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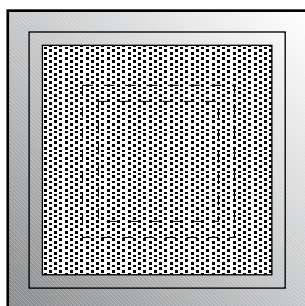
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## SQUARE PERFORATED FACE GRILLE / DIFFUSER

Series F1100

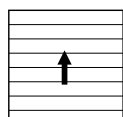


### General

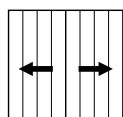
Multi-pattern supply air grille/diffuser available in 1, 2, 3, and 4 way air patterns, using curved (eye lash) deflecting vanes behind a hinged perforated easy to clean face. Suitable for ceiling mounting.

### Design

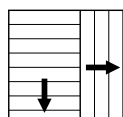
The curved deflection vanes are individually adjustable, without special tools, and accessible behind the hinged perforated face, leaving the diffuser appearance unchanged. The combination of curved vanes and perforated face provides a high rate of induction, and has superior anti-smudge characteristics due to centre aspiration. Ideal for rooms of unusual shape, ceiling height, ceiling slope, or where fixed type diffusers may not be suitable. Air patterns available :



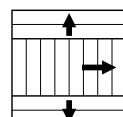
F1101 - 1 way



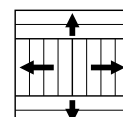
F1102 - 2 way/180°



F1102C - 2 way/90°



F1103 - 3 way



F1104 - 4 way.

### Frames

Perforated face grilles have a flat frame that maintains a low unobtrusive profile against any ceiling.

### Performance Data

The data is referenced by the duct size to be used in combination with the chosen ceiling hole size. The various combinations are shown in the dimensions table.

### Sizes

Available in square format only and in the ceiling hole size / duct size combinations listed in the dimensions table. The 512 x 512 diffuser will fit directly into a 600 x 600 suspended ceiling grid with 25 mm T-rail.

When ordering, specify air pattern followed by square ceiling hole and duct size :

e.g. F1104 - 600 / 350,  
F1102 - 400 / 200,  
F1102C - 600 / 300

### Finishes

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

### Construction

Diffuser face is galvanised steel. Frame and vanes are of corrosion resistant aluminium construction.

### Accessories

Optional accessories include opposed blade dampers (OBD), square-to-round (SRA) ducting adaptors.

**Dimensions (mm)**

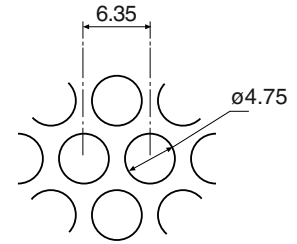
**SQUARE PERFORATED FACE GRILLE / DIFFUSER**

Ceiling Hole Size A	Overall Size B	Neck Size C	Duct Size Options for Ceiling Hole Size **						
			D						
			150	200	250	300	350	400	450
300 x 300	363	296	●	-	-	-	-	-	-
400 x 400	463	396	-	●	●	-	-	-	-
500 x 500	563	496	-	-	●	●	●	-	-
600 x 600	663	596	-	-	-	●	●	●	●
512 x 512 *	575	508	-	-	-	●	●	●	●

\* To suit Lay-in type 600 mm grid applications (25 mm T-rail).

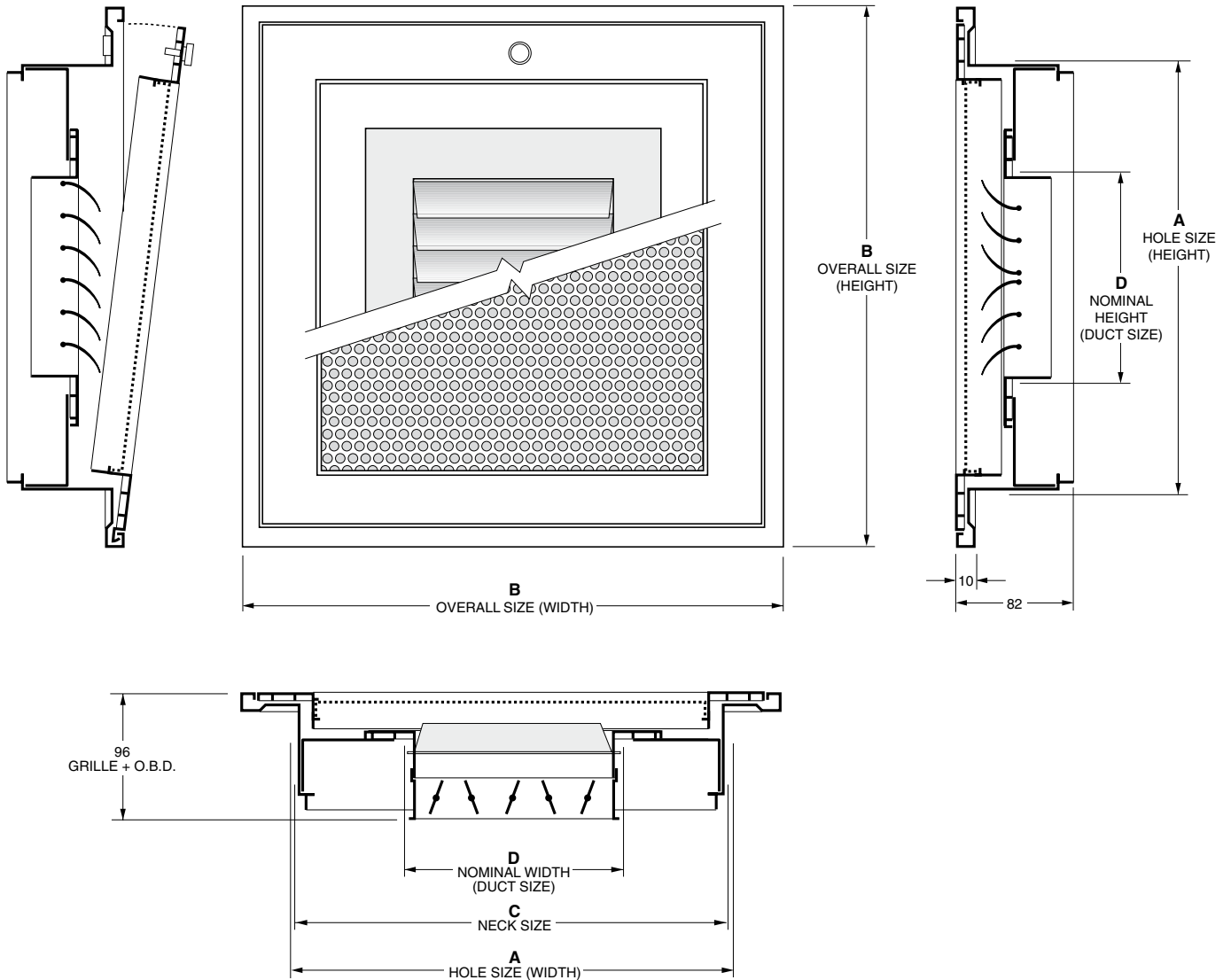
\*\* Use duct size for entry into performance data tables.

Perforation Pattern



F1101

F1102



## Performance Data

SQUARE PERFORATED FACE  
GRILLE / DIFFUSER

Note: Throw values are given for terminal velocities of 0.50 m/s and 0.25 m/s respectively.

Duct Size (mm)	Neck Vel. m/s	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0
	Stat. Press. Pa	5	9	14	21	28	37	48	59

## Series F1101 (1 way)

150 x 150	Volume l/s	30	38	48	57	67	76	86	95
	Throw m	1.5 - 3.0	1.8 - 3.9	1.8 - 3.9	3.0 - 5.5	3.4 - 5.8	3.9 - 6.4	4.6 - 6.7	4.9 - 7.0
	N.C.	< 20	< 20	< 20	< 20	22	26	30	34
200 x 200	Volume l/s	53	70	88	105	120	140	160	175
	Throw m	2.1 - 4.3	3.0 - 5.8	3.7 - 6.7	4.6 - 7.3	5.2 - 7.9	6.1 - 8.5	6.4 - 9.1	6.7 - 9.5
	N.C.	< 20	< 20	< 20	22	26	30	35	38
250 x 250	Volume l/s	84	110	140	170	200	225	250	280
	Throw m	3.0 - 5.8	3.9 - 7.6	4.9 - 8.5	5.8 - 9.5	7.0 - 10.0	7.6 - 10.7	8.2 - 11.6	8.5 - 12.2
	N.C.	< 20	< 20	21	24	29	34	38	42
300 x 300	Volume l/s	125	165	205	245	290	330	370	410
	Throw m	3.9 - 7.6	5.2 - 9.2	6.4 - 10.4	7.6 - 11.3	8.5 - 12.2	9.2 - 13.1	9.8 - 14.0	10.4 - 14.6
	N.C.	< 20	< 20	23	27	31	36	40	44
350 x 350	Volume l/s	170	230	285	340	400	455	515	570
	Throw m	5.2 - 9.5	6.7 - 11.0	8.5 - 12.2	9.5 - 13.4	10.0 - 14.3	11.0 - 15.6	11.6 - 16.5	12.2 - 17.0
	N.C.	< 20	< 20	24	29	34	38	43	47
400 x 400	Volume l/s	225	300	375	450	525	600	675	750
	Throw m	6.7 - 11.0	8.8 - 15.2	9.8 - 14.0	11.0 - 15.2	11.6 - 16.5	12.5 - 17.7	13.1 - 18.6	14.0 - 19.8
	N.C.	< 20	21	26	31	32	40	45	49
450 x 450	Volume l/s	290	380	480	575	670	765	860	955
	Throw m	8.5 - 12.2	10.0 - 14.0	11.3 - 15.9	12.2 - 17.4	13.1 - 18.6	14.0 - 19.8	15.0 - 21.0	15.9 - 22.3
	N.C.	< 20	22	28	32	37	42	47	50

## Series F1102 (2 way/180°/90°)

150 x 150	Volume l/s	30	38	48	57	67	76	86	95
	Throw m	1.2 - 2.7	1.8 - 3.4	2.1 - 4.3	2.4 - 4.9	3.0 - 5.2	3.4 - 5.5	4.0 - 5.8	4.3 - 6.1
	N.C.	< 20	< 20	< 20	20	23	26	30	34
200 x 200	Volume l/s	53	70	88	105	120	140	160	175
	Throw m	1.8 - 4.0	2.4 - 5.2	3.0 - 6.0	4.0 - 6.4	4.6 - 7.0	5.2 - 7.6	5.8 - 7.9	6.0 - 8.5
	N.C.	< 20	< 20	20	23	27	31	36	39
250 x 250	Volume l/s	84	110	140	170	195	225	250	280
	Throw m	2.4 - 4.8	3.4 - 6.7	4.0 - 7.6	4.8 - 8.2	5.8 - 8.9	6.7 - 9.5	7.0 - 10.0	7.6 - 10.7
	N.C.	< 20	< 20	23	26	30	35	39	43
300 x 300	Volume l/s	125	165	205	245	290	330	370	410
	Throw m	3.0 - 6.4	4.3 - 8.2	5.2 - 9.2	6.4 - 10.0	7.3 - 10.7	8.2 - 11.6	8.5 - 12.2	9.2 - 12.8
	N.C.	< 20	20	26	29	33	38	42	46
350 x 350	Volume l/s	170	230	285	340	400	455	515	570
	Throw m	4.0 - 7.6	5.2 - 9.8	6.4 - 10.7	7.6 - 11.9	8.9 - 12.8	9.8 - 13.7	10.0 - 14.3	10.7 - 15.2
	N.C.	< 20	23	28	32	37	41	45	49
400 x 400	Volume l/s	225	300	375	450	525	600	675	750
	Throw m	4.6 - 9.5	6.1 - 11.0	7.9 - 12.2	9.5 - 13.4	10.4 - 14.6	11.0 - 15.6	11.6 - 16.5	12.2 - 17.4
	N.C.	20	26	31	35	37	44	48	52
450 x 450	Volume l/s	290	380	480	575	670	765	860	955
	Throw m	5.5 - 10.7	7.6 - 12.5	9.5 - 14.0	10.7 - 15.2	11.6 - 16.5	12.5 - 17.7	13.1 - 18.6	14.0 - 19.5
	N.C.	21	28	33	37	43	47	51	55

## Performance Data

SQUARE PERFORATED FACE  
GRILLE / DIFFUSER

Note: Throw values are given for terminal velocities of 0.50 m/s and 0.25 m/s respectively.

Duct Size (mm)	Neck Vel. m/s	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0
	Stat. Press. Pa	5	9	14	21	28	37	48	59

## Series F1103 (3 way)

150 x 150	Volume l/s	30	38	48	57	67	76	86	95
	Throw m	0.6 - 1.2	0.9 - 1.5	0.9 - 2.1	1.2 - 2.4	1.5 - 2.7	1.5 - 3.0	1.8 - 3.4	2.1 - 3.4
	N.C.	< 20	< 20	< 20	22	25	29	33	36
200 x 200	Volume l/s	53	70	88	105	120	140	160	175
	Throw m	0.9 - 1.8	1.2 - 2.7	1.5 - 3.4	1.8 - 3.7	2.4 - 4.0	2.7 - 4.3	3.0 - 4.6	3.4 - 4.6
	N.C.	< 20	< 20	22	25	29	34	38	41
250 x 250	Volume l/s	84	110	140	170	195	225	250	280
	Throw m	1.5 - 2.7	1.8 - 4.0	2.4 - 4.3	2.7 - 4.9	3.4 - 5.2	4.0 - 5.5	4.3 - 5.8	4.3 - 6.1
	N.C.	< 20	20	24	28	33	37	41	45
300 x 300	Volume l/s	125	165	205	245	290	330	370	410
	Throw m	2.1 - 4.3	2.7 - 4.9	3.4 - 5.5	4.3 - 6.1	4.6 - 6.4	4.9 - 7.0	5.2 - 7.3	5.5 - 7.9
	N.C.	< 20	21	27	30	36	40	44	48
350 x 350	Volume l/s	170	230	285	340	400	455	515	570
	Throw m	3.0 - 5.2	4.0 - 6.1	4.9 - 6.7	5.2 - 7.6	5.8 - 7.9	6.1 - 8.5	6.4 - 9.2	6.7 - 9.8
	N.C.	< 20	24	28	34	39	43	47	51
400 x 400	Volume l/s	225	300	375	450	525	600	675	750
	Throw m	4.6 - 6.4	5.2 - 7.3	5.8 - 8.2	6.4 - 9.2	7.0 - 9.8	7.3 - 10.7	7.9 - 11.3	8.2 - 11.9
	N.C.	< 20	25	30	37	38	46	50	54
450 x 450	Volume l/s	290	385	480	575	670	765	860	955
	Throw m	5.5 - 7.9	6.4 - 9.2	7.0 - 10.1	7.9 - 11.0	8.5 - 11.9	9.2 - 12.8	9.5 - 13.4	16.1 - 14.3
	N.C.	21	27	33	39	45	49	53	56

## Series F1104 (4 way)

150 x 150	Volume l/s	30	38	48	57	67	76	86	95
	Throw m	0.9 - 1.8	1.2 - 2.1	1.5 - 2.7	1.5 - 3.0	1.8 - 3.4	2.1 - 3.7	2.4 - 4.0	2.7 - 4.0
	N.C.	< 20	< 20	22	26	30	33	37	41
200 x 200	Volume l/s	53	70	88	105	120	140	160	175
	Throw m	1.2 - 2.4	1.5 - 3.4	2.1 - 4.0	2.4 - 4.3	2.7 - 4.6	3.4 - 4.9	3.7 - 5.2	4.0 - 5.5
	N.C.	< 20	20	26	29	33	37	42	45
250 x 250	Volume l/s	85	110	140	170	195	225	250	280
	Throw m	1.5 - 3.0	2.1 - 4.3	2.4 - 4.9	3.0 - 5.5	3.7 - 5.8	4.3 - 6.4	4.6 - 6.7	4.9 - 7.0
	N.C.	< 20	23	28	32	36	40	44	49
300 x 300	Volume l/s	125	165	205	245	290	330	370	410
	Throw m	1.8 - 4.0	2.4 - 5.2	3.0 - 6.1	4.0 - 6.7	4.6 - 7.0	5.2 - 7.6	5.8 - 7.9	6.1 - 8.5
	N.C.	< 20	24	30	34	38	42	46	50
350 x 350	Volume l/s	170	230	285	340	400	455	515	570
	Throw m	2.4 - 4.6	3.0 - 6.4	4.0 - 7.0	4.6 - 7.6	5.5 - 8.2	6.4 - 8.9	6.7 - 9.5	7.0 - 10.0
	N.C.	< 20	26	31	36	40	44	48	53
400 x 400	Volume l/s	225	300	375	450	525	600	675	750
	Throw m	2.7 - 5.5	3.7 - 7.3	4.6 - 8.2	5.5 - 8.9	6.4 - 9.5	7.3 - 10.4	7.6 - 11.0	8.2 - 11.6
	N.C.	21	28	33	38	38	45	50	54
450 x 450	Volume l/s	290	380	480	575	670	765	860	955
	Throw m	3.4 - 6.4	4.3 - 8.2	5.5 - 9.2	6.4 - 10.1	7.6 - 11.0	8.2 - 11.6	8.5 - 12.2	9.1 - 12.8
	N.C.	22	29	34	39	42	46	51	55

## GRILLES & DIFFUSERS

# 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<sup>2</sup>)**

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<sup>3</sup> at 21°C and 760 mm Hg (barometric pressure).

#### **Static Pressure (Pa)**

The Static pressure (of an air stream) 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.

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## GRILLES & DIFFUSERS

### 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.

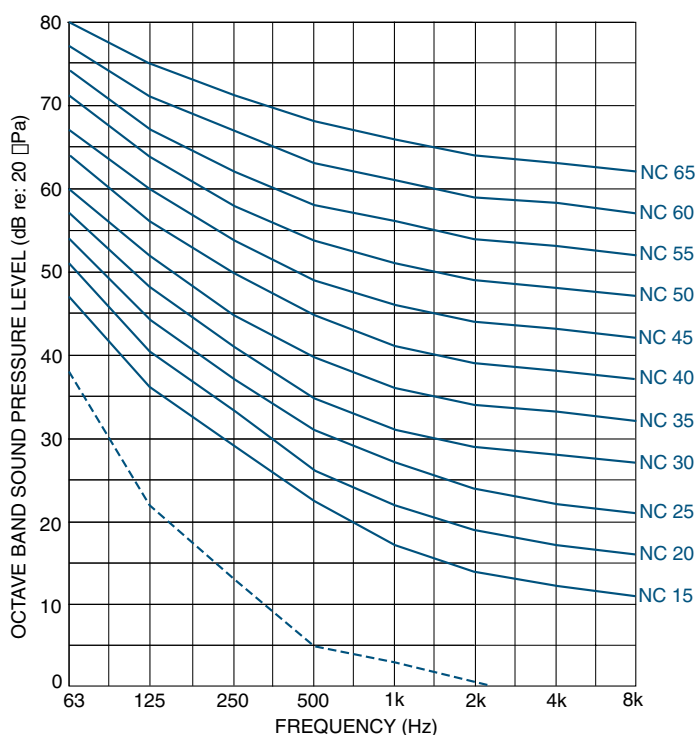
Where measurements cannot be carried out with an octave-band sound level meter, an approximation of an NC level can be calculated from an 'A' scale sound level meter reading, as follows:

$$\text{NC Level} = \text{'A' scale reading in dB} - 6 \pm 2$$

### Guide for Environmental Sound Level Design

<i>Environment</i>	<i>Suggested NC Range</i>
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

### **Square Perforated Face Diffuser - Series F1100**

All ceiling diffusers shall have hinged perforated face mounted in a sub-frame to suit the ceiling construction. The perforated face shall have a non-visible hinge, be easily removable from the sub-frame, and be latched with a suitable fastener. All diffuser cores shall have individually adjustable curved (eye lash) deflection vanes arranged to suit the specified air patterns. The sub-frame, hinged frame and diffuser core shall be of aluminium alloy sections. The perforated face shall be 1.0 mm galvanised steel with 4.76 mm diameter perforations at 6.35 mm centres in a staggered pattern. The entire diffuser assembly shall be finished in powder or stoving enamel coating, all as manufactured by **temperzone** Limited. Where OBDs are fitted they shall be fastened to the core. The diffuser/OBD assembly shall be removable as a unit through the face opening.

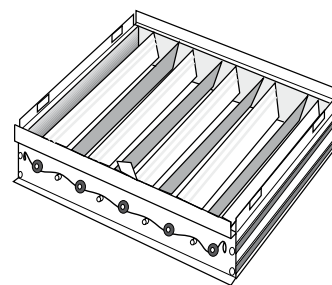
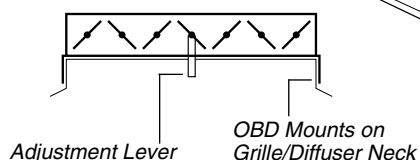
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## ACCESSORIES

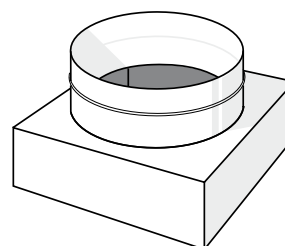
### Opposed Blade Damper (OBD)

- 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



### Square to Round Adaptor (SRA)

- Adapts square neck grilles/diffusers to round flexible or rigid ducting
- Black Satin enamel finish on inside surfaces
- Galvanised steel construction; black polyethylene construction for size 300 sq. to 200/250 round
- Sized to suit grilles/diffusers and ducting



### Side Entry/Exit Plenum (Cushion Head)

- Adapts square neck grilles/diffusers to round flexible or rigid ducting in a restricted ceiling space
- Uninsulated, or Insulated (25 mm) for improved acoustic and thermal properties
- Galvanised steel
- Sized to suit grilles/diffusers and ducting

