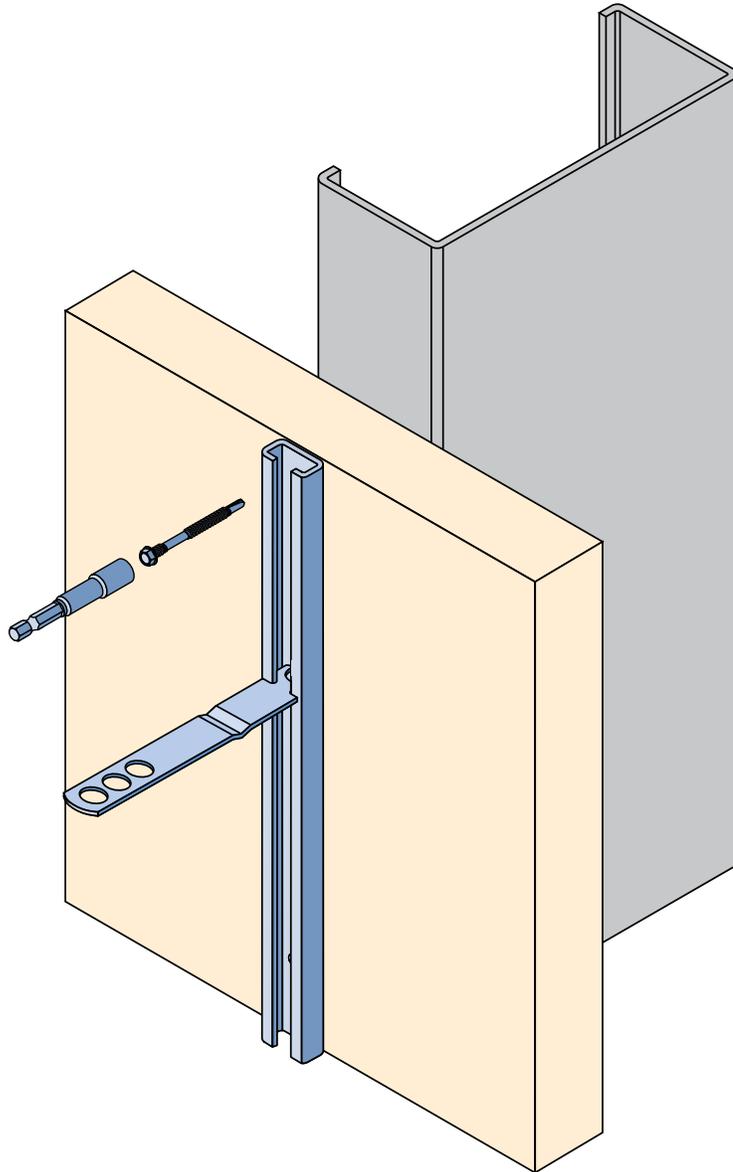


# HALFEN FRS FRAME RESTRAINT SYSTEM



## Introduction

Halfen FRS Frame Restraint System is specifically designed to provide an economical method of restraining external masonry back to steel studwork.

The Halfen FRS channel can be quickly and easily fixed to the metal studwork via the pre-drilled holes in the back of the channel and the Halfen FRS self drill fasteners. These fasteners accommodate the insulation board between the channel and the studwork and effectively secure the channel back to the studwork frame system. The standard Halfen FRS fasteners can accommodate 30-100mm rigid insulation board and can be fixed into steel studwork up to 6mm thick without the need for pre-drilling. Specially developed Halfen FRS ties can then be installed into the channel at the desired centres.

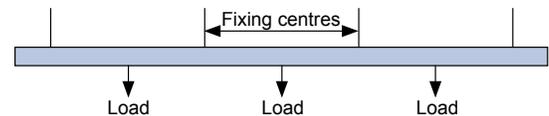
## Halfen FRS channels

The FRS channel is supplied with pre-punched 5.25mm diameter holes at 110mm centres. The close hole centres allows the channel to be cut on site and avoids excessive channel cantilever past the last fixing.

Standard channel length: 2700mm  
 Product Ref: FRS 25/14 2700  
 Order Code: 0280.400-00010

## Channel Loads

Fixing Centres (mm)	110	220	330	440	550
Loads (kN)	0.90	0.45	0.30	0.18	0.09



The allowable loads assume the FRS Channel is simply supported and are limited by one of the following:

- a maximum stress of 140 N/mm<sup>2</sup>
- a span/deflection ratio of 360
- a maximum deflection of 1mm

## Channel Section Properties

Mass (kg/m)	Z <sub>xx</sub> (cm <sup>3</sup> )	Z <sub>yy</sub> (cm <sup>3</sup> )	I <sub>xx</sub> (cm <sup>4</sup> )	I <sub>yy</sub> (cm <sup>4</sup> )
0.52	0.17	0.48	0.15	0.60

## Halfen FRS Fasteners

Halfen self drill high thread fasteners enable the easy and secure fixing of Halfen FRS channel to the steel stud system. The standard Halfen FRS fasteners are designed to accommodate 30-100mm rigid insulation board. For thicker insulation boards please consult Halfen.

### Material

Halfen recommend stainless steel self drill fasteners (material grade 1.4301, 304, A2) to fix the stainless steel FRS channel. Carbon steel with zinc corrosion resistant finish (bzip) is also available. Both types of fasteners have high quality case hardened carbon steel tips to enable fixing to steelwork from 1.5mm to 6.0mm thick without the need to drill a pilot hole.

The screw heads identify the material and finish:

- J2 = Carbon steel with a zinc corrosion resistant finish
- J3 = Stainless steel with a carbon tip

Carbon steel fasteners with an organic corrosion resistant finish available as a special order.

## Halfen FRS Ties

Halfen FRS Ties have been specifically designed to fit the Halfen FRS Channel and ensure a secure fit within the lips of the channel. Standard Halfen ties should not be used. All FRS ties are stainless steel (304/A2) and can be supplied in various lengths.

Minimum order quantity - 100No.

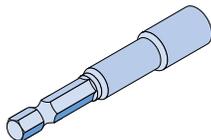
A - Ex-stock (usually 2-3 days)  
C - 10-15 days

① Delivery times are estimates. Please ask our sales staff for best delivery dates when placing order.

## Halfen HD Driver

8mm Hex head driver  
Recommended maximum drilling speed - 1500 rpm

Order code: 0389.080-00001



## Fastener range

Product reference	Length (mm)	Insulation thickness (mm)*	Material	Diameter (mm)		Order code 0389.070-
				low thread	high thread	
FRS-67-I-J3	67	32-45	Stainless steel with a carbon tip J3	5.5	6.3	00011
FRS-87-I-J3	87	39-65				00012
FRS-107-I-J3	107	49-85				00013
FRS-127-I-J3	127	69-105				00014
FRS-62-I-J2	62	35-47	Carbon steel with zinc corrosion resistant finish J2	5.5	6.3	00001
FRS-82-I-J2	82	51-67				00002
FRS-102-I-J2	102	65-87				00003
FRS-122-I-J2	122	85-107				00004

\* Based on 2mm thick steel studwork



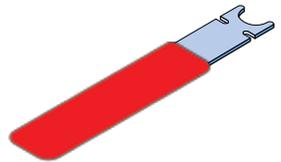
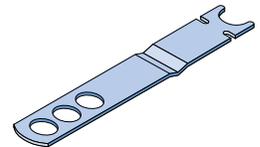
## Load capacities of fasteners

Nominal steel thickness (mm)	1.50	2.00	2.50	3.00	4.00	5.00	6.00
Steel yield strength (N/mm <sup>2</sup> )	350	350	350	350	275	275	275
Ultimate pullout load (kN)	2.38	3.65	4.28	5.71	8.59	11.5†	11.5†
Ultimate shear load	7.5						

† Limited by tensile strength of fastener

## Tie range

Product reference	Estimated lead time ①	Order code 0145.100-	Description
FRS-01-SS A2-100mm	A	00001	Bonded safety end ties
FRS-02-SS A2-125mm	A	00002	
FRS-03-SS A2-150mm	A	00003	
FRS-04-SS A2-175mm	C	00004	
FRS-05-SS A2-200mm	C	00005	
		0145.110-	
FRS-06-SS A2-100mm	C	00001	Debonded plain-end ties supplied with plastic debond sleeve
FRS-07-SS A2-125mm	C	00002	
FRS-08-SS A2-150mm	C	00003	
FRS-09-SS A2-175mm	C	00004	
FRS-10-SS A2-200mm	C	00005	



## Installation guide

Position the 2.7m lengths of Halfen FRS channel on to the rigid insulation board. Using the Halfen HD driver socket and FRS self drill fasteners fix the channel back to the steel studwork through the pre-drilled holes in the back of the channel.

The channel is normally fixed at maximum 450mm vertical centres. The cantilever past the last fixing must not exceed 30mm. When correctly installed the head of the fastener will be flat against the back of the channel.

Fastener and wall tie spacings should be based on the loads and detailing requirements of the specific building.

Care should be taken not to over torque the fasteners. The washers should only be compressed 25%. The channel is now ready to accept the Halfen FRS ties.

Halfen FRS wall ties should be embedded a minimum of 62.5mm into the mortar joint. Ensure the tie ends are fully embedded within the mortar joint and ensure that across the cavity the ties are free from mortar. The drip feature on the FRS tie should point down to prevent water crossing the cavity.