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CHAN CHUAN CHANG METAL WORKS

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CIRCULAR LOURVE CEILING DIFFUSER



Brand : CCC

**AIR DIFFUSION EQUIPMENT
CIRCULAR LOURVE CEILING DIFFUSER
Series : CCC-CCD**

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.

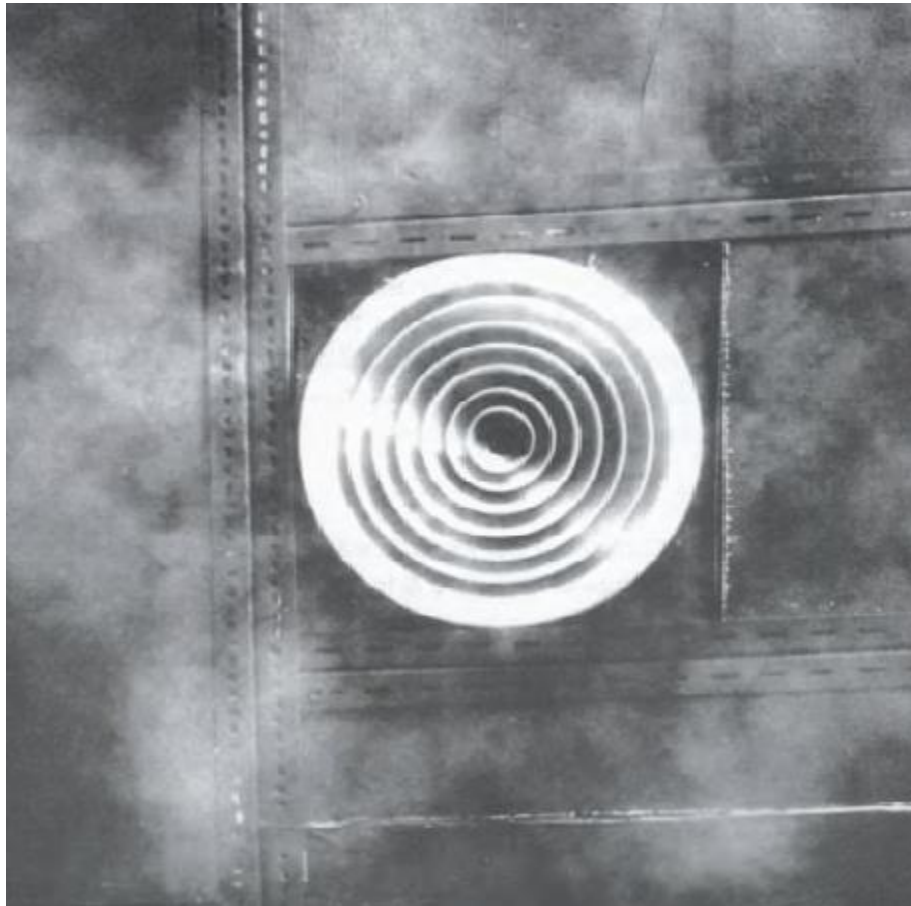
1991 CCC Aluminium Computer Floor Air Grille was sent for Comprehensive Loading Test conducted by Singapore Institute of Standard & Industrial Research (SISIR) and achieved excellent results.

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.

Laboratory Testings



Installed ceiling diffusers in laboratory for testing.

Ceiling is painted black to facilitate witnessing of smoke pattern.

CCC-CD/01



CCC-CCD/01



CCC-CCD/02

APPLICATIONS

- General purposes for commercial installations.
- A standardized and popular type of diffuser for most of the commercial installations.
- Installation to be only for ceilings.
- Designed for supply, return and exhaust air application in heating and cooling ventilation systems.

FEATURES & DETAILS

- Standard construction of circular diffuser is extruded aluminium.
- Diffuser offers uniform air distribution in all direction.
- The core of the diffuser is easily removable.
- Standard finishing is white powder coating.

CCC-CCD/01



*MULTI CORE DIFFUSER WHICH OFFERS UNIFORM AIR
DISTRIBUTION IN ALL DIRECTION*

Product Name : Circular Louvre Ceiling Diffusers

Model : CCC-CCD/01

Material : Extruded Aluminium / SS304 / SS316

Features :

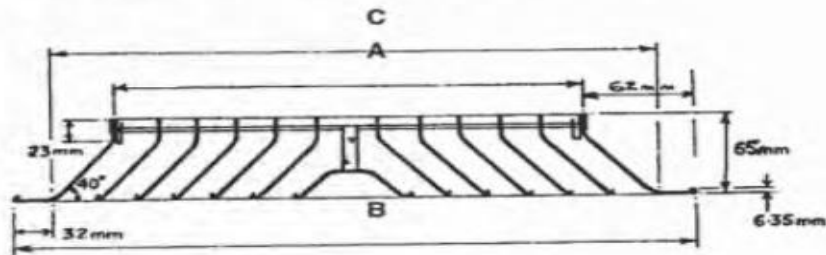
CCC standard diffusers are manufactured from extruded aluminium sections. This model is a multi-core diffuser which offers uniform air distribution in all direction. The core of the diffuser is easily removable for maintenance. Standard finishing of the diffuser will be white powder coating.

Optional Accessories (chargeable) :

- Other optional accessories such as Plenum with circular or rectangular connection, Fan-type Damper, Air Equalizer and Adaptor Collars may be available upon request.
- Materials such as SS304 and SS316 are available upon request subjected to sizes.
- Other colour finishing may be available upon request.

CCC-CCD/01

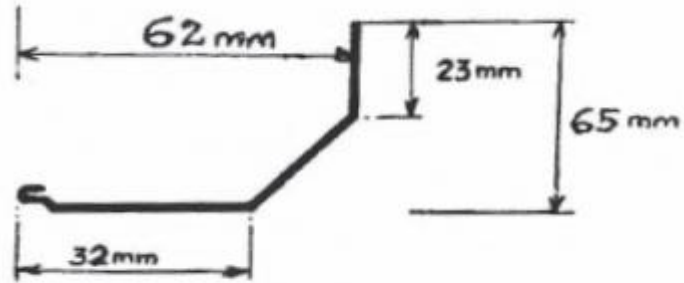
Design and Dimensions



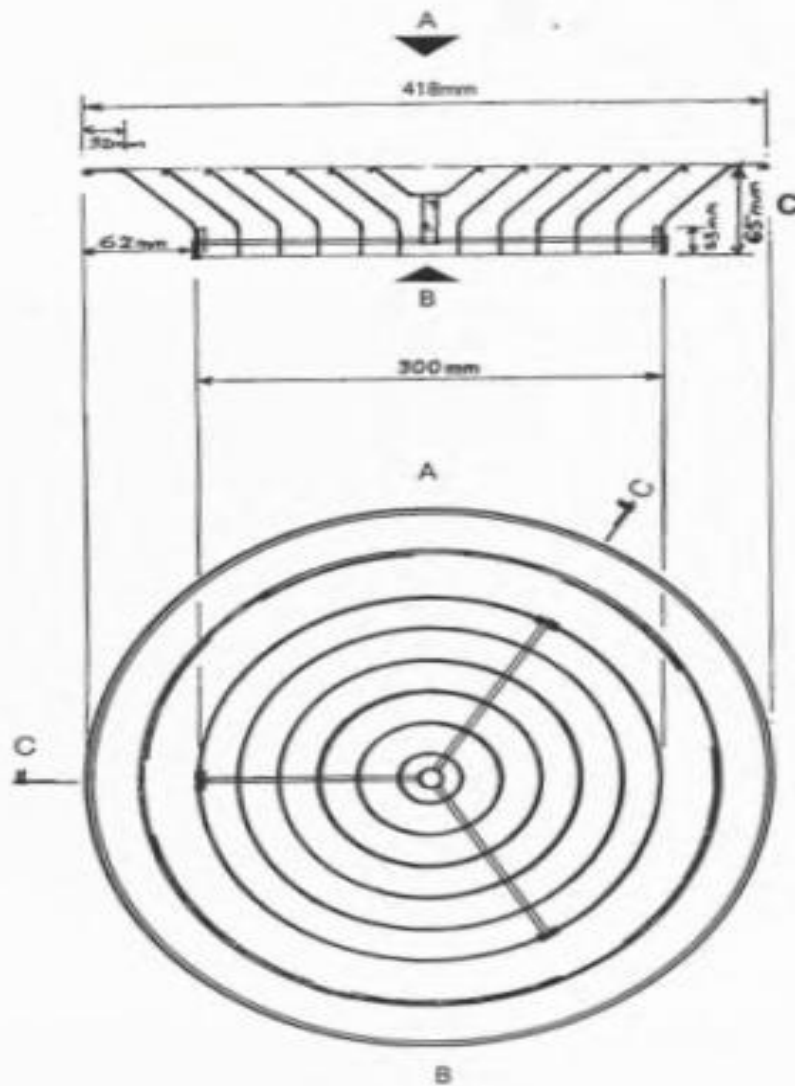
- A = Nominal neck size less 12 mm
- B = Nominal face size
- C = Ceiling opening size or nominal face size less 64 mm

DIFFUSER (NECK SIZE) (MM)	DIFFUSER (ACTUAL FACE SIZE) (MM)
102 ϕ	218 ϕ
152 ϕ	270 ϕ
203 ϕ	320 ϕ
254 ϕ	367 ϕ
305 ϕ	418 ϕ
356 ϕ	470 ϕ
406 ϕ	518 ϕ
457 ϕ	569 ϕ
508 ϕ	620 ϕ
560 ϕ	669 ϕ
610 ϕ	720 ϕ

CCC-CCD/01



CCD/F02



CCD/01

CCC-CCD/02



DESIGNED FOR SUPPLY, RETURN AND EXHAUST AIR APPLICATION.

Product Name : Circular Louvre Ceiling Diffusers

Model : CCC-CCD/02

Material : Extruded Aluminium / SS304 / SS316

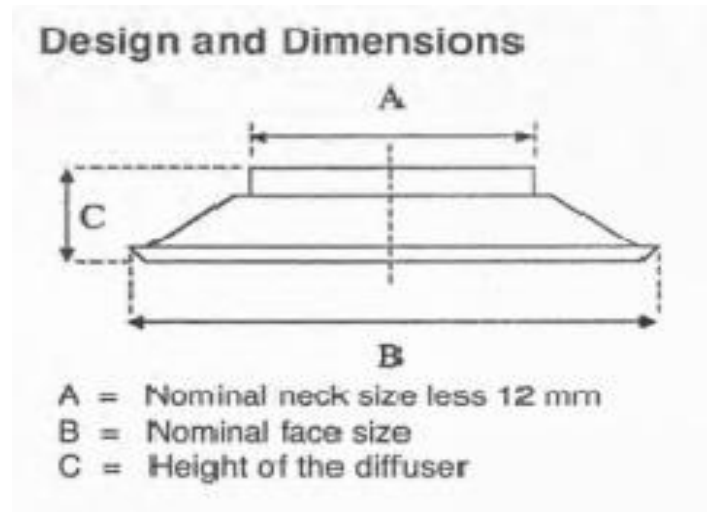
Features :

CCC standard diffusers are manufactured from extruded aluminium sections. It is designed for supply, return and exhaust air application in heating and cooling ventilation systems. This diffuser also allows 360 degrees horizontal or vertical air diffusion pattern and ensure maximum airflow at minimum noise level. Standard finishing will be in white powder coating.

Optional Accessories (chargeable) :

- Other optional accessories such as Plenum with circular or rectangular connection, Fan-type Damper, Air equalizer and Adaptor Collars may be available upon request.
- Materials such as SS304 and SS316 are available upon request.
- Other colour finishing may be available upon request.

CCC-CCD/02



TYPE	A (MM)	B (MM)	C (MM)	FRAME SIZE (MM)
1	145 ϕ	320 ϕ	60	26
2	193 ϕ	410 ϕ	60	32
3	241 ϕ	475 ϕ	60	32
4	292 ϕ	550 ϕ	75	38

Performance Table

Type	Air Velocity (m/s)	3	3.5	4	4.5	5	5.5	6	7	8
1	Air Volume (l/s)	54	63	73	81	91	100	109	127	145
	Pressure Loss (Pa)	13	18	24	30	37	44	53	72	94
	Throw (m)	1.3	1.6	1.8	2.0	2.2	2.4	2.6	2.9	3.3
	NR Level	-	15	20	24	27	30	33	40	44
2	Air Volume (l/s)	98	114	130	146	164	179	202	224	256
	Pressure Loss (Pa)	11	16	21	26	32	41	50	64	84
	Throw (m)	1.8	2.0	2.3	2.5	2.8	3.0	3.5	3.9	4.4
	NR Level	16	20	25	28	30	35	37	41	43
3	Air Volume (l/s)	155	179	209	228	254	279	306	355	408
	Pressure Loss (Pa)	9	13	17	21	25	33	39	52	68
	Throw (m)	2.2	2.4	2.8	3.1	3.5	3.8	4.5	4.9	5.5
	NR Level	15	20	25	30	33	35	39	43	45
4	Air Volume (l/s)	229	255	292	330	368	400	438	515	585
	Pressure Loss (Pa)	9	12	16	21	25	30	37	51	66
	Throw (m)	2.7	2.9	3.3	3.7	4.6	4.6	5.0	5.8	6.7
	NR Level	18	23	27	31	35	38	40	42	45

Throws are shown to a terminal velocity of 0.75m/s.

To select the suitable diffuser category, please refer to the performance table.

SELECTING A SERIES CCD DIFFUSER

When selecting a Series CD 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 GRAPHS

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

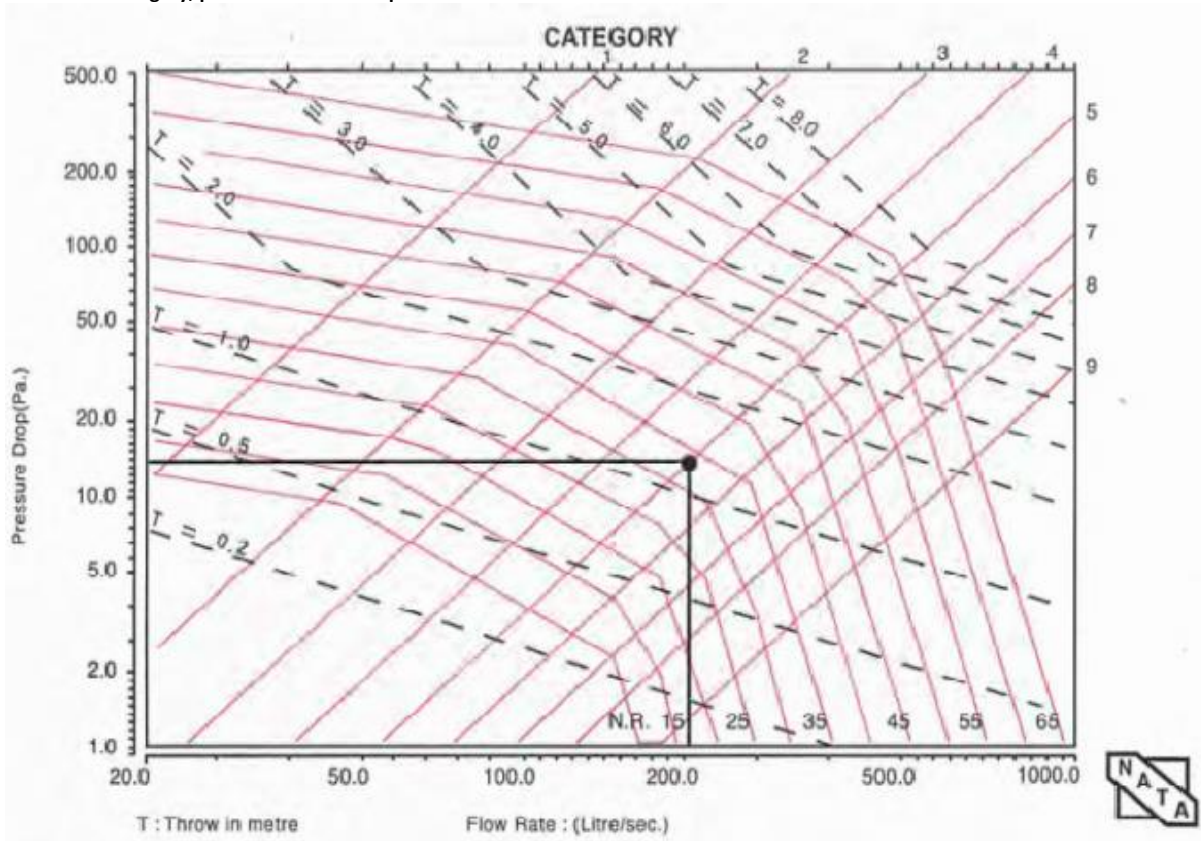
The throws are established to a terminal velocity of 0.5m/s (100 fpm) and are in metres. On the performance graphs, there are marked in as dashed lines, with the particular throw value marked on as follows: i.e. T=04

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)

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



ASPECT TABLE

CATEGORY	1	2	3	4	5	6	7	8	9
NECK SIZE (MM)	100	150	200	250	300	350	400	450	550

Example:

An airflow of 200 l/s (425 cfm) using a size 300 (category 5) will give a pressure drop of 17Pa (0.074inwg), a noise rating of 35, and a throw of 1.5m for an air velocity of 0.5 m/s.

OPTIONAL ACCESSORIES

These are some of our optional accessories for your references:



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 intended to store air and also helps to reduce noise level of the airflow.