FORBUILD

SALON TUKITUOTE
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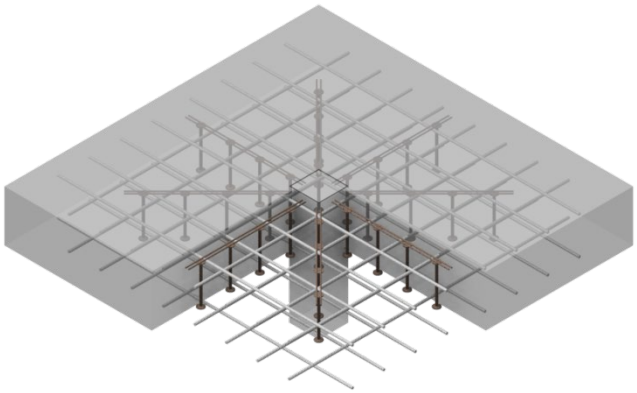
TECHNICAL DATA SHEET

FBD PUNCHING SHEAR REINFORCEMENT



PRODUCT DESCRIPTION

FBD steel bolts take the form of steel rods with plate-like endings. The rods are made of ribbed steel rods, with a diameter of Ø 10 mm ÷ Ø 32 mm, with a specific yield strength of fyk ≥ 500 MPa and a specific tensile strength of fuk ≥ 550 MPa, ductility classes B or C. The mounting rods have diameters between Ø4 ÷ Ø10 and are made of smooth or ribbed steel, with a specific yield strength fyk ≥ 235 MPa. The installation battens/ profiles are made of steel, with a specific yield strength of fyk ≥ 235 MPa and are dimensioned at (25÷50)x(3÷5) mm.

APPLICATION

FBD rods are foreseen for application as components of rebar transferring shear forces in reinforced concrete ceiling plate, reinforced concrete foundation plates and in spot foundations, at point support spots in order to increase punching shear strength. FBD steel rods can be used in reinforced concrete ceiling plates and reinforced concrete foundation plates with thicknesses not below 18 cm, made of C20/25÷C50/60 concrete per PN-EN 206+A2:2021.

MODE OF INSTALLATION/ USAGE

The components have to be installed considering their distribution in the execution design. It is possible to install the sets 'from above' after completion of the full reinforcement mesh. It is also possible to rest the punching shear reinforcement in reverse – on plastic or concrete spacers. Before concreting, the rods must be tied to the rebar mesh with tie wire.

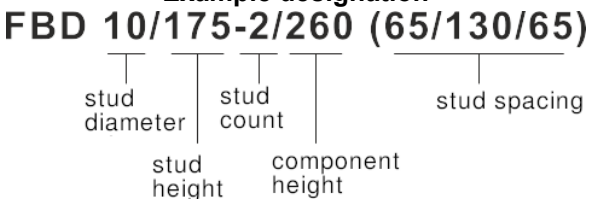
STORAGE / TRANSPORT

The steel bolts are packed in bulk split by type, protected against damage, stabilised and loaded onto pallets or wooden crates.

REFERENCE DOCUMENTS

- Catalogue: *Concrete reinforcement systems*
- Polish National Technical Assessment of the Polish Institute of Building Technology
- Polish Declaration of Performance of the Polish Institute of Building Technology.

Example designation



TECHNICAL AND RETAIL DATA

No.	Fundamental properties	Usable properties	Assessment method
1	Yield strength R_e, MPa	≥ 500	PN-EN ISO 6892-1:2016
2	Tensile strength R_m, MPa	≥ 550	
3	R_m/R_e ratio	≥ 1.05	
4	Total elongation at maximum elongation force A_{gt}, %	≥ 2.5	
5	Fire reaction class	A1	PN-EN 13501-1:2019 European Commission Decision 96/603/EC (as amended)

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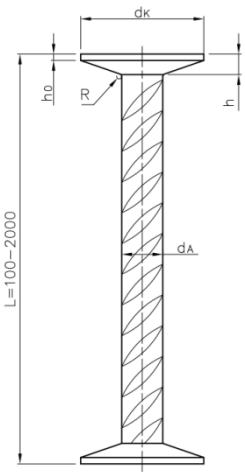
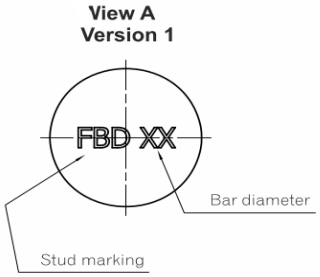
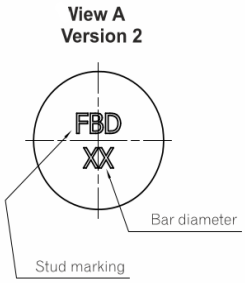
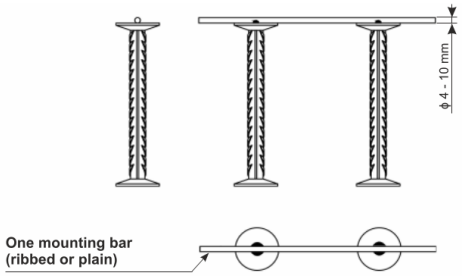




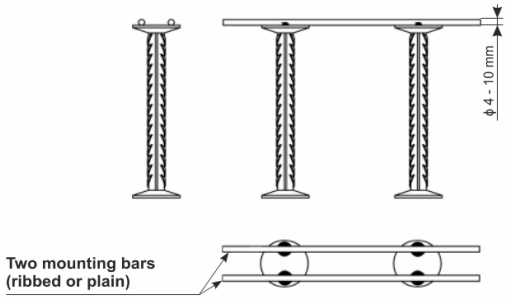


No.	Stud diameter $Ød_A$, mm	Head diameter $Ød_K$, mm	Head height h, mm	Head height h_0, mm	Stud diameter A,mm^2	Load F_{Rd}, kN (safety 1.15)
1	10	30 (+ 2 / - 1)	5 (+ 1)	2 (+ 1)	78.54	34.1
2	12	36 (+ 2 / - 1)	6 (+ 1.5)	2.5 (+ 1.5)	113.10	49.2
3	14	42 (+ 3 / - 1)	7 (+ 2.5)	3 (+ 2)	153.94	66.9
4	16	48 (+ 3 / - 1)	8 (+ 2.5)	3 (+ 2.5)	201.06	87.4
5	18	54 (+ 3 / - 1)	8,5 (+ 3)	3 (+ 3)	254.47	110.6
6	20	60 (+ 3 / - 1)	10 (+ 3)	3 (+ 3)	314.16	136.6
7	22	66 (+ 4 / - 1)	11 (+ 3.5)	3 (+ 3)	380.13	165.3
8	25	75 (+ 4 / - 1)	12 (+ 3.5)	3.5 (+ 3.5)	490.87	213.4
9	28	84 (+ 5 / - 1)	16 (+ 4)	4 (+ 4)	615.75	267.7
10	32	96 (+ 5 / - 1)	17 (+ 4)	4.5 (+ 4)	804.25	349.7
Length tolerance L: ± 5 mm $d_K = 3 \cdot d_A$						

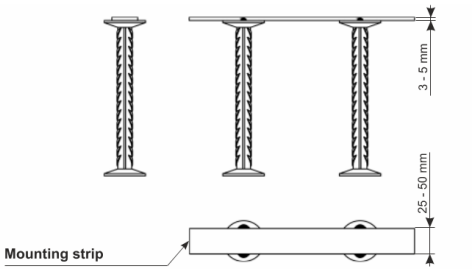
FBD-1P



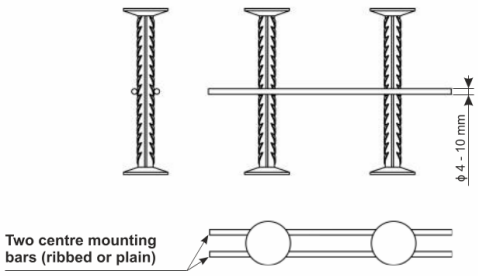
FBD



FBD-PK



FBD-2PS



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