NOZZLE DIFFUSERS
N SERIES
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</table>
Introduction

Application

‘N’ Series range of nozzle diffusers are based on a patented nozzle design that allows architects and consultants to have total flexibility when considering their air distribution requirements. The nozzles rotate so that any air pattern can be accommodated and they are available in a wide range of colours to match their surroundings. This brochure provides many examples of the tremendous possibilities this revolutionary product provides. The diffusers have been developed to attain maximum induction and coanda-effect. Thus air from the room is drawn into the diffuser's air streams and cooling is achieved outside of the occupied zone creating comfortable air movement and temperature conditions.

Where a VAV system is being designed this requires diffusers that maintain a high induction effect even at reduced air displacement levels. ‘N’ Series diffusers provide this flexibility and may be incorporated directly into the standard design.

Description

N Series diffusers comprise a number of circular nozzles that each emit an air stream at approx. 30° to the surface they are mounted in. The nozzles can be individually swivelled through 360° allowing many different distribution patterns to be generated.

The patented design of the nozzles prevents the distribution pattern from affecting the pressure drop (³P), or noise level. Readjustment of the pattern can therefore be made whenever necessary without affecting any of these parameters.

Typical installation
**Throw**

Throw $L_z$ is defined as the minimum distance from diffuser to wall without exceeding an air velocity of 0.2 m/s in the occupied zone.

Select the smallest diffuser which will give an adequate throw, and an air displacement greater than the required minimum air displacement.

The minimum distance to the nearest diffuser is $L_z \times 2 = 2L_z$.

$L_z$ in the charts is given for a ceiling height of 2.45m, and isothermal conditions. At greater ceiling heights $L_z$ is reduced, and with greater temperature difference ($\Delta t$), $L_z$ is increased.

**Nozzle Settings**

The standard nozzle setting is given for each diffuser model. Other nozzle settings may be made on site, or the diffusers may be supplied with the desired settings, after consultation.

**Colours**

The standard colour is RAL 9010. Other colours can be supplied on demand, but will incur an additional charge.
Supplied Cool Air

The suitability of a diffuser for delivering temperate air depends on the air stream's ability to propel the surrounding air mass. This is known as the induction effect. The greater the induction effect of a given diffuser, the more suitable it is for air supply.

The effect of the airstream adhering to the ceiling surface (coanda-effect) diminishes with reduced air velocity.

At a velocity of 0.35 m/s the coanda-effect ceases entirely. If the air stream at this point is cooled, a cold down-draught will be created. It is therefore important that the air stream has a large induction effect so that equalization of temperature takes place before the air velocity reaches 0.35 m/s.

Air supply diffusers with a short 'throw', are more suitable for distribution than those with a long 'throw'.

N-Series diffuser, with their unique nozzle construction, are especially well suited for delivering cooled air.

The construction of the nozzles, together with the possibility of individual adjustment, eliminates the risk of cold down-draughts. In addition the nozzles attain an extremely high induction effect firstly because each nozzle induces individually, and secondly because the shape of the air stream gives a large surface area in comparison to its cross section.

The air stream's flat cross-section gives a large surface area creating a high induction effect.

Calculating of cooling effect
- air displacement
- temperature difference

The cooling effect for a given displacement of air is calculated by: \( P = 1.2 \times Q^3t \) (W)

The cooling effect per \( m^2 \) of floor area is calculated by: \( P_A = \frac{1.2 \times Q \times 3t}{A} \) (W/m\(^2\))

The displacement of air at a given cooling effect is calculated by: \( Q = \frac{P}{1.2 \times 3t} \) (l/s)

The temperature difference \( 3t \) is calculated by: \( 3t = \frac{P}{1.2 \times Q} \) (°C)

\( P \) = Cooling effect in watts (W)

\( Q \) = Volume of air in litres per second (l/s)

\( A \) = Floor area in square metres (m\(^2\))

\( 3t \) = Difference in temperature in degrees centigrade (°C)

\( P_A \) = Cooling effect per square metre in watts (W/m\(^2\))

\( W \) = Watts
The Noise Level Generated By The Diffuser

The noise level generated by the diffuser is given by the diffuser’s capacity chart in NR, with a room allowance of 8dB.

Location Of Diffusers In The Room

In larger premises and in rooms with air displacement greater than 12m³/h per m² floor area, the air volume should be divided among several smaller diffusers.

These diffusers should be placed as symmetrically as possible in the room ceiling. N-Series ceiling diffusers with a swirl pattern will provide a good dispersion of the air mass of the whole room without causing uncomfortable draughts in the occupied zone.

In smaller rooms, and rooms where the displacement of air per m² floor area does not exceed 12m³/h, one diffuser will suffice. If the N-Series ceiling diffuser with a swirl pattern is selected, it can be located off-centre in the room. The diffuser’s high induction effect means a good dispersion of the air mass in the room, combined with low air velocity in the occupied zone, will be achieved.

When planning for the positioning of the diffusers, make sure not to place the units closer to walls than the distance the minimum throw allows for. We are always ready to lend any assistance with more detailed planning specifications.
Flexibility - A major benefit of the N Series Nozzles

ADJUSTING THE NOZZLE

Where the layout of a room is altered requiring a change in the direction of air flow. The nozzles can be easily and rapidly changed to obtain the desired throw.

Changes in the nozzle pattern do not affect air volume, pressure drop or noise level. Adjustment is made by a simple, lightweight tool as illustrated.
Ceiling Application

Colman Air Distribution N Series Nozzle Diffusers are available for installation in to all types of ceiling systems with frame styles that cater for surface, recessed, T-bar or threadline mounting.

ROUND NECK CEILING DIFFUSER

SQUARE NECK CEILING DIFFUSER
Plenum Boxes

NN Plenum boxes are specifically designed for use with all square neck styles of N Series diffuser to ensure even distribution of the air over the rear of the diffuser.

When balancing is a requirement, this is achieved through a mono-blade damper (on inlet spigots up to 400dia) fitted into the plenum spigot and operated from the face of the diffuser via a cord.

<table>
<thead>
<tr>
<th>PLENUM SIZE</th>
<th>Inside Plen E</th>
<th>&quot;D&quot; Dia (MAX)</th>
<th>Height H</th>
<th>H For Top Entry</th>
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</thead>
<tbody>
<tr>
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<td>256x256</td>
<td>250</td>
<td></td>
<td>&quot;D&quot; Dia</td>
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<tr>
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<td>328x328</td>
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<td>&quot;D&quot; Dia +125mm</td>
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<td>436x436</td>
<td>400</td>
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<td>&quot;D&quot; Dia</td>
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<td>&quot;D&quot; Dia</td>
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<td>687x687</td>
<td>450</td>
<td></td>
<td>&quot;D&quot; Dia</td>
</tr>
</tbody>
</table>
Fixings:
The Diffusers will integrate with most types of ceiling systems, catering for Surface, Recessed, T-bar or Threadline Mounting.

### Dimensional Data

#### Threadline - Type NF

<table>
<thead>
<tr>
<th>Size</th>
<th>Nom Neck A</th>
<th>O/all Face B</th>
<th>Nozzle Rows</th>
<th>Grid Ctrs C</th>
</tr>
</thead>
<tbody>
<tr>
<td>2560</td>
<td>256 x 256</td>
<td>595 x 595</td>
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<tr>
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<td>687 x 687</td>
<td>778 x 778</td>
<td>19 x 19</td>
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#### Threadline - Type NX

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<td>388 x 388</td>
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<td>496 x 496</td>
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#### T-Bar - Type NT

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#### Recessed - Type NR

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#### Type NSS

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#### Type NTS, NFS, NXS

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<th>Nozzle Rows</th>
<th>Grid Ctrs C</th>
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#### Type NRS

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<td>599 x 599</td>
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### CODING - CEILING APPLICATION - SQUARE NECK

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<tr>
<th>&quot;N&quot; Series</th>
<th>FRAME</th>
<th>NECK</th>
<th>QTY NOZZLES</th>
<th>AIR PATTERN</th>
<th>FIXING</th>
<th>FINISH</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>S</td>
<td>S</td>
<td>15 x 15</td>
<td>Swirl (Supply)</td>
<td>None</td>
<td>RAL9010 20%</td>
</tr>
<tr>
<td>T</td>
<td>Tee Bar Mounted (595 x 595, 495 x 495)</td>
<td>12 x 12</td>
<td>4 Way (Supply)</td>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R</td>
<td>Recessed Mounted (Burgess - 599 x 599, 499 x 499 (Ceiling type to be specified)</td>
<td>9 x 9</td>
<td>3 Way (Supply)</td>
<td>B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>Threadline 16mm drop (To suit 15mm &quot;T&quot; Bar as standard)</td>
<td>7 x 7</td>
<td>2 Way Opposite (Supply)</td>
<td>A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>X</td>
<td>Threadline 8mm drop (To suit 15mm &quot;T&quot; Bar as standard)</td>
<td>19 x 19</td>
<td>2 Way Corner (Supply)</td>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>Threadline 16mm drop (To suit 24mm &quot;T&quot; Bar)</td>
<td></td>
<td>1 Way (Supply)</td>
<td>D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>W</td>
<td>Threadline 8mm drop (To suit 24mm &quot;T&quot; Bar)</td>
<td></td>
<td>EXTRACT Nozzle</td>
<td>E</td>
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### EXAMPLES OF ORDER CODES

- **Nozzle**
- Surface Mounted
- Square Neck
- 15 x 15 Nozzles
- Swirl (Supply)
- No Fixings
- RAL 9010 20%
- Nom. Neck 543 x 543
- Overall Face 634 x 634

### PLENUM BOXES ORDER CODING

<table>
<thead>
<tr>
<th>&quot;N&quot; Series</th>
<th>LINING</th>
<th>INSTALLATION</th>
<th>Accessories</th>
<th>ARRANGEMENT</th>
<th>SPIGOT TYPE</th>
<th>SPIGOT SIZE</th>
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</thead>
<tbody>
<tr>
<td>N</td>
<td>N</td>
<td>Unlined</td>
<td>O - Raw Edge</td>
<td>S - Supply</td>
<td>R - Round - Side Entry</td>
<td>A - 100</td>
</tr>
<tr>
<td>L</td>
<td>L</td>
<td>Lined (6mm Bestobel)</td>
<td>C - Concealed Strap</td>
<td>E - Extract</td>
<td>T - Round - Top Entry</td>
<td>B - 125</td>
</tr>
<tr>
<td>M</td>
<td>M</td>
<td>Mono Blade</td>
<td>O - None</td>
<td>S - Extract</td>
<td>W - Round - Flush</td>
<td>C - 150</td>
</tr>
<tr>
<td>P</td>
<td>P</td>
<td>Extract Plenum (Painted Matt Black Internally)</td>
<td>M - Mono Blade</td>
<td>E - Extract</td>
<td>S - Square - Side Entry</td>
<td>D - 200</td>
</tr>
<tr>
<td>N</td>
<td>N</td>
<td>Extract Plenum c/w mono damper (Painted Matt Black (Internally)</td>
<td>N - Extract Plenum c/w mono damper (Painted Matt Black) (Internally)</td>
<td></td>
<td>Y - Square - Top Entry</td>
<td>E - 250</td>
</tr>
<tr>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X - Square - (Flush)</td>
<td>G - 350</td>
</tr>
</tbody>
</table>

### PLENUM BOXES ORDER CODING

- **LINING**
  - Unlined
  - Lined (6mm Bestobel)
- **INSTALLATION**
  - O - Raw Edge
  - C - Concealed Strap
- **Accessories**
  - O - None
  - M - Mono Blade
  - P - Extract Plenum (Painted Matt Black Internally)
  - N - Extract Plenum c/w mono damper (Painted Matt Black) (Internally)
- **ARRANGEMENT**
  - S - Supply
  - E - Extract
- **SPIGOT TYPE**
  - R - Round - Side Entry
  - T - Round - Top Entry
  - W - Round - (Flush)
  - S - Square - Side Entry
  - Y - Square - Top Entry
  - X - Square - (Flush)
- **SPIGOT SIZE**
  - A - 100
  - B - 125
  - C - 150
  - D - 200
  - E - 250
  - G - 350
  - H - 400
  - J - 450
SUPPLY PERFORMANCE DATA

Square Neck Diffuser - Surface / Recessed Mounted

How To Use The Charts, Example:

1. Air volume 38 l/s
2. Noise level NR22
3. Pressure drop 27Pa
4. Zone length $L_{Z150} = 1.1$ metres

Note: $(L_{Z(10K)} = L_{Z(ISO)} \times 1.1)$

For 10deg $^\circ$ increase zone length by 10% for other models increase as indicated.
SUPPLY PERFORMANCE DATA

Square Neck Diffuser - Tee Bar And Threadline Mounted - Cont.

**MODEL NSSF (5460)**
NESF/NTSF/NRSF/NTSF/NWSF/NXSF (5460)

**MODEL NSSC (6880)**
N-Series Nozzle Diffusers (Ceiling Application)
Model NTR, NFR, NXR, NER & NWR.
c/w 2 No Concentric Rings. (Tee Bar & Threadline)
CODING - CEILING APPLICATION - ROUND NECK

<table>
<thead>
<tr>
<th>&quot;N&quot; Series</th>
<th>FRAME</th>
<th>NECK</th>
<th>QTY NOZZLES</th>
<th>AIR PATTERN</th>
<th>FIXING</th>
<th>FINISH</th>
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<tbody>
<tr>
<td>N</td>
<td>T</td>
<td>R</td>
<td>2 Rings</td>
<td>SWIRL</td>
<td>S</td>
<td>RAL9010 20%</td>
</tr>
<tr>
<td></td>
<td>R</td>
<td></td>
<td>To be determined by circular size</td>
<td>Hanger fitted to conversion</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>F</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>RAL9006</td>
</tr>
<tr>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Special</td>
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</tbody>
</table>

EXAMPLES OF ORDER CODES

NTR

ASS

F

20 60

SUPPLY PERFORMANCE DATA

Round Neck Diffuser - Tee Bar And Threadline Mounted

NTRA (1260)

NTRA (2060)
Sidewall Application

Colman Air Distribution N Series Nozzle Diffusers are ideally suited to be used for sidewall application for installation either with plenum or directly into the ductwork. Whichever method is utilised the end product is aesthetically pleasing and efficient.
Sidewall Application

<table>
<thead>
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<th>FRAME</th>
<th>NECK</th>
<th>QTY NOZZLES</th>
<th>AIR PATTERN</th>
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<tbody>
<tr>
<td>N</td>
<td>G Sidewall Rectangular</td>
<td>R Round Neck (Includes conversion)</td>
<td>A 7 x 3</td>
<td>D 1 Way</td>
<td>G Screw through face</td>
<td>F RAL9010 20%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>S Square Neck</td>
<td>B 9 x 3</td>
<td>C 2 Way</td>
<td>C Concealed stop</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>C 11 x 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>D 12 x 6</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### EXAMPLES OF ORDER CODES

- **NGS**: Sidewall Mounted, Square Neck, 9 x 3 Nozzles, 1 Way Pattern, Screw Fixings, RAL 9010 20% Nom. Width, Nom. Height
- **NGR**: Round Neck

**N** Series FRAME NECK QTY NOZZLES AIR PATTERN FIXING FINISH

<table>
<thead>
<tr>
<th>N</th>
<th>G Side Rectangular</th>
<th>R Round (Includes conversion)</th>
<th>A 7 x 3</th>
<th>D 1 Way</th>
<th>G Screw through face</th>
<th>F RAL9010 20%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>S Square</td>
<td>B 9 x 3</td>
<td>C 2 Way</td>
<td>C Concealed stop</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>C 11 x 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>D 12 x 6</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**MODEL NGS SQUARE NECK & NGR ROUND NECK (SUITEABLE FOR WALL MOUNTING)**
SUPPLY PERFORMANCE DATA

Sidewall Diffuser

NGSA (280 X 135)

NGSB (340 X 135)

NGSC (425 X 170)

NGSD (460 X 245)
### NOZZLE DIFFUSER - CODING SHEET (DUCT MOUNTED)

<table>
<thead>
<tr>
<th>&quot;N&quot; Series</th>
<th>FRAME</th>
<th>NECK</th>
<th>QTY NOZZLES</th>
<th>AIR PATTERN</th>
<th>FIXING</th>
<th>FINISH</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>D</td>
<td>S</td>
<td>24 x 1 (Ducts 200 - 1000mm)</td>
<td>1 Way</td>
<td>G</td>
<td>RAL9010 20%</td>
</tr>
<tr>
<td>N</td>
<td>D</td>
<td>R</td>
<td>24 x 2 (Ducts 315 - 1250mm)</td>
<td>2 Way</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### EXAMPLES OF ORDER CODES

- **N**: Nozzle
- **D**: Duct Mounted
- **R**: Round Duct
- **F**: 24 x 2 Rows Nozzles
- **C**: 2 Way Pattern
- **G**: Screw Fixing
- **F**: RAL 9010 20%
- **1000**: Nominal Length

### MODEL NDR

![Diagram of Model NDR](image)

### MODEL NDS

![Diagram of Model NDS](image)

### CODE | SIZE | NOM NECK | OVERALL FACE | NOZZLE QTY | DUCT SIZE | DESCRIPTION
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>NDRE</td>
<td>1000</td>
<td>950 X 60</td>
<td>1000 X 100</td>
<td>25 X 1</td>
<td>dia</td>
<td>DUCT MOUNTED</td>
</tr>
<tr>
<td>NDRE</td>
<td>1000</td>
<td>950 X 95</td>
<td>1000 X 133</td>
<td>25 X 2</td>
<td>(200 - 1000)</td>
<td></td>
</tr>
<tr>
<td>NDRE</td>
<td>1000</td>
<td>950 X 60</td>
<td>1000 X 100</td>
<td>25 X 2</td>
<td>(315 - 1250)</td>
<td></td>
</tr>
<tr>
<td>NDRE</td>
<td>1000</td>
<td>975 X 125</td>
<td>1000 X 138</td>
<td>25 X 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NDRE</td>
<td>1000</td>
<td></td>
<td></td>
<td>25 X 2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Duct Mounted Diffuser - Rectangular

The chart’s applies to air velocities in the ducting of 1-5 m/s

\[ L_{Z_{10K}} = L_{Z_{(ISO)}} \times 1.2 \]
Linear Application

Colman Air Distribution N Series Nozzle Diffusers are ideally suited to be used for linear applications giving an efficient, alternative approach to meeting air distribution requirements.

NNB/NNC Plenum Boxes

Colman Air Distribution manufacture a range of high quality, galvanised sheet steel plenum boxes to suit the N range of nozzle. Designed to equalise the air distribution along the diffuser, these plenums are available in standard configurations or purpose made to suit different ceilings, bulkheads and air volumes. For supply air applications they will contain an equalising mesh to equalise the air along the full length of the diffuser. Plenums are normally supplied unlined but can be offered with a variety of acoustic and thermal lining materials. As standard, plenums are supplied with a central circular spigot. Diffuser fixing to the plenums is either via clips (NNB) where the diffuser is fixed first and the plenum is then clipped to the back (as illustrated above) or via universal mounting brackets (NNC) where the plenum is the first fix item.

NBCL WITH N TYPE PLENUM
### NOZZLE DIFFUSER - CODING SHEET (LINEAR APPLICATION)

<table>
<thead>
<tr>
<th>&quot;N&quot; Series</th>
<th>FRAME</th>
<th>AIR PATTERN</th>
<th>QTY NOZZLES</th>
<th>ACCESSORIES</th>
<th>FIXING</th>
<th>FINISH</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>B</td>
<td>Linear</td>
<td>L 25 x 2</td>
<td>B Straight (2end caps)</td>
<td>U Universal Bracket</td>
<td>F RAL9010 20%</td>
</tr>
</tbody>
</table>

### EXAMPLES OF ORDER CODES

```
N B C L B H F 1000 2
```

- **N**: Nozzle
- **B**: Linear
- **C**: 2 Way
- **L**: 25 x 2 Rows Nozzles
- **B**: 2 End Caps
- **H**: Hanger Brackets
- **F**: RAL 9010 20%
- **1000**: Nominal Length
- **2**: 2 Rows

### NOZZLE PLENUM - CODING SHEET

<table>
<thead>
<tr>
<th>&quot;N&quot; Series</th>
<th>LINING</th>
<th>INSTALLATION</th>
<th>Accessories</th>
<th>ARRANGEMENT</th>
<th>SPIGOT TYPE</th>
<th>SPIGOT SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>N Unlined</td>
<td>O Raw Edge</td>
<td>D None</td>
<td>S Supply</td>
<td>R Round - Side Entry</td>
<td>A - 100</td>
</tr>
<tr>
<td>L Lined (6mm Bestobel)</td>
<td>U Universal Bracket (NB Type ONLY)</td>
<td>M Mono Blade</td>
<td>T Round - Top Entry</td>
<td>B - 125</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P Plaster Mounting Frame (NB Type ONLY)</td>
<td>P Extract Plenum (Painted Matt Black internally)</td>
<td>W Round - (Flush)</td>
<td>C - 150</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>C Concealed Strap</td>
<td>N Extract Plenum c/w mono damper (Painted Matt Black internally)</td>
<td>S Square - Side Entry</td>
<td>D - 200</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Y Square - Top Entry</td>
<td>E - 250</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>X Square - (Flush)</td>
<td>F - 300</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>G - 350</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>H - 400</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>J - 450</td>
<td></td>
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</tr>
</tbody>
</table>
LINEAR PERFORMANCE DATA

PROJECTS

Trafford Centre - Manchester (Retail)

Oracle - Reading (Retail)

Glan Clwyd Hospital - Clwyd (Medical)

Havelock Mills - Manchester (Office)

Human Genetics - Oxford (Pharmaceutical)

BBC - London (Office)

Braehead Park - Glasgow (Retail)

Meadowside Leisure Centre - Burton Upon Trent
## PRODUCT RANGES

<table>
<thead>
<tr>
<th>GRILLES</th>
<th>DIFFUSERS</th>
<th>LOUVRES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linear Bar</td>
<td>Linear Slot</td>
<td>External</td>
</tr>
<tr>
<td>Ceiling</td>
<td>Louvre Face</td>
<td>Circular</td>
</tr>
<tr>
<td>Sidewall</td>
<td>Sidewall</td>
<td>Door</td>
</tr>
<tr>
<td>Floor</td>
<td>Perforated Face</td>
<td>Screens</td>
</tr>
<tr>
<td>Computer Floor</td>
<td>Circular</td>
<td>Penthouse</td>
</tr>
<tr>
<td>Cill</td>
<td>Swirl</td>
<td>Sand Louvres</td>
</tr>
<tr>
<td>Single &amp; Double</td>
<td>Ceiling</td>
<td>Roof Louvres</td>
</tr>
<tr>
<td>Deflection</td>
<td>Sidewall Fixed &amp; Adjustable</td>
<td></td>
</tr>
<tr>
<td>Egg Crate</td>
<td>Jet Flow / Nozzle</td>
<td></td>
</tr>
<tr>
<td>Hinged Core</td>
<td>Repus Displacement Ventilation</td>
<td></td>
</tr>
<tr>
<td>Door Transfer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Security and Prison</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supply and Extract Valves</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## BESPOKE SERVICE

We offer a bespoke design service where standard products do not fit the requirements of the build, we also supply products in special colours and finishes including bronze, brass, gold and chrome to meet Architectural design specifications.