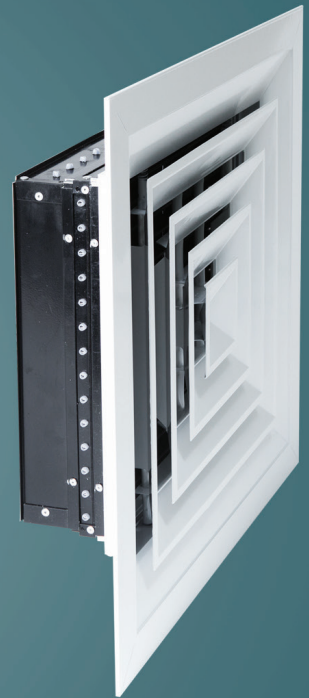
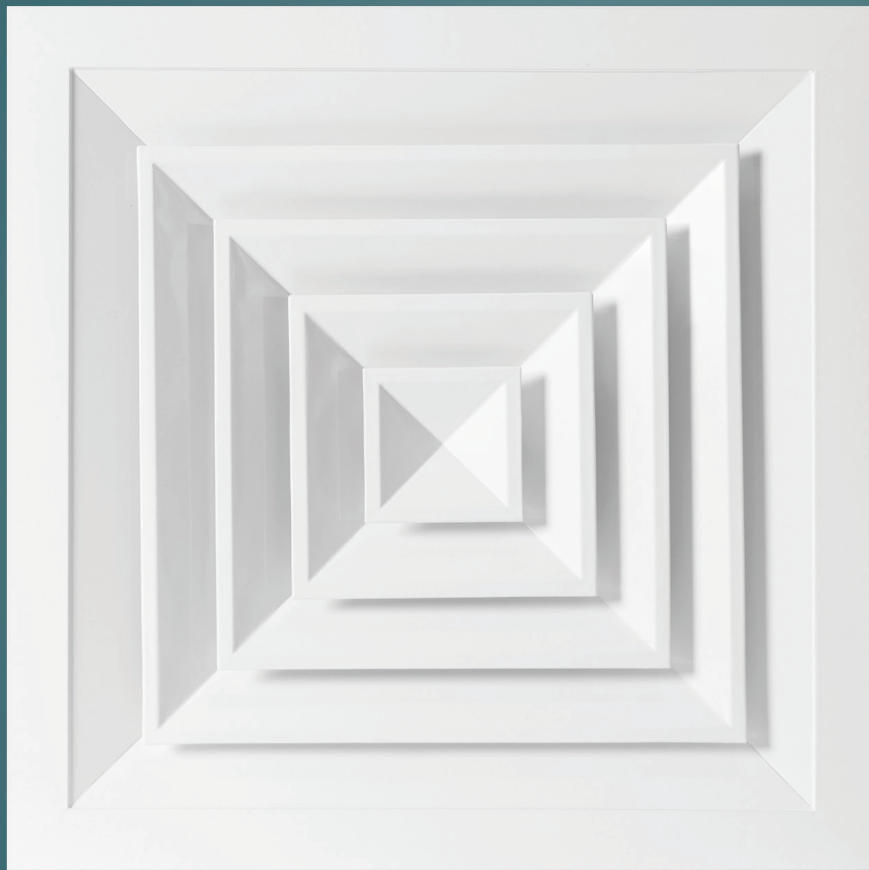




TECNALCO

CHAPTER 4



CEILING DIFFUSERS

CHAPTER-4 CEILING DIFFUSERS INDEX

- o Supply,Return, Diffusers _____
- o Combination Models of Supply and Return Air _____
- o Standard Directional Core Patterns _____
- o Engineering and Performance Data _____
 - o Notes on Selector
 - o Smoke diffusion Pattern Pictures
 - o Test Results from ETL
 - o Effective Free Area
 - o Selection Tables
 - o Easy Selection Graphs
- o Ceiling Diffusers Fixing Details _____
- o Ordering Data _____

CEILING DIFFUSERS

SUPPLY, RETURN, EXTRACT CEILING DIFFUSERS

Square and rectangular models:

TECNALCO ceiling diffusers can supply large volumes of conditioned air at acceptable sound levels and pressure drops, when over all dimensions of the diffuser are limited by modular ceiling systems or architectural considerations. The excellent performance is completed by a pleasing appearance that harmonizes with various architectural details, especially in modular ceiling systems.

TECNALCO directional diffusers are a popular, versatile choice for many heating, ventilating and cooling applications. There is a style, size, pattern to fit every conceivable installation and shape and size of space to be conditioned. The diffuser directional pattern can be selected to deliver the appropriate amount of conditioned air in to the areas, where it is needed.

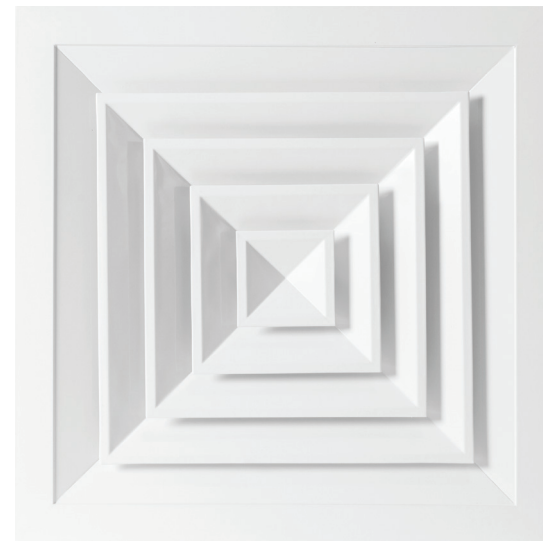
Features:

- Available in square and rectangular shapes, with different directions of discharging core styles for 1, 2, 3 and 4 way in horizontal path
- Available with Flanged border (standard type) or Recessed border (Type 'C').
- Material is of extruded aluminium in natural anodised finish.
- Internal core is of spiral spring loaded, easily removable type, to provide easy access and for adjustment of key operated opposed blade damper.
- Rear dampers and ancillaries are of aluminium mill finish. Available with black matt finish in colour on request.
- Face is of extruded aluminium natural anodised or bronze anodised colour. Available on request in any colour, powder coated in satin, glossy or matt finish.
- Available with optional extended panels to suit modular ceilings.

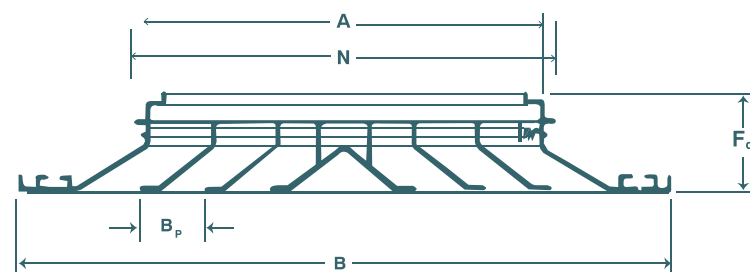
SUPPLY, RETURN, EXTRACT CEILING DIFFUSERS

Standard Type. Designed for flush surface mounting on all types of ceilings, custom made in a variety of core patterns.

- This type of construction is of standard model of TECNALCO with flanged border.
- Available in a variety of flange styles to suit various ceiling applications.
- Available with optional extended panels to suit modular ceilings.
- Wide selection of sizes and core patterns.
- Directional core easily removable at diffuser face.
- Facilitates replacement of core pattern after installation, should a revision be required.



CDR



Standard sizes:

Any combination of L x W

L	W
mm	mm
150	150
225	225
300	300
375	375
450	450
525	525
600	600

Standard sizes:

Neck and overall dimensions of square-type models

L x W	N	A	B
mm	mm	mm	mm
150 x 150	145 x 145	293 x 293	293 x 293
225 x 225	220 x 220	368 x 368	368 x 368
300 x 300	295 x 295	443 x 443	443 x 443
375 x 375	370 x 370	518 x 518	518 x 518
450 x 450	445 x 445	593 x 593	593 x 593
525 x 525	520 x 520	668 x 668	668 x 668
600 x 600	595 x 595	743 x 743	743 x 743
457 x 457 *	452 x 452	600 x 600	600 x 600

*A special model for suiting in a ceiling module size of 600 x 600 mm

NOTE:

- Possible error in dimensions = ± 1%

N = Nominal size
 N = D = Duct size
 A = Neck size of the diffuser
 B = Face side (outer to outer size)
 = Diffuser overall size
 F = False ceiling opening size
 See Table No.
 N = Listed size = L x W
 $A = (L - 5) \times (W - 5) = x \times y$
 $B = (x + 148) \times (y + 148) = m \times n$
 $= (L + 143) \times (W + 143)$
 $F = (m - 60) \times (n - 60)$
 $= (L + 83) \times (W + 83)$
 Frame thickness = 1.2mm

SUPPLY, RETURN, EXTRACT CEILING DIFFUSERS

CDR

- TECNALCO model CDR is used as a return air diffuser.

CDS

- TECNALCO model CDS is accompanied by a key operated opposed blade damper, which is normally used for supply air. The opposed blade damper can be operated with a screw driver after removing internal core. Refer to Page No. 4-12 for diagrammatic representation.

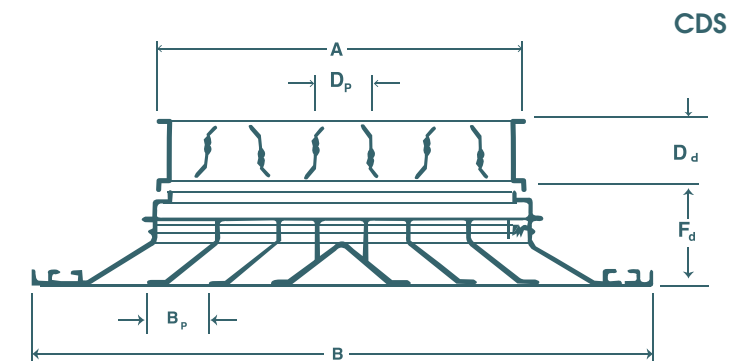
CDF

- TECNALCO model CDR is a fresh air inlet diffuser.



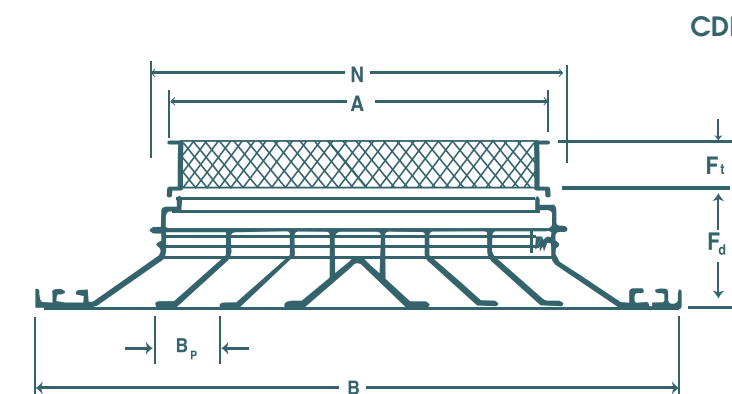
Excellent for Variable Air Volume Applications:

The uniform, nearly horizontal jet from the outer core, maintains effective distribution even when the air volumes vary over a considerable range.



CDS

B_p = Blade pitch = 38 mm
 F_d = Flange depth = 48 mm
 D_d = Damper depth = 36 mm
 D_p = Damper pitch = 25 mm
 F_t = Filter thickness = 12.5/25 mm



CDF

False ceiling opening sizes:

L x W	N	F
mm	mm	mm
150 x 150	233 x 233	
225 x 225	308 x 308	
300 x 300	383 x 383	
375 x 375	458 x 458	
450 x 450	533 x 533	
525 x 525	608 x 608	
600 x 600	683 x 683	
457 x 457 *	540 x 540	

SUPPLY, EXTRACT CEILING DIFFUSERS WITH LEVER

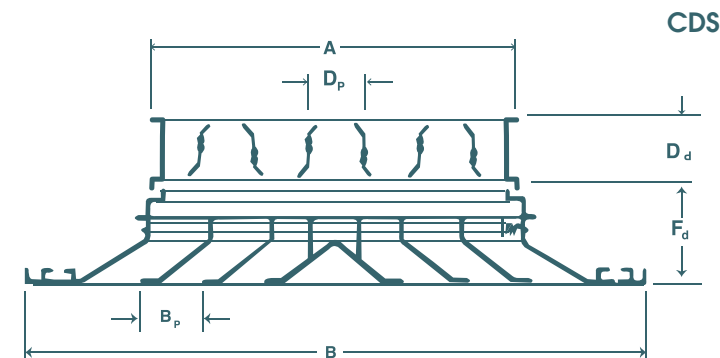
CDS

- TECNALCO model CDS is accompanied by a key operated opposed blade damper, which is normally used for supply air. The opposed blade damper can be operated with a screw driver after removing internal core. Refer to Page No. 4-12 for diagrammatic representation.



Excellent for Variable Air Volume Applications:

The uniform, nearly horizontal jet from the outer core, maintains effective distribution even when the air volumes vary over a considerable range.



- B_p = Blade pitch = 38 mm
- F_d = Flange depth = 48 mm
- D_d = Damper depth = 36 mm
- D_p = Damper pitch = 25 mm
- F_t = Filter thickness = 12.5/25 mm

False ceiling opening sizes:

L x W	N mm	F mm
150 x 150	233 x 233	
225 x 225	308 x 308	
300 x 300	383 x 383	
375 x 375	458 x 458	
450 x 450	533 x 533	
525 x 525	608 x 608	
600 x 600	683 x 683	
457 x 457 *	540 x 540	

SUPPLY, RETURN, EXTRACT CEILING DIFFUSERS

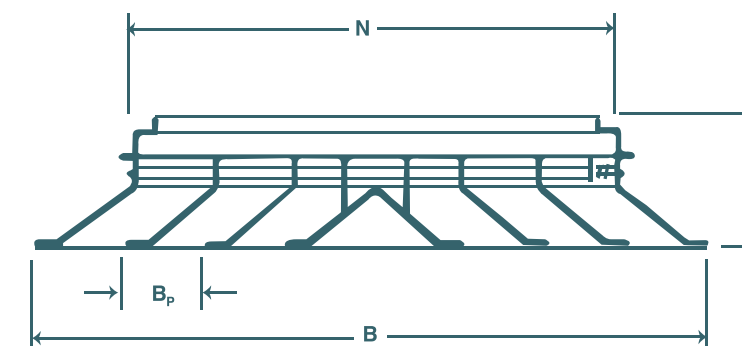
Recessed type:

Designed for installation in modular metal pan ceilings with snap-in T-bar suspension. Sized to fit the standard dimensions of the metal panel modules.

- It maintains same features as TECNALCO standard type models, except in border flange.
- Recessed type border enables diffuser face to be mounted flush with ceiling tile modules without overlapping flange.



CDR-C



Standard sizes:

Any combination of L x W

L mm	W mm
150	150
225	225
300	300
375	375
450	450
525	525
600	600

Standard sizes:

Neck and overall dimensions of square-type models

L x W	N mm	x x y A mm	m x n B mm
150 x 150	150 x 150	150 x 150	230 x 230
225 x 225	225 x 225	225 x 225	305 x 305
300 x 300	300 x 300	300 x 300	380 x 380
375 x 375	375 x 375	375 x 375	455 x 455
450 x 450	450 x 450	450 x 450	530 x 530
525 x 525	525 x 525	525 x 525	605 x 605
600 x 600	600 x 600	600 x 600	680 x 680
520 x 520	520 x 520	520 x 520	600 x 600

*A special model sized to fit in a ceiling module size of 600 x 600 mm

NOTE:

- Please add 5mm to 'N' for duct opening size.

N = Nominal size = L x W

A = Diffuser Neck size

D = Duct size = (L + 5) x (W + 5)

B = Diffuser overall size = (L + 80) x (W + 80)

h = Diffuser height = Fd

N = Nominal size = L x W

A = Diffuser neck size = x x y

B = Diffuser overall size = m x n

F = False opening size = (m - 14)

Fd = Frame depth = 35 mm

SUPPLY, RETURN, EXTRACT CEILING DIFFUSERS

CDR-C

- TECNALCO model CDR-C is a return air diffuser with a recessed frame.

CDS-C

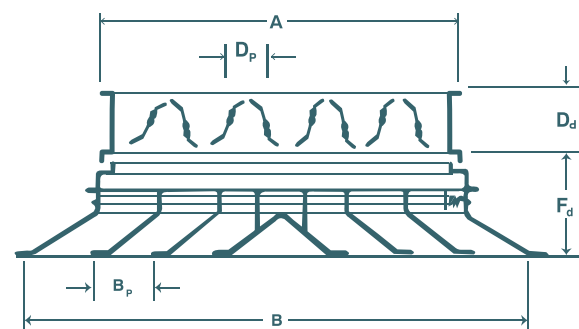
- TECNALCO model CDS-C is accompanied by a key operated opposed blade damper. The damper can be operated with a screw driver after removing the internal core, which is used as a supply air terminal.

CDR-C-BD

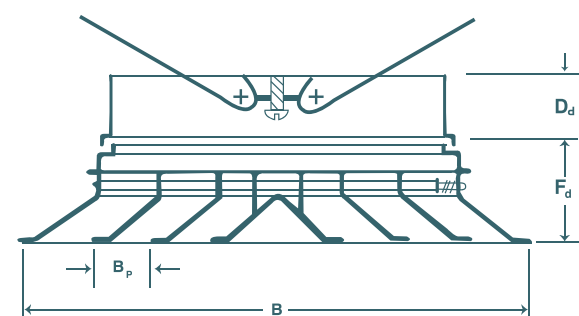
- TECNALCO model CDR-C-BD is like CDS-C but with a butterfly damper, used as a supply air terminal.



CDS-C



CDR-C-BD



False ceiling opening sizes:

N mm	F mm
150 x 150	216 x 216
225 x 225	291 x 291
300 x 300	366 x 366
375 x 375	441 x 441
450 x 450	516 x 516
525 x 525	591 x 591
600 x 600	666 x 666
520 x 520*	586 x 586

Extended panel with snap in flanges:

If the ceiling module is more than 75 mm larger than the listed duct size (or) nominal size in either or both dimensions, a module sized extended panel will be added to the diffuser. The extended panel will be of steel (or) aluminium construction, complete with the snap-in flanges, in powder coated colour finish, matching with the Diffuser.

NOTE:

- For Engineering and Performance Data refer to Page No. 4-14 to 4-31
- For Fastening details refer to Page No. 4-32

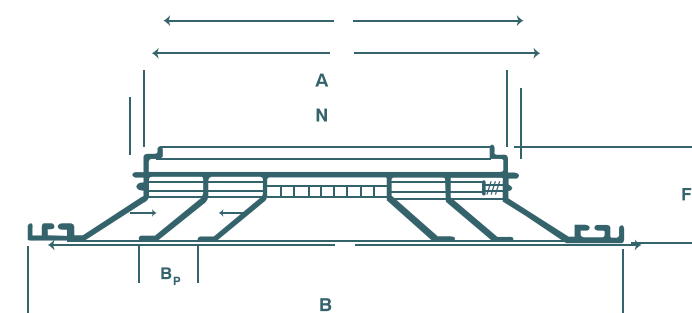
CEILING DIFFUSERS COMBINATION MODELS OF SUPPLY AND RETURN AIR

CDRS-DD

- TECNALCO model CDRS-DD type diffuser is a combination of supply and return ceiling diffusers which is sized to match rooftop air conditioners in the most popular capacities.
- The Return Core Is Decorative Design Pattern Type.
- The core is of easily removable type and interchangeable also.
- The supply portion of diffuser is accompanied by a key operated opposed blade damper.



CDRS-D



Standard sizes:

Any combination of L x W

L	W
150	150
225	225
300	300
375	375
450	450
525	525
600	600
675	675
750	750
825	825
900	900

Standard sizes:

Neck and overall dimensions of Type CDRS - Square models

L x W	N = D mm	A mm	B mm
150 x 150	145 x 145	293 x 293	293 x 293
225 x 225	220 x 220	368 x 368	368 x 368
300 x 300	295 x 295	443 x 443	443 x 443
375 x 375	370 x 370	518 x 518	518 x 518
450 x 450	445 x 445	593 x 593	593 x 593
525 x 525	520 x 520	668 x 668	668 x 668
600 x 600	595 x 595	743 x 743	743 x 743
675 x 675	670 x 670	818 x 818	818 x 818
750 x 750	745 x 745	893 x 893	893 x 893
825 x 825	820 x 820	968 x 968	968 x 968
900 x 900	895 x 895	1043 x 1043	1043 x 1043

N = Nominal size = Duct size 'D'

A = Diffuser Neck size

B = Diffuser overall size

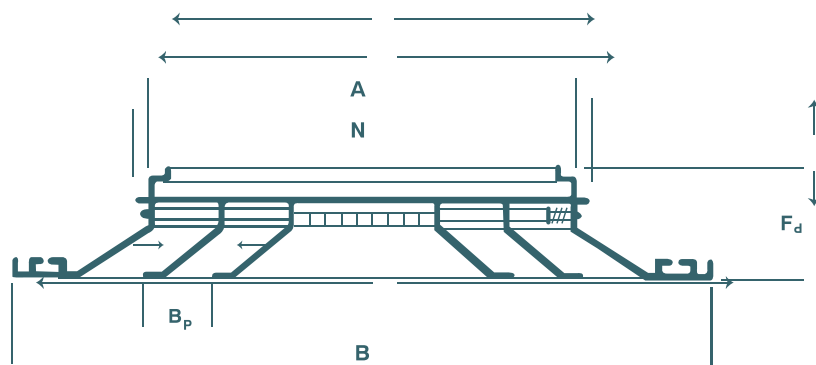
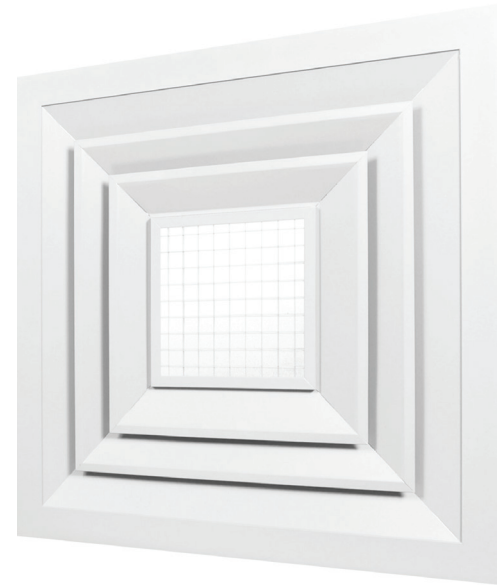
n = Neck size for the return airegg crate core

F = False ceiling opening size

CEILING DIFFUSERS COMBINATION MODELS OF SUPPLY AND RETURN AIR

CDR-EC

- The return air core is egg-crate type with dimensions of 12.5 x 12.5 x 0.5 mm aluminium core with a 90% free area.
- The core is of easily removable type and interchangeable also.
- The supply portion of diffuser is accompanied by a key operated opposed blade damper.



Return air neck size:

N	mm	n	mm
150 x 150		75 x 75	
225 x 225		150 x 150	
300 x 300		150 x 150	
375 x 375		150 x 150	
450 x 450		225 x 225	
525 x 525		225 x 225	
600 x 600		300 x 300	
457 x 457*		225 x 225	

False ceiling opening sizes:

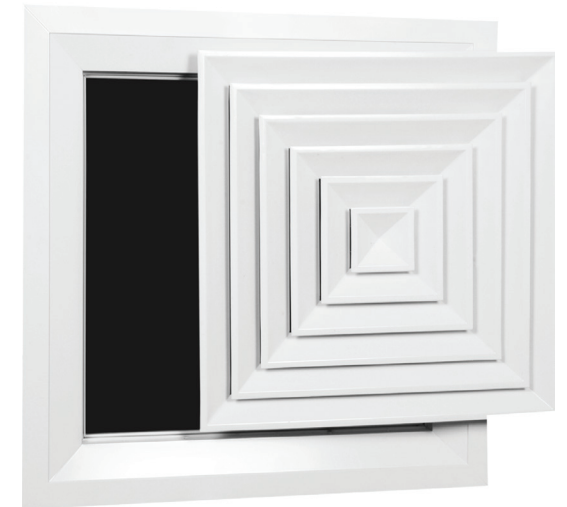
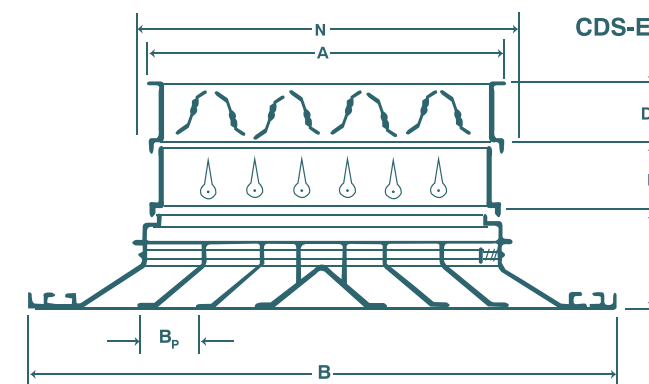
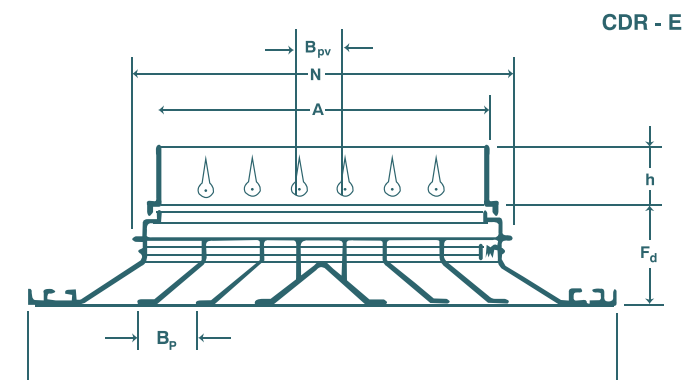
N	F
150 x 150	233 x 233
225 x 225	308 x 308
300 x 300	383 x 383
375 x 375	458 x 458
450 x 450	533 x 533
525 x 525	608 x 608
600 x 600	683 x 683
457 x 457*	540 x 540

NOTE:

'n' - the neck size for the return air - egg crate core size can be varied as per the customer's requirement.

* A special model for suiting in a ceiling module size of 600 x 600 mm

SUPPLY, RETURN, EXTRACT CEILING DIFFUSERS



- A diffuser with 'EQUALISINGGRID' Equalises flow of air into neck of diffuser or duct. Also gives directional control of air flow with minimum noise and turbulence. Equalising grid louvres are individually adjustable, secured in nylon bushes to hold their settings and provide rattle-free performance. Extruded aluminium vanes and mill finish frame. Available in black matt finish also

- Equalising grid helps for distributing the cool air even more horizontally over the ceiling surface
- The vanes of equalising grid can be adjusted to different degrees either in one direction or in both directions away from each other.

B_{pv} = Vertical bar pitch = 19 mm

h = Height of the equalising grid = 40 mm

Standard sizes:

Any combination of L x W

L	W
150	150
225	225
300	300
375	375
450	450
525	525
600	600

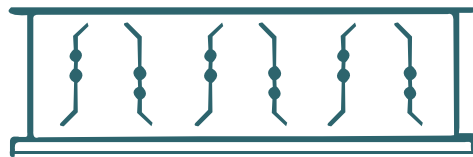
- Other than the listed sizes are also available on request.

SUPPLY, RETURN, EXTRACT CEILING DIFFUSERS

Opposed blade damper - OD:

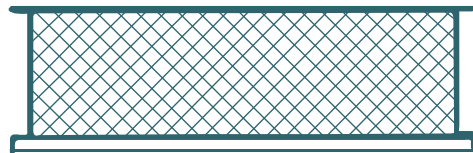


An opposed blade damper is specially designed for use with all models of TECNALCO square and rectangular type ceiling diffusers. Blade arrangement ensures uniform distribution through diffuser throat. Provides positive control of air volume from full open to full closed position, regardless of system pressure.



Attaches quickly with sheet metal screws directly to neck of the diffuser. Operating lever is accessible at diffuser face or screw operating is accessible at the face of the opposed blade damper, which can be operated by a key or a screw driver. The material is of extruded aluminium mill finish. Black matt in colour is also available on request.

Aluminium filter - AF:

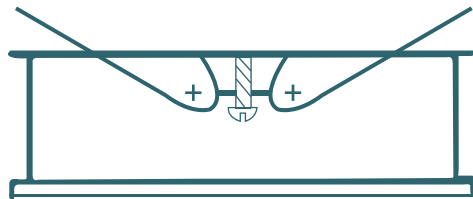


A filter media is specially designed for use electronic, computer, and pharmaceutical industry. The thickness of the filter varies from 50 mm to 100 mm as per requirement.

Efficiency of filter:

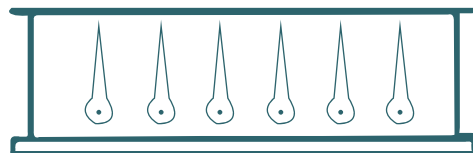
Particles Size	Efficiency %
150 - 700	90
75 - 150	60

A Round Damper (or) Butterfly Damper - BD:



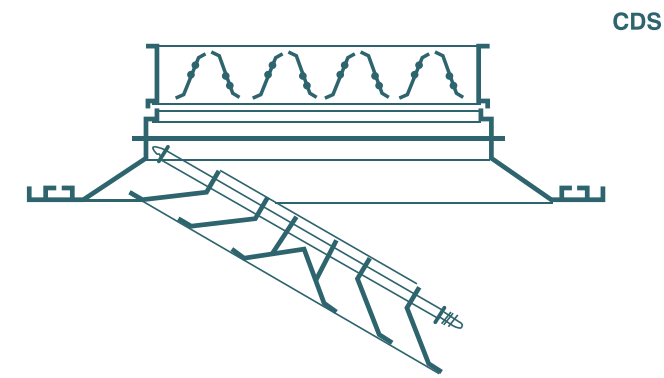
Adapts square neck CDS diffusers to a round neck, permitting attachment of round flexible or rigid duct. Damper selection is then restricted to dampers for round neck only. Adaptors fit over the diffuser neck for fast assembly

Equalising grid - EG:



Equalises flow of air into neck of diffuser or duct. Also gives directional control of air flow with minimum noise and turbulence. Louvres are individually adjustable, secured in nylon bushes to hold their settings and provide rattlefree performance. Extruded aluminium vanes and mill finish frame. Available in black matt finish also

SUPPLY, RETURN, EXTRACT CEILING DIFFUSERS



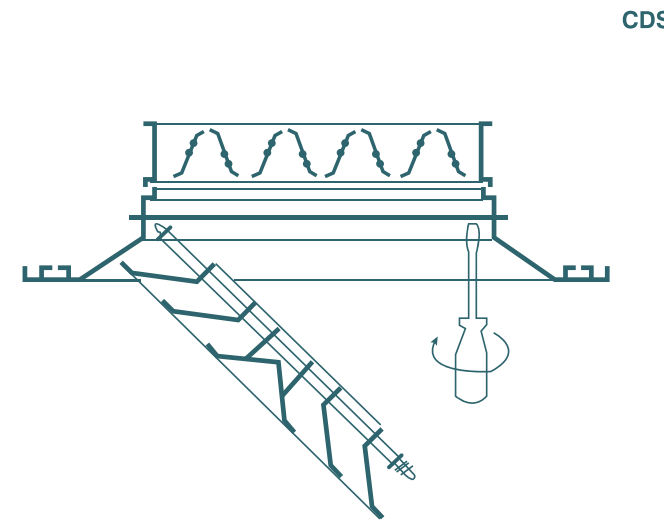
CDS

Duct fixing and Core

Removal:

Insertion of diffuser core is effected by depressing core pin springs in holes located at end of border frame and releasing core when pins are aligned with corresponding holes at opposite end of frame.

Procedure is reversed for removal of core.



CDS

Operation of Opposed Blade Damper:

An opposed blade damper is specially designed for use with TECNALCO ceiling diffusers of all models. Blade arrangement ensures uniform distribution through diffuser throat. Provides positive control air volume from full open to full closed position, regardless of system pressure. The full open to full closed position of damper to any degree can be operated by a screw driver after removing the internal core, which is shown in the figure.

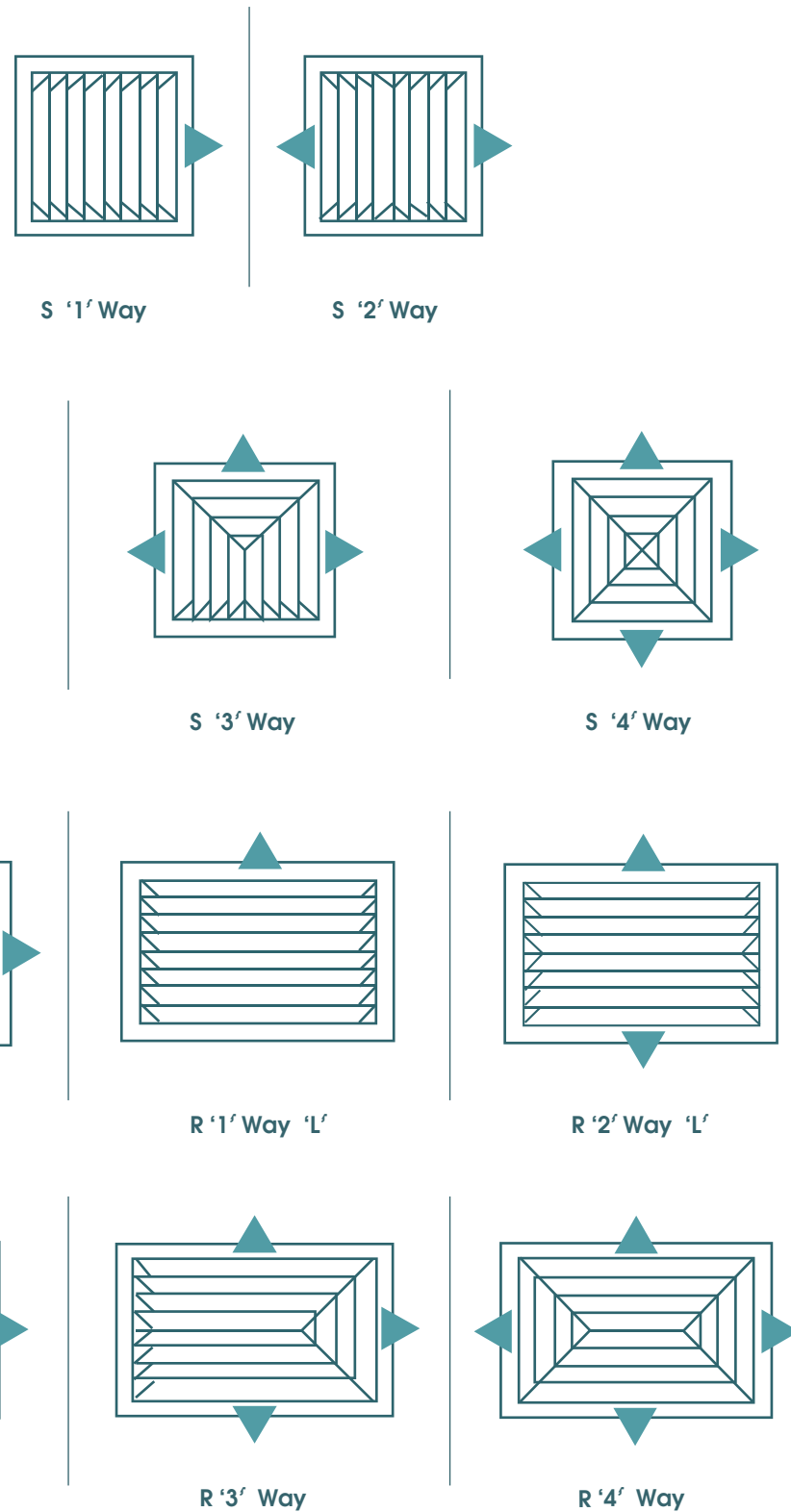
GENERAL NOTES:

- The directional segments of each core style are noted as shown to identify with the tabulated performance data.
- Dimensions noted on each core style are the "increments" in mm of the available duct sizes (L x W).
- For nonstandard core style, or a standard core style with modified air volume requirements, see the detailed selection procedure and by simple interpolation of the given data, required data will be obtained.

SUPPLY, RETURN, EXTRACT CEILING DIFFUSERS

Standard directional core patterns of Ceiling Diffusers

- TECNALCO models of Square and Rectangular diffusing cores are interchangeable between standard outer frames of the same size



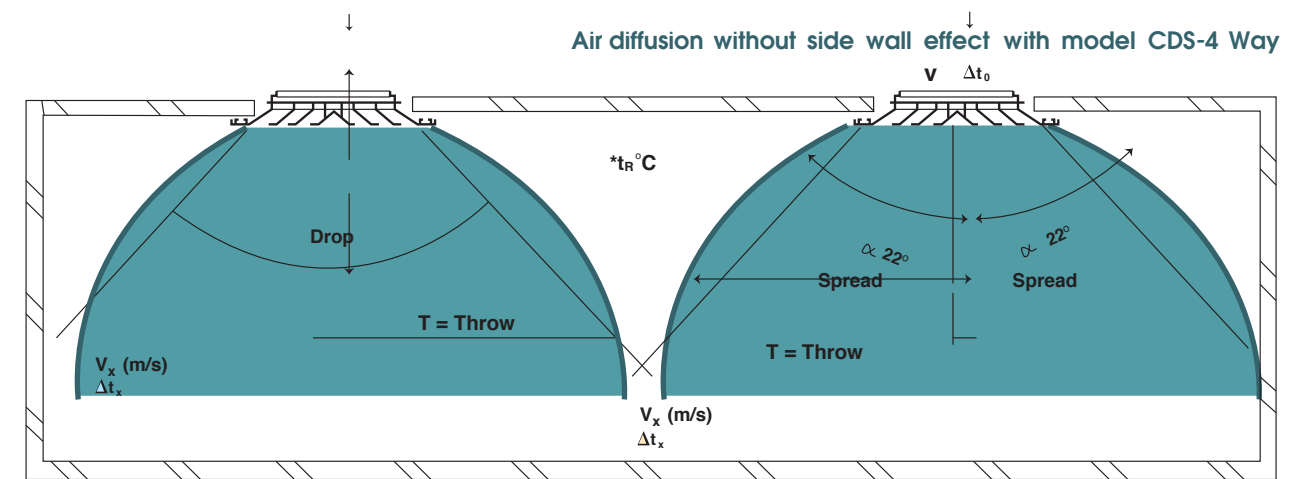
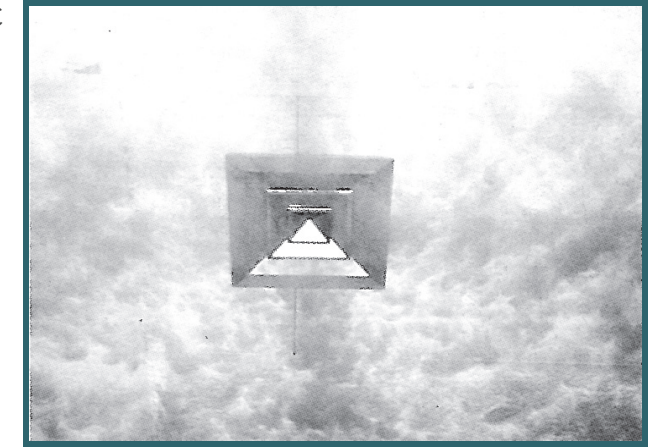
ENGINEERING AND PERFORMANCE DATA

Notes on Selection

- Throw data are based on terminal velocities (V_t) at the ceiling for supply air temperatures of 11°C below room temperatures. To determine throw for isothermal and $\Delta 11^{\circ}\text{C}$ temperature differential, use factors in following table.

V_t m/s	Isothermal air flow	$\Delta 11^{\circ}\text{C}$ air flow
0.75	1.00	1.00
0.50	1.05	1.10
0.25	1.11	1.22

- Maximum throw shown is based on a V_t of 0.25 m/s, and minimum throw on a V_t of 0.75 m/s. With diffusers mounted on a 2.7 m high ceiling and supplying air at 11°C below room temperature, the approximate average room velocities will be 0.175 m/s and 0.33 m/s respectively.



- When two diffusers are discharging air towards each other, selection should be based on the diffuser size which will produce the required throw (one half the distance between diffuser centres) within the medium to maximum throw range at the air volume requirements.
- When diffusers are mounted on an exposed duct, or used with drop collars, the throw is decreased by approximately 40%. Air will be discharged downwards at an angle of approximately 20° from the horizontal. Horizontal air thrown can be obtained by extending a surface minimum of 300 mm beyond the periphery of the diffuser.
- For heating application, maximum mounting height is 3.7 metres at 16.5°C temperature differential with returns mounted at or near floor level.
- NC data are measured at a location from the diffuser of 1.5 metres and 45° angle from the face with an allowance of 10 dB for room effect and for diffusers without dampers or with dampers fully open. A blank space indicates no significant sound.
- Note:** Sound Power level ratings are available for the full range of diffusers upon request and are based on recommendations as per ADC Standard 1062 - GRD 84
- Dampers fitted to diffusers are intended for fine balancing purposes. Excessive dampening to overcome high duct pressures will result in an increased sound level of approximately 8dB per doubling of pressure drop

ENGINEERING AND PERFORMANCE DATA

Air Distribution

For ceiling diffusers, in addition to air flow, air throw and induction characteristics are the principle actors for selection.

The induction factor and the throw can be adjusted by the individual internal setting blades for slot diffusers but they are mostly fixed for ceiling diffusers.

For such reason, the selection of ceiling diffuser must be made with precision, taking into consideration, the following procedure:

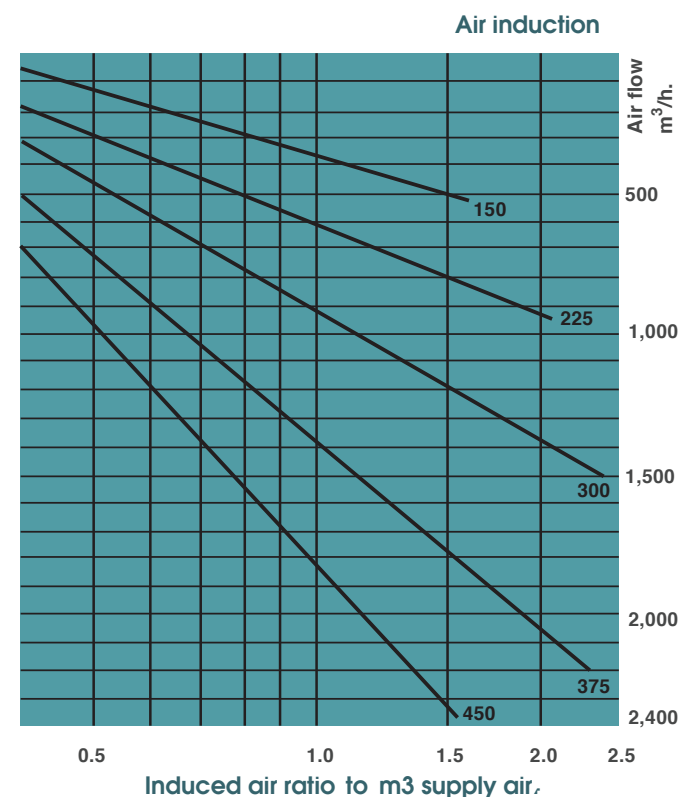
- o Calculate the total air flow for the specific area.
- o locate diffusers uniformly and co-ordinate with lighting fixtures.
- o If diffusers cannot be located in the center of the area, select random diffusers with 1, 2 or 3 way pattern.
- o Suggest diffuser locations considering ceiling height.
- o Find maximum air flow rate per side of diffuser.
- o Control the total air flow rate permissible per diffuser.
- o Select the number of supply and return diffusers.
- o Control sound level for the type of application.
- o Select the size of diffusers from the air flow data and recontrol the horizontal throw of the selected diffusers.

At important neck velocity, the ceiling diffusers can have high induction factors which are included in the throw values in the information given on following pages. The importance of air induction can be observed from pictures taken with contrast smoke.

Tests have been made on CD-4 listed sizes 150 mm, 300 mm and 600 mm with different neck velocities. The resulting air induction factor becomes important with increasing neck velocity and the induced air capacity can be more important in volume than the initial air supply.

Air Induction

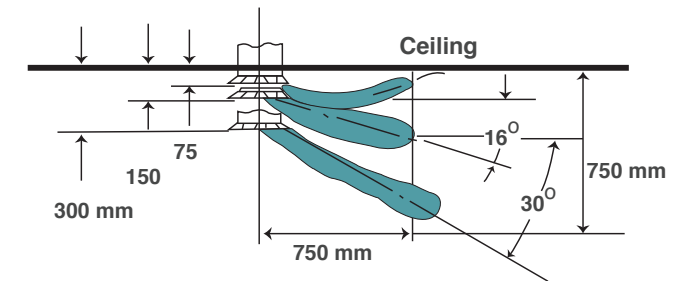
Air induction is an important factor in air conditioning distributing systems. The energy produced by the volume flow through diffuser and the discharge velocity at the diffusers outlet induces the air in the room and is the principle reason for the drop in temperature between supply air and room air. At high neck velocity, the induced air capacity can become more important than the original air flow, and throw is increasing in function of induced air ratio. Testing results for throw includes the influence of air induction.



ENGINEERING AND PERFORMANCE DATA

Ceiling effect

Model CD directional diffusers are not recommended for applications without ceilings, such as exposed duct mounting. Performance data as published in this catalogue is based on the CD diffuser being mounted at the ceiling. The published performance for the directional air pattern benefits from the ceiling coanda effect. When the CD diffuser is mounted remote from the ceiling, the air patterns to be anticipated are illustrated in Figure.



With model CDS-4 Way 225 x 225 mm size
 $\Delta t_0 = 110C$ differential
 Diffusing of air pattern without ceiling effect

High Efficiency Units

TECNALCO Model CDF

1. A filter media for use in submicroscopic clean areas especially in the electronic, nuclear and pharmaceutical industries.
2. Designed specifically to filter critical air supplies in operating theatres, sterile and contaminated suites, also in viral and toxic research areas. B.S. 3928 class 99.9995% efficiency with Hepa filters.

How to Specify

1. Sizes are designated by neck dimensions (L x W).
2. Available core patterns are illustrated on page 4-13
3. Standard sizes are available in increments of 75 mm, depending on the dimensions involved and the core pattern selected.
4. The module size is required when extended panel models are specified.

Performance Notes

All pressures are in mm of water.

TP = total pressure.

- SP = negative static pressure.

Throw data is listed in Metres to terminal velocities (Vt) as listed below.

Minimum throw to Vt = 0.75 met/sec.

Middle throw to Vt = 0.5 met/sec.

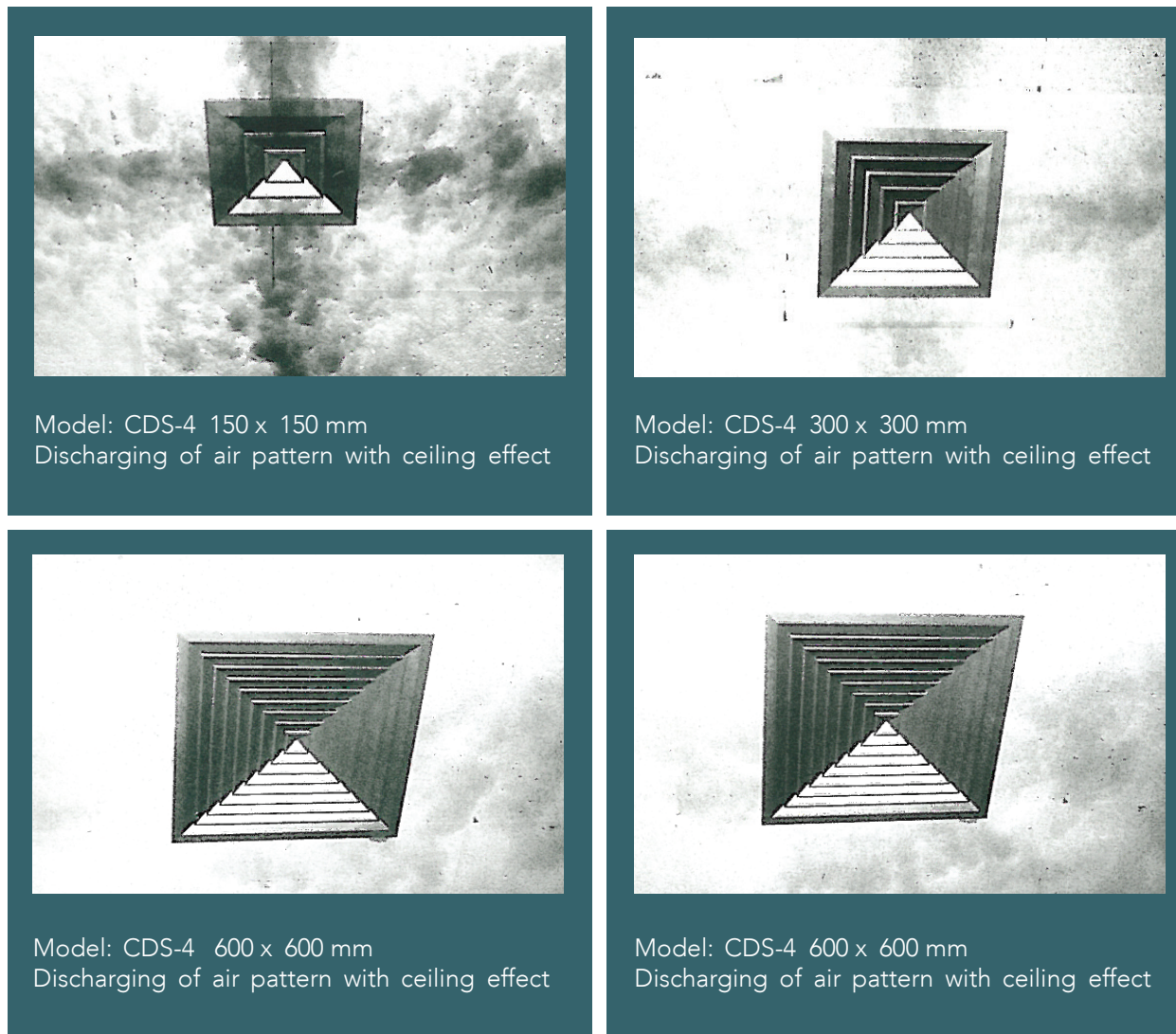
maximum throw to Vt = 0.25 met/sec.

Sound data:

- NC values are based on a room absorption of 10 db, re 10-12 watts. Tested per ADC Equipment Code 1062 : GRD-84
- Performance data as tabulated is for supply air applications.
- Performance data assumes that CDS is mounted on the ceiling for maximum ceiling effect.
- When no ceiling effect is present, the horizontal throw will be reduced approximately by 25%, producing a downward projection angle as illustrated in the above Figure.

ENGINEERING AND PERFORMANCE DATA

Discharging of air pattern can be observed from the smoke test results.



Model: CDS-4 150 x 150 mm
Discharging of air pattern with ceiling effect

Model: CDS-4 300 x 300 mm
Discharging of air pattern with ceiling effect

Model: CDS-4 600 x 600 mm
Discharging of air pattern with ceiling effect

Model: CDS-4 600 x 600 mm
Discharging of air pattern with ceiling effect

NOTE :

Tests have been conducted with constant volume of air (smoke)

Smoke tests conducted by **ETL Testing Laboratories Inc. An ADC certified lab.**

ENGINEERING AND PERFORMANCE DATA

Test Results from ETL

The tests were conducted, by the ETL Testing Laboratories, on the selected sizes of the supply ceiling diffusers. The diffusers had adjustable opposed blade dampers attached to their inlets. The dampers were set to full open position. The test results include Total pressure, Area factor, Throw pattern and Sound power level.

Test method :

The diffusers were tested in accordance with Air Diffusion Council Test Code for Grilles, Registers and Diffusers ADC 1062: GRD-84. The diffusers were installed in the ADC facility and supplied with measured volumes of air. The static pressure was measured 1-1/2 duct diameters upstream of the diffuser inlet.

Air volume q_v :

Air volumes are given in Lt/sec.

Throw T :

The throw values given in the tables are related to the ceiling diffuser placed nearer to the ceiling.

Three throw values are given for each q_v to the corresponding terminal velocities V_t .

Minimum Throw \rightarrow 0.75 m/sec. V_t

Middle Throw \rightarrow 0.50 m/sec. V_t

Maximum Throw \rightarrow 0.25 m/sec. V_t

If the ceiling diffuser is mounted on an exposed duct, these throw values should be decreased by a factor 0.6 ~0.75 .

Neck velocity V_k :

The effective neck velocities given are related to the corresponding neck areas of the diffuser.

NC values :

Noise data is given in terms of NC levels. These have been derived from sound power level data (dB re 10-12 watts) by subtracting 10 dB (Room effect) from the sound power levels.

Outlet size :

Outlet sizes are mentioned on the left side of each row within a tolerance of $\pm 10\%$

Area Factor A_k

For air outlets and inlets

MANUFACTURER: TECNALCO								OUTLET/INLET TYPE & SIZE: 150 mm square				
PRODUCT: 4WAY CEILING DIFFUSER								NECK AREA: 225 cm ²				
FLOW METER EQUIPMENT: 305 mm metering station 152 mm sharp edged orifice								ANEMOMETER: Alnor Velometer Type 6070P TYPE & SERIAL NUMBER: 6077AA				
RUN NO.	Flow Meter ΔP Pa	READINGS					STATIC PRESSURE Pa	CALCULATIONS				
		DISCHARGE VELOCITY IN m/sec.						FLOW L/s	NECK VEL. m/s	NECK V.P. Pa	TOTAL PRESS. Pa	AREA FACTOR (A_k)
		1	2	3	4	AVE.						
1	9.71	6.48	6.60	6.86	6.60	6.63	22.90	47	2.03	2.49	25.39	0.0071
2	14.93	7.98	8.13	8.26	8.26	8.15	35.84	59	2.54	3.98	39.82	0.0072
3	21.41	9.86	10.16	10.26	10.26	10.13	51.27	71	3.05	5.72	56.99	0.0070
											AVERAGE	0.0071

ENGINEERING AND PERFORMANCE DATA

Throw Test Data

Product: 4Way Ceiling Diffuser - 150 mm square

Run No. A Flow L/s 71 NC 30

Distance from Outlet, Throw in Metres

Drop cm	0	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0
2.5	*	*	2.2	1.5	1.1	0.7	0.6	0.5	0.3	0.25	-	-	-
7.5	0.6	1.0	1.1	0.9	0.7	0.5	0.4	0.3	0.25	-	-	-	-
15	0.3	0.25	0.3	0.4	0.3	0.25	0.25	0.25	-	-	-	-	-
22	0.3	-	-	-	-	-	-	-	-	-	-	-	-
30													
45													
60													
90													
120													

Velocity in m/s.

Run No. B Flow L/s 47 NC 19

Distance from Outlet, Throw in Metres

Drop cm	0	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0
2.5	*	2.5	1.5	1.1	0.7	0.5	0.4	0.3	0.25	-	-	-	-
7.5	0.4	0.6	0.8	0.6	0.5	0.3	0.3	0.25	-	-	-	-	-
15													
22													
30													
45													
60													
90													
120													

Velocity in m/s.

ENGINEERING AND PERFORMANCE DATA

Sound Test Data

Sound Power Level Data Sheet

Octava Band Center Frequency Hertz	150 x 150 mm Four Way				
	Discharge Sound Power Level Lw dB re 10-12 Watt				
125	36.0	36.5	38.5	43.0	46.0
250	36.5*	37.0	41.0	45.0	48.0
500	27.0	35.0*	40.0*	44.5	48.5
1000	18.0	28.0	35.0	40.0	45.5
2000	(16.0)	24.0	32.5	39.0*	45.5*
4000	(19.5)	(19.5)	24.0	31.5	39.5
8000	(26.5)	(26.5)	(26.5)	27.0	31.0
Total Air Volume L/s	35	47	59	71	85
Inlet Total Pressure, Pa	14.44	25.39	39.82	57.00	82.14
**Noise Criteria	12	19	24	30	36

NOTE:

- Sound power level data marked in parenthesis has reached ambient levels in the test room. Actual levels are less than or equal to the levels indicated.

*Octave Band Center Frequency, Sound Power Level that determined the Noise Criteria for each air volume.

**Noise Criteria ratings were determined by subtracting 10 db(room effect) from the Sound Power Levels.

Technical Data:

Ceiling height (m)	Max. Cooling Δt (°C)	Maximum air flow for one direction	
		m ³ /s	m ³ /h
2.5	11	0.10	360
3.0	14	0.22	800
3.5	16	0.35	1260
4.0	17	0.50	1800

- Recommended maximum air flow per direction in relation to the height differential between the supply air and room air.

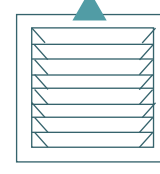
ENGINEERING AND PERFORMANCE DATA

Ceiling Diffusers - Effective Free Area $A_k = \text{met}^2$

Nominal Size L x W (mm)	Core Style													
	S 1	S 2	S 2C	S 3	S 4	R 1W	R 2W	R 1L	R 2L	R 3	R 4			
150 x 150	0.0073	0.0073	0.0073	0.0071	0.007									
225 x 150						0.01	0.01	0.0095	0.0095	0.009	0.009			
300 x 150						0.014	0.014	0.013	0.013	0.013	0.012			
375 x 150						0.018	0.018	0.017	0.017	0.017	0.0165			
450 x 150						0.022	0.022	0.021	0.021	0.021	0.02			
225 x 225	0.0155	0.0155	0.0155	0.0152	0.015									
300 x 225						0.022	0.022	0.019	0.019	0.017	0.016			
375 x 225						0.027	0.027	0.023	0.023	0.022	0.021			
450 x 225						0.035	0.035	0.031	0.031	0.031	0.030			
525 x 225						0.037	0.037	0.035	0.035	0.034	0.033			
300 x 300	0.0297	0.0297	0.0297	0.0293	0.029									
375 x 300						0.038	0.038	0.037	0.037	0.0365	0.036			
450 x 300						0.046	0.046	0.045	0.045	0.0445	0.044			
525 x 300						0.055	0.055	0.052	0.052	0.051	0.05			
375 x 375	0.0428	0.0428	0.0428	0.0425	0.042									
450 x 375						0.057	0.057	0.056	0.056	0.055	0.052			
525 x 375						0.066	0.066	0.065	0.065	0.0645	0.064			
450 x 450	0.0619	0.0619	0.0619	0.0619	0.061									
525 x 450						0.083	0.083	0.082	0.082	0.081	0.08			
600 x 450						0.095	0.095	0.095	0.0945	0.093	0.093			
525 x 525	0.0882	0.0882	0.0882	0.088	0.087									
600 x 600	0.1095	0.1095	0.1095	0.109	0.108									

ENGINEERING AND PERFORMANCE DATA

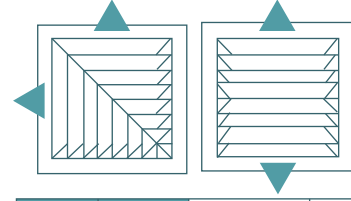
Selection Tables of Ceiling Diffusers - Square Core - 1 Way Discharge



Neck Size (mm)	Neck Velocity M/S	1.0							1.5							2.0							2.5							3.0							3.5						
		Velocity Pressure (Pa)		L/S Throw (m)		NC		L/S Throw (m)		NC		L/S Throw (m)		NC		L/S Throw (m)		NC		L/S Throw (m)		NC		L/S Throw (m)		NC		L/S Throw (m)		NC													
150 x 150		23	1.5-2.0-3.9	34	2.1-3.1-4.6	45	2.9-3.8-5.4	56	3.6-4.3-6.4	68	4.1-5.1-7.9	79	4.1-5.1-7.9	88	4.1-5.1-7.9	97	4.1-5.1-7.9	106	4.1-5.1-7.9	115	4.1-5.1-7.9	124	4.1-5.1-7.9	133	4.1-5.1-7.9	142	4.1-5.1-7.9	151	4.1-5.1-7.9	160	4.1-5.1-7.9												
225 x 225		51	2.9-3.8-5.8	76	3.4-4.8-6.1	101	4.3-5.6-7.0	127	4.9-6-6.9	152	5.7-6.4-9.3	177	5.7-6.4-9.3	202	5.7-6.4-9.3	227	5.7-6.4-9.3	252	5.7-6.4-9.3	277	5.7-6.4-9.3	302	5.7-6.4-9.3	327	5.7-6.4-9.3	352	5.7-6.4-9.3	377	5.7-6.4-9.3	402	5.7-6.4-9.3												
300 x 300		90	3.5-5-6.4	135	5.2-6.3-7.9	180	6.1-7.4-9.5	225	6.5-7.8-10.8	270	7.3-8.8-12.6	315	7.3-8.8-12.6	360	7.3-8.8-12.6	405	7.3-8.8-12.6	450	7.3-8.8-12.6	495	7.3-8.8-12.6	540	7.3-8.8-12.6	585	7.3-8.8-12.6	630	7.3-8.8-12.6	675	7.3-8.8-12.6	720	7.3-8.8-12.6												
375 x 375		141	4.3-6-8.1	211	6.7-8.9-11.8	281	8.2-10-13.1	352	8.8-10.6-14.9	422	9.7-11.4-16.1	492	9.7-11.4-16.1	562	9.7-11.4-16.1	632	9.7-11.4-16.1	702	9.7-11.4-16.1	772	9.7-11.4-16.1	842	9.7-11.4-16.1	912	9.7-11.4-16.1	982	9.7-11.4-16.1	1052	9.7-11.4-16.1	1122	9.7-11.4-16.1												
450 x 450		203	5.1-6.9-9.1	304	7.1-8.9-11.8	405	8.2-9.4-13.1	506	8.8-10.6-14.9	607	9.7-11.4-16.1	708	9.7-11.4-16.1	809	9.7-11.4-16.1	910	9.7-11.4-16.1	1011	9.7-11.4-16.1	1112	9.7-11.4-16.1	1213	9.7-11.4-16.1	1314	9.7-11.4-16.1	1415	9.7-11.4-16.1	1516	9.7-11.4-16.1	1617	9.7-11.4-16.1												
525 x 525		276	5.9-8-12.0	413	8.2-10-14.5	551	9.6-11.7-16.8	689	11-13.1-17.9	827	11.9-14-19.5	965	11.9-14-19.5	1103	11.9-14-19.5	1241	11.9-14-19.5	1379	11.9-14-19.5	1517	11.9-14-19.5	1655	11.9-14-19.5	1793	11.9-14-19.5	1931	11.9-14-19.5	2069	11.9-14-19.5	2207	11.9-14-19.5												
600 x 600		360	7.3-10.2-13.8	540	10.2-11.9-16	720	11.2-14.5-18	900	12.8-15-20.1	1080	13.8-16.4-21.5	1260	13.8-16.4-21.5	1440	13.8-16.4-21.5	1620	13.8-16.4-21.5	1800	13.8-16.4-21.5	1980	13.8-16.4-21.5	2160	13.8-16.4-21.5	2340	13.8-16.4-21.5	2520	13.8-16.4-21.5	2700	13.8-16.4-21.5	2880	13.8-16.4-21.5												

ENGINEERING AND PERFORMANCE DATA

Selection Tables of Ceiling Diffusers - Square Core - 2 Way Discharge



Neck Size (mm)	Neck Velocity M/S		1.0		1.5		2.0		2.5		3.0		3.5	
	Throw (m)	NC	23	1.2-1.6-3.1 < 15	34	2.0-2.8-3.6 < 15	45	2.3-3.2-4.5 18	56	2.8-3.9-5.0 23	68	3.2-4.1-5.2 29	79	3.5-4.1-5.8 35
225 x 225	L/S		51		76		101		127		152		177	
	Throw (m)	NC	2.7-3.3-5.2 < 15	3.2-4.5-5.8 < 15	4.0-5.2-6.6 18	4.6-5.7-6.5 24	5.4-6.4-8.4 29	6.2-7.3-10.3 31	7.0-8.5-12.2 41	7.9-9.4-13.4 43	8.5-9.9-14.8 47	9.1-10.9-15.7 47	9.7-12.2-16.9 52	10.6-12.8-18.1 49
300 x 300	L/S		90		135		180		225		270		315	
	Throw (m)	NC	3.2-4.6-6.0 15	4.9-5.9-7.6 15	5.8-7.0-9.1 24	6.2-7.3-10.3 31	6.7-7.6-11.2 36	7.0-8.5-12.2 41	7.9-9.4-13.4 43	8.5-9.9-14.8 47	9.1-10.9-15.7 47	9.7-12.2-16.9 52	10.6-12.8-18.1 49	11.6-14.0-19.4 54
375 x 375	L/S		141		211		281		352		422		492	
	Throw (m)	NC	4.0-5.6-7.8 15	5.8-7.2-9.2 23	6.9-7.8-10.7 31	7.6-8.8-12.4 37	8.5-10.2-14.5 42	9.1-10.9-15.7 47	9.7-12.2-16.9 52	10.6-12.8-18.1 49	11.6-14.0-19.4 54	12.9-15.5-22.6 56	13.9-16.6-24.6 61	15.0-18.1-25.6 66
450 x 450	L/S		203		304		405		506		607		908	
	Throw (m)	NC	4.8-6.6-8.6 17	6.8-8.2-11.3 28	7.9-9.1-12.8 35	8.5-10.2-14.5 42	9.1-10.9-15.7 47	9.7-12.2-16.9 52	10.6-12.8-18.1 49	11.6-14.0-19.4 54	12.9-15.5-22.6 56	13.9-16.6-24.6 61	15.0-18.1-25.6 66	
525 x 525	L/S		276		413		551		689		827		965	
	Throw (m)	NC	5.2-7.4-10.6 19	7.6-9.1-13.0 31	8.8-10.6-15.0 37	10.0-11.9-16.6 44	11.0-13.7-18.9 51	11.9-14.6-19.7 56	12.9-15.5-22.6 61	13.9-16.6-24.6 66	15.0-18.1-25.6 71	16.1-20.1-30.1 76	17.2-22.2-33.2 81	
600 x 600	L/S		360		540		720		900		1080		1260	
	Throw (m)	NC	6.1-8.6-12.1 22	8.8-10.4-14.6 33	10.0-11.9-16.6 40	11.0-13.7-18.9 46	11.9-14.6-19.7 51	12.9-15.5-22.6 56	13.9-16.6-24.6 61	15.0-18.1-25.6 66	16.1-20.1-30.1 71	17.2-22.2-33.2 76	18.3-24.3-36.3 81	

ENGINEERING AND PERFORMANCE DATA

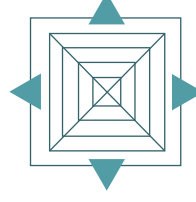
Selection Tables of Ceiling Diffusers - Square Core - 3 Way Discharge



Neck Size (mm)	Neck Velocity M/S		1.0		1.5		2.0		2.5		3.0		3.5	
	Throw (m) Tx	Throw (m) Ty	32	1.0-1.5-2.5 1.2-1.6-3.0 < 15	34	1.9-2.1-3.0 2.0-2.6-3.4 < 15	45	1.8-2.4-4.0 2.1-3.0-4.2 18	56	2.1-3.0-4.3 2.4-3.6-4.8 23	68	2.4-3.0-4.6 2.9-3.8-5.0 29	79	2.7-3.7-4.9 3.1-3.8-5.1 35
150 x 150	L/S		51		76		101		127		152		177	
	Throw (m) Tx	Throw (m) Ty	2.4-3.0-4.3 2.7-3.0-4.8 < 15	2.9-3.7-5.2 2.9-4.3-6.0 < 15	3.4-4.3-6.0 3.7-4.9-6.3 18	3.8-4.5-6.7 4.1-5.2-7.3 24	4.4-5.2-7.6 5.0-5.8-8.2 29	4.6-5.5-8.0 5.0-5.8-8.6 34	5.8-7.0-10.0 6.4-7.4-11.0 36	6.1-7.6-11.0 6.8-8.0-11.8 41	6.7-8.5-12.2 7.0-8.5-12.2 43	7.6-9.1-13.7 8.1-9.7-14.0 47	8.2-10.4-14.6 8.6-11.0-15.2 47	8.8-11.0-15.8 9.4-11.8-16.7 52
225 x 225	L/S		90		135		180		225		270		315	
	Throw (m) Tx	Throw (m) Ty	2.7-4.0-5.8 2.7-4.3-6.2 15	4.3-5.1-7.0 4.6-5.1-7.3 15	4.9-6.1-8.2 5.5-6.7-8.8 24	5.2-6.4-9.4 5.9-7.1-10.0 31	5.8-7.0-10.0 6.4-7.4-11.0 36	6.1-7.6-11.0 6.8-8.0-11.8 41	7.0-8.5-12.2 7.8-9.2-12.9 43	8.2-10.4-14.6 8.6-11.0-15.2 47	9.1-11.0-15.5 9.8-11.9-17.1 52	10.7-13.1-18.3 11.3-13.7-18.8 57	12.2-14.6-21.0 12.8-15.2-21.9 62	
300 x 300	L/S		141		211		281		352		422		492	
	Throw (m) Tx	Throw (m) Ty	3.6-5.4-7.0 3.6-5.4-7.6 15	4.9-6.1-8.5 5.6-6.9-9.3 23	5.6-7.0-9.8 6.5-7.8-10.7 34	6.4-7.9-11.3 7.3-8.6-11.9 37	7.0-8.5-12.2 7.8-9.2-12.9 43	8.2-10.4-14.6 8.6-11.0-15.2 47	9.1-11.0-15.5 9.8-11.9-17.1 52	10.7-13.1-18.3 11.3-13.7-18.8 57	12.2-14.6-21.0 12.8-15.2-21.9 62	14.7-19.6-29.6 15.3-20.3-30.3 67	17.2-22.2-33.2 17.8-23.8-35.8 72	
375 x 375	L/S		203		304		405		506		607		908	
	Throw (m) Tx	Throw (m) Ty	4.3-5.8-8.2 4.6-6.4-8.5 17	5.8-7.3-10.4 6.4-7.9-11.2 28	7.0-8.5-11.9 7.8-8.9-12.6 35	7.6-9.4-13.4 8.4-11.0-15.2 42	8.2-10.4-14.6 8.6-11.0-15.2 47	9.1-11.0-15.5 9.8-11.9-17.1 52	10.7-13.1-18.3 11.3-13.7-18.8 57	12.2-14.6-21.0 12.8-15.2-21.9 62	14.7-19.6-29.6 15.3-20.3-30.3 67	17.2-22.2-33.2 17.8-23.8-35.8 72	20.7-27.6-41.6 21.3-28.3-43.3 77	
450 x 450	L/S		276		413		551		689		827		965	
	Throw (m) Tx	Throw (m) Ty	4.6-6.7-9.8 4.9-7.4-10.4 19	6.7-8.5-11.9 7.4-8.9-12.5 31	7.9-9.8-14.0 8.8-10.7-14.6 37	9.1-11.3-15.8 10.4-12.8-18.0 44	10.4-12.8-18.0 11.3-13.7-18.8 49	11.3-13.7-18.8 11.9-14.3-19.7 54	12.2-14.6-21.0 12.8-15.2-21.9 59	14.7-19.6-29.6 15.3-20.3-30.3 64	17.2-22.2-33.2 17.8-23.8-35.8 69	20.7-27.6-41.6 21.3-28.3-43.3 74	24.2-32.2-48.2 24.8-32.8-48.8 79	
525 x 525	L/S		360		540		720		900		1080		1260	
	Throw (m) Tx	Throw (m) Ty	5.5-7.9-11.3 5.8-8.5-11.9 22	7.9-9.8-13.7 8.6-10.2-14.4 33	9.1-11.3-15.8 9.4-11.9-16.4 40	10.4-12.8-18.0 10.7-13.3-18.9 46	11.3-13.7-18.8 11.9-14.3-19.7 51	12.2-14.6-21.0 12.8-15.2-21.9 56	14.7-19.6-29.6 15.3-20.3-30.3 61	17.2-22.2-33.2 17.8-23.8-35.8 66	20.7-27.6-41.6 21.3-28.3-43.3 71	24.2-32.2-48.2 24.8-32.8-48.8 76	28.7-38.7-58.7 29.3-39.3-59.3 81	
600 x 600	L/S		540		810		1080		1350		1620		1890	
	Throw (m) Tx	Throw (m) Ty	7.9-9.8-13.7 8.6-10.2-14.4 33	9.1-11.3-15.8 9.4-11.9-16.4 40	10.4-12.8-18.0 10.7-13.3-18.9 46	11.3-13.7-18.8 11.9-14.3-19.7 51	12.2-14.6-21.0 12.8-15.2-21.9 56	14.7-19.6-29.6 15.3-20.3-30.3 61	17.2-22.2-33.2 17.8-23.8-35.8 66	20.7-27.6-41.6 21.3-28.3-43.3 71	24.2-32.2-48.2 24.8-32.8-48.8 76	28.7-38.7-58.7 29.3-39.3-59.3 81	34.2-45.6-68.4 34.8-46.2-69.0 86	

ENGINEERING AND PERFORMANCE DATA

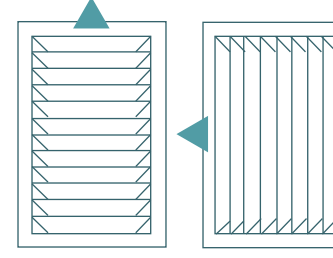
Selection Tables of Ceiling Diffusers - Square Core - 4 Way Discharge



Neck Size (mm)	Neck Velocity M/S		1.0		1.5		2.0		2.5		3.0		3.5	
	Velocity Pressure (Pa)		0.5		1.3		2.4		3.7		5.4		7.4	
150 x 150	L/S	23	34	45	56	68	79	1.0-1.5-2.5 6 <15	1.8-2.4-4.0 23 18	2.1-3.0-4.3 36 23	2.4-3.4-4.6 53 29	2.7-3.7-4.9 72 35	3.0-4.0-5.0 6 <15	3.7-4.7-5.7 6 <15
	Throw (m) Pt (Pa) NC	1.0-1.5-2.5 6 <15	1.8-2.4-4.0 23 18	2.1-3.0-4.3 36 23	2.4-3.4-4.6 53 29	2.7-3.7-4.9 72 35	3.0-4.0-5.0 6 <15							
225 x 225	L/S	51	76	101	127	152	177	2.4-3.0-4.3 6 <15	3.4-4.3-6.0 23 18	3.8-4.5-6.7 36 24	4.4-5.2-7.6 53 29	4.6-5.5-8.0 72 34	5.2-6.4-9.4 36 31	5.8-7.0-10.0 53 36
	Throw (m) Pt (Pa) NC	2.4-3.0-4.3 6 <15	3.4-4.3-6.0 23 18	3.8-4.5-6.7 36 24	4.4-5.2-7.6 53 29	4.6-5.5-8.0 72 34	5.2-6.4-9.4 36 31							
300 x 300	L/S	90	135	180	225	270	315	2.7-4.0-5.8 6 <15	4.9-6.1-8.2 23 24	5.2-6.4-9.4 36 31	5.8-7.0-10.0 53 36	6.1-7.6-11.0 72 34	6.6-8.5-12.2 54 43	7.0-8.5-11.3 37 37
	Throw (m) Pt (Pa) NC	2.7-4.0-5.8 6 <15	4.9-6.1-8.2 23 24	5.2-6.4-9.4 36 31	5.8-7.0-10.0 53 36	6.1-7.6-11.0 72 34	6.6-8.5-12.2 54 43							
375 x 375	L/S	141	211	281	352	422	492	3.5-4.9-7.0 6 <15	5.6-7.0-9.8 23 31	6.4-7.9-11.3 37 37	7.0-8.5-12.2 54 43	7.6-13.7 73 47	8.2-10.4-14.6 54 47	8.8-11.0-15.8 74 52
	Throw (m) Pt (Pa) NC	3.5-4.9-7.0 6 <15	5.6-7.0-9.8 23 31	6.4-7.9-11.3 37 37	7.0-8.5-12.2 54 43	7.6-13.7 73 47	8.2-10.4-14.6 54 47							
450 x 450	L/S	203	304	405	506	607	908	4.3-5.8-8.2 6 <15	7.0-8.5-11.9 24 35	7.6-9.4-13.4 37 42	8.2-10.4-14.6 54 47	8.8-11.0-15.8 74 52	9.8-11.9-17.1 55 49	10.7-13.1-18.3 75 54
	Throw (m) Pt (Pa) NC	4.3-5.8-8.2 6 <15	7.0-8.5-11.9 24 35	7.6-9.4-13.4 37 42	8.2-10.4-14.6 54 47	8.8-11.0-15.8 74 52	9.8-11.9-17.1 55 49							
525 x 525	L/S	276	413	551	689	827	965	4.6-6.7-9.8 6 19	7.9-9.8-14.0 24 37	9.1-11.0-15.5 38 44	9.8-11.9-17.1 55 49	10.7-13.1-18.3 75 54	11.3-13.7-18.8 56 51	12.2-14.6-21.0 76 56
	Throw (m) Pt (Pa) NC	4.6-6.7-9.8 6 19	7.9-9.8-14.0 24 37	9.1-11.0-15.5 38 44	9.8-11.9-17.1 55 49	10.7-13.1-18.3 75 54	11.3-13.7-18.8 56 51							
600 x 600	L/S	360	540	720	900	1080	1260	5.5-7.9-11.3 6 22	9.1-11.3-15.8 25 40	10.4-12.8-18.0 39 46	11.3-13.7-18.8 56 51	12.2-14.6-21.0 76 56	13.1-15.5-21.0 56 51	14.6-21.0 76 56
	Throw (m) Pt (Pa) NC	5.5-7.9-11.3 6 22	9.1-11.3-15.8 25 40	10.4-12.8-18.0 39 46	11.3-13.7-18.8 56 51	12.2-14.6-21.0 76 56	13.1-15.5-21.0 56 51							

ENGINEERING AND PERFORMANCE DATA

Selection Tables of Ceiling Diffusers - Rectangular Core - 1 Way Discharge



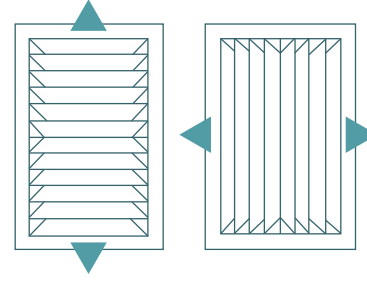
Neck Size (mm)	Neck Velocity M/S		1.0		1.5		2		2.5		3.0		3.5	
	Velocity Pressure (Pa)		0.5		1.3		2.4		3.7		5.4		7.4	
225 x 150	L/S	32	47	66	85	94	112	1.4-2.1-5 15	2.1-4-5.5 15	4.1-4.9-7 22	5.5-8-7.6 27	5.2-6.1-8.2 32	5.9-7.1-9.3 44	6.3-7.9-11 48
	Throw (m) NC	1.4-2.1-5 15	2.1-4-5.5 15	4.1-4.9-7 22	5.5-8-7.6 27	5.2-6.1-8.2 32	5.9-7.1-9.3 44							
300 x 150	L/S	43	64	90	112	132	152	2.2-3-5.9 15	2.9-4.8-6.4 15	4.4-5.4-8 28	4.8-5.5-8.3 29	5.1-6.5-9 33	5.9-7.1-9.3 44	6.9-8.3-12 50
	Throw (m) NC	2.2-3-5.9 15	2.9-4.8-6.4 15	4.4-5.4-8 28	4.8-5.5-8.3 29	5.1-6.5-9 33	5.9-7.1-9.3 44							
450 x 150	L/S	65	98	130	164	198	231	2.5-3.8-6 17	3.3-5.1-7 19	5-6.5-8.6 34	5.5-6.8-8.9 39	5.9-7.1-9.3 44	6.9-8.3-12 50	7.5-8.7-13 52
	Throw (m) NC	2.5-3.8-6 17	3.3-5.1-7 19	5-6.5-8.6 34	5.5-6.8-8.9 39	5.9-7.1-9.3 44	6.9-8.3-12 50							
300 x 225	L/S	65	98	130	164	198	231	2.5-3.8-6 18	3.3-5.1-7 20	5-6.5-8.5 35	5.5-6.8-8.9 40	5.9-7.1-9.3 44	6.9-8.3-12 50	7.5-8.7-13 52
	Throw (m) NC	2.5-3.8-6 18	3.3-5.1-7 20	5-6.5-8.5 35	5.5-6.8-8.9 40	5.9-7.1-9.3 44	6.9-8.3-12 50							
450 x 225	L/S	101	152	180	252	302	360	3-3.9-6.5 20	3.9-5.2-7.5 23	5.5-6.9-9.4 37	5.8-6.9-10 42	6.3-7.9-11 48	6.9-8.3-12 50	7.5-8.7-13 52
	Throw (m) NC	3-3.9-6.5 20	3.9-5.2-7.5 23	5.5-6.9-9.4 37	5.8-6.9-10 42	6.3-7.9-11 48	6.9-8.3-12 50							
450 x 300	L/S	128	198	264	334	404	472	3.5-4.4-7.2 24	4.4-5.8-9 26	6.6-7.3-10.2 39	6.9-7.9-11 45	6.9-8.3-12 50	7.5-8.7-13 52	8.1-9.1-12.1 56
	Throw (m) NC	3.5-4.4-7.2 24	4.4-5.8-9 26	6.6-7.3-10.2 39	6.9-7.9-11 45	6.9-8.3-12 50	7.5-8.7-13 52							
525 x 300	L/S	152	231	312	396	484	571	3.9-5.2-7.3 25	4.7-6-9.2 27	6.9-7.4-10.8 42	7.2-8.1-11.6 46	7.5-8.7-13 52	8.1-9.1-12.1 56	9.1-10.1-13.1 61
	Throw (m) NC	3.9-5.2-7.3 25	4.7-6-9.2 27	6.9-7.4-10.8 42	7.2-8.1-11.6 46	7.5-8.7-13 52	8.1-9.1-12.1 56							

CEILING DIFFUSERS



ENGINEERING AND PERFORMANCE DATA

Selection Tables of Ceiling Diffusers - Rectangular Core - 2 Way Discharge



Neck Size (mm)	Neck Velocity M/S		1.0		1.5		2.0		2.5		3.0		3.5	
	Velocity (Pa)	Pressure (Pa)	0.5		1.3		2.4		3.7		5.4		7.4	
225 x 150	L/S	32	47	66	85	94	112	127	152	168	198	231	296	360
	Throw (m)	1.1-1.8-4.6	1.8-3.7-4.9	3.4-4.5-5.9	3.6-4.3-6.8	4.4-4.9-7.2	4.5-5.8-7.9	4.9-6.1-8.4	5.1-5.9-8.1	5.4-6.6-8	5.7-7.0-9.8	6.0-7.4-10.5	6.4-7.9-11.4	6.5-8-12
300 x 150	L/S	43	64	90	112	141	164	198	231	296	360	430	496	560
	Throw (m)	1.8-2.4-5.4	2.4-4.3-5.8	3.9-4.9-6.7	4.1-4.9-7.6	4.6-5.2-7.9	4.9-6.1-8.4	5.1-5.9-8.1	5.4-6.6-8	5.7-7.0-9.8	6.0-7.4-10.5	6.4-7.9-11.4	6.5-8-12	6.5-8-12
375 x 150	L/S	57	84	112	141	164	198	231	296	360	430	496	560	630
	Throw (m)	2.0-2.9-5.4	2.9-4.8-6.1	4.0-5.2-7.0	4.1-5.1-8.0	4.6-5.2-7.9	4.9-6.1-8.4	5.1-5.9-8.1	5.4-6.6-8	5.7-7.0-9.8	6.0-7.4-10.5	6.4-7.9-11.4	6.5-8-12	6.5-8-12
450 x 150	L/S	65	98	130	164	198	231	296	360	430	496	560	630	700
	Throw (m)	2.2-3.1-5.7	3.0-4.9-6.6	4.2-5.2-7.7	4.8-6.0-8.2	5.2-6.4-9.0	5.3-6.5-9.5	5.6-6.9-9.9	6.0-7.8-11	6.4-7.9-11.4	6.5-8-12	6.5-8-12	6.5-8-12	6.5-8-12
300 x 225	L/S	65	98	130	164	198	231	296	360	430	496	560	630	700
	Throw (m)	2.2-3.1-5.7	3.0-4.9-6.6	4.2-5.2-7.7	4.8-6.0-8.2	5.2-6.4-9.0	5.3-6.5-9.5	5.6-6.9-9.9	6.0-7.8-11	6.4-7.9-11.4	6.5-8-12	6.5-8-12	6.5-8-12	6.5-8-12
375 x 525	L/S	83	124	165	208	248	296	345	396	444	496	548	596	644
	Throw (m)	2.4-3.3-6.0	3.2-4.9-6.7	4.4-6.0-7.8	4.9-6.0-8.4	5.3-6.5-9.5	5.6-6.9-9.9	6.0-7.8-11	6.4-7.9-11.4	6.5-8-12	6.5-8-12	6.5-8-12	6.5-8-12	6.5-8-12
450 x 225	L/S	101	152	180	252	302	360	430	496	560	630	700	770	840
	Throw (m)	2.8-3.6-6.1	3.5-4.9-7.0	4.4-6.0-8.1	5.2-6.4-9.0	5.3-6.5-9.5	5.6-6.9-9.9	6.0-7.8-11	6.4-7.9-11.4	6.5-8-12	6.5-8-12	6.5-8-12	6.5-8-12	6.5-8-12
525 x 225	L/S	110	176	234	302	362	430	496	560	630	700	770	840	910
	Throw (m)	2.7-3.7-6.4	3.8-5.2-7.4	4.7-6.4-8.4	5.6-6.9-9.6	6.0-7.8-11	6.4-7.9-11.4	6.5-8-12	6.5-8-12	6.5-8-12	6.5-8-12	6.5-8-12	6.5-8-12	6.5-8-12
375 x 300	L/S	104	164	221	281	345	404	472	540	608	676	744	812	880
	Throw (m)	2.8-3.7-6.4	3.8-5.2-7.7	4.7-6.4-8.4	5.9-6.3-9.6	6.0-7.4-10.5	6.4-7.9-11.4	6.5-8-12	6.5-8-12	6.5-8-12	6.5-8-12	6.5-8-12	6.5-8-12	6.5-8-12

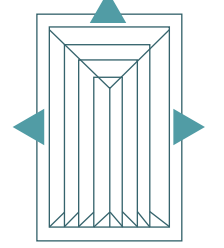


CEILING DIFFUSERS



ENGINEERING AND PERFORMANCE DATA

Self Selection Tables of Ceiling Diffusers - Rectangular Core - 3 Way Discharge



Neck Size (mm)	Neck Velocity M/S		1.0		1.5		2.0		2.5		3.0		3.5	
	Velocity (Pa)	Pressure (Pa)	0.5		1.3		2.4		3.7		5.4		7.4	
225 x 150	L/S	32	47	66	85	94	112	127	152	168	198	231	296	360
	Throw (m) Tx	1.0-1.5-2.5	1.9-2.1-3.0	1.8-2.4-4	2.1-3-4.3	2.4-3.4-4.6	2.7-3.7-4.9	2.7-3.7-4.9	2.7-3.7-4.9	2.7-3.7-4.9	2.7-3.7-4.9	2.7-3.7-4.9	2.7-3.7-4.9	2.7-3.7-4.9
300 x 150	L/S	43	64	90	112	141	164	198	231	296	360	430	496	560
	Throw (m) Ty	1.0-1.6-3.5	1.9-3.6-4.4	3.1-4.1-5.5	3.3-4.2-6.6	4.1-4.6-7	4.6-5.2-7.9	4.9-6.1-8.4	5.1-5.9-8.1	5.4-6.6-8	5.7-7.0-9.8	6.0-7.4-10.5	6.4-7.9-11.4	6.5-8-12
450 x 150	L/S	65	98	130	164	198	231	296	360	430	496	560	630	700
	Throw (m) Tx	1-1.5-2.5	1.9-2.1-3	1.8-2.4-4	2.1-3-4.3	2.4-3.4-4.6	2.7-3.7-4.9	2.7-3.7-4.9	2.7-3.7-4.9	2.7-3.7-4.9	2.7-3.7-4.9	2.7-3.7-4.9	2.7-3.7-4.9	2.7-3.7-4.9
300 x 225	L/S	65	98	130	164	198	231	296	360	430	496	560	630	700
	Throw (m) Ty	2-2.9-4.9	3.7-4.6-6	3.6-4.9-7	4.4-5.8-7	4.6-5.2-7.9	4.9-6.1-8.4	5.1-5.9-8.1	5.4-6.6-8	5.7-7.0-9.8	6.0-7.4-10.5	6.4-7.9-11.4	6.5-8-12	6.5-8-12
450 x 225	L/S	101	152	180	252	302	360	430	496	560	630	700	770	840
	Throw (m) Tx	2.4-3-4.3	2.9-3.7-5.2	3.4-4.3-6	3.8-4.5-6.7	4.4-5.2-7.9	4.6-5.2-7.9	4.9-6.1-8.4	5.1-5.9-8.1	5.4-6.6-8	5.7-7.0-9.8	6.0-7.4-10.5	6.4-7.9-11.4	6.5-8-12
450 x 300	L/S	128	198	264	334	404	472	540	608	676	744	812	880	950
	Throw (m) Ty	2.7-4-5.8	4.3-5-7	4.9-6.1-8.2	5.2-6.4-9.4	5.8-7.0-10	6.1-7.6-11	6.4-7.9-11.4	6.5-8-12	6.5-8-12	6.5-8-12	6.5-8-12	6.5-8-12	6.5-8-12
525 x 300	L/S	152	231	312	396	484	571	658	746	834	922	1010	1098	1186
	Throw (m) Ty	3-4-5-6.5	4.4-5.4-8.1	4.9-6.1-8.2	5.2-6.4-9.4	5.8-7-10	6.1-7.6-11	6.4-7.9-11.4	6.5-8-12	6.5-8-12	6.5-8-12	6.5-8-12	6.5-8-12	6.5-8-12



ENGINEERING AND PERFORMANCE DATA

Selection Tables of Ceiling Diffusers - Rectangular Core - 4 Way Discharge

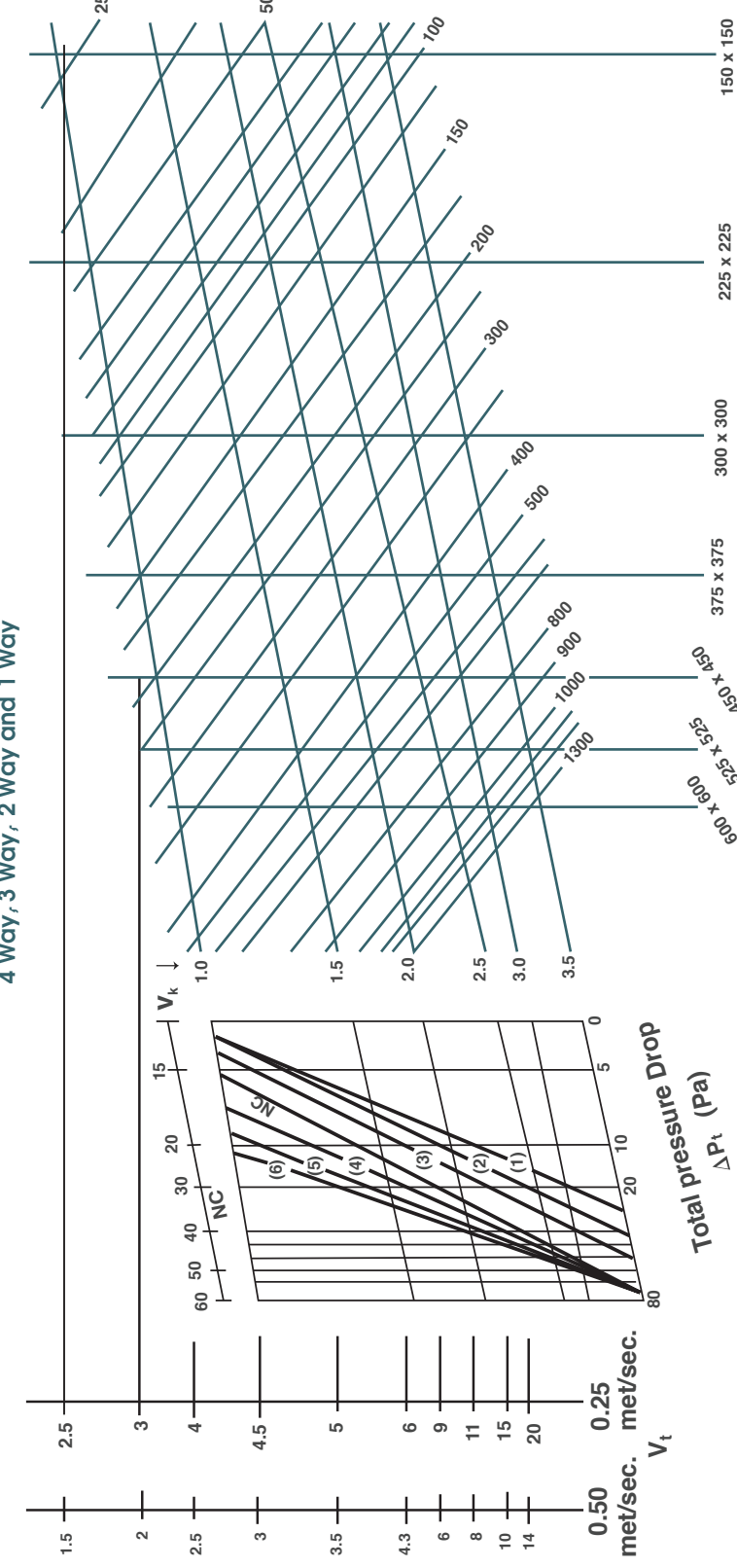


Neck Size (mm)	Neck Velocity M/S		1.0	1.5	2.0	2.5	3.0	3.5
	Velocity Pressure (Pa)		0.5	1.3	2.4	3.7	5.4	7.4
225 x 150	L/S		32	47	66	85	94	112
	Throw (m) Tx		1.0-1.5-2.5	1.9-2.1-3.0	1.8-2.4-4	2.1-3-4.3	2.4-3.4-4.6	2.7-3.7-4.9
	Throw (m) Ty		0.9-1.4-3.2	1.3-3.4-3.9	3-3.9-5.2	3.1-4-6.4	4-4.3-6.8	4.1-5-7.2
300 x 150	NC		15	15	19	22	27	32
	L/S		43	64	90	112	132	152
	Throw (m) Tx		1-1.5-2.5	1.9-2.1-3	1.8-2.4-4	2.1-3-4.3	2.4-3.4-4.6	2.7-3.7-4.9
450 x 150	Throw (m) Ty		1.2-2-4.9	1.7-3-2.5	3-3.9-6	3.4-4.1-6.9	4-4.9-7.2	4.2-5-5-8
	NC		15	15	23	28	29	33
	L/S		65	98	130	164	198	231
300 x 225	Throw (m) Tx		1-1.5-2.5	1.9-2.1-3	1.8-2.4-4	2.1-3-4.3	2.4-3.4-4.6	2.7-3.7-4.9
	Throw (m) Ty		1.8-2.7-4.1	2.6-4-5.0	3-4-4-6.1	3.8-5-5-7.1	4-4-5-9-7.9	5-6-3-8.5
	NC		17	19	27	34	39	44
450 x 225	L/S		65	98	130	164	198	231
	Throw (m) Tx		2.4-3-4.3	2.9-3.7-5.2	3.4-4.3-6	3.8-4.5-6.7	4.4-5.2-7.6	4.6-5-5-8
	Throw (m) Ty		2.4-3.6-4.9	3.2-4.1-5.9	3.7-4.7-6.6	4.1-5.2-6.9	4.7-5.6-8	5-8.1-8.7
450 x 300	NC		18	20	28	35	40	44
	L/S		101	152	180	252	302	360
	Throw (m) Tx		2.4-3-4.3	2.9-3.7-5.2	3.4-4.3-6	3.8-4.5-6.7	4.4-5.2-7.6	4.6-5-5-8
525 x 300	Throw (m) Ty		2.6-3.3-5.1	3.2-4.5-6.3	4-5-5-7.1	4.2-5-8-7.6	4.8-6-8.2	5.2-6.2-9.2
	NC		20	23	32	37	42	48
	L/S		128	198	264	334	404	472
450 x 300	Throw (m) Tx		2.7-4-5.8	4.3-5-7	4.9-6.1-8.2	5.2-6.4-9.4	5.8-7-10	6.1-7.6-11
	Throw (m) Ty		2.9-4-6.3	4.3-5.1-7.8	4.9-6.3-8.4	5.7-6.6-9.6	5.8-7.1-10.4	6.2-7.8-11.3
	NC		24	26	33	39	45	50
525 x 300	L/S		152	231	312	396	484	571
	Throw (m) Tx		2.7-4-5.8	4.3-5-7	4.9-6.1-8.2	5.2-6.4-9.4	5.8-7-10	6.1-7.6-11
	Throw (m) Ty		2.9-4-6.1	4.3-5.2-7.9	4.9-6.4-8.8	5.6-6.6-9.9	5.9-7.1-10.6	6.4-7.9-11.5
NC		25	27	35	42	46	52	

ENGINEERING AND PERFORMANCE DATA

Easy selection graphs for Ceiling Diffusers - Square Type - Model CD and CDC

4 Way, 3 Way, 2 Way and 1 Way



- (1) 150 x 150; 225 x 225
- (2) 300 x 300
- (3) 375 x 375
- (4) 450 x 450
- (5) 525 x 525
- (6) 600 x 600

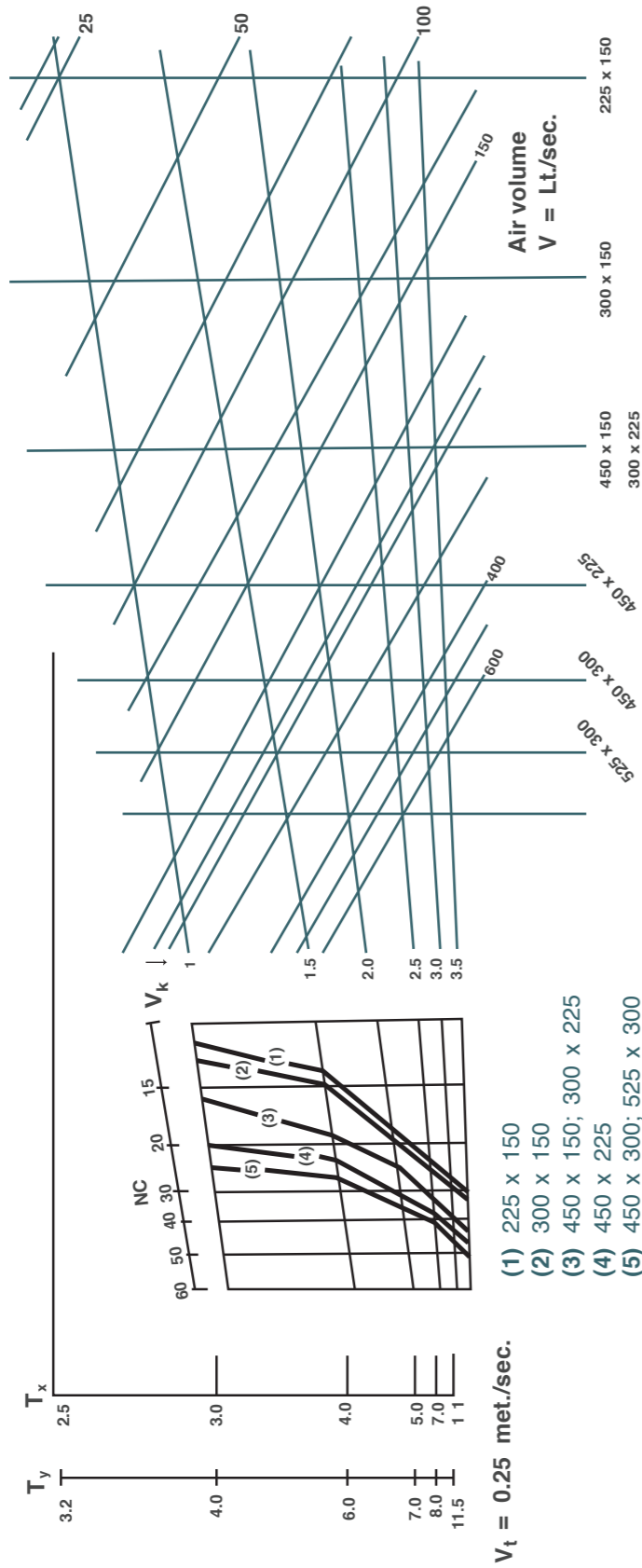
N = Nominal size = L x W

Correction factors for Throw:

4 Way	3 Way		1 Way
	T _x	T _y	
X 1	X 1	≈ X 1.10	≈ X 1.13
			≈ X 1.20

ENGINEERING AND PERFORMANCE DATA

Easy selection graphs for Ceiling Diffusers - Rectangular Type - Model CD and CDC
4 Way, 3 Way, 2 Way and 1 Way



Correction factors for Throw:

4 Way	3 Way		2 Way		1 Way	
	T _y	T _x	T _y	T _x	T _y	T _x
x 1	x 1	x 1	≈ x 1.10	≈ x 1.13	≈ x 1.20	≈ x 1.20
V_x max.	2.5	2	1.5	1	0.5	0.25
ΔT_x°C	4.4	3.52	2.64	1.76	0.88	0.44

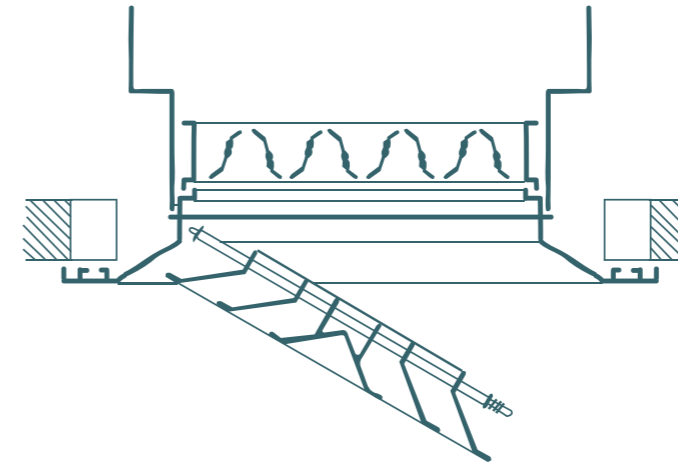
Induction and Temperature co-efficient

$$\Delta t_x = 0.8 \Delta t_0 \left(\frac{V_x}{V_0} \right)$$

$$\text{Temp. co-efficient} = \frac{\Delta t_x}{\Delta t_0}$$

$$\text{Induction } i = \frac{V_0}{V_x}$$

CEILING DIFFUSERS FIXING DETAILS

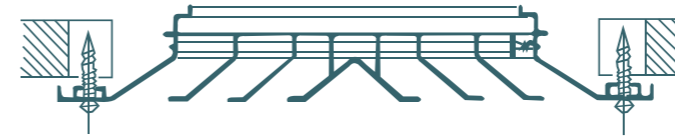


Ceiling Diffusers Fixing Details

Type 'C' fixing:

Concealed type fixing with spring loaded removable core

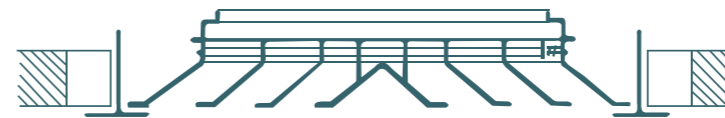
- Recommended for ceiling and sill applications.



Type 'S' fixing:

A counter-sunk screw type fixing

- Recommended for ceiling and sill applications.



Type 'C' fixing:

Concealed type fixing with Snap in T-bar suspension

- Recommended for ceiling and sill applications.

NOTE:

Standard supply is Type 'C' fixing.

CEILING DIFFUSERS ORDERING DATA

Available finishes:

- Natural anodised aluminium
- Powder coated colour finish. (Mention RAL colour number)
- Mill finish aluminium

Available finishes for the accessories :

- Mill finish aluminium
- Powder coated in black matt finish

Ordering Data:

Specify

1. TECNALCO type and model
2. Nominal size - L x W
3. Quantity
4. Type of fixing
5. Surface finish
6. Remarks

Example:					
1.	2.	3.	4.	5.	6.
CDS 4 way	450 x 450 mm	50 nos.	Type 'C' fixing	Powder coated finish RAL 9016	D → Damper Mill finish Sponge gasket required