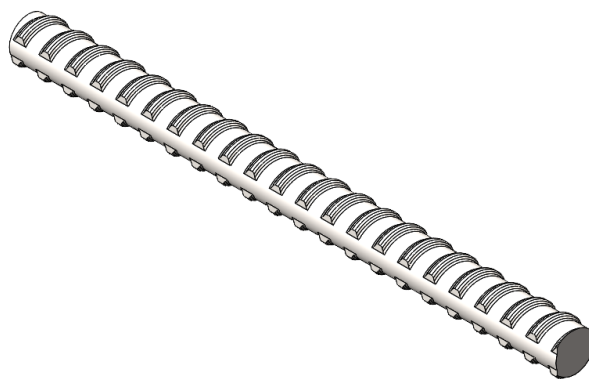


HOT ROLLED EURO THREADED ROD

FORMING

Hot rolled Euro threaded bar is a non-weldable tie rod designed with two flat surfaces and can be used in multiple formwork applications.



ADDITIONAL INFORMATION

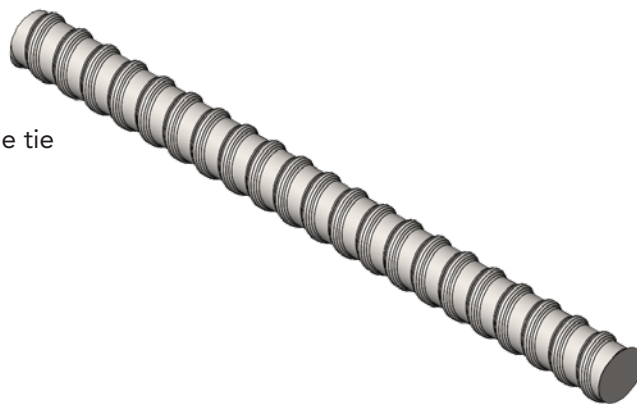
- Material: Non-weldable high-strength steel
- Can be easily cut in the field to required lengths with bolt cutters or a carborundum blade.
- Safe working load is based on a 2:1 safety factor.

Part No.	Description	Stock Length	Safe Working Load	Ultimate Load	Weight
FW15HRTB1901	15mm Hot Rolled Threaded Bar	19'-1"	20,232.8 lb	41,814.5 lb	18.4 lb
	19'-1" sticks	5800 mm	90 kN	186 kN	8.35 kg
FW20HRTB1901	20mm Hot Rolled Threaded Bar	19'-1"	35,969.4 lb	74,187.0 lb	32.74 lb
	19'-1" sticks	5800 mm	160 kN	330 kN	14.84 kg

COLD ROLLED EURO THREADED ROD

FORMING

Fast threading, cold rolled Euro threaded bar is a non-weldable tie rod used in multiple formwork applications.



ADDITIONAL INFORMATION

- Material: Non-weldable high-strength steel
- Safe working load is based on a 2:1 safety factor

Part No.	Description	Stock Length	Safe Working Load	Ultimate Load	Weight
FW15CRTB20	15mm Cold Rolled Threaded Rod	20'	20,907 lb	41,814 lb	19.8 lb
	20' sticks	6.1 m	93 kN	186 kN	8.98 kg
FW20CRTB20	20mm Cold Rolled Threaded Rod	20'	32,147 lb	64,294 lb	36.15 lb
	20' sticks	6.1 m	143 kN	286 kN	16.40 kg

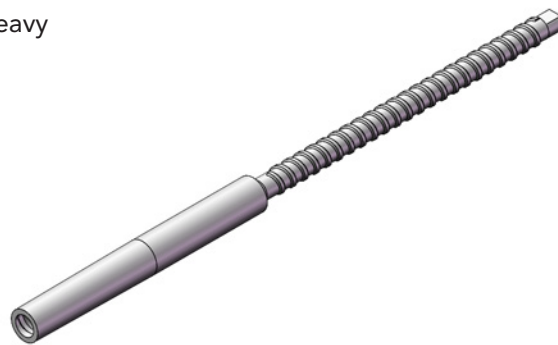
EURO THREADED SHE BOLT

FORMING

She-Bolts are heavy duty, reusable form ties used for medium and heavy concrete forming applications.

ADDITIONAL INFORMATION

- 15mm Euro Thread
- Taper diameter is 0.905" to 0.984" (23 mm to 25 mm)
- Unthreaded section is 7.75" (196.85 mm)
- Safe working load is based on a 2:1 safety factor



Part No.	Description	Total Length	Taper Length	Safe Working Load	Ultimate Load	Weight
FWSB18	15mm x 18" She Bolt	18" 457.2 mm	4" 101.6 mm	20,000 lb 88.96 kN	40,000 lb 177.93 kN	2.4 lb 1.1 kg
FWSB24	15mm x 24" She Bolt	24" 609.6 mm	4" 101.6 mm	20,000 lb 88.96 kN	40,000 lb 177.93 kN	2.9 lb 1.3 kg

EURO THREADED TAPER TIE

FORMING

Taper Ties are heavy duty, reusable form ties used for medium and heavy concrete forming applications where specifications require or permit complete removal of the form tie from the concrete.

ADDITIONAL INFORMATION

- 15mm Euro Thread
- Square end of rod identifies large end of taper
- Taper diameter is 0.752" to 0.866" (19.1 mm to 22 mm)
- Safe working load is based on a 2:1 safety factor



Part No.	Description	Thread Length	Taper Length	Safe Working Load	Ultimate Load	Weight
FWTT32	15mm x 32" Taper Tie	32" 812.8 mm	13" 101.6 mm	20,000 lb 88.96 kN	40,000 lb 177.93 kN	3.5 lb 1.6 kg
FWTT38	15mm x 38" Taper Tie	38" 965.2 mm	19" 482.6 mm	20,000 lb 88.96 kN	40,000 lb 177.93 kN	4.4 lb 2.0 kg
FWTT44	15mm x 44" Taper Tie	44" 1117.6 mm	25" 635 mm	20,000 lb 88.96 kN	40,000 lb 177.93 kN	5.5 lb 2.5 kg
FWTT50	15mm x 50" Taper Tie	50" 1270 mm	31" 787.4 mm	20,000 lb 88.96 kN	40,000 lb 177.93 kN	6.5 lb 3.0 kg

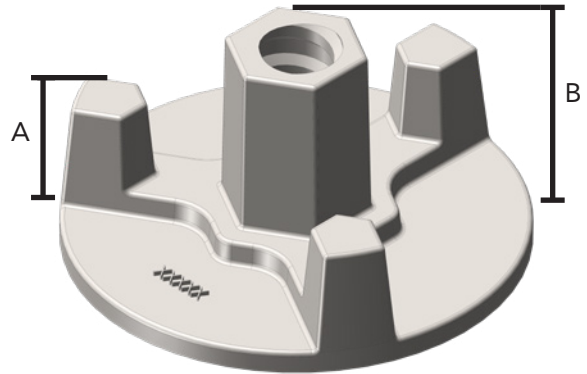
EURO FLANGE NUT

FORMING

Forged Flange Nuts used to secure Euro Style threaded tie rods in a variety of formwork applications.

ADDITIONAL INFORMATION

- Compatible with Euro Style 15mm Thread
- Cast steel material
- Turn with 1" socket
- Safe working load is based on a 2:1 safety factor



Part No.	Description	Dimensions			Safe Working Load	Weight
		A	B	Diameter		
FWTPN100+G	15mm Flange Nut Galvanized	1.08" 27.5 mm	1.87" 47.5 mm	3.84" 97.5 mm	21,300 lb 94.75 kN	3.02 lb 1.37 kg
FWTPN100	15mm Flange Nut	1.08" 27.5 mm	1.87" 47.5 mm	3.84" 97.5 mm	21,300 lb 94.75 kN	3.02 lb 1.37 kg

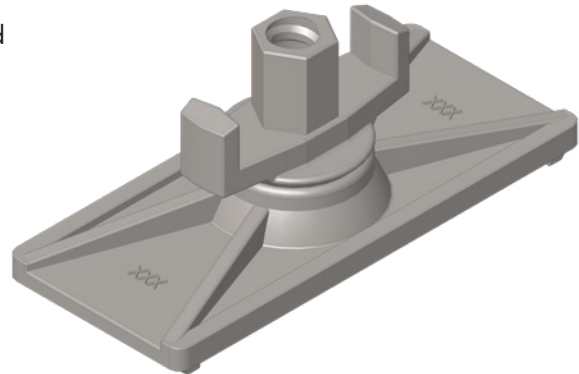
EURO ARTICULATED FLANGE NUT

FORMING

Articulated Flange Nuts are used to secure Euro Style threaded tie rods in a variety of formwork applications.

ADDITIONAL INFORMATION

- Compatible with Euro Style 15mm thread
- Galvanized cast steel material
- Turn with 1" socket
- Safe working load is based on a 2:1 safety factor



Part No.	Description	Dimensions			Safe Working Load	Weight
		L	W	H		
FWATPN	Articulated Flange Nut	7.28" 185 mm	3.11" 79 mm	3.11" 79 mm	21,300 lb 94.75 kN	2.91 lb 1.32 kg

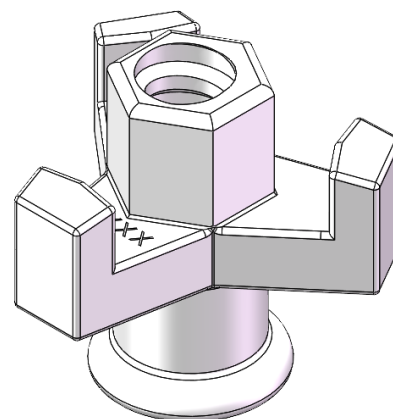
EURO STAR NUT

FORMING

Star Nuts are wing style nuts used to secure Euro Style threaded tie rods in a variety of formwork applications.

ADDITIONAL INFORMATION

- Compatible with Euro Style 15mm Thread
- Cast steel material with electro-plated finish
- Turn with 1" socket
- Safe working load is based on a 2:1 safety factor



Part No.	Description	Safe Working Load	Weight
FWNS	15mm Star Nut	21,300 lb 94.75 kN	.77 lb .35 kg

EURO ROD HEX COUPLER

FORMING

EURO Rod Couplers are used to couple both cold and hot rolled EURO Bars to any lengths that may be required for the spacing and securing of clamp form systems.

ADDITIONAL INFORMATION

- Compatible with Euro Style 15mm & 20mm Thread
- Safe working load is based on a 2:1 safety factor
- Supplied with Positive stop in middle of coupler, ensuring full capacity of the tie system.
- Material: High Strength Steel, Black Finish



Part No.	Description	Safe Working Load	Weight
FW15HC	15mm EURO Rod Coupler	20,233 lb / 90 kN	.93 lb / .42 kg
FW20HC	20mm EURO Rod Coupler	35,969 lb / 160 kN	1.39lb / .63 kg

EURO THREAD DROP-IN ANCHOR

FORMING

Drop-in Anchor with EURO internal thread for post installed threadbar connections. Suitable for concrete C12/15-C50/60 or hard natural stone. The Drop-in Anchor does not protrude out of the concrete after removing the threadbar.

Multi-functional Anchor for concrete formwork. Cost efficient, quick fixing into existing concrete. Ideal for fixing one-sided formwork or temporary guardrails.

Base Material: concrete C12/15–C 50/60 or hard natural stone

Spacing & Edge Distance

- Effective anchorage depth: 3.15" 80 mm h_{ef}
- MinSpacing: 23.62" 600 mm S_{min}
- Min Edge Distance: 11.81" 300 mm C_{min}
- Min Concrete Slab Thickness: 6.3" 160 mm h_{min}

Installation Parameters

- Drill Hole Diameter: .87" 22 mm d_o
- Depth of Drill Hole: 3.15" 80 mm h_o
- Length of Thread: 1.38" 35 mm L_{th}
- Stab/Screw min Inst Depth: 1.1" 28 mm



FWEUDA15



FWEUDA15T

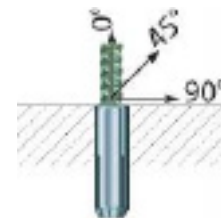
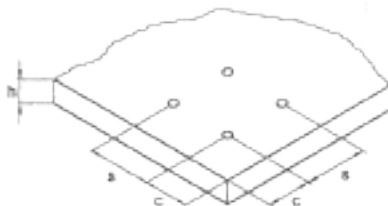
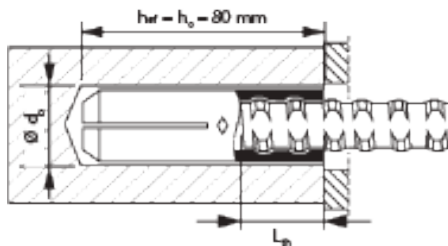


ADDITIONAL INFORMATION

- For fixing threadbars in formwork
- **Material:** Steel
- **Finish:** Zinc Plated

Part No.	Description	Drill Hole ϕ x depth	Thread ϕ x length	Pkg contents pcs.	Pkg Wt
FWEUDA15	Drop-In Anchor ED-DW 15	.87" x 3.15" 22 x 80 mm	.59" x 1.38" 15 x 35 mm	25	8.29 lb 3.76 kg
FWEUDA15T	Setting Tool	-	-	-	-

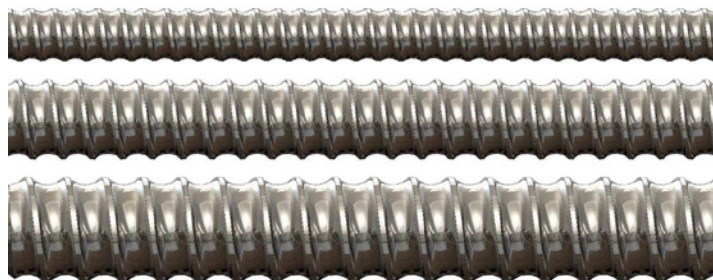
Loads and Performance Data		Applied Load Angle	0°	15°	30°	45°	60°	75°	90°
Recommended Loads, Uncracked Concrete	C12/15		3,889 lb	3,799 lb	3,776 lb	3,912 lb	4,203 lb	4,631 lb	5,081 lb
	rec. F [kN]		17.3 kN	16.9 kN	16.8 kN	17.4 kN	18.7 kN	20.6 kN	22.6 kN
	> C12/15		4,339 lb	4,203 lb	4,114 lb	4,181 lb	4,384 lb	4,743 lb	5,081 lb
	rec. F [kN]		19.3 kN	18.7 kN	18.3 kN	18.6 kN	19.5 kN	21.1 kN	22.6 kN



COIL ROD

FORMING

Continuously threaded and manufactured from cold rolled high strength steel, Coil Rod can be used in multiple forming applications in combination with coil ties, coil inserts, and coil threaded form hardware, as well as hanging bridge overhang brackets from a beam hanger.



ADDITIONAL INFORMATION

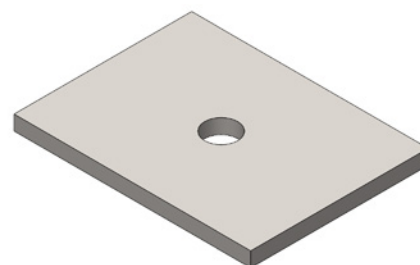
- Material: non-weldable high-strength steel
- Can be easily cut in the field to required lengths with bolt cutters or a carborundum blade
- Safe working load is based on a 2:1 safety factor

Part No.	Description	Dia	TPI	L	Safe Working Load		Min Coil Penetration
					Tension	Shear	
FWCR05012	1/2" Threaded Coil Rod x 12'	1/2"	6	12' 3.65 m	9,000 lb 40 kN	6,000 26 kN	2"
FWCR07512	3/4" Threaded Coil Rod x 12'	3/4"	4.5	12' 3.65 m	18,000 lb 80 kN	12,000 53 kN	2 1/4"
FWCR10012	1" Threaded Coil Rod x 12'	1"	3.5	12' 3.65 m	38,000 lb 169 kN	25,300 112 kN	2 1/2"

FLAT WASHER

FORMING

Flat Washers are made from flat steel plate, and are used to transfer loads from the ties to a form system's frames, wallers or strongbacks.



ADDITIONAL INFORMATION

- Material: High-Strength Steel, Black Finish
- Load rating based on a 2:1 safety factor

Part No.	Description	Dimensions				Load Capacity	Weight
		W	L	D	THK		
FWWSF05D3X4T25	3" x 4" Flat Washer for 1/2" Diameter Rod	3" 76.2 mm	4" 101.6 mm	.5625" 14.3 mm	.25" 6.4 mm	6,751 lb 30.02 kg	.83 lb .38 kg
FWWSF075D4X5T25	4" x 5" Flat Washer for 3/4" Diameter Rod	4" 101.6 mm	5" 127 mm	.8125" 20.6 mm	.25" 6.4 mm	6,751 lb 30.02 kg	1.37lb .62 kg
FWWSF1D5X5T50	5" x 5" Flat Washer for 1" Diameter Rod	5" 127 mm	5" 127 mm	1.0625" 27 mm	.5" 12.7 mm	18,500 lb 82.29 kg	3.4 lb 1.54 kg

COIL THREAD DROP-IN ANCHOR

FORMING

ADDITIONAL INFORMATION

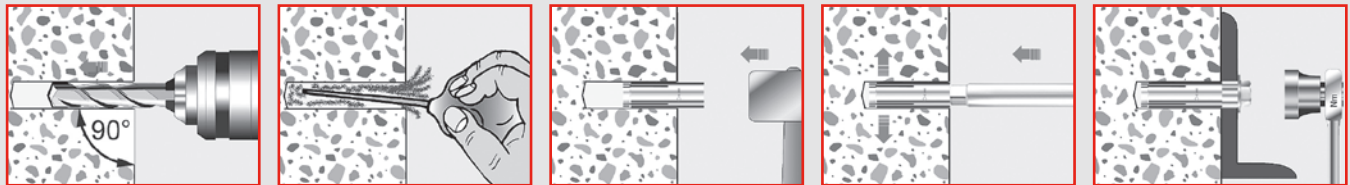
- Ideal for form work and tilt-up bracing
- Accepts 1/2" or 3/4" standard coil thread rod or coil thread bolts
- Preassembled for ease of installation
- Slotted body is precision-matched to tapered internal plug for uniform expansion
- Knurled body increases friction connection between anchor and wall of hole
- Dead load only
- Hole depth must be equal to anchor length
- Do not over torque
- **Material:** Carbon Steel
- **Finish:** Zinc Plated
- **Approval:** G.S.A. Spec FF-S-325C, Group VIII, Type 1



Part No.	Bolt ø	Hole ø	Min Embed.	Max Torque	Tension	Shear	Tension	Shear	Box Qty	Master Qty
					2000 PSI		4000 PSI			
FWCRDA050	1/2"	5/8"	2"	20 ft lb	5,312 lb	5,854 lb	7,698 lb	5,854lb	50	250
FWCRDA075	3/4"	1"	3 3/16"	80 ft lb	12,300 lb	11,627 lb	16,019 lb	11,627 lb	10	50

INSTALLATION

1. Drill hole same length as anchor. Do not use core bits. Maintain accurate hole diameter.
2. Clean hole of debris.
3. Drop in anchor, slotted end first.
4. To set, drive setting tool into anchor until shoulder of tool is flush with top of anchor.
5. Select appropriate coil thread rod or coil bolt.



TAPER BOLT

FORMING

ADDITIONAL INFORMATION

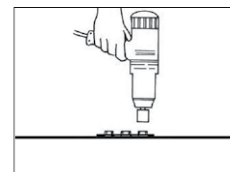
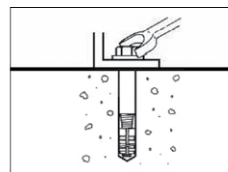
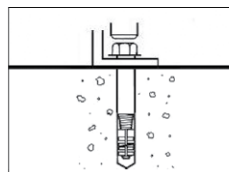
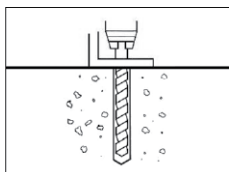
- Required hole diameter equals anchor diameter
- Variation in hole size can be accommodated by turning the expander nut
- Equipment may be removed and replaced. The bolt is simply re-inserted and torqued to obtain original holding power (the nut stays in the hole)
- Bolt can be removed and re-used with a new nut after cleaning and lubricating the threads
- Strength – the highest shear strength of any expansion anchor
- Withstands vibratory loads
- Works in a bottomless hole
- Do not use in brick or block
- Tested by Pittsburgh Testing Laboratory PG-2170
- Contact customer service for approvals/ listings for state D.O.T.'s
- **Material:** Grade 5
- **Finish:** Zinc plated, other metals and finishes are available by special quote
- Eye bolt version available by special quote



Part No.	Size	Box Qty	Master Qty
	3/8"	100	3,000
FWNTTP050	1/2"	50	600
	5/8"	50	400
FWNTTP075	3/4"	50	400
FWNTTP100	1"	10	120

Part No.	Anchor ø x L	Hole ø	Min Embed.	Req Torque lb/ft	Head Size	Req Head Clear.	Tension	Shear	Tension	Shear	Box Qty	Mst Qty
							2000 PSI		5000 PSI			
	3/8" x 2-1/4"	3/8"	1-7/8"	40	9/16"	3/16"	4,030	7,177	4,987	8,567	50	400
	3/8" x 2-5/8"	3/8"	1-7/8"	40	9/16"	3/16"	4,030	7,177	4,987	8,567	50	400
	3/8" x 3"	3/8"	1-7/8"	40	9/16"	3/16"	4,030	7,177	4,987	8,567	50	400
	3/8" x 4"	3/8"	1-7/8"	40	9/16"	3/16"	4,030	7,177	4,987	8,567	50	400
FWBTTP05X5	1/2" x 2-7/8"	1/2"	2-3/8"	90	3/4"	1/4"	8,165	12,177	9,346	15,217	25	200
	1/2" x 4"	1/2"	2-3/8"	90	3/4"	1/4"	8,165	12,177	9,346	15,217	25	200
	1/2" x 5"	1/2"	2-3/8"	90	3/4"	1/4"	8,165	12,177	9,346	15,217	20	100
	5/8" x 3-1/2"	5/8"	2-7/8"	125	15/16"	5/16"	9,990	17,030	10,470	17,257	20	75
	5/8" x 4-1/2"	5/8"	2-7/8"	125	15/16"	5/16"	9,990	17,030	10,470	17,257	25	75
	5/8" x 6"	5/8"	2-7/8"	125	15/16"	5/16"	9,990	17,030	10,470	17,257	25	75
	5/8" x 7"	5/8"	2-7/8"	125	15/16"	5/16"	9,990	17,030	10,470	17,257	25	75
	FWBTTP075X4125	3/4" x 4-1/8"	3/4"	3-3/8"	250	1-1/8"	7/16"	11,906	27,916	17,073	28,110	20
FWBTTP075X55	3/4" x 5-1/2"	3/4"	3-3/8"	250	1-1/8"	7/16"	11,906	27,916	17,073	28,110	20	60
	3/4" x 7"	3/4"	3-3/8"	250	1-1/8"	7/16"	11,906	27,916	17,073	28,110	15	45
	3/4" x 8"	3/4"	3-3/8"	250	1-1/8"	7/16"	11,906	27,916	17,073	28,110	15	45
FWBTTP1X5625	1" x 5-5/8"	1"	4-5/8"	550	1-1/2"	5/8"	28,263	36,257	30,817	38,487	10	30
	1" x 6-3/4"	1"	4-5/8"	550	1-1/2"	5/8"	28,263	36,257	30,817	38,487	10	30
	1" x 7-1/4"	1"	4-5/8"	550	1-1/2"	5/8"	28,263	36,257	30,817	38,487	10	20

1. Drill hole the same diameter as the Taper-Bolt using fixture as a template. 2 Clean hole of debris. 3 Drive Taper-Bolt into place leaving recommended head clearance. If hole is oversized simply remove and pre-expand the expander nut to fit hole. 4 Tighten Taper-Bolt to recommended torque. 5 For big jobs, set Taper-Bolt with an impact wrench. This method offers speed, consistency and greater installer productivity

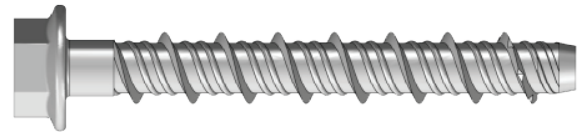


SUP-R-BOLT

FORMING

ADDITIONAL INFORMATION

- 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.
- **Material:** High strength steel
- **Approval:** ACI 318 category 1 for cracked concrete, ICC-ES ESR 4347 except 3/4" x 4" size
- **Do not use in brick or block**
- **Do not reuse**

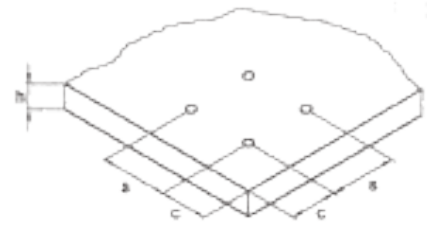
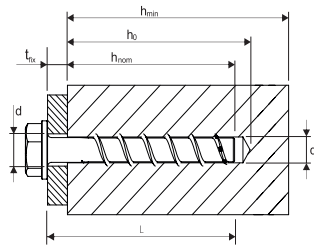


Part No.	Anchor $\phi \times L$	Hole $\phi \times D$	Min Embed.	Max Thickness Fastened	Required Torque	Box Qty
	3/8" x 3"	3/8" x 2-3/4"	2-1/2"	1/2"	35	50
	3/8" x 4"	3/8" x 2-3/4"	2-1/2"	1-1/2"	35	50
	3/8" x 5"	3/8" x 2-3/4"	2-1/2"	2-1/2"	35	50
	3/8" x 6"	3/8" x 2-3/4"	2-1/2"	3-1/2"	35	50
FWBTSP05X5	1/2" x 4"	1/2" x 3-3/8"	3"	1"	45	25
	1/2" x 5"	1/2" x 3-3/8"	3"	2"	45	25
	1/2" x 6"	1/2" x 3-3/8"	3"	3"	45	25
	5/8" x 4"	5/8" x 3-5/8"	3-3/4"	3/4"	85	25
	5/8" x 5"	5/8" x 3-5/8"	1-3/4"	1-3/4"	85	25
	5/8" x 6"	5/8" x 3-5/8"	3-1/4"	2-3/4"	85	20
	5/8" x 8"	5/8" x 3-5/8"	3-1/4"	4-3/4"	85	20
	3/4" x 4"	3/4" x 4-3/8"	4"	0"	115	15
	3/4" x 5"	3/4" x 4-3/8"	4"	1"	115	15
	3/4" x 6"	3/4" x 4-3/8"	4"	2"	115	15
	3/4" x 7"	3/4" x 4-3/8"	4"	3"	115	15
	3/4" x 10"	3/4" x 4-3/8"	4"	6"	115	5



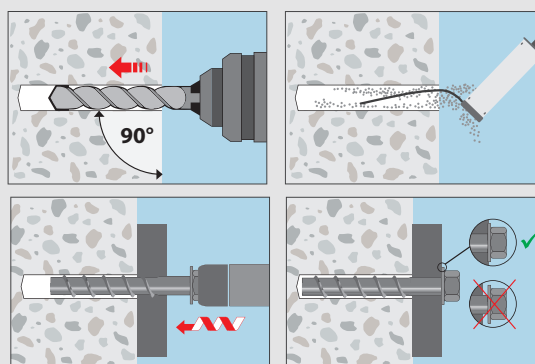
SUP-R-BOLT

FORMING



	Conc psi	Symbol	Units	3/8"		1/2"		5/8"		3/4"	
Embedment		h_{nom}	in	2-1/2"	3-1/4"	3"	4-1/4"	3-1/4"	5"	4"	6-1/4"
Cracked Concrete											
Avg. ultimate load, tension	4,000	$N_{u,cr}$	lb	2,705	4,225	4,077	6,358	3,898	8,122	5,503	11,626
Avg. ultimate load, shear	4,000	$V_{u,cr}$	lb	1,894	2,957	3,054	6,091	2,729	8,278	7,704	9,255
Allowable loads, tension ¹	2,500	$N_{allow,cr}$	lb	939	1,467	1,416	2,207	1,353	2,820	1,911	4,037
	4,000	$N_{allow,cr}$	lb	1,188	1,855	1,790	2,792	1,712	3,567	2,417	5,106
	6,000	$N_{allow,cr}$	lb	1,455	2,272	2,193	3,420	2,097	4,369	2,960	6,254
	8,500	$N_{allow,cr}$	lb	1,732	2,705	2,610	4,070	2,496	5,200	3,523	7,443
Uncracked Concrete											
Allowable loads, tension ¹	2,500	$N_{allow,cr}$	lb	1,326	2,330	1,416	3,116	1,911	3,981	2,698	5,699
	4,000	$N_{allow,cr}$	lb	1,677	2,947	1,692	3,942	2,417	5,036	3,412	7,209
	6,000	$N_{allow,cr}$	lb	2,054	3,609	1,974	4,828	2,960	6,168	4,179	8,829
	8,500	$N_{allow,cr}$	lb	2,445	4,296	2,254	5,746	3,523	7,341	4,974	10,508
Allowable loads, tension - light weight ¹	3,000			872	930	1,256	1,773				
Cracked & Uncracked Concrete											
Allowable loads, shear ¹	2,500	V_{allow}	lb	1,428	1,428	2,098	4,116	5,594	5,594	5,810	6,253
	>4,000	V_{allow}	lb	1,805	1,806	2,653	4,116	5,594	5,594	6,253	6,253
Allowable loads, shear - light weight ¹	3,000	V_{allow}	lb	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_{ac}	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
Spacing & Edge Distance											
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 lb	35	50	45	65	85	100	115	150
Wrench Size		W_s	in	9/16	9/16	3/4	3/4	5/16	5/16	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 & into the hole.
4. Tighten the anchor to the specified torque making sure the head is firmly against the item being fastened.