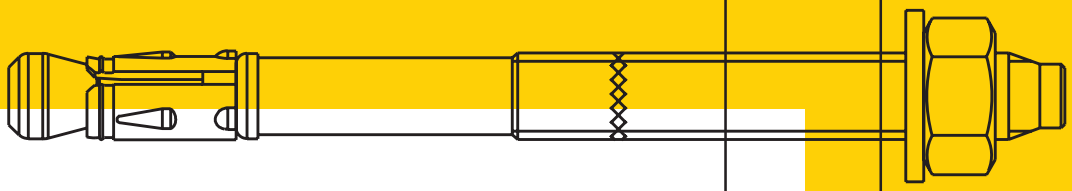


Metal Anchors

Brass plug
ME

Advantages

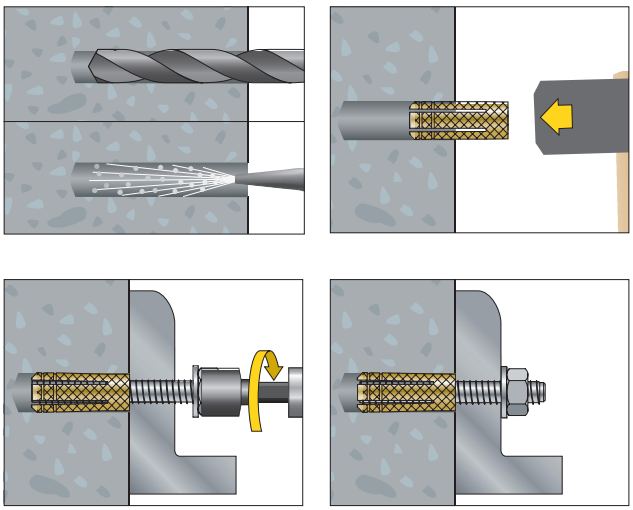
- The knurling ensures good antirotation behaviour
- Quick removal of fixture
- Setting depth of the metric screw matches approximately the anchor length (also depends on solidity of base material)
- No special setting tool needed
- Corrosion resistant anchor, therefore also suitable for outdoor use

Suitable building materials

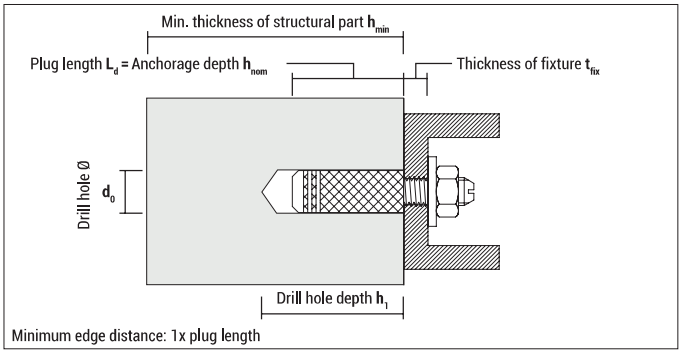
Very suitable

- Concrete
- Natural stone
- Solid brick
- Solid sand-lime brick

Mounting



Brass plug ME



Minimum edge distance: 1x plug length

ME

Type	Art-No	d_0 [mm]	$h_1 \geq$ [mm]	$L_d = h_{nom}$ [mm]	Thread	€ / 100 pcs	[pcs]	[pcs]
ME 4	9L4ME	5	18	16	M4		100	3.200
ME 5	9L5ME	6	22	20	M5		100	3.200
ME 6	9L6ME	8	27	23	M6		100	4.000
ME 8	9L8ME	10	35	30	M8		50	2.000
ME 10	9L10ME	12	39	34	M10		50	1.500
ME 12	9L12ME	15	46	40	M12		25	750
ME 16	9L16ME	20	50	44	M16		25	350

Blister ME

Type	Art-No	d_0 [mm]	$h_1 \geq$ [mm]	L_d [mm]	Thread	€ / Blister	[pcs]	[Blister]
ME 6	5L6ME5	8	27	23	M6		5	10
ME 8	5L8ME4	10	35	30	M8		4	10

Loads, spacing and edge distance

Type	Concrete C20/25 F_{rec} [kN]	Solid brick Mz 12 F_{rec} [kN]	Solid sand-lime brick KS 12 F_{rec} [kN]	Spacing S [mm]	Edge distance C [mm]	h_{min} [mm]
ME 4	0,40	0,30	0,30	60	40	50
ME 5	0,45	0,40	0,40	60	50	50
ME 6	0,65	0,55	0,55	60	60	60
ME 8	1,10	0,90	0,90	80	80	70
ME 10	1,60	1,30	1,30	80	80	80
ME 12	2,20	1,60	1,60	100	100	100
ME 16	3,30	2,30	2,30	120	120	150

F_{rec}: Recommended loads incl. safety factor

Suspended ceiling anchor DA

Advantages

Suspended ceiling anchor DA 30/5

Suspended ceiling anchor DA 60/35

- Approved as a fixing system for multiple use in non-structural applications in cracked and non-cracked concrete
- Low anchorage depth of only 25 mm, this means less risk of hitting rebars! You save time and money
- Reduced impact force for fatigue-free work
- Especially suited for suspended ceilings

Approvals and certificates

For multiple use for non-structural applications in cracked concrete

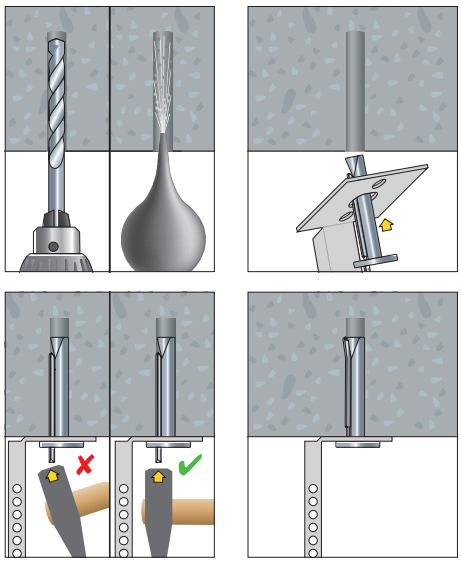
see assessment

Suitable building materials

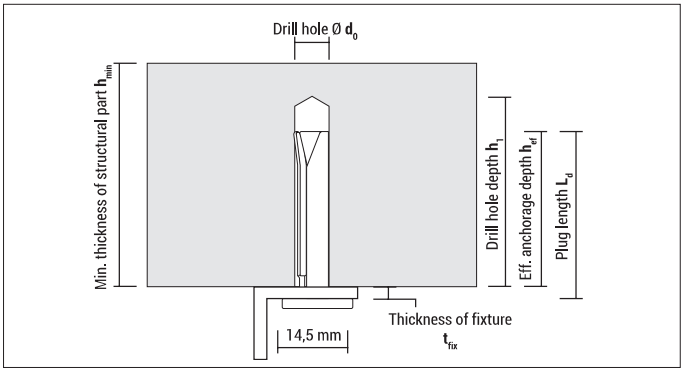
Very suitable

- Concrete
- Solid brick

Mounting



Suspended ceiling anchor DA



DA, zinc plated

Type	Art-No	d_0 [mm]	$h_1 \geq$ [mm]	$h_{ef} \geq$ [mm]	L_d [mm]	$t_{fix} \leq$ [mm]	ETA	€ / 100 pcs	[pcs]	[pcs]
DA 6-30/5	965DA	6	30	25	30	4,5	●		100	1.800
DA 6-60/35	9635DA	6	30	25	60	35	●		100	1.200

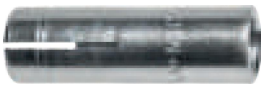
Loads, spacing and edge distance

Type	Concrete ≥ C20/25 F_{per} [kN]	Solid brick Mz 12 F_{rec} [kN]	Solid sand-lime brick KS 12 F_{rec} [kN]	Spacing S_{min} [mm]	Edge distance C_{min} [mm]	Min. thickness of structural part h_{min} [mm]
DA 6-30/5	0,95	0,60	0,40	200	150	80
DA 6-60/35	0,95	0,60	0,40	200	150	80

F_{per}: Permissible load in all directions.
F_{per} includes the resistances' partial safety factors as per ETA assessment and a partial safety factor on the action of $\gamma_F = 1,4$
F_{rec}: Recommended loads in all directions incl. safety factor of 5 (solid brick and solid sand-lime brick are not part of the ETA)
h_{min}, S_{min} and C_{min} must be observed.

Drop-in anchor SA plus & SAK plus

Advantages



SA plus, zinc plated

SAK plus with lip, zinc plated

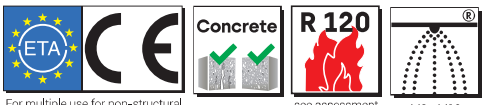
Setting tool ESW PRO

Setting tool ESW

- The drop-in anchor SA plus is approved for single use in non-cracked concrete and for multiple use for non-structural applications in cracked concrete
- The high expansion ability of the drop-in anchor enables a low drill hole depth and low anchorage depth
- The setting tool is necessary for the correct installation

Approvals and certificates

European Technical Assessment
Option 7 for non-cracked concrete
(M8 - M16)



For multiple use for non-structural applications in cracked concrete (M6 - M10)

see assessment M6 - M10

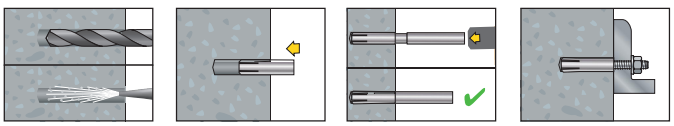
M8 - M10

Suitable building materials

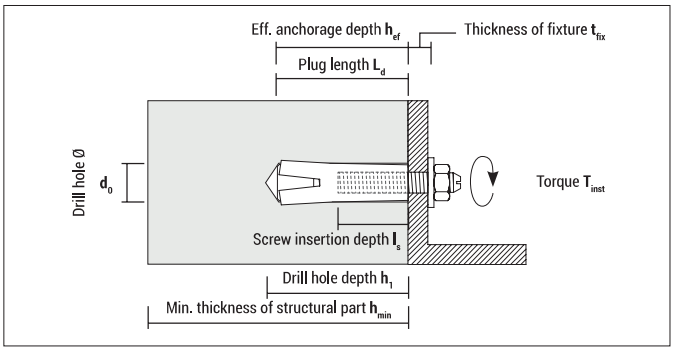
Very suitable

- Concrete

Mounting



Drop-in anchor SA plus & SAK plus



SA plus, zinc plated

Type	Art-No	d_0 [mm]	h_1 [mm]	$L_d = h_{ef}$ [mm]	$l_{s,\ min\text{-}max}$ * [mm]	Thread	ETA	€ / 100 pcs	[pcs]	[pcs]
SA plus 6	96SAP	8	27	25	6 - 11	M6	●		100	1.800
SA plus 8	98SAP	10	32	30	8 - 13	M8	●		100	1.000
SA plus 10	910SAP	12	43	40	10 - 16	M10	●		50	500
SA plus 12	912SAP	15	54	50	12 - 23	M12	●		50	300
SA plus 16	916SAP	20	70	65	16 - 32	M16	●		25	150

* Min. / max. screw insertion depth in drop-in anchor

SAK plus with lip, zinc plated

Type	Art-No	d_0 [mm]	h_1 [mm]	$L_d = h_{ef}$ [mm]	$l_{s,\ min\text{-}max}$ * [mm]	Thread	ETA	€ / 100 pcs	[pcs]	[pcs]
SAK plus 6	96SAPK	8	27	25	6 - 11	M6	●		100	1.800
SAK plus 8-25	9825SAPK	10	27	25	6 - 12	M8	●		100	1.000
SAK plus 8	98SAPK	10	32	30	8 - 13	M8	●		100	1.000
SAK plus 10-25	91025SAPK	12	27	25	8 - 12	M10	●		50	900
SAK plus 10	910SAPK	12	43	40	10 - 16	M10	●		50	500
SAK plus 12	912SAPK	15	54	50	12 - 23	M12	●		50	300
SAK plus 16	916SAPK	20	70	65	16 - 32	M16	●		25	150

* Min. / max. screw insertion depth in drop-in anchor

ESW PRO for SA plus, SAK plus, SA and SA-N with hand protection

Type	Art-No	Suitable for	€ / pcs	[pcs]
ESW PRO 6	96ESWP	SA plus 6, SAK plus 6, SA-N 6		1
ESW PRO 8	98ESWP	SA plus 8, SAK plus 8 and SAK plus 8-25, SA-N 8		1
ESW PRO 10-25	91025ESWP	SAK plus 10-25		1
ESW PRO 10	910ESWP	SA plus 10, SAK plus 10 and SA-N 10		1
ESW PRO 12	912ESWP	SA plus 12, SAK plus 12 and SA 12D, SA-N 12		1
ESW PRO 16	916ESWP	SA plus 16, SAK plus 16 and SA-N 16		1

Drop-in anchor SA plus & SAK plus

ESW for SA plus, SAK plus, SA and SA-N

Type	Art-No	Suitable for	€ / pcs	[pcs]
ESW 6	96ESW	SA plus 6, SAK plus 6, SA-N 6		1
ESW 8	98ESW	SA plus 8, SAK plus 8 and SAK plus 8-25, SA-N 8		1
ESW 10-25	91025ESW	SAK plus 10-25		1
ESW 10	910ESW	SA plus 10, SAK plus 10 and SA-N 10		1
ESW 12	912ESW	SA plus 12, SAK plus 12 and SA 12D, SA-N 12		1
ESW 16	916ESW	SA plus 16, SAK plus 16 and SA-N 16		1

Loads, spacing and edge distance for single anchor in non-cracked concrete C20/25

Type	Permissible tension load [1],[2],[3] (screw 4.6-8.8)	Permissible shear load [1],[2]		Permissible bending moment [2]		Spacing	Edge distance	Min. thickness of structural part	Max. torque	Ø of clearance hole in fixture
		(screw 4.6)	(screw 8.8)	(screw 4.6)	(screw 8.8)					
	N_{per} [kN]	V_{per} [kN]	V_{per} [kN]	M_{per} [Nm]	M_{per} [Nm]	s_{min} [mm]	c_{min} [mm]	h_{min} [mm]	$T_{inst \leq}$ [Nm]	d_f [mm]
SA/SAK plus 8	3,6	3,1	4,0	6,4	17,1	105	105	100	8	9
SA/SAK plus 10	4,8	4,5	4,5	12,8	34,2	105	140	100	15	12
SA/SAK plus 12	6,3	7,3	7,3	22,4	59,8	125	175	120	35	14
SA/SAK plus 16	10,5	12,2	12,2	56,8	151,7	180	230	160	60	18

[1] Permissible loads for single anchor without influence of spacing and edge distance.
[2] Load figures include the resistances' partial safety factors as per ETA assessment and a partial safety factor on the action of $\gamma_F = 1,4$
[3] For higher concrete strengths up to C50/55 the values increase by max. 55%.
h_{min}, S_{min} and C_{min} must be observed.

Loads, spacing and edge distance for multiple use for non-structural applications in cracked concrete C20/25-C50/60

Type	Permissible load in any direction [1],[2] (screw 4.6-8.8)	Permissible bending moment [2]		Spacing	Edge distance	Min. thickness of structural part	Max. torque	Ø of clearance hole in fixture
		(screw 4.6)	(screw 8.8)					
	F_{per} [kN]	M_{per} [Nm]	M_{per} [Nm]	s_{min} [mm]	c_{min} [mm]	h_{min} [mm]	$T_{inst \leq}$ [Nm]	d_f [mm]
SA/SAK plus 6	0,5	2,6	7,0	70	105	100	4	7
SAK plus 8-25	1,0	6,4	17,1	120	110	100	8	9
SA/SAK plus 8	1,2	6,4	17,1	105	105	100	8	9
SAK plus 10-25	1,0	12,8	34,2	130	140	100	15	12
SA/SAK plus 10	3,0	12,8	34,2	105	140	100	15	12

[1] Permissible loads without influence of spacing and edge distance.
[2] Load figures include the resistances' partial safety factors as per ETA assessment and a partial safety factor on the action of $\gamma_F = 1,4$
h_{min}, S_{min} and C_{min} must be observed.

Drop-in anchor SAK plus 8-25 & SAK plus 10-25

Advantages

SAK plus with lip, zinc plated

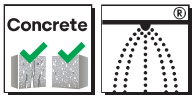
Setting tool ESW PRO (p. 115)

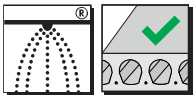
Setting tool ESW (p. 116)

- The drop-in anchor SAK plus 8-25 and 10-25 are approved as a fixing system for multiple use in non-structural applications in cracked and non-cracked concrete
- The anchor is also approved for fixing in precast pre-stressed hollow core slabs
- Low anchorage depth of only 25 mm, this means time saving
- The high expansion ability of the drop-in anchor enables a small drill hole and low anchorage depth
- The setting tool is necessary for the correct installation

Approvals and certificates

For multiple use for non-structural applications in cracked concrete (M8 - M10)





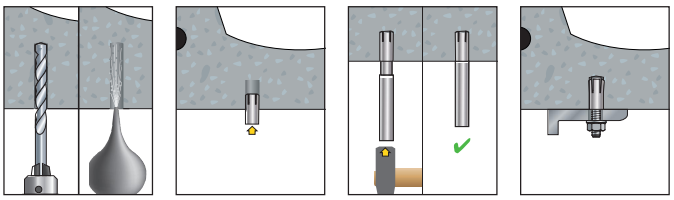
M8 - M10

Suitable building materials

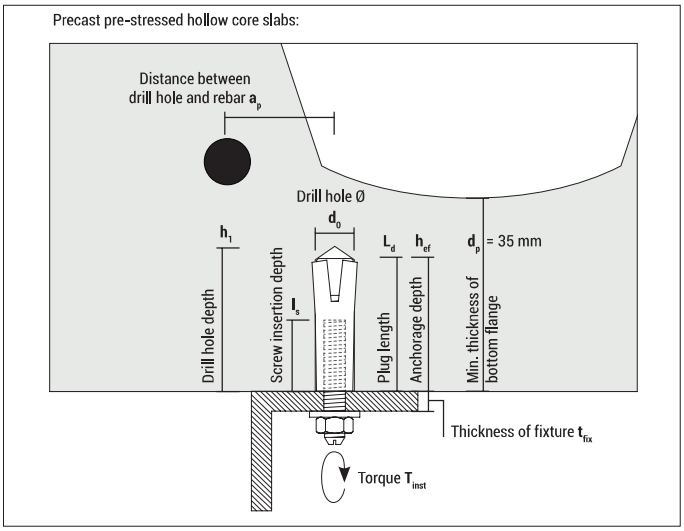
Very suitable

- Concrete
- Precast pre-stressed hollow core slabs

Mounting



Drop-in anchor SAK plus 8-25 & 10-25



SAK plus with lip, zinc plated

Type	Art-No	d_0 [mm]	h_1 [mm]	$L_d = h_{ef}$ [mm]	$l_{s,\,min\text{-}max}$* [mm]	Thread	ETA	€ / 100 pcs	[pcs]	[pcs]
SA plus 8-25	9825SAPK	10	27	25	6 - 12	M8	●		100	1.000
SA plus 10-25	91025SAPK	12	27	25	8 - 12	M10	●		50	900

* Min. / max. screw insertion depth in drop-in anchor

Loads, spacing and edge distance for multiple use for non-structural applications in **precast pre-stressed hollow core slabs** C45/55

Type	Permissible load in any direction [1),2)] (screw 4.6-8.8) F_{per} [kN]	Permissible bending moment [2)] (screw 4.6) M_{per} [Nm]	(screw 8.8) M_{per} [Nm]	Spacing S_{min} [mm]	Edge distance C_{min} [mm]	Min. thickness of bottom flange d_p [mm]	Max. torque $T_{inst} \leq$ [Nm]	Distance between drill hole and rebar $a_{p,min}$ [mm]	Ø of clearance hole in fixture d_f [mm]
SAK plus 8-25	1,2	6,4	17,1	180	150	35	8	50	9
SAK plus 10-25	1,6	12,8	34,2	180	150	35	15	50	12

[1)] Permissible loads without influence of spacing and edge distance.

[2)] Load figures include the resistances' partial safety factors as per ETA assessment and a partial safety factor on the action of $\gamma_F = 1{,}4$

S_{min}, C_{min} and $a_{p,min}$ must be observed.

Drop-in anchor
SA 12D
SA-N

Advantages

Drop-in anchor SA 12D, zinc plated
Drop-in anchor SA-N, stainless steel A4

Setting tool ESW PRO

Setting tool ESW

- SA 12D with the reinforced anchor sleeve is especially suitable for temporary fastenings of diamond core rigs.
- SA-N is made of stainless steel A4, therefore the anchor has a high corrosion resistance and can be used for outdoor applications.
- The high expansion ability of the drop-in anchor enables a low anchorage and drill hole depth.
- For a correct and fast installation it is essential to use the setting tool ESW or ESW Pro with hand protection to achieve a high expansion and secure anchorage in the base material.

Suitable building materials

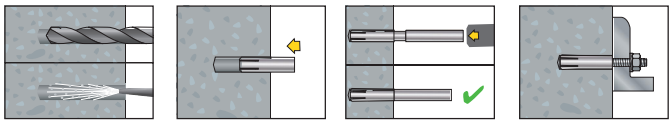
Very suitable

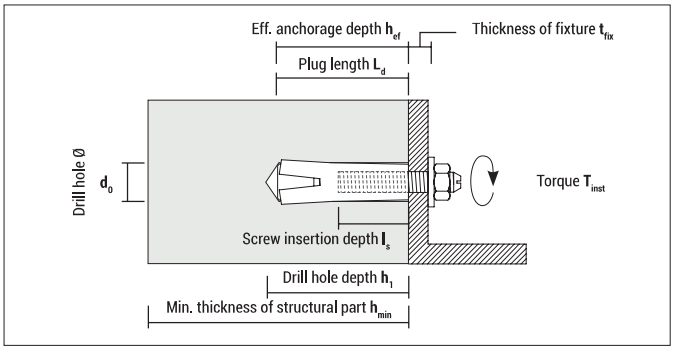
- Concrete

Approvals and certificates

A4 STAINLESS STEEL

Mounting





Drop-in anchor SA and SA N

SA 12D, zinc plated without approval, recommended for fixing diamond core rigs

Type	Art-No	d_0* [mm]	h_1 [mm]	L_d [mm]	$l_{s\ min-max}$** [mm]	Thread	€ / 100 pcs	[pcs]	[pcs]
SA 12D	91216SA	16	50	50	12 - 18	M12		50	250

* reinforced anchor sleeve by 1 mm
** Min. / max. screw insertion depth in drop-in anchor

A4 STAINLESS STEEL

SA-N, stainless steel A4 without approval

Type	Art-No	d_0 [mm]	h_1 [mm]	L_d [mm]	$l_{s\ min-max}$* [mm]	Thread	€ / 100 pcs	[pcs]	[pcs]
SA-N 6	9X6SAN	8	25	25	6 - 12	M6		100	1.000
SA-N 8	9X8SAN	10	30	30	8 - 13	M8		100	1.000
SA-N 10	9X10SAN	12	40	40	10 - 15	M10		50	500
SA-N 12	9X12SAN	15	50	50	12 - 18	M12		50	400
SA-N 16	9X16SAN	20	65	65	16 - 23	M16		25	125

* Min. / max. screw insertion depth in drop-in anchor

ESW for SA plus, SAK plus, SA and SA-N

Type	Art-No	Suitable for	€ / pcs	[pcs]
ESW 6	96ESW	SA plus 6, SAK plus 6, SA-N 6		1
ESW 8	98ESW	SA plus 8, SAK plus 8 and SAK plus 8-25, SA-N 8		1
ESW 10	910ESW	SA plus 10, SAK plus 10 and SA-N 10		1
ESW 12	912ESW	SA plus 12, SAK plus 12 and SA 12D, SA-N 12		1
ESW 16	916ESW	SA plus 16, SAK plus 16 and SA-N 16		1

Setting tool ESW PRO with hand protection see page 115

Loads, spacing and edge distance in non-cracked concrete

Type	Concrete C20/25 F_{rec} [kN]	Spacing S_{min} [mm]	Edge distance C_{min} [mm]	Min. thickness of structural part h_{min} [mm]	Max. Torque $T_{inst} \leq$ [Nm]
SA-N 6	1,2	70	80	100	5
SA-N 8	1,8	90	90	100	8
SA-N 10	3,6	120	120	120	15
SA/SA-N 12	5,7	160	160	150	35
SA-N 16	7,4	220	240	200	60

F_{rec}: Recommended loads incl. safety factor of 4