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**CHAN CHUAN CHANG METAL WORKS**

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Reg. No. 204949/00M



# PERFORATED GRILLE



**Brand : CCC**

**Air Diffusion Equipment**

**PERFORATED GRILLE**

**Series : CCC-PG**

## 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.

## Perforated Grilles



CCC-PG

### Application

- CCC Perforated Grilles can be used for Supply or Return ventilation system.
- Commonly used in locations such as pharmaceutical industry and hospitals.
- Perforated Grilles are installed on suspended ceiling.

### Features & Details

- CCC Perforated Grilles are constructed with high quality aluminium frame and G.I. sheet as the centre core.
- Design of the grille has an attractive appearance to give a minimum resistance to air flow.
- Standard construction is of fixed non-removable core.
- Frame or Frameless designs to match your ceilings.
- Perforated Grilles are commonly used for cleaning purposes in pharmaceutical industry and hospitals.
- Finishing of the grille will be in white powder coating.

## Perforated Grilles



**CCC-PG**

**Product Name :** Perforated Grilles

**Model :** CCC-PG

**Material :** Aluminium & G.I.

**Features :**

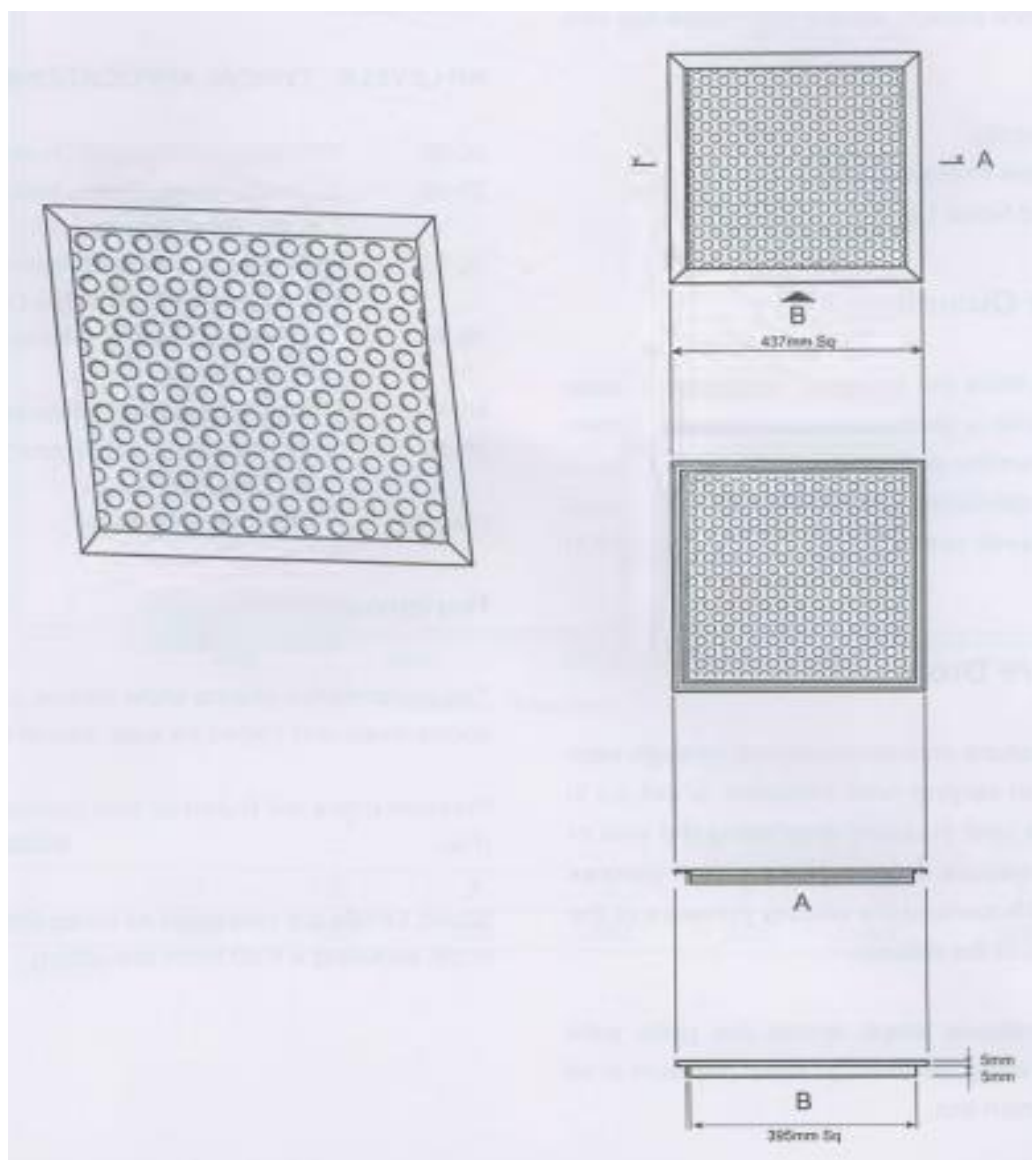
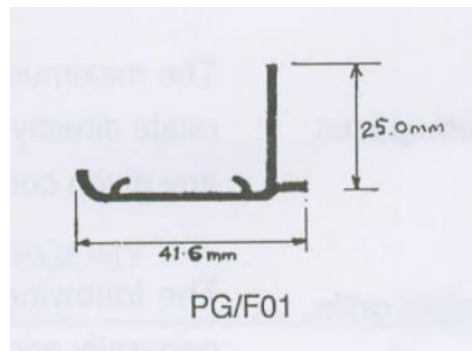
CCC Perforated Grilles are constructed from high quality aluminium frames & G.I. centre core. It can be used for supply / return air for locations such as pharmaceutical industry and hospitals. Design of the grille has an attractive appearance to give a minimum resistance to air flow.

- Standard size of 600mm x 600mm.
- Diffuser is made of high quality aluminium frame & galvanised centre core with white powder coating finishing.
- Can be used for supply air and return air.
- Non-removable fixed centre core.

**Optional Accessories (chargeable):**

- Opposed Blade Damper.
- Plenum Box with circular or rectangular connections.
- Fan-Type Damper.
- Hinged Type with/without safety wire (centre core removable for cleaning)
- Spring type (Centre core removable for cleaning)
- Frameless bracket with Filter (removable for cleaning)
- Other colour finishing upon request.
- Other materials such as SS304/SS316 upon request.

## Frame Style

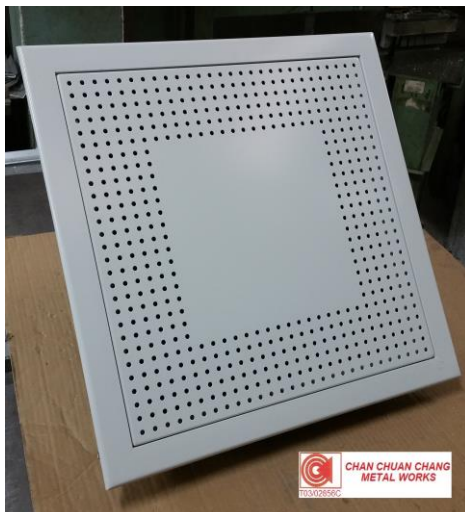


## Samples of different type of Perforated Grilles



### Perforated Grilles with Springs

Centre perforated core can be removed easily a hook. The end of the springs will prevent the perforated core from dropping down from the ceiling. Just lightly push back the centre core and it will be clipped into position nicely.



### Different Types of Profiles

CCC is able to do different type of perforated profiles to meet your requirement. Simply contact us and let us know the specifications that you required and we will provide the quotation to you accordingly.



### Stainless Steel Customized

CCC is able to customized all type of perforated grilles that meets your requirement. This is an example of a SS304 perforated grille with fan-type damper. A lever is at the centre core to adjust the airflow.

## SELECTING A PERFORATED GRILLE

To select a grille suitable for your application, two sets of data should be considered:

- i. The application and its location to occupied spaces on both sides of the grille.
- ii. The performance characteristics of the actual grille.

Three important aspects evolve from these two sets of data.

1. The Air Quantity.
2. The allowable Pressure Drop
3. The Desired Noise Levels.

### **1. The Air Quantity**

Measured in litres per second, the air that passes through the grille is determined by the overall system design. The number of size of the grilles to be used is selected by establishing the maximum pressure drop and noise level that can be tolerated in that application.

### **2. Pressure Drop**

The total pressure drop encountered through each core pattern at varying neck velocities is set out in pascals – the total pressure drop being the sum of the static pressure drop of the air as it passes through the diffuser and the velocity pressure of the air at the neck of the diffuser.

The static pressure drops across the grille were measured by using the average static pressure in an oversized plenum box.

### **3. Noise Level**

The maximum permissible NR levels from each grille relate directly to the quantity of air transmitted through any given 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.

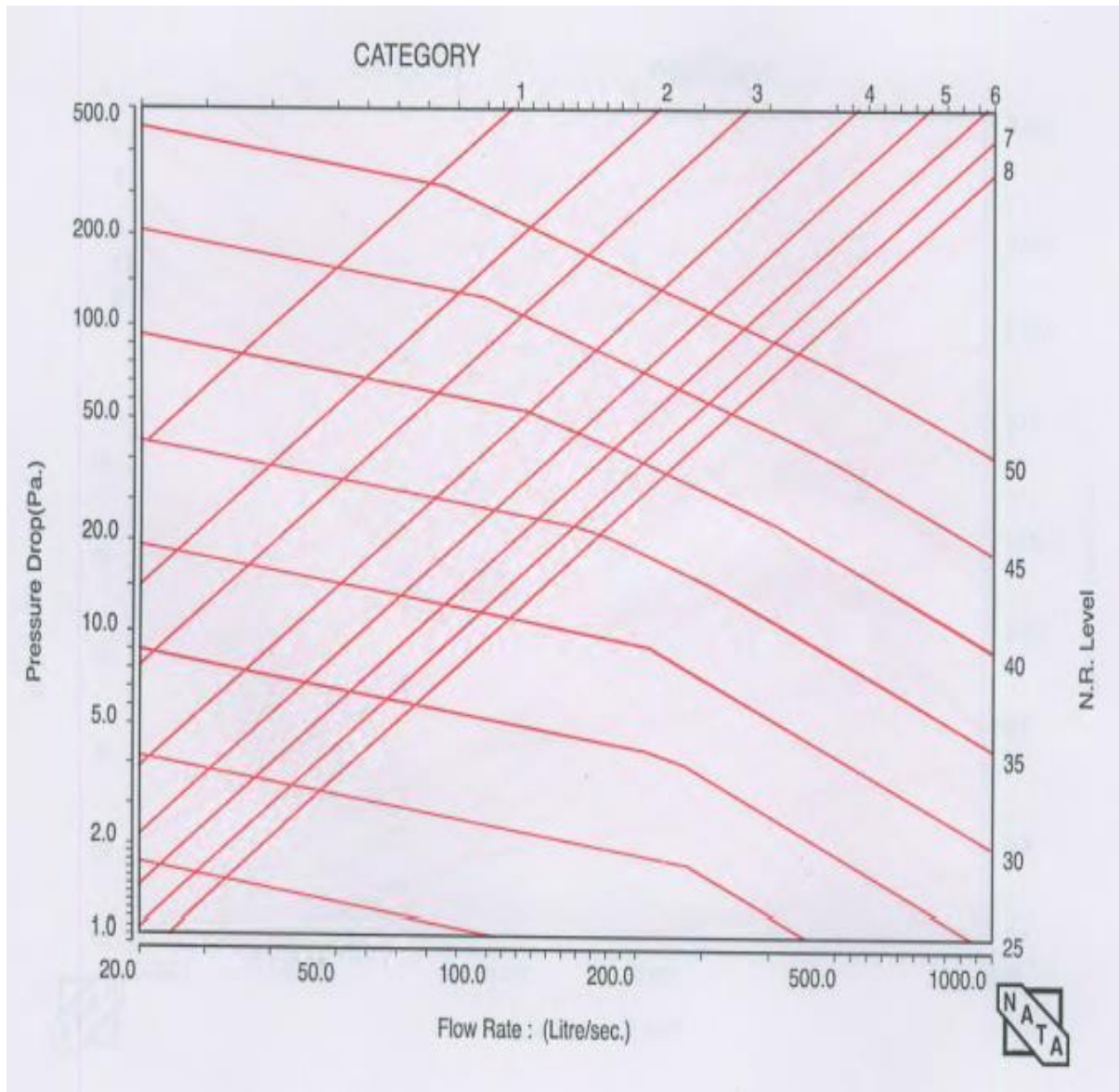
Pressure drops are shown as total pressure in Pascals (Pa)

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



## Performance Graph

300m Long



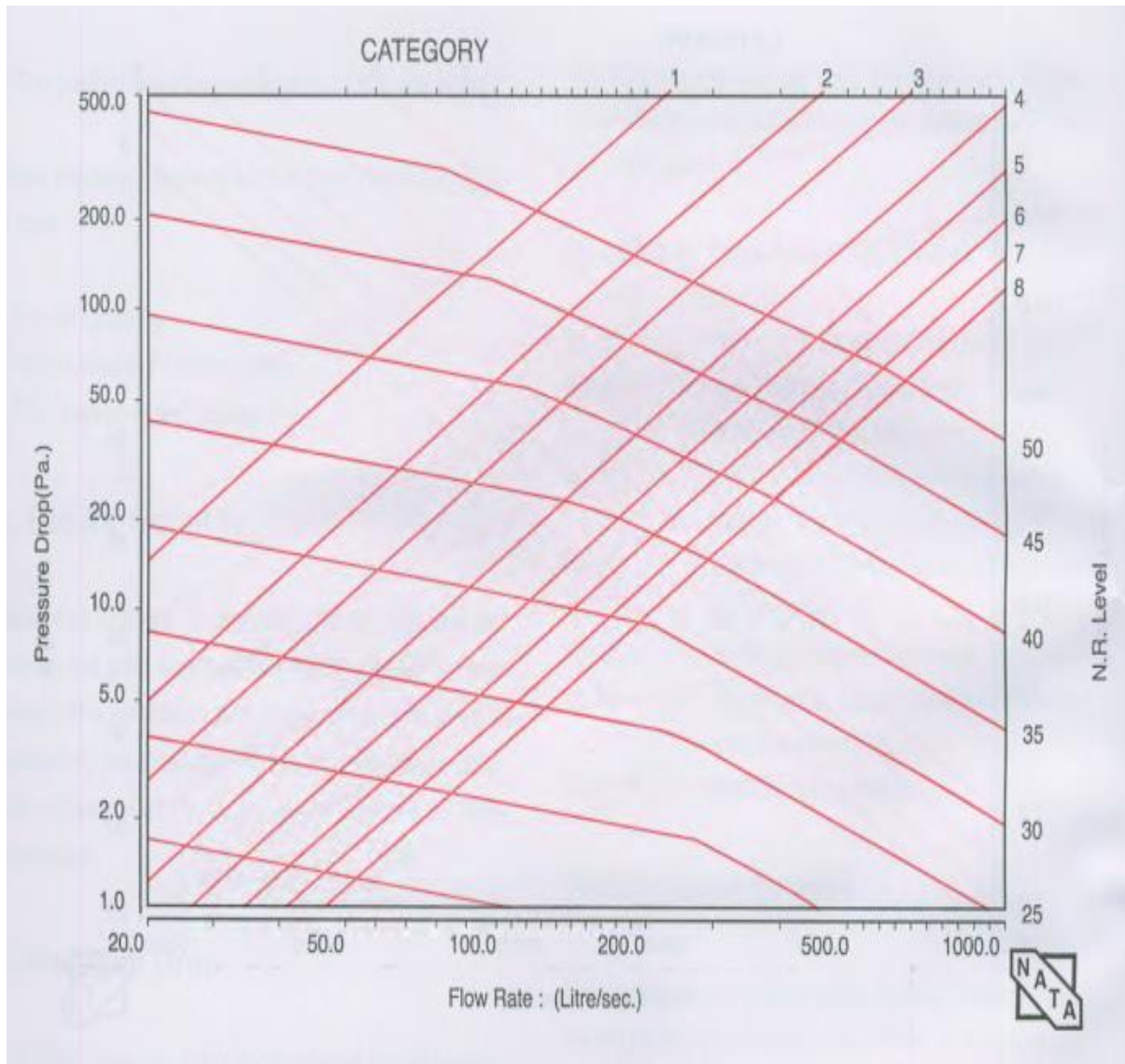
### Aspect Table

CATEGORY	1	2	3	4	5	6	7	8
GRILLE HEIGHT	100	125	175	250	325	400	500	575

(in mm)

## Performance Graph

600m Long



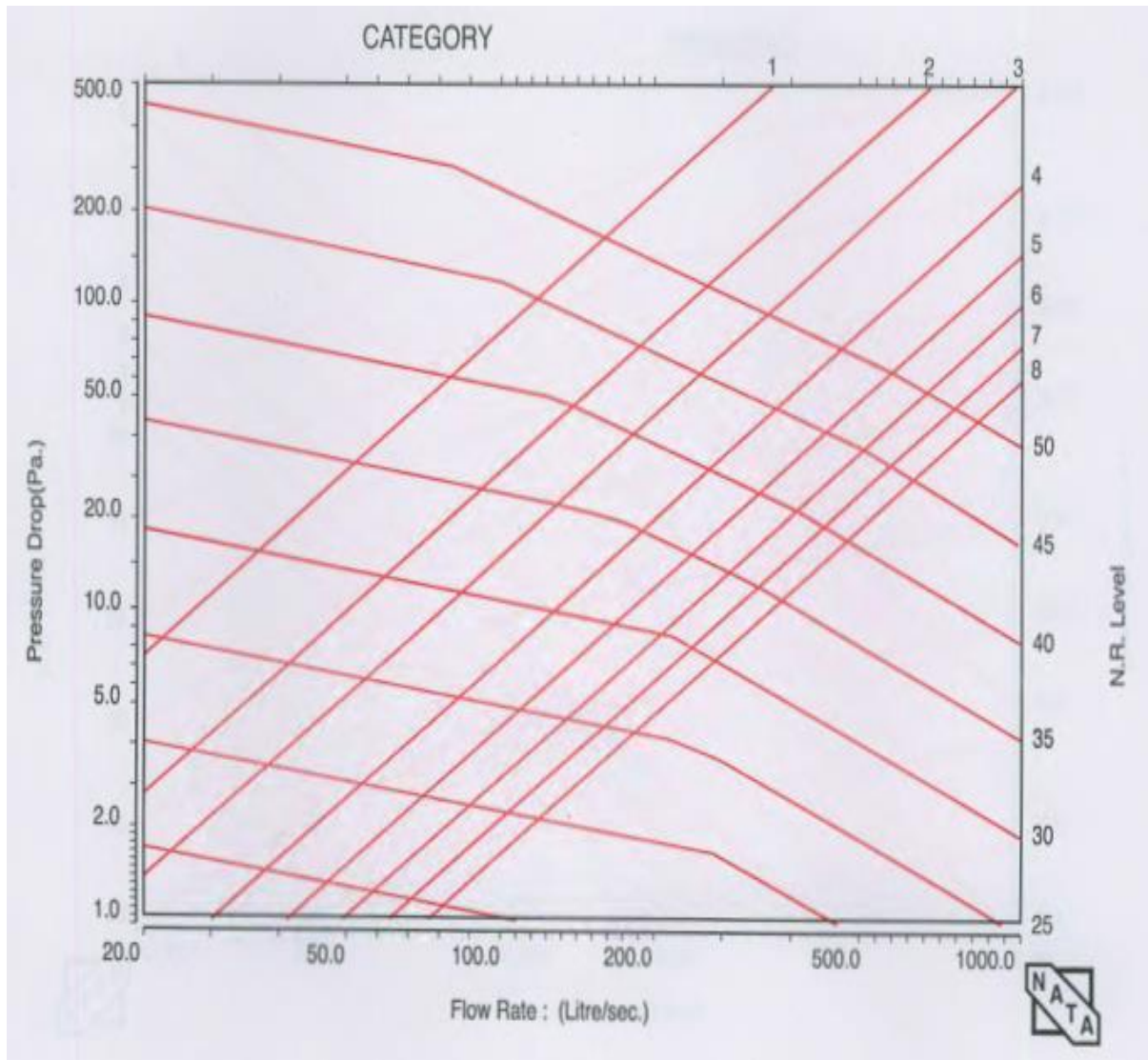
### Aspect Table

CATEGORY	1	2	3	4	5	6	7	8
GRILLE HEIGHT	100	125	175	250	325	400	500	575

(in mm)

## Performance Graph

900m Long



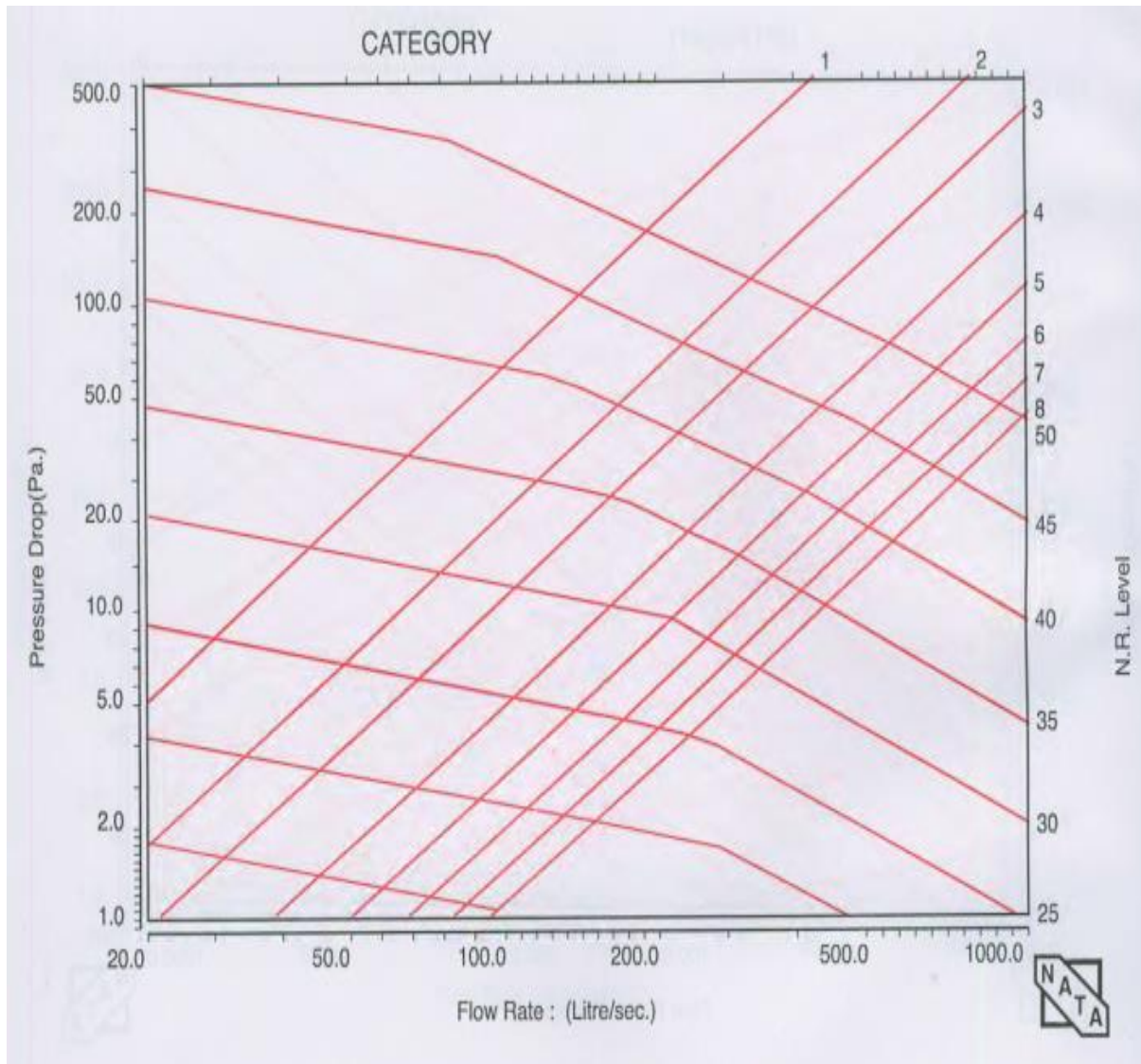
### Aspect Table

CATEGORY	1	2	3	4	5	6	7	8
GRILLE HEIGHT	100	125	175	250	325	400	500	575

(in mm)

## Performance Graph

1200m Long



## Aspect Table

CATEGORY	1	2	3	4	5	6	7	8
GRILLE HEIGHT	100	125	175	250	325	400	500	575

(in mm)

## 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.



### Reflector

To control the direction of the air flow



### 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.