

A Guide to
SIZE & FREE AREAS
for

**PRESSED STEEL
GRILLES,
ALLUMINIUM
GRILLES &
REGISTERS**

**TECHNICAL
INFORMATION
& CLARIFICATION**



CONTENT

1.	Pressed Steel Grilles	3
2.	Balanced Compartments	4
3.	Fan Assisted Provision of Combustion Air	5
4.	Pressed Steel Registers 44R	6
5.	Pressed Steel Grilles 33G "Free Are"	6
6.	Aluminium Opposed Blade Balancing Dampers	7
7.	Heavy Duty Steel Floor Diffusers	7
8.	Steel Ceiling Diffusers	7
9.	Full Width Grille Strip	7

In the interest of continuous development Johnson and Starley reserve the right to change specification without prior notice

Johnson and Starley prides itself on it's ability to supply spare parts quickly and efficiently. If your service engineer indicates a problem in obtaining a spare part, advise him to contact Johnson and Starley Spares Department.

1. PRESSED STEEL GRILLES

Pressed steel grilles have been widely used in the gas heating industry for many years both for the combustion air provision and for heater/boiler compartment relief ventilation at high and low level. (see BS 5440)

This type of grille was produced by a number of manufacturers and the 'free area' opening of these grilles differed from one to another.

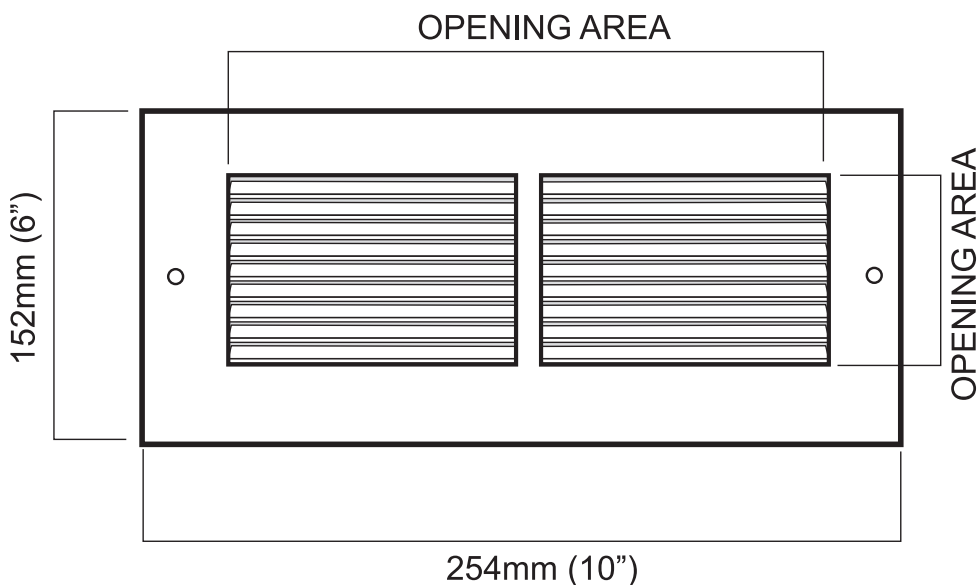
However, there has been some confusion with the 'rule of thumb' calculation for the free area of a given grille.

It has been widely accepted that the nominal free area of a grille was 70%.

This could be 70% of the overall grille size.

i.e. $25.4\text{cm} \times 15.2\text{cm} = 386\text{cm}^2 \times 70\% = 270\text{cm}^2$
($10\text{in} \times 6\text{in} = 60\text{in}^2 \times 70\% = 42\text{in}^2$) for some manufactures.

For other manufacturers the 70% free area was 70% of the louvered area only which could result in a figure of 60% of the overall grille size.



This had led to confusion with installers believing they had fitted the correct size grille only to find that it was undersize according to manufacturers instructions.

Having undersize grilles was not a major crisis as it was deemed to be NCS (not to current standards). However, since June 2008 the classification for undersized existing ventilation had changed from NCS to AR (at risk).

From 1st June 2008, all installations providing less than 90% of the ventilation requirement will be regarded as AR.

90% to 100% of the requirement is accepted under standards.

Where a defect(s) is identified with the ventilation and it is not possible to rectify it, reference should be made to the requirements of the current Gas Industry Unsafe Situations Procedure.

In certain situations, such as a compartment door being lined with asbestos, the existing hole cannot be increased, without specialist asbestos removed practices being employed and therefore it could be deemed as not possible to rectify it.

Note: *Providing that the asbestos is not disturbed its continuous use is still permitted.*

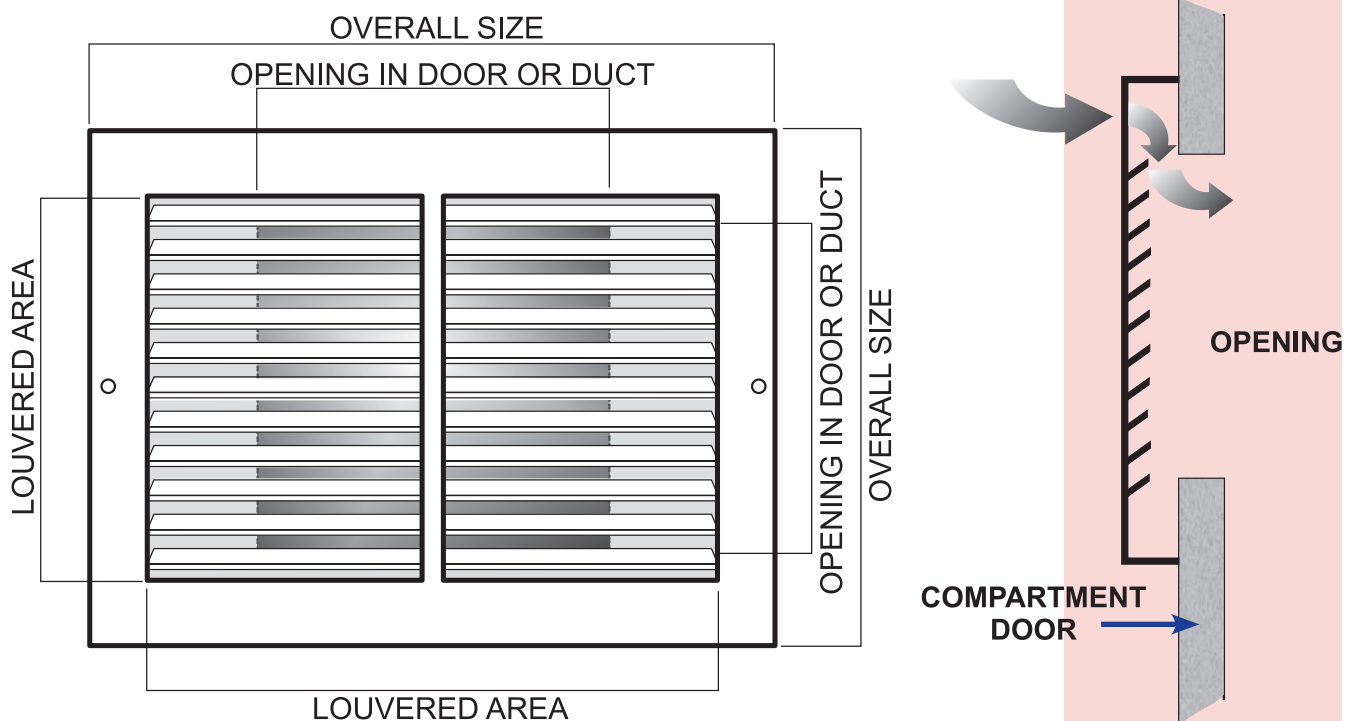
However, if the hole size in the door partition or compartment is adequate, a new Johnson & Starley grille with the rule of thumb 70% free area of the overall grille, with flanges deeper than that of the louver's can be used to provide the correct ventilation requirement. The grille stands proud of the door enabling an undersized grille covering an opening to be replaced with a correct free area grille without having to cut the door.

i.e. A compartment has a requirement for a high level grille with a free area requirement. 270cm².

A 25.4 cm x 15.2 cm hole was cut into the compartment door and covered with a 25.4 x 15.2 grille.

The measured free area of the existing grille is 230cm² therefore this is undersize by 40cm² and is now classified as AR.

The 25.4 x 15.2 hole is more than adequate for the requirement therefore a larger grille with the correct free area can be fitted over the hole and as the grille is proud of the door there will be no restriction to the airflow.



2. BALANCED COMPARTMENTS

A balanced compartment is a method of installing an open-flued appliance in a room sealed situation and arranging the flueing and ventilation so that a balanced flue effect is achieved. (see BS 5440)

This method was generally used in applications for larger appliances (35kW to 70kW) where room sealed appliances were generally not available. There were also a number of these applications used in the installation of warm air heating systems.

As this type of application is not generally used in new installations many engineers are not aware of their existence and have been known to put warning labels on them and/or turning off appliances as they have assumed that there is no ventilation to the compartment.

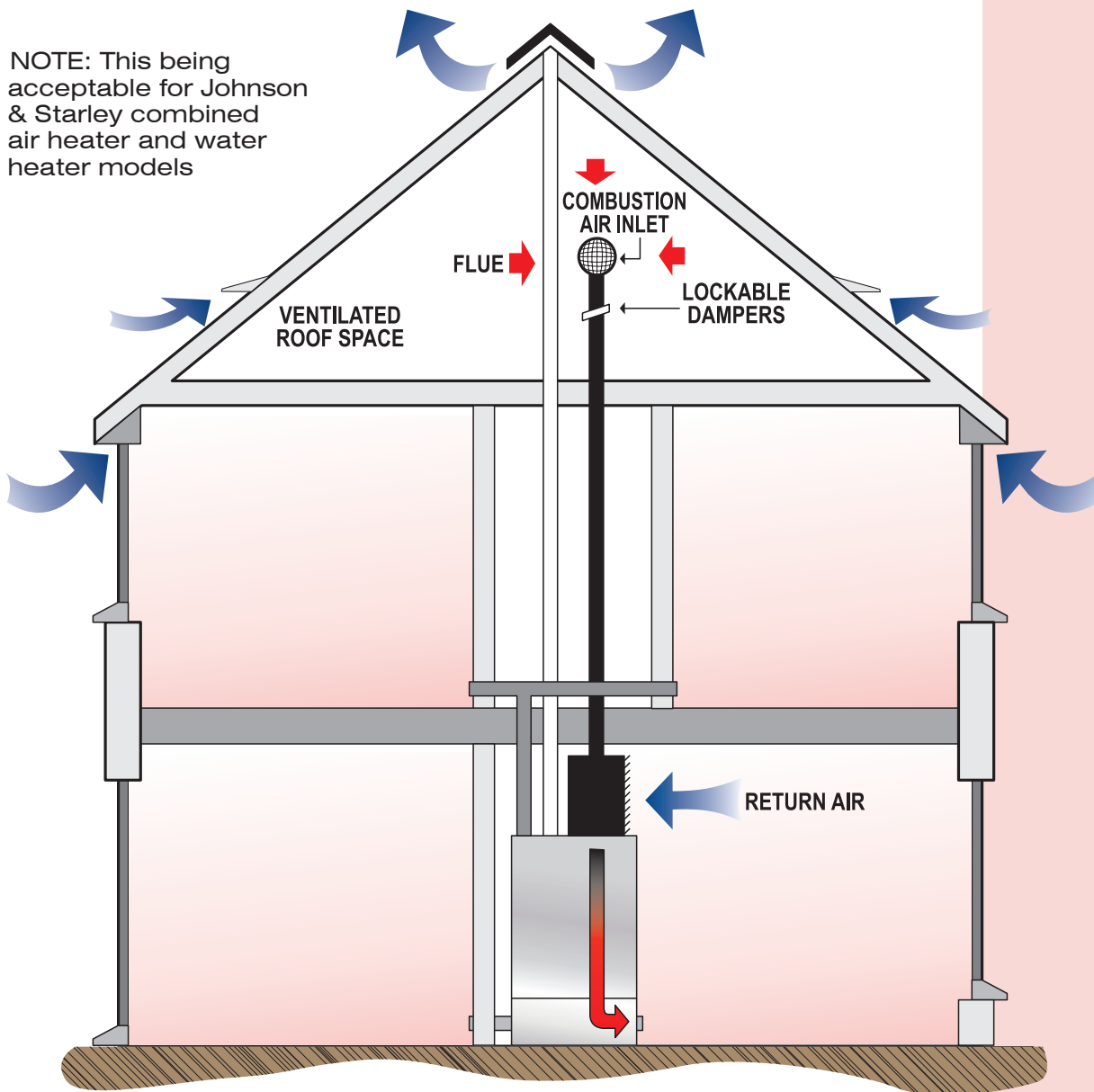
Many existing balanced compartment installations have been modified by adding high and low level compartment grilles into the door and, unwittingly, causing an at risk situation.

3. FAN ASSISTED PROVISION OF COMBUSTION AIR

This is an alternative method of providing combustion air for open-flued warm air heaters in tighter constructed dwellings, which often include draft and sound proofing materials. The method operated by drawing air from a ventilated roof space into the warm air ducting system and eliminated the need for openings in walls, doors or windows and reduced the risk of draughts. (see BS 5864).

When the warm air heater operates, its fan will draw in external air, mix it with the return air and circulate it throughout the warm air distribution ducts. Warm air should be circulated into the room / space where the air heater is installed using a non-closing register fitted in that area.

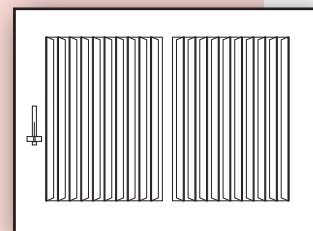
Where this method of air supply is used, reference should be made to the appliance manufacturer's installation instructions and BS 5864:2004 Installation and maintenance of gas-fired ducted air heaters of rated input not exceeding 70kw net (2nd and 3rd family gases) specification for further guidance.



There are several systems of this type fitted into dwellings and as not all engineers are familiar with this type of combustion air provision several appliances have been labelled or turned off incorrectly.

4. PRESSED STEEL REGISTERS 44R

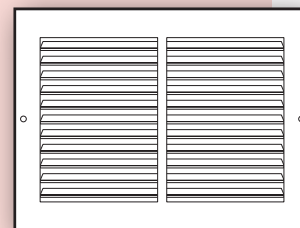
ITEM NO	INCHES	mm	FREE AREA in ²	FREE AREA cm ²
44R	6 x 4	152 x 102	16.8	105
44R	8 x 4	203 x 102	22.4	140
44R	6 x 6	152 x 152	25.2	157.5
44R	8 x 6	203 x 152	33.6	210
44R	10 x 6	254 x 152	42	262.5
44R	12 x 6	305 x 152	50.2	314
44R	14 x 6	356 x 152	58.8	367.5
44R	10 x 8	254 x 203	56	350
44R	12 x 8	305 x 203	67.2	420
44R	14 x 8	356 x 203	78.4	490



5. PRESSED STEEL GRILLES 33G "FREE AREA"

EQUIVALENT AREA (TO BS EN 13141-1:2004) ADD 9% TO FIGURES SHOWN BELOW

ITEM NO	INCHES	mm	FREE AREA in ²	FREE AREA cm ²
33G	6 x 4	152 x 102	18.9	118.2
33G	6 x 6	152 x 152	27.2	170.1
33G	8 x 4	203 x 102	27.63	172.7
33G	8 x 6	203 x 152	38.0	237.7
33G	10 x 4	254 x 102	34.73	217.1
33G	10 x 6	254 x 152	49.22	307.5
33G	10 x 8	254 x 203	62.93	393.3
33G	12 x 6	305 x 152	56.72	354.5
33G	12 x 8	305 x 203	72.62	453.9
33G	12 x 10	305 x 254	90.75	567.2
33G	12 x 12	305 x 305	104.16	651
33G	14 x 6	356 x 152	64.77	404.8
33G	14 x 8	356 x 203	85.536	534.6
33G	14 x 12	356 x 305	122.77	767.3
33G	14 x 14	356 x 356	141.49	884.3
33G	16 x 8	406 x 203	93.15	582.2
33G	16 x 16	406 x 406	173.27	1082.9
33G	18 x 12	457 x 305	151.57	947.3
33G	18 x 16	457 x 406	204.34	1279
33G	18 x 18	457 x 457	220.74	1379.6



6. ALUMINIUM OPPOSED BLADE BALANCING DAMPERS

ITEM No.	INCHES	mm	FREE AREA in ²	FREE AREA cm ²
OBD	6 x 4	152 x 102	17	109
OBD	8 x 4	203 x 102	22	145
OBD	6 x 6	152 x 152	25	162
OBD	8 x 6	203 x 152	34	216
OBD	10 x 6	254 x 152	42	270
OBD	12 x 6	305 x 152	50	325
OBD	10 x 8	254 x 203	56	361
OBD	12 x 8	305 x 203	67	433
OBD	14 x 8	356 x 203	78	506

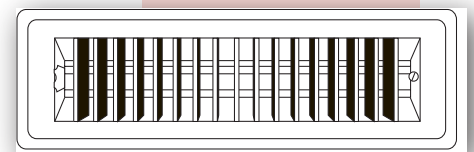


7. ALUMINIUM GRILLES & REGISTERS

ITEM No.	INCHES	mm	FREE AREA in ²	FREE AREA cm ²	ITEM No.	INCHES	mm	FREE AREA in ²	FREE AREA cm ²
AG	8 x 4	203 x 102	18	119	AG 20 x 12	20 x 12	508 x 305	159	1025
AG	6 x 6	152 x 152	21	135	AG 14 x 14	14 x 14	356 x 356	129	823
AG	8 x 6	203 x 152	29	189	AG 12 x 16	12 x 16	305 x 406	126	812
AG	10 x 6	254 x 152	39	232	AG 18 x 16	18 x 16	456 x 406	170	1097
AG	12 x 6	305 x 152	44	284	AG 18 x 18	18 x 18	457 x 457	192	1238
AG	8 x 8	203 x 203	39	253	AR 6 x 4	6 x 4	152 x 102	13	84
AG	12 x 8	305 x 203	60	387	AR 8 x 4	8 x 4	203 x 102	18	116
AG	12 x 10	305 x 254	76	490	AR 6 x 6	6 x 6	152 x 152	21	135
AG	14 x 10	356 x 254	98	613	AR 8 x 6	8 x 6	203 x 152	29	187
AG	8 x 12	203 x 305	60	387	AR 10 x 6	10 x 6	254 x 152	36	232
AG	12 x 12	305 x 305	93	600	AR 12 x 6	12 x 6	305 x 142	44	284
AG	14 x 12	356 x 305	118	735	AR 10 x 8	10 x 8	254 x 203	50	322
AG	16 x 12	406 x 305	126	812	AR 12 x 8	12 x 8	305 x 203	60	387
AG	18 x 12	457 x 305	143	922	AR 14 x 8	14 x 8	356 x 203	71	458

8. HEAVY DUTY STEEL FLOOR DIFFUSERS

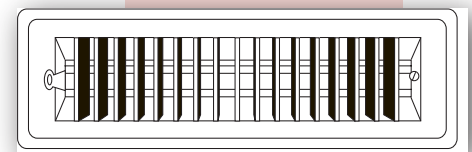
ITEM No.	INCHES	mm	FREE AREA in ²	FREE AREA cm ²
FD	MINI	245 x 57	8	50
FD	10 x 2¼	254 x 57	16	100
FD	12 x 2¼	305 x 57	18	116
FD	14 x 2¼	356 x 57	22	136
FD	10 x 4	254 x 102	27	177
FD	12 x 4	305 x 102	33	213
FD	14 x 4	356 x 102	39	248



BRONZE

9. STEEL CEILING DIFFUSERS

ITEM	INCHES	mm	FREE AREA in ²	FREE AREA cm ²
CD	MINI	254 x 57	8	50
CD	10 x 2¼	254 x 57	16	100
CD	12 x 2¼	305 x 57	18	116
CD	14 x 2¼	356 x 57	22	136



WHITE

10. FULL WIDTH GRILLE STRIP

ITEM	INCHES	mm	FREE AREA in ²	FREE AREA cm ²
GS262	26 x 2	660 x 50	17	109
GS302	30 x 2	762 x 50	20	129



ALUMINIUM



Johnson & Starley

Rhosili Road, Brackmills, Northampton NN4 7LZ
Main Switchboard Tel: 01604 762881 Fax: 01604 767408
Spares Tel: 01604 707012 Fax: 01604 764884
Service Tel: 01604 707011 Fax: 01604 707017
www.johnsonandstarley.co.uk