



MHG HEATING LTD

Air Supply, Ventilation and Balance Flue Terminal Positioning Quick Reference Guide for BS 5440-2 : 2000, BS 6644 : 2005 & IGE/UP/10 (ed 2)

BS5440-2 : 2000. Installation and maintenance of flue and ventilation for gas appliances of rated input not exceeding 70 kW net (1st 2nd & 3rd family gases)

Open Flued Appliances Installed within a Room (Natural ventilation requirements direct to Outside Air.)

Total rated net input not in excess of (70 kW – 7 kW) x 5cm² = Ventilation opening free area

Open Flued Appliances Installed within a compartment (Natural ventilation requirements.)

Ventilation route Grille Location	Ventilation to room or internal space. (The internal space ventilated into must be ventilated as detailed above to outside air.)	Ventilation direct to outside air
Low Level (Free Area / kW)	20 cm ²	10 cm ²
High Level (Free Area / kW)	10 cm ²	5 cm ²

Balanced Flued Appliances Installed within an Enclosure (Natural ventilation requirements)

Ventilation route Grille Location	Ventilation to room or internal space.	Ventilation direct to outside air
Low Level (Free Area / kW)	10 cm ²	5 cm ²
High Level (Free Area / kW)	10 cm ²	5 cm ²

Document Intended for quick guidance only. Absolute guidance must be sought from BS5440 2 : 2000 directly.

BS6644 :2005 Specification for the Installation of gas-fired hot water boilers of rated inputs between 70 kW (net) and 1.8 MW (net) (2nd and 3rd family gases)

Open Flued Appliances Installed within an Enclosure (Natural ventilation requirements direct to Outside Air.)

System Type & Operational Time Grille Location	Heating &/or HWS Operation < 50% time operation during summer months	Heating &/or HWS Operation > 50% < 75% time operation during summer months	Heating &/or HWS Operation > 75% time operation during summer months
Low Level (Free Area / kW)	10 cm ²	11 cm ²	12cm ²
High Level (Free Area / kW)	5 cm ²	6 cm ²	7 cm ²

Open Flued Appliances Installed within a Boiler Room (Natural ventilation requirements direct to Outside Air.)

System Type & Operational Time Grille Location	Heating &/or HWS Operation < 50% time operation during summer months	Heating &/or HWS Operation > 50% < 75% time operation during summer months	Heating &/or HWS Operation > 75% time operation during summer months
Low Level (Free Area / kW)	4 cm ²	5 cm ²	6 cm ²
High Level (Free Area / kW)	2 cm ²	3 cm ²	4 cm ²

Balanced Flued Appliances Installed within an Enclosure (Natural ventilation requirements direct to Outside Air)

System Type & Operational Time Grille Location	Heating &/or HWS Operation < 50% time operation during summer months	Heating &/or HWS Operation > 50% < 75% time operation during summer months	Heating &/or HWS Operation > 75% time operation during summer months
Low Level (Free Area / kW)	5 cm ²	5 cm ²	5 cm ²
High Level (Free Area / kW)	5 cm ²	5 cm ²	5 cm ²

Balanced Flued Appliances Installed within an Enclosure (Natural ventilation requirements to a room or internal space.)

System Type & Operational Time Grille Location	Heating &/or HWS Operation < 50% time operation during summer months	Heating &/or HWS Operation > 50% < 75% time operation during summer months	Heating &/or HWS Operation > 75% time operation during summer months
Low Level (Free Area / kW)	10 cm ²	10 cm ²	10 cm ²
High Level (Free Area / kW)	10 cm ²	10 cm ²	10 cm ²

Balanced Flued Appliances Installed within a Boiler Room (Natural ventilation requirements direct to Outside Air.)

System Type & Operational Time Grille Location	Heating &/or HWS Operation < 50% time operation during summer months	Heating &/or HWS Operation > 50% < 75% time operation during summer months	Heating &/or HWS Operation > 75% time operation during summer months
Low Level (Free Area / kW)	2 cm ²	3 cm ²	4 cm ²
High Level (Free Area / kW)	2 cm ²	3 cm ²	4 cm ²

Document Intended for quick guidance only. Absolute guidance must be sought from BS6644 : 2005 directly.

**Open Flued Appliances Installed with a Draught Diverter
(Mechanical ventilation flow rate requirements direct to Outside Air.)**

System Type & Operational Time Grille Location	Heating &/or HWS Operation < 50% time operation during summer months	Heating &/or HWS Operation > 50% < 75% time operation during summer months	Heating &/or HWS Operation > 75% time operation during summer months
Low Level Inlet (m ³ /h / kW)	2.8	3.52	4.24
High Level Extract (m ³ /h / kW) (Difference Between Inlet and Extract Air)	2.07 +/- 0.18	2.07 +/- 0.18	2.07 +/- 0.18

**Open Flued Appliances Installed without a Draught Diverter (With or without stabilizers)
(Mechanical ventilation flow rate requirements direct to Outside Air.)**

System Type & Operational Time Grille Location	Heating &/or HWS Operation < 50% time operation during summer months	Heating &/or HWS Operation > 50% < 75% time operation during summer months	Heating &/or HWS Operation > 75% time operation during summer months
Low Level Inlet (m ³ /h / kW)	2.6	3.32	4.04
High Level Extract (m ³ /h / kW) (Difference Between Inlet and Extract Air)	1.35 +/- 0.18	1.35 +/- 0.18	1.35 +/- 0.18

Where high level / discharge openings are not mechanically assisted, the free area must be calculated as detailed above.

All air inlet and extract fans must be fitted with automatic controls (interlocks) causing safety shut-down or lockout of the installed gas burning appliances in the event of an inlet or extract air flow failure.

Document Intended for quick guidance only. Absolute guidance must be sought from BS6644 : 2005 directly.

IGE/UP/10 Part 1 Edition 2 Installation of gas appliances in industrial and commercial premises.

Guidance for installations with Inputs in Excess of 1.8 MW net.(2nd and 3rd family gases)

Open Flued Appliances Installed within a Boiler Room (Natural ventilation requirements direct to Outside Air.)

Grille Location	Ventilation Requirement Calculations
Low Level (Free Area)	9270 cm ² + 4cm ² Per kW of total net heat input in excess of 1.8MW
High Level (Free Area)	4635 cm ² + 2cm ² Per kW of total net heat input in excess of 1.8MW

1. For lighter than air gases where high and low level ventilation is not practicable and the volume of the space is equal to or greater than 1m³ per 2kW total net input, it is permitted to install 6cm² per kW of total ventilation at high level only provided more than one ventilator is fitted. This is not permitted for heavier than air gasses.
2. For lighter than air gases where the plant room does not exceed 1m³ per 2kW total net heat input, ducting of ventilation air to low level without mechanical assistance is not recommended.

Open Flued Appliances. Modern low radiation losses and low excess air burners.
(Mechanical ventilation flow rate requirements direct to Outside Air.)

Burner Type	Flow rate per 1000 kW heat input net (m ³ /s)	
	Inlet Air (Combustion and Ventilation)	Extract Air (Ventilation)
Natural draught	1.2 (1.1 gross heat input)	0.5 (0.45 gross heat input)
Forced draught, Blown Air, Premix	1.0 (0.9 gross heat input)	0.66 (0.6 gross heat input)

Where high level / discharge openings are not mechanically assisted, the free area must be calculated as detailed above.

All air inlet and extract fans must be fitted with automatic controls (interlocks) causing safety shut-down or lockout of the installed gas burning appliances in the event of an inlet or extract air flow failure.

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MHG Heating Ltd is the UK subsidiary of MHG Heiztechnik GmbH.

MHG Heiztechnik GmbH has been a leading European premium heating equipment manufacturer for over 80 years.

MHG's boilers have been marketed in the UK for many years, however MHG can now supply and support UK customers directly with its entire range of products.

This means that existing MHG product owners now have the option to use MHG's service engineers and new clients have the option to deal directly with one of Europe's leading premium heating equipment manufacturers.

The benefits for MHG's UK clients will include the ability to have direct prices on MHG's full range of quality products including the well-known gas condensing range, oil condensing boilers, award winning Blue Flame Oil Rocket Burner®, heat pumps, thermal solar systems and innovative and heating product award nominated ThermiPro Hybrid Heat Station and EcoStar Oil hybrid unit.

As you would expect from a German group of companies, MHG is committed to providing quality products and the highest level of customer support, encompassing selection, application, commissioning and annual servicing at competitive prices.

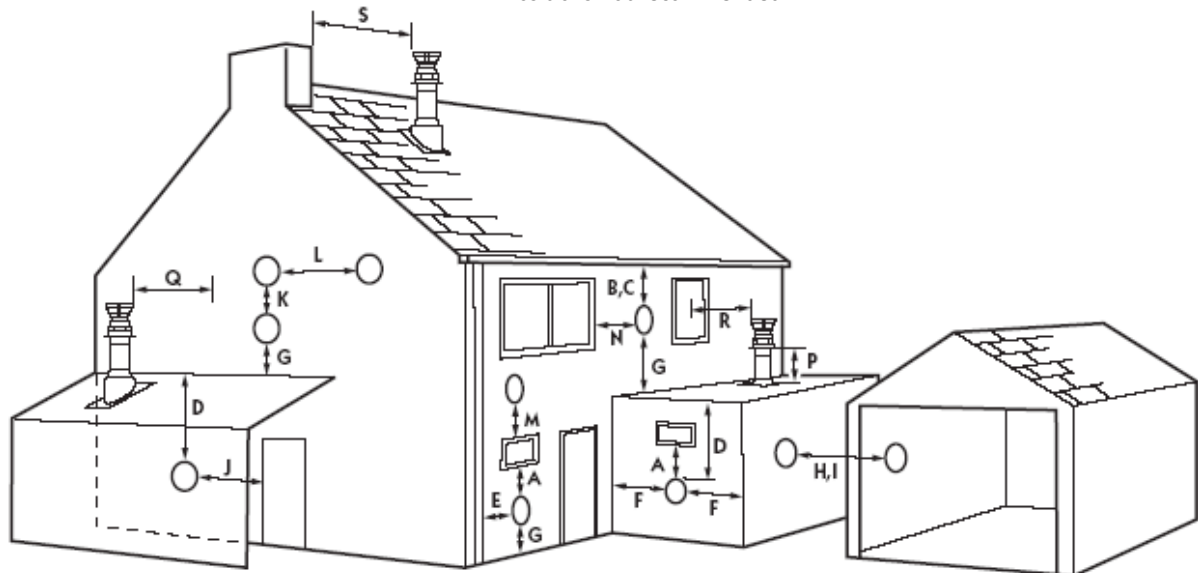
Technical support is available 7 days a week and all products are supplied with a 36 month warranty.

Balanced Flue Terminal Positions For Boilers Below and Above 70kW Net Input

All measurements are in mm and are minimum clearances.

Terminal Location		Boilers with a rated Input < 70kW Net	Boilers with a rated Input > 70kW Net
A	*Below and opening window etc.	300	600
B	Below gutter soil pipes etc.	75	700
C	Below Eaves.	200	200
D	*Below balconies or car port roof.	200	N/A
E	From vertical drain or soil pipe etc.	150	150
F	From internal or external corners.	300	300
G	Above ground or balcony level.	300	300 (2000 where people have general access)
H	From a surface facing the terminal.	2000	2000
I	From a terminal facing the terminal.	2000	2000
J	*From opening in a carport into a dwelling.	1200	N/A
K	Vertically from a terminal on the same wall.	1500	1500
L	Horizontally from a terminal on the same wall.	300	600
M	Above an opening, window etc.	500	600
N	*Horizontally to an opening, window etc.	300	600
P	Above a level roof (base of terminal.)	500	500
Q	From an adjacent wall (edge of terminal.)	500	500
R	From adjacent opening, window etc.	1000	1000
S	From any other flue terminal.	600	600

* Positions not recommended.



Groups of appliances of 150kW gross input (136kW net input) and above must comply with the Clean Air Act with respect to the chimney discharge height.

The terminal/s shall be guarded if it is less than 2000mm above the ground or in any position where it may cause injury to persons resulting from touching a hot surface.

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