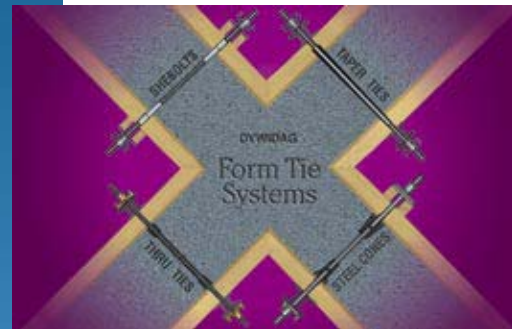


DYWIDAG Form Tie Systems



DYWIDAG BARS



THREADBAR®

The original THREADBAR® is hot-rolled, high strength steel with two flat sides in the thread pattern that allow gripping and turning of the bars with a crescent wrench. The flat sides facilitate self-cleaning with each stripping operation. Dywidag THREADBAR® and accessories have been used around the world for decades.

Benefits

Fast

The continuous coarse threads on all Dywidag Form Tie components mean quick installation and stripping. The threads resist handling damage and remain threadable even when dirty or rusty.

Strong

Dywidag's high load capacities allow greater spacing for fewer ties and lower labor costs.

Light

Dywidag ties are 50% lighter than conventional ties. Their lightweight and high strength features save on shipping and labor costs.

Versatile

The bars are available in mill lengths and can be cut to fit and/or spliced at any point without reduction in strength or threadability.

DYWIDAG THREADBAR® vs. Conventional High Tensile Coil Rod

	5/8" THREADBAR®	3/4" Coil Rod	7/8" THREADBAR®	1" Coil Rod
Steel Grade (KSI)	160	120	160	120
Ultimate Load (kips)	43.8	38	78.4	75
Weight (#/LF)	1.0	1.5	1.7	2.7
Bendability (Around a 6D Pin)	yes	no	yes	no
Threadability (After Surface Rusting)	yes	no	yes	no
Certified Mechanical Properties	yes	?	yes	?
Mill Lengths	19'1"	20' & 12'	38'9"	20' & 12'
Stripping Speed (Threads per inch)	Faster (2.5)	Slower (4.5)	Faster (2.5)	Slower (3.5)
Jobsite Handling	Rounded Threads: More Durable	Sharper Threads: Subject to Damage	Rounded Threads: More Durable	Sharper Threads: Subject to Damage
Convenient End Hardware Compatibility	Same Size All Systems	Various Sizes Depending on System	Same Size All Systems	Various Sizes Depending on System

DYWIDAG TAPER TIES



All Steel Taper Ties

Dywidag Taper Ties are machined from a single high strength steel bar. The taper is milled to the appropriate length and diameter. Both ends of the tie are

turned down to the same diameter and threaded to allow the same size hardware to be used on both ends. The rugged and fast Dywidag thread pat-

tern (2-1/2 threads per inch) is utilized, resulting in much less time required for stripping, setting and cleaning.

	Component	Part Number	Weight		Working Loads ⁺	
			(lbs)	(kg)	(kips)	(kN)
1" to 3/4" taper with 5/8" ends	16" taper length, 41" overall	B15F28216	5.01	2.25	18.75	83
	24" taper length, 49" overall	B15F28224	6.38	2.87	18.75	83
	32" taper length, 57" overall	B15F28232	7.75	3.48	18.75	83
	40" taper length, 65" overall	B15F28240	9.11	4.10	18.75	83
7/8" to 3/4" taper with 5/8" ends	16" taper length, 41" overall	B15F28316	4.65	2.09	18.75	83
	24" taper length, 49" overall	B15F28324	5.81	2.61	18.75	83
	32" taper length, 57" overall	B15F28332	7.00	3.15	18.75	83
	40" taper length, 65" overall	B15F28340	8.17	3.68	18.75	83
3/4" to 5/8" taper with 5/8" ends	16" taper length, 41" overall	B15F28416	3.97	1.79	18.75	83
	24" taper length, 49" overall	B15F28424	4.81	2.16	18.75	83
	32" taper length, 57" overall	B15F28432	5.65	2.54	18.75	83
	40" taper length, 65" overall	B15F28440	6.50	2.93	18.75	83
1-1/4" to 1" taper with 7/8" ends	30" taper length, 51" overall	B20F28230	11.8	5.31	32.5	145
	36" taper length, 57" overall	B20F28236	13.5	6.08	32.5	145
	42" taper length, 63" overall	B20F28242	15.2	6.84	32.5	145
1" to 7/8" taper with 7/8" ends	16" taper length, 37" overall	B20F28316	7.85	3.53	32.5	145
	24" taper length, 45" overall	B20F28324	10.1	4.54	32.5	145
	32" taper length, 53" overall	B20F28332	12.4	5.58	32.5	145
	40" taper length, 61" overall	B20F28340	14.6	6.57	32.5	145

+ Factor of Safety = 2:1

++ Special order sizes available upon request.

Taper Sleeve

	Component	Part Number	Weight		Component	Part Number	Weight		
			(lbs)	(kg)			(lbs)	(kg)	
1" to 3/4"	18" length	B15F29218	1.45	0.65	7/8" to 3/4"	18" length	B15F29218	1.40	0.63
	26" length	B20F29226	2.09	0.94		26" length	B20F29226	2.02	0.91

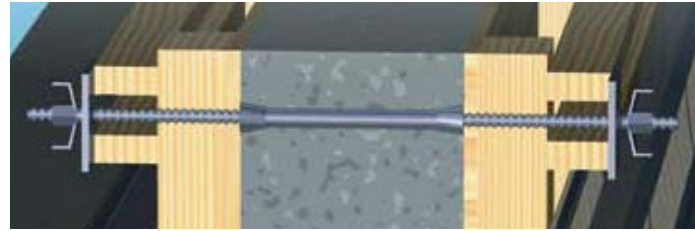
DYWIDAG THRU TIES



PVC Spacer Sleeve

PVC Spacer Sleeve

PVC Spacer Sleeve		Inside Dimension		Outside Dimension		Weight	
(in)	(mm)	(in)	(mm)	(in)	(mm)	(lbs.)	(kg)
3/4	19.8	.081	21.95	1.05	27.8	.214	.096
1	26.5	1.03	27.2	1.32	34.9	.315	.142
1-1/4	33.1	1.36	36.0	1.66	44.0	.426	.192



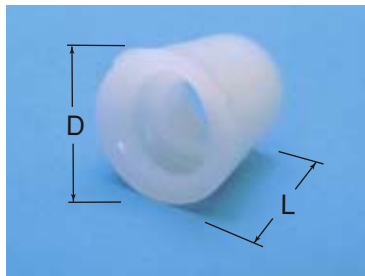
Thru Ties



Dywidag Thru Ties, available with THREADBAR®, are sheathed with PVC sleeves and buttressed by reusable plastic cones. This system ensures accurate form spacing and the coarse threading makes installation and stripping quick and easy. The resulting convenience and labor savings make these ties popular worldwide.

Plastic Cones

Cones are re-usable. Use Dywidag THREADBAR® to strip cones.



Plastic Cones

Plastic Cone		L Dimension		D Dimension		Weight	
(in)	(mm)	(in)	(mm)	(in)	(mm)	(lbs.)	(kg)
5/8	15	1.50	38	1.62	41	.39	.18
7/8	20	1.50	38	1.67	48	.42	.19
1	26	1.50	38	2.25	57	.50	.23

THREADBAR® Thru Tie Rods

Inner Rod Diameter		Ultimate Strength		Safe Working Load +		Weight	
(in)	(mm)	(kips)	(kN)	(kips)	(kN)	(lbs.)	(kg)
5/8	15	43.8	195	21.9	98	1.0	.45
7/8	20	76	340	38	170	1.7	.77
1	26	127.5	568	63.7	284	3.0	1.35

+ Factor of Safety = 2:1

Concrete Plug

For architectural walls.

Concrete Plug

Concrete Plug		Weight	
(in)	(mm)	(lbs.)	(kg)
5/8	15	.05	.02
7/8	30	.07	.03



Euro Push Fit Cone

Cones are not re-usable.

Euro Push Fit Cone

Euro Push Fit Cone		Weight	
(in)	(mm)	(lbs.)	(kg)
5/8	15	.02	.009
7/8	20	.03	.01



Note: After cones are stripped the holes can be dry packed or plugged.

DYWIDAG SHEBOLTS



Shebolts

Available in three sizes listed below, the threaded portions of Dywidag Shebolts incorporate standard THREADBAR®. The inner rods also use the standard THREADBAR®. This combination provides a cost-effective and rugged tie that can be adapted to difficult installations.



Shebolt Inner Rod and Thru Ties using THREADBAR®

Bar Size	Maximum Diameter	Ultimate Load	Safe Working Load	Weight	Bar Size	Maximum Diameter	Ultimate Load	Safe Working Load	Weight
inches		kips		lbs./ft.	mm		kN		lbs./ft.
5/8	0.7	43.8	21.9	1.0	15	18	195	98	1.5
7/8	0.9	78.4	39.2	1.7	20	23	348	174	2.6
1	1.2	127.5	63.7	3.0	26	31	568	284	4.5

Euro Pass-Thru

Dywidag Euro Pass-Thru Shebolt is a streamlined version of the conventional shebolt and is designed to work both the small European form panel tie holes, as well as with the conventional forming systems. It is manufactured from high strength steel with the smooth tapered portion milled to the appropriate length and diameter. The end of the shebolt utilizes Dywidag rugged and fast (2-1/2 threads per inch) thread pattern and has many outside diameter variations to fill the needs of the different form panel tie holes. The most common outside diameter is 7/8"-20mm. It also utilizes Dywidag's fast and versatile THREADBAR® innerrods,



Note: DYWIDAG-THREADBAR exceeds tension capacity of Euro Pass-Thru She Bolts. Call for exact load carrying capacity

Shebolt Inner Rod and Thru Ties using THREADBAR®

Bar Size	Maximum Diameter	Ultimate Load	Safe Working Load	Weight	Bar Size	Maximum Diameter	Ultimate Load	Safe Working Load	Weight
inches		kips		lbs./ft.	mm		kN		lbs./ft.
5/8	0.7	43.8	21.9	1.0	15	18	195	98	1.5
7/8	0.9	78.4	39.2	1.7	20	23	348	174	2.6

Shebolt Cones



Shebolt Steel Cone (5/8" - 15mm)

Works with THREADBAR®. Cone shape seals hole for no leakage and clean finish. Available in two styles (steel outer surface and PVC outer surface). Suitable for any application where conventional shebolts are used. Tail length can be

easily adapted to accommodate any form dimension. Works with the standard pre-drilled 1" and 1-1/8" European hole diameters. Internally spaces wall form and creates a 2" setback from the face of the wall to end of inner rod.



Shebolt PVC Cone (5/8" - 15mm)

Shebolt Inner Rod and Thru Ties using THREADBAR® (Not available for 1" diameter)

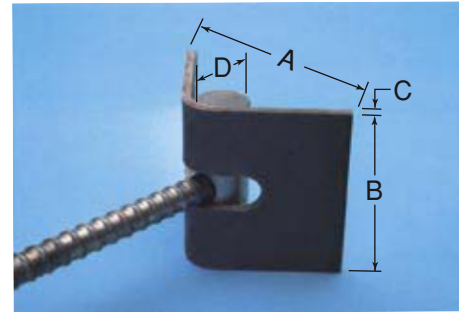
Bar Size	Maximum Diameter	Ultimate Load	Safe Working Load	Weight	Bar Size	Maximum Diameter	Ultimate Load	Safe Working Load	Weight
inches		kips		lbs./ft.	mm		kN		lbs./ft.
5/8	0.7	43.8	21.9	1.0	15	18	195	98	1.5
7/8	0.9	78.4	39.2	1.7	20	23	348	174	2.6

ONE-SIDE FORMING OFF STEEL

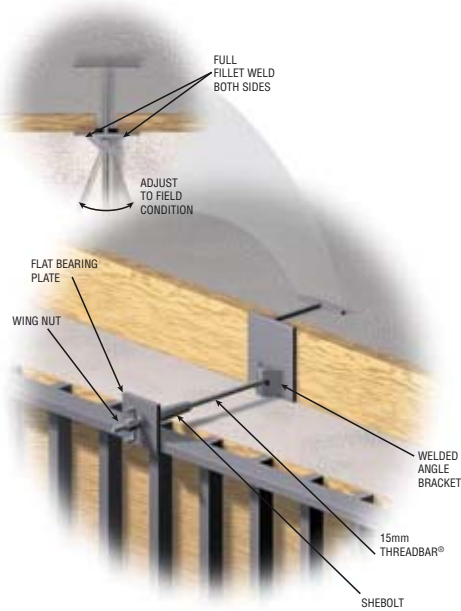


Welded Angle Bracket

Available for both 5/8" and 7/8" THREADBAR®, the threaded pin swivels up to +/- 45°. The welded angle bracket is mainly used on H-piles below grade for one-sided forming applications. This bracket adapts easily to both domestic or European form hole diameters. Note that the THREADBAR® needs to be fully engaged with the threaded pin.



The strengths listed on the chart for the DSI WELDED ANGLE BRACKET were determined based on FULLFILLET WELDS along the B dimension of each side of the bracket. **DSI assumes no responsibility nor liability for this welded connection.**

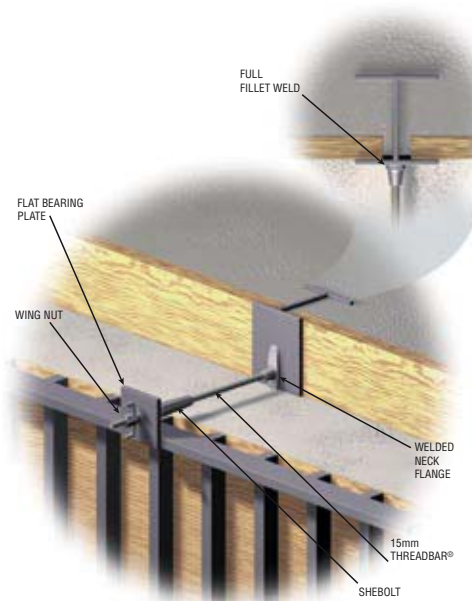
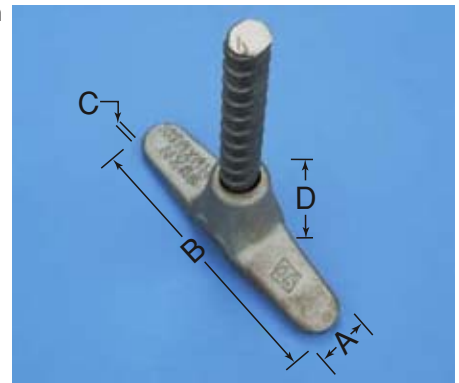


Rod Diameter		A		B		C		D		Ultimate Load		Safe Working Load 2:1		Bracket W/PIN Weight		Bar Weight	
in	mm	in	mm	in	mm	in	mm	in	mm	kips	kN	kips	kN	lbs	kg	lbs/lf	kg/m
5/8	15	5.25	133	4	102	.25	6	1.5	38	43.8	195	21.9	98	4.0	1.8	1.0	1.5
7/8	20	7	178	6	152	.50	13	2	51	78.4	348	39.2	174	8.5	3.9	1.7	2.6

Welded Neck Flange

The DSI WELDED NECK FLANGE offers an economical solution for one sided forming off steel where angle tying is not required.

The strengths listed on the chart were determined based on a 1/4" fillet weld completely around the base of the Neck Flange. **DSI assumes no responsibility nor liability for this welded connection.**



Rod Diameter		A		B		C		D		Ultimate Load		Safe Working Load 2:1		Neck Flange Weight		Bar Weight	
in	mm	in	mm	in	mm	in	mm	in	mm	kips	kN	kips	kN	lbs	kg	lbs/lf	kg/m
5/8	15	1.18	30	5.12	130	.47	12	1.96	50	43.8	195	21.9	98	4.0	1.8	1.0	1.5
*SPECIAL ORDER 7/8" WELDED NECK FLANGE										78.4	348	39.2	174	9.0	4.1	1.7	2.6

Load on Form Ties (P x A) In KIPS

Lateral Pressure, P in PSF	3,000	27.0	36.0	48.0	60.0	75.0	90.0	108.0	126.0	147.0	168.0	192.0	
	2,900	26.1	34.8	46.4	58.0	72.5	87.0	104.4	121.8	142.1	162.4	185.6	
	2,800	25.2	33.6	44.8	56.0	70.0	84.0	100.8	117.6	137.2	156.8	179.2	
	2,700	24.3	32.4	43.2	54.0	67.5	81.0	97.2	113.4	132.3	151.2	172.8	
	2,600	23.4	31.2	41.6	52.0	65.0	78.0	93.6	109.2	127.4	145.6	166.4	
	2,500	22.5	30.0	40.0	50.0	62.5	75.0	90.0	105.0	122.5	140.0	160.0	
	2,400	21.6	28.8	38.4	48.0	60.0	72.0	86.4	100.8	117.6	134.4	153.6	
	2,300	20.7	27.6	36.8	46.0	57.5	69.0	82.8	96.6	112.7	128.8	147.2	
	2,200	19.8	26.4	35.2	44.0	55.0	66.0	79.2	92.4	107.8	123.2	140.8	
	2,100	18.9	25.2	33.6	42.0	52.5	63.0	75.6	88.2	102.9	117.6	134.4	
	2,000	18.0	24.0	32.0	40.0	50.0	60.0	72.0	84.0	98.0	112.0	128.0	
	1,900	17.1	22.8	30.4	38.0	47.5	57.0	68.4	79.8	93.1	106.4	121.6	
	1,800	16.2	21.6	28.8	36.0	45.0	54.0	64.8	75.6	88.2	100.8	115.2	
	1,700	15.3	20.4	27.2	34.0	42.5	51.0	61.2	71.4	83.3	95.2	108.8	
	1,600	14.4	19.2	25.6	32.0	40.0	48.0	57.6	67.2	78.4	89.6	102.4	
	1,500	13.5	18.0	24.0	30.0	37.5	45.0	54.0	63.0	73.5	84.0	96.0	
	1,400	12.6	16.8	22.4	28.0	35.0	42.0	50.4	58.8	68.6	78.4	89.6	
	1,300	11.7	15.6	20.8	26.0	32.5	39.0	46.8	54.6	63.7	72.8	83.2	
	1,200	10.8	14.4	19.2	24.0	30.0	36.0	43.2	50.4	58.8	67.2	76.8	
	1,100	9.9	13.2	17.6	22.0	27.5	33.0	39.6	46.2	53.9	61.6	70.4	
	1,000	9.0	12.0	16.0	20.0	25.0	30.0	36.0	42.0	49.0	56.0	64.0	
	900	8.1	10.8	14.4	18.0	22.5	27.0	32.4	37.8	44.1	50.4	57.6	
	800	7.2	9.6	12.8	16.0	20.0	24.0	28.8	33.6	39.2	44.8	51.2	
	700	6.3	8.4	11.2	14.0	17.5	21.0	25.2	29.4	34.3	39.2	44.8	
600	5.4	7.2	9.6	12.0	15.0	18.0	21.6	25.2	29.4	33.6	38.4		
Area SF	9	12	16	20	25	30	36	42	49	56	64		
(Spacing of Ties)	(3'x 3')	(3'x 4')	(4'x 4')	(4'x 5')	(5'x 5')	(5'x 6')	(6'x 6')	(6'x 7')	(7'x 7')	(7'x 8')	(8'x 8')		

Contributing Area, A in Sq. Ft.

Use the appropriate DSI ties for loads below their respective line.

A safety factor of 2 has been applied to determine safe working loads (SWL) of ties.

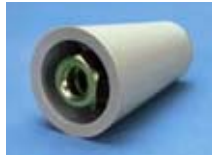
COMPONENTS



Shebolt – Setting Cone System



Standard Shebolt
B15F37010
B20F37010
B26E37010



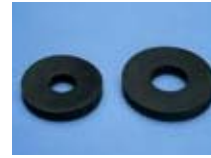
5/8" Shebolt Plastic
Cone
B15F33700



Pass-thru Shebolt
B15F38015
B15F38019
B15F38119
B20F38015
B20F38019



Shebolt Steel Cone
B15F30340
B20F30340



Neoprene Waterstop
B15F34500
B20F34500



Hydrophilic
Waterstop
B15F34600
B20F34600

Embedded Anchors



Brace Frame
Double Anchor
B15F20020
B20F20020



U-Bolt
B15FUBLT
B20FUBLT



J-Bolt
B15FJBLT
B20FJBLT



L-Rod
B15FLBLT
B20FLBLT



Wobble
B15F52080
B20F52080

Thru Tie System



Plastic Spacer
Cones
B15F86010
B20F86010
B26E86010



PVC Spacer
Sleeve
B15F36010
B20F36010
B26E36010



THREADBAR®
B15F01910
B20F04910
B26E06010



Euro Push Fit
Cone
B15F87030
B20F87030



Concrete Plug
B15F34110
B20F34110



Taper Sleeve

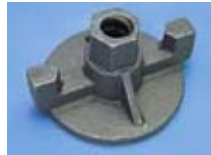
	Component	Part Number	Weight (lbs) (kg)	
1" to 3/4"	18" length	B15F29218	1.45	0.65
	26" length	B15F29226	2.09	0.94
7/8" to 3/4"	18" length	B20F29218	1.40	0.63
	26" length	B20F29226	2.02	0.91

* THREADBAR® – Not To Be Welded

End Hardware Accessories



Wing Nut
B15F27711
B20F27711
B26E27710



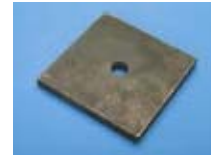
Wing Nut Bracket
B15F27210
B15F27220 3Wings
B20F2072



Hex Coupler
B15F30510
B20F30510



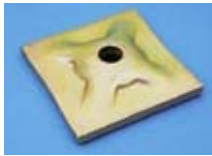
Batter Washer
B15F35210
B20F35210
B26E35210



Flat Bearing Plate
B15F35175
B20F35100
B26E35100



Hex Nut
B15F27901
B20F20211



Ribbed Plate
B15F26610



Combination Plate
B15F1020



Round Steel Coupler
B15F1030
B20F30310
B26F30310

One Sided Forming Accessories



Welded Angle
Bracket
B15F36110
B20F36110



Wobble Anchor
B15F52080
B20F52080
B26E52080



Radiused Anchor
B15F20010
B20F20010



Shebolt Steel Cone
B15F30340
B20F30340



5/8" Welded Neck
Flange
B15F32610

*SPECIAL ORDER
7/8" Welded Neck
Flange

Safety Warning: Improper use of the formwork accessories can expose workers to extreme danger that may result in severe injury or death.

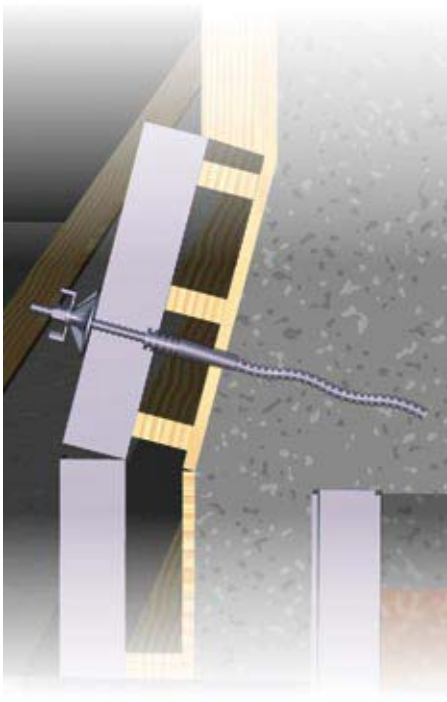
The products and applications shown in this brochure are intended for use by trained, qualified and experienced workmen only. The user of DSI products is cautioned to: evaluate the product application; determine the load to be applied; evaluate and control the field conditions so as to never exceed the safe working loads; inspect on a regular basis all components for signs of wear, misuse, corrosion or overloading, and immediately discard any components that exhibit any of these signs; never weld formwork accessories that have not been specifically designated as weldable. If there is any uncertainty about the proper use or installation of any DSI product, contact the nearest DSI office for clarification or in the United States call 800-DSI-FORM. Negligence in obtaining clarification may result in severe injury or death.

FORM TIE ANCHORS



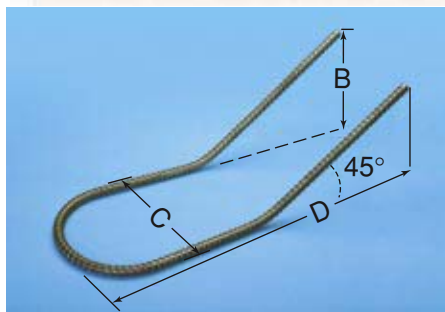
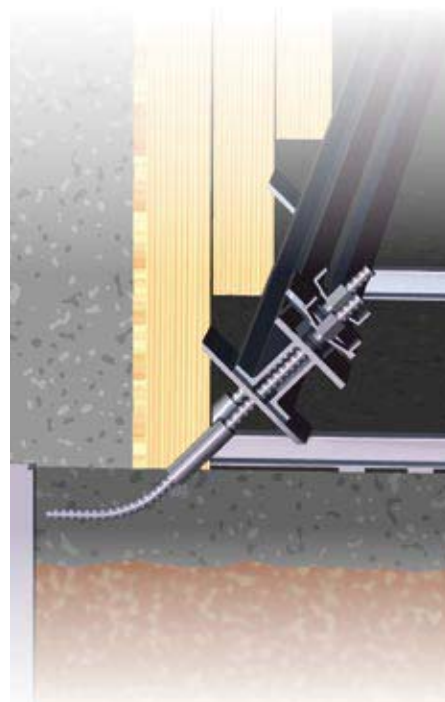
Fabricated using **THREADBAR®**

Wobble Anchor



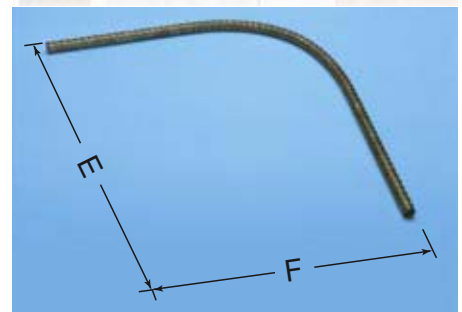
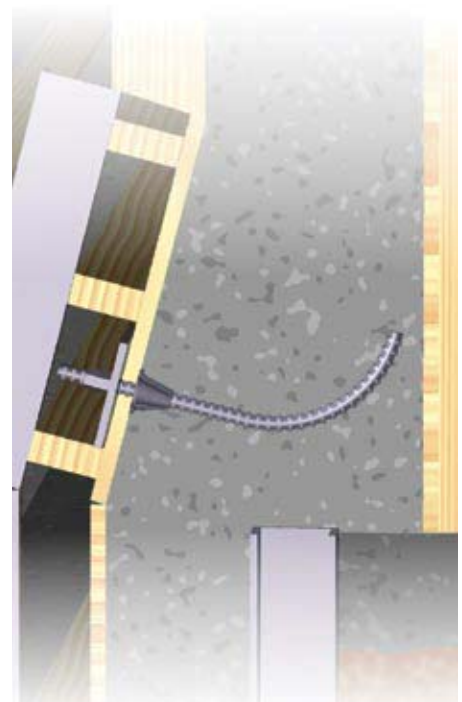
Rod Dia.	A	Ult. Load*	Weight
(in) (mm)	(in) (mm)	(kips) (kN)	(lbs) (kg)
5/8 15	22 559	43.8 195	1.9 .9
7/8 20	28 711	78.4 349	3 1.36

Brace Frame Double Anchor



B	C	D	Ult. Load*	Weight
(in) (mm)	(in) (mm)	(in) (mm)	(kips) (kN)	(lbs) (kg)
11 280	9 230	20 508	87.6 390	5.2 2.4
11 280	9 230	20 508	157 698	9.0 4.1

Radiused Anchor

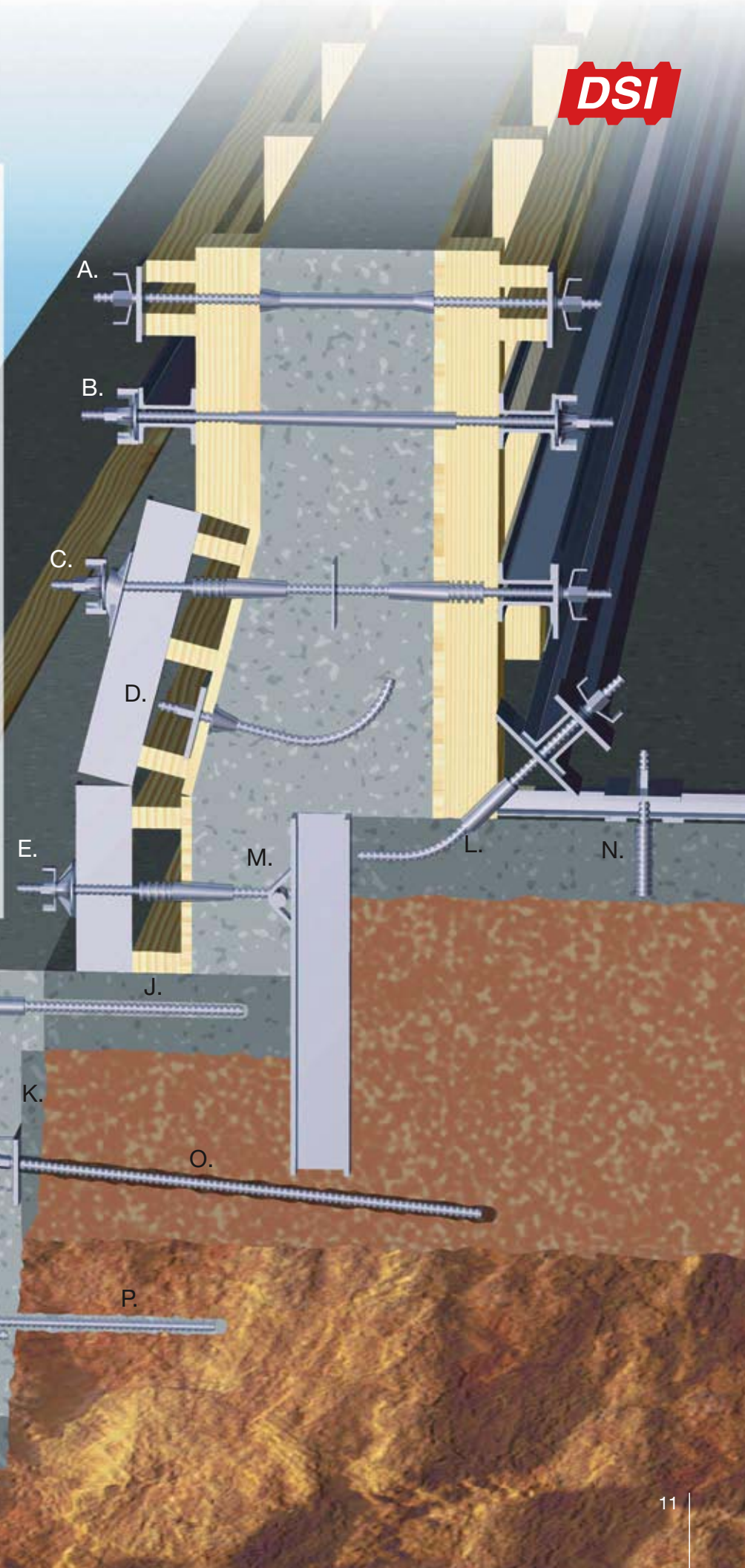


E	F	Ult. Load*	Weight
(in) (mm)	(in) (mm)	(kips) (kN)	(lbs) (kg)
16 406	17 438	43.8 195	2.6 1.2
21 533	25 635	78.4 349	6.4 2.9

* Assuming 3,000 psi concrete.

APPLICATIONS

- A.** Thru Tie with wing nuts and flat bearing plates on wooden wales
- B.** Taper Tie with wing nut brackets on metal wales
- C.** Shebolt with wing nut bracket and batter washer and waterstop welded onto THREADBAR® inner rod
- D.** Hex nut and plate securing setting cone and radiused anchor (climbing cone replaces setting cone to hold jumped forms)
- E.** Combination plate on shebolt for one-sided form
- F.** Wing nut bracket
- G.** Combination plate
- H.** Coupler
- I.** Offset coupler
- J.** THREADBAR® resin anchor in concrete
- K.** Shotcrete wall
- L.** Brace frame double anchor with coupler
- M.** Welded angle bracket on H-Pile
- N.** Threaded sleeve anchor
- O.** THREADBAR® soil nail
- P.** THREADBAR® resin anchor in rock



5/8" Expansion Anchor

Dywidag expansion anchors can be used with 5/8" THREADBAR®. These anchors are used in many applications including one sided forming off existing concrete or temporary tiedowns in existing slabs. The fast Dywidag thread pattern (2¹/₂ threads per inch) provides quick installation and stripping. Available in two bore hole diameters (33 – 36 mm and 35 – 38 mm), simply determine the estimated compressive strength of existing concrete and the depth of the hole.



Embedded Anchor Capacities

For inserts and anchors embedded in concrete, the capacity is estimated using the truncated cone break-out failure mechanism according to ACI 318 appendix D. The concrete cone angle can be assumed as $\alpha = 55^\circ$ to the axis of the load. The tensile strength of concrete is $f_{ct} = k\sqrt{f'_c}$ with $k = 1.4$ for cast-in anchors and $k = 1.0$ for post-installed anchors and f'_c being the 28-day cylinder compressive strength in psi. The cone surface area is $A_c = L\pi(d + L \tan \alpha)$ with L being the effective embedment length and d = hole or anchor diameter.

The ultimate capacity $P_c = A_c f_{ct}$.

$$\text{Safe Load} = \frac{P_c}{\text{Safety Factor}}$$

Example: Expansion Shell (post-installed): $d = 55 \text{ mm} = 2.165 \text{ inch}$.

$L = 11 \text{ inch}$, Surface Area = 618 in.²

Using $f'_c = 4000 \text{ psi}$ makes $f_{ct} = 63 \text{ psi}$

Thus $P_c = 39,000 \text{ lbs}$. For a forming application the Safe Load = 19,500 lbs.

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