

Plaka Stabox Technical

Calculation of shearing forces at the construction joints



Calculation compliant
with NBN EN 1992-1-1
and the National Belgian
annex (ANB)



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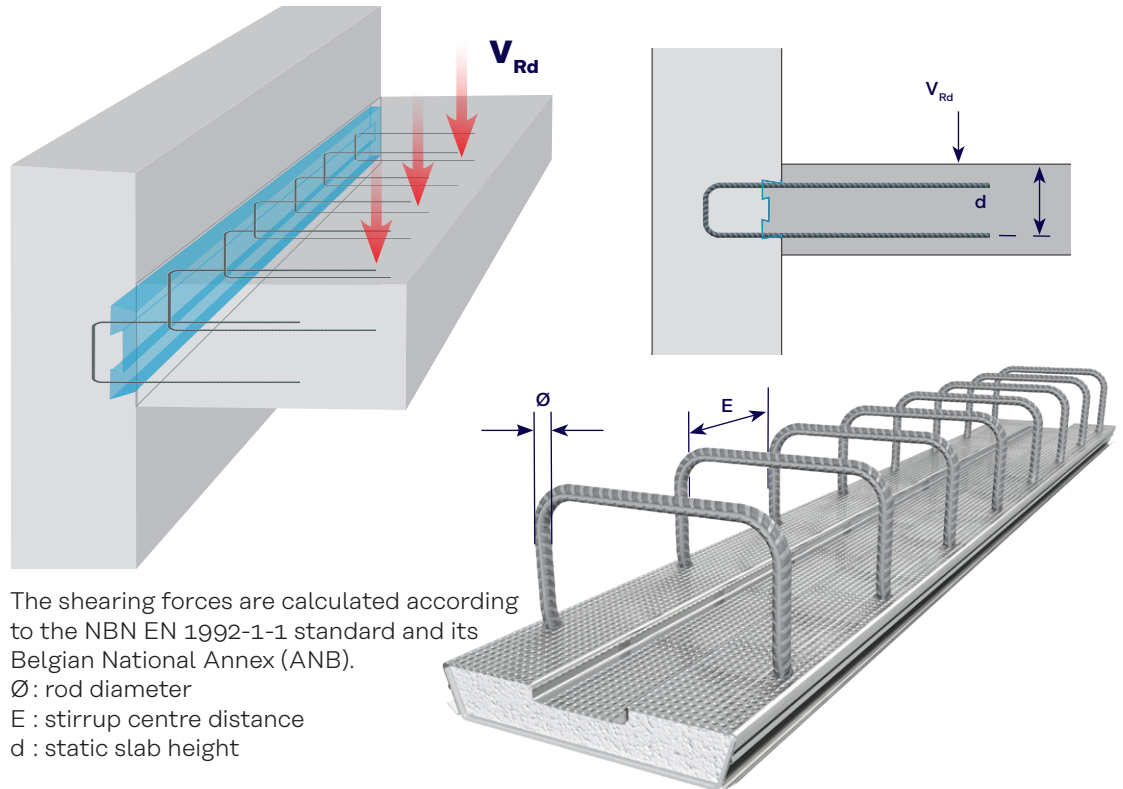
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Stabox Type D

The STABOX standby box is calculated in compliance with Eurocode 2 (NBN EN 1992-1-1) and the Belgian National Annex (ANB). This calculation differentiates the shearing force perpendicular to the construction joint (slab-shell link), where the static height "d" impacts the load capacity, and the shearing force parallel to the construction joint (shell-shell link) where the surface of the joint is totally rough. B500B reinforcement (with AFCAB, BENOR and KIWA certificates) after folding and unfolding remains compliant with the standards without having to reduce the shearing force capacity.

Shearing force perpendicular to the joint



The shearing forces are calculated according to the NBN EN 1992-1-1 standard and its Belgian National Annex (ANB).
 \emptyset : rod diameter
 E : stirrup centre distance
 d : static slab height

V_{Rd} (kN/m)

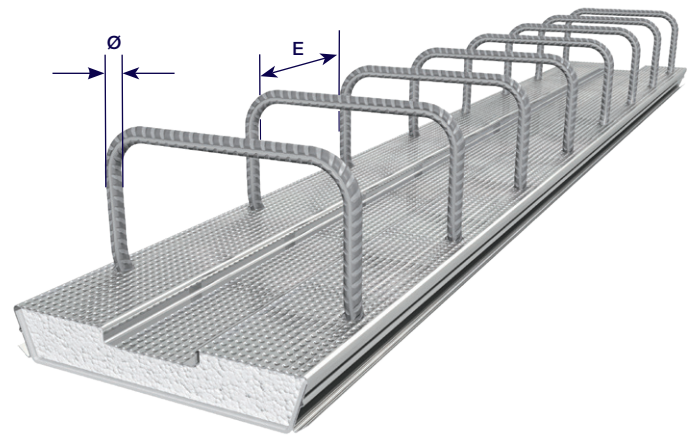
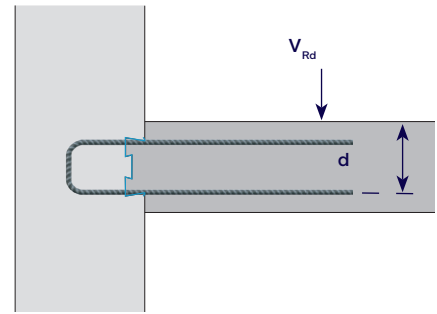
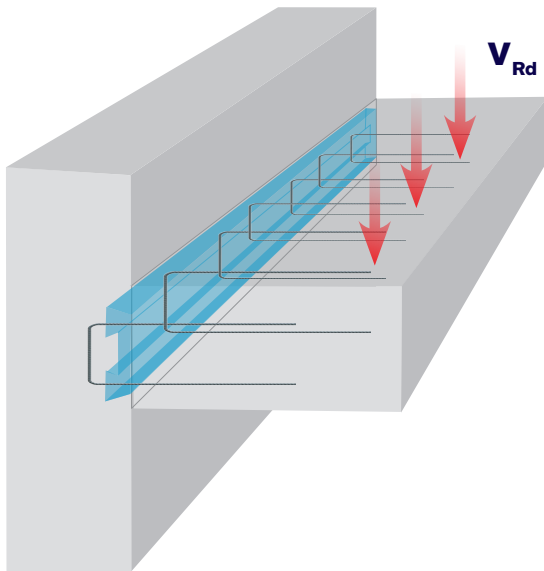
		C25/30							
\emptyset (mm)	E (mm)	d=120 mm	d=130 mm	d=140 mm	d=150 mm	d=160 mm	d=170 mm	d=180 mm	d=190 mm
6	200	41,28	43,55	45,75	47,90	50,01	52,07	54,10	56,08
6	240	38,85	40,98	43,05	45,08	47,06	49,00	50,91	52,77
8	150	55,04	58,06	61,00	63,87	66,68	69,43	72,13	74,77
8	200	50,01	52,75	55,42	58,03	60,58	63,08	65,53	67,94
8	240	47,06	49,64	52,16	54,61	57,01	59,36	61,67	63,93
10	150	63,87	67,37	70,79	74,12	77,38	80,57	83,70	86,77
10	200	58,03	61,21	64,31	67,34	70,30	73,20	76,04	78,83
12	150	72,13	76,08	79,93	83,70	87,38	90,98	94,51	97,98
12	200	65,53	69,12	72,62	76,04	79,39	82,66	85,87	89,02

		C25/30						
\emptyset (mm)	E (mm)	d=200 mm	d=210 mm	d=220 mm	d=230 mm	d=240 mm	d=250 mm	d=260 mm
6	200	58,03	59,23	60,40	61,55	62,68	63,79	64,87
6	240	54,61	55,74	56,84	57,92	58,98	60,02	61,05
8	150	77,38	78,97	80,53	82,07	83,57	85,05	86,50
8	200	70,30	71,75	73,17	74,56	75,93	77,27	78,59
8	240	66,16	67,52	68,85	70,16	71,45	72,71	73,96
10	150	89,79	91,64	93,45	95,23	96,97	98,69	100,37
10	200	81,58	83,26	84,91	86,52	88,11	89,66	91,20
12	150	101,39	103,48	105,53	107,54	109,51	111,44	113,35
12	200	92,12	94,02	95,88	97,70	99,49	101,25	102,98



Stabox Type D

Shearing force perpendicular to the joint



The shearing forces are calculated according to the NBN EN 1992-1-1 standard and its Belgian National Annex (ANB).

Ø : rod diameter

E : stirrup centre distance

d : static slab height

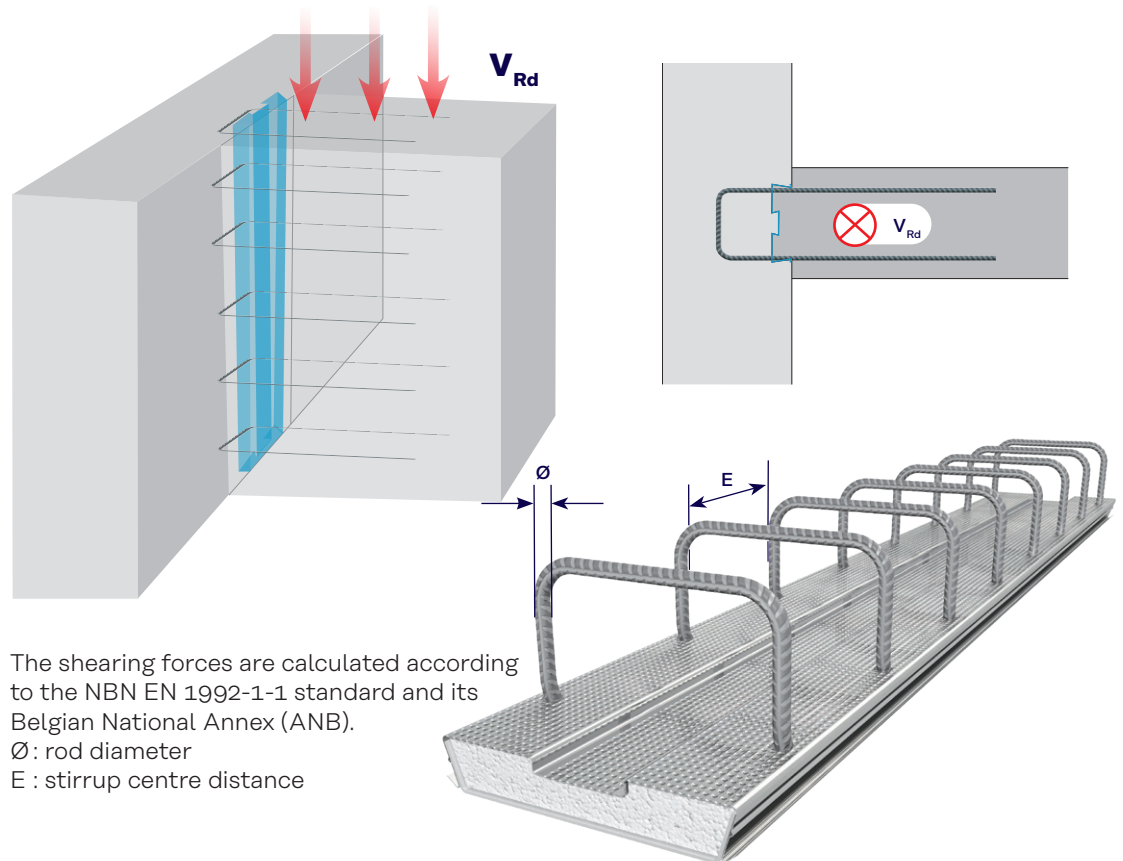
V_{Rd} (kN/m)

C30/37									
Ø (mm)	E (mm)	d=120 mm	d=130 mm	d=140 mm	d=150 mm	d=160 mm	d=170 mm	d=180 mm	d=190 mm
6	200	43,87	46,27	48,62	50,91	53,14	55,34	57,48	59,59
6	240	41,28	43,55	45,75	47,90	50,01	52,07	54,10	56,08
8	150	58,49	61,70	64,82	67,87	70,86	73,78	76,65	79,46
8	200	53,14	56,06	58,90	61,67	64,38	67,03	69,64	72,19
8	240	50,01	52,75	55,42	58,03	60,58	63,08	65,53	67,94
10	150	67,87	71,59	75,22	78,76	82,22	85,62	88,94	92,20
10	200	61,67	65,05	68,34	71,56	74,71	77,79	80,81	83,77
12	150	76,65	80,85	84,94	88,94	92,85	96,68	100,44	104,12
12	200	69,64	73,45	77,18	80,81	84,36	87,84	91,25	94,60

C30/37								
Ø (mm)	E (mm)	d=200 mm	d=210 mm	d=220 mm	d=230 mm	d=240 mm	d=250 mm	d=260 mm
6	200	61,67	62,94	64,18	65,41	66,60	67,78	68,94
6	240	58,03	59,23	60,40	61,55	62,68	63,79	64,87
8	150	82,22	83,92	85,58	87,21	88,81	90,38	91,92
8	200	74,71	76,25	77,75	79,23	80,69	82,11	83,51
8	240	70,30	71,75	73,17	74,56	75,93	77,27	78,59
10	150	95,41	97,38	99,31	101,20	103,05	104,87	106,66
10	200	86,69	88,47	90,23	91,94	93,63	95,28	96,91
12	150	107,74	109,96	112,14	114,27	116,37	118,43	120,45
12	200	97,89	99,91	101,89	103,82	105,73	107,60	109,43

Stabox Type D

Shearing force parallel with the joint



The shearing forces are calculated according to the NBN EN 1992-1-1 standard and its Belgian National Annex (ANB).

\varnothing : rod diameter

E : stirrup centre distance

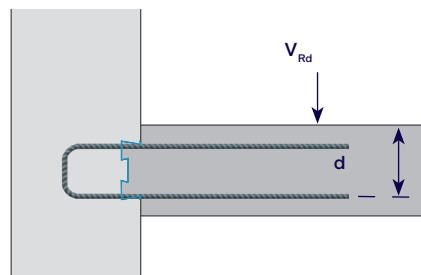
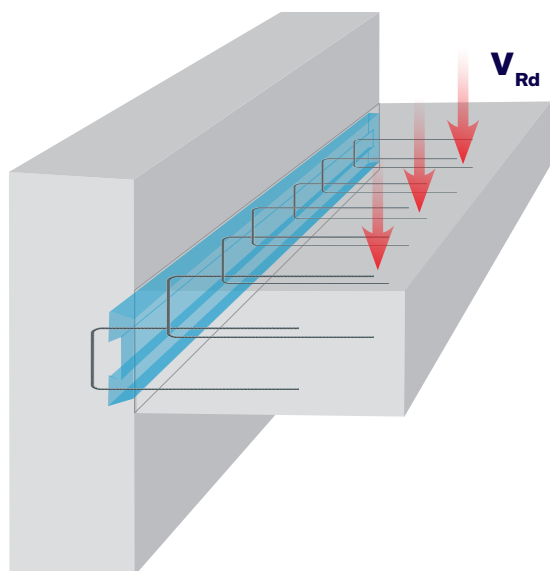
V_{Rd} (kN/m)

		C25/30				
\varnothing (mm)	E (mm)	Type 90D	Type 120D	Type 160D	Type 190 D	Type 230D
6	200	128,89	143,17	-	-	-
6	240	114,55	128,83	-	-	-
8	150	246,82	261,10	280,14	294,42	313,46
8	200	195,82	210,10	229,14	243,42	262,46
8	240	170,32	184,60	-	-	-
10	150	361,55	375,83	394,87	409,15	428,19
10	200	281,87	296,15	315,19		348,51
12	150	-	-	535,11	549,39	568,43
12	200	-	-	420,37	434,65	-

		C30/37				
\varnothing (mm)	E (mm)	Type 90D	Type 120D	Type 160D	Type 190 D	Type 230D
6	200	134,65	150,85	-	-	-
6	240	120,31	136,51	-	-	-
8	150	252,58	268,78	290,38	306,58	328,18
8	200	201,58	217,78	239,38	255,58	277,18
8	240	176,08	192,28	-	-	-
10	150	367,31	383,51	405,11	421,31	442,91
10	200	287,63	303,83	325,43	341,63	363,23
12	150	-	-	545,35	561,55	583,15
12	200	-	-	430,61	446,81	-

Stabox Type S

Shearing force perpendicular to the joint

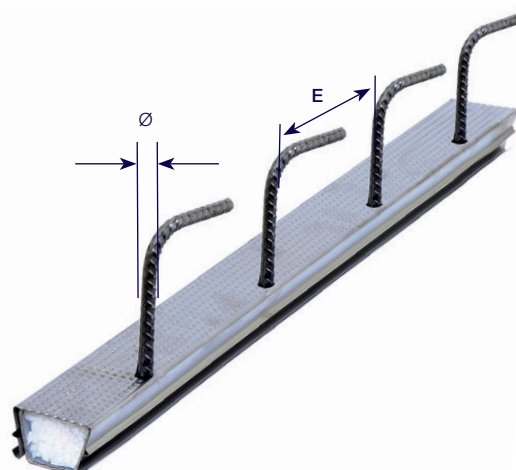


The shearing forces are calculated according to the NBN EN 1992-1-1 standard and its Belgian National Annex (ANB).

Ø : rod diameter

E : stirrup centre distance

d : static slab height



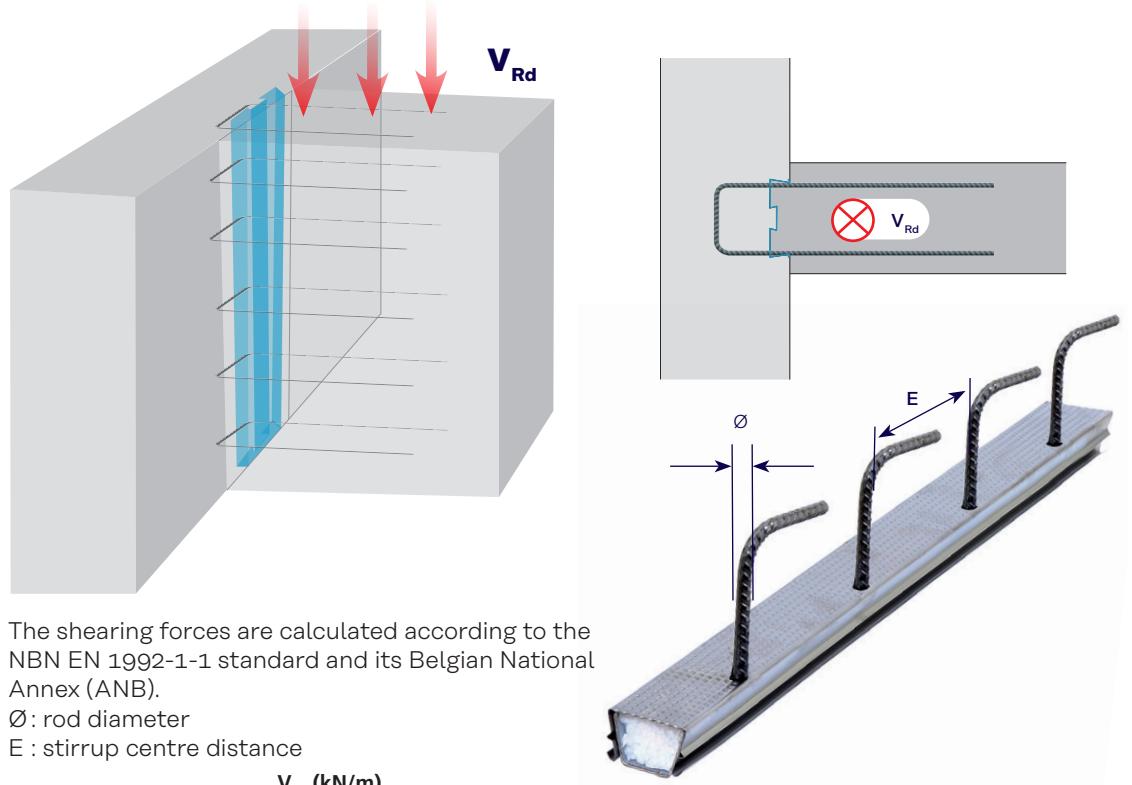
V_{Rd} (kN/m)

C25/30							
Ø (mm)	E (mm)	d=60 mm	d=70 mm	d=80 mm	d=90 mm	d=100 mm	d=110 mm
6	200	26,01	28,82	31,50	34,08	36,56	38,96
6	240	24,47	27,12	29,65	32,07	34,40	36,66
6	300	22,72	25,18	27,52	29,77	31,94	34,03
8	150	34,68	38,43	42,01	45,44	48,74	51,94
8	200	31,50	34,91	38,16	41,28	44,29	47,19
8	240	29,65	32,86	35,91	38,85	41,68	44,41
10	100	46,06	51,05	55,80	60,36	64,75	68,99
10	150	40,24	44,59	48,74	52,73	56,56	60,27
10	200	36,56	40,51	44,29	47,90	51,39	54,76
12	100	52,01	57,64	63,01	68,16	73,12	77,91
12	150	45,44	50,36	55,04	59,54	63,87	68,06
12	200	41,28	45,75	50,01	54,10	58,03	61,84

C30/37							
Ø (mm)	E (mm)	d=60 mm	d=70 mm	d=80 mm	d=90 mm	d=100 mm	d=110 mm
6	200	27,64	30,63	33,48	36,21	38,85	41,40
6	240	26,01	28,82	31,50	34,08	36,56	38,96
6	300	24,14	26,76	29,25	31,64	33,94	36,16
8	150	36,85	40,84	44,64	48,28	51,80	55,20
8	200	33,48	37,10	40,56	43,87	47,06	50,15
8	240	31,50	34,91	38,16	41,28	44,29	47,19
10	100	48,95	54,24	59,29	64,14	68,80	73,32
10	150	42,76	47,39	51,80	56,03	60,11	64,05
10	200	38,85	43,05	47,06	50,91	54,61	58,19
12	100	55,27	61,25	66,96	72,43	77,70	82,79
12	150	48,28	53,51	58,49	63,27	67,87	72,33
12	200	43,87	48,62	53,14	57,48	61,67	65,71

Stabox Type S

Shearing force parallel with the joint



The shearing forces are calculated according to the NBN EN 1992-1-1 standard and its Belgian National Annex (ANB).

Ø : rod diameter

E : stirrup centre distance

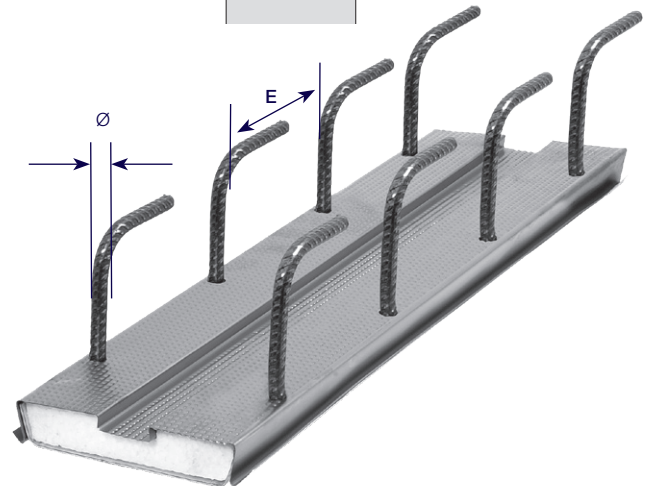
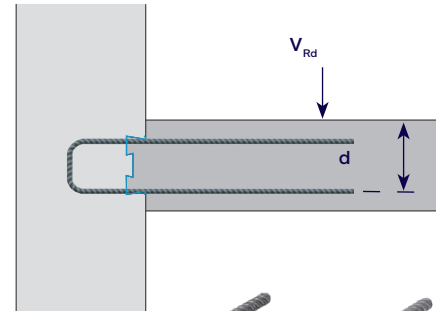
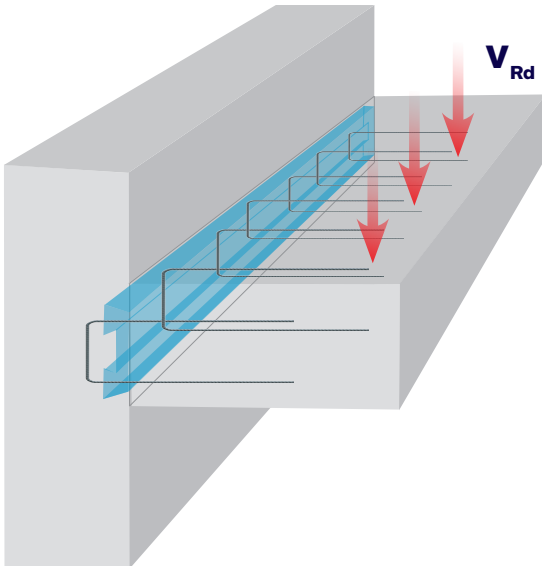
V_{Rd} (kN/m)

		C25/30		
Ø (mm)	E (mm)	Type 45S	Type 60S	Type 90S
6	200	64,45	-	-
6	240	57,28	-	-
6	300	50,10	-	-
8	150	123,41	130,55	-
8	200	97,91	105,05	-
8	240	85,16	-	-
10	100	-	267,59	287,63
10	150	180,78	187,92	207,96
10	200	140,94	148,08	-
12	100	-	-	392,81
12	150	202,50	-	278,07
12	200	193,52	-	220,70

		C30/37		
Ø (mm)	E (mm)	Type 45S	Type 60S	Type 90S
6	200	67,33	-	-
6	240	60,16	-	-
6	300	52,98	-	-
8	150	126,29	134,39	-
8	200	100,79	108,89	-
8	240	88,04	-	-
10	100	-	271,43	287,63
10	150	183,66	191,76	207,96
10	200	143,82	151,92	-
12	100	-	-	392,81
12	150	237,60	-	278,07
12	200	196,40	-	220,70

Stabox Type DS

Shearing force perpendicular to the joint



The shearing forces are calculated according to the NBN EN 1992-1-1 standard and its Belgian National Annex (ANB).

Ø : rod diameter

E : stirrup centre distance

d : static slab height

V_{Rd} (kN/m)

		C25/30							
Ø (mm)	E (mm)	d=130 mm	d=140 mm	d=150 mm	d=160 mm	d=170 mm	d=180 mm	d=190 mm	
10	100	77,12	81,03	84,84	88,57	92,23	95,81	99,32	
10	150	67,37	70,79	74,12	77,38	80,57	83,70	86,77	
12	100	87,09	91,50	95,81	100,02	104,15	108,19	112,16	
12	150	76,08	79,93	83,70	87,38	90,98	94,51	97,98	

		C25/30							
Ø (mm)	E (mm)	d=200 mm	d=210 mm	d=220 mm	d=230 mm	d=240 mm	d=250 mm	d=260 mm	
10	100	102,78	104,90	106,97	109,01	111,01	112,97	114,90	
10	150	89,79	91,64	93,45	95,23	96,97	98,69	100,37	
12	100	116,06	118,46	120,80	123,10	125,35	127,57	129,75	
12	150	101,39	103,48	105,53	107,54	109,51	111,44	113,35	

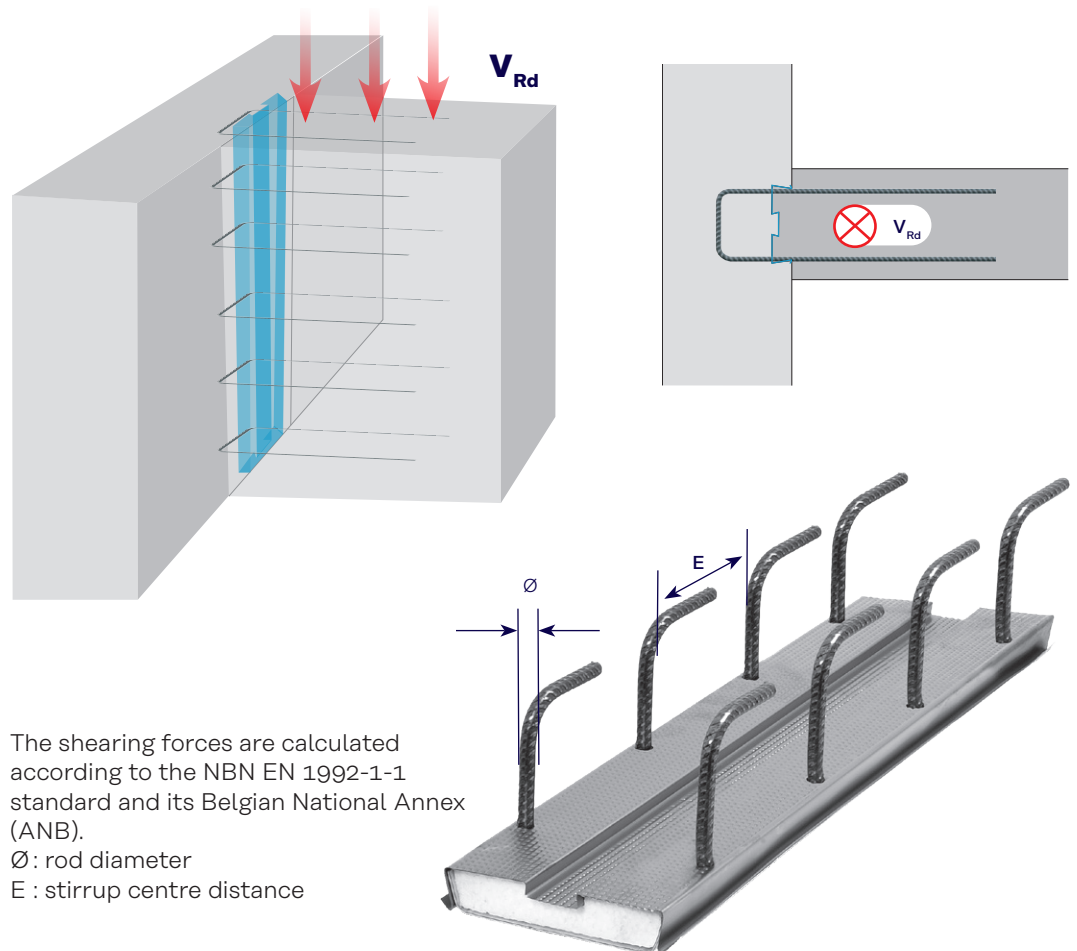
		C30/37							
Ø (mm)	E (mm)	d=130 mm	d=140 mm	d=150 mm	d=160 mm	d=170 mm	d=180 mm	d=190 mm	
10	100	81,96	86,11	90,16	94,12	98,00	101,81	105,55	
10	150	71,59	75,22	78,76	82,22	85,62	88,94	92,20	
12	100	92,55	97,23	101,81	106,29	110,67	114,97	119,19	
12	150	80,85	84,94	88,94	92,85	96,68	100,44	104,12	

		C30/37							
Ø (mm)	E (mm)	d=200 mm	d=210 mm	d=220 mm	d=230 mm	d=240 mm	d=250 mm	d=260 mm	
10	100	109,22	111,47	113,68	115,84	117,96	120,05	122,10	
10	150	95,41	97,38	99,31	101,20	103,05	104,87	106,66	
12	100	123,34	125,88	128,37	130,81	133,21	135,56	137,88	
12	150	107,74	109,96	112,14	114,27	116,37	118,43	120,45	



Stabox Type DS

Shearing force parallel with the joint



The shearing forces are calculated according to the NBN EN 1992-1-1 standard and its Belgian National Annex (ANB).
 \varnothing : rod diameter
 E : stirrup centre distance

V_{Rd} (kN/m)

C25/30					
\varnothing (mm)	E (mm)	Type 120DS	Type 160DS	Type 190DS	Type 230DS
10	100	535,19	554,23	568,51	587,55
10	150	375,83	394,87	409,15	428,19
12	100	540,00	720,00	778,86	797,90
12	150	516,07	535,11	549,39	568,43

C30/37					
\varnothing (mm)	E (mm)	Type 120DS	Type 160DS	Type 190DS	Type 230DS
10	100	542,87	564,47	580,67	602,27
10	150	383,51	405,11	421,31	442,91
12	100	633,60	774,82	791,02	812,62
12	150	523,75	545,35	561,55	583,15

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