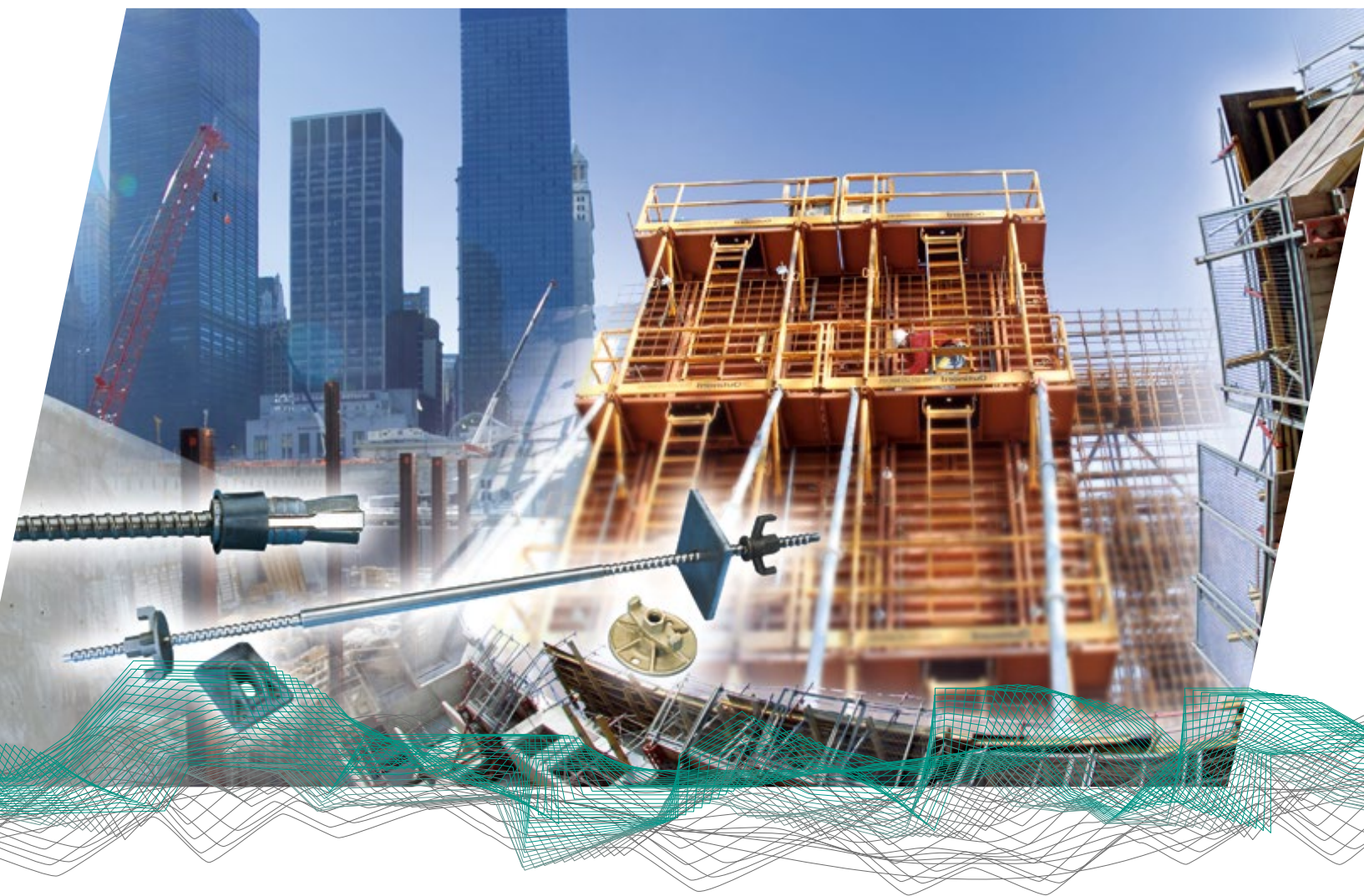
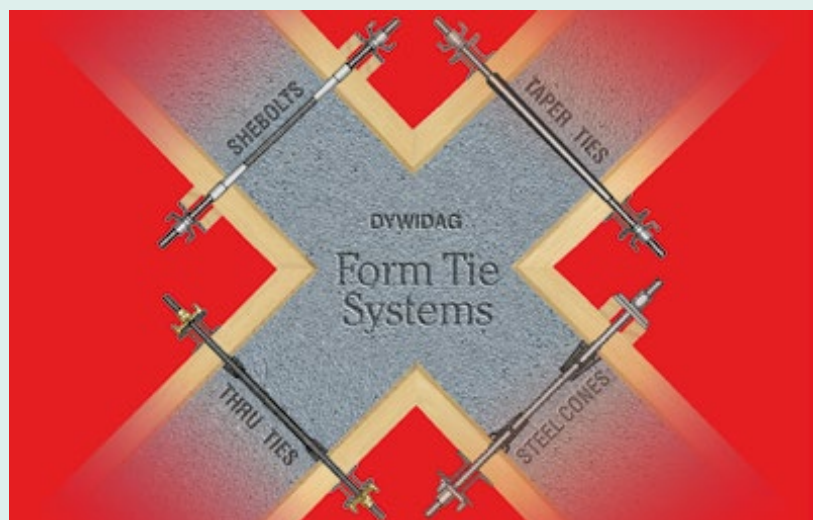


## DYWIDAG Form Tie Systems





|                                  |    |
|----------------------------------|----|
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# THREADBAR® / Benefits

## 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®

|                                       | 5/8" THREADBAR® | 7/8" THREADBAR® | 1" THREADBAR® |
|---------------------------------------|-----------------|-----------------|---------------|
| Steel Grade (KSI)                     | 160             | 160             | 150           |
| Ultimate Load (kips)                  | 43.8            | 78.4            | 127.5         |
| Weight (#/LF)                         | 1.0             | 1.7             | 3.0           |
| Bendability (Around a 6D Pin)         | yes             | yes             | yes           |
| Threadability (After Surface Rusting) | yes             | yes             | yes           |
| Certified Mechanical Properties       | yes             | yes             | yes           |
| Mill Lengths                          | 19'1"           | 38'9"           | 60'0"         |

+ Bar can be cut to length with a + or - tolerance of ¼".



## 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

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

|                                   | Component                     | Part Number | Weight |      | Working Load <sup>+</sup> |      |
|-----------------------------------|-------------------------------|-------------|--------|------|---------------------------|------|
|                                   |                               |             | [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. +++ Not all Ties are stock call for availability.

## DYWIDAG Thru Ties

### Plastic Cones

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



### Thru Ties



| Plastic Cone |      | L Dimension |      | D Dimension |      | Weight |      |
|--------------|------|-------------|------|-------------|------|--------|------|
| [in]         | [mm] | [in]        | [mm] | [in]        | [mm] | [lbs.] | [kg] |
| 5/8          | 15   | 1.50        | 38   | 1.62        | 41   | 0.39   | 0.18 |
| 7/8          | 20   | 1.50        | 38   | 1.67        | 48   | 0.42   | 0.19 |
| 1            | 26   | 1.50        | 38   | 2.25        | 57   | 0.50   | 0.23 |

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.

### 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    | 0.45 |
| 7/8                | 20   | 78                | 348  | 39.2                | 174  | 1.7    | 0.77 |
| 1                  | 26   | 127.5             | 568  | 63.7                | 284  | 3.0    | 1.35 |

+ Factor of Safety = 2:1



### Concrete Plug

For architectural walls.

| Concrete Plug |      | Weight |      |
|---------------|------|--------|------|
| [in]          | [mm] | [lbs.] | [kg] |
| 5/8           | 15   | 0.05   | 0.02 |
| 7/8           | 20   | 0.07   | 0.03 |



### Euro Push Fit Cone

Cones are not re-usable.

| Euro Push Fit Cone |      | Weight |       |
|--------------------|------|--------|-------|
| [in]               | [mm] | [lbs.] | [kg]  |
| 5/8                | 15   | 0.02   | 0.009 |
| 7/8                | 20   | 0.03   | 0.01  |



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

## DYWIDAG Shebolts

### Swaged Shebolts

Available in three sizes listed below, the threaded portions of DYWIDAG Swaged 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. DYWIDAG Swaged Shebolts can be made to any length



### Shebolt Inner Rod and Thru Ties using THREADBAR®

| Bar Size |      | Maximum Diameter |      | Ultimate Load |      | Safe Working Load |      | Weight     |        |
|----------|------|------------------|------|---------------|------|-------------------|------|------------|--------|
| [inches] | [mm] | [inches]         | [mm] | [kips]        | [kN] | [kips]            | [kN] | [lbs./ft.] | [kg/m] |
| 5/8      | 15   | 0.7              | 18   | 37.5          | 195  | 18.8              | 98   | 1.0        | 1.5    |
| 7/8      | 20   | 0.9              | 23   | 78.4          | 348  | 39.2              | 174  | 1.7        | 2.6    |
| 1        | 26   | 1.2              | 31   | 127.5         | 568  | 63.7              | 284  | 3.0        | 4.5    |

### Euro Pass-Thru

DYWIDAG Euro Pass-Thru Shebolt is a streamlined version of the shebolt and designed to work with both the small European form panel tie holes, as well as with the 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, which carry loads of 43.8 kips for the 5/8" system and 78.4 kips for the 7/8" system.



**Note: DYWIDAG THREADBAR® exceeds tensile capacity of euro pass-thru Shebolts. Call for exact load carrying capacities.**

|              | Ult. Load | SWF Load |
|--------------|-----------|----------|
| 5/8" Shebolt | 37.5      | 18.8     |
| 7/8" Shebolt | 75.0      | 37.5     |

### Shebolt Cones



**Shebolt Steel Cone**  
(5/8" – 15mm)

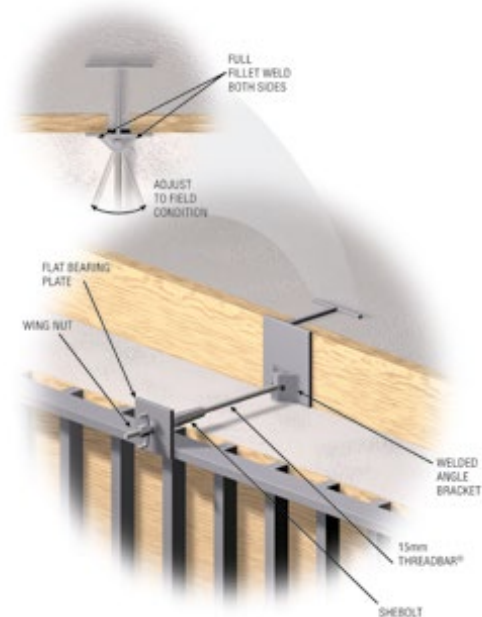
Works with THREADBAR®. Cone shape seals hole for no leakage and clean finish. Suitable for any application where conventional shebolts are used. Tail length can be easily adapted to

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

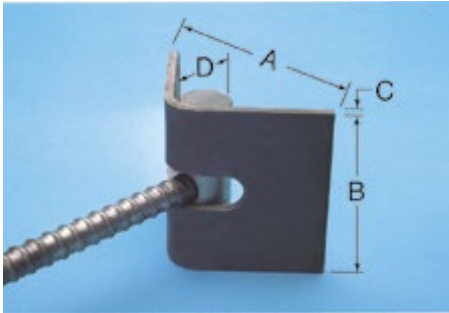
| Bar Size |      | Maximum Diameter |      | Ultimate Load |      | Safe Working Load |      | Weight     |        |
|----------|------|------------------|------|---------------|------|-------------------|------|------------|--------|
| [inches] | [mm] | [inches]         | [mm] | [kips]        | [kN]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

# One-Side Forming Off Steel



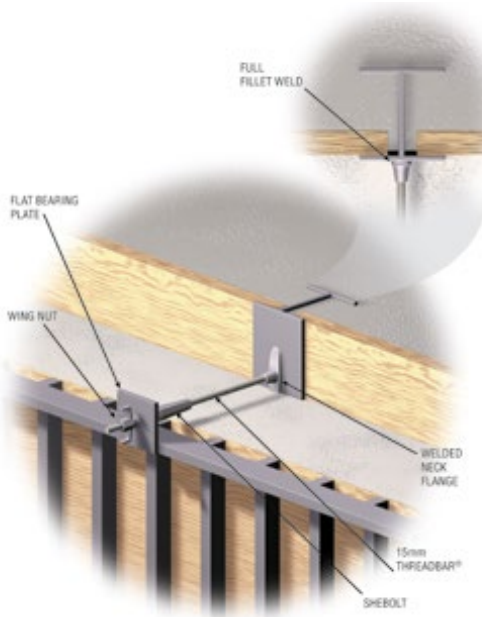
## Welded Angle Bracket

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 FULL FILLET 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  | 0.25 | 6    | 2    | 51   | 43.8          | 195  | 21.9                  | 98   | 4.0                   | 1.8  | 1.0        | 1.5    |
| 7/8          | 20   | 7    | 178  | 6    | 152  | 0.50 | 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 |      | 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   | 1.18 | 30   | 5.12 | 130  | 0.47 | 12   | 1.96 | 50   | 43.8          | 195  | 21.9                  | 98   | 4.0                   | 1.8  | 1.0        | 1.5    |
| * 7/8" 20 – CALL FOR DIMENSIONS |      |      |      |      |      |      |      |      |      | 78.4          | 348  | 39.2                  | 174  | 9.0                   | 4.1  | 1.7        | 2.6    |



## Load on Form Ties

### 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          | Special Design Required       |
|                              | 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           | 78.01          | 93.6           | 109.2          | 127.4          | 145.6          | 166.4          | 1" THREADBAR®<br>SWL = 63.7 K |
|                              | 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          | 7/8" THREADBAR®               |
|                              | 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          | 5/8" THREADBAR®               |
|                              | 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<br>(Spacing of Ties) |       | 9<br>(3'x 3') | 12<br>(3'x 4') | 16<br>(4'x 4') | 20<br>(4'x 5') | 25<br>(5'x 5') | 30<br>(5'x 6') | 36<br>(6'x 6') | 42<br>(6'x 7') | 49<br>(7'x 7') | 56<br>(7'x 8') | 64<br>(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

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### Shebolt – Setting Cone System

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Swaged Shebolt  
B15F37040  
B20F37030  
B26E37030



Pass-thru Shebolt  
B15F38015  
B15F38019  
B20F38015  
B20F38019



5/8" Shebolt Steel  
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

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Plastic Spacer Cones  
B15F86010  
B20F86010  
B26E86010



THREADBAR®  
B15F01910  
B20F04910  
B26E06010



Euro Push Fit Cone  
B15F87010  
B20F87010



Concrete Plug  
B15F34110  
B20F34110

### Special Order Concrete Accessories

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**DSI Haan** manufactures a wide variety of **form tie accessories** that complement our existing domestic stock.

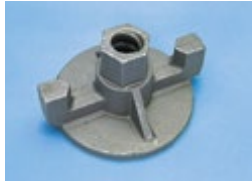
All of these products are available. Please let us know if you request literature or pricing from any of these companies.

## Components

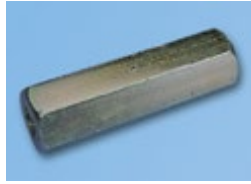
### End Hardware Accessories



Wing Nut  
B15F27711  
B20F27711  
B26E27710



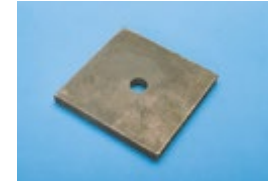
Wing Nut Bracket  
B15F27210  
B15F27220 3 Wings  
B20F2072



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  
B15F30310 B20F30310  
B26E30310

### One Sided Forming Accessories



Welded Angle  
Bracket  
B15F36110  
B20F36110



Wobble Anchor  
B15F52080  
B20F52080  
B26E52080



Radiused Anchor  
B15F20010  
B20F20010



Shebolt Steel Cone  
B15F30340  
B20F30340  
B26E3034



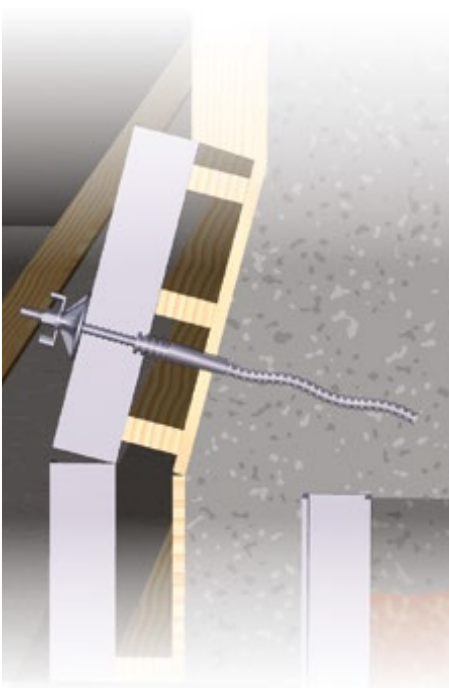
5/8\"/>

**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.

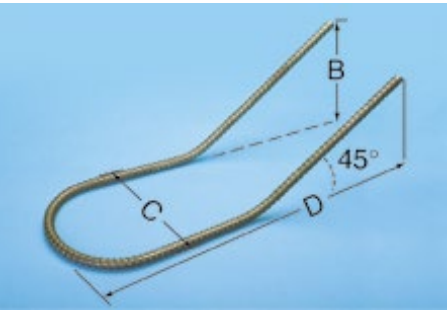
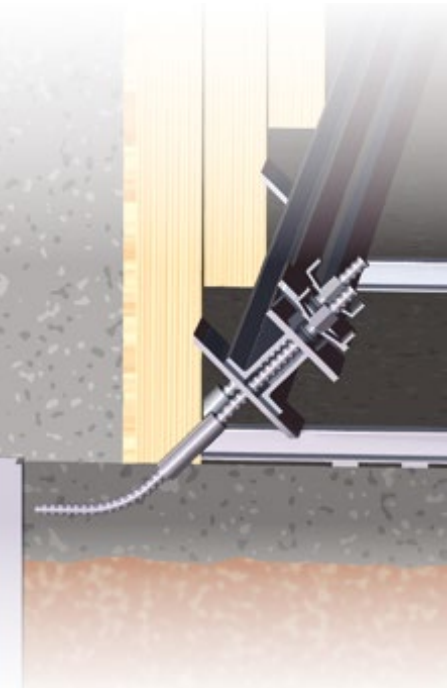
Fabricated using THREADBAR®

Wobble Anchor



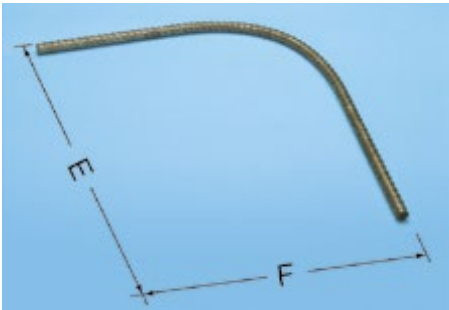
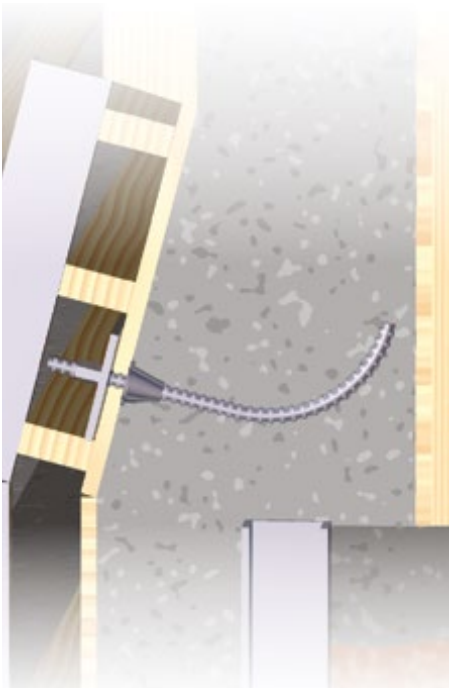
| Rod Diameter |      | A    |      | Ultimate Load* |      | Weight |      |
|--------------|------|------|------|----------------|------|--------|------|
| [in]         | [mm] | [in] | [mm] | [kips]         | [kN] | [lbs.] | [kg] |
| 5/8          | 15   | 22   | 559  | 43.8           | 195  | 1.9    | 0.9  |
| 7/8          | 20   | 28   | 711  | 78.4           | 349  | 3      | 1.36 |

Brace Frame Double Anchor



| B    |      | C    |      | D    |      | Ultimate 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



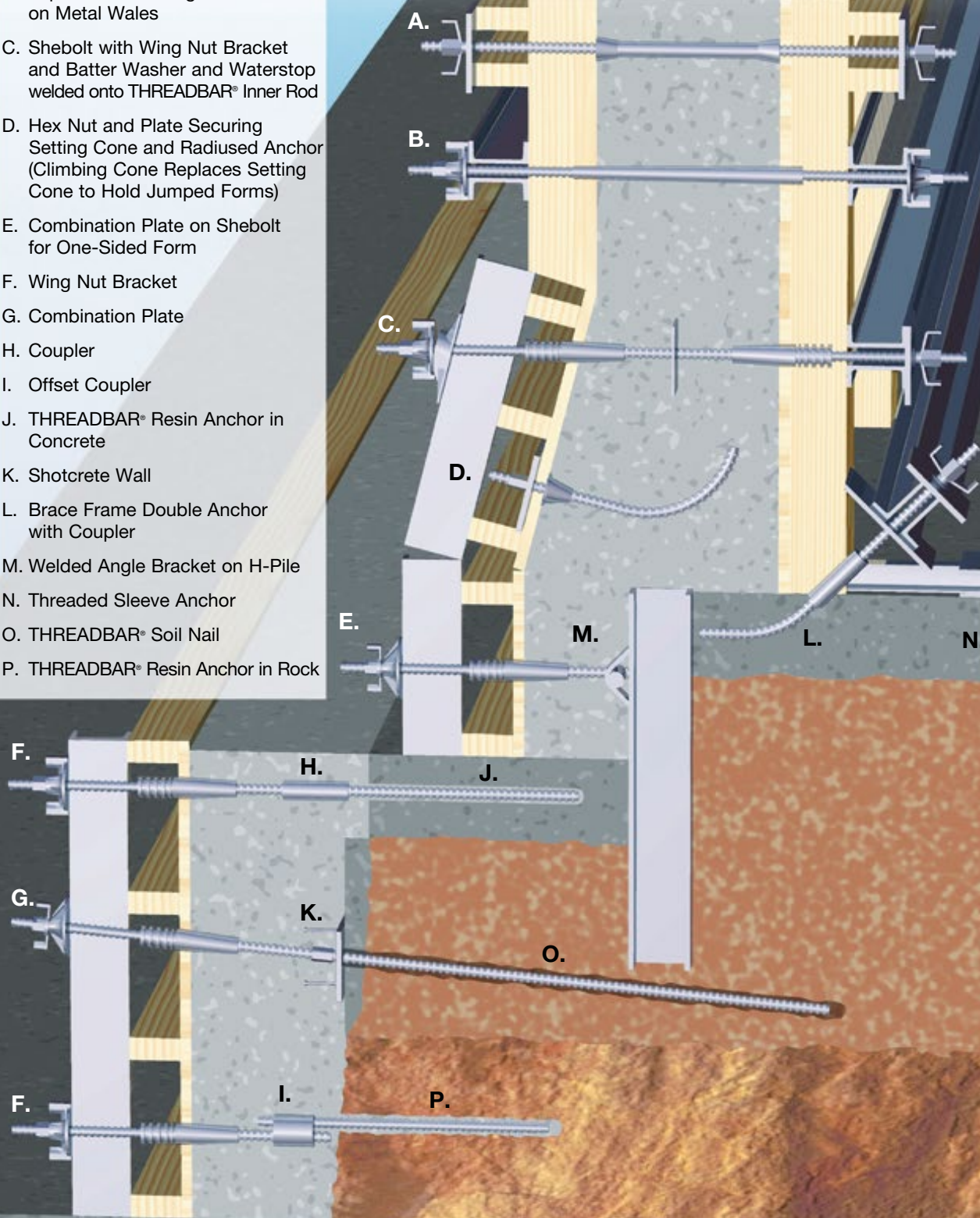
| E    |      | F    |      | Ultimate Load* |      | Weight |      |
|------|------|------|------|----------------|------|--------|------|
| [in] | [mm] | [in] | [mm] | [kips]         | [kN] | [lbs.] | [kg] |
| 16   | 406  | 17   | 438  | 43.8           | 195  | 2.6    | 1.2  |
| 21   | 533  | 25   | 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



# DYWIDAG Expansion Anchor

## 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

Ultimate load  $F_u$  in kips (use appropriate factor of safety)

|    | Concrete strength [psi] |      |      |      |      |      |      |      |
|----|-------------------------|------|------|------|------|------|------|------|
|    | 3000                    | 3500 | 4000 | 4500 | 5000 | 5500 | 6000 |      |
| 8  | 4.8                     | 5.2  | 5.6  | 5.9  | 6.2  | 6.6  | 6.8  | 5/8" |
| 9  | 7.4                     | 8.0  | 8.6  | 9.1  | 9.6  | 10.1 | 10.5 |      |
| 10 | 10.4                    | 11.2 | 12.0 | 12.8 | 13.4 | 14.1 | 14.7 |      |
| 11 | 13.7                    | 14.8 | 15.8 | 16.8 | 17.7 | 18.5 | 19.4 |      |
| 12 | 17.2                    | 18.6 | 19.9 | 21.1 | 22.3 | 23.3 | 24.4 |      |
| 13 | 21.1                    | 22.8 | 24.3 | 25.8 | 27.2 | 28.5 | 29.8 |      |
| 14 | 25.1                    | 27.2 | 29.0 | 30.8 | 32.5 | 34.0 | 35.6 |      |
| 15 | 29.4                    | 31.8 | 34.0 | 36.1 | 38.0 | 39.9 | 41.6 |      |
| 16 | 34.0                    | 36.7 | 39.2 | 41.6 | 43.9 | 46.0 | 48.0 | 7/8" |
| 17 | 38.7                    | 41.8 | 44.7 | 47.4 | 50.0 | 52.4 | 54.7 |      |
| 18 | 43.6                    | 47.1 | 50.4 | 53.5 | 56.3 | 59.1 | 61.7 |      |
| 19 | 48.8                    | 52.7 | 56.3 | 59.7 | 63.0 | 66.0 | 69.0 |      |
| 20 | 54.1                    | 58.4 | 62.5 | 66.3 | 69.8 | 73.2 | 76.5 |      |
| 21 | 59.6                    | 64.4 | 68.8 | 73.0 | 76.9 |      |      |      |
| 22 | 65.3                    | 70.5 | 75.4 |      |      |      |      |      |
| 23 | 71.1                    | 76.8 |      |      |      |      |      |      |
| 24 | 77.1                    |      |      |      |      |      |      |      |

The capacity of embedded anchors in concrete is estimated using the truncated cone break-out failure mechanism.

The concrete cone angle can be assumed as  $\alpha = 55^\circ$  to the axis of the load. The ultimate load can be computed using the equation according to ACI 318 appendix D.

\* The spacing of expansion anchors shall not be less than 3 times the effective embedment length.

Assume expansion shell length 5"

Example:

Equation (ACI 318 appendix D):

$$F_u = k \cdot \sqrt{f_c} \cdot L^2$$

$F_u$  = ultimate load [lbf]

$L$  = effective embedment length [in]

$k = 17$  factor for post-installed anchor

$\sqrt{f_c}$  = concrete shear stress [psi]

$$L = 11"$$

$$k = 17$$

$$f_c' = 4000 \text{ psi}$$

compute  $F_u$ :

$$F_u = 39200 \text{ lbf} = 39.2 \text{ kips}$$

For a forming application the Safe Load is

$$F_u/2 = 19.6 \text{ kips}$$

$$\text{The drill hole depth is } 11" + 5" = 16"$$

Safe working load =  $F_u$  / safety factor

Drill hole depth:

Add up expansion shell length (approx. 5") and effective embedment length







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