ESCR - STRUCTURAL WOOD SCREW

The ESCR is a washer head screw designed to connect two or more timber members together.

UK-DoP-e13-0796, ETA-13/0796

FEATURES

Material

Heat Treated Carbon Steel

Finish: Electrogalvanised with Yellow Chromate and anti-friction coating. Zinc coating thickness ≥ 5µm.

Warning: Industry studies show that hardened fasteners can
experience performance problems in wet or corrosive environments.
Accordingly, the ESCR wood screws should only be used in dry, interior and non-corrosive environments e.g. Service class 1 & 2.

Benefits

The ESCR screw has a reamer to allow for smooth driving of the shank. The large washer head gives high head pull-through resistance while allowing the timber members to close up firmly.

APPLICATIONS

Suitable On

I-Joists, SIP Panels, Roof Trusses, Timber Frame Panels, Composite Panels, Engineered Timber, Metal Web Joists.

When to Use

Connection of multi-ply timbers.

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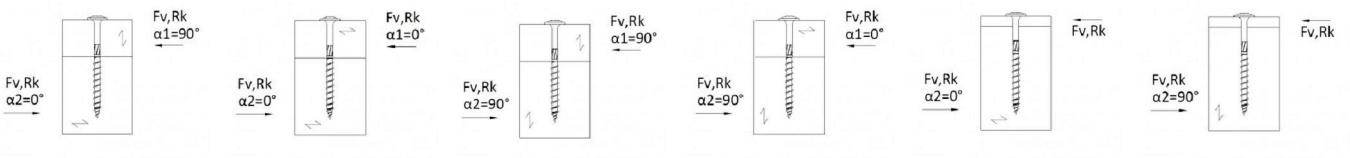
SIMPSON Strong-Tie

TECHNICAL DATA



Dimensions

References	Thread diameter [df] [mm]	Total length [L] [mm]	Head diameter [mm]	Shank diameter	Max fixture thickness [T_{fix}] [mm]	Thread length [lf] [mm]	bit	Packaging [pcs]
ESCR8.0x380								
ESCR8.0X80	8	80	20	5.9	26	54	T-40	50
ESCR8.0X100		100	20	5.9	46	54	T-40	50
ESCR8.0X120		120	20	5.9	66	54	T-40	50
ESCR8.0X140		140	20	5.9	56	84	T-40	50
ESCR8.0X160		160	20	5.9	76	84	T-40	50
ESCR8.0X180		180	20	5.9	80	100	T-40	50
ESCR8.0X200		200	20	5.9	100	100	T-40	50
ESCR8.0X220		220	20	5.9	120	100	T-40	50
ESCR8.0X240		240	20	5.9	140	100	T-40	50
ESCR8.0X260		260	20	5.9	160	100	T-40	50
ESCR8.0X280		280	20	5.9	180	100	T-40	50
ESCR8.0X300		300	20	5.9	200	100	T-40	50
ESCR8.0X320		320	20	5.9	220	100	T-40	50
ESCR8.0X340		340	20	5.9	240	100	T-40	50
ESCR8.0X360		360	20	5.9	260	100	T-40	50
ESCR8.0X400		400	20	5.9	300	100	T-40	50
ESCR10.0X120	10	120	25	7.1	60	60	T-50	25
ESCR10.0X140		140	25	7.1	80	60	T-50	25
ESCR10.0X160		160	25	7.1	60	100	T-50	25
ESCR10.0X180		180	25	7.1	80	100	T-50	25
ESCR10.0X200		200	25	7.1	100	100	T-50	25
ESCR10.0X220		220	25	7.1	120	100	T-50	25
ESCR10.0X240		240	25	7.1	140	100	T-50	25
ESCR10.0X260		260	25	7.1	160	100	T-50	25
ESCR10.0X280		280	25	7.1	180	100	T-50	25
ESCR10.0X300		300	25	7.1	200	100	T-50	25
ESCR10.0X320		320	25	7.1	220	100	T-50	25
ESCR10.0X340		340	25	7.1	240	100	T-50	25
ESCR10.0X360		360	25	7.1	260	100	T-50	25
ESCR10.0X400		400	25	7.1	300	100	T-50	25

Characteristic values

References	Thread diameter [df] [mm]	Characteristic capacities - Timber class C24 [kN]							
		Tension Resistance [Fax,Rk] [kN]	Head resistance [Fhead,Rk] [kN]	Shear resistance - timber to timber [Fv,Rk] [kN]				Shear resistance - Steel to timber [Fv,Rk] [kN]	
				α_1=90° et α_2=0° [1]	α_1=0° et α_2=0° [2]	α_1=90° et α_2=0° [3]	α_1=0° et α_2=90° [4]	α_2=0° [5]	α_2=90° [6]
ESCR8.0X80	8	4.62	7.04	a)	a)	a)	a)	6.18	5.3
ESCR8.0X100		4.62	7.04	4.14	4.71	3.96	4.35	6.18	5.3

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References	Thread diameter [df] [mm]	Characteristic capacities - Timber class C24 [kN]							
		Tension Resistance [Fax,Rk] [kN]	Head resistance [Fhead,Rk] [kN]	Shear resistance - timber to timber [Fv,Rk] [kN]				Shear resistance - Steel to timber [Fv,Rk] [kN]	
				α_1=90° et α_2=0° [1]	α_1=0° et α_2=0° [2]	α_1=90° et α_2=0° [3]	α_1=0° et α_2=90° [4]	α_2=0° [5]	α_2=90° [6]
ESCR8.0X120		4.62	7.04	4.35	4.71	4.09	4.35	6.18	5.3
ESCR8.0X140		7.19	7.04	4.96	5.31	4.69	4.96	6.82	5.94
ESCR8.0X160		7.19	7.04	4.96	5.31	4.69	4.96	6.82	5.94
ESCR8.0X180		8.56	7.04	4.96	5.31	4.69	4.96	7.17	6.28
ESCR8.0X200		8.56	7.04	4.96	5.31	4.69	4.96	7.17	6.28
ESCR8.0X220		8.56	7.04	4.96	5.31	4.69	4.96	7.17	6.28
ESCR8.0X240		8.56	7.04	4.96	5.31	4.69	4.96	7.17	6.28
ESCR8.0X260		8.56	7.04	4.96	5.31	4.69	4.96	7.17	6.28
ESCR8.0X280		8.56	7.04	4.96	5.31	4.69	4.96	7.17	6.28
ESCR8.0X300		8.56	7.04	4.96	5.31	4.69	4.96	7.17	6.28
ESCR8.0X320		8.56	7.04	4.96	5.31	4.69	4.96	7.17	6.28
ESCR8.0X340		8.56	7.04	4.96	5.31	4.69	4.96	7.17	6.28
ESCR8.0X360		8.56	7.04	4.96	5.31	4.69	4.96	7.17	6.28
ESCR8.0X400		8.56	7.04	4.96	5.31	4.69	4.96	7.17	6.28
ESCR10.0X120	10	5.7	9.5	5.67	6.17	5.3	5.67	8.14	6.91
ESCR10.0X140		5.7	9.5	5.67	6.17	5.3	5.67	8.14	6.91
ESCR10.0X160		9.5	9.5	6.62	7.12	6.25	6.62	9.09	7.86
ESCR10.0X180		9.5	9.5	6.62	7.12	6.25	6.62	9.09	7.86
ESCR10.0X200		9.5	9.5	6.62	7.12	6.25	6.62	9.09	7.86
ESCR10.0X220		9.5	9.5	6.62	7.12	6.25	6.62	9.09	7.86
ESCR10.0X240		9.5	9.5	6.62	7.12	6.25	6.62	9.09	7.86
ESCR10.0X260		9.5	9.5	6.62	7.12	6.25	6.62	9.09	7.86
ESCR10.0X280		9.5	9.5	6.62	7.12	6.25	6.62	9.09	7.86
ESCR10.0X300		9.5	9.5	6.62	7.12	6.25	6.62	9.09	7.86
ESCR10.0X320		9.5	9.5	6.62	7.12	6.25	6.62	9.09	7.86
ESCR10.0X340		9.5	9.5	6.62	7.12	6.25	6.62	9.09	7.86
ESCR10.0X360		9.5	9.5	6.62	7.12	6.25	6.62	9.09	7.86
ESCR10.0X400		9.5	9.5	6.62	7.12	6.25	6.62	9.09	7.86

a) The thickness of the secondary member is not sufficient according to ETA-13/0796 annex 7 table A6.9, so no values are given for these dimensions in case of wood to wood connection. For Steel to wood connection no minimal thickness is defined.

- *The tension resistance of the thread have been calculated with an angle between 45° and 90° compared with the grain*
- *The geometry and mechanical properties are defined in ETA-13/0769.*
- *The values are for a timber class C24 # = 350 kg/m³.*
- *The thickness of the secondary member (AD) has been chosen equal to the length of the smooth part.*
- *All values have been calculated with a thread totally drown in the primary member.*
- *For connection steel to timber, the thickness of the steel plate is equal to the diameter for calculation.*
- *Subject to setting and printing error*
- *The values given are available to help the design. Projects must be carried out exclusively by duly licensed professionals.*

ESCR Mechanical Properties

References	Characteristic Tensile Capacity<br / > $f_{tens,k}$ [kN]	Characteristic Yield Moment $M_{y,k}$ [kN]	Characteristic Head Pull-Through Parameter<br / > $f_{head,k}$ [N/mm2]	Characteristic Withdrawal Parameter<br / > $f_{ax,k,90°}$ [N/mm2]
ESCR8.0 Range	22.7	22.6	17.6	10.7

Mechanical properties

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References	Characteristic Yield Moment [My,k] [Nm]	Characteristic Withdrawal Parameter [fax,k,90°] [N/mm²]	Characteristic Head Pull-Through Parameter [fhead,k] [N/mm²]	Characteristic Tensile Capacity [ftens,k] [kN]	Characteristic torsional strength [ftor,k] [kN]
ESCR8.0X80	22.6	10.7	17.6	22.7	25.6
ESCR8.0X100	22.6	10.7	17.6	22.7	25.6
ESCR8.0X120	22.6	10.7	17.6	22.7	25.6
ESCR8.0X140	22.6	10.7	17.6	22.7	25.6
ESCR8.0X160	22.6	10.7	17.6	22.7	25.6
ESCR8.0X180	22.6	10.7	17.6	22.7	25.6
ESCR8.0X200	22.6	10.7	17.6	22.7	25.6
ESCR8.0X220	22.6	10.7	17.6	22.7	25.6
ESCR8.0X240	22.6	10.7	17.6	22.7	25.6
ESCR8.0X260	22.6	10.7	17.6	22.7	25.6
ESCR8.0X280	22.6	10.7	17.6	22.7	25.6
ESCR8.0X300	22.6	10.7	17.6	22.7	25.6
ESCR8.0X320	22.6	10.7	17.6	22.7	25.6
ESCR8.0X340	22.6	10.7	17.6	22.7	25.6
ESCR8.0x380	22.6	10.7	17.6	22.7	25.6
ESCR8.0X360	22.6	10.7	17.6	22.7	25.6
ESCR8.0X400	22.6	10.7	17.6	22.7	25.6
ESCR10.0X120	33	9.5	15.2	33.2	47.5
ESCR10.0X140	33	9.5	15.2	33.2	47.5
ESCR10.0X160	33	9.5	15.2	33.2	47.5
ESCR10.0X180	33	9.5	15.2	33.2	47.5
ESCR10.0X200	33	9.5	15.2	33.2	47.5
ESCR10.0X220	33	9.5	15.2	33.2	47.5
ESCR10.0X240	33	9.5	15.2	33.2	47.5
ESCR10.0X260	33	9.5	15.2	33.2	47.5
ESCR10.0X280	33	9.5	15.2	33.2	47.5
ESCR10.0X300	33	9.5	15.2	33.2	47.5
ESCR10.0X320	33	9.5	15.2	33.2	47.5
ESCR10.0X340	33	9.5	15.2	33.2	47.5
ESCR10.0X360	33	9.5	15.2	33.2	47.5
ESCR10.0X400	33	9.5	15.2	33.2	47.5

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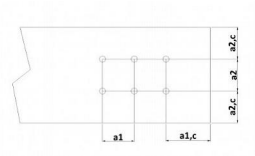
INSTALLATION

Assemblage poteau-poutre

Fixation chevron sur faitage

Assemblage de panneaux de plancher sur solives

Minimal distance



References	Min distances b)			
	a1 [mm]	a2 [mm]	a1,c [mm]	a2,c [mm]
ESCR 8,0	40	40	40	32
ESCR 10,0	70	50	100	40

The spacing a2 can be reduce to 2,5xØ, when a1 x a2 > 25 x Ø². Don't apply to Ø > 8mm.
The minimal spacing are given according to ETA-13/0796 A.7.3 for axial loading. For shear, please refer to EN1995-1-1

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