

# Sup-r BOLT

## AVAILABLE MATERIALS

- Carbon Steel, zinc plated
- 316 Stainless Steel

## FEATURES/ADVANTAGES

- Required hole diameter equals anchor diameter
- Designed for standard ANSI tolerance drill bits
- Hardened threads for tapping high strength concrete
- Anti-rotation teeth on underside of hex washer head lock against the fixture
- Can be installed closer to the edge than traditional expansion anchors
- Fast installation with powered impact wrench
- Diameter, length and identifying marking stamped on head of each anchor
- One-piece, finished head design
- Equipment can be removed.
- Able to resist seismic loads.

## APPROVALS/LISTINGS

- ICC-ES ESR 4347
- ACI 318 category 1 for cracked concrete
- ICC ESR-5359 - Masonry

## CONSIDERATIONS

- Do not use in brick or hollow block
- Do not reuse



## ORDER DETAIL

Anchor Dimensions	Order Code	Drill Hole Dia. x Depth (in)	Min. Embed.(in)	Maximum Thickness Fastened (in)	Required Torque to Set (ft. lbs.)	Box Qty.
1/4" X 1-3/4"	4114134	1/4 x 2	1-5/8	1/8	15	100
1/4" X 2-1/4"	4114214	1/4 x 2-3/8	1-5/8	5/8	15	100
1/4" X 3"	4114300	1/4 x 2-3/8	1-5/8	1-5/8	15	100
1/4" X 4"	4114400	1/4 x 2-3/8	1-5/8	2-3/8	15	100
3/8" X 1-3/4"	4138134	3/8 x 2-3/4	2-1/2	1/4	35	50
3/8" X 2-1/2"	4138212	3/8 x 2-3/4	2-1/2	1/4	35	50
3/8" x 3"	4138300	3/8 x 2-3/4	2-1/2	1/2	35	50
3/8" x 4"	4138400	3/8 x 2-3/4	2-1/2	1-1/2	35	50
3/8" x 5"	4138500	3/8 x 2-3/4	2-1/2	2-1/2	35	50
3/8" x 6"	4138600	3/8 x 2-3/4	2-1/2	3-1/2	35	50
1/2" x 4"	4112400	1/2 x 3-3/8	3	1	45	25
1/2" x 5"	4112500	1/2 x 3-3/8	3	2	45	25
1/2" x 6"	4112600	1/2 x 3-3/8	3	3	45	25
1/2" X 8"	4112800	1/2 x 3-3/8	3	5	45	25
5/8" X 3"	4158300	5/8 x 3-5/8	3-1/4	5/8	85	25
5/8" x 4"	4158400	5/8 x 3-5/8	3-1/4	3/4	85	25
5/8" x 5"	4158500	5/8 x 3-5/8	3-1/4	1-3/4	85	25
5/8" x 6"	4158600	5/8 x 3-5/8	3-1/4	2-3/4	85	20
5/8" x 8"	4158800	5/8 x 3-5/8	3-1/4	4-3/4	85	20
3/4" x 4"	4134400	3/4 x 4-3/8	4	1/4	115	15
3/4" x 5"	4134500	3/4 x 4-3/8	4	1	115	15
3/4" x 6"	4134600	3/4 x 4-3/8	4	2	115	15
3/4" x 7"	4134700	3/4 x 4-3/8	4	3	115	15
3/4" x 10"	4134100	3/4 x 4-3/8	4	6	115	5

## Sup-r BOLT 316 SS

## ORDER DETAIL

Anchor Dimensions	Order Code	Drill Hole Dia. x Depth (in)	Min. Embed.(in)	Maximum Thickness Fastened (in)	Required Torque to Set (ft. lbs.)	Box Qty.
1/4" X 1-3/4"	4314134	1/4 x 2-3/8	2	1/8	10	100
1/4" X 2"	4314214	1/4 x 2-3/8	2	5/8	10	100
1/4" X 3"	4314300	1/4 x 2-3/8	2	1-5/8	10	100
1/4" X 4"	4314400	1/4 x 2-3/8	2	2-3/8	10	100
3/8" X 1-3/4"	4338134	3/8 x 3	2-3/4	1/4	35	50
3/8" X 2-1/2"	4338212	3/8 x 3	2-3/4	1/4	35	50
3/8" X 3"	4338300	3/8 x 3	2-3/4	1/2	35	50
3/8" X 4"	4338400	3/8 x 3	2-3/4	1-1/2	35	50
3/8" X 5"	4338500	3/8 x 3	2-3/4	2-1/2	35	50
3/8" X 5"	4338600	3/8 x 3	2-3/4	3-1/2	35	50
1/2" X 3"	4312300	1/2 x 3-3/8	3	1/4	35	25
1/2" X 4"	4312400	1/2 x 3-3/8	3	1	35	25
1/2" X 5"	4312500	1/2 x 3-3/8	3	2	35	25
1/2" X 6"	4312600	1/2 x 3-3/8	3	3	35	25
1/2" X 8"	4312800	1/2 x 3-3/8	3	5	35	25

\* Catalog numbers denote sizes which are less than the minimum standard anchor length for strength Design. Anchors not long enough to meet the minimum nominal embedments published for strength design are outside the scope of ICC-ES ESR-4747 & ICC-ES ESR-5359.

Load & Performance Data	Conc.(psi)	Symbol	Units	1/4"	3/8"	1/2"	5/8"	3/4"			
Embedment depth		$h_{nom}$	in	2-1/2	3-1/4	3	4-1/4	3-1/4	5	4	6-1/4
<b>Cracked Concrete</b>											
Avg. ultimate load, tension	4,000	$N_{t,cr}$	lbs	2,705	4,225	4,077	6,358	3,898	8,122	5,503	11,626
Avg. ultimate load, shear	4,000	$V_{t,cr}$	lbs	1,894	2,957	3,054	6,091	2,729	8,278	7,704	9,255
Allowable loads, tension <sup>1</sup>	2,500	$N_{allow,cr}$	lbs	939	1,467	1,416	2,207	1,353	2,820	1,911	4,037
	4,000	$N_{allow,cr}$	lbs	1,188	1,855	1,790	2,792	1,712	3,567	2,417	5,106
	6,000	$N_{allow,cr}$	lbs	1,455	2,272	2,193	3,420	2,097	4,369	2,960	6,254
	8,500	$N_{allow,cr}$	lbs	1,732	2,705	2,610	4,070	2,496	5,200	3,523	7,443
<b>Uncracked Concrete</b>											
Allowable loads, tension <sup>1</sup>	2,500	$N_{allow,unscr}$	lbs	1,326	2,330	1,416	3,116	1,911	3,981	2,698	5,699
	4,000	$N_{allow,unscr}$	lbs	1,677	2,947	1,692	3,942	2,417	5,036	3,412	7,209
	6,000	$N_{allow,unscr}$	lbs	2,054	3,609	1,974	4,828	2,960	6,168	4,179	8,829
	8,500	$N_{allow,unscr}$	lbs	2,445	4,296	2,254	5,746	3,523	7,341	4,974	10,508
Allowable loads, tension - light weight <sup>1</sup>	3,000			872		930		1,256		1,773	
<b>Cracked and Uncracked Concrete</b>											
Allowable loads, shear <sup>1</sup>	2,500	$V_{allow}$	lbs	1,428	1,428	2,098	4,116	5,594	5,594	5,810	6,253
	>4,000	$V_{allow}$	lbs	1,805	1,806	2,653	4,116	5,594	5,594	6,253	6,253
Allowable loads, shear - light weight <sup>1</sup>	3,000	$V_{allow}$	lbs	563		827		811		2,291	

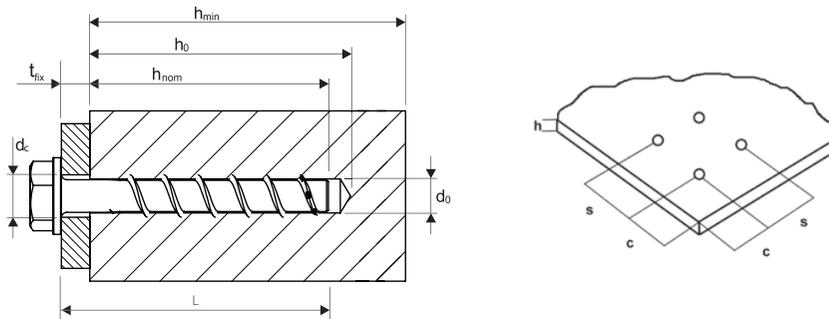
**Spacing & Edge Distance**

Effective Anchorage Depth	$h_{ef}$	in	1.85	2.49	2.21	3.27	2.36	3.85	2.97	4.89
Critical Edge Distance	$C_{ec}$	in	4	5	4-1/2	5	3-3/4	7	4-1/2	8
Minimum Spacing	$S_{min}$	in	3	3	3	3	4	4	4	4
Minimum Edge Distance	$C_{min}$	in	1-1/2	1-1/2	1-3/4	1-3/4	1-3/4	1-3/4	1-3/4	1-3/4
Minimum thickness of concrete slab	$h_{min}$	in	4	4-3/4	4-3/4	6-3/4	5	7	6	8-1/8

**Installation Parameters**

Drilled hole diameter	$d_o$	in	3/8	3/8	1/2	1/2	5/8	5/8	3/4	3/4
Diameter of clearance hole	$d_c$	in	1/2	1/2	5/8	5/8	3/4	3/4	7/8	7/8
Depth of drilled hole	$h_o$	in	2-3/4	3-1/2	3-3/8	4-5/8	3-5/8	5-3/8	4-3/8	6-5/8
Installation Torque	$T_{inst}$	ft-lbs	35	50	45	65	85	100	115	150
Wrench Size	WS	in	9/16	9/16	3/4	3/4	15/16	15/16	1-1/8	1-1/8

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 diameter and depth.
- 2 Remove dust, rubble from the hole with compressed air.
- 3 Assemble the proper socket size onto an impact or torque wrench. Insert the anchor through the item being fastened and into the hole.
- 4 Tighten the anchor to the specified torque making sure the head is firmly against the item being fastened.

