number: 0020095546	
200mm Up to 400kW	2 x 45° elbow Article number: 0020095557 2 x 500mm extension Article number: 0020095545	
250mm Up to 720kW	2 x 45° elbow Article number: 0020106564 1 x 500mm extension Article number: 0020145507	

External cascade facades

Once the output of a cascade system has been ascertained, the specification of the internal and external flue requirements can be determined. Vaillant can supply a range of flue components including pipe and fittings in sizes up to 250mm for internal use and within 350mm stainless steel for outer facade pipe.

These, along with additional accessories such as fixing brackets, flat roof and pitched roof weather ring collars, enable a complete cascade flue system to be ordered for your project. It is vital that the diameter of the flue components is correctly matched to the outputs required.

Key	Stainless steel facade flue up to 240kW 160mm PP / 225mm Stainless steel	Article number
A	Bird Protection grid DN160	0020230630
B	Terminal - 160mm / 225mm	0020095583
C	Vertical through roof section 225mm	0020095581
D	Roof tile 225mm 25-35°	0020130600
E	Collar for flat roof 160mm	0020095587
F	Bend 45°	0020095544
G	Extension 500mm	0020095577
G	Extension 1000mm	0020095579
H	Wall bracket (stainless steel) 160mm	0020095575
J	Pipe clamp 225mm (one per extension)	0020095540
K	Support kit 160mm / 225mm facade	0020095573

Key	Stainless steel facade flue up to 400kW 200mm PP / 300mm Stainless steel	Article number
A	Bird protection grid DN200	0020228943
B	Terminal 200/300mm	0020095584
C	Vertical through roof section 300mm	0020095582
D	Roof tile 300mm - 25-35°	0020130602
E	Collar for flat roof	0020095588
F	Elbow 45°	0020095548
G	Extension 500mm	0020095578
G	Extension 1000mm	0020095580
H	Wall bracket (stainless steel)	0020095576
J	Pipe clamp 300mm (one per extension)	0020095536
K	Support set 200/300mm facade	0020095574

Key	Stainless steel facade flue over 400kW 250mm PP / 350mm Stainless steel	Article number
A	Bird protection grid DN250	0020231158
B	Terminal - 250 / 350mm	0020108008
C	Vertical through roof section 350mm	0020108007
D	Roof tile 350mm - 25-35°	0020145573
E	Collar for flat roof	0020108013
F	Elbow 45°	0020108009
G	Extension 500mm	0020108005
G	Extension 1000mm	0020108006
H	Wall bracket (stainless steel)	0020106559
J	Pipe clamp 350mm (one per extension)	0020108011
K	Support kit 250/350mm facade	0020106434

Concentric stainless steel facade flue

NOTE: When going through a wall to outside use a 500mm stainless steel extension which acts as a sleeve to connect onto support kit elbow.

Plate heat exchangers for cascade installations

Overview

All Vaillant cascaded systems and standalone installations above 70kW must be installed with a plate heat exchanger. Vaillant's plate heat exchanger range is the perfect solution for separating the system water from the boiler, thus protecting the boiler and preventing downtime of the heating system. Vaillant plate heat exchangers come with insulation, are easy to install and are directly compatible with Vaillant cascade rig systems to prevent unnecessary fabrication and alterations during installation onsite. For systems requiring different temperatures, please see page 62 for the flow rate and pressure loss graphs. The system designer will need to suitably size the pump to achieve the necessary flow rates. For requirements outside of those specified in the graphs and technical tables, please contact your Vaillant Regional Business Manager with full details of your system requirements.

Plate heat exchangers for up to 720kW

Boiler models	Plate heat exchanger	kW
ecoTEC plus 48 / 64 / 80 / 100 / 120 models up to 120kW output. Not using Vaillant cascade hydraulics (1 - 1 $\frac{1}{4}$" BSP). See pages 34 and 35 for more information.	PHE S 120-70	120
ecoTEC plus 48 / 64 / 80 / 100 / 120 models up to 240 to 360kW output for each plate. When using Vaillant cascade hydraulics	PHE C 240-40	240
	PHE C 360-70	360
ecoTEC plus 80 / 100 / 120 models up to 480 or 720kW output for each plate. When using Vaillant cascade hydraulics	PHE C 480-90	480
	PHE C 600-120	600
	PHE C 720-170	720

NOTE: System design of Δt 20

Plate heat exchangers technical specifications

	PHE C 240-40	PHE C 360-70	PHE C 480-90	PHE C 600-120	PHE C 720-170
Article number	0020175315	0020175316	0020175317	0020175318	0020175319
Material					
Connection	Flange connection DN65 / PN6		Flange connection DN80 / PN6		
Weight (kg)	40.80	57.00	70.92	87.12	114.12
Plates	40	70	90	120	170
Volume in litres (primary side)	4.20	7.51	9.72	13.04	18.56
Volume in litres (secondary side)	4.42	7.74	9.95	13.26	18.79
Maximum operating pressure MPa (bar)	0.6 (6)				

Dimensions
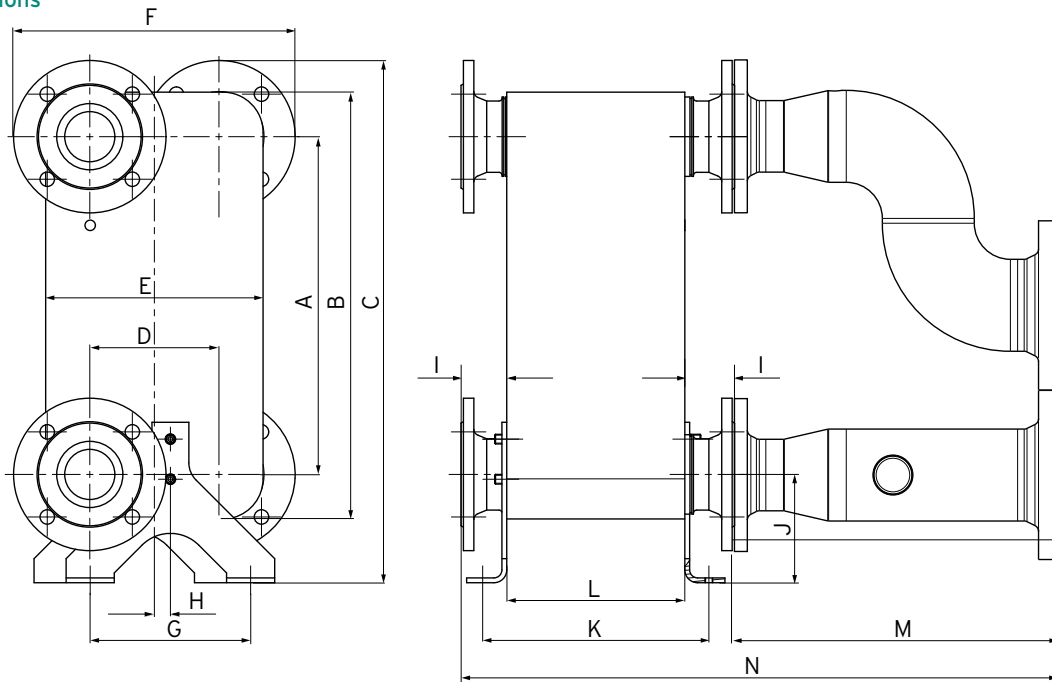
Plate Heat Exchanger Set	Unit	A	B	C	D	E	F	G	H	I	J	K	L	M	N
VCP2 PHE C240-40 excluding DN65 insulation 240kW d20	mm			636			321			86		175	105		677
VCP3 PHE C360-70 excluding DN65 insulation 360kW d20	mm											246	176		748
VCP4 PHE C480-90 excluding DN100 insulation 480kW d20	mm	421	532		161	271		200	20		135	292	222	400	794
VCP5 PHE C600-120 excluding DN100 insulation 600kW d20	mm			651			351			62		362	292		864
VCP6 PHE C720-170 excluding DN100 insulation 720kW d20	mm											479	409		981

System flow rates at various ΔT

Model	Required ΔT	Water flow volumes	
ecoTEC plus	K	l/hr	m^3/hr
48	11	3547	3.547
64	11	4656	4.656
80	11	6258	6.258
100	11	7804	7.804
120	11	9349	9.349
48	15	2601	2.601
64	15	3414	3.414
80	15	4390	4.390
100	15	5474	5.474
120	15	6558	6.558
48	20	1951	1.951
64	20	2561	2.561
80	20	3442	3.442
100	20	4292	4.292
120	20	5142	5.142
48	23	1697	1.697
64	23	2227	2.227
80	23	2863	2.863
100	23	3570	3.570
120	23	4277	4.277
48	28	1394	1.394
64	28	1829	1.829
80	28	2352	2.352
100	28	2932	2.932
120	28	3513	3.513

Flow rate and pressure loss chart - Primary side

Model kW - plates		Article number
PHE S 120 - 70		0020137069
PHE C 240 - 40		0020175315
PHE C 360 - 70		0020175316
PHE C 480 - 90		0020175317
PHE C 600 - 120		0020175318
PHE C 720 - 170		0020175319

KPA X 10 = mbar

Mass Flow [m³/h]
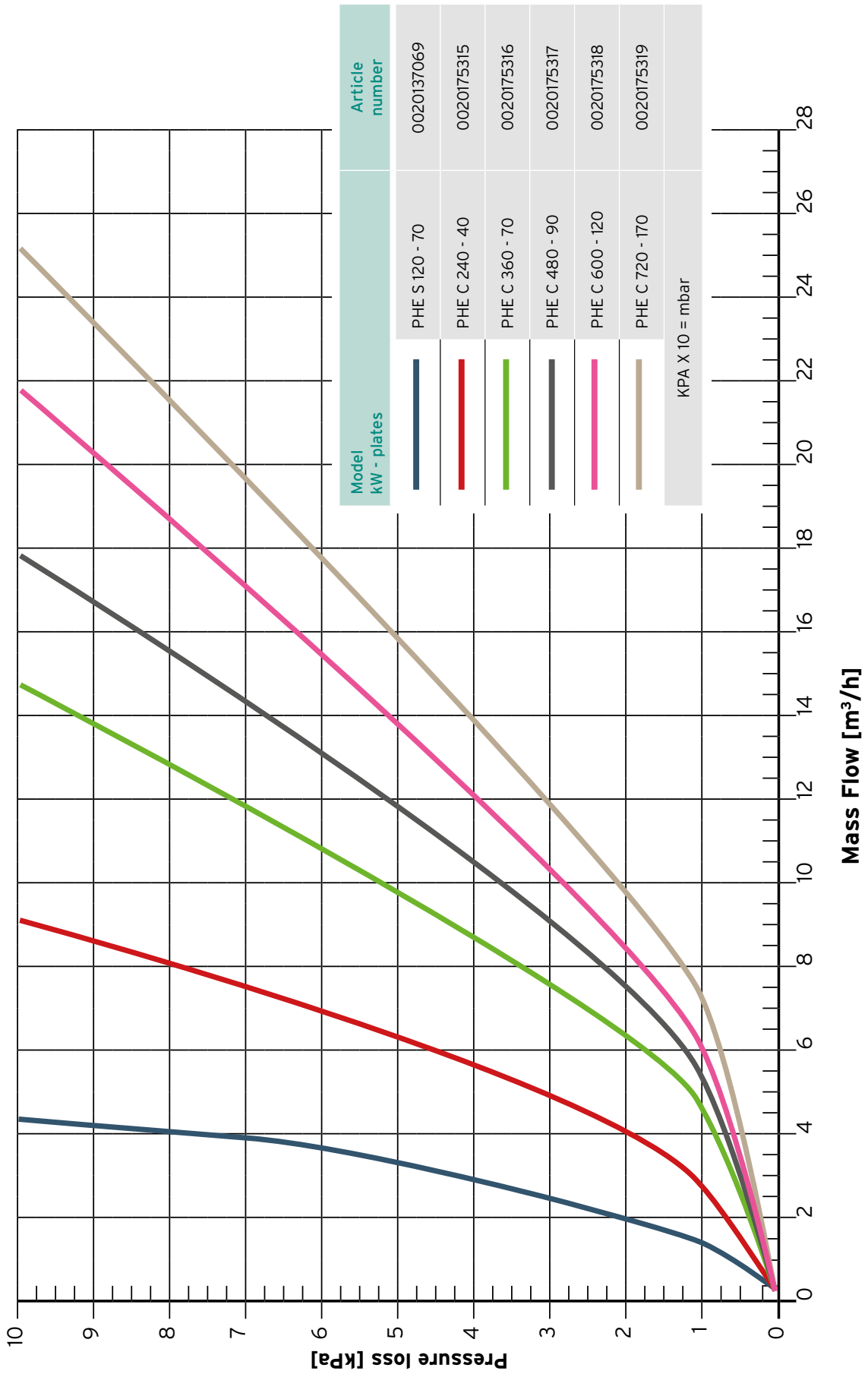
Pressure loss [kPa]

Flow rate and pressure loss chart - Secondary side

Model kW - plates		Article number
PHE S 120 - 70		0020137069
PHE C 240 - 40		0020175315
PHE C 360 - 70		0020175316
PHE C 480 - 90		0020175317
PHE C 600 - 120		0020175318
PHE C 720 - 170		0020175319
KPA X 10 = mbar		

Pressure loss [kPa] vs **Mass Flow [m³/h]**
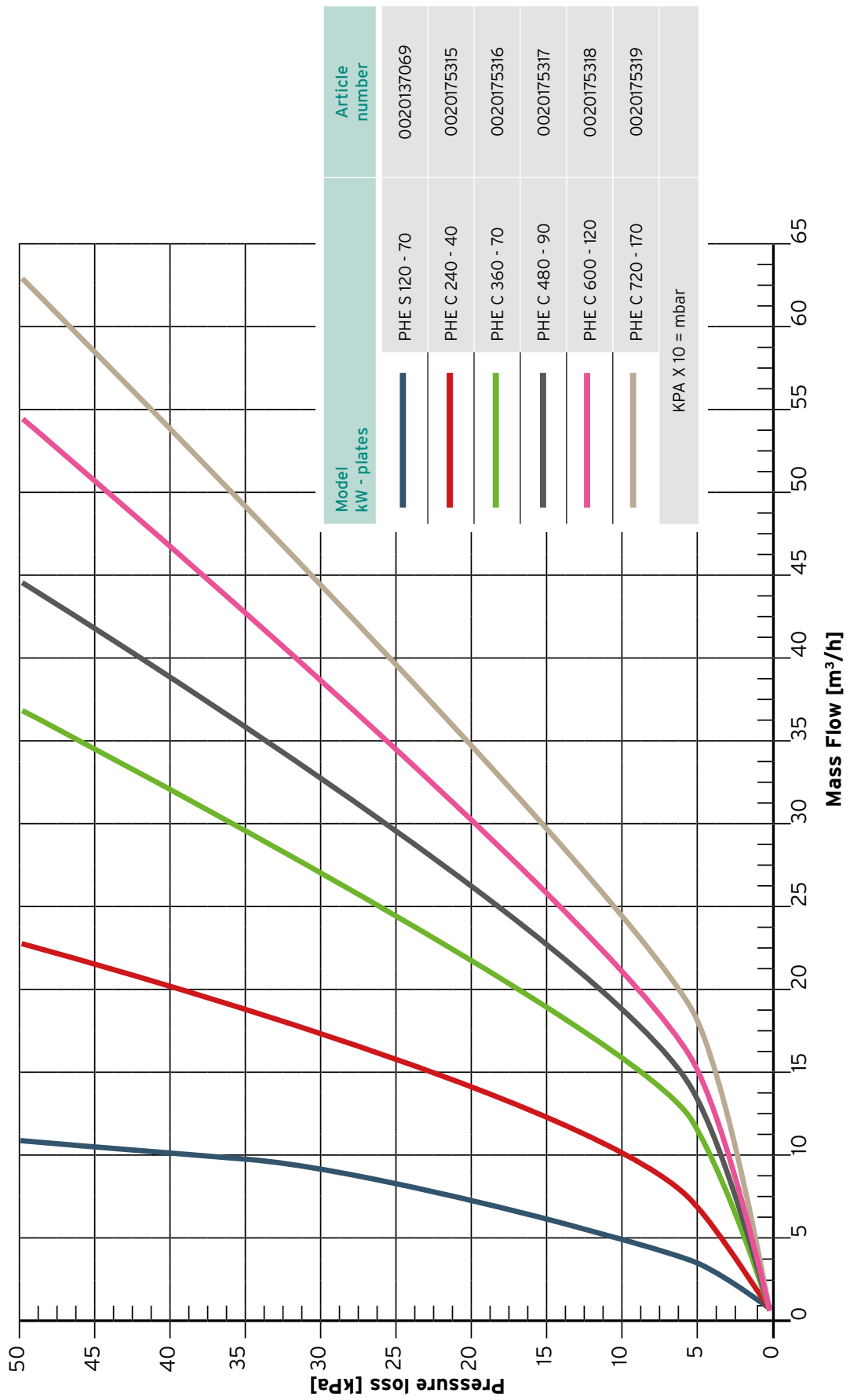
Large capacity uniSTOR cylinders.

Overview

The Vaillant Commercial Systems cylinder range includes two large capacity cylinders and a complete range of accessories. The 500 and 800 litre uniSTOR's have impressive coil sizes, of 4.7m^2 and 7m^2 which are manufactured using high grade stainless steel, and pass the highest Vaillant standards and quality control requirements.

In addition, a comprehensive range of accessories are available which includes a choice of unvented cylinder kits, compatible expansion vessels and a 7.5kW immersion (800 litre only). This provides the installer and specifier with maximum flexibility during design and installation.

Both cylinders can also be cascaded to generate higher requirements for hot water. Vaillant's dedicated commercial and technical designers can advise on any project for additional support and peace of mind.

Key features and benefits

▌ **Single guarantee for all components**
  Complete peace of mind from one manufacturer

▌ **Unvented cylinder kit, expansion vessel and sensor available as an accessory**
  Complete system solution offering whilst meeting all building regulations

▌ **Large diameter, smooth coil technology**
  Provides quiet operation, reduces build-up of scale and aids in long term efficiency through automatic descaling

▌ **Global Warming Potential less than 5 and ozone depletion of 0**
  Designed around environmental requirements

▌ **In-built lifting eye**
  Easy to move over any terrain

▌ **Secondary return**
  Accommodates complex and larger dwellings

▌ **Factory fitted T&P valve**
  Ensures safety requirements to meet regulations

▌ **Large 7.5kW single phase immersion available**
  Emergency backup in case of main heat source failure (800 litre only)

▌ **Inspection port included**
  Meets requirement of many commercial specifications (800 litre only)

Large capacity uniSTOR cylinders

Dimensions
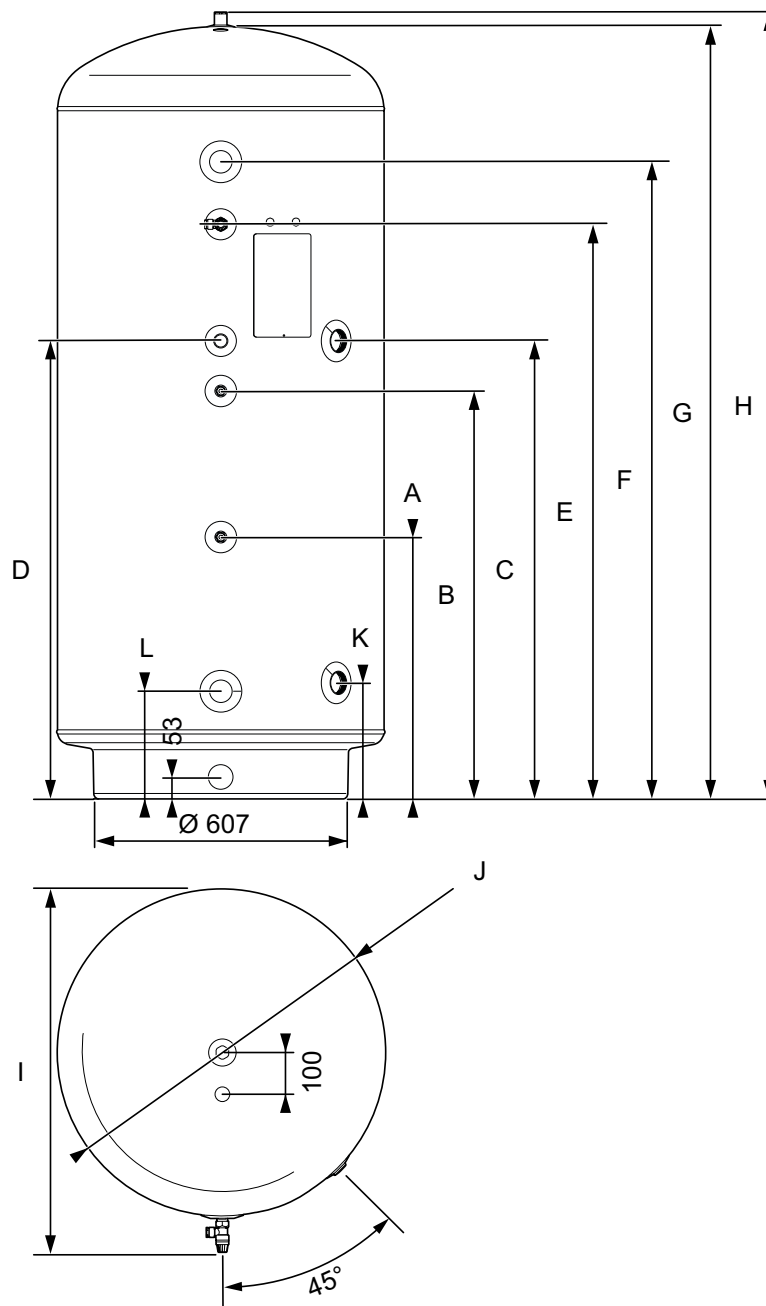
uniSTOR	Unit	A	B	C	D	E	F	G	H	I	J	K	L
500 litre	mm	649	979	1,099	1,099	1,379	1,529	1,853	1,886	872	785	279	259
800 litre		745	1,180	1,130	1,280	1,381	1,480	1,872	1,905	1,071	986	310	310

Connections

Available as an accessory	Components not supplied
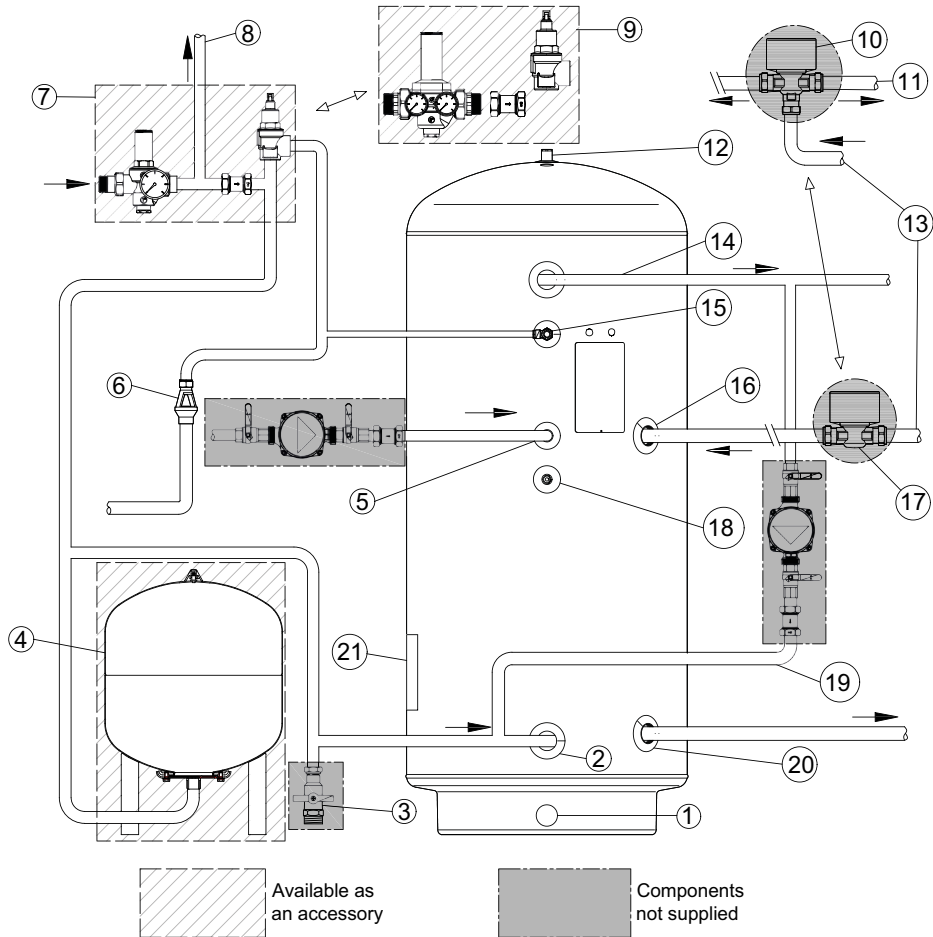
Item	Description
1	Cylinder drain
2	Cold water inlet
3	System drain valve (not supplied)
4	Expansion vessel
5	Secondary circulation (not supplied)
6	Tundish
7	Safety group (available as an accessory)
8	Balanced cold water
9	2" Safety group supplied with additional pressure gauge
10	Heat pump connection method: three-way motorised diverter valve (not supplied)
11	Heating circuit heating flow
12	Non-removable lifting eye (manual vent behind lifting eye)
13	Heating flow from heat source
14	Domestic hot water outlet
15	Temperature-pressure relief valve
16	Cylinder heating flow
17	Boiler connection method: motorised valve (not supplied)
18	Temperature sensor pocket
19	Legionella protection loop (not supplied)
20	Cylinder heating return
21	Inspection hatch (800 litre only)

NOTE: Items included with large capacity uniSTOR cylinders are documentation and tundish. Unvented cylinder kits and expansion vessels are available in a range of sizes as an accessory, see page 74.

Large capacity uniSTOR cylinders technical specification

Technical data	Unit	500 litre uniSTOR	800 litre uniSTOR
Article number		0010019228	0010019229
Total tank capacity	l	541.4	784.0
Actual capacity (without coil volume)	l	512.0	740.0
Hot water capacity / draw off*	l	460.0	635.0
Standby losses	kWh/24h	2.5	3.0
Energy-related Products	band	C	C
Heat exchanger volume	l	29.0	44.0
Heat exchanger surface	m^2	4.7	7.0
Primary flow rate	l/h	1800	1800
Maximum operating DHW temperature	°C	85	85
Maximum operating heat circuit temperature	°C	95	95
Quantity of temperature sensor tubes	qty	2	2
Size of expansion vessel	l	50 (supplied as an accessory)	80 (supplied as an accessory)
Immersion heater rating	kW	5.0	7.5
Immersion heater cable size	mm	4.0	6.0
Immersion heater current	A	32	40

* Calculation from test EN 12897

Dimensions	Unit	500 litre uniSTOR	800 litre uniSTOR
Outer diameter with insulation	mm	785	986
Height with insulation	mm	1.9	1.9
Net weight empty cylinder	kg	140	231
Weight of filled cylinder	kg	690	1015
Insulation thickness	mm	65	100

Connections	Unit	500 litre uniSTOR	800 litre uniSTOR
Primary heat exchanger flow and return connections	BSP female	1 ½"	1 ½"
Cold and hot water connections	BSP female	1 ½"	1 ½"
Temperature sensor sleeve diameter	mm	8	8
Immersion heater boss diameter	BSP female	1 ¼"	1 ¼"

uniSTOR cylinders accessories

Description	Article number
Immersion heater 7kW (800 litre uniSTOR only)	0020235671
Unvented cylinder kit 1"	0020235964
Unvented cylinder kit 1¼"	0020235965
Unvented cylinder kit 1½"	0020235966
Unvented cylinder kit 2"	0020235967
Expansion vessel 50 litre (for uniSTOR 500 litre)	0020229941
Expansion vessel 80 litre (for uniSTOR 800 litre)	0020229942

Expansion vessel dimensions
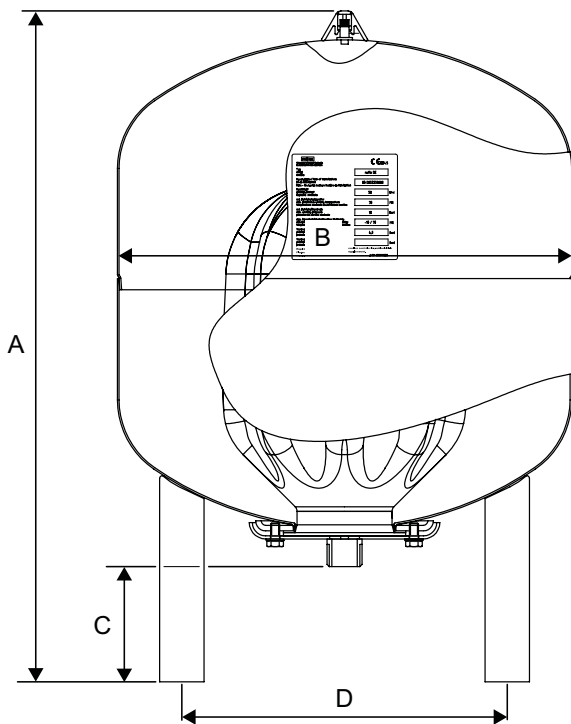
Dimensions	Unit	50 litre expansion vessel	80 litre expansion vessel
A = Height		604	729
B = Diameter	mm	409	480
C = Connection height		104	152
D = Feet span c/c		293	351

System control

VRC 700 and VRC 700f, app and accessories

Overview

Installing a Vaillant system control solution has never been so easy. The wired VRC 700 and wireless VRC 700f system controls allow your customer to take control of their Vaillant heating and hot water system. Designed to work harmoniously with all current Vaillant products, the VRC 700 and VRC 700f effortlessly use weather and load compensation technology to ensure your customers appliances are working to their peak performance, always maintaining optimum efficiency.

Furthermore, the VRC 700 and VRC 700f can be controlled remotely via the VRC 700 app (available for Android and iOS devices) when installed with a VR 920 internet gateway. The app's ability to display the boiler's health and status of the system allows installers and property maintenance managers to have complete control and visibility over the heating system.

The VRC 700 app can also integrate ambiSENSE, the new smart thermostatic radiator valve (TRV) which also works in harmony with the VRC 700 and VRC 700f. ambiSENSE can control the temperature in each individual room using the VRC 700 app which is easy to manage, offering ultimate convenience for customers and end users.

Smarter heating systems can reduce bills whilst increasing comfort as a result of energy being used more efficiently. Up to 20 ambiSENSE TRV's can be installed when using the VR 920, the VRC 700 or VRC 700f control, and one VR 91 or VR 91f on up to seven boilers in cascade. To download the VRC 700 app, visit the Google Play Store or Apple App Store.

System control VRC 700/VRC 700f and accessories

VRC 700 key features and benefits

Cascade up to seven boilers
VRC 700 and VRC 700f can control up to seven boilers in cascade and one heat pump or solar thermal appliance and will ensure every appliance is run for an equal amount of time

Multiple heating circuits with domestic hot water control
The wired control can control up to 9 heating circuits and the wireless control can control up to 3 heating circuits

Stored programs are protected from potential power failures
Holds time and temperature programs permanently, even in the event of a power failure

Flexible time programs
Three heating and three hot water time periods can be set for each week, day or over a 24-hour period

Internet weather compensation
Optimises system flow temperatures and efficiency

Holiday function
Prevents the heating and hot water coming on whilst away and reinstates it upon return. Ideal for use in schools during the school holidays

Designed with simplicity and familiarity in mind
The VRC 700 and VRC 700f controls are designed with ease of use in mind. Using a familiar menu structure it makes controlling the system easy and efficient

App control available
The VRC 700 app enables complete control on the go - available for Android and iOS devices.

Compatible with ambiSENSE
Control individual room temperatures remotely via the VRC 700 app

VRC 700 app key features and benefits

Complete system control
Smartphone App allowing installers and maintenance staff to keep in control when on and off site

Multi-user sharing and multi-home control
The app can connect to multiple VRC 700 controls allowing maintenance contractors to control multiple buildings from one app

Integrated diagnostics
If a fault occurs the VRC 700 app alerts all users and directs the user to the issue

Easy to use
Once the VR 920 has been installed the smart app is intuitive to the users' needs

Android and Apple iOS application
App allows remote control of heating and hot water on the move and from anywhere, anytime

ambiSENSE key features and benefits

Energy saving
When windows are opened ambiSENSE will detect the cooler draft and stop heating

Create up to 20 zones
Connect up to 20 valves without worrying about connection, each valve also works as a signal booster

Horizontal and vertical mounting variants
To fit a wide range of radiators

Easy to install
Battery powered for quick and simple installation

Clear digital display
Provides clear room temperature information

Manually alter the temperature
Adjust the valve to alter the temperature for an hour without disrupting your heating program

System control VRC 700 and VRC 700f

One heating zone

Description	Pack contents	Article number
One wired heating zone and hot water system	VRC 700, VR 70	0020236292
One wireless heating zone and hot water system	VRC 700f, VR 70	0020259830
One wired heating zone and solar thermal hot water system	VRC 700, VR 70, VR 11	0020236295
One wireless heating zone and solar thermal hot water system	VRC 700f, VR 70, VR 11	0020259833

Two heating zones

Description	Pack contents	Article number
Two wired heating zones and hot water system	VRC 700, VR 70, VR 91	0020236293
Two wireless heating zones and hot water system	VRC 700f, VR 70, VR 91f	0020259831
Two wired heating zones and solar thermal hot water system	VRC 700, VR 71, VR 11, VR 91	0020259834
Two wireless heating zones and solar thermal hot water system	VRC 700f, VR 71, VR 11, VR 91f	0020259835

Three heating zones

Description	Pack contents	Article number
Three wired heating zones and hot water system	VRC 700, VR 71, two VR 91	0020236294
Three wireless heating zones and hot water system	VRC 700f, VR 71, two VR 91f	0020259832

Four to nine heating zones (VRC 700 only)

The VRC 700 can control up to nine heating zones, for more information contact your Regional Business Manager

VRC 700 / VRC 700f control and components

Description	Article number
VRC 700 wired, weather compensating programmable room thermostat	0020184838
VRC 700f wireless, weather compensating, programmable room thermostat	0020259829
VR 70 wiring centre for up to two zones	0020184844
VR 71 wiring centre for up to three zones	0020184847
VR 91 wired, additional room thermostat	0020171334
VR 91f wireless, additional room thermostat	0020231566
VR 40 two-in-seven multifunction module	0020017744
VR 11 solar collector NTC	306788
VR 32 eBUS coupler	0020139895
VR 10 immersion or contact sensor bare ends	306787

ambiSENSE accessories

	Article number
ambiSENSE starter pack	0020242485
VR 50 ambiSENSE radiator valve	0020242487
VR 51 ambiSENSE room thermostat	0020247923
VR 920 Internet gateway	0020252923

For further information on Vaillant's range of controls and accessories, please contact your Regional Business Manager.

NOTE: VRC 700 (f) and ambiSENSE are sold on domestic terms.
Individual components will not include wiring guides.

Controls and
electrical accessories

Overview

To ensure compatibility with a number of different system configurations, further accessories like the VR 34 and VR 36 may be required - for further information or help with designing a new system, contact your Regional Business Manager.
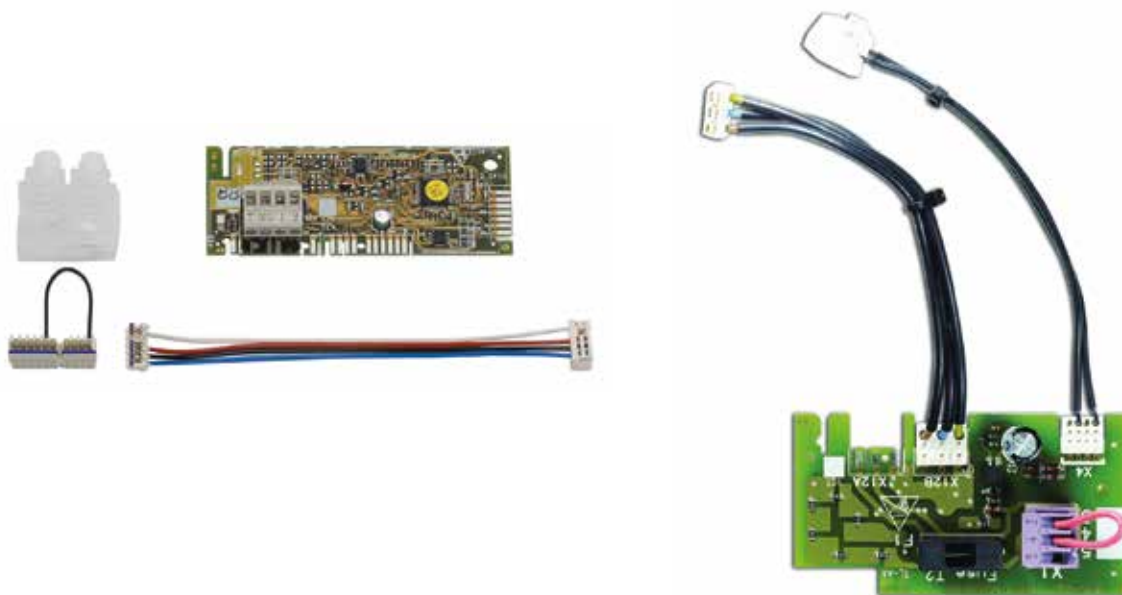
VR 34 0-10V adapter

The VR 34 is a 0-10V coupler for ecoTEC plus and ecoCRAFT, which transfers a voltage input from the BEMS equipment into a temperature set point for the boiler. The VR 34 also has a 24V fault signal output. In the event of a boiler failure, this will remain active until the fault is cleared and the boiler reset. The VR 34 also has an LED to indicate operation.

VR 36 240V 3-4-5 converter

The VR 36 is a 230V switching interface card for use with ecoTEC plus 80, 100 and 120kW boilers only and with third party controls - for example, standard on/off controls.

Model	Article number
VR 34	0020017897

Model	Article number
VR 36	0020117036

ecoTEC plus 48 to 120 - schematic

VRC 693 outdoor sensor

VRC 700

VR 70

VR 91

Variable temperature direct circuit - R1

Variable temperature mixing circuit - R2

sensor cylinder
dry pocket

Wiring Colours

1. Pink – eBUS
2. Green – sensors
3. Blue – 230 volt

Key

1. Boiler flow isolation valve (supplied only with ecoTEC plus)
2. Boiler return isolation valve (supplied only with ecoTEC plus)
3. Boiler safety valve (supplied only with ecoTEC plus)
4. Boiler shunt pump (supplied internally with ecoTEC plus 48 & 64, available as an accessory with ecoTEC plus 80, 100 & 120 ranges)
5. Pressurisation unit (not supplied by Vaillant)
6. Expansion vessel (available as an accessory)
7. Heating pumps
8. System check valve
9. Heating circuit mixing valve

10. Service valves (not supplied by Vaillant)
11. Cylinder primary pump
12. Cylinder motorised valve (not supplied by Vaillant)
13. Dirt separator or strainer (not supplied by Vaillant)
14. Plate heat exchanger (available as an accessory)
15. VR 10 sensor (available as an accessory)
16. Heating circuit VR 10 sensor (supplied with VR 70 wiring centre)
17. Cylinder VR 10 sensor (supplied with VR 70 wiring centre)
18. Cylinder high limit thermostat (supplied only with uniSTOR cylinder)

Note:

1. Vaillant strongly recommends the installation of a suitably sized dirt separator in the return pipe work to the header or system separation plate heat exchanger, particularly in the case of old systems.
2. The schematic drawings depicted in this brochure are a suggested layout of a typical system and should not be solely relied upon as a definitive design.
3. 48-64 includes shunt pump within the boiler
4. Items are not supplied by Vaillant unless stated otherwise

For existing or retrofit systems all 48-120kW boilers should be fitted with a plate heat exchanger. For new systems (new heat emitters, pipework and fittings) a low-loss header can be used in lieu of a plate heat exchanger. For both systems the system water should be fully cleansed and inhibited before boiler first ignition.

ecoTEC plus 48 and 64 - wiring diagram

VR 91

VRC 700

VRC 700 configuration settings
System Diagram = 2
VR 70 = Config 1
Zone 1 Assignment = VRC 700
Zone 2 Assignment = VR 91

Optional hot water
secondary circulation
pump
(set ecoTEC parameter
d.26 to No 1)

L N E 230 volt

1 RT
230V

L N E X18

L N E X11

L N E X13

L N E X16

230 mains voltage terminals

ecoTEC 48-64 boiler terminals

- + BUS

factory links
must be fitted

1 2 24V RT

1 2 Burner
off

Low voltage terminals

VRC 693
Outdoor
Sensor

DCF 0 0

VRC edge connector X41

Insert into
cylinder
dry pocket

Strap onto
system
flow pipe

Strap sensor
to flow pipe
after pump for
this circuit

VR 10 sensor

VR 10 sensor

VR 10 sensor

BUS - +

eBUS

Input 7 O T I S7

Heating
circuit 2
sensor
Input 6 1 2 S6

Input 5 1 2 S5

Input 4 1 2 S4

Input 3 1 2 S3

Input 2 1 2 S2

Cylinder
sensor
Input 1 1 2 S1

Low voltage terminals

Zone
address
selector

230 mains voltage terminals
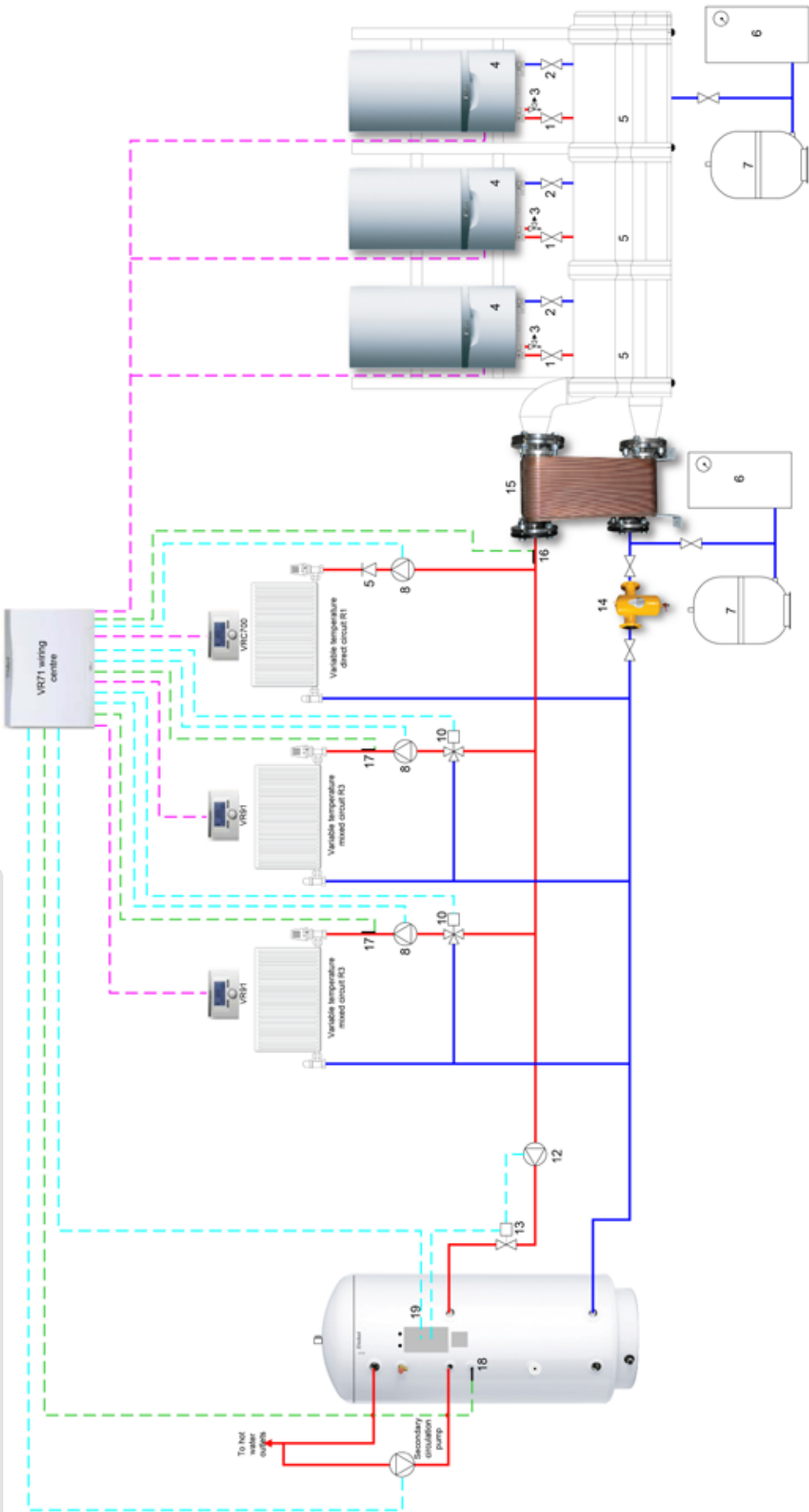
Heating
circuit 2
mixing
valve
R5/R6 E N 1 2

Cylinder
motorised
valve
R3/R4 E N 1 2

Heating
circuit 2
R2 E N L

Heating
circuit 1
R1 E N L

Mains input
connection
4 amps

230 volt E N L

Vaillant VR 70
Wiring Centre

2 & 1
Cylinder high limit
thermostat
(uniSTOR
cylinders only
remove wire link)

Unvented
hot water
cylinder
motorised valve

Cylinder pump

Notes:
1. All electrical connections to the equipment must be in accordance with current IEE Wiring Regulations.
2. For drawing clarity, some earth wires have been omitted; these must be included on the installation.
3. The colours of the wires in the drawing are for illustration purposes and do not represent the required colours for installation.
4. The low voltage cables must be 0.75mm minimum and run separately to mains voltage cables.
5. Please consult the relevant Vaillant instruction manuals for the equipment.
6. The VR 70 wiring centre cannot control twin-head pumps

ecoTEC plus 80, 100 and 120 - wiring diagram

VR 91

VRC 700

VRC 700 configuration settings
System Diagram = 2
VR 70 = Config 1
Zone 1 Assignment = VRC 700
Zone 2 Assignment = VR 91

230 volt mains input connection fuse at 3 amps

L N E
230 volt

230 volt mains voltage terminals

L N E
X18

L N E
X11

L N E
X13

Optional hot water secondary circulation pump (set ecoTEC plus parameter d.26 to No 1)

L N E
X16

ecoTEC plus 80-120 boiler terminals

- +
BUS

factory link must be fitted
1 2
24V RT

factory link must be fitted
1 2
Burner off

VRC 693 outdoor sensor

FB | DCF | RF | 0 | 0
VRC edge connector X41

Low voltage terminals

eBUS
- +
BUS

Strap sensor to flow pipe after pump for this circuit

O T I
S7   Input 7

Heating circuit 2 sensor
VR 10 sensor
1 2
S6   Input 6

Strap onto system flow pipe
VR 10 sensor
1 2
S5   Input 5

1 2
S4   Input 4

1 2
S3   Input 3

1 2
S2   Input 2

Insert into cylinder dry pocket
VR 10 sensor
1 2
S1   Cylinder sensor

Low voltage terminals

Zone address selector

230 mains voltage terminals

Heating circuit 2 mixing valve
E N 1 2
R5/R6

Cylinder motorised valve
E N 1 2
R3/R4

Heating circuit 2
E N L
R2

Heating circuit 1
E N L
R1

Mains input connection 4 amps
E N L
230 volt

Vaillant VR 70 Wiring Centre

2 & 1

Cylinder high limit thermostat (uniSTOR cylinders only remove wire link)

Unvented hot water cylinder motorised valve

Cylinder pump

Notes:
1. All electrical connections to the equipment must be in accordance with current IEE Wiring Regulations.
2. For drawing clarity, some earth wires have been omitted; these must be included on the installation.
3. The colours of the wires in the drawing are for illustration purposes and do not represent the required colours for installation.
4. The low voltage cables must be 0.75mm minimum and run separately to mains voltage cables.
5. Please consult the relevant Vaillant instruction manuals for the equipment.
6. The VR 70 wiring centre cannot control twin-head pumps

ecoTEC plus 48 to 120 - schematic

Note:
1. Vaillant strongly recommends the installation of a suitably sized dirt separator in the return pipe work to the header or system separation plate heat exchanger, particularly in the case of old systems.
2. The schematic drawings depicted in this brochure are a suggested layout of a typical system and should not be solely relied upon as a definitive design.
3. 48-64 includes shunt pump within the boiler
4. Items are not supplied by Vaillant unless stated otherwise

For existing or retrofit systems all 48-120kW boilers should be fitted with a plate heat exchanger. For new systems (new heat emitters, pipework and fittings) a low-loss header can be used in lieu of a plate heat exchanger. For both systems the system water should be fully cleansed and inhibited before boiler first ignition.

Key
1. Boiler flow isolation valve (supplied)
2. Boiler return isolation valve (supplied)
3. Boiler safety valve (supplied)
4. Boiler shunt pump required (supplied only with ecoTEC 48 - 64kW) (internal)*
5. Single check valve
6. Pressurisation unit
7. Expansion vessel
8. Heating pumps
10. Heating circuit mixing valve
12. Cylinder primary pump
13. Cylinder motorised valve
14. Dirt separator or strainer
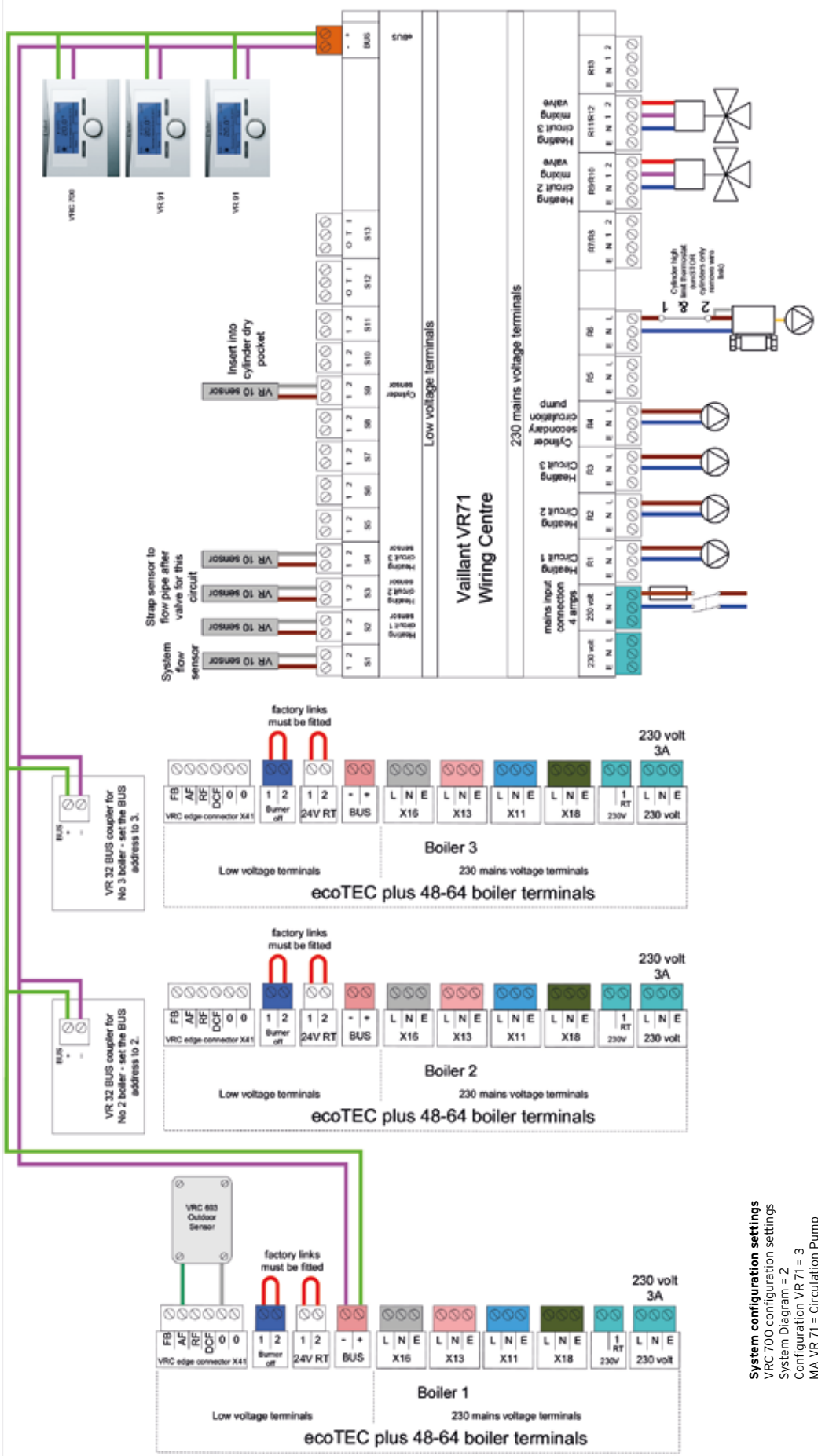15. Plate heat exchanger (available as an accessory)

* Item 4 available as an accessory but must be used on all ecoTEC plus 80 -110 & 120kW

16. Plate heat exchanger VR 10 sensor (supplied with VRC 71)
17. Heating circuit VR 10 sensor (supplied with VR 71)
18. Cylinder VR 10 sensor (supplied with VR 71)
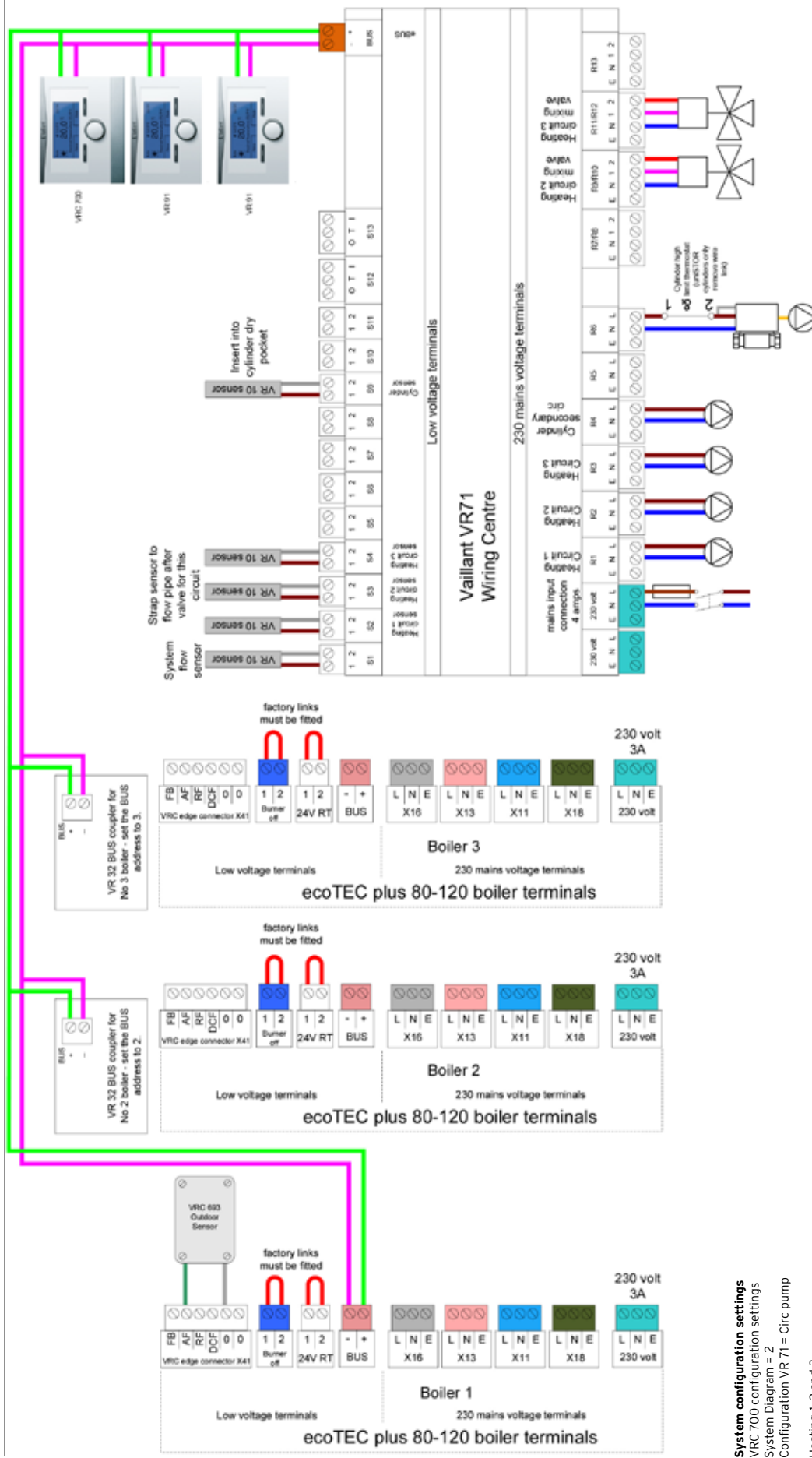19. Cylinder high limit thermostat (supplied with uniSTOR cylinder)

Wiring Colours

1. Purple – eBUS
2. Light green – sensors
3. light blue – 230 volt

VRZ71 wiring centre

VRC700

VRR1

VRR1

Variable temperature direct circuit R1

Variable temperature mixed circuit R3

Variable temperature mixed circuit R3

To hot water outlets

Secondary circulation pump

System configuration settings
VRC 700 configuration settings
System Diagram = 2
Configuration VR 71 = 3
MA VR 71 = Circulation Pump

Heating 1, 2 and 3
Room Temp Mod = Thermostat
Zone 1 assignment = VRC 700
Zone 2 assignment = VR 91 address 1
Zone 3 assignment = VR 91 address 2

Boiler 3
ecoTEC plus 80-120 boiler terminals

Boiler 2
ecoTEC plus 80-120 boiler terminals

Boiler 1
ecoTEC plus 80-120 boiler terminals

System configuration settings
VRC 700 configuration settings
System Diagram = 2
Configuration VR 71 = Circ pump

Heating 1, 2 and 3
Room Temp Mod = Thermostat
Zone 1 assignment = VRC 700
Zone 2 assignment = VR 91 address 1
Zone 3 assignment = VR 91 address 2

Training and development

As the industry's leading training provider, Vaillant offer comprehensive training courses designed to give you the skills, knowledge and understanding to help take your business forward.

Each year, we train thousands of professionals and we're continually developing and improving our training programmes and facilities to provide a service that matches your requirements. Each one of Vaillant's training courses is based on practical, hands-on experience and backed up by qualified, expert tuition to help you improve your skills and in turn increase your profit. We can even tailor courses to suit your company's individual training needs.

Our training is provided at Vaillant's own Centres of Excellence, situated throughout the country to ensure, wherever you are, there's a centre within easy reach. These spacious, state-of-the-art facilities offer a comfortable and superbly equipped training environment that also gives you a unique opportunity to find out more about Vaillant's full range of services and any upcoming product developments.

For more information on our courses or to visit one of our UK Centres of Excellence:

Telephone: **0345 601 8885**
Email: **training.enquiriesuk@vaillant-group.com**
Or visit: **www.vaillant.co.uk**

Service and support

The Vaillant service standard
Vaillant's dedicated team of specialist engineers are trained to the highest standard in order to support on-site queries throughout the UK. Backed by an expertly trained call centre, they're available to assist you whenever you're installing commercial heating systems. We also have an in-house systems design team, who are on hand to answer any queries you may have during the design stage.

Assisted commissioning*
Service engineers will visit the installation and guide you through the first system commissioning, helping with the final stages and the handover of the installation as needed.

Spares
Vaillant is committed to ensuring spare parts can be supplied for any boiler for up to 15 years. We have dedicated spare part distributors in over 680 outlets across the UK. Each stockist has been approved by us and commits to hold the majority of Vaillant spares at any one time; otherwise the products are only a phone call away. Should you have any difficulty in sourcing a particular item, then our customer service representatives will be happy to help you locate the spares you require.

Full local support
Our nationwide sales team provides installers and specifiers with expert support from beginning to end.

* A charge may apply for this service.

Notes

Notes

Customer service support contact details.

Sales Support

Vaillant products are available to purchase from reputable heating merchants in the UK. To find contact details for your nearest Vaillant sales representative:
Telephone: 0345 602 0262

Specifiers

We can provide you with bespoke solutions to accommodate a variety of different installations. To discuss your requirements or find contact details for your nearest sales representative:
Telephone: 0345 602 0262

Technical Enquiries

For technical assistance:
Telephone: 0330 102 8570
Email: commercial@vaillant.co.uk

Commercial Service

For commercial product aftersales, servicing and commissioning:
Telephone: 0207 022 0927
Email: commercial@vaillant.co.uk

General Enquiries

If you have a general enquiry our friendly reception staff will happily point you in the right direction:
Telephone: 0345 602 2922

Training Enquiries

Vaillant provide many different training courses. For more information:
Telephone: 0345 601 8885
Email: training.enquiriesuk@vaillant-group.com

Vaillant
Commercial Systems
vaillantuk