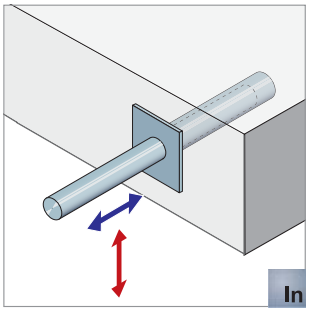
FRANK | Technologies for the construction industry


# Egcodubel

## Shear force dowel for low and middle loads

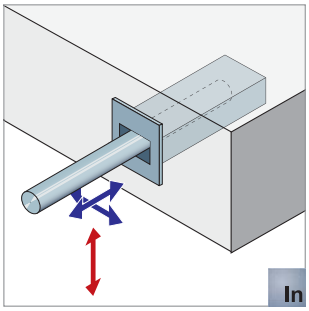
## Egcodubel
## for longitudinal movements

The Egcodubel with stainless steel sleeve is used in environments subject to high corrosion. The dowel core is made of structural steel quality S355 or it is available as high-grade material.



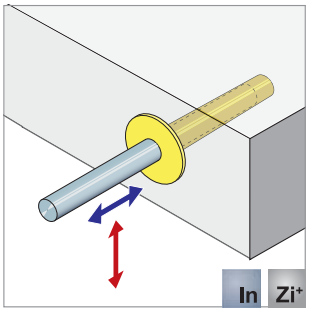

## Egcodubel
## for longitudinal & transverse movements

For transmission of movements orthogonal to the dowel axle the Egcodubel can also be supplied with a sleeve allowing for transverse movements. All other properties are identical with the above described Egcodubel for longitudinal movements.




## Egcodubel
## for longitudinal movements – plastic sleeve

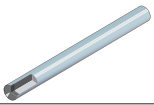
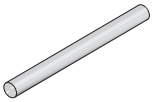
The Egcodubel can be combined with a plastic sleeve for transfer of less important loads or for connection of structural elements. The galvanised type of Egcodubel is used for environments without exposure to corrosion.



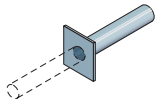
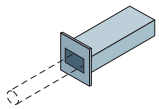
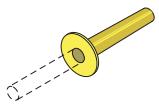

## Type designation

**Example: Egcodubel EDM 27 HF HQI**

Egcodubel | Type | Diameter | Dowel core | Sleeve design[1)]

| Dowel type | |
|---|---|
| Stainless steel  | **EDM** In |
| Galvanised[2)]  | EDV Zi+ |

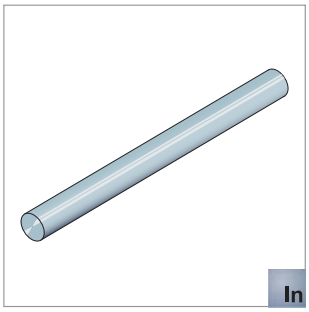
| Dowel core/ Dowel material | Diameter [mm] | Length [mm] |
|---|---|---|
| **HF** | 20 | 340 |
| | 22 | 350 |
| | 25[3)] | 360 |
| | **27**[4)] | 360 |
| | 30 | 400 |
| | 37[4)] | 470 |
| S355 | 20 | 300 |
| | 22 | 300 |
| | 25[3)] | 300 |
| | 27[4)] | 300 |
| | 30 | 350 |

| Sleeve design | |
|---|---|
| Stainless steel sleeve for longitudinal movement  | HI In |
| Stainless steel sleeve for longitudinal and transverse movement  | **HQI** In |
| Plastic sleeve for longitudinal movement up to max. Ø 30 mm  | H P+ |

1) *Optional, not necessary when dowel without sleeve is used.*
2) *Types may only be combined with plastic sleeve.*
3) *Only galvanised*
4) *Only stainless steel*

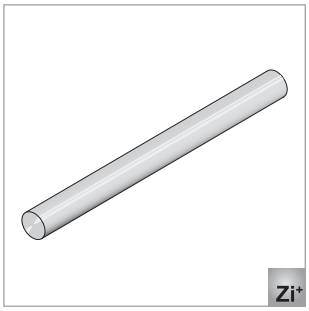
## Egcodubel with stainless steel sleeve

Egcodubel systems can also be supplied without gliding sleeves to produce dowel connections between construction joints or contraction joints. For environments subject to strong corrosion, specifiers must use the dowel type with stainless steel sleeve.



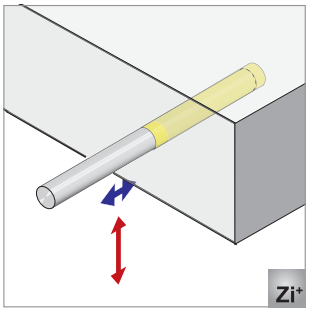

## Egcodubel galvanised

If the concrete cover ensures sufficient corrosion protection, the galvanised Egcodubel type for construction joints or contraction joints is sufficient.




## Egcodubel for absorption of forced stress (one end coated with soft plastic)

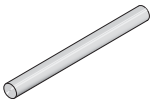
The galvanised Egcodubel is fitted with a half-sided coating made of soft plastic material for absorption of forced stress, e.g. stress caused by temperature influence.



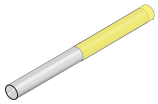
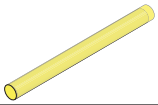

## Type designation – Egcodubel for track slabs

**Example: Egcodubel EDV 18 S235 E**

Egcodubel | Type | Diameter | Dowel core | Expansion sleeve[5]

| Dowel type | |
|---|---|
| Galvanised  | **EDV** Zi+ |

| Dowel core/ Dowel material | Diameter [mm] | Length [mm] |
|---|---|---|
| S355 | 20 | 500 |
| | 22 | 500 |
| | 25 | 500 |
| **S235** | **18** | 500 |
| | 20 | 500 |
| | 22 | 500 |
| | 25 | 500 |
| | 28 | 500 |

| Coating[6] | |
|---|---|
| half-sided coating, expansion sleeve  | **E** |
| completely plastic coated[7]  | B |

*5) Optional, dowel without expansion sleeve or coating*
*6) If coated no sleeve necessary.*
*7) Only available for dowel S235 diameter 25 mm*

**Key**

Stainless steel . . . . . In
Galvanised . . . . . Zi+
Plastic . . . . . P+

Force . . . . . ↕
Movement . . . . . ↔

### Stainless steel dowel, high-grade steel core, longitudinal movements

| Dowel type | | EDM20HF | EDM22HF | EDM27HF | EDM30HF | EDM37HF |
|---|---|---|---|---|---|---|
| $h_{min}$ | [mm] | 160 | 180 | 200 | 220 | 260 |
| $e_{min}$ | [mm] | 310 | 370 | 440 | 500 | 630 |
| z | [mm] | $V_{Rd,S}$ [kN] | | | | |
| 10 | | **39.8** | **51.1** | **86.4** | **112.2** | **185.2** |
| 20 | | **29.8** | **39.0** | **68.0** | **89.8** | **153.9** |
| 30 | | **23.9** | **31.5** | **56.1** | **74.8** | **130.9** |
| 40 | | **19.9** | **26.4** | **47.7** | **64.1** | **113.9** |
| 50 | | **17.0** | **22.7** | **41.5** | **56.1** | **100.8** |

### Stainless steel dowel, core S355, longitudinal movements

| Dowel type | | EDM20S355 | EDM22S355 | EDM27S355 | EDM30S355 | EDM37S355 |
|---|---|---|---|---|---|---|
| $h_{min}$ | [mm] | 160 | 180 | 200 | 220 | 260 |
| $e_{min}$ | [mm] | 310 | 370 | 440 | 500 | 630 |
| z | [mm] | $V_{Rd,S}$ [kN] | | | | |
| 10 | | **18.8** | **24.2** | **40.9** | **53.1** | **87.7** |
| 20 | | **14.1** | **18.4** | **32.2** | **42.5** | **72.8** |
| 30 | | **11.3** | **14.9** | **26.5** | **35.4** | **62.0** |
| 40 | | **9.4** | **12.5** | **22.6** | **30.4** | **53.9** |
| 50 | | **8.1** | **10.8** | **19.6** | **26.6** | **47.7** |

### Galvanised dowel, material: high-grade steel, longitudinal movements

| Dowel type | | EDV20HF | EDV22HF | EDV25HF | EDV30HF |
|---|---|---|---|---|---|
| $h_{min}$ | [mm] | 160 | 180 | 200 | 220 |
| $e_{min}$ | [mm] | 310 | 370 | 440 | 500 |
| z | [mm] | $V_{Rd,S}$ [kN] | | | |
| 10 | | **54.5** | **68.1** | **91.1** | **136.9** |
| 20 | | **40.9** | **51.9** | **71.0** | **110.5** |
| 30 | | **32.7** | **41.9** | **58.1** | **92.0** |
| 40 | | **27.3** | **35.1** | **49.2** | **78.9** |
| 50 | | **23.4** | **30.3** | **42.6** | **69.0** |

### Galvanised dowel, material: S355, longitudinal movements

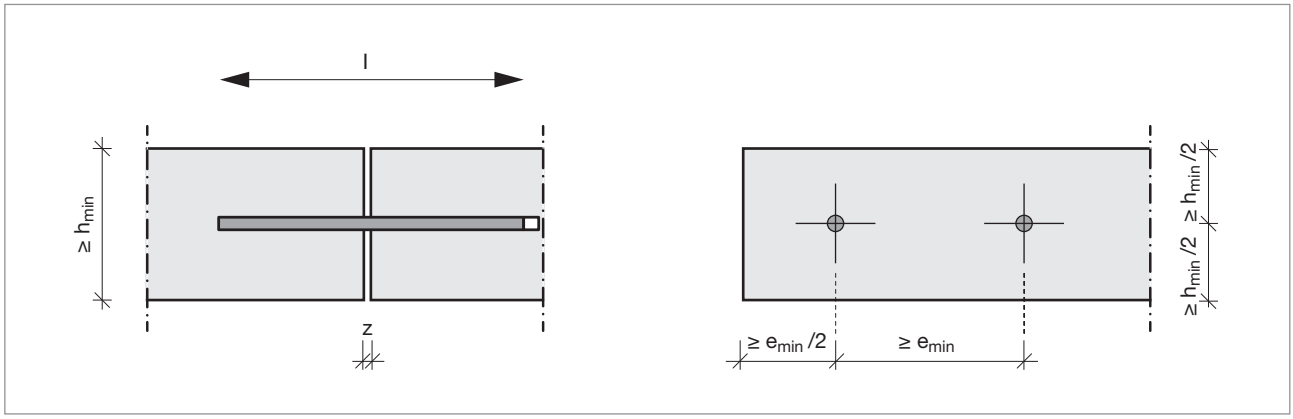
| Dowel type | | EDV20S355 | EDV22S355 | EDV25S355 | EDV30S355 |
|---|---|---|---|---|---|
| $h_{min}$ | [mm] | 160 | 180 | 200 | 220 |
| $e_{min}$ | [mm] | 310 | 370 | 440 | 500 |
| z | [mm] | $V_{Rd,S}$ [kN] | | | |
| 10 | | **25.8** | **32.2** | **43.1** | **64.8** |
| 20 | | **19.4** | **24.5** | **33.6** | **52.3** |
| 30 | | **15.5** | **19.8** | **27.5** | **43.6** |
| 40 | | **12.9** | **16.6** | **23.3** | **37.3** |
| 50 | | **11.1** | **14.3** | **20.2** | **32.7** |

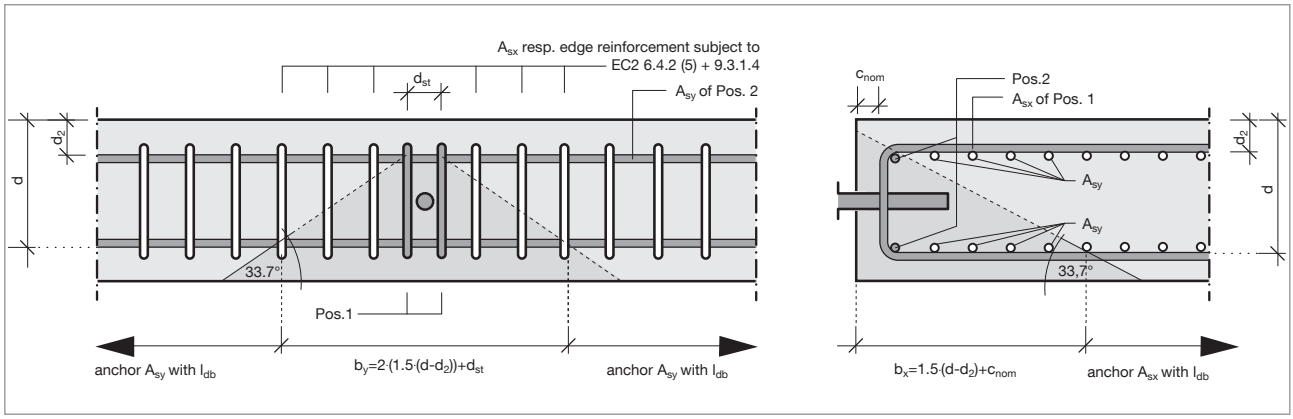
### Stainless steel dowel, high-grade steel core, longitudinal and transverse movements

| Dowel type | | EDM20HF | EDM22HF | EDM27HF | EDM30HF | EDM37HF |
|---|---|---|---|---|---|---|
| $h_{min}$ | [mm] | 160 | 180 | 200 | 220 | 260 |
| $e_{min}$ | [mm] | 310 | 370 | 440 | 500 | 630 |
| z | [mm] | $V_{Rd,S}$ [kN] | | | | |
| 10 | | **35.8** | **46.0** | **77.7** | **100.9** | **166.7** |
| 20 | | **26.8** | **35.1** | **61.2** | **80.8** | **138.5** |
| 30 | | **21.5** | **28.3** | **50.5** | **67.4** | **117.8** |
| 40 | | **17.9** | **23.8** | **42.9** | **57.7** | **102.5** |
| 50 | | **15.3** | **20.5** | **37.4** | **50.5** | **90.7** |

### Stainless steel dowel, core S355, longitudinal and transverse movements

| Dowel type | | EDM20S355 | EDM22S355 | EDM27S355 | EDM30S355 | EDM37S355 |
|---|---|---|---|---|---|---|
| $h_{min}$ | [mm] | 160 | 180 | 200 | 220 | 260 |
| $e_{min}$ | [mm] | 310 | 370 | 440 | 500 | 630 |
| z | [mm] | $V_{Rd,S}$ [kN] | | | | |
| 10 | | **16.9** | **21.8** | **36.8** | **47.8** | **78.9** |
| 20 | | **12.7** | **16.6** | **29.0** | **38.3** | **65.5** |
| 30 | | **10.2** | **13.4** | **23.9** | **31.9** | **55.8** |
| 40 | | **8.5** | **11.2** | **20.3** | **27.3** | **48.5** |
| 50 | | **7.3** | **9.7** | **17.7** | **23.9** | **42.9** |




*$h_{min}$ = Minimum slab thickness*
*$e_{min}$ = Minimum dowel distance*
*z = Maximum joint width*

## Concrete bearing capacity, longitudinal movements

| Slab thickness [mm] | Concrete quality C20/25 | C25/30 | C30/37 | Pos. 1 | Pos. 2* | Suitable dowels depending on the minimum slab thickness |
|---|---|---|---|---|---|---|
| | $V_{Rd,C}$ | | | | | |
| 160 | **14.8** | **16.6** | **18.1** | 2ø10 | ø10 | EDV20 / EDM20 |
| 180 | **16.3** | **18.3** | **20.2** | 2ø10 | ø10 | EDV20 / EDM20 |
| 200 | **17.2** | **19.4** | **21.3** | 2ø10 | ø10 | EDV20 / EDM20 |
| | **23.1** | **25.9** | **28.5** | 2ø12 | ø12 | EDV20 / EDM20 |
| 220 | **18.8** | **21.1** | **23.3** | 2ø10 | ø10 | EDV20 / EDM20 |
| | **24.9** | **28.1** | **30.9** | 2ø12 | ø12 | EDV20 / EDM20 |
| 240 | **26.8** | **30.2** | **33.3** | 2ø12 | ø12 | EDV20 / EDM20 |
| | **34.1** | **38.4** | **42.3** | 2ø14 | ø14 | EDV20 / EDM20 |
| 260 | **27.9** | **31.4** | **34.7** | 2ø12 | ø12 | EDV20 / EDM20 |
| | **35.4** | **39.8** | **43.9** | 2ø14 | ø14 | EDV20 / EDM20 |
| 280 | **29.7** | **33.5** | **37.1** | 2ø12 | ø12 | EDV20 / EDM20 |
| | **37.5** | **42.3** | **46.7** | 2ø14 | ø14 | EDV20 / EDM20 |
| 300 | **39.6** | **44.8** | **49.5** | 2ø14 | ø14 | EDV20 / EDM20 |
| | **48.6** | **54.8** | **60.5** | 2ø16 | ø16 | EDV20 / EDM20 |
| 350 | **44.9** | **50.9** | **56.4** | 2ø14 | ø14 | EDV20 / EDM20 |
| | **54.6** | **61.8** | **68.4** | 2ø16 | ø16 | EDV20 / EDM20 |
| 400 | **60.6** | **68.7** | **76.2** | 2ø16 | ø16 | EDV20 / EDM20 |
| 450 | **66.6** | **75.7** | **84.0** | 2ø16 | ø16 | EDV20 / EDM20 |
| 500 | **72.5** | **82.5** | **91.8** | 2ø16 | ø16 | EDV20 / EDM20 |
| 550 | **78.5** | **89.4** | **99.5** | 2ø16 | ø16 | EDV20 / EDM20 |
| 600 | **84.4** | **96.2** | **107.3** | 2ø16 | ø16 | EDV20 / EDM20 |
| 650 | **90.2** | **103.1** | **115.0** | 2ø16 | ø16 | EDV20 / EDM20 |
| 700 | **96.1** | **109.9** | **122.7** | 2ø16 | ø16 | EDV20 / EDM20 |
| 750 | **102.0** | **116.7** | **130.4** | 2ø16 | ø16 | EDV20 / EDM20 |
| 800 | **107.9** | **123.5** | **138.1** | 2ø16 | ø16 | EDV20 / EDM20 |

** The reinforcement must be inserted both, at the top and at the bottom.*
*Rate values apply to $c_{nom}$ = 35 mm*
*The less rate value form steel bearing capacity and concrete bearing capacity is determined.*

## Concrete bearing capacity, longitudinal and transverse movements

| Slab thickness [mm] | Concrete quality | | | Pos. 1 | Pos. 2* | Suitable dowels depending on the minimum slab thickness |
|---|---|---|---|---|---|---|
| | C20/25 | C25/30 | C30/37 | | | |
| | $V_{Rd,C}$ | | | | | |
| 160 | **12.5** | **14.0** | **15.4** | 2ø10 | ø10 | EDM20 |
| 180 | **13.0** | **14.5** | **15.9** | 2ø10 | ø10 | EDM20 |
| 200 | **13.8** | **15.5** | **17.0** | 2ø10 | ø10 | EDM20 |
| | **18.7** | **20.9** | **22.9** | 2ø12 | ø12 | EDM20 |
| 220 | **15.2** | **17.1** | **18.9** | 2ø10 | ø10 | EDM20 |
| | **20.4** | **22.9** | **25.1** | 2ø12 | ø12 | EDM20 |
| 240 | **22.1** | **24.8** | **27.3** | 2ø12 | ø12 | EDM20 |
| | **28.3** | **31.7** | **34.9** | 2ø14 | ø14 | EDM20 |
| 260 | **23.1** | **26.0** | **28.7** | 2ø12 | ø12 | EDM20 |
| | **29.4** | **33.1** | **36.4** | 2ø14 | ø14 | EDM20 |
| 280 | **24.8** | **27.9** | **30.9** | 2ø12 | ø12 | EDM20 |
| | **31.4** | **35.4** | **39.0** | 2ø14 | ø14 | EDM20 |
| 300 | **33.3** | **37.6** | **41.5** | 2ø14 | ø14 | EDM20 |
| | **41.0** | **46.2** | **50.9** | 2ø16 | ø16 | EDM20 |
| 350 | **38.2** | **43.2** | **47.8** | 2ø14 | ø14 | EDM20 |
| | **46.5** | **52.6** | **58.1** | 2ø16 | ø16 | EDM20 |
| 400 | **52.0** | **58.9** | **65.3** | 2ø16 | ø16 | EDM20 |
| 450 | **57.4** | **65.2** | **72.4** | 2ø16 | ø16 | EDM20 |
| 500 | **62.8** | **71.4** | **79.4** | 2ø16 | ø16 | EDM20 |
| 550 | **68.2** | **77.6** | **86.4** | 2ø16 | ø16 | EDM20 |
| 600 | **73.5** | **83.8** | **93.4** | 2ø16 | ø16 | EDM20 |
| 650 | **78.9** | **90.0** | **100.4** | 2ø16 | ø16 | EDM20 |
| 700 | **84.2** | **96.2** | **107.4** | 2ø16 | ø16 | EDM20 |
| 750 | **89.5** | **102.3** | **114.3** | 2ø16 | ø16 | EDM20 |
| 800 | **94.8** | **108.5** | **121.3** | 2ø16 | ø16 | EDM20 |

** The reinforcement must be inserted both, at the top and at the bottom.*
*Rate values apply to $c_{nom}$ = 35 mm*
*The less rate value form steel bearing capacity and concrete bearing capacity is determined.*

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