

Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: S280GD – EN 10346

Component II: S235 to S355 – EN 10025-1

Drilling capacity: $\Sigma t \leq 13,00$ mm

Timber substructures:

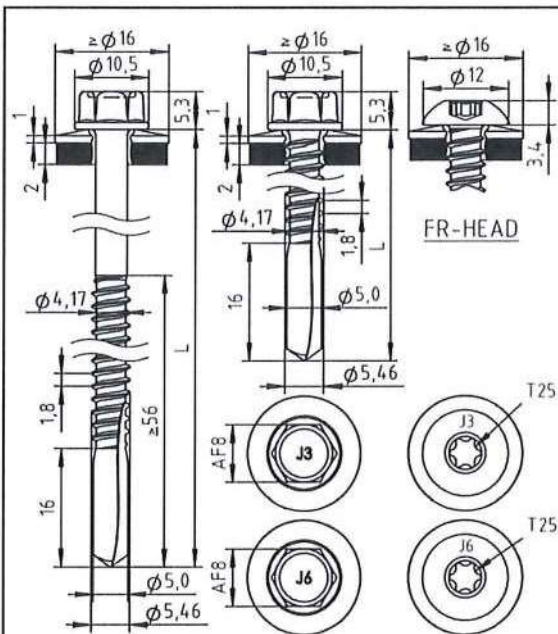
no performance determined

$t_{n,II}$ [mm]	4,00	5,00	6,00	8,00	10,00	12,00	
$M_{t,nom}$	7 Nm						
$V_{R,k}$ [kN] for $t_{n,I} =$	0,50	—	—	—	—	—	
	0,55	—	—	—	—	—	
	0,63	2,20	ac	2,20	ac	2,20	ac
	0,75	2,80	ac	2,80	ac	2,80	ac
	0,88	3,50	ac	3,50	ac	3,50	ac
	1,00	4,20	—	4,20	ac	4,20	ac
	1,13	4,20	—	4,90	—	4,90	—
	1,25	4,20	—	5,60	—	5,60	—
	1,50	4,20	—	6,40	—	7,20	—
	1,75	4,20	—	6,40	—	7,20	—
	2,00	4,20	—	6,40	—	7,20	—
$N_{R,k}$ [kN] for $t_{n,I} =$	0,50	1,30	ac	1,30	ac	1,30	ac
	0,55	1,64	ac	1,64	ac	1,64	ac
	0,63	2,40	ac	2,40	ac	2,40	ac
	0,75	3,10	ac	3,10	ac	3,10	ac
	0,88	3,90	ac	3,90	ac	3,90	ac
	1,00	4,70	—	4,70	ac	4,70	ac
	1,13	4,70	—	5,60	—	5,60	—
	1,25	4,70	—	6,40	—	6,40	—
	1,50	4,70	—	6,40	—	6,40	—
	1,75	4,70	—	6,40	—	6,40	—
	2,00	4,70	—	6,40	—	6,40	—

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR-)12-5,5xL, JT6-(FR-)12-5,5xL
with hexagon head or round head with Torx® drive system and sealing washer $\geq \phi 16$ mm

Annex 68



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506
Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal
Component I: S320GD or S350GD – EN 10346
Component II: S235 to S355 – EN 10025-1

Drilling capacity: $\Sigma t \leq 13,00$ mm

Timber substrates:

no performance determined

$t_{N,II}$ [mm]	4,00	5,00	6,00	8,00	10,00	12,00
$M_{t,nom}$	7 Nm					
$V_{R,k}$ [kN] for $t_{N,j} =$	0,50	—	—	—	—	—
	0,55	—	—	—	—	—
	0,63	2,50	ac	2,50	ac	2,50
	0,75	3,20	ac	3,20	ac	3,20
	0,88	3,90	ac	3,90	ac	3,90
	1,00	4,20	—	4,60	ac	4,60
	1,13	4,20	—	5,30	—	5,30
	1,25	4,20	—	6,00	—	6,00
	1,50	4,20	—	6,40	—	7,20
	1,75	4,20	—	6,40	—	7,60
2,00	4,20	—	6,40	—	7,60	
$N_{R,k}$ [kN] for $t_{N,j} =$	0,50	1,40	ac	1,40	ac	1,40
	0,55	1,77	ac	1,77	ac	1,77
	0,63	2,60	ac	2,60	ac	2,60
	0,75	3,30	ac	3,30	ac	3,30
	0,88	4,20	ac	4,20	ac	4,20
	1,00	4,70	—	5,00	ac	5,00
	1,13	4,70	—	6,00	—	6,00
	1,25	4,70	—	6,90	—	6,90
	1,50	4,70	—	6,90	—	6,90
	1,75	4,70	—	6,90	—	6,90
2,00	4,70	—	6,90	—	6,90	

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR)-12-5,5xL, JT6-(FR)-12-5,5xL
with hexagon head or round head with Torx® drive system and sealing washer $\geq \varnothing 16$ mm

Annex 69

English translation prepared by DIBt

	<p>Materials:</p> <p>Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506</p> <p>Washer: stainless steel (A2/A4) – EN ISO 3506 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</p> <hr/> <p>Drilling capacity: $\Sigma t_i \leq 13,00 \text{ mm}$</p> <hr/> <p>Timber substructures: no performance determined</p>
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$t_{N,II}$ [mm]	4,00	5,00	6,00	8,00	10,00	12,00
$M_{t,nom}$	—					
$V_{R,k}$ [kN] for $t_{N,I} =$	0,50	0,77 ac	0,77 ac	0,77 ac	0,77 ac	0,77 ac
	0,60	0,94 ac	0,94 ac	0,94 ac	0,94 ac	0,94 a
	0,70	1,10 ac	1,10 ac	1,10 ac	1,10 ac	1,10 a
	0,80	1,27 ac	1,27 ac	1,27 ac	1,27 ac	1,27 a
	0,90	1,48 ac	1,48 ac	1,48 ac	1,48 ac	1,48 a
	1,00	1,69 ac	1,69 ac	1,69 ac	1,69 ac	1,69 a
	1,20	1,94 —	1,94 —	1,94 —	1,94 ac	— —
	1,50	2,32 —	2,32 —	2,32 —	2,32 ac	— —
	2,00	2,91 —	3,00 —	3,09 —	3,26 ac	3,26 ac
$N_{R,II,k}$ [kN] =	1,11	1,58	2,21	3,48	3,48	3,48

– 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.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR-)12-5,5xL, JT6-(FR-)12-5,5xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \phi 11 \text{ mm}$

Annex 70

	<p>Materials:</p> <p>Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506</p> <p>Washer: stainless steel (A2/A4) – EN ISO 3506 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</p> <hr/> <p>Drilling capacity: $\Sigma t \leq 13,00 \text{ mm}$</p> <hr/> <p>Timber substructures:</p> <p>no performance determined</p>
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$t_{n,II}$ [mm]	4,00	5,00	6,00	8,00	10,00	12,00
$M_{t,nom}$	—					
$V_{R,k}$ [kN] for $t_{n,j} =$	0,50	1,00 ac	1,00 ac	1,00 ac	1,00 ac	1,00 ac
	0,60	1,22 ac	1,22 ac	1,22 ac	1,22 ac	1,22 a
	0,70	1,44 ac	1,44 ac	1,44 ac	1,44 ac	1,44 a
	0,80	1,66 ac	1,66 ac	1,66 ac	1,66 ac	1,66 a
	0,90	1,93 ac	1,93 ac	1,93 ac	1,93 ac	1,93 a
	1,00	2,20 ac	2,20 ac	2,20 ac	2,20 ac	2,20 a
	1,20	2,52 —	2,52 —	2,52 —	2,52 ac	— —
	1,50	3,02 —	3,02 —	3,02 —	3,02 ac	— —
	2,00	3,79 —	3,91 —	4,02 —	4,25 ac	4,25 ac
$N_{R,II,k}$ [kN] =	1,45	2,06	2,89	4,54	4,54	4,54

– 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.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR-)12-5,5xL, JT6-(FR-)12-5,5xL
with hexagon head or round head with Torx® drive system and sealing washer $\geq \varnothing 11 \text{ mm}$

Annex 71

	<p>Materials:</p> <p>Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506</p> <p>Washer: stainless steel (A2/A4) – EN ISO 3506 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: S235 to S355 – EN 10025-1</p> <hr/> <p>Drilling capacity: $\Sigma t \leq 13,00 \text{ mm}$</p> <hr/> <p>Timber substructures:</p> <p>no performance determined</p>
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$t_{N,II}$ [mm]	4,00	5,00	6,00	8,00	10,00	12,00
$M_{t,nom}$	—					
$V_{R,k}$ [kN] for $t_{N,I} =$	0,50	0,77 ac	0,77 ac	0,77 ac	0,77 ac	0,77 ac
	0,60	0,94 ac	0,94 ac	0,94 ac	0,94 ac	0,94 a
	0,70	1,10 ac	1,10 ac	1,10 ac	1,10 ac	1,10 a
	0,80	1,27 ac	1,27 ac	1,27 ac	1,27 ac	1,27 a
	0,90	1,48 ac	1,48 ac	1,48 ac	1,48 ac	2,48 a
	1,00	1,69 ac	1,69 ac	1,69 ac	1,69 ac	1,69 a
	1,20	1,94 —	1,94 —	1,94 —	1,94 ac	— —
	1,50	2,32 —	2,32 —	2,32 —	2,32 ac	— —
2,00	2,91 —	3,09 —	3,09 —	3,26 ac	3,26 a	— —
$N_{R,II,k}$ [kN] =	4,70	6,40	6,40	6,40	6,40	6,40

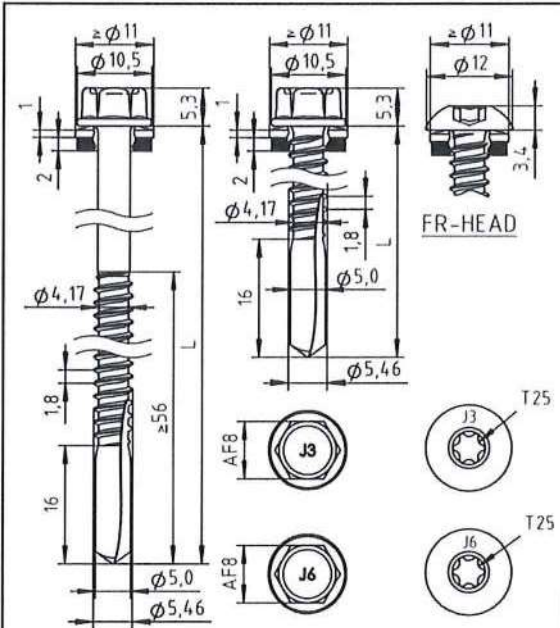
– Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR-)12-5,5xL, JT6-(FR-)12-5,5xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \text{Ø}11 \text{ mm}$

Annex 72



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573

Component II: S235 to S355 – EN 10025-1

Drilling capacity: $\Sigma t \leq 13,00 \text{ mm}$

Timber substructures:

no performance determined

$t_{N,II}$ [mm]	4,00	5,00	6,00	8,00	10,00	12,00
$M_{t,nom}$	—					
$V_{R,k}$ [kN] for $t_{N,I} =$	0,50	1,00 ac	1,00 ac	1,00 ac	1,00 ac	1,00 ac
	0,60	1,22 ac	1,22 ac	1,22 ac	1,22 ac	1,22 a
	0,70	1,44 ac	1,44 ac	1,44 ac	1,44 ac	1,44 a
	0,80	1,66 ac	1,66 ac	1,66 ac	1,66 ac	1,66 a
	0,90	1,93 ac	1,93 ac	1,93 ac	1,93 ac	1,93 a
	1,00	2,20 ac	2,20 ac	2,20 ac	2,20 ac	2,20 a
	1,20	2,52 —	2,52 —	2,52 —	2,52 ac	2,52 ac
	1,50	3,02 —	3,02 —	3,02 —	3,02 ac	3,02 ac
	2,00	3,79 —	3,91 —	4,02 —	4,25 ac	4,25 ac
$N_{R,II,k}$ [kN] =	4,70	6,40	6,40	6,40	6,40	6,40

– 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.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR)-12-5,5xL, JT6-(FR)-12-5,5xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \text{Ø}11 \text{ mm}$

Annex 73

	<p>Materials:</p> <p>Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506</p> <p>Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal</p> <p>Component I: S280GD – EN 10346 Component II: S235 to S355 – EN 10025-1</p>
	<p>Drilling capacity: $\Sigma t \leq 18,0$ mm</p>
	<p>Timber substructures: no performance determined</p>

$t_{n,II}$ [mm]	4,00	5,00	6,00	8,00	10,0	12,0	14,0	16,0
$M_{t,nom}$	7 Nm							
$V_{R,k}$ [kN] for $t_{n,I} =$	0,40	1,50 —	1,50 —	1,50 —	1,50 —	1,50 —	1,50 —	1,50 —
	0,50	1,91 —	1,91 —	1,91 —	1,91 —	1,91 —	1,91 —	1,91 —
	0,55	2,12 —	2,12 —	2,12 —	2,12 —	2,12 —	2,12 —	2,12 —
	0,63	2,20 —	2,20 —	2,20 —	2,20 —	2,20 —	2,20 —	2,20 —
	0,75	2,80 —	2,80 —	2,80 —	2,80 —	2,80 —	2,80 —	2,80 —
	0,88	3,50 —	3,50 —	3,50 —	3,50 —	3,50 —	3,50 —	3,50 —
	1,00	4,20 —	4,20 —	4,20 —	4,20 —	4,20 —	4,20 —	4,20 —
	1,13	4,20 —	4,90 —	4,90 —	4,90 —	4,90 —	4,90 —	4,90 —
	1,25	4,20 —	5,60 —	5,60 —	5,60 —	5,60 —	5,60 —	5,60 —
	1,50	4,20 —	6,40 —	7,20 —	7,20 —	7,20 —	7,20 —	7,20 —
	1,75	4,20 —	6,40 —	7,20 —	7,20 —	7,20 —	7,20 —	7,20 —
	2,00	4,20 —	6,40 —	7,20 —	7,20 —	7,20 —	7,20 —	7,20 —
$N_{R,k}$ [kN] for $t_{n,I} =$	0,40	0,95 —	0,95 —	0,95 —	0,95 —	0,95 —	0,95 —	0,95 —
	0,50	1,21 —	1,21 —	1,21 —	1,21 —	1,21 —	1,21 —	1,21 —
	0,55	1,35 —	1,35 —	1,35 —	1,35 —	1,35 —	1,35 —	1,35 —
	0,63	1,56 —	1,56 —	1,56 —	1,56 —	1,56 —	1,56 —	1,56 —
	0,75	1,87 —	1,87 —	1,87 —	1,87 —	1,87 —	1,87 —	1,87 —
	0,88	2,22 —	2,22 —	2,22 —	2,22 —	2,22 —	2,22 —	2,22 —
	1,00	2,53 —	2,53 —	2,53 —	2,53 —	2,53 —	2,53 —	2,53 —
	1,13	2,88 —	2,88 —	2,88 —	2,88 —	2,88 —	2,88 —	2,88 —
	1,25	3,19 —	3,19 —	3,19 —	3,19 —	3,19 —	3,19 —	3,19 —
	1,50	3,85 —	3,85 —	3,85 —	3,85 —	3,85 —	3,85 —	3,85 —
	1,75	4,40 —	4,40 —	4,40 —	4,40 —	4,40 —	4,40 —	4,40 —
	2,00	4,40 —	4,40 —	4,40 —	4,40 —	4,40 —	4,40 —	4,40 —

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR-)18-5,5xL, JT6-(FR-)18-5,5xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \phi 11$ mm

Annex 74

English translation prepared by DIBt

Materials:
 Fastener: stainless steel (A2) – EN ISO 3506
 stainless steel (A4) – EN ISO 3506
 Washer: stainless steel (A2/A4) – EN ISO 3506
 with vulcanised EPDM seal
 Component I: S320GD or S350GD – EN 10346
 Component II: S235 to S355 – EN 10025-1

Drilling capacity: $\Sigma t_i \leq 18,0$ mm

Timber substructures:
 no performance determined

$t_{N,II}$ [mm]	4,00	5,00	6,00	8,00	10,0	12,0	14,0	16,0
$M_{t,nom}$	7 Nm							
$V_{R,k}$ [kN] for $t_{N,I} =$	0,40	1,62 —	1,62 —	1,62 —	1,62 —	1,62 —	1,62 —	1,62 —
	0,50	2,07 —	2,07 —	2,07 —	2,07 —	2,07 —	2,07 —	2,07 —
	0,55	2,30 —	2,30 —	2,30 —	2,30 —	2,30 —	2,30 —	2,30 —
	0,63	2,50 —	2,50 —	2,50 —	2,50 —	2,50 —	2,50 —	2,50 —
	0,75	3,20 —	3,20 —	3,20 —	3,20 —	3,20 —	3,20 —	3,20 —
	0,88	3,90 —	3,90 —	3,90 —	3,90 —	3,90 —	3,90 —	3,90 —
	1,00	4,20 —	4,60 —	4,60 —	4,60 —	4,60 —	4,60 —	4,60 —
	1,13	4,20 —	5,30 —	5,30 —	5,30 —	5,30 —	5,30 —	5,30 —
	1,25	4,20 —	6,00 —	6,00 —	6,00 —	6,00 —	6,00 —	6,00 —
	1,50	4,20 —	6,40 —	7,20 —	7,60 —	7,60 —	7,60 —	7,60 —
	1,75	4,20 —	6,40 —	7,20 —	7,60 —	7,60 —	7,60 —	7,60 —
	2,00	4,20 —	6,40 —	7,20 —	7,60 —	7,60 —	7,60 —	7,60 —
$N_{R,k}$ [kN] for $t_{N,I} =$	0,40	1,03 —	1,03 —	1,03 —	1,03 —	1,03 —	1,03 —	1,03 —
	0,50	1,32 —	1,32 —	1,32 —	1,32 —	1,32 —	1,32 —	1,32 —
	0,55	1,46 —	1,46 —	1,46 —	1,46 —	1,46 —	1,46 —	1,46 —
	0,63	1,69 —	1,69 —	1,69 —	1,69 —	1,69 —	1,69 —	1,69 —
	0,75	2,03 —	2,03 —	2,03 —	2,03 —	2,03 —	2,03 —	2,03 —
	0,88	2,40 —	2,40 —	2,40 —	2,40 —	2,40 —	2,40 —	2,40 —
	1,00	2,75 —	2,75 —	2,75 —	2,75 —	2,75 —	2,75 —	2,75 —
	1,13	3,12 —	3,12 —	3,12 —	3,12 —	3,12 —	3,12 —	3,12 —
	1,25	3,46 —	3,46 —	3,46 —	3,46 —	3,46 —	3,46 —	3,46 —
	1,50	4,18 —	4,18 —	4,18 —	4,18 —	4,18 —	4,18 —	4,18 —
	1,75	4,70 —	4,74 —	4,74 —	4,74 —	4,74 —	4,74 —	4,74 —
	2,00	4,70 —	4,74 —	4,74 —	4,74 —	4,74 —	4,74 —	4,74 —

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR-)18-5,5xL, JT6-(FR-)18-5,5xL
 with hexagon head or round head with Torx® drive system and sealing washer $\geq \phi 11$ mm

Annex 75

English translation prepared by DIBt

Materials:
Fastener: stainless steel (A2) – EN ISO 3506
 stainless steel (A4) – EN ISO 3506
Washer: stainless steel (A2/A4) – EN ISO 3506
 with vulcanised EPDM seal
Component I: S280GD – EN 10346
Component II: S235 to S355 – EN 10025-1

Drilling capacity: $\Sigma t \leq 18,0$ mm

Timber substructures:
 no performance determined

$t_{N,II}$ [mm]	4,00	5,00	6,00	8,00	10,0	12,0	14,0	16,0
$M_{t,nom}$	7 Nm							
$V_{R,k}$ [kN] for $t_{N,I} =$	0,40	1,50 ac	1,50 ac	1,50 ac	1,50 ac	1,50 ac	1,50 ac	1,50 ac
	0,50	1,91 ac	1,91 ac	1,91 ac	1,91 ac	1,91 ac	1,91 ac	1,91 ac
	0,55	2,12 ac	2,12 ac	2,12 ac	2,12 ac	2,12 ac	2,12 ac	2,12 ac
	0,63	2,20 ac	2,20 ac	2,20 ac	2,20 ac	2,20 ac	2,20 ac	2,20 ac
	0,75	2,80 ac	2,80 ac	2,80 ac	2,80 ac	2,80 ac	2,80 ac	2,80 ac
	0,88	3,50 ac	3,50 ac	3,50 ac	3,50 ac	3,50 ac	3,50 ac	3,50 ac
	1,00	4,20 —	4,20 ac	4,20 ac	4,20 ac	4,20 ac	4,20 ac	4,20 ac
	1,13	4,20 —	4,90 —	4,90 —	4,90 —	4,90 —	4,90 —	4,90 —
	1,25	4,20 —	5,60 —	5,60 —	5,60 —	5,60 —	5,60 —	5,60 —
	1,50	4,20 —	6,40 —	7,20 —	7,20 —	7,20 —	7,20 —	7,20 —
$N_{R,k}$ [kN] for $t_{N,I} =$	0,40	1,38 ac	1,38 ac	1,38 ac	1,38 ac	1,38 ac	1,38 ac	1,38 ac
	0,50	1,77 ac	1,77 ac	1,77 ac	1,77 ac	1,77 ac	1,77 ac	1,77 ac
	0,55	1,96 ac	1,96 ac	1,96 ac	1,96 ac	1,96 ac	1,96 ac	1,96 ac
	0,63	2,40 ac	2,40 ac	2,40 ac	2,40 ac	2,40 ac	2,40 ac	2,40 ac
	0,75	3,10 ac	3,10 ac	3,10 ac	3,10 ac	3,10 ac	3,10 ac	3,10 ac
	0,88	3,90 ac	3,90 ac	3,90 ac	3,90 ac	3,90 ac	3,90 ac	3,90 ac
	1,00	4,70 —	4,70 ac	4,70 ac	4,70 ac	4,70 ac	4,70 ac	4,70 ac
	1,13	4,70 —	5,60 —	5,60 —	5,60 —	5,60 —	5,60 —	5,60 —
	1,25	4,70 —	6,40 —	6,40 —	6,40 —	6,40 —	6,40 —	6,40 —
	1,50	4,70 —	6,40 —	6,40 —	6,40 —	6,40 —	6,40 —	6,40 —

Fastening screws JA, JB, JT, JZ and JF	Annex 76
Self-drilling screw JT3-(FR-)18-5,5xL, JT6-(FR-)18-5,5xL with hexagon head or round head with Torx® drive system and sealing washer $\geq \phi 16$ mm	

English translation prepared by DIBt

Materials:
Fastener: stainless steel (A2) – EN ISO 3506
 stainless steel (A4) – EN ISO 3506
Washer: stainless steel (A2/A4) – EN ISO 3506
 with vulcanised EPDM seal
Component I: S320GD or S350GD – EN 10346
Component II: S235 to S355 – EN 10025-1

Drilling capacity: $\Sigma t_i \leq 18,0$ mm

Timber substructures:
no performance determined

$t_{N,II}$ [mm]	4,00	5,00	6,00	8,00	10,0	12,0	14,0	16,0
$M_{t,nom}$	7 Nm							
$V_{R,k}$ [kN] for $t_{N,I} =$	0,40	1,62 ac	1,62 ac	1,62 ac	1,62 ac	1,62 ac	1,62 ac	1,62 ac
	0,50	2,07 ac	2,07 ac	2,07 ac	2,07 ac	2,07 ac	2,07 ac	2,07 ac
	0,55	2,30 ac	2,30 ac	2,30 ac	2,30 ac	2,30 ac	2,30 ac	2,30 ac
	0,63	2,50 ac	2,50 ac	2,50 ac	2,50 ac	2,50 ac	2,50 ac	2,50 ac
	0,75	3,20 ac	3,20 ac	3,20 ac	3,20 ac	3,20 ac	3,20 ac	3,20 ac
	0,88	3,90 ac	3,90 ac	3,90 ac	3,90 ac	3,90 ac	3,90 ac	3,90 ac
	1,00	4,20 —	4,60 ac	4,60 ac	4,60 ac	4,60 ac	4,60 ac	4,60 ac
	1,13	4,20 —	5,30 —	5,30 —	5,30 —	5,30 —	5,30 —	5,30 —
	1,25	4,20 —	6,00 —	6,00 —	6,00 —	6,00 —	6,00 —	6,00 —
	1,50	4,20 —	6,40 —	7,20 —	7,60 —	7,60 —	7,60 —	7,60 —
$N_{R,k}$ [kN] for $t_{N,I} =$	0,40	1,50 ac	1,50 ac	1,50 ac	1,50 ac	1,50 ac	1,50 ac	1,50 ac
	0,50	1,91 ac	1,91 ac	1,91 ac	1,91 ac	1,91 ac	1,91 ac	1,91 ac
	0,55	2,12 ac	2,12 ac	2,12 ac	2,12 ac	2,12 ac	2,12 ac	2,12 ac
	0,63	2,60 ac	2,60 ac	2,60 ac	2,60 ac	2,60 ac	2,60 ac	2,60 ac
	0,75	3,30 ac	3,30 ac	3,30 ac	3,30 ac	3,30 ac	3,30 ac	3,30 ac
	0,88	4,20 ac	4,20 ac	4,20 ac	4,20 ac	4,20 ac	4,20 ac	4,20 ac
	1,00	4,70 —	5,00 ac	5,00 ac	5,00 ac	5,00 ac	5,00 ac	5,00 ac
	1,13	4,70 —	6,00 —	6,00 —	6,00 —	6,00 —	6,00 —	6,00 —
	1,25	4,70 —	6,90 —	6,90 —	6,90 —	6,90 —	6,90 —	6,90 —
	1,50	4,70 —	6,90 —	6,90 —	6,90 —	6,90 —	6,90 —	6,90 —

Fastening screws JA, JB, JT, JZ and JF	Annex 77
Self-drilling screw JT3-(FR-)18-5,5xL, JT6-(FR-)18-5,5xL with hexagon head or round head with Torx® drive system and sealing washer $\geq \phi 16$ mm	

	<p>Materials:</p> <p>Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506</p> <p>Washer: stainless steel (A2/A4) – EN ISO 3506 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</p>
<p>Drilling capacity: $\Sigma t \leq 18,0 \text{ mm}$</p>	
<p>Timber substructures: no performance determined</p>	

$t_{N,II}$ [mm]	4,00	5,00	6,00	8,00	10,0	12,0	14,0	16,0
$M_{t,nom}$	—							
$V_{R,k}$ [kN] for $t_{N,I} =$	0,50	0,77 —	0,77 —	0,77 —	0,77 —	0,77 —	0,77 —	0,77 —
	0,60	0,94 —	0,94 —	0,94 —	0,94 —	0,94 —	0,94 —	0,94 —
	0,70	1,10 —	1,10 —	1,10 —	1,10 —	1,10 —	1,10 —	1,10 —
	0,80	1,27 —	1,27 —	1,27 —	1,27 —	1,27 —	1,27 —	1,27 —
	0,90	1,48 —	1,48 —	1,48 —	1,48 —	1,48 —	1,48 —	1,48 —
	1,00	1,69 —	1,69 —	1,69 —	1,69 —	1,69 —	1,69 —	1,69 —
	1,20	1,94 —	1,94 —	1,94 —	1,94 —	1,94 —	1,94 —	1,94 —
	1,50	2,32 —	2,32 —	2,32 —	2,32 —	2,32 —	2,32 —	2,32 —
	2,00	2,91 —	3,00 —	3,09 —	3,26 —	3,26 —	3,26 —	3,26 —
$N_{R,k}$ [kN]	1,11	1,58	2,21	3,48	3,48	3,48	3,48	3,48

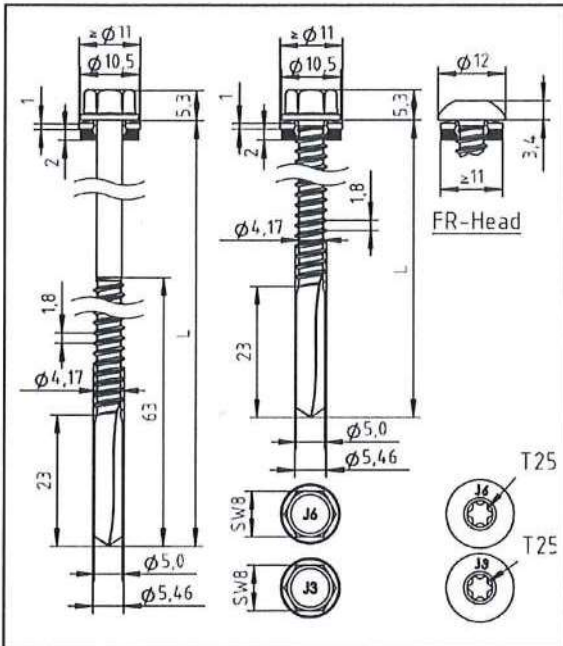
– Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR-)18-5,5xL, JT6-(FR-)18-5,5xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \phi 11 \text{ mm}$

Annex 78



Materials:

- Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506
- Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal
- Component I: aluminium alloy
with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573
- Component II: aluminium alloy
with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573

Drilling capacity: $\Sigma t \leq 18,0 \text{ mm}$

Timber substructures:

no performance determined

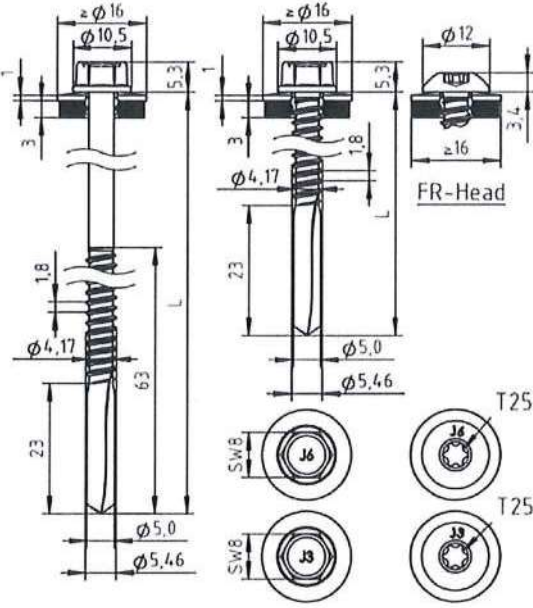
$t_{N,II}$ [mm]	4,00	5,00	6,00	8,00	10,0	12,0	14,0	16,0
$M_{t,nom}$	—							
$V_{R,k}$ [kN] for $t_{N,I} =$	0,50	1,00 —	1,00 —	1,00 —	1,00 —	1,00 —	1,00 —	1,00 —
	0,60	1,22 —	1,22 —	1,22 —	1,22 —	1,22 —	1,22 —	1,22 —
	0,70	1,44 —	1,44 —	1,44 —	1,44 —	1,44 —	1,44 —	1,44 —
	0,80	1,66 —	1,66 —	1,66 —	1,66 —	1,66 —	1,66 —	1,66 —
	0,90	1,93 —	1,93 —	1,93 —	1,93 —	1,93 —	1,93 —	1,93 —
	1,00	2,20 —	2,20 —	2,20 —	2,20 —	2,20 —	2,20 —	2,20 —
	1,20	2,52 —	2,52 —	2,52 —	2,52 —	2,52 —	2,52 —	2,52 —
	1,50	3,02 —	3,02 —	3,02 —	3,02 —	3,02 —	3,02 —	3,02 —
	2,00	3,79 —	3,91 —	4,02 —	4,25 —	4,25 —	4,25 —	4,25 —
$N_{R,k}$ [kN]	1,45	2,06	2,89	4,54	4,54	4,54	4,54	4,54

– 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.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR)-18-5,5xL, JT6-(FR)-18-5,5xL
with hexagon head or round head with Torx® drive system and sealing washer $\geq \text{Ø}11 \text{ mm}$

Annex 79



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573

Component II: aluminium alloy
with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573

Drilling capacity: $\Sigma t \leq 18,0 \text{ mm}$

Timber substructures:
no performance determined

$t_{N,I} [\text{mm}]$	4,00	5,00	6,00	8,00	10,0	12,0	14,0	16,0
$M_{t,nom}$	—							
$V_{R,k} [\text{kN}]$ for $t_{N,I} =$	0,50	0,77 —	0,77 —	0,77 —	0,77 —	0,77 —	0,77 —	0,77 —
	0,60	0,94 —	0,94 —	0,94 —	0,94 —	0,94 —	0,94 —	0,94 —
	0,70	1,10 —	1,10 —	1,10 —	1,10 —	1,10 —	1,10 —	1,10 —
	0,80	1,27 —	1,27 —	1,27 —	1,27 —	1,27 —	1,27 —	1,27 —
	0,90	1,48 —	1,48 —	1,48 —	1,48 —	1,48 —	1,48 —	1,48 —
	1,00	1,69 —	1,69 —	1,69 —	1,69 —	1,69 —	1,69 —	1,69 —
	1,20	1,94 —	1,94 —	1,94 —	1,94 —	1,94 —	1,94 —	1,94 —
	1,50	2,32 —	2,32 —	2,32 —	2,32 —	2,32 —	2,32 —	2,32 —
	2,00	2,91 —	3,00 —	3,09 —	3,26 —	3,26 —	3,26 —	3,26 —
$N_{R,k} [\text{kN}]$	1,11	1,58	2,21	3,48	3,48	3,48	3,48	3,48

– 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.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR)-18-5,5xL, JT6-(FR)-18-5,5xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \varnothing 16 \text{ mm}$

Annex 80

	Materials: Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal Component I: aluminium alloy with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573 Component II: aluminium alloy with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573
	Drilling capacity: $\Sigma t \leq 18,0 \text{ mm}$
	Timber substructures: no performance determined

$t_{N,II}$ [mm]	4,00	5,00	6,00	8,00	10,0	12,0	14,0	16,0
$M_{t,nom}$	—							
$V_{R,k}$ [kN] for $t_{N,I} =$	0,50	1,00 —	1,00 —	1,00 —	1,00 —	1,00 —	1,00 —	1,00 —
	0,60	1,22 —	1,22 —	1,22 —	1,22 —	1,22 —	1,22 —	1,22 —
	0,70	1,44 —	1,44 —	1,44 —	1,44 —	1,44 —	1,44 —	1,44 —
	0,80	1,66 —	1,66 —	1,66 —	1,66 —	1,66 —	1,66 —	1,66 —
	0,90	1,93 —	1,93 —	1,93 —	1,93 —	1,93 —	1,93 —	1,93 —
	1,00	2,20 —	2,20 —	2,20 —	2,20 —	2,20 —	2,20 —	2,20 —
	1,20	2,52 —	2,52 —	2,52 —	2,52 —	2,52 —	2,52 —	2,52 —
	1,50	3,02 —	3,02 —	3,02 —	3,02 —	3,02 —	3,02 —	3,02 —
	2,00	3,79 —	3,91 —	4,02 —	4,25 —	4,25 —	4,25 —	4,25 —
$N_{R,k}$ [kN]	1,45	2,06	2,89	4,54	4,54	4,54	4,54	4,54

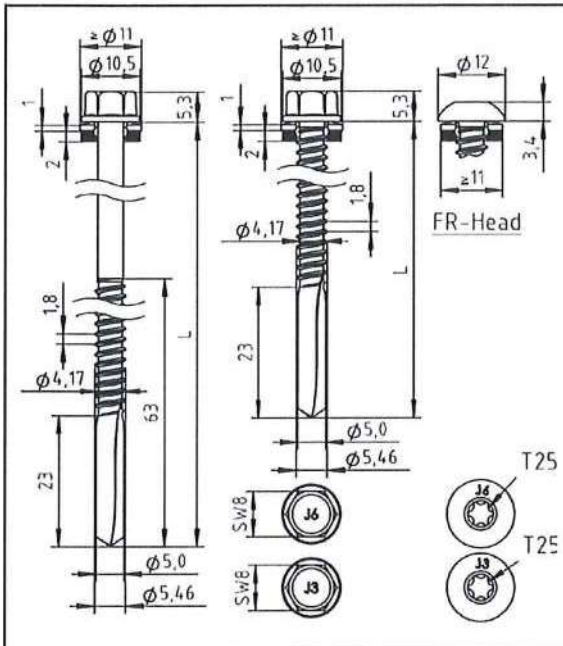
– Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR-)18-5,5xL, JT6-(FR-)18-5,5xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \varnothing 16 \text{ mm}$

Annex 81



Materials:

- Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506
- Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal
- Component I: aluminium alloy
with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573
- Component II: S235 to S355 – EN 10025-1

Drilling capacity: $\Sigma t \leq 18,0 \text{ mm}$

Timber substructures:

no performance determined

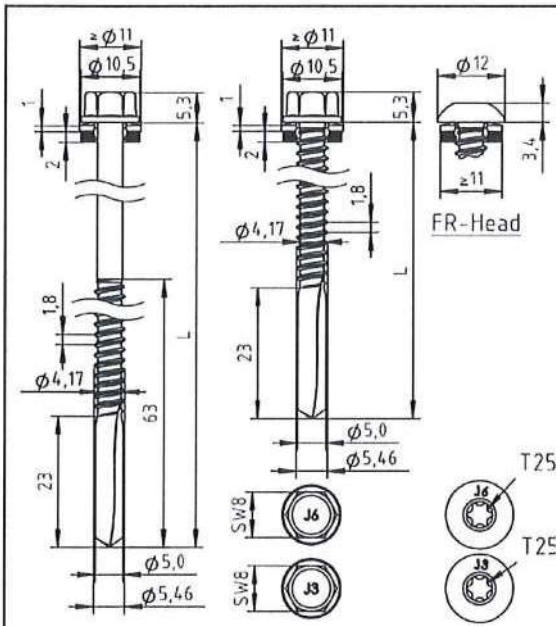
$t_{N,II}$ [mm]	4,00	5,00	6,00	8,00	10,0	12,0	14,0	16,0	
$M_{t,nom}$	—								
$V_{R,k}$ [kN] for $t_{N,j} =$	0,77	0,77	0,77	0,77	0,77	0,77	0,77	0,77	
0,60	0,94	0,94	0,94	0,94	0,94	0,94	0,94	0,94	
0,70	1,10	1,10	1,10	1,10	1,10	1,10	1,10	1,10	
0,80	1,27	1,27	1,27	1,27	1,27	1,27	1,27	1,27	
0,90	1,48	1,48	1,48	1,48	1,48	1,48	1,48	1,48	
1,00	1,69	1,69	1,69	1,69	1,69	1,69	1,69	1,69	
1,20	1,94	1,94	1,94	1,94	1,94	1,94	1,94	1,94	
1,50	2,32	2,32	2,32	2,32	2,32	2,32	2,32	2,32	
2,00	2,91	3,00	3,09	3,26	3,26	3,26	3,26	3,26	
$N_{R,k}$ [kN]	4,70	6,40	6,40	6,40	6,40	6,40	6,40	6,40	

– 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.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR-)18-5,5xL, JT6-(FR-)18-5,5xL
with hexagon head or round head with Torx® drive system and sealing washer $\geq \text{Ø}11 \text{ mm}$

Annex 82



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573

Component II: S235 to S355 – EN 10025-1

Drilling capacity: $\Sigma t \leq 18,0 \text{ mm}$

Timber substructures:

no performance determined

$t_{N,II}$ [mm]	4,00	5,00	6,00	8,00	10,0	12,0	14,0	16,0
$M_{t,nom}$	—							
$V_{R,k}$ [kN] for $t_{N,I} =$	0,50	1,00 —	1,00 —	1,00 —	1,00 —	1,00 —	1,00 —	1,00 —
	0,60	1,22 —	1,22 —	1,22 —	1,22 —	1,22 —	1,22 —	1,22 —
	0,70	1,44 —	1,44 —	1,44 —	1,44 —	1,44 —	1,44 —	1,44 —
	0,80	1,66 —	1,66 —	1,66 —	1,66 —	1,66 —	1,66 —	1,66 —
	0,90	1,93 —	1,93 —	1,93 —	1,93 —	1,93 —	1,93 —	1,93 —
	1,00	2,20 —	2,20 —	2,20 —	2,20 —	2,20 —	2,20 —	2,20 —
	1,20	2,52 —	2,52 —	2,52 —	2,52 —	2,52 —	2,52 —	2,52 —
	1,50	3,02 —	3,02 —	3,02 —	3,02 —	3,02 —	3,02 —	3,02 —
	2,00	3,79 —	3,91 —	4,02 —	4,25 —	4,25 —	4,25 —	4,25 —
$N_{R,k}$ [kN]	4,70	6,40	6,40	6,40	6,40	6,40	6,40	6,40

– 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.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR-)18-5,5xL, JT6-(FR-)18-5,5xL
with hexagon head or round head with Torx® drive system and sealing washer $\geq \phi 11 \text{ mm}$

Annex 83

	Materials: Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal Component I: aluminium alloy with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573 Component II: S235 to S355 – EN 10025-1
	Drilling capacity: $\Sigma t \leq 18,0 \text{ mm}$
	Timber substructures: no performance determined

$t_{N,II}$ [mm]	4,00	5,00	6,00	8,00	10,0	12,0	14,0	16,0
$M_{t,nom}$	—							
$V_{R,k}$ [kN] for $t_{N,I} =$	0,50	0,77 ac	0,77 ac	0,77 ac	0,77 ac	0,77 ac	0,77 ac	0,77 ac
	0,60	0,94 ac	0,94 ac	0,94 ac	0,94 ac	0,94 ac	0,94 ac	0,94 ac
	0,70	1,10 ac	1,10 ac	1,10 ac	1,10 ac	1,10 ac	1,10 ac	1,10 ac
	0,80	1,27 ac	1,27 ac	1,27 ac	1,27 ac	1,27 ac	1,27 ac	1,27 ac
	0,90	1,48 ac	1,48 ac	1,48 ac	1,48 ac	1,48 ac	1,48 ac	1,48 ac
	1,00	1,69 ac	1,69 ac	1,69 ac	1,69 ac	1,69 ac	1,69 ac	1,69 ac
	1,20	1,94 —	1,94 —	1,94 —	1,94 —	1,94 —	1,94 —	1,94 —
	1,50	2,32 —	2,32 —	2,32 —	2,32 —	2,32 —	2,32 —	2,32 —
	2,00	2,91 —	3,00 —	3,09 —	3,26 —	3,26 —	3,26 —	3,26 —
$N_{R,k}$ [kN]	4,70	6,40	6,40	6,40	6,40	6,40	6,40	6,40

– 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.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR)-18-5,5xL, JT6-(FR)-18-5,5xL
with hexagon head or round head with Torx® drive system and sealing washer $\geq \text{Ø}16 \text{ mm}$

Annex 84

	<p>Materials:</p> <p>Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506</p> <p>Washer: stainless steel (A2/A4) – EN ISO 3506 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: S235 to S355 – EN 10025-1</p>
	<p>Drilling capacity: $\Sigma t \leq 18,0 \text{ mm}$</p> <p>Timber substructures: no performance determined</p>

$t_{N,II}$ [mm]	4,00	5,00	6,00	8,00	10,0	12,0	14,0	16,0
$M_{t,nom}$	—							
$V_{R,k}$ [kN] for $t_{N,I} =$	0,50	1,00 ac	1,00 ac	1,00 ac	1,00 ac	1,00 ac	1,00 ac	1,00 ac
	0,60	1,22 ac	1,22 ac	1,22 ac	1,22 ac	1,22 ac	1,22 ac	1,22 ac
	0,70	1,44 ac	1,44 ac	1,44 ac	1,44 ac	1,44 ac	1,44 ac	1,44 ac
	0,80	1,66 ac	1,66 ac	1,66 ac	1,66 ac	1,66 ac	1,66 ac	1,66 ac
	0,90	1,93 ac	1,93 ac	1,93 ac	1,93 ac	1,93 ac	1,93 ac	1,93 ac
	1,00	2,20 ac	2,20 ac	2,20 ac	2,20 ac	2,20 ac	2,20 ac	2,20 ac
	1,20	2,52 —	2,52 —	2,52 —	2,52 —	2,52 —	2,52 —	2,52 —
	1,50	3,02 —	3,02 —	3,02 —	3,02 —	3,02 —	3,02 —	3,02 —
	2,00	3,79 —	3,91 —	4,02 —	4,25 —	4,25 —	4,25 —	4,25 —
$N_{R,k}$ [kN]	4,70	6,40	6,40	6,40	6,40	6,40	6,40	6,40

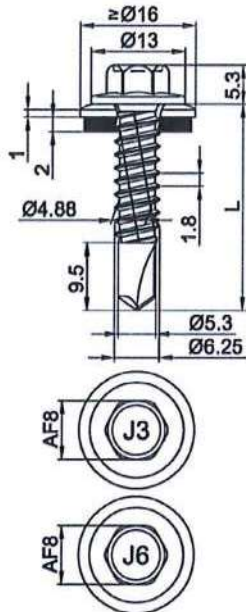
– Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR-)18-5,5xL, JT6-(FR-)18-5,5xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \text{Ø}16 \text{ mm}$

Annex 85



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: S280GD to S350GD – EN 10346

Component II: S235 to S355 – EN 10025-1
S280GD to S350GD – EN 10346

Drilling capacity: $\Sigma t_i \leq 6,50$ mm

Timber substructures:

no performance determined

$t_{N,II}$ [mm]	2,00	2,50	3,00	4,00	5,00	6,00	
$M_{t,nom}$	7Nm						
$V_{R,k}$ [kN] for $t_{N,I} =$	0,50	1,80 abcd	1,80 abcd	1,80 abcd	1,80 abcd	1,80 abc	1,80 a
	0,55	2,20 abcd	2,20 abcd	2,20 abcd	2,20 abcd	2,20 abc	— —
	0,63	2,60 abcd	2,60 abcd	2,60 abcd	2,60 abcd	2,60 abc	— —
	0,75	3,40 ac	3,40 ac	3,40 ac	3,40 ac	3,40 ac	— —
	0,88	3,80 ac	3,90 ac	4,10 ac	4,10 ac	4,10 a	— —
	1,00	4,20 ac	4,40 ac	4,70 ac	4,70 ac	4,70 a	— —
	1,13	4,70 ac	5,00 ac	5,40 ac	5,70 ac	5,70 a	— —
	1,25	5,10 ac	5,50 ac	6,00 ac	6,60 ac	6,60 a	— —
	1,50	5,70 ac	6,40 ac	7,00 ac	7,50 a	7,90 a	— —
	1,75	5,70 ac	6,40 ac	7,00 ac	7,50 —	— —	— —
	2,00	5,70 ac	6,40 ac	7,00 ac	7,50 —	— —	— —
$N_{R,k}$ [kN] for $t_{N,I} =$	0,50	1,50 abcd	1,50 abcd	1,50 abcd	1,50 abcd	1,50 abc	1,50 a
	0,55	2,10 abcd	2,10 abcd	2,10 abcd	2,10 abcd	2,10 abc	— —
	0,63	2,70 abcd	2,70 abcd	2,70 abcd	2,70 abcd	2,70 abc	— —
	0,75	3,00 ac	3,70 ac	3,70 ac	3,70 ac	3,70 a	— —
	0,88	3,00 ac	4,20 ac	4,20 ac	4,20 ac	4,20 a	— —
	1,00	3,00 ac	4,20 ac	4,70 ac	4,70 ac	4,70 a	— —
	1,13	3,00 ac	4,20 ac	4,80 ac	5,60 ac	5,60 a	— —
	1,25	3,00 ac	4,20 ac	4,80 ac	6,40 ac	6,40 a	— —
	1,50	3,00 ac	4,20 ac	4,80 ac	8,30 a	8,30 a	— —
	1,75	3,00 ac	4,20 ac	4,80 ac	8,30 —	— —	— —
	2,00	3,00 ac	4,20 ac	4,80 ac	8,30 —	— —	— —

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-6-6,3xL, JT6-6-6,3xL
with hexagonal head and sealing washer $\geq \varnothing 16$ mm

Annex 86

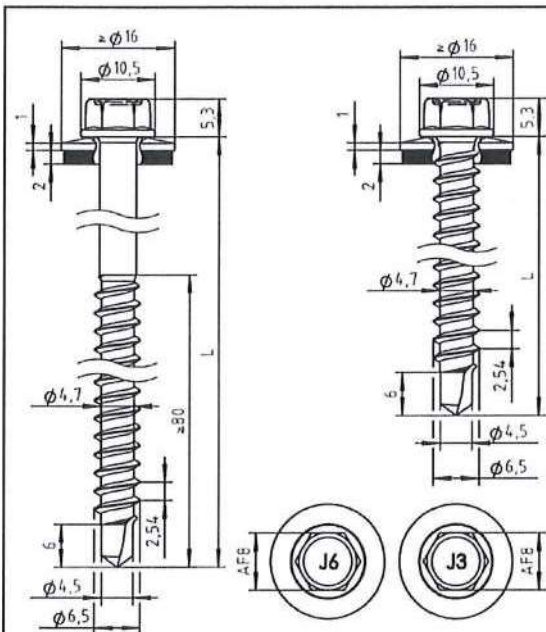
	Materials: Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4 / 1.4578) – EN ISO 3506 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal Component I: S280GD – EN 10346 Component II: S235 – EN 10025-1 S280GD to S350GD – EN 10346 timber – EN 14081
	Drilling capacity: $\Sigma t_i \leq 2,00$ mm Timber substructures Performance determined with $M_{y,Rk} = 9,742$ Nm $F_{ax,k} = 8,575$ N/mm ² for $l_{ef} \geq 26,0$ mm

$t_{n,II}$ [mm]	0,63	0,75	0,88	1,00	1,13	1,25	1,50		
$M_{t,nom}$	3 Nm							—	
$V_{R,k}$ [kN] for $t_{n,I} =$								bearing resistance of component I	
0,50	—	—	—	—	—	—	—		
0,55	—	—	—	—	—	—	—		
0,63	1,30	1,30	1,30	1,30	1,30	1,30	1,30		
0,75	1,30	1,80	1,80	1,80	1,80	1,80	1,80		
0,88	1,30	1,80	2,60	2,60	2,60	—	2,60		
1,00	1,30	1,80	2,60	3,30	—	—	3,30		
1,13	1,30	1,80	2,60	—	—	—	3,30		
1,25	1,30	1,80	—	—	—	—	3,30		
1,50	1,30	1,80	—	—	—	—	3,30		
1,75	—	—	—	—	—	—	—		
2,00	—	—	—	—	—	—	—		
$N_{R,k}$ [kN] for $t_{n,I} =$								pull-through resistance of component I	
0,50	0,43	0,54	0,70	0,86	0,86	ac	0,86		
0,55	0,55	0,68	0,89	1,09	1,09	ac	1,09		
0,63	0,80	1,00	1,30	1,60	1,60	ac	1,60		
0,75	0,80	1,00	1,30	1,60	1,60	ac	1,60		
0,88	0,80	1,00	1,30	1,60	1,60	ac	—		
1,00	0,80	1,00	1,30	1,60	—	ac	—		
1,13	0,80	1,00	1,30	—	—	—	—		
1,25	0,80	1,00	—	—	—	—	—		
1,50	0,80	—	—	—	—	—	—		
1,75	—	—	—	—	—	—	—		
2,00	—	—	—	—	—	—	—		

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-2-6,5xL, JT6-2-6,5xL
with hexagonal head and sealing washer $\geq \varnothing 16$ mm

Annex 87



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: S280GD – EN 10346

Component II: timber – EN 14081

Drilling capacity: $\Sigma t \leq 2,00$ mm

Timber substructures

Performance determined with

$M_{y,Rk} = 9,742$ Nm
 $F_{ax,k} = 8,575$ N/mm² for $l_{ef} \geq 26,0$ mm

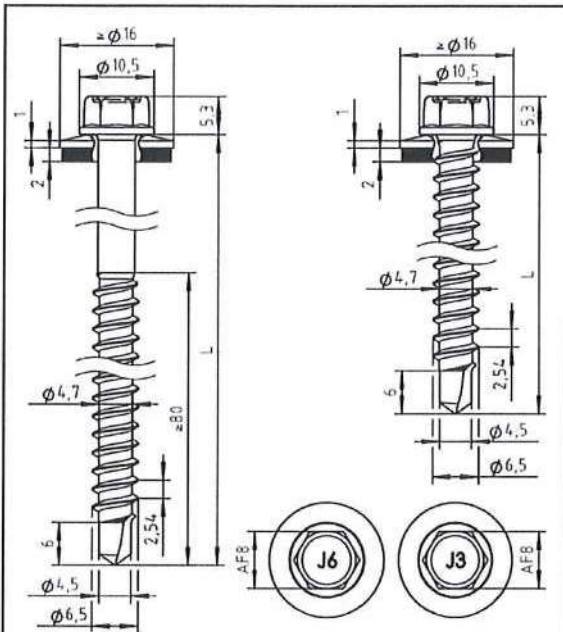
$t_{n,i}$ [mm]	l_g [mm]												
	32	38	42	48	52	58	62	68	72	78	82		
$V_{R,k}$ [kN] for $t_{n,i} =$	0,50	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	1,30	1,30	1,30	1,30	1,30	1,30	1,30	1,30	1,30	1,30	1,30	1,30
	0,75	1,80	1,80	1,80	1,80	1,80	1,80	1,80	1,80	1,80	1,80	1,80	1,80
	0,88	2,04	2,10	2,17	2,29	2,29	2,35	2,42	2,48	2,54	2,60	2,60	2,60
	1,00	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	3,30
	1,13	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	3,30
	1,25	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	3,30
	1,50	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	3,30
	1,75	—	—	—	—	—	—	—	—	—	—	—	—
2,00	—	—	—	—	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{n,i} =$	0,50	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19	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	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	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	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	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	—	—	—	—	—	—	—	—	—	—	—	—
2,00	—	—	—	—	—	—	—	—	—	—	—	—	

– The values indicated above, depending on the screw depth l_g shall apply to $k_{mod} = 0,90$ and the timber strength class C24 ($\rho_k = 350$ kg/m³). For other values of k_{mod} and strength classes see chapter 4.2.2.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-2-6,5xL, JT6-2-6,5xL
with hexagon head and sealing washer $\geq \phi 16$ mm

Annex 88



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506
Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal
Component I: aluminium alloy
with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573
Component II: timber – EN 14081

Drilling capacity: $\Sigma t_i \leq 2,00 \text{ mm}$

Timber substructures

Performance determined with

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

$t_{n,i}$ [mm]	l_g [mm]										
	33	36	39	42	45	48	51	54	60		
$V_{R,k}$ [kN] for $t_{n,i} =$	0,54	0,54	0,54	0,54	0,54	0,54	0,54	0,54	0,54	0,54	bearing resistance of component I
0,60	0,74	0,74	0,74	0,74	0,74	0,74	0,74	0,74	0,74	0,74	
0,70	0,93	0,93	0,93	0,93	0,93	0,93	0,93	0,93	0,93	0,93	
0,80	1,13	1,13	1,13	1,13	1,13	1,13	1,13	1,13	1,13	1,13	
0,90	1,25	1,25	1,25	1,25	1,25	1,25	1,25	1,25	1,25	1,25	
1,00	1,30	1,37	1,37	1,37	1,37	1,37	1,37	1,37	1,37	1,37	
1,20	1,30	1,45	1,60	1,70	1,70	1,70	1,70	1,70	1,70	1,70	
1,50	1,30	1,45	1,60	1,70	1,70	1,70	1,70	1,70	1,70	1,70	
2,00	1,30	1,45	1,60	1,70	1,70	1,70	1,70	1,70	1,70	1,70	
$N_{R,II,k}$ [kN] =	1,12	1,25	1,38	1,51	1,64	1,77	1,90	2,03	2,16	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.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-2-6,5xL, JT6-2-6,5xL
with hexagon head and sealing washer $\geq \text{ø}16 \text{ mm}$

Annex 89

Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573

Component II: timber – EN 14081

Drilling capacity: $\Sigma t_i \leq 2,00 \text{ mm}$

Timber substructures

Performance determined with

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

$t_{N,i}$ [mm]	l_g [mm]										
	33	36	39	42	45	48	51	54	60		
$V_{R,k}$ [kN] for $t_{N,i} =$	0,70	0,70	0,70	0,70	0,70	0,70	0,70	0,70	0,70	0,70	bearing resistance of component I
0,60	0,96	0,96	0,96	0,96	0,96	0,96	0,96	0,96	0,96	0,96	
0,70	1,21	1,21	1,21	1,21	1,21	1,21	1,21	1,21	1,21	1,21	
0,80	1,30	1,45	1,47	1,47	1,47	1,47	1,47	1,47	1,47	1,47	
0,90	1,30	1,45	1,60	1,63	1,63	1,63	1,63	1,63	1,63	1,63	
1,00	1,30	1,45	1,60	1,75	1,78	1,78	1,78	1,78	1,78	1,78	
1,20	1,30	1,45	1,60	1,75	1,90	2,05	2,20	2,22	2,22	2,22	
1,50	1,30	1,45	1,60	1,75	1,90	2,05	2,20	2,22	2,22	2,22	
2,00	1,30	1,45	1,60	1,75	1,90	2,05	2,20	2,22	2,22	2,22	
$N_{R,II,k}$ [kN] =	1,12	1,25	1,38	1,51	1,64	1,77	1,90	2,03	2,16	failure of component II see chapter 4.2.2	

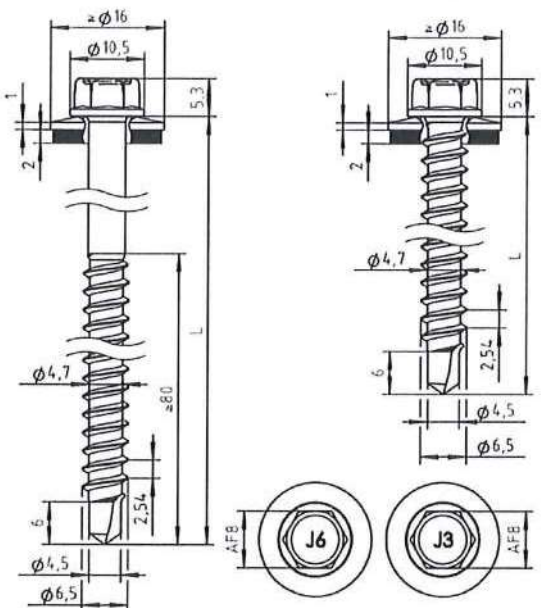
- Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.
- The values indicated above, depending on the screw depth l_g shall apply to $k_{mod} = 0,90$ and the timber strength class C24 ($\rho_k = 350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

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-2-6,5xL, JT6-2-6,5xL

with hexagon head and sealing washer $\geq \phi 16 \text{ mm}$

Annex 90



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: S320GD – EN 10346
Component II: S235 – EN 10025-1
S280GD to S350GD – EN 10346

Drilling capacity: $\Sigma t_i \leq 2,00$ mm

Timber substructures

Performance determined with

$M_{y,Rk} = 9,742$ Nm
 $F_{ax,k} = 8,575$ N/mm² for $l_{ef} \geq 26,0$ mm

$t_{n,II}$ [mm]	0,63	0,75	0,88	1,00	1,13	1,25	1,50		
$M_{t,nom}$	3 Nm							—	
$V_{R,k}$ [kN] for $t_{n,I} =$								bearing resistance of component I	
0,50	—	—	—	—	—	—	—		
0,55	—	—	—	—	—	—	—		
0,63	1,30	1,40	1,40	1,40	1,40	1,40	1,40		
0,75	1,30	1,80	2,00	2,00	2,00	2,00	2,00		
0,88	1,30	1,80	2,60	2,60	2,80	—	—		
1,00	1,30	1,80	2,60	3,30	—	—	—		
1,13	1,30	1,80	2,60	—	—	—	—		
1,25	1,30	1,80	—	—	—	—	—		
1,50	1,30	1,80	—	—	—	—	—		
1,75	—	—	—	—	—	—	—	—	
2,00	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{n,I} =$								pull-through resistance of component I	
0,50	0,43	0,54	0,70	0,86	0,86	0,86	0,86		
0,55	0,55	0,68	0,89	1,09	1,09	1,09	—		
0,63	0,80	1,00	1,30	1,60	1,60	1,60	—		
0,75	0,80	1,00	1,30	1,60	1,60	1,60	—		
0,88	0,80	1,00	1,30	1,60	1,60	—	—		
1,00	0,80	1,00	1,30	1,60	—	—	—		
1,13	0,80	1,00	1,30	—	—	—	—		
1,25	0,80	1,00	—	—	—	—	—		
1,50	0,80	—	—	—	—	—	—		
1,75	—	—	—	—	—	—	—		
2,00	—	—	—	—	—	—	—		

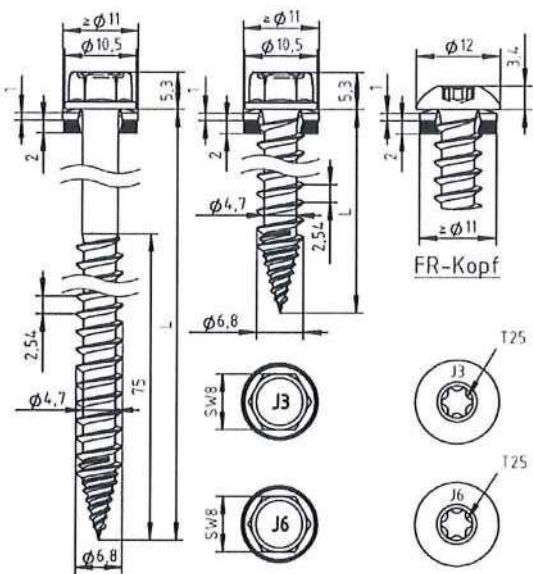
Fastening screws JA, JB, JT, JZ and JF	Annex 91
Self-drilling screw JT3-2-6,5xL, JT6-2-6,5xL with hexagon head and sealing washer $\geq \varnothing 16$ mm	

	Materials: Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal Component I: S320GD or S350GD – EN 10346 Component II: timber – EN 14081
	Drilling capacity: $\Sigma t_i \leq 2,00$ mm Timber substructures Performance determined with $M_{y,Rk} = 9,742$ Nm $F_{ax,k} = 8,575$ N/mm ² for $l_{ef} \geq 26,0$ mm

$t_{N,I}$ [mm]	l_g [mm]													
	32	38	42	48	52	58	62	68	72	78	82			
$V_{R,k}$ [kN] for $t_{N,I} =$	0,50	—	—	—	—	—	—	—	—	—	—	—	—	bearing resistance of component I
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	
	0,63	1,40	1,40	1,40	1,40	1,40	1,40	1,40	1,40	1,40	1,40	1,40	1,40	
	0,75	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	
	0,88	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	2,80	
	1,00	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	3,30	
	1,13	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	3,30	
	1,25	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	3,30	
	1,50	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	3,30	
	1,75	—	—	—	—	—	—	—	—	—	—	—	—	
2,00	—	—	—	—	—	—	—	—	—	—	—	—		
$N_{R,k}$ [kN] for $t_{N,I} =$	0,50	1,30	1,30	1,30	1,30	1,30	1,30	1,30	1,30	1,30	1,30	1,30	1,30	pull-through resistance of component I
	0,55	1,30	1,56	1,64	1,64	1,64	1,64	1,64	1,64	1,64	1,64	1,64	1,64	
	0,63	1,30	1,56	1,81	2,06	2,31	2,40	2,40	2,40	2,40	2,40	2,40	2,40	
	0,75	1,30	1,56	1,81	2,06	2,31	2,56	2,81	3,06	3,10	3,10	3,10	3,10	
	0,88	1,30	1,56	1,81	2,06	2,31	2,56	2,81	3,06	3,31	3,56	3,80	3,80	
	1,00	1,30	1,56	1,81	2,06	2,31	2,56	2,81	3,06	3,31	3,56	3,81	4,60	
	1,13	1,30	1,56	1,81	2,06	2,31	2,56	2,81	3,06	3,31	3,56	3,81	5,50	
	1,25	1,30	1,56	1,81	2,06	2,31	2,56	2,81	3,06	3,31	3,56	3,81	6,30	
	1,50	1,30	1,56	1,81	2,06	2,31	2,56	2,81	3,06	3,31	3,56	3,81	6,30	
	1,75	—	—	—	—	—	—	—	—	—	—	—	—	
2,00	—	—	—	—	—	—	—	—	—	—	—	—		

– The values indicated above, depending on the screw depth l_g shall apply to $k_{mod} = 0,90$ and the timber strength class C24 ($\rho_k = 350$ kg/m³). For other values of k_{mod} and strength classes see chapter 4.2.2.

Fastening screws JA, JB, JT, JZ and JF	Annex 92
Self-drilling screw JT3-2-6,5xL, JT6-2-6,5xL with hexagon head and sealing washer $\geq \varnothing 16$ mm	



Materials:
 Fastener: stainless steel (A2) – EN ISO 3506
 stainless steel (A4) – EN ISO 3506
 Washer: stainless steel (A2/A4) – EN ISO 3506
 with vulcanised EPDM seal
 Component I: S280GD to S350GD – EN 10346
 Component II: timber – EN 14081

Drilling capacity: $\Sigma t \leq 1,00$ mm

Timber substructures
 Performance determined with
 $M_{y,Rk} = 10,744$ Nm
 $f_{ax,k} = 11,080$ N/mm² for $l_{ef} \geq 34$ mm

$t_{N,I}$ [mm]	l_g [mm]												
	45	48	51	54	57	60	63	66	69	72	75		
$V_{R,k}$ [kN] for $t_{N,I} =$	0,40	1,77	1,77	1,77	1,77	1,77	1,77	1,77	1,77	1,77	1,77	1,77	1,77
	0,50	2,02	2,07	2,12	2,17	2,22	2,26	2,26	2,26	2,26	2,26	2,26	2,26
	0,55	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,43	2,48	2,51	2,51
	0,63	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,43	2,48	2,53	2,90
	0,75	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,43	2,48	2,53	3,10
	0,88	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,43	2,48	2,53	3,20
	1,00	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,43	2,48	2,53	3,60
	1,13	—	—	—	—	—	—	—	—	—	—	—	—
	1,25	—	—	—	—	—	—	—	—	—	—	—	—
	1,50	—	—	—	—	—	—	—	—	—	—	—	—
1,75	—	—	—	—	—	—	—	—	—	—	—	—	
2,00	—	—	—	—	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I} =$	0,40	0,95	0,95	0,95	0,95	0,95	0,95	0,95	0,95	0,95	0,95	0,95	0,95
	0,50	1,21	1,21	1,21	1,21	1,21	1,21	1,21	1,21	1,21	1,21	1,21	1,21
	0,55	1,35	1,35	1,35	1,35	1,35	1,35	1,35	1,35	1,35	1,35	1,35	1,35
	0,63	1,56	1,56	1,56	1,56	1,56	1,56	1,56	1,56	1,56	1,56	1,56	1,56
	0,75	1,87	1,87	1,87	1,87	1,87	1,87	1,87	1,87	1,87	1,87	1,87	1,87
	0,88	2,22	2,22	2,22	2,22	2,22	2,22	2,22	2,22	2,22	2,22	2,22	2,22
	1,00	2,31	2,51	2,53	2,53	2,53	2,53	2,53	2,53	2,53	2,53	2,53	2,53
	1,13	—	—	—	—	—	—	—	—	—	—	—	—
	1,25	—	—	—	—	—	—	—	—	—	—	—	—
	1,50	—	—	—	—	—	—	—	—	—	—	—	—
1,75	—	—	—	—	—	—	—	—	—	—	—	—	
2,00	—	—	—	—	—	—	—	—	—	—	—	—	

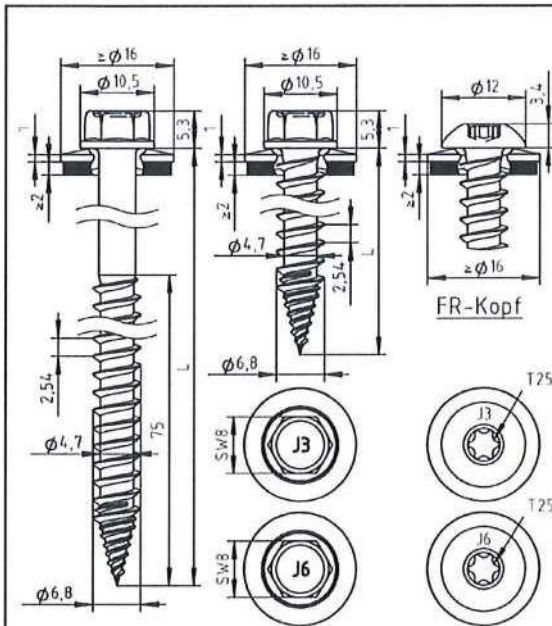
– The values indicated above, depending on the screw depth l_g shall apply to $k_{mod} = 0,90$ and the timber strength class C24 ($\rho_k = 350$ kg/m³). For other values of k_{mod} and strength classes see chapter 4.2.2.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw (chipless) JF3-(FR)-6,8xL, JF6-(FR)-6,8xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \varnothing 11$ mm

Annex 93



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: S280GD to S350GD – EN 10346

Component II: timber – EN 14081

Drilling capacity: $\Sigma t \leq 1,00$ mm

Timber substructures:

performance determined with

$M_{y,Rk} = 10,744$ Nm

$f_{ax,k} = 11,080$ N/mm² for $l_{ef} \geq 34$ mm

$t_{N,I}$ [mm]	l_g [mm]												
	45	48	51	54	57	60	63	66	69	72	75		
$V_{R,k}$ [kN] for $t_{N,I} =$	0,40	1,77	1,77	1,77	1,77	1,77	1,77	1,77	1,77	1,77	1,77	1,77	1,77
	0,50	2,02	2,07	2,12	2,17	2,22	2,26	2,26	2,26	2,26	2,26	2,26	2,26
	0,55	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,43	2,48	2,51	2,51
	0,63	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,43	2,48	2,53	2,90
	0,75	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,43	2,48	2,53	3,10
	0,88	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,43	2,48	2,53	3,20
	1,00	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,43	2,48	2,53	3,60
	1,13	—	—	—	—	—	—	—	—	—	—	—	—
	1,25	—	—	—	—	—	—	—	—	—	—	—	—
	1,50	—	—	—	—	—	—	—	—	—	—	—	—
	1,75	—	—	—	—	—	—	—	—	—	—	—	—
2,00	—	—	—	—	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I} =$	0,40	1,38	1,38	1,38	1,38	1,38	1,38	1,38	1,38	1,38	1,38	1,38	1,38
	0,50	1,77	1,77	1,77	1,77	1,77	1,77	1,77	1,77	1,77	1,77	1,77	1,77
	0,55	1,96	1,96	1,96	1,96	1,96	1,96	1,96	1,96	1,96	1,96	1,96	1,96
	0,63	2,27	2,27	2,27	2,27	2,27	2,27	2,27	2,27	2,27	2,27	2,27	2,27
	0,75	2,31	2,51	2,71	2,73	2,73	2,73	2,73	2,73	2,73	2,73	2,73	2,73
	0,88	2,31	2,51	2,71	2,92	3,12	3,23	3,23	3,23	3,23	3,23	3,23	3,23
	1,00	2,31	2,51	2,71	2,92	3,12	3,32	3,53	3,69	3,69	3,69	3,69	3,69
	1,13	—	—	—	—	—	—	—	—	—	—	—	—
	1,25	—	—	—	—	—	—	—	—	—	—	—	—
	1,50	—	—	—	—	—	—	—	—	—	—	—	—
	1,75	—	—	—	—	—	—	—	—	—	—	—	—
2,00	—	—	—	—	—	—	—	—	—	—	—	—	

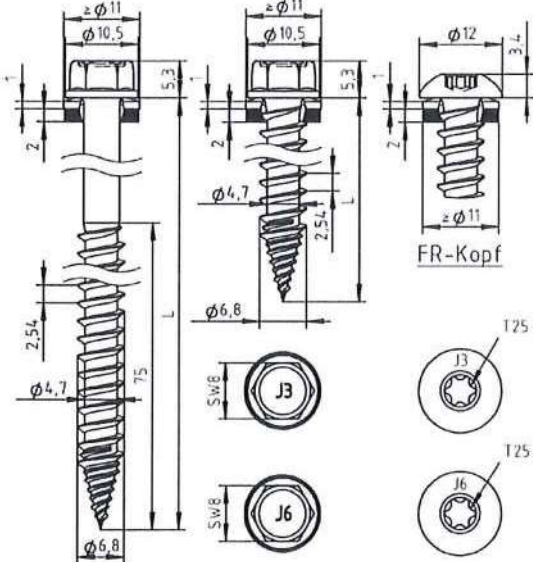
– The values indicated above, depending on the screw depth l_g shall apply to $k_{mod} = 0,90$ and the timber strength class C24 ($\rho_k = 350$ kg/m³). For other values of k_{mod} and strength classes see chapter 4.2.2.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw (chipless) JF3-(FR)-6,8xL, JF6-(FR)-6,8xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \varnothing 16$ mm

Annex 94



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573

Component II: timber – EN 14081

Drilling capacity: $\Sigma t_i \leq 1,50 \text{ mm}$

Timber substructures:
performance determined with

$M_{y,Rk} = 10,744 \text{ Nm}$
 $f_{ax,k} = 11,080 \text{ N/mm}^2$ for $l_{ef} \geq 34 \text{ mm}$

$t_{N,i}$ [mm]	l_g [mm]											
	45	48	51	54	57	60	63	66	69	72	75	
$V_{R,k}$ [kN] for $t_{N,i} =$	—	—	—	—	—	—	—	—	—	—	—	—
0,40	—	—	—	—	—	—	—	—	—	—	—	—
0,50	0,92	0,92	0,92	0,92	0,92	0,92	0,92	0,92	0,92	0,92	0,92	0,92
0,60	1,15	1,15	1,15	1,15	1,15	1,15	1,15	1,15	1,15	1,15	1,15	1,15
0,70	1,38	1,38	1,38	1,38	1,38	1,38	1,38	1,38	1,38	1,38	1,38	1,38
0,80	1,61	1,61	1,61	1,61	1,61	1,61	1,61	1,61	1,61	1,61	1,61	1,61
0,90	1,84	1,84	1,84	1,84	1,84	1,84	1,84	1,84	1,84	1,84	1,84	1,84
1,00	2,02	2,07	2,07	2,07	2,07	2,07	2,07	2,07	2,07	2,07	2,07	2,07
1,20	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,38	2,38	2,38	2,38
1,50	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,43	2,48	2,53	2,76
2,00	—	—	—	—	—	—	—	—	—	—	—	—
$N_{R,i,k}$ [kN] =	2,31	2,51	2,71	2,92	3,12	3,32	3,53	3,73	3,93	4,14	4,34	failure of component II see chapter 4.2.2

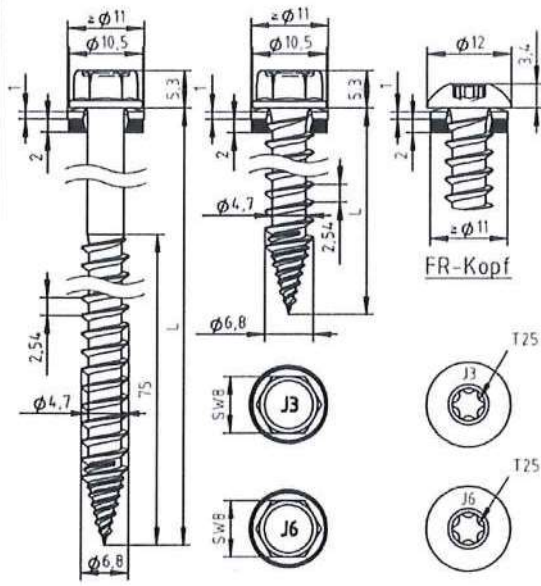
- Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.
- The values indicated above, depending on the screw depth l_g shall apply to $k_{mod} = 0,90$ and the timber strength class C24 ($\rho_k = 350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

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw (chipless) JF3-(FR-)6,8xL, JF6-(FR-)6,8xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \text{Ø}11 \text{ mm}$

Annex 95



Materials:
Fastener: stainless steel (A2) – EN ISO 3506
 stainless steel (A4) – EN ISO 3506
Washer: stainless steel (A2/A4) – EN ISO 3506
 with vulcanised EPDM seal
Component I: aluminium alloy
 with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573
Component II: timber – EN 14081

Drilling capacity: $\Sigma t \leq 1,50 \text{ mm}$

Timber substructures:
 performance determined with
 $M_{y,Rk} = 10,744 \text{ Nm}$
 $f_{ax,k} = 11,080 \text{ N/mm}^2$ for $l_{ef} \geq 34 \text{ mm}$

$t_{N,I}$ [mm]	l_g [mm]												
	45	48	51	54	57	60	63	66	69	72	75		
$V_{R,k}$ [kN] for $t_{N,I} =$													bearing resistance of component I
0,40	—	—	—	—	—	—	—	—	—	—	—	—	
0,50	1,20	1,20	1,20	1,20	1,20	1,20	1,20	1,20	1,20	1,20	1,20	1,20	
0,60	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	
0,70	1,80	1,80	1,80	1,80	1,80	1,80	1,80	1,80	1,80	1,80	1,80	1,80	
0,80	2,02	2,07	2,10	2,10	2,10	2,10	2,10	2,10	2,10	2,10	2,10	2,10	
0,90	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,40	2,40	2,40	2,40	
1,00	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,43	2,48	2,53	2,70	
1,20	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,43	2,48	2,53	3,10	
1,50	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,43	2,48	2,53	3,60	
2,00	—	—	—	—	—	—	—	—	—	—	—	—	
$N_{R,II,k}$ [kN] =	2,31	2,51	2,71	2,92	3,12	3,32	3,53	3,73	3,93	4,14	4,34	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.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw (chipless) JF3-(FR)-6,8xL, JF6-(FR)-6,8xL
 with hexagon head or round head with Torx® drive system and sealing washer $\geq \text{Ø}11 \text{ mm}$

Annex 96

	<p>Materials:</p> <p>Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506</p> <p>Washer: stainless steel (A2/A4) – EN ISO 3506 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: timber – EN 14081</p>
	<p>Drilling capacity: $\Sigma t_i \leq 1,50 \text{ mm}$</p> <p>Timber substructures: performance determined with</p> <p>$M_{y,Rk} = 10,744 \text{ Nm}$ $f_{ax,k} = 11,080 \text{ N/mm}^2$ for $l_{ef} \geq 34 \text{ mm}$</p>

$t_{N,i}$ [mm]	l_g [mm]												
	45	48	51	54	57	60	63	66	69	72	75		
$V_{R,k}$ [kN] for $t_{N,i} =$	—	—	—	—	—	—	—	—	—	—	—	—	bearing resistance of component I
0,40	—	—	—	—	—	—	—	—	—	—	—	—	
0,50	0,92	0,92	0,92	0,92	0,92	0,92	0,92	0,92	0,92	0,92	0,92	0,92	
0,60	1,15	1,15	1,15	1,15	1,15	1,15	1,15	1,15	1,15	1,15	1,15	1,15	
0,70	1,38	1,38	1,38	1,38	1,38	1,38	1,38	1,38	1,38	1,38	1,38	1,38	
0,80	1,61	1,61	1,61	1,61	1,61	1,61	1,61	1,61	1,61	1,61	1,61	1,61	
0,90	1,84	1,84	1,84	1,84	1,84	1,84	1,84	1,84	1,84	1,84	1,84	1,84	
1,00	2,02	2,07	2,07	2,07	2,07	2,07	2,07	2,07	2,07	2,07	2,07	2,07	
1,20	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,38	2,38	2,38	2,38	
1,50	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,43	2,48	2,53	2,76	
2,00	—	—	—	—	—	—	—	—	—	—	—	—	
$N_{R,II,k}$ [kN] =	2,31	2,51	2,71	2,92	3,12	3,32	3,53	3,73	3,93	4,14	4,34	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.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw (chipless) JF3-(FR)-6,8xL, JF6-(FR)-6,8xL
with hexagon head or round head with Torx® drive system and sealing washer $\geq \text{Ø}16 \text{ mm}$

Anhang 97

English translation prepared by DIBt

Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573

Component II: timber – EN 14081

Drilling capacity: $\Sigma t_i \leq 1,50 \text{ mm}$

Timber substructures:
performance determined with

$M_{y,Rk} = 10,744 \text{ Nm}$
 $f_{ax,k} = 11,080 \text{ N/mm}^2$ for $l_{ef} \geq 34 \text{ mm}$

$t_{N,i}$ [mm]	l_g [mm]												
	45	48	51	54	57	60	63	66	69	72	75		
$V_{Ri,k}$ [kN] for $t_{N,i} =$													
0,40	—	—	—	—	—	—	—	—	—	—	—	—	—
0,50	1,20	1,20	1,20	1,20	1,20	1,20	1,20	1,20	1,20	1,20	1,20	1,20	1,20
0,60	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50
0,70	1,80	1,80	1,80	1,80	1,80	1,80	1,80	1,80	1,80	1,80	1,80	1,80	1,80
0,80	2,02	2,07	2,10	2,10	2,10	2,10	2,10	2,10	2,10	2,10	2,10	2,10	2,10
0,90	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,40	2,40	2,40	2,40	2,40
1,00	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,43	2,48	2,53	2,70	2,70
1,20	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,43	2,48	2,53	3,10	3,10
1,50	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,43	2,48	2,53	3,60	3,60
2,00	—	—	—	—	—	—	—	—	—	—	—	—	—
$N_{Ri,II,k}$ [kN] =	2,31	2,51	2,71	2,92	3,12	3,32	3,53	3,73	3,93	4,14	4,34	failure of component II see chapter 4.2.2	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.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw (chipless) JF3-(FR-)6,8xL, JF6-(FR-)6,8xL
with hexagon head or round head with Torx® drive system and sealing washer $\geq \phi 16 \text{ mm}$

Annex 98

		<p>Materials:</p> <p>Fastener: stainless steel (1.4529) – EN ISO 3506</p> <p>Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal</p> <p>Component I: S280GD to S320GD – EN 10346</p> <p>Component II: S235 – EN 10025-1 S280GD to S320GD – EN 10346 timber – EN 14081</p>																		
		<p>Pre-drill diameter: see table</p> <p>Timber substructures: performance determined with</p> <p>$M_{y,Rk} = 9,742 \text{ Nm}$ $F_{ax,k} = 8,575 \text{ N/mm}^2$ for $l_{ef} \geq 26,0 \text{ mm}$</p>																		
$t_{N,II}$ [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 $t_{N,J} =$	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	2,90	ac	2,90
	0,75	1,40	—	1,60	—	1,90	—	2,20	ac	2,50	ac	2,70	ac	3,10	ac	3,10	ac	3,10	ac	3,10
	0,88	1,50	—	1,70	—	2,00	—	2,30	—	2,60	—	2,80	ac	3,20	ac	3,20	ac	3,20	ac	3,20
	1,00	1,50	—	1,80	—	2,10	—	2,50	—	2,80	—	3,10	—	3,60	—	3,60	—	3,60	—	3,60
	1,13	1,60	—	1,80	—	2,20	—	2,60	—	2,90	—	3,20	—	3,80	—	3,80	—	3,80	—	3,80
	1,25	1,60	—	1,90	—	2,30	—	2,70	—	3,00	—	3,30	—	4,00	—	4,00	—	4,00	—	4,00
	1,50	1,60	—	1,90	—	2,40	—	2,80	—	3,20	—	3,50	—	4,00	—	4,00	—	4,00	—	4,00
	1,75	1,60	—	1,90	—	2,40	—	2,80	—	3,20	—	3,50	—	4,00	—	4,00	—	4,00	—	4,00
2,00	1,60	—	1,90	—	2,40	—	2,80	—	3,20	—	3,50	—	4,00	—	4,00	—	4,00	—	4,00	
$N_{R,k}$ [kN] for $t_{N,J} =$	0,50	0,49	—	0,59	—	0,70	—	0,76	ac	0,86	ac	0,97	ac	1,13	ac	1,13	ac	1,13	ac	1,19
	0,55	0,61	—	0,75	—	0,89	—	0,95	ac	1,09	ac	1,23	ac	1,43	ac	1,43	ac	1,43	ac	1,50
	0,63	0,90	—	1,10	—	1,30	—	1,40	ac	1,60	ac	1,80	ac	2,10	ac	2,10	ac	2,10	ac	2,20
	0,75	0,90	—	1,10	—	1,30	—	1,40	ac	1,60	ac	1,80	ac	2,10	ac	2,10	ac	2,10	ac	2,80
	0,88	0,90	—	1,10	—	1,30	—	1,40	—	1,60	—	1,80	ac	2,10	ac	2,10	ac	2,10	ac	3,50
	1,00	0,90	—	1,10	—	1,30	—	1,40	—	1,60	—	1,80	—	2,20	—	2,20	—	2,20	—	4,20
	1,13	1,00	—	1,20	—	1,40	—	1,50	—	1,70	—	1,90	—	2,30	—	2,30	—	2,30	—	5,00
	1,25	1,00	—	1,20	—	1,40	—	1,50	—	1,70	—	1,90	—	2,30	—	2,30	—	2,30	—	5,90
	1,50	1,00	—	1,20	—	1,40	—	1,50	—	1,70	—	1,90	—	2,30	—	2,30	—	2,30	—	5,90
	1,75	1,00	—	1,20	—	1,40	—	1,50	—	1,70	—	1,90	—	2,30	—	2,30	—	2,30	—	5,90
2,00	1,00	—	1,20	—	1,40	—	1,50	—	1,70	—	1,90	—	2,30	—	2,30	—	2,30	—	5,90	
Fastening screws JA, JB, JT, JZ and JF											Annex 99									
Self-tapping screw JA1-6,5xL with hexagon head and sealing washer $\geq \text{Ø}16 \text{ mm}$																				

Materials:

Fastener: stainless steel (1.4529) – EN ISO 3506
 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal

Component I: S280GD to S350GD – EN 10346
 Component II: timber – EN 14081

Pre-drill diameter: see table

Timber substructures:
 performance determined with

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

l_g [mm] =	26	31	36	41	46	51	56	61	66	71	76			
d_{pd} [mm]	$\text{Ø } 4,5$													
$V_{R,k}$ [kN] for $t_{N,I} =$	0,50	—	—	—	—	—	—	—	—	—	—	—	bearing resistance of component I	
	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	
$N_{R,k}$ [kN] for $t_{N,I} =$	0,50	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19	pull-through resistance of component I	
	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		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		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		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 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.

Fastening screws JA, JB, JT, JZ and JF

Self-tapping screw JA1-6,5xL

with hexagon head and sealing washer $\geq \text{Ø}16 \text{ mm}$

Annex 100

<p>Typ JB</p>	<p>Materials:</p> <p>Fastener: stainless steel (1.4529) – EN ISO 3506</p> <p>Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal</p> <p>Component I: S280GD to S350GD – EN 10346</p> <p>Component II: S235 – EN 10025-1 S280GD to S350GD – EN 10346</p>
	<p>Pre-drill diameter: see table</p>
	<p>Timber substructures:</p> <p>no performance determined</p>

$t_{N,II}$ [mm]	1,25	1,50	2,00	3,00	4,00	6,00	$\geq 7,00$
d_{pd} [mm]	$\varnothing 5,0$		$\varnothing 5,3$			$\varnothing 5,5$	$\varnothing 5,7$
$M_{t,nom}$	5 Nm						
$V_{R,k}$ [kN] for $t_{N,I} =$	0,50	—	—	—	—	—	—
	0,55	—	—	—	—	—	—
	0,63	2,50 ac	2,70 ac	2,90 abcd	3,00 abcd	3,10 abcd	3,10 abcd
	0,75	2,60 ac	3,10 ac	3,30 abcd	3,60 abcd	3,70 abcd	3,70 abcd
	0,88	2,80 ac	3,20 ac	3,80 ac	4,10 abcd	4,30 abcd	4,40 abcd
	1,00	3,20 ac	3,60 ac	4,10 ac	4,80 ac	4,90 ac	5,10 ac
	1,13	3,40 ac	4,00 ac	4,60 ac	5,40 ac	5,60 ac	5,80 ac
	1,25	3,60 ac	4,20 ac	5,00 ac	6,10 ac	6,30 ac	6,50 ac
	1,50	3,70 ac	4,40 ac	5,70 ac	6,80 ac	7,10 ac	7,30 ac
	1,75	3,70 ac	4,70 ac	6,20 ac	7,60 ac	7,70 ac	8,10 ac
2,00	5,00 —	6,50 —	8,80 —	10,30 —	10,60 —	11,30 —	
$N_{R,k}$ [kN] for $t_{N,I} =$	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
	0,63	1,80 ac	2,50 ac	2,80 abcd	2,80 abcd	2,80 abcd	2,80 abcd
	0,75	2,00 ac	2,60 ac	3,10 abcd	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 abcd	3,80 abcd
	1,00	2,00 ac	2,70 ac	3,40 ac	4,00 ac	4,00 ac	4,00 ac
	1,13	2,00 ac	2,70 ac	3,60 ac	4,40 ac	4,40 ac	4,40 ac
	1,25	2,00 ac	2,70 ac	3,60 ac	4,80 ac	4,90 ac	4,90 ac
	1,50	2,00 ac	2,70 ac	3,60 ac	5,60 ac	5,90 ac	5,90 ac
	1,75	2,00 ac	2,70 ac	3,60 ac	5,80 ac	6,90 ac	6,90 ac
2,00	2,00 —	2,70 —	3,60 —	6,00 —	7,30 —	7,30 —	

- JZ1-6,3 x L for components II with $t_{II} \geq 1,25$ mm
- JB1-6,3 x L for components II mit $t_{II} \leq 2,00$ mm

Fastening screws JA, JB, JT, JZ and JF

Self-tapping screw JZ1-6,3xL, JB1-6,3xL, JZ5-6,3xL
with hexagon head and sealing washer $\geq \varnothing 16$ mm

Annex 101

	<p>Materials:</p> <p>Fastener: stainless steel (1.4529) – EN ISO 3506</p> <p>Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal</p> <p>Component I: S280GD, S320GD or S350GD – EN 10346</p> <p>Component II: S235 – EN 10025-1 S280GD to S350GD – EN 10346</p> <p>Pre-drill diameter: see table</p> <p>Timber substructures: no performance determined</p>
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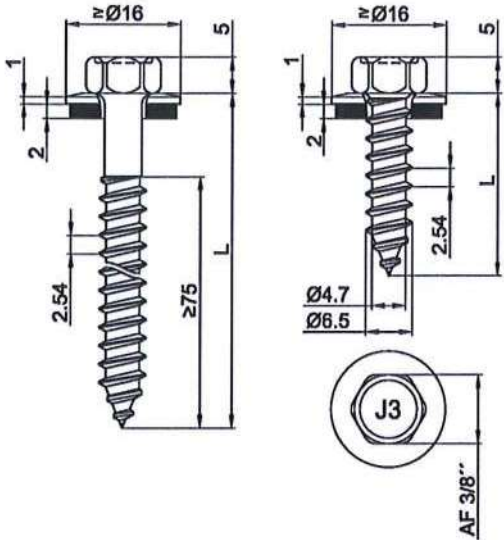
$t_{N,II}$ [mm]	4,00	5,00	6,00	$\geq 7,00$	
d_{pd} [mm]	$\varnothing 5,3$		$\varnothing 5,5$	$\varnothing 5,7$	
$M_{t,nom}$	5 Nm				
$V_{R,k}$ [kN] for $t_{N,I} =$	0,50	—	—	—	—
	0,55	—	—	—	—
	0,63	3,40 abcd	3,40 abcd	3,40 abcd	3,40 abcd
	0,75	4,20 ac	4,20 ac	4,20 ac	4,20 ac
	0,88	4,70 ac	4,70 ac	4,70 ac	4,70 ac
	1,00	5,00 ac	5,00 ac	5,10 ac	5,10 ac
	1,13	5,60 ac	5,60 ac	5,80 ac	5,80 ac
	1,25	6,30 —	6,40 —	6,50 ac	6,50 ac
	1,50	7,10 —	7,20 —	7,30 —	7,30 —
	1,75	7,70 —	7,90 —	8,10 —	8,10 —
2,00	7,70 —	7,90 —	8,10 —	8,10 —	
$N_{R,k}$ [kN] for $t_{N,I} =$	0,50	1,67 abcd	1,67 abcd	1,67 abcd	1,67 abcd
	0,55	2,11 abcd	2,11 abcd	2,11 abcd	2,11 abcd
	0,63	3,10 abcd	3,10 abcd	3,10 abcd	3,10 abcd
	0,75	4,00 ac	4,00 ac	4,00 ac	4,00 ac
	0,88	4,40 ac	4,40 ac	4,40 ac	4,40 ac
	1,00	4,60 ac	4,60 ac	4,60 ac	4,60 ac
	1,13	5,10 ac	5,10 ac	5,10 ac	5,10 ac
	1,25	5,10 —	5,10 —	5,10 ac	5,10 ac
	1,50	5,90 —	5,90 —	5,90 —	5,90 —
	1,75	6,90 —	6,90 —	7,10 —	7,10 —
2,00	8,80 —	11,60 —	13,40 —	13,40 —	

Fastening screws JA, JB, JT, JZ and JF

Self-tapping screw JZ1-6,3xL

with hexagon head and sealing washer $\geq \varnothing 22$ mm

Annex 102



Materials:
 Fastener: stainless steel (A2/ 1.4567) – EN ISO 3506
 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal
 Component I: S280GD to S350GD – EN 10346
 Component II: S235 – EN 10025-1
 S280GD to S350GD – EN 10346

Pre-drill diameter: see table

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 $t_{N,I} =$																							
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	2,90	ac	3,10	ac	3,10	ac	3,10
0,75	1,40	—	1,60	—	1,90	—	2,20	ac	2,50	ac	2,70	ac	3,10	ac	3,10	ac	3,10	ac	3,10	ac	3,10	ac	3,10
0,88	1,50	—	1,70	—	2,00	—	2,30	—	2,60	—	2,80	ac	3,20	ac	3,20	ac	3,20	ac	3,20	ac	3,20	ac	3,20
1,00	1,50	—	1,80	—	2,10	—	2,50	—	2,80	—	3,10	—	3,60	—	3,60	—	3,60	—	3,60	—	3,60	—	3,60
1,13	1,60	—	1,80	—	2,20	—	2,60	—	2,90	—	3,20	—	3,80	—	3,80	—	3,80	—	3,80	—	3,80	—	3,80
1,25	1,60	—	1,90	—	2,30	—	2,70	—	3,00	—	3,30	—	4,00	—	4,00	—	4,00	—	4,00	—	4,00	—	4,00
1,50	1,60	—	1,90	—	2,40	—	2,80	—	3,20	—	3,50	—	4,00	—	4,00	—	4,00	—	4,00	—	4,00	—	4,00
1,75	1,60	—	1,90	—	2,40	—	2,80	—	3,20	—	3,50	—	4,00	—	4,00	—	4,00	—	4,00	—	4,00	—	4,00
2,00	1,60	—	1,90	—	2,40	—	2,80	—	3,20	—	3,50	—	4,00	—	4,00	—	4,00	—	4,00	—	4,00	—	4,00
$N_{R,k}$ [kN] for $t_{N,I} =$																							
0,50	0,49	—	0,59	—	0,70	—	0,76	ac	0,86	ac	0,97	ac	1,13	ac	1,13	ac	1,13	ac	1,13	ac	1,13	ac	1,19
0,55	0,61	—	0,75	—	0,89	—	0,95	ac	1,09	ac	1,23	ac	1,43	ac	1,43	ac	1,43	ac	1,43	ac	1,43	ac	1,50
0,63	0,90	—	1,10	—	1,30	—	1,40	ac	1,60	ac	1,80	ac	2,10	ac	2,10	ac	2,10	ac	2,10	ac	2,10	ac	2,20
0,75	0,90	—	1,10	—	1,30	—	1,40	ac	1,60	ac	1,80	ac	2,10	ac	2,10	ac	2,10	ac	2,10	ac	2,10	ac	2,80
0,88	0,90	—	1,10	—	1,30	—	1,40	—	1,60	—	1,80	ac	2,10	ac	2,10	ac	2,10	ac	2,10	ac	2,10	ac	3,50
1,00	0,90	—	1,10	—	1,30	—	1,40	—	1,60	—	1,80	—	2,20	—	2,20	—	2,20	—	2,20	—	2,20	—	4,20
1,13	1,00	—	1,20	—	1,40	—	1,50	—	1,70	—	1,90	—	2,30	—	2,30	—	2,30	—	2,30	—	2,30	—	5,00
1,25	1,00	—	1,20	—	1,40	—	1,50	—	1,70	—	1,90	—	2,30	—	2,30	—	2,30	—	2,30	—	2,30	—	5,90
1,50	1,00	—	1,20	—	1,40	—	1,50	—	1,70	—	1,90	—	2,30	—	2,30	—	2,30	—	2,30	—	2,30	—	5,90
1,75	1,00	—	1,20	—	1,40	—	1,50	—	1,70	—	1,90	—	2,30	—	2,30	—	2,30	—	2,30	—	2,30	—	5,90
2,00	1,00	—	1,20	—	1,40	—	1,50	—	1,70	—	1,90	—	2,30	—	2,30	—	2,30	—	2,30	—	2,30	—	5,90

Fastening screws JA, JB, JT, JZ and JF

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

Annex 103

	<p>Materials:</p> <p>Fastener: stainless steel (A2/ 1.4567) – EN ISO 3506 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal</p> <p>Component I: S280GD to S350GD – EN 10346 Component II: timber – EN 14081</p>
	<p>Pre-drill diameter: see table</p> <p>Timber substructures: performance determined with</p> <p>$M_{y,Rk} = 9,742 \text{ Nm}$ $F_{ax,k} = 8,575 \text{ N/mm}^2$ for $l_{ef} \geq 26,0 \text{ mm}$</p>

l_g [mm] =	26	31	36	41	46	51	56	61	66	71	76			
d_{pd} [mm]	Ø 4,5													
$V_{R,k}$ [kN] for $t_{N,j} =$	0,50	—	—	—	—	—	—	—	—	—	—	—	bearing resistance of component I	
	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		
$N_{R,k}$ [kN] for $t_{N,j} =$	0,50	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19	pull-through resistance of component I	
	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		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		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		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 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.

Fastening screws JA, JB, JT, JZ and JF

Annex 104

Self-tapping screw JA3-6,5xL

with hexagon head and sealing washer $\geq \text{Ø}16 \text{ mm}$

	<p>Materials:</p> <p>Fastener: stainless steel (A2/ 1.4567) – EN ISO 3506</p> <p>Washer: stainless steel (A2/A4) – EN ISO 3506 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: performance determined with</p> <p>$M_{y,Rk} = 9,742 \text{ Nm}$ $F_{ax,k} = 8,575 \text{ N/mm}^2$ for $l_{ef} \geq 26,0 \text{ mm}$</p>

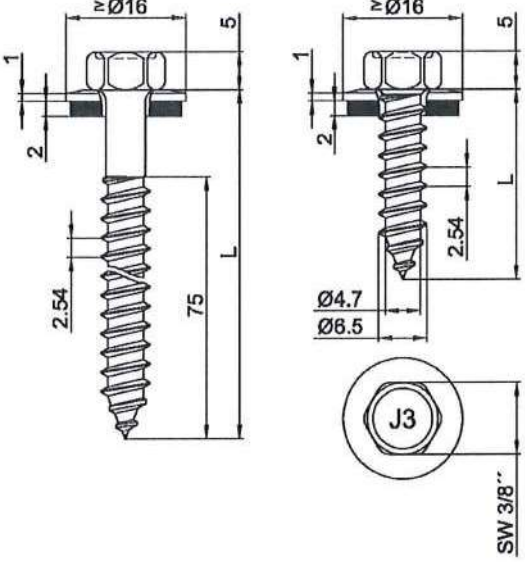
$t_{N,II}$ [mm]	0,50	0,70	0,90	1,00	1,20	1,50	2,00	2,50	3,00		
d_{pd} [mm]	Ø 4,0		Ø 4,5						Ø 5,0		
$M_{t,nom}$	—										
$V_{R,k}$ [kN] for $t_{N,I} =$	0,50	0,60	0,70	0,80	0,90	1,00	1,20	1,50	2,00		bearing resistance of component I
	0,24 —	0,24 —	0,24 —	0,24 —	0,24 —	0,24 —	0,24 —	0,24 —	0,24 —	0,24	
	0,40 —	0,40 —	0,40 —	0,40 —	0,40 —	0,40 —	0,40 —	0,40 —	0,40 —	0,40	
	0,57 —	0,57 —	0,57 —	0,57 —	0,57 —	0,57 —	0,57 —	0,57 —	0,57 —	0,57	
	0,65 —	0,65 —	0,65 —	0,65 —	0,65 —	0,65 —	0,65 —	0,65 —	0,65 —	0,65	
	0,82 —	0,82 —	0,82 —	0,82 —	0,82 —	0,82 —	0,82 —	0,82 —	0,82 —	0,82	
	0,92 ac	0,92 ac	0,92 ac	0,92 ac	0,92 ac	0,92 ac	0,92 ac	0,92 ac	0,92 ac	0,92	
	1,15 ac	1,15 ac	1,15 ac	1,15 ac	1,15 ac	1,15 ac	1,15 ac	1,15 ac	1,15 ac	1,15	
	1,38 ac	1,38 ac	1,38 ac	1,38 ac	1,38 ac	1,38 ac	1,38 ac	1,38 ac	1,38 ac	1,38	
	1,61 ac	1,61 ac	1,61 ac	1,61 ac	1,61 ac	1,61 ac	1,61 ac	1,61 ac	1,61 ac	1,61	
	1,84 —	1,84 —	1,84 —	1,84 —	1,84 —	1,84 —	1,84 —	1,84 —	1,84 —	1,84	
	2,07 —	2,07 —	2,07 —	2,07 —	2,07 —	2,07 —	2,07 —	2,07 —	2,07 —	2,07	
	2,38 —	2,38 —	2,38 —	2,38 —	2,38 —	2,38 —	2,38 —	2,38 —	2,38 —	2,38	
	2,76 —	2,76 —	2,76 —	2,76 —	2,76 —	2,76 —	2,76 —	2,76 —	2,76 —	2,76	
$N_{R,II,k}$ [kN] =	—	—	0,36	0,42	0,55	0,77	1,23	1,77	2,38	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.
- Timber substructures (component II): predrilling the holes with Ø4,80 mm is necessary.

Fastening screws JA, JB, JT, JZ and JF

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

Annex 105



Materials:

Fastener: stainless steel (A2/ 1.4567) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal

Component I: aluminium alloy with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573

Component II: aluminium alloy with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573 timber – EN 14081

Pre-drill diameter: see table

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]	0,50	0,70	0,90	1,00	1,20	1,50	2,00	2,50	3,00	/	
d_{pd} [mm]	Ø 4,0		Ø 4,5						Ø 5,0		
$M_{t,nom}$	—										
$V_{R,k}$ [kN] 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	
$N_{R,II,k}$ [kN] =	—	—	0,47	0,55	0,71	1,00	1,60	2,30	3,10	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.
- Timber substructures (component II): predrilling the holes with Ø4,80 mm is necessary.

Fastening screws JA, JB, JT, JZ and JF

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

Annex 106

	<p>Materials:</p> <p>Fastener: stainless steel (A2/ 1.4567) – EN ISO 3506</p> <p>Washer: stainless steel (A2/A4) – EN ISO 3506 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: S235 – EN 10025-1 S280GD to S350GD – EN 10346 timber – EN 14081</p>
	<p>Pre-drill diameter: see table</p> <p>Timber substructures: performance determined with</p> <p>$M_{y,Rk} = 9,742 \text{ Nm}$ $F_{ax,k} = 8,575 \text{ N/mm}^2$ for $l_{ef} \geq 26,0 \text{ mm}$</p>

$t_{N,II}$ [mm]	0,63	0,75	0,88	1,00	1,25	1,50	2,00	2,50	3,00	/	
d_{pd} [mm]	Ø 3,5	Ø 4,0	Ø 4,5			Ø 5,0	Ø 5,3				
$M_{t,nom}$	—										
$V_{R,k}$ [kN] 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
	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
	0,70	0,35 —	0,44 —	0,55 —	0,65 —	0,86 —	1,07 —	1,38 —	1,38 ac	1,38 ac	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
	0,90	0,35 —	0,44 —	0,56 —	0,65 —	0,86 —	1,27 —	1,61 —	1,77 —	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
	1,20	0,35 —	0,44 —	0,56 —	0,67 —	0,92 —	1,61 —	1,84 —	2,15 —	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
	2,00	0,35 —	0,44 —	0,56 —	0,67 —	0,94 —	2,15 —	2,30 —	2,53 —	2,76 —	2,76
$N_{R,II,k}$ [kN] =	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.
- Timber substructures (component II): predrilling the holes with Ø4,80 mm is necessary.

Fastening screws JA, JB, JT, JZ and JF

Self-tapping screw JA3-6,5xL

with hexagon head and sealing washer $\geq \text{Ø}16 \text{ mm}$

Annex 107