MIKROFILL®

Ethos Range
High Efficiency
Domestic Boilers

Combination Boilers
Condensing Combination Boilers
Condensing System Boilers

From 1994, Mikrofill has been supplying high quality products to the commercial heating market from their manufacturing base in Bromsgrove Worcestershire.

Our commitment to Quality, service and customer satisfaction has always been our benchmark.

Ethos, an exciting new range of highly efficient wall mounted boilers offers the latest high efficiency heating solutions.

The Ethos Range

Ethos from Mikrofill, a highly innovative range of modern, stylish wall mounted boilers that deliver a very attractive package, in terms of economical running costs (high efficiency) and environmental benefits (lower emissions).

With combination, condensing combination and condensing system boilers, the Ethos range provides the answer to all of your heating and hot water requirements.

In-built time clock, clear logical digital display and easy to operate controls are among some of the advantages the Ethos range has to offer.

A comprehensive range of vertical and horizontal flue accessories are available allowing the flexibility to install the Ethos wherever suits you best.

As well as the reassurance Mikrofill products bring, you have the benefit of a comprehensive 24 month warranty, giving you peace of mind that you and your appliance have the support of a comprehensive network of Mikrofill service centres.

Mikrofill offer full product training and advice concerning all installation and service matters.

What is a Combination Boiler?

A combi is so called because it combines a central heating boiler and an instantaneous water heater into one compact, self contained, highly economical unit. Therefore,unlike a conventional system, a combination boiler dose not store hot water. Instead it heats water directly from the cold mains, as you need it.

The Ethos 24c

The Ethos 24c is an efficient wall mounted gas fired combination boiler, the room sealed fan flued unit combining the best in quality and economy.

The Ethos 24c features a duplex copper heat exchanger, which offers high efficiency and very rapid response.

The sophisticated control system controls the boiler output according to demand and provide for full self-diagnostic controls, a feature of all Ethos boilers.

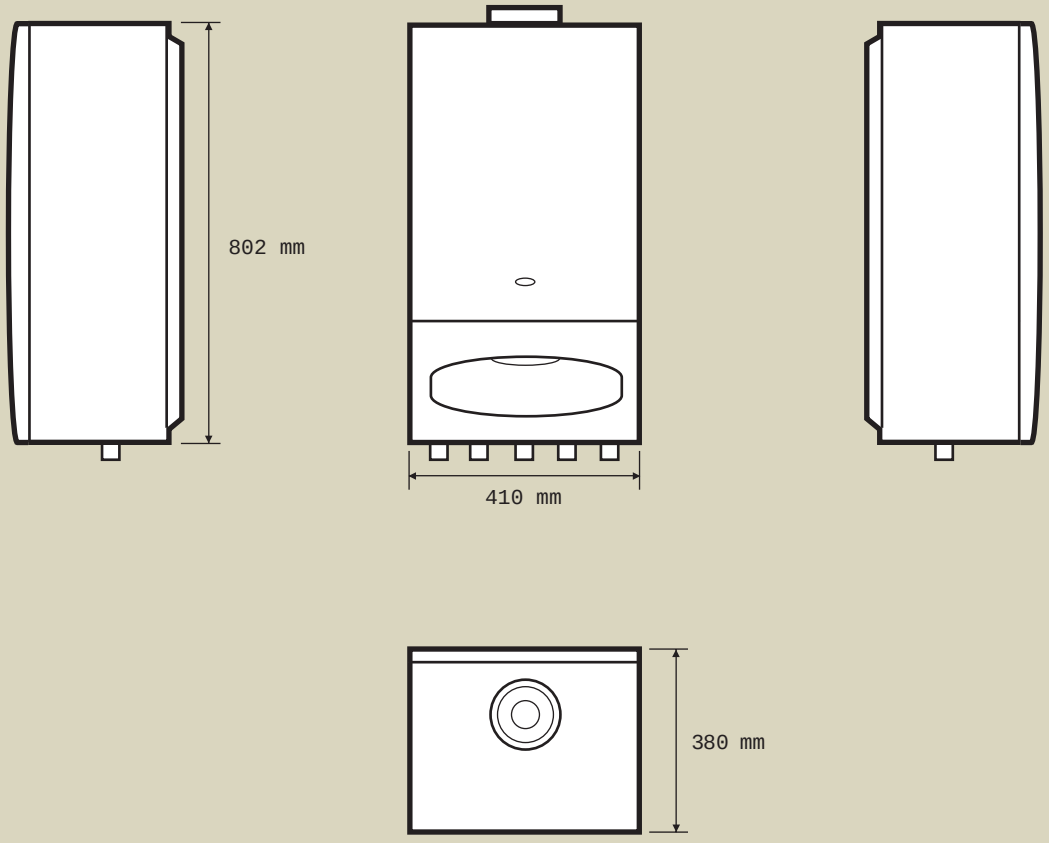
The Ethos 24c incorporates a limescale protective programme with the hot water demand being controlled by pressure operated divert valves ensuring long trouble free operation.

The Ethos 24c is designed for use with a concentric flue system with a wide range of flue options.

The Ethos 24c offers the ultimate package, an efficient product with a very high build quality maintaining the standard of the Ethos range. The subtle casing design makes the Ethos 24c acceptable in any situation, and when used in conjunction with a Mikrofill "Rapide" high recovery cylinder it can satisfy the heating and hot water demand of the largest of domestic properties. (See typical system layouts).

The Ethos 24c

Gas Fired Combination Boiler



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Technical Data - Ethos 24c

Propane Version (to be introduced shortly)		
Burner Injector	Mm	0.74
Burner Pressure	Mbar	35
Gas Rate	Kg/h	2.02

Technical Data – Ethos 24c		
Expansion Vessel	Capacity (litres)	8
Expansion Vessel	Pre-charge (bar)	0.5
Domestic Water Supply Output (litres/m) by Temp Rise	35°C 30°C 25°C	9 11 13
Air Intake Pipe	Diameter (mm)	100
Flue Pipe	Diameter(mm)	60
CO/CO2 Ratio at Max Input	0.0026	0.0026
CO/CO2 Ratio at Min Input	0.0013	0.0013
Nitrogen oxide (NOx) Emissions at Max Input (NOx Class 3)	ppm	73
Nitrogen oxide (NOx) Emissions at Min Input (NOx Class 3)	ppm	28
Combustion products temperature	°C	150
Case Dimensions	mm	380d x 410w x 802h
Shipping Weight	kg	44
Dry Weight	kg	40

Technical Data – Ethos 24c		
Heat Input (max)	kW(Btu/h)	25.6 (87,428)
Heat Output (max)	kW(Btu/h)	23.17 (79,129)
Heat Input (min)	kW(Btu/h)	10.04 (34,120)
Heat Output (min)	kW(Btu/h)	8.9(30,395)
Useful efficiency at 100% load	%	90.5
Useful efficiency at 30% load	%	88.6
Burner injector	mm	1.2
Inlet Pressure (Natural Gas)	mbar	20
Burner Pressure (Natural Gas)	mbar	Max 12.1 Min 1.2
Gas Rate (Natural Gas)	m3/h g/s	Max 2.88 Min 1.06
Power Supply	Input	Max 0.535 Min 0.197
Max. power consumption	Watts	170
Level of protection	IPOX	IPOX
Boiler water content	Litres	3.5
Maximum heating Temperature	°C	90o
Max. domestic hot water temperature	°C	65o
Operating pressure (Bar)	Max (Min)	3 (0.5)
Domestic water supply pressure (Bar)	Max (Min)	8 (0.3)

Dimensions, Connections & Rating	
Product Identification Number	CE 08601
Appliance Category	12H
Dimensions (H x W x D)	802mm x 410mm x 380mm
Heating Circuit Connections	22mm
Gas Connection	BSP
Safety Valve Connection	BSP
Water Connections	15mm
Air Supply/Flue Connections	100/60 mm
SEDBUK	D

Further technical data available in the operating and maintenance manuals.

What is a Condensing Boiler?

Modern conventional boilers are efficient, but there is still a considerable amount of energy carried to waste in the flue gases, which in an average boiler will exit at around 200deg C. In a condensing boiler the energy usually lost in these flue gases is reclaimed. This reclamation results in very low flue gas temperatures, so low that the water content of the flue gases condense from water vapour into water, hence the term "Condensing boiler" this process can result in energy savings of up to 12.5% over a conventional boiler. The process requires a boiler design that will operate reliably whilst condensing, and also a heating system that will encourage the boiler to operate in the "condensing mode". Most modern condensing boilers also feature the latest developments in combustion technology, which result in very low emissions of "greenhouse gases".

The correct use of a condensing boiler will offer considerable energy cost savings to the user, whilst minimising the emission of harmful products of combustion.

What is a System Boiler?

Ethos system boilers are compact, highly efficient, and designed to supply all the heating and hot water you need while achieving significant savings on running and installation costs compared with a conventional system. Furthermore, whereas a conventional system requires a separate feed and expansion cistern and a separate circulating pump (each of which has to be installed individually), the Ethos condensing system boiler comes complete with all major components built in ready for connection to a hot water cylinder.

How to obtain the best results from a condensing boiler

Install the boiler into a purpose designed heating system, Mikrofill technical department can assist with this.

Electronic weather compensation ensures that the system is operated at the lowest possible temperature to maintain comfort levels, all Mikrofill condensing boilers feature weather compensation as standard. Use high recovery hot water cylinders to reduce the time that the boiler operates at maximum temperature, most Mikrofill high recovery hot water cylinders only require 12 minutes heat up period.

Balance the boiler output to the heating load, all Ethos boilers are fully modulating and automatically adjust the output of the boiler to the demand, so reducing costs.

The Ethos 28cc

The Ethos 28cc represents the very best in modern boiler technology. As a high efficiency condensing gas fired combination boiler, designed to exceed the most stringent emission requirements, the Ethos 28cc incorporates a stainless steel heat exchanger with an integral pre mix gas fired burner, offering ultra low emissions coupled with efficiencies (net) in excess of 100%

The boiler is designed to offer the ultimate in design flexibility, in addition to a high domestic hot water flow rate, the boiler can control a high output domestic hot water cylinder (Mikrofill Rapide) enabling the boiler to be suitable for larger domestic applications with multiple bathrooms etc. (See typical system layouts)

The Ethos 28cc incorporates a sophisticated control system, it not only controls the boiler output by way of continuously modulating the gas valve, but also incorporates weather compensation and frost protection facilities. The addition of the external sensors will accurately control the boiler output and match it to the heating system load.

The Ethos 28cc pump management system maintains the boiler in its most efficient (condensing) mode for as long as possible, hence reducing running costs and environmental pollution.

Supplied as a room-sealed appliance the 28cc has a concentric flue connection, offering a multitude of fluing options. If necessary, the use of a conventional flue is a further alternative. The Ethos 28cc can accommodate flue runs up to 30 metres, offering the installer complete flexibility in boiler location.

To complete the impressive package the Ethos 28cc housed in an attractive casing with a discreet control panel, offering full self-diagnostic display represents the very best in efficient boiler technology.

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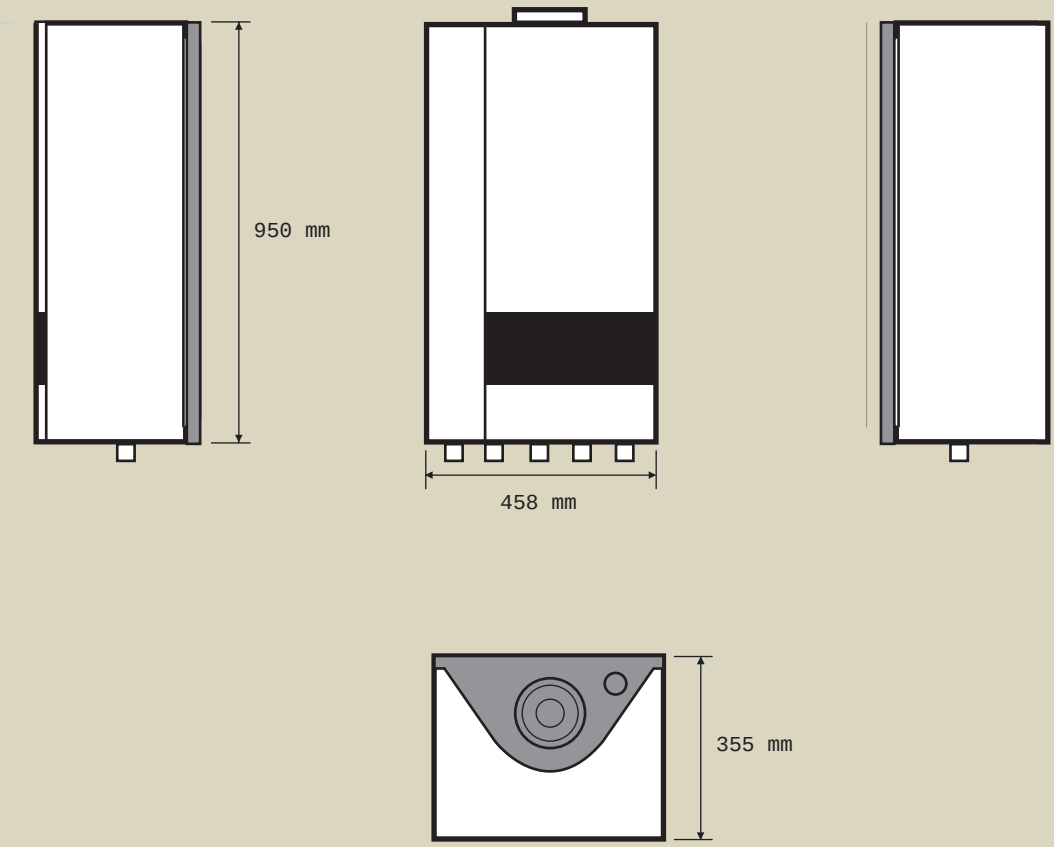
The Ethos 28cc

Gas Fired Condensing Combination Boiler



Technical Data - Ethos 28cc

Heating Specifications		
Models H, HS and S		Ethos 28cc
Maximum Rated Input	kW	22
Nominal Output To Heating 80/600C	kW	21.4
Minimum Output To Heating 80/600C	kW	3.1
Nominal Output To Heating 50/300C	kW	23.1
Minimum Output To Heating 50/300C	kW	3.6
CO2 % content at max/min load	CO2 %	9
Dew Point of Flue Gases	°C	52
Flue Gas Temp @ 80/600C (Amb 200C)	°C	75
* Maximum Flue Resistance	Pa	100
pH value of condensate water	PH	4-5.5
Pump Pressure @ 30kW and 20K Bar		0.15
Maximum Flow Temperature	°C	85
Min/Max filling pressure	Bar	0.5 - 3.0
**Efficiency @ 75/60°C	%	104
**Efficiency @ 40/30°C	%	108.5

Hot Water Specifications		
Model		Ethos 28cc
Maximum Rated Input	kW	28.0
Modulating Output	kW	3.4-28
Hot Water Flow rates at dt 30oc	L/min	13.4
Maximum Tap Water Pressure	bar	10

Connection Values		
Min/Max Gas Pressure	mbar	15/50
Minimum Input Rate Natural Gas	m/h3	0.36
Maximum Input Rate Natural Gas	m/h3	2.67
Electrical Supply	VAC	230
Power Consumption Average	W	60

Capacities & Weights		
Model		Ethos 28cc
Heating Water Capacity	litres	1.8
Heating Water Coil Capacity (S models)	Litres	1.3
Weight (empty)	kg	37

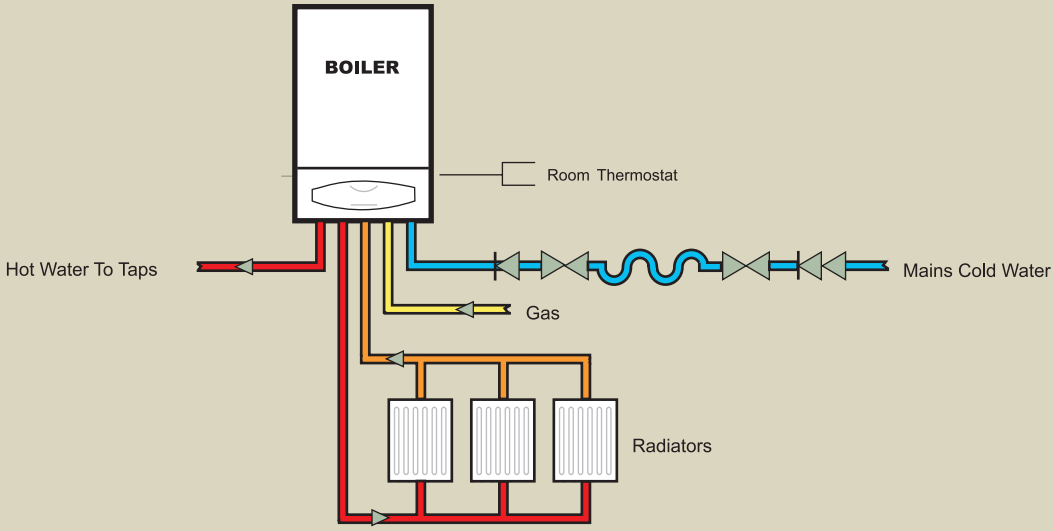
Environmental Emission Values Ethos 28cc	
CO2	natural gas: 8.2 – 8.8 %
CO (0 % O2)	natural gas: 2.9 – 66 ppm
NOx (0 % O2)	natural gas: 8.1 – 27.1ppm
Noise Levels Pump high speed	50 dB(A)
Noise Levels Pump low speed	34 dB(A)

Dimensions & Connections	
Product Identification Number	CE 0063 BL 3323
Appliance Category	28123 HEI
Dimensions (H x W x D)	950mm x 458mm x 355mm
Heating Circuit Connections	22mm
Gas Connection	15mm
Safety Valve Connection	BSP
Air Supply/Flue Connections	100/60 mm
SEDBUK	A

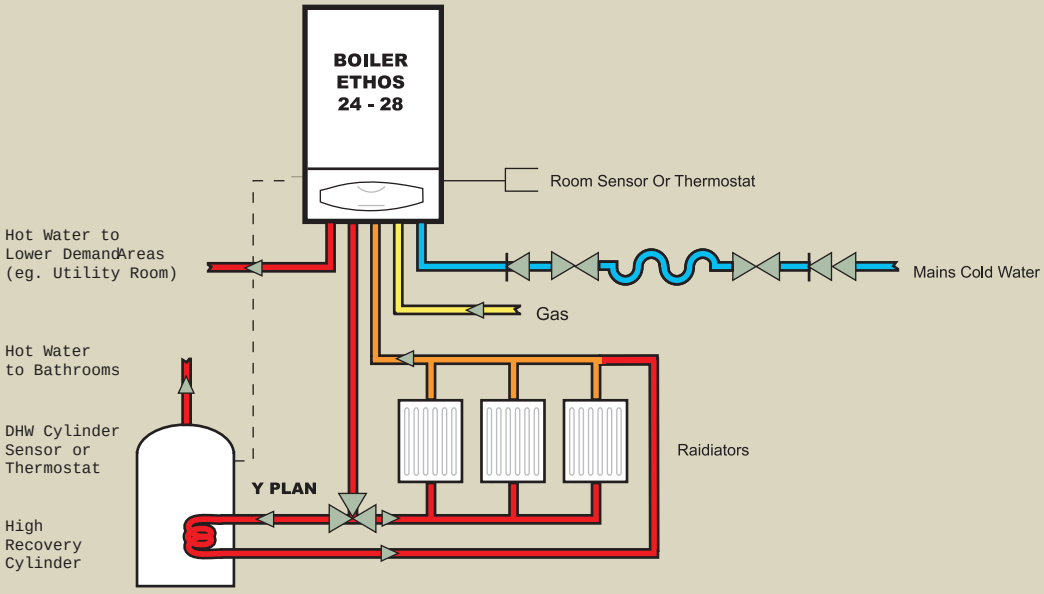
Further technical data available in the operating and maintenance manuals.

Typical System Layouts

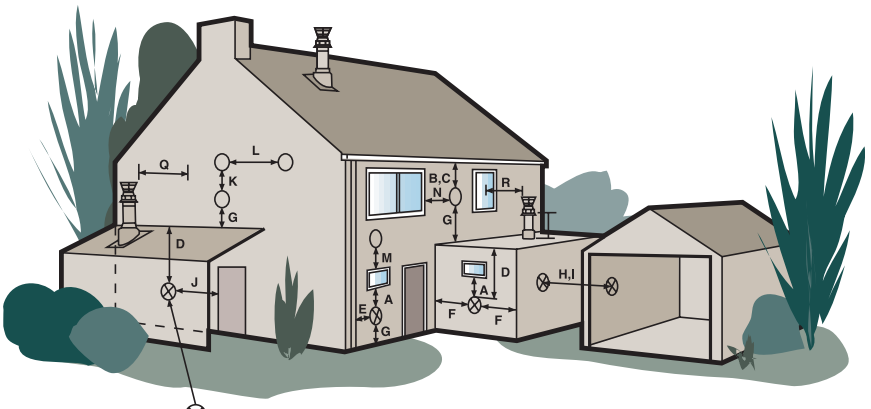
Standard ‘Combi’ Schematic



Combi with High Recovery Hot Water Cylinder



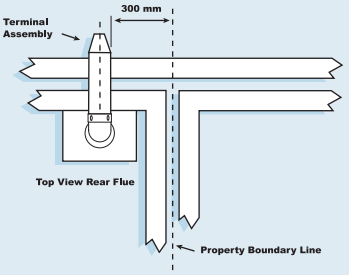
Minimum Clearances



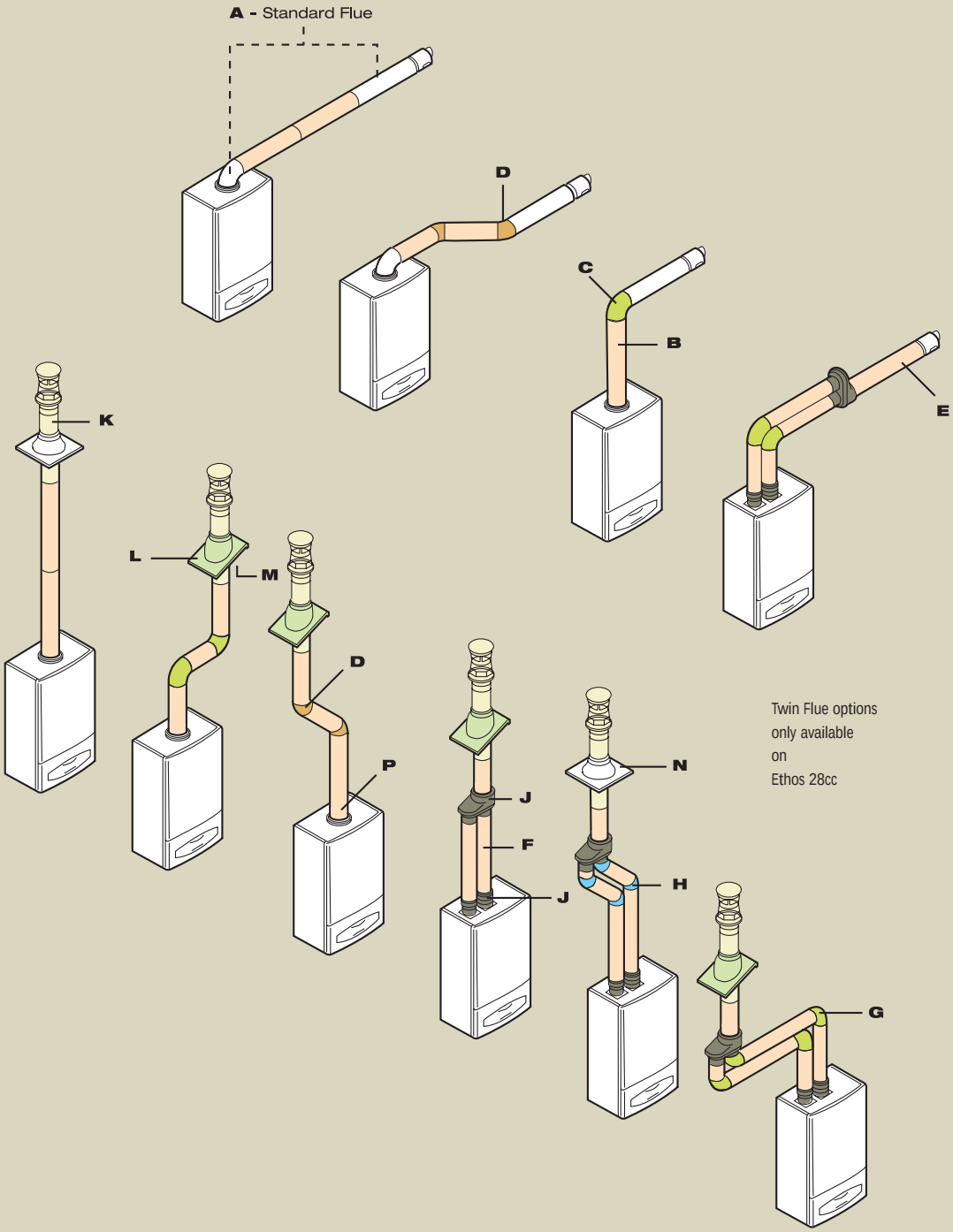
Likely flue positions requiring a flue terminal guard

Horizontal Flues	Minimum distance mm to edge of terminal
A Directly below an openable window, air vent or any other ventilation opening	300
B Below gutter, drain/soil pipe	150
C Below eaves	200
D Below a balcony/carport roof	200
E From vertical drain pipes and soil pipes	150
F From internal or external corners	300
G Above adjacent ground or balcony level	300
H From a surface facing the terminal	600
I Facing terminals	1200
J From opening (door/window) in carport into dwelling	1200
K Vertically from a terminal on the same wall	1500
L Horizontally from a terminal on the same wall	300
M Above an opening, air brick, opening window, ect	300
N Horizontally to an opening, air brick, opening window, ect	300

Vertical Flues	Minimum distance mm to edge of terminal
P Above the roof level (to base of terminal)	300
Q From adjacent wall to flue	300
R From an adjacent opening window	1000
S From another terminal	600



Please refer to the latest regulations in force for confirmation and full details of flue installation.


A - Standard Flue
D
C
B
E
K
L
M
D
P
J
F
J
N
H
G
Twin Flue options
only available
on
Ethos 28cc

Key

Concentric Flue System 60/100mm or 80/125mm diameter

	A	Horizonal flue Kit (including 90^{O} elbow)	850mm
	B	Straight extension kit	1000mm 500mm 250mm
	C	Bend Kit	90^{O}
	D	Bend Kit (pair)	45^{O}
	E	Horizontal flue terminal	

Twin Flue System 80mm diameter

	F	Straight extension kit	1000mm 500mm
	G	Bend Kit	90^{O}
	H	Bend Kit (pair)	45^{O}

Universal Vertical Flue Kits

	J	Twin flue adaptor kit	
	K	Vertical flue terminal	
	L	Universal roof tile	25^{O}/50^{O}
	M	Roof cover plate kit	
	N	Flat roof flashing	
	P	Boiler connection vertical concentric	

Flue System Sizing

Ethos 24c use 60/100mm concentric flue components
Ethos 28cc use 80/125mm concentric flue components or 80mm twin flue components

Flue Options

The maximum permissible flue length for each boiler is given in the technical information table.

This refers to a straight flue, a reduction in this maximum length must be made for every bend that is used in the system and the maximum length reduced by the values shown below:

Concentric pipe

45^{O} bend	reduce maximum length by 0.5 metres per bend
90^{O} bend	reduce maximum length by 1.0 metre per bend

Twin flue pipe

45^{O} bend (air)	reduce maximum length by 1.3 metres per bend
45^{O} bend (flue)	reduce maximum length by 2.6 metres per bend
90^{O} bend (air)	reduce maximum length by 4.8 metres per bend
90^{O} bend (flue)	reduce maximum length by 9.6 metres per bend

Also available from Mikrofill

Rapide, high recovery stainless steel cylinders with capacities from 60 – 500 litres.

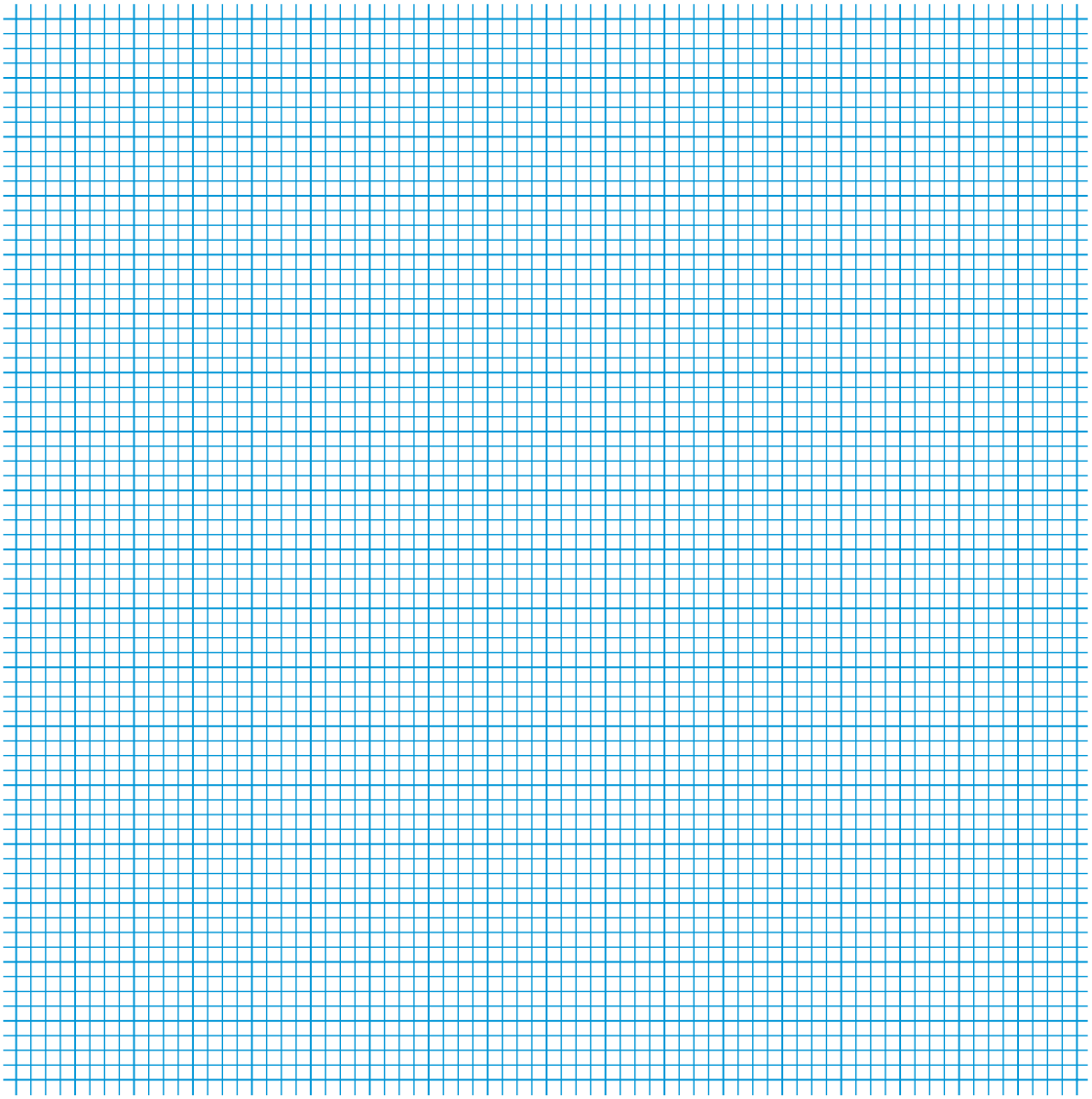
Maxi & Maxi Plus, automatic pressurisation units.

EFD, the unique WRAS approved pressurisation and filling device.

Ethos compact condensing, combination and system boilers.

For information on any Mikrofill products contact our sales department or visit us at mikrofill.com

Notes



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