

## Single or Multi-slot Ceiling Diffuser

CSD-13 (13mm SLOTS)

CSD-19 (19mm SLOTS)

CSD-25 (25mm SLOTS)

Extruded aluminium continuous or discrete length linear slot diffusers to suit modern interiors, while providing unobtrusive draughtless air distribution over widely ranging airflows.

Particularly suited to variable volume applications and ideal for perimeter supply in major commercial buildings. Supply and return air configurations are identical in construction except for omission of pattern controls.

## Features

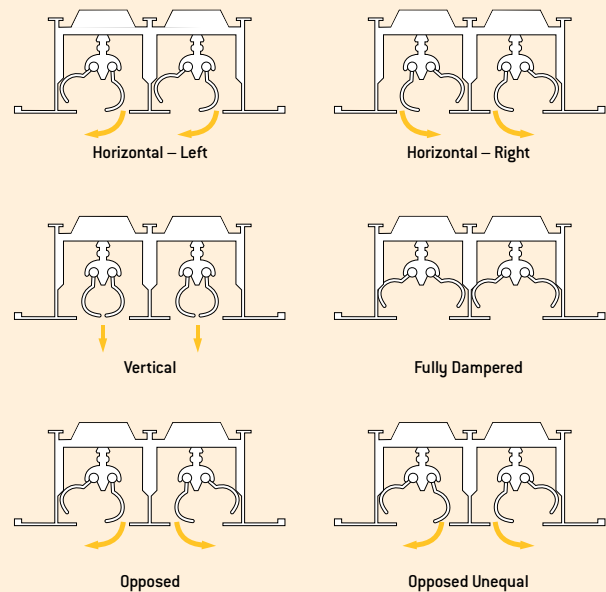
- Available in one to eight slots with three slot widths.
- Standard universal pattern control is aluminium, black anodised for best visual effect and can be adjusted to give full 180° control of air pattern, with volume control to shut off.
- CSD-MF mounting frame available for ease of installation and high standard finish.
- For use with diffuser adapter (CSDA), plenum supply, or linear duct.
- Alignment strips and four end types to suit discrete or continuous lengths.
- Up to 2.8 metres single piece length.

For standard universal pattern control/damper, specify CSD.

For return air application, specify CSDR.

Performance for CSD fitted with either type of pattern control may be read from the supply performance data on pages 8 to 14.

## Typical CSD Throw Options



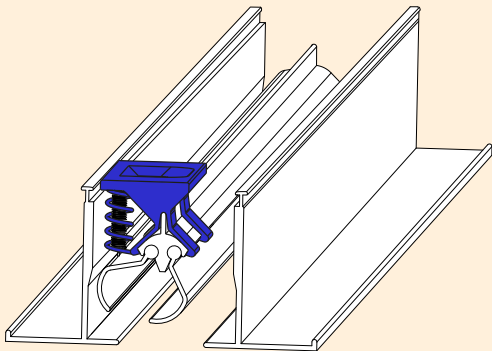
Due to a policy of continuous development and improvement the right is reserved to supply products which may differ slightly from those illustrated and described in this publication.

# Thermally Operated – CSD-T

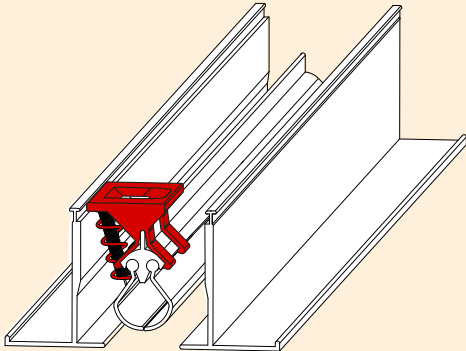
Model: CSD-T – Thermally Operated Ceiling Slot Diffuser

Ceiling Slot Diffusers

CSD-T – Cooling



CSD-T – Heating



### CSD-T – Thermally Operated Ceiling Slot Diffuser

The Holyoake CSD-T Thermally Operated Ceiling Slot Diffuser is designed to utilise standard CSD slot diffuser components, which provide unobtrusive, draughtless air distribution over widely ranging airflows. Particularly suited to variable air volume applications and ideal for perimeter supply in major commercial buildings. The unique die cast clip attaches to the pattern blades to provide the CSD with a thermal control, enabling energy savings to be made and improvements in room comfort levels. Above 35°C the thermal control starts to move the pattern position, providing vertical airflow.

**On multi-slot diffusers CSD-T is required on the first slot only. Discuss with your local Holyoake branch other options available.**

### Construction

Extruded aluminium continuous or discrete length linear slot diffusers. Utilising standard CSD components and mounting frame, with a specifically designed die cast clip containing a temperature sensitive alloy for thermal adjustment of the pattern blades.

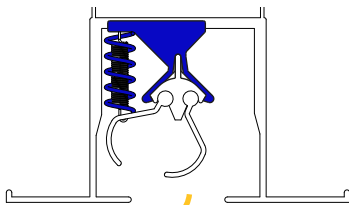
### Features

- CSD-T thermal option, to give CSD a self powered thermal control.
- **Die cast clip may be retrofitted to existing installations.**
- Operation is controlled by a temperature sensitive alloy.
- Changes the air distribution pattern from horizontal (ceiling when cooling) to vertical (down to floor in heating).
- Energy savings and improvement in comfort level.
- Enables cost savings to be made.

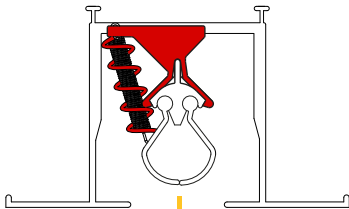
Guide Product Weights	
Model	Approximate Weight in Kg
CSD-T Die Cast Thermal Clip	0.05
Add to CSD 25 Weights*	0.05

\*Refer to your local Holyoake branch for quantities per specific diffusers.

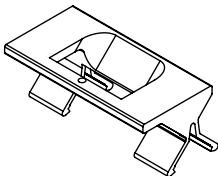
### CSD-T – Pattern Control Positions



UPON COOLING: PATTERN CONTROL MOVES UPWARDS DIRECTING COOL AIR ALONG THE CEILING.



UPON HEATING: PATTERN CONTROL MOVES DOWN DIRECTING WARM AIR VERTICALLY.

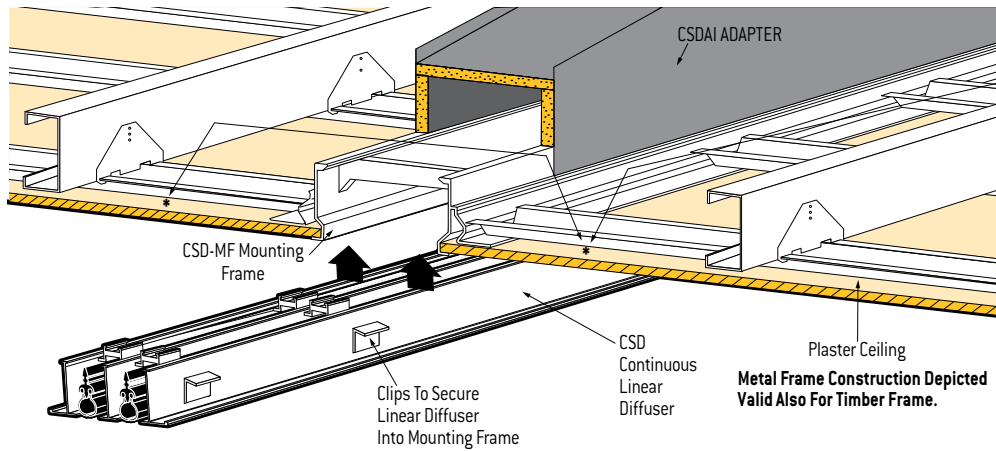


DIE CAST CLIP AS DETAILED ABOVE

### Notes

1. Only suitable for CSD25 models.
2. Use CSD horizontal and vertical performance data.
3. On multi-slot diffusers, CSD-T is required on the first slot only.
4. Refer to your local Holyoake branch for CSD-T quantity required, per slot length and any special site requirements.
5. Seismic restraints required but not supplied.

# CSD Mounting Frame – CSD-MF



**\*Note:** Do NOT fix plaster board to ceiling battens closer than 300mm of mounting frame.

For more detailed instructions please contact your local Holyoke branch.

The CSD Mounting Frame (CSD-MF) is a base frame which is designed to be built into a solid ceiling. Once the frame has been installed the CSD is then inserted into this mounting frame to complete the installation.

The CSD-MF offers a vastly improved alternative to the standard method of CSD installation. This system will not only save time for all of the contractors involved (HVAC, ceiling erectors, plasterers, etc.) but will also give a much higher standard of finish than was typically able to be achieved.

Normally ceiling slot diffusers are one of the most difficult supply diffusers to install into a solid ceiling. During the process of installation it is not uncommon for both the plasterer and the painter to have to carry out remedial work to ensure a reasonable standard of finish is achieved. All of this work is obviously detrimental as it takes time and often damages the linear diffuser and contributes to the poor overall appearance of the ceiling diffuser.

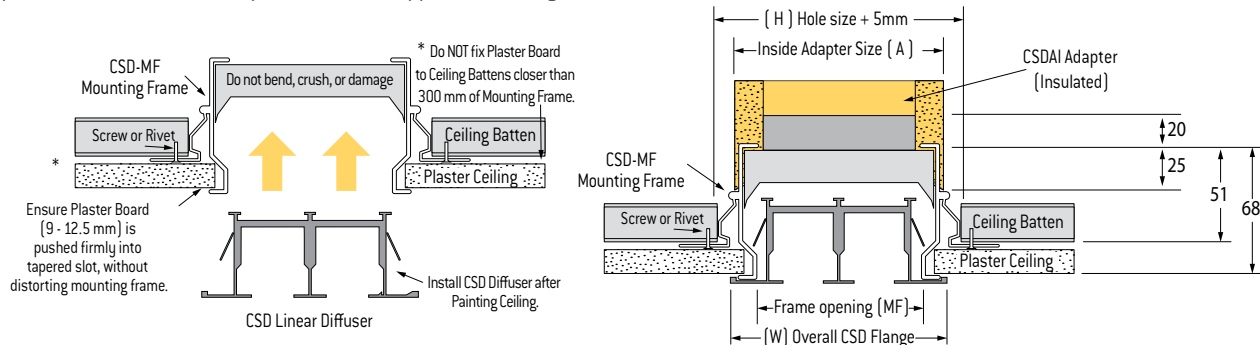
The CSD-MF is installed as part of the solid ceiling grid system. This allows the supply air boots to be installed when there is clear access to the ceiling space and there is no danger of damaging the high quality finish of the CSD. When it is time to line the ceiling, the ceiling erector has a slot to slide the gib or plaster sheet into. Once the plasterer has "stopped" the ceiling sheets

the painter is free to paint the entire ceiling without having to be concerned with masking the CSD which is not yet in place. When everything has been finished to the required standard the CSD itself is just simply pushed up into place to completely conceal the mounting frame.

The CSD-MF has many features designed into it to enable a faultless CSD installation. The mounting frame is equipped with a flexible edge which is fastened to the adjacent steel or wooden ceiling battens, whichever is used. This flexible edge allows for any discrepancies in the ceiling itself.

If the flexible edge does not take up any discrepancies in the ceiling the solid main section of the frame remains rigid to provide an accurate slot for CSD. The frame is also designed to accept the gib or plaster sheet accurately, however if there were discrepancies the plasterer can plaster out those discrepancies.

With all these features the use of the CSD-MF will not only save time in installing the CSD but will also result in a much higher standard of finish for the installation.



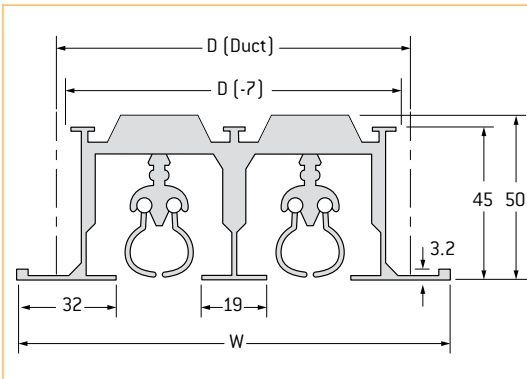
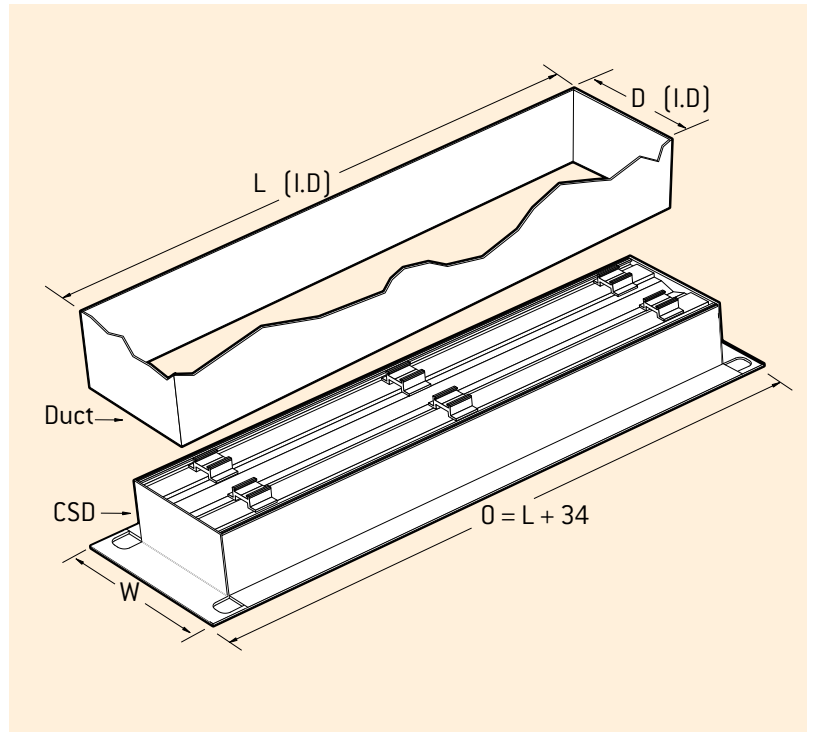
**CSD AND MF DIMENSIONS**

No. of Slots	CSD-13				CSD-19				CSD-25			
	Diffuser Flange	Adapter Size	Ceiling Opening	Frame Opening	Diffuser Flange	Adapter Size	Ceiling Opening	Frame Opening	Diffuser Flange	Adapter Size	Ceiling Opening	Frame Opening
	W	A	H	MF	W	A	H	MF	W	A	H	MF
1	76	70	100	47	82	77	107	54	88	83	113	60
2	109	102	132	79	120	115	145	92	132	127	157	104
3	141	133	163	110	158	153	183	130	177	172	202	149
4	174	165	195	143	196	191	221	168	222	216	246	191
5	206	197	227	174	234	229	259	206	264	260	290	237
6	238	229	259	206	271	267	297	244	308	305	335	282
7	271	260	290	237	310	305	335	282	352	349	379	326
8	304	292	322	269	348	343	373	320	396	394	424	371

Note: Seismic restraints required but not supplied.

## Notes

1. The illustration below is a two slot CSD supply diffuser. Return air assembly Model CSDR is similar, but with pattern controls removed.
2. Duct dimensions include 20mm clearance on length and 7mm clearance on width (or specify exact length required).
3. For more critical applications check overall widths and advise your local Holyoake branch when ordering.



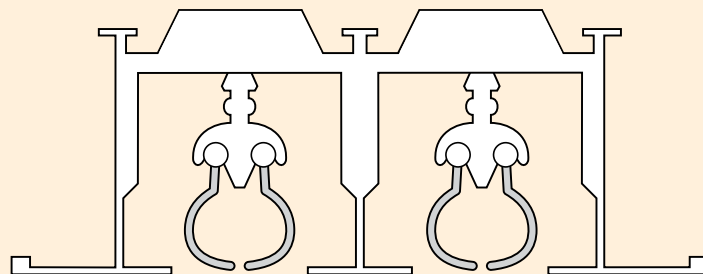
## Guide Product Weights

Model	Approximate Weight in Kg per metre
CSD 13 Two Slots (inc Mounting Frame)	3.85
CSD 19 Two Slots (inc Mounting Frame)	3.79
CSD 25 Two Slots (inc Mounting Frame)	4.51
CSDR 19 Two Slots (inc Mounting Frame)	1.17

No. Slots	CSD-13		CSD-19		CSD-25	
	D	W	D	W	D	W
1	47	76	54	82	60	88
2	79	109	92	120	104	132
3	110	141	130	158	149	177
4	142	174	168	196	193	220
5	174	206	206	234	237	264
6	206	238	244	272	282	308
7	237	271	282	310	326	352
8	269	304	320	348	371	396

Note: Seismic restraints required but not supplied.

## Frame

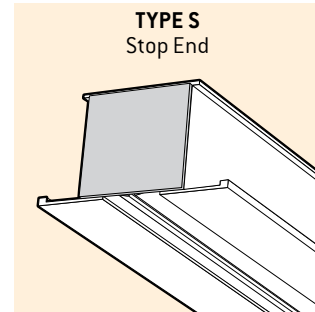
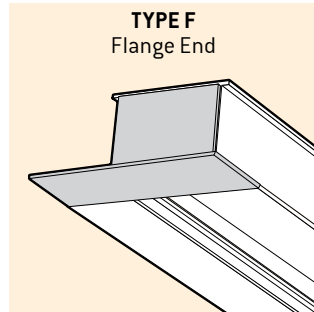


CSD Surface Mount

## End Styles

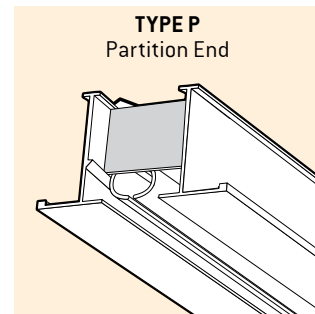
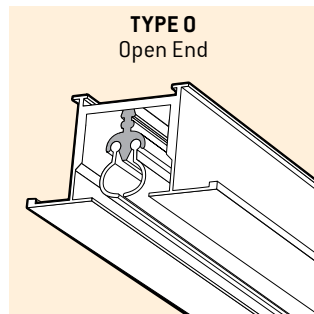
**Flanged End - Type F** is for use where the end of the diffuser terminates away from the wall or partition and is visible.

[These are recessed to accommodate CSD-MF Mounting Frame.]



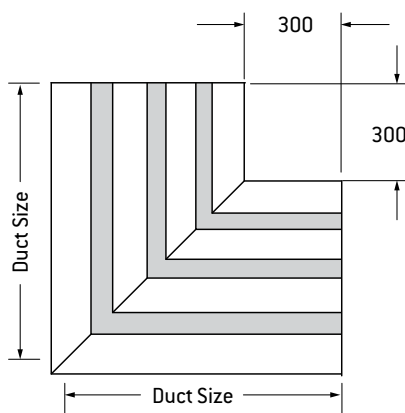
**Stop End - Type S** is used where the diffuser terminates at a wall or partition.

**Open End - Type O** is for use when the diffuser terminates at a wall or partition, or when the diffuser is to be butted with another diffuser. Also used when field cutting is required.

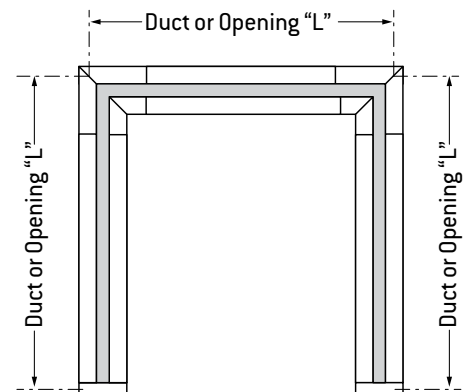
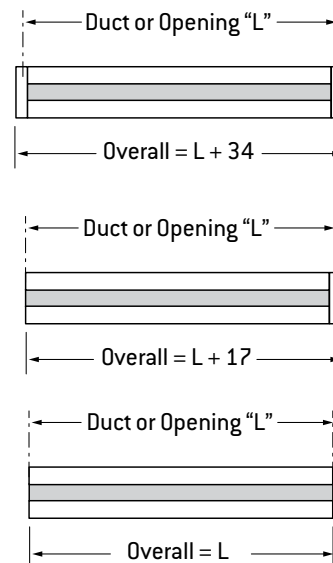


**Partition End - Type P** is used to separate between active and inactive sections of diffuser when part of a continuous length.

## Mitred Corner

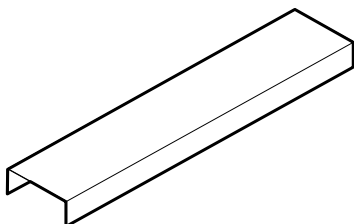


## Diffuser Length Dimensions

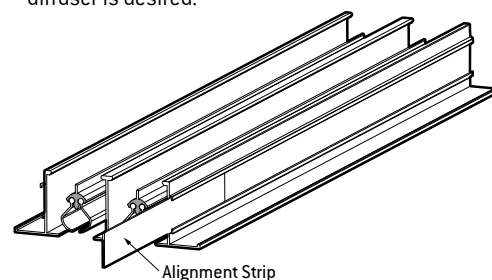


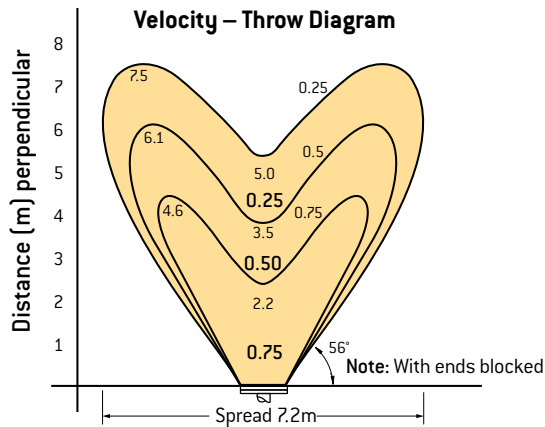
## Accessories

**Blank Off** used to cover inactive sections of diffuser shipped in 1200mm or 2400mm sections for field cutting and installation. Material: 0.45 galvanised steel.

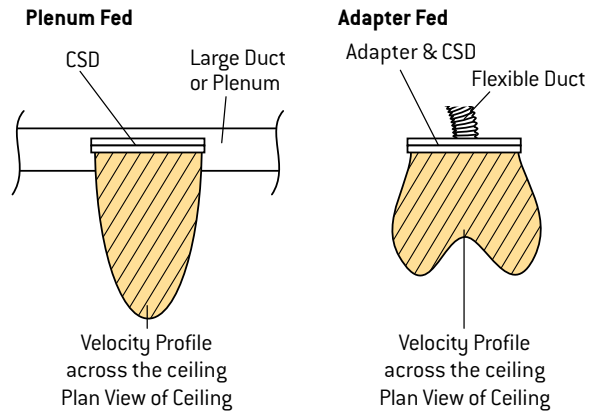


**Alignment Strips** used on installations where alignment of continuous diffuser is desired.





Typical Throw envelopes for CSDA adapter fed CSD section



Typical Plenum and Adapter Fed Velocity Profiles

## Performance Notes

General Notes on performance charts for single or multi slot linear diffusers in this section.

1. All pressures are Pa (N/m<sup>2</sup>).
2. **Projection (throw) values in metres are based upon the performance of a one metre long active section.** When only 300mm is active, the values are 0.6 times those shown. For a 3 metre long continuous length, the values are 1.8 times those shown. See table below:

Length mm	300	400	500	600	700	800	900	1000	1200	1500	1800	2000	2400	3000
Correction Factor	0.6	0.66	0.72	0.8	0.84	0.9	0.96	1	1.08	1.2	1.32	1.4	1.56	1.8

H : Horizontal projection : Minimum is to a terminal velocity of 0.75m/s and maximum to 0.25m/s.

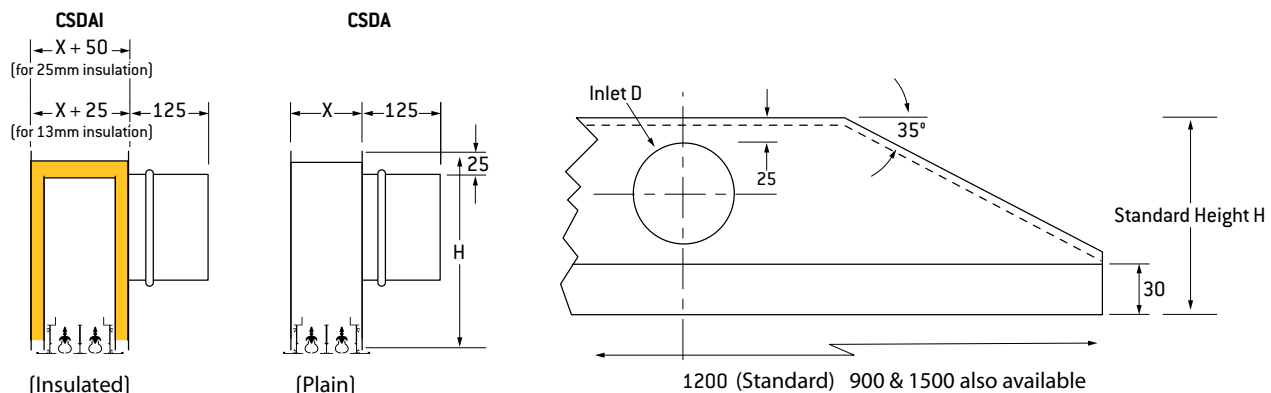
V : Vertical projection is to a terminal velocity of 0.25m/s.

3. Spread is the maximum width of the jet defined by the above velocities.
4. **N.C. values are based upon horizontal projection from a three metre active section and a room absorption of 10dB re 10<sup>-12</sup> watts.** Vertical projection values are 11dB less than listed.
5. N.C. correction for length:

Length mm	300	600	1000	1200	1800	2400	3000	4500	6000	7500	9000
Supply	-16	-11	-7	-6	-3	-2	0	+3	+5	+6	+8
Return	-10	-7	-5	-4	-2	-1	0	+2	+3	+4	+5

6. Figures for plenum fed diffusers are for essentially zero inlet velocity. The velocity profile is relatively uniform for the length of the active section.
7. Figures for adapter fed diffusers take account of the effect of the adapter and inlet neck on diffuser velocities which tend to be less uniform and produce a velocity profile of the shape shown in the Velocity-Throw diagram above. The 0.25m/s isovel generally shows a projection reduction at the centre of approximately 25%.

## CSDA Adapters



### CSDA Dimensions

No. of Slots	CSD-13			CSD-19			CSD-25		
	D	H	X	D	H	X	D	H	X
1	100	195	46	100	195	53	125	220	60
2	125	220	79	125	245	92	150	245	104
3	150	245	110	150	270	130	200	295	149
4	175	270	143	175	295	168	250	345	191

Guide Weights	
CSDA	CSDAI
1200	1200
4.78	5.08

- Notes: 1. For sizes other than shown Standard Height H = Inlet Diameter +100.  
 2. Construction details may vary\*.  
 3. Premi-aire™ versions available\*.  
 \* Please check with your local Holyoake branch.

# CSD, CSDA, CSD-T, CSD-MF

## Diffuser Description Code Examples and Suggested Specifications

[ CSD ]	–	[ 13 19 25 ]	–	2 SLOT	–	FRAME '2'	–	END 'F'	–	X2800	–	FINISH	–	OPTIONS
Ceiling Slot Diffuser.		Slot Width.		No. of Slots.		Frame Style.		End Border Type.		'L' Duct Length in mm.		Holyoke White. Mill Aluminium. Powder Coat.		Mounting Frame. Galv Plenum. <b>Premi-aire™ adapter fed supply box.</b> CSD – T – Thermal.

Series CSD Ceiling Slot Diffusers shall be of extruded aluminium construction, complete with integral combination air pattern control and volume control damper. The number of slots shall be as shown on the drawings and the slot components shall be mechanically locked together to form a rigid assembly. Pattern controls shall be readily adjustable through the slots and shall be finished matt black. CSD slot diffusers shall be provided with matching adapters or plenums and suitable mounting frame where shown. All shall be as manufactured by Holyoke.

Ceiling Slot Diffusers

CSDA CSDAI CSDA/PREM	–	19	–	2 SLOT	–	X 1000	–	X DIA
Ceiling Slot Diffuser Adapter (For separate diffuser)		Slot Width		No. of Slots		'L' Duct Length in mm		Inlet Diameter (mm)

Series CSDA, CSDAI and CSDA/PREM Ceiling Slot Diffuser **'Adapter Boxes'** shall be of either sheet metal construction, with, or without non-woven polyester insulation, or manufactured from Premi-aire™ board. A suitably sized galvanised circular, or equivalent oval, inlet spigot is provided. All shall be as manufactured by Holyoke.

[ CSD-T ]	–	[ 13 19 25 ]	–	2 SLOT	–	FRAME '2'	–	END 'F'	–	X2800	–	FINISH	–	OPTIONS
Ceiling Slot Diffuser <b>Thermally Operated</b>		Slot Width.		No. of Slots.		Frame Style.		End Border Type.		'L' Duct Length in mm.		Holyoke White. Mill Aluminium. Powder Coat.		Mounting Frame. Galv Plenum. <b>Premi-aire™ adapter fed supply box.</b>

Series CSD - T Thermally Operated Ceiling Slot Diffusers shall be of extruded aluminium construction, complete with a unique die cast clip containing a temperature sensitive alloy; attached to the integral combination air pattern control and volume control damper, (on the first slot only, if multi-slot diffusers). The number of slots shall be as shown on the drawings and the slot components shall be mechanically locked together to form a rigid assembly. Pattern controls shall be readily adjustable through the slots, except thermal blade and shall be finished matt black. CSD - T slot diffusers shall be provided with matching adapters or plenums and suitable mounting frame where shown. All shall be as manufactured by Holyoke.

CSD-MF	–	25	–	2 SLOT	–	FRAME '1'	–	X 1200
Ceiling Slot Diffuser 'Mounting Frame' (Available for all CSD Models).		Slot Width.		No. of Slots.		Frame Style.		'L' Duct Length in mm.

Series CSD - MF Ceiling Slot Diffuser **'Mounting Frame'** shall be of extruded aluminium construction. The mounting frame shall be able to be installed into the ceiling to form a straight and stable support structure for the ceiling to be finished to. The slot diffuser shall clip into the mounting frame, providing a neat and secure fixing. All shall be as manufactured by Holyoke.