

## Linear Slot Diffusers

CS-F / CS-P / CS-J / CS-M / CS-S&E / CS-TW / CS Plank

### Introduction

The Waterloo Small Format Continuous Slot Diffuser series (CS), has for many years set the industry standard in terms of highest aerodynamic and acoustic performance. The CS range is ideally suited to variable volume applications due to its excellent low flow rate air diffusion characteristics and high air handling capacity. The novel air pattern control element design allows any air diffusion to vertical projection, without any change in the facial appearance.

CS diffusers are suitable for all commercial and industrial projects requiring single or multi-slot diffusers for ceilings, bulkheads or sidewall supply and exhaust.

Diffusers are manufactured from aluminium alloy extrusions fixed or clipped to cross stays allowing easy removal of internal vanes and pattern control elements.

### Product Description

|                   |                                                                                 |
|-------------------|---------------------------------------------------------------------------------|
| <b>CS-F</b>       | Standard 28mm flange for general purpose                                        |
| <b>CS-P</b>       | Narrow 18mm flange for flush / recess mounting                                  |
| <b>CS-J</b>       | Medium 25mm flange for general purpose                                          |
| <b>CS-M</b>       | For Tegular 30mm, 16mm & 8mm drop fitting                                       |
| <b>CS-S&amp;E</b> | Supply and Exhaust (or dual supply) system diffuser                             |
| <b>CS-TW</b>      | Extra wide flange                                                               |
| <b>CS Plank</b>   | Plank replacement unit (Refer to Head Office for details)                       |
| <b>Ends</b>       | Standard end caps                                                               |
| <b>MEC</b>        | Mitred end caps                                                                 |
| <b>BP</b>         | Blanking plate - supplied loose in 1250 lengths (for fitting on site by others) |
| <b>ED</b>         | Equalising deflector                                                            |

### Features

- High air capacity
- Wide dynamic range perfect for VAV systems
- Strong coanda effects for good low flow performance
- Fully adjustable air pattern from horizontal to vertical
- Hidden flow control vanes for consistent facial appearance
- Continuous joint detail for ceiling integrations

### Finishes

PPG9010 (RAL 9010 Gloss - 80% Gloss White)

PPM9010 (RAL 9010 Matt - 20% Gloss White)

PPM9006 (RAL 9006 Matt - 30% Gloss Silver)

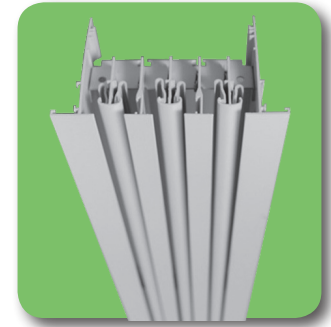
Other colours available on request

Pattern control elements are supplied with the same finish as the frame (standard) but can be supplied in black.

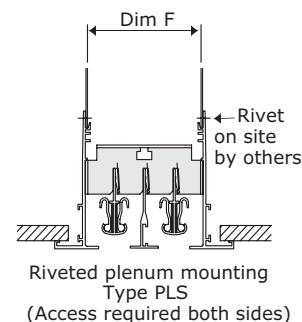
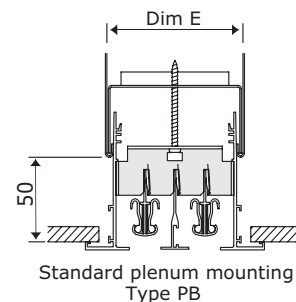
### Sizes

Standard from 1 to 8 slots wide in 1500mm long sections (excluding flanged ends).

Continuous diffuser lengths are supplied in sections for butt jointing on site. (Alignment plates supplied)



| Weights kg/m |             |     |     |     |     |     |     |     |
|--------------|-------------|-----|-----|-----|-----|-----|-----|-----|
| Style        | No of slots |     |     |     |     |     |     |     |
|              | 1           | 2   | 3   | 4   | 5   | 6   | 7   | 8   |
| CS-F         | 1.9         | 2.7 | 3.5 | 4.3 | 5.1 | 5.9 | 6.7 | 7.5 |
| CS-P         | 1.8         | 2.6 | 3.4 | 4.2 | 5.0 | 5.8 | 6.6 | 7.4 |
| CS-J         | 1.9         | 2.7 | 3.5 | 4.3 | 5.1 | 5.9 | 6.7 | 7.5 |
| CS-M         | 1.8         | 2.6 | 3.4 | 4.2 | 5.0 | 5.8 | 6.6 | 7.4 |
| CSM -TEG     | 1.8         | 2.6 | 3.4 | 4.2 | 5.0 | 5.8 | 6.6 | 7.4 |
| CS-S & E-F   | 2.0         | 2.8 | 3.6 | 4.4 | 5.2 | 6.0 | 6.8 | 7.6 |
| CS-TW        | 2.6         | 3.4 | 4.2 | 5.0 | 5.8 | 6.6 | 7.4 | 8.2 |



|        | Type PB | Type PLS |
|--------|---------|----------|
| Slots  | Dim E   | Dim F    |
| 1 Slot | 46      | 34       |
| 2 Slot | 84      | 72       |
| 3 Slot | 122     | 110      |
| 4 Slot | 160     | 148      |
| 5 Slot | 198     | 186      |
| 6 Slot | 236     | 225      |
| 7 Slot | 274     | 263      |
| 8 Slot | 312     | 301      |

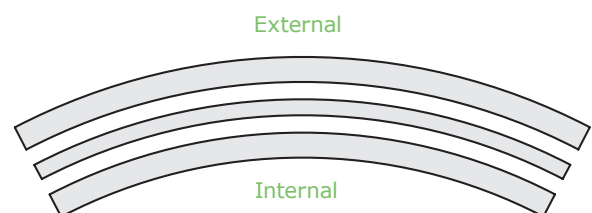
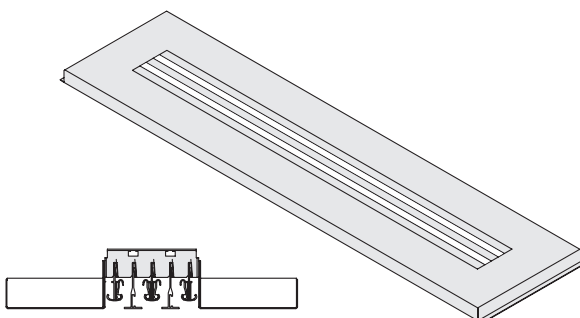
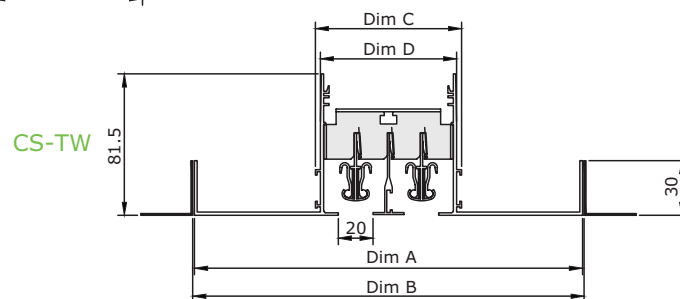
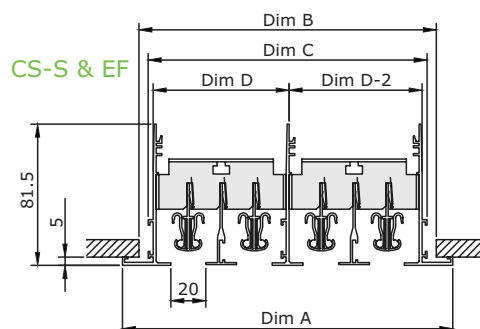
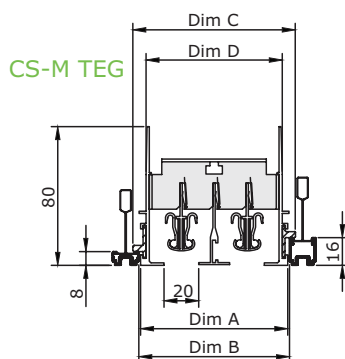
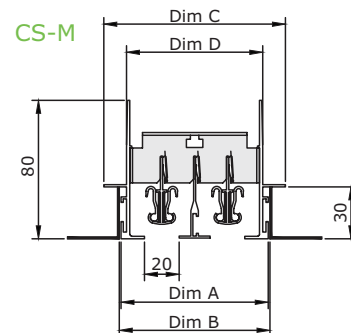
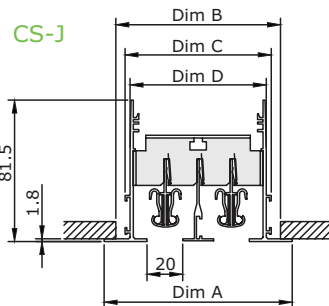
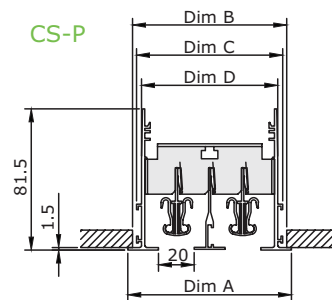
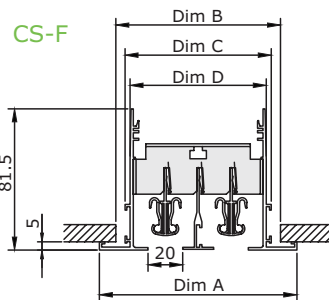
### ORDER EXAMPLE

CS-F/3000/S1/PPM9010/ENDS

Type \_\_\_\_\_  
Length \_\_\_\_\_  
No of Slots \_\_\_\_\_  
Finish \_\_\_\_\_  
Ends caps \_\_\_\_\_

## Linear Slot Diffusers

CS-F / CS-P / CS-J / CS-M / CS-S&E / CS-TW / CS Plank



**CS Plank**  
(Typical size is 1200 x 150 with internal 2 slot  
or 1200 x 300 with internal 3/4 slot)

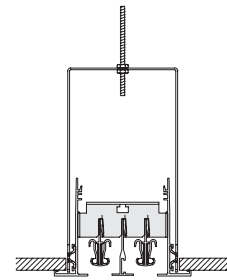
Internal, external or vertical  
air throw available, please  
specify on order.

## Linear Slot Diffusers

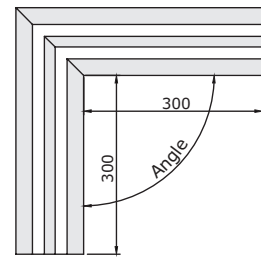
CS-F / CS-P / CS-J / CS-M / CS-S&E / CS-TW / CS Plank

| Diffuser Type    | Dimension Reference           | No of slots |     |     |     |     |     |     |     |
|------------------|-------------------------------|-------------|-----|-----|-----|-----|-----|-----|-----|
|                  |                               | 1           | 2   | 3   | 4   | 5   | 6   | 7   | 8   |
| CS-F             | Dim A = O/A Face Flange Width | 76          | 114 | 152 | 190 | 228 | 266 | 304 | 343 |
|                  | Dim B = Ceiling Cutout Width  | 57          | 95  | 133 | 171 | 209 | 247 | 285 | 324 |
|                  | Dim C = O/A Stack Width       | 45          | 84  | 122 | 160 | 198 | 236 | 274 | 312 |
|                  | Dim D = Outside Stack Width   | 40          | 79  | 117 | 155 | 193 | 231 | 269 | 307 |
| CS-P             | Dim A = O/A Face Flange Width | 56          | 95  | 133 | 171 | 209 | 247 | 285 | 323 |
|                  | Dim B = Ceiling Cutout Width  | 50          | 89  | 127 | 165 | 203 | 241 | 279 | 317 |
|                  | Dim C = O/A Stack Width       | 45          | 84  | 122 | 160 | 198 | 236 | 274 | 312 |
|                  | Dim D = Outside Stack Width   | 40          | 79  | 117 | 155 | 193 | 231 | 269 | 307 |
| CS-J             | Dim A = O/A Face Flange Width | 70          | 108 | 146 | 184 | 222 | 260 | 298 | 337 |
|                  | Dim B = Ceiling Cutout Width  | 57          | 95  | 133 | 171 | 209 | 247 | 285 | 324 |
|                  | Dim C = O/A Stack Width       | 45          | 84  | 122 | 160 | 198 | 236 | 274 | 312 |
|                  | Dim D = Outside Stack Width   | 40          | 79  | 117 | 155 | 193 | 231 | 269 | 307 |
| CS-M             | Dim A = O/A Face Flange Width | 46          | 84  | 122 | 160 | 198 | 236 | 274 | 313 |
|                  | Dim B = Ceiling Cutout Width  | 48          | 86  | 124 | 162 | 200 | 238 | 276 | 315 |
|                  | Dim C = O/A Stack Width       | 67          | 105 | 143 | 181 | 219 | 257 | 295 | 334 |
|                  | Dim D = Outside Stack Width   | 40          | 79  | 117 | 155 | 193 | 231 | 269 | 307 |
| CS-M<br>TEG      | Dim A = O/A Face Flange Width | 46          | 84  | 122 | 160 | 198 | 236 | 274 | 313 |
|                  | Dim B = Ceiling Cutout Width  | 48          | 86  | 124 | 162 | 200 | 238 | 276 | 315 |
|                  | Dim C = O/A Fitting Lug Width | 56          | 94  | 132 | 170 | 208 | 246 | 284 | 323 |
|                  | Dim D = Outside Stack Width   | 40          | 79  | 117 | 155 | 193 | 231 | 269 | 307 |
| CS-S<br>&<br>E-F | Dim A = O/A Face Flange Width | -           | 114 | 152 | 190 | 228 | 266 | 304 | 343 |
|                  | Dim B = Ceiling Cutout Width  | -           | 95  | 133 | 171 | 209 | 247 | 285 | 324 |
|                  | Dim C = O/A Stack Width       | 40          | 79  | 117 | 155 | 193 | 231 | 269 | -   |
|                  | Dim D = Outside Stack Width   | -           | 84  | 122 | 160 | 198 | 236 | 274 | 312 |
| CS-TW            | Dim A = O/A Face Flange Width | 184         | 223 | 261 | 299 | 337 | 375 | 413 | 451 |
|                  | Dim B = Ceiling Cutout Width  | 185         | 224 | 262 | 300 | 338 | 376 | 414 | 452 |
|                  | Dim C = O/A Stack Width       | 45          | 84  | 122 | 160 | 198 | 236 | 274 | 312 |
|                  | Dim D = Outside Stack Width   | 40          | 79  | 117 | 155 | 193 | 231 | 269 | 307 |

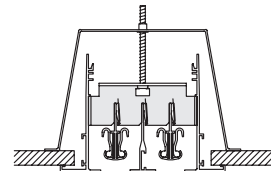
**Please note:** CS-P requires that the ceiling cut out is exactly as described by 'Dim B' to avoid fitment issues due to the small dimension of the over hang of the border.



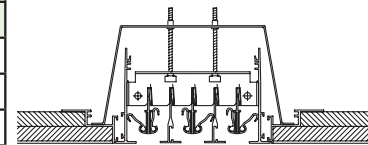
Dummy hanging bracket fixing available for 1 to 8 slot



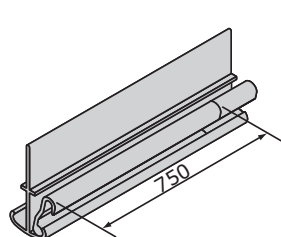
Standard CS Mitred Corner



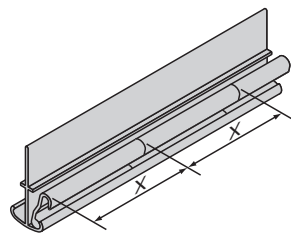
Plasterboard bracket fixing available for 1 to 6 slot



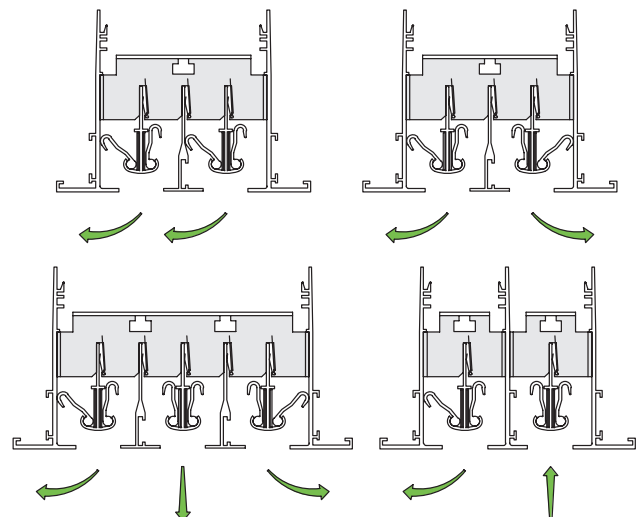
CSP Plaster Frame



**Standard**  
Diffusers are supplied with flow control vanes in lengths up to 750mm (to suit diffuser length).



**Special**  
To provide finer control of the air pattern, flow control vanes may be supplied in any specified length.

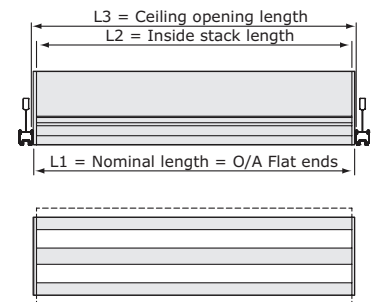


Typical PCE Settings

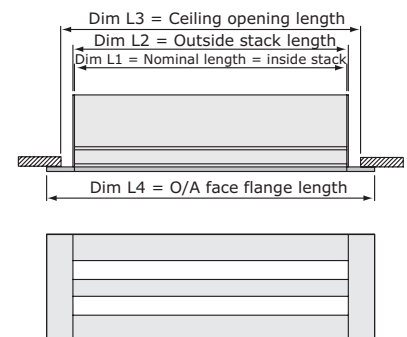
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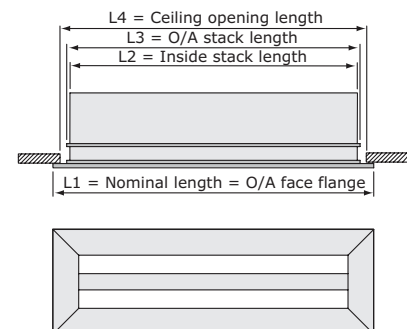
| FLAT END CAPS  |                |                    |                    |
|----------------|----------------|--------------------|--------------------|
| Diffuser Style | Dim L1         | Dim L2             | Dim L3             |
| CS-M           | Nominal Length | Nominal Length - 6 | Nominal Length + 2 |
| CS-M TEG       | Nominal Length | Nominal Length - 6 | Nominal Length + 2 |



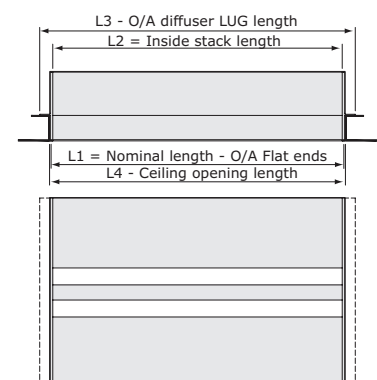
| STANDARD END CAPS |                |                    |                     |                     |
|-------------------|----------------|--------------------|---------------------|---------------------|
| Diffuser Style    | Dim L1         | Dim L2             | Dim L3              | Dim L4              |
| CS-F              | Nominal Length | Nominal Length + 3 | Nominal Length + 19 | Nominal Length + 56 |
| CS-P              | Nominal Length | Nominal Length + 3 | Nominal Length + 19 | Nominal Length + 36 |
| CS-J              | Nominal Length | Nominal Length + 3 | Nominal Length + 19 | Nominal Length + 56 |
| CS-S & E-F        | Nominal Length | Nominal Length + 3 | Nominal Length + 19 | Nominal Length + 56 |
| CSM               | Nominal Length | Nominal Length + 6 | Nominal Length + 2  | Nominal Length + 6  |



| MITRED END CAPS |                |                     |                     |                     |
|-----------------|----------------|---------------------|---------------------|---------------------|
| Diffuser Style  | Dim L1         | Dim L2              | Dim L3              | Dim L4              |
| CS-F            | Nominal Length | Nominal Length - 39 | Nominal Length - 30 | Nominal Length - 19 |
| CS-P            | Nominal Length | Nominal Length - 20 | Nominal Length - 11 | Nominal Length - 7  |
| CS-J            | Nominal Length | Nominal Length - 33 | Nominal Length - 24 | Nominal Length - 12 |
| CS-S & E-F      | Nominal Length | Nominal Length - 39 | Nominal Length - 30 | Nominal Length - 19 |



| FLAT END CAPS  |                |                    |                     |                    |
|----------------|----------------|--------------------|---------------------|--------------------|
| Diffuser Style | Dim L1         | Dim L2             | Dim L3              | Dim L4             |
| CS-TW          | Nominal Length | Nominal Length - 6 | Nominal Length + 25 | Nominal Length + 2 |



## Linear Slot Diffusers

CS-F / CS-P / CS-J / CS-M / CS-S&E / CS-TW / CS Plank

### Selection Criteria

Ceiling height 2.75m, increase throw by 1m for each 1m increase in ceiling height. Horizontal diffusion is based on a cooling differential of 11°C.

For isothermal diffusion apply a factor of 1.1 to throw values. For heating in horizontal diffusion apply a factor of 1.2 to throw values.

Vertical projection is based on a heating differential of 11°C. Noise level is based on diffuser sound power level less 8dB room absorption.

$V_r$  = mean room air velocity (m/s)

$V_t$  = terminal velocity of supply air jet (m/s)

### Selection Example CS2/1800

Total air flow rate 180 l/s = 100 l/s/m

#### 1 Way Throw

Minimum throw 2.8m (3.5 x 0.8 factor) Maximum throw 7.2m (9.0 x 0.8 factor) Pressure drop 25Pa  
Noise level 34dBA (37dBA - 3dB length correction)

#### 2 Way Throw

Minimum throw 2.0m (2.5 x 0.8 factor) Maximum throw 5.2m (6.5 x 0.8 factor) Pressure drop 25Pa  
Noise level 30dBA (33dBA - 3dB length correction)

| Length corrections |      |      |     |     |     |
|--------------------|------|------|-----|-----|-----|
| Active Length (m)  | 0.5  | 1.25 | 2.0 | 2.5 | 3.0 |
| dBA Reduction      | -8   | -5   | -3  | -2  | 0   |
| Throw multiplier   | 0.45 | 0.65 | 0.8 | 0.9 | 1.0 |

### Performance Nomogram

