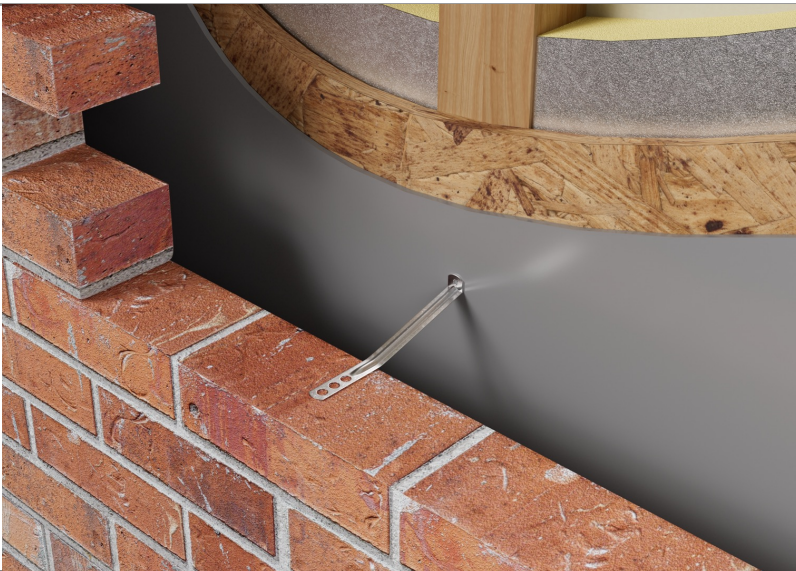


Timber Frame Tie

This product is specifically designed to secure an inner timber frame to an outer brick skin. The main property of these ties is that they can absorb substantial vertical movement between the brick and timber while still performing their structural function. Supplied complete with 50mm x 3.35mm Stainless Steel Annular Ring Nails. Also available with 50mm x 4.0mm Stainless Steel Screws for SIPS panels.



Features

- **Application** - For use in domestic and small commercial builds up to 3 storeys. They're suitable for buildings with a max height of 15m and for flat sites where the basic wind speed is up to 25m/s and altitude is not greater than 150m above sea level.
- **Design** – Masonry-timber tie for timber frame buildings that accommodates vertical movement.
- **Material** – Manufactured from grade 304 stainless steel.
- **Behaviour in relation to fire** – non combustible (as defined in the national Building Regulations).
- **Durability** – excellent corrosion resistance and a service life of not less than 60 years.
- **Thermal performance** – In situations where thermal losses through ties need to be taken into account, the products will adequately resist thermal transmittance through a wall cavity.
- **Compliance** – Tested as Type B (sound) and as Type 6 (strength) to BS EN 845-1. (The Type 6 description is used as an identifier, as the previous standard is no longer in effect).
- **Specification** – Available for specification on the NBS Source platform.

Code	Size	Cavity	Units
V61-125-STST	125mm	50mm	250 Box
V61-150-STST	150mm	75mm	250 Box
V61-175-STST	175mm	100mm	250 Box

Safety Precautions

V61 Timber Frame Ties are manufactured from sheared plate and strip so may contain sharp edges. Suitable personal protection should always be used when handling/installing these products.

Test Results

Summary

V61 Timber Frame Tie	125mm (50mm cavity)	150mm (75mm cavity)	175mm (100mm cavity)
Tensile Load (As Received) Timber End	1160N	1190N	1010N
Compression Load (As Received) Timber End	540N	440N	400N
Tensile Load (24mm Movement) Timber End	1010N	1230N	1140N
Compressive Load (24mm Movement) Timber End	560N	780N	400N
Tensile Load Mortar End	1060N	1090N	960N
Compressive Load Mortar End	480N	450N	400N

V61-125-STST (50-65mm Cavity)

End	Failure	Test Result (N)	γ_m	k_{mod}	Result x k_{mod} / γ_m (N)	Failure description
Masonry	Tension	1060	3	1.1	388.67	Withdrawal from mortar joint
Masonry	Compression (65mm cavity)	480	1.15	1.1	459.13	Buckling of tie
Timber	Tension	1160	1.3	1.1	981.54	Withdrawal of nail
Timber	Compression (65mm cavity & 0mm movement)	540	1.15	1.1	516.52	Buckling of tie
					388.67	Lowest failure

V61-150-STST (75-90mm Cavity)

End	Failure	Test Result (N)	γ_m	k_{mod}	Result x k_{mod} / γ_m (N)	Failure description
Masonry	Tension	1090	3	1.1	399.67	Withdrawal from mortar joint
Masonry	Compression (90mm cavity)	450	1.15	1.1	430.43	Buckling of tie
Timber	Tension	1190	1.3	1.1	1006.92	Withdrawal of nail
Timber	Compression (90mm cavity & 0mm movement)	440	1.15	1.1	420.87	Buckling of tie
					399.67	Lowest failure

V61-175-STST (100-115mm Cavity)

End	Failure	Test Result (N)	γ_m	k_{mod}	Result x k_{mod} / γ_m (N)	Failure description
Masonry	Tension	960	3	1.1	352.00	Withdrawal from mortar joint
Masonry	Compression (115mm cavity)	400	1.15	1.1	382.61	Buckling of tie
Timber	Tension	1010	1.3	1.1	854.62	Withdrawal of nail
Timber	Compression (115mm cavity 0/24mm movement)	400	1.15	1.1	382.61	Buckling of tie
					352.00	Lowest failure

Performance Calculations

V61-125-STST (50-65mm Cavity)

50mm Cavity	600mm Stud centres				
	150	225	300	375	450
Vertical tie spacing (mm)	(every 2nd brick course)	(every 3rd brick or every block course)	(every 4th brick course)	(every 5th brick course)	(every 2nd block course)
Tie density calculation	1000/150 = 6.667 6.667x(1000/600) = 11.111	1000/225 = 4.444 6.667x(1000/600) = 7.407	1000/300 = 3.333 3.333x(1000/600) = 5.555	1000/375 = 2.667 2.667x(1000/600) = 4.444	1000/450 = 2.222 2.222x(1000/600) = 3.703
Ties/m ²	11.1	7.4	5.5	4.4	3.7
Maximum Wind Load (N/m ²)	388.67 x 11.111 = 4318.5 4318.5	388.67 x 7.407 = 2879 2879.0123	388 x 5.555 = 2159.2 2159.259	388 x 4.444 = 1727.4 1727.407	388 x 3.703 = 1439.5 1439.506
Peak velocity pressure (N/m ²)	4318.5/1.1/1.5 = 2617.2 2617.2	2879/1.1/1.5 = 1744.8 1744.8	2159.3/1.1/1.5 = 1308.6 1308.6	1727.4/1.1/1.5 = 1046.9 1046.9	1439.5/1.1/1.5 = 872.4 872.4

V61-150-STST (75-90mm Cavity)

75mm Cavity	600mm Stud centres				
	150	225	300	375	450
Vertical tie spacing (mm)	(every 2nd brick course)	(every 3rd brick or every block course)	(every 4th brick course)	(every 5th brick course)	(every 2nd block course)
Tie density calculation	1000/150 = 6.667 6.667x(1000/600) = 11.111	1000/225 = 4.444 6.667x(1000/600) = 7.407	1000/300 = 3.333 3.333x(1000/600) = 5.555	1000/375 = 2.667 2.667x(1000/600) = 4.444	1000/450 = 2.222 2.222x(1000/600) = 3.703
Ties/m ²	11.1	7.4	5.5	4.4	3.7
Maximum Wind Load (N/m ²)	399.67 x 11.111 = 4440.7 4440.7	399.67 x 7.407 = 2960.5 2960.5	399.67 x 5.555 = 1955.5 2220.4	399.67 x 4.444 = 1776.3 1776.3	399.67 x 3.703 = 1303.7 1480.2
Peak velocity pressure (N/m ²)	4440.7/1.1/1.5 = 2691.4 2691.4	2960.5/1.1/1.5 = 1794.2 1794.2	2220.4/1.1/1.5 = 1345.7 1345.7	1776.3/1.1/1.5 = 1076.5 1076.5	1480.2/1.1/1.5 = 897.1 897.1

V61-175-STST (100-115mm Cavity)

100mm Cavity	600mm Stud centres				
	150	225	300	375	450
Vertical tie spacing (mm)	(every 2nd brick course)	(every 3rd brick or every block course)	(every 4th brick course)	(every 5th brick course)	(every 2nd block course)
Tie density calculation	1000/150 = 6.667 6.667x(1000/600) = 11.111	1000/225 = 4.444 6.667x(1000/600) = 7.407	1000/300 = 3.333 3.333x(1000/600) = 5.555 ties/m ²	1000/375 = 2.667 2.667x(1000/600) = 4.444	1000/450 = 2.222 2.222x(1000/600) = 3.703
Ties/m ²	11.1	7.4	5.5	4.4	3.7
Maximum Wind Load (N/m ²)	352 x 11.111 = 3911.1 3911.1	352 x 7.407 = 2607.4 2607.4	352 x 5.555 = 1955.5N/m ² 1955.5	352 x 4.444 = 1564.4N/m ² 1564.4	352 x 3.703 = 1303.7N/m ² 1303.7
Peak velocity pressure (N/m ²)	3911.1/1.1/1.5 = 2370.3 2370.3	2607.4/1.1/1.5 = 1580.2 1580.2	1955.5/1.1/1.5 = 1185.1 1185.1	1564.4/1.1/1.5 = 948.1 948.1	1303.7/1.1/1.5 = 790.1 790.1