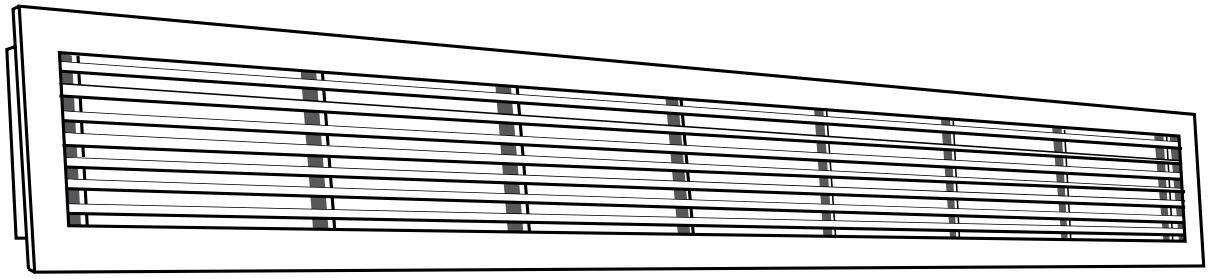
1500 Linear Fixed Blade Diffuser/Grille

airdistribution



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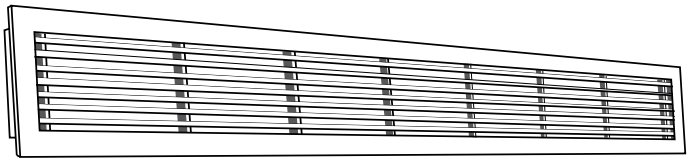
Supply / Return Air

LINEAR FIXED BLADE DIFFUSER / GRILLE

Series 1500, 1515



General

Fixed deflection linear bar type supply or return air diffuser/grille suitable for ceiling, sidewall, sill, or floor mounting. Standard manufacture is with closed end sections. Continuous (butt-jointed) lengths and mitred corners are available for special installations.

Design

Grille bars are fixed at 12 mm centres and are mechanically bonded to support mullions and frames. Floor mounting grilles have additional mullions fitted.

Series 1500 has 0° deflection blades; Series 1515 has 15° deflection blades.

Frame style is flat, with a bevelled edge.

Sizes (mm)

Available square or rectangular.

Minimum Nominal (hole) size :	200 mm x 50 mm
Maximum Nominal (hole) size :	2400 mm x 250 mm
Standard size increment :	50 mm width 25 mm height

For non-standard size increments - refer factory.

Maximum single piece length 2.4 metre. Longer diffusers/grilles are butt-jointed.

When ordering, specify nominal width followed by nominal height:	e.g. 500 mm wide x 200 mm high

Finishes

Standard finish is gloss powder coat. Alternative colours and finishes are available.

Construction

Frames and cores are of corrosion resistant aluminium construction.

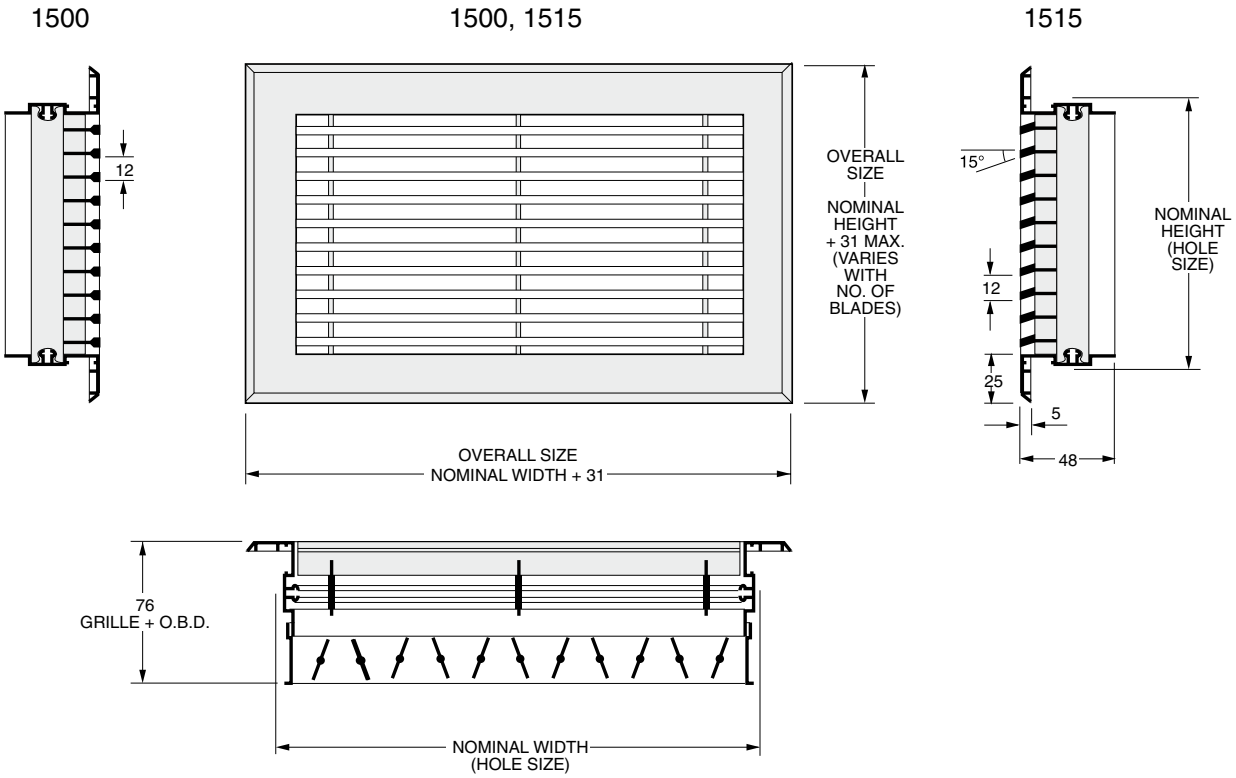
Accessories

Optional accessories include opposed blade dampers (OBD) and custom made boots/plenums.

Dimensions (mm)

LINEAR FIXED BLADE DIFFUSER / GRILLE

Series 1500, 1515



Performance Data

The data in the following tables (overleaf) is based on a grille length of 1.2 metres, without OBD.

Minimum throw values are at a terminal velocity of 0.50 m/s; maximum throw values are at a terminal velocity of 0.25 m/s; both at a cooling temperature differential of 11°C.

NC levels are based on a room attenuation of 10 dB (SWL re 10^{-12} watts).

Throw values are given for 'Sidewall' (horizontal air flow) and 'Sill' (vertical air flow) applications.

When linear grilles are used for return air duty:

(a) Add 5 to the supply air NC rating,

(b) Negative Total Pressure = Total Pressure x -0.25

(c) Negative Static Pressure = Total Pressure x -0.50

Example:

Return air volume: 475 l/s per m
Grille width: 150 mm
NC rating = 27 + 5 = 32 NC
Negative Total Pressure = 25 x -0.25 = -6.25 Pa
Negative Static Pressure = 25 x -0.50 = -12.50 Pa

Performance Data

LINEAR FIXED BLADE DIFFUSER / GRILLE

Series 1500

Note: Data based on 1.2 m long active section.
Throw: Sidewall = horizontal air flow, Sill = vertical air flow.

Nominal Width(mm)	Total Pressure Pa		3	10	20	25	30	40	50	60	80	100
37.5	Volume l/s per m.		23	44	60	67	74	85	95	105	120	135
	Sound Data N.C.		< 20	< 20	< 20	< 20	20	24	28	30	34	39
	Throw	Sidewall m	1.2 - 2.1	2.1 - 4.0	2.7 - 5.5	3.0 - 5.8	3.4 - 6.1	4.0 - 6.7	4.3 - 7.0	4.9 - 7.3	5.5 - 7.9	5.8 - 8.5
		Sill m	0.6 - 1.5	1.5 - 2.7	1.8 - 4.0	2.1 - 4.3	2.4 - 4.3	2.8 - 4.6	3.0 - 4.9	3.7 - 5.2	4.0 - 5.5	4.3 - 5.8
50	Volume l/s per m.		39	70	100	115	120	145	160	175	200	225
	Sound Data N.C.		< 20	< 20	< 20	20	22	27	30	33	37	41
	Throw	Sidewall m	1.5 - 2.8	2.4 - 4.9	3.7 - 7.3	4.0 - 7.6	4.3 - 7.9	5.2 - 8.5	5.8 - 9.2	6.1 - 9.5	7.3 - 10.4	7.6 - 10.7
		Sill m	0.9 - 1.8	1.8 - 3.7	2.4 - 5.2	2.8 - 5.5	3.0 - 5.8	3.7 - 6.1	4.0 - 6.4	4.3 - 6.7	5.2 - 7.3	5.5 - 7.6
75	Volume l/s per m.		70	130	185	200	220	255	285	310	360	405
	Sound Data N.C.		< 20	< 20	20	23	25	30	33	35	40	43
	Throw	Sidewall m	1.8 - 3.7	3.4 - 7.0	4.9 - 9.8	5.5 - 10.4	5.8 - 10.7	6.7 - 11.3	7.6 - 11.9	8.2 - 12.5	9.5 - 13.1	10.4 - 14
		Sill m	1.2 - 2.8	2.4 - 4.9	3.4 - 7.0	3.7 - 7.3	4.3 - 7.6	4.9 - 8.2	5.5 - 8.5	5.8 - 9.2	6.7 - 9.8	7.3 - 10.4
100	Volume l/s per m.		100	185	260	295	320	370	410	450	525	580
	Sound Data N.C.		< 20	< 20	22	25	27	31	35	37	42	45
	Throw	Sidewall m	2.1 - 4.6	4.0 - 8.2	5.8 - 11.6	6.4 - 12.2	7.0 - 12.5	8.2 - 13.4	9.2 - 14.0	10.0 - 14.7	11.6 - 15.9	12.2 - 16.5
		Sill m	1.5 - 3.0	2.7 - 5.8	4.0 - 8.2	4.6 - 5.8	4.9 - 9.2	5.8 - 9.8	6.4 - 10.4	7.0 - 10.7	8.2 - 11.6	8.9 - 12.2
125	Volume l/s per m.		130	240	340	380	420	485	540	590	685	760
	Sound Data N.C.		< 20	< 20	23	26	28	33	36	39	43	46
	Throw	Sidewall m	2.4 - 5.2	4.6 - 9.5	6.7 - 12.8	7.3 - 13.7	8.2 - 14.3	9.5 - 15.2	10.4 - 15.9	11.3 - 16.8	12.8 - 17.7	13.7 - 18.6
		Sill m	1.8 - 3.7	3.4 - 6.7	4.6 - 9.5	5.2 - 10.0	5.8 - 10.4	6.7 - 11.3	7.3 - 11.6	8.2 - 12.2	9.5 - 13.1	10.0 - 13.7
150	Volume l/s per m.		165	300	420	475	520	600	670	730	845	940
	Sound Data N.C.		< 20	< 20	25	27	29	34	37	39	44	47
	Throw	Sidewall m	2.8 - 5.8	5.2 - 10.4	7.3 - 14.0	8.2 - 15.0	9.2 - 15.6	10.4 - 16.8	11.6 - 17.7	12.5 - 18.3	14.0 - 19.5	14.9 - 20.4
		Sill m	2.1 - 4.0	3.7 - 7.3	5.2 - 10.4	5.8 - 11.0	6.4 - 11.6	7.3 - 12.2	8.2 - 12.8	8.8 - 13.4	10.4 - 14.3	11.0 - 15.0
175	Volume l/s per m.		195	350	505	565	615	710	795	870	1 000	1 120
	Sound Data N.C.		< 20	< 20	25	28	30	34	38	40	45	48
	Throw	Sidewall m	3.0 - 6.0	5.5 - 11.3	8.0 - 15.3	9.2 - 16.2	9.8 - 16.8	11.3 - 18.0	12.5 - 19.0	13.4 - 19.8	15.3 - 21.0	16.2 - 22.3
		Sill m	2.1 - 4.3	4.0 - 7.9	5.8 - 11.3	6.4 - 11.9	7.0 - 12.5	7.9 - 13.1	8.8 - 13.7	9.8 - 14.3	11.3 - 15.6	11.9 - 16.2
200	Volume l/s per m.		225	410	580	650	710	825	920	1 010	1 165	1 300
	Sound Data N.C.		< 20	< 20	26	28	31	35	38	41	45	48
	Throw	Sidewall m	3.4 - 6.7	6.1 - 8.5	8.5 - 16.5	9.8 - 17.4	10.7 - 18.0	11.9 - 19.2	13.0 - 20.4	14.4 - 21.4	16.5 - 22.6	17.4 - 23.8
		Sill m	2.4 - 4.6	4.3 - 8.5	6.1 - 11.9	6.7 - 12.8	7.6 - 13.0	8.5 - 14.0	9.8 - 15.0	10.7 - 15.6	11.9 - 16.5	12.8 - 17.4

Performance Data

LINEAR FIXED BLADE DIFFUSER / GRILLE

Series 1515

Note: Data based on 1.2 m long active section.
Throw: Sidewall = horizontal air flow, Sill = vertical air flow.

Nominal Width(mm)	Total Pressure Pa		3	10	20	25	30	40	50	60	80	100
37.5	Volume l/s per m.		22	39	56	62	68	79	88	96	110	125
	Sound Data N.C.		< 20	< 20	26	28	29	32	35	37	41	46
	Throw	Sidewall m	1.2 - 2.1	1.8 - 4.0	2.7 - 5.5	3.0 - 5.8	3.4 - 6.1	4.0 - 6.4	4.3 - 6.7	4.9 - 7.0	5.5 - 7.6	5.8 - 8.2
		Sill m	0.9 - 1.5	1.2 - 2.7	1.8 - 4.0	2.1 - 4.0	2.4 - 4.3	2.7 - 4.6	3.0 - 4.9	3.4 - 4.9	3.7 - 5.5	4.0 - 5.8
50	Volume l/s per m.		36	65	93	105	115	130	145	165	190	210
	Sound Data N.C.		< 20	22	28	31	32	35	37	40	44	48
	Throw	Sidewall m	1.5 - 2.7	2.4 - 4.9	3.7 - 7.0	4.0 - 7.3	4.3 - 7.6	5.2 - 8.2	5.8 - 8.9	6.4 - 9.2	7.0 - 9.8	7.3 - 10.4
		Sill m	0.9 - 1.8	1.8 - 3.7	2.4 - 4.9	2.7 - 5.2	3.0 - 5.5	3.7 - 5.8	4.0 - 6.1	4.6 - 6.4	4.9 - 7.0	5.2 - 7.3
75	Volume l/s per m.		61	120	170	190	205	235	265	290	335	380
	Sound Data N.C.		< 20	25	31	34	35	38	40	42	46	51
	Throw	Sidewall m	1.5 - 3.4	3.4 - 6.7	4.9 - 9.5	5.5 - 10.0	5.8 - 10.4	6.7 - 11.0	7.6 - 11.6	8.2 - 12.2	9.5 - 12.8	10.0 - 13.7
		Sill m	1.2 - 2.4	2.4 - 4.9	3.4 - 6.7	4.0 - 7.0	4.3 - 7.3	4.9 - 7.9	5.5 - 8.2	5.8 - 8.9	6.7 - 9.5	7.0 - 10.0
100	Volume l/s per m.		93	175	245	270	300	345	390	420	485	545
	Sound Data N.C.		< 20	27	33	35	37	40	42	44	48	52
	Throw	Sidewall m	2.1 - 4.6	4.3 - 8.2	5.8 - 11.3	6.4 - 11.6	7.0 - 12.2	8.2 - 13.1	9.2 - 13.7	10.0 - 14.3	11.3 - 15.3	11.6 - 15.9
		Sill m	1.5 - 3.0	3.0 - 5.8	4.0 - 7.9	4.6 - 8.5	5.2 - 8.9	5.8 - 9.5	6.4 - 10.0	7.0 - 10.4	7.9 - 11.3	8.5 - 11.6
125	Volume l/s per m.		125	225	320	360	390	450	505	550	635	710
	Sound Data N.C.		< 20	28	35	37	38	41	44	45	49	54
	Throw	Sidewall m	2.4 - 5.2	4.6 - 9.5	6.7 - 12.5	7.6 - 13.1	8.2 - 13.7	9.5 - 14.6	10.4 - 15.6	11.3 - 16.1	12.5 - 17.0	13.1 - 18.0
		Sill m	1.8 - 3.7	3.4 - 6.7	4.6 - 9.2	5.2 - 9.8	5.8 - 10.0	6.7 - 10.7	7.3 - 11.3	8.2 - 11.9	9.2 - 12.5	9.8 - 13.1
150	Volume l/s per m.		150	280	395	435	485	555	620	680	785	875
	Sound Data N.C.		< 20	29	36	38	40	42	45	46	50	54
	Throw	Sidewall m	2.7 - 5.8	5.2 - 10.7	7.3 - 13.7	8.2 - 14.6	9.2 - 15.3	10.4 - 16.2	10.4 - 17.0	12.5 - 17.7	13.7 - 18.9	14.6 - 19.8
		Sill m	2.1 - 4.0	3.7 - 7.3	5.2 - 10.0	5.8 - 10.7	6.4 - 11.3	7.3 - 11.9	8.2 - 12.5	9.2 - 12.8	10.0 - 13.7	10.7 - 14.6
175	Volume l/s per m.		185	330	465	525	575	700	740	805	935	1 045
	Sound Data N.C.		< 20	30	36	39	41	44	46	47	51	55
	Throw	Sidewall m	3.0 - 6.4	5.8 - 11.3	7.9 - 15.0	9.2 - 15.9	9.8 - 16.5	11.9 - 18.0	12.5 - 18.3	13.4 - 19.2	15.0 - 20.4	15.9 - 21.7
		Sill m	2.1 - 4.6	4.0 - 7.9	5.8 - 11.0	6.4 - 11.6	7.0 - 11.9	8.5 - 13.1	8.9 - 13.4	9.8 - 14.0	11.0 - 15.0	11.6 - 15.9
200	Volume l/s per m.		210	380	545	600	660	765	855	940	1 085	1 210
	Sound Data N.C.		< 20	30	37	39	41	44	46	48	52	56
	Throw	Sidewall m	3.4 - 6.7	6.1 - 11.9	8.5 - 15.9	9.8 - 16.8	10.7 - 17.4	11.9 - 18.6	13.1 - 19.5	14.3 - 20.4	15.9 - 22.0	16.8 - 23.2
		Sill m	2.4 - 4.9	4.3 - 8.5	6.1 - 11.6	6.7 - 12.2	7.3 - 12.8	8.5 - 13.7	9.8 - 14.3	10.7 - 15.0	11.6 - 15.9	12.2 - 16.8

PERFORMANCE DATA

The data in the Performance Tables was obtained from tests conducted in accordance with ISO Standard 5219, ISO Standard 3741 and ADC Test Code 1062 GRD84.

Additional performance details are included, where applicable, within each product section.

For performance data beyond the tables' range, consult your nearest temperzone sales office.

Definitions:

Core Area (m^2)
The total plane area within the frame opening through which air passes.

Isothermal Air
Air with a nil temperature difference between primary (supply) air and secondary (room) air.

Neck Velocity (m/s)
Neck Velocity = Volume (flow rate) ÷ Neck Core Area.
Measured in metres per second at the neck - the point where the grille/diffuser attaches to the duct.

Noise Criteria (NC)
The Noise Criteria (NC) system curves define the limits which the octave band spectrum of a continuous noise source must not exceed to achieve compliance with the design goal and a level of occupant acceptance.

Standard (Dry) Air
Density of 1.2 kg/m^3 at 21°C and 760 mm Hg (barometric pressure).

Static Pressure (Pa)
The Static pressure (of an air steam) is the force per unit area exerted in all directions, irrespective of the air flow direction. Can be positive or negative. Measured in pascals, perpendicular to the air flow direction.

Terminal Velocity (m/s)
The specific velocity in metres per second used to define the throw distance.

Throw (m)
The horizontal or vertical distance, in metres, that the air stream travels from the outlet face to where the specific terminal velocity occurs. Each Performance Data Chart states throw values in metres at the terminal velocities noted. Throw distances are based on isothermal air, for grilles/diffusers flush mounted in a wall, sill or ceiling. For grilles/diffusers, mounted on exposed ductwork, throws will be approximately 70% of performance data values.

Total Pressure (Pa)
The Total Pressure (of an air stream) equals the sum of its Static Pressure and its Velocity Pressure. Measured in pascals, parallel and counter to the air flow direction. Tabled values do not include allowance for Opposed Blade Dampers (OBDs), except Series 5180.

Velocity (Dynamic) Pressure (Pa)
The Velocity pressure (of an air stream) is the force per unit area equivalent to the transformation of the kinetic energy into pressure energy. Always positive. Obtained from the difference between Total and Static pressure.

Volume (l/s)
Volume of air per unit of time (flow rate) entering or leaving the grille or diffuser.
Measured in litres per second.

Noise Criteria (Sound)

The information presented below is included to assist in the design and/or selection of air distribution equipment for the intended end-use environment. 'NC' curves are shown, together with the suggested design goal NC range table.

The NC levels in the performance data tables are for the grille/diffuser alone, and assume a room attenuation of 10 dB across the octave band spectrum with a single outlet operating. Upstream duct-generated noise is not considered in the data. By selecting grille/diffuser sizes in accordance with the performance data tables and at the appropriate NC level, there will be no significant contribution to the overall system sound levels by the grille/diffuser. All data presented is in accordance with international standards, i.e. SWL re: 10^{-12} watts.

Sound level measurements, taken in a calibrated reverberant room, can be read directly as Sound Power Levels (SWL) in decibels (dB) whereas measurements taken in the installed environment are Sound Pressure Levels (SPL) in decibels (dB) which can be plotted on the NC curves.

By utilising the NC curves and NC range table, compliance with the design goal can be confirmed by:

(i) predicting the Sound Pressure Levels (SPL) which can be calculated from published Sound Power Level (SWL) data and specified room characteristics,
(ii) measuring Sound Pressure Levels (SPL) directly in an existing installation - preferably using an octave band sound pressure level meter.

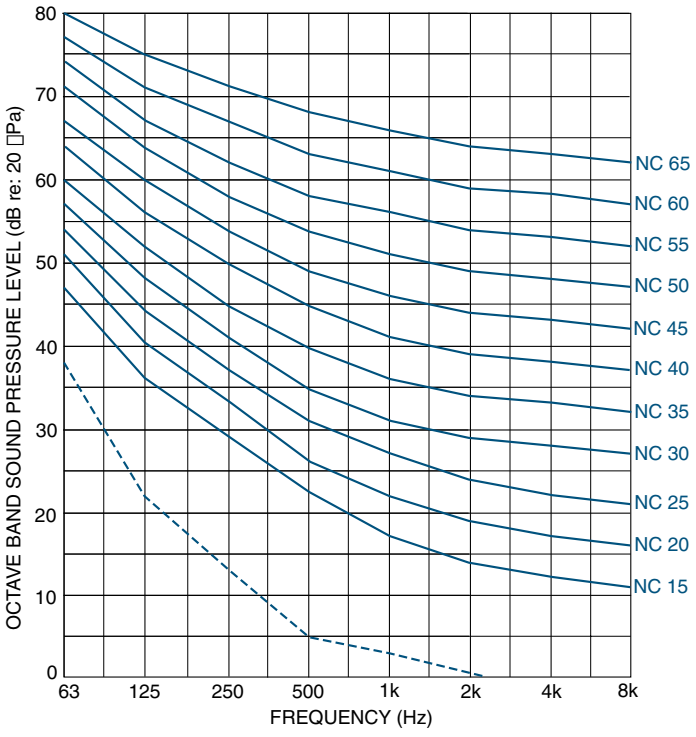
Where measurements cannot be carried out with an octave-band sound level meter, an approximation of an NC level can be calculated from an 'A' scale sound level meter reading, as follows:

NC Level = 'A' scale reading in dB −6 ± 2

Guide for Environmental Sound Level Design

Environment	*Suggested NC Range*
Broadcast, Recording Studios	15 - 20
Concert / Opera Halls	20 - 25
Residences, Bedrooms	25 - 35
Hospitals	25 - 35
Theatres, Halls, Churches	25 - 30
Cinemas	30 - 35
Private Offices, Libraries	30 - 35
Restaurants, Bars	35 - 45
Retail Stores & Shops	35 - 45
General Offices, Schools	35 - 45
Swimming Centres, Gymnasiums	35 - 50
Kitchens	40 - 50
Factories	
- Light Engineering	45 - 65
- Heavy Engineering	55 - 75

NC Curves

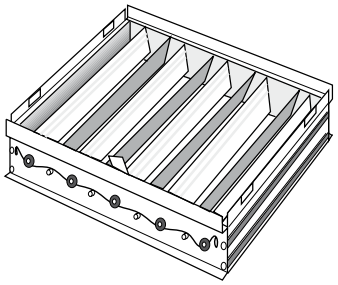


For more specific information on allowable noise levels, consult the latest issue of 'ASHRAE Guide and Data Book - Fundamentals and Equipment'.

SUGGESTED SPECIFICATIONS

Linear Fixed Blade Grille - Series 1500, 1515
All linear bar type supply/return air grilles shall have non-adjustable continuous blades (bars) of fixed deflection, mechanically bonded to mullions, the mullions being locked into the frame. Frame and blades shall be of aluminium alloy extruded sections, finished in commercial grade powder or stoving enamel coating, all as manufactured by **temperzone** Limited. For continuous length grilles, each section shall be butt-jointed using non-visible pins located in each frame. Where grilles (registers) are fitted with opposed blade volume regulating dampers (OBD), the adjustment lever shall be accessible from the register face.

ACCESSORIES



Opposed Blade Damper (OBD)

- Controls air volume for balancing and fine adjustment
- Installs directly to neck with clip fasteners
- Lever operated from the face of the grille/diffuser
- Not intended for use as a shut-off damper
- Aluminium construction
- Sized to suit grilles/diffusers