



ALUFIX

Threaded bar working as ground anchor for AluBeam 100



SYSTEM COMPONENTS

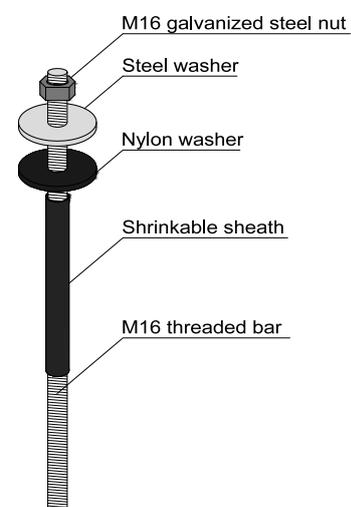
M16x400mm threaded bar, steel class 5.8

Black shrinkable sheath (already applied to each threaded bar)

M16 galvanized steel (class 8.8) hexagonal nut

Nylon washer, internal Φ 17mm, external Φ 40mm, thickness 3mm

Galvanized steel washer, internal Φ 17mm, external Φ 40mm, thickness 3mm



ADDITIONAL PRODUCTS



Socket wrench with 24mm exagonal head for the final tightening of the M16 nut



Percussion drill with 20mm drill bit, minimum length of the bit 400mm, in order to achieve the holes on the concrete plate



Compressor to clean the holes



Chemical anchoring resin to fix the M16 threaded bars to concrete

MOUNTING PHASES

- 1) Pierce the concrete plane right at the holes that are prepared on the pieces of profile ALUBEAM100
- 2) Clean the holes
- 3) Filling the holes with chemical anchoring resin
- 4) Before you insert the M16 bars into the holes, make sure you have them prepared as shown in the scheme on the previous page
- 5) Insert the M16 bars into the holes
- 6) Once the resin has hardened, tighten the M16 nut

MECHANICAL PROPERTIES

EFFICIENT LENGTH TO TRACTION

The efficient length to traction h_{ef} is calculated as the length of the bar that is absorbed into the concrete plate:

$$h_{ef} = L_{bar} - h_{profile} = 400 - 150 = 250 \text{ mm}$$

PUNCHING STRENGTH

The numerical and experimental models show that failure for traction forces due to seismic action, comes for punching of the horizontal element, at the contact between ALUBEAM100 and the washers.

The punching strength has been calculated according to EC9 - part.1-1 §8.5.5:

$$B_{p,Rd} = 29,5 \text{ kN}$$

SHEAR STRENGTH

Shear strength is the minor value between the M16 bar shear strength $F_{v,Rd}$, calculated according to D.M.14/01/2008 (NTC2008) §4.2.8 and the burr strength $F_{b,Rd}$ calculated at the lowest horizontal element of the profile, according to EC9 - part 1.1 §8.5.5:

$$F_{v,Rd} = 34,84 \text{ kN}$$

$$F_{b,Rd} = 25,6 \text{ kN}$$

Consequently the shear strength value is the burr strength.

Advice for calculation: The design values for the bars strengths (shear and traction strengths) we suggest to consider the data sheet of the chemical anchoring resin, provided by the companies producing them. Traction strength is the minor between the punching strength of the profile, the pull-out strength of the M16 bar and the concrete cone failure strength.

The numbers of ground anchoring bars associated to each aluminium plate are summarized on the table below:

PLATE	SH18	HD28	HD56	HD23/SH18	HD40/SH18
NR.OF BARS	1	1	2	2	2