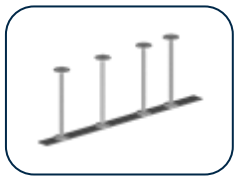
TECHNICAL DATASHEET

PLAKA - ARMATEC

Punching shear reinforcement

REF 01.06.01 - Version V01 - 10/08/2020



Description

Armatec consists of a series of studs aimed for the shear reinforcement of the most critical area in the floor slab. These reinforcement bars prevent the concrete slab from punching, by carrying the shear load induced by the columns in the slab.
The studs are welded onto a strip and are made out of ribbed bars. Both ends are hot-forged and have a shape of a nail head. The Armatec stud bars are to be installed radially around the column in the floor slab, according to a setting-out plan provided by the construction engineer or by Leviat.

Application fields

The Armatec dowels are applied :

- at the junction of columns in superstructure floor slabs (mushroom floors)
- at the junction of columns in foundation slabs.
- in floor slabs supported on piles

The punching shear reinforcement are also applied in case recesses are present in the slab near the column. The punching shear reinforcement can be used with preslabs. In this case, the stud bars should be integrated in the preslab during their production.

Properties

Mechanical properties	
Steel quality of the Armatec studs	Ribbed steel bar B500B
Steel quality of the strips	Steel S235JR
Available diameters	12 -16 -20 -25 mm
Technical advice	CSTB

For further infomation, please contact your Leviat office.
Belgium : info.plaka.be@leviat.com / + 32 (0) 2 582 29 45
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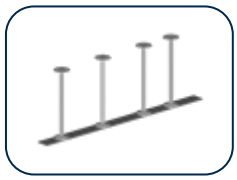
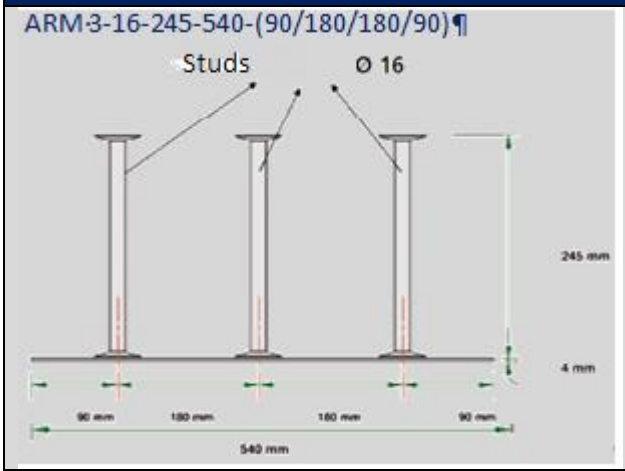


Various information

Nomenclature



ARM	Reference Armatec product
3	Number of studs per bar
16	Diameter of the rod of the stud [mm]
245	Length of the double-headed stud [mm]
540	Length of the strip [mm]
90/180/180/90	Indication of the position of the studs, from the end of the strip that is positioned near the column perimeter [mm]

Necessary information to calculate the Armatec reinforcement	
Floor slab	Total thickness Static height Resistance class of the concrete Flexural reinforcement ratio of the slab at the level of the column
Column	Dimensions of the column section Column type (interior - edge - corner - wall end - wall corner)
Other	Level floor plan, with clear indication of openings (position and size) and reinforcement ratio of the slab. Punching shear load (ULS.) For foundation slabs, the σ_p value of the soil pressure

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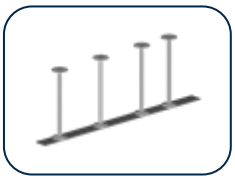
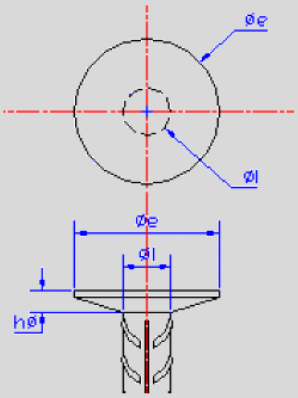


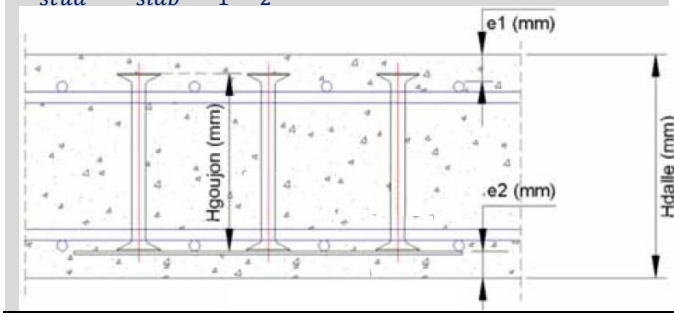
Stud

Diameters of the available studs and their geometrical characteristics.



ϕ_{stud}	ϕ_{head} = 3 x ϕ_{stud}	Minimal thickness of the head (h)
12mm	36mm	6mm
16mm	48mm	7mm
20mm	60mm	9mm
25mm	75mm	12mm

$H_{stud} = H_{slab} - e_1 - e_2 + a$



The stud height is defined by the thickness of the slab, and by the concrete cover of the slab reinforcement.

H_{stud}	Height of the stud[mm]
H_{slab}	Thickness of the slab[mm]
e_1	Concrete cover of the upper slab reinforcement [mm]
e_2	Concrete cover of the lower slab reinforcement [mm]
a	Extra height varies between 5mm (traditional) and 20mm

Support rail

The support rail cares for the good positioning of the studs in relation to the position of the column The rail presents holes allowing an easy installation. The holes allow the nailing of the rail onto the formwork panels, after installation of the adapted plastic or fibreconcrete spacers.

In the case of asymmetric rails, the end of the rail presenting a special notch has to be placed against the column perimeter.

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