

## CROSS-SHAPED POST BASE

### PARTIAL INTERLOCKING IN TWO DIRECTIONS

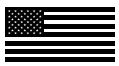
Resistant to bending moment in both directions, for the creation of a partial interlocking in the bracing of canopies and shelters. Strength and stiffness values tested.

### TWO VERSIONS

Without holes for use with self drilling dowels, smooth dowels or bolts; with holes, for use with XEPOX epoxy adhesive. Both versions are hot-dip galvanised for maximum durability in outdoor settings.

### CONCEALED JOINT

Totally concealed installation. Different strength levels depending on the fastening configuration selected.



#### USA DESIGN VALUES

CANADA, EU and more design values available online.



VIDEO

#### SERVICE CONDITION



#### MATERIAL

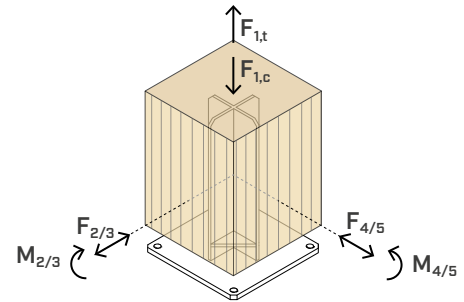
S235  
HD655

S235 carbon steel with hot galvanising  
55 µm

#### GROUND CLEARANCE

from 1.8 to 2 in

#### EXTERNAL LOADS



#### VIDEO

Scan the QR Code and watch the video on our YouTube channel



### FIELDS OF USE

Ground joints for moment-resistant columns in both directions.  
Pergolas, carports, gazebos.

Suitable for columns in:

- solid timber softwood and hardwood
- glulam, LVL



## FREE STRUCTURES

The base constraint can absorb horizontal loads allowing to realize pergolas or gazebos which do not require bracings and are open on all sides.

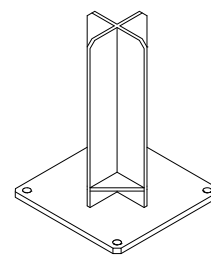
## XEPOX

The cross shaped configuration and the fastener disposition are designed to guarantee a moment-resisting capacity, creating a semi-rigid constraint at the base.

## CODES AND DIMENSIONS

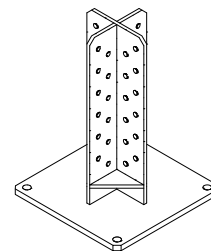
XS10 - fastening with dowels or bolts

| CODE           | bottom plate<br>[in]   | lower holes<br>[n. x in] | H<br>[in] | knife plate thickness<br>[in] | cross shaped blades | pcs |
|----------------|------------------------|--------------------------|-----------|-------------------------------|---------------------|-----|
| <b>XS10120</b> | 8 5/8 x 8 5/8 x 0.39   | 4 x Ø0.51                | 12 3/16   | 0.24                          | smooth              | 1   |
| <b>XS10160</b> | 10 1/4 x 10 1/4 x 0.47 | 4 x Ø0.67                | 12 5/16   | 0.31                          | smooth              | 1   |



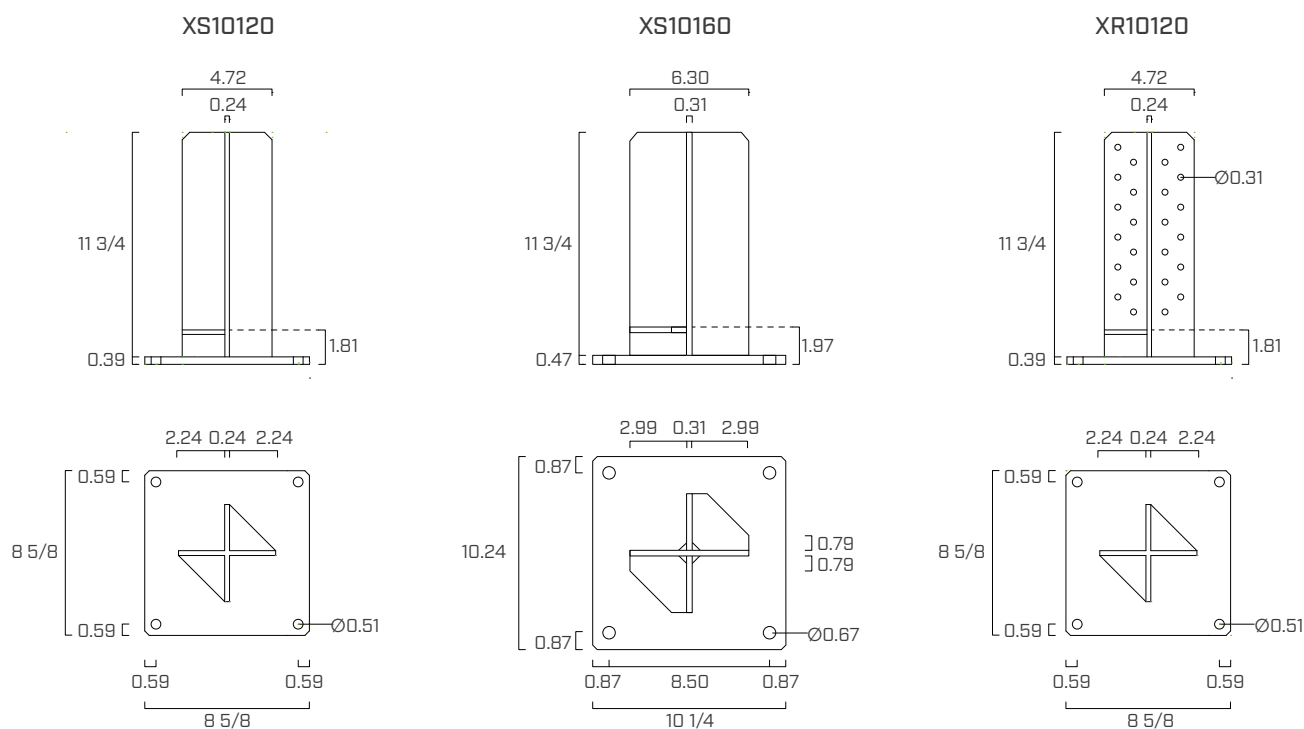
XR10 - fastening with resin for wood

| CODE           | bottom plate<br>[in] | lower holes<br>[n. x in] | H<br>[in] | knife plate thickness<br>[in] | cross shaped blades | pcs |
|----------------|----------------------|--------------------------|-----------|-------------------------------|---------------------|-----|
| <b>XR10120</b> | 8 5/8 x 8 5/8 x 0.39 | 4 x Ø0.51                | 12 3/16   | 0.24                          | holes Ø0.31         | 1   |



Not holding CE marking.

## GEOMETRY

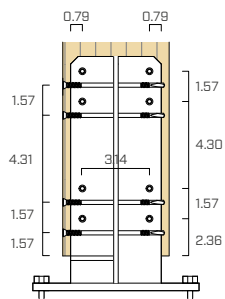


## ADDITIONAL PRODUCTS - FASTENING

| type               | description                 |  | d         |             | support |
|--------------------|-----------------------------|--|-----------|-------------|---------|
|                    |                             |  | [mm]      | [in]        |         |
| <b>SBD</b>         | self-drilling dowel         |  | 7,5       | 0.30        |         |
| <b>STA</b>         | smooth dowel                |  | 12        | 0.48        |         |
| <b>KOS</b>         | hexagonal head bolt         |  | M12       | 0.48        |         |
| <b>XEPOX F</b>     | epoxy adhesive              |  | -         | -           |         |
| <b>AB1</b>         | CE1 expansion anchor        |  | 12 - 16   | 0.48 - 0.63 |         |
| <b>SKR/SKR EVO</b> | screw-in anchor             |  | 12 - 16   | 0.48 - 0.63 |         |
| <b>ABE</b>         | CE1 expansion anchor        |  | M12 - M16 | 0.48 - 0.63 |         |
| <b>VIN-FIX</b>     | vinyl ester chemical anchor |  | M12 - M16 | 0.48 - 0.63 |         |
| <b>HYB-FIX</b>     | hybrid chemical anchor      |  | M12 - M16 | 0.48 - 0.63 |         |
| <b>EPO-FIX</b>     | epoxy chemical anchor       |  | M12 - M16 | 0.48 - 0.63 |         |

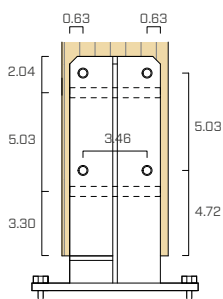
## XS10 FASTENING CONFIGURATIONS

XS10120



**S1 - SBD**

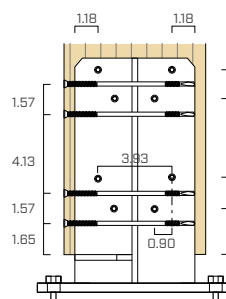
SBD self-drilling  
dowels



**S1 - STA**

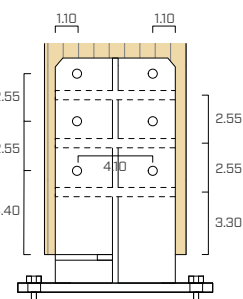
smooth  
dowels STA

XS10160



**S2 - SBD**

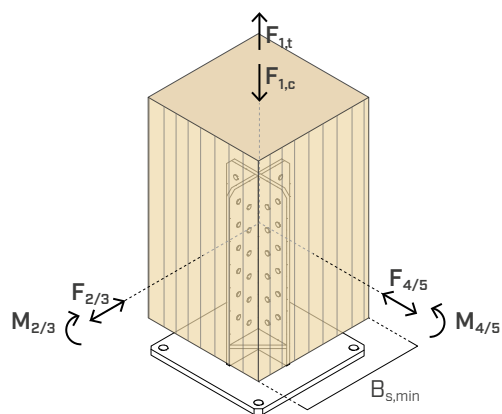
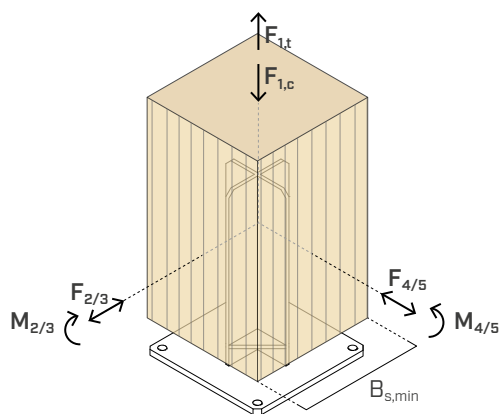
SBD self-drilling  
dowels



**S2 - STA**

smooth  
dowels STA

## STRUCTURAL VALUES



### XS10

| CODE    | config.  | fasteners for timber |                          | column<br>$B_{s,min}$<br>[in] | COMPRESSION               | TENSION                  | SHEAR <sup>(1)(2)</sup>                       | MOMENT <sup>(1)(2)</sup>                           |                                                  |
|---------|----------|----------------------|--------------------------|-------------------------------|---------------------------|--------------------------|-----------------------------------------------|----------------------------------------------------|--------------------------------------------------|
|         |          | type                 | pcs - Ø x L<br>[in x in] |                               | $F_{1,c}$ timber<br>[lbf] | $F_{1,t}$ steel<br>[lbf] | $F_{2/3}$ steel =<br>$F_{4/5}$ steel<br>[lbf] | $M_{2/3}$ timber =<br>$M_{4/5}$ timber<br>[lbf-in] | $M_{2/3}$ steel =<br>$M_{4/5}$ steel<br>[lbf-in] |
| XS10120 | S1 - SBD | SBD                  | 16 - Ø0.30 x 5 5/16      | 5.5 x 5.5                     | 16,456                    | 3,597                    | 787                                           | 14,161                                             | 10,001                                           |
|         | S2 - STA | STA                  | 8 - Ø0.48 x 4 3/4        | 5.5 x 5.5                     | 12,140                    | 3,597                    | 758                                           | 11,506                                             | 10,001                                           |
| XS10160 | S1 - SBD | SBD                  | 16 - Ø0.30 x 6 7/8       | 7.5 x 7.5                     | 17,468                    | 7,801                    | 1,538                                         | 15,931                                             | 25,402                                           |
|         | S2 - STA | STA                  | 12 - Ø0.48 x 6 1/4       | 7.5 x 7.5                     | 18,142                    | 7,801                    | 1,378                                         | 20,357                                             | 25,402                                           |

### XR10

| CODE    | configurations                | column<br>$B_{s,min}$<br>[in] | COMPRESSION                              | TENSION                  | SHEAR <sup>(1)(2)</sup>                       | MOMENT <sup>(1)(2)</sup>                         |
|---------|-------------------------------|-------------------------------|------------------------------------------|--------------------------|-----------------------------------------------|--------------------------------------------------|
|         |                               |                               | $F_{1,c}$ timber <sup>(4)</sup><br>[lbf] | $F_{1,t}$ steel<br>[lbf] | $F_{2/3}$ steel =<br>$F_{4/5}$ steel<br>[lbf] | $M_{2/3}$ steel =<br>$M_{4/5}$ steel<br>[lbf-in] |
| XR10120 | XEPOX adhesive <sup>(3)</sup> | 6.3 x 6.3                     | 23,605                                   | 3,597                    | 787                                           | 10,001                                           |

NOTES and GENERAL PRINCIPLES see page pagina 6.

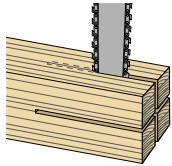
## STIFFNESS

| CODE    | fasteners for timber | configuration |           | $K_{2/3,ser} = K_{4/5,ser}^{(5)}$<br>[kips-ft/rad] |
|---------|----------------------|---------------|-----------|----------------------------------------------------|
|         |                      | pcs           | Ø<br>[in] |                                                    |
| XS10120 | S1 - SBD             | 16            | 0.30      | 40.6                                               |
|         | S2 - STA             | 8             | 0.48      | 103.2                                              |
| XS10160 | S1 - SBD             | 16            | 0.30      | 258                                                |
|         | S2 - STA             | 12            | 0.48      | 118                                                |

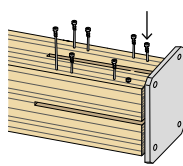


## MOUNTING

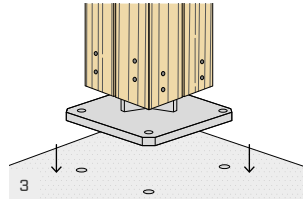
### XS10



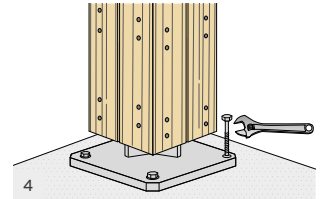
1



2

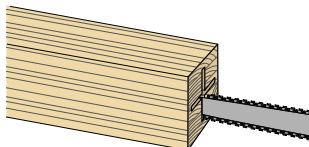


3

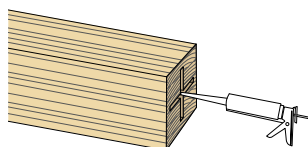


4

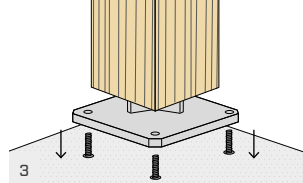
### XR10



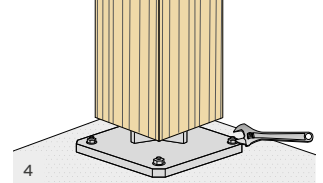
1



2

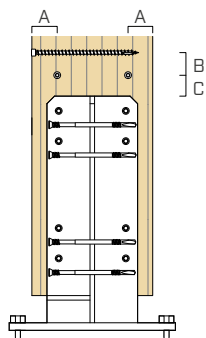


3



4

## REINFORCEMENT PERPENDICULAR TO THE GRAIN



If the post base needs to withstand the bending moment, it is needed to insert VGZ Ø7 (0.28") screws as a reinforcement perpendicular to the grain.

|          |                 |        |      |
|----------|-----------------|--------|------|
| <b>A</b> | min $a_{2CG}$   | [inch] | 0.83 |
| <b>B</b> | min $a_{CROSS}$ | [inch] | 0.43 |
| <b>C</b> | min $a_{1CG}$   | [inch] | 2.20 |

The minimum distances in the table refer to a Ø7 (0.28") diameter screw.

### NOTES

- <sup>(1)</sup> Provide orthogonal reinforcement to the grain for each load direction, installing 2 screws VGZ Ø7 (0.28") x  $B_{s,min}$  above the vertical flanges.
- <sup>(2)</sup> Limit value of the bottom plate for shear stress application at a height of  $e = 8.66-9$  in (220-230 mm).
- <sup>(3)</sup> We recommend using XEPOX F. The amount of resin required depends on the thickness of the routing:
  - 20.3 oz for 3/8" routing;
  - 27 oz for 1/2" routing.
 The values are obtained with a waste coefficient of 1.4.
- <sup>(4)</sup> Calculated according to internal analysis.
- <sup>(5)</sup> Values obtained from the test.

### GENERAL PRINCIPLES

- The strength values indicated in the table are valid in compliance with the fasteners installation according to the configurations indicated.
- The verification of the fastener-to-concrete connection must be carried out separately.
- The moment and shear strength values are calculated individually. In case of combined loading the verification must be carried out separately.
- For the calculation process a timber with a specific gravity of 0.42 has been considered.
- For the timber side: the values are calculated according to the NDS (2024). The tabled reference design values are unfactored and should be multiplied by the adjustment factors to get the adjusted design values.
- For the steel side: calculations are based on AISC 360-16 and test-validated FEM analysis.
- A gap of 1/8" between timber column and steel X cruciform was considered on each side of steel plate.