Blacks

PROUDLY 100% NEW ZEALAND OWNED

Order Direct Online

REISSER®

Timber Construction Screws Product Guide

DIFFERENTIATION OF MATERIALS

UTILISATION CLASSES

The utilisation classes from Eurocode 5 / DIN EN 1995-1-1 are listed below. They are categorised according to the climatic conditions to which timber components are to be exposed in use after installation and are used to calculate the proof of stability (structural analysis). They must not be confused with the use classes (formerly hazard classes).

NKL 1

UTILISATION CLASS 1 (NKL 1)

This utilisation class refers to applications that are found in dry indoor areas.

NKL 2

UTILISATION CLASS 2 (NKL 2)

This refers to rooms with temporarily increased relative humidity. This could be in a bathroom, for example, or under a roof.

NKL 3

UTILISATION CLASS 3 (NKL 3)

This utilisation class refers to weathered outdoor areas and rooms that are temporarily or permanently exposed to high humidity. Stainless steel screws should be used in these cases.

ATMOSPHERIC CORROSIVITY CATEGORIES

The atmospheric corrosivity categories classify the corrosion load of metals in different environments. They are defined in ISO 9223 and are based on factors such as humidity, temperature, sulphur dioxide pollution and salt content of the air.
This classification helps in the selection of suitable corrosion protection measures for metal components.

	C1	C2	C3	C4	C5
HUMIDITY	Rare condensation	Rare condensation	Occasional condensation	Frequent condensation	High frequency Condensation
AIR POLLUTION	very low e.g. offices, schools, museums, deserts, centre of the Arctic/ Antarctic	low e.g. warehouses, sports halls, rural areas, small towns	moderate e.g. food production plants, laundries, breweries, dairies, urban areas	high e.g. industrial plants, swimming pools, urban areas with air pollution	very high e.g. mines, non-ventilated halls in subtropical and tropical climate zones, industrial areas, coastal areas, sheltered spots on the coastline
CORROSIVENESS	insignificant	low	moderate	high	very high

These notes are only recommendations. If necessary, preliminary tests should be carried out.

HBS COUNTERSUNK HEAD

THE WOOD CONSTRUCTION SCREW

PRODUCT FAMILY

Material:	Steel
Surface:	LT Protect 1000 (C4 Atmospheric Corrosion Coating)
Head shape:	Countersunk head
Drive:	TX 30, 40, 50
Thread type:	Partial thread (L1)
Dia. [mm]:	6.0 - 10.0
Lengths [mm]:	40 - 400

FIELD OF APPLICATION

Wood construction, roofing, rafter insulation

PROCESSING

Pre-drilling may be necessary depending on wood quality and application situation.

PRODUCT INFORMATION

Reliability you can depend on with REISSER calculation software.

REISSER dimensioning software

PRODUCT FEATURES

ETA-11/0106

TX

- Excellent power transmission
- No slipping
- Secure processing

Countersunk head with milling ribs

- Milling ribs ensure effective milled recessing of the head in the material
- Flush countersinking

End mill

- Reduced screw-in resistance
- Reduced stress on components

Coarse thread

- Fast screwing thanks to large pitch
- High load-bearing capacity
- Reduced screw-in resistance

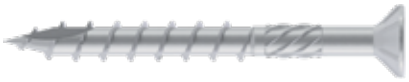
Cutting point

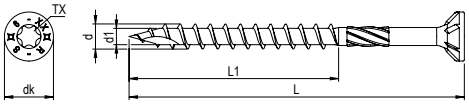
- Pre-drills and minimises splitting of the material
- Immediate screw start

Material/surface

- T Protect 1000 (C4 Atmospheric Corrosion Coating)
- Slide coating reduces the screw-in resistance

HBS COUNTERSUNK HEAD





ETA-11/0106

FIELD OF APPLICATION

Wood construction, roofing, rafter insulation

Constructions made of solid and laminated wood.

TECHNICAL DATA

Material: Steel
Surface: LT Protect 1000 (C4 Atmospheric Corrosion Coating)
Product features: Countersunk head, TX, Milling ribs, End mill, Cutting point
Thread type: Partial thread (L1)

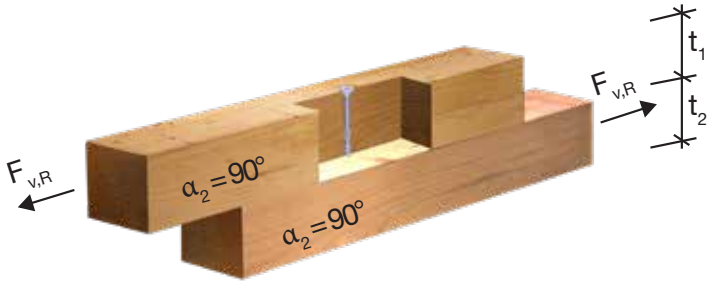
PRODUCT INFORMATION

From length 80 mm with end mill.
Reliability you can depend on with REISSER calculation software.

d [mm]	L [mm]	L1 [mm]	d1 [mm]	dk [mm]	ETA	Small pack [pcs.]	Art.No. GTIN
TX 30							
6.0	100	60	3.6	12.0	•	100	WSRCS06100
	120	70	3.6	12.0	•	100	WSRCS06120
	140	70	3.6	12.0	•	100	WSRCS06140
	160	70	3.6	12.0	•	100	WSRCS06160
	180	70	3.6	12.0	•	100	WSRCS06180
TX 40							
8.0	80	60	5.2	14.5	•	50	WSRCS08080
	100	60	5.2	14.5	•	50	WSRCS08100
	120	60	5.2	14.5	•	50	WSRCS08120
	140	80	5.2	14.5	•	50	WSRCS08140
	160	80	5.2	14.5	•	50	WSRCS08160
	180	80	5.2	14.5	•	50	WSRCS08180
	200	100	5.2	14.5	•	50	WSRCS08200
	220	100	5.2	14.5	•	50	WSRCS08220
	240	100	5.2	14.5	•	50	WSRCS08240
	260	100	5.2	14.5	•	50	WSRCS08260
	280	100	5.2	14.5	•	50	WSRCS08280
	300	100	5.2	14.5	•	50	WSRCS08300
TX 50							
10.0	120	60	6.3	17.8	•	50	WSRCS10120
	140	80	6.3	17.8	•	50	WSRCS10140
	160	80	6.3	17.8	•	50	WSRCS10160
	180	80	6.3	17.8	•	50	WSRCS10180
	200	80	6.3	17.8	•	50	WSRCS10200
	220	80	6.3	17.8	•	50	WSRCS10220
	240	80	6.3	17.8	•	50	WSRCS10240

HBS COUNTERSUNK HEAD

WOOD-WOOD SHEAR CONNECTION



Shear capacity
Wood-wood connection

Single-cut wood-to-wood connection

α_i Angle between screw axis and fibre direction of the component

t_1 Thickness of the head end component

Component 2: $t_2 \geq \ell_{req} - t_1$
(Minimum component thicknesses must be observed)

$F_{v,R}$ Load capacity of a screw for shearing

ℓ_{req} Required screw length to achieve the specified load capacity

Load capacities apply to a char. bulk density
$\rho_k \geq 350$ kg/m^3.

Example

t_1 [mm]	$F_{v,R}$ [kN]	ℓ_{req} [mm]
5	1	3
	2	4

1 Characteristic values $F_{v,Rk}$

2 Design value of the load-bearing capacity $F_{v,Rd}$ for $k_{mod} = 0.8$ and $\gamma_M = 1.3$

3 ℓ_{req} for $F_{v,Rk}$

4 ℓ_{req} for $F_{v,Rd}$

5 Thickness of the head end component

General information

Carbon steel screws may only be used in service classes 1 and 2.

It is not necessary to pre-drill the components.

For connections with several screws, the effective number of screws n_{ef} must be taken into account.

Specifications and requirements according to ETA-11/0106 and DIN EN 1995-1-1:2010-12 with DIN EN 1995-1-1/NA:2013-08 must be taken into account.

Calculation bases:

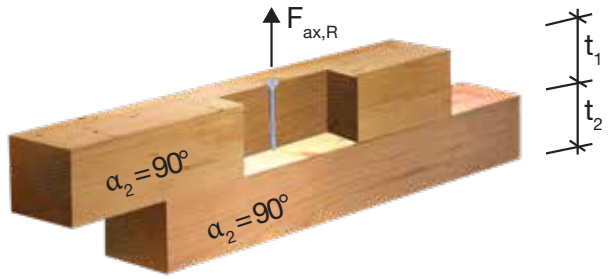
ETA-11/0106
DIN EN 1995-1-1:2010-12
DIN EN 1995-1-1/NA:2013-08

Shear capacity $F_{v,Rk}$ resp. $F_{v,Rd}$ with required minimum screw length ℓ_{req}

t_1 [mm]	Ø 6 [mm]		Ø 8 [mm]		Ø 10 [mm]	
	$F_{v,R}$ [kN]	ℓ_{req} [mm]	$F_{v,R}$ [kN]	ℓ_{req} [mm]	$F_{v,R}$ [kN]	ℓ_{req} [mm]
80	1.93	120	3.05	140		
	1.19	120	1.87	140		
100	1.93	140	3.05	160	4.12	160
	1.19	140	1.87	160	2.54	160
120	1.93	160	3.05	180	4.12	180
	1.19	160	1.87	180	2.54	180
140	1.93	180	3.05	200	4.12	200
	1.19	180	1.87	200	2.54	200
160	2.34	200	3.05	220	4.12	220
	1.44	200	1.87	220	2.54	220
180	2.34	220	3.05	240	4.12	240
	1.44	220	1.87	240	2.54	240
200	2.34	240	3.05	260	4.12	260
	1.44	240	1.87	260	2.54	260
220	2.34	260	3.05	280	4.12	280
	1.44	260	1.87	280	2.54	280
240	2.34	280	3.05	300	4.12	300
	1.44	280	1.87	300	2.54	300
260	2.34	300	3.05	320	4.12	320
	1.44	300	1.87	320	2.54	320
280			3.05	340	4.12	340
			1.87	340	2.54	340
300			3.05	360	4.12	360
			1.87	360	2.54	360
320			3.05	380	4.12	380
			1.87	380	2.54	380
340			3.05	400	4.12	400
			1.87	400	2.54	400
360			2.21	400	2.74	400
			1.36	400	1.68	400

HBS COUNTERSUNK HEAD

WOOD-WOOD TENSILE CONNECTION



Pull-out capacity $F_{ax,Rk}$ resp. $F_{ax,Rd}$ with required minimum screw length ℓ_{req}

t_1 [mm]	Ø 6 [mm]		Ø 8 [mm]		Ø 10 [mm]	
	$F_{v,R}$ [kN]	ℓ_{req} [mm]	$F_{v,R}$ [kN]	ℓ_{req} [mm]	$F_{v,R}$ [kN]	lreq [mm]
80	1.35	120	1.98	140		
	0.83	120	1.22	140		
100	1.35	140	1.98	160	2.98	160
	0.83	140	1.22	160	1.83	160
120	1.35	160	1.98	180	2.98	180
	0.83	160	1.22	180	1.83	180
140	1.35	180	1.98	200	2.98	200
	0.83	180	1.22	200	1.83	200
160	3	200	1.98	220	2.98	220
	1.85	200	1.22	220	1.83	220
180	3	220	1.98	240	2.98	240
	1.85	220	1.22	240	1.83	240
200	3	240	1.98	260	2.98	260
	1.85	240	1.22	260	1.83	260
220	3	260	1.98	280	2.98	280
	1.85	260	1.22	280	1.83	280
240	3	280	1.98	300	2.98	300
	1.85	280	1.22	300	1.83	300
260	3	300	1.98	320	2.98	320
	1.85	300	1.22	320	1.83	320
280			1.98	340	2.98	340
			1.22	340	1.83	340
300			1.98	360	2.98	360
			1.22	360	1.83	360
320			1.98	380	2.98	380
			1.22	380	1.83	380
340			1.98	400	2.98	400
			1.22	400	1.83	400

Pull-out capacity
Wood-wood connection

Single-cut wood-to-wood connection

α_i Angle between screw axis and fibre direction of the component

t_1 Thickness of the head end component

Component 2: $t_2 \geq \ell_{req} - t_1$
(Minimum component thicknesses must be observed)

$F_{ax,R}$ Load-bearing capacity of a screw in axial direction (thread pull-out, head pull-through, tear-off resistance)

ℓ_{req} Required screw length to achieve the specified load capacity

Load capacities apply to a char. bulk density
$\rho_k \geq 350$ kg/m^3.

Example

t1	Fax,R	lreq
5	1	3
	2	4

1 Characteristic values $F_{ax,Rk}$
2 Design value of the load-bearing capacity $F_{ax,Rd}$ for $k_{mod} = 0.8$ and $\gamma_M = 1.3$
3 ℓ_{req} for $F_{ax,Rk}$
4 ℓ_{req} for $F_{ax,Rd}$
5 Thickness of the head end component

General information

Carbon steel screws may only be used in service classes 1 and 2.

It is not necessary to pre-drill the components.

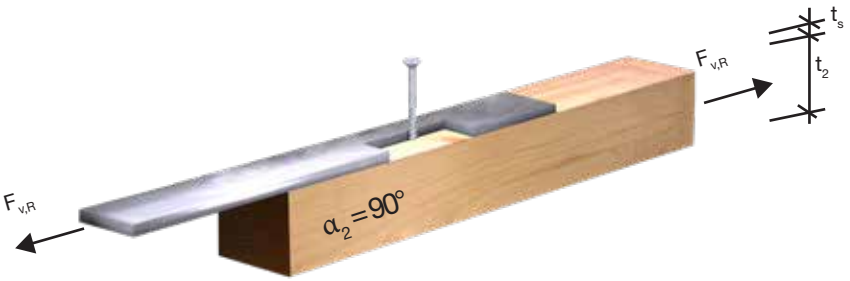
For connections with several screws, the effective number of screws n_{ef} must be taken into account.

Specifications and requirements according to ETA-11/0106 and DIN EN 1995-1-1:2010-12 with DIN EN 1995-1-1/NA:2013-08 must be taken into account.

Calculation bases:
ETA-11/0106
DIN EN 1995-1-1:2010-12
DIN EN 1995-1-1/NA:2013-08

HBS COUNTERSUNK HEAD

STEEL-WOOD SHEAR CONNECTION



Shear capacity
Steel-wood connection

Single-cut steel-wood connection

α_i Angle between screw axis and fibre direction of the component

t_s Thickness of the steel component

t_2 Thickness of the timber component

$F_{v,R}$ Load capacity of a screw for shearing

ℓ_{req} Required screw length to achieve the specified load capacity

Load capacities apply to a char. bulk density $\rho_k \geq 350$ kg/m^3.

For countersunk heads, a countersunk hole is required in the sheet steel.

Example

t_2 [mm]	$F_{v,R}$ [kN]	ℓ_{req} [mm]
5	1	3
	2	4

1 Characteristic values $F_{v,Rk}$
2 Design value of the load-bearing capacity $F_{v,Rd}$ for $k_{mod} = 0.8$ and $\gamma_M = 1.3$
3 ℓ_{req} for $F_{v,Rk}$
4 ℓ_{req} for $F_{v,Rd}$
5 Thickness of the timber component

General information

Carbon steel screws may only be used in service classes 1 and 2.

It is not necessary to pre-drill the components.

For connections with several screws, the effective number of screws n_{ef} must be taken into account.

Specifications and requirements according to ETA-11/0106 and DIN EN 1995-1-1:2010-12 with DIN EN 1995-1-1/NA:2013-08 must be taken into account.

Calculation bases:

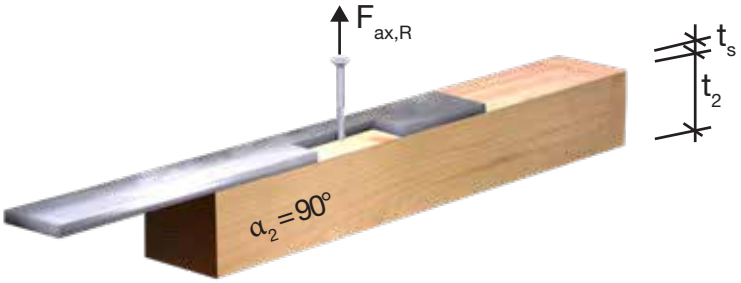
ETA-11/0106
DIN EN 1995-1-1:2010-12
DIN EN 1995-1-1/NA:2013-08

Shear capacity $F_{v,Rk}$ resp. $F_{v,Rd}$ with required minimum screw length ℓ_{req}

t_2 [mm]	Ø 6 [mm] $t_{s,min}$ = 6 mm $t_{s,max}$ = 8 mm		Ø 8 [mm] $t_{s,min}$ = 8 mm $t_{s,max}$ = 10 mm		Ø 10 [mm] $t_{s,min}$ = 10 mm $t_{s,max}$ = 13 mm	
	$F_{v,R}$ [kN]	ℓ_{req} [mm]	$F_{v,R}$ [kN]	ℓ_{req} [mm]	$F_{v,R}$ [kN]	ℓ_{req} [mm]
80	3.19	80	4.93	80		
	1.96	80	3.03	80		
100	3.37	100	4.93	80	6.43	100
	2.08	100	3.03	80	3.96	100
120	3.56	120	4.93	80	6.43	100
	2.19	120	3.03	80	3.96	100
140	3.56	120	5.37	130	6.98	140
	2.19	120	3.3	130	4.29	140
160	3.56	120	5.37	130	6.98	140
	2.19	120	3.3	130	4.29	140
180	3.56	120	5.37	130	6.98	140
	2.19	120	3.3	130	4.29	140
200	3.75	200	5.37	130	6.98	140
	2.31	200	3.3	130	4.29	140
220	3.75	200	5.37	130	6.98	140
	2.31	200	3.3	130	4.29	140
240	3.75	200	5.37	130	6.98	140
	2.31	200	3.3	130	4.29	140
260	3.75	200	5.37	130	6.98	140
	2.31	200	3.3	130	4.29	140
280	3.75	200	5.37	130	6.98	140
	2.31	200	3.3	130	4.29	140
300	3.75	200	5.37	130	6.98	140
	2.31	200	3.3	130	4.29	140
320	3.75	200	5.37	130	6.98	140
	2.31	200	3.3	130	4.29	140
340	3.75	200	5.37	130	6.98	140
	2.31	200	3.3	130	4.29	140
360	3.75	200	5.37	130	6.98	140
	2.31	200	3.3	130	4.29	140
380	3.75	200	5.37	130	6.98	140
	2.31	200	3.3	130	4.29	140
400	3.75	200	5.37	130	6.98	140
	2.31	200	3.3	130	4.29	140
420	3.75	200	5.37	130	6.98	140
	2.31	200	3.3	130	4.29	140
440	3.75	200	5.37	130	6.98	140
	2.31	200	3.3	130	4.29	140

HBS COUNTERSUNK HEAD

STEEL-WOOD TENSILE CONNECTION



Pull-out capacity $F_{ax,Rk}$ resp. $F_{ax,Rd}$ with required minimum screw length ℓ_{req}

t_2	Ø 6 [mm] $t_{s,min}$ = 6 mm $t_{s,max}$ = 8 mm		Ø 8 [mm] $t_{s,min}$ = 8 mm $t_{s,max}$ = 10 mm		Ø 10 [mm] $t_{s,min}$ = 10 mm $t_{s,max}$ = 13 mm	
	$F_{v,R}$ [kN]	ℓ_{req} [mm]	$F_{v,R}$ [kN]	ℓ_{req} [mm]	$F_{v,R}$ [kN]	ℓ_{req} [mm]
80	3.75	80	5.28	80		
	2.31	80	3.25	80		
100	4.5	100	5.28	80	6.6	100
	2.77	100	3.25	80	4.06	100
120	5.25	120	5.28	80	6.6	100
	3.23	120	3.25	80	4.06	100
140	5.25	120	7.04	130	8.8	140
	3.23	120	4.33	130	5.42	140
160	5.25	120	7.04	130	8.8	140
	3.23	120	4.33	130	5.42	140
180	5.25	120	7.04	130	8.8	140
	3.23	120	4.33	130	5.42	140
200	6	200	7.04	130	8.8	140
	3.69	200	4.33	130	5.42	140
220	6	200	7.04	130	8.8	140
	3.69	200	4.33	130	5.42	140
240	6	200	7.04	130	8.8	140
	3.69	200	4.33	130	5.42	140
260	6	200	7.04	130	8.8	140
	3.69	200	4.33	130	5.42	140
280	6	200	7.04	130	8.8	140
	3.69	200	4.33	130	5.42	140
300	6	200	7.04	130	8.8	140
	3.69	200	4.33	130	5.42	140
320	6	200	7.04	130	8.8	140
	3.69	200	4.33	130	5.42	140
340	6	200	7.04	130	8.8	140
	3.69	200	4.33	130	5.42	140
360	6	200	7.04	130	8.8	140
	3.69	200	4.33	130	5.42	140
380	6	200	7.04	130	8.8	140
	3.69	200	4.33	130	5.42	140
400	6	200	7.04	130	8.8	140
	3.69	200	4.33	130	5.42	140
420	6	200	7.04	130	8.8	140
	3.69	200	4.33	130	5.42	140
440	6	200	7.04	130	8.8	140
	3.69	200	4.33	130	5.42	140

Pull-out capacity
Steel-wood connection

Single-cut steel-wood connection

- α_i Angle between screw axis and fibre direction of the component
- t_s Thickness of the steel component
- t_2 Thickness of the timber component
- $F_{ax,R}$ Load-bearing capacity of a screw in axial direction (thread pull-out, head pull-through, tear-off resistance)
- ℓ_{req} Required screw length to achieve the specified load capacity

Load capacities apply to a char. bulk density $\rho_k \geq 350$ kg/m^3.

For countersunk heads, a countersunk hole is required in the sheet steel.

Example

t_2 [mm]	$F_{ax,R}$ [kN]	ℓ_{req} [mm]
5	1	3
	2	4

1 Characteristic values $F_{ax,Rk}$
2 Design value of the load-bearing capacity $F_{ax,Rd}$ with k_{mod} = 0.8 and γ_M = 1.3
3 ℓ_{req} for $F_{ax,Rk}$
4 ℓ_{req} for $F_{ax,Rd}$
5 Thickness of the timber component

General information

Carbon steel screws may only be used in service classes 1 and 2.

It is not necessary to pre-drill the components.

For connections with several screws, the effective number of screws n_{ef} must be taken into account.

Specifications and requirements according to ETA-11/0106 and DIN EN 1995-1-1:2010-12 with DIN EN 1995-1-1/NA:2013-08 must be taken into account.

Calculation bases:

ETA-11/0106
DIN EN 1995-1-1:2010-12
DIN EN 1995-1-1/NA:2013-08

HBS WAFER HEAD

THE WAFER HEAD WOOD SCREW WITH CUTTING POINT

PRODUCT FAMILY

Material:	Steel
Surface:	LT Protect 1000 (C4 Atmospheric Corrosion Coating)
Head shape:	Wafer head
Drive:	TX 30, 40, 50
Thread type:	Partial thread (L1)
Dia. [mm]:	6.0 - 10.0
Lengths [mm]:	40 - 500

FIELD OF APPLICATION

Wooden buildings, wooden houses with panel construction, on-roof insulation

PROCESSING

Pre-drilling may be necessary depending on wood quality and application situation.

PRODUCT INFORMATION

Reliability you can depend on with REISSER calculation software.

REISSER dimensioning software

PRODUCT FEATURES

TX

- Excellent power transmission
- No slipping
- Secure processing

Wafer head

- With ander-head reinforcement
- Secure hold
- High contact pressure
- Flat contact surface

End mill

- Reduced screw-in resistance
- Reduced stress on components

Coarse thread

- Fast screwing thanks to large pitch
- High load-bearing capacity
- Reduced screw-in resistance

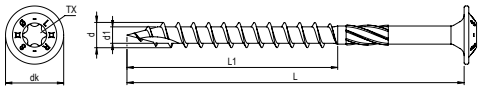
Cutting point

- Pre-drills and minimises splitting of the material
- Immediate screw start

Material/surface

- LT Protect 1000 (C4 Atmospheric Corrosion Coating)
- Slide coating reduces the screw-in resistance

HBS WAFER HEAD



FIELD OF APPLICATION

Wooden buildings, wooden houses with panel construction, on-roof insulation

Constructions made of solid and laminated wood.

TECHNICAL DATA

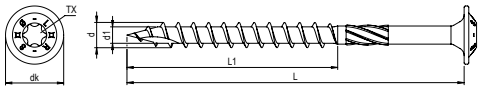
Material: Steel
Surface: T Protect 1000 (C4 Atmospheric Corrosion Coating)
Product features: Wafer head, TX, End mill, Cutting point
Thread type: Partial thread (L1)

PRODUCT INFORMATION

From length 80 mm with end mill.
Reliability you can depend on with REISSER calculation software.

d [mm]	L [mm]	L1 [mm]	d1 [mm]	dk [mm]	ETA	Small pack [pcs.]	Art.No. GTIN
TX 30							
6.0	50	50	3.6	13.8	•	100	WSRCW06050
	60	50	3.6	13.8	•	100	WSRCW06060
	70	50	3.6	13.8	•	100	WSRCW06070
	80	50	3.6	13.8	•	100	WSRCW06080
	100	60	3.6	13.8	•	100	WSRCW06100
	120	70	3.6	13.8	•	100	WSRCW06120
	140	70	3.6	13.8	•	100	WSRCW06140
	160	70	3.6	13.8	•	100	WSRCW06160
	180	70	3.6	13.8	•	100	WSRCW06180
	200	80	3.6	13.8	•	100	WSRCW06200
TX 40							
8.0	80	60	5.2	22.0	•	50	WSRCW08080
	100	60	5.2	22.0	•	50	WSRCW08100
	120	60	5.2	22.0	•	50	WSRCW08120
	140	80	5.2	22.0	•	50	WSRCW08140
	160	80	5.2	22.0	•	50	WSRCW08160
	180	80	5.2	22.0	•	50	WSRCW08180
	200	100	5.2	22.0	•	50	WSRCW08200
	220	100	5.2	22.0	•	50	WSRCW08220
	240	100	5.2	22.0	•	50	WSRCW08240
	260	100	5.2	22.0	•	50	WSRCW08260
	280	100	5.2	22.0	•	50	WSRCW08280
	300	100	5.2	22.0	•	50	WSRCW08300

HBS WAFER HEAD



FIELD OF APPLICATION

Wooden buildings, wooden houses with panel construction, on-roof insulation

Constructions made of solid and laminated wood.

TECHNICAL DATA

Material: Steel
Surface: T Protect 1000 (C4 Atmospheric Corrosion Coating)
Product features: Wafer head, TX, End mill, Cutting point
Thread type: Partial thread (L1)

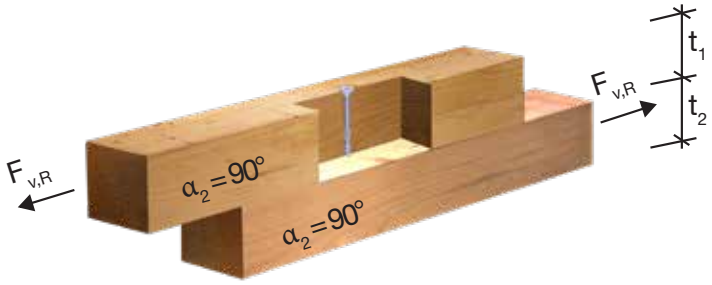
PRODUCT INFORMATION

From length 80 mm with end mill.
Reliability you can depend on with REISSER calculation software.

d [mm]	L [mm]	L1 [mm]	d1 [mm]	dk [mm]	ETA	Small pack [pcs.]	Art.No. GTIN
TX 50							
10.0	120	60	6.3	24.0	•	50	WSRCW10120
	140	80	6.3	24.0	•	50	WSRCW10140
	160	80	6.3	24.0	•	50	WSRCW10160
	180	80	6.3	24.0	•	50	WSRCW10180
	200	80	6.3	24.0	•	50	WSRCW10200
	220	80	6.3	24.0	•	50	WSRCW10220
	240	80	6.3	24.0	•	50	WSRCW10240
	260	80	6.3	24.0	•	50	WSRCW10260
	280	80	6.3	24.0	•	50	WSRCW10280
	300	80	6.3	24.0	•	50	WSRCW10300
	340	80	6.3	24.0	•	50	WSRCW10340

HBS WAFER HEAD

WOOD-WOOD SHEAR CONNECTION



Shear capacity
Wood-wood connection

Single-cut wood-to-wood connection

α_i Angle between screw axis and fibre direction of the component

t_1 Thickness of the head end component

Component 2: $t_2 \geq \ell_{req} - t_1$
(Minimum component thicknesses must be observed)

$F_{v,R}$ Load capacity of a screw for shearing

ℓ_{req} Required screw length to achieve the specified load capacity

Load capacities apply to a char. bulk density
$\rho_k \geq 350$ kg/m^3.

Example

t_1 [mm]	$F_{v,R}$ [kN]	ℓ_{req} [mm]
5	1	3
	2	4

1 Characteristic values $F_{v,Rk}$

2 Design value of the load-bearing capacity $F_{v,Rd}$ for $k_{mod} = 0.8$ and $\gamma_M = 1.3$

3 ℓ_{req} for $F_{v,Rk}$

4 ℓ_{req} for $F_{v,Rd}$

5 Thickness of the head end component

General information

Carbon steel screws may only be used in service classes 1 and 2.

It is not necessary to pre-drill the components.

For connections with several screws, the effective number of screws n_{ef} must be taken into account.

Specifications and requirements according to ETA-11/0106 and DIN EN 1995-1-1:2010-12 with DIN EN 1995-1-1/NA:2013-08 must be taken into account.

Calculation bases:

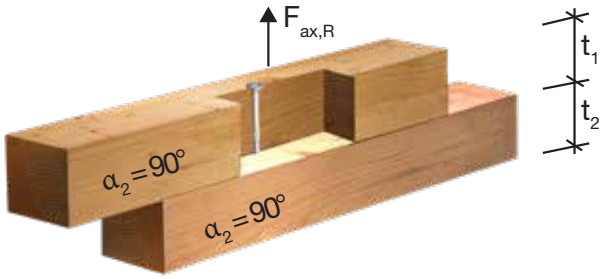
ETA-11/0106
DIN EN 1995-1-1:2010-12
DIN EN 1995-1-1/NA:2013-08

Shear capacity $F_{v,Rk}$ resp. $F_{v,Rd}$ with required minimum screw length ℓ_{req}

t_1 [mm]	Ø 6 [mm]		Ø 8 [mm]		Ø 10 [mm]	
	$F_{v,R}$ [kN]	ℓ_{req} [mm]	$F_{v,R}$ [kN]	ℓ_{req} [mm]	$F_{v,R}$ [kN]	ℓ_{req} [mm]
80	2.04	120	3.49	140		
	1.25	120	2.15	140		
100	2.04	140	3.49	160	4.73	160
	1.25	140	2.15	160	2.91	160
120	2.04	160	3.49	180	4.73	180
	1.25	160	2.15	180	2.91	180
140	2.04	180	3.49	200	4.73	200
	1.25	180	2.15	200	2.91	200
160	2.34	200	3.49	220	4.73	220
	1.44	200	2.15	220	2.91	220
180	2.34	220	3.49	240	4.73	240
	1.44	220	2.15	240	2.91	240
200	2.34	240	3.49	260	4.73	260
	1.44	240	2.15	260	2.91	260
220	2.34	260	3.49	280	4.73	280
	1.44	260	2.15	280	2.91	280
240	2.34	280	3.49	300	4.73	300
	1.44	280	2.15	300	2.91	300
260	2.34	300	3.49	320	4.73	320
	1.44	300	2.15	320	2.91	320
280			3.49	340	4.73	340
			2.15	340	2.91	340
300			3.49	360	4.73	360
			2.15	360	2.91	360
320			3.49	380	4.73	380
			2.15	380	2.91	380
340			3.49	400	4.73	400
			2.15	400	2.91	400
360			2.21	400	4.73	450
			1.36	400	2.91	450
380					4.73	450
					2.91	450
400					4.73	500
					2.91	500
420					4.73	500
					2.91	500
440					4.73	500
					2.91	500

HBS WAFER HEAD

WOOD-WOOD TENSILE CONNECTION



Pull-out capacity
Wood-wood connection

Single-cut wood-to-wood connection

α_i Angle between screw axis and fibre direction of the component

t_1 Thickness of the head end component

Component 2: $t_2 \geq \ell_{req} - t_1$
(Minimum component thicknesses must be observed)

$F_{ax,R}$ Load-bearing capacity of a screw in axial direction (thread pull-out, head pull-through, tear-off resistance)

ℓ_{req} Required screw length to achieve the specified load capacity

Load capacities apply to a char. bulk density
$\rho_k \geq 350$ kg/m^3.

Example

t_1 [mm]	$F_{ax,R}$ [kN]	ℓ_{req} [mm]
5	1	3
	2	4

1 Characteristic values $F_{ax,Rk}$

2 Design value of the load-bearing capacity $F_{ax,Rd}$ for $k_{mod} = 0.8$ and $\gamma_M = 1.3$

3 ℓ_{req} for $F_{ax,Rk}$

4 ℓ_{req} for $F_{ax,Rd}$

5 Thickness of the head end component

General information

Carbon steel screws may only be used in service classes 1 and 2.

It is not necessary to pre-drill the components.

For connections with several screws, the effective number of screws n_{ef} must be taken into account.

Specifications and requirements according to ETA-11/0106 and DIN EN 1995-1-1:2010-12 with DIN EN 1995-1-1/NA:2013-08 must be taken into account.

Calculation bases:

ETA-11/0106
DIN EN 1995-1-1:2010-12
DIN EN 1995-1-1/NA:2013-08

Pull-out capacity $F_{ax,Rk}$ resp. $F_{ax,Rd}$ with required minimum screw length ℓ_{req}

t_1 [mm]	Ø 6 [mm]		Ø 8 [mm]		Ø 10 [mm]	
	$F_{ax,R}$ [kN]	ℓ_{req} [mm]	$F_{ax,R}$ [kN]	ℓ_{req} [mm]	$F_{ax,R}$ [kN]	ℓ_{req} [mm]
80	1.79	120	3.76	140		
	1.1	120	2.31	140		
100	1.79	140	3.76	160	5.41	160
	1.1	140	2.31	160	3.33	160
120	1.79	160	3.76	180	5.41	180
	1.1	160	2.31	180	3.33	180
140	1.79	180	3.76	200	5.41	200
	1.1	180	2.31	200	3.33	200
160	3	200	3.76	220	5.41	220
	1.85	200	2.31	220	3.33	220
180	3	220	3.76	240	5.41	240
	1.85	220	2.31	240	3.33	240
200	3	240	3.76	260	5.41	260
	1.85	240	2.31	260	3.33	260
220	3	260	3.76	280	5.41	280
	1.85	260	2.31	280	3.33	280
240	3	280	3.76	300	5.41	300
	1.85	280	2.31	300	3.33	300
260	3	300	3.76	320	5.41	320
	1.85	300	2.31	320	3.33	320
280			3.76	340	5.41	340
			2.31	340	3.33	340
300			3.76	360	5.41	360
			2.31	360	3.33	360
320			3.76	380	5.41	380
			2.31	380	3.33	380
340			3.76	400	5.41	400
			2.31	400	3.33	400
360					5.41	450
					3.33	450
380					5.41	450
					3.33	450
400					5.41	500
					3.33	500
420					5.41	500
					3.33	500
440					5.41	500
					3.33	500

Our **Store Locations**

Blacks Fasteners operate from nine convenient branch locations around the South Island of New Zealand giving fast and efficient service - wherever you need it. Please feel free to contact the office closest to you in your sales region.

Nelson
7 Nayland Road, Stoke,
Nelson 7011
Phone: 03 547 5102
nelson@blacksfasteners.co.nz

Blenheim
1 Sutherland Terrace,
Blenheim 7201
Phone: 03 579 6280
blenheim@blacksfasteners.co.nz

Christchurch West
34 Nga Mahi Road, Sockburn,
Christchurch 8042
Phone: 03 348 0340
sockburn@blacksfasteners.co.nz

Christchurch East
39A Gasson Street, Sydenham,
Christchurch 8023
Phone: 03 365 2460
sydenham@blacksfasteners.co.nz

Ashburton
519E East Street,
Ashburton, New Zealand 7700
Phone: 03 307 4770
ashburton@blacksfasteners.co.nz

Timaru
3 Snowdon Road,
Washdyke, Timaru 7910.
Phone: 03 688 2280
timaru@blacksfasteners.co.nz

Cromwell
30 Harvest Road,
Cromwell 9310
Phone: 03 777 6200
cromwell@blacksfasteners.co.nz

Dunedin
20 Orari Street,
South Dunedin 9012
Phone: 03 456 1145
dunedin@blacksfasteners.co.nz

Invercargil
46 Bond Street,
West Invercargill 9810
Phone: 03 214 4499
invercargill@blacksfasteners.co.nz

blacksfasteners.co.nz

Blacks

MAY2026