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European Technical Assessment

ETA 18/0012
of 29/04/2019

General Part

Technical Assessment Body issuing the European Technical Assessment Technický a zkušební ústav stavební Praha, s.p.	
Trade name of the construction product	**Aztec Fastening Screws**
Product family to which the construction product belongs	Product area code: 33 Fastening screws for metal members and sheeting
Manufacturer	Aztec International S.A. Ul. Bułgarska 63/65 60-320 Poznań Republic of Poland
Manufacturing plant	1. Plant 1 2. Plant 2 3. Plant 3 4. Plant 4 5. Aztec International S.A. Ul. Bułgarska 63/65 60-320 Poznań Republic of Poland
This European Technical Assessment contains	30 pages including 4 Annexes, which form an integral part of this European Technical Assessment
This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of	EAD 330046-01-0602 Fastening screws for metal members and sheeting

Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and should be identified as such.

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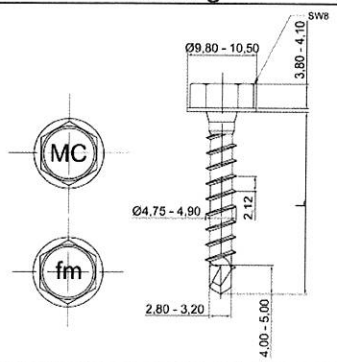
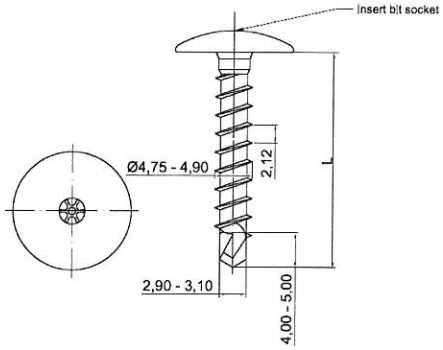
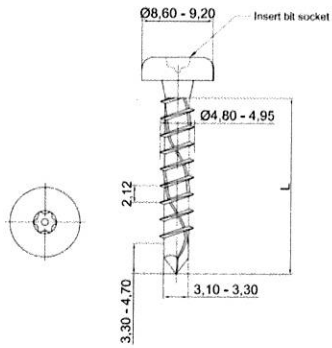
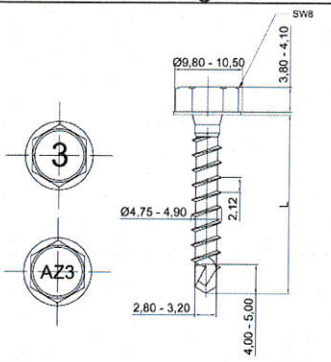
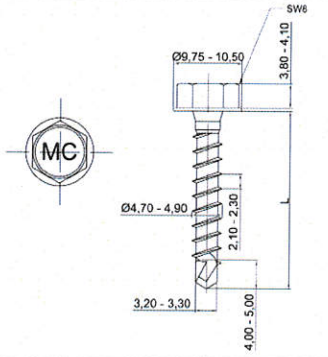
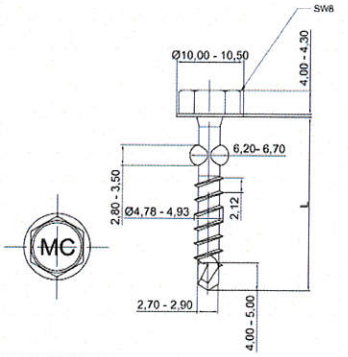
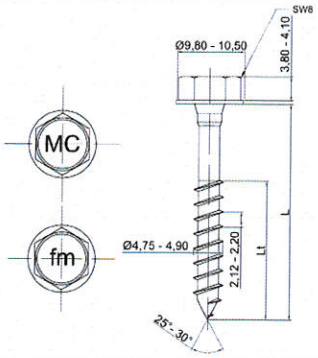
Specific Parts

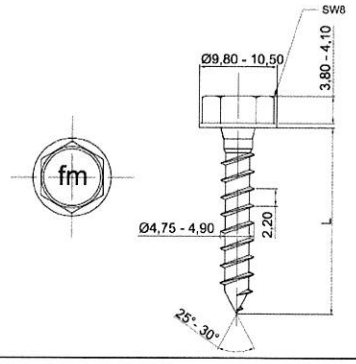
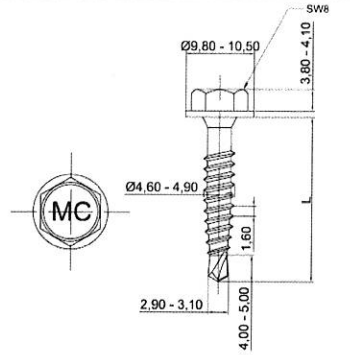
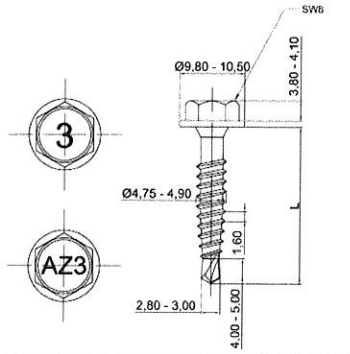
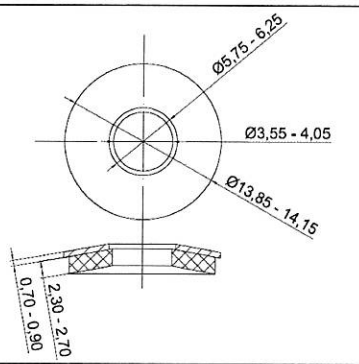
1 Technical description of the product

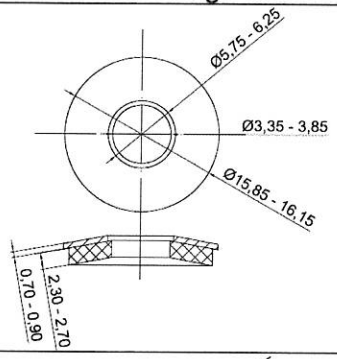
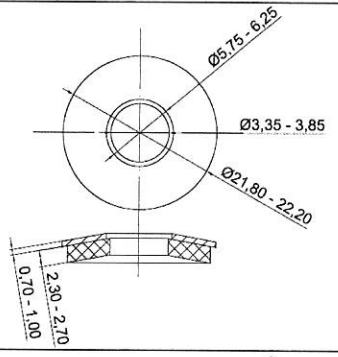
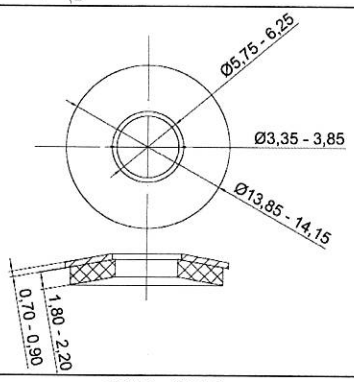
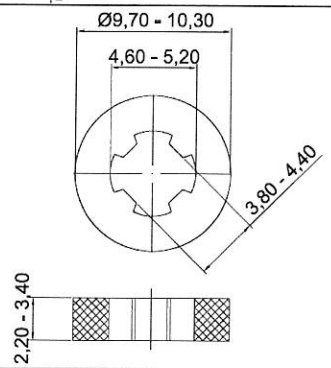
The Aztec Fastening Screws **FS, FS OVAL, FS STR, FSBI, FS SS, FS WING, SP, SP SS, GA2, GA2BI** are self-drilling screws. The screws are made of carbon steel 1022, stainless steel SS 410 or bimetal (head and body SS 304 M, dril point carbon steel 1035 or 1022). Some of them are supplied with aluminium, stainless steel or EPDM washer. For details see table below. Examples of fastening screws and the corresponding connections are shown in Annex 2. The screws and the corresponding connections are subject to tension and shear forces.

Specification of samples

Element	Drawing	Material
Screw FS 4.8xL		Carbon steel 1022
Screw FS 4.8xL OVAL		Carbon steel 1022
Screw FS 5.0xL STR		Carbon steel 1022

Element	Drawing	Material
Screw FSBI 4.8xL		Bimetal
Screw FS 4.8xL SS		Stainless steel SS 410
Screw FS 4.8xL WING		Carbon steel 1022
Screw SP 4.8xL		Carbon steel 1022

Element	Drawing	Material
Screw SP 4.8xL SS		Stainless steel SS 410
Screw GA2 4.8xL		Carbon steel 1022
Screw GA2BI 4.8xL		Bimetal
14 AI Washer		Aluminium

Element	Drawing	Material
16 Al Washer		Aluminium
22 Al Washer		Aluminium
14 SS Washer		Stainless steel
10 EPDM Washer		EPDM

1.1 Characteristics of the product

The Aztec Fastening Screws shall correspond to the drawings given in table under clause 1. The characteristic material values, dimensions and tolerances of the fastening screws shall correspond to the respective values laid down in technical documentation deposited at Technický a zkušební ústav stavební Praha, s.p. The characteristic values of the shear and tension resistance of the connections made with the fastening screws are given in the Annex 3.

2 Specification of the intended use(s) in accordance with the applicable European Assessment Document (hereinafter EAD)

The Aztec Fastening Screws are intended to be used for fastening steel sheeting to steel and timber supporting structures. The sheeting can either be used as wall or roof cladding or as load bearing wall and roof element. The fastening screws can also be used for the fastening of any other thin gauge metal members. The component to be fastened is component I and the supporting structure is component II. The intended use comprises connections for indoor and outdoor applications. Fastening screws which are intended to be used in external environments shall be protected against corrosion. Furthermore, the intended use comprises connections with predominantly static loads (e.g. wind loads, dead loads).

The intended use comprises fastening screws and connections for indoor and outdoor applications. Fastening screws which are intended to be used in external environments with ≥ C2 corrosion according to the standard EN ISO 12944-2 are made of stainless steel.

The assessment methods included or referred to in the EAD have been written based on the manufacturer's request to take into account a working life of the fastening screws for metal members and sheeting for the intended use of 25 years when installed in the works. The provisions are based upon the current state of the art and the available knowledge and experience.

The indications given as to the working life of the construction product cannot be interpreted as a guarantee neither given by the product manufacturer or his representative nor by EOTA when drafting the EAD, but are regarded only as a means for expressing the expected economically reasonable working life of the product.

3 Performance of the product and references to the methods used for its assessment

The assessment of the fitness for use of the Aztec Fastening Screws according to the basic work requirements (BWR) were carried out in compliance with EAD 330046-01-0602.

The European Technical Assessment is issued for the fastening screws on the basis of agreed data and information, deposited at Technický a zkušební ústav stavební Praha, s.p., which identifies fastening screws that has been assessed and judged. Changes to the fastening screws or production process which could result in this deposited data and information being incorrect should be notified to Technický a zkušební ústav stavební Praha, s.p. before the changes are introduced. Technický a zkušební ústav stavební Praha, s.p. will decide whether or not such changes affect the ETA and consequently the validity of the CE marking on the basis of the ETA and if so whether further assessment or alternations to the ETA shall be necessary.

Table 1 Essential characteristics of the product

	Essential characteristic	Performance
3.1 BWR 1: Mechanical resistance and stability		
3.1.1	Shear Resistance of the Connection	See Annex 3
3.1.2	Tension Resistance of the Connection	See Annex 3
3.1.3	Durability	See point 3.1.3
3.2 BWR 2: Safety in case of fire		
3.2.1	Reaction to fire	The performance of the product is class A1 according to EN 13501-1
3.3 BWR 3: Hygiene, health and the environment		
3.3.1	Content, emission and/or release of dangerous substances	Declaration of manufacturer

3.1 Mechanical resistance and stability (BWR 1)

Annex 3 contains essential characteristics for Aztec Fastening Screws for metal members and sheeting. The design and construction shall be carried out according to national provisions that apply at the installation site in line with the partial safety factor format.

3.1.1 Shear Resistance of the Connection

The test of shear resistance of the connection was performed according to provisions in EAD 330046-01-0602, clause 2.2.1.1 and evaluated according to clause 2.2.1.3. The test results are documented in tables under Annex 3.

3.1.2 Tension Resistance of the Connection

The test of tension resistance of the connection was performed according to provisions in EAD 330046-01-0602, clause 2.2.2.1 and clause 2.2.2.3 and evaluated according to clause 2.2.2.4. The test results are documented in tables under Annex 3.

3.1.3 Durability against corrosion

The screws are made from carbon steel 1022, stainless steel SS 410 or bimetal (head and body SS 304 M, drill point carbon steel 1035 or 1022) with corrosion protection layer. Some of them are supplied with aluminium, stainless steel washer or EPDM washer. The screws are zinc-plated with 3, 7, 12 and 20 µm or with ZnNi 7 µm.

For the corrosion protection the rules given in EN 1993-1-3, EN 1993-1-4 and EN 1999-1-4 shall be taken into account. Fastening screw and washers which are made of stainless steel are intended to be used in external environments ≥ C2 corrosion according to the standard EN ISO 12944-2.

When the screws are painted and when the paint or coating combination is not given in EN ISO 12944-5, then, testing in accordance with EN ISO 12944-6:1998 shall be carried out.

Due to the fact that only the rim of the EPDM sealing washer might be exposed to ageing media, the EPDM sealing washer ensures adequate durability for the intended working life.

If required, the durability of the EPDM sealing washer shall be evaluated with 1000h ageing in accordance with EN ISO 4892-2 or EN ISO 4892-3 followed by the evaluation of water tightening ability after the test.

3.2 Safety in case of fire (BWR 2)

3.2.1 Reaction to fire

The fastening screws are considered to satisfy the requirements for performance Class A1 of the characteristic reaction to fire, in accordance with the EC Decision 96/603/EC (as amended) without the need for further testing on the basis of is conformity with the specification of the product detailed in that Decision and its intended end use application being covered by that Decision.
Therefore, the performance of the product is class A1 according to EN 13501-1.

3.3 Hygiene, health and the environment (BWR 3)

3.3.1 Content, emission and/or release of dangerous substances

The manufacturer submitted a written declaration the product does not contain any dangerous substances.

4 Assessment and verification of constancy of performance (hereinafter AVCP) system applied, with reference to its legal base

According to the decision 1998/0214/EC[1], of the European Commission the system(s) of assessment and verification of constancy of performance (see Annex V to Regulation (EU) No 305/2011) given in the following table applies:

Product(s)	Intended use(s)	Level(s) or class(es)	Attestation of conformity system(s)
Structural connectors metallic rivets, bolts (nuts and washers) and H. R. bolts (high strength friction grip bolts), studs, screws, railway fasteners	for uses in structural metallic works		2+(1)

(1) System 2+: See Annex III (2)(ii) of Directive 89/106/EEC, First possibility, including certification of the factory production control by an approved body on the basis of its continuous surveillance, assessment and approval

[1] 1998/0214/EC - European Commission decision of 18/3/1998, published in the Official Journal of the European Communities No L 80/46

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at the Technický a zkušební ústav stavební Praha, s.p.

Issued in Prague on 29/04/2019

By

Ing. Mária Schaan
Head of the TAB

Annexes:

Annex 1	Manufacturing, installation, storage and maintenance
Annex 2	Examples for screws, types of connection
Annex 3	Tension and shear resistances of the connections
Annex 4	Reference documents

Annex 1 Manufacturing, installation, storage and maintenance

Manufacture

This European Technical Assessment is issued for Aztec Fastening Screws for metal members and sheeting produced by the Aztec International S.A. on the basis of agreed data, deposited with the Technický a zkušební ústav stavební Praha, s.p., which identifies the screws that has been assessed and evaluated. Changes to the screws or production process which could result in this deposited data being incorrect, shall be notified to the Technický a zkušební ústav stavební Praha, s.p., before the changes are introduced. Technický a zkušební ústav stavební Praha, s.p. will decide whether or not such changes affect the ETA and consequently the validity of the CE marking on the basis of the ETA, and if so, whether further assessment or alterations to the ETA shall be necessary.

Design and installation

The installation instructions including special installation techniques and provisions for the qualification of the personnel are given in the manufacturer's technical documentation.

Design, installation and execution of Aztec Fastening Screws must confirm with national documents. Such documents and the level of their implementation in member states legislation are different. Therefore, the assessment and declaration of performance are done taking into account the general assumptions included in EAD 330046-01-0602, which summarizes how information included in the ETA and related documents are intended to be used in the construction process and gives advice to all parties interested when normative documents are missing.

Packaging, transport and storage

Information on packaging, transport and storage is given in the manufacturer's technical documentation. It is the responsibility of the manufacturer to ensure that this information is made known to the people concerned.

Aztec Fastening Screws must be stored indoors and protected from the weather, damage and/or breakage.

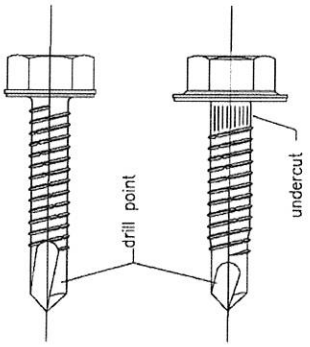
Aztec Fastening Screws should be transported in such a way as to protect against damage or breakage.

Use, maintenance and repair

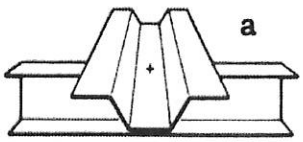
Information on use, maintenance and repair is given in the manufacturer's technical documentation. It is the responsibility of the manufacturer to ensure that this information is made known to the people concerned.

Annex 2 Examples for screws, types of connection

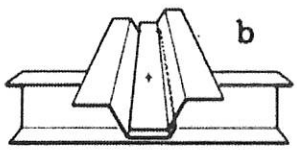
self–drilling screw
with sealing washer



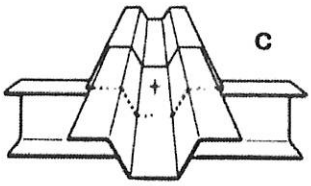
self–drilling screw
with integrated washer



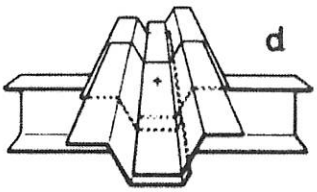
Single connection



Side lap connection

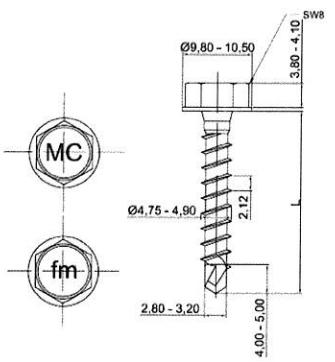


End overlap connection



Side lap + end overlap connection

Annex 3 Tension and shear resistances of the connections



Materials
Fastener: carbon steel 1022
Washer: -
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: structural timber – EN 14081

Drilling capacity: $\Sigma t_i \leq 1.5$ mm

Timber substructures
For timber substructures performance determined with

$M_{y,Rk} = 3.88$ Nm
$f_{ax,k} = 19.23$ N/mm² for $l_{eff} \geq 18.5$ mm

$M_{y,Rk} = 3.88$ Nm
$f_{ax,k} = 18.62$ N/mm² for $l_{eff} \geq 25.5$ mm

$t_{N,II}$ [mm]		0.50	0.75	1.00	1.50	Wood class ≥ C24		
$M_{t,nom}$		3 Nm				18.5 mm	25.5 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0.50	—	—	—	—	1.18	1.38	*bearing resistance of component I **bearing resistance of component II
	0.75	—	—	—	—	1.18	1.39	
	1.00	—	—	—	—	1.18	1.36	
	1.50	—	—	—	—	1.18	1.47	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0.50	—	—	—	—	1.50**	1.58*	*bearing resistance of component II **bearing resistance of component I
	0.75	—	—	—	—	1.50**	1.94**	
	1.00	—	—	—	—	1.50**	1.94**	
	1.50	—	—	—	—	1.50**	1.94**	

If both components I and II are made of S280GD the values $V_{R,k}$ may be decreased by 8.3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 8.3%

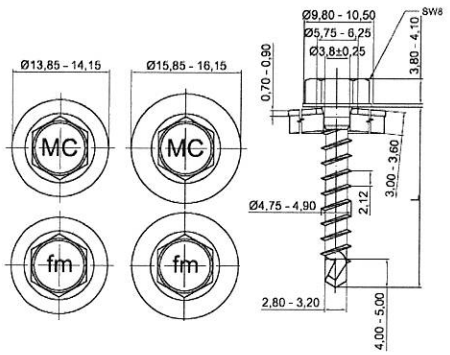
FS fastening screws for metal members and sheeting

FS 4,8 × L

with hexagon head and integrated washer

Annex 3

of European Technical Assessment ETA 18/0012



Materials

Fastener:	carbon steel 1022
Washer:	EPDM sealing ring with metal top made of aluminium
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	structural timber – EN 14081

Drilling capacity: $\Sigma t_i \leq 1.5$ mm

Timber substructures

For timber substructures performance determined with

$M_{y,Rk}$ = 3.88 Nm
$f_{ax,k}$ = 19.23 N/mm² for $l_{eff} \geq 18.5$ mm

$M_{y,Rk}$ = 3.88 Nm
$f_{ax,k}$ = 18.62 N/mm² for $l_{eff} \geq 25.5$ mm

$t_{N,II}$ [mm]		0.50	0.75	1.00	1.50	Wood class ≥ C24		
$M_{t,nom}$		3 Nm				18.5 mm	25.5 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0.50	—	—	—	—	1.18	1.38	*bearing resistance of component I **bearing resistance of component II
	0.75	—	—	—	—	1.18	1.39	
	1.00	—	—	—	—	1.18	1.36	
	1.50	—	—	—	—	1.18	1.47	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0.50	—	—	—	—	1.50**	1.94**	*bearing resistance of component II **bearing resistance of component I
	0.75	—	—	—	—	1.50**	1.94**	
	1.00	—	—	—	—	1.50**	1.94**	
	1.50	—	—	—	—	1.50**	1.94**	

If both components I and II are made of S280GD the values $V_{R,k}$ may be decreased by 8.3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 8.3%

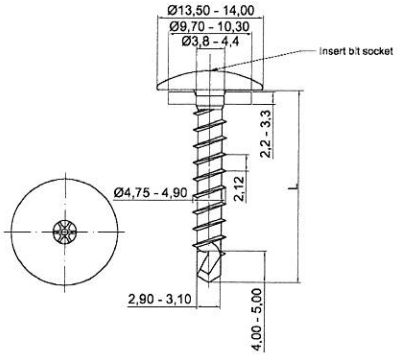
FS fastening screws for metal members and sheeting

FS 4,8 × L + 14 AL (16 AL)

with hexagon head, integrated washer and sealing washer ≥ Ø14 mm
with metal top made of aluminium

Annex 3

of European Technical Assessment ETA 18/0012



Materials
Fastener: carbon steel 1022
Washer: EPDM sealing ring
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: structural timber – EN 14081

Drilling capacity: $\Sigma t_i \leq 1.5$ mm

Timber substructures
For timber substructures performance determined with

$M_{y,Rk} = 3.88$ Nm
$f_{ax,k} = 19.23$ N/mm² for $l_{eff} \geq 18.5$ mm

$M_{y,Rk} = 3.88$ Nm
$f_{ax,k} = 18.62$ N/mm² for $l_{eff} \geq 25.5$ mm

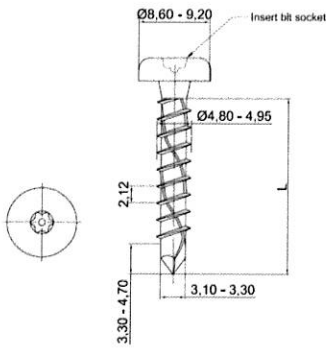
$t_{N,II}$ [mm]		0.50	0.75	1.00	1.50	Wood class ≥ C24		
$M_{t,nom}$		3 Nm				18.5 mm	26 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0.50	—	—	—	—	1.18	1.46	*bearing resistance of component I **bearing resistance of component II
	0.75	—	—	—	—	1.18	1.41	
	1.00	—	—	—	—	1.18	1.57	
	1.50	—	—	—	—	1.18	1.56	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0.50	—	—	—	—	1.50**	1.94**	*bearing resistance of component II **bearing resistance of component I
	0.75	—	—	—	—	1.50**	1.94**	
	1.00	—	—	—	—	1.50**	1.94**	
	1.50	—	—	—	—	1.50**	1.94**	

If both components I and II are made of S280GD the values $V_{R,k}$ may be decreased by 8.3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 8.3%

FS OVAL fastening screws for metal members and sheeting

FS 4,8 × L OVAL + 10 EPDM
with oval convex head and sealing washer ≥ Ø10 mm

Annex 3
of European Technical Assessment ETA 18/0012



Materials
Fastener: carbon steel 1022
Washer: -
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: structural timber – EN 14081

Drilling capacity: $\Sigma t_i \leq 1.5$ mm

Timber substructures
For timber substructures performance determined with

$M_{y,Rk} = 2.12$ Nm
$f_{ax,k} = 18.26$ N/mm² for $l_{eff} \geq 25.3$ mm

$t_{N,II}$ [mm]		0.50	0.75	1.00	1.50	Wood class ≥ C24		
$M_{t,nom}$		1.5 Nm				—	25.3 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0.50	—	—	—	—	—	1.16	*bearing resistance of component I **bearing resistance of component II
	0.75	—	—	—	—	—	1.97	
	1.00	—	—	—	—	—	2.27	
	1.50	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0.50	—	—	—	—	—	1.61**	*bearing resistance of component II **bearing resistance of component I
	0.75	—	—	—	—	—	1.61**	
	1.00	—	—	—	—	—	1.61**	
	1.50	—	—	—	—	—	—	

If both components I and II are made of S280GD the values $V_{R,k}$ may be decreased by 8.3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 8.3%

FS STR fastening screws for metal members and sheeting

FS 5,0 × L STR
with pan head

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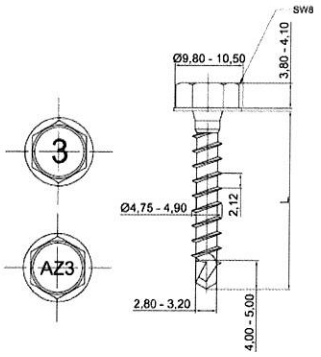

Materials
Fastener: bimetal – head and body stainless steel 304 M, drill point – carbon steel 1022 or 1035
Washer: -
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: structural timber – EN 14081

Drilling capacity: $\Sigma t_i \leq 1.5$ mm

Timber substructures
For timber substructures performance determined with

$M_{y,Rk} = 4.22$ Nm
$f_{ax,k} = 18.62$ N/mm² for $l_{eff} \geq 25.5$ mm

$t_{N,II}$ [mm]		0.50	0.75	1.00	1.50	Wood class ≥ C24		
$M_{t,nom}$		3 Nm				—	25.5 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0.50	—	—	—	—	—	1.26	*bearing resistance of component I **bearing resistance of component II
	0.75	—	—	—	—	—	1.49	
	1.00	—	—	—	—	—	1.44	
	1.50	—	—	—	—	—	1.43	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0.50	—	—	—	—	—	1.83*	*bearing resistance of component II **bearing resistance of component I
	0.75	—	—	—	—	—	2.14**	
	1.00	—	—	—	—	—	2.14**	
	1.50	—	—	—	—	—	2.14**	

If both components I and II are made of S280GD the values $V_{R,k}$ may be decreased by 8.3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 8.3%

FSBI fastening screws for metal members and sheeting

FSBI 4,8 × L
with hexagon head and integrated washer

Annex 3
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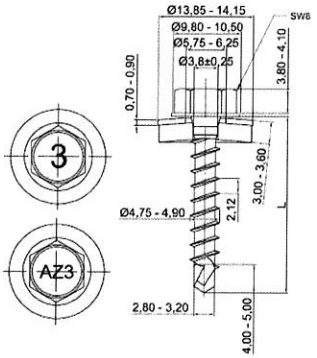

Materials

Fastener:	bimetal – head and body stainless steel 304 M, drill point – carbon steel 1022 or 1035
Washer:	EPDM sealing ring with metal top made of aluminium or stainless steel
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	structural timber – EN 14081

Drilling capacity: $\Sigma t_i \leq 1.5$ mm

Timber substructures

For timber substructures performance determined with

$M_{y,Rk} = 4.22$ Nm

$f_{ax,k} = 18.62$ N/mm² for $l_{eff} \geq 25.5$ mm

$t_{N,II}$ [mm]		0.50	0.75	1.00	1.50	Wood class ≥ C24		
$M_{t,nom}$		3 Nm				—	25.5 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0.50	—	—	—	—	—	1.26	*bearing resistance of component I **bearing resistance of component II
	0.75	—	—	—	—	—	1.49	
	1.00	—	—	—	—	—	1.44	
	1.50	—	—	—	—	—	1.43	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0.50	—	—	—	—	—	2.14**	*bearing resistance of component II **bearing resistance of component I
	0.75	—	—	—	—	—	2.14**	
	1.00	—	—	—	—	—	2.14**	
	1.50	—	—	—	—	—	2.14**	

If both components I and II are made of S280GD the values $V_{R,k}$ may be decreased by 8.3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 8.3%

FSBI fastening screws for metal members and sheeting

FSBI 4,8 × L + 14 AL (14 SS)

with hexagon head, integrated washer and sealing washer ≥ Ø14 mm
with metal top made of aluminium or stainless steel

Annex 3

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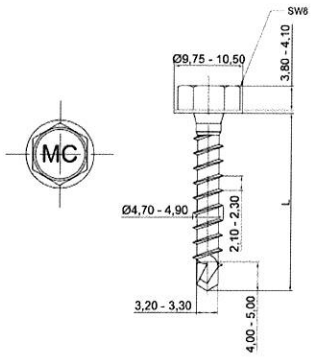

Materials
Fastener: stainless steel SS 410
Washer: -
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: structural timber – EN 14081

Drilling capacity: $\Sigma t_i \leq 1.5$ mm

Timber substructures
For timber substructures performance determined with

$M_{y,Rk} = 4.26$ Nm
$f_{ax,k} = 18.60$ N/mm² for $l_{eff} \geq 26.5$ mm

$t_{N,II}$ [mm]		0.50	0.75	1.00	1.50	Wood class ≥ C24		
$M_{t,nom}$		3 Nm				—	26.5 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0.50	—	—	—	—	—	1.19	*bearing resistance of component I **bearing resistance of component II
	0.75	—	—	—	—	—	1.46	
	1.00	—	—	—	—	—	1.46	
	1.50	—	—	—	—	—	1.55	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0.50	—	—	—	—	—	2.05*	*bearing resistance of component II **bearing resistance of component I
	0.75	—	—	—	—	—	2.06**	
	1.00	—	—	—	—	—	2.06**	
	1.50	—	—	—	—	—	2.06**	

If both components I and II are made of S280GD the values $V_{R,k}$ may be decreased by 8.3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 8.3%

FS SS fastening screws for metal members and sheeting

FS 4,8 × L SS
with hexagon head and integrated washer

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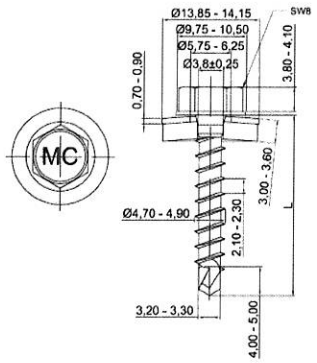

Materials

Fastener:	stainless steel SS 410
Washer:	EPDM sealing ring with metal top made of aluminium or stainless steel
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	structural timber – EN 14081

Drilling capacity: $\Sigma t_i \leq 1.5$ mm

Timber substructures

For timber substructures performance determined with

$M_{y,Rk}$ = 4.26 Nm

$f_{ax,k}$ = 18.60 N/mm² for $l_{eff} \geq 26.5$ mm

$t_{N,II}$ [mm]		0.50	0.75	1.00	1.50	Wood class ≥ C24		
$M_{t,nom}$		3 Nm				—	26.5 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0.50	—	—	—	—	—	1.19	*bearing resistance of component I **bearing resistance of component II
	0.75	—	—	—	—	—	1.46	
	1.00	—	—	—	—	—	1.46	
	1.50	—	—	—	—	—	1.55	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0.50	—	—	—	—	—	2.05*	*bearing resistance of component II **bearing resistance of component I
	0.75	—	—	—	—	—	2.06**	
	1.00	—	—	—	—	—	2.06**	
	1.50	—	—	—	—	—	2.06**	

If both components I and II are made of S280GD the values $V_{R,k}$ may be decreased by 8.3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 8.3%

FS SS fastening screws for metal members and sheeting

FS 4,8 × L SS + 14 AL (14 SS)

with hexagon head, integrated washer and sealing washer ≥ Ø14 mm
with metal top made of aluminium or stainless steel

Annex 3

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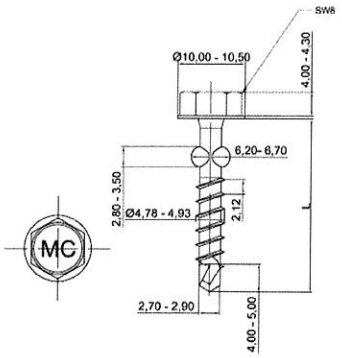

Materials
Fastener: carbon steel 1022
Washer: -
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: structural timber – EN 14081

Drilling capacity: $\Sigma t_i \leq 1.5$ mm

Timber substructures
For timber substructures performance determined with

$M_{y,Rk}$ = 3.70 Nm
$f_{ax,k}$ = 18.62 N/mm² for $l_{eff} \geq 25.5$ mm

$t_{N,II}$ [mm]		0.50	0.75	1.00	1.50	Wood class ≥ C24		
$M_{t,nom}$		3 Nm				—	25.5 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0.50	—	—	—	—	—	1.46	*bearing resistance of component I **bearing resistance of component II
	0.75	—	—	—	—	—	1.44	
	1.00	—	—	—	—	—	1.57	
	1.50	—	—	—	—	—	1.62	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0.50	—	—	—	—	—	0.78**	*bearing resistance of component II **bearing resistance of component I
	0.75	—	—	—	—	—	0.78**	
	1.00	—	—	—	—	—	0.78**	
	1.50	—	—	—	—	—	0.78**	

If both components I and II are made of S280GD the values $V_{R,k}$ may be decreased by 8.3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 8.3%

FS WING fastening screws for metal members and sheeting

FS 4,8 × L WING
with hexagon head and integrated washer

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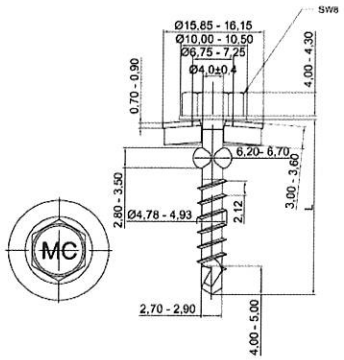
of European Technical Assessment ETA 18/0012



Materials

Fastener:	carbon steel 1022
Washer:	EPDM sealing ring with metal top made of aluminium
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	structural timber – EN 14081

Drilling capacity: $\Sigma t_i \leq 1.5$ mm

Timber substructures

For timber substructures performance determined with

$M_{y,Rk}$ = 3.70 Nm

$f_{ax,k}$ = 18.62 N/mm² for $l_{eff} \geq 25.5$ mm

$t_{N,II}$ [mm]		0.50	0.75	1.00	1.50	Wood class ≥ C24		
$M_{t,nom}$		3 Nm				—	25.5 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0.50	—	—	—	—	—	1.46	*bearing resistance of component I **bearing resistance of component II
	0.75	—	—	—	—	—	1.44	
	1.00	—	—	—	—	—	1.57	
	1.50	—	—	—	—	—	1.62	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0.50	—	—	—	—	—	0.78**	*bearing resistance of component II **bearing resistance of component I
	0.75	—	—	—	—	—	0.78**	
	1.00	—	—	—	—	—	0.78**	
	1.50	—	—	—	—	—	0.78**	

If both components I and II are made of S280GD the values $V_{R,k}$ may be decreased by 8.3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 8.3%

FS WING fastening screws for metal members and sheeting

FS 4,8 × L WING + 16 AL

with hexagon head, integrated washer and sealing washer ≥ Ø16 mm with metal top made of aluminium

Annex 3

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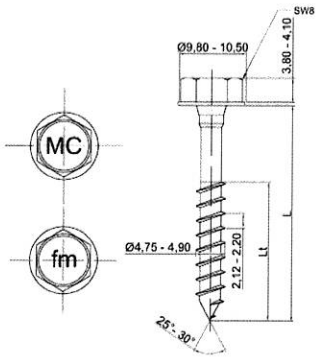

Materials
Fastener: carbon steel 1022
Washer: -
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: structural timber – EN 14081

Drilling capacity: $\Sigma t_i \leq 1.0$ mm

Timber substructures
For timber substructures performance determined with

My,Rk = 3.88 Nm
fax,k = 18.99 N/mm2 for leff ≥ 21 mm

$M_{y,Rk}$ = 3.89 Nm
$f_{ax,k}$ = 18.62 N/mm² for l_{eff} ≥ 34 mm

$t_{N,II}$ [mm]		0.50	0.75	1.00	1.50	Wood class ≥ C24		
$M_{t,nom}$		3 Nm				21 mm	34 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0.50	—	—	—	—	1.15	1.28	*bearing resistance of component I **bearing resistance of component II
	0.75	—	—	—	—	1.15	1.65	
	1.00	—	—	—	—	—	—	
	1.50	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0.50	—	—	—	—	1.58**	1.58**	*bearing resistance of component II **bearing resistance of component I
	0.75	—	—	—	—	1.58**	1.58**	
	1.00	—	—	—	—	—	—	
	1.50	—	—	—	—	—	—	

If both components I and II are made of S280GD the values $V_{R,k}$ may be decreased by 8.3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 8.3%

SP fastening screws for metal members and sheeting

SP 4,8 × L

with hexagon head and integrated washer

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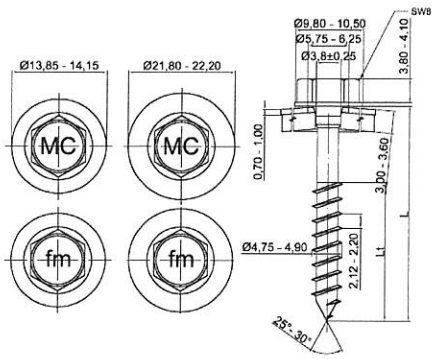


Materials

Fastener:	carbon steel 1022
Washer:	EPDM sealing ring with metal top made of aluminium
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	structural timber – EN 14081

Drilling capacity: $\Sigma t_i \leq 1.0$ mm

Timber substructures

For timber substructures performance determined with

$M_{y,Rk} = 3.88$ Nm
$f_{ax,k} = 18.99$ N/mm² for $l_{eff} \geq 21$ mm

$M_{y,Rk} = 3.89$ Nm
$f_{ax,k} = 18.62$ N/mm² for $l_{eff} \geq 34$ mm

$t_{N,II}$ [mm]		0.50	0.75	1.00	1.50	Wood class ≥ C24		
$M_{t,nom}$		3 Nm				21 mm	34 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0.50	—	—	—	—	1.15	1.28	*bearing resistance of component I **bearing resistance of component II
	0.75	—	—	—	—	1.15	1.65	
	1.00	—	—	—	—	—	—	
	1.50	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0.50	—	—	—	—	1.58**	1.58**	*bearing resistance of component II **bearing resistance of component I
	0.75	—	—	—	—	1.58**	1.58**	
	1.00	—	—	—	—	—	—	
	1.50	—	—	—	—	—	—	

If both components I and II are made of S280GD the values $V_{R,k}$ may be decreased by 8.3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 8.3%

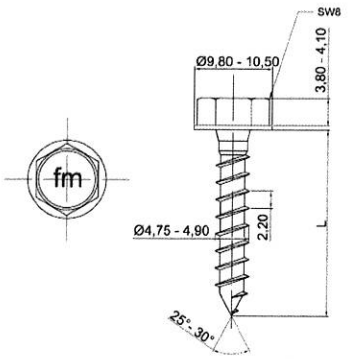
SP fastening screws for metal members and sheeting

SP 4,8 × L + 14 AL (22 AL)

with hexagon head, integrated washer and sealing washer ≥ Ø14 mm with metal top made of aluminium

Annex 3

of European Technical Assessment ETA 18/0012



Materials
Fastener: stainless steel SS 410
Washer: -
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: structural timber – EN 14081

Drilling capacity: $\Sigma t_i \leq 1.0$ mm

Timber substructures
For timber substructures performance determined with

$M_{y,Rk}$ = 3.80 Nm
$f_{ax,k}$ = 18.99 N/mm² for $l_{eff} \geq 34$ mm

$M_{y,Rk}$ = 3.80 Nm
$f_{ax,k}$ = 18.99 N/mm² for $l_{eff} \geq 21$ mm

$t_{N,II}$ [mm]		0.50	0.75	1.00	1.50	Wood class ≥ C24		
$M_{t,nom}$		3 Nm				21 mm	34 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0.50	—	—	—	—	1.17	1.18	*bearing resistance of component I **bearing resistance of component II
	0.75	—	—	—	—	1.17	1.59	
	1.00	—	—	—	—	—	—	
	1.50	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0.50	—	—	—	—	1.28*	1.28*	*bearing resistance of component II **bearing resistance of component I
	0.75	—	—	—	—	1.48**	2.67**	
	1.00	—	—	—	—	—	—	
	1.50	—	—	—	—	—	—	

If both components I and II are made of S280GD the values $V_{R,k}$ may be decreased by 8.3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 8.3%

SP SS fastening screws for metal members and sheeting

SP 4,8 × L SS
with hexagon head and integrated washer

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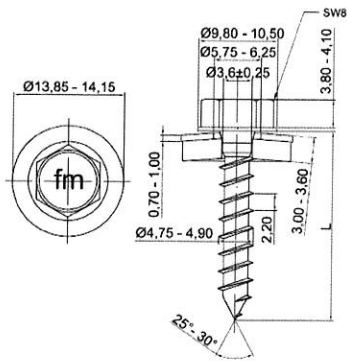
of European Technical Assessment ETA 18/0012



Materials

Fastener:	stainless steel SS 410
Washer:	EPDM sealing ring with metal top made of stainless steel
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	structural timber – EN 14081

Drilling capacity: $\Sigma t_i \leq 1.0$ mm

Timber substructures

For timber substructures performance determined with

$M_{y,Rk} = 3.80$ Nm
$f_{ax,k} = 18.99$ N/mm² for $l_{eff} \geq 34$ mm

$M_{y,Rk} = 3.80$ Nm
$f_{ax,k} = 18.99$ N/mm² for $l_{eff} \geq 21$ mm

$t_{N,II}$ [mm]		0.50	0.75	1.00	1.50	Wood class ≥ C24		
$M_{t,nom}$		3 Nm				21 mm	34 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0.50	—	—	—	—	1.17	1.18	*bearing resistance of component I **bearing resistance of component II
	0.75	—	—	—	—	1.17	1.59	
	1.00	—	—	—	—	—	—	
	1.50	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0.50	—	—	—	—	1.48**	2.09*	*bearing resistance of component II **bearing resistance of component I
	0.75	—	—	—	—	1.48**	2.67**	
	1.00	—	—	—	—	—	—	
	1.50	—	—	—	—	—	—	

If both components I and II are made of S280GD the values $V_{R,k}$ may be decreased by 8.3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 8.3%

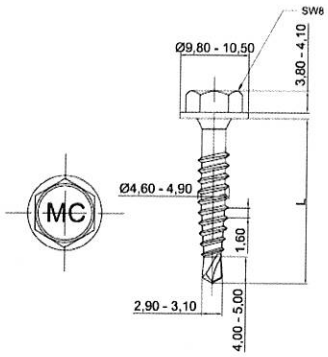
SP SS fastening screws for metal members and sheeting

SP 4,8 × L SS + 14 SS

with hexagon head, integrated washer and sealing washer ≥ Ø14 mm with metal top made of stainless steel

Annex 3

of European Technical Assessment ETA 18/0012



Materials

Fastener:	carbon steel 1022
Washer:	-
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma t_i \leq 2 \times 1.0$ mm

Timber substructures
no performance determined

$t_{N,II}$ [mm]		0.50	0.75	1.00	1.50	Wood class ≥ C24		
$M_{t,nom}$				-		—	—	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0.50	0.86	0.90	1.05	—	—	—	*bearing resistance of component I **bearing resistance of component II
	0.75	0.90	1.06	1.77	—	—	—	
	1.00	1.05	1.77	1.79	—	—	—	
	1.50	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0.50	0.55	0.55	0.55	—	—	—	*bearing resistance of component II **bearing resistance of component I
	0.75	0.55	0.89	0.89	—	—	—	
	1.00	0.55	0.89	1.25	—	—	—	
	1.50	—	—	—	—	—	—	

If both components I and II are made of S280GD the values $V_{R,k}$ may be decreased by 8.3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 8.3%

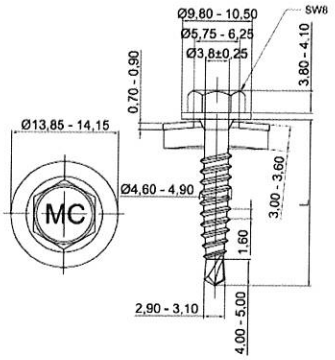
GA2 fastening screws for metal members and sheeting

GA2 4,8 × L

with hexagon head and integrated washer

Annex 3

of European Technical Assessment ETA 18/0012



Materials

Fastener:	carbon steel 1022
Washer:	EPDM sealing ring with metal top made of aluminium
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma t_i \leq 2 \times 1.0$ mm

Timber substructures
no performance determined

$t_{N,II}$ [mm]		0.50	0.75	1.00	1.50	Wood class ≥ C24		
$M_{t,nom}$			-			—	—	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0.50	0.86	0.90	1.05	—	—	—	*bearing resistance of component I **bearing resistance of component II
	0.75	0.90	1.06	1.77	—	—	—	
	1.00	1.05	1.77	1.79	—	—	—	
	1.50	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0.50	0.55	0.55	0.55	—	—	—	*bearing resistance of component II **bearing resistance of component I
	0.75	0.55	0.89	0.89	—	—	—	
	1.00	0.55	0.89	1.25	—	—	—	
	1.50	—	—	—	—	—	—	

If both components I and II are made of S280GD the values $V_{R,k}$ may be decreased by 8.3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 8.3%

GA2 fastening screws for metal members and sheeting

GA2 4,8 × L + 14 AL

with hexagon head, integrated washer and sealing washer ≥ Ø14 mm with metal top made of aluminium

Annex 3

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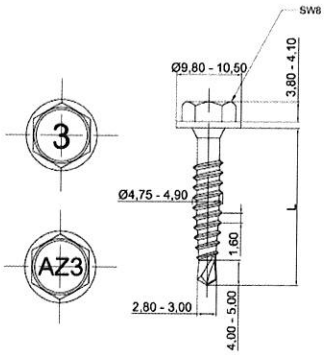


Materials
Fastener: bimetal – head and body stainless steel 304 M, drill point – carbon steel 1022 or 1035
Washer: -
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma t_i \leq 2 \times 1.0$ mm

Timber substructures
no performance determined

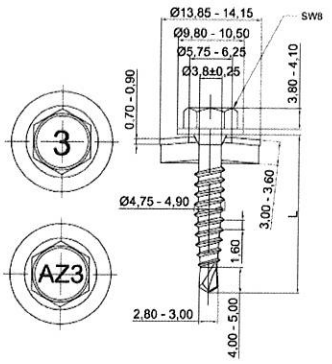
$t_{N,II}$ [mm]		0.50	0.75	1.00	1.50	Wood class ≥ C24		
$M_{t,nom}$		-				—	—	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0.50	0.96	1.09	1.36	—	—	—	*bearing resistance of component I **bearing resistance of component II
	0.75	1.09	1.39	1.76	—	—	—	
	1.00	1.36	1.76	—	—	—	—	
	1.50	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0.50	0.54	0.54	0.54	—	—	—	*bearing resistance of component II **bearing resistance of component I
	0.75	0.54	1.10	1.10	—	—	—	
	1.00	0.54	1.10	1.28	—	—	—	
	1.50	—	—	—	—	—	—	

If both components I and II are made of S280GD the values $V_{R,k}$ may be decreased by 8.3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 8.3%

GA2BI fastening screws for metal members and sheeting

GA2BI 4,8 × L
with hexagon head and integrated washer

Annex 3
of European Technical Assessment ETA 18/0012



Materials

Fastener:	bimetal – head and body stainless steel 304 M, drill point – carbon steel 1022 or 1035
Washer:	EPDM sealing ring with metal top made of aluminium or stainless steel
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma t_i \leq 2 \times 1.0$ mm

Timber substructures
no performance determined

$t_{N,II}$ [mm]		0.50	0.75	1.00	1.50	Wood class ≥ C24		
$M_{t,nom}$				-		—	—	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0.50	0.96	1.09	1.36	—	—	—	*bearing resistance of component I **bearing resistance of component II
	0.75	1.09	1.39	1.76	—	—	—	
	1.00	1.36	1.76	—	—	—	—	
	1.50	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0.50	0.54	0.54	0.54	—	—	—	*bearing resistance of component II **bearing resistance of component I
	0.75	0.54	1.10	1.10	—	—	—	
	1.00	0.54	1.10	1.28	—	—	—	
	1.50	—	—	—	—	—	—	

If both components I and II are made of S280GD the values $V_{R,k}$ may be decreased by 8.3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 8.3%

GA2BI fastening screws for metal members and sheeting

GA2BI 4,8 × L + 14 AL (14 SS)

with hexagon head, integrated washer and sealing washer ≥ Ø14 mm
with metal top made of aluminium or stainless steel

Annex 3

of European Technical Assessment ETA 18/0012

Annex 4 Reference documents

[1] European Assessment Document EAD 330046-01-0602 Fastening screws for metal members and sheeting (edition January 2016)

[2] Test Report No. 070-055521 dated 18.03.2019, regarding tests of shear and tension resistances of the connection, issued by Technický a zkušební ústav stavební Praha, s.p., Czechia

[3] Declaration of conformity to REACH requirements dated 13.11.2014, issued by Aztec International S.A. and Declaration of RoHS conformity dated 15.03.2019, 20.3.2019, 21.3.2019 issued by plant 1, plant 2, plant 3 and plant 4.