

EJOT[®] self-tapping screw JA3-6.5

Fastening profiled steel sheet and sandwich panels
to timber substructure

Self-tapping screws JA3 / JZ3

A2 stainless steel



EJOT® self-tapping screw JA3-6.5

Length [mm]	For sandwich panels [mm]	Clamp thickness [mm]	PU	Price/100 [EUR]	Order description	Article number
Sealing washer E16, Ø 16 mm						
19	-	-	500		JA3-6.5x19-E16	3 113 111 311
25	-	-	500		JA3-6.5x25-E16	3 113 211 311
32	-	-	500		JA3-6.5x32-E16	3 113 311 311
38	-	-	500		JA3-6.5x38-E16	3 113 411 311
45	-	-	500		JA3-6.5x45-E16	3 113 511 311
50	-	-	250		JA3-6.5x50-E16	3 113 611 311
64	-	0 - 14	250		JA3-6.5x64-E16	3 113 811 311
75	-	0 - 25	100		JA3-6.5x75-E16	3 113 911 311
90	-	12 - 40	100		JA3-6.5x90-E16	3 114 111 311
100	20 - 45	22 - 50	100		JA3-6.5x100-E16	3 114 211 311
115	40 - 60	37 - 65	100		JA3-6.5x115-E16	3 114 311 311
125	55 - 70	47 - 75	100		JA3-6.5x125-E16	3 114 411 311
150	70 - 95	70 - 100	100		JA3-6.5x150-E16	3 114 611 311
175	90 - 120	90 - 125	100		JA3-6.5x175-E16	3 114 711 311
200	115 - 145	115 - 150	100		JA3-6.5x200-E16	3 114 811 311
230	140 - 175	140 - 180	100		JA3-6.5x230-E16	3 114 911 311
260	170 - 205	170 - 210	100		JA3-6.5x260-E16	3 110 911 311
290	200 - 235	200 - 240	100		JA3-6.5x290-E16	3 116 211 311
Sealing washer E22, Ø 22 mm						
19	-	-	500		JA3-6.5x19-E22	3 113 113 311
25	-	-	500		JA3-6.5x25-E22	3 113 213 311
32	-	-	200		JA3-6.5x32-E22	3 113 313 311
38	-	-	200		JA3-6.5x38-E22	3 113 413 311
45	-	-	250		JA3-6.5x45-E22	3 113 513 311
50	-	-	250		JA3-6.5x50-E22	3 113 613 311
64	-	0 - 14	200		JA3-6.5x64-E22	3 113 813 311
75	-	0 - 25	100		JA3-6.5x75-E22	3 113 913 311
90	-	12 - 40	100		JA3-6.5x90-E22	3 114 113 311
100	20 - 45	22 - 50	100		JA3-6.5x100-E22	3 114 213 311
115	40 - 60	37 - 65	100		JA3-6.5x115-E22	3 114 313 311
125	55 - 70	47 - 75	100		JA3-6.5x125-E22	3 114 413 311
150	70 - 95	70 - 100	100		JA3-6.5x150-E22	3 114 613 311
175	90 - 120	90 - 125	100		JA3-6.5x175-E22	3 114 713 311
200	115 - 145	115 - 150	100		JA3-6.5x200-E22	3 114 813 311
230	140 - 175	140 - 180	50		JA3-6.5x230-E22	3 114 913 311
260	170 - 205	170 - 210	50		JA3-6.5x260-E22	3 110 913 311
290	200 - 235	200 - 240	50		JA3-6.5x290-E22	3 116 213 311



Approval
ETA-10/2000
ETA-13/0177

Cross reference
Accessories
Self-drilling screw JT3-2-6.5
ORKAN storm washers
Metal screwdriver SCS 6.3
Drill hole chart

Note
See relevant annexes of European technical approvals at the following pages.

Please download complete European technical approvals at our website:

www.ejot.es

Application Range

- Fastening profiled steel sheet and sandwich panels to timber substructure
- Fastening profiled steel / aluminium sheet to ≤ 2 mm steel substructure
- Side lap stitching of profiled steel / aluminium sheet

Properties

- A2 stainless steel
- Stainless steel sealing washer
- Pre-assembled sealing washer

Technical Data

Drive	Hexagon AF 3/8"
Ø screw	6.5 mm

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Minimum tensile strength		Minimum shear strength	
Ø mm	kN	Ø mm	kN
6.5	13.0	6.5	10.0

Materials

Fastener: stainless steel (1.4301) - EN 10088
 Washer: stainless steel (1.4301) - EN 10088
 Component I: S280GD, S320GD or S350GD - EN 10346
 Component II: S235 - EN 10025-1
 S280GD, S320GD or S350GD - EN 10346

Predrill diameter see table below

Timber substructures
 performance determined with

$M_{y,Rk} = 9,742 \text{ Nm}$
 $f_{ax,k} = 8,575 \text{ N/mm}^2$ for $l_{ef} \geq 26,0 \text{ mm}$

$t_{N,II}$ [mm]	0,63	0,75	0,88	1,00	1,13	1,25	1,50	2,00									
d_{pd} [mm]	Ø 3,5	Ø 4,0	Ø 4,5				Ø 5,0	Ø 5,3									
$M_{t,nom}$	3 Nm					5 Nm											
$V_{R,k}$ [kN] for $t_{N,II}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	—	—					
	0,55	—	—	—	—	—	—	—	—	—	—	—					
	0,63	1,30	—	1,50	—	1,80	—	2,00	ac	2,30	ac	2,50	ac	2,90	ac	2,90	ac
	0,75	1,40	—	1,60	—	1,90	—	2,20	ac	2,50	ac	2,70	ac	3,10	ac	3,10	ac
	0,88	1,50	—	1,70	—	2,00	—	2,30	—	2,60	—	2,80	ac	3,20	ac	3,20	ac
	1,00	1,50	—	1,80	—	2,10	—	2,50	—	2,80	—	3,10	—	3,60	—	3,60	—
	1,13	1,60	—	1,80	—	2,20	—	2,60	—	2,90	—	3,20	—	3,80	—	3,80	—
	1,25	1,60	—	1,90	—	2,30	—	2,70	—	3,00	—	3,30	—	4,00	—	4,00	—
	1,50	1,60	—	1,90	—	2,40	—	2,80	—	3,20	—	3,50	—	4,00	—	4,00	—
	1,75	1,60	—	1,90	—	2,40	—	2,80	—	3,20	—	3,50	—	4,00	—	4,00	—
	2,00	1,60	—	1,90	—	2,40	—	2,80	—	3,20	—	3,50	—	4,00	—	4,00	—
$N_{R,k}$ [kN] for $t_{N,II}$ [mm]	0,50	0,49	—	0,59	—	0,70	—	0,76	ac	0,86	ac	0,97	ac	1,13	ac	1,13	ac
	0,55	0,61	—	0,75	—	0,89	—	0,95	ac	1,09	ac	1,23	ac	1,43	ac	1,43	ac
	0,63	0,90	—	1,10	—	1,30	—	1,40	ac	1,60	ac	1,80	ac	2,10	ac	2,10	ac
	0,75	0,90	—	1,10	—	1,30	—	1,40	ac	1,60	ac	1,80	ac	2,10	ac	2,10	ac
	0,88	0,90	—	1,10	—	1,30	—	1,40	—	1,60	—	1,80	ac	2,10	ac	2,10	ac
	1,00	0,90	—	1,10	—	1,30	—	1,40	—	1,60	—	1,80	—	2,20	—	2,20	—
	1,13	1,00	—	1,20	—	1,40	—	1,50	—	1,70	—	1,90	—	2,30	—	2,30	—
	1,25	1,00	—	1,20	—	1,40	—	1,50	—	1,70	—	1,90	—	2,30	—	2,30	—
	1,50	1,00	—	1,20	—	1,40	—	1,50	—	1,70	—	1,90	—	2,30	—	2,30	—
	1,75	1,00	—	1,20	—	1,40	—	1,50	—	1,70	—	1,90	—	2,30	—	2,30	—
	2,00	1,00	—	1,20	—	1,40	—	1,50	—	1,70	—	1,90	—	2,30	—	2,30	—

The values listed above in dependence on the screw-in length l_{ef} are valid for $k_{mod} = 0,90$ and timber strength grade C24 ($\rho_a = 350 \text{ kg/m}^3$). For other combinations of k_{mod} and timber strength grades see section 4.2.2.

Self tapping screw	Annex 74
JA3-6,5 x L with hexagon head and sealing washer $\geq \text{Ø}16 \text{ mm}$	

Materials
 Fastener: stainless steel (1.4301 / 1.4567) - EN 10088
 Washer: stainless steel (1.4301) - EN 10088
 Component I: S280GD, S320GD or S350GD – EN 10346
 Component II: structural timber – EN 14081

Predrill diameter see table below

Timber substructures
 performance determined with
 $M_{y,Rk} = 9,742 \text{ Nm}$
 $f_{ax,k} = 8,575 \text{ N/mm}^2$ for $l_{ef} \geq 26 \text{ mm}$

$l_g =$	26	31	36	41	46	51	56	61	66	71	76		
$d_{pd} [\text{mm}]$	Ø 4,5 mm												
$M_{t,nom} =$	—												
N_{Rk} for $k_{N,I} =$	0,50	—	—	—	—	—	—	—	—	—	—	—	
	0,55	—	—	—	—	—	—	—	—	—	—	—	
	0,63	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	2,90
	0,75	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	3,10
	0,88	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	3,20
	1,00	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	3,60
	1,13	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	3,80
	1,25	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	4,00
	1,50	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	4,00
	1,75	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	4,00
2,00	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	4,00	
N_{Rk} for $k_{N,I} =$	0,50	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19	
	0,55	1,30	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	
	0,63	1,30	1,56	1,81	2,06	2,20	2,20	2,20	2,20	2,20	2,20	2,20	
	0,75	1,30	1,56	1,81	2,06	2,31	2,56	2,80	2,80	2,80	2,80	2,80	
	0,88	1,30	1,56	1,81	2,06	2,31	2,56	2,81	3,06	3,31	3,50	3,50	
	1,00	1,30	1,56	1,81	2,06	2,31	2,56	2,81	3,06	3,31	3,56	3,81	4,20
	1,13	1,30	1,56	1,81	2,06	2,31	2,56	2,81	3,06	3,31	3,56	3,81	5,00
	1,25	1,30	1,56	1,81	2,06	2,31	2,56	2,81	3,06	3,31	3,56	3,81	5,90
	1,50	1,30	1,56	1,81	2,06	2,31	2,56	2,81	3,06	3,31	3,56	3,81	5,90
	1,75	1,30	1,56	1,81	2,06	2,31	2,56	2,81	3,06	3,31	3,56	3,81	5,90
2,00	1,30	1,56	1,81	2,06	2,31	2,56	2,81	3,06	3,31	3,56	3,81	5,90	

The values listed above in dependence on the screw-in length l_g are valid for $k_{mod} = 0,90$ and timber strength grade C24 ($\rho_k = 350 \text{ kg/m}^3$). For other values of k_{mod} and timber strength grades see section 4.2.2.

Self tapping screw	Annex 75
JA3-6,5 x L with hexagon head and sealing washer $\geq \text{Ø } 16 \text{ mm}$	

		<p>Materials</p> <p>Fastener: stainless steel (1.4301 / 1.4567) – EN 10088</p> <p>Washer: stainless steel (1.4301) – EN 10088 with vulcanised EPDM seal</p> <p>Component I: aluminium alloy with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573</p> <p>Component II: aluminium alloy with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573 timber – EN 14081</p>																																																																																																																																																																																																																																																																																																																																																																																																																																					
		<p>Pre-drill diameter see table</p> <p>Timber substructures for timber substructures following performance were determined</p> <p>$M_{y,k} = 9,742 \text{ Nm}$ $f_{ax,k} = 8,575 \text{ N/mm}^2$ for $l_{eff} \geq 32,5 \text{ mm}$</p>																																																																																																																																																																																																																																																																																																																																																																																																																																					
<table border="1"> <tr> <td>$t_{N,II} =$</td> <td>0,50</td> <td>0,70</td> <td>0,90</td> <td>1,00</td> <td>1,20</td> <td>1,50</td> <td>2,00</td> <td>2,50</td> <td>3,00</td> <td></td> </tr> <tr> <td>$d_{pd} =$</td> <td colspan="2">Ø 4,0</td> <td colspan="6">Ø 4,5</td> <td>Ø 5,0</td> <td></td> </tr> <tr> <td>$M_{t,norm} =$</td> <td colspan="10">—</td> </tr> <tr> <td rowspan="8">$V_{R,k}$ for $t_{N,I} =$</td> <td>0,50</td> <td>0,24</td> <td>-</td> <td>0,40</td> <td>-</td> <td>0,57</td> <td>-</td> <td>0,65</td> <td>-</td> <td>0,82</td> <td>-</td> <td>0,92</td> <td>ac</td> <td>0,92</td> <td>ac</td> <td>0,92</td> <td>abcd</td> <td>0,92</td> <td>abcd</td> <td>0,92</td> </tr> <tr> <td>0,60</td> <td>0,24</td> <td>-</td> <td>0,40</td> <td>-</td> <td>0,57</td> <td>-</td> <td>0,65</td> <td>-</td> <td>0,82</td> <td>-</td> <td>1,00</td> <td>-</td> <td>1,15</td> <td>ac</td> <td>1,15</td> <td>ac</td> <td>1,15</td> <td>ac</td> <td>1,15</td> </tr> <tr> <td>0,70</td> <td>0,24</td> <td>-</td> <td>0,40</td> <td>-</td> <td>0,57</td> <td>-</td> <td>0,65</td> <td>-</td> <td>0,82</td> <td>-</td> <td>1,07</td> <td>-</td> <td>1,38</td> <td>-</td> <td>1,38</td> <td>ac</td> <td>1,38</td> <td>ac</td> <td>1,38</td> </tr> <tr> <td>0,80</td> <td>0,24</td> <td>-</td> <td>0,40</td> <td>-</td> <td>0,57</td> <td>-</td> <td>0,65</td> <td>-</td> <td>0,82</td> <td>-</td> <td>1,15</td> <td>-</td> <td>1,46</td> <td>-</td> <td>1,61</td> <td>-</td> <td>1,61</td> <td>ac</td> <td>1,61</td> </tr> <tr> <td>0,90</td> <td>0,24</td> <td>-</td> <td>0,40</td> <td>-</td> <td>0,57</td> <td>-</td> <td>0,65</td> <td>-</td> <td>0,82</td> <td>-</td> <td>1,27</td> <td>-</td> <td>1,61</td> <td>-</td> <td>1,77</td> <td>-</td> <td>1,84</td> <td>-</td> <td>1,84</td> </tr> <tr> <td>1,00</td> <td>0,24</td> <td>-</td> <td>0,40</td> <td>-</td> <td>0,57</td> <td>-</td> <td>0,67</td> <td>-</td> <td>0,82</td> <td>-</td> <td>1,38</td> <td>-</td> <td>1,77</td> <td>-</td> <td>1,92</td> <td>-</td> <td>2,07</td> <td>-</td> <td>2,07</td> </tr> <tr> <td>1,20</td> <td>0,24</td> <td>-</td> <td>0,40</td> <td>-</td> <td>0,57</td> <td>-</td> <td>0,67</td> <td>-</td> <td>0,88</td> <td>-</td> <td>1,61</td> <td>-</td> <td>1,84</td> <td>-</td> <td>2,15</td> <td>-</td> <td>2,38</td> <td>-</td> <td>2,38</td> </tr> <tr> <td>1,50</td> <td>0,24</td> <td>-</td> <td>0,40</td> <td>-</td> <td>0,57</td> <td>-</td> <td>0,67</td> <td>-</td> <td>0,88</td> <td>-</td> <td>2,15</td> <td>-</td> <td>2,30</td> <td>-</td> <td>2,53</td> <td>-</td> <td>2,76</td> <td>-</td> <td>2,76</td> </tr> <tr> <td>2,00</td> <td>0,24</td> <td>-</td> <td>0,40</td> <td>-</td> <td>0,57</td> <td>-</td> <td>0,67</td> <td>-</td> <td>0,88</td> <td>-</td> <td>2,15</td> <td>-</td> <td>2,30</td> <td>-</td> <td>2,53</td> <td>-</td> <td>2,76</td> <td>-</td> <td>2,76</td> </tr> <tr> <td rowspan="10">$N_{R,III} =$</td> <td>-</td> <td>-</td> <td>-</td> <td>0,36</td> <td>0,42</td> <td>0,55</td> <td>0,77</td> <td>1,23</td> <td>1,77</td> <td>2,38</td> <td></td> </tr> <tr> <td></td> </tr> <tr> <td></td> </tr> <tr> <td></td> </tr> <tr> <td></td> </tr> <tr> <td></td> </tr> <tr> <td></td> </tr> <tr> <td></td> </tr> <tr> <td></td> </tr> <tr> <td></td> </tr> </table>		$t_{N,II} =$	0,50	0,70	0,90	1,00	1,20	1,50	2,00	2,50	3,00		$d_{pd} =$	Ø 4,0		Ø 4,5						Ø 5,0		$M_{t,norm} =$	—										$V_{R,k}$ for $t_{N,I} =$	0,50	0,24	-	0,40	-	0,57	-	0,65	-	0,82	-	0,92	ac	0,92	ac	0,92	abcd	0,92	abcd	0,92	0,60	0,24	-	0,40	-	0,57	-	0,65	-	0,82	-	1,00	-	1,15	ac	1,15	ac	1,15	ac	1,15	0,70	0,24	-	0,40	-	0,57	-	0,65	-	0,82	-	1,07	-	1,38	-	1,38	ac	1,38	ac	1,38	0,80	0,24	-	0,40	-	0,57	-	0,65	-	0,82	-	1,15	-	1,46	-	1,61	-	1,61	ac	1,61	0,90	0,24	-	0,40	-	0,57	-	0,65	-	0,82	-	1,27	-	1,61	-	1,77	-	1,84	-	1,84	1,00	0,24	-	0,40	-	0,57	-	0,67	-	0,82	-	1,38	-	1,77	-	1,92	-	2,07	-	2,07	1,20	0,24	-	0,40	-	0,57	-	0,67	-	0,88	-	1,61	-	1,84	-	2,15	-	2,38	-	2,38	1,50	0,24	-	0,40	-	0,57	-	0,67	-	0,88	-	2,15	-	2,30	-	2,53	-	2,76	-	2,76	2,00	0,24	-	0,40	-	0,57	-	0,67	-	0,88	-	2,15	-	2,30	-	2,53	-	2,76	-	2,76	$N_{R,III} =$	-	-	-	0,36	0,42	0,55	0,77	1,23	1,77	2,38																																																																																																																																																																																																				<p>Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting. The values indicated above, depending on the screw depth l_b, shall apply to $k_{mod} = 0,90$ and the timber strength class C24 ($\rho_k = 350 \text{ kg / m}^3$). For other values of k_{mod} and strength classes see chapter 4.2.2 Timber substructures (component II): predrilling the holes with Ø 4,80 mm is necessary.</p>	
$t_{N,II} =$	0,50	0,70	0,90	1,00	1,20	1,50	2,00	2,50	3,00																																																																																																																																																																																																																																																																																																																																																																																																																														
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$V_{R,k}$ for $t_{N,I} =$	0,50	0,24	-	0,40	-	0,57	-	0,65	-	0,82	-	0,92	ac	0,92	ac	0,92	abcd	0,92	abcd	0,92																																																																																																																																																																																																																																																																																																																																																																																																																			
	0,60	0,24	-	0,40	-	0,57	-	0,65	-	0,82	-	1,00	-	1,15	ac	1,15	ac	1,15	ac	1,15																																																																																																																																																																																																																																																																																																																																																																																																																			
	0,70	0,24	-	0,40	-	0,57	-	0,65	-	0,82	-	1,07	-	1,38	-	1,38	ac	1,38	ac	1,38																																																																																																																																																																																																																																																																																																																																																																																																																			
	0,80	0,24	-	0,40	-	0,57	-	0,65	-	0,82	-	1,15	-	1,46	-	1,61	-	1,61	ac	1,61																																																																																																																																																																																																																																																																																																																																																																																																																			
	0,90	0,24	-	0,40	-	0,57	-	0,65	-	0,82	-	1,27	-	1,61	-	1,77	-	1,84	-	1,84																																																																																																																																																																																																																																																																																																																																																																																																																			
	1,00	0,24	-	0,40	-	0,57	-	0,67	-	0,82	-	1,38	-	1,77	-	1,92	-	2,07	-	2,07																																																																																																																																																																																																																																																																																																																																																																																																																			
	1,20	0,24	-	0,40	-	0,57	-	0,67	-	0,88	-	1,61	-	1,84	-	2,15	-	2,38	-	2,38																																																																																																																																																																																																																																																																																																																																																																																																																			
	1,50	0,24	-	0,40	-	0,57	-	0,67	-	0,88	-	2,15	-	2,30	-	2,53	-	2,76	-	2,76																																																																																																																																																																																																																																																																																																																																																																																																																			
2,00	0,24	-	0,40	-	0,57	-	0,67	-	0,88	-	2,15	-	2,30	-	2,53	-	2,76	-	2,76																																																																																																																																																																																																																																																																																																																																																																																																																				
$N_{R,III} =$	-	-	-	0,36	0,42	0,55	0,77	1,23	1,77	2,38																																																																																																																																																																																																																																																																																																																																																																																																																													
<p align="center">Self-tapping screw</p> <p align="center">JA3-6,5xL-E16 With hexagon head and seal washer $\geq \text{Ø } 16,0 \text{ mm}$</p>		<p align="center">Annex 76</p>																																																																																																																																																																																																																																																																																																																																																																																																																																					

		<p>Materials</p> <p>Fastener: stainless steel (1.4301 / 1.4567) – EN 10088</p> <p>Washer: stainless steel (1.4301) – EN 10088 with vulcanised EPDM seal</p> <p>Component I: aluminium alloy with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573</p> <p>Component II: aluminium alloy with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573 timber – EN 14081</p>																																																																																																																																																																																																																																																																
		<p>Pre-drill diameter see table</p>																																																																																																																																																																																																																																																																
		<p>Timber substructures</p> <p>for timber substructures following performance were determined</p> <p>$M_{y,k} = 9,742 \text{ Nm}$ $f_{ax,k} = 8,575 \text{ N/mm}^2$ for $l_{eff} \geq 32,5 \text{ mm}$</p>																																																																																																																																																																																																																																																																
		<table border="1"> <tr> <td>$t_{N,II} =$</td> <td>0,50</td> <td>0,70</td> <td>0,90</td> <td>1,00</td> <td>1,20</td> <td>1,50</td> <td>2,00</td> <td>2,50</td> <td>3,00</td> <td></td> </tr> <tr> <td>$d_{pd} =$</td> <td colspan="2">Ø 4,0</td> <td colspan="6">Ø 4,5</td> <td>Ø 5,0</td> <td></td> </tr> <tr> <td>$M_{t,nom} =$</td> <td colspan="10">—</td> </tr> <tr> <td rowspan="8">$V_{R,k}$ for $t_{N,I} =$</td> <td>0,50</td> <td>0,31</td> <td>-</td> <td>0,53</td> <td>-</td> <td>0,74</td> <td>-</td> <td>0,85</td> <td>-</td> <td>1,06</td> <td>-</td> <td>1,20</td> <td>ac</td> <td>1,20</td> <td>ac</td> <td>1,20</td> <td>abcd</td> <td>1,20</td> <td>abcd</td> <td>1,20</td> </tr> <tr> <td>0,60</td> <td>0,31</td> <td>-</td> <td>0,53</td> <td>-</td> <td>0,74</td> <td>-</td> <td>0,85</td> <td>-</td> <td>1,06</td> <td>-</td> <td>1,30</td> <td>-</td> <td>1,50</td> <td>ac</td> <td>1,50</td> <td>ac</td> <td>1,50</td> <td>ac</td> <td>1,50</td> </tr> <tr> <td>0,70</td> <td>0,31</td> <td>-</td> <td>0,53</td> <td>-</td> <td>0,74</td> <td>-</td> <td>0,85</td> <td>-</td> <td>1,06</td> <td>-</td> <td>1,40</td> <td>-</td> <td>1,80</td> <td>-</td> <td>1,80</td> <td>ac</td> <td>1,80</td> <td>ac</td> <td>1,80</td> </tr> <tr> <td>0,80</td> <td>0,31</td> <td>-</td> <td>0,53</td> <td>-</td> <td>0,74</td> <td>-</td> <td>0,85</td> <td>-</td> <td>1,06</td> <td>-</td> <td>1,50</td> <td>-</td> <td>1,90</td> <td>-</td> <td>2,10</td> <td>-</td> <td>2,10</td> <td>ac</td> <td>2,10</td> </tr> <tr> <td>0,90</td> <td>0,31</td> <td>-</td> <td>0,53</td> <td>-</td> <td>0,75</td> <td>-</td> <td>0,85</td> <td>-</td> <td>1,06</td> <td>-</td> <td>1,65</td> <td>-</td> <td>2,10</td> <td>-</td> <td>2,30</td> <td>-</td> <td>2,40</td> <td>-</td> <td>2,40</td> </tr> <tr> <td>1,00</td> <td>0,31</td> <td>-</td> <td>0,53</td> <td>-</td> <td>0,75</td> <td>-</td> <td>0,88</td> <td>-</td> <td>1,06</td> <td>-</td> <td>1,80</td> <td>-</td> <td>2,30</td> <td>-</td> <td>2,50</td> <td>-</td> <td>2,70</td> <td>-</td> <td>2,70</td> </tr> <tr> <td>1,20</td> <td>0,31</td> <td>-</td> <td>0,53</td> <td>-</td> <td>0,75</td> <td>-</td> <td>0,88</td> <td>-</td> <td>1,15</td> <td>-</td> <td>2,10</td> <td>-</td> <td>2,40</td> <td>-</td> <td>2,80</td> <td>-</td> <td>3,10</td> <td>-</td> <td>3,10</td> </tr> <tr> <td>1,50</td> <td>0,31</td> <td>-</td> <td>0,53</td> <td>-</td> <td>0,75</td> <td>-</td> <td>0,88</td> <td>-</td> <td>1,15</td> <td>-</td> <td>2,80</td> <td>-</td> <td>3,00</td> <td>-</td> <td>3,30</td> <td>-</td> <td>3,60</td> <td>-</td> <td>3,60</td> </tr> <tr> <td>2,00</td> <td>0,31</td> <td>-</td> <td>0,53</td> <td>-</td> <td>0,75</td> <td>-</td> <td>0,88</td> <td>-</td> <td>1,15</td> <td>-</td> <td>2,80</td> <td>-</td> <td>3,00</td> <td>-</td> <td>3,30</td> <td>-</td> <td>3,60</td> <td>-</td> <td>3,60</td> </tr> <tr> <td rowspan="2">$N_{R,III} =$</td> <td>-</td> <td>-</td> <td>-</td> <td>0,47</td> <td>0,55</td> <td>0,71</td> <td>1,00</td> <td>1,60</td> <td>2,30</td> <td>3,10</td> <td></td> </tr> <tr> <td></td> <td>failure of component II see chapter 4.2.2</td> </tr> </table>		$t_{N,II} =$	0,50	0,70	0,90	1,00	1,20	1,50	2,00	2,50	3,00		$d_{pd} =$	Ø 4,0		Ø 4,5						Ø 5,0		$M_{t,nom} =$	—										$V_{R,k}$ for $t_{N,I} =$	0,50	0,31	-	0,53	-	0,74	-	0,85	-	1,06	-	1,20	ac	1,20	ac	1,20	abcd	1,20	abcd	1,20	0,60	0,31	-	0,53	-	0,74	-	0,85	-	1,06	-	1,30	-	1,50	ac	1,50	ac	1,50	ac	1,50	0,70	0,31	-	0,53	-	0,74	-	0,85	-	1,06	-	1,40	-	1,80	-	1,80	ac	1,80	ac	1,80	0,80	0,31	-	0,53	-	0,74	-	0,85	-	1,06	-	1,50	-	1,90	-	2,10	-	2,10	ac	2,10	0,90	0,31	-	0,53	-	0,75	-	0,85	-	1,06	-	1,65	-	2,10	-	2,30	-	2,40	-	2,40	1,00	0,31	-	0,53	-	0,75	-	0,88	-	1,06	-	1,80	-	2,30	-	2,50	-	2,70	-	2,70	1,20	0,31	-	0,53	-	0,75	-	0,88	-	1,15	-	2,10	-	2,40	-	2,80	-	3,10	-	3,10	1,50	0,31	-	0,53	-	0,75	-	0,88	-	1,15	-	2,80	-	3,00	-	3,30	-	3,60	-	3,60	2,00	0,31	-	0,53	-	0,75	-	0,88	-	1,15	-	2,80	-	3,00	-	3,30	-	3,60	-	3,60	$N_{R,III} =$	-	-	-	0,47	0,55	0,71	1,00	1,60	2,30	3,10																														failure of component II see chapter 4.2.2
$t_{N,II} =$	0,50	0,70	0,90	1,00	1,20	1,50	2,00	2,50	3,00																																																																																																																																																																																																																																																									
$d_{pd} =$	Ø 4,0		Ø 4,5						Ø 5,0																																																																																																																																																																																																																																																									
$M_{t,nom} =$	—																																																																																																																																																																																																																																																																	
$V_{R,k}$ for $t_{N,I} =$	0,50	0,31	-	0,53	-	0,74	-	0,85	-	1,06	-	1,20	ac	1,20	ac	1,20	abcd	1,20	abcd	1,20																																																																																																																																																																																																																																														
	0,60	0,31	-	0,53	-	0,74	-	0,85	-	1,06	-	1,30	-	1,50	ac	1,50	ac	1,50	ac	1,50																																																																																																																																																																																																																																														
	0,70	0,31	-	0,53	-	0,74	-	0,85	-	1,06	-	1,40	-	1,80	-	1,80	ac	1,80	ac	1,80																																																																																																																																																																																																																																														
	0,80	0,31	-	0,53	-	0,74	-	0,85	-	1,06	-	1,50	-	1,90	-	2,10	-	2,10	ac	2,10																																																																																																																																																																																																																																														
	0,90	0,31	-	0,53	-	0,75	-	0,85	-	1,06	-	1,65	-	2,10	-	2,30	-	2,40	-	2,40																																																																																																																																																																																																																																														
	1,00	0,31	-	0,53	-	0,75	-	0,88	-	1,06	-	1,80	-	2,30	-	2,50	-	2,70	-	2,70																																																																																																																																																																																																																																														
	1,20	0,31	-	0,53	-	0,75	-	0,88	-	1,15	-	2,10	-	2,40	-	2,80	-	3,10	-	3,10																																																																																																																																																																																																																																														
	1,50	0,31	-	0,53	-	0,75	-	0,88	-	1,15	-	2,80	-	3,00	-	3,30	-	3,60	-	3,60																																																																																																																																																																																																																																														
2,00	0,31	-	0,53	-	0,75	-	0,88	-	1,15	-	2,80	-	3,00	-	3,30	-	3,60	-	3,60																																																																																																																																																																																																																																															
$N_{R,III} =$	-	-	-	0,47	0,55	0,71	1,00	1,60	2,30	3,10																																																																																																																																																																																																																																																								
																				failure of component II see chapter 4.2.2																																																																																																																																																																																																																																														
		<p>Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.</p> <p>The values indicated above, depending on the screw depth l_b, shall apply to $k_{mod} = 0,90$ and the timber strength class C24 ($\rho_k = 350 \text{ kg / m}^3$). For other values of k_{mod} and strength classes see chapter 4.2.2</p> <p>Timber substructures (component II): predrilling the holes with Ø 4,80 mm is necessary.</p>																																																																																																																																																																																																																																																																
<p align="center">Self-tapping screw</p> <p align="center">JA3-6,5xL-E16</p> <p align="center">With hexagon head and seal washer $\geq \text{Ø } 16,0 \text{ mm}$</p>		<p align="center">Annex 77</p>																																																																																																																																																																																																																																																																

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Institut
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Bautechnik

Materials
 Fastener: stainless steel (1.4301 7 1.4567) – EN 10088
 Washer: stainless steel (1.4301) – EN 10088 with vulcanised EPDM seal
 Component I: aluminium alloy with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573
 Component II: S235 – EN 10025-1, S280GD, S320GD – EN 10346, timber – EN 14081

Pre-drill diameter see table

Timber substructures
 for timber substructures following performance were determined

$M_{y,k} = 9,742 \text{ Nm}$
 $f_{ax,k} = 8,575 \text{ N/mm}^2$ for $l_{eff} \geq 32,5 \text{ mm}$

$t_{N,II} =$	0,63	0,75	0,88	1,00	1,25	1,50	2,00	2,50	3,00												
$d_{pd} =$	Ø 3,5	Ø 4,0	Ø 4,5			Ø 5,0	Ø 5,3														
$M_{t,nom} =$	—																				
$V_{R,k}$ for $t_{N,I} =$	0,50	0,35	-	0,44	-	0,55	-	0,65	-	0,86	-	0,92	ac	0,92	ac	0,92	abcd	0,92	abcd	0,92	failure of component I (bearing)
	0,60	0,35	-	0,44	-	0,55	-	0,65	-	0,86	-	1,00	-	1,15	ac	1,15	ac	1,15	ac	1,15	1,15
	0,70	0,35	-	0,44	-	0,55	-	0,65	-	0,86	-	1,07	-	1,38	-	1,38	ac	1,38	ac	1,38	1,38
	0,80	0,35	-	0,44	-	0,55	-	0,65	-	0,86	-	1,15	-	1,46	-	1,61	-	1,61	ac	1,61	1,61
	0,90	0,35	-	0,44	-	0,56	-	0,65	-	0,86	-	1,27	-	1,61	-	1,77	-	1,84	-	1,84	1,84
	1,00	0,35	-	0,44	-	0,56	-	0,67	-	0,86	-	1,38	-	1,77	-	1,92	-	2,07	-	2,07	2,07
	1,20	0,35	-	0,44	-	0,56	-	0,67	-	0,92	-	1,61	-	1,84	-	2,15	-	2,38	-	2,38	2,38
	1,50	0,35	-	0,44	-	0,56	-	0,67	-	0,94	-	2,15	-	2,30	-	2,53	-	2,76	-	2,76	2,76
	2,00	0,35	-	0,44	-	0,56	-	0,67	-	0,94	-	2,15	-	2,30	-	2,53	-	2,76	-	2,76	2,76
$N_{R,II,k} =$	1,00	1,20	1,40	1,50	1,90	2,30	2,30	2,30	2,30	failure of component II see chapter 4.2.2											

Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.
 The values indicated above, depending on the screw depth l_g , shall apply to $k_{mod} = 0,90$ and the timber strength class C24 ($\rho_k = 350 \text{ kg / m}^3$). For other values of k_{mod} and strength classes see chapter 4.2.2
 Timber substructures (component II): predrilling the holes with $\text{Ø } 4,80 \text{ mm}$ is necessary.

Self-tapping screw	Annex 78
JA3-6,5xL-E16 With hexagon head and seal washer $\geq \text{Ø } 16,0 \text{ mm}$	

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Materials
Fastener: stainless steel (1.4301 / 1.4567) – EN 10088
Washer: stainless steel (1.4301) – EN 10088 with vulcanised EPDM seal
Component I: aluminium alloy with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573
Component II: S235 – EN 10025-1
S280GD, S320GD – EN 10346
timber – EN 14081

Pre-drill diameter see table

Timber substructures
for timber substructures following performance were determined

$M_{y,k} = 9,742 \text{ Nm}$
 $f_{ax,k} = 8,575 \text{ N/mm}^2$ for $l_{eff} \geq 32,5 \text{ mm}$

$t_{N,II} =$	0,63	0,75	0,88	1,00	1,25	1,50	2,00	2,50	3,00										
$d_{pd} =$	$\varnothing 3,5$	$\varnothing 4,0$	$\varnothing 4,5$			$\varnothing 5,0$	$\varnothing 5,3$												
$M_{t,nom} =$	—																		
$V_{R,k}$ for $t_{N,I} =$	0,50	0,45	0,58	0,72	0,85	1,12	1,20	1,30	1,50	1,20	1,50	1,80	2,10	2,40	2,70	3,10	3,60	3,60	failure of component I (bearing)
	0,60	0,45	0,58	0,72	0,85	1,12	1,30	1,50	1,50	1,50	1,50	1,80	2,10	2,40	2,70	3,10	3,60	3,60	
	0,70	0,45	0,58	0,72	0,85	1,12	1,40	1,80	1,80	1,80	1,80	1,80	2,10	2,40	2,70	3,10	3,60	3,60	
	0,80	0,45	0,58	0,72	0,85	1,12	1,50	1,90	1,90	2,10	2,10	2,10	2,40	2,70	3,10	3,60	3,60	3,60	
	0,90	0,45	0,58	0,72	0,85	1,12	1,65	2,10	2,10	2,30	2,30	2,40	2,70	3,10	3,60	3,60	3,60	3,60	
	1,00	0,45	0,58	0,72	0,88	1,12	1,80	2,30	2,30	2,50	2,50	2,70	3,10	3,60	3,60	3,60	3,60	3,60	
	1,20	0,45	0,58	0,72	0,88	1,20	2,10	2,40	2,40	2,80	2,80	3,10	3,60	3,60	3,60	3,60	3,60	3,60	
$N_{R,II,k} =$		1,00	1,20	1,40	1,50	1,90	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30	failure of component II see chapter 4.2.2

Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.
The values indicated above, depending on the screw depth l_g , shall apply to $k_{mod} = 0,90$ and the timber strength class C24 ($\rho_k = 350 \text{ kg / m}^3$). For other values of k_{mod} and strength classes see chapter 4.2.2
Timber substructures (component II): predrilling the holes with $\varnothing 4,80 \text{ mm}$ is necessary.

Self-tapping screw

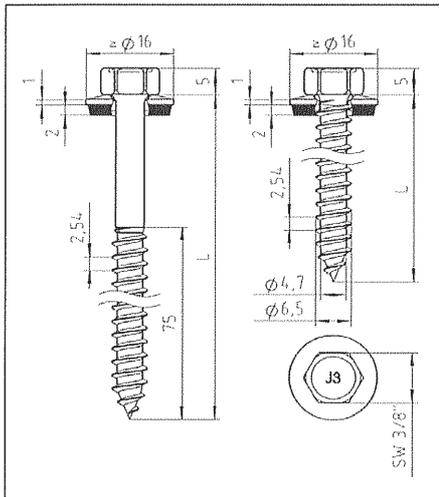
JA3-6,5xL-E16
With hexagon head and seal washer $\geq \varnothing 16,0 \text{ mm}$

Annex 79

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English translation prepared by DIBt

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Bautechnik



Materials:

Fastener: stainless steel (1.4301) – EN 10088

Washer: stainless steel (1.4301) – EN 10088

Component I: S280GD – EN 10346

Component II: structural timber – EN 14081

Predrill diameter 4,5 mm

Timber supporting structures:

performance determined with

$M_{y,Rk} = 9,742 \text{ Nm}$

$f_{ax,k} = 11,080 \text{ N/mm}^2$ für $l_{ef} \geq 50 \text{ mm}$

t_{N1}, t_{N2}, d, D [mm]	50	53	55	58	60	63	65	68	70	73	75	
$V_{R,k}$ [kN]	1,03	1,03	1,03	1,03	1,03	1,03	1,03	1,03	1,03	1,03	1,03	1,03
$N_{R,k}$ [kN]	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24
max u [mm]	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0
$M_{t, nom}$ [Nm]												

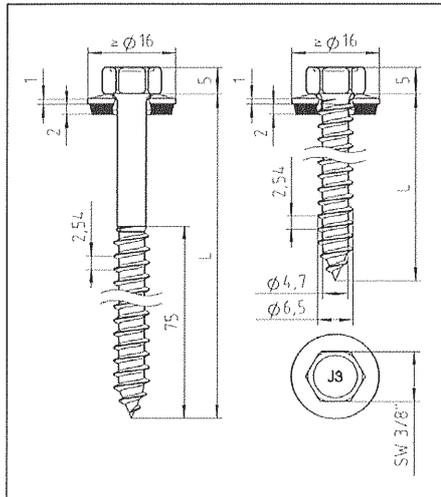
The values listed above in dependence on the screw-in length in length l_g are valid for $k_{mod} = 0,90$ and timber strength grade C24 ($\rho_k = 350 \text{ kg/m}^3$). For other values of k_{mod} and timber strength grades see section 4.2.2.

Self tapping screw	Annex 18
EJOT® JA3-6,5 x L with sealing washer $\geq \varnothing 16 \text{ mm}$	

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ETA-13/0177 of 26 April 2013

English translation prepared by DIBt

Deutsches
Institut
für
Bautechnik



Materials:

Fastener: stainless steel (1.4301) – EN 10088
Washer: stainless steel (1.4301) – EN 10088
Component I: S320GD or S350GD – EN 10346
Component II: structural timber – EN 14081

Predrill diameter 4,5 mm

Timber supporting structures:
performance determined with

$M_{y,Rk} = 9,742 \text{ Nm}$
 $f_{ax,k} = 11,080 \text{ N/mm}^2$ für $l_{ef} \geq 50 \text{ mm}$

t_{N1}, t_{N2}, d, D [mm]	50	53	56	59	62	65	68	71	74	77	80	
$V_{R,k}$ [kN]	1,11	1,11	1,11	1,11	1,11	1,11	1,11	1,11	1,11	1,11	1,11	1,11
$N_{R,k}$ [kN]	1,35	1,35	1,35	1,35	1,35	1,35	1,35	1,35	1,35	1,35	1,35	1,35
max u [mm]	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0
$M_{t,nom}$ [Nm]	20,0	20,0	20,0	20,0	20,0	20,0	20,0	20,0	20,0	20,0	20,0	20,0

The values listed above in dependence on the screw-in length in length l_g are valid for $k_{mod} = 0,90$ and timber strength grade C24 ($\rho_k = 350 \text{ kg/m}^3$). For other values of k_{mod} and timber strength grades see section 4.2.2.

Self tapping screw	Annex 19
EJOT® JA3-6,5 x L with sealing washer $\geq \varnothing 16 \text{ mm}$	