SFS

Horizontal Lifeline

How it works

ICB PROJECTS

Deployment and loading

The Soter high load post is a uniquely patented design that embodies many technological advances in Fall Protection.

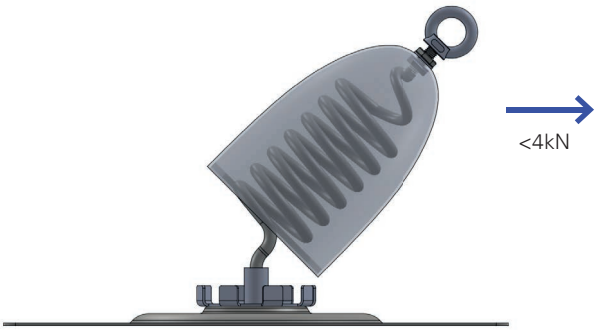
At the heart of each post is an energy-absorbing element and deformable member that holds the post module perpendicular to its base plate. The post has been designed as a detachable module from the base plate, both having separate waterproof sealing barriers, so if the post is removed the base will not leak.

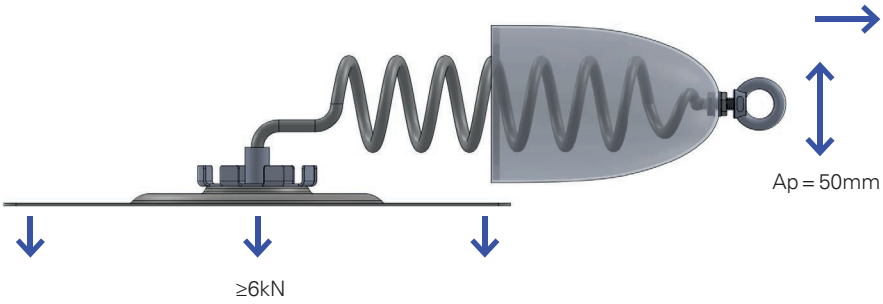
In the event of a fall the forces involved will cause the deformable member, designed to resist static loading, to release the absorbing element reducing the forces back to the roof and critically saving the user(s).

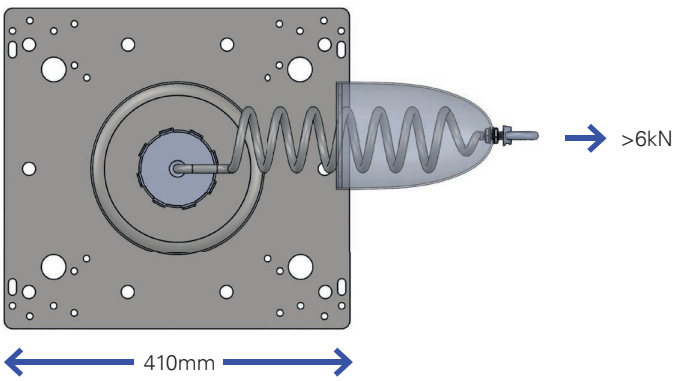
Under static loading conditions the deformable member will start to release the energy-absorbing element at around 4kN. Dynamically, the peak force back to the post is below 6kN.

During the arrest of a falling mass the energy-absorbing element within the post orientates in the same plane as the base plate. Although there will be load exerted in a tensile (TI) direction the predominance would be for shear (SI) loading through the fasteners holding the base plate to the roof system.

From Figure 1 we know that the Peak force, Fp = 6kN for 200kg free falling mass and the attachment point height from base plate, Ap = 50mm after deployment.







Compliance

SATRA reference:	Subject:	Result:
SPC0226559/1428	EN195:2012 & CEN/TS16415:2013 Type C anchors	Pass
SPC0257234/1719/1	EN195:2012 & CEN/TS16415:2013 Type C anchors	Pass
SPC0265141/1749	EN195:2012 & CEN/TS16415:2013 Type A anchors	Pass
SPC0272005/1824	AS/NZS 1891.2:2001	Pass

The whole sequence from initial impact through to peak force (dt) is typically around 0.5 seconds. After this point the mass will bounce, with this bounce decaying until rest.

The data shown was taken from a calibrated 12kN drop test being captured on 1kHz instrumentation.

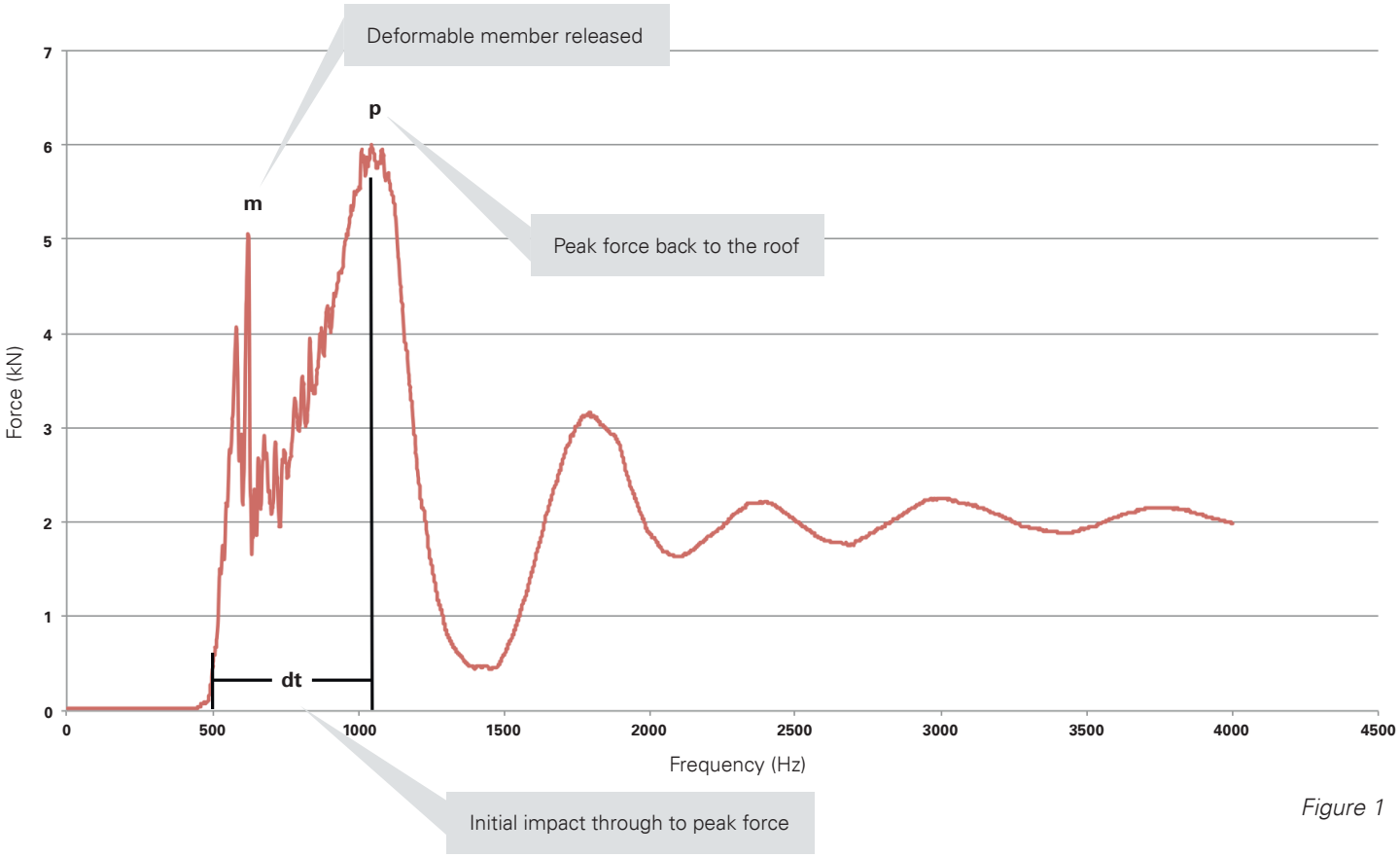


Figure 1

Calcs

Using the position of the furthest most fastener from the direction of deployment to the front edge of the base plate, here Df = 410mm we can now determine the tensile load (Tl) and the shear load (Sl) in the fasteners as:

Sl = Peak load / Number of fasteners: **6kN / 8 = 0.75kN per fastener**

Tl = Peak load x Attachment point height / Df: **6kN x 50mm / 410mm = 0.73kN**

It will generally be the case that the furthest most fasteners from the leading edge will be subjected to a greater tensile load (Tlr), as such we can conclude:

Tlr = Tl / Number of furthest fasteners: **0.73kN / 4 = 0.183kN per fastener**

Considerations to remember are the length of the base plate used and the number of fasteners holding the base plate to the roof system.

Testing and standards

The standards that govern Fall Protection are written to set a benchmark for minimum performance. It is important to acknowledge that the majority of standards do not specify the structure (roof profile or make up) when defining the requirements of the testing. All our independent testing is undertaken on OEM supplied product, not direct to concrete.

We are conscious of the many different structures in the market place and undertake in-house testing on standing seam, composite, single skin, built up systems and flat roofing (bituminous & PVC). Many of these tests are undertaken to provide backup data for our network of sales offices across Europe as well as allowing us to build up an extensive library of test data.

Our test facility is audited and calibrated by an independent UKAS accredited laboratory with all tests conducted in the same manner and to the same requirements as they provide to us for our certified products.

The Soter Horizontal Lifeline systems are tested and certified to allow from 1 to 4 users to safely work in either Arrest or Restraint conditions.

All our Horizontal Lifeline solutions are independently tested (UKAS laboratory) and certified to meet the requirements of:

EN795:2012 – Personal fall protection equipment - Anchor devices

Requirements

- Anchor device - Assembly of elements which incorporates one or more anchor points or mobile anchor points that can include a fixing element, is intended for use as part of a personal fall protection system, is intended to be removable from the structure and to be part of the anchor system.
- Dynamic performance using 100kg test mass.
- Static strength test for 3 minutes of 12kN.
- Non-metallic materials a static strength of 18kN for 3 minutes unless evidence of durability is provided.
- Type A anchor device with one or more stationary anchor points, with the need for a structural anchor(s) or fixing element(s) to fix to the structure.
- Type C anchor device employing a flexible anchor line which deviates from the horizontal by not more than 15°.
- To allow for foreseeable misuse of equipment, the standard requires that all anchor devices be tested for Fall Arrest even if their intended use is for Fall Restraint.

CEN/TS16415:2013 – Personal fall protection equipment - Anchor devices - Recommendations for anchor devices for use by more than one person simultaneously

Requirements

- Requires anchor devices to comply with EN795:2012.
- Dynamic performance using 200kg test mass.
- Static strength test for 3 minutes of 12kN + 1kN for every additional user.
- Non-metallic materials a static strength of 18kN + 1kN for every additional user for 3 minutes unless evidence of durability is provided.
- Type A anchor device with one or more stationary anchor points, with the need for a structural anchor(s) or fixing element(s) to fix to the structure.
- Type C anchor device employing a flexible anchor line which deviates from the horizontal by not more than 15°.
- To allow for foreseeable misuse of equipment, the standard requires that all anchor devices be tested for Arrest even if their intended use is for Restraint.

AS/NZS 1891.2:2001 - Industrial fall-arrest systems and devices

Requirements

- Requires many of the requirements for anchor devices as to comply with EN795:2012.
- Dynamic performance using 100kg test mass.
- Static strength test for 3 minutes of 12kN.
- A tensile force equal to 90% +/- 5% of the stated initial operating force for 2 minutes +/- 20 seconds without any sign of initial operation.
- Initial operation of the device shall occur at a tensile force laying within +/-10% of the stated force.
- Mobile attachment device requires 2 actions to be removable and must sustain 15kN for 3 minutes without breaking.

www.icbprojects.co.uk

ICB (Projects) Ltd. Unit 9 -11, Fleets Industrial Estate,
Willis Way, Poole, Dorset, BH15 3SU UK

Tel: 01202 785200 Fax: 01202 785201

Email: info@icbprojects.co.uk