WB

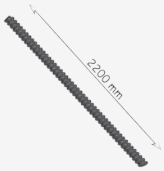
Structural reinforcement system

Carbon steel with white galvanic zinc coating

SFS intec

LARGE SIZES

Diameters up to 20 mm and lengths up to 2200 mm

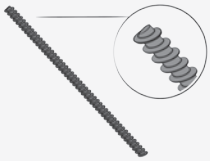


SPECIAL STEEL AND THREAD

High tensile resistance steel (fy,k = 800 N/mm2) with wood thread

RAPID DRY SYSTEM

Reinforcement bar with wood thread that does not require resin or adhesive

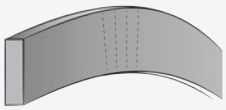


TECHNICAL ASSISTANCE

Complete installation instructions and documentation online

FIELDS OF USE

Solid-wood, glulam, X-Lam, LVL, wood-based panel reinforcements.
Service classes 1 and 2



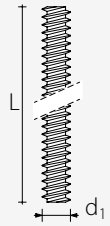
ANY SIZE

The length of the bars allows for fast and secure reinforcements on any size beam

FAST USE

The lack of adhesives or resins makes it possible to execute large reinforcements quickly while containing costs

Codes and dimensions



d_1 [mm]	code	L [mm]	Ø hole [mm]	pcs/pckg
16	CS220016	2200	12	1
20	CS220020	2200	15	1

Tools

❶

USE AS WB SCREWDRIVER

For 16 and 20 structural reinforcement bars

code	description	pcs/pckg
❶ DUD38RLE	drill	1
❷ DUD38SH	handle	1
❸ ATCS2010	sleeve adaptor Ø16-20	1
❹ ATCS007	sleeve Ø16	1
❺ ATCS008	sleeve Ø20	1
❻ DUVSKU	safety clutch	1
ATCS009	drill set Ø12	1
ATCS012	tip Ø12 x 400mm for ATCS009	1
ATCS010	drill set Ø15	1
ATCS015	tip Ø15 x 400mm for ATCS010	1

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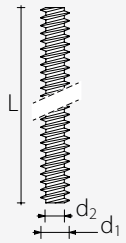
Geometry and minimum distances

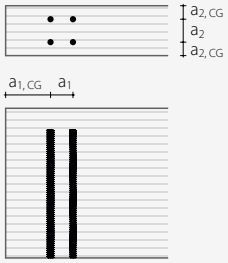
GEOMETRY AND MECHANICAL CHARACTERISTICS



WB CONNECTOR			
Nominal diameter	**d_1 [mm]**	**16**	**20**
Tip diameter	d_2 [mm]	12,0	15,0
Pre-bored hole diameter	d_v [mm]	12,0	15,0
Characteristic yield moment	$M_{y,k}$ [Nmm]*	91204,4	162922,8
Characteristic extraction-resistance parameter	$f_{1,k}$ [N/mm²]*	$70 \cdot 10^{-6} \cdot \rho_k^{\ 2}$	
Characteristic tensile strength	$f_{tens,k}$ [kN]*	91,5	145,0

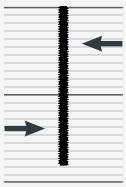
* Comply with DIN 1052:2008 in accordance with Z-9.1-777

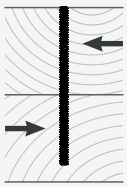
MINIMUM DISTANCES FOR AXIAL STRESSES (1)



		16	20
a_1	[mm]	64	80
a_2	[mm]	48	60
$a_{1,c}$	[mm]	40	50
$a_{2,c}$	[mm]	40	50

MINIMUM DISTANCES FOR SHEAR LOADS (1)

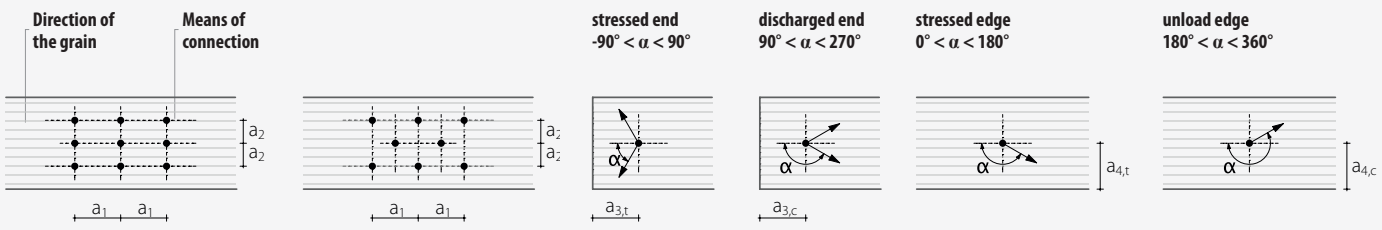




Angle between strength and grain α = 0°

Angle between strength and grain α = 90°

		16	20	16	20
a_1	[mm]	80	100	48	60
a_2	[mm]	48	60	48	60
$a_{3,t}$	[mm]	192	240	112	140
$a_{3,c}$	[mm]	112	140	112	140
$a_{4,t}$	[mm]	48	60	112	140
$a_{4,c}$	[mm]	48	60	48	60

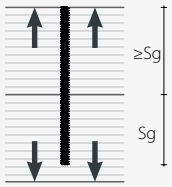


NOTE

(1) The minimum distances are in accordance with the DIN 1052:2008 standard in accordance with Z-9.1-777.

Designer statics

TRACTION (1)

	thread withdrawal (2)		steel traction
			
		wood	steel
d_1 [mm]	s_g [mm]	$R_{ax,k}$ [mm]	$R_{tens,k}$ [mm]
16	100	16,2	91,5
	200	32,3	
	300	48,5	
	400	64,7	
	500	80,9	
	600	97,0	
20	100	20,2	145,0
	200	40,4	
	300	60,6	
	400	80,9	
	500	101,1	
	600	121,3	
	700	141,5	
	800	161,7	

Corrective coefficient k_F for different densities ρ_k

ρ_k [kg/m³]	350	380	410	430	450
k_F	0,848	1,000	1,164	1,280	1,402

For different densities ρ_k the wood-side design resistance is calculated as: $R'_{ax,d} = R_{ax,d} \cdot k_F$

GENERAL PRINCIPLES

- Characteristic values comply with the DIN 1052:2008 standard in accordance with Z-9.1-777.
- In the calculations, the density of the wood elements was considered equal to ρ_k = 380 kg/m³.
- Sizing and verification of the wooden elements must be done separately.

NOTE

(1) The tensile design strength of the connector is the lower between the wood-side design strength ($R_{ax,d}$) and the steel-side design strength ($R_{tens,d}$).

$$R_{ax,d} = min \begin{cases} R_{ax,k} \cdot k_{mod} \ / \ \gamma_m \\ R_{tens,k} \ / \ \gamma_{m2} \end{cases}$$

The coefficients γ_m and k_{mod} should be taken according to the current regulations used for the calculation.

(2) For intermediate sg values it is possible to interpolate linearly.