# SUP-R STUD® TZ



## AVAILABLE MATERIALS

- Steel Zinc plated
- 304/316 Stainless Steel

## FEATURES/ADVANTAGES

- ACI 318 category 1 anchor for cracked or uncracked concrete
- Suitable for resisting seismic design loads Category A-F
- Required hole diameter equals anchor diameter
- Can be loaded immediately
- Simple to install
- For medium to heavy loads
- Hole diameter is critical
- Concrete only

## APPROVALS/LISTINGS

- ACI 318 Category 1 for cracked concrete
- ICC ESR - 2461
- Contact customer service for approvals / listings for state DOT's

ESR-2461

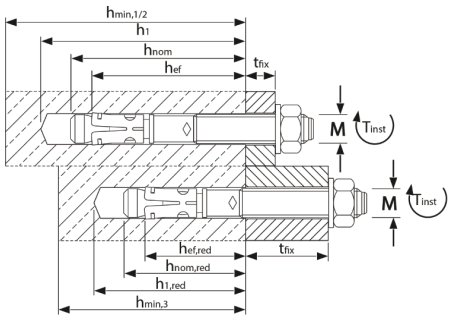
**ORDER DETAIL**

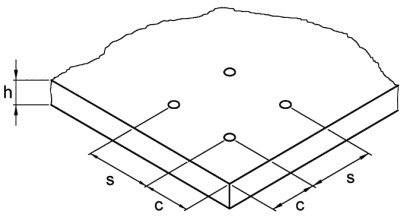
| Anchor Dimensions | Order Code | Th [in] | $d_o$ [in] | $h_o$ [in] | $h_{nom}$ [in] | $h_{ef}$ [in] | L [in] | $t_{max}$ [in] | $T_{inst}$ [ft-lbs] | $d_c$ [in] | $w_s$ [in] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3/8"X3" | 2138300 | 3/8 | 3/8 | 2-5/8 | 2-5/16 | 2 | 3 | 1 | 17.5 | 7/16 | 9/16 |
| 3/8"X3-3/4" | 2138334 | 3/8 | 3/8 | 2-5/8 | 2-5/16 | 2 | 3-5/11 | 1-3/4 | 17.5 | 7/16 | 9/16 |
| 3/8"X5" | 2138500 | 3/8 | 3/8 | 2-5/8 | 2-5/16 | 2 | 5 | 3 | 17.5 | 7/16 | 9/16 |
| 1/2" x 3-3/4" | 2112334 | 1/2 | 1/2 | 3-1/4 | 2-7/8 | 2-1/2 | 3-3/4 | 1/4 | 35 | 9/16 | 3/4 |
| 1/2" x 4-1/2" | 2112412 | 1/2 | 1/2 | 3-1/4 | 2-7/8 | 2-1/2 | 4-1/2 | 1 | 35 | 9/16 | 3/4 |
| 1/2" x 5-1/2" | 2112512 | 1/2 | 1/2 | 3-1/4 | 2-7/8 | 2-1/2 | 5-1/2 | 2 | 35 | 9/16 | 3/4 |
| 1/2" x 7" | 2112700 | 1/2 | 1/2 | 3-1/4 | 2-7/8 | 2-1/2 | 7 | 3-1/2 | 35 | 9/16 | 3/4 |
| 5/8" x 4-3/4" | 2158434 | 5/8 | 5/8 | 4-1/8 | 3-3/4 | 3-1/4 | 4-3/4 | 1/4 | 65 | 11/16 | 15/16 |
| 5/8" x 6" | 2158600 | 5/8 | 5/8 | 4-1/8 | 3-3/4 | 3-1/4 | 6 | 1-1/2 | 65 | 11/16 | 15/16 |
| 5/8" x 8-1/2" | 2158812 | 5/8 | 5/8 | 4-1/8 | 3-3/4 | 3-1/4 | 8-1/2 | 4 | 65 | 11/16 | 15/16 |
| 5/8" x 10" | 2158100 | 5/8 | 5/8 | 4-1/8 | 3-3/4 | 3-1/4 | 10 | 5-1/2 | 65 | 11/16 | 15/16 |
| 3/4 X 4-3/4" | 2134434 | 3/4 | 3/4 | 4-1/2 | 4-5/16 | 3-3/4 | 4-3/4 | 5/8 | 115 | 13/16 | 1-1/8 |
| 3/4"X5-1/2" | 2134512 | 3/4 | 3/4 | 4-1/2 | 4-5/16 | 3-3/4 | 5-1/2 | 1-3/8 | 115 | 13/16 | 1-1/8 |
| 3/4X6-1/4" | 2134614 | 3/4 | 3/4 | 4-1/2 | 4-5/16 | 3-3/4 | 6-1/4 | 2-1/8 | 115 | 13/16 | 1-1/8 |

**Steel zinc plated / Approved for cracked or uncracked concrete / ACI 318, Category 1**

| Load & Performance Data | Conc. (psi) | Symbol | Units | 1/2" | 5/8" |
|---|---|---|---|---|---|
| | | Cracked Concrete | | | |
| Avg.ultimate load,tension | 4,000 | $N_{pn}$ | lbs | 4,447 | 9,603 |
| Avg. ultimate load, shear | 4,000 | $V_n$ | lbs | 9,621 | 14,859 |
| Allowable loads, tension[1] | 2,500 | $N_{allow}$ | lbs | 1,234 | 2,187 |
| | 4,000 | $N_{allow}$ | lbs | 1,561 | 2,767 |
| | 6,000 | $N_{allow}$ | lbs | 1,912 | 3,388 |
| | 8,500 | $N_{allow}$ | lbs | 2276 | 4,034 |
| | | Uncracked Concrete | | | |
| Allowable loads, tension[1] | 2,500 | $N_{allow}$ | lbs | 1,974 | 3,088 |
| | 4,000 | $N_{allow}$ | lbs | 2,497 | 3,906 |
| | 6,000 | $N_{allow}$ | lbs | 3,059 | 4,784 |
| | 8,500 | $N_{allow}$ | lbs | 3,641 | 5,694 |
| | | Cracked and Uncracked Concrete | | | |
| Allowable loads, shear[1] | 2,500 | $V_{allow}$ | lbs | 3,178 | 4,711 |
| | >4,000 | $V_{allow}$ | lbs | 3,259 | 4,839 |
| **Spacing & Edge Distance** | | | | | |
| Effective anchorage depth | | $h_{ef}$ | in | $2^{1}/_{2}$ | $3^{1}/_{4}$ |
| Critical Spacing | | $S_{ac}$ | in | 16 | $19^{1}/_{2}$ |
| Critical Edge Distance | | $C_{ac}$ | in | 8 | $9\ ^{3}/_{4}$ |
| Minimum Spacing for Edge Distance C | | $S_{a,min}/C$ | in | $2^{1}/_{2}$ / 5 | 3 / 6 |
| Minimum Edge Distance for Spacing S | | $C_{a,min}/S$ | in | 3 / 6 | $3^{1}/_{2}$ / $9^{1}/_{2}$ |
| Minimum thickness of concrete slab | | $h_{min}$ | in | 5 | $6^{1}/_{2}$ |
| **Installation Parameters** | | | | | |
| Drilled hole diameter | | $d_o$ | in | $^{1}/_{2}$ | $^{5}/_{8}$ |
| Diameter of clearance hole | | $d_c$ | in | $^{9}/_{16}$ | $^{11}/_{16}$ |
| Depth of drilled hole | | $h_o$ | in | $3^{1}/_{4}$ | $4\ ^{1}/_{8}$ |
| Installation torque | | $T_{inst}$ | ft-lbs | 35 | 65 |
| Wrench size | | WS | in | 3/4 | $^{15}/_{16}$ |

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