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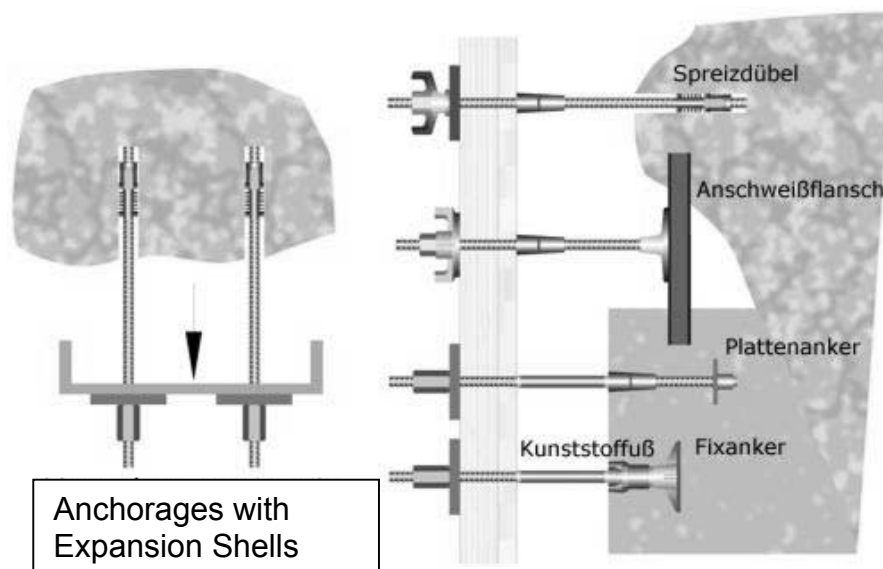
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## Installation of Expansion Shells

### 1 Applications, Characteristics



- Anchoring element in concrete and rock
- Expansion shell induces very high radial stresses to the underground (rock, concrete)
- Max. loading depends very much on the diameter of bore hole

## 2 Types, Data



Artikel No.	For bar-Ø [mm]	Bore hole-Ø [mm]	Weight [kg/pc.]
15F2128	15	32-34	0,20
15F2135	15	35-37	0,30
15F2184	15	35-37	0,40
20F2137	20	51-53	0,40
20F2136	20	43-45	0,40
26E2137	26	51-53	0,40

Table 1: Types

### Attention:

All following values can only be regarded as estimations for the real pull out loads. Therefore DYWIDAG SYSTEMS recommends to perform pull out tests on site.

### - Minimum anchoring depth $h_v$ and test results:

Article No.	Minimum anchoring depth $h_v$ [cm]	Pull out loads in DSI-tests with concrete strength 25 N/mm <sup>2</sup>	
		Bore hole [mm]	Pull out force [kN] * <sup>1</sup>
15F2128	20	33	108
15F2135	20	36	108
15F2184	20	35* <sup>2</sup>	140* <sup>2</sup>
20F2137	30	56	133
26E2137	45	56	133
26E2129	not recommended	not recommended	not recomm.

\*1: Note: To estimate working loads please consider security factors

\*2: This test was performed with a concrete strength of < 10 N/mm<sup>2</sup>

### - min. distance of bore holes a: $3 \times h_v$

### **3 Installation**

1. Drilling of borehole e.g. with HILTI TE-y 37/575. Please take care of the correct diameter (see table): It should be as small as possible.
2. Clean the borehole.
3. Screw the bar into the cone of the expansion shell.
4. Remove the black PE – Sleeve and insert the anchor into the bore hole. The shells should have slight contact with the borehole.
5. After insertion of the anchor screw the bar by hand (right hand thread) until the anchor is fixed and cannot be moved further.
6. Now you may close the borehole with cement grout.
7. Apply Anchor Plate and Nut; take care of a correct fixing.
8. Before hardening of cement grout prestress the anchor. This should be done at least once on site to control the loads that can be transferred (pull out test, see above).

#### **Accessories:**

##### Prestressing and Testing Equipment:

- please ask the nearest DSI unit

##### Nuts, Plates, Threadbars:

- see catalogue **DYWIDAG Form Tie System**