

CROSS-SHAPED POST BASE

PARTIAL INTERLOCKING IN TWO DIRECTIONS

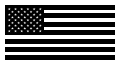
Resistant to bending moment in both directions, for the creation of a partial interlocking in the bracing of canopies and shelters. Strength and stiffness values tested.

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

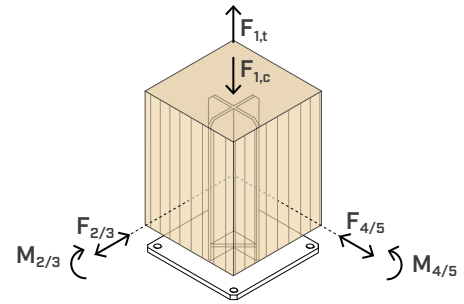
S235
HD655

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.

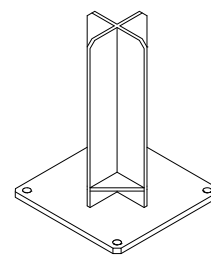
XEPOX

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

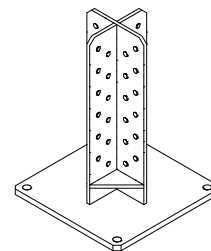
XS10 - fastening with dowels or bolts

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



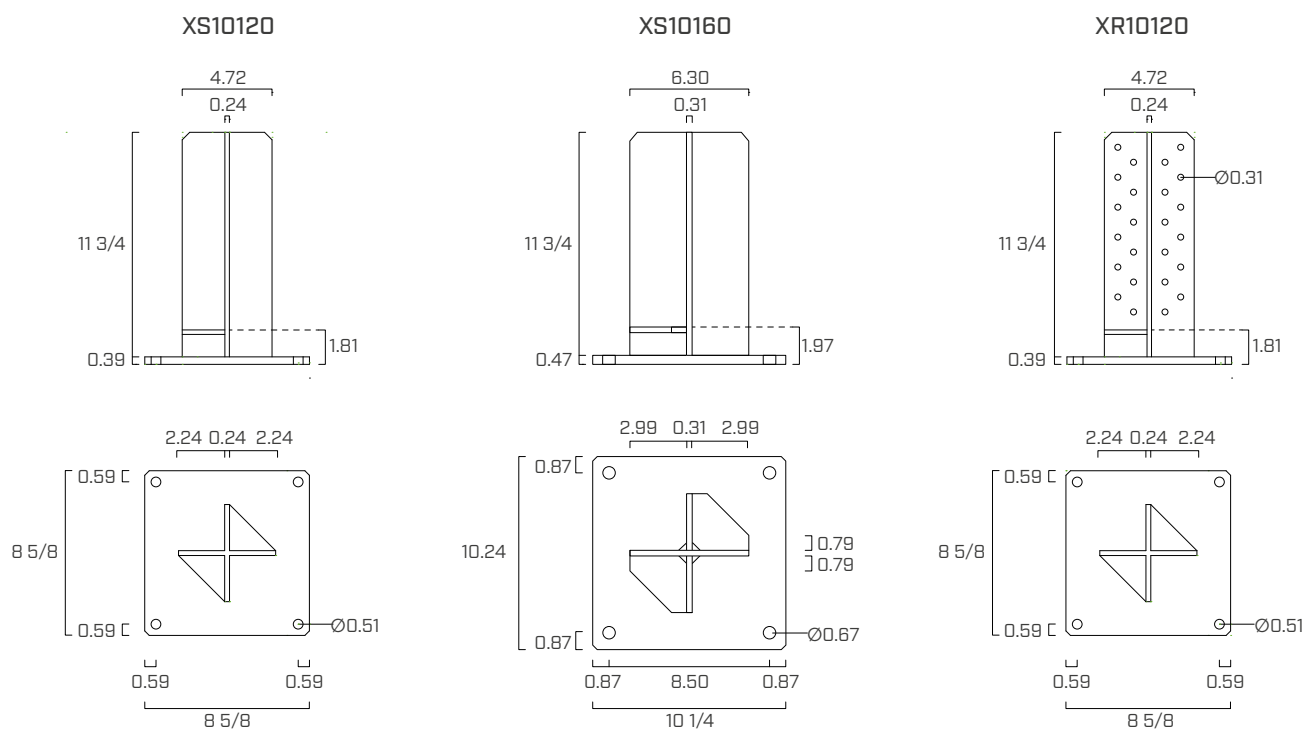
XR10 - fastening with resin for wood

CODE	bottom plate [in]	lower holes [n. x in]	H [in]	knife plate thickness [in]	cross shaped blades	pcs
XR10120	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

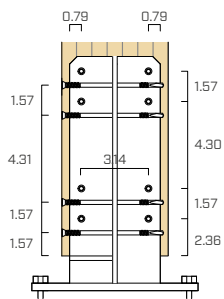


ADDITIONAL PRODUCTS - FASTENING

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

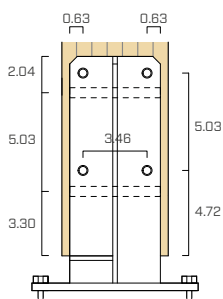
XS10 FASTENING CONFIGURATIONS

XS10120



S1 - SBD

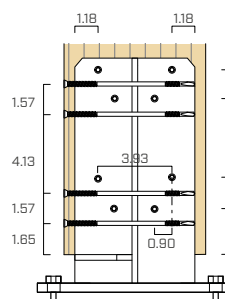
SBD self-drilling
dowels



S1 - STA

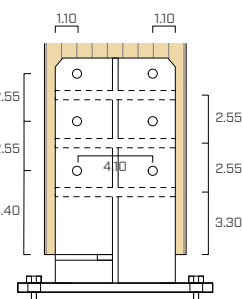
smooth
dowels STA

XS10160



S2 - SBD

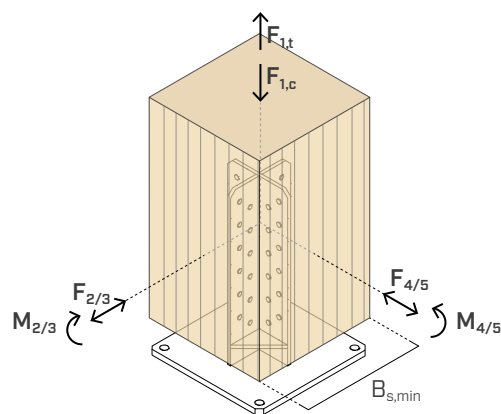
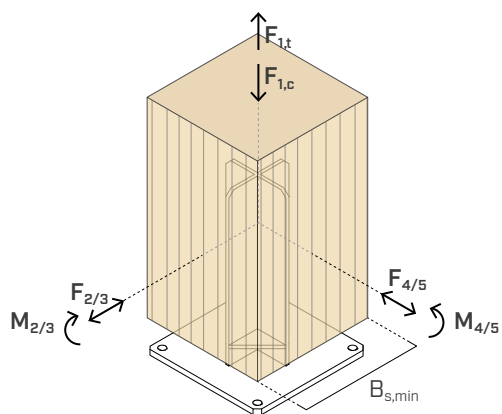
SBD self-drilling
dowels



S2 - STA

smooth
dowels STA

STRUCTURAL VALUES



XS10

CODE	config.	fasteners for timber		column $B_{s,min}$ [in]	COMPRESSION	TENSION	SHEAR ⁽¹⁾⁽²⁾	MOMENT ⁽¹⁾⁽²⁾	
		type	pcs - Ø x L [in x in]		$F_{1,c}$ timber [lbf]	$F_{1,t}$ steel [lbf]	$F_{2/3}$ steel = $F_{4/5}$ steel [lbf]	$M_{2/3}$ timber = $M_{4/5}$ timber [lbf-in]	$M_{2/3}$ steel = $M_{4/5}$ steel [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 $B_{s,min}$ [in]	COMPRESSION	TENSION	SHEAR ⁽¹⁾⁽²⁾	MOMENT ⁽¹⁾⁽²⁾
			$F_{1,c}$ timber ⁽⁴⁾ [lbf]	$F_{1,t}$ steel [lbf]	$F_{2/3}$ steel = $F_{4/5}$ steel [lbf]	$M_{2/3}$ steel = $M_{4/5}$ steel [lbf-in]
XR10120	XEPOX adhesive ⁽³⁾	6.3 x 6.3	5858	3,597	787	10,001

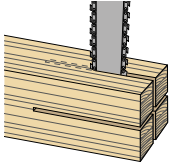
NOTES and GENERAL PRINCIPLES see page pagina 6.

STIFFNESS

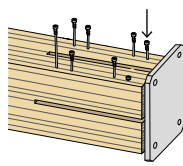
CODE	fasteners for timber	configuration		$K_{2/3,ser} = K_{4/5,ser}^{(5)}$ [kips-ft/rad]
		pcs	Ø [in]	
XS10120	S1 - SBD	16	0.30	40.6
	S2 - STA	8	0.48	103.2
XS10160	S1 - SBD	16	0.30	258
	S2 - STA	12	0.48	118

MOUNTING

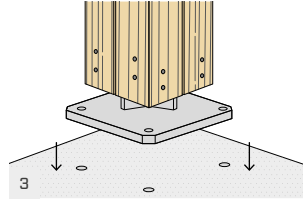
XS10



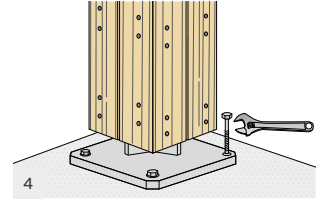
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2

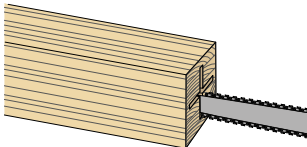


3

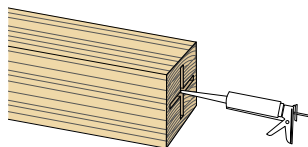


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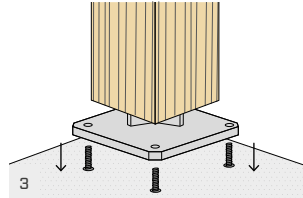
XR10



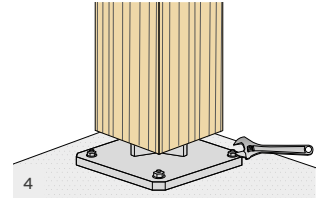
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2



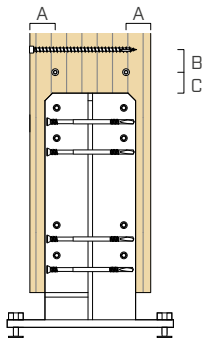
3



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.

A	min a_{2CG}	[inch]	0.83
B	min a_{CROSS}	[inch]	0.43
C	min a_{1CG}	[inch]	2.20

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

NOTES

- ⁽¹⁾ 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.
- ⁽²⁾ Limit value of the bottom plate for shear stress application at a height of $e = 8.66-9$ in (220-230 mm).
- ⁽³⁾ 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;
 - 14 oz for 5/16" routing.
 The values are obtained with a waste coefficient of 1.4.
- ⁽⁴⁾ Not established as an ASD capacity. However, the stated value includes an assumed safety factor of 5 applied to the calculated XEPOX shear resistance.

$$F_{1,c,timber} = n \cdot n_s \cdot f \cdot \pi d^2 / (4\gamma)$$
 where $n=48$ epoxy dowels, $n_s=2$ shear planes per dowel, $d=0.31$ in. hole diameter, $\gamma=5$ assumed reduction factor, and f (3.92 ksi) is the mean XEPOX F punch-shear strength reported in the XEPOX technical datasheet (ASTM D732).
- ⁽⁵⁾ 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.