



曾 泉 江 鐵 器 廠
CHAN CHUAN CHANG METAL WORKS

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Reg. No. 204949/00M



HEAVY DUTY COMPUTER FLOOR GRILLES



Brand : CCC

AIR DIFFUSION EQUIPMENT
HEAVY DUTY COMPUTER FLOOR GRILLE
Series : CCC-CR

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.

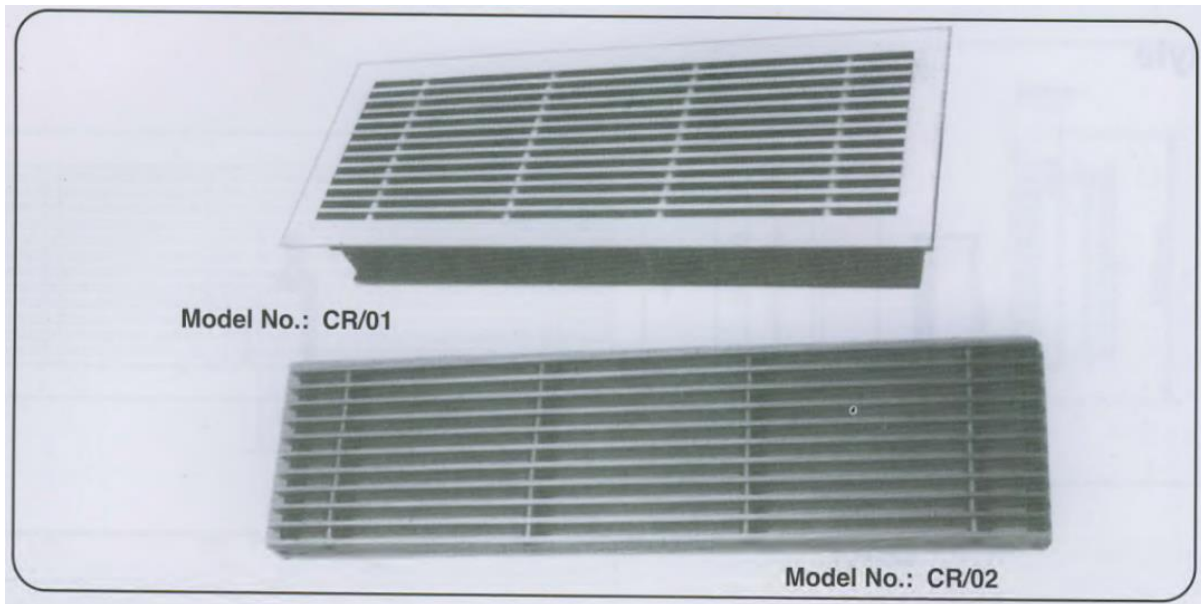
2012 CCC was awarded ISO 9001:2008 Certification by BVQI Accreditation. CCC also became a certified member of Air Movement and Control Association International (AMCA). Our Low Leakage dampers were tested according to AMCA standards and received certifications.

Series CR



Installed computer floor grille in laboratory for testing.
Floor is painted black to facilitate witnessing smoke pattern.

Series CR



Construction

- High quality extruded natural anodised aluminium sections.
- Centre core not removable to enhance strength against load.
- Standard finish is natural anodised.
- Pencil-proof.

Description

- Series CR grilles are specially designed for floor mounting in both supply air and return air application.
- The grilles are manufactured from heavy duty natural anodised aluminium sections.
- The centre core are non removable to enhance their strength against heavy load.
- These grilles are suitable for installation in computer room with bar sections closely arranged and they are pencil-proof.
- The straight bars ensure good vertical pattern at the minimum possible noise levels and pressure drops

- The grilles are available in two types of design:
 - (i) CR/01 – Complete with support frame
 - (ii) CR/02 – Without frame support (frameless)
- Some of the standard sizes are 600x600mm, 600x300mm and 600x150mm while other dimensions can be customised upon request.

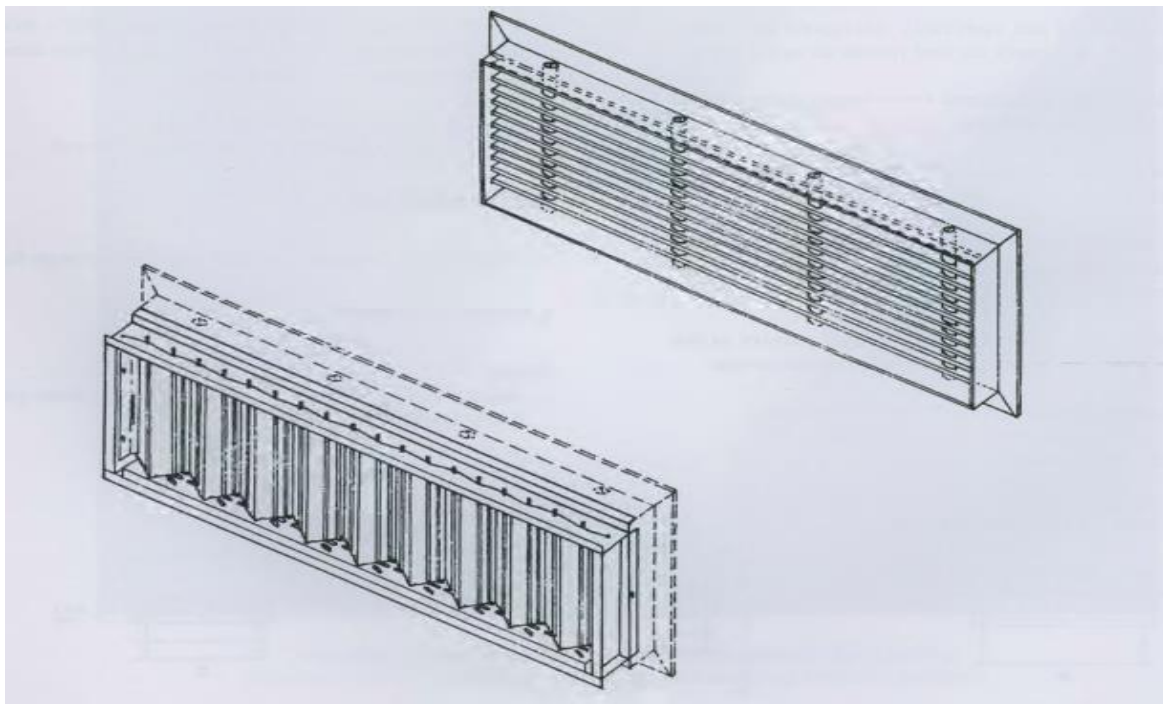
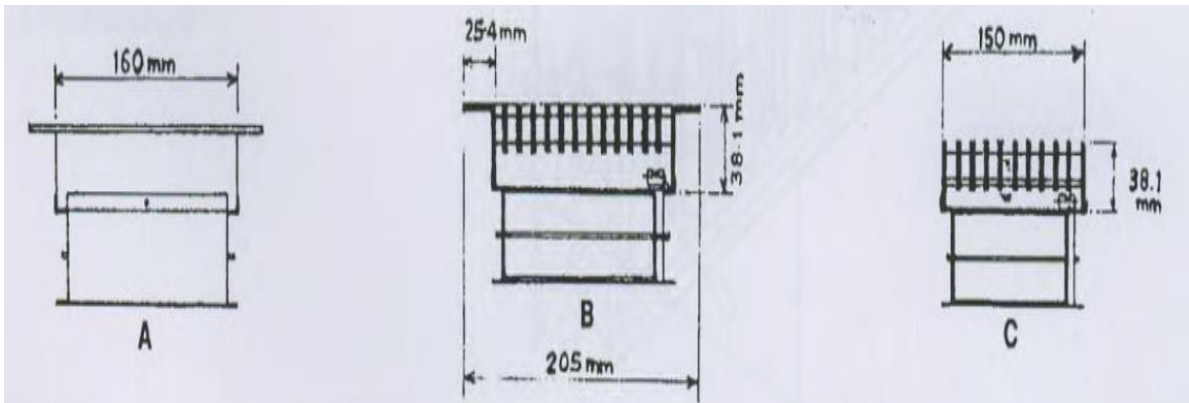
Accessories

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

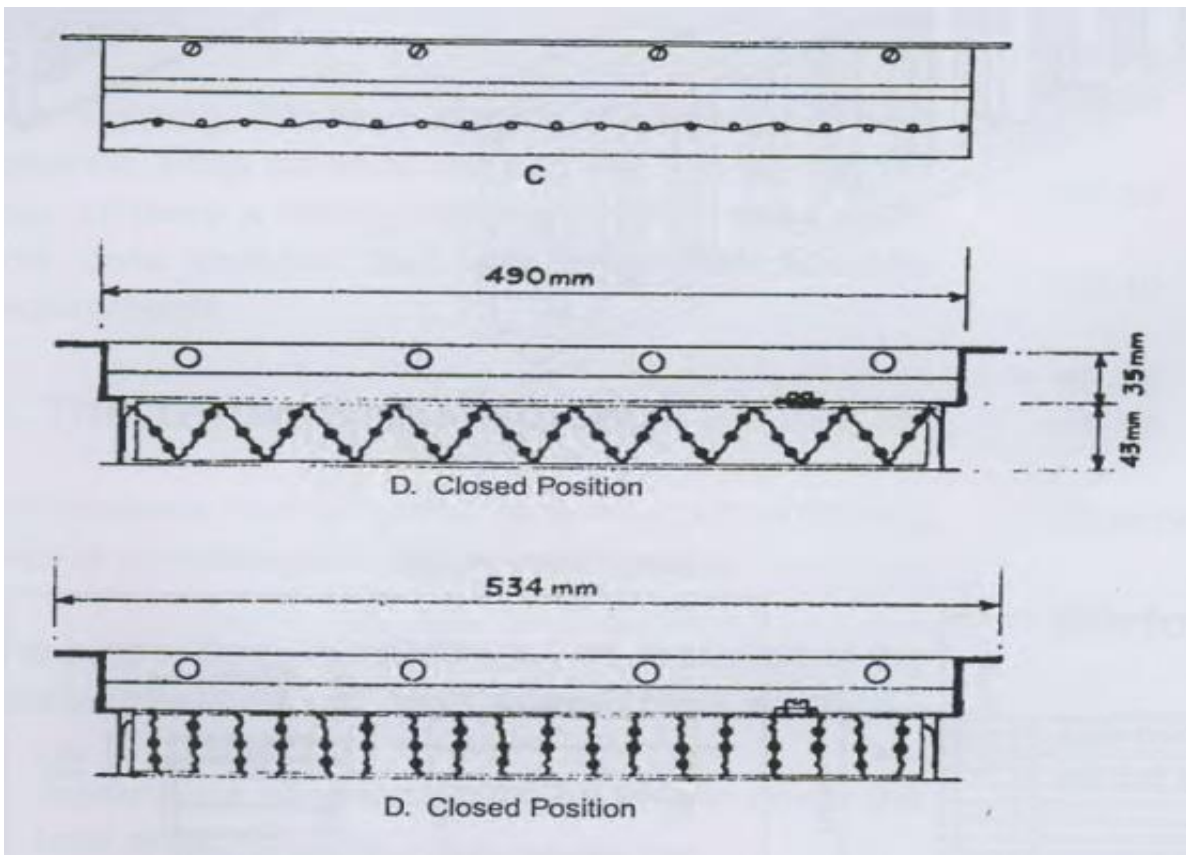
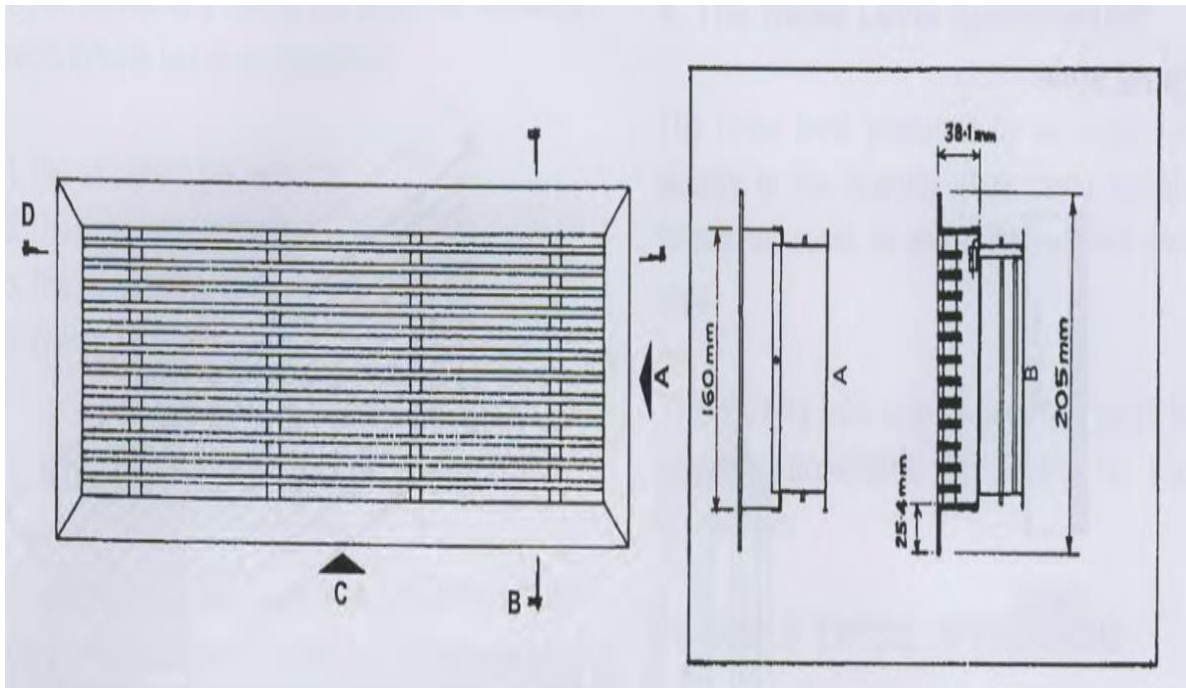
Other Optional Features

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

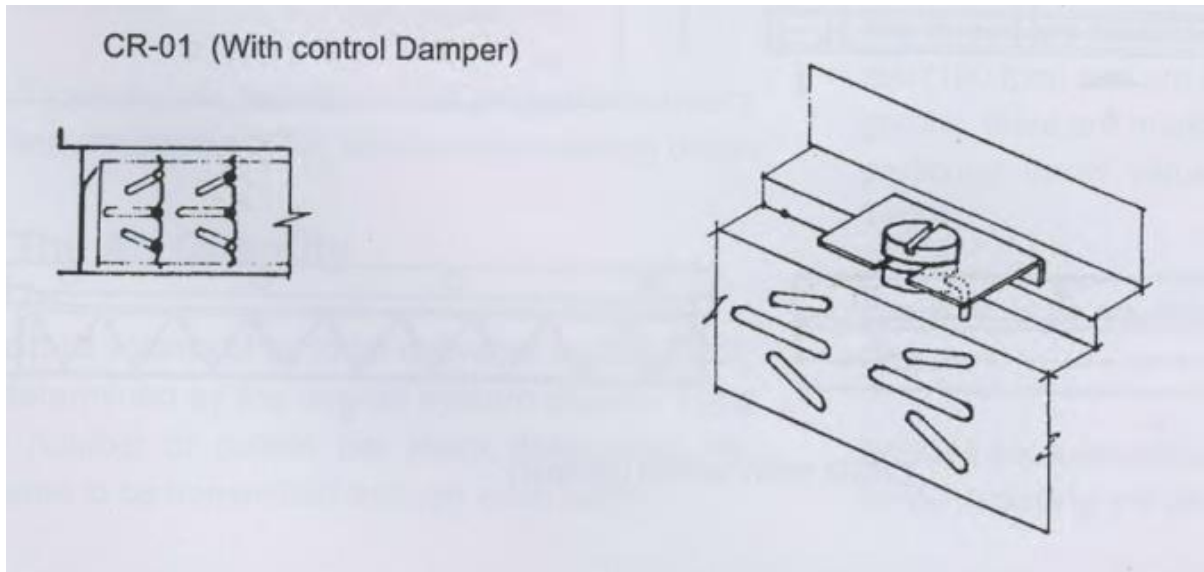
Designs and Dimensions



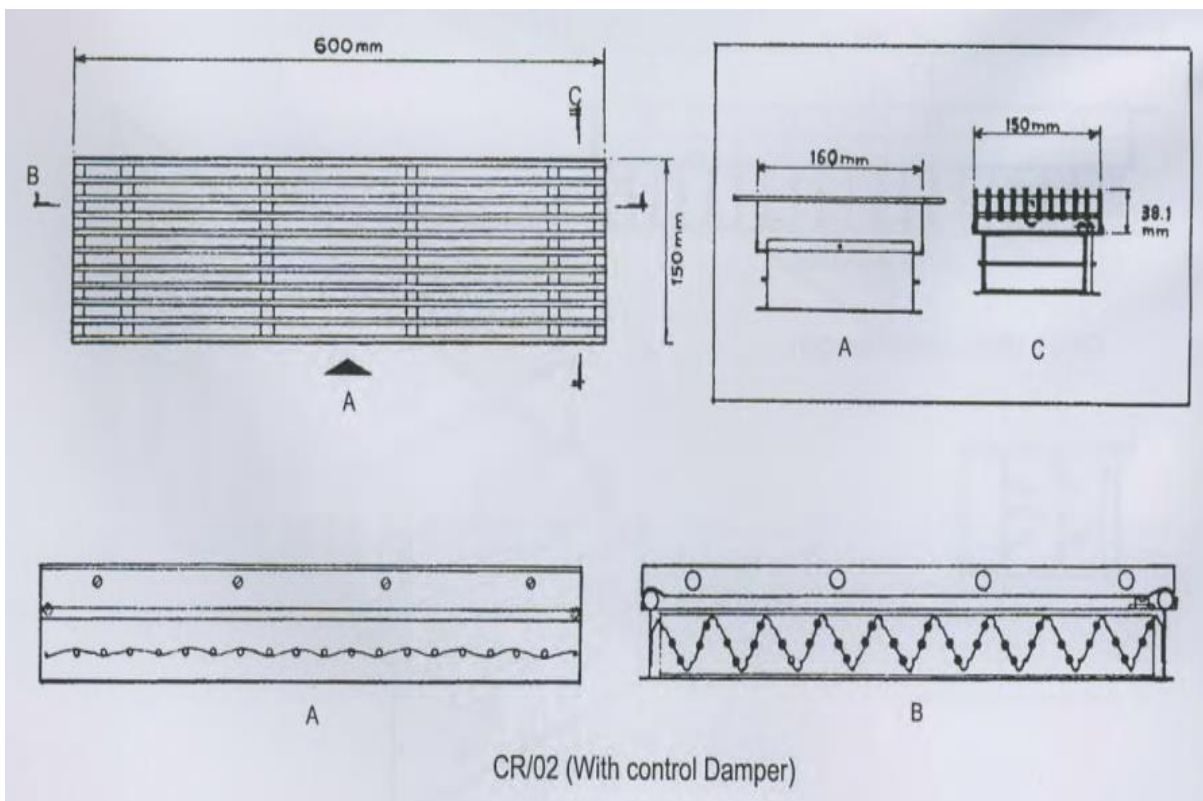
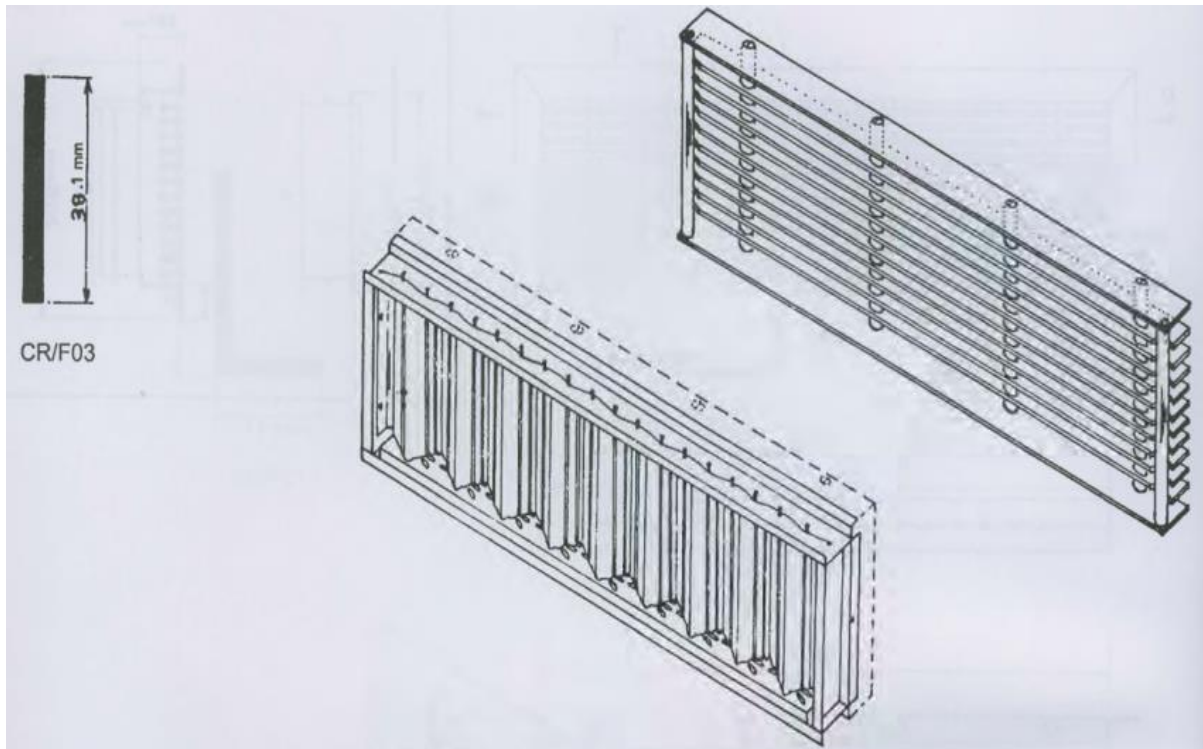
Frame Style CR/01



Frame Style CR/01



Frame Style CR/02



Selecting a CR Series Grilles

When selecting a Series CR 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 or the distance from a diffuser to the intersection of its airstream with that of a second diffuser, is considered the throw requirement.

For high ceiling applications, the throw is usually measured to extend to the 1500mm level of the room.

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 Graph

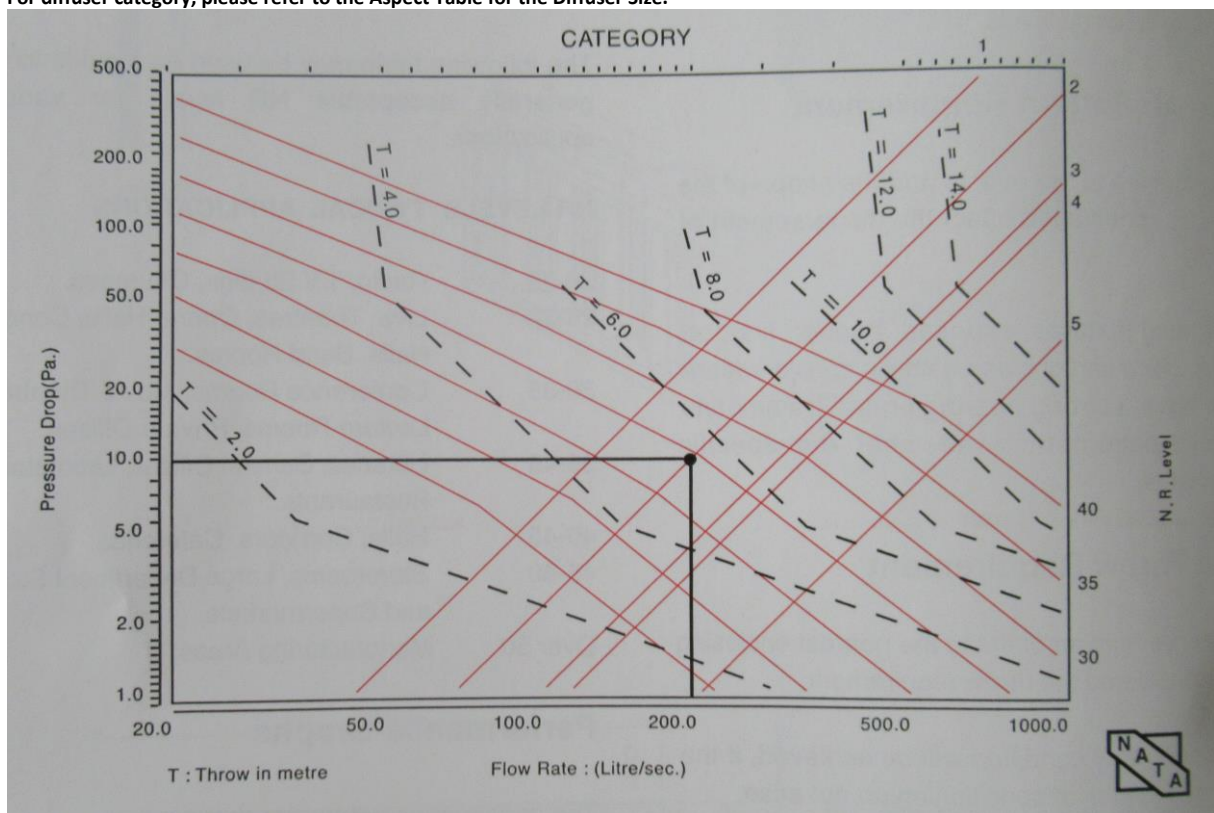
The performance graphs show Airflow, pressure drop sound levels and throws for each size of the product.

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)
 For diffuser category, please refer to the Aspect Table for the Diffuser Size.



Aspect Table		
CATEGORY	HEIGHT (MM)	WIDTH (MM)
1	500	160
2	610	200
3	610	300
4	450	450
5	610	610


Example:

An airflow of 200 l/s (425 cfm) using a CATEGORY 2 (610mm X 200mm) will give a pressure drop of 12pa (0.048inwg), a noise rating of 24, and a throw of 5.5m, for an air velocity of 0.5 m/s.



Test Reports

Test Report No. S08MEC01960/LLW
 dated 07 APR 2008


 PSB Singapore

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Note: This report is issued subject to TÜV SÜD PSB's "Terms and Conditions Governing Technical Services".
 The terms and conditions governing the issue of this report are set out as attached within this report.


SUBJECT:
 Compressive Load Test for Aluminium Heavy Duty Computer Floor Grille.

TESTED FOR:
 Chan Chuan Chang Metal Works
 Blk 5055, Ang Mo Kio Industrial Park 2,
 #01-1141
 Singapore 569558.
 Attn: Mr. Andrew Koh

SAMPLE DESCRIPTION:
 The sample was received on 28th March 2008 (Refer to photo 1).

TEST METHODS:
 The test was conducted as per customer specification:
 The sample (nominal size: 600mm x 600mm) was held by a metal frame and placed onto the universal testing machine. An axial load was gradually applied at the speed of 1mm/minute at every incremental load of 1kN until maximum was observed.




PSB TEST
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Test Reports

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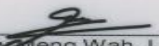


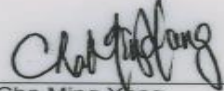
RESULTS:

Table 1: Result of Compressive Load Test

Load (kN)	Deflection (mm)
1	0.75
2	0.77
3	0.80
4	0.81
5	0.83
6	0.84
7	0.85
8	0.87
9	0.88

Note:
 1) The sample and metal frame was return to customer after tested.


 Low Meng Wah, Leon
 Associate Engineer


 Cha Ming Yang
 Engineer
 Building & Industrial Products
 Testing Group

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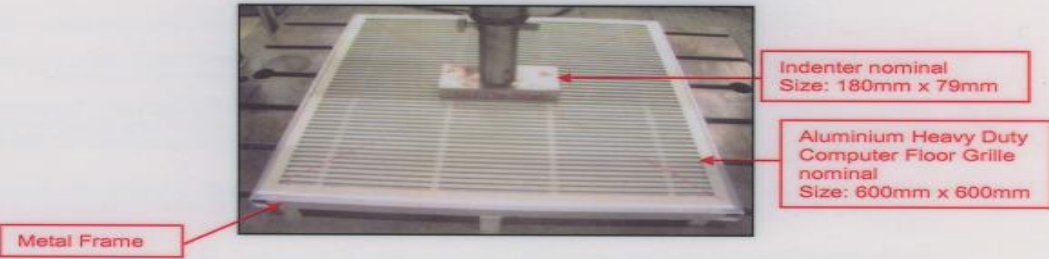


Photo 1: Aluminium Heavy Duty Computer Floor Grille Before Test

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.

