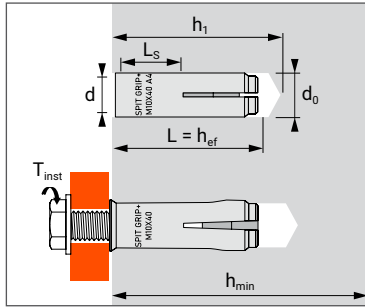


Deformation-controlled expansion female anchor
for use in cracked and non-cracked concrete and hollow concrete slab



TECHNICAL DATA

RANGE	Min. anchor depth	Thread diameter	Thread length	Drilling depth	Drilling diameter	Min. thick of base material	Total anchor length	Tighten torque	Code Zinc coated steel	Code stainless steel A4	Setting tool	
	(mm) hef	(mm) d	(mm) Ls	(mm) h1	(mm) d0	(mm) hmin	(mm) L	(Nm) Tinst				
M6X25	25	6	10	27	8	100	25	4	058581	058589	ST-M M6x25	058596
M8X30	30	8	13	33	10	100	30	11	058583	058591	ST-M M8x30	058597
M10X25*	25	10	13	28	12	80	25	17	058584	-	ST-M M10x25	058598
M10X40	40	10	17	43	12	100	40	17	058585	058592	ST-M M10x40	058599
M12X50	50	12	21	54	15	100	50	38	058586	058593	ST-M M12x50	058601
M16X65	65	16	27	70	20	130	65	60	058587	058594	ST-M M16x65	058602

* Zinc coated steel only

CHARACTERISTICS



Vds CEA 4001
M8 - M16

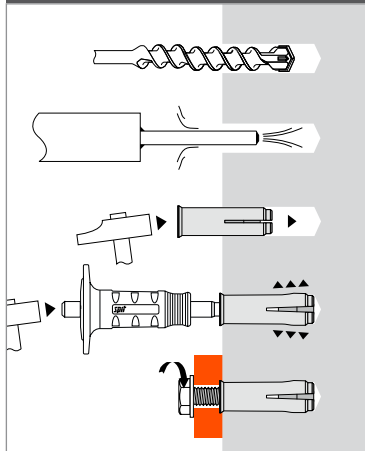
APPLICATION

- Ventilation ducts
- Suspended ceilings
- Cable trays
- Sprinkler system

ANCHOR MECHANICAL PROPERTIES

DIMENSIONS		M6	M8	M10	M12	M16
Zinc coated steel						
M ⁰ _{Rk,s} [Nm]	Characteristic bending moment					
	(grade 4.6/4.8)	6,1	15,0	29,9	52,4	133,3
	(grade 5.6/5.8)	7,6	18,8	37,4	65,5	166,6
	(grade 6.8)	9,2	22,5	44,9	78,7	199,9
	(grade 8.8)	12,2	30,0	59,9	104,9	266,6
Stainless steel A4						
M ⁰ _{Rk,s} [Nm]	Characteristic bending moment					
	(grade A4-50)	7,6	18,8	37,4	65,5	166,6
	(grade A4-70)	10,6	26,3	52,4	91,8	233,1
	(grade A4-80)	12,2	30,0	59,9	104,9	266,6

INSTALLATION





GRIP+L/GRIP+A4

MINIMUM THICKNESS OF CONCRETE, CHARACTERISTIC & MINIMUM DISTANCES FOR SPACING, EDGE

Zinc coated steel

SIZE			M6	M8	M10	M10	M12	M16
Anchorage depth	h_{ef}	[mm]	25	30	25	40	50	65
Minimum thickness of base material	h_{min}	[mm]	100	100	80	100	100	130
Characteristic edge and spacing distance for full anchor capacity	$C_{cr} \geq$	[mm]	37,5	45	60	60	75	97,5
	$S_{cr} \geq$	[mm]	75	90	120	120	150	195
Minimum distances for cracked and non-cracked concrete	C_{min}	[mm]	60	60	75	80	100	130
	S_{min}	[mm]	105	105	60	140	175	230

Stainless steel A4

SIZE			M6	M8	M10	M10	M12	M16
Anchorage depth	h_{ef}	[mm]	25	30	-	40	50	65
Minimum thickness of base material	h_{min}	[mm]	80	80	-	80	100	130
Characteristic edge and spacing distance for full anchor capacity	$C_{cr} \geq$	[mm]	150	150	-	60	150	195
	$S_{cr} \geq$	[mm]	200	200	-	120	200	260
Minimum distances for cracked and non-cracked concrete	C_{min}	[mm]	60	60	-	100	100	130
	S_{min}	[mm]	65	80	-	100	130	175

CHARACTERISTIC RESISTANCES [kN]

Characteristic resistances are shown as informative, and have to be used by application of safety factors.

TENSILE

CRACKED AND NON-CRACKED CONCRETE - C20/25 to C50/60

Zinc coated steel

SIZE		M6	M8	M10	M10	M12	M16
h_{ef}	[mm]	25	30	25	40	50	65
$N_{Rk,cr}$	[kN]	1,5	3,0	4,0	5,0	7,5	12,0

Stainless steel A4

SIZE		M6	M8	M10	M10	M12	M16
h_{ef}	[mm]	25	30	25	40	50	65
$N_{Rk,cr}$	[kN]	2,5	3,5	-	3,5	6,5	12,5

HOLLOW CONCRETE SLAB

Zinc coated steel

SIZE		M6	M8	M10	M10	M12	M16
Bottom flange thickness	[mm]	≥ 25	≥ 25	≥ 35	-	-	-
$N_{Rk,p}$	[kN]	6,0	6,0	8,0	-	-	-

SHEAR

CRACKED AND NON-CRACKED CONCRETE - C20/25 to C50/60

Zinc coated steel

SIZE		M6	M8	M10	M10	M12	M16
h_{ef}	[mm]	25	30	25	40	50	65
$V_{Rk,cr}$	[kN]	1,5	3,0	4,0	5,0	7,5	12,0

Stainless steel A4

SIZE		M6	M8	M10	M10	M12	M16
h_{ef}	[mm]	25	30	25	40	50	65
$V_{Rk,cr}$	[kN]	2,5	3,5	-	3,5	6,5	12,5

HOLLOW CONCRETE SLAB

Zinc coated steel

SIZE		M6	M8	M10	M10	M12	M16
Bottom flange thickness	[mm]	≥ 25	≥ 25	≥ 35	-	-	-
V_{Rk}	[kN]	3,6	6,7	10,5	-	-	-

RECOMMENDED LOADS OF ONE ANCHOR WITHOUT INFLUENCE OF SPACING & CONCRETE EDGE [kN]

Recommended values are determined from performances given in the ETA, and are guaranteed for spacing $\geq S_{cr}$ and edge distance $\geq C_{cr}$.

TENSILE

CRACKED AND NON-CRACKED CONCRETE - C20/25 to C50/60

Zinc coated steel

SIZE		M6	M8	M10	M10	M12	M16
h_{ef}	[mm]	25	30	25	40	50	65
N_{Rec}	[kN]	0,6	1,2	1,6	1,7	2,6	4,1

Stainless steel A4

SIZE		M6	M8	M10	M10	M12	M16
h_{ef}	[mm]	25	30	25	40	50	65
N_{Rec}	[kN]	0,9	1,2	-	1,2	2,2	4,3

HOLLOW CONCRETE SLAB

Zinc coated steel

SIZE		M6	M8	M10	M10	M12	M16
Bottom flange thickness	[mm]	≥ 25	≥ 25	≥ 35	-	-	-
$N_{Rk,p}$	[kN]	2,0	2,0	2,7	-	-	-

$$N_{Rec} = N_{Rd,cr} / \gamma_F; \gamma_F = 1,4$$

SHEAR

CRACKED AND NON-CRACKED CONCRETE - C20/25 to C50/60

Zinc coated steel

SIZE		M6	M8	M10	M10	M12	M16
h_{ef}	[mm]	25	30	25	40	50	65
V_{Rec}	[kN]	0,6	1,2	1,6	1,7	2,6	4,1

Stainless steel A4

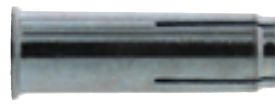
SIZE		M6	M8	M10	M10	M12	M16
h_{ef}	[mm]	25	30	25	40	50	65
V_{Rec}	[kN]	0,9	1,2	-	1,2	2,2	4,3

HOLLOW CONCRETE SLAB

Zinc coated steel

SIZE		M6	M8	M10	M10	M12	M16
Bottom flange thickness	[mm]	≥ 25	≥ 25	≥ 35	-	-	-
V_{Rec}	[kN]	2,0	2,0	2,7	-	-	-

$$V_{Rec} = V_{Rd} / \gamma_F; \gamma_F = 1,4$$



Design resistances for static and fire loads are determined from performances given in the ETA, and are guaranteed for spacing $\geq S_{cr}$ and edge distance $\geq C_{cr}$. For project with reduced spacing and edge distance, we recommend to use SPIT i-Expert software to design your project according to EN 1992-4.

DESIGN RESISTANCE FOR STATIC LOADS IN CRACKED & NON-CRACKED CONCRETE [kN]

TENSILE

CRACKED AND NON-CRACKED CONCRETE - C20/25 to C50/60

Zinc coated steel

SIZE		M6	M8	M10	M10	M12	M16
h_{ef}	[mm]	25	30	25	40	50	65
$N_{Rd,cr}$	[kN]	0,83	1,7	2,2	2,4	3,6	5,7

Stainless steel A4

SIZE		M6	M8	M10	M10	M12	M16
h_{ef}	[mm]	25	30	25	40	50	65
$N_{Rd,cr}$	[kN]	1,2	1,7	-	1,7	3,1	6,0

Distances S_{cr} and C_{cr} must be fulfilled

$N_{Rd,cr} = N_{Rk,p,cr} / \gamma_{Mc}$

Zinc coated steel: M6-M8-M10x25 : $\gamma_{Mc} = 1,8$; M10x40-M12-M16 : $\gamma_{Mc} = 2,1$

Stainless steel A4 : $\gamma_{Mc} = 2,1$

SHEAR

CRACKED AND NON-CRACKED CONCRETE - C20/25 to C50/60

Zinc coated steel

SIZE		M6	M8	M10	M10	M12	M16
h_{ef}	[mm]	25	30	25	40	50	65
$V_{Rd,cr}$	[kN]	0,83	1,7	2,2	2,4	3,6	5,7

Stainless steel A4

SIZE		M6	M8	M10	M10	M12	M16
h_{ef}	[mm]	25	30	25	40	50	65
$V_{Rd,cr}$	[kN]	1,2	1,7	-	1,7	3,1	6,0

$V_{Rd,cr} = V_{Rk,cr} / \gamma_{Mc}$

Zinc coated steel: M6-M8-M10x25 : $\gamma_{Mc} = 1,8$; M10x40-M12-M16 : $\gamma_{Mc} = 2,1$

Stainless steel A4 : $\gamma_{Mc} = 2,1$

DESIGN RESISTANCE FOR STATIC LOADS IN HOLLOW CONCRETE SLAB [kN]

TENSILE

Zinc coated steel

SIZE		M6	M8	M10	M10	M12	M16
Bottom flange thickness	[mm]	≥ 25	≥ 25	≥ 35	-	-	-
N_{Rd}	[kN]	2,9	2,9	3,8	-	-	-

$N_{Rd} = N_{Rk,p} / \gamma_{Mc}$

$\gamma_{Mc} = 2,1$

SHEAR

Zinc coated steel

SIZE		M6	M8	M10	M10	M12	M16
Bottom flange thickness	[mm]	≥ 25	≥ 25	≥ 35	-	-	-
V_{Rd}	[kN]	1,75	3,2	5,0	-	-	-

$V_{Rd} = V_{Rk} / \gamma_{Mc}$

$\gamma_{Mc} = 2,1$

DESIGN RESISTANCE FOR FIRE EXPOSURE [kN]

TENSILE

Zinc coated steel

SIZE		M6	M8	M10	M10	M12	M16
h_{ef}	[mm]	25	30	25	40	50	65
$N_{Rd,fi}$ R30	[kN]	0,2	0,4	0,54	0,9	1,7	3,1
$N_{Rd,fi}$ R60	[kN]	0,2	0,3	0,54	0,6	1,3	2,4
$N_{Rd,fi}$ R90	[kN]	0,1	0,3	0,54	0,6	1,1	2,0
$N_{Rd,fi}$ R120	[kN]	0,1	0,2	0,43	0,5	0,8	1,6

Stainless steel A4

SIZE		M6	M8	M10	M10	M12	M16
h_{ef}	[mm]	25	30	25	40	50	65
$N_{Rd,fi}$ R30	[kN]	0,20	0,73	-	0,87	1,63	2,19
$N_{Rd,fi}$ R60	[kN]	0,18	0,59	-	0,87	1,63	3,19
$N_{Rd,fi}$ R90	[kN]	0,14	0,44	-	0,87	1,63	3,14
$N_{Rd,fi}$ R120	[kN]	0,10	0,37	-	0,69	1,30	2,51

$N_{Rd,fi} = N_{Rk,s,fi} / \gamma_{M,fi}$

$\gamma_{M,fi} = 1,0$

SHEAR

Zinc coated steel

SIZE		M6	M8	M10	M10	M12	M16
h_{ef}	[mm]	25	30	25	40	50	65
$V_{Rd,fi}$ R30	[kN]	0,2	0,4	0,54	0,9	1,7	3,1
$V_{Rd,fi}$ R60	[kN]	0,2	0,3	0,54	0,6	1,3	2,4
$V_{Rd,fi}$ R90	[kN]	0,1	0,3	0,54	0,6	1,1	2,0
$V_{Rd,fi}$ R120	[kN]	0,1	0,2	0,43	0,5	0,8	1,6

Stainless steel A4

SIZE		M6	M8	M10	M10	M12	M16
h_{ef}	[mm]	25	30	25	40	50	65
$V_{Rd,fi}$ R30	[kN]	0,20	0,73	-	0,87	1,63	2,19
$V_{Rd,fi}$ R60	[kN]	0,18	0,59	-	0,87	1,63	3,19
$V_{Rd,fi}$ R90	[kN]	0,14	0,44	-	0,87	1,63	3,14
$V_{Rd,fi}$ R120	[kN]	0,10	0,37	-	0,69	1,30	2,51

$V_{Rd,fi} = V_{Rk,s,fi} / \gamma_{M,fi}$

$\gamma_{M,fi} = 1,0$