

**APPLICATIONS :**

For installation within air conditioning or ventilation ductwork systems to reduce the transmission of airborne ducted noise. Attenuators are suitable for terminal equipment, crosstalk applications or attenuated openings in partitions above ceiling voids.

**SIZE RANGE :**

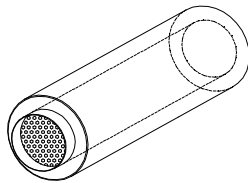
Contact **CAICE** engineers for details or see overleaf.

**TYPICAL AREAS FOR CONSIDERATION:**

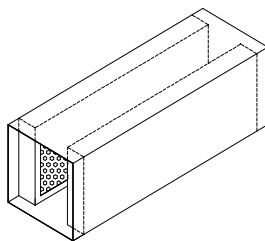
- Common ductwork serving male-female toilets / changing areas, or for privacy between adjacent cellular offices.
- Penetrations in partitions requiring high acoustic performance.
- Broadcasting / recording studios.

**CONFIGURATIONS :**

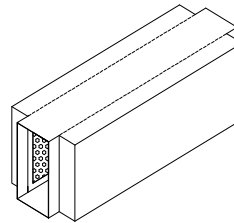
**CDA**



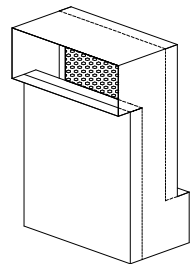
**SDA**



**XDA**



**XDZ**



**CONSTRUCTION :**

Model Codes are used to define the specific constructional properties of each product. The coding system for attenuators operates as follows :

*PRIMARY CODE / OPTIONAL FEATURES / OPTIONAL EXTRAS*

The coding definitions for crosstalk attenuators are as follows :

**PRIMARY CODE :**

**CDA, SDA, XDA, XDZ**

- galvanised sheet steel casing with lockformed mastic sealed joints
- internal liners faced with perforated sheet steel
- controlled density mineral wool infill with tissue facing to reduce fibre egress

**OPTIONAL FEATURES :**

*Casing pressure and leakage options :*

- 1** - DW142 Class B leakage and up to +1000 / -750 Pa pressure rating only

*Casing end connection options :*

- P** - plain spigot end connections only

*Internal lining options :*

- U** - unpodded, straight through attenuator (CDA only)
- V** - vertical element orientation (all except CDA)
- H** - horizontal element orientation (all except CDA)

**OPTIONAL EXTRAS :**

- M** - melinex wrapped infill for grease, diluted chemical or moisture laden air and also to ensure zero fibre egress for hospital or clean room applications
- W** - wrapped casing ends with heavy duty polythene to prevent ingress of rubble on site
- X** - denotes special optional extras (as required)

**EXAMPLE CODING :**

**XDA / 1PV / W**

**SPECIAL OPTIONAL EXTRAS**

Special optional extras are available upon specific request.

**AERODYNAMIC PRESSURE LOSS**

Pressure losses for CDA & XDA type crosstalk attenuators are negligible, as attenuation takes place out of airstream.  
 For SDA & XDZ type crosstalk attenuator pressure losses, refer to CAICE engineers or see below.  
 Pressure losses are quoted in accordance with BS4718. Substantial increases may occur where turbulent airflow conditions exist.

**GUIDE TO CROSSTALK ATTENUATOR SELECTION**

The following guide is intended to provide a quick method for selection of crosstalk attenuators in a common ducted system or ceiling void return air path. For accurate selection, or where attenuators are intended for use in sensitive locations such as high acoustically rated partitions (typically in excess of Rw40), please refer to CAICE engineer.

When making selections for crosstalk attenuators, it is necessary to consider the following aspects:

**1) The level of speech reaching the receiving room:**

The source of crosstalk nuisance is assumed to be raised speech, for which the average sound pressure level (500-4kHz) is 70dB\*.  
 The room to room acoustic loss for a typical common ductwork system or via the ceiling void is approximately 7dB, therefore the average speech level within the receiving room is taken to be 70-7 = 63dB.

**2) The noise criteria for the design of mechanical services in each space being considered:**

If crosstalk is being assessed between two adjacent room areas with different noise criteria, then the lowest criteria should be used.  
 Subtract the required NR level from the received speech level to give the additional average insertion loss requirement.

The following tables provide a guide length to the crosstalk attenuator, based on a 32.5% free area SDA type unit.

Attenuator length	Average I.L (500-4kHz)
600	22dB
900	28dB
1250	34dB
1500	40dB
1800	46dB

Crosstalk path	Room NR	Received speech level minus lowest NR	Attenuator length req'd
Conference Room to Conference Room	30 to 30	63-30 = 33	1250
Conference Room to Cellular Office	30 to 35	63-30 = 33	1250
Cellular Office to Open Plan Office	35 to 38	63-35 = 28	900
Cellular Office to Corridor	38 to 45	63-38 = 25	900
Male to Female Toilet	45 to 45	63-45 = 18	600

**SIZING OF CROSSTALK ATTENUATORS**

For CDA & XDA type attenuators, it is acceptable to size these units to correspond to the duct cross-section, since attenuation takes place out of airstream, and hence pressure drop is negligible.

For ducted SDA type units, the attenuator cross-section should ideally be sized to maintain a maximum pressure drop of 10Pa. This requires a limiting velocity of 1.5m/s for a 32.5% free area attenuator.

For non-ducted SDA type units, the attenuator cross-section should ideally be sized to maintain a maximum pressure drop of 5Pa. This requires a limiting velocity of 1.0m/s for a 32.5% free area attenuator.

**Example:**

Air volume 0.09m<sup>3</sup>/s. Ducted crosstalk attenuation required between NR45 toilet areas.  
 Attenuator cross-section required to maintain 1.5m/s is calculated by (volume / velocity) = 0.09/1.5 = 0.06m<sup>2</sup>.  
 Typical attenuator cross-sections for 0.06m<sup>2</sup> face area : 300 x 200, 400 x 150.  
 For NR45 areas, insertion loss requirement = 63-45 = 18dB, therefore 600mm long attenuator selected.

\* **Note:** Average level for raised speech derived from raised speech sound pressure level (ref: Parkin Humphries & Cowell).