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CHAN CHUAN CHANG METAL WORKS

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LINEAR SLOT CEILING DIFFUSER



Brand : CCC

**AIR DIFFUSION EQUIPMENT
LINEAR SLOT CEILING DIFFUSER
Series : CCC-LD**

CHAN CHUAN CHANG METAL WORKS



VISION

“To produce high quality products, high standard of creativity in design and excellent credibility in reputation”

MISSION

“Serve customer with satisfactory and reliable works and products”

Chan Chuan Chang Metal Works was established in 1975, committed to the vision to manufacture good quality Air Diffusion Equipment. After building up its reputation in the industry as a top manufacturer, the company registered the logo with the Registry of Trade and Patents (Singapore). From then onwards, all equipment which has the trade mark symbolise our commitment to serve our customer with satisfactory and reliable works and products.

Our products have been tested by VIPAC, testing laboratory at Victorian technology Centre, Port Melbourne, Victoria. Furthermore, the results are NATA Certified (National Association of Testing Authorities, Australia) to ADC 10623 R3 (Air Diffusion Council, USA) and are officially endorsed in countries which are signatories to the I.L.A.C agreement-namely, Australia, New Zealand, Britain, USA and Malaysia.

We were proud to introduce the **Heavy Duty Aluminium Computer Floor Grille**, Series : CR to the industry in 1991. This has been a breakthrough as the grille are able to provide adequate air flow whilst maintaining the weight of any person or equipment. This is verified by the Comprehensive Loading Test performed by Singapore Institute of Standard & Industrial Research (SISIR), currently known as Spring Singapore. Series : CR has since then been installed in many computer rooms, wafer manufacturing plant and places which require the product.



COMPANY MILESTONE

1975 Established with the vision to manufacture high quality Air Diffusion Equipment to meet future needs and demands. Together with a team of experienced Engineers & Craftsman dedicated to Chan Chuan Chang's Motto – Commitment, Creativity & Credibility, we produced good quality products with high standard of creativity in design and maintained excellent credibility in reputation.

1982 Registered with the Registry of Trade and Patents (Singapore), CCC Trade Mark  has since become a household name in its industry.

1986 Chan Chuan Chang (CCC) products are tested by VIPAC, a testing laboratory at Victorian Technology Centre, Port Melbourne, Victoria. These results are NATA Certified (National Association of Testing Authorities, Australia) to ADC 10623 R3 (Air Diffusion Council, USA) and are officially endorsed in countries which are signatories to the I.L.A.C agreement – namely, Australia, New Zealand, Britain, USA and Malaysia.

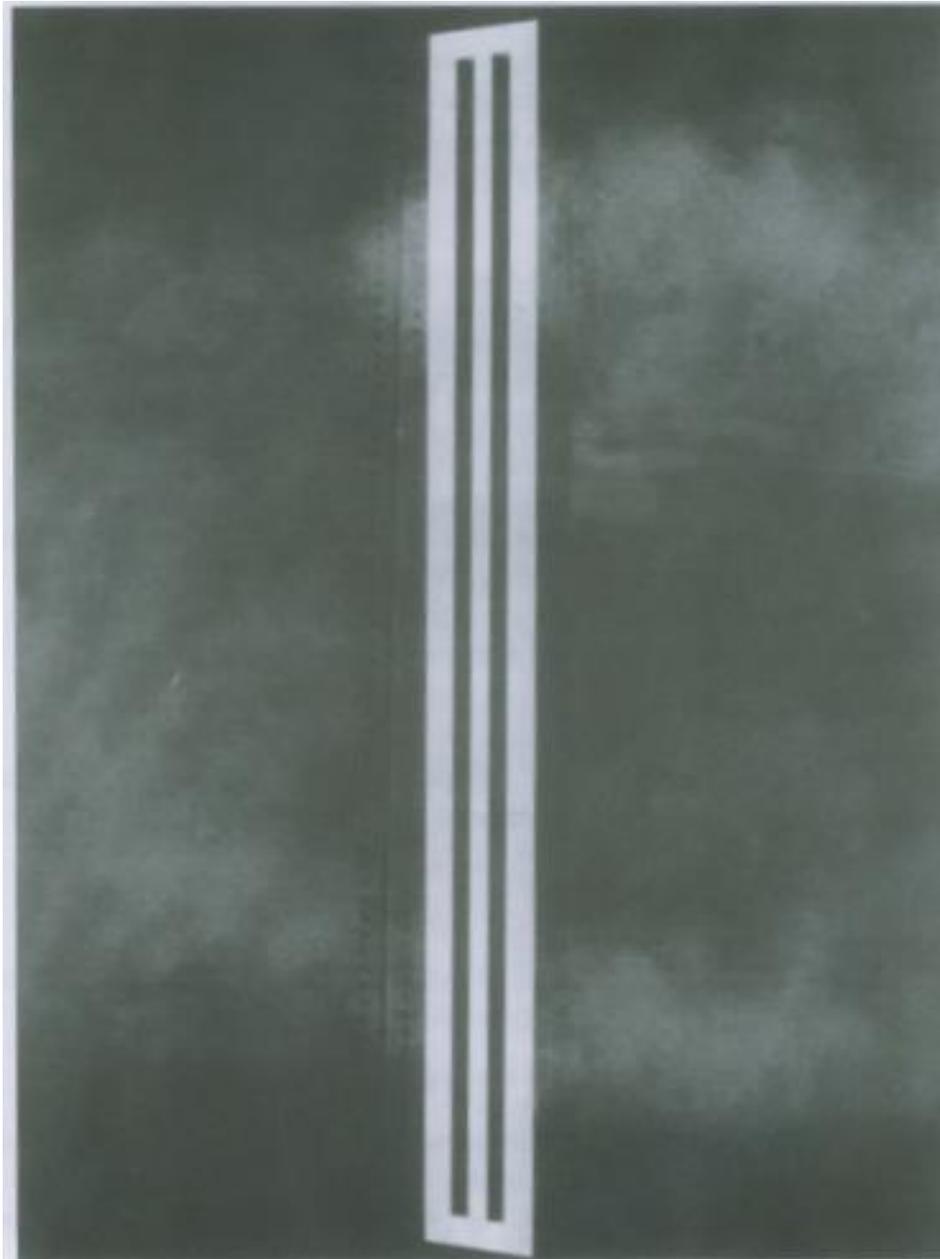
1991 CCC Aluminium Computer Floor Air Grille was sent for Comprehensive Loading Test conducted by Singapore Institute of Standard & Industrial Research (SISIR) and achieved excellent results.

1997 CCC was awarded ISO 9002 Certification. Our impressive list of satisfied clients is testimony to CCC's motto – Commitment, Creativity and Credibility.

2005 CCC has improved its quality management system with respect to the ISO 9001:2000 standard due to our commitment towards quality improvement in our products and customer satisfaction. We thank you for your faith and support in our products. We will continue to strive harder to exceed your demand & satisfaction.

2012 CCC was awarded ISO 9001:2008 Certification by BVQI Accreditation. CCC also became a certified member of Air Movement and Control Association International (AMCA). Our Low Leakage dampers were tested according to AMCA standards and received certifications.

Linear Slot Ceiling Diffuser



Installed linear slot ceiling diffuser in laboratory for testing.
Ceiling is painted black to facilitate witnessing of smoke pattern.

Linear Slot Ceiling Diffuser



Model No: LD/02

Construction

- High quality extruded aluminium sections.
- Standard slot width of 20mm.
- Length is up to your requirement.
- Allows full adjustment of air pattern through 180°.
- Number of slots available are 1,2,3,4 or according to your requirement.
- Finishing will be in white powder coating for flanges with black adjustable vanes.

Accessories

- Plenum box
- Volume Control Damper
- Foam Gasket
- Anti-Condensation coating

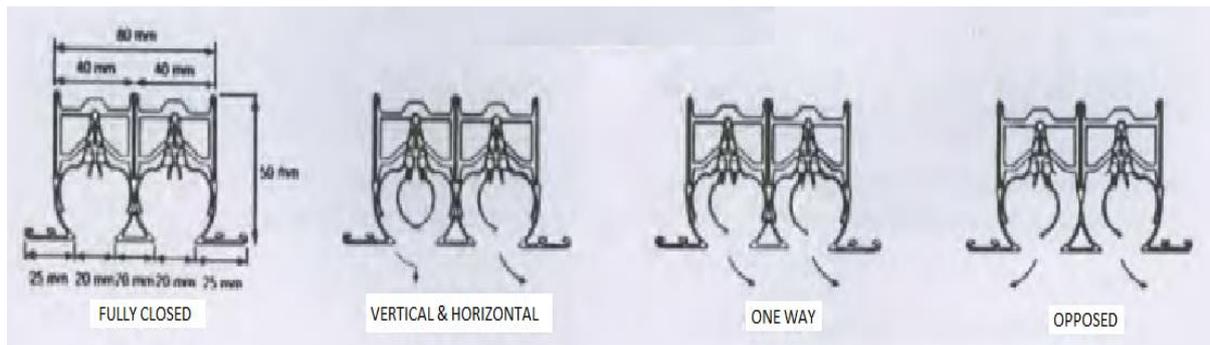
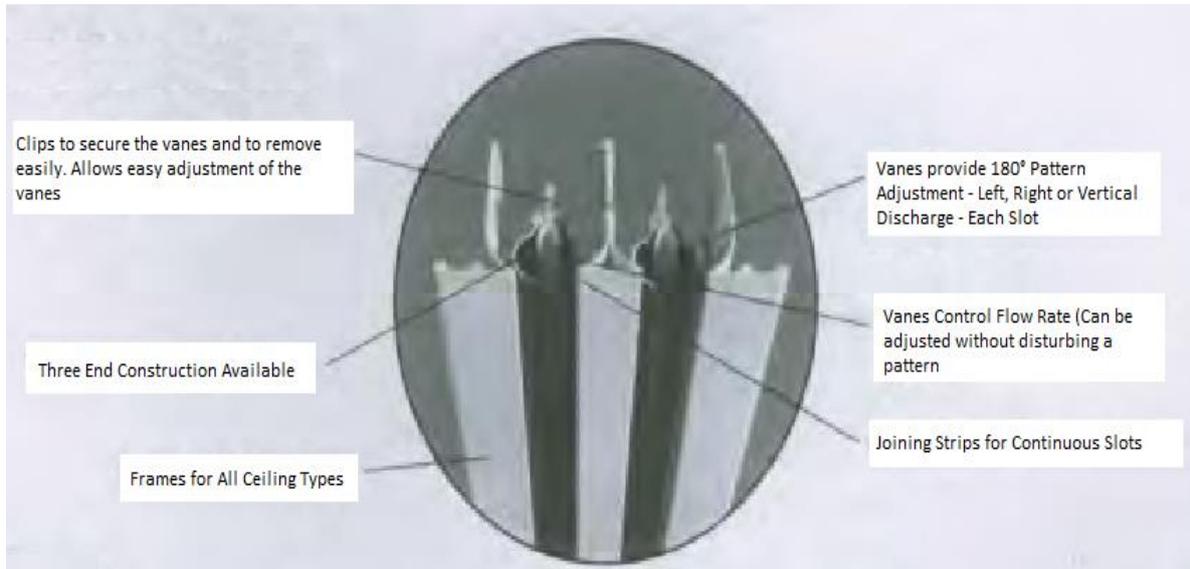
Other Optional Features

- Other colour coatings may be available upon request.
- Suggestions are also available on request from your CCC specialist.

Description

- Series LD diffuser is a versatile diffuser designed for supply, return or exhaust air systems.
- Design incorporates concealed aligning keyways for continuous wall to wall application.
- Specially designed adjustable centre sections allow full adjustment of air pattern through 180°.
- Diffuser is manufactured from high quality extruded aluminium sections.

Design and Dimensions



(Model No: LD/02)
Dimensions in MM

	No. of slots							
Dimension	1	2	3	4	5	6	7	8
Face Size	78	123	170	214	260	308	351	396
Neck Size	48	93	139	186	231	277	322	367

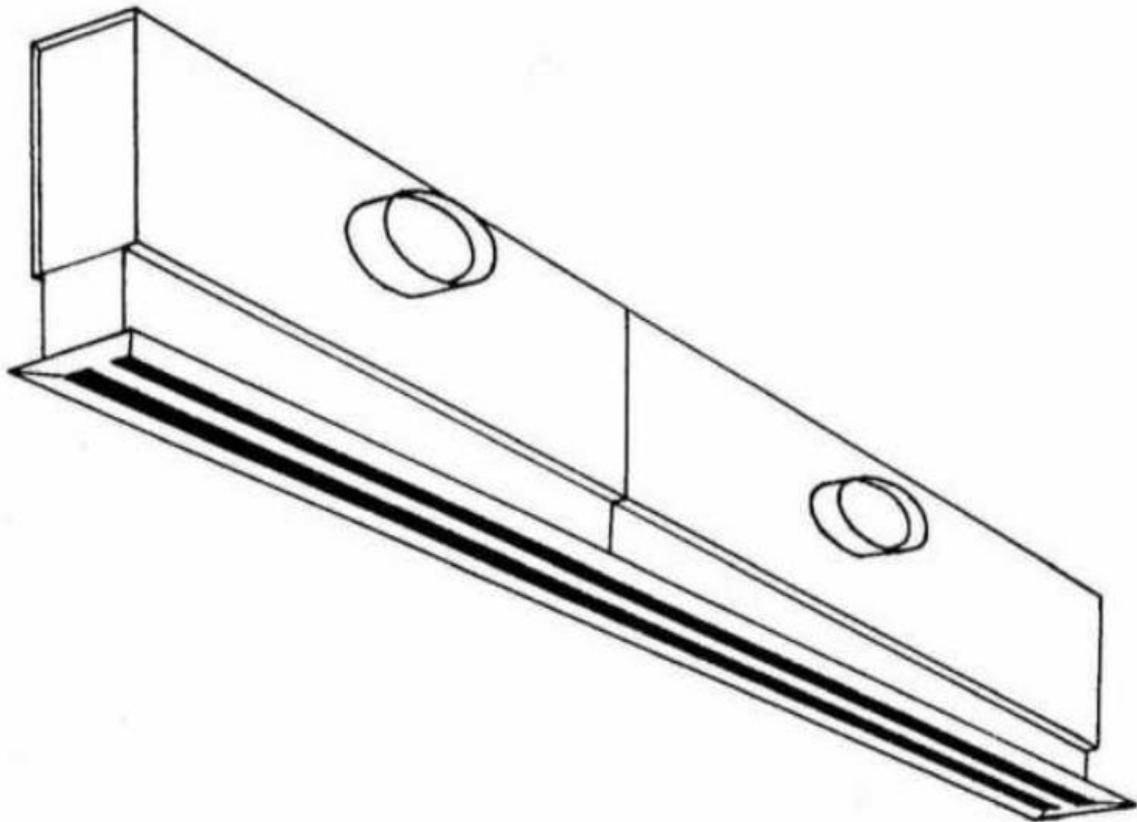
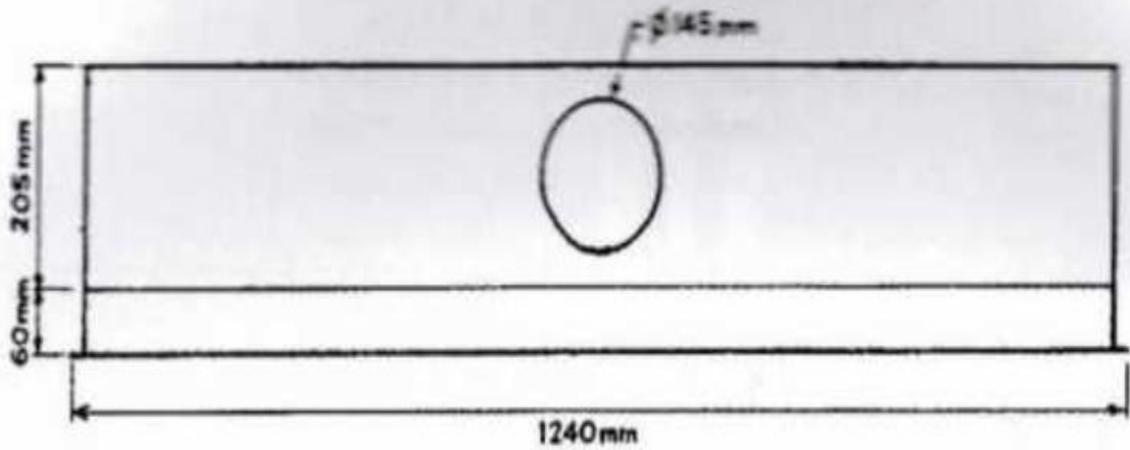
Linear diffuser with 25mm for each slot. All are in actual face and actual neck.

	No. of slots							
Dimension	1	2	3	4	5	6	7	8
Face Size	71	111	150	191	232	271	312	352
Neck Size	42	82	122	162	202	242	283	323

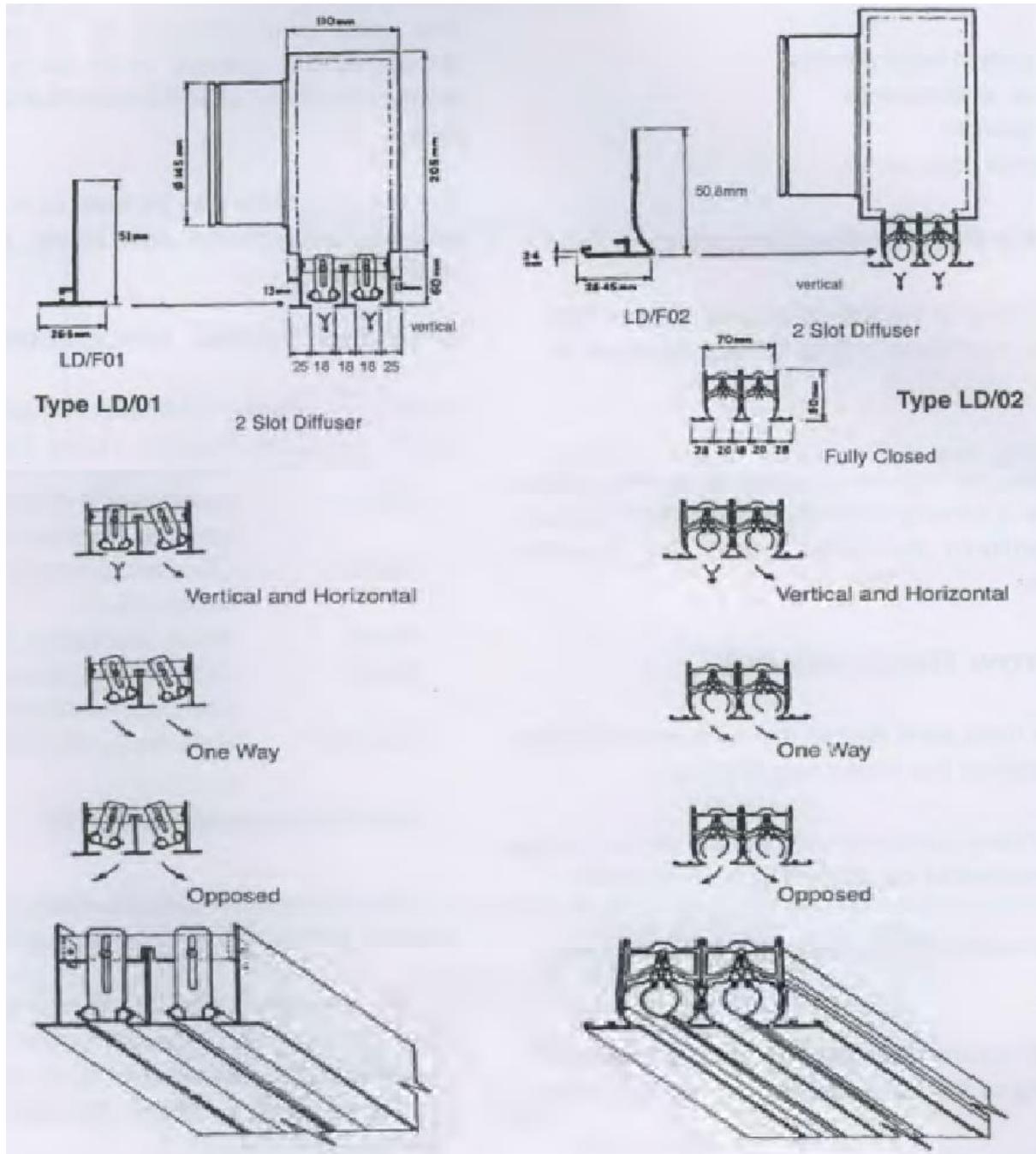
Linear diffuser with 20mm for each slot. All are in actual face and actual neck.

Note: Other sizes that differs from above actual standard sizes are available on request.

Design and Dimensions



Frame Style



(Model No: LD/01)

Dimensions in MM

	No. of slots							
Dimension	1	2	3	4	5	6	7	8
Face Size	70	111	149	189	229	262	308	348
Neck Size	41	80	121	160	200	240	280	319

Selecting a Series LD Diffuser

When selecting a Series LD diffuser, the following requirements has to be considered.

1. The air pattern requirements.
2. The throw requirements.
3. The air quantity.
4. The desired noise levels.

1. The Air Pattern Requirement

The positioning of the outlets and the shape of the area to be conditioned affect the dispersing of the air.

For example, a small office may only require a single small ceiling diffuser to be located in the centre of the room. However a large area, such as a supermarket, library or classroom, may require a large number of diffuser, evenly spaced throughout the area to produce an overlapping movement of air.

Besides lighting fixtures, exposed beams, support columns, office partions and aesthetic considerations may all have a strong bearing on the frame style and core pattern that will meet the specific requirements.

2. The Throw Requirement

The distance from an outlet to the nearest enclosing wall is considered the throw requirement.

The proper throw condition will be achieved, if the following extremes of conditioning do not arise:

- i. Inadequate conditioning which fails to cover the total area.
- ii. Excessive air quantities relative to the capacity and positioning of the diffuser, thus creating drafts.

3. The Air Quantity

The total volume of air to be delivered to each area, is determined by the overall system design. Thus the number of outlets per room, determines the volume to be transmitted through each outlet.

4. The Noise Level Specification

The noise level produced by an outlet relates directly to the quantity of air being transmitted through the outlet, as well as the neck size and core style.

The following table may be used as a guide to the generally acceptable NR levels for various common use situations:

NR LEVELS	TYPICAL APPLICATIONS
20 – 25	Radio, TV, Studios, Churches.
25 - 30	Live Theatres, Opera Halls, Concert Halls, Band Rooms
30 - 35	Conference Rooms, Movie Theatres, Lecture Rooms, Private Offices.
35 - 40	Libraries, General Offices, Laboratories, Restaurants.
40 - 45	Halls, Corridors, Cafeterias.
45 - 50	Storerooms, Large Department Stores and Supermarkets.
Over 50	Manufacturing Areas.

Performance Graphs

The performance graphs show Airflow, pressure drop sound levels and throws for each size of the product.

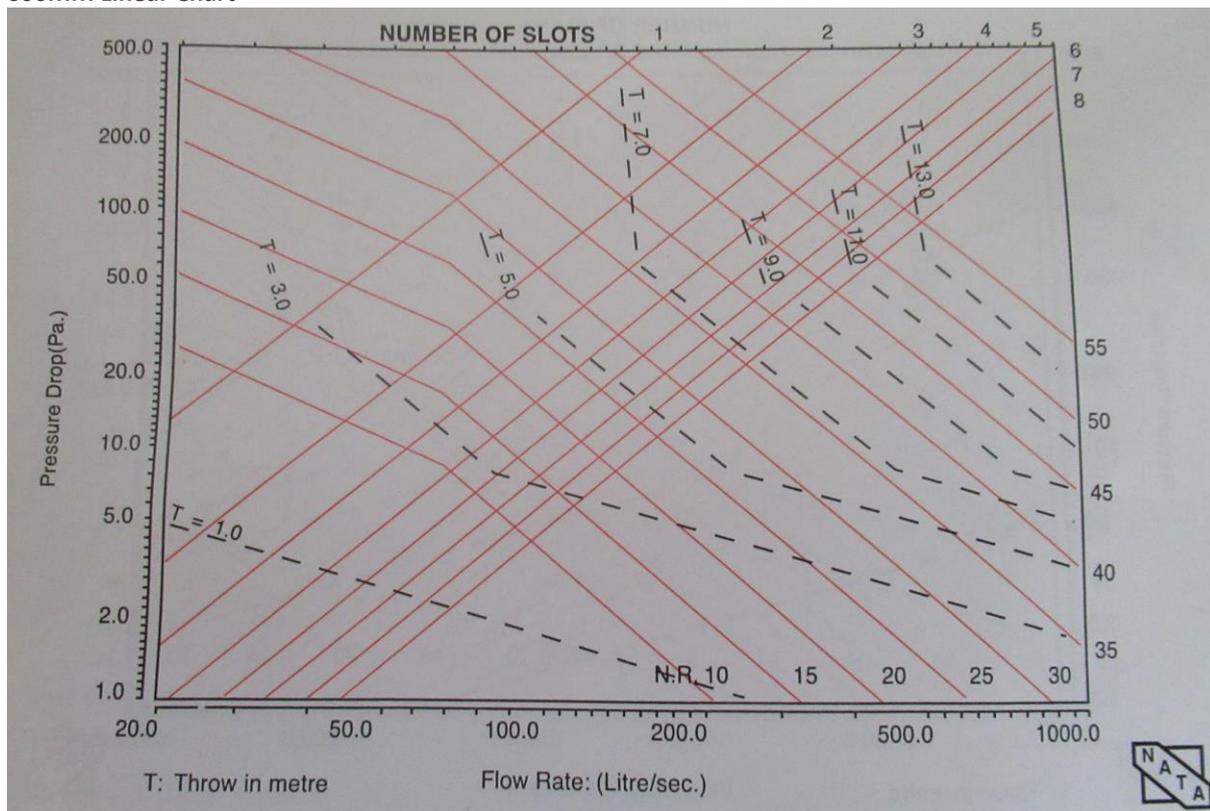
The throws are established to a terminal velocity of 0.5m/s (100 fpm) and are in metres. On the performance graphs, there are marked in as dashed lines, with the particular throw value marked on as follows: i.e. T=04

Pressure drops are shown as total pressure in Pascals (Pa).

Sound Levels are presented as Noise Ratings (N.R.) in dB, including a 6 dB room absorption.

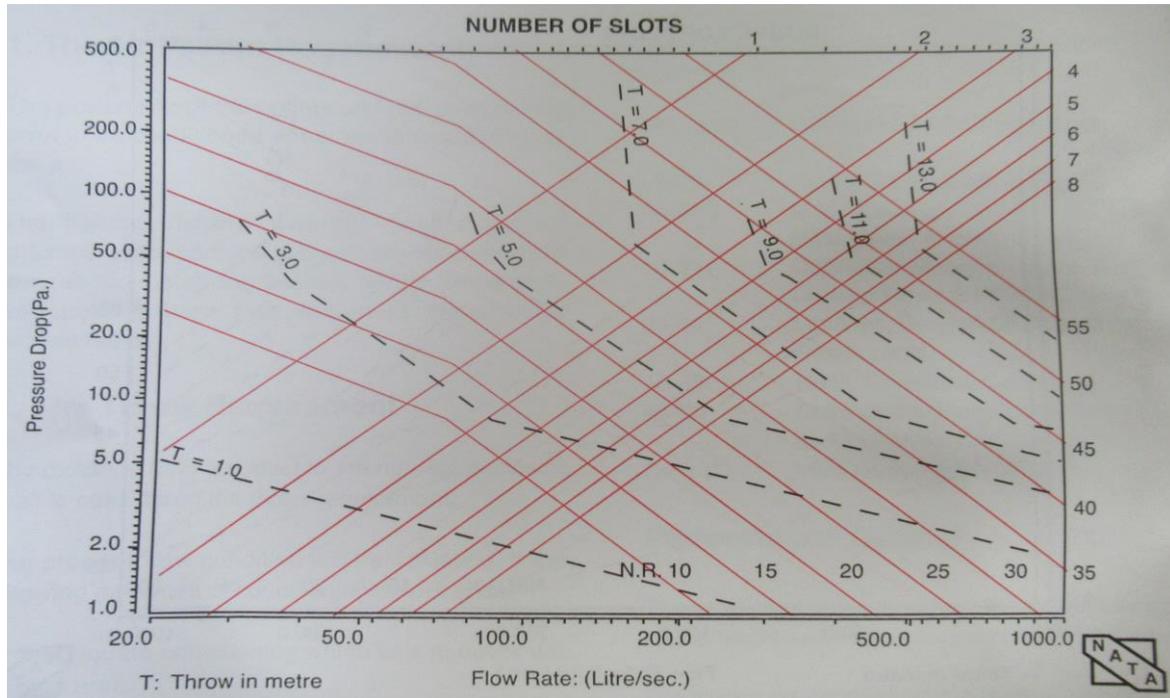
Throws are shown to a terminal velocity of 0.5m/s (100 fpm)

600MM Linear Chart

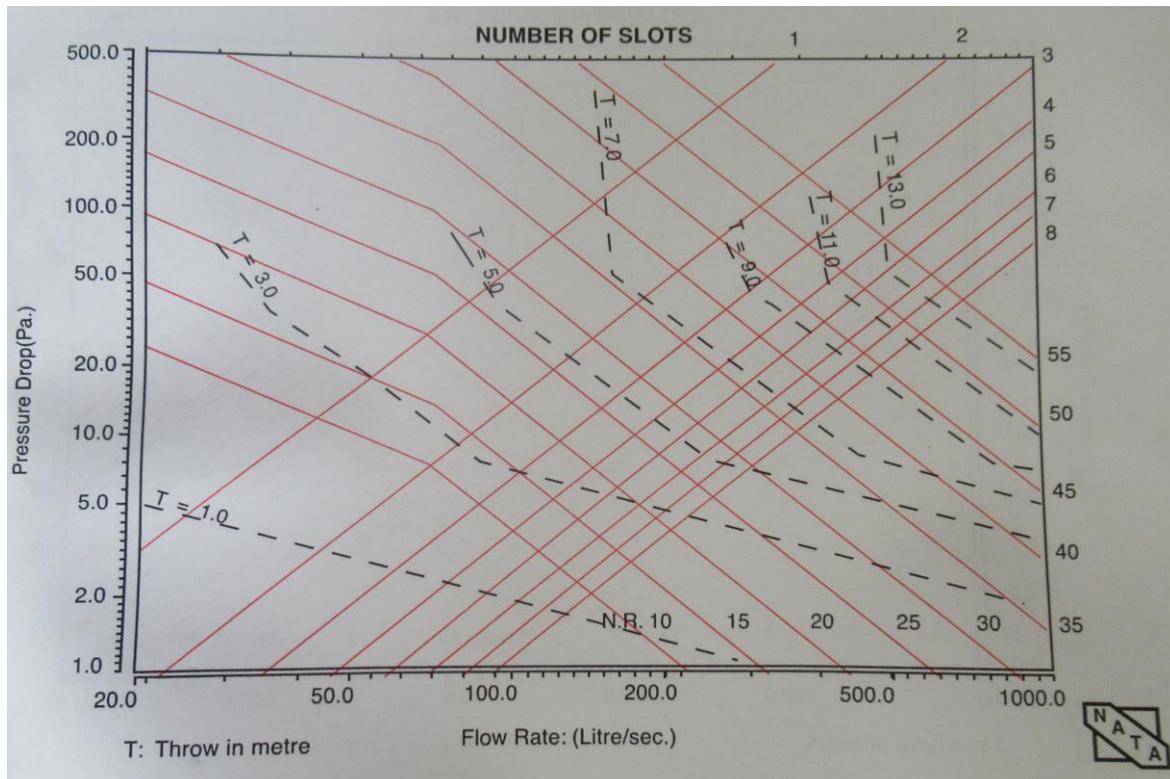


Performance Graphs

900MM Linear Chart

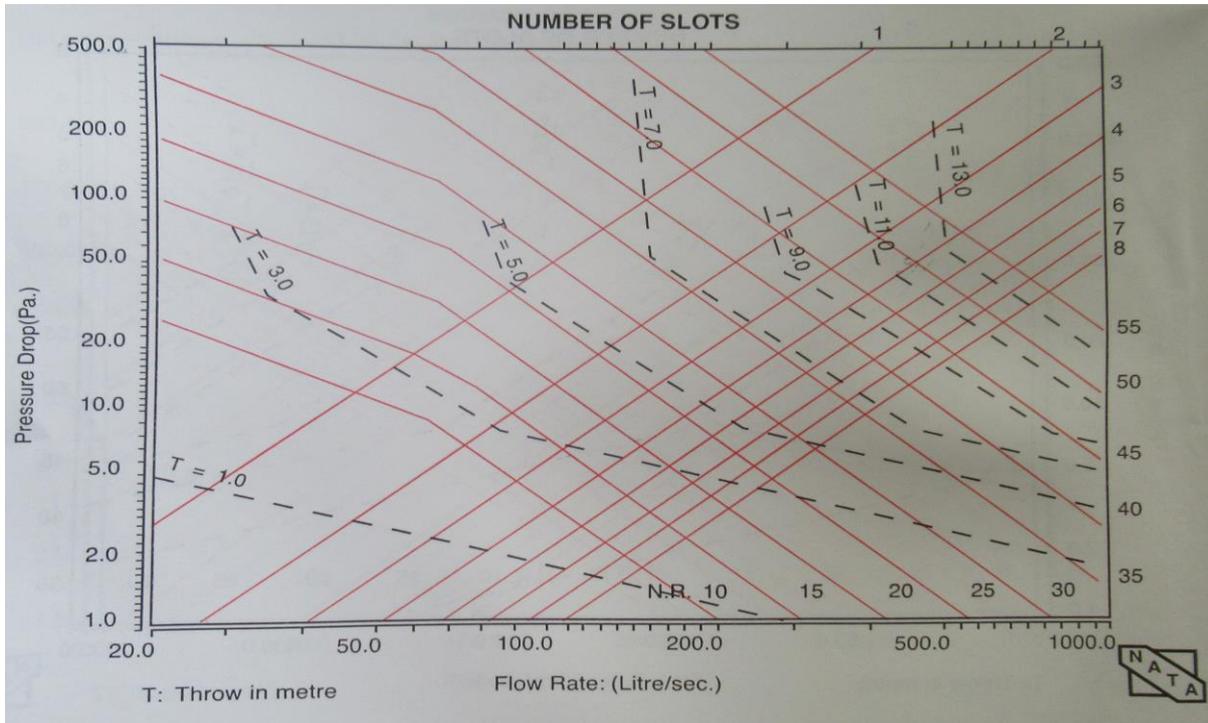


1200MM Linear Chart

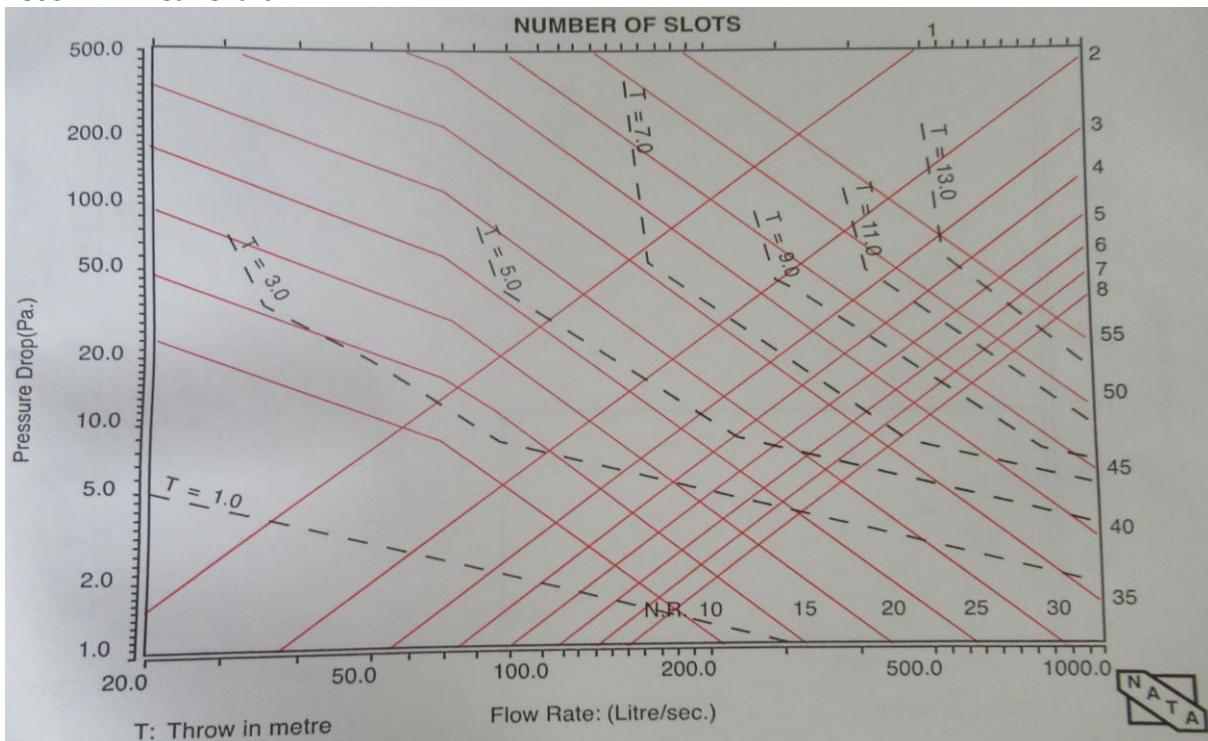


Performance Graphs

1500MM Linear Chart

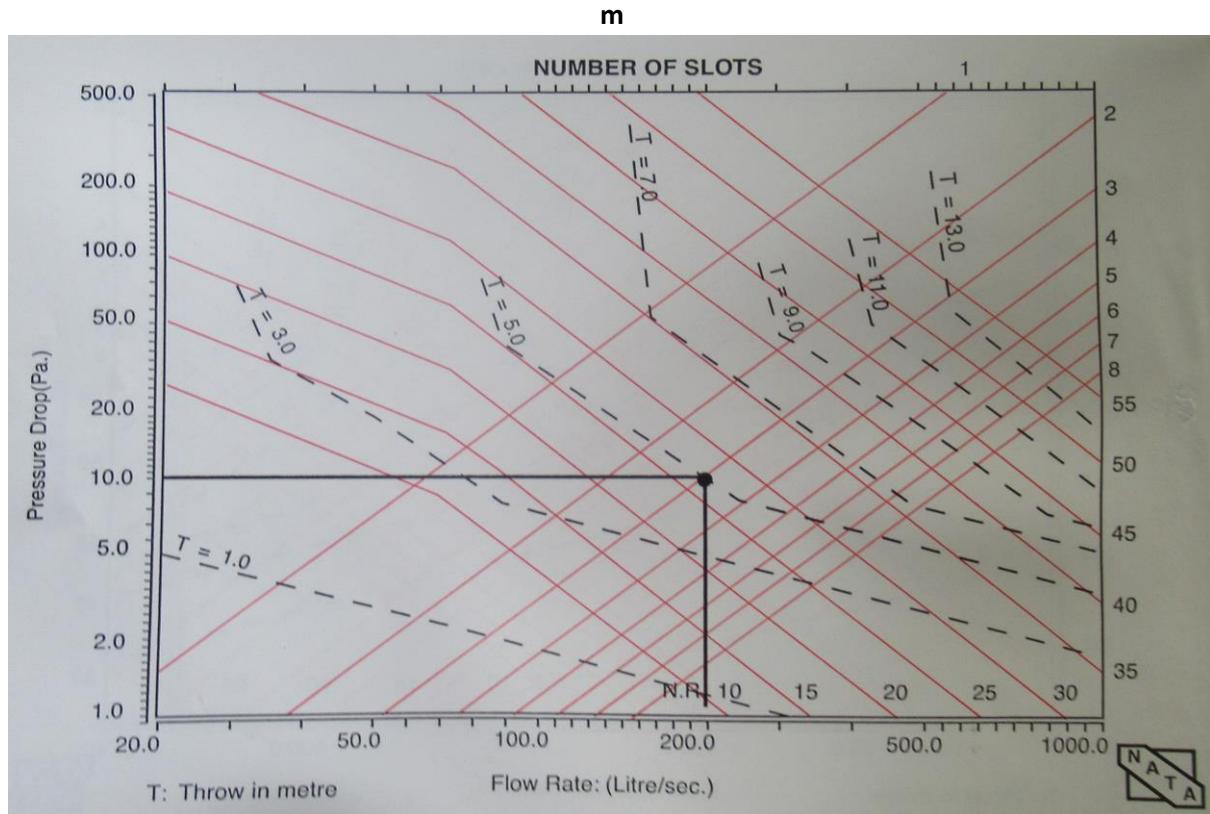


1800MM Linear Chart



Performance Graphs

2000MM Linear Chart



Example:

An airflow of 200 l/s (425cfm) using a size 3 slots will give a pressure drop of 10pa (inwg), of sound level of 26 NR, and a throw of 5 m, for an air velocity of 0.5 m/s.

Test Certificates



VIPAC
ENGINEERS & SCIENTISTS
APPLIED INDUSTRIAL RESEARCH

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Please Reply to:

TEST CERTIFICATE

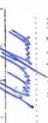
DESCRIPTION

The device under test was a DOUBLE SLOT LINEAR DIFFUSER
 manufactured by CCC METAL WORKS
 the diffuser is categorised as Model L502

RESULTS:

Airflow Pressure Drop (Pa)	Throw At (m)	Octave Sound Power Level dB re 10 ⁻¹² W							
		125	250	500	1000	2000	4000	8000	
280	117	9.5	62	63.5	62.5	55.5	57	52.5	42.5
270	107	9.0	61.5	62.5	60.5	53	54.5	51	40
235	80	8.5	53.5	54	48.5	44	43.5	34.5	28.5
158	33	6.5	51	49.5	43	37.5	36	29.5	27


 Greg Tunny
 Test Engineer


 Michael J. Smith
 MIRA, Signatory



This Laboratory is registered by the National Association of Testing Authorities, Australia
 The tests reported herein have been performed in accordance with its terms of registration

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 Ian G. Jones B. Mech. E., M.I.E. Aust., F.R.M.I.T.

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 John F. Howell Dip. C.E., B.E.S.C., M. Eng., Ph.D., M.I.E. Aust.



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Please Reply to:

TEST CERTIFICATE

DESCRIPTION

The device under test was a 3 SLOT LINEAR DIFFUSER
 manufactured by CCC METAL WORKS
 the diffuser is categorised as Model L503

RESULTS:

Airflow Pressure Drop (Pa)	Throw At (m)	Octave Sound Power Level dB re 10 ⁻¹² W						
		125	250	500	1000	2000	4000	8000
300	50	9	60	54.5	51	48.5	44	34
275	49	8.5	63	57.5	52	49	47	39.5
210	27	7	56	50	46	39	36	26.5
170	11.5	5.5	50	43	38.5	30.5	28.5	20.5


 Greg Tunny
 Test Engineer


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Optional Accessories

These are some of our optional accessories for your references:



Opposed-Blade Damper

To vary and control the supply air volume providing a sustained discharge velocity throughout the volume range.



Fan-Type Damper

To vary and control the supply air volume providing a sustained discharge velocity throughout the volume range.



Plenum Box

A junction to join various ducts. It is a closed space space inteded to store air and also helps to reduce noise level of the airflow.



Anti Condensation

Anti-Condensation coating to reduce and prevent sweating for your grilles and diffusers due to the differences of temperature in the surrounding.