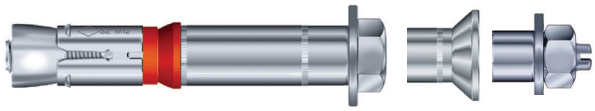
SZ HIGH LOAD ANCHOR

AVAILABLE MATERIALS

- High strength steel
- Flat head style available by special order

FEATURES/ADVANTAGES

- ACI 318 category 1 anchor for cracked or uncracked concrete
- Required hole diameter equals anchor diameter
- Equipment can be removed. The bolt and sleeve can be removed for a flush surface. The expansion sleeve and cone remain in the hole.
- Exceptional strength coupled with the ability to resist seismic loads.
- Metric dimensions for international use.
- Collapsible sleeve allows for secure clamping force.
- Embedment depth is marked on each anchor for easy installation.
- Multiple head styles available.



SZ-S SZ-SK SZ-B

CONCERNS

- Do not use in brick or block
- Must be installed with a metric drill bit

APPROVALS/LISTINGS

- European Technical Approval ETA-02/0030
- Tested by the University of Stuttgart
- ICC ESR-3173 (M12-M28 carbon steel and M12-M24 316 stainless steel)
- ACI 318 category 1

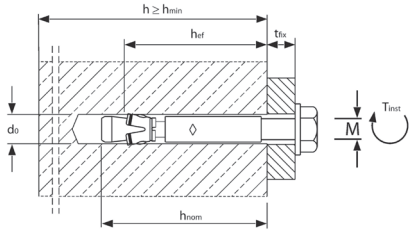
ORDER DETAIL

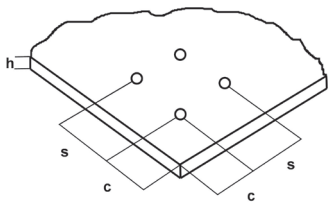
Description	SZ-S (Bolt Version)	SZ-B (Stud Version)	Drill Hole Dia. x Depth (mm)	Min. Embed.(mm)	Anchor Diameter & Length SZ-S (mm)	Anchor Diameter & Length SZ-B (mm)	Thread Diameter (mm)	Maximum Thickness Fastened (mm)	Required Torque to Set (ft. lbs.)	Box Qty.
SZ 10-0	M14005301	M16005301	10 x 65	60	10 x 65	10 x 67	M6	0	11	100
SZ 10-10	M14010301	M16010301	10 x 65	60	10 x 75	10 x 77	M6	10	11	50
SZ 10-30	M14025301	M16025301	10 x 65	60	10 x 95	10 x 97	M6	30	11	50
SZ 10-50	M14030301	M16030301	10 x 65	60	10 x 115	10 x 117	M6	50	11	50
SZ 10-100		M16045301	10 x 65	60		10 x 167	M6	100	11	25
SZ 12-0	M14105301	M16105301	12 x 80	70	12 x 77	12 x 80	M8	0	22	50
SZ 12-10	M14110301	M16110301	12 x 80	70	12 x 87	12 x 90	M8	10	22	50
SZ 12-30	M14125301	M16125301	12 x 80	70	12 x 107	12 x 110	M8	30	22	50
SZ 12-50	M14130301	M16130301	12 x 80	70	12 x 127	12 x 130	M8	50	22	25
SZ 12-100	-	M16145301	12 x 80	70		12 x 180	M8	100	22	25
SZ 15-0	M14205301	M16205301	15 x 95	85	15 x 93	15 x 96	M10	0	37	25
SZ15-15	M14215301	M16215301	15 x 95	85	15 x 108	15 x 111	M10	15	37	25
SZ 15-25	M14220301	M16220301	15 x 95	85	15 x 118	15 x 121	M10	25	37	25
SZ 15-45	M14225301	M16225301	15 x 95	85	15 x 138	15 x 141	M10	45	37	25
SZ 15-95	M14240301	M16240301	15 x 95	85	15 x 188	15 x 191	M10	95	37	25
SZ 18-0	M14305301	M16305301	18 x 105	95	18 x 107	18 x 112	M12	0	59	20
SZ 18-10	M14310301	M16310301	18 x 105	95	18 x 117	18 x 122	M12	10	59	20
SZ 18-20	M14315301	M16315301	18 x 105	95	18 x 127	18 x 132	M12	20	59	20
SZ 18-40	M14325301	M16325301	18 x 105	95	18 x 147	18 x 152	M12	40	59	20
SZ 18-70	M14335301	M16335301	18 x 105	95	18 x 177	18 x 182	M12	70	59	20
SZ 18-100		M16340301	18 x 105	95		18 x 212	M12	100	59	10
SZ 24-0	M14505301	M16505301	24 x 130	120	24 x 132	24 x 137	M16	0	118	10
SZ 24-20	M14515301	M16515301	24 x 130	120	24 x 152	24 x 157	M16	20	118	10
SZ 24- 50	M14525301	M16525301	24 x 130	120	24 x 182	24 x 187	M16	50	118	10
SZ 24-100		M16530301	24 x 130	120		24 x 237	M16	100	118	5
SZ 24-0 L	M14555301	M16555301	24 x 130	135	24 x 150	24 x 152	M16	0	118	10
SZ 24-30 L	M14565301	M16565301	24 x 130	135	24 x 180	24 x 182	M16	30	118	10
SZ 24-50 L	M14575301	M16575301	24 x 130	135	24 x 200	24 x 202	M16	50	118	10
SZ 28-10	M14610301	M16610301	28 x 160	150	28 x 172	28 x 181	M20	10	207	10
SZ 28-30	M14615301	M16615301	28 x 160	150	28 x 192	28 x 201	M20	30	207	10
SZ 28-60	M14625301	M16625301	28 x 160	150	28 x 222	28 x 231	M20	60	207	5
SZ 28-100	M14630301	M16630301	28 x 160	150	28 x 262	28 x 271	M20	100	207	5

Additional sizes available upon request. To convert to inches, divide millimeters by 25.4.

Load & Performance Data		Conc.(psi)	Symbol	Units	SZ10 M6	SZ12 M8	SZ15 M10	SZ18 M12	SZ24 M16	SZ24L M16L	SZ28 M20
			Cracked Concrete								
Avg. ultimate load, tension		4,000	N_{pn}	lbs	3,765	5,780	7,717	9,988	14,057	19,227	21,444
Avg. ultimate load, shear	SZ-S	4,000	V_n	lbs	5,620	8,497	12,510	18,849	38,920	38,920	44,623
Avg. ultimate load, shear	SZ-B	4,000	V_n	lbs	5,125	7,171	10,363	19,041	26,212	26,212	37,317
Allowable Tension Loads[1]		2,500	N_{allow}	lbs	484	1,162	1,549	2,206	3,083	3,802	4,308
		4,000	N_{allow}	lbs	612	1,469	1,959	2,790	3,900	4,809	5,450
		6,000	N_{allow}	lbs	750	1,799	2,399	3,417	4,776	5,890	6,675
		8,500	N_{allow}	lbs	892	2,142	2,856	4,068	5,685	7,010	7,944
			Uncracked Concrete								
Allowable Tension Loads[1]		2,500	N_{allow}	lbs	1,539	1,936	2,604	3,114	4,352	5,367	6,082
		4,000	N_{allow}	lbs	1,927	2,449	3,294	3,939	5,505	6,789	7,694
		6,000	N_{allow}	lbs	1,927	2,999	4,034	4,825	6,743	8,315	9,423
		8,500	N_{allow}	lbs	1,927	3,493	4,801	5,742	8,025	9,897	11,216
			Cracked and Uncracked Concrete								
Allowable Shear Loads[1]		2,500	V_{allow}	lbs	1,670	2,557	3,778	4,751	6,640	8,189	9,280
		4,000	V_{allow}	lbs	1,670	2,557	3,778	6,010	8,399	9,519	11,738
		>6,000	V_{allow}	lbs	1,670	2,557	3,778	6,597	9,519	9,519	12,734
Spacing & Edge Distance											
Effective Anchorage Depth			h_{ef}	in	1.97	2.36	2.80	3.15	3.94	4.53	4.92
				(mm)	(50)	(60)	(71)	(80)	(100)	(115)	(125)
Critical Edge Distance			C_{ac}	in	2.95	3.54	4.89	4.72	5.91	6.79	7.38
				(mm)	(75)	(90)	(107)	(120)	(150)	(173)	(188)
Minimum Spacing for Edge Distance C			S_{min}/C	in	1.97/3.15	2.36/3.94	2.76/4.72	3.15/6.30	3.94/7.09	3.94/7.09	4.92/11.81
				(mm)	(50/80)	(60/100)	(70/120)	(80/160)	(100/180)	(100/180)	(125/300)
Minimum Edge Distance for Spacing S			C_{min}/S	in	1.57/3.94	2.36/4.72	2.76/6.89	3.15/7.87	3.94/8.66	7.34/8.66	7.09/21.26
				(mm)	(50/100)	(60/120)	(70/175)	(80/200)	(100/220)	(100/220)	(180/540)
Minimum thickness of concrete slab			h_{min}	in	3.94	4.72	5.51	6.30	7.87	9.06	9.84
				(mm)	(100)	(120)	(140)	(160)	(200)	(230)	(250)
Installation Parameters											
Drilled hole diameter			d_o	in	.39	.47	.59	.71	.94	.94	1.10
				(mm)	(10)	(12)	(15)	(18)	(24)	(24)	(28)
Diameter of clearance hole			d_c	in	.47	.55	.67	.79	1.02	1.02	1.22
				(mm)	(12)	(14)	(17)	(20)	(26)	(26)	(31)
Depth of drilled hole			h_o	in	2.25	3.15	3.74	4.13	5.12	5.71	6.30
				(mm)	(65)	(80)	(95)	(105)	(130)	(145)	(160)
Installation Torque			T_{inst}	ft-lbs	11	22	37	59	118	118	207
Wrench size			WS	(mm)	(10)	(13)	(17)	(19)	(24)	(24)	(30)

1) A safety factor of 1.48 was used to calculate the allowable loads. This is based on a load combination of 30% dead loads and 70% live loads.





INSTALLATION

1. Drill hole to recommended size and depth.
2. Remove dust, rubble from the hole with compressed air.
3. Using a hammer, tap the anchor through the material to be fastened until the anchor is firmly seated.
4. Tighten the anchor to the specified torque.