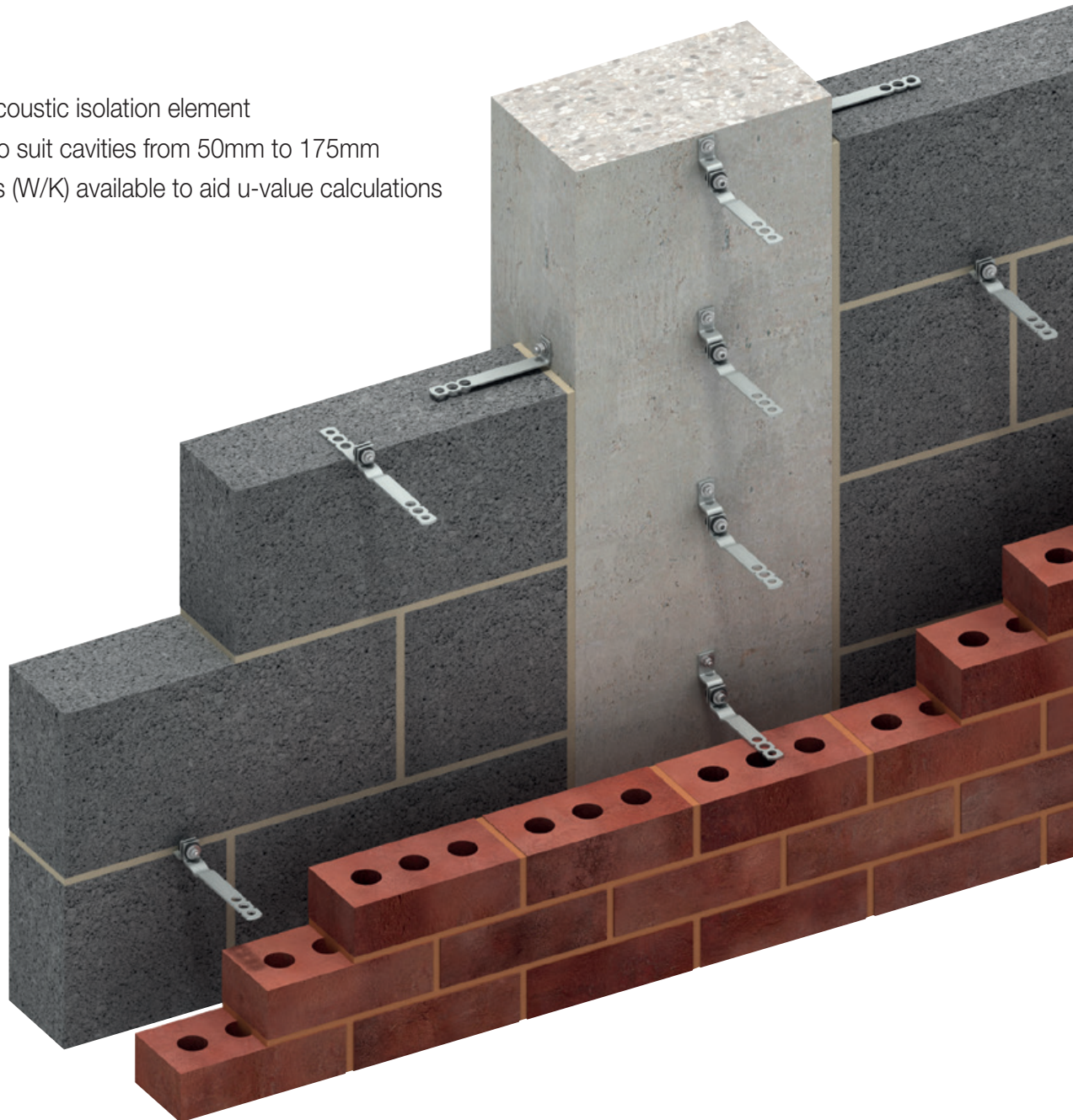


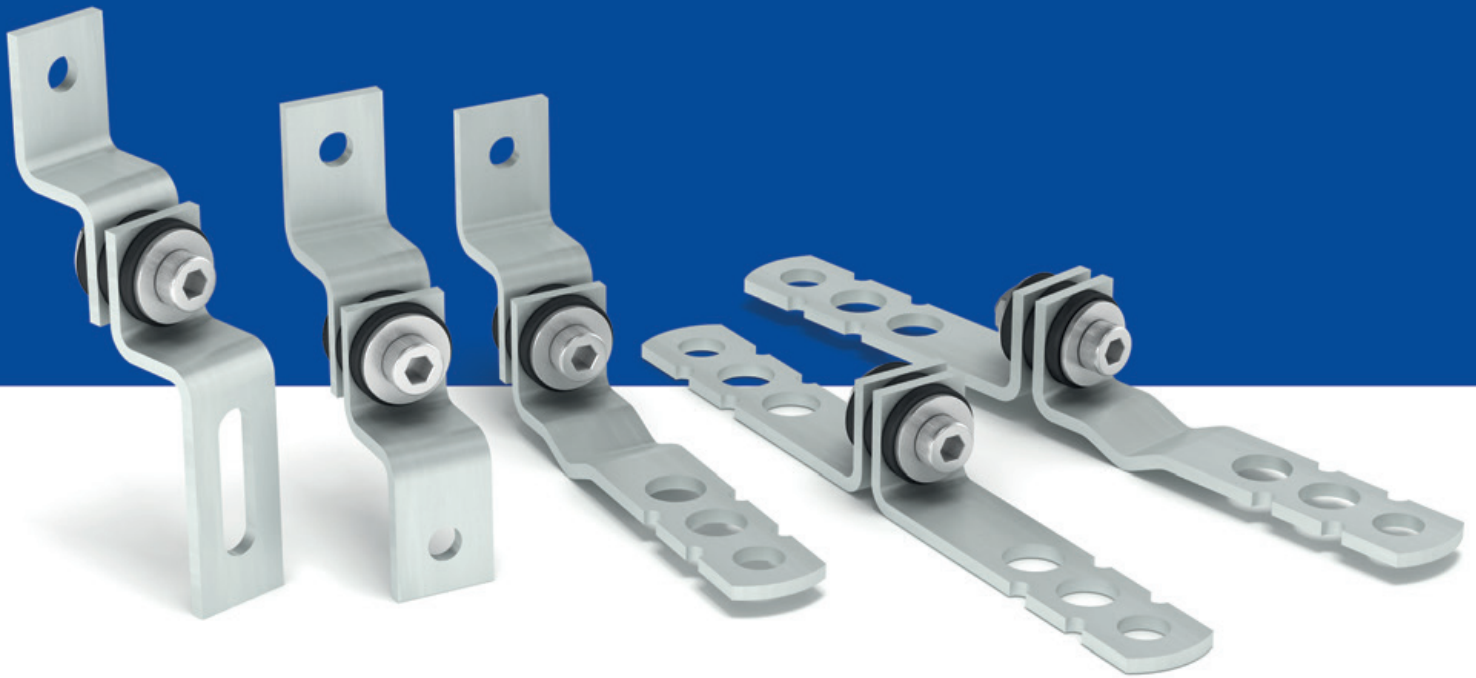
# Acoustic Wall Ties

Acoustic wall ties and frame cramps for connecting the leaves of a cavity wall while minimising the transfer of airborne noise and vibration

Ideal for • Recording Studios • Cinemas • Mixed Use Developments

- ✓ Integral acoustic isolation element
- ✓ Lengths to suit cavities from 50mm to 175mm
- ✓ Chi values (W/K) available to aid u-value calculations





## Ancon Acoustic Wall Ties

While standard cavity wall ties create a solid connection through which sound waves can travel, Ancon Acoustic Wall Ties feature a highly engineered, pre-compressed, acoustic isolation element. Products in this range provide the necessary structural performance, while minimising the transfer of airborne noise and vibration.

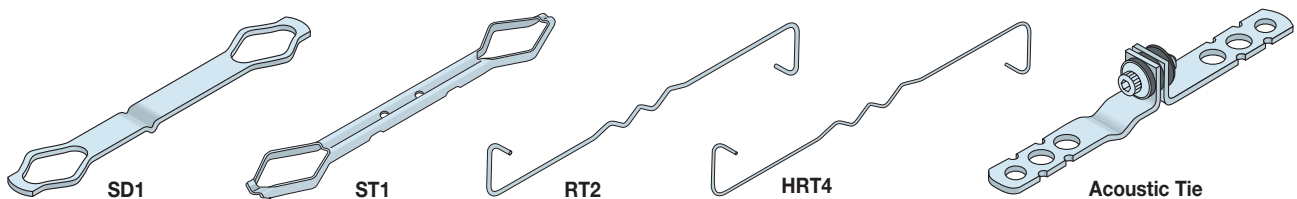
The acoustic performance of this range is far superior to other wall tie types and is the result of a carefully engineered balance between mechanical stiffness and high acoustic resilience.

### Comparison of Acoustic Performance of Various Ancon Wall Tie Types

Wall Tie	PD6697 Type	Cavity	Frequency*	Dynamic Stiffness**
SD1	1	150 mm	823 Hz	72.1 MN/m <sup>3</sup>
ST1	1	50 mm	848 Hz	75.8 MN/m <sup>3</sup>
RT2	2	50 mm	500 Hz	25.5 MN/m <sup>3</sup>
HRT4	4	50 mm	208 Hz	4.7 MN/m <sup>3</sup>
<b>Acoustic Tie</b>	<b>4</b>	<b>-</b>	<b>139 Hz</b>	<b>2.15 MN/m<sup>3</sup></b>

\*Mean axial mass-spring-mass resonance frequency of the tie

\*\*At a standard tie density of 2.5 ties per sq.m. Test regime described in BRE information paper IP3/01.



### Dynamic Stiffness

Dynamic stiffness, as featured in Approved Document E of the Building Regulations, is an established acoustic performance rating for wall ties and allows comparisons to be made between ties of different types and lengths, with the lower the dynamic stiffness, the better for resisting noise transfer.

Research has shown that the dynamic stiffness of a wall tie featuring an acoustic isolator is determined by this element alone and is independent of the tie length and cavity width in which it is used (Robin Wilson, Heriot Watt University, 1992).

Approved Document E specifies the use of Type A ties in separating/party walls of new build residential developments in England and Wales. Type A ties must have a dynamic stiffness of less than 4.8 MN/m<sup>3</sup>. The dynamic stiffness of most Type 4 wire wall ties is only marginally below this threshold at a standard tie density of 2.5 ties/m<sup>2</sup>. In contrast, the Ancon Acoustic Wall Tie range, with a comparable dynamic stiffness of just 2.15 MN/m<sup>3</sup> offers a significant improvement over standard Type 4/Type A wall ties.

### Frequency

When considering sound insulation in buildings, the range of frequencies considered are generally between 50Hz and 5000Hz and these are normally banded into the low frequency range [50 – 200Hz], mid-frequency range [201 – 1000Hz] and high frequency range [1001 – 5000Hz]. Ancon Acoustic Wall Ties have been designed to fall within the lowest band.

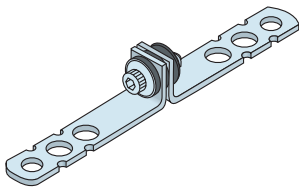
## Typical applications include:

- ✓ Recording studios
- ✓ Nightclubs
- ✓ Industrial units
- ✓ Mixed use developments
- ✓ Cinemas
- ✓ Laboratories
- ✓ Residential developments

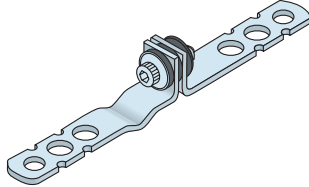
### Structural Performance

Each product shown below offers Type 4 wall tie performance to PD6697:2010 at a standard tie spacing of 2.5 ties/m<sup>2</sup> and is available in incremental lengths of 25mm to suit the cavity range stated. The table shows the calculated tie density to achieve other wall tie types and how this affects the dynamic stiffness (NM/m<sup>3</sup>). Contact us for more information.

#### Cavity Wall Ties for brick/block construction



**ACOU SP-SP**  
Plain shank cavity tie  
Suits 50-175mm cavities  
Available with either a central or offset isolator



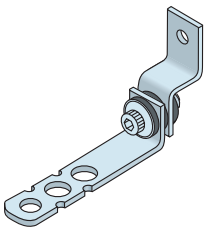
**ACOU SP-SD**  
Cavity tie with integral drip  
Suits 75-175mm cavities  
Available with either a central or offset isolator

#### Ancon ACOU Acoustic Range Calculated Tie Density per Wall Tie Type

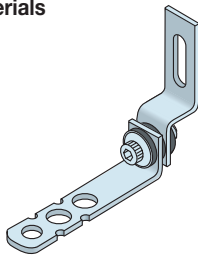
Equivalent Wall Tie Type	Tie Density (Spacing)	Dynamic Stiffness	Type A
<b>Type 4</b> Light Duty	<b>2.5 ties/m<sup>2</sup></b> (900mm x 450mm)	<b>2.15 MN/m<sup>3</sup></b>	✓
<b>Type 3</b> Basic	<b>3.5 ties/m<sup>2</sup></b> (640mm x 450mm)	<b>2.93 MN/m<sup>3</sup></b>	✓
<b>Type 2</b> General Purpose	<b>5.7 ties/m<sup>2</sup></b> (390mm x 450mm)	<b>4.79 MN/m<sup>3</sup></b>	✓
<b>Type 1*</b> Heavy Duty	<b>7.9 ties/m<sup>2</sup></b> (280mm x 450mm)	<b>6.64 MN/m<sup>3</sup></b>	-

For more information on wall tie types, refer to PD6697:2010 or the Ancon 'Wall Ties and Restraint Fixings' literature. Type A ties to Approved Document E = <4.8MN/m<sup>3</sup>  
\* Type M2 (iv) mortar only

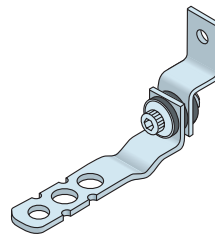
#### Frame Cramps for surface-fixing to a range of materials



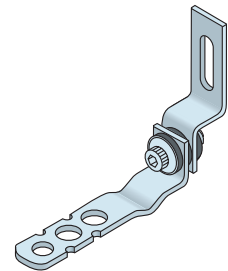
**ACOU SP-ZB**  
Plain shank frame cramp with 7mm fixing hole  
Suits 50-175mm cavities



**ACOU SP-ZV**  
Plain shank frame cramp with 8mm x 30mm fixing slot  
Suits 50-175mm cavities

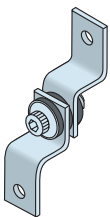


**ACOU SD-ZB**  
Frame cramp with integral drip and 7mm fixing hole  
Suits 100-175mm cavities

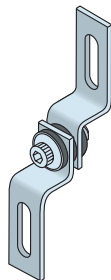


**ACOU SD-ZV**  
Frame cramp with integral drip and 8mm x 30mm fixing slot  
Suits 100-175mm cavities

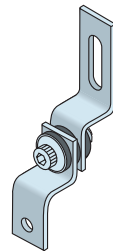
#### Partition Ties



**ACOU ZB-ZB**  
Partition tie with two 7mm fixing holes  
Suits 50-175mm cavities



**ACOU ZV-ZV**  
Partition tie with two 8mm x 30mm fixing slots  
Suits 50-175mm cavities



**ACOU ZB-ZV**  
Partition tie with a 7mm fixing hole and an 8mm x 30mm fixing slot  
Suits 50-175mm cavities

#### Standard Fixings Available from Leviat:

- Plugs and Screws
- Expansion Bolts
- Set Screws
- Self-Drilling Screws
- Wood Screws

See overleaf for design considerations and best practice installation advice.

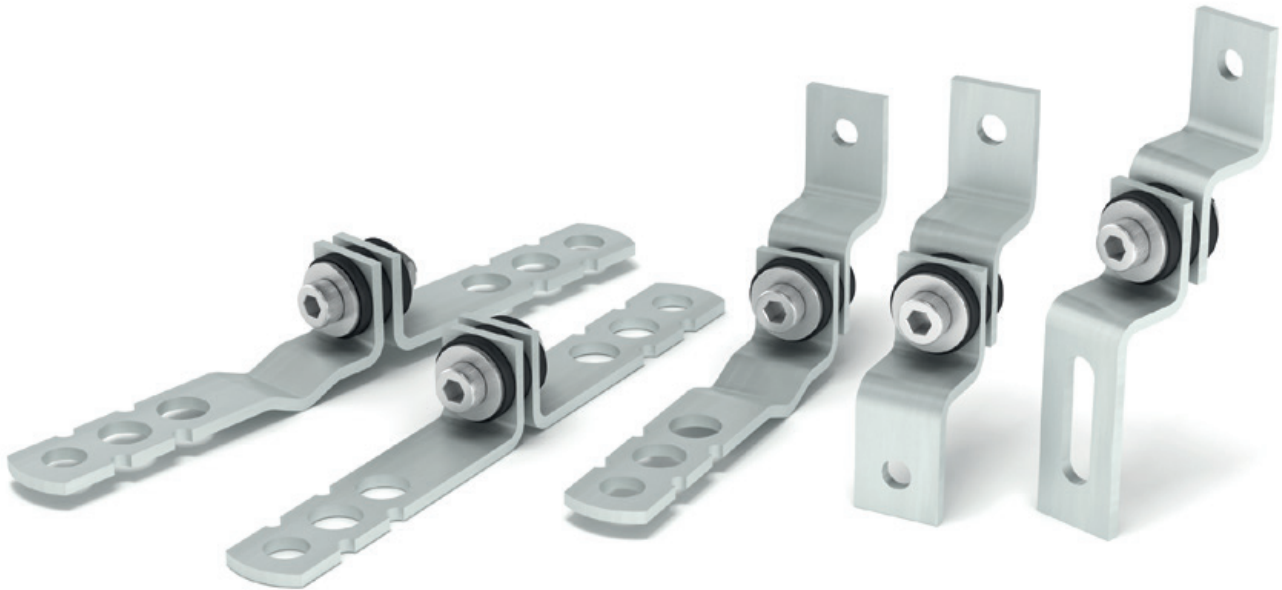
## Design Considerations

Acoustic wall ties can only influence the transmission of airborne sound directly through a cavity wall and not the associated indirect paths along adjacent elements in the construction, such as doors, windows, floors and foundations. It is essential that these ties are used as part of an overall isolation system designed to separate the space in question from the main building structure.

## Best Practice Installation Advice

The correct installation of Ancon Acoustic Wall Ties will provide superior isolation against airborne noise through a cavity wall, however, it is essential that some basic rules are followed to ensure the designed performance is achieved.

- Wall ties should be pressed down into fresh mortar. They should be surrounded by mortar and not simply placed on the masonry leaf and mortar placed on them
- They must be placed in position as the leaf is constructed and not simply pushed into a pre-constructed mortar joint
- Wall ties should be of the correct length to ensure they are properly embedded in the masonry. The length should take into account the site tolerances for both the cavity width and centring the tie. Leviaat recommends tie lengths which achieve an embedment of 62.5mm to 75mm
- Fill and seal all masonry joints with fresh mortar
- The design should keep the masonry leaves separate below ground level to avoid flanking transmission
- Avoid building cavity walls off common solid concrete floor slabs
- Ensure that external cavity walls are stopped with a flexible closer at the junction with the separating walls unless the cavity is fully filled with insulation
- Ensure the installed wall ties are clear of mortar dropping or other debris
- Ensure the cavity is clear of debris
- Avoid air paths such as gaps, holes or slits as these will reduce the sound insulation
- Where air paths cannot be avoided ensure they are properly filled with the appropriate acoustic products
- Ensure the cavity wall conforms to the design and its requirements



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