

FRANK | Technologies for the construction industry



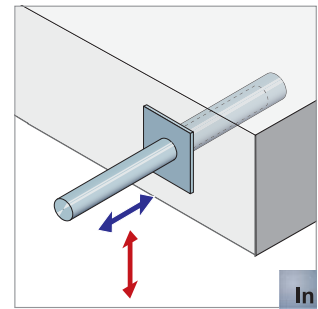
Egcodubel

Shear force dowel for low and middle loads



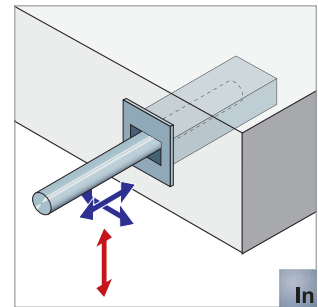
Egcodubel for longitudinal movements

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.



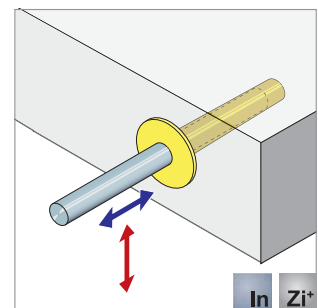
Egcodubel for longitudinal & transverse movements

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.



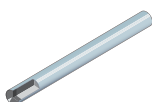
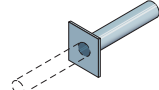


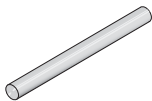
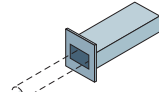


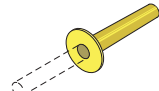

Type designation

Example: Egcodubel EDM
Egcodubel Type

27
Diameter

HF
Dowel core

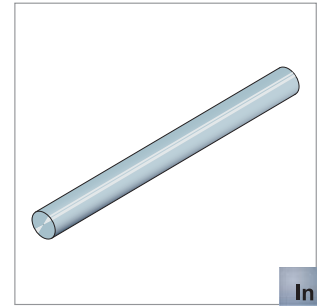
HQI
Sleeve design¹⁾

Dowel type		Dowel core/ Dowel material	Diameter [mm]	Length [mm]	Sleeve design		
Stainless steel 	EDM	HF	20	340	Stainless steel sleeve for longitudinal movement 	HI	
			22	350			
Galvanised ²⁾ 	EDV		25 ³⁾	360	Stainless steel sleeve for longitudinal and transverse movement 	HQI	
			27⁴⁾	360			
			30	400		Plastic sleeve for longitudinal movement up to max. Ø 30 mm 	H
			37 ⁴⁾	470			
		S355	20	300			
			22	300			
			25 ³⁾	300			
			27 ⁴⁾	300			
			30	350			

- 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

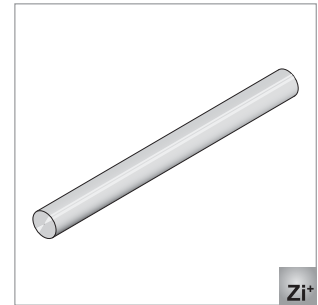
Egcodubel with stainless steel sleeve

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.



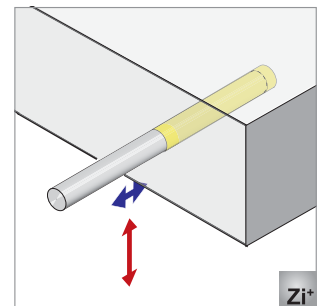
Egcodubel galvanised

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 sleeve⁵⁾

Dowel type		Dowel core/ Dowel material	Diameter [mm]	Length [mm]	Coating ⁶⁾		
Galvanised 	EDV	S355	20	500	half-sided coating, expansion sleeve 	E	
			22	500			
			25	500			
	Zi+	18	S235	20	500	completely plastic coated ⁷⁾ 	B
				22	500		
				25	500		
				28	500		

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		Force	
Galvanised		Movement	
Plastic			

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

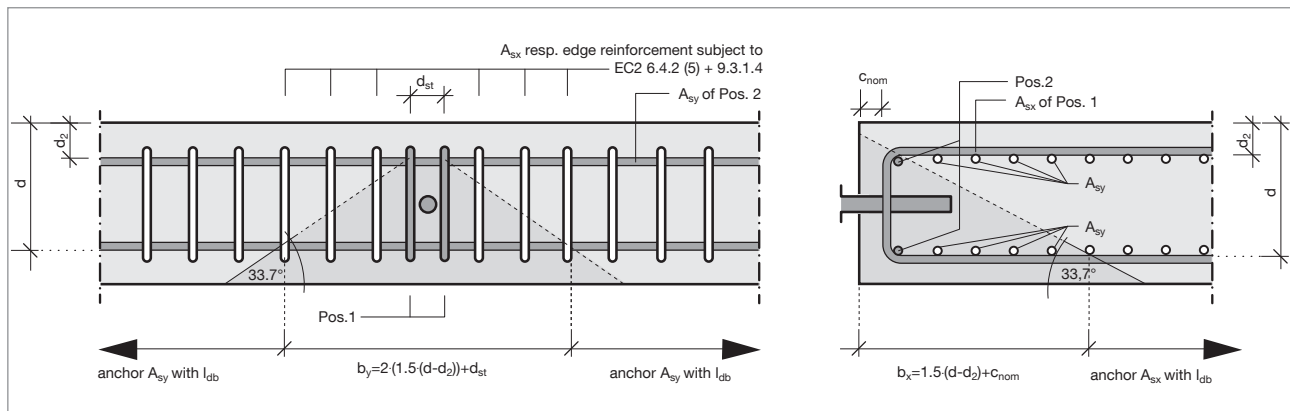
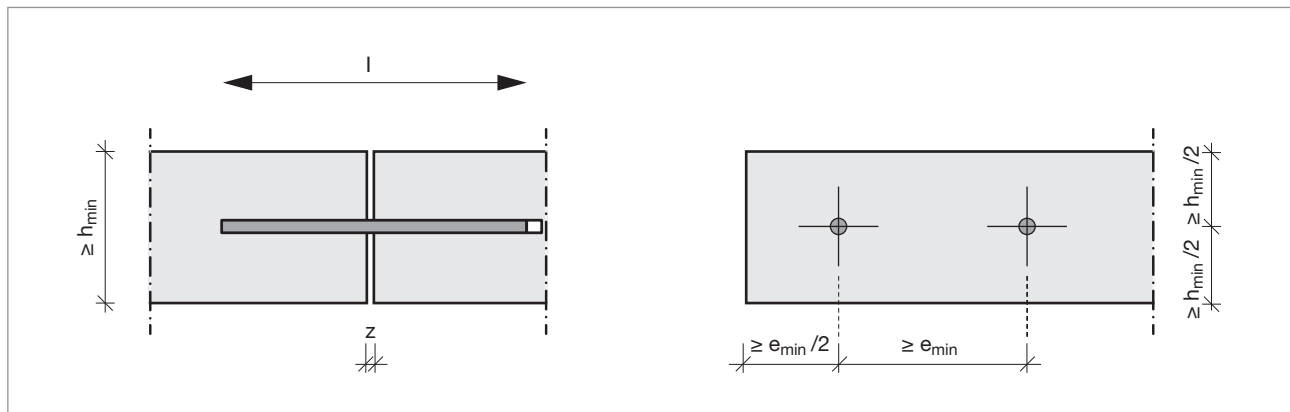
Dowel type	EDV20S355	EDV22S355	EDV25S355	EDV30S355
h_{\min} [mm]	160	180	200	220
e_{\min} [mm]	310	370	440	500
z [mm]	$V_{Rd,S}$ [kN]			
10	25.8	32.2	43.1	64.8
20	19.4	24.5	33.6	52.3
30	15.5	19.8	27.5	43.6
40	12.9	16.6	23.3	37.3
50	11.1	14.3	20.2	32.7

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			Pos. 1	Pos. 2*	Suitable dowels depending on the minimum slab thickness				
	C20/25	C25/30	C30/37			$V_{Rd,C}$				
160	14.8	16.6	18.1	2ø10	ø10	EDV20 / EDM20	EDV22 / EDM22	EDV25 / EDM27	EDV30 / EDM30	EDM37
180	16.3	18.3	20.2	2ø10	ø10					
200	17.2	19.4	21.3	2ø10	ø10					
	23.1	25.9	28.5	2ø12	ø12					
220	18.8	21.1	23.3	2ø10	ø10					
	24.9	28.1	30.9	2ø12	ø12					
240	26.8	30.2	33.3	2ø12	ø12					
	34.1	38.4	42.3	2ø14	ø14					
260	27.9	31.4	34.7	2ø12	ø12					
	35.4	39.8	43.9	2ø14	ø14					
280	29.7	33.5	37.1	2ø12	ø12					
	37.5	42.3	46.7	2ø14	ø14					
300	39.6	44.8	49.5	2ø14	ø14					
	48.6	54.8	60.5	2ø16	ø16					
350	44.9	50.9	56.4	2ø14	ø14					
	54.6	61.8	68.4	2ø16	ø16					
400	60.6	68.7	76.2	2ø16	ø16					
450	66.6	75.7	84.0	2ø16	ø16					
500	72.5	82.5	91.8	2ø16	ø16					
550	78.5	89.4	99.5	2ø16	ø16					
600	84.4	96.2	107.3	2ø16	ø16					
650	90.2	103.1	115.0	2ø16	ø16					
700	96.1	109.9	122.7	2ø16	ø16					
750	102.0	116.7	130.4	2ø16	ø16					
800	107.9	123.5	138.1	2ø16	ø16					

* 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	EDM22	EDM27	EDM30	EDM37
180	13.0	14.5	15.9	2ø10	ø10					
200	13.8	15.5	17.0	2ø10	ø10					
	18.7	20.9	22.9	2ø12	ø12					
220	15.2	17.1	18.9	2ø10	ø10					
	20.4	22.9	25.1	2ø12	ø12					
240	22.1	24.8	27.3	2ø12	ø12					
	28.3	31.7	34.9	2ø14	ø14					
260	23.1	26.0	28.7	2ø12	ø12					
	29.4	33.1	36.4	2ø14	ø14					
280	24.8	27.9	30.9	2ø12	ø12					
	31.4	35.4	39.0	2ø14	ø14					
300	33.3	37.6	41.5	2ø14	ø14					
	41.0	46.2	50.9	2ø16	ø16					
350	38.2	43.2	47.8	2ø14	ø14					
	46.5	52.6	58.1	2ø16	ø16					
400	52.0	58.9	65.3	2ø16	ø16					
450	57.4	65.2	72.4	2ø16	ø16					
500	62.8	71.4	79.4	2ø16	ø16					
550	68.2	77.6	86.4	2ø16	ø16					
600	73.5	83.8	93.4	2ø16	ø16					
650	78.9	90.0	100.4	2ø16	ø16					
700	84.2	96.2	107.4	2ø16	ø16					
750	89.5	102.3	114.3	2ø16	ø16					
800	94.8	108.5	121.3	2ø16	ø16					

* 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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