

## 2.3.15 DHS COMPONENTS

### 2.3.15.1 FASTBRACE

#### Product Description

Fastbrace is a lock-in bracing system which uses cleats with specially shaped lock-in tabs attached to each end of a 89 x 12 bracing channel, for use with DHS purlins up to and including DHS 300 series.

Pairs of Fastbrace are fitted from each side of the DHS purlin through prepunched 18mm diameter round bracing holes and are locked together, minimising erection time.

When a line of Fastbrace has been installed, the system provides resistance to restrict lateral movement of the DHS purlin and also supports the purlin flange.

#### Limitations for Use

The end brace at the first and last bracing points is secured using the standard bolted connection on the outermost cleat end.

To ensure straight alignment of the bracing system, the bracing holes can be offset by 25mm over the last purlin spacing to accommodate a bolted cleat. If this is not achieved, an angle of less than 2 degrees from a straight alignment is created, which in most cases is negligible and acceptable.

At the ridge, the lower bolt position is used to tie the bracing lines each side together using a sag rod.

Where back to back DHS purlins are used, bolted end brace components are required each side.

The durability of zinc coated products is dependent on the environment it will be used in, the grade of the zinc coating and the amount of maintenance that will be carried out over the life of the product. Refer Section 2.1.3 Environments for further guidelines.

#### Maintenance

Must be carried out in accordance with Section 2.1.6 Maintenance.

#### Handling and Storage

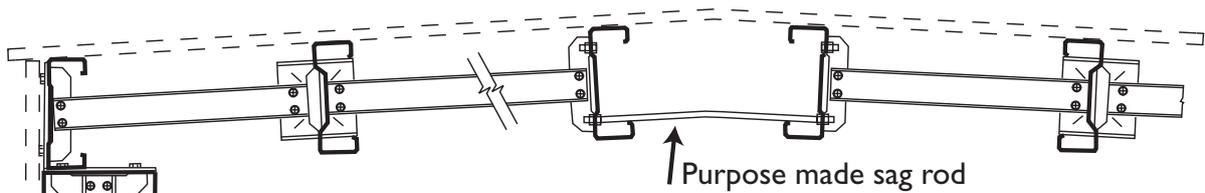
The Fastbrace system is delivered to site, usually strapped together, marked in bundles for installing in the same area of the roof structure. Refer to Section 2.6.2 Handling and Storage.

#### Material Specification

	Base metal thickness (BMT) (mm)	Steel grade	Yield strength $f_y$ (MPa)	Standard zinc weight Z (g/m <sup>2</sup> )
Bracing channel	1.15	G250	250	450
End cleats	2.00	G250	250	450

Tolerances:	Length	±	2mm
	Depth	±	1mm
	Width	±	1mm
	Web/flange angle		89 to 93 degrees

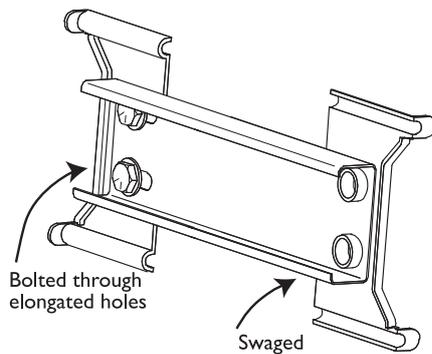
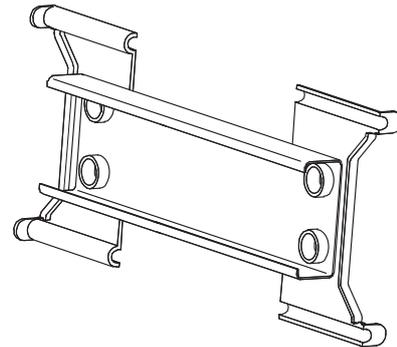
2.3.15.1 FASTBRACE *continued*



*General Arrangement of the Fastbrace System*

**Standard Brace** →

This is the standard Fastbrace component used almost everywhere in the system. It locks into other standard brace components, adjustable brace components, or end brace components.

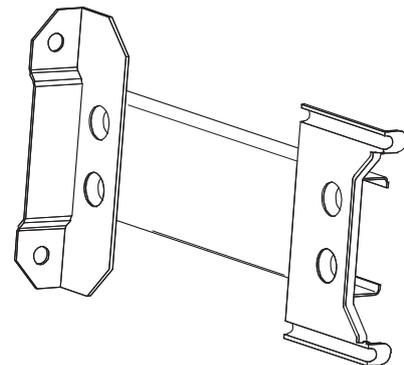


← **Adjustable Brace**

This is the adjustable component in the Fastbrace system and is used where some level of adjustment on the purlin line is required. The purlin is adjusted into line and the 12mm diameter hex flange bolts on the brace tightened. The adjustable brace offers up to 20mm of adjustment.

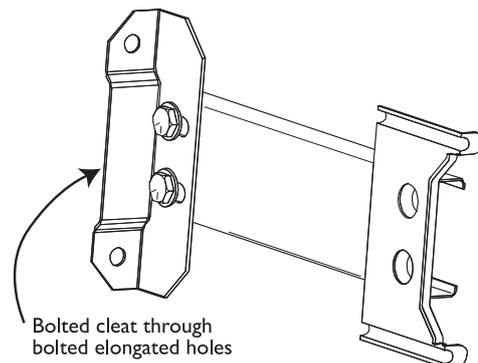
**End Brace** →

End brace is used at the end of a purlin bracing line, i.e. eaves or ridge, each side of a roof step, or at top and bottom girts on a wall. The end brace locks into either standard or adjustable brace at one end and is twisted between the purlin lips and bolted into position at the other end.



**Adjustable End Brace** →

Where the end purlin spacing is less than 800mm, an adjustable end brace with a bolted end cleat is available, as twisting of the end cleat is not practical. The adjustable cleat can be rotated up to 15 degrees from normal, to accommodate the change in angle from vertical portal to the roof slope of the rafter.



### 2.3.15.2 BOLTED CHANNEL BRACING

#### Product Description

The Dimond bolted channel bracing system uses cleats, clinched at each end of a 89 x 12 bracing channel, which are fastened through the DHS purlin with two bolts each end. Bolted channel bracing is used with the full DHS purlin range (DHS 150 to DHS 400 series).

This system uses bolted channel bracing between all purlins in the bracing line. Refer Section 2.3.9.1 for design basis.

At the ridge, the lower hole position is used to tie the bracing lines each side together using a sag rod.

#### Limitations for Use

The durability of zinc coated products is dependent on the environment it will be used in, the grade of the zinc coating and the amount of maintenance that will be carried out over the life of the product. Refer Section 2.1.3 Environments for further guidelines.

#### Maintenance

Must be carried out in accordance with Section 2.1.6 Maintenance.

#### Handling and Storage

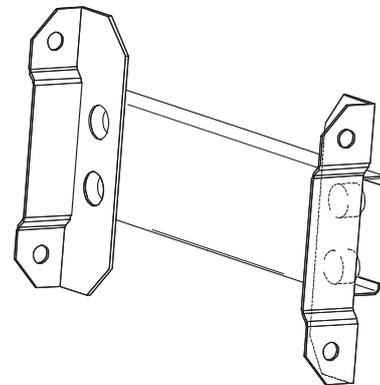
The channel bracing system is delivered to site, usually strapped together, marked in bundles for installing in the same area of the roof structure. Refer to Section 2.6.2 Handling and Storage.

For the material specifications of the bracing refer to Section 2.3.15.1.

#### Components

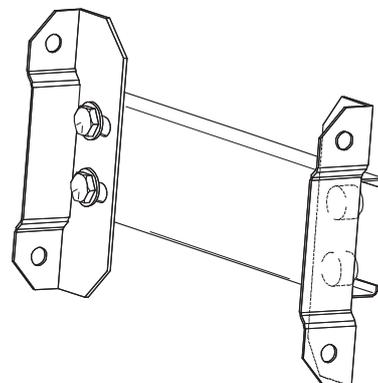
##### Bolted Channel Brace

This is the standard component used in the bolted channel bracing system and is used almost everywhere.



##### Adjustable Bolted Channel Brace

This is the adjustable component in the bolted channel bracing system and is used where some level of adjustment on the purlin line is required. The purlin is adjusted into line and the 12mm diameter hex flange bolts on the brace tightened. The adjustable brace offers up to 20mm of adjustment.



### 2.3.15.3 PORTAL CLEATS

These are typically supplied by the fabricator or installer and welded on to the portal frame. Cleat thicknesses range from 6mm to 12mm thickness. The hole centres are laid out to suit hole punchings in the DHS purlin, refer to Section 2.3.16.3 Hole Locations for details. The cleat height may need to be increased where an expansion step in the roof is detailed.

### 2.3.15.4 SAG RODS

Alternating sag rods and channel have been superseded by the use of Fastbrace and the bolted channel bracing as the preferred bracing method. However the rods are still used as a cranked sag rod at the ridge to join each side together. Usually supplied by the steel erectors and fabricators in 12mm diameter engineering round bar grade 250 MPa, galvanised or electroplated finishes, with double nuts and washers each end. Where loads require, 16mm diameter engineering round bar can be used.

### 2.3.15.5 TIMBER STRIP

Timber strip battens are fitted once the netting is in place to avoid roof insulation squashing down, over the purlin, as the roofing is screwed down.

Usually supplied and fixed on site by the fabricator. However Dimond recommend using an ex 50mm x 50mm timber batten or a depth of batten equal to the thickness of the insulation gauged two sides and treated to H3.1 timber preservation such as boric or LOSP (low, organic solvent preservative). The CCA treatment process should be avoided, due to chemical contact with galvanised surface.

The batten is fixed onto the top flange of the DHS Purlins, once the netting or safety mesh has been laid on the structure. Fixings to be 10g – 16 x 75mm. Countersunk rib head – wingtek. The coating finish is a zinc plated AS 3566 class 2 finish. Longer, other types of fixings may need to be considered when the timber depth is greater than 65mm.

Spacing of the wingteks is dependent on the DHS material thickness it is being fixed into. Refer to the following table.

DHS Purlin BMT (mm)	Max. screw centres (mm)
1.15	250
1.25 to 2.0	300

At these centres, the maximum outward load on the nailing strip is 5.0 kN/m.