

GUIDE TO MAXIMUM AIR VELOCITIES IN DUCTS

When considering the acoustic design of a ventilation or air conditioning system, it is important to take into account noise generated by sources other than main air handling plant. This data sheet specifically considers flow generated noise and proposes guidelines for maximum duct velocities relative to noise criteria.

Noise generation elements can be considered under two headings.

Elements producing secondary noise energy into the duct

Duct Runs	Dampers
Bends	Transformations
Tie Rods	Proprietary Fittings
Branches	

Terminal Units

Grilles	Diffusers
VCDs	Proprietary Fittings

To minimise the risk of generated noise, we would suggest that the following maximum duct velocities should be adhered to.

Maximum Duct Velocities (m/s)					
NR Design Levels	Risers	Main Branches	Ductwork To Grilles	Ductwork To Diffusers	Extract Stub Ducts(above ceiling voids)
25	5	3	1.5	1	1.5
30	6	4	2	1.5	2
35	7.5	5	2.5	2	3
38	9	5.5	2.5	2	3.5
40 & above	10	6	3	2.5	4

The above figures are only intended as a guide. The position of the duct relative to the ventilated or air-conditioned space and the geometry of the fittings etc. will determine whether increased or reduced air velocities are acceptable.

Grilles and diffusers should be carefully selected from the manufacturer's catalogue so that they are compatible with the appropriate noise criteria. In addition it should be noted that the choice of individual grilles and diffusers may be affected by their quantity within the room. For example, if there are four diffusers in a room, the NR criterion for each diffuser will need to be 6dB lower than the required NR criterion for the room to allow for the noise generated by each diffuser.

Where ventilation or air-conditioning systems are required to meet noise levels of NR25 or below we would recommend that the services of an Acoustic Consultant be sought.