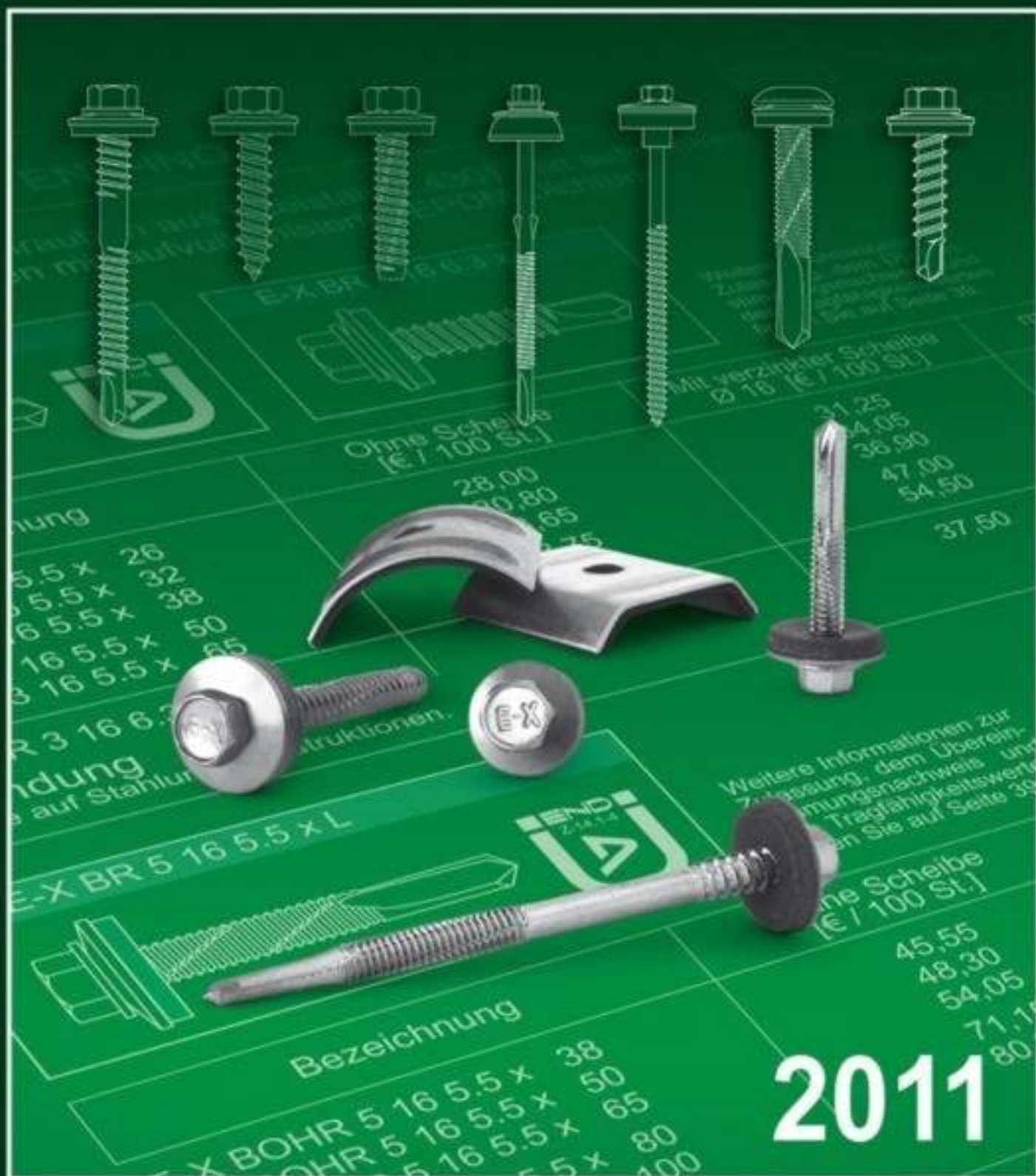


Special screws
of stainless steel
heat-treated steel
and aluminium
for roof and wall

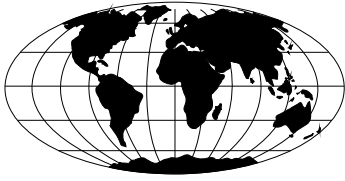
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CATALOGUE



2011

END - Your guarantee for innovative ideas, consistently good quality and precise processing!



END-Products around the world

The sector of fastening systems systems is demanding: greatest care in production is required – because safety components are involved here. That is why our quality assurance complies with DIN EN ISO 9001:2000.

Creativity has been at the heart of our company since the beginning: as early as 1966 we were the first company in Europe to produce a self-cutting stainless steel screw which was based on our knowledge of the market.

Today a large number of products for the same applications are based on this idea:

the fastening of trapezoidal steel and aluminium sheets, roof lights and fibre cement sheets.

Our ongoing development is based on an experienced team of qualified employees who display great dedication each day in satisfying our customers' wishes.

The company was successful.

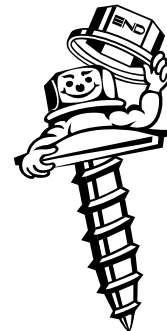
Today END products can be found around the world; encompassing all of Europe and the Middle East (the list of our representative offices speaks volumes). Many customers take advantage of the option of involving our specialists in the planning stage of a project in order to benefit from our knowledge in developing the best possible solutions, in both technological and financial terms.

A well-developed in-house organisation which enables orders to be processed on the same day is equally important. Our delivery capability means that we enjoy the reputation of a reliable partner for our customers - worldwide.

Our flexibility is also the result of our state-of-the-art central warehouse in which we keep our entire range in stock, in other words all the items which are presented in our catalogue. This prevents delays caused by delivery times. We produce, store and manage our products on an area covering over 11,000 m².

But enough of our products - our products will say all the rest for themselves.

We look forward to excellent cooperation.



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When a delivery is extremely urgent ...

on request we can send your orders by overnight express, deadline express or courier with guaranteed delivery the next working day.

The only additional costs which you will incur are the costs for the express service.



Guntram End GmbH

Untertürkheimer Str. 20 Postfach 650 144
Gewerbegebiet Süd

D - 66117 Saarbrücken D - 66140 Saarbrücken

Telefon:

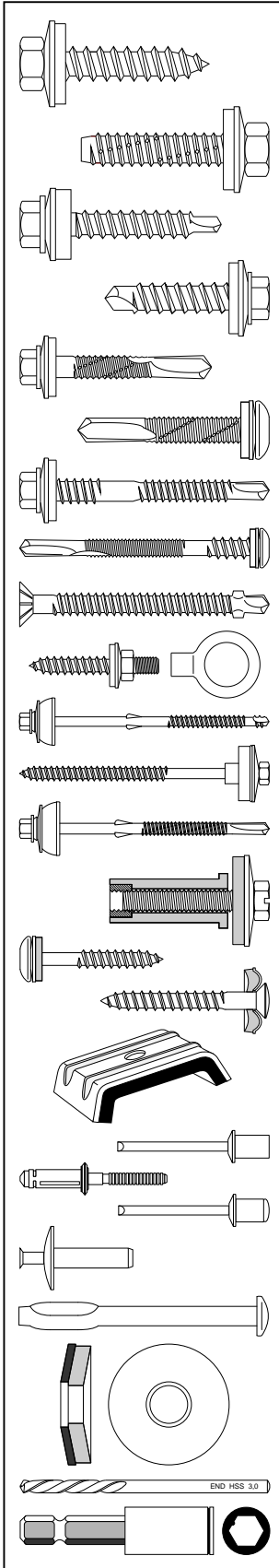
+49 [0] 681 / 58601-0

Telefax:

+49 [0] 681 / 58601-39

Internet:

www.GuntramEnd.de



E-X [®]	END-INOX self-tapping special screws of rustproof stainless steel 1.4301	Page	2
E-X [®] BOHR	END-INOX self-drilling special screws of rustproof stainless steel 1.4301	Page	3-6
E-X [®] BOHR HT	END-INOX self-drilling special screws of rustproof stainless steel 1.4301 (for sandwich profiles)	Page	8-9
E-X [®] BOHR FLT	END-INOX self-drilling special screws with ribbed countersunk head and wings, of rustproof stainless steel 1.4301	Page	10
E-X [®] DDBS FK	END-INOX self-tapping special screws of rustproof stainless steel 1.4301 with special seal	Page	11
E-X [®] Special screws	END-INOX Scaffolding anchor (EGA E-X), repair screws (E-XR)	Page	12-13
E-VS [®]	END HEAT-TREATED STEEL self-tapping special screws	Page	14
E-VS [®] BOHR	END HEAT-TREATED STEEL self-drilling special screws	Page	15-18
E-VS [®] BOHR HT	END HEAT-TREATED STEEL self-drilling special screws (for sandwich profiles)	Page	19
DDBS FK	ROOFING SCREW self-drilling special screws of heat-treated steel with special seal	Page	20
E-VS [®] PD	END HEAT-TREATED STEEL self-tapping special screws with mushroom-type seal	Page	21
E-VS [®] BOHR FLT	END HEAT-TREATED STEEL self-drilling special screws with ribbed countersunk head and wings	Page	22-23
E-DB RS	END FLAT ROOF FASTENER self-drilling special screws of heat-treated steel	Page	24
E-AL [®]	END ALUMINIUM self-tapping special screws of hardened aluminium F44	Page	25
E-AL [®] BOHR	END ALUMINIUM self-drilling special screws of hardened aluminium F44	Page	25
Saddle washers	Aluminium saddle washers with bonded EPDM seal for all profiles	Page	26-27
Rivets	Bulb-Tite (breakstem blind rivets), blind and blind rivets	Page	28-29
HSS SPIBO	HSS spiral drill with point thinning, right-hand cutting, 30 mm spiral	Page	30
Accessories	Socket for BI-HEX, clamp follower for Torx, drivebar only, cover caps	Page	31
WHAT YOU SHOULD KNOW		From Page	32
INFORMATION ON THE APPROVALS		From Page	36

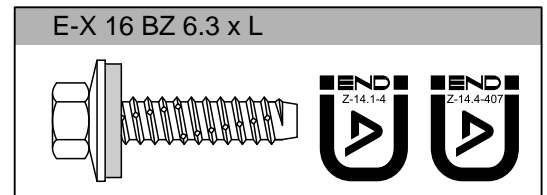
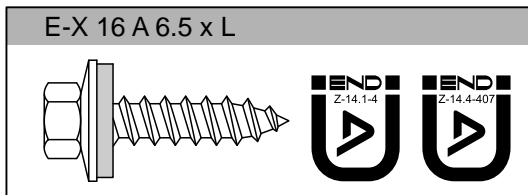
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Supporting member of the:

IFBS Industrieverband
für Bausysteme
im Stahlleichtbau

Self-tapping special screws of stainless steel 1.4301 with fitted sealing washers of stainless steel 1.4301. Washers with bonded EPDM seal.



Further information on the approval, compliance certificate and bearing ratios is provided on pages 37, 39 and 40.

Name	Without washers [€/ 100 items]	With stainless steel washer Ø 16 [€/ 100 items]	Name
E-X 16 A 6.5 x 13	13,25	16,50	
E-X 16 A 6.5 x 16	13,60	16,85	E-X 16 BZ 6.3 x 16
E-X 16 A 6.5 x 20	13,65	16,90	E-X 16 BZ 6.3 x 20
E-X 16 A 6.5 x 25	15,85	19,10	E-X 16 BZ 6.3 x 25
E-X 16 A 6.5 x 32	19,05	22,30	E-X 16 BZ 6.3 x 32
E-X 16 A 6.5 x 38	23,10	26,35	E-X 16 BZ 6.3 x 38
E-X 16 A 6.5 x 45	24,45	27,70	E-X 16 BZ 6.3 x 45
E-X 16 A 6.5 x 50	25,85	29,10	E-X 16 BZ 6.3 x 50
E-X 16 A 6.5 x 60	31,70	34,95	E-X 16 BZ 6.3 x 60
E-X 16 A 6.5 x 65	34,40	37,65	E-X 16 BZ 6.3 x 65
E-X 16 A 6.5 x 70	37,20	40,45	E-X 16 BZ 6.3 x 70
E-X 16 A 6.5 x 75	39,10	42,35	E-X 16 BZ 6.3 x 75
E-X 16 A 6.5 x 80	40,95	44,20	E-X 16 BZ 6.3 x 80
E-X 16 A 6.5 x 85	42,90	46,15	E-X 16 BZ 6.3 x 85
E-X 16 A 6.5 x 90	46,35	49,60	E-X 16 BZ 6.3 x 90
E-X 16 A 6.5 x 100	49,70	52,95	E-X 16 BZ 6.3 x 100
E-X 16 A 6.5 x 115	56,40	59,65	E-X 16 BZ 6.3 x 115
E-X 16 A 6.5 x 130	63,25	66,50	E-X 16 BZ 6.3 x 130
E-X 16 A 6.5 x 150	73,50	76,75	E-X 16 BZ 6.3 x 150
E-X 16 A 6.5 x 175	90,55	93,80	E-X 16 BZ 6.3 x 175
E-X 16 A 6.5 x 200	116,75	120,00	E-X 16 BZ 6.3 x 200
E-X 16 A 6.5 x 220	131,75	135,00	E-X 16 BZ 6.3 x 220
E-X 16 A 6.5 x 240	147,30	150,55	E-X 16 BZ 6.3 x 240
E-X 16 A 6.5 x 260	161,75	165,00	E-X 16 BZ 6.3 x 260
E-X 16 A 6.5 x 280	176,75	180,00	E-X 16 BZ 6.3 x 280
E-X 16 A 6.5 x 300	191,50	194,75	E-X 16 BZ 6.3 x 300

Application

Fastened on a wooden substructure or a steel substructure with a flange thickness of up to 3.0 mm.

Application

Fastened on a steel substructure with a flange thickness of 1.25 mm or more.

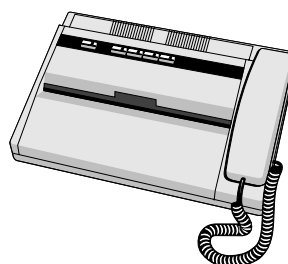
Available from stock:

- Stainless steel 1.4401 (A4), Price on application
- Width across flats 8 mm
- Coloured fasteners

Our employees will be pleased to advise you about any fastening problems you have.

INFOLINE:

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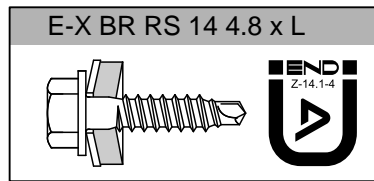
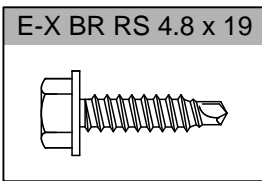
We can be contacted round the clock and your order will be processed as quickly as possible.

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The additional prices for larger sealing washers and coloured fasteners are provided on page 33.

Self-drilling special screws of stainless steel 1.4301 with fitted sealing washers of stainless steel 1.4301. Washers with bonded EPDM seal.

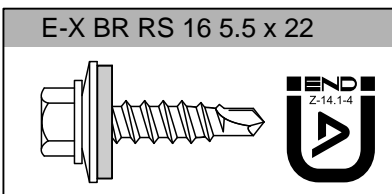


Further information on the approval, compliance certificate and bearing ratios is provided on page 38.

Name	Without washers [€/ 100 items]	With stainless steel washer Ø 14 [€/ 100 items]	max. drilling performance [mm]
E-X BOHR RS 4.8 x 19	22,15	-	Overlap
E-X BOHR RS 14 4.8 x 20	-	25,15	

Application

Mounting of sheet metal laps; please also observe our product information on page 34.

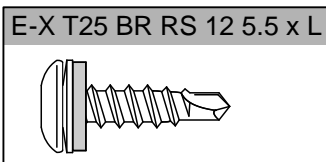


Further information on the approval, compliance certificate and bearing ratios is provided on page 38.

Name	Without washers [€/ 100 items]	With stainless steel washer Ø 16 [€/ 100 items]	max. drilling performance [mm]
E-X BOHR RS 16 5.5 x 22	26,90	30,15	Overlap

Application

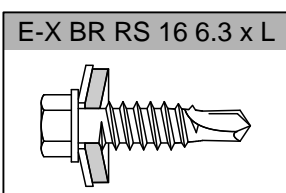
Mounting of sheet metal laps; please also observe our product information on page 34.



Name	Without washers [€/ 100 items]	With stainless steel washer Ø 12 [€/ 100 items]	max. drilling performance [mm]
E-X T25 BR RS 12 5.5 x 22	28,80	31,60	Overlap

Application

Mounting of sheet metal laps. The screws are ideally suitable for mounting small corrugated profiles on a façade.



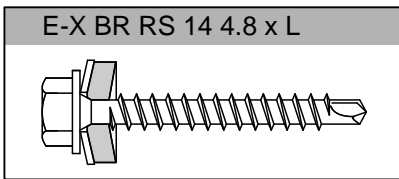
Name	Without washers [€/ 100 items]	With stainless steel washer Ø 16 [€/ 100 items]	max. drilling performance [mm]
E-X BOHR RS 16 6.3 x 25	38,75	42,00	Overlap

Application

Mounting of sheet metal laps; please also observe our product information on page 34.

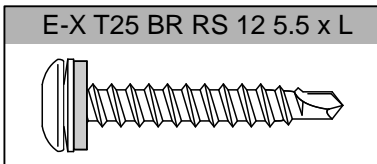
The additional prices for larger sealing washers and coloured fasteners are provided on page 33.

Self-drilling special screws of stainless steel 1.4301 with fitted sealing washers of stainless steel 1.4301. Washers with bonded EPDM seal.



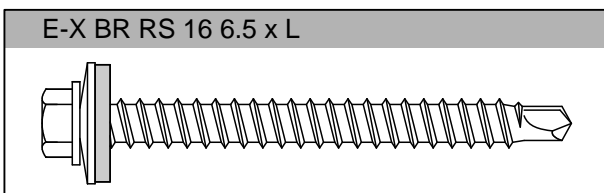
Name	Without washers [€/ 100 items]	With stainless steel washer Ø 14 [€/ 100 items]	max. drilling performance [mm]
E-X BOHR RS 14 4.8 x 35	28,40	31,30	Wooden
E-X BOHR RS 14 4.8 x 80	45,95	48,85	

Application
Mounting on a wooden substructure.



Name	Without washers [€/ 100 items]	With stainless steel washer Ø 12 [€/ 100 items]	max. drilling performance [mm]
E-X T25 BR RS 12 5.5 x 38	35,30	38,10	Wooden

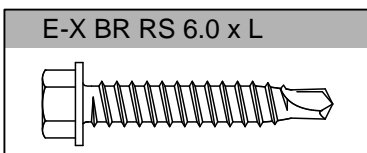
Application
Mounting on a wooden substructure. The screws are ideally suitable for mounting small corrugated profiles on a façade.



Approval by the building authorities according to Z-14.1-4 has been applied for.

Name	Without washers [€/ 100 items]	With stainless steel washer Ø 16 [€/ 100 items]	max. drilling performance [mm]
E-X BOHR RS 16 6.5 x 50	48,10	51,35	Wooden
E-X BOHR RS 16 6.5 x 65	53,55	56,80	
E-X BOHR RS 16 6.5 x 80	74,60	77,85	

Application
Mounting on a wooden substructure.

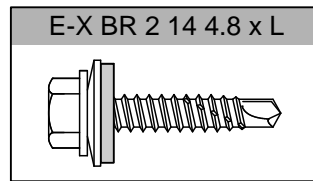
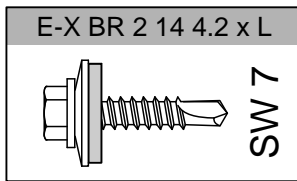


Name	Without washers [€/ 100 items]	With stainless steel washer Ø 16 [€/ 100 items]	max. drilling performance [mm]
E-X BOHR RS 16 6.0 x 35	40,40	43,65	3.0

Application
Mounting of fasteners for seam profiles on a steel substructure.

The additional prices for larger sealing washers and coloured fasteners are provided on page 33.

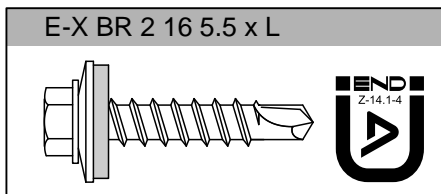
Self-drilling special screws of stainless steel 1.4301 with fitted sealing washers of stainless steel 1.4301. Washers with bonded EPDM seal.



Name	Without washers [€/ 100 items]	With stainless steel washer Ø 14 [€/ 100 items]	max. drilling performance [mm]
E-X BOHR 2 14 4.2 x 19 SW 7	16,10	19,00	2.5
E-X BOHR 2 14 4.8 x 16	17,20	20,10	
E-X BOHR 2 14 4.8 x 20	20,70	23,60	
E-X BOHR 2 14 4.8 x 25	21,65	24,55	

Application

Mounting of sheet metal laps.



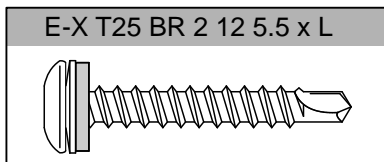
Weitere Informationen zur Zulassung, dem Übereinstimmungsnachweis und den Tragfähigkeitswerten finden Sie auf Seite 38.



Name	Without washers [€/ 100 items]	With stainless steel washer Ø 16 [€/ 100 items]	max. drilling performance [mm]
E-X BOHR 2 16 5.5 x 25	26,25	29,50	3.5
E-X BOHR 2 16 5.5 x 28	29,20	32,45	
E-X BOHR 2 16 5.5 x 38	33,95	37,20	
E-X BOHR 2 16 5.5 x 50	43,85	47,10	
E-X BOHR 2 16 5.5 x 58	47,10	50,35	
E-X BOHR 2 16 5.5 x 65	51,65	54,90	
E-X BOHR 2 16 5.5 x 80	67,60	70,85	
E-X BOHR 2 16 5.5 x 100	72,50	75,75	

Application

Mounting on thin sheet profiles or coffered partition walls.



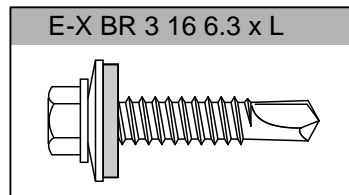
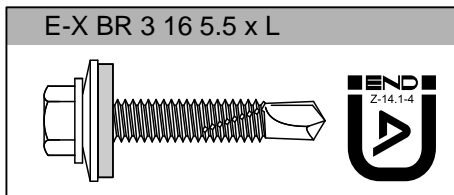
Name	Without washers [€/ 100 items]	With stainless steel washer Ø 12 [€/ 100 items]	max. drilling performance [mm]
E-X T25 BR 2 12 5.5 x 25	27,55	30,35	3.5
E-X T25 BR 2 12 5.5 x 38	34,20	37,00	
E-X T25 BR 2 12 5.5 x 50	45,20	48,00	

Application

Mounting on thin sheet profiles or coffered partition walls. The screws are ideally suitable for mounting small corrugated profiles on a façade.

The additional prices for larger sealing washers and coloured fasteners are provided on page 33.

Self-drilling special screws of stainless steel 1.4301 with fitted sealing washers of stainless steel 1.4301. Washers with bonded EPDM seal.

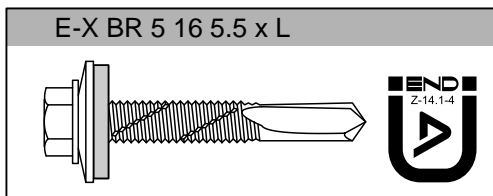


Further information on the approval, compliance certificate and bearing ratios is provided on page 39.

Name	Without washers [€/ 100 items]	With stainless steel washer Ø 16 [€/ 100 items]	max. drilling performance [mm]
E-X BOHR 3 16 5.5 x 26	29,10	32,35	6.0
E-X BOHR 3 16 5.5 x 32	32,00	35,25	
E-X BOHR 3 16 5.5 x 38	34,95	38,20	
E-X BOHR 3 16 5.5 x 50	45,40	48,65	
E-X BOHR 3 16 5.5 x 65	53,20	56,45	
E-X BOHR 3 16 6.3 x 25	35,60	38,85	

Application

Mounting on a steel substructure.

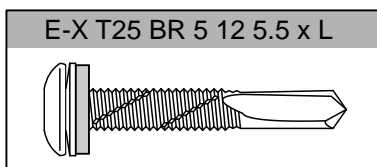


Further information on the approval, compliance certificate and bearing ratios is provided on page 39.

Name	Without washers [€/ 100 items]	With stainless steel washer Ø 16 [€/ 100 items]	max. drilling performance [mm]
E-X BOHR 5 16 5.5 x 38	47,30	50,55	12.5
E-X BOHR 5 16 5.5 x 50	50,10	53,35	
E-X BOHR 5 16 5.5 x 65	56,10	59,35	
E-X BOHR 5 16 5.5 x 80	73,75	77,00	
E-X BOHR 5 16 5.5 x 100	83,25	86,50	

Application

Mounting on a steel substructure.



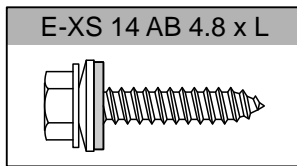
Name	Without washers [€/ 100 items]	With stainless steel washer Ø 12 [€/ 100 items]	max. drilling performance [mm]
E-X T25 BR 5 12 5.5 x 38	48,65	51,45	12.5

Application

Mounting on a steel substructure. The screws are ideally suitable for mounting small corrugated profiles on a façade.

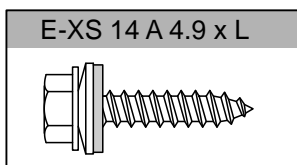
The additional prices for larger sealing washers and coloured fasteners are provided on page 33.

Self-tapping special screws of stainless steel 1.4301 with fitted sealing washers of stainless steel 1.4301. Washers with bonded EPDM seal.



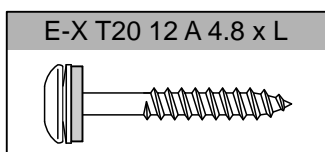
Name	Without washers [€/ 100 items]	With stainless steel washer Ø 14 [€/ 100 items]
E-XS 14 AB 4.8 x 16	12,25	15,15
E-XS 14 AB 4.8 x 19	12,75	15,65
E-XS 14 AB 4.8 x 25	13,95	16,85
E-XS 14 AB 4.8 x 32	15,75	18,65
E-XS 14 AB 4.8 x 38	17,00	19,90
E-XS 14 AB 4.8 x 50	20,10	23,00
E-XS 14 AB 4.8 x 60	23,65	26,55

Application
Mounting on a steel substructure.



Name	Without washers [€/ 100 items]	With stainless steel washer Ø 14 [€/ 100 items]
E-XS 14 A 4.9 x 25	13,95	16,85
E-XS 14 A 4.9 x 32	15,75	18,65
E-XS 14 A 4.9 x 38	17,00	19,90
E-XS 14 A 4.9 x 60	23,65	26,55

Application
Mounting on a wooden substructure.

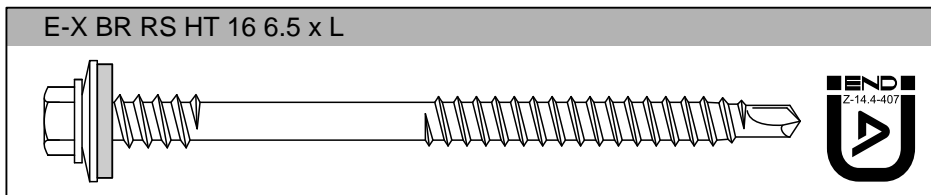


Name	Without washers [€/ 100 items]	With stainless steel washer Ø 12 [€/ 100 items]
E-X T20 12 A 4.8 x 25	15,55	18,35
E-X T20 12 A 4.8 x 32	15,90	18,70
E-X T20 12 A 4.8 x 38	16,40	19,20
E-X T20 12 A 4.8 x 50	19,40	22,20
E-X T20 12 A 4.8 x 60	21,65	24,45
E-X T20 12 A 4.8 x 80	27,05	29,85
E-X T20 12 A 4.8 x 100	33,20	36,00

Application
Mounting on a wooden substructure.

The additional prices for larger sealing washers and coloured fasteners are provided on page 33.

Self-drilling special screws of stainless steel 1.4301 with fitted sealing washers of stainless steel 1.4301. Washers with bonded EPDM seal.

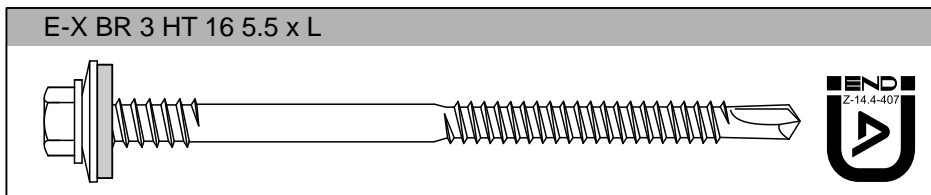


Further information on the approval, compliance certificate and bearing ratios is provided on page 36.

Name	Without washers [€/ 100 items]	With stainless steel washer Ø 16 [€/ 100 items]	max. drilling performance [mm]	Clamping area from - to [mm]
E-X BOHR RS HT 16 6.5 x 80	83,30	86,55	Wooden	< 30
E-X BOHR RS HT 16 6.5 x 100	95,15	98,40		< 50
E-X BOHR RS HT 16 6.5 x 120	102,90	106,15		< 70
E-X BOHR RS HT 16 6.5 x 140	111,20	114,45		< 90
E-X BOHR RS HT 16 6.5 x 160	118,95	122,20		< 110
E-X BOHR RS HT 16 6.5 x 180	130,65	133,90		< 130
E-X BOHR RS HT 16 6.5 x 200	142,55	145,80		< 150
E-X BOHR RS HT 16 6.5 x 220	153,10	156,35		< 170
E-X BOHR RS HT 16 6.5 x 240	162,10	165,35		< 190

Application

Mounting sandwich profiles on a wooden substructure.

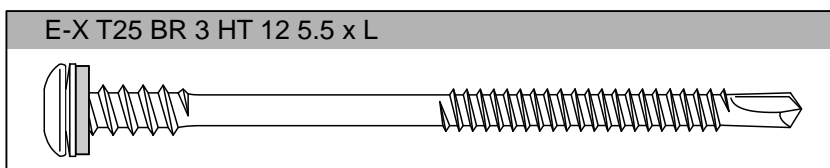


Further information on the approval, compliance certificate and bearing ratios is provided on page 36.

Name	Without washers [€/ 100 items]	With stainless steel washer Ø 16 [€/ 100 items]	max. drilling performance [mm]	Clamping area from - to [mm]
E-X BOHR 3 HT 16 5.5 x 70	62,40	65,65	5.5	22 - 47
E-X BOHR 3 HT 16 5.5 x 85	71,35	74,60		32 - 62
E-X BOHR 3 HT 16 5.5 x 95	73,85	77,10		42 - 72
E-X BOHR 3 HT 16 5.5 x 110	77,00	80,25		57 - 87
E-X BOHR 3 HT 16 5.5 x 130	84,45	87,70		77 - 107
E-X BOHR 3 HT 16 5.5 x 150	89,15	92,40		99 - 127
E-X BOHR 3 HT 16 5.5 x 165	102,50	105,75		112 - 142
E-X BOHR 3 HT 16 5.5 x 180	112,50	115,75		127 - 157
E-X BOHR 3 HT 16 5.5 x 200	128,10	131,35		148 - 177
E-X BOHR 3 HT 16 5.5 x 230	153,10	156,35		178 - 207

Application

Mounting sandwich profiles on a steel substructure.

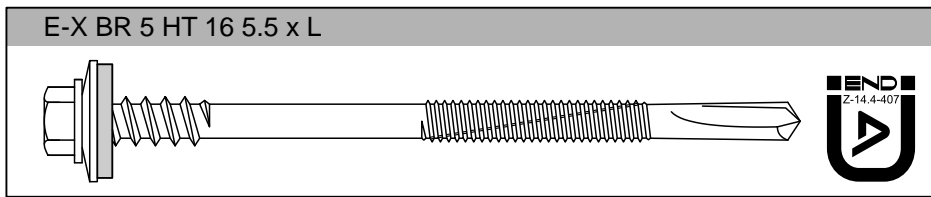


Name	Without washers [€/ 100 items]	With stainless steel washer Ø 12 [€/ 100 items]	max. drilling performance [mm]	Clamping area from - to [mm]
E-X T25 BR 3 HT 12 5.5 x 120	78,85	83,85	5.5	69 - 96

Application

Mounting of sandwich profiles on a steel substructure. Ideal for small corrugated profiles.

Self-drilling special screws of stainless steel 1.4301 with fitted sealing washers of stainless steel 1.4301. Washers with bonded EPDM seal.

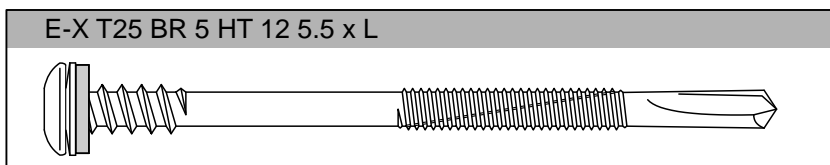


Further information on the approval, compliance certificate and bearing ratios is provided on page 37.

Name	Without washers [€/ 100 items]	With stainless steel washer Ø 16 [€/ 100 items]	max. drilling performance [mm]		Clamping area from - to [mm]
E-X BOHR 5 HT 16 5.5 x 75	75,50	78,75	14.0		24 - 35
E-X BOHR 5 HT 16 5.5 x 95	87,45	90,70			28 - 55
E-X BOHR 5 HT 16 5.5 x 110	94,25	97,50			43 - 70
E-X BOHR 5 HT 16 5.5 x 125	101,10	104,35			58 - 85
E-X BOHR 5 HT 16 5.5 x 150	114,75	118,00			83 - 110
E-X BOHR 5 HT 16 5.5 x 165	129,20	132,45			98 - 125
E-X BOHR 5 HT 16 5.5 x 185	143,70	146,95			113 - 145
E-X BOHR 5 HT 16 5.5 x 210	154,75	158,00			138 - 170
E-X BOHR 5 HT 16 5.5 x 240	199,30	202,55			168 - 200

Application

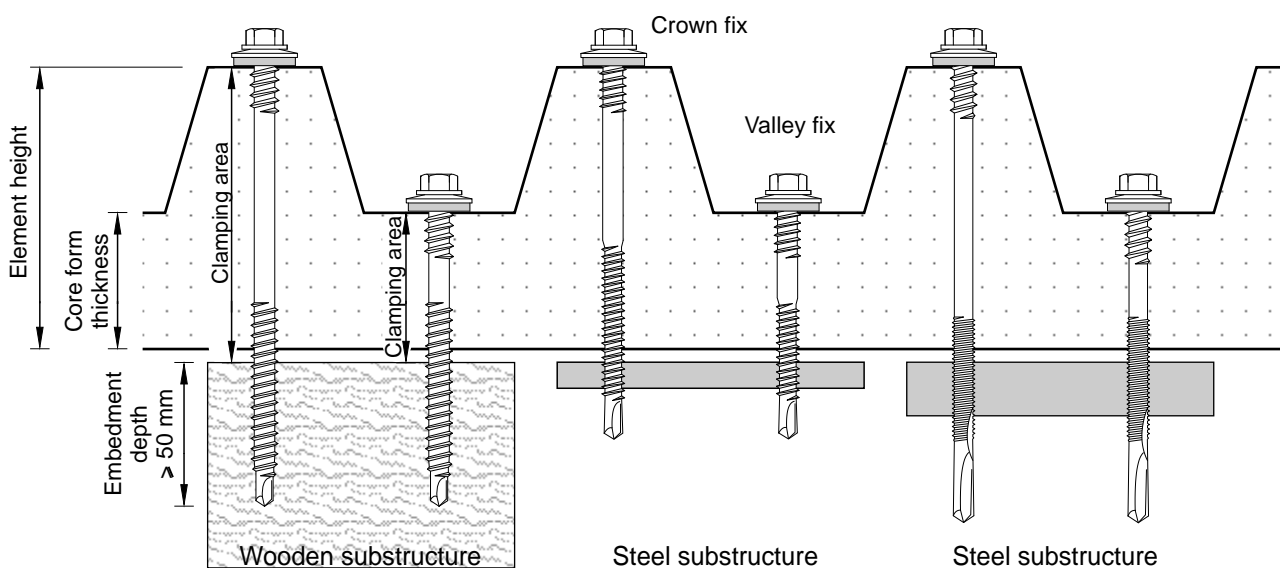
Mounting of sandwich profiles on a steel substructure.



Name	Without washers [€/ 100 items]	With stainless steel washer Ø 12 [€/ 100 items]	max. drilling performance [mm]		Clamping area from - to [mm]
E-X T25 BR 5 HT 12 5.5 x 130	103,70	108,70	12.5		63 - 90

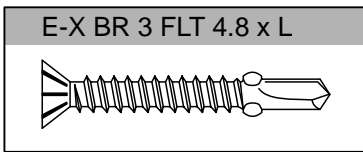
Application

Mounting of sandwich profiles on a steel substructure. Ideal for small corrugated profiles.



E-X BOHR RS HT 6.5 x L	E-X BOHR 3 HT 5.5 x L	E-X BOHR 5 HT 5.5 x L
E-VS BOHR 3 HT 5.5 x L	E-VS BOHR 5 HT 5.5 x L	

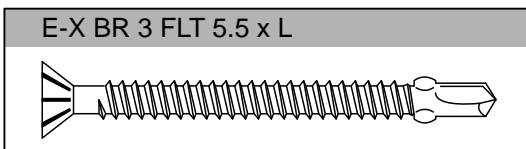
Self-drilling special screws of stainless steel 1.4301 with ribbed countersunk head and wings.



Name	Price [€/ 100 items]	Drive	max. drilling performance [mm]	Wood thickness [mm]
E-X BOHR FLT 4.8 x 38	38,40	PH 2	3.5	5 - 18
E-X BOHR FLT 4.8 x 50	46,95			5 - 30

Application

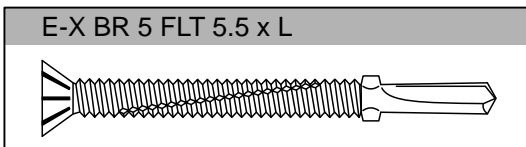
For fastening wood on a steel substructure. The minimum thickness of the substructure may not be less than 1.25 mm.



Name	Price [€/ 100 items]	Drive	max. drilling performance [mm]	Wood thickness [mm]
E-X BOHR 3 FLT 5.5 x 60	51,20	PH 3	5.0	10 - 38
E-X BOHR 3 FLT 5.5 x 85	57,90			20 - 63
E-X BOHR 3 FLT 5.5 x 109	76,50			45 - 88
E-X BOHR 3 FLT 5.5 x 130	85,40			max. 105

Application

For fastening wood on a steel substructure. The minimum thickness of the substructure may not be less than 1.25 mm.

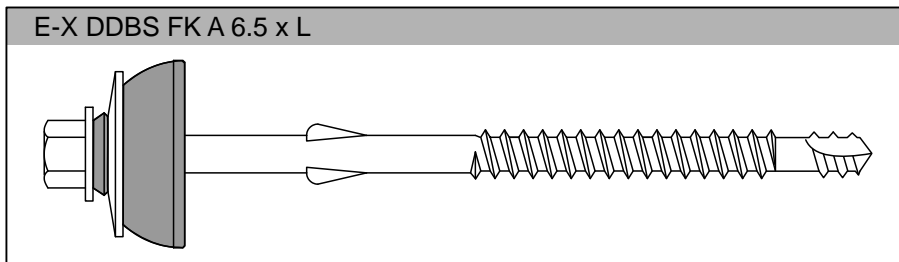


Name	Price [€/ 100 items]	Drive	max. drilling performance [mm]	Wood thickness [mm]
E-X BOHR 5 FLT 5.5 x 60	56,10	PH 3	12.5	5 - 24
E-X BOHR 5 FLT 5.5 x 85	69,00			13 - 49
E-X BOHR 5 FLT 5.5 x 109	87,00			37 - 73
E-X BOHR 5 FLT 5.5 x 130	97,20			max. 94

Application

For fastening wood on a steel substructure. The minimum thickness of the substructure may not be less than 1.25 mm.

Self-drilling and self-tapping special screws of stainless steel 1.4301. Sealing element consisting of stainless steel washer and special seal (FK, PD) of EPDM.

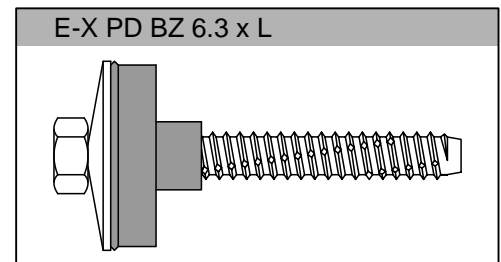
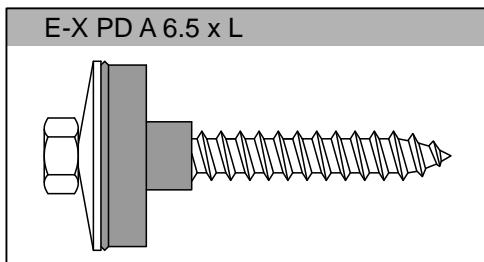


Eternit approval has been applied for.

Name	Without washers [€/ 100 items]	With cap (FK) Ø 25 [€/ 100 items]	max. drilling performance [mm]
E-X DDBS FK A 6.5 x 130	-	84,45	Wooden
E-X DDBS FK A 6.5 x 180	-	98,00	

Application

For fastening fibre-cement corrugated sheets on a wooden substructure.



Name	Without washers [€/ 100 St.]	With mushroom-type seal Ø 25 [€/ 100 St.]	Name
E-X PDA 6.5 x 32	19,05	31,55	E-X PD BZ 6.3 x 32
E-X PDA 6.5 x 38	23,10	35,70	E-X PD BZ 6.3 x 38
E-X PDA 6.5 x 45	24,45	37,05	E-X PD BZ 6.3 x 45
E-X PDA 6.5 x 50	25,85	38,45	E-X PD BZ 6.3 x 50
E-X PDA 6.5 x 60	31,70	44,30	E-X PD BZ 6.3 x 60
E-X PDA 6.5 x 65	34,40	47,00	E-X PD BZ 6.3 x 65
E-X PDA 6.5 x 70	37,20	49,80	E-X PD BZ 6.3 x 70
E-X PDA 6.5 x 75	39,10	51,70	E-X PD BZ 6.3 x 75
E-X PDA 6.5 x 80	40,95	53,55	E-X PD BZ 6.3 x 80
E-X PDA 6.5 x 85	42,90	55,50	E-X PD BZ 6.3 x 85
E-X PDA 6.5 x 90	46,35	58,95	E-X PD BZ 6.3 x 90
E-X PDA 6.5 x 100	49,70	62,30	E-X PD BZ 6.3 x 100
E-X PDA 6.5 x 115	56,40	69,00	E-X PD BZ 6.3 x 115
E-X PDA 6.5 x 130	63,25	75,85	E-X PD BZ 6.3 x 130
E-X PDA 6.5 x 150	73,50	86,10	E-X PD BZ 6.3 x 150
E-X PDA 6.5 x 175	90,55	103,15	E-X PD BZ 6.3 x 175
E-X PDA 6.5 x 200	116,75	129,35	E-X PD BZ 6.3 x 200
E-X PDA 6.5 x 220	131,75	144,35	E-X PD BZ 6.3 x 220
E-X PDA 6.5 x 240	147,30	159,90	E-X PD BZ 6.3 x 240
E-X PDA 6.5 x 260	161,75	174,35	E-X PD BZ 6.3 x 260
E-X PDA 6.5 x 280	176,75	189,35	E-X PD BZ 6.3 x 280
E-X PDA 6.5 x 300	191,50	204,10	E-X PD BZ 6.3 x 300

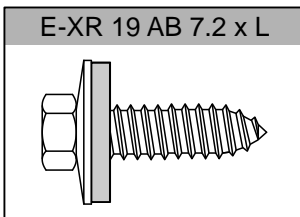
Application

For fastening roof, light and wall slabs of fibre cement and plastic on a wooden substructure.

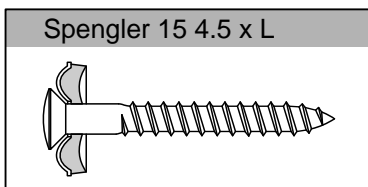
Application

For fastening roof, light and wall slabs of fibre cement and plastic on a steel substructure with a flange thickness of 1.25 mm or more.

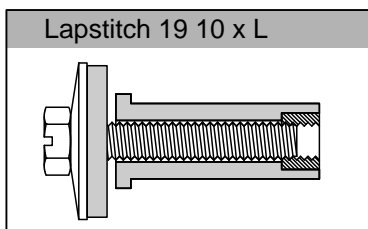
Self-tapping special screws of stainless steel 1.4301 with fitted sealing washers of stainless steel 1.4301. Washers with bonded EPDM seal.



Name	Without washers [€/ 100 items]	With stainless steel washer Ø 19 [€/ 100 items]
E-XR 19 AB 7.2 x 19	26,60	31,85
E-XR 19 AB 7.2 x 25	29,60	34,85
E-XR 19 AB 7.2 x 38	40,90	46,15
Application Repair screw		



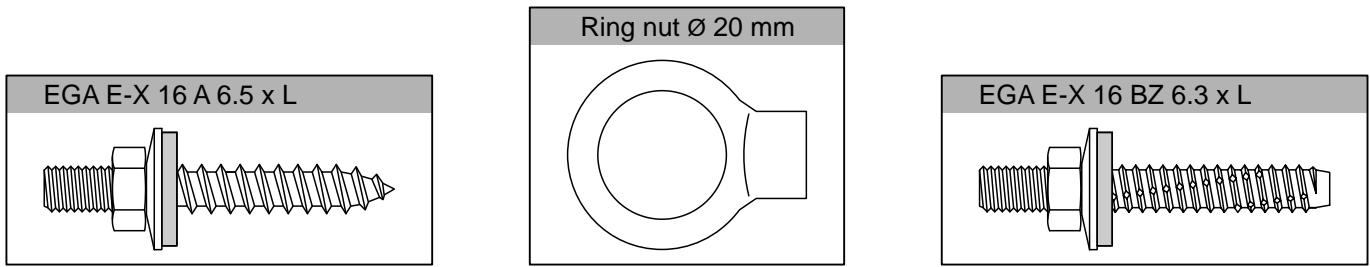
Name	With stainless steel washer Ø 15 [€/ 100 items]	Drive	max. drilling performance [mm]
Spengler 15 4.5 x 25	10,90	PZ 2 or optional TORX 25	Wooden
Spengler 15 4.5 x 35	12,95		
Spengler 15 4.5 x 45	15,00		
Application Mounting on a wooden substructure.			



Name	With aluminium washer Ø 19 [€/ 100 items]
Lapstitch 19 10 x 25	29,00
Application Elastic fastening of plastic slabs in the case of overlap.	

The additional prices for larger sealing washers and coloured fasteners are provided on page 33.

Self-tapping special screws of stainless steel 1.4301 with fitted sealing washers of stainless steel 1.4301. Washers with bonded EPDM seal.



Name	Without washers [€/ 100 items]	With stainless steel washer Ø 16 [€/ 100 items]	Name
EGA E-X 16 A 6.5 x 25	50,50	53,75	EGA E-X 16 BZ 6.3 x 25
EGA E-X 16 A 6.5 x 65	98,75	102,00	EGA E-X 16 BZ 6.3 x 65
EGA E-X 16 A 6.5 x 115	132,30	135,55	EGA E-X 16 BZ 6.3 x 115
EGA E-X 16 A 6.5 x 150	147,85	151,10	EGA E-X 16 BZ 6.3 x 150

Application

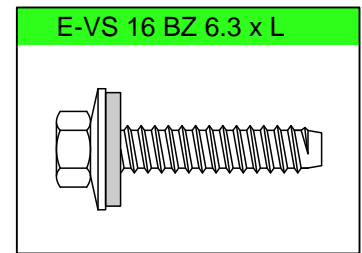
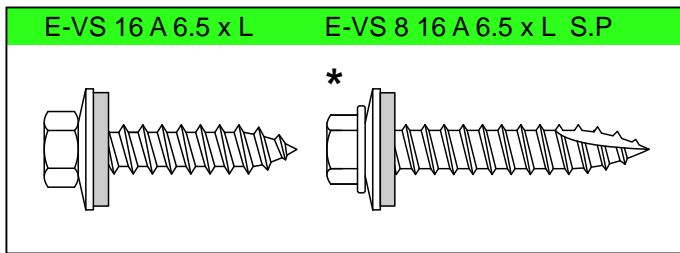
Fastening of, for example, ring eyes on a wooden substructure, thread M6.

Application

Fastening of, for example, ring eyes on steel substructure with a flange thickness of 1.25 mm or more, thread M6.

Ring nut, stainless steel, eye diameter 20 mm	€ per 100 items 431,40
Ring nut, galvanised steel, eye diameter 20 mm	€ per 100 items 135,75
Ring nut, galvanised steel, eye diameter 28 mm	€ per 100 items 88,00

Self-drilling special screws of heat-treated steel, corrosion-resistant, with fitted sealing washers of galvanised steel. Washers with bonded EPDM seal.



Name	Without washers [€/ 100 items]	With galvanised steel washer Ø 16 [€/ 100 items]	Name
E-VS 16 A 6.5 x 16	5,40	7,65	E-VS 16 BZ 6.3 x 16
E-VS 16 A 6.5 x 20 *	5,75	8,00	E-VS 16 BZ 6.3 x 20
E-VS 16 A 6.5 x 25 *	7,15	9,40	E-VS 16 BZ 6.3 x 25
E-VS 16 A 6.5 x 32 *	7,85	10,10	E-VS 16 BZ 6.3 x 32
E-VS 16 A 6.5 x 38 *	8,50	10,75	E-VS 16 BZ 6.3 x 38
E-VS 16 A 6.5 x 45 *	9,25	11,50	E-VS 16 BZ 6.3 x 45
E-VS 16 A 6.5 x 50 *	9,55	11,80	E-VS 16 BZ 6.3 x 50
E-VS 16 A 6.5 x 60	11,10	13,35	E-VS 16 BZ 6.3 x 60
E-VS 16 A 6.5 x 65 *	11,45	13,70	E-VS 16 BZ 6.3 x 65
E-VS 16 A 6.5 x 70	11,70	13,95	E-VS 16 BZ 6.3 x 70
E-VS 16 A 6.5 x 75 *	12,55	14,80	E-VS 16 BZ 6.3 x 75
E-VS 16 A 6.5 x 80	12,75	15,00	E-VS 16 BZ 6.3 x 80
E-VS 16 A 6.5 x 85	13,75	16,00	E-VS 16 BZ 6.3 x 85
E-VS 16 A 6.5 x 90 *	14,15	16,40	E-VS 16 BZ 6.3 x 90
E-VS 16 A 6.5 x 100 *	18,10	20,35	E-VS 16 BZ 6.3 x 100
E-VS 16 A 6.5 x 115	19,55	21,80	E-VS 16 BZ 6.3 x 115
E-VS 16 A 6.5 x 130 *	25,40	27,65	E-VS 16 BZ 6.3 x 130
E-VS 16 A 6.5 x 150 *	31,45	33,70	E-VS 16 BZ 6.3 x 150
E-VS 16 A 6.5 x 175 *	38,60	40,85	E-VS 16 BZ 6.3 x 175
E-VS 16 A 6.5 x 200 *	51,10	53,35	E-VS 16 BZ 6.3 x 200
E-VS 16 A 6.5 x 220	67,20	69,45	E-VS 16 BZ 6.3 x 220
E-VS 16 A 6.5 x 240	79,95	82,20	E-VS 16 BZ 6.3 x 240
E-VS 16 A 6.5 x 260	93,10	95,35	E-VS 16 BZ 6.3 x 260

Anwendung

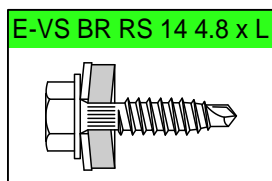
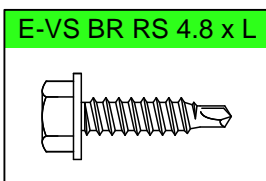
Fastened on a wooden substructure or a steel substructure with a flange thickness of up to 3.0 mm.

We also offer the screws marked with * in SW 8 mm and cutting thread (S.P) which are suitable for fastening trapezoidal steel sheets of up to 1.0 mm on a wooden substructure without pre-drilling.

Anwendung

Fastened on a steel substructure with a flange thickness of 3 mm or more.

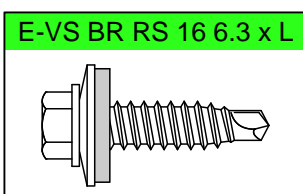
Self-drilling special screws of heat-treated steel, corrosion-resistant, with fitted sealing washers of galvanised steel. Washers with bonded EPDM seal.



Name	Without washers [€/ 100 items]	With galvanised steel washer Ø 14 [€/ 100 items]	max. drilling performance [mm]
E-VS BOHR RS 4.8 x 19	7,75	-	Overlap
E-VS BOHR RS 14 4.8 x 20*	-	9,70	

Application

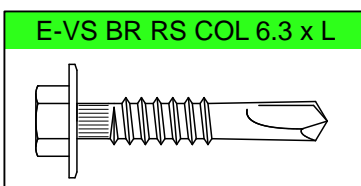
Mounting the longitudinal connection. Please observe the product information on page 22 of our catalogue.



Name	Without washers [€/ 100 items]	With galvanised steel washer Ø 16 [€/ 100 items]	max. drilling performance [mm]
E-VS BOHR RS 16 6.3 x 20	-	15,10	Overlap
E-VS BOHR RS 16 6.3 x 25	-	16,40	

Application

Mounting the longitudinal connection. Please observe the product information on page 22 of our catalogue.



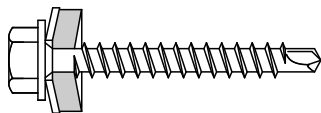
Name	Without washers [€/ 100 items]	With galvanised steel washer Ø 16 [€/ 100 items]	max. drilling performance [mm]
E-VS BOHR RS COL 6.3 x 22	12,00	-	2 x 1.00
E-VS BOHR RS COL 6.3 x 23	12,00	-	Overlap 2 x 1.25
E-VS BOHR RS COL 6.3 x 32	14,65	-	2 x 1.50

Application

Mounting the longitudinal connection. Please observe the product information on page 23 of our catalogue.

Self-drilling special screws of heat-treated steel, corrosion-resistant, with fitted sealing washers of galvanised steel. Washers with bonded EPDM seal.

E-VS BR RS 14 4.8 x L

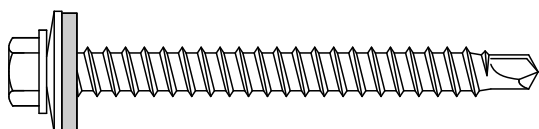


Name	Without washers [€/ 100 items]	With galvanised steel washer Ø 14 [€/ 100 items]	max. drilling performance [mm]
E-VS BOHR RS 14 4.8 x 28	-	10,55	Wooden
E-VS BOHR RS 14 4.8 x 35	-	13,05	
E-VS BOHR RS 14 4.8 x 60	-	14,35	
E-VS BOHR RS 14 4.8 x 80	-	17,15	

Application

Mounting the longitudinal connection and mounting sheet steel profiles on a wooden substructure.

E-VS BR RS 16 6.5 x L

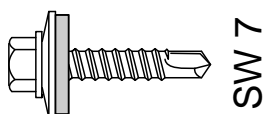


Name	Without washers [€/ 100 items]	With galvanised steel washer Ø 16 [€/ 100 items]	max. drilling performance [mm]
E-VS BOHR RS 16 6.5 x 50	19,50	21,75	Wooden
E-VS BOHR RS 16 6.5 x 70	23,65	25,90	
E-VS BOHR RS 16 6.5 x 90	30,25	32,50	

Application

Mounting on a wooden substructure.

E-VS BR 3 14 4.2 x L



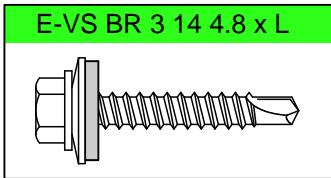
Name	Without washers [€/ 100 items]	With galvanised steel washer Ø 14 [€/ 100 items]	max. drilling performance [mm]
E-VS BOHR 3 14 4.2 x 13	4,45	6,40	2.0
E-VS BOHR 3 14 4.2 x 16	4,75	6,70	
E-VS BOHR 3 14 4.2 x 19	5,80	7,75	
E-VS BOHR 3 14 4.2 x 25	6,30	8,25	
E-VS BOHR 3 14 4.2 x 32	6,80	8,75	

Application

Mounting on a steel substructure.

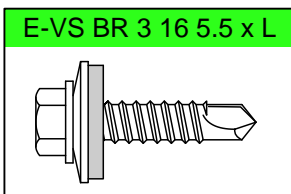
The additional prices for larger sealing washers and coloured fasteners are provided on page 33.

Self-drilling special screws of heat-treated steel, corrosion-resistant, with fitted sealing washers of galvanised steel. Washers with bonded EPDM seal.



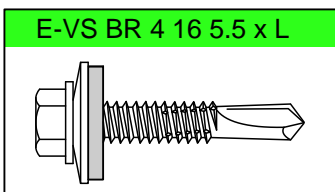
Name	Without washers [€/ 100 items]	With galvanised steel washer Ø 14 [€/ 100 items]	max. drilling performance [mm]
E-VS BOHR 3 14 4.8 x 13	7,00	8,95	3.0
E-VS BOHR 3 14 4.8 x 16	7,60	9,55	
E-VS BOHR 3 14 4.8 x 19	7,75	9,70	
E-VS BOHR 3 14 4.8 x 22	8,15	10,10	
E-VS BOHR 3 14 4.8 x 25	9,25	11,20	
E-VS BOHR 3 14 4.8 x 32	9,70	11,65	
E-VS BOHR 3 14 4.8 x 38	10,55	12,50	
E-VS BOHR 3 14 4.8 x 45	10,95	12,90	
E-VS BOHR 3 14 4.8 x 50	12,00	13,95	
E-VS BOHR 3 14 4.8 x 60	13,15	15,10	

Application
Mounting on a steel substructure.



Name	Without washers [€/ 100 items]	With galvanised steel washer Ø 16 [€/ 100 items]	max. drilling performance [mm]
E-VS BOHR 3 16 5.5 x 19	10,15	12,40	5.0
E-VS BOHR 3 16 5.5 x 22	10,65	12,90	
E-VS BOHR 3 16 5.5 x 25	11,05	13,30	
E-VS BOHR 3 16 5.5 x 32	11,95	14,20	
E-VS BOHR 3 16 5.5 x 38	12,95	15,20	
E-VS BOHR 3 16 5.5 x 50	15,30	17,55	
E-VS BOHR 3 16 5.5 x 60	16,55	18,80	

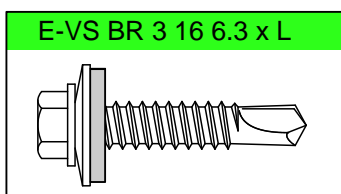
Application
Mounting on a steel substructure.



Name	Without washers [€/ 100 items]	With galvanised steel washer Ø 16 [€/ 100 items]	max. drilling performance [mm]
E-VS BOHR 4 16 5.5 x 24	13,25	15,50	8.0
E-VS BOHR 4 16 5.5 x 26	14,05	16,30	

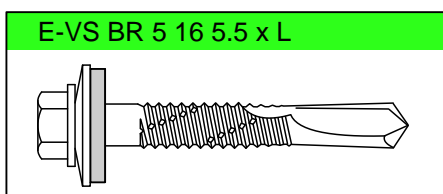
Application
Mounting on a steel substructure.

Self-drilling special screws of heat-treated steel, corrosion-resistant, with fitted sealing washers of galvanised steel. Washers with bonded EPDM seal.



Name	Without washers [€/ 100 items]	With galvanised steel washer Ø 16 [€/ 100 items]	max. drilling performance [mm]
E-VS BOHR 3 16 6.3 x 19	12,80	15,05	6.0
E-VS BOHR 3 16 6.3 x 22	13,60	15,85	
E-VS BOHR 3 16 6.3 x 25	14,10	16,35	
E-VS BOHR 3 16 6.3 x 32	16,25	18,50	
E-VS BOHR 3 16 6.3 x 38	17,40	19,65	
E-VS BOHR 3 16 6.3 x 50	21,15	23,40	8.0
E-VS BOHR 3 16 6.3 x 65	22,60	24,85	
E-VS BOHR 3 16 6.3 x 80	26,10	28,35	
E-VS BOHR 3 16 6.3 x 100	35,65	37,90	
E-VS BOHR 3 16 6.3 x 120	39,70	41,95	
E-VS BOHR 3 16 6.3 x 140	44,00	46,25	
E-VS BOHR 3 16 6.3 x 160	47,30	49,55	

Application
Mounting on a steel substructure.

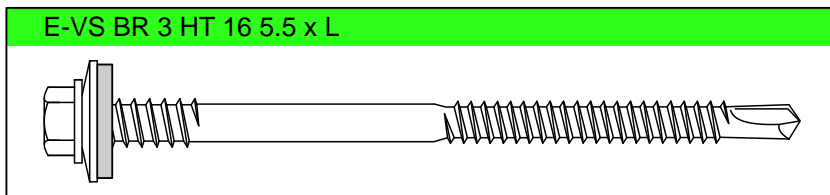


Name	Without washers [€/ 100 items]	With galvanised steel washer Ø 16 [€/ 100 items]	max. drilling performance [mm]
E-VS BOHR 5 16 5.5 x 32	14,85	17,10	12.5
E-VS BOHR 5 16 5.5 x 38	15,45	17,70	
E-VS BOHR 5 16 5.5 x 51	16,85	19,10	
E-VS BOHR 5 16 5.5 x 67	22,55	24,80	
E-VS BOHR 5 16 5.5 x 76	24,25	26,50	
E-VS BOHR 5 16 5.5 x 85	25,95	28,20	
E-VS BOHR 5 16 5.5 x 100	30,05	32,30	
E-VS BOHR 5 16 5.5 x 115	37,60	39,85	
E-VS BOHR 5 16 5.5 x 130	43,05	45,30	
E-VS BOHR 5 16 5.5 x 150	45,40	47,65	

Application
Mounting on a steel substructure.

The additional prices for larger sealing washers and coloured fasteners are provided on page 33.

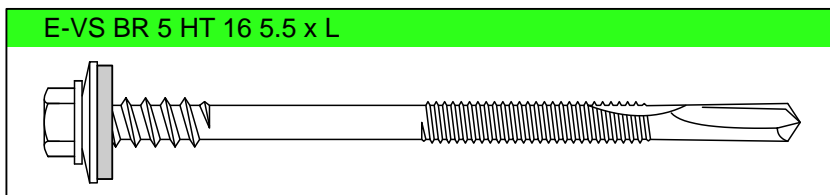
Self-drilling special screws of heat-treated steel, corrosion-resistant, with fitted sealing washers of galvanised steel. Washers with bonded EPDM seal.



Name	Without washers [€/ 100 items]	With galvanised steel washer Ø 16 [€/ 100 items]	max. drilling performance [mm]	Clamping area from - to [mm]
E-VS BOHR 3 HT 16 5.5 x 60	18,75	21,00	5.0	25 - 40
E-VS BOHR 3 HT 16 5.5 x 65	19,25	21,50		25 - 45
E-VS BOHR 3 HT 16 5.5 x 80	21,55	23,80		40 - 60
E-VS BOHR 3 HT 16 5.5 x 98	26,40	28,65		50 - 78
E-VS BOHR 3 HT 16 5.5 x 120	30,95	33,20		60 - 100
E-VS BOHR 3 HT 16 5.5 x 130	33,20	35,45		70 - 110
E-VS BOHR 3 HT 16 5.5 x 150	38,95	41,20		70 - 130
E-VS BOHR 3 HT 16 5.5 x 180	51,30	53,55		100 - 160
E-VS BOHR 3 HT 16 5.5 x 200	61,85	64,10		120 - 180
E-VS BOHR 3 HT 16 5.5 x 230	70,00	72,25		150 - 210

Application

Mounting of sandwich profiles on a steel substructure.



Name	Without washers [€/ 100 items]	With galvanised steel washer Ø 16 [€/ 100 items]	max. drilling performance [mm]	Clamping area from - to [mm]
E-VS BOHR 5 HT 16 5.5 x 75	26,25	28,50	12.5	25 - 35
E-VS BOHR 5 HT 16 5.5 x 85	27,30	29,55		38 - 46
E-VS BOHR 5 HT 16 5.5 x 105	32,50	34,75		38 - 64
E-VS BOHR 5 HT 16 5.5 x 130	39,30	41,55		61 - 90
E-VS BOHR 5 HT 16 5.5 x 140	42,00	44,25		71 - 100
E-VS BOHR 5 HT 16 5.5 x 150	44,80	47,05		61 - 110
E-VS BOHR 5 HT 16 5.5 x 160	47,00	49,25		70 - 120
E-VS BOHR 5 HT 16 5.5 x 175	49,20	51,45		85 - 135
E-VS BOHR 5 HT 16 5.5 x 190	60,55	62,80		100 - 150
E-VS BOHR 5 HT 16 5.5 x 210	72,15	74,40		130 - 180
E-VS BOHR 5 HT 16 5.5 x 240	92,00	94,25		152 - 200
E-VS BOHR 5 HT 16 5.5 x 285	124,85	127,10		200 - 245

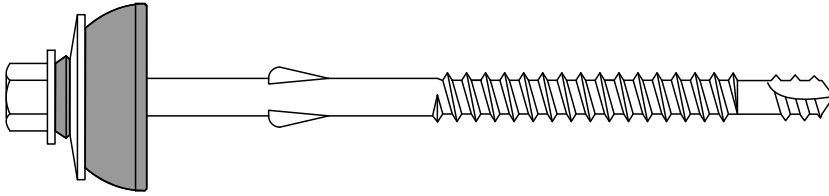
Application

Mounting of sandwich profiles on a steel substructure.

A figure is provided on page 9 to facilitate understanding and to explain the terms clamping area, element height, core foam thickness and embedment depth.

Self-drilling special screws of heat-treated steel, screw type A, 50 µm fire galvanised according to approval. Screw type B, organically coated. Sealing element consisting of stainless steel washer and special seal (FK) of EPDM.

DDBS FK A 6.5 x L

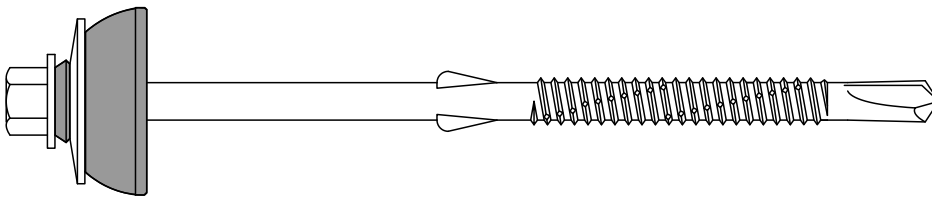


Name	Without washers [€/ 100 items]	With cap (FK) Ø 25 [€/ 100 items]	max. drilling performance [mm]
DDBS FK A 6.5 x 95	-	40,40	Wooden
DDBS FK A 6.5 x 110	-	43,00	
DDBS FK A 6.5 x 130	-	45,40	
DDBS FK A 6.5 x 150	-	50,45	
DDBS FK A 6.5 x 180	-	58,00	

Application

For fastening fibre-cement corrugated sheets on a wooden substructure.

DDBS FK B 6.5 x L



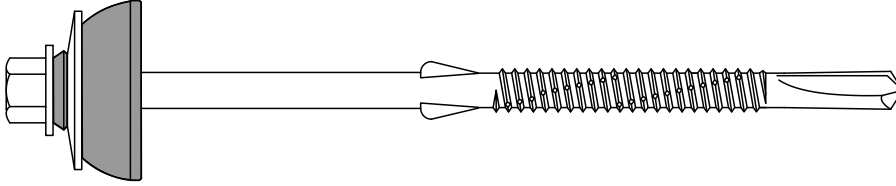
Name	Without washers [€/ 100 items]	With cap (FK) Ø 25 [€/ 100 items]	max. drilling performance [mm]
DDBS FK B 6.3 x 105	-	54,80	5.0
DDBS FK B 6.3 x 115	-	58,25	
DDBS FK B 6.3 x 125	-	61,55	
DDBS FK B 6.3 x 145	-	69,80	
DDBS FK B 6.3 x 175	-	85,30	
DDBS FK B 6.3 x 200	-	108,45	
DDBS FK B 6.3 x 230	-	129,15	

Application

For fastening fibre-cement corrugated sheets on a steel substructure.

Self-drilling and self-tapping special screws of heat-treated steel, corrosion-resistant, screw type DDBS 5 B, organically coated. Sealing element consisting of stainless steel washer and special seal (FK, PD) of EPDM.

DDBS 5 FK B 6.5 x L

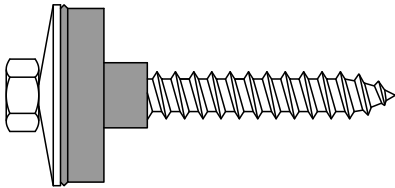


Name	Without washers [€/ 100 items]	With cap (FK) Ø 25 [€/ 100 items]	max. drilling performance [mm]
DDBS 5 FK B 6.3 x 110	-	64,30	12.5
DDBS 5 FK B 6.3 x 120	-	71,55	
DDBS 5 FK B 6.3 x 130	-	75,35	
DDBS 5 FK B 6.3 x 145	-	82,60	
DDBS 5 FK B 6.3 x 175	-	91,45	
DDBS 5 FK B 6.3 x 200	-	116,95	
DDBS 5 FK B 6.3 x 235	-	137,90	

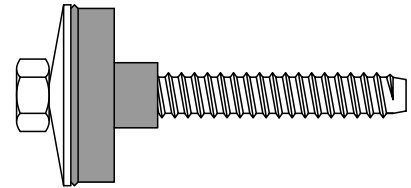
Application

For fastening fibre-cement corrugated sheets on a wooden substructure.

E-VS PDA 6.5 x L



E-VS PD BZ 6.3 x L



Name	Without washers [€/ 100 items]	With mushroom-type seal Ø 25 [€/ 100 items]	Name
E-VS PDA 6.5 x 32	7,85	20,45	E-VS PD BZ 6.3 x 32
E-VS PDA 6.5 x 38	8,50	21,10	E-VS PD BZ 6.3 x 38
E-VS PDA 6.5 x 45	9,25	21,85	E-VS PD BZ 6.3 x 45
E-VS PDA 6.5 x 50	9,55	22,15	E-VS PD BZ 6.3 x 50
E-VS PDA 6.5 x 60	11,10	23,70	E-VS PD BZ 6.3 x 60
E-VS PDA 6.5 x 65	11,45	24,05	E-VS PD BZ 6.3 x 65
E-VS PDA 6.5 x 70	11,70	24,30	E-VS PD BZ 6.3 x 70
E-VS PDA 6.5 x 75	12,55	25,15	E-VS PD BZ 6.3 x 75
E-VS PDA 6.5 x 80	12,75	25,35	E-VS PD BZ 6.3 x 80
E-VS PDA 6.5 x 85	13,75	26,35	E-VS PD BZ 6.3 x 85
E-VS PDA 6.5 x 90	14,15	26,75	E-VS PD BZ 6.3 x 90
E-VS PDA 6.5 x 100	18,10	30,70	E-VS PD BZ 6.3 x 100
E-VS PDA 6.5 x 115	19,55	32,15	E-VS PD BZ 6.3 x 115
E-VS PDA 6.5 x 130	25,40	38,00	E-VS PD BZ 6.3 x 130
E-VS PDA 6.5 x 150	31,45	44,05	E-VS PD BZ 6.3 x 150
E-VS PDA 6.5 x 175	38,60	51,20	E-VS PD BZ 6.3 x 175
E-VS PDA 6.5 x 200	51,10	63,70	E-VS PD BZ 6.3 x 200
E-VS PDA 6.5 x 220	67,20	79,80	E-VS PD BZ 6.3 x 220
E-VS PDA 6.5 x 240	79,95	92,55	E-VS PD BZ 6.3 x 240
E-VS PDA 6.5 x 260	93,10	105,70	E-VS PD BZ 6.3 x 260

Application

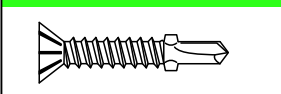
For fastening roof, light and wall slabs of fibre cement and plastic on a wooden substructure.

Application

For fastening roof, light and wall slabs of fibre cement and plastic on a steel substructure.

Self-drilling special screws of heat-treated steel, corrosion-resistant, with ribbed countersunk head and wings.

E-VS BR 2 FLT 4.2 x L

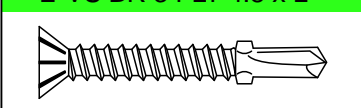


Name	Price [€/ 100 items]	Drive	max. drilling performance [mm]	Wood thickness [mm]
E-VS BOHR 2 FLT 4.2 x 25	2,70	PH 2	2.5	9

Application

For fastening wood on a steel substructure. The minimum thickness of the substructure may not be less than 1.0 mm.

E-VS BR 3 FLT 4.8 x L

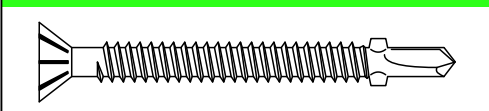


Name	Price [€/ 100 items]	Drive	max. drilling performance [mm]	Wood thickness [mm]
E-VS BOHR 3 FLT 4.8 x 32	3,00	PH 2	3.5	12
E-VS BOHR 3 FLT 4.8 x 38	3,20			18
E-VS BOHR 3 FLT 4.8 x 45	4,50			25
E-VS BOHR 3 FLT 4.8 x 50	5,55			30

Application

For fastening wood on a steel substructure. The minimum thickness of the substructure may not be less than 1.25 mm.

E-VS BR 3 FLT 5.5 x L



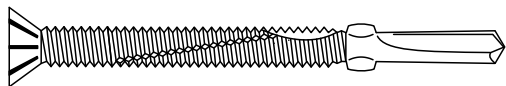
Name	Price [€/ 100 items]	Drive	max. drilling performance [mm]	Wood thickness [mm]
E-VS BOHR 3 FLT 5.5 x 38	6,10	PH 3	5.0	13
E-VS BOHR 3 FLT 5.5 x 55	6,75			30
E-VS BOHR 3 FLT 5.5 x 60	8,25			35
E-VS BOHR 3 FLT 5.5 x 85	14,30			60
E-VS BOHR 3 FLT 5.5 x 109	18,70			84
E-VS BOHR 3 FLT 5.5 x 130	20,70			105
E-VS BOHR 3 FLT 5.5 x 150	22,75			125

Application

For fastening wood on a steel substructure. The minimum thickness of the substructure may not be less than 1.25 mm.

Self-drilling special screws of heat-treated steel, corrosion-resistant, with ribbed countersunk head and wings.

E-VS BR 5 FLT 5.5 x L

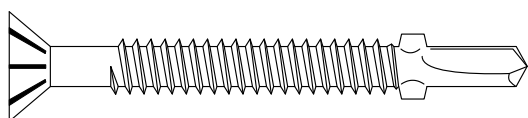


Name	Price [€/ 100 items]	Drive	max. drilling performance [mm]		Wood thickness [mm]
E-VS BOHR 5 FLT 5.5 x 60	17,55	PH 3	12.5		27
E-VS BOHR 5 FLT 5.5 x 85	23,70				52
E-VS BOHR 5 FLT 5.5 x 109	27,45				76
E-VS BOHR 5 FLT 5.5 x 130	33,10				97
E-VS BOHR 5 FLT 5.5 x 150	35,65				117

Application

For fastening wood on a steel substructure. The minimum thickness of the substructure may not be less than 1.25 mm.

E-VS BR T30 FLT 6.3 x L

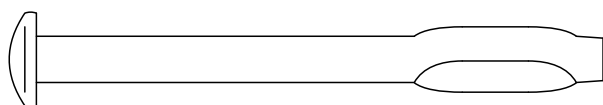


Name	Price [€/ 100 items]	Drive	max. drilling performance [mm]		Wood thickness [mm]
E-VS BOHR T30 FLT 6.3 x 45	8,10	T 30	6.0		10 - 20
E-VS BOHR T30 FLT 6.3 x 50	9,30				12 - 28
E-VS BOHR T30 FLT 6.3 x 60	12,00				12 - 36
E-VS BOHR T30 FLT 6.3 x 70	13,95				15 - 45
E-VS BOHR T30 FLT 6.3 x 80	15,45				25 - 57
E-VS BOHR T30 FLT 6.3 x 100	16,80				35 - 75

Application

For fastening wood on a steel substructure. The minimum thickness of the substructure may not be less than 1.25 mm.

E-VS SP 6.0 x L

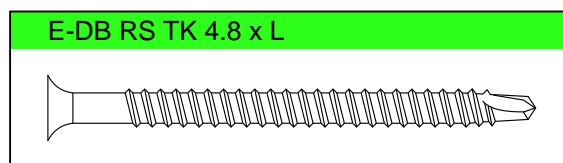
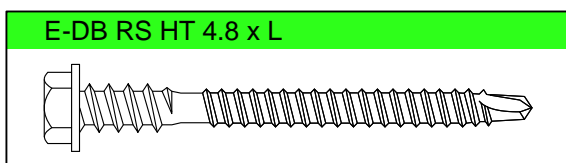


Name	Without washers [€/ 100 items]	With galvanised steel washer Ø 19 [€/ 100 items]	Clamping area from - to [mm]
E-VS SP 6.0 x 40	11,60	15,65	< 10
E-VS SP 6.0 x 135	23,20	27,25	< 105
E-VS SP 6.0 x 155	25,60	29,65	< 125
E-VS SP 6.0 x 185	29,70	33,75	< 155

Application

For fastening on a concrete substructure. Installation dimension = Ø 6.0 mm, at least 30 mm deep.

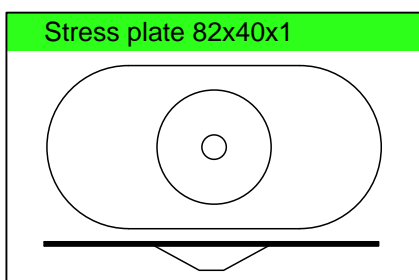
Self-drilling special screws of heat-treated steel, organically coated.



Name	Price [€/ 100 items]	Name
E-DB RS 4.8 x 50	9,80	E-DB RS TK 4.8 x 50
E-DB RS 4.8 x 60	12,15	_____
E-DB RS HT 4.8 x 60	12,95	_____
E-DB RS 4.8 x 70	12,95	E-DB RS TK 4.8 x 70
E-DB RS 4.8 x 80	17,95	E-DB RS TK 4.8 x 80
E-DB RS HT 4.8 x 80	16,50	_____
_____	19,15	E-DB RS TK 4.8 x 90
E-DB RS HT 4.8 x 100	20,35	E-DB RS TK 4.8 x 100
E-DB RS 4.8 x 110	23,25	E-DB RS TK 4.8 x 110
E-DB RS HT 4.8 x 120	29,95	E-DB RS TK 4.8 x 120
E-DB RS 4.8 x 130	33,25	E-DB RS TK 4.8 x 130
E-DB RS HT 4.8 x 140	36,55	E-DB RS TK 4.8 x 140
E-DB RS 4.8 x 150	41,55	E-DB RS TK 4.8 x 150
E-DB RS HT 4.8 x 160	48,90	_____
E-DB RS HT 4.8 x 180	53,20	_____
E-DB RS HT 4.8 x 200	66,50	_____
E-DB RS HT 4.8 x 220	77,55	_____
E-DB RS HT 4.8 x 240	89,75	_____
E-DB RS HT 4.8 x 260	101,40	_____
E-DB RS HT 4.8 x 280	116,35	_____
E-DB RS HT 4.8 x 300	132,65	_____

Application

Mechanical fastening of insulating material and roof sheeting on a wooden substructure and trapezoidal steel sheets up to 2 x 1.0 mm thick.

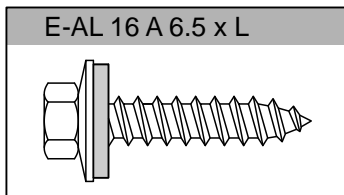


Name	Price [€/ 100 items]
stress plate, oval 82 x 40 x 1 HT	11,90
stress plate, oval 82 x 40 x 1 TK	11,90
stress plate, round 50 x 0.50	4,90

Application

Mechanical fastening of insulating material and roof sheeting.

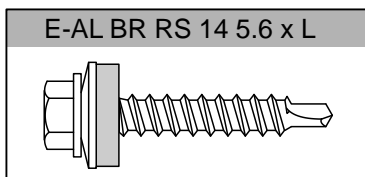
Self-tapping and self-drilling special screws of hardened aluminium F44 with fitted sealing washers of aluminium. Washers with bonded EPDM seal.



Name	Without washers [€/ 100 items]	With Aluminium washer Ø 16 [€/ 100 items]
E-AL 16 A 6.5 x 20	6,75	9,25
E-AL 16 A 6.5 x 25	7,65	10,15
E-AL 16 A 6.5 x 32	8,15	10,65
E-AL 16 A 6.5 x 38	8,30	10,80
E-AL 16 A 6.5 x 50	8,45	10,95
E-AL 16 A 6.5 x 60	11,15	13,65
E-AL 16 A 6.5 x 65	12,35	14,85
E-AL 16 A 6.5 x 70	13,70	16,20
E-AL 16 A 6.5 x 75	15,22	17,75
E-AL 16 A 6.5 x 80	17,20	19,70
E-AL 16 A 6.5 x 90	20,05	22,55

Application

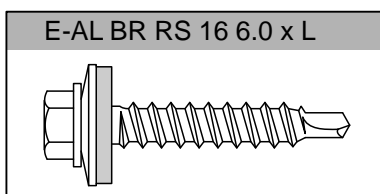
Fastening of aluminium sheet profile overlap and aluminium sheet on a wooden substructure.



Name	Without washers [€/ 100 items]	With Aluminium washer Ø 14 [€/ 100 items]	max. drilling performance [mm]
E-AL BOHR RS 14 5.6 x 19	11,60	13,80	Wooden
E-AL BOHR RS 14 5.6 x 35	14,85	17,05	

Application

Fastening of aluminium sheet profile overlap and aluminium sheet on a wooden substructure.



Name	Without washers [€/ 100 items]	With Aluminium washer Ø 16 [€/ 100 items]	max. drilling performance [mm]
E-AL BOHR RS 16 6.0 x 35	15,45	17,95	Wooden

Application

Fastening of aluminium sheet on a wooden substructure.

The additional prices for larger sealing washers and coloured fasteners are provided on page 33.

SADDLE WASHERS



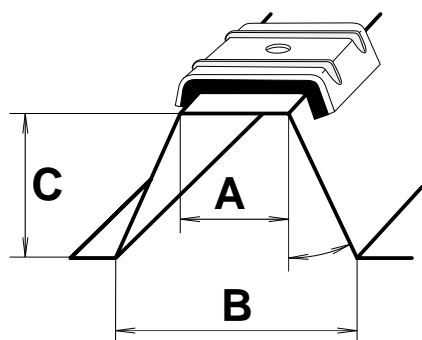
Aluminium saddle washers with bonded EPDM seal. For crown fix of roof coverings of polyester, aluminium, steel and fibre cement.



Name	Upper flange width [mm]	Profile angle	Natural [€/ 100 items]	Coloured [€/ 100 items]	
R 38	19/34	19	34°	15,45	18,55
G 4	20/32	20	32°	15,45	18,55
30/200	20/29	20	29°	15,45	18,55
N 1000 T	23/30	23	30°	16,35	19,60
ROMA D	24/22	24	22°	15,45	18,55
30/153	24/30	24	30°	15,45	18,55
TRP 20	24/32	24	32°	16,35	19,60
150/45	25/27	25	27°	16,35	19,60
100/24	28/35	28	35°	16,35	19,60
MONTANA THERM	30/22	30	22°	18,90	22,70
TRP 40	30/27	30	27°	18,90	22,70
KINGSPAN	31/23	31	23°	18,90	22,70
40/167	34/23	34	23°	18,90	22,70
35/203	36/36	36	36°	20,65	24,80
40/183	40/17	40	17°	20,65	24,80
35/207	40/36	40	36°	20,65	24,80
EKO 50	42/44	42	44°	24,05	28,90
SAB 52	50/42	50	42°	24,05	28,90
50/250	57/18	57	18°	24,05	28,90
WAVE 18/76		Radius 24	15,45	18,55	
WAVE 150/50		Radius 30	20,65	24,80	
WAVE 130/30		Radius 40	20,65	24,80	
WAVE 177/55		Radius 48	24,05	28,90	

Application
The saddle washer is used in conjunction with the corresponding screw for secure mounting of trapezoidal aluminium or steel sheets on the crown.

To determine the correct saddle washer profile, we require details as shown in the figure below.



- A** Upper flange width
- B** Inner width on lower flange
- C** Profile height
- OR
- A** Upper flange width
- Profile angle

Other profiles on request

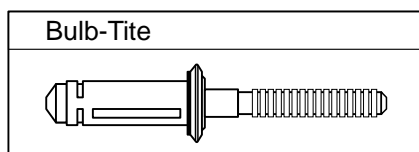
Permanently elastic

Non-ageing

Securely sealed

Manufacturer	Profile name	Saddle washer name	Manufacturer	Profile name	Saddle washer name
ALUBEL	alubel 28; 40	35/207	Münker	M 35/207	35/207
Aludach	Alutech 60	150/45		M 40/183	40/183
Aluform System	Aluform 29/124 Aluform 45/150 Alutherm DT 900 Alutherm DT 1000 Wellprofil 18/76 Wellprofil 55/177	R 38 150/45 R 38 150/45 Welle 18/76 Welle 177/55	Novelis / Aluform	M 40 KD 333	150/45
				M 50/250	50/250
Arcelor Mittal	35/207; 77/301 39/333 T 40/183; 183 SR 85/325 AL 40/183 AL 45/150; 150 S 37/193 E Ondatherm 1001TS Wellprofil 18/76	35/207 30/153 40/183 35/207 40/183 150/45 150/45 N 1000 T Welle 18/76	O-Metall	32.250 35.200 Wellprofil 18/76	35/207 150/45 Welle 18/76
			Salzgitter AG	P-S 35; 85 P-S 40; 40 S	35/207 40/183
Bieber	35/207 40/183; 18 S	35/207 40/183	Pflaum & Söhne	40/183 35/207 40/250 50/192 Wellprofil 18/76	40/183 35/207 150/45 30/200 Welle 18/76
				Profilpartner	35/207 45/150; 45/333 S Wellprofil W 18/76 Wellprofil W 42/160 Wellprofil W 55/177
corus-Gruppe Hoogovens	TR 35/200 TR 45/150 TR 50/167 Wellprofil 18/76	35/203 150/45 40/167 Welle 18/76	Proge	35/207; 85/250; 90/305 40/183; 183 S 45/333 TL 75; 95; 115 DL 70 bis 140	35/207 40/183 Kingspan 35/207 35/207
corus-Gruppe Montana	SP 26; 35; 45 SP 40; 80 MTD TL 85; 105; 125 Wellprofil SP 27 Wellprofil SP 42	35/207 40/183 40/167 Welle 150/50 Welle 177/55		SAB	35/1035 40/915 85 R/1120; 89/915 D65; 75; 95 D 115 1000TL Wellprofil 18/998 Wellprofil 42/960
corus-Gruppe Fischer	35/207; 85/280 40/183 50/250 Isotherm DL 70-140 Wellprofil Sinus 18 Wellprofil Sinus 27 Wellprofil Sinus 35 Wellprofil Sinus 42	35/207 40/183 50/250 35/207 Welle 18/76 Welle 18/76 Welle 150/50 Welle 177/55	Scanwall	ASJ 35 ASJ 40; 40/3	35/207 40/183
CSB	CSB 35 CSB 40	35/207 40/183	Sollac Sidal	Ondatherm 101 TS 1004 TS 1022 TS 1028	40/183 150/45 30/200 TRP 40
DS Stahlhandel	TRP 20/115 TRP 35/206 Sinus 18/75 Sinus 35/143	TRP 20 35/203 Welle 18/76 Welle 150/50	SSK	40/183 T 39/333 T 85/325 1001 TS Wellprofil 18/76 T	40/183 30/153 35/207 150/45 Welle 18/76
Finish Profiles BV	38/914	R 38		Thyssen-Krupp-Hoesch	T 35.1; T 85.1 T 40.1 T 50.1 TL 75; 95; 115
Luxmetall	LM 40 250 1000 A	150/45	Unideck	HD 1,5;2,0; 2,5 S	35/207
Kingspan	KS 1000 RW 30/65; 40/75; 50/85 60/95; 80/115 100/135	Kingspan Kingspan Kingspan Kingspan	Weckmann	W - 1/1064	Welle 18/76
Klöckner	35/1035 40/915 S 75; 95; 115 TL	35/207 40/183 35/203	Wurzer	WU 20/125; 35/207 WU 30/200 WU 40/183 WU 80/307 WU 50/250	35/207 30/200 40/183 35/207 50/250
Lindab	LP 35 LP 40	35/207 40/183			
Metecno	G 4 ST; AL	G 4			
M-Profil	KP - 60 bis 150	35/203			

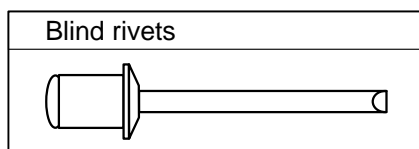
Bulb-Tite rivets of ALU/ALU, blind rivets of ALU/STEEL, ALU/NIRO and NIRO/NIRO.



Name	Price [€/ 100 items]	Clamping area from - to [mm]	Pre-drilling diameter [mm]
NIETEN BULB-TITE W 3	26,90	0.5 - 4.8	5.4
NIETEN BULB-TITE W 4	27,10	1.5 - 6.4	
NIETEN BULB-TITE W 6	27,85	4.8 - 9.5	
NIETEN BULB-TITE W 8	28,55	7.9 - 12.7	
NIETEN BULB-TITE W 10	29,45	11.1 - 15.9	
NIETEN BULB-TITE W 12	30,35	14.3 - 19.1	

Application

Rainproof breakstem rivet; forms three star-shaped lugs. Particularly recommendable when the outer part is thicker than the inner part.



Name	Price [€/ 100 items]	Clamping area from - to [mm]	Pre-drilling diameter [mm]
ALU/STAHL 4.8 x 8	2,85	2.5 - 4.5	4.9
ALU/STAHL 4.8 x 10	3,05	4.5 - 6.0	4.9
ALU/STAHL 4.8 x 16	3,90	10.0 - 12.0	4.9
ALU/STAHL 6.0 x 10	5,70	3.0 - 5.0	6.1
ALU/STAHL 6.0 x 12	6,00	5.0 - 7.0	6.1
ALU/STAHL 6.0 x 16	6,40	7.0 - 11.0	6.1
ALU/NIRO 4.8 x 8	4,65	2.5 - 4.5	4.9
ALU/NIRO 4.8 x 10	4,95	4.5 - 6.0	
ALU/NIRO 4.8 x 12	5,45	6.0 - 8.0	
ALU/NIRO 4.8 x 16	7,10	10.0 - 12.0	
NIRO/NIRO 3.2 x 8	5,90	3.0 - 5.0	3.3
NIRO/NIRO 4.0 x 10	14,10	4.5 - 6.5	4.1
NIRO/NIRO 4.8 x 8	12,00	2.0 - 4.0	4.9
NIRO/NIRO 4.8 x 10	14,35	4.0 - 6.0	4.9
NIRO/NIRO 4.8 x 12	15,45	6.0 - 8.0	4.9
NIRO/NIRO 4.8 x 16	19,75	9.5 - 11.0	4.9

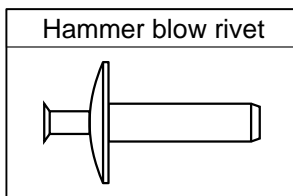
Application

Longitudinal connection of profiled sheets.

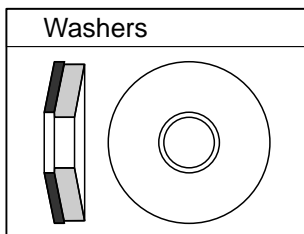
Bucket rivets of ALU/NIRO, hammer blow rivets of ALU/NIRO.



Name	Price [€/ 100 items]	Clamping area from - to [mm]	Pre-drilling diameter [mm]
ALU/NIRO 4.8 x 11	11,45	5.0 - 6.5	4.9
ALU/NIRO 6.4 x 12	18,00	6.5 - 8.0	6.6
Application Longitudinal connection of profiled sheets..			



Name	Price [€/ 100 items]	Clamping area [mm]
ALU/NIRO 5.0 x 20	18,50	bis 5.0
Application Aluminium or steel profiles on masonry, concrete, steel or wood.		



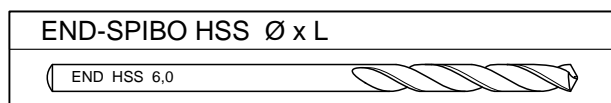
Material	Ø 12 mm	Ø 14 mm	Ø 16 mm	Ø 19 mm	Ø 22 mm	Ø 25 mm	Ø 29 mm
INOX	3,10	3,75	4,45	5,75	8,10	10,95	13,55
ALUMINIUM	2,30	2,80	3,25	4,30	5,85	8,10	10,25
GALVANISED	2,15	2,60	3,05	4,05	5,50	7,65	9,65

The inner diameter is tailored to the screw diameter.

HSS-SPIBO SPIRAL DRILL

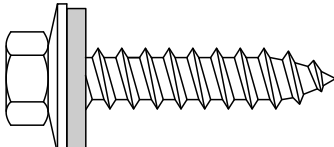
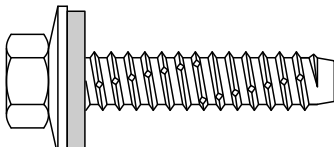


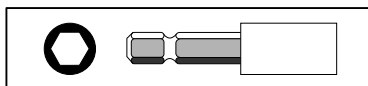
HSS spiral drill with point thinning, right-hand cutting, spiral length up to 30 mm.
Price in € per item.



∅ mm	66	90	135	185	205	260	280	mm ∅
3.0	1,20	1,80	2,10	-	-	-	-	3.0
3.1	1,25	-	2,15	-	-	-	-	3.1
3.3	1,25	-	2,15	-	-	-	-	3.3
3.5	1,25	1,80	2,15	-	-	-	-	3.5
4.0	1,40	-	2,70	-	-	-	-	4.0
4.1	1,40	1,80	2,75	-	-	-	-	4.1
4.2	1,40	1,85	2,75	-	-	-	-	4.2
4.3	-	1,85	-	-	-	-	-	4.3
4.5	1,50	1,85	3,20	-	-	-	-	4.5
4.7	1,50	2,15	3,20	-	-	-	-	4.7
4.8	1,70	2,15	3,30	-	-	-	-	4.8
4.9	1,70	2,15	3,30	-	-	-	-	4.9
5.0	1,70	2,15	3,45	7,10	8,75	9,60	10,00	5.0
5.1	1,70	2,15	3,55	-	-	-	-	5.1
5.2	1,70	2,15	3,55	-	8,75	-	-	5.2
5.3	1,95	2,15	3,55	7,10	8,75	9,60	-	5.3
5.4	-	-	-	-	-	-	-	5.4
5.5	1,95	2,45	3,55	7,10	8,75	9,60	12,70	5.5
5.6	1,95	2,45	3,55	-	-	-	-	5.6
5.7	1,95	2,45	4,00	7,10	8,75	10,25	13,30	5.7
5.8	1,95	2,45	4,00	7,10	8,75	10,25	13,30	5.8
5.9	1,95	2,45	4,00	7,10	8,75	10,25	13,30	5.9
6.0	1,95	2,45	4,00	7,10	9,60	-	-	6.0
6.5	2,25	-	-	-	-	-	-	6.5
∅ mm	66	90	135	185	205	260	280	mm ∅

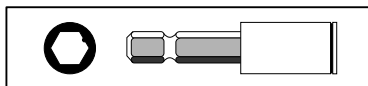
Pre-drilling table

Thread type	Beam thickness St 37	Drill diameter	In accordance with the approval the figures relate to steel, S235Jxx acc. to DIN EN 10 025 S280GD+xx or S320GD+xx acc. to DIN EN 10 147
A 	Wood 0.63 mm 0.75 mm 0.88 - 1.25 mm 1.5 - 3.0 mm	4.8 mm 3.5 mm 4.0 mm 4.5 mm 5.0 mm	
BZ 	1.25 - 1.5 mm 2.0 - 4.0 mm 4.0 - 6.0 mm ab 7.0 mm	5.0 mm 5.3 mm 5.5 mm 5.7 mm	



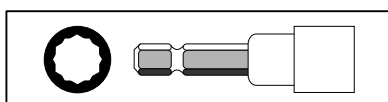
Socket with drivebar 1/4", in SW3/8" or Sw8

€ per items 5,70



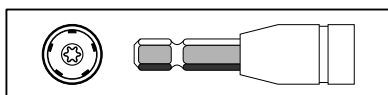
Socket with drivebar 1/4", with spring washer in SW3/8" or SW8 or with magnet Sw8

€ per items 6,70



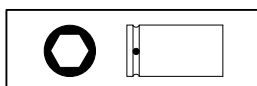
Socket with drivebar 1/4" for BI-HEX, SW 11

€ per items 5,70



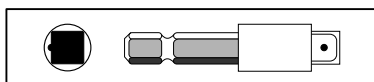
Clamp follower T25 1/4", for TORX 25

€ per items 22,00



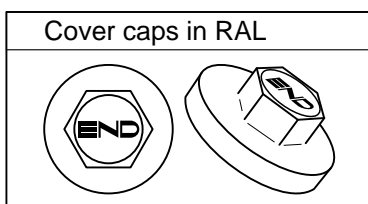
Wrench insert 1/4", in 3/8" or 1/2", in SW3/8" or Sw8

€ per items 5,70



Drivebar only 1/4" x 3/8"

€ per items 10,30



Cover caps in RAL

SW 8, Diameter 19 mm

€ per 100 items 1,85

SW 3/8", Diameter 19 mm

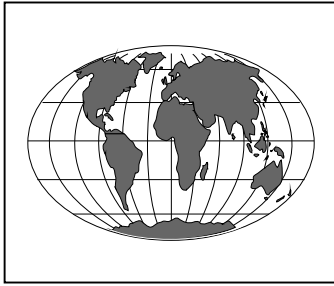
€ per 100 items 1,85

SW 3/8", Diameter 25 mm

€ per 100 items 3,60

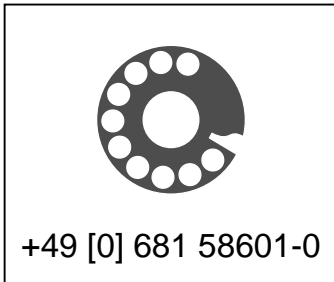
SW 3/8", Diameter 29 mm

€ per 100 items 3,60



Order

You can reach us on the phone on +49 [0] 681 - 58601 - 0 or by fax on +49 [0] 681 - 58601 - 39, or dial the extension number of one of our members of staff. If you have a customer number, please always quote this when ordering. Please enter our product code when you place an order. This is an effective way of avoiding errors when orders are accepted; it makes our work easier and enables your orders to be delivered quicker.



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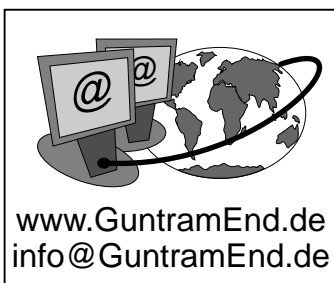
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For each order below €250.00 we charge €5.80 in despatch costs. We deliver orders over €250.00 carriage free. This does not apply for express deliveries, however. We will pass the costs for express deliveries on to you. We have negotiated special rates with various express services and will be pleased to let you benefit from these. Deliveries abroad up to an order value of €1,500.00 are handled EXW Saarbrücken (ex works); in the case of order values of €1,500.00 or above we deliver free to the buyer's address or to the DDP destination (duty paid).



www.GuntramEnd.de
info@GuntramEnd.de

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We only accept returned goods after prior agreement and with a deduction of 20% as a handling charge (but at least €10.00). The cost of returning goods must be borne by you.



Guntram End GmbH
Postfach 650114
66140 Saarbrücken

Defects

Obvious defects should be reported to us immediately, no later than 14 days after delivery. We will correct the defects or replace your goods.



Guntram End GmbH
Untertürkheimer Str. 20
Gewerbegebiet Süd
66117 Saarbrücken

Technology

For your information we have provided some important data on the following pages. You will also find an extract from the general approval by the building authorities relating to our approved stainless steel screws. If you wish, you can download the complete approval document from the IFBS homepage for a fee, or procure this document in printed form from the IFBS shop. We have intentionally avoided overloading the catalogue with technical data. Please call us if you have any questions about a product. We will be pleased to give you advice about your technical problems. On request you can also receive test reports and certificates.

Quality plus reliability

Gross additional prices for larger sealing washers

Washers	Material	Ø 14 mm	Ø 16 mm	Ø 19 mm	Ø 22 mm	Ø 25 mm	Ø 29 mm
	INOX	1,20	1,40	2,00	3,90	6,00	9,20
	ALUMINIUM	-	1,30	1,80	3,35	5,05	7,90
	GALVANISED	1,05	1,25	1,80	3,35	5,00	7,80

Net additional prices for coloured screws

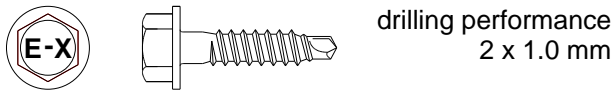
coloured screws		€ per 100 items
	100 items - 1.999 items	5,55
	2.000 items - 4.999 items	4,45
	5.000 items - 19.999 items	2,80
	ab 20.000 items	1,95

Coloured fasteners cannot be exchanged.

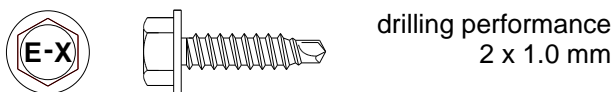
Stitching screws



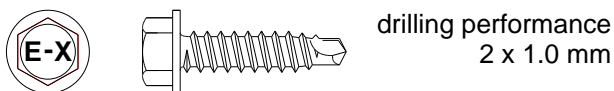
Stainless steel (E-X[®])



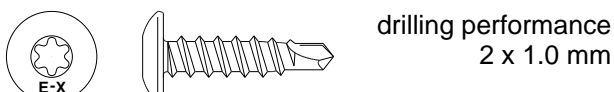
E-X BR RS 4.8 x 20



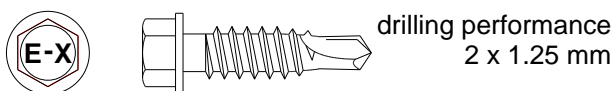
E-X BR RS 4.8 x 19



E-X BR RS 5.5 x 22 / ... 38

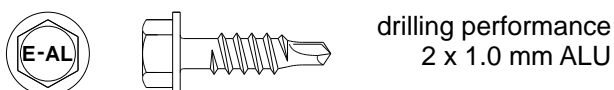


E-X T25 BR RS 5.5 x 22 / ... 38



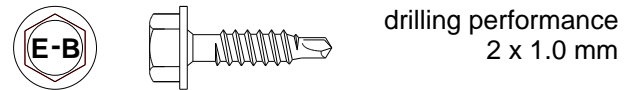
E-X BR RS 6.3 x 25

Aluminium (E-AL[®])

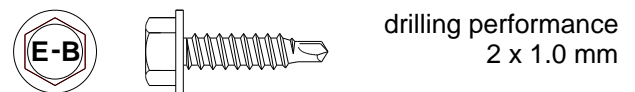


E-AL BR RS 5.6 x 20

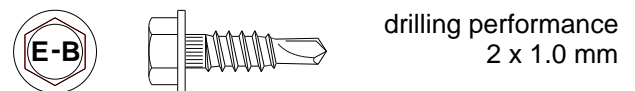
Heat-treated steel (E-VS[®])



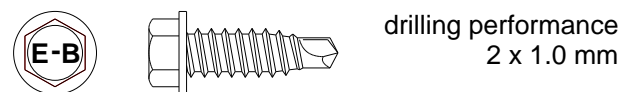
E-VS BR RS 4.8 x 20 / ...28



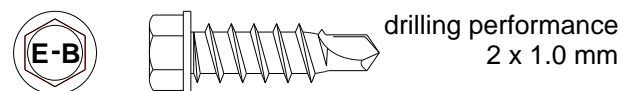
E-VS BR RS 4.8 x 19



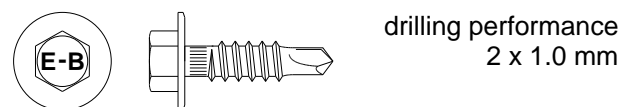
E-VS8 BR RS 5.5 x 20 / ... 28



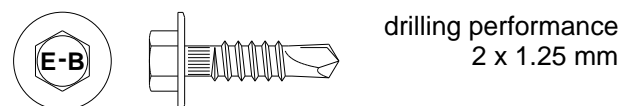
E-VS8 BR RS 6.3 x 19 / ... 25



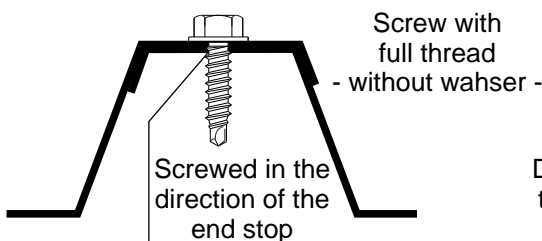
E-VS BR RS 7.8 x 25



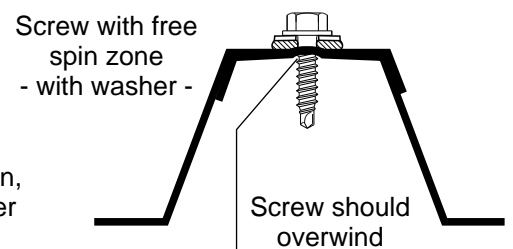
E-VS BR RS COL 6.3 x 22



E-VS BR RS COL 6.3 x 23

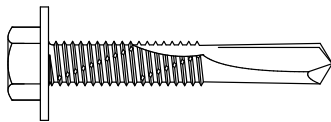


Depending on the application, these screws are used either with or without a washer.



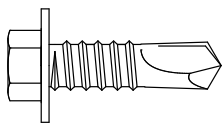
E-VS Bohr COL

Self-tapping or self-drilling special screws, SW 8 mm, of heat-treated steel, corrosion-resistant. With 15 mm flange to increase load-bearing capability.



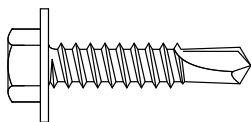
E-VS Bohr 5 COL 5.5 x 35
E-VS Bohr 5 COL 5.5 x 50

Steel substructure
drilling performance, 12.5 mm



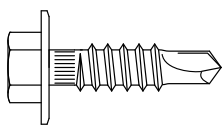
E-VS Bohr COL 6.3 x 22

Steel substructure
drilling performance, 6.0 mm



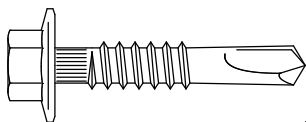
E-VS Bohr COL 5.5 x 25

Steel substructure
drilling performance, 5.0 mm



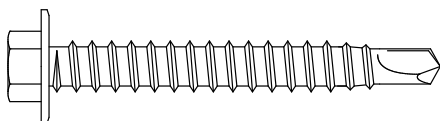
E-VS Bohr RS COL 6.3 x 22
E-VS Bohr RS COL 6.3 x 23

Overlap
2 x 1.00 mm
2 x 1.25 mm



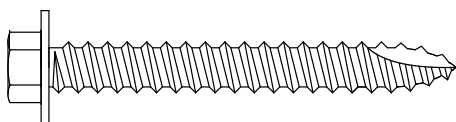
E-VS Bohr RS COL 6.3 x 32

Overlap
2 x 1.50 mm



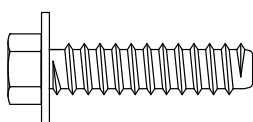
E-VS Bohr RS COL 6.5 x 50
E-VS Bohr RS COL 6.5 x 63

Wooden substructure



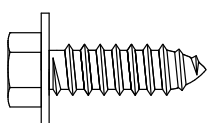
E-VS8 COL A 6.5 x 50 S.P.

Wooden substructure



E-VS8/14 BZ 6.3 x 20
E-VS8/14 BZ 6.3 x 25

Steel substructure



E-VS8/14 B 6.3 x 20

Steel substructure

If you have any questions about these products, simply give us a call. You can also inquire about the prices.

Im Zulassungsbescheid Z-14.4 - 407, Blatt 4.5

**Verbindungs-
element** Bohrschraube
E-X Bohr RS HT 6,5 x L
Dichtscheibe ≥ 16 mm

Werkstoffe **Schraube**
nichtrostender Stahl,
Werkst.-Nr.: 1.4301

Scheibe
nichtrostender Stahl,
Werkst.-Nr.: 1.4301
mit aufvulkanisierter
EPDM-Dichtung

Sandwichdicke d oder D in mm		Bauteil II, Nadelholz Sortierklasse S10 nach DIN 4074-1						Belastungsart
		40	50	60	70	80	≥ 100	
Verschraubung		anschlagorientiert verschrauben						 Querkraft V_{Rk} in kN
Einschraubtiefe		$t_{ef} \geq 50$ mm einschließlich Bohrspitze						
Bauteil I, Blechdicke t_{bl} , bzw. t_{N1} in mm S280 GD+xx bis S350 GD+xx nach DIN EN 10326	$\geq 0,50$	0,90	0,90	0,90	0,90	0,90	0,90	 Zugkraft N_{Rk} in kN
	0,55	1,00	1,00	1,00	1,00	1,00	1,00	
	0,63	1,10	1,10	1,10	1,10	1,10	1,10	
	0,75	1,10	1,10	1,10	1,10	1,10	1,10	
	$\geq 0,88$	1,10	1,10	1,10	1,10	1,10	1,10	
	1,00	2,00	2,00	2,00	2,00	2,00	2,00	
Maximale Kopfauslenkung U Sandwichdicke d oder D in mm		5	6	7	8	9	16	 Maximale Kopfauslenkung U, in mm

Im Zulassungsbescheid Z-14.4 - 407, Blatt 2.20

**Verbindungs-
element** Bohrschraube
E-X Bohr 3 HT 5,5 x L
Dichtscheibe ≥ 16 mm

Werkstoffe **Schraube**
nichtrostender Stahl,
Werkst.-Nr.: 1.4301

Scheibe
nichtrostender Stahl,
Werkst.-Nr.: 1.4301
mit aufvulkanisierter
EPDM-Dichtung

Blechdicke [mm]		Bauteil II, Stahl mit t_b in mm, S235Jxx nach DIN EN 10025-2, S280GD+xx oder S320GD+xx nach DIN EN 10326						Belastungsart
		D [mm]	1,5	2,0	2,5	3,0	4,0	
Verschraubung		anschlagorientiert verschrauben						 Querkraft V_{Rk} in kN
Einschraubtiefe		$t_{ef} \geq 50$ mm einschließlich Bohrspitze						
Bauteil I, Blechdicke t_{bl} , bzw. t_{N1} in mm S280 GD+xx bis S350 GD+xx nach DIN EN 10326	$\geq 0,50$	40	0,80	0,80	0,80	0,80	0,90	 Zugkraft N_{Rk} in kN
	$\geq 0,50$	60	1,00	1,10	1,20	1,20	1,30	
	0,50	/	2,10	2,20	2,20	2,20	2,20	
	0,55	/	2,10	2,60	2,60	2,60	2,60	
	0,63	/	2,10	3,00	3,00	3,00	3,00	
	0,75	/	2,10	3,20	3,70	3,70	3,70	
0,88	/	2,10	3,20	3,80	3,80	3,80		
1,00	/	2,10	3,20	4,00	4,00	4,00		
Maximale Kopfauslenkung U Sandwichdicke d oder D in mm		40	10,0	3,5	3,5	3,5	3,5	 Maximale Kopfauslenkung U, in mm
		50	12,5	4,5	4,5	4,5	4,5	
		60	15,0	6,0	6,0	6,0	5,8	
		70	17,5	7,5	7,5	7,5	7,3	
		80	20,0	9,0	9,0	9,0	8,8	
		≥ 100	20,0	12,0	12,0	12,0	11,7	

maximale Durchdringung $\Sigma (t_{N2} + t_{N1})$ 5,5 mm

Im Zulassungsbescheid Z-14.4 - 407, Blatt 2.21

**Verbindungs-
element** Bohrschraube
E-X Bohr 5 HT 5,5 x L
Dichtscheibe ≥ 16 mm

Werkstoffe **Schraube**
nichtrostender Stahl,
Werkst.-Nr.: 1.4301

Scheibe
nichtrostender Stahl,
Werkst.-Nr.: 1.4301
mit aufvulkanisierter
EPDM-Dichtung

Blechdicke [mm]		Bauteil II, Stahl mit t_b in mm, S235Jxx nach DIN EN 10025-2, S280GD+xx oder S320GD+xx nach DIN EN 10326						Belastungsart
		D [mm]	3,0	4,0	5,0	6,0	$\geq 10,0$	
Verschraubung		anschlagorientiert verschrauben						 Querkraft V_{Rk} in kN
Einschraubtiefe		$t_{ef} \geq 50$ mm einschließlich Bohrspitze						
Bauteil I, Blechdicke t_{bl} , bzw. t_{N1} in mm S280 GD+xx bis S350 GD+xx nach DIN EN 10326	$\geq 0,50$	40	1,00	1,00	1,10	1,10	1,20	 Zugkraft N_{Rk} in kN
	$\geq 0,50$	60	1,00	1,00	1,10	1,20	1,30	
	0,50	/	2,40	2,40	2,40	2,40	2,40	
	0,55	/	2,60	2,60	2,60	2,60	2,60	
	0,63	/	3,00	3,00	3,00	3,00	3,00	
	0,75	/	3,60	3,60	3,60	3,60	3,60	
0,88	/	4,20	4,20	4,20	4,20	4,20		
1,00	/	4,70	4,70	4,70	4,70	4,70		
Maximale Kopfauslenkung U Sandwichdicke d oder D in mm		40	3,5	3,0	3,0	3,0	3,0	 Maximale Kopfauslenkung U, in mm
		50	5,0	5,0	5,0	5,0	5,0	
		60	6,0	6,0	6,0	6,0	6,0	
		70	7,5	7,5	7,5	7,5	7,5	
		80	9,0	9,0	9,0	9,0	9,0	
		≥ 100	12,0	12,0	12,0	12,0	12,0	

maximale Durchdringung $\Sigma (t_{N2} + t_{N1})$ 14 mm

Im Zulassungsbescheid Z-14.4 - 407, Blatt 5.5		Bauteil II, Nadelholz Sortierklasse S10 nach DIN 4074-1																																																					
	Verbindungs- element E-X A 6,5 x L Dichtscheibe ≥ 16 mm	Sandwichdicke d oder D in mm							Belastungsart																																														
		Ø Bohrlloch [mm] 4,8																																																					
		Einschraubtiefe $t_{ef} \geq 45$ mm																																																					
Werkstoffe Schraube nichtrostender Stahl, Werkst.-Nr.: 1.4301 Scheibe nichtrostender Stahl, Werkst.-Nr.: 1.4301 mit aufvulkanisierter EPDM-Dichtung	Bauteil I, Bleichdicke t_{N1} bzw. t_{N2} in mm S280 GD+xx bis S350 GD+xx nach DIN EN 10326							 Querkraft $V_{R,x}$ in kN																																															
	<table border="1"> <tr><td>0,50</td><td>0,60</td><td>0,60</td><td>0,60</td><td>0,60</td><td>0,60</td><td>0,60</td><td>0,60</td></tr> <tr><td>0,55</td><td>0,70</td><td>0,70</td><td>0,70</td><td>0,70</td><td>0,70</td><td>0,70</td><td>0,70</td></tr> <tr><td>0,63</td><td>0,80</td><td>0,80</td><td>0,80</td><td>0,80</td><td>0,80</td><td>0,80</td><td>0,80</td></tr> <tr><td>0,75</td><td>0,80</td><td>0,80</td><td>0,80</td><td>0,80</td><td>0,80</td><td>0,80</td><td>0,80^a</td></tr> <tr><td>0,88</td><td>0,80</td><td>0,80</td><td>0,80</td><td>0,80</td><td>0,80</td><td>0,80</td><td>0,80^a</td></tr> <tr><td>1,00</td><td>0,80</td><td>0,80</td><td>0,80</td><td>0,80</td><td>0,80</td><td>0,80</td><td>0,80^a</td></tr> </table> <p>a) Bei t_{N2} aus S320 GD dürfen die Werte $V_{R,x}$ um 0,10 kN erhöht werden.</p>							0,50	0,60	0,60	0,60	0,60	0,60	0,60	0,60	0,55	0,70	0,70	0,70	0,70	0,70	0,70	0,70	0,63	0,80	0,80	0,80	0,80	0,80	0,80	0,80	0,75	0,80	0,80	0,80	0,80	0,80	0,80	0,80 ^a	0,88	0,80	0,80	0,80	0,80	0,80	0,80	0,80 ^a	1,00	0,80	0,80	0,80	0,80	0,80	0,80	0,80 ^a
0,50	0,60	0,60	0,60	0,60	0,60	0,60	0,60																																																
0,55	0,70	0,70	0,70	0,70	0,70	0,70	0,70																																																
0,63	0,80	0,80	0,80	0,80	0,80	0,80	0,80																																																
0,75	0,80	0,80	0,80	0,80	0,80	0,80	0,80 ^a																																																
0,88	0,80	0,80	0,80	0,80	0,80	0,80	0,80 ^a																																																
1,00	0,80	0,80	0,80	0,80	0,80	0,80	0,80 ^a																																																
<table border="1"> <tr><td>0,50</td><td>1,60</td><td>1,60</td><td>1,60</td><td>1,60</td><td>1,60</td><td>1,60</td><td>1,60</td></tr> <tr><td>0,55</td><td>1,90^b</td><td>1,90^b</td><td>1,90^b</td><td>1,90^b</td><td>1,90^b</td><td>1,90^b</td><td>1,90^b</td></tr> <tr><td>0,63</td><td>2,30^b</td><td>2,30^b</td><td>2,30^b</td><td>2,30^b</td><td>2,30^b</td><td>2,30^b</td><td>2,30^b</td></tr> <tr><td>0,75</td><td>2,80^b</td><td>2,80^b</td><td>2,80^b</td><td>2,80^b</td><td>2,80^b</td><td>2,80^b</td><td>2,80^b</td></tr> <tr><td>0,88</td><td>2,80^b</td><td>2,80^b</td><td>2,80^b</td><td>2,80^b</td><td>2,80^b</td><td>2,80^b</td><td>2,80^b</td></tr> <tr><td>1,00</td><td>2,80^b</td><td>2,80^b</td><td>2,80^b</td><td>2,80^b</td><td>2,80^b</td><td>2,80^b</td><td>2,80^b</td></tr> </table> <p>b) Bei t_{N1} aus S320 GD dürfen die Werte $N_{R,x}$ um 8,2% erhöht werden.</p>							0,50	1,60	1,60	1,60	1,60	1,60	1,60	1,60	0,55	1,90 ^b	1,90 ^b	1,90 ^b	1,90 ^b	1,90 ^b	1,90 ^b	1,90 ^b	0,63	2,30 ^b	2,30 ^b	2,30 ^b	2,30 ^b	2,30 ^b	2,30 ^b	2,30 ^b	0,75	2,80 ^b	2,80 ^b	2,80 ^b	2,80 ^b	2,80 ^b	2,80 ^b	2,80 ^b	0,88	2,80 ^b	2,80 ^b	2,80 ^b	2,80 ^b	2,80 ^b	2,80 ^b	2,80 ^b	1,00	2,80 ^b	2,80 ^b	2,80 ^b	2,80 ^b	2,80 ^b	2,80 ^b	2,80 ^b	 Maximale Kopfauslenkung U, in mm
0,50	1,60	1,60	1,60	1,60	1,60	1,60	1,60																																																
0,55	1,90 ^b	1,90 ^b	1,90 ^b	1,90 ^b	1,90 ^b	1,90 ^b	1,90 ^b																																																
0,63	2,30 ^b	2,30 ^b	2,30 ^b	2,30 ^b	2,30 ^b	2,30 ^b	2,30 ^b																																																
0,75	2,80 ^b	2,80 ^b	2,80 ^b	2,80 ^b	2,80 ^b	2,80 ^b	2,80 ^b																																																
0,88	2,80 ^b	2,80 ^b	2,80 ^b	2,80 ^b	2,80 ^b	2,80 ^b	2,80 ^b																																																
1,00	2,80 ^b	2,80 ^b	2,80 ^b	2,80 ^b	2,80 ^b	2,80 ^b	2,80 ^b																																																
<table border="1"> <tr><td></td><td>4</td><td>6</td><td>7</td><td>9</td><td>13</td><td>18</td><td></td></tr> </table>								4	6	7	9	13	18																																										
	4	6	7	9	13	18																																																	

Im Zulassungsbescheid Z-14.4 - 407, Blatt 3.8		Bauteil II, Stahl mit t_i in mm, S235Jxx nach DIN EN 10025-2, S280GD+xx oder S320GD+xx nach DIN EN 10326																																																																					
	Verbindungs- element E-X BZ 6,3 x L Dichtscheibe ≥ 16 mm	Bleichdicke [mm]							Belastungsart																																																														
		Ø Bohrlloch [mm]																																																																					
		Verschraubung																																																																					
Werkstoffe Schraube nichtrostender Stahl, Werkst.-Nr.: 1.4301 Scheibe nichtrostender Stahl, Werkst.-Nr.: 1.4301 mit aufvulkanisierter EPDM-Dichtung	Bauteil I, Bleichdicke t_{N1} bzw. t_{N2} in mm S280 GD+xx bis S350 GD+xx nach DIN EN 10326							 Querkraft $V_{R,x}$ in kN																																																															
	<table border="1"> <tr><td>0,50</td><td>0,70</td><td>0,70</td><td>0,70</td><td>0,70</td><td>0,70</td><td>0,70</td><td>0,70</td></tr> <tr><td>0,55</td><td>0,80</td><td>0,80</td><td>0,80</td><td>0,80</td><td>0,80</td><td>0,80</td><td>0,80</td></tr> <tr><td>0,63</td><td>1,00</td><td>1,00^a</td><td>1,10^a</td><td>1,10^a</td><td>1,10^a</td><td>1,20^a</td><td>1,20^a</td></tr> <tr><td>0,75</td><td>1,10</td><td>1,20^a</td><td>1,30^a</td><td>1,40^a</td><td>1,50^a</td><td>1,50^a</td><td>1,60^b</td></tr> </table> <p>a) Bei t_{N2} aus S320 GD dürfen diese Werte um 0,10 kN erhöht werden. b) Bei t_{N1} aus S320 GD dürfen diese Werte um 0,20 kN erhöht werden.</p>							0,50	0,70	0,70	0,70	0,70	0,70	0,70	0,70	0,55	0,80	0,80	0,80	0,80	0,80	0,80	0,80	0,63	1,00	1,00 ^a	1,10 ^a	1,10 ^a	1,10 ^a	1,20 ^a	1,20 ^a	0,75	1,10	1,20 ^a	1,30 ^a	1,40 ^a	1,50 ^a	1,50 ^a	1,60 ^b	 Zugkraft $N_{R,x}$ in kN																															
0,50	0,70	0,70	0,70	0,70	0,70	0,70	0,70																																																																
0,55	0,80	0,80	0,80	0,80	0,80	0,80	0,80																																																																
0,63	1,00	1,00 ^a	1,10 ^a	1,10 ^a	1,10 ^a	1,20 ^a	1,20 ^a																																																																
0,75	1,10	1,20 ^a	1,30 ^a	1,40 ^a	1,50 ^a	1,50 ^a	1,60 ^b																																																																
<table border="1"> <tr><td>0,50</td><td>1,20</td><td>1,60^b</td><td>2,10^a</td><td>2,10^a</td><td>2,10^a</td><td>2,10^a</td><td>2,10^a</td></tr> <tr><td>0,55</td><td>1,20</td><td>1,60^b</td><td>2,30^a</td><td>2,30^a</td><td>2,30^a</td><td>2,30^a</td><td>2,30^a</td></tr> <tr><td>0,63</td><td>1,20</td><td>1,60^b</td><td>2,60^a</td><td>2,60^a</td><td>2,60^a</td><td>2,60^a</td><td>2,60^a</td></tr> <tr><td>0,75</td><td>1,20</td><td>1,60^b</td><td>2,80^b</td><td>3,00^a</td><td>3,00^a</td><td>3,00^a</td><td>3,00^a</td></tr> <tr><td>0,88</td><td>1,20</td><td>1,60^b</td><td>2,80^b</td><td>3,40^b</td><td>3,40^b</td><td>3,40^b</td><td>3,40^b</td></tr> <tr><td>1,00</td><td>1,20</td><td>1,60^b</td><td>2,80^b</td><td>3,60^c</td><td>3,60^c</td><td>3,60^c</td><td>3,60^c</td></tr> </table> <p>a) Bei t_{N1} aus S320 GD dürfen diese Werte um 0,10 kN erhöht werden. b) Bei t_{N2} bzw. t_i aus S320 GD dürfen diese Werte um 0,20 kN erhöht werden. c) Bei t_{N1} aus S320 GD dürfen diese Werte um 0,30 kN erhöht werden.</p>							0,50	1,20	1,60 ^b	2,10 ^a	2,10 ^a	2,10 ^a	2,10 ^a	2,10 ^a	0,55	1,20	1,60 ^b	2,30 ^a	2,30 ^a	2,30 ^a	2,30 ^a	2,30 ^a	0,63	1,20	1,60 ^b	2,60 ^a	2,60 ^a	2,60 ^a	2,60 ^a	2,60 ^a	0,75	1,20	1,60 ^b	2,80 ^b	3,00 ^a	3,00 ^a	3,00 ^a	3,00 ^a	0,88	1,20	1,60 ^b	2,80 ^b	3,40 ^b	3,40 ^b	3,40 ^b	3,40 ^b	1,00	1,20	1,60 ^b	2,80 ^b	3,60 ^c	3,60 ^c	3,60 ^c	3,60 ^c	 Maximale Kopfauslenkung U, in mm																
0,50	1,20	1,60 ^b	2,10 ^a	2,10 ^a	2,10 ^a	2,10 ^a	2,10 ^a																																																																
0,55	1,20	1,60 ^b	2,30 ^a	2,30 ^a	2,30 ^a	2,30 ^a	2,30 ^a																																																																
0,63	1,20	1,60 ^b	2,60 ^a	2,60 ^a	2,60 ^a	2,60 ^a	2,60 ^a																																																																
0,75	1,20	1,60 ^b	2,80 ^b	3,00 ^a	3,00 ^a	3,00 ^a	3,00 ^a																																																																
0,88	1,20	1,60 ^b	2,80 ^b	3,40 ^b	3,40 ^b	3,40 ^b	3,40 ^b																																																																
1,00	1,20	1,60 ^b	2,80 ^b	3,60 ^c	3,60 ^c	3,60 ^c	3,60 ^c																																																																
<table border="1"> <tr><td>40</td><td>26,5</td><td>26,5</td><td>10,0</td><td>9,0</td><td>8,0</td><td>7,0</td><td>4,5</td></tr> <tr><td>50</td><td>40,0</td><td>40,0</td><td>12,5</td><td>11,5</td><td>10,5</td><td>8,5</td><td>5,5</td></tr> <tr><td>60</td><td>40,0</td><td>40,0</td><td>15,5</td><td>14,5</td><td>13,5</td><td>10,0</td><td>7,0</td></tr> <tr><td>70</td><td>40,0</td><td>40,0</td><td>18,5</td><td>16,0</td><td>14,0</td><td>11,5</td><td>9,0</td></tr> <tr><td>80</td><td>40,0</td><td>40,0</td><td>21,5</td><td>18,0</td><td>14,5</td><td>13,5</td><td>11,5</td></tr> <tr><td>100</td><td>40,0</td><td>40,0</td><td>27,0</td><td>23,0</td><td>19,0</td><td>17,5</td><td>14,0</td></tr> <tr><td>120</td><td>40,0</td><td>40,0</td><td>32,5</td><td>29,5</td><td>26,5</td><td>25,0</td><td>21,0</td></tr> <tr><td>140</td><td>40,0</td><td>40,0</td><td>38,5</td><td>36,5</td><td>34,5</td><td>32,5</td><td>28,0</td></tr> </table>							40	26,5	26,5	10,0	9,0	8,0	7,0	4,5	50	40,0	40,0	12,5	11,5	10,5	8,5	5,5	60	40,0	40,0	15,5	14,5	13,5	10,0	7,0	70	40,0	40,0	18,5	16,0	14,0	11,5	9,0	80	40,0	40,0	21,5	18,0	14,5	13,5	11,5	100	40,0	40,0	27,0	23,0	19,0	17,5	14,0	120	40,0	40,0	32,5	29,5	26,5	25,0	21,0	140	40,0	40,0	38,5	36,5	34,5	32,5	28,0	
40	26,5	26,5	10,0	9,0	8,0	7,0	4,5																																																																
50	40,0	40,0	12,5	11,5	10,5	8,5	5,5																																																																
60	40,0	40,0	15,5	14,5	13,5	10,0	7,0																																																																
70	40,0	40,0	18,5	16,0	14,0	11,5	9,0																																																																
80	40,0	40,0	21,5	18,0	14,5	13,5	11,5																																																																
100	40,0	40,0	27,0	23,0	19,0	17,5	14,0																																																																
120	40,0	40,0	32,5	29,5	26,5	25,0	21,0																																																																
140	40,0	40,0	38,5	36,5	34,5	32,5	28,0																																																																

Im Zulassungsbescheid Z-14.1-4, Blatt 3.65

maximale Durchdringung
 $\Sigma (t_1 + t_2) \geq 1,00 \text{ mm}$

Verbindungs- element Bohrschraube
E-X Bohr RS 4,8 x L
Dichtscheibe $\varnothing \geq 14 \text{ mm}$

Werkstoffe **Schraube**
nichtrostender Stahl, Werkst.-Nr.: 1.4301
Scheibe
nichtrostender Stahl, Werkst.-Nr.: 1.4301
mit aufvulkanisierter EPDM-Dichtung

		Bauteil II aus Stahl mit t_1 [mm] S235Jxx nach DIN EN 10 025 S280GD+xx oder S320GD+xx nach DIN EN 10 147						Bauteil II aus Holz; Sortierklasse \geq S10
		0,63	0,75	0,88	1,00	1,13	1,25	
Anzugsmoment		anschlagorientiert verschrauben						
		5 Nm (Richtwert)						
Bauteil I aus Stahl mit t_1 [mm] S280GD+xx oder S320GD+xx nach DIN EN 10 147	Querkraft V_{fs} [kN]	0,63	0,70 ac	1,00 ac	1,30 a	1,30 a	1,30 a	
		0,75	0,90 —	1,20 —	1,50 —	1,60 —	1,70 —	
		0,88	1,10 —	1,40 —	1,80 —	2,00 —	—	
		1,00	1,20 —	1,60 —	2,00 —	—	—	
		1,13	1,40 —	1,80 —	—	—	—	
		1,25	1,60 —	—	—	—	—	
	1,50	—	—	—	—	—		
Bauteil I aus Stahl mit t_1 [mm] S280GD+xx oder S320GD+xx nach DIN EN 10 147	Zugkraft N_{fs} [kN]	0,63	0,40 —	0,50 ac	0,60 ac	0,70 a	0,90 a	0,90 a
		0,75	0,40 —	0,50 —	0,60 —	0,70 —	0,90 —	1,00 —
		0,88	0,40 —	0,50 —	0,60 —	0,80 —	1,10 —	—
		1,00	0,40 —	0,50 —	0,60 —	0,80 —	—	—
		1,13	0,40 —	0,50 —	0,70 —	—	—	—
		1,25	0,40 —	0,50 —	0,70 —	—	—	—
	1,50	—	—	—	—	—	—	

Im Zulassungsbescheid Z-14.1-4, Blatt 3.66

maximale Durchdringung
 $\Sigma (t_1 + t_2) \geq 1,00 \text{ mm}$

Verbindungs- element Bohrschraube
E-X Bohr RS 5,5 x L
Dichtscheibe $\varnothing \geq 14 \text{ mm}$

Werkstoffe **Schraube**
nichtrostender Stahl, Werkst.-Nr.: 1.4301
Scheibe
nichtrostender Stahl, Werkst.-Nr.: 1.4301
mit aufvulkanisierter EPDM-Dichtung

		Bauteil II aus Stahl mit t_1 [mm] S235Jxx nach DIN EN 10 025 S280GD+xx oder S320GD+xx nach DIN EN 10 147						Bauteil II aus Holz; Sortierklasse \geq S10
		0,63	0,75	0,88	1,00	1,13	1,25	
Anzugsmoment		anschlagorientiert verschrauben						
		5 Nm (Richtwert)						
Bauteil I aus Stahl mit t_1 [mm] S280GD+xx oder S320GD+xx nach DIN EN 10 147	Querkraft V_{fs} [kN]	0,63	1,20 ac	1,30 ac	1,80 a	2,10 a	2,80 a	
		0,75	1,30 —	1,60 —	2,00 —	2,40 —	3,00 —	
		0,88	1,40 —	1,80 —	2,20 —	2,70 —	—	
		1,00	1,50 —	2,00 —	2,40 —	—	—	
		1,13	1,60 —	2,00 —	—	—	—	
		1,25	1,70 —	—	—	—	—	
	1,50	—	—	—	—	—		
Bauteil I aus Stahl mit t_1 [mm] S280GD+xx oder S320GD+xx nach DIN EN 10 147	Zugkraft N_{fs} [kN]	0,63	0,50 —	0,70 ac	0,90 ac	0,90 a	0,90 a	0,90 a
		0,75	0,50 —	0,70 —	1,00 —	1,00 —	1,00 —	1,00 —
		0,88	0,70 —	0,90 —	1,10 —	1,20 —	1,20 —	—
		1,00	0,70 —	0,90 —	1,10 —	1,40 —	—	—
		1,13	0,80 —	1,00 —	1,30 —	—	—	—
		1,25	0,80 —	1,00 —	—	—	—	—
	1,50	—	—	—	—	—	—	

Im Zulassungsbescheid Z-14.1-4, Blatt 3.116

maximale Durchdringung
 $\Sigma (t_1 + t_2) \leq 3,50 \text{ mm}$

Verbindungs- element Bohrschraube
E-X Bohr 2 5,5 x L
Dichtscheibe $\varnothing \geq 16 \text{ mm}$

Werkstoffe **Schraube**
nichtrostender Stahl, Werkst.-Nr.: 1.4301
Scheibe
nichtrostender Stahl, Werkst.-Nr.: 1.4301
mit aufvulkanisierter EPDM-Dichtung

		Bauteil II aus Stahl mit t_1 [mm] S235Jxx nach DIN EN 10 025 S280GD+xx oder S320GD+xx nach DIN EN 10 147					Bauteil II aus Holz; Sortierklasse \geq S10	
		0,88	1,00	1,13	1,25	1,50		2,00
Anzugsmoment (Richtwert)		anschlagorientiert verschrauben						
		5 Nm					7 Nm	
Bauteil I aus Stahl mit t_1 [mm] S280GD+xx oder S320GD+xx nach DIN EN 10 147	Querkraft V_{fs} [kN]	0,63	1,20 —	1,50 —	1,70 —	1,70 abc	1,70 abc	
		0,75	1,60 —	1,80 —	2,00 —	2,00 ac	2,00 abc	
		0,88	2,00 —	2,20 —	2,30 —	2,40 —	2,40 ac	
		1,00	2,20 —	2,60 —	2,70 —	2,70 —	2,70 a	
		1,13	2,20 —	2,60 —	2,70 —	2,70 —	2,70 a	
		1,25	2,20 —	2,60 —	2,70 —	2,70 —	2,70 a	
		1,50	2,20 —	2,60 —	2,70 —	2,70 —	2,70 a	
		1,75	2,20 —	2,60 —	2,70 —	2,70 —	—	
	2,00	2,20 —	2,60 —	2,70 —	2,70 —	—		
Bauteil I aus Stahl mit t_1 [mm] S280GD+xx oder S320GD+xx nach DIN EN 10 147	Zugkraft N_{fs} [kN]	0,50	0,38 —	0,43 —	0,54 —	0,76 abc	1,19 abc	
		0,55	0,48 —	0,55 —	0,68 —	0,95 abc	1,50 abc	
		0,63	0,70 —	0,80 —	1,00 —	1,40 abc	2,20 abc	
		0,75	0,70 —	0,80 —	1,00 —	1,40 ac	2,20 abc	
		0,88	0,70 —	0,80 —	1,00 —	1,40 —	2,20 ac	
		1,00	0,70 —	0,80 —	1,00 —	1,40 —	2,20 a	
		1,13	0,70 —	0,80 —	1,00 —	1,40 —	2,20 a	
		1,25	0,70 —	0,80 —	1,00 —	1,40 —	2,20 a	
	1,50	0,70 —	0,80 —	1,00 —	1,40 —	2,20 a		
	1,75	0,70 —	0,80 —	1,00 —	1,40 —	—		
	2,00	0,70 —	0,80 —	1,00 —	1,40 —	—		

Im Zulassungsbescheid Z-14.1-4, Blatt 3.117

Verbindungselement Bohrschraube
E-X Bohr 3 5,5 x L
Dichtscheibe Ø ≥ 16 mm

Werkstoffe **Schraube**
nichtrostender Stahl,
Werkst.-Nr.: 1.4301
Scheibe
nichtrostender Stahl,
Werkst.-Nr.: 1.4301
mit aufvulkanisierter
EPDM-Dichtung

maximale Durchdringung $\Sigma(t_i + t_j) \leq 5,25$ mm

		Bauteil II aus Stahl mit t_i [mm] S235Jxx nach DIN EN 10 025 S280GD+xx oder S320GD+xx nach DIN EN 10 147							Bauteil II aus Holz; Sortierklasse ≥ S10	
		1,50	2,00	2,50	3,00	4,00	5,00	6,00		
Anzugsmoment (Richtwert)		anschlagorientiert verschrauben								
Bauteil I aus Stahl mit t_i [mm] S280GD+xx oder S320GD+xx nach DIN EN 10 147	Anzugsmoment (Richtwert)	2 Nm								
		Querkraft V_{Rk} [kN]	0,63	2,40 ac	2,40 ac	2,40 ac	2,40 abcd	2,40 abc		
			0,75	2,70 ac	2,80 ac	2,80 ac	3,30 ac	3,30 ac		
			0,88	3,00 —	3,50 —	3,50 —	4,20 —	4,20 —		
			1,00	3,20 —	3,60 —	3,60 —	4,30 —	4,30 —		
			1,13	3,20 —	3,60 —	3,60 —	4,30 —	4,30 —		
			1,25	3,20 —	3,60 —	3,60 —	4,30 —	4,30 —		
			1,50	3,20 —	3,60 —	3,60 —	4,30 —	—		
			1,75	3,20 —	3,60 —	3,60 —	4,30 —	—		
			2,00	3,20 —	3,60 —	3,60 —	4,30 —	—		
Bauteil I aus Stahl mit t_i [mm] S280GD+xx oder S320GD+xx nach DIN EN 10 147	Zugkraft N_{Rk} [kN]		0,50	0,54 ac	0,97 ac	0,97 ac	1,57 abcd	1,57 abc		
		0,55	0,68 ac	1,23 ac	1,23 ac	1,98 abcd	1,98 abc			
		0,63	1,00 ac	1,80 ac	1,80 ac	2,90 abcd	2,90 abc			
		0,75	1,00 ac	1,80 ac	1,80 ac	3,50 ac	3,50 ac			
		0,88	1,00 —	1,80 —	1,80 —	4,10 —	4,10 —			
		1,00	1,00 —	1,80 —	1,80 —	4,60 —	4,70 —			
		1,13	1,00 —	1,80 —	1,80 —	4,60 —	5,40 —			
		1,25	1,00 —	1,80 —	1,80 —	4,60 —	6,00 —			
		1,50	1,00 —	1,80 —	1,80 —	4,60 —	—			
		1,75	1,00 —	1,80 —	1,80 —	4,60 —	—			
2,00	1,00 —	1,80 —	1,80 —	4,60 —	—					

Im Zulassungsbescheid Z-14.1-4, Blatt 3.133

Verbindungselement Bohrschraube
E-X Bohr 5 5,5 x L
Dichtscheibe Ø ≥ 16 mm

Werkstoffe **Schraube**
nichtrostender Stahl,
Werkst.-Nr.: 1.4301
Scheibe
nichtrostender Stahl,
Werkst.-Nr.: 1.4301
mit aufvulkanisierter
EPDM-Dichtung

maximale Durchdringung $\Sigma(t_i + t_j) \leq 12,5$ mm

		Bauteil II aus Stahl mit t_i [mm] S235Jxx nach DIN EN 10 025 S280GD+xx oder S320GD+xx nach DIN EN 10 147						Bauteil II aus Holz; Sortierklasse ≥ S10		
		4,00	5,00	6,00	8,00	10,00	12,00		13,00	
Anzugsmoment (Richtwert)		anschlagorientiert verschrauben								
Bauteil I aus Stahl mit t_i [mm] S280GD+xx oder S320GD+xx nach DIN EN 10 147	Anzugsmoment (Richtwert)	8 Nm								
		Querkraft V_{Rk} [kN]	0,63							
			0,75							
			0,88							
			1,00							
			1,13							
			1,25							
			1,50							
			1,75							
			2,00							
Bauteil I aus Stahl mit t_i [mm] S280GD+xx oder S320GD+xx nach DIN EN 10 147	Zugkraft N_{Rk} [kN]		0,50							
		0,55								
		0,63								
		0,75								
		0,88								
		1,00								
		1,13								
		1,25								
		1,50								
		1,75								
2,00										

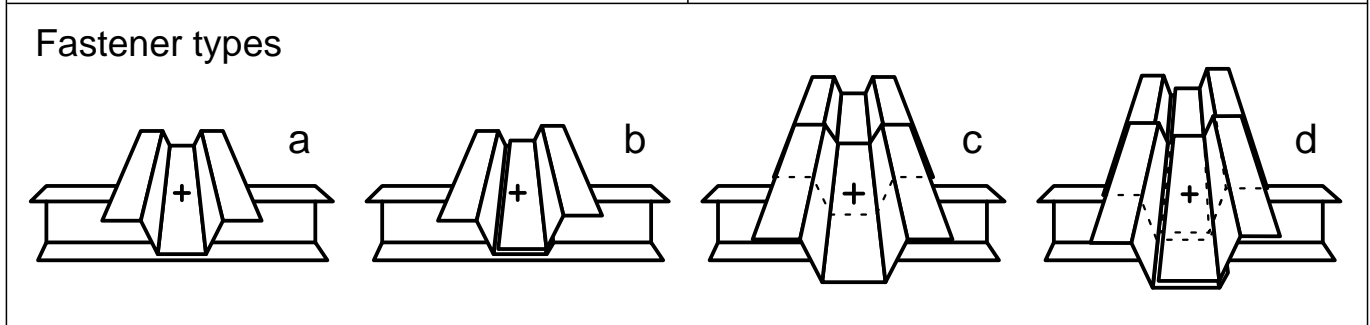
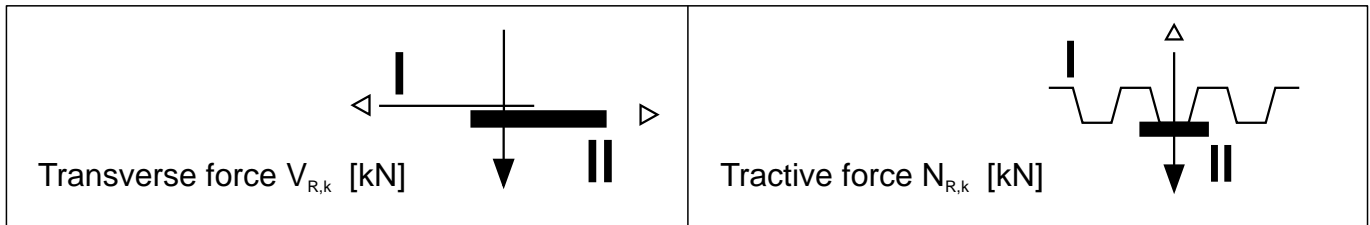
Im Zulassungsbescheid Z-14.1-4, Blatt 4.8

Verbindungselement E-X BZ 6,3 x L
Dichtscheibe Ø ≥ 16 mm

Werkstoffe **Schraube**
nichtrostender Stahl,
Werkst.-Nr.: 1.4301
Scheibe
nichtrostender Stahl,
Werkst.-Nr.: 1.4301
mit aufvulkanisierter
EPDM-Dichtung

		Bauteil II aus Stahl mit t_i [mm] S235Jxx nach DIN EN 10 025 S280GD+xx oder S320GD+xx nach DIN EN 10 147						Bauteil II aus Holz; Sortierklasse ≥ S10		
		1,25	1,50	2,00	3,00	4,00	6,00		≥ 7,00	
Vorgebohrt mit		Ø 5,0		Ø 5,3		Ø 5,5	Ø 5,7			
Anzugsmoment		anschlagorientiert verschrauben, Richtwert 5 Nm								
Bauteil I aus Stahl mit t_i [mm] S280GD+xx oder S320GD+xx nach DIN EN 10 147	Anzugsmoment (Richtwert)	0,63	2,50 ac	2,70 ac	2,90 abcd	3,00 abcd	3,10 abcd		3,10 abcd	3,10 abcd
		0,75	2,60 ac	3,10 ac	3,30 ac	3,60 ac	3,70 abcd		3,70 abcd	3,70 abcd
		0,88	2,80 ac	3,20 ac	3,80 ac	4,10 ac	4,30 ac		4,40 ac	4,40 ac
		1,00	3,20 —	3,60 ac	4,10 ac	4,80 ac	4,90 ac		5,10 ac	5,10 ac
		1,13	3,40 —	4,00 —	4,60 ac	5,40 ac	5,60 ac		5,80 ac	5,80 ac
		1,25	3,60 —	4,20 —	5,00 ac	6,10 ac	6,30 ac		6,50 ac	6,50 ac
		1,50	3,70 —	4,40 —	5,70 ac	6,80 —	7,10 —		7,30 —	7,30 —
		1,75	3,70 —	4,70 —	6,20 —	7,60 —	7,70 —		8,10 —	8,10 —
		2,00	3,80 —	4,90 —	6,90 —	7,80 —	7,90 —		8,10 —	8,10 —
		Bauteil I aus Stahl mit t_i [mm] S280GD+xx oder S320GD+xx nach DIN EN 10 147	Zugkraft N_{Rk} [kN]	0,50	0,97 ac	1,35 ac	1,51 abcd	1,51 abcd	1,51 abcd	1,51 abcd
0,55	1,23 ac			1,71 ac	1,91 abcd	1,91 abcd	1,91 abcd	1,91 abcd	1,91 abcd	
0,63	1,80 ac			2,50 ac	2,80 abcd	2,80 abcd	2,80 abcd	2,80 abcd	2,80 abcd	
0,75	2,00 ac			2,60 ac	3,10 ac	3,60 ac	3,60 abcd	3,60 abcd	3,60 abcd	
0,88	2,00 ac			2,70 ac	3,30 ac	3,80 ac	3,80 ac	3,80 ac	3,80 ac	
1,00	2,00 —			2,70 ac	3,40 ac	4,00 ac	4,00 ac	4,00 ac	4,00 ac	
1,13	2,00 —			2,70 —	3,60 ac	4,40 ac	4,40 ac	4,40 ac	4,40 ac	
1,25	2,00 —			2,70 —	3,60 ac	4,80 ac	4,90 ac	4,90 ac	4,90 ac	
1,50	2,00 —			2,70 —	3,60 —	5,60 —	5,90 —	5,90 —	5,90 —	
1,75	2,00 —			2,70 —	3,60 —	5,80 —	6,90 —	7,10 —	7,10 —	
2,00	2,00 —	2,70 —	3,60 —	6,00 —	7,30 —	7,60 —	7,60 —			

<p>Im Zulassungsbescheid Z-14.1-4, Blatt 4.1</p> <p>Verbindungs- element E-X A 6,5 x L Dichtscheibe Ø ≥ 16 mm</p> <p>Werkstoffe <u>Schraube</u> nichtrostender Stahl, Werkst.-Nr.: 1.4301 <u>Scheibe</u> nichtrostender Stahl, Werkst.-Nr.: 1.4301 mit aufvulkanisierter EPDM-Dichtung</p>	<p>Bauteil II aus Stahl mit t_s [mm] S235Jxx nach DIN EN 10 025 S280GD+xx oder S320GD+xx nach DIN EN 10 147</p>										<p>Bauteil II aus Holz; Sortier- klasse ≥ S10 s_g ≥ 26 mm</p>						
	<p>Vorgebohrt mit Ø 3,5</p>		<p>Ø 4,0</p>		<p>Ø 4,5</p>			<p>Ø 5,0</p>			<p>Ø 4,8</p>						
<p>Anzugsmoment</p>		<p>Richtwert 3 Nm</p>					<p>Richtwert 5 Nm</p>										
<p>0,63</p>		1,30	1,50	1,80	2,00	ac	2,30	ac	2,50	ac	2,90	ac	2,90	ac	2,90		
<p>0,75</p>		1,40	1,60	1,90	2,20	ac	2,50	ac	2,70	ac	3,10	ac	3,10	ac	3,10		
<p>0,88</p>		1,50	1,70	2,00	2,30	ac	2,60	ac	2,80	ac	3,20	ac	3,20	ac	3,20		
<p>1,00</p>		1,60	1,80	2,10	2,50	ac	2,80	ac	3,10	ac	3,60	ac	3,60	ac	3,60		
<p>1,13</p>		1,60	1,80	2,20	2,60	ac	2,90	ac	3,20	ac	3,80	ac	3,80	ac	3,80		
<p>1,25</p>		1,60	1,90	2,30	2,70	ac	3,00	ac	3,30	ac	4,00	ac	4,00	ac	4,00		
<p>1,50</p>		1,60	1,90	2,40	2,80	ac	3,20	ac	3,50	ac	4,00	ac	4,00	ac	4,00		
<p>1,75</p>		1,60	1,90	2,40	2,80	ac	3,20	ac	3,50	ac	4,00	ac	4,00	ac	4,00		
<p>2,00</p>		1,60	1,90	2,40	2,80	ac	3,20	ac	3,50	ac	4,00	ac	4,00	ac	4,00		
<p>Bauteil I aus Stahl mit t_s [mm] S280GD+xx oder S320GD+xx nach DIN EN 10 147</p>		<p>0,50</p>		0,49	0,59	0,70	0,76	ac	0,86	ac	0,97	ac	1,13	ac	1,13	ac	1,13
<p>0,55</p>		0,61	0,75	0,89	0,95	ac	1,09	ac	1,23	ac	1,43	ac	1,43	ac	1,43		
<p>0,63</p>		0,90	1,10	1,30	1,40	ac	1,60	ac	1,80	ac	2,10	ac	2,10	ac	2,10		
<p>0,75</p>		0,90	1,10	1,30	1,40	ac	1,60	ac	1,80	ac	2,10	ac	2,10	ac	2,10		
<p>0,88</p>		0,90	1,10	1,30	1,40	ac	1,60	ac	1,80	ac	2,10	ac	2,10	ac	2,10		
<p>1,00</p>		0,90	1,10	1,30	1,40	ac	1,60	ac	1,80	ac	2,20	ac	2,20	ac	2,20		
<p>1,13</p>		1,00	1,20	1,40	1,50	ac	1,70	ac	1,90	ac	2,30	ac	2,30	ac	2,30		
<p>1,25</p>		1,00	1,20	1,40	1,50	ac	1,70	ac	1,90	ac	2,30	ac	2,30	ac	2,30		
<p>1,50</p>		1,00	1,20	1,40	1,50	ac	1,70	ac	1,90	ac	2,30	ac	2,30	ac	2,30		
<p>1,75</p>		1,00	1,20	1,40	1,50	ac	1,70	ac	1,90	ac	2,30	ac	2,30	ac	2,30		
<p>2,00</p>		1,00	1,20	1,40	1,50	ac	1,70	ac	1,90	ac	2,30	ac	2,30	ac	2,30		



The fastener types which are permitted in the case of transverse load as a result of temperature without calculational verification are specified in the table next to the permitted forces.

In the case of intermediate values for part thickness I or II, the permissible transverse and tractive values for the thinner part must be selected.

<p>Manufacturer</p>	<p>Guntram End GmbH Untertürkheimer Str. 20 66117 Saarbrücken Tel.: +49 [0] 681/ 5 86 01 - 0 Fax: +49 [0] 681/ 5 86 01 - 39 www.GuntramEnd.de</p>	<p>Sales</p>	<p>Guntram End GmbH Untertürkheimer Str. 20 66117 Saarbrücken Tel.: +49 [0] 681/ 5 86 01 - 0 Fax: +49 [0] 681/ 5 86 01 - 39 E-Mail: info@GuntramEnd.de</p>
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We are certified by DEKRA ISTI GmbH:

- For stainless steel drilling screws and screws types A and BZ under reg. no. ÜZ-001/2004.
- For screws to fasten sandwich profiles under reg. no. ÜZ-002/2004.