

Dimensions in mm

Materials

Fastener carbon steel,
case-hardened and galvanized,
steel grade 1.5506, 1.5523, 1.5525

Washer ---

Component I S280GD, S320GD – EN 10346

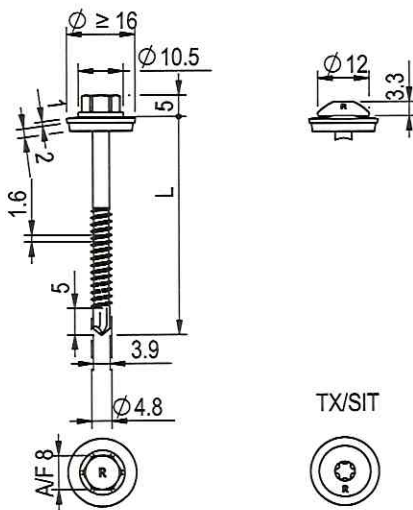
Component II S235 – EN 10025-1
S280GD, S320GD – EN 10346

Drilling performance $\Sigma t_i \leq 4.50$ mm

Timber substructure

Performance not assessed

		Component II, t_{II} in mm																		
		0.63		0.75		0.88		1.00		1.13		1.25		1.50		2.00		3.00		
Component I, t_I in mm	$V_{R,k}$ in kN	0.55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		0.63	0.99	-	1.05	-	1.05	-	1.05	-	1.14	-	1.29	-	1.29	-	1.29	-	1.29	ac
		0.75	1.07	-	1.40	-	1.40	-	1.40	-	1.40	-	1.40	-	1.40	-	1.40	-	1.40	ac
		0.88	1.07	-	1.40	-	1.40	-	1.40	-	1.71	-	2.02	-	2.02	-	2.25	-	2.71	a
		1.00	1.07	-	1.40	-	1.40	-	1.40	-	2.02	-	2.63	-	2.63	-	3.09	-	4.01	a
		1.13	1.07	-	1.40	-	1.40	-	1.40	-	2.02	-	2.63	-	2.63	-	3.21	-	4.38	-
		1.25	1.07	-	1.40	-	1.40	-	1.40	-	2.02	-	2.63	-	2.63	-	3.33	-	4.73	-
		1.50	1.07	-	1.40	-	1.40	-	1.40	-	2.02	-	2.63	-	2.63	-	3.57	-	5.44	-
		1.75	1.07	-	1.40	-	1.40	-	1.40	-	2.02	-	2.63	-	2.63	-	3.57	-	-	-
		2.00	1.07	-	1.40	-	1.40	-	1.40	-	2.02	-	2.63	-	2.63	-	3.57	-	-	-
	$N_{R,k}$ in kN	0.55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		0.63	0.40	-	0.50	-	0.66	-	0.80	-	1.01	-	1.20	-	1.60	-	2.14	-	2.14	ac
		0.75	0.40	-	0.50	-	0.66	-	0.80	-	1.01	-	1.20	-	1.60	-	2.30	-	2.30	ac
		0.88	0.40	-	0.50	-	0.66	-	0.80	-	1.01	-	1.20	-	1.60	-	2.50	-	2.50	a
		1.00	0.40	-	0.50	-	0.66	-	0.80	-	1.01	-	1.20	-	1.60	-	2.50	-	2.50	a
		1.13	0.40	-	0.50	-	0.66	-	0.80	-	1.01	-	1.20	-	1.60	-	2.50	-	2.50	-
		1.25	0.40	-	0.50	-	0.66	-	0.80	-	1.01	-	1.20	-	1.60	-	2.50	-	2.50	-
		1.50	0.40	-	0.50	-	0.66	-	0.80	-	1.01	-	1.20	-	1.60	-	2.50	-	2.50	-
		1.75	0.40	-	0.50	-	0.66	-	0.80	-	1.01	-	1.20	-	1.60	-	2.50	-	-	-
		2.00	0.40	-	0.50	-	0.66	-	0.80	-	1.01	-	1.20	-	1.60	-	2.50	-	-	-



Dimensions in mm

Materials

Fastener carbon steel,
case-hardened and galvanized,
steel grade 1.5506, 1.5523, 1.5525

Washer carbon steel,
corrosion-resistant
with EPDM sealing washer

Component I S280GD, S320GD – EN 10346

Component II S235 – EN 10025-1
S280GD, S320GD – EN 10346

Drilling performance $\Sigma t_i \leq 4.50$ mm

Timber substructure

Performance not assessed

		Component II, t_i in mm									
		0.63	0.75	0.88	1.00	1.13	1.25	1.50	2.00	3.00	
Component I, t_i in mm	$V_{R,k}$ in kN	0.55	-	-	-	-	-	-	-	-	-
	0.63	1.00	-	1.20	-	1.41	-	1.60	ac	1.60	ac
	0.75	1.00	-	1.30	-	1.56	-	1.80	-	1.93	-
	0.88	1.00	-	1.39	-	1.60	-	1.80	-	2.16	-
	1.00	1.00	-	1.46	-	1.60	-	2.00	-	2.30	-
	1.13	1.00	-	1.50	-	1.70	-	2.10	-	2.54	-
	1.25	1.00	-	1.54	-	1.80	-	2.20	-	2.59	-
	1.50	1.00	-	1.56	-	1.94	-	2.30	-	2.59	-
	1.75	1.00	-	1.56	-	1.94	-	2.30	-	2.59	-
	2.00	1.00	-	1.56	-	1.94	-	2.30	-	2.59	-
	$N_{R,k}$ in kN	0.55	-	-	-	-	-	-	-	-	-
	0.63	0.40	-	0.50	-	0.66	-	0.80	ac	1.01	ac
	0.75	0.40	-	0.50	-	0.66	-	0.80	-	1.01	-
	0.88	0.40	-	0.50	-	0.66	-	0.80	-	1.01	-
	1.00	0.40	-	0.50	-	0.66	-	0.80	-	1.01	-
	1.13	0.40	-	0.50	-	0.66	-	0.80	-	1.01	-
	1.25	0.40	-	0.50	-	0.66	-	0.80	-	1.01	-
	1.50	0.40	-	0.50	-	0.66	-	0.80	-	1.01	-
	1.75	0.40	-	0.50	-	0.66	-	0.80	-	1.01	-
	2.00	0.40	-	0.50	-	0.66	-	0.80	-	1.01	-



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European Technical Assessment

ETA-21/0306
of 21.04.2021

General part

**Technical Assessment Body issuing the
European Technical Assessment**

Österreichisches Institut für Bautechnik (OIB)
Austrian Institute of Construction Engineering

Trade name of the construction product

See Annex 1.1 to Annex 1.10

**Product family to which the construction
product belongs**

Fastening screws for metal members and
sheeting

Manufacturer

REISSER-Schraubentechnik GmbH
Fritz-Müller-Straße 10
74653 Ingelfingen-Criesbach
Germany

Manufacturing plants

Plant 1, plant 2, plant 3, plant 4, and plant 5

**This European Technical Assessment
contains**

128 pages including Annexes 1.01 to 40.20,
which form an integral part of this assessment.

**This European Technical Assessment
is issued in accordance with Regulation
(EU) № 305/2011, on the basis of**

European Assessment Document
(EAD) 330046-01-0602 – Fastening screws for
metal members and sheeting.

Table of contents

EUROPEAN TECHNICAL ASSESSMENT	ETA-21/0306 OF 21.04.2021	1
GENERAL PART		1
TABLE OF CONTENTS		2
REMARKS		4
SPECIFIC PARTS		4
1	TECHNICAL DESCRIPTION OF THE PRODUCT	4
1.1	General	4
2	SPECIFICATION OF THE INTENDED USE IN ACCORDANCE WITH THE APPLICABLE EUROPEAN ASSESSMENT DOCUMENT (HEREINAFTER EAD)	4
2.1	Intended use	4
2.2	Assumptions	4
2.2.1	General	4
2.2.2	Design	4
2.2.3	Installation	5
2.3	Assumed working life	5
3	PERFORMANCE OF THE PRODUCT AND REFERENCES TO THE METHODS USED FOR ITS ASSESSMENT	6
3.1	Essential characteristics	6
3.2	Product performance	6
3.2.1	Mechanical resistance and stability	6
3.2.1.1	Shear resistance of the connection	6
3.2.1.2	Tension resistance of the connection	7
3.2.1.3	Design resistance in case of combined tension and shear forces (interaction)	7
3.2.1.4	Check of deformation capacity in case of constraining forces due to temperature	7
3.2.1.5	Durability	7
3.2.2	Safety in case of fire	7
3.2.2.1	Reaction to fire	7
3.3	Assessment methods	7
3.4	Identification	7
4	ASSESSMENT AND VERIFICATION OF CONSTANCY OF PERFORMANCE (HEREINAFTER AVCP) SYSTEM APPLIED, WITH REFERENCE TO ITS LEGAL BASE	7
4.1	System of assessment and verification of constancy of performance	7
4.2	AVCP for construction products for which a European Technical Assessment has been issued	8
5	TECHNICAL DETAILS NECESSARY FOR THE IMPLEMENTATION OF THE AVCP SYSTEM, AS PROVIDED FOR IN THE APPLICABLE EAD	8
5.1	Tasks for the manufacturer	8
5.1.1	Factory production control	8
5.1.2	Declaration of performance	9
5.2	Tasks for the notified product certification body	9

5.2.1	Initial inspection of the manufacturing plant and of factory production control	9
5.2.2	Continuing surveillance, assessment, and evaluation of factory production control.....	9
ANNEXES		10
ANNEX 1.1	FASTENING SCREW, OVERVIEW – Ø 4.2 AND 4.5 MM.....	10
ANNEX 1.2	FASTENING SCREW, OVERVIEW – Ø 4.8 MM	11
ANNEX 1.3	FASTENING SCREW, OVERVIEW – Ø 4.8, 4.9, 5.0, AND 5.5 MM	12
ANNEX 1.4	FASTENING SCREW, OVERVIEW – Ø 5.5 MM	13
ANNEX 1.5	FASTENING SCREW, OVERVIEW – Ø 5.5 AND 6.0 MM.....	14
ANNEX 1.6	FASTENING SCREW, OVERVIEW – Ø 6.0 MM	15
ANNEX 1.7	FASTENING SCREW, OVERVIEW – Ø 6.0 AND 6.3 MM.....	16
ANNEX 1.8	FASTENING SCREW, OVERVIEW – Ø 6.3 MM	17
ANNEX 1.9	FASTENING SCREW, OVERVIEW – Ø 6.5 MM	18
ANNEX 1.10	FASTENING SCREW, OVERVIEW – Ø 6.5, 7.2, 8.0, AND 8.4 MM	19
ANNEX 1.11	FASTENING SCREW, SYMBOLS	20
ANNEX 2.1	FASTENING SCREWS FOR METAL MEMBERS AND SHEETING, DESIGN	21
ANNEX 2.2	FASTENING SCREWS FOR METAL MEMBERS AND SHEETING, DESIGN AND INSTALLATION	22
ANNEX 3.1	FASTENING SCREWS FOR METAL MEMBERS AND SHEETING, CHARACTERISTIC RESISTANCE	23
ANNEX 3.2	FASTENING SCREWS FOR METAL MEMBERS AND SHEETING, REFERENCE DOCUMENTS	24
ANNEX 4.10 TO 40.20	FASTENING SCREWS – DETAILS	25

Remarks

Translations of the 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

1.1 General

The European Technical Assessment – ETA – applies to fastening screws for metal members and sheeting according to Annex 1.1 to Annex 1.10.

The fastening screws are self-drilling or self-tapping screws made of stainless steel, galvanised carbon steel, or stainless steel with galvanised carbon steel drill bits. The fastening screws can be equipped with a sealing washer, comprising metal washer and EPDM-seal.

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

2.1 Intended use

The fastening screws are intended to be used for fastening metal sheeting to metal or timber supporting substructures. For details see Annexes 4.10 to 40.20. The component to be fastened is component I and the supporting structure is component II. 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 fastening of any other thin gauge metal member.

The intended use comprises fastening screws and connections for indoor and outdoor applications. Fastening screws that are intended to be used in atmospheric environments of atmospheric-corrosivity categories \geq C2 according to EN ISO 12944-2¹ are in stainless steel.

Furthermore the screw connections are for predominantly static loads (e.g. wind loads, dead loads).

The fastening screws for metal members and sheeting are not for re-use.

2.2 Assumptions

2.2.1 General

Concerning product packaging, transport, storage, maintenance, replacement, and repair it is the responsibility of the manufacturer to undertake the appropriate measures and to advise his clients on transport, storage, maintenance, replacement, and repair of the product as he considers necessary.

2.2.2 Design

The manufacturer ensures that the requirements in accordance with Clauses 1, 2, and 3 as well as with the Annexes of the European Technical Assessment are made known to those who are concerned with design and execution of the works.

¹ Standards and other documents referred to in the European Technical Assessment are listed in Annex 3.2.

The European Technical Assessment only applies to the manufacture and use of the fastening screws for metal members and sheeting. Verification of stability of the works including application of loads on the fastening screws for metal members and sheeting is not subject to the European Technical Assessment.

The following conditions are observed.

- Design of the fastening screws for metal members and sheeting is carried under the responsibility of an engineer experienced in such products.
- Design of the works account for the protection of fastening screws for metal members and sheeting to prevent corrosion at the place of use.
- The screws are installed correctly.

Design of the fastening screws for metal members and sheeting is according to Eurocode 3, Eurocode 5, and Eurocode 9, taking into account of Annex 2.1, Annex 2.2, and Annex 3.1.

2.2.3 Installation

It is assumed that the product will be installed according to the manufacturer's instructions or – in absence of such instructions – according to the usual practice of the building professionals.

Further indications on product installation are given in Annex 2.2.

2.3 Assumed working life

The European Technical Assessment is based on an assumed working life of the fastening screws for metal members and sheeting of 25 years, provided that the fastening screws for metal members and sheeting are subject to appropriate installation, use, and maintenance, see Clause 2.2. These provisions are based upon the current state of the art and the available knowledge and experience.

In normal use conditions, the real working life may be considerably longer without major degradation affecting the basic requirements for construction works².

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 nor by the Technical Assessment Body, but are regarded only as a means for expressing the expected economically reasonable working life of the product.

² The real working life of a product incorporated in a specific works depends on the environmental conditions to which that works are subject, as well as on the particular conditions of design, execution, use, and maintenance of that works. Therefore, it cannot be excluded that in certain cases the real working life of the product may also be shorter than the assumed working life.

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

3.1 Essential characteristics

The performances of the fastening screws for metal members and sheeting for the essential characteristics are given in Table 1.

Table 1 Essential characteristics and performances of the product

No	Essential characteristic	Product performance
Basic requirement for construction works 1: Mechanical resistance and stability		
1	Shear resistance of the connection	See Clause 3.2.1.1.
2	Tension resistance of the connection	See Clause 3.2.1.2.
3	Design resistance in case of combined tension and shear forces (interaction)	See Clause 3.2.1.3.
4	Check of deformation capacity in case of constraining forces due to temperature	See Clause 3.2.1.4.
5	Durability	See Clause 3.2.1.5.
Basic requirement for construction works 2: Safety in case of fire		
6	Reaction to fire	See Clause 3.2.2.1.
Basic requirement for construction works 3: Hygiene, health, and the environment		
—	Not relevant. No characteristic assessed.	—
Basic requirement for construction works 4: Safety and accessibility in use		
—	Not relevant. No characteristic assessed.	—
Basic requirement for construction works 5: Protection against noise		
—	Not relevant. No characteristic assessed.	—
Basic requirement for construction works 6: Energy economy and heat retention		
—	Not relevant. No characteristic assessed.	—
Basic requirement for construction works 7: Sustainable use of natural resources		
—	No characteristic assessed.	—

3.2 Product performance

3.2.1 Mechanical resistance and stability

3.2.1.1 Shear resistance of the connection

The fastening screws for metal members and sheeting as described in the ETA meet the acceptance criteria of EAD 330046-01-0602, Clause 2.2.1. The characteristic values of shear resistance of the connection with materials of component I and of component II according to Annex 1.1 to Annex 1.10 are listed in Annex 4.10 to 40.20.

3.2.1.2 Tension resistance of the connection

The fastening screws for metal members and sheeting as described in the ETA meet the acceptance criteria of EAD 330046-01-0602, Clause 2.2.2. The characteristic values of tension resistance of the connection with materials of component I and of component II according to Annex 1.1 to Annex 1.10 are listed in Annex 4.10 to 40.20.

3.2.1.3 Design resistance in case of combined tension and shear forces (interaction)

For fastening screws for metal members and sheeting as described in the ETA the linear interaction equation in Annex 2.2 is applied.

3.2.1.4 Check of deformation capacity in case of constraining forces due to temperature

The fastening screws for metal members and sheeting as described in the ETA meet the acceptance criteria of EAD 330046-01-0602, Clause 2.2.4, see Annex 2.1 and Annex 4.10 to 40.20.

3.2.1.5 Durability

The fastening screws for metal members and sheeting as described in the ETA meet the acceptance criteria of EAD 330046-01-0602, Clause 2.2.5. Materials are given in Annex 3.1 and Annex 4.10 to 40.20.

3.2.2 Safety in case of fire

3.2.2.1 Reaction to fire

The performance of components made of steel is Class A1 without testing.

The performance of components of other materials has not been assessed.

3.3 Assessment methods

The assessment of the essential characteristics in Clause 3.1 of the fastening screws for metal members and sheeting for the intended use, and in relation to the requirements for mechanical resistance and stability and safety in case of fire, in the sense of the basic requirements for construction works № 1 and 2 of Regulation (EU) № 305/2011, has been made in accordance with EAD 330046-01-0602, Fastening screws for metal members and sheeting.

3.4 Identification

The European Technical Assessment for the fastening screws for metal members and sheeting is issued on the basis of agreed data that identify the assessed product³. Changes to materials, to composition, or to characteristics of the product, or to the production process could result in these deposited data being incorrect. Österreichisches Institut für Bautechnik should be notified before the changes are introduced, as an amendment of the European Technical Assessment is possibly necessary.

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

4.1 System of assessment and verification of constancy of performance

According to Commission Decision 98/214/EC the system of assessment and verification of constancy of performance to be applied to the fastening screws for metal members and sheeting is System 2+. System 2+ is detailed in Commission Delegated Regulation (EU) № 568/2014 of 18 February 2014, Annex, point 1.3, and provides for the following items.

³ The technical file of the European Technical Assessment is deposited at Österreichisches Institut für Bautechnik.

- (a) The manufacturer shall carry out
 - (i) an assessment of the performance of the construction product on the basis of testing (including sampling) calculation, tabulated values or descriptive documentation of that product;
 - (ii) factory production control;
 - (iii) testing of samples taken at the manufacturing plant by the manufacturer in accordance with the prescribed test plan⁴.
- (b) The notified factory production control certification body shall decide on the issuing, restriction, suspension or withdrawal of the certificate of conformity of the factory production control on the basis of the outcome of the following assessments and verifications carried out by that body
 - (i) initial inspection of the manufacturing plant and of factory production control;
 - (ii) continuing surveillance, assessment, and evaluation of factory production control.

4.2 AVCP for construction products for which a European Technical Assessment has been issued

Manufacturers undertaking tasks under System 2+ shall consider the European Technical Assessment issued for the construction product in question as the assessment of the performance of that product. Manufacturers shall therefore not undertake the tasks referred to in Clause 4.1, point (a) (i).

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

5.1 Tasks for the manufacturer

5.1.1 Factory production control

In the manufacturing plant, the manufacturer establishes and continuously maintains a factory production control. All procedures and specifications adopted by the manufacturer are documented in a systematic manner. Purpose of factory production control is to ensure the constancy of performances of the fastening screws for metal members and sheeting with regard to the essential characteristics.

The manufacturer only uses raw materials supplied with the relevant inspection documents as laid down in the control plan. The incoming raw materials are subjected to controls by the manufacturer before acceptance. Check of incoming materials includes control of inspection documents presented by the manufacturer of the raw materials.

Testing within factory production control is in accordance with the prescribed test plan. The results of factory production control are recorded and evaluated. The records are presented to the notified factory production control certification body involved in continuous surveillance and are kept at least for ten years after the product has been placed on the market. On request, the records are presented to Österreichisches Institut für Bautechnik.

If test results are unsatisfactory, the manufacturer immediately implements measures to eliminate the defects. Products or components that are not in conformity with the requirements are removed. After elimination of the defects, the respective test – if verification is required for technical reasons – is repeated immediately.

⁴ The prescribed test plan has been deposited with Österreichisches Institut für Bautechnik and is handed over only to the notified factory production control certification body involved in the procedure for the assessment and verification of constancy of performance. The prescribed test plan is also referred to as control plan.

5.1.2 Declaration of performance

The manufacturer is responsible for preparing the declaration of performance. When all the criteria of the assessment and verification of constancy of performance are met, including the certificate of conformity of the factory production control issued by the notified factory production control certification body, the manufacturer draws up the declaration of performance. Essential characteristics to be included in the declaration of performance for the corresponding intended use are given in Clause 3.1, Table 1.

5.2 Tasks for the notified factory production control certification body

5.2.1 Initial inspection of the manufacturing plant and of factory production control

The notified factory production control certification body verifies the ability of the manufacturer for a continuous and orderly manufacturing of the fastening screws for metal members and sheeting according to the European Technical Assessment. In particular, the following items are appropriately considered.

- Personnel and equipment
- Suitability of the factory production control established by the manufacturer
- Full implementation of the prescribed test plan

5.2.2 Continuing surveillance, assessment, and evaluation of factory production control

The notified factory production control certification body visits the factory at least once a year for routine inspection. In particular the following items are appropriately considered.

- Manufacturing process including personnel and equipment
- Factory production control
- Implementation of the prescribed test plan

It is verified that the system of factory production control and the specified manufacturing process are maintained, taking account of the prescribed test plan.

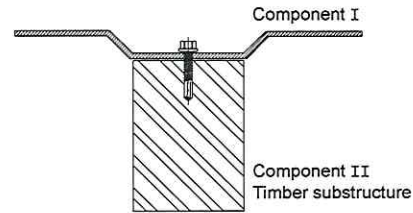
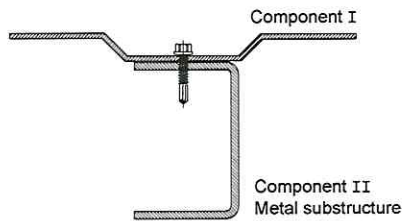
The results of continuous surveillance are made available on demand by the notified factory production control certification body to Österreichisches Institut für Bautechnik. When the provisions of the European Technical Assessment or the prescribed test plan are no longer fulfilled, the certificate of conformity of the factory production control is withdrawn by the notified factory production control certification body.

Issued in Vienna on 21 April 2021
by Österreichisches Institut für Bautechnik

The original document is signed by

Rainer Mikulits
Managing Director

Connections made with the fastening screws



Fastening screws – Overview

Screw			Component I – II	Annex
Ø in mm	Designation	Material		
4.2	RP-K-4,2 × L	Stainless steel	Steel – Steel	21.11
4.2	RP-K-LK-4,2 × L	Stainless steel	Steel – Steel	21.10
4.2	RS-K-4,2 × L	Galvanised steel	Steel – Steel	4.10
4.2	RS-K-4,2 × L	Galvanised steel	Steel – Steel	4.12
4.2	RS-K-LK-4,2 × L	Galvanised steel	Steel – Steel	4.11
4.5	RP-T2-4,5 × L	Stainless steel	Steel – Steel	28.10
4.5	RP-T2-4,5 × L	Stainless steel	Steel – Steel	28.11
4.5	RP-T2-4,5 × L	Stainless steel	Aluminium – Aluminium	28.20
4.5	RP-T2-4,5 × L	Stainless steel	Aluminium – Steel	28.30
4.5	RP-T2-FK-4,5 × L	Stainless steel	Steel – Steel	28.10
4.5	RP-T2-FK-4,5 × L	Stainless steel	Steel – Steel	28.11
4.5	RP-T2-FK-4,5 × L	Stainless steel	Aluminium – Aluminium	28.20
4.5	RP-T2-FK-4,5 × L	Stainless steel	Aluminium – Steel	28.30
4.5	RP-T2-LK-4,5 × L	Stainless steel	Steel – Steel	28.10
4.5	RP-T2-LK-4,5 × L	Stainless steel	Steel – Steel	28.11
4.5	RP-T2-LK-4,5 × L	Stainless steel	Aluminium – Aluminium	28.20
4.5	RP-T2-LK-4,5 × L	Stainless steel	Aluminium – Steel	28.30
4.5	RS-T2-4,5 × L	Galvanised steel	Steel – Steel	10.10
4.5	RS-T2-4,5 × L	Galvanised steel	Steel – Steel	10.11
4.5	RS-T2-FK-4,5 × L	Galvanised steel	Steel – Steel	10.10
4.5	RS-T2-FK-4,5 × L	Galvanised steel	Steel – Steel	10.11
4.5	RS-T2-LK-4,5 × L	Galvanised steel	Steel – Steel	10.10
4.5	RS-T2-LK-4,5 × L	Galvanised steel	Steel – Steel	10.11
4.5	RV-T2-4,5 × L	Stainless steel	Aluminium – Aluminium	28.20
4.5	RV-T2-FK-4,5 × L	Stainless steel	Aluminium – Aluminium	28.20
4.5	RV-T2-LK-4,5 × L	Stainless steel	Aluminium – Aluminium	28.20

Fastening screws – Overview

Screw			Component I – II	Annex
Ø in mm	Designation	Material		
4.8	RP-K-4,8 × L	Stainless steel	Steel – Steel	22.10
4.8	RP-K-4,8 × L	Stainless steel	Aluminium – Aluminium	22.20
4.8	RP-K-4,8 × L	Stainless steel	Aluminium – Steel	22.30
4.8	RP-K-FK-4,8 × L	Stainless steel	Steel – Steel	22.10
4.8	RP-K-FK-4,8 × L	Stainless steel	Steel – Steel	22.11
4.8	RP-K-FK-4,8 × L	Stainless steel	Aluminium – Aluminium	22.20
4.8	RP-K-FK-4,8 × L	Stainless steel	Aluminium – Steel	22.30
4.8	RP-K-LK-4,8 × L	Stainless steel	Steel – Steel	22.11
4.8	RP-K-LK-4,8 × L	Stainless steel	Aluminium – Aluminium	22.20
4.8	RP-K-LK-4,8 × L	Stainless steel	Aluminium – Steel	22.30
4.8	RP-r-3H-4,8 × L	Stainless steel	Steel – Steel	12.10
4.8	RP-r-3H-4,8 × L	Stainless steel	Aluminium – Aluminium	12.20
4.8	RP-r-3H-4,8 × L	Stainless steel	Aluminium – Steel	12.30
4.8	RP-r-3H-FK-4,8 × L	Stainless steel	Steel – Steel	12.10
4.8	RP-r-3H-FK-4,8 × L	Stainless steel	Aluminium – Aluminium	12.20
4.8	RP-r-3H-FK-4,8 × L	Stainless steel	Aluminium – Steel	12.30
4.8	RP-r-3H-LK-4,8 × L	Stainless steel	Steel – Steel	12.10
4.8	RP-r-3H-LK-4,8 × L	Stainless steel	Aluminium – Aluminium	12.20
4.8	RP-r-3H-LK-4,8 × L	Stainless steel	Aluminium – Steel	12.30
4.8	RP-r-4,8 × L	Stainless steel	Steel – Steel	11.10
4.8	RP-r(X)-4,8 × L	Stainless steel	Steel – Steel	11.11
4.8	RP-r(X)-4,8 × L	Stainless steel	Aluminium – Aluminium	11.20
4.8	RP-r-FK-4,8 × L	Stainless steel	Steel – Steel	11.10
4.8	RP-r-FK(X)-4,8 × L	Stainless steel	Steel – Steel	11.11
4.8	RP-r-FK(X)-4,8 × L	Stainless steel	Aluminium – Aluminium	11.20
4.8	RV-r-FK(X)-4,8 × L	Stainless steel	Aluminium – Aluminium	11.20
4.8	RP-r-LK(X)-4,8 × L	Stainless steel	Steel – Steel	11.11
4.8	RP-r-LK(X)-4,8 × L	Stainless steel	Aluminium – Aluminium	11.20
4.8	RV-r-LK(X)-4,8 × L	Stainless steel	Aluminium – Aluminium	11.20
4.8	RV-r(X)-4,8 × L	Stainless steel	Aluminium – Aluminium	11.20
4.8	RP-r-FK(X)-4,8 × L	Stainless steel	Aluminium – Steel	11.30
4.8	RP-r-LK(X)-4,8 × L	Stainless steel	Aluminium – Steel	11.30
4.8	RP-r(X)-4,8 × L	Stainless steel	Aluminium – Steel	11.30

Fastening screws – Overview

Screw			Component I – II	Annex
Ø in mm	Designation	Material		
4.8	RS-K-4,8 × L	Galvanised steel	Steel – Steel	5.10
4.8	RS-K-4,8 × L	Galvanised steel	Steel – Steel	5.12
4.8	RS-K-FK-4,8 × L	Galvanised steel	Steel – Steel	5.11
4.8	RS-K-FK-4,8 × L	Galvanised steel	Steel – Steel	5.12
4.8	RS-K-LK-4,8 × L	Galvanised steel	Steel – Steel	5.11
4.8	RV-K-4,8 × L	Stainless steel	Aluminium – Aluminium	22.20
4.8	RV-K-FK-4,8 × L	Stainless steel	Aluminium – Aluminium	22.20
4.8	RV-K-LK-4,8 × L	Stainless steel	Aluminium – Aluminium	22.20
4.8	RV-r-3H-4,8 × L	Stainless steel	Aluminium – Aluminium	12.20
4.8	RV-r-3H-FK-4,8 × L	Stainless steel	Aluminium – Aluminium	12.20
4.8	RV-r-3H-LK-4,8 × L	Stainless steel	Aluminium – Aluminium	12.20
4.9	RP-r-4,9 × L	Stainless steel	Steel – Timber	13.40
4.9	RP-r-4,9 × L	Stainless steel	Steel – Timber	13.41
4.9	RP-r-FK-4,9 × L	Stainless steel	Steel – Timber	13.40
4.9	RP-r-FK-4,9 × L	Stainless steel	Steel – Timber	13.41
4.9	RP-TD-4,9 × L	Stainless steel	Steel – Timber	18.40
4.9	RP-TD-4,9 × L	Stainless steel	Steel – Timber	18.41
4.9	RP-TD-FK-4,9 × L	Stainless steel	Steel – Timber	18.40
4.9	RP-TD-FK-4,9 × L	Stainless steel	Steel – Timber	18.41
5.0	RV-B5-5,0 × L	Stainless steel	Aluminium – Aluminium	40.20
5.0	RV-r-SSK-(X)-5,0 × L	Stainless steel	Aluminium – Aluminium	40.20
5.5	RP-K12-5,5 × L	Stainless steel	Steel – Steel	25.10
5.5	RP-K12-FK-5,5 × L	Stainless steel	Steel – Steel	26.10
5.5	RP-K-5,5 × L	Stainless steel	Steel – Steel	23.10
5.5	RP-K-5,5 × L	Stainless steel	Steel – Steel	23.11
5.5	RP-K-5,5 × L	Stainless steel	Steel – Steel	23.12
5.5	RP-K-5,5 × L	Stainless steel	Aluminium – Aluminium	23.20
5.5	RP-K-5,5 × L	Stainless steel	Aluminium – Steel	23.30
5.5	RP-K-FK-5,5 × L	Stainless steel	Steel – Steel	23.10
5.5	RP-K-FK-5,5 × L	Stainless steel	Steel – Steel	23.11
5.5	RP-K-FK-5,5 × L	Stainless steel	Steel – Steel	23.12
5.5	RP-K-FK-5,5 × L	Stainless steel	Aluminium – Aluminium	23.20
5.5	RP-K-FK-5,5 × L	Stainless steel	Aluminium – Steel	23.30
5.5	RP-r-3H-5,5 × L	Stainless steel	Steel – Steel	14.10
5.5	RP-r-3H-5,5 × L	Stainless steel	Steel – Steel	14.11

Fastening screws – Overview

Screw			Component I – II	Annex
Ø in mm	Designation	Material		
5.5	RP-r-3H-5,5 × L	Stainless steel	Aluminium – Aluminium	14.20
5.5	RP-r-3H-5,5 × L	Stainless steel	Aluminium – Aluminium	14.21
5.5	RP-r-3H-5,5 × L	Stainless steel	Aluminium – Steel	14.30
5.5	RP-r-3H-FK-5,5 × L	Stainless steel	Steel – Steel	14.10
5.5	RP-r-3H-FK-5,5 × L	Stainless steel	Steel – Steel	14.11
5.5	RP-r-3H-FK-5,5 × L	Stainless steel	Aluminium – Aluminium	14.20
5.5	RP-r-3H-FK-5,5 × L	Stainless steel	Aluminium – Aluminium	14.21
5.5	RP-r-3H-FK-5,5 × L	Stainless steel	Aluminium – Steel	14.30
5.5	RP-r-5,5 × L	Stainless steel	Steel – Steel	14.10
5.5	RP-r-5,5 × L	Stainless steel	Steel – Steel	14.11
5.5	RP-r-5,5 × L	Stainless steel	Aluminium – Aluminium	14.20
5.5	RP-r-5,5 × L	Stainless steel	Aluminium – Aluminium	14.21
5.5	RP-r-5,5 × L	Stainless steel	Aluminium – Steel	14.30
5.5	RP-r-FK-5,5 × L	Stainless steel	Steel – Steel	14.10
5.5	RP-r-FK-5,5 × L	Stainless steel	Steel – Steel	14.11
5.5	RP-r-FK-5,5 × L	Stainless steel	Aluminium – Aluminium	14.20
5.5	RP-r-FK-5,5 × L	Stainless steel	Aluminium – Aluminium	14.21
5.5	RP-r-FK-5,5 × L	Stainless steel	Aluminium – Steel	14.30
5.5	RS-K12-5,5 × L	Galvanised steel	Steel – Steel	8.10
5.5	RS-K12-5,5 × L	Galvanised steel	Steel – Steel	8.11
5.5	RS-K12-FK-5,5 × L	Galvanised steel	Steel – Steel	8.10
5.5	RS-K12-FK-5,5 × L	Galvanised steel	Steel – Steel	8.11
5.5	RS-K-5,5 × L	Galvanised steel	Steel – Steel	6.10
5.5	RS-K-5,5 × L	Galvanised steel	Steel – Steel	6.11
5.5	RS-K-5,5 × L	Galvanised steel	Steel – Steel	6.12
5.5	RS-K-5,5 × L	Galvanised steel	Steel – Steel	6.13
5.5	RS-K-FK-5,5 × L	Galvanised steel	Steel – Steel	6.10
5.5	RS-K-FK-5,5 × L	Galvanised steel	Steel – Steel	6.11
5.5	RS-K-FK-5,5 × L	Galvanised steel	Steel – Steel	6.12
5.5	RS-K-FK-5,5 × L	Galvanised steel	Steel – Steel	6.13
5.5	RV-K-5,5 × L	Stainless steel	Aluminium – Aluminium	23.20
5.5	RV-K-FK-5,5 × L	Stainless steel	Aluminium – Aluminium	23.20
5.5	RV-r-3H-5,5 × L	Stainless steel	Aluminium – Aluminium	14.20
5.5	RV-r-3H-5,5 × L	Stainless steel	Aluminium – Aluminium	14.21

Fastening screws – Overview

Screw			Component I – II	Annex
Ø in mm	Designation	Material		
5.5	RV-r-3H-FK-5,5 × L	Stainless steel	Aluminium – Aluminium	14.20
5.5	RV-r-3H-FK-5,5 × L	Stainless steel	Aluminium – Aluminium	14.21
5.5	RV-r-5,5 × L	Stainless steel	Aluminium – Aluminium	14.20
5.5	RV-r-5,5 × L	Stainless steel	Aluminium – Aluminium	14.21
5.5	RV-r-FK-5,5 × L	Stainless steel	Aluminium – Aluminium	14.20
5.5	RV-r-FK-5,5 × L	Stainless steel	Aluminium – Aluminium	14.21
6.0	RP-r-6,0 × L	Stainless steel	Steel – Steel	15.10
6.0	RP-r-6,0 × L	Stainless steel	Aluminium – Aluminium	15.20
6.0	RP-r-6,0 × L	Stainless steel	Aluminium – Steel	15.30
6.0	RP-r-6,0 × L	Stainless steel	Steel – Timber, Steel – BauBuche	15.40
6.0	RP-r-6,0 × L	Stainless steel	Steel – Timber, Steel – BauBuche	15.41
6.0	RP-r-6,0 × L	Stainless steel	Steel – Timber, Steel – BauBuche	15.42
6.0	RP-r-6,0 × L	Stainless steel	Aluminium – Timber, Aluminium – BauBuche	15.50
6.0	RP-r-FK-6,0 × L	Stainless steel	Steel – Steel	15.10
6.0	RP-r-FK-6,0 × L	Stainless steel	Aluminium – Aluminium	15.20
6.0	RP-r-FK-6,0 × L	Stainless steel	Aluminium – Steel	15.30
6.0	RP-r-FK-6,0 × L	Stainless steel	Steel – Timber, Steel – BauBuche	15.40
6.0	RP-r-FK-6,0 × L	Stainless steel	Steel – Timber, Steel – BauBuche	15.41
6.0	RP-r-FK-6,0 × L	Stainless steel	Steel – Timber, Steel – BauBuche	15.42
6.0	RP-r-FK-6,0 × L	Stainless steel	Aluminium – Timber, Aluminium – BauBuche	15.50
6.0	RP-r-LK-6,0 × L	Stainless steel	Steel – Steel	15.10
6.0	RP-r-LK-6,0 × L	Stainless steel	Aluminium – Aluminium	15.20
6.0	RP-r-LK-6,0 × L	Stainless steel	Aluminium – Steel	15.30
6.0	RP-r-LK-6,0 × L	Stainless steel	Steel – Timber, Steel – BauBuche	15.40
6.0	RP-r-LK-6,0 × L	Stainless steel	Steel – Timber, Steel – BauBuche	15.41
6.0	RP-r-LK-6,0 × L	Stainless steel	Steel – Timber, Steel – BauBuche	15.42
6.0	RP-r-LK-6,0 × L	Stainless steel	Aluminium – Timber, Aluminium – BauBuche	15.50

Fastening screws – Overview

Screw			Component I – II	Annex
Ø in mm	Designation	Material		
6.0	RP-T1-(X)-6,0 × L	Stainless steel	Steel – Steel	29.10
6.0	RP-T1-6,0 × L	Stainless steel	Steel – Steel	29.11
6.0	RP-T1-6,0 × L	Stainless steel	Aluminium – Aluminium	29.21
6.0	RP-T1-6,0 × L	Stainless steel	Aluminium – Steel	29.31
6.0	RP-T1-FK-(X)-6,0 × L	Stainless steel	Steel – Steel	29.10
6.0	RP-T1-FK-6,0 × L	Stainless steel	Steel – Steel	29.11
6.0	RP-T1-FK-6,0 × L	Stainless steel	Aluminium – Aluminium	29.21
6.0	RP-T1-FK-6,0 × L	Stainless steel	Aluminium – Steel	29.31
6.0	RP-T1-LK-(X)-6,0 × L	Stainless steel	Steel – Steel	29.10
6.0	RP-T1-LK-6,0 × L	Stainless steel	Steel – Steel	29.11
6.0	RP-T1-LK-6,0 × L	Stainless steel	Aluminium – Aluminium	29.21
6.0	RP-T1-LK-6,0 × L	Stainless steel	Aluminium – Steel	29.31
6.0	RP-T2-(X)-6,0 × L	Stainless steel	Steel – Steel	29.10
6.0	RP-T2-6,0 × L	Stainless steel	Steel – Steel	29.11
6.0	RP-T2-6,0 × L	Stainless steel	Aluminium – Aluminium	29.20
6.0	RP-T2-6,0 × L	Stainless steel	Aluminium – Steel	29.30
6.0	RP-T2-FK-(X)-6,0 × L	Stainless steel	Steel – Steel	29.10
6.0	RP-T2-FK-6,0 × L	Stainless steel	Steel – Steel	29.11
6.0	RP-T2-FK-6,0 × L	Stainless steel	Aluminium – Aluminium	29.20
6.0	RP-T2-FK-6,0 × L	Stainless steel	Aluminium – Steel	29.30
6.0	RP-T2-LK-(X)-6,0 × L	Stainless steel	Steel – Steel	29.10
6.0	RP-T2-LK-6,0 × L	Stainless steel	Steel – Steel	29.11
6.0	RP-T2-LK-6,0 × L	Stainless steel	Aluminium – Aluminium	29.20
6.0	RP-T2-LK-6,0 × L	Stainless steel	Aluminium – Steel	29.30

Fastening screws – Overview

Screw			Component I – II	Annex
Ø in mm	Designation	Material		
6.0	RP-TD-6,0 × L	Stainless steel	Steel – Timber, Steel – BauBuche	19.40
6.0	RP-TD-6,0 × L	Stainless steel	Steel – Timber, Steel – BauBuche	19.41
6.0	RP-TD-6,0 × L	Stainless steel	Steel – Timber, Steel – BauBuche	19.42
6.0	RP-TD-FK-6,0 × L	Stainless steel	Steel – Timber, Steel – BauBuche	19.40
6.0	RP-TD-FK-6,0 × L	Stainless steel	Steel – Timber, Steel – BauBuche	19.41
6.0	RP-TD-FK-6,0 × L	Stainless steel	Steel – Timber, Steel – BauBuche	19.42
6.0	RP-TD-LK-6,0 × L	Stainless steel	Steel – Timber, Steel – BauBuche	19.40
6.0	RP-TD-LK-6,0 × L	Stainless steel	Steel – Timber, Steel – BauBuche	19.41
6.0	RP-TD-LK-6,0 × L	Stainless steel	Steel – Timber, Steel – BauBuche	19.42
6.0	RV-r-6,0 × L	Stainless steel	Aluminium – Aluminium	15.20
6.0	RV-r-6,0 × L	Stainless steel	Aluminium – Timber, Aluminium – BauBuche	15.50
6.0	RV-r-FK-6,0 × L	Stainless steel	Aluminium – Aluminium	15.20
6.0	RV-r-FK-6,0 × L	Stainless steel	Aluminium – Timber, Aluminium – BauBuche	15.50
6.0	RV-r-LK-6,0 × L	Stainless steel	Aluminium – Aluminium	15.20
6.0	RV-r-LK-6,0 × L	Stainless steel	Aluminium – Timber, Aluminium – BauBuche	15.50
6.0	RV-T1-6,0 × L	Stainless steel	Aluminium – Aluminium	29.21
6.0	RV-T1-FK-6,0 × L	Stainless steel	Aluminium – Aluminium	29.21
6.0	RV-T1-LK-6,0 × L	Stainless steel	Aluminium – Aluminium	29.21
6.0	RV-T2-6,0 × L	Stainless steel	Aluminium – Aluminium	29.20
6.0	RV-T2-FK-6,0 × L	Stainless steel	Aluminium – Aluminium	29.20
6.0	RV-T2-LK-6,0 × L	Stainless steel	Aluminium – Aluminium	29.20
6.3	FABA-BZ-6,3 × L	Stainless steel	Steel – Steel	33.10
6.3	FABA-BZ-6,3 × L	Stainless steel	Aluminium – Aluminium	33.20
6.3	FABA-BZ-6,3 × L	Stainless steel	Aluminium – Steel	33.30
6.3	FABA-BZ-FK-6,3 × L	Stainless steel	Steel – Steel	33.10
6.3	FABA-BZ-FK-6,3 × L	Stainless steel	Aluminium – Aluminium	33.20
6.3	FABA-BZ-FK-6,3 × L	Stainless steel	Aluminium – Steel	33.30

Fastening screws – Overview

Screw			Component I – II	Annex
Ø in mm	Designation	Material		
6.3	RP-C3-6,3 × L	Stainless steel	Steel – Steel	27.10
6.3	RP-C3-FK-6,3 × L	Stainless steel	Steel – Steel	27.10
6.3	RP-K-6,3 × L	Stainless steel	Steel – Steel	24.10
6.3	RP-K-6,3 × L	Stainless steel	Steel – Steel	24.11
6.3	RP-K-(X)-6,3 × L	Stainless steel	Aluminium – Aluminium	24.20
6.3	RP-K-6,3 × L	Stainless steel	Aluminium – Aluminium	24.21
6.3	RP-K-6,3 × L	Stainless steel	Aluminium – Steel	24.30
6.3	RP-K-FK-6,3 × L	Stainless steel	Steel – Steel	24.10
6.3	RP-K-FK-6,3 × L	Stainless steel	Steel – Steel	24.11
6.3	RP-K-FK-(X)-6,3 × L	Stainless steel	Aluminium – Aluminium	24.20
6.3	RP-K-FK-6,3 × L	Stainless steel	Aluminium – Aluminium	24.21
6.3	RP-K-FK-6,3 × L	Stainless steel	Aluminium – Steel	24.30
6.3	RP-r-6,3 × L	Stainless steel	Steel – Steel	16.10
6.3	RP-r-6,3 × L	Stainless steel	Aluminium – Aluminium	16.20
6.3	RP-r-6,3 × L	Stainless steel	Aluminium – Steel	16.30
6.3	RP-r-FK-6,3 × L	Stainless steel	Steel – Steel	16.10
6.3	RP-r-FK-6,3 × L	Stainless steel	Aluminium – Aluminium	16.20
6.3	RP-r-FK-6,3 × L	Stainless steel	Aluminium – Steel	16.30
6.3	RS-K-6,3 × L	Galvanised steel	Steel – Steel	7.10
6.3	RS-K-6,3 × L	Galvanised steel	Steel – Steel	7.11
6.3	RS-K-6,3 × L	Galvanised steel	Steel – Steel	7.12
6.3	RS-K-6,3 × L	Galvanised steel	Steel – Steel	7.13
6.3	RS-K-6,3 × L	Galvanised steel	Steel – Steel	7.14
6.3	RS-K-FK-6,3 × L	Galvanised steel	Steel – Steel	7.10
6.3	RS-K-FK-6,3 × L	Galvanised steel	Steel – Steel	7.11
6.3	RS-K-FK-6,3 × L	Galvanised steel	Steel – Steel	7.12
6.3	RS-K-FK-6,3 × L	Galvanised steel	Steel – Steel	7.13
6.3	RS-K-FK-6,3 × L	Galvanised steel	Steel – Steel	7.14
6.3	RV-K-(X)-6,3 × L	Stainless steel	Aluminium – Aluminium	24.20
6.3	RV-K-6,3 × L	Stainless steel	Aluminium – Aluminium	24.21
6.3	RV-K-FK-(X)-6,3 × L	Stainless steel	Aluminium – Aluminium	24.20
6.3	RV-K-FK-6,3 × L	Stainless steel	Aluminium – Aluminium	24.21
6.3	RV-r-6,3 × L	Stainless steel	Aluminium – Aluminium	16.20
6.3	RV-r-FK-6,3 × L	Stainless steel	Aluminium – Aluminium	16.20

Fastening screws – Overview

Screw			Component I – II	Annex
Ø in mm	Designation	Material		
6.5	FABA-A-6,5 × L	Stainless steel	Steel – Steel	30.10
6.5	FABA-A-6,5 × L	Stainless steel	Aluminium – Aluminium	30.20
6.5	FABA-A-6,5 × L	Stainless steel	Aluminium – Steel	30.30
6.5	FABA-A-6,5 × L	Stainless steel	Steel – Timber	30.40
6.5	FABA-A-6,5 × L	Stainless steel	Aluminium – Timber	30.50
6.5	FABA-A-FK-6,5 × L	Stainless steel	Steel – Steel	30.10
6.5	FABA-A-FK-6,5 × L	Stainless steel	Aluminium – Aluminium	30.20
6.5	FABA-A-FK-6,5 × L	Stainless steel	Aluminium – Steel	30.30
6.5	FABA-A-FK-6,5 × L	Stainless steel	Steel – Timber	30.40
6.5	FABA-A-FK-6,5 × L	Stainless steel	Aluminium – Timber	30.50
6.5	RP-r-6,5 × L	Stainless steel	Steel – Steel	17.10
6.5	RP-r-6,5 × L	Stainless steel	Aluminium – Aluminium	17.20
6.5	RP-r-6,5 × L	Stainless steel	Aluminium – Steel	17.30
6.5	RP-r-6,5 × L	Stainless steel	Steel – Timber	17.40
6.5	RP-r-6,5 × L	Stainless steel	Steel – Timber	17.41
6.5	RP-r-6,5 × L	Stainless steel	Steel – Timber	17.42
6.5	RP-r-6,5 × L	Stainless steel	Aluminium – Timber	17.50
6.5	RP-r-FK-6,5 × L	Stainless steel	Steel – Steel	17.10
6.5	RP-r-FK-6,5 × L	Stainless steel	Aluminium – Aluminium	17.20
6.5	RP-r-FK-6,5 × L	Stainless steel	Aluminium – Steel	17.30
6.5	RP-r-FK-6,5 × L	Stainless steel	Steel – Timber	17.40
6.5	RP-r-FK-6,5 × L	Stainless steel	Steel – Timber	17.41
6.5	RP-r-FK-6,5 × L	Stainless steel	Steel – Timber	17.42
6.5	RP-r-FK-6,5 × L	Stainless steel	Aluminium – Timber	17.50
6.5	RP-r-LK-6,5 × L	Stainless steel	Steel – Steel	17.10
6.5	RP-r-LK-6,5 × L	Stainless steel	Aluminium – Aluminium	17.20
6.5	RP-r-LK-6,5 × L	Stainless steel	Aluminium – Steel	17.30
6.5	RP-r-LK-6,5 × L	Stainless steel	Steel – Timber	17.40
6.5	RP-r-LK-6,5 × L	Stainless steel	Steel – Timber	17.41
6.5	RP-r-LK-6,5 × L	Stainless steel	Steel – Timber	17.42
6.5	RP-r-LK-6,5 × L	Stainless steel	Aluminium – Timber	17.50

Fastening screws – Overview

Screw			Component I – II	Annex
Ø in mm	Designation	Material		
6.5	RP-TD-6,5 × L	Stainless steel	Steel – Timber, Steel – BauBuche	20.40
6.5	RP-TD-6,5 × L	Stainless steel	Steel – Timber, Steel – BauBuche	20.41
6.5	RP-TD-6,5 × L	Stainless steel	Steel – Timber, Steel – BauBuche	20.42
6.5	RP-TD-FK-6,5 × L	Stainless steel	Steel – Timber, Steel – BauBuche	20.40
6.5	RP-TD-FK-6,5 × L	Stainless steel	Steel – Timber, Steel – BauBuche	20.41
6.5	RP-TD-FK-6,5 × L	Stainless steel	Steel – Timber, Steel – BauBuche	20.42
6.5	RP-TD-LK-6,5 × L	Stainless steel	Steel – Timber, Steel – BauBuche	20.40
6.5	RP-TD-LK-6,5 × L	Stainless steel	Steel – Timber, Steel – BauBuche	20.41
6.5	RP-TD-LK-6,5 × L	Stainless steel	Steel – Timber, Steel – BauBuche	20.42
6.5	RV-r-6,5 × L	Stainless steel	Aluminium – Aluminium	17.20
6.5	RV-r-6,5 × L	Stainless steel	Aluminium – Timber	17.50
6.5	RV-r-FK-6,5 × L	Stainless steel	Aluminium – Aluminium	17.20
6.5	RV-r-FK-6,5 × L	Stainless steel	Aluminium – Timber	17.50
6.5	RV-r-LK-6,5 × L	Stainless steel	Aluminium – Aluminium	17.20
6.5	RV-r-LK-6,5 × L	Stainless steel	Aluminium – Timber	17.50
7.2	FABA-A-(X)-7,2 × L	Stainless steel	Aluminium – Aluminium	31.20
7.2	FABA-A-7,2 × L	Stainless steel	Steel – Steel	31.10
7.2	FABA-A-7,2 × L	Stainless steel	Aluminium – Aluminium	31.21
7.2	FABA-A-7,2 × L	Stainless steel	Aluminium – Steel	31.30
7.2	FABA-A-FK-7,2 × L	Stainless steel	Steel – Steel	31.10
7.2	FABA-A-FK-7,2 × L	Stainless steel	Aluminium – Aluminium	31.21
7.2	FABA-A-FK-7,2 × L	Stainless steel	Aluminium – Steel	31.30
7.2	FABA-A-FK-(X)-7,2 × L	Stainless steel	Aluminium – Aluminium	31.20
7.2	FABA-A-LK-(X)-7,2 × L	Stainless steel	Aluminium – Aluminium	31.20
8.0	FABA-BZ-8,0 × L	Stainless steel	Steel – Steel	34.10
8.0	RS-K12-8,0 × L	Galvanised steel	Steel – Steel	9.10
8.0	RS-K12-8,0 × L	Galvanised steel	Steel – Steel	9.11
8.4	FABA-A-8,4 × L	Stainless steel	Steel – Timber	32.40



Fastening screw

Overview – Ø 6.5, 7.2, 8.0, and 8.4 mm

Annex 1.10

 of European Technical Assessment
ETA-21/0306 of 21.04.2021

Dimensions

- t_I Thickness of component I
 t_{II} Thickness of component II
 Σt_i Sum of thickness of all components I and II
 L Length of screw
 l_{ef} Effective screw-in depth in component II of structural timber, without drill point
 l_g Total screw-in depth in component II of structural timber, including drill point
 d_{pd} Pre-drill diameter of component I and component II


The thickness t_{II} corresponds to the load-bearing screw-in depth of the fastening screw in component II if the fastening screw does not grip the entire thickness of component II.

Other symbols

- R_m Tensile strength of component I or component II
 $V_{R,k}$ Characteristic value of shear resistance of the connection
 $V_{R,I,k}$ Characteristic value of shear resistance (load bearing) of component I
 $V_{R,II,k}$ Characteristic value of shear resistance of component II
 $N_{R,k}$ Characteristic value of tension resistance of the connection
 $N_{R,I,k}$ Characteristic value of tension resistance (pull-through) of component I
 $N_{R,II,k}$ Characteristic value of tension resistance (pull-out) of component II
 $M_{y,Rk}$ Characteristic value of yield moment of the fastening screw, for component II of structural timber
 $f_{ax,k}$ Characteristic value of withdrawal strength for component II of structural timber
 $f_{h,k}$ Characteristic value of embedding strength for component II of structural timber
 ρ_k Characteristic value of density of structural timber in kg/m^3
 ρ_a Actual density of structural timber in kg/m^3
 d_{ef} Effective diameter of the fastening screw
 d_{core} Core diameter of the fastening screw

Notations for materials

- Fastener Material of the fastening screw
 Washer Material of the sealing washer
 Component I Material of the metal member or sheeting with contact to the screw head
 Component II Material of the substructure

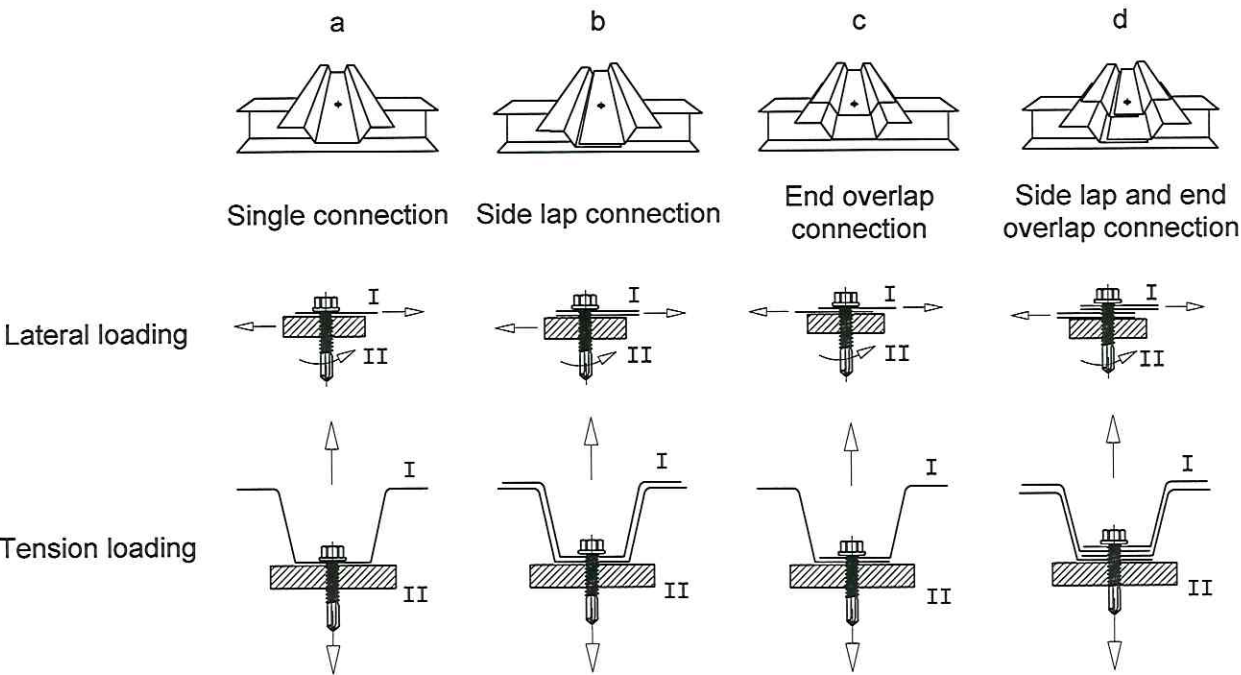
	Fastening screw	Annex 1.11 of European Technical Assessment ETA-21/0306 of 21.04.2021
	Symbols	

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Connections and loading

Other symbols

Connection



Key

I..... Component I

II..... Component II

For connections a, b, c, and d indicated in the Annexes, effects of constraints due to temperature need not to be taken into account. For all other connections, the effect of constraints has to be taken into account, unless they do not occur or are not significant (e.g. by sufficient flexibility of the substructure).

Determination of design values

The design values of tension and shear resistance are calculated with

$$N_{R,d} = \frac{N_{R,k}}{\gamma_M} \text{ and } V_{R,d} = \frac{V_{R,k}}{\gamma_M}$$

The characteristic values $N_{R,k}$ and $V_{R,k}$ are given in the Annexes. If the thickness of component I or component II is in-between two stated thicknesses, the characteristic value may be interpolated.

The recommended partial safety factor is $\gamma_M = 1.33$ save no partial safety factor is indicated in standards and regulations in force at the place of use.

For asymmetric metal substructures with a thickness $t_{II} < 5.0$ mm, e. g. Z- or C-sections, the characteristic value $N_{R,k}$ given in the Annexes is reduced to 70 %.

In case of combined tension and shear forces, the following equation is applied

$$\frac{N_{S,d}}{N_{R,d}} + \frac{V_{S,d}}{V_{R,d}} \leq 1.0$$

Where

$N_{S,d}$ and $V_{S,d}$ indicates the design values of actions in tension and shear.

Installation conditions


The installation is carried out according to the manufacturer's instructions.

The load-bearing screw-in length of the fastening screw given by the manufacturer is considered.

The fastening screws are screwed-in with electric screw driver, the use of impact wrenches is not permitted.

The fastening screws are installed perpendicular to the surface of the metal member or sheeting.

Metal member or sheeting and substructure are in contact to each other. The use of compression resistant thermal insulation strips up to a thickness of 3 mm is permitted.

	Fastening screws for metal members and sheeting	Annex 2.2 of European Technical Assessment ETA-21/0306 of 21.04.2021
	Design and installation	

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Timber substructure

$N_{R,II,k}$ and $V_{R,II,k}$ according to Annex 4.10 to 40.20 with deviating k_{mod} and ρ_k
Characteristic values of tension and shear resistance of the connection for $k_{mod} \neq 0.9$ and/or $\rho_k > 350 \text{ kg/m}^3$ are determined as follows:

$$N_{R,k} = \min \begin{cases} N_{R,I,k} \\ N_{R,II,k} \cdot \frac{k_{mod}}{0.9} \cdot \left(\frac{\rho_a}{350}\right)^{0.8} \end{cases}$$

and

$$V_{R,k} = \min \begin{cases} V_{R,I,k} \\ V_{R,II,k} \cdot \frac{k_{mod}}{0.9} \cdot \left(\frac{\rho_a}{350}\right)^{0.8} \end{cases}$$

$N_{R,I,k}$ and $V_{R,I,k}$ are given in the corresponding Annex of the fastening screw.
For BauBuche according to ETA-14/0354 the characteristic values for timber C24, $\rho_k = 350 \text{ kg/m}^3$ are applied.

Aluminium members and sheeting

Characteristic values of tension resistance of the connection can be determined as follows:

$$N_{R,k} = \min \begin{cases} N_{R,I,k} \\ N_{R,II,k} \end{cases}$$


The characteristic value $N_{R,I,k}$ is determined according to EN 1999-1-4, equation (8.13). The characteristic value $N_{R,II,k}$ is given in the corresponding Annex of the fastening screw.

Steel grade for component I and component II

The load-bearing capacity in the Annexes also applies to similar steel grades, provided that tensile strength of the strength classes specified in the Annexes are not exceeded.

Fastener materials

A fastener for which stainless steel material number 1.4301, 1.4401, 1.4567, or 1.4578 is specified in the corresponding Annex may also be made of stainless steel with the material number 1.4529, 1.4539, or 1.4571.

	Fastening screws for metal members and sheeting	Annex 3.1 of European Technical Assessment ETA-21/0306 of 21.04.2021
	Characteristic resistance	

European Assessment Document

EAD 330046-01-0602 Fastening screws for metal members and sheeting

European Technical Assessment

ETA-14/0354 of 11.07.2018 Träger BauBuche GL75, Beam BauBuche GL75, Poutre BauBuche GL75, Trave BauBuche GL75, Viga BauBuche GL75, Belka BauBuche GL75, Draagbalk BauBuche GL75

Eurocodes

Eurocode 3 Eurocode 3 – Design steel structures
Eurocode 5 Eurocode 5 – Design of timber structures
Eurocode 9 Eurocode 9 – Design of aluminium structures

Standards

EN 573, 11.2004 Aluminium and aluminium alloys – Chemical composition and form of wrought products

EN 1995-1-1+A2, 05.2014 Eurocode 5 – Design of timber structures – Part 1-1: General – Common rules and rules for buildings
EN 1999-1-4+A1, 08.2011 Eurocode 9 – Design of aluminium structures – Part 1-4: Cold-formed structural sheeting
EN 10025-1, 11.2004 Hot rolled products of structural steels – Part 1: General technical delivery conditions

EN 10088, 10.2014 Stainless steels
EN 10346, 07.2015 Continuously hot-dip coated steel flat products for cold forming – Technical delivery conditions

EN 14081+A1, 08.2019 Timber structures – Strength graded structural timber with rectangular cross section – Part 1: General requirements
EN ISO 12944-2, 12.2017 Paints and varnishes – Corrosion protection of steel structures by protective paint systems – Part 2: Classification of environments

Other documents

98/214/EC Commission decision 98/214/EC of 9 March 1998 on the procedure for attesting the conformity of construction products pursuant to Article 20 (2) of Council Directive 89/106/EEC as regards structural metallic products and ancillaries, Official Journal of the European Communities L 80 of 18 March 1998, p. 46, amended by Commission decision 2001/596/EC of 8 January 2001, Official Journal of the European Communities L 209 of 2 August 2001, p. 33

305/2011 Regulation (EU) № 305/2011 of the European Parliament and of the Council of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC, OJ L 88 of 4 April 2011, p. 5, amended by Commission Delegated Regulation (EU) № 568/2014 of 18 February 2014, OJ L 157 of 27.05.2014, p. 76, Commission Delegated Regulation (EU) № 574/2014 of 21 February 2014, OJ L 159 of 28.05.2014, p. 41, and Regulation (EU) 2019/1020 of the European Parliament and of the Council of 20 June 2019, OJ L 169 of 15.06.2019, p. 1

568/2014 Commission Delegated Regulation (EU) № 568/2014 of 18 February 2014 amending Annex V to Regulation (EU) № 305/2011 of the European Parliament and of the Council as regards the assessment and verification of constancy of performance of construction products, OJ L 157 of 27.05.2014, p. 76



Fastening screws for metal members and sheeting

Reference documents

Annex 3.2

of European Technical Assessment
ETA-21/0306 of 21.04.2021