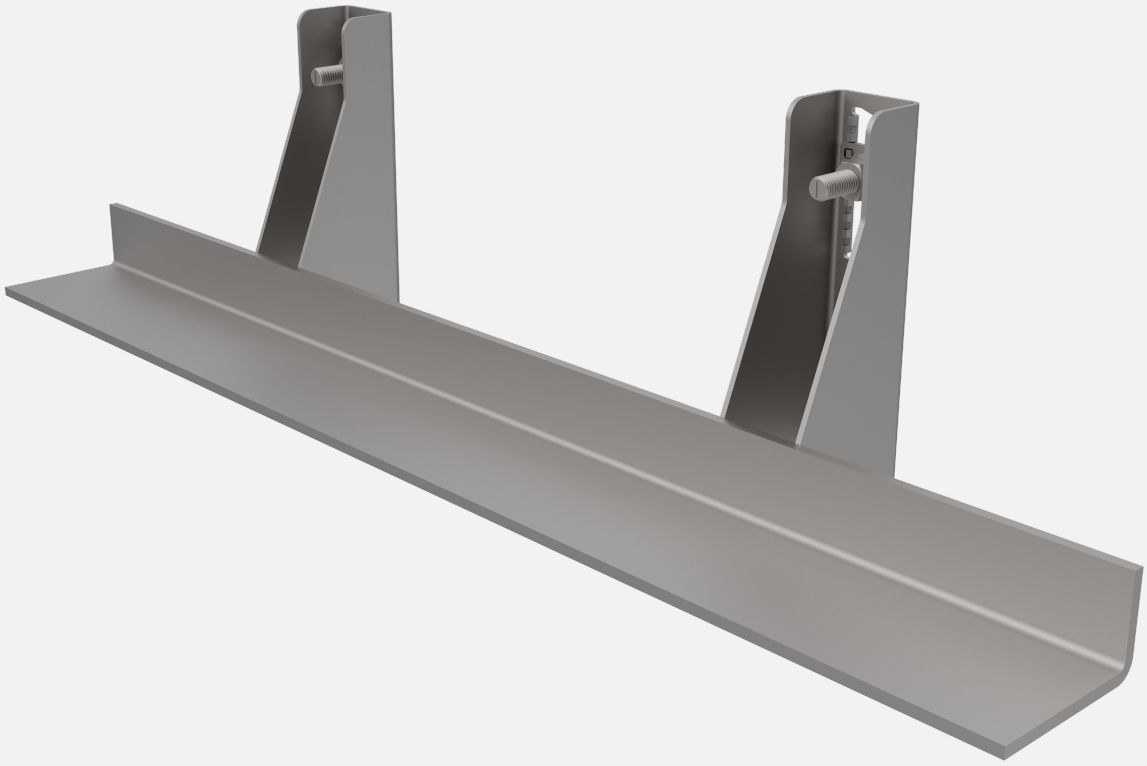
ACS

Technical Data Sheet

Masonry Support



Masonry Support

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Product summary

UKCA / CE+UKNI marked

Masonry Support is a common feature found in masonry clad buildings worldwide. Masonry Support has the critical function of taking the external masonry load and applying it back to the structure of the supporting building.

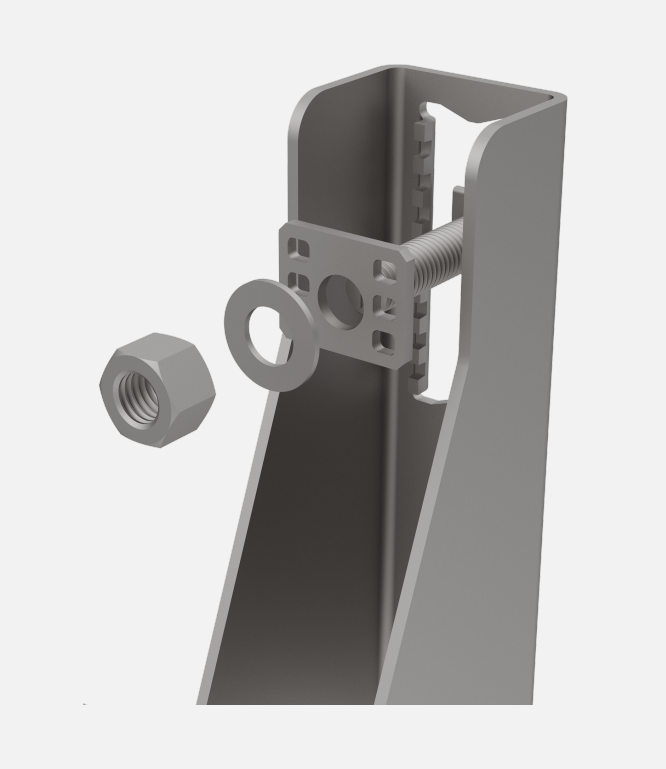
The most common system is formed of two components, the first is the 'angle' which is embedded into the external leaf. This is then welded to a number of 'brackets' which are restrained back to the internal structure of the building. This forms the passageway for the external load to be transferred back to the structure.

Masonry Support is required to allow for differential movement between the masonry panels and structure around the building and is normally located at horizontal movement joints, window heads, soffits or large openings. Support is usually installed at every, or every other floor depending on the cavity size, structure type, structure size, and load.

ACS Masonry Support systems are a fully bespoke assembly allowing a solution specifically designed for each scenario.

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Structural tolerances

To allow for typical construction tolerances, ACS Masonry Support systems can be adjusted in three directions.

1. Vertical adjustment

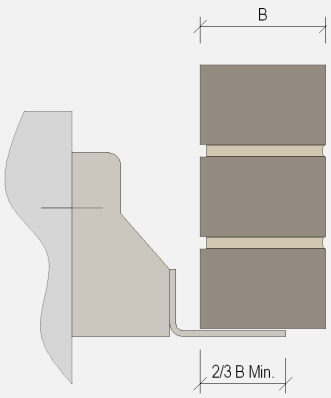
To provide adjustment to the necessary levels of support, ACS Masonry Support is supplied with the patented 'Alpha II' system. The positive lock system provides a greater load capacity than a traditional serrated system due to the physical locking teeth.

The offset hole in the washer allows the increments of adjustment to be halved when rotated through 180° meaning the support level can be finely adjusted by up to +/- 25mm. The design of the Alpha II System provides clear inspection into the location and engagement of the washer in the bracket simplifying the final site installation checks. It is imperative that the washer is positively engaged with three teeth on each side.

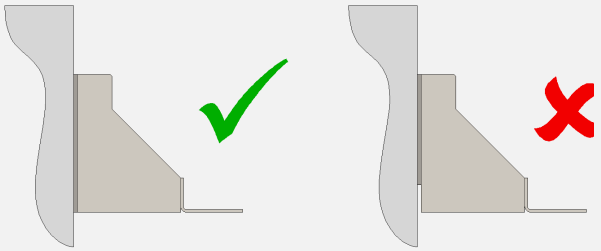
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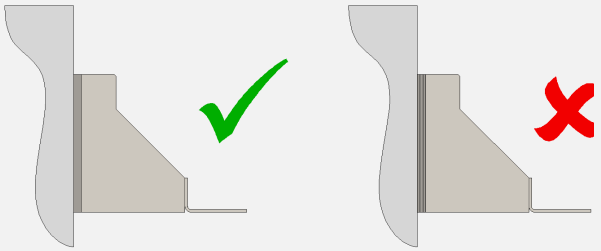
a



b



c



2. Cavity width adjustments

a. The support system is designed to allow a small amount of cavity adjustment, however, a minimum masonry bearing of 2/3rds must always be maintained unless advised otherwise by ACS. To increase the cavity width further than this, stainless steel shims can be used.

b. When utilising these, it is important that the shim is fully bearing on the structure to support the compressive forces at the heel of the bracket.

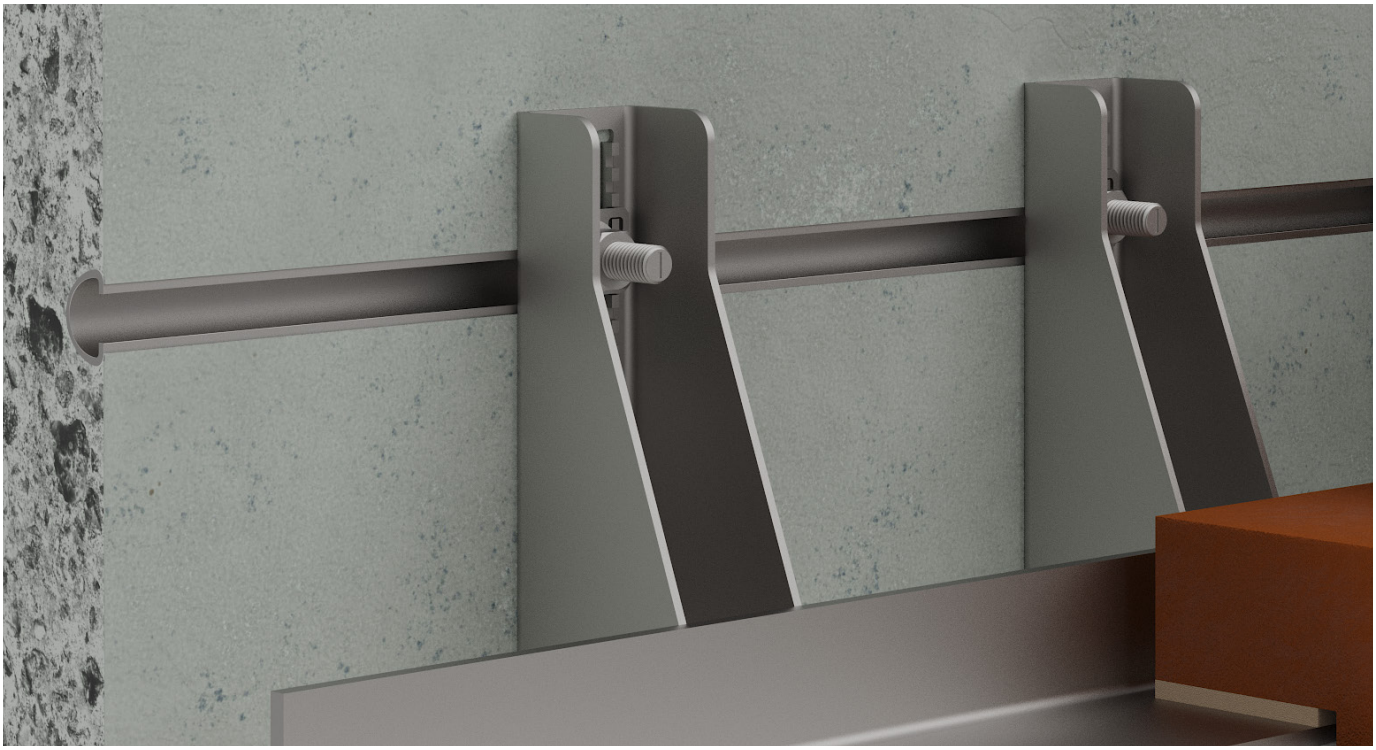
c. ACS masonry support can be shimmed with loose shims up to 12mm. For shim adjustments greater than 10mm additional fixing checks must be carried out and welded shim packs may be required. Please contact the ACS Technical Team where greater shimmed adjustment is required.

The total number of shims should be kept to a minimum to avoid creating slip planes that may allow settlement or creep under load.

If there is a requirement to introduce a thermal break between the internal structure and Masonry Support system, ACS can provide a thermal shim as standard. The ACS thermal shim has a thermal conductivity of 0.35W/mK. For more details, please see the technical data sheet for the product.

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3. Horizontal adjustment

There are several ways in which the ACS Masonry Support system can be adjusted to allow for any requirement in the horizontal plane.

Firstly, Masonry Support systems are designed with a nominal gap of 10mm between angle lengths. This provides horizontal adjustment to accommodate for tolerances on-site during installation.

If you are fixing back to a concrete structure, for continuous adjustment in the horizontal direction, a cast in channel can be utilised. ACS offer the 31/21 AXIS channel which is specifically designed to work with ACS Masonry Support systems. The patented curve profile benefits from higher design resistances when compared to other medium duty cast in channels.

Finally, the alpha adjustment system offers a small amount of horizontal tolerance to allow for drill hole deviations.

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System types

T1 – Standard

The most common form of ACS Masonry Support utilises a shelf angle found within a horizontal brickwork movement joint. On to this angle are welded a number of brackets which will be specifically designed for each unique scenario. T1 standard systems are utilised for areas where the cavity size is at least 50mm and where the angle is located below the fixing points.



T1 – Inverted

Similar to the T1 standard system, the T1 inverted system still utilises the same angle and bracket assembly. However with the inverted system, the angle is located above the fixing locations. This system tends to be used in pier locations where the support is located at the base of a window and is often provided with reveal support inbuilt.

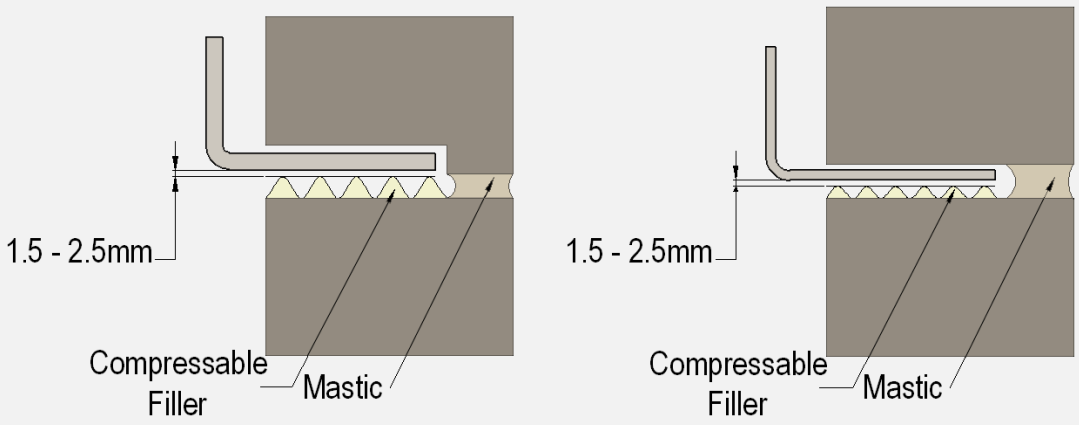


T2

For scenarios where the cavity size is less than 50mm, a T2 system can be utilised. This basic system is used where there is no availability to fit a bracket into the cavity size. Due to the larger bending moment upon the angle at larger cavities, T2 systems become uneconomical and should be replaced with a T1 bracket and angle system.

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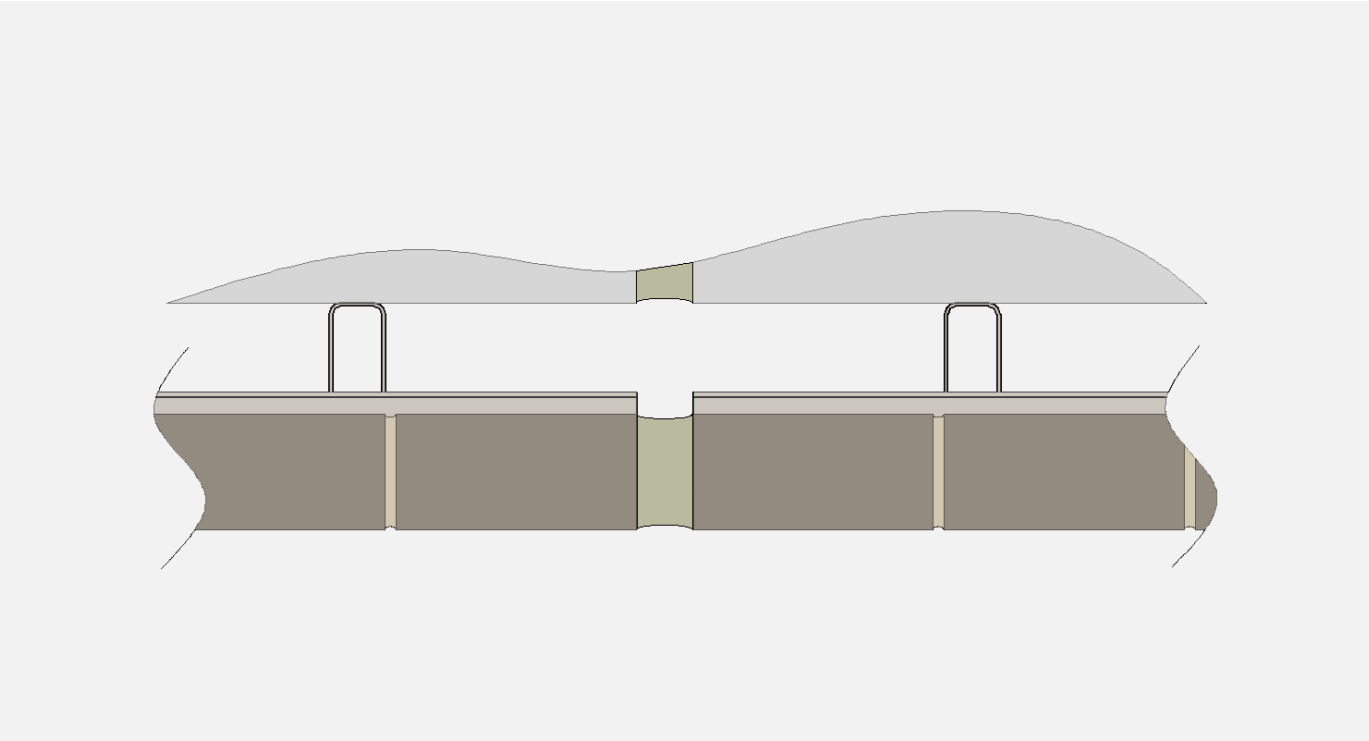
Horizontal movement joints

As the most common location for Masonry Support is within a horizontal movement joint, it is important that the brickwork panel below still has the ability to expand and contact without completely closing this joint. Failure to allow for movement can result in cracking of brickwork mortar joints.

This is completed with a compressible filler being located under the support angle. The Masonry Support angle should be set approximately 1.5 to 2.5mm above the compressible filler to prevent the angle deflecting into the joint when loaded. Once the masonry panel is complete, the open joint on the face of the panel should be filled with a mastic seal. Thin angles can be concealed in a standard joint, however thicker angles may require a rebate or pistol to be cut into the underside of the brick. The pistol brick should then be bedded onto a 5mm max mortar joint. It is imperative that no more than 1.5m of masonry is built off a support angle per day to prevent excessive deflection through rotation of the angle.

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Vertical movement joints

In terms of vertical movement joints, there are two distinct scenarios that occur around Masonry Support. When support is required with a structural movement joint in the primary structure, the angles should be split so that there is an allowance for differential movement. However, if there is just a brickwork movement joint in the panel, the support can be continuous through the joint. This is due to the fact that the movement can still take place without the risk of cracking within the panel.

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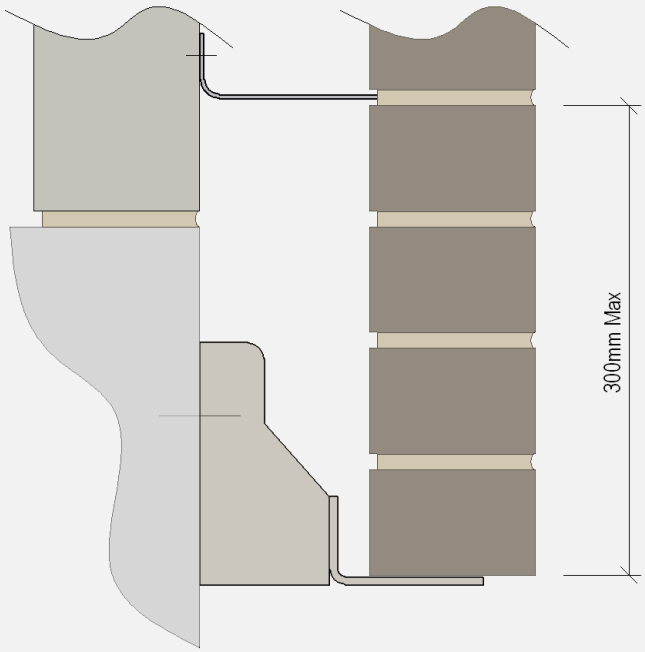
0113 391 8200
info@acsstainless.co.uk

acsstainless.co.uk/products/masonry-support

ACS Stainless Steel Fixings Ltd
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Wall ties

Wall ties are critical to the correct function and performance of all Masonry Support systems. Stainless steel wall ties should be positioned within 300mm of a support angle at a maximum horizontal spacing of 450mm, or within 225mm vertically at 600mm horizontal centres to ensure that the panel is sufficiently restrained. Ties can be specially designed to suit the particular application and should be installed in line with the manufacturer's recommendations.

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Bi-metallic corrosion

Bi-metallic corrosion can occur when dissimilar metals such as stainless and carbon steel are in direct contact in the presence of water. To avoid this, it is recommended that steel beams are painted, or an isolation gasket is positioned between the bracket and beam and that a top hat washer is used to isolate the stainless steel bolt from the drilled fixing hole. Both the isolation gasket and top hat washer can be supplied by ACS as part of the Masonry Support system.

Thermal conductivity

Due to its high corrosive resistance, all ACS Masonry Support systems are manufactured from stainless steel. As well as it's corrosion resistance, stainless steel also has the benefit of having a lower thermal conductivity in comparison to carbon steel. With the introduction of the new version of Approved Document L, updated requirements for external wall U-values have come into place. This puts additional emphasis into the reduction of thermal bridges across a cavity. To assist with this, as already mentioned, ACS can provide thermal shims to work alongside the Masonry Support brackets. With a thermal conductivity of 0.35W/mK, compared to 17W/mK for stainless steel, this can assist with reducing the transfer of heat through the system. As standard the shims are provided at 3mm thickness, however please contact ACS if a larger thickness is required.

A1 non-combustible

ACS Masonry Support is a stainless steel product which satisfies the requirements for an A1 classification without testing as the below details outline. Referring to document 96/603/EC, ACS Masonry Support is produced from stainless steel and shall on account of the material's low level of combustibility, be classified in Classes A ("No contribution to fire") without need for further testing. The document shows all categories considered as non-combustible. For any further information please refer to the aforementioned standard.

Safety

Although every effort is taken to remove all sharp edges from Masonry Support, gloves should always be worn when installing the product. Due to the complexity of some masonry support systems, the mass of units may require specific lifting plans for installation. Please refer to HSE guidance for advice on lifting operations.

Design and accreditations

ACS operate a UKAS accredited ISO 9001 Quality Management System, a BS EN 1090 Welding and Fabrication Quality Management System, and a BS EN 1090 Factory Production Control and UKCA Marking System in line with the requirements of the Construction Products Regulations (CPR). All these systems are independently assessed and certified by a UKAS accredited approval body.

All ACS products are designed to ensure that both the structural integrity and durability can be guaranteed and maintained throughout their life in service and beyond. ACS are certified to UKCA mark all ancillary components in line with the relevant harmonised standards and are certified to UKCA mark all welded and fabricated products to Execution Class 2 in line with BS EN 1090. ACS design and test all components in line with the latest British and European Standards relevant to the particular product.

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Fixings

The fixing is one of the most critical features of a load-bearing structural element and the correct installation of the fixing is of paramount importance in achieving and maintaining the structural integrity of a support system. Only fixings designed and supplied by ACS should be used in the installation of ACS Masonry Support. Special care should be taken, especially when installing concrete fixings. Guidance from ACS and the fixing manufacturer should be used to establish best practice such as:

— Drill diameters

— Embedment depths

— Edge distances

— Minimum spacing

— Installation procedure

— Tightening torques

Most of this information will be detailed on the design drawings illustrating the layouts and section details for the specially designed support system. ACS will design a system for approval that will work within the limits of the specified fixing. These designs should be adhered to - to ensure the design capacity of the fixing is achieved and maintained throughout the service life of the system. For further information on the correct specification and use of fixings please contact ACS.

ACS

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Get in touch to learn more about how ACS can help you deliver your next project.

0113 391 8200
info@acsstainless.co.uk
acsstainless.co.uk

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