Halton VRI
Plenum for Demand-Based Ventilation

- Supply air plenum for variable flow active diffusers VHB and VHD
- For optimised demand-based ventilation installations
- Guarantee of proper function of the supply air diffuser
- Airtight and robust construction with aesthetic design
- Effective sound attenuation
- Access for ductwork cleaning
- Junction box for cabling an active diffuser as standard with the delivery
- Detachable measurement and airflow adjustment module MSM

**MATERIAL AND FINISHING**

<table>
<thead>
<tr>
<th>PART</th>
<th>MATERIAL</th>
<th>NOTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Casing</td>
<td>Galvanised steel</td>
<td></td>
</tr>
<tr>
<td>Collar</td>
<td>Galvanised steel</td>
<td></td>
</tr>
<tr>
<td>Attenuation material</td>
<td>Polyester fibre</td>
<td></td>
</tr>
<tr>
<td>Spigot with gasket</td>
<td>Galvanised steel, Gasket of rubber compound</td>
<td></td>
</tr>
<tr>
<td>Measurement and adjustment module MSM</td>
<td>Body; Aluminium Plate; galvanised steel Brackets; galvanised steel Plastic parts; Polypropylene (PP) Spindle; Stainless steel</td>
<td></td>
</tr>
<tr>
<td>Junction box</td>
<td>Plastic</td>
<td></td>
</tr>
<tr>
<td>Hanging and safety wire</td>
<td>Steel</td>
<td></td>
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</tbody>
</table>
**Function**

The VRI balancing plenum equalises the airflow by reducing the flow velocity. Air is spread evenly into the diffuser, ensuring a proper throw pattern in the room space. The balancing plenum attenuates airborne sounds.

**Wiring**

![Schematic Diagram]

Junction box  Cable connector

Control signals in junction box

Terminal 3
0 VDC = minimum position / airflow
10 VDC = maximum position / airflow

Terminal 5
Not connected

**Installation**

VRI plenum can be installed using two strips. Connection to distribution ductwork is performed with a spigot including an integral gasket. VRI/V includes a pressure test plug.

**VRI/V**

The VRI/V is connected to the ventilation ductwork with a male inlet connection. After the ductwork pressure test, the diffuser can be installed. Hang the diffuser to the wire of the VRI/V plenum. Connect the actuator cable connector plug to the plug from the plenum junction box. Fix the actuator assembly to the plenum and tighten two screws. The power supply and control signal cables are connected to junction box according to the diffuser’s wiring instructions.

**DIMENSIONS**

![Dimensional Diagram]

<table>
<thead>
<tr>
<th>NS</th>
<th>L</th>
<th>H</th>
<th>K</th>
<th>ØD</th>
<th>ØD1</th>
</tr>
</thead>
<tbody>
<tr>
<td>125/160</td>
<td>458</td>
<td>182</td>
<td>432</td>
<td>124</td>
<td>162</td>
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<tr>
<td>160/160</td>
<td>458</td>
<td>222</td>
<td>432</td>
<td>159</td>
<td>162</td>
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<tr>
<td>200/200</td>
<td>618</td>
<td>272</td>
<td>592</td>
<td>199</td>
<td>202</td>
</tr>
<tr>
<td>250/250</td>
<td>618</td>
<td>336</td>
<td>592</td>
<td>249</td>
<td>252</td>
</tr>
</tbody>
</table>

For pressure drop and sound data, please refer to TRI.
Adjustment

The supply airflow rate is determined using measurement and adjustment module MSM. Maximum airflow rate is measured when the active diffuser is fully open. Pull out the airflow measurement tubes and airflow adjustment spring through the plenum. Make sure that the active diffuser is fully open. Measure the differential pressure with a manometer and calculate the airflow rate using the formula below.

\[ q_v = k \cdot \sqrt{\Delta p_m} \]

- \( q_v \) actual airflow rate, l/s
- \( k \) airflow coefficient: see the k value table delivered with the diffuser
- \( \Delta p_m \) measured differential pressure

Adjust the airflow rate by rotating the adjustment spring until the desired setting is achieved. Push the tubes and adjustment spring back into the plenum.

Servicing

Open the diffuser part and detach the perforated plate of the coupling sleeve. Remove the control cone part completely by opening the screw in the middle of the cone. Loosen two screws which are holding the motor assembly on VHB body and let it hang on the wire. The MSM is removed through VRI/V outlet by pulling from it’s body - not the measurement tubes or control spindle. The possible sound attenuation material of the plenum is removable and washable. Clean the parts with a damp cloth, instead of immersing in water. Replace all parts in opposite order. Both the diffuser and the airflow adjustment unit are removable for ductwork cleaning purposes. Open or detach the diffuser. Detach the measurement and adjustment module by gently pulling from the unit body. Please, do not pull from the adjustment spring or measurement tubes. For cleaning of the plenum and diffuser, wipe the plenum and diffuser parts with a damp cloth, instead of immersing in water. The sound attenuation material of the plenum is removable and washable. After cleaning, reassemble the sound attenuation material, airflow adjustment unit and diffuser.

Suggested specifications

The balancing plenum shall be made of galvanised steel and shall have an airtight design. The airflow equalisation module or airflow rate measurement and adjustment module shall be supplied for supply air applications. The measurement and adjustment module shall be adjustable without opening the device. The balancing plenum shall have a spigot with integral gasket for airtight duct connection and a plug for ductwork pressure testing. The balancing plenum shall attenuate airborne sound, and the sound attenuation material shall be made of polyester fibre with a washable surface.

Product code

VRI/S-D-E

- \( S = \) VRI plenum
- \( V = \) V model
- \( D = \) Diameter of duct connection
  - 160, 200, 250
- \( E = \) Dimension of diffuser connection
  - \( D=160: \) 160
  - \( D=200: \) 200
  - \( D=250: \) 250

Code example

VRI/V-160-160